



# Feasibility Study/Cleanup Action Plan

**Port of Illahee Property**

**Pollution Liability Insurance Agency**

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# Table of Contents

<b>Limitations</b> .....	<b>i</b>
<b>1.0 Introduction</b> .....	<b>1</b>
1.1 Objectives .....	1
<b>2.0 Background</b> .....	<b>1</b>
2.1 Previous Investigations and Remediation Activities .....	2
2.1.1 2016 Langseth Site Investigation.....	2
2.1.2 2017 G-Logics Preliminary Planning Assessment .....	2
2.2 Previously Identified Data Gaps .....	3
<b>3.0 Additional Site Characterization</b> .....	<b>3</b>
3.1 Conduct Groundwater Monitoring Event.....	3
3.2 Install and Sample Sub-Slab Soil Vapor Probes.....	4
3.3 Drill and Sample Soil Borings and Install Groundwater Monitoring Wells – 2022 Assessment.....	4
3.4 Drill and Sample Soil Borings and Install Groundwater Monitoring Wells – 2023 Assessment.....	5
3.5 Residuals Management.....	7
3.6 2022 Groundwater Monitoring and Sample Analytical Results.....	7
3.7 2022 Sub-Slab Soil Vapor Sample Analytical Results.....	7
3.8 2023 Soil Sample Analytical Results .....	7
3.9 Findings of Additional Site Characterization .....	8
<b>4.0 Feasibility Study</b> .....	<b>8</b>
4.1 Remedial Action Objectives.....	8
4.2 Applicability of Model Remedies.....	9
4.3 Cleanup Action Alternatives .....	9
4.3.1 Alternative 1: Site-Wide Soil Excavation and Offsite Disposal .....	10
4.3.2 Alternative 2: Air Sparging/Soil Vapor Extraction (AS/SVE) and Monitored Natural Attenuation (MNA).....	11
4.3.3 Alternative 3: Targeted Soil Excavation, Offsite Disposal, and MNA.....	12
4.3.4 No Further Action Process for Alternatives 2 and 3 .....	13
4.4 Evaluation Basis for Remediation Alternatives .....	14
4.4.1 Disproportionate Cost Analysis.....	14
4.5 Evaluation of Remediation Alternatives .....	16
4.5.1 Protectiveness.....	16



4.5.2 Permanence.....	17
4.5.3 Effectiveness Over the Long Term .....	17
4.5.4 Management of Short-Term Risks.....	17
4.5.5 Technical and Administrative Implementability .....	17
4.5.6 Consideration of Public Concerns .....	17
4.5.7 Costs.....	18
4.6 Recommended Cleanup Action.....	18
<b>5.0 General Description of the Proposed Cleanup Action.....</b>	<b>18</b>
5.1 Proposed Cleanup Levels .....	18
5.2 Points of Compliance .....	19
5.3 UST Decommissioning and Removal .....	19
5.4 Limited Soil Excavation .....	20
5.5 Monitoring Well Installation.....	20
5.6 Surveying.....	21
5.7 Groundwater Sampling.....	21
<b>6.0 Permitting and Implementation Schedule .....</b>	<b>21</b>
6.1 Permitting.....	21
6.2 Implementation Schedule .....	21
<b>7.0 References.....</b>	<b>23</b>

## Tables

Table 1	Groundwater Sampling Field Parameter Measurements
Table 2	Groundwater Monitoring Data
Table 3	Groundwater Sample Analytical Data
Table 4	Soil Vapor Sample Analytical Data
Table 5	Soil Sample Analytical Data
Table 6	Alternative 1: Site-Wide Soil Excavation and Offsite Disposal
Table 7	Alternative 2: Air Sparging and Soil Vapor Extraction
Table 8	Alternative 3: Targeted Soil Excavation and Offsite Disposal, and MNA

## Figures

Figure 1	Subject Property Location Map
Figure 2	Site Plan



- Figure 3 Groundwater Elevation Contour Map – October 24, 2022
- Figure 4 GRO and Benzene Concentrations in Groundwater – October 24, 2022
- Figure 5 SVP Concentrations– October 28, 2022
- Figure 6 GRO and Benzene Concentrations in Soil – December 2022 and July 2023
- Figure 7 Alternative 1: Site-Wide Soil Excavation and Offsite Disposal
- Figure 8 Alternative 2: Air Sparging and Soil Vapor Extraction
- Figure 9 Alternative 3: Targeted Soil Excavation, Offsite Disposal, and Monitored Natural Attenuation

## **Appendices**

- Appendix A Groundwater Sampling Field Data Sheets
- Appendix B Soil Boring Logs
- Appendix C Laboratory Reports



## 1.0 Introduction

SLR International Corporation (SLR) has prepared this Feasibility Study/Cleanup Action Plan (FS/CAP) for the PLIA-led Remedial Action at the Former Port of Illahee Retail Fueling Station located at 5507 Illahee Road Northeast in Bremerton, Washington (Subject Property) in accordance with Statement of Work (SOW) Number WP-002401 between SLR and PLIA executed October 12, 2024.

In 2022 and 2023, SLR conducted a subsurface investigation to address identified data gaps, and to provide a greater level of certainty regarding potential future costs associated with Site cleanup.

### 1.1 Objectives

SLR has prepared this FS/CAP in accordance with Task 2 of the SOW WP-002401 to review the project documents and propose a work plan with cost estimates, outlining project activities, in addition to adhering to the requirements of the Washington Model Toxics Control Act (WAC 173-340-350) for implementation of a remedial action. This report presents the activities and results of additional characterization activities, and presents a general conceptual-level description of a proposed remedial action at the Subject Property.

## 2.0 Background

The Subject Property consists of a single parcel of land (Kitsap County parcel number 4429-015-001-0309) totaling approximately 0.15 acres located at 5507 Illahee Road NE in Kitsap County, Washington (Subject Property/Site). The Subject Property is located within a mixed commercial and residential area in the Port of Illahee (the Port), in an unincorporated area of Kitsap County between the cities of Bremerton and Silverdale (See Figure 1).

The Subject Property was initially developed as a grocery store and gasoline station in approximately 1939. A former underground storage tank (UST) was reportedly located in the northwest portion of the Subject Property and two fuel dispensers were located near the eastern property boundary. One of the dispensers reportedly dispensed leaded gasoline. Records documenting the installation, location, or removal of the former UST were not identified; however, a ground penetrating radar (GPR) survey conducted in June 2017 did not indicate the presence of an abandoned UST. The existing building at the Subject Property was constructed in 1979 and the Subject Property operated as a convenience store and gasoline station until approximately 2002. Three USTs are located to the east of the building and were installed in 1980, and a dispenser island is located near the northeast portion of the property. The Subject Property is currently vacant (G-Logics, 2017).

The USTs at the Subject Property consist of one 4,000-gallon UST which contained leaded gasoline, and one 4,000-gallon UST and one 6,000-gallon UST which contained unleaded gasoline. The USTs are constructed of single-wall steel with leak detection and impressed-current corrosion protection. The USTs were reportedly upgraded in 1998 and have been out of service since approximately 2002. Jim Aho, the Port Commissioner, reported that the USTs were previously emptied of remaining product (G-Logics, 2017).

The surface of the Subject Property is primarily paved with concrete or asphalt, and a portion of the Subject Property to the north of the building is grass. The Subject Property is bordered to the north by an asphalt parking lot followed by Oceanview Boulevard NE, to the east by Illahee Road NE followed by the Illahee Dock, to the south by residential homes and Allview Boulevard



NE, and to the west by residential homes. The surface of the Subject Property is generally flat and is situated at an approximate elevation of 54 feet above mean sea level. East of the Subject Property, the topography slopes steeply toward the Port Orchard channel of Puget Sound, located approximately 250 feet to the east. Features of the Site are depicted on Figure 2.

Subsurface soils generally consist of dense to very dense sand, gravel, and gravelly sand with varying amounts of silt and occasional silt lenses, to depths of approximately 17 feet below ground surface (bgs). Groundwater was encountered at depths between 9 and 12 feet bgs during previous drilling activities at the Site. Based on groundwater data collected by G-Logics, Inc. (G-Logics) on July 14, 2017, the depth to groundwater in each of the monitoring wells ranged from 5.19 to 12.88 feet bgs (G-Logics, 2017). The groundwater flow direction beneath the Site is generally to the east, toward the Port Orchard channel.

## **2.1 Previous Investigations and Remediation Activities**

### **2.1.1 2016 Langseth Site Investigation**

On December 12, 2016, Langseth Environmental Services, Inc. (Langseth) conducted investigation activities at the Site to assess soil conditions in the vicinity of the tank pit and former gasoline dispenser. Five soil borings (designated B1 through B5) were advanced at the eastern portion of the Site. Soil borings B1, B2, and B3 were advanced to the west, north, and east of the former dispenser, respectively, and borings B4 and B5 were advanced to the east of the tank pit (see Figure 2). The borings were advanced to depths ranging between approximately 5 and 13 feet bgs. Soil sample analytical results indicated concentrations of gasoline-range organics (GRO; up to 810 milligrams per kilogram [mg/kg]) above the Model Toxics Control Act (MTCA) Method A cleanup level (30 mg/kg) in the soil samples collected from borings B4 and B5 at a depth of 8 feet bgs (see Figure 6 and Table 5). Benzene and toluene were detected at concentrations (0.69 and 8.87 mg/kg, respectively) above the MTCA Method A cleanup levels (0.03 and 6.0 mg/kg, respectively) in the sample collected from B5 at 8 feet bgs. Groundwater was not encountered during the drilling (Langseth, 2016).

### **2.1.2 2017 G-Logics Preliminary Planning Assessment**

During July 2017, G-Logics conducted investigation activities at the Site as part of the Washington State Pollution Liability Insurance Agency's (PLIA) Preliminary Planning Assessment (PPA) for the Site to try and identify the nature and extent of petroleum contamination at the Site and present and evaluate cleanup alternatives for the Site.

The investigation included the drilling and sampling of eight soil borings (designated GLB-1 through GLB-4, and GLMW-1 through GLMW-4). Four of the soil borings (GLMW-1 through GLMW-4) were completed as groundwater monitoring wells. Soil borings GLB-1, GLB-3, GLB-4, and GLMW-1 were advanced to the north, south, west, and east, respectively, of the historic UST located to the north of the current building. GLB-2 was advanced to the east of the former dispenser. GLMW-2, GLMW-3, and GLMW-4 were advanced to the east of the UST basin. The soil borings were advanced to depths between 6 and 17 feet bgs. The boring and monitoring well locations are depicted on Figure 2.

The soil sample results showed that samples from GLMW-2 at a depth of 8 feet bgs, and GLMW-3 at depths of 1.5 and 7.5 feet bgs, contained GRO concentrations (up to 679 mg/kg) above the MTCA Method A soil cleanup level (30 mg/kg). The soil sample from GLMW-3 collected at a depth of 1.5 feet bgs also contained a benzene concentration (0.0453 mg/kg) above the MTCA Method A soil cleanup level (0.03 mg/kg).



On July 14, 2017, G-Logics collected groundwater samples from the four newly installed wells (GLMW-1 through GLMW-4). The analytical results showed that the groundwater samples collected from GLMW-2 and GLMW-3 contained GRO concentrations (up to 998 micrograms per liter [ $\mu\text{g/L}$ ]) above the MTCA Method A groundwater cleanup level (800  $\mu\text{g/L}$ ). Benzene was detected in the sample collected from GLMW-3 (4.76  $\mu\text{g/L}$ ) but at a concentration below the cleanup level (5.0  $\mu\text{g/L}$ ). 1,2-Dibromoethane (EDB), 1,2-Dichloroethane (EDC), and Methyl tert-butyl ether (MTBE) were not detected in the samples collected from GLMW-2 or GLMW-3 (G-Logics, 2017). Lead was measured in all samples collected at concentrations below MTCA Method A criteria.

## 2.2 Previously Identified Data Gaps

The results of these investigations were summarized in SLR's *Remedial Investigation Work Plan, Port of Illahee Property* (SLR, 2022). At the time, SLR identified the following data gaps:

- The lateral extents of petroleum hydrocarbon-impacted groundwater had not been delineated:
  - To the east, downgradient of the UST basin, and beneath the Illahee Road NE ROW, towards the Port Orchard channel.
  - To the west, upgradient of the UST basin toward the current building.
  - To the north beyond the former dispenser island.
  - Potentially to the south beyond GLMW-4.
- The lateral extents of the petroleum-impacted soil had not been delineated:
  - Laterally to the north beyond the former dispenser island; to the east beneath the Illahee Road NE right-of-way (ROW); and to the west beneath the current building.
- The soil vapor pathway had not been assessed.
- A disproportionate cost analysis had not been conducted.

## 3.0 Additional Site Characterization

### 3.1 Conduct Groundwater Monitoring Event

In October 2022, SLR conducted investigation and assessment activities to address the data gaps identified in the Remedial Investigation Work Plan. A summary of this event, along with copies of field notes, boring logs, and laboratory reports was previously provided to PLIA (SLR, 2023). SLR visited the Site on October 24, 2022, to conduct a groundwater sampling event; the data collected would later be used to plan subsequent drilling activities. During the sampling event, SLR collected groundwater samples from the four monitoring wells present on the Subject Property (GLMW-1 through GLMW-4). Prior to sampling, SLR measured the depths to groundwater in the wells by using an electronic water level indicator. SLR used a peristaltic pump with new tubing to purge and sample each well by using low flow (0.33 liter per minute) pumping methods, with the bottom of the tubing set at approximately 2 feet below the water level. During the purging of each well, pH, conductivity, temperature, oxidation-reduction (redox) potential, and dissolved oxygen concentration of the extracted water were measured, and a groundwater sample was collected after stabilization of the field parameter measurements. The final field parameter measurements (at the time of groundwater sample collection) from the October 2022 sampling event are presented in Table 1.



The groundwater samples were submitted to Apex Laboratories (Apex) in Tigard, Oregon, for analysis of gasoline-range organics (GRO) by Washington State Department of Ecology (Ecology) Method NWTPH-Gx; diesel-range organics (DRO) and oil-range organics (ORO) by Ecology Method NWTPH-Dx; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) Method 8260D; and total and dissolved lead by EPA Method 6020. The samples collected for dissolved lead were filtered in the field using disposable 0.45-micron field filters.

### **3.2 Install and Sample Sub-Slab Soil Vapor Probes**

On October 28, 2022, SLR installed two sub-slab vapor probes within the eastern and western portions of the building (designated SS-1 and SS-2, respectively) (SLR, 2023). SLR installed the probes by drilling a small-diameter hole in the concrete floor with a rotary hammer to install Vapor Pins®. Probe installation and vapor sampling were conducted in accordance with Ecology's *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* (Ecology, 2022), and with the manufacturer's standard operating procedure for Vapor Pin® installation.

Prior to sampling, the soil vapors in each probe were purged for a minimum of five minutes. A peristaltic pump with new tubing was connected to the purging port on a decontaminated, disposable three-way manifold and was used to extract soil vapors from the probe. While purging, the soil vapor probes were tested for leaks by using a tracer gas box over the probe. A calibrated helium detector with a range of 0 parts per million to 100 percent was used to monitor the helium concentration within the box and in the purged air. Helium was introduced into the tracer gas box and maintained at a concentration of at least 70 percent while helium concentrations in the purged soil vapors were monitored. Each soil vapor probe passed the leak testing procedure.

After purging, a one-liter Summa canister (individually certified as decontaminated by the lab) with a dedicated flow regulator was attached to the sample valve on each manifold. The purging valve on the manifold was closed, the peristaltic pump turned off, and then the sample valve and dedicated flow regulator were opened to allow the Summa canister to extract a sample from the soil vapor probe over a period of approximately five minutes. The valve on the canister was closed when the vacuum reached zero. The filled Summa canisters were submitted to Friedman & Bruya, Inc. (Friedman & Bruya) in Seattle, Washington, for analysis of total petroleum hydrocarbon (TPH) equivalent carbon (EC) fractions 5-8 (aliphatics), EC9-12 (aliphatics), EC9-10 (aromatics), BTEX, and naphthalene by EPA Method TO-15.

### **3.3 Drill and Sample Soil Borings and Install Groundwater Monitoring Wells – 2022 Assessment**

To delineate the eastern and western extents of the petroleum hydrocarbon-impacted groundwater and soil, a total of four soil borings (designated SB-1, MW-5, MW-7, and MW-8) were drilled and sampled on December 12, 13, and 14, 2022 (SLR, 2023). Borings SB-1, MW-7, and MW-8 were located to the east of the UST basin, beneath the Illahee Road NE ROW; and boring MW-5 was located to the west of the UST basin, adjacent to the eastern wall of the Subject Property building (see Figure 2). Holt Services, Inc. (Holt) of Edgewood, Washington, drilled and sampled the borings using a limited-access combination hydraulic push-probe and hollow-stem auger drill rig, under the direction of an SLR geologist. Borings MW-5, MW-7, and MW-8 were completed as groundwater monitoring wells.



Prior to conducting the drilling, SLR arranged for public and private utility locates to identify and mark the locations of underground utilities and structures near the planned drilling locations. SLR also arranged for traffic control before proceeding with boring SB-1 located in the ROW. Drilling locations were adjusted in the field based on the presence of utilities or structures. To ensure that shallow underground utilities were not damaged during drilling, Holt used a vacuum truck to air knife the upper five feet of soil from each boring.

At depths below 5 feet bgs, soil samples were collected on a continuous basis by using a disposable acetate liner within the drill rods. SLR personnel screened each soil sample for the presence of petroleum hydrocarbons by using visual appearance, odor, and photoionization detector (PID) readings. Soil samples were collected from each of the soil borings for laboratory analysis. Based on the field screening results, the soil sample from each boring that exhibited the greatest evidence of contamination, as well as the sample from the bottom of the boring, were submitted to Apex for analysis. If there was no evidence of petroleum hydrocarbon in the samples from a boring, then the soil sample collected directly above the water table or at the bottom of the boring was submitted for analysis..

Boring MW-5 was advanced to a depth of approximately 15 feet bgs, which was approximately 7 feet below the groundwater table. There were no indications of petroleum-impacted soil, so SLR collected samples from directly above the groundwater table (at a depth of approximately 7 to 8 feet bgs) and from the bottom of the boring (at a depth of approximately 14 to 15 feet bgs) for laboratory analysis. Boring MW-7 was advanced to a depth of approximately 26 feet bgs, which was approximately 16 feet below the groundwater table. Strong petroleum-like odors and PID readings (up to 1,292 parts per million [ppm]) were observed in soil at a depth of approximately 12.5 feet bgs, and the field evidence of contamination decreased with depth. SLR collected a sample of the soil exhibiting the greatest field evidence of contamination (at a depth of approximately 12 to 13 feet bgs) as well as from the bottom of the boring (at a depth of approximately 24 to 26 feet bgs) for laboratory analysis.

Boring MW-8 was advanced to a depth of approximately 30 feet bgs, which was approximately 17.5 feet below the groundwater table. Strong petroleum-like odors and PID readings (up to 1,673 ppm) were present in a soil sample collected at approximately 12 to 13 feet bgs and the field evidence of contamination decreased with depth. SLR did not collect a sample of the soil exhibiting the greatest field evidence of contamination due to the proximity of a sample collected at the same depth and interval in MW-7. SLR did collect a sample from the bottom of the boring (at a depth of approximately 29 to 30 feet bgs) for laboratory analysis. Boring SB-1 was advanced to a depth of approximately 20 feet bgs, and groundwater was not encountered above this depth. Strong petroleum-like odors and PID readings (up to 861 ppm) were observed in soil at a depth of approximately 10.5 feet bgs, and the field evidence of contamination decreased with depth. SLR collected a sample of the soil exhibiting the greatest field evidence of contamination (at a depth of approximately 10 to 11 feet bgs as well as from the bottom of the boring (at a depth of approximately 19 to 20 feet bgs) for laboratory analysis.

### **3.4 Drill and Sample Soil Borings and Install Groundwater Monitoring Wells – 2023 Assessment**

Due to time constraints during the December event, the proposed boring MW-6 was not installed. Additionally, SLR determined that because impacted soil was encountered within the Illahee Road NE ROW, as observed during the drilling of MW-7 and MW-8, delineation was incomplete. As a result, continued assessment to delineate the northern extent of the impacted groundwater and soil in conjunction with an attempt to further delineate the downgradient/eastern extent was planned for a later date. During this second phase of



assessment, three soil borings (SB-2, MW-6 and MW-9) were drilled and sampled on July 25, 2023. Boring MW-6 was located to the north of the UST basin, while MW-9 was located to the east, on a downward sloping area of the paved Illahee Dock access road. Boring SB-2 was located to the southeast of the UST basin, to assess if impacted soils further extended into the Illahee Road NE ROW. Holt drilled and sampled the borings using a hollow-stem auger drill rig, under the direction of an SLR geologist. Borings MW-6 and MW-9 were completed as groundwater monitoring wells.

Prior to conducting drilling, SLR arranged for public and private utility locates to identify and mark the locations of underground utilities and structures near the planned drilling locations. SLR also arranged for traffic control before proceeding with SB-2 located in the ROW. Drilling locations were adjusted in the field based on the presence of utilities or structures. To ensure that shallow underground utilities were not damaged during drilling, Holt used a vacuum truck to air knife the upper five feet of soil from each boring.

At depths below 5 feet bgs, soil samples were collected on 2.5- or 5.0-foot intervals using a split-spoon sampler within the drill rods. SLR personnel screened each soil sample for the presence of petroleum hydrocarbons by using visual appearance, odor, and PID readings. Based on the field screening results, the soil sample from each boring that exhibited the greatest evidence of contamination, as well as the sample from the bottom of the boring, were submitted to Friedman & Bruya for analysis. If there was no evidence of petroleum hydrocarbon in a boring, then the soil sample collected directly above the water table or, if groundwater was not encountered, at the bottom of the boring was submitted for analysis.

Boring MW-6 was advanced to a depth of approximately 16 feet bgs, which was approximately 4.5 feet below the groundwater table. There were no indications of petroleum-impacted soil, so SLR collected samples from directly above the groundwater table (at a depth of approximately 10 to 11 feet bgs) and from the bottom of the boring (at a depth of approximately 15 to 16 feet bgs) for laboratory analysis. Boring SB-2 was advanced to a depth of approximately 15.75 feet bgs, at which groundwater was not encountered<sup>1</sup>. SLR collected samples from the approximate middle of the boring (at a depth of approximately 7.5 to 8 feet bgs) and from the bottom of the boring (at a depth of approximately 15 to 15.5 feet bgs) for laboratory analysis.

Boring MW-9 was advanced to a depth of approximately 26.5 feet bgs, which was approximately 3.5 feet below the groundwater table. Strong petroleum-like odors and PID readings (up to 1,070 ppm) were observed in soil at a depth of approximately 10.5 feet bgs, and the field evidence of contamination decreased with depth. SLR collected a sample of the soil exhibiting the greatest field evidence of contamination (at a depth of approximately 10 to 11 feet bgs) as well as from the bottom of the boring (at a depth of approximately 25 to 25.5 feet bgs) for laboratory analysis. Due to poor recovery, no sample was collected at a depth of 20 feet bgs.

The soil samples were analyzed for DRO and ORO by Northwest Method NWTPH-Dx, GRO by Northwest Method NWTPH-Gx, BTEX by EPA Method 8260D, and lead by EPA Method 6020.

Groundwater from the newly installed wells was not sampled during this event and have not been sampled to-date.

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<sup>1</sup> The shallow groundwater table was not encountered at the maximum depth explored at the location of SB-2; however, an insignificant zone of perched groundwater was observed in the gravel base and sub-base courses of Illahee Road NE above a silt unit.



### 3.5 Residuals Management

The soil generated by the drilling activities; the wastewater generated during the decontamination of the drilling and sampling equipment; and the purge water generated during sampling, are temporarily stored at the Site in properly labeled 55-gallon steel drums, awaiting offsite disposal at an Ecology-approved facility as part of the remedial action described below.

### 3.6 2022 Groundwater Monitoring and Sample Analytical Results

The depths to groundwater on October 24, 2022 ranged from 7.57 to 16.12 feet below the tops of the well casings. Based on these groundwater table elevations, it appears that groundwater flow direction beneath the Subject Property is generally to the east, with an average hydraulic gradient of 0.3 foot per foot (ft/ft). The elevations measured in monitoring wells GLMW-1 and GLMW-2 were significantly lower than the elevations measured by G-Logics in 2017, and the elevations measured in wells GLMW-3 and GLMW-4 were similar to previous events.

The depth to groundwater measurements and groundwater elevations in the monitoring wells during the October 2022 groundwater sampling event, as well as during the 2017 sampling event, are presented in Table 2. A groundwater elevation contour map based on the data collected on October 24, 2022 is presented on Figure 3.

The groundwater sample analytical results showed that the sample from monitoring well GLMW-3 contained a GRO concentration [351 micrograms per liter ( $\mu\text{g/L}$ ) that was below the MTCA Method A groundwater cleanup level (800  $\mu\text{g/L}$ ). No other analytes were detected in any of the wells above the laboratory's method reporting limits (MRLs). The GRO and BTEX concentrations in the October 2022 groundwater samples are presented on Figure 4. The groundwater sample analytical results from the October 2022 sampling event, as well as from the 2017 sampling event, are presented in Table 3.

### 3.7 2022 Sub-Slab Soil Vapor Sample Analytical Results

The sub-slab soil vapor sample analytical results showed that both of the samples contained concentrations of air-phase hydrocarbons (APH) that were below the MTCA Method B screening level for APH. No other analytes were detected in any of the wells above the laboratory's MRLs. The total APH and BTEX concentrations in the October 2022 sub-slab soil vapor samples are presented on Figure 5. The sub-slab soil vapor analytical results from the October 2022 sampling event are presented in Table 4.

### 3.8 2023 Soil Sample Analytical Results

The soil sample analytical results showed that the shallow soil samples collected from borings SB-1, MW-8, and MW-9 contained GRO concentrations (160, 477, and 510 mg/kg, respectively) that exceeded the MTCA Method A soil clean up level (100 mg/kg). The shallow soil sample collected from boring MW-7 contained a GRO concentration (19.5 mg/kg) that did not exceed the cleanup level. The shallow soil samples collected from borings SB-1, MW-7, MW-8, and MW-9 contained DRO concentrations (34.7, 19.5, 58.7, and 290 mg/kg, respectively) that did not exceed the cleanup level (2,000 mg/kg). The shallow soil sample collected from MW-9 contained an Ethylbenzene concentration (2.2 mg/kg) and a Total Xylenes concentration (3.425 mg/kg) that did not exceed the cleanup levels of 6 mg/kg and 9 mg/kg, respectively. The deep soil sample from MW-9 contained an Ethylbenzene concentration (0.07 mg/kg) and a Total Xylenes concentration (0.125 mg/kg) that did not exceed the cleanup levels of 6 mg/kg and 9 mg/kg, respectively. The shallow soil samples collected from SB-2, MW-5, and MW-6, as well



as the deep samples from SB-1, SB-2, MW-5, MW-6, MW-7, and MW-8 did not contain any analytes above either the MTCA Method A cleanup levels or the laboratory's MRLs. The soil sample analytical results from these investigations, as well as from the 2017 investigation, are presented in Table 5. The GRO and benzene concentrations in the soil samples are also presented on Figure 6. . Findings of Additional Site Characterization

Based on the results of previous remedial investigation and the combined results of the 2022 and 2023 additional investigation activities, the data gaps presented in Section 2.2 have been partially resolved. The conclusions of these assessments and the remaining data gaps are as follows:

- The lateral extents of petroleum-impacted groundwater have been delineated to the south, north, and to the west.
  - The eastern extents of impacted groundwater have not been delineated. SLR proposes the installation of an additional groundwater monitoring well (MW-10) to be located at the eastern end of the Illahee Dock access road, as seen on Figure 7.
  - Additional data from existing groundwater monitoring wells would benefit the site characterization efforts.
- The lateral extents of petroleum-impacted soil have been delineated to the north, south, and to the west, as MW-5, MW-6, and SB-2 (located to the south of the UST basin and SB-1 in the ROW) did not contain any petroleum hydrocarbon concentrations above the MTCA Method A cleanup levels.
  - The eastern extents of impacted soil in the off-property area have not been delineated, as MW-9 contained GRO concentrations above MTCA Method A cleanup levels.
- The soil vapor pathway has been determined to be an incomplete exposure pathway for the current location and configuration of the lone site structure based on the two soil vapor samples collected in 2022. An off-property vapor intrusion assessment has not been completed as the extent and magnitude of groundwater impacts to the east have not been determined.
- Since the eastern extents of the impacted soil and groundwater have yet to be delineated, it is unclear whether or not surface water may be impacted. Installation of and sampling of the proposed downgradient monitoring well MW-10 will support evaluation of the groundwater to surface water pathway.

## 4.0 Feasibility Study

The 2017 PPA report for the Site did not include a Feasibility Study (FS) to evaluate remedial alternatives. MTCA Cleanup Regulation, WAC 173-340-350 requires an FS “to evaluate sufficient information regarding a site to select a cleanup action under WAC 173-340-360 through 173-340-390.”

### 4.1 Remedial Action Objectives

The objectives for remedial actions under this FS are to eliminate, reduce, or otherwise control to the extent possible, unacceptable risks to human health and the environment posed by petroleum hydrocarbons in Site soil, groundwater, and soil vapor by using appropriate cleanup



technologies in accordance with MTCA. To meet these goals, Remedial Action Objectives (RAOs) have been identified for each of the exposure pathways:

- RAO-1: Prevent direct contact with soils containing hazardous petroleum constituents above a level which would pose unacceptable risk as determined in accordance with MTCA.
- RAO-2: Prevent ingestion of groundwater containing petroleum hydrocarbons at concentrations above the MTCA Method A cleanup level for groundwater.
- RAO-3: Prevent human inhalation of vapors containing petroleum constituents above the levels calculated for a non-residential, non-industrial exposure level.

It should be noted that the RAOs developed for this FS do not consider the soil to groundwater to surface water transport pathway, the human health direct contact to surface water or sediments exposure pathway, or ecological receptors.

## 4.2 Applicability of Model Remedies

Ecology has developed standardized cleanup approaches called “model remedies” in response to legislative direction. In 2015, Ecology issued the “Model Remedies for Sites with Petroleum Contaminated Soils” document. This was followed in August 2016 with the “Model Remedies for Sites with Petroleum Impacts to Groundwater” document. Both documents were revised and updated in 2017. These documents provide guidelines to help evaluate if sites are eligible for a Model Remedy approach, which were developed to help streamline the cleanup process and reduce costs associated with agency review.

SLR conducted an evaluation as to the applicability of model remedies to the Site. SLR also performed a review of new revised draft guidelines currently undergoing public comment to evaluate potential changes to model remedies that might influence remediation decision-making at the Site.

SLR determined that the Site is ineligible for application of a model remedy due to the presence of soil and groundwater contamination above Method A cleanup levels that will likely remain off of the source property in the public right-of-way (Illahee NE) and at the west-adjacent property (the Port of Illahee park property).

## 4.3 Cleanup Action Alternatives

This section summarizes the three remedial alternatives that were developed and evaluated for the Site. For each alternative, the key components are described, including conceptual engineering designs.

This section summarizes the three remedial alternatives that were developed and evaluated for the Site based on discussions with the Port of Illahee and PLIA. As data gaps still remain in the Site characterization (described in detail in section 3.9), particularly the extent of groundwater impacts to the east, these alternatives are based on the following assumption:

- Additional soil and groundwater data from the installation of a groundwater monitoring well at the western end of the Illahee Dock access road will demonstrate that the GRO and BTEX concentrations originating at the Subject Property and extending across the Illahee Road right-of-way onto the Port of Illahee park property have not likely reached Puget Sound (i.e., the surface water pathway is incomplete).



Costs to complete data gap characterization are included in the cost estimates developed for the alternatives below. For each alternative, the key components are described, including conceptual engineering designs. Components and unit pricing were developed based on prior experience and current vendor information.

The following three alternatives were developed and evaluated:

- 1 Alternative 1: Site-Wide Soil Excavation and Offsite Disposal
- 2 Alternative 2: Air Sparging/Soil Vapor Extraction (AS/SVE) and Monitored Natural Attenuation (MNA)
- 3 Alternative 3: Targeted Soil Excavation, Offsite Disposal, and MNA

Alternative 1 represents a baseline alternative that would physically remove all of the soil from the Site that contains petroleum hydrocarbons at concentrations exceeding MTCA Method A Cleanup Levels. However, this evaluation also demonstrates a poor cost-to-benefit ratio of actively remediating the entire Site to satisfy a site-wide No Further Action (NFA) determination, so alternatives 2 and 3 target the source area with active approaches and use compliance monitoring to measure the natural attenuation of contaminants in the downgradient areas. The conceptual scope of works are described below, and the estimated costs are presented in Table 6 to Table 8.

#### **4.3.1 Alternative 1: Site-Wide Soil Excavation and Offsite Disposal**

For Alternative 1, the soil on the Site (on property and off property) that contains petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels would be excavated and disposed of offsite at an Ecology-approved facility. Alternative 1 would require the temporary closure and rerouting of Illahee Road NE as well as the excavation of at least the eastern portion of the Illahee Dock access road. The proposed excavation would extend to an anticipated depth of up to approximately 15 feet below ground surface (bgs).. The estimated area to be excavated are shown on Figure 7.

Prior to conducting the excavation activities, grading and building demolition permits would be obtained from Kitsap County and utility locates would be performed. SLR would coordinate with Kitsap County to close and reroute Illahee Road NE during the excavation work and to prepare an engineering design for the restoration of the roadway once the excavation work is completed. Temporary fencing would be used to secure the active work area. Shoring is not anticipated to be needed for this work; however, excavation dewatering and appropriate disposal of wastewater may be required.

Approximately 18,000 square feet of concrete and asphalt paving would be removed from the area that is planned to be excavated, including within the Illahee Road NE right-of-way. The former dispenser island would also be removed. Excavation would begin following removal of the pavement. As the excavation progresses, soils would be screened for possible impacts and select samples would be collected and analyzed on a rush basis (using a mobile laboratory) to verify that soils remaining do not contain petroleum hydrocarbons above MTCA Method A soil cleanup levels. An estimated 1,500 in-place cubic yards of impacted soil would be excavated and transported to an Ecology-approved disposal facility. The excavation would be backfilled with approximately 2,000 tons of imported clean backfill material compacted to 95 percent of the maximum dry density. Asphalt pavement would be installed over the entire excavation area to restore the Site surface to its pre-remediation condition and to limit the infiltration of surface



water. Illahee Road NE and the Illahee Dock access road would be restored in accordance with the requirements of Kitsap County and the Port of Illahee.

Groundwater impacts are expected to be addressed via the removal of the entire mass of contaminant source in soils. Once source-area soils are removed, contaminant concentrations in groundwater are expected to decline rapidly. Downgradient monitoring well MW-10 would be installed as part of Alternative 1 to monitor the groundwater conditions adjacent to the groundwater – surface water interface. An environmental covenant addressing residual groundwater contamination may be required following source removal activities.

#### **4.3.2 Alternative 2: Air Sparging/Soil Vapor Extraction (AS/SVE) and Monitored Natural Attenuation (MNA)**

For Alternative 2, an AS and SVE system would be installed to treat impacted soil and groundwater within the Subject Property boundary (i.e., does not include impacts in the ROW). Four SVE points and six AS wells would be installed would also be installed. The treatment area, and the locations of the proposed SVE points and AS wells are shown on Figure 8. This alternative includes MNA of the remaining impacted groundwater after the source area has been addressed.

The conceptual scope of work for Alternative 2 is described below, and the estimated costs for Alternative 2 are presented in [Table 7](#).

##### **4.3.2.1 AS and SVE**

AS and SVE are commonly used to remediate petroleum impacts in soil and groundwater. Air sparging will inject air into the subsurface to strip and volatilize the submerged volatile petroleum in the soil, and the volatile petroleum in the groundwater. Soil vapor extraction will extract the hydrocarbons that were volatilized by the air sparging operation and will extract the volatile petroleum in the groundwater fluctuation zone and in the vadose zone. Air sparging also increases the oxygen concentration in the subsurface which will help to enhance the aerobic biodegradation of hydrocarbons in the soil and groundwater. The AS/SVE system would operate year-round and can be seasonally adjusted, as needed, when groundwater levels are high.

Based on experience with AS/SVE systems at other petroleum-impacted sites, AS and SVE appears to be an effective alternative for this site. Before implementation of the AS/SVE system, pilot testing will be required to determine an effective ROI for AS and SVE wells. Furthermore, the pilot test can help size an appropriate blower and compressor to accommodate Site-specific conditions. The spacing of the AS and SVE wells may change based on the results of the pilot testing. For this evaluation, an ROI of 15 feet is assumed for the SVE wells which results in a total of four proposed 3-inch-diameter SVE wells (screened 5 to 15 ft bgs). For this evaluation, the SVE blower is assumed to remove a combined flow of 120 scfm at an approximate vacuum of 60 inches of water (inH<sub>2</sub>O) at each of the wells. The proposed layout of the SVE wells is shown in Figure 8.

For the AS wells, an ROI of 10 feet was assumed for the purpose of this evaluation which results in a total of six AS wells to target the impacts on the Subject Property. The wells will be 1-inch diameter PVC wells completed to a depth of at least 25 feet bgs with 1 foot of screen. Assuming a flow of 5 scfm per well at a pressure of 20 pounds per square inch (psi) the total air flow would be 50 scfm. The proposed layout of the AS wells is shown on Figure 8.



A sound dampening enclosure would be constructed for the compressor and blower for the AS/SVE system to mitigate noise concerns. The sound dampening enclosure would be constructed using a pre-fabricated shed. The enclosure would be thoroughly insulated with sound dampening materials but with sufficient ventilation to prevent excessive build-up of heat within the enclosure. Additionally, the equipment would be installed with rubber antivibration cushions below the skids and rubber fittings on the pipe connections to dampen equipment vibrations.

Piping from the AS and SVE wells would be installed in a trench that leads to the sound dampened treatment system enclosure on a paved section of the northwest corner of the Subject Property. Individual pipes (2-inch for the SVE and 1-inch for the AS) would be installed from the enclosure to each well. A blower will extract vapors from the SVE points and an air compressor/blower would be used to pump air underground through the AS points. The extracted soil vapors would be forced through vapor-phase granular activated carbon (GAC) units for treatment prior to emission to the atmosphere, pending Puget Sound Clean Air Agency approval.

System O&M would be conducted on a weekly basis for one month, on a bi-weekly basis for two months, and then on a monthly basis. Operation and maintenance would include equipment maintenance, repair, and replacement activities, and monitoring applied pressures, air flow rates, and vapor concentrations at the system. In addition, vapor effluent samples from the GAC units would be collected on a monthly basis to monitor for potential contaminant break-through and comply with anticipated permit conditions. The AS/SVE system is estimated to be in operation for approximately three years.

Due to SLR's understanding of the statutes that govern PLIA's Loan and Grant program, it is assumed that the SVE and AS system equipment (blowers, compressors, GAC units, controls, etc.) would be rented rather than purchased outright.

#### **4.3.2.2 Monitored Natural Attenuation (MNA)**

The impacted groundwater downgradient of the Subject Property would be monitored over time during and after operation of the AS/SVE system. Groundwater samples would be collected from a total of ten wells (six wells on the Subject Property and four wells on the Port of Illahee park property, including downgradient well MW-10 which will be installed as part of Alternative 2) on a quarterly basis for the first three years (during system operation), then on an annual basis for years 4 to 7, and on a quarterly basis on the final year 8 (fifth year of MNA) at which time it is expected that the analyte concentrations in groundwater in all of the wells within the site boundaries would be below Method A cleanup levels.

#### **4.3.3 Alternative 3: Targeted Soil Excavation, Offsite Disposal, and MNA**

For Alternative 3, the accessible soil within the boundary of the Subject Property and the adjacent Illahee Road NE ROW that is not beneath the travel lanes that contains petroleum hydrocarbon concentrations greater than the MTCA Method A soil cleanup levels would be excavated and disposed of offsite at an Ecology-approved facility. Alternative 3 would remove impacted soil from the source area to the greatest extent practicable, including in the Illahee Road NE right-of-way. The proposed excavation would extend to an anticipated depth of approximately 15 feet in the areas around the UST excavation and proceed up until the boundary with the ROW. The area to be excavated are shown on Figure 9.



Prior to conducting the excavation activities, grading permits would be obtained from Kitsap County and utility locates would be performed. Temporary fencing would be used to secure the active work area. Shoring is not anticipated to be needed for this work; however, excavation dewatering and appropriate disposal of wastewater will likely be required.

Approximately 900 square feet of concrete and asphalt paving would be removed from the area that is planned to be excavated. The former dispenser island would also be removed. Excavation and removal of the USTs and underground piping would begin following removal of the pavement. As the excavation progresses, soils would be screened for possible impacts and select samples would be collected and analyzed on a rush basis (using a mobile laboratory) to verify that soils remaining do not contain petroleum hydrocarbons above the MTCA Method A cleanup levels, and/or to document the contamination concentrations in inaccessible soil that will remain in place at the limits of the excavation. An estimated 300 in-place cubic yards of impacted soil would be excavated and transported to an Ecology-approved disposal facility. The excavation would be backfilled with approximately 450 tons of imported clean backfill material compacted to 95 percent of the maximum dry density. Asphalt pavement would be installed over the entire excavation area to restore the Site surface to its pre-remediation condition and to limit the infiltration of surface water.

#### **4.3.3.1 Monitored Natural Attenuation (MNA)**

The impacted groundwater downgradient of the Subject Property would be monitored over time following soil excavation. Groundwater samples would be collected from a total of ten wells (six wells on the Subject Property and four wells on the Port of Illahee park property, including downgradient well MW-10 which will be installed as part of Alternative 3) on an annual basis for 5 years to evaluate if contaminate concentrations are decreasing.

#### **4.3.4 No Further Action Process for Alternatives 2 and 3**

Alternatives 2 and 3 include administratively seeking a property-specific NFA once Remedial Action Objectives RAO-1, RAO-2, and RAO-3 have been met at the Subject Property. This determination would be requested in accordance with the requirements set forth in WAC 173-340-430 for interim actions, with the appropriate written documentation demonstrating that all stake holders affected by the contamination agree to exclude off-property contamination. Such a request would be accompanied by a report that fulfills WAC 173-340-430(a-f) and would clearly show the extents of remaining contamination and points of compliance at the Site in the public ROW and on the Port of Illahee park property, and include a performance and compliance monitoring and contingency plan for long-term MNA of impacts remaining in the off-property portions of the Site. The property-specific NFA determination for the Subject Property would constitute the final action for the Subject Property. An estimated five years of MNA and Site-wide long-term groundwater monitoring would subsequently be conducted to demonstrate that the off-property contaminant concentrations are declining over time.

Alternatives 2 and 3 would seek to establish an Environmental Covenant in accordance with the 2007 Uniform Environmental Covenants Act. The covenant would identify and characterize the extents of remaining contaminated soil at the Site, define the existing improvements (i.e., the pavement surfaces) as an “engineered control” protective cap that prevents access to soils containing concentrations of petroleum hydrocarbons exceeding levels protective of the direct contact pathway.

Note that occasionally counties are unable to covenant right-of-way properties; however, due to extremely low likelihood due to zoning and other county restrictions that unacceptable risks will



occur via soil excavation in the right-of-way, prior precedent indicates that a good faith effort will be made to obtain an Environmental Covenant with Kitsap County, and if this is not successful even with support from PLIA, this effort will be documented, notice sent to the county documenting the presence of the contamination on the right-of-way, and a property-specific NFA for the Subject Property may be issued.

## 4.4 Evaluation Basis for Remediation Alternatives

Cleanup actions are subject to the threshold requirements set forth in WAC 173-340-360(2)(a). Under the threshold requirements, the cleanup action shall:

- Protect human health and the environment,
- Comply with cleanup standards,
- Comply with applicable state and federal laws, and
- Provide for compliance monitoring,

In addition, for cleanup actions that meet the threshold requirements, the selected actions shall:

- Use permanent solutions to the maximum extent practicable,
- Provide for a reasonable restoration time frame, and
- Consider public concerns.

### 4.4.1 Disproportionate Cost Analysis

The MTCA Disproportionate Cost Analysis [DCA; described in WAC 173-340-360(3)(e)] is used to evaluate which of the alternatives that meet the threshold requirements that are protective to the maximum extent practicable. This analysis involves comparing the costs and benefits of alternatives and selecting the alternative whose incremental costs are not disproportionate to the incremental benefits. The evaluation criteria for the DCA are specified in WAC 173-340-360(3)(f), and include protectiveness, permanence, effectiveness over the long term, management of short-term risks, implementability, consideration of public concerns, and costs.

To favor the benefits of criteria associated with the primary goals of the remedial action, a weighting system was used in this FFS for the DCA. That is, the criteria associated with environmentally based benefits are more highly weighted than other criteria that are associated with non-environmental factors. Each of the MTCA criteria used in the DCA and the weighting factors for the criteria are described below.

#### 4.4.1.1 Protectiveness

The cleanup action alternatives are evaluated for overall protectiveness of human health and the environment, including the degree to which existing risks are reduced, time required to reduce risk at the facility and attain cleanup standards, onsite and offsite risks resulting from implementing the alternative, and improvement of the overall environmental quality. For this FFS, a weighting factor of 30 percent was applied toward the overall benefit analysis. The high weight placed on protectiveness relative to the other factors is warranted due to the overall importance of protection of human health and the environment as a primary goal of cleanup at the Site.



#### **4.4.1.2 Permanence**

The permanence of a cleanup action is defined as the degree to which the alternative permanently reduces the toxicity, mobility or volume of hazardous substances, including the adequacy of the alternative in destroying the hazardous substances, the reduction or elimination of hazardous substance releases and sources of releases, the degree of irreversibility of waste treatment process, and the characteristics and quantity of treatment residuals generated. A weighing factor of 20 percent was assigned to the numeric values associated with this evaluation criterion.

#### **4.4.1.3 Effectiveness Over the Long Term**

Long-term effectiveness includes the degree of certainty that the alternative will be successful, the reliability of the alternative during the period of time hazardous substances are expected to remain onsite at concentrations that exceed cleanup levels, the magnitude of residual risk with the alternative in place, and the effectiveness of controls required to manage treatment residues or remaining wastes. The MTCA regulations provide guidelines for ranking cleanup action components when assessing the relative degree of long-term effectiveness. These elements are, in descending order: reuse or recycling; destruction or detoxification; immobilization or solidification; onsite or offsite disposal in an engineered, lined and monitored facility; onsite isolation or containment with attendant engineering controls; and institutional controls and monitoring. The MTCA preference ranking must be considered along with other site-specific factors in the evaluation of long-term effectiveness. A weighting factor of 20 percent was assigned to the long-term effectiveness criterion.

#### **4.4.1.4 Management of Short-Term Risks**

This criterion considers potential risk to human health and the environment associated with the alternative during construction and implementation, and the effectiveness of measures that will be taken to manage such risks. Examples of risks include potential exposure to hazardous substances by Site workers during implementation, mobilization of contaminants during construction, or general safety risks and construction hazards. A weighting factor of 10 percent was assigned to this criterion. This lower rating is based on the limited timeframe associated with the risks and the general ability to correct short-term risks during construction without significant effect on human health and the environment.

#### **4.4.1.5 Technical and Administrative Implementability**

This criterion considers the feasibility of a selected remedy to be implemented, including consideration of whether the alternative is technically possible, the availability of necessary offsite facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction operations and monitoring, and integration with existing facility operations and other current or potential remedial actions. Implementability is less associated with the primary goal of the cleanup action, protection of human health and the environment, and therefore has a lower weighting factor. In addition, the issues associated with the implementability are reflected in the remedy costs. Therefore, the weighting factor for implementability was 10 percent.



#### 4.4.1.6 Consideration of Public Concerns

The public involvement process under MTCA is used to identify potential public concerns regarding cleanup action alternatives. The extent to which an alternative addresses those concerns is considered as part of the evaluation process. This includes concerns raised by individuals, community groups, local governments, tribes, federal and state agencies, and other organizations with an interest in the Site. The weighting factor used for this criterion was 10 percent. Similar to the applied factor for implementability, the low weighting of public concerns prevents duplication of issues that are addressed with other criteria. Historically, public concerns for most sites are typically related to environmental concerns and performance of the cleanup action, which are addressed under other MTCA criteria such as protectiveness and permanence.

#### 4.4.1.7 Cost

The costs to implement the cleanup action alternatives are evaluated, including the cost of construction, the net present value of any long-term costs, and agency oversight costs that are cost recoverable. Long-term costs include operation and maintenance costs, monitoring costs, equipment replacement costs, and the cost of maintaining institutional controls. Cost estimates for treatment technologies include pretreatment, analytical, labor, and waste management costs. The design life of the cleanup action is estimated and the cost of replacement or repair of major elements is included in the estimate. Costs were compared against benefits to assess cost effectiveness and practicability of the cleanup action alternatives. No weighting factor was applied to this quantitative category.

### 4.5 Evaluation of Remediation Alternatives

This section provides an evaluation of the three remediation alternatives. Each alternative is discussed independently relative to the MTCA criteria used in the DCA, and a raw score is provided for the alternative, on a scale of 1 to 10. In this scheme, a raw score of 10 is the highest (i.e., the most favorable) potential ranking, and a raw score of 1 represents the least favorable potential ranking. Raw scores were carried forward into the DCA, where they were weighted according to the factors discussed in Section 4.4.

#### 4.5.1 Protectiveness

All alternatives will be protective of human health and the environment; however, Alternative 1 has a higher score (“8”) because it would rapidly remove all of the contamination above the direct-contact cleanup level. Alternatives 2 and 3 are scored slightly lower (both “7”) than Alternative 1 because Alternative 2 would take longer and may not be able to reach all of the contamination at the Site (depending on the radius of influence), while Alternative 3 would certainly leave the largest amount of contamination in place beneath Illahee Road NE and the Illahee Dock access road. Alternatives 2 and 3 would also require an Environmental Covenant, which may or may not be obtainable from Kitsap County. In addition, although not likely, an Environmental Covenant could be revoked or modified in the future.



#### **4.5.2 Permanence**

Alternative 1 has the highest permanence ranking (“9”) because of physical contaminant removal, which would extend to the areas of the otherwise inaccessible soils beneath Illahee Road NE and the Illahee Dock access road. Alternative 2 is scored slightly lower (“8”) because an AS/SVE system may not be able to reach all of the inaccessible soil, depending on the ROI of the system. Alternative 3 is ranked lower still (“7”), because avoiding excavating beneath the adjacent roadways would require the largest amount of impacted soil to be left in place. Alternatives 2 and 3 would require an Environmental Covenant, which may or may not be obtainable from Kitsap County. In addition, although not likely, an Environmental Covenant could be revoked or modified in the future.

#### **4.5.3 Effectiveness Over the Long Term**

All three Alternatives will be effective over the long term because they are targeted at remediating the soil and groundwater. Alternatives 1 and 2 and are ranked slightly higher (both “8”) than Alternative 3 (“7”), because Alternative 1 more thoroughly addresses the impacted soil by removing all of it while Alternative 2 more thoroughly addresses the impacted groundwater through the use of AS.

#### **4.5.4 Management of Short-Term Risks**

Alternatives 2 and 3 have the highest scores (both “8”) because they include less exposure of excavation contractors to hazardous substances, the reduced footprint of excavation, as well as the elimination of work in the public rights-of-way. Alternative 1 has a lower score (“6”) due to the direct contact and vapor inhalation risks to contractors and property workers/visitors during the soil excavation, as well as an increased amount of potentially hazardous excavation work as well as work in the public rights-of-way and on the steep slope of the Illahee Dock access road.

#### **4.5.5 Technical and Administrative Implementability**

Alternative 3 has the highest ranking (“9”) because it is technically and administratively relatively easy to implement. Alternative 2 is ranked lower (“7”) because AS/SVE systems can be more challenging to design and implement and require a more thorough understanding of the conditions in the subsurface at the Site. Alternative 1 is ranked lowest (“5”) because SLR anticipates challenges with obtaining the required permits, and resistance from other parties, with regards to temporarily closing Illahee Road NE.

#### **4.5.6 Consideration of Public Concerns**

Alternative 3 has the highest ranking (“9”) for consideration of public concerns. The former Illahee Foods store is currently closed, so during the planned remedial activities there will be no impacts to Subject Property workers and visitors, and minimal impacts to the neighboring properties. Alternative 2 is ranked lower (“7”) because of the trenching work and additional drilling and well installation work that will be completed on the Subject Property, as well as the potential for noise concerns with long-term operation of the AS/SVE system. Alternative 1 is ranked lowest (“3”) due to the potential for odors, noise, truck traffic associated with demolition and soil removal and offsite disposal, and impacts to local vehicle traffic and neighborhood use



of the new Port of Illahee park facility due to closures of Illahee Road NE and the Illahee Dock access road.

#### **4.5.7 Costs**

Cost estimates for each alternative are provided in Tables 6, 7, and 8 including construction and operating costs. The actual cost for operation and monitoring in future years was added to the total cost as a net present value. The estimated total cost for the three alternatives varies widely, ranging from \$330,000 to \$1,220,000.

### **4.6 Recommended Cleanup Action**

The results of SLR's evaluation of the remediation alternatives are summarized as a numeric scoring system in Table 9. It should be noted that each of the Alternatives 1, 2, and 3 each have similar benefit rankings of 7.2, 7.5, and 7.5, respectively; with Alternative 3 being between \$370,000 and \$890,000 less costly, it has a much higher benefit-to-cost ratio.

The cost per benefit values were approximately \$169,000 for Alternative 1, \$93,000 for Alternative 2, and \$44,000 for Alternative 3. The recommended remedial action for the Site is Alternative 3 because it had the lowest cost per benefit value.

## **5.0 General Description of the Proposed Cleanup Action**

The results of the FS and DCA indicate that Alternative 3 is the most feasible approach to achieving the remedial action objectives (RAOs) for the Site. During the planned removal of the USTs, underground piping, and dispenser island at the Subject Property, the remaining accessible petroleum hydrocarbon-impacted soil on the Subject Property and possibly in portions of the Illahee Road NE right-of-way (but outside the footprint of the road itself) will be excavated for off-site disposal. Confirmation soil samples will be collected to evaluate the presence of any residual impacts following excavation. Groundwater will be monitored to evaluate attenuation. The existing roadway and park property will be utilized as a cap to protect exposure to remaining contamination.

### **5.1 Proposed Cleanup Levels**

Based on the results of the Conceptual Site Model (CSM) that was conducted during the 2017 PPA along with more recent data gap investigations, SLR evaluated potential cleanup levels for the soil and groundwater at the Site to meet the WAC 173-340-710 requirements that cleanup actions conducted under MTCA comply with applicable state and federal laws. "Applicable state and federal laws" are defined in WAC 173-340-710(1) as those requirements (referred to as "ARARs") that are: 1) legally applicable, and 2) considered relevant and appropriate. "Legally applicable" and "relevant and appropriate" requirements are defined by WAC 173-340-710(3) and (4), respectively. These definitions are summarized below.

Legally applicable requirements include those standards or other requirements, criteria, or limitations promulgated under Washington state law or federal law that specifically address a hazardous substance, cleanup action, location, or other circumstance at the Site. Though not legally applicable, relevant and appropriate requirements include those requirements designed to address problems or situations sufficiently similar to those encountered at the Site that their use is well suited to the Site.



The primary ARAR is the MTCA Rule (Chapter 70.105D RCW) and Regulation (WAC 173-340). Additional ARARs that may be applicable to proposed cleanup regulations include:

- The federal Maximum Criteria Levels for drinking water (40 CFR Part 141)
- Washington Hazardous Waste Management Act (Chapter 70.105 RCW) and Regulation (WAC 173-201).
- Washington Solid Waste Management Act (Chapter 70.95 RCW) and Regulations (WAC 173-303 and WAC 173-302)
- Federal and State laws and regulations pertaining to industrial safety and health (Chapter 49.17 RCW and 29 CFR 1910 and 1926)
- State Environmental Policy Act (SEPA, Chapter 43.21C RCW and WAC 197-11)

The groundwater beneath the Site appears to be potable. To effectively minimize the risks associated with the impacted groundwater, the use of MTCA Method A groundwater cleanup levels is proposed. Since the impacted groundwater presents the greatest potential risk associated with the contamination at the Site, and Method A cleanup levels are based on protection of groundwater, the use of MTCA Method A soil cleanup levels for the impacted soil is proposed.

## 5.2 Points of Compliance

Standard points of compliance are appropriate for the Site. The soil point of compliance for cleanup levels based on human exposure via direct contact or other pathways where contact with soil is required to complete the pathway will be throughout the Site from ground surface to 15 feet bgs. The groundwater point of compliance will be throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site and extending horizontally to the downgradient edge of the plume, once identified.

## 5.3 UST Decommissioning and Removal

The areas for decommissioning and removal are depicted on Figure 7. A summary of the remedial excavation activities to be completed by a licensed contractor under the direction and oversight of SLR personnel are as follows:

- A vacuum truck will be used to rinse all piping associated with USTs before they are containerized and transported off site to be recycled. The USTs will also be pumped and rinsed for any residual products.
- Concrete and asphalt, both covering the USTs and that of the dispenser island/drive pad, will be demolished to facilitate removal of the USTs and dispenser piping. The materials will be transported off site to be recycled.
- Once exposed, the USTs will be accessed and cleaned under the oversight of a Marine Chemist. Upon the Marine Chemist deeming the USTs safe for both transport and disposal, the USTs will be removed from the excavation and transported off site to an appropriate recycling facility.
- Clean, existing overburden soil that is removed from the excavation will be placed back along with imported gravel borrow in order to displace the former UST volume. Grading and resurfacing of the excavation area including an asphalt-top finish will conclude the Site restoration.



Prior to conducting the remedial excavation activities, the contractor will assist SLR in the preparation and submittal of the Washington State Department of Ecology 30-Day Notification as well as submit the Kitsap County UST Removal/Closure Application. The contractor will also notify and confirm the public utility notification center (One-Call) process has been completed and the excavation area cleared of utilities.

The contractor will provide SLR with any subsequent generated documents including permits, imported materials (i.e., cleaning/pump-and-rinse, gravel, etc.) manifests, receipts, and Ecology documentation of Permanent Closure.

## 5.4 Limited Soil Excavation

As part of the UST decommissioning and removal work described in Section 5.3 above, the contractor will extend the lateral extents of the UST excavation to approximately 23 feet to the east (to the Subject Property boundary) and approximately 13 feet to the north (from the easternmost edge of the UST excavation) to target the remaining source area contaminated soils within the Subject Property boundaries based on current understanding of the extents of contamination. The excavation will extend to a maximum depth of 15 feet bgs (the point of compliance).

During excavation, SLR will identify the presence of any petroleum hydrocarbon-impacted soil excavated during the removal of the tanks and the lateral extension of the UST excavation. SLR personnel will screen the excavated soil for the potential presence of petroleum hydrocarbons by using visual observations (e.g., staining, sheen, and product), odors, and photoionization detector (PID) readings. The excavated soil will be segregated into non-impacted and impacted soil stockpiles based on the field screening results or loaded directly onto trucks for off-site disposal. SLR will collect soil samples from the sidewalls and floor of the excavation for laboratory analysis to further assess the soil conditions in accordance with Ecology's Underground Storage Tank Regulations (Chapter 173-360 WAC), Table 830-1 of the Model Toxics Control Act (MTCA; Chapter 173-340 WAC) and the Site Assessment Guidance for Underground Storage Tank Systems (Ecology, 2022). As required by the waste disposal facility, SLR will collect samples of the excavated petroleum hydrocarbon-impacted soil for waste characterization purposes.

## 5.5 Monitoring Well Installation

To allow for assessment of the eastern extents of impacted groundwater, the installation of one groundwater monitoring well, to be designated MW-10 and located at the foot of the slope of the Illahee Dock access road, will be completed by a subcontracted licensed driller under the oversight of an SLR geologist. The driller will conduct vacuum clearance of the first 5 feet bgs via air knife prior to advancing the boring. Once clearance is complete, the monitoring well will be advanced to an approximate depth of 13 feet bgs. The well will be constructed with a 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) riser, an approximate 10-foot-long screen (0.020-inch-wide slots) that intercepts the groundwater table, and a 2-inch-diameter Schedule 40 PVC cap. The well will be backfilled with a 10x20 silica sand filter pack to approximately six inches above the uppermost well screen slot, above which hydrated bentonite chips will be placed to a depth of approximately two feet bgs. The well will be completed at the surface in an 8-inch diameter flush-mounted steel monument set in concrete finished to match the surrounding ground surface. After installation, the well will be developed using surging and pumping methods to remove suspended sediments. The groundwater monitoring well construction details will be presented in a boring log upon completion.



## 5.6 Surveying

Once installation of the groundwater monitoring well (MW-10) is complete, DHA Surveyors (DHA) of Woodinville, Washington, will conduct a survey of the top-of-casing elevations of all new monitoring wells at the Site (MW-5 through MW-10). The survey will be completed relative to the NAVD88 datum. Elevations provided by the survey will be used in conjunction with depth-to-groundwater measurements from each of the wells to calculate groundwater elevation and assess flow direction at the Site.

## 5.7 Groundwater Sampling

To monitor groundwater conditions over time, groundwater samples will be collected from each of the wells (GLMW-1 through GLMW-4, and MW-5 through MW-10) at the Site on a quarterly basis for the first year following the completion of the UST removal and excavation activities described in Sections 5.3 and 5.4 above and thereafter on an annual basis for an estimated three years. Once the groundwater sample analytical results from the annual groundwater sampling events show that the groundwater are below MTCA Method A cleanup levels, groundwater samples will be collected on a quarterly basis until the analyte concentrations in all of the wells are below the MTCA Method A cleanup levels for four consecutive quarterly events. All of the groundwater samples are proposed to be analyzed for GRO, BTEX and total and dissolved lead; field parameter measurements of the groundwater samples including pH, temperature, conductivity, oxidation-reduction potential (ORP), and dissolved oxygen (DO) will also be collected.

## 6.0 Permitting and Implementation Schedule

### 6.1 Permitting

SLR and/or the selected remediation contractor, ICS, will apply for and obtain the necessary permits and notifications to perform the remedial action, including:

- UST Removal Permit from Kitsap County
- Ecology's 30-Day Notice for Underground Storage Tank Systems for the decommissioning/removal of the existing tanks
- Ecology's Site Check/Site Assessment Checklist

### 6.2 Implementation Schedule

The current planned approximate schedule for completing the remedy at the Site:

- Prepare and submit CAP to the Site owners and PLIA – November 2025
- Submit permit applications with the agencies described in Section 6.1– Winter 2025
- Conduct Remedial Excavation activities – Spring 2026
- Conduct post-remediation groundwater monitoring and confirmation sampling – 2026 through 2031

This implementation schedule will depend on the availability of materials and equipment to conduct the planned infrastructure upgrades, as well as the turn-around-time for permits from the various involved agencies.



SLR has prepared this CAP for the Port of Illahee Property under the direction and supervision of the undersigned.

Sincerely,

**SLR International Corporation**

(DRAFT)

**Christopher Lee, L.G.**  
Senior Geologist

(DRAFT)

**Chris Kramer**  
Principal



## 7.0 References

Washington State Department of Ecology (Ecology), 2022. Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action. March.

Ecology, 2022. Site Assessment Guidance for Underground Storage Tank Systems. October.

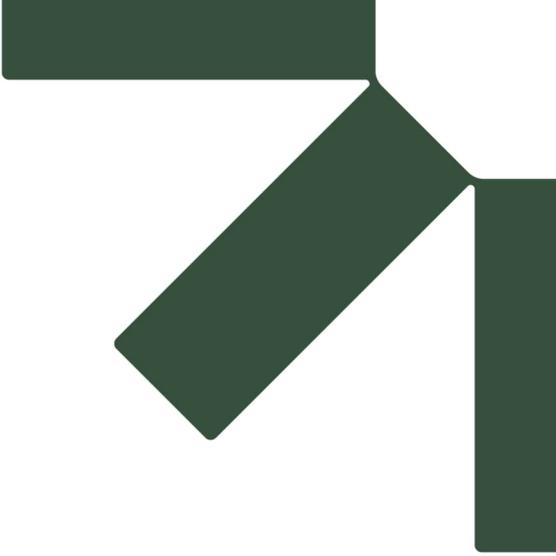
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Langseth Environmental Services, Inc., 2016. Site Investigation Report, 5507 Illahee Rd NW, Parcel # 4429-015-001-0309, ERTS # 669620, Soil Boring and Sampling Project. December 28.

SLR International Corporation (SLR). 2022. Remedial Investigation Work Plan Port of Illahee Property. October.

SLR International Corporation (SLR). 2023. Environmental Data Submittal and Budget Increase Request. May.





# Tables

**Table 1**  
**Groundwater Sampling Field Parameter Measurements**  
**Port of Illahee**  
**Bremerton, Washington**

Well Number	Date Measured	Approximate Total Purge Volume (gallons)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox Potential (mV)
GLMW-1	10/24/2022	1.75	16.0	0.703	3.19	6.44	12.9
GLMW-2	10/24/2022	0.25	17.4	0.159	0.92	6.61	20.5
GLMW-3	10/24/2022	2.25	18.1	0.175	0.07	6.60	20.5
GLMW-4	10/24/2022	1.25	16.5	0.143	2.37	6.48	28.3

**Notes:**

Field parameter measurements in this table were the final measurements prior to collecting each groundwater sample.

°C = Degrees Celsius.

mS/cm = Millisiemens per centimeter.

mg/L = Milligrams per liter.

**Table 2**  
**Groundwater Monitoring Data**  
**Port of Illahee**  
**Bremerton, Washington**



<b>Well Number</b>	<b>Top of Casing Elevation<sup>a</sup> (feet)</b>	<b>Date Measured</b>	<b>Depth to Groundwater (feet)</b>	<b>Groundwater Elevation (feet)</b>
GLMW-1	100.90	07/14/17	5.19	95.71
		10/24/22	7.57	93.33
GLMW-2	98.05	07/14/17	12.88	85.17
		10/24/22	16.12	81.93
GLMW-3	96.95	07/14/17	9.27	87.68
		10/24/22	9.39	87.56
GLMW-4	97.07	07/14/17	9.10	87.97
		10/24/22	9.27	87.80

**Notes:**

<sup>a</sup> Elevation readings taken at top of casing and rim on north side unless otherwise noted.

**Table 3  
Groundwater Sample Analytical Results  
Port of Illahee  
Bremerton, Washington**



Monitoring Well Number	Sample ID	Date Collected	Petroleum Hydrocarbons			Volatile Organic Compounds <sup>c</sup>							Total Lead <sup>d</sup>
			Gasoline - Range Organics <sup>a</sup>	Diesel-Range Organics <sup>b</sup>	Oil-Range Organics <sup>b</sup>	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dichloride (EDC) <sup>c</sup>	Ethylene Dibromide (EDB) <sup>c</sup>	Methyl tert-Butyl Ether (MTBE) <sup>c</sup>	
<b>MTCA Method A Cleanup Levels<sup>e</sup></b>			<b>800</b>	<b>500</b>	<b>500</b>	<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>5</b>	<b>0.01</b>	<b>20</b>	<b>15</b>
GLMW-1	GLMW-1-0717	7/13/17	<100	<76.2	<152	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	2.43
	GLMW-1-1022	10/24/22	<100	<190	<381	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	<0.200
GLMW-2	GLMW-2-0717	7/13/17	<b>978</b>	<77.7	<155	<0.200	<1.00	0.690	<1.50	<0.500	<0.020	<1.00	0.333
	GLMW-2-1022	10/24/22	<100	NA	NA	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	<0.200
GLMW-3	GLMW-3-0717	7/13/17	<b>998</b>	103	<155	4.76	<1.00	3.84	2.21	<0.500	<0.020	<1.00	0.533
	GLMW-3-1022	10/24/22	351	<194	<388	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	<0.200
GLMW-4	GLMW-4-0717	7/13/17	<100	<76.2	<152	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	0.467
	GLMW-4-1022	10/24/22	<100	<202	<404	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	<0.200
Trip Blank	Trip Blank 1546	7/13/17	<100	NA	NA	<0.200	<1.00	<0.500	<1.50	NA	NA	NA	NA

**Notes:**

All values in micrograms per liter (µg/L).

Values in **red** represent concentrations above the MTCA Method A groundwater cleanup levels.

NA = Not analyzed.

<sup>a</sup> Gasoline-range organics (GRO) analysed by Ecology Method NWTPH-Gx.

<sup>b</sup> Diesel-range organics (DRO) and oil-range organics (ORO) analysed by Ecology Method NWTPH-Dx (without silica gel cleanup).

<sup>c</sup> VOCs analyzed by EPA Method 8260C.

<sup>d</sup> Total and dissolved lead by EPA Method 200.8.

<sup>e</sup> Chapter 173-340 WAC, Model Toxics Control Act Statute and Regulation, Table 720-1, Method A Cleanup Levels for Groundwater.

**Table 4**  
**Soil Vapor Sample Analytical Results**  
**Port of Illahee**  
**Bremerton, Washington**



Sample ID	Date	TPH <sup>a</sup>				VOCs <sup>b</sup>						
		APH EC5-8 Aliphatics	APH EC9-12 Aliphatics	APH EC9-10 Aromatics	Total APH <sup>d</sup>	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Xylenes <sup>e</sup>	Naphthalene
<b>MTCA Method B Screening Levels<sup>c</sup></b>		NE	NE	NE	4,700	11.0	76,000	15,000	1,500	1,500	1,500	46
<b>2022 Investigation</b>												
SS-1-1022	10/28/2022	730	560	<130	1,355	<1.7	<98	<2.3	8	3	11	<1.4
SS-2-1022	10/28/2022	550	540	<130	1,155	<1.7	<98	<2.3	8.2	3.1	11.3	<1.4

**Notes:**

All values in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

Values in **red** represent concentrations above MTCA Method B cleanup levels.

<sup>a</sup> TPH analyzed as APH by Massachusetts Method MA-APH.

<sup>b</sup> BTEX and naphthalene analyzed by EPA Method TO-15.

<sup>c</sup> Ecology's MTCA Cleanup Regulation (Chapter 173-340 WAC), Method B Soil Vapor Screening Levels for Residential Land Uses, as published on Ecology's Cleanup Level and Risk Calculation (CLARC) table (updated July 2022).

<sup>d</sup> Total APH = sum of individual EC boiling ranges. For compounds that were non-detect, a value of half the laboratory's RL was used.

<sup>e</sup> Total xylenes = sum of individual xylene compounds.

<sup>ve</sup> The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

NA = not analyzed

NE = none established

< = analyte was not detected at a concentration above the laboratory's listed RL.

APH = Air Phase Hydrocarbons

Ecology = Washington State Department of Ecology

EPA = United States Environmental Protection Agency

MTCA = Model Toxics Control Act

TPH = Total Petroleum Hydrocarbons

BTEX = benzene, toluene, ethylbenzene, and total xylenes

VOCs = volatile organic compounds

**Table 5**  
**Soil Analysis**  
**Port of Illahee**  
**Bremerton, Washington**



Soil Boring Number	Sample ID	Sample Depth (feet)	Date Collected	Gasoline Range Organics <sup>a</sup>	Diesel Range Organics <sup>b</sup>	Heavy Oil Range Organics <sup>b</sup>	Benzene <sup>d</sup>	Toluene <sup>d</sup>	Ethylbenzene <sup>d</sup>	Xylenes <sup>cd</sup>	Total Lead <sup>e</sup>
<b>MTCA Method A Cleanup Levels</b>				<b>100/30</b>	<b>2,000</b>	<b>2,000</b>	<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>250</b>
<b>2023 SLR Investigation</b>											
SB-2	SB-2-7.5'-8.0'	7.5-8	07/25/23	<5	<5	<250	<0.03	<0.05	<0.05	<0.15	1.54
	SB-2-15.0'-15.5'	15-15.5	07/25/23	<5	<5	<250	<0.03	<0.05	<0.05	<0.15	1.55
MW-6	MW-6-10.0'-11.0'	10-11	07/25/23	<5	<5	<250	<0.03	<0.05	<0.05	<0.15	2.81
	MW-6-15.0'-16.0'	15-16	07/25/23	<5	<5	<250	<0.03	<0.05	<0.05	<0.15	1.84
MW-9	MW-9-10.0'-10.5'	10-10.5	07/25/23	510	290	<250	<0.03	<0.05	2.2	3.425	2.29
	MW-9-25.0'-25.5'	25-25.5	07/25/23	<5	<5	<250	<0.03	<0.05	0.07	0.125	1.4
<b>2022 SLR Investigation</b>											
SB-1	SB-1-10'-11'	10-11	12/12/22	160	34.7	<41.4	<0.0101	<0.0503	0.072	0.132	2.12
	SB-1-19'-20'	19-20	12/12/22	<4.82	<21.1	<42.3	<0.00965	<0.0482	<0.0241	<0.0723	1.79
MW-5	MW-5-7'-8'	7-8	12/14/22	<6.89	<23.3	<46.6	<0.0138	<0.0689	<0.0344	<0.103	1.57
	MW-5-14'-15'	14-15	12/14/22	<4.82	<21.1	<42.2	<0.00965	<0.0482	<0.0241	<0.0724	1.09
MW-7	MW-7-12'-13'	12-13	12/13/22	19.5	36.8	<44.6	<0.0101	<0.0505	0.0389	0.138	1.99
	MW-7-24'-26'	24-26	12/13/22	<5.42	<24.0	<48.0	<0.0108	<0.0542	<0.0271	<0.0813	1.83
MW-8	MW-8-12'-13'	12-13	12/12/22	477	58.7	<40.5	<0.0182	<0.0908	0.351	0.622	1.27
	MW-8-29'-30'	29-30	12/12/22	<4.90	<21.1	<42.1	<0.00981	<0.0490	0.0279	<0.0736	1.11
<b>2017 G-Logics Investigation</b>											
GLB-1	GLB-1-6	6	07/12/17	<4.60	<25.0	<50.0	<0.00920	<0.0460	<0.0230	<0.0690	1.58
GLB-2	GLB-2-2	2	07/13/17	<6.08	<25.0	<50.0	<0.0122	<0.0608	<0.0304	<0.0912	31.3
	GLB-2-5	5	07/13/17	<5.45	<25.0	<50.0	<0.0109	<0.0545	<0.0272	<0.0817	3.58
GLB-3	GLB-3-10	10	07/13/17	<4.65	<25.0	<50.0	<0.00930	<0.0465	<0.0233	<0.0698	1.39
GLB-4	GLB-4-7.5	7.5	07/13/17	<4.23	<25.0	<50.0	<0.00846	<0.0423	<0.0212	<0.0635	1.25
	GLB-4-10	10	07/13/17	<3.74	<25.0	<50.0	<0.00748	<0.0374	<0.0187	<0.0561	1.72
GLMW-1	GLMW-1-10	10	07/13/17	<5.65	<25.0	<50.0	<0.0113	<0.0565	<0.0282	<0.0847	1.18
	GLMW-1-15	15	07/13/17	<4.81	<25.0	<50.0	<0.00962	<0.0481	<0.0241	<0.0722	1.46

**Table 5  
Soil Analysis  
Port of Illahee  
Bremerton, Washington**



Soil Boring Number	Sample ID	Sample Depth (feet)	Date Collected	Gasoline Range Organics <sup>a</sup>	Diesel Range Organics <sup>b</sup>	Heavy Oil Range Organics <sup>b</sup>	Benzene <sup>d</sup>	Toluene <sup>d</sup>	Ethylbenzene <sup>d</sup>	Xylenes <sup>cd</sup>	Total Lead <sup>e</sup>
<b>MTCA Method A Cleanup Levels</b>				<b>100/30</b>	<b>2,000</b>	<b>2,000</b>	<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>250</b>
GLMW-2	GLMW-2-8	8	07/13/17	679	42.7	<50.0	<0.0101	<0.0504	0.0493	<0.0755	1.48
	GLMW-2-8 DUP	8	07/13/17	267	<25.0	<50.0	<0.0103	<0.514	<0.0257	<0.0771	1.9
	GLMW-2-10	10	07/13/17	<5.60	<25.0	<50.0	<0.0112	<0.0560	<0.0280	<0.0839	1.32
GLMW-3	GLMW-3-1.5	1.5	07/13/17	167	<25.0	<50.0	0.0453	0.109	2.14	8.05	NA
	GLMW-3-4.5	4.5	07/13/17	<6.27	<25.0	<50.0	<0.0125	<0.0627	<0.0314	<0.0941	NA
	GLMW-3-7.5	7.5	07/13/17	271	142	<50.0	<0.0109	<0.0544	0.0544	<0.0815	2.20
	GLMW-3-10	10	07/13/17	<3.97	<25.0	<50.0	<0.00794	<0.0397	<0.0199	<0.0596	NA
GLMW-4	GLMW-4-7.5	7.5	07/13/17	<4.55	<25.0	<50.0	<0.00909	<0.0455	<0.0227	<0.0682	1.80
<b>2016 Langseth Environmental Investigation</b>											
B-1	B-1-3'	3	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	12.4
	B-1-6'	6	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
B-2	B-2-2'	2	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
	B-2-5'	5	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
B-3	B-3-2'	2	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	8.3
	B-3-2' DUP	2	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	NA
	B-3-5'	5	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
B-4	B-4-8'	8	12/12/16	37	NA	NA	0.028	<0.1	0.28	<0.15	<5
	B-4-11'	11	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
B-5	B-5-8'	8	12/12/16	810	NA	NA	0.69	1.57	8.87	4.84	<5
	B-5-11.5'	11.5	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5
	B-5-13'	13	12/12/16	<10	NA	NA	<0.02	<0.1	<0.05	<0.15	<5

**Notes:**

This table only includes the analytes that were detected in at least one soil sample and have MTCA Method A soil cleanup levels.

All values in milligrams per kilogram (mg/kg).

Values in red represent concentrations above MTCA Method A cleanup levels.

NA = Not Analyzed

<sup>a</sup> Gasoline-range organics by Ecology Method NWTPH-Gx.

<sup>b</sup> Diesel-range organics (DRO) and Oil-range organics (ORO) by Ecology Method NWTPH-Dx.

<sup>c</sup> Total xylenes is the total concentration of m,p-Xylene and o-Xylene. For a non-detect value, 1/2 of the method reporting limit (MRL) was used to calculate the total xylene concentration.

<sup>d</sup> BTEX analyzed by EPA Method 8021B, EPA 8260B, or EPA 8260C (see individual reports)

<sup>e</sup> Total Lead by EPA Method 7010 Series



**Table 6**  
**Feasibility Study/Cleanup Action Plan**  
**Port of Illahee**  
**Bremerton, Washington**  
**Alternative 1: Site-Wide Soil Excavation and Off-Site Disposal**

**Remedy Components:**

- Data Gap Characterization - Downgradient Monitoring Well
- Soil Removal - Excavation and off-site disposal of all impacted soil.
- Soil Removal - Impacted soil estimated at 1,500 cy.
- Groundwater - MNA
- Institutional Controls - GW use restriction

<b>REMEDIAL ALTERNATIVE COST ESTIMATE</b>					
<b>Remedial Action Component</b>	<b>Units</b>	<b>No. of Units</b>	<b>Unit Cost</b>	<b>Subtotal</b>	<b>Total</b>
<b>Soil Excavation On Property and Off Property</b>					
Permitting	LS	1	\$ 1,500	\$ 1,500	
Mobilization & Traffic Control	LS	1	\$ 7,000	\$ 7,000	
Surface Demolition	sq. ft.	4,500	\$ 2.25	\$ 10,125	
UST Decommissioning & Removal	LS	3	\$ 16,700	\$ 50,100	
Soil Confirmation Sampling and Analytical	LS	1	\$ 60,000	\$ 60,000	
Excavate and stockpile soil and UST overburden	cy	350	\$ 12	\$ 4,200	
Place back and compact soil and UST overburden	cy	350	\$ 12	\$ 4,200	
Place and compact structural fill (Gravel Borrow)	tons	125	\$ 60	\$ 7,500	
Impacted soil loading and disposal	tons	1,900	\$ 170	\$ 323,000	
Import, place, and compact clean fill	tons	1,900	\$ 30	\$ 57,000	
Restoration of Illahee Road NE and Illahee Dock access road	sq. ft.	3,000	\$ 30	\$ 90,000	
On-site Asphalt Restoration	sq. ft.	1,500	\$ 12	\$ 18,000	
				<b>Subtotal (plus 10% markup)</b>	<b>\$ 695,888</b>
Project Management (for excavation and infrastructure)	8%				\$ 55,671
Design	10%				\$ 69,589
Construction Observation	8%				\$ 55,671
Contingency	15%				\$ 104,383
				<b>Remedial Action Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 980,000</b>
<b>Groundwater MNA</b>					
Soil Boring Drilling and MW installation (one MW)	ea	1	\$ 12,500	\$ 12,500	
Groundwater monitoring, sampling, and reporting (quarterly, yrs 1, 4)	yr	2	\$ 50,000	\$ 100,000	
Groundwater monitoring, sampling, and reporting (annually, yrs 2-3)	yr	2	\$ 12,500	\$ 25,000	
IDW Management	yr	4	\$ 2,000	\$ 8,000	
				<b>Subtotal</b>	<b>\$ 173,000</b>
				<b>Monitoring and Maintenance Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 170,000</b>
<b>Closure</b>					
NFA determination	LS	1	\$ 10,000	\$ 10,000	
Well Abandonment	each	10	\$ 3,000	\$ 30,000	
Closure report	yr	1	\$ 30,000	\$ 30,000	
				<b>Subtotal</b>	<b>\$ 70,000</b>
				<b>Closure Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 70,000</b>
<b>REMEDIAL ACTION ESTIMATED TOTAL (Rounded to nearest \$10,000)</b>					<b>\$ 1,220,000</b>



**Table 7**  
**Feasibility Study/Cleanup Action Plan**  
**Port of Illahee**  
**Bremerton, Washington**

**Alternative 2: Air Sparging (AS)/Soil Vapor Extraction (SVE) and Monitored Natural Attenuation (MNA)**

**Remedy Components:**

Data Gap Characterization - Downgradient Monitoring Well  
 UST Decommissioning  
 Soil Removal - None  
 Groundwater - MNA  
 Institutional Controls - GW use restriction; Soil Restriction

<b>REMEDIAL ALTERNATIVE COST ESTIMATE</b>					
<b>Remedial Action Component</b>	<b>Units</b>	<b>No. of Units</b>	<b>Unit Cost</b>	<b>Subtotal</b>	<b>Total</b>
<b>AS/SVE System</b>					
Pilot testing	L.S.	1	\$ 7,500	\$ 7,500	
UST Decommissioning & Removal	L.S.	3	\$ 16,700	\$ 50,100	
Excavate and stockpile soil and UST overburden	cy	350	\$ 12	\$ 4,200	
Place back and compact soil and UST overburden	cy	350	\$ 12	\$ 4,200	
Place and compact structural fill (Gravel Borrow)	tons	125	\$ 60	\$ 7,500	
Soil Confirmation Sampling and Analytical	LS	1	\$ 20,000	\$ 20,000	
Permitting	each	1	\$ 2,000	\$ 2,000	
Concrete Surface Demolition, Loading, Transport and Recycling	sq. ft.	800	\$ 2.25	\$ 1,800	
System Components	month	36	\$ 500	\$ 18,000	
System Enclosure	each	1	\$ 4,000	\$ 4,000	
Equipment Installation/Startup/Initial Carbon Fill	each	1	\$ 5,500	\$ 5,500	
AS Well installation	each	4	\$ 2,750	\$ 11,000	
SVE Well installation	each	6	\$ 2,000	\$ 12,000	
Trenching and pipe	each	1	\$ 30,000	\$ 30,000	
Electrical and Controls	each	1	\$ 25,000	\$ 25,000	
			<b>Subtotal (plus 10% markup)</b>		<b>\$ 223,080</b>
Project Management	8%				\$ 17,846
Design	10%				\$ 22,308
Construction Observation	8%				\$ 17,846
Contingency	15%				\$ 33,462
			<b>Remedial Action Subtotal (Rounded to nearest \$10,000)</b>		<b>\$ 310,000</b>
<b>Monitoring</b>					
Soil Boring Drilling and MW installation (one MW)	ea	1	\$ 12,500	\$ 12,500	
Groundwater monitoring, sampling, and reporting (quarterly, yrs 1-2, 8)	yr	3	\$ 50,000	\$ 150,000	
Groundwater monitoring, sampling, and reporting (annually, yrs 3-7)	yr	4	\$ 12,500	\$ 50,000	
System operation and maintenance	yr	3	\$ 12,000	\$ 36,000	
System power	month	36	\$ 250	\$ 9,000	
Emissions Sampling (4 qtr for year 1, waived thereafter)	each	4	\$ 5,500	\$ 22,000	
			<b>Subtotal</b>		<b>\$ 279,500</b>
			<b>Monitoring and Maintenance Subtotal (Rounded to nearest \$10,000)</b>		<b>\$ 280,000</b>
<b>Closure</b>					
Establish IC for parcel	ea	1	\$ 15,000	\$ 15,000	
Good faith effort to negotiate Environmental Covenant with Kitsap County	LS	1	\$ 12,500	\$ 12,500	
System Decommissioning	each	1	\$ 20,000	\$ 20,000	
Well Abandonment	each	10	\$ 3,000	\$ 30,000	
Closure report	yr	1	\$ 30,000	\$ 30,000	
			<b>Subtotal</b>		<b>\$ 107,500</b>
			<b>Closure Subtotal (Rounded to nearest \$10,000)</b>		<b>\$ 110,000</b>
<b>REMEDIAL ACTION ESTIMATED TOTAL (Rounded to nearest \$10,000)</b>					<b>\$ 700,000</b>



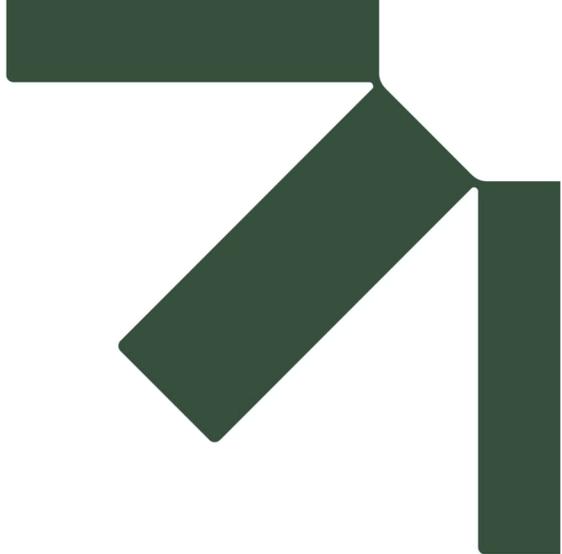
**Table 8**  
**Feasibility Study/Cleanup Action Plan**  
**Port of Illahee**  
**Bremerton, Washington**  
**Alternative 3: Targeted Soil Excavation, Off-Site Disposal, and MNA**

**Remedy Components:**

Data Gap Characterization - Downgradient Monitoring Well  
 UST Decommissioning  
 Soil Removal - On Property estimated at 1,000 cubic yards  
 Groundwater - MNA  
 Institutional Controls - GW use restriction; Soil Restriction

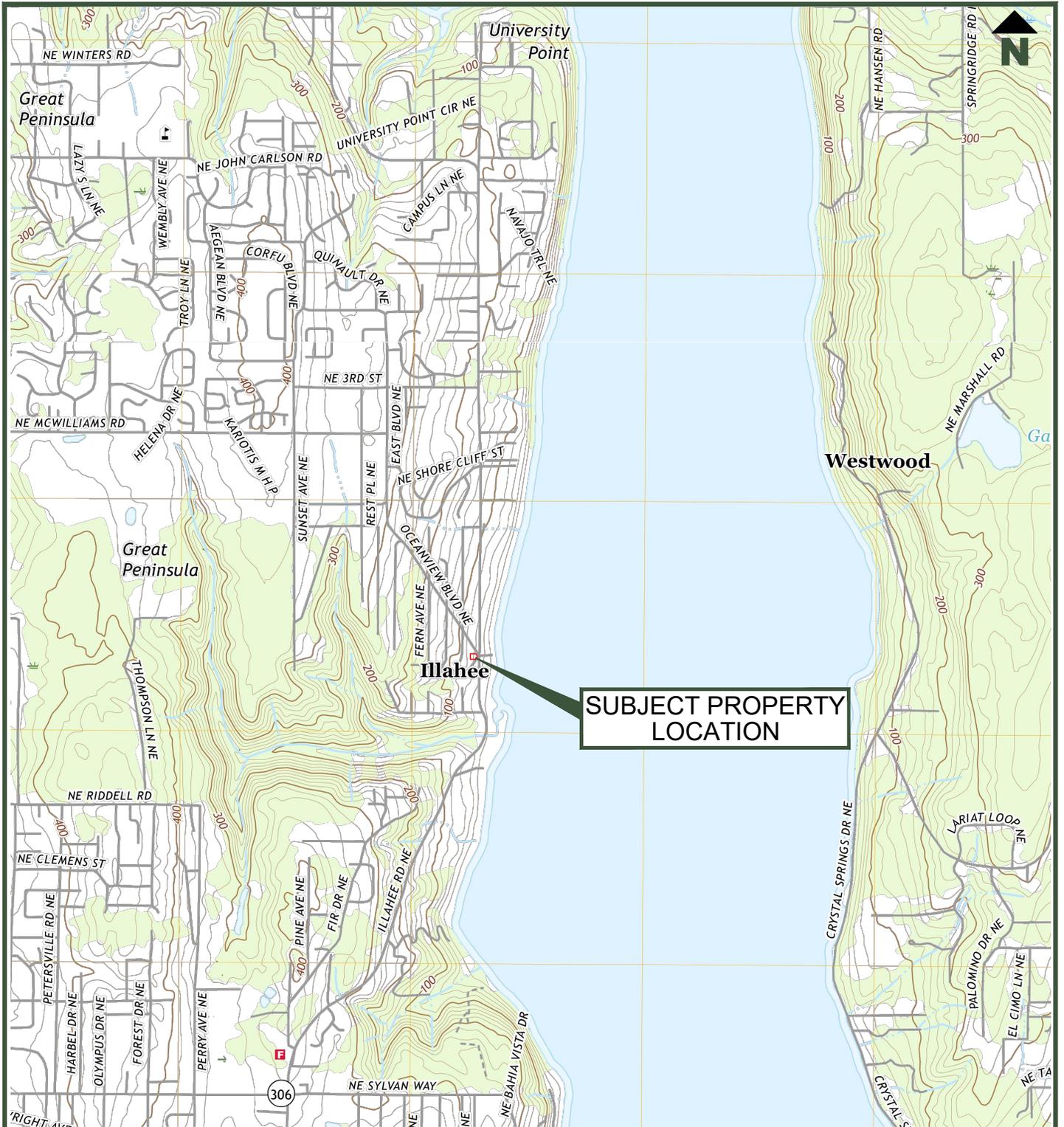
**REMEDIAL ALTERNATIVE COST ESTIMATE**

Remedial Action Component	Units	No. of Units	Unit Cost	Subtotal	Total
<b>Soil Excavation</b>					
Permitting	LS	1	\$ 1,500	\$ 1,500	
UST Decommissioning & Removal	LS	3	\$ 16,700	\$ 50,100	
Surface Demolition	sq. ft.	1,600	\$ 2.25	\$ 3,600	
Excavate and stockpile soil and UST overburden	cy	160	\$ 12	\$ 1,920	
Place back and compact soil and UST overburden	cy	160	\$ 12	\$ 1,920	
Soil Confirmation Sampling and Analytical	LS	1	\$ 40,000	\$ 40,000	
Place and compact structural fill (Gravel borrow)	tons	125	\$ 60	\$ 7,500	
Impacted soil excavation, load, transport, and disposal	tons	400	\$ 170	\$ 68,000	
Import and compact clean fill	tons	400	\$ 30	\$ 12,000	
Asphalt Restoration	sq. ft.	1,600	\$ 10.50	\$ 16,800	
				<b>Subtotal (plus 10% markup)</b>	<b>\$ 223,674</b>
Project Management	8%				\$ 17,894
Design	10%				\$ 22,367
Construction Observation	8%				\$ 17,894
Contingency	15%				\$ 33,551
				<b>Remedial Action Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 320,000</b>
<b>Monitoring</b>					
Soil Boring Drilling and MW installation	ea	1	\$ 12,500	\$ 12,500	
Groundwater monitoring, sampling, and reporting (quarterly, yrs 1-2, 8)	yr	3	\$ 50,000	\$ 150,000	
Groundwater monitoring, sampling, and reporting (annually, yrs 3-7)	yr	4	\$ 12,500	\$ 50,000	
				<b>Subtotal</b>	<b>\$ 212,500</b>
				<b>Monitoring and Maintenance Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 210,000</b>
<b>Closure</b>					
Establish IC for parcel	ea	1	\$ 15,000	\$ 15,000	
Good faith effort to negotiate Environmental Covenant with Kitsap County	LS	1	\$ 12,500	\$ 12,500	
Well Abandonment	each	10	\$ 3,000	\$ 30,000	
Closure report	yr	1	\$ 30,000	\$ 30,000	
				<b>Subtotal</b>	<b>\$ 87,500</b>
				<b>Monitoring and Closure Subtotal (Rounded to nearest \$10,000)</b>	<b>\$ 90,000</b>
				<b>REMEDIAL ACTION ESTIMATED TOTAL (Rounded to nearest \$10,000)</b>	<b>\$ 330,000</b>



# Figures

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REFERENCED FROM : USGS 7.5 MINUTE QUADRANGLE  
BREMERTON EAST, WA 2020  
SUQUAMISH, WA 2020

0 2,000 4,000 6,000'



PORT OF ILLAHEE  
5507 ILLAHEE ROAD NE.  
BREMERTON, WA 98311

Figure

SUBJECT PROPERTY LOCATION MAP

Date February 28, 2025

Scale AS SHOWN

Figure No.

File Name Port of Illahee

Project No. 128.V01826.00022

1

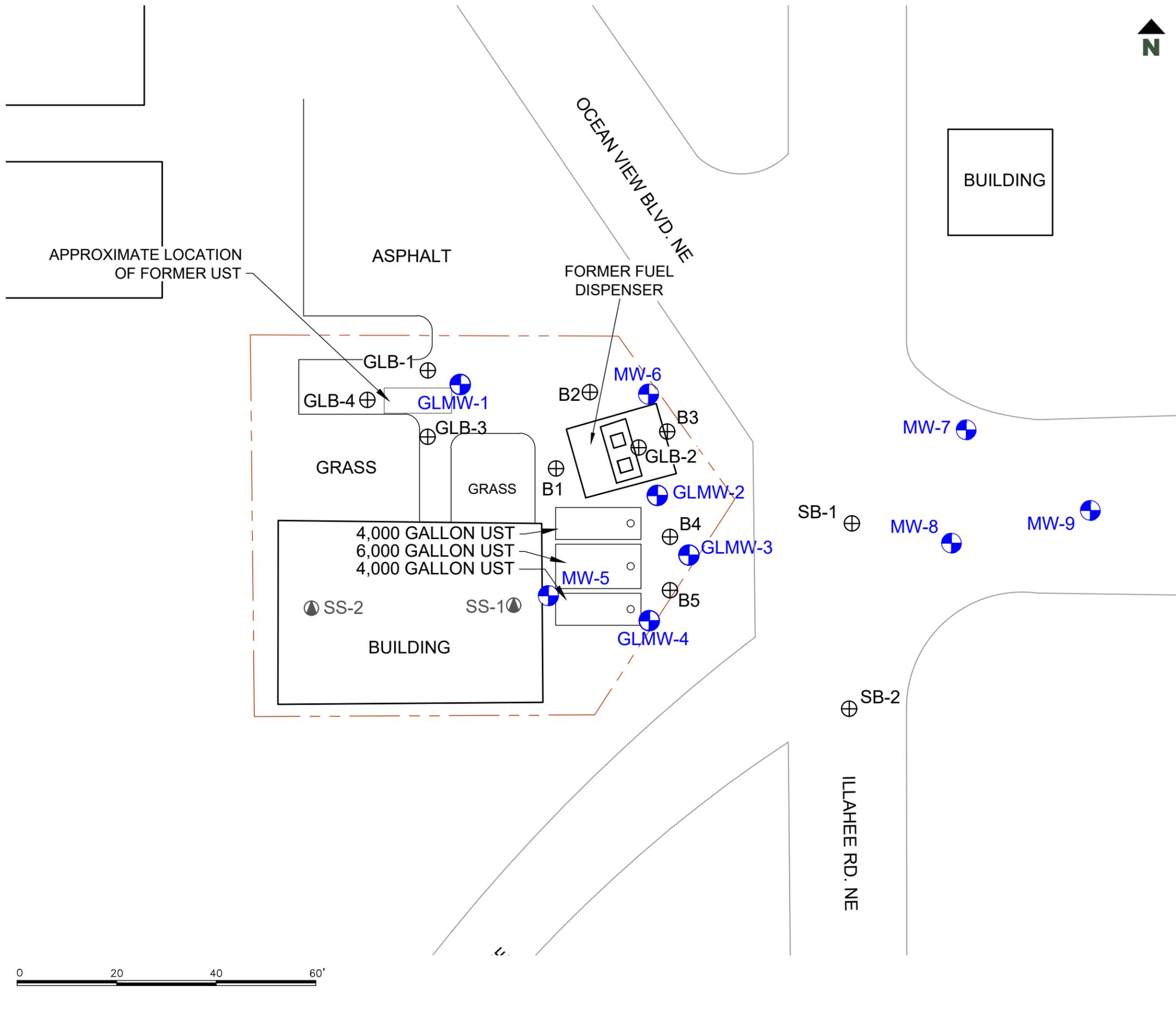
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**NOTES**  
BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.

**LEGEND**

	APPROXIMATE PROPERTY BOUNDARY
	MW-1 MONITORING WELL LOCATION AND DESIGNATION
	SS-1 SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
	SB-1 SOIL BORING LOCATION AND DESIGNATION



PORT OF ILLAHEE  
5507 ILLAHEE ROAD NE.  
BREMERTON, WA 98311

Figure  
**SITE PLAN**

Date	July 9, 2025	Scale	AS SHOWN	Figure No.	2
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



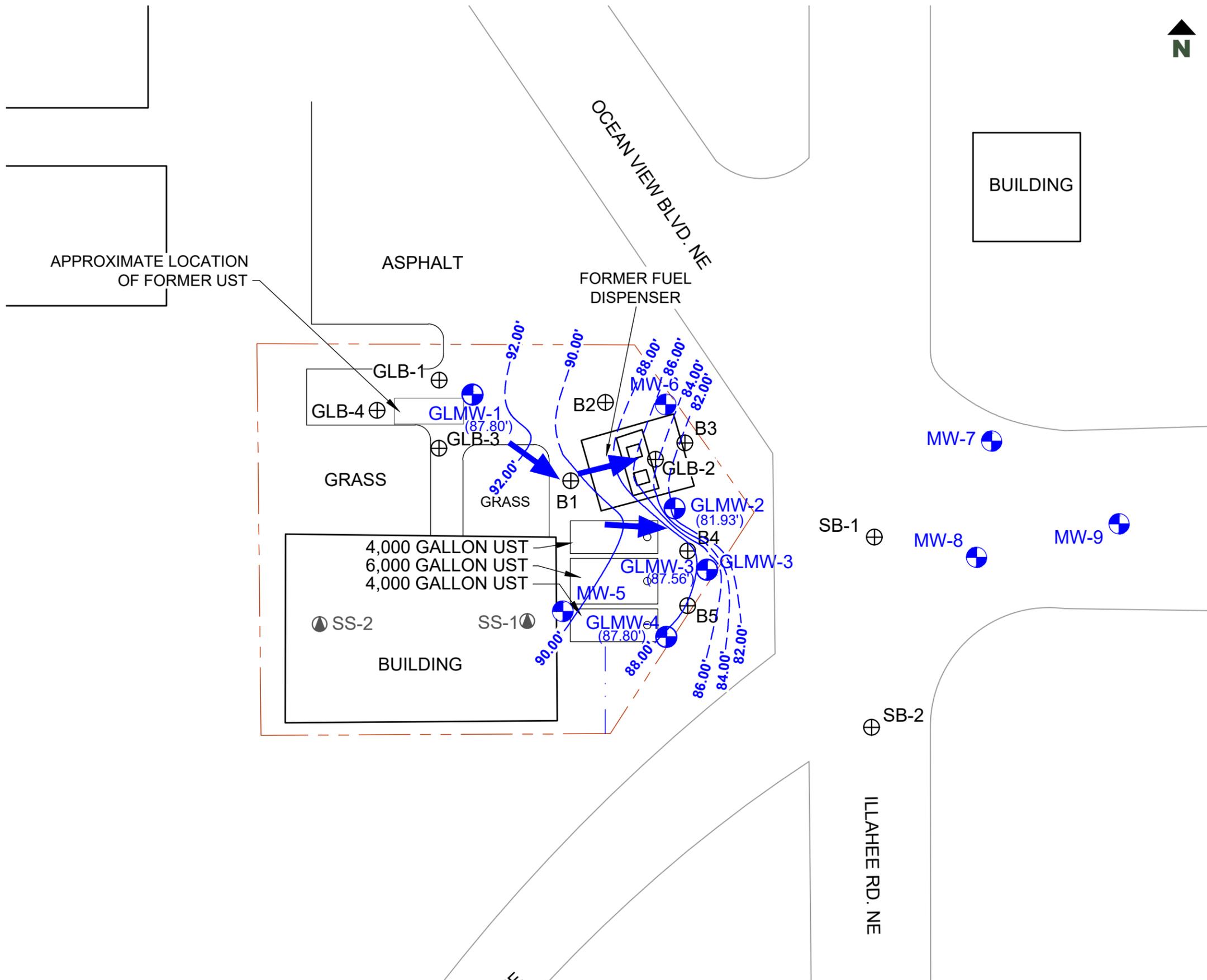
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**NOTES**  
 1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.  
 2) \* = WATER ELEVATION DATA APPEARED TO BE ANOMALOUS AND WERE NOT USED.

**LEGEND**

	APPROXIMATE PROPERTY BOUNDARY
	MW-1 MONITORING WELL LOCATION AND DESIGNATION
	SS-1 SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
	SB-1 SOIL BORING LOCATION AND DESIGNATION
	GROUNDWATER SURFACE ELEVATION (RELATIVE TO ARBITRARY SURVEY POINT ASSIGNED ELEVATION OF 100.00 FT) ON JUNE 14, 2017
	GROUNDWATER SURFACE ELEVATION CONTOUR LINE
	GENERAL GROUNDWATER FLOW DIRECTION



PORT OF ILLAHEE  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
 GROUNDWATER ELEVATION CONTOUR MAP -  
 OCTOBER 24, 2022

Date	July 9, 2025	Scale	AS SHOWN	Figure No.	3
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



Drawing path: N:\Bothe\11 PROJECTS\Pollution Liability Insurance Agency - 1826\Port of Illahee\Figures\Port of Illahee\_2025.dwg



**NOTES**

- 1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.
- 2) SAMPLE VALUES BOLD IN RED INDICATE CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVEL.
- 3) GRO = GASOLINE RANGE ORGANICS.
- 4) B = BENZENE.
- 5) µg/L = MICROGRAMS PER LITER.

**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- MW-1 MONITORING WELL LOCATION AND DESIGNATION
- SS-1 SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
- SB-1 SOIL BORING LOCATION AND DESIGNATION

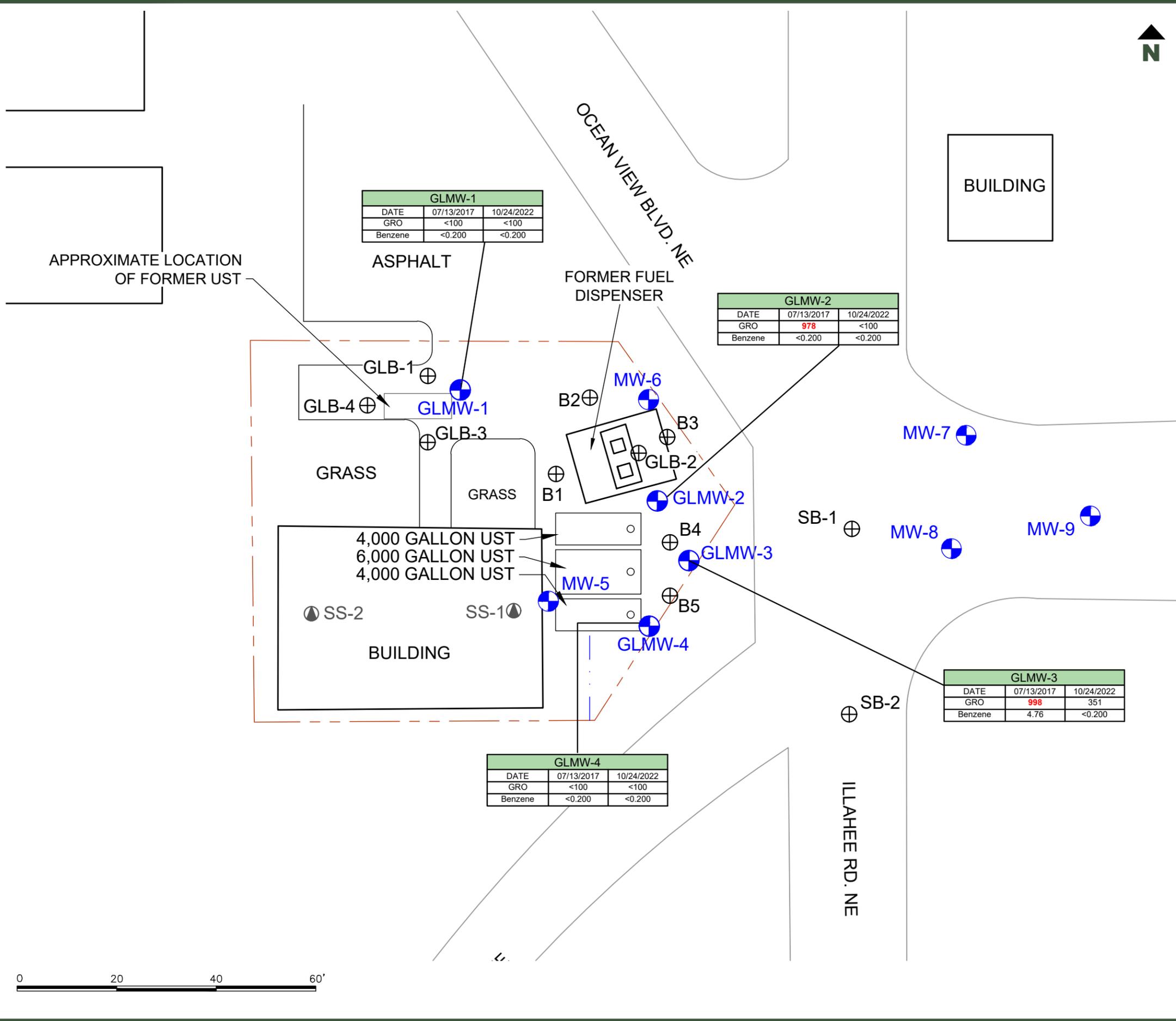
GLMW-3	
DATE	07/13/2017
GRO	<b>998</b>
B	4.76

SAMPLE DESIGNATION →  
ANALYTE (µg/L) →  
SAMPLE DATE →

PORT OF ILLAHEE  
5507 ILLAHEE ROAD NE.  
BREMERTON, WA 98311

Figure  
GRO AND BENZENE CONCENTRATIONS IN  
GROUNDWATER - OCTOBER 24, 2022

Date	July 9, 2025	Scale	AS SHOWN	Figure No.	4
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



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**NOTES**

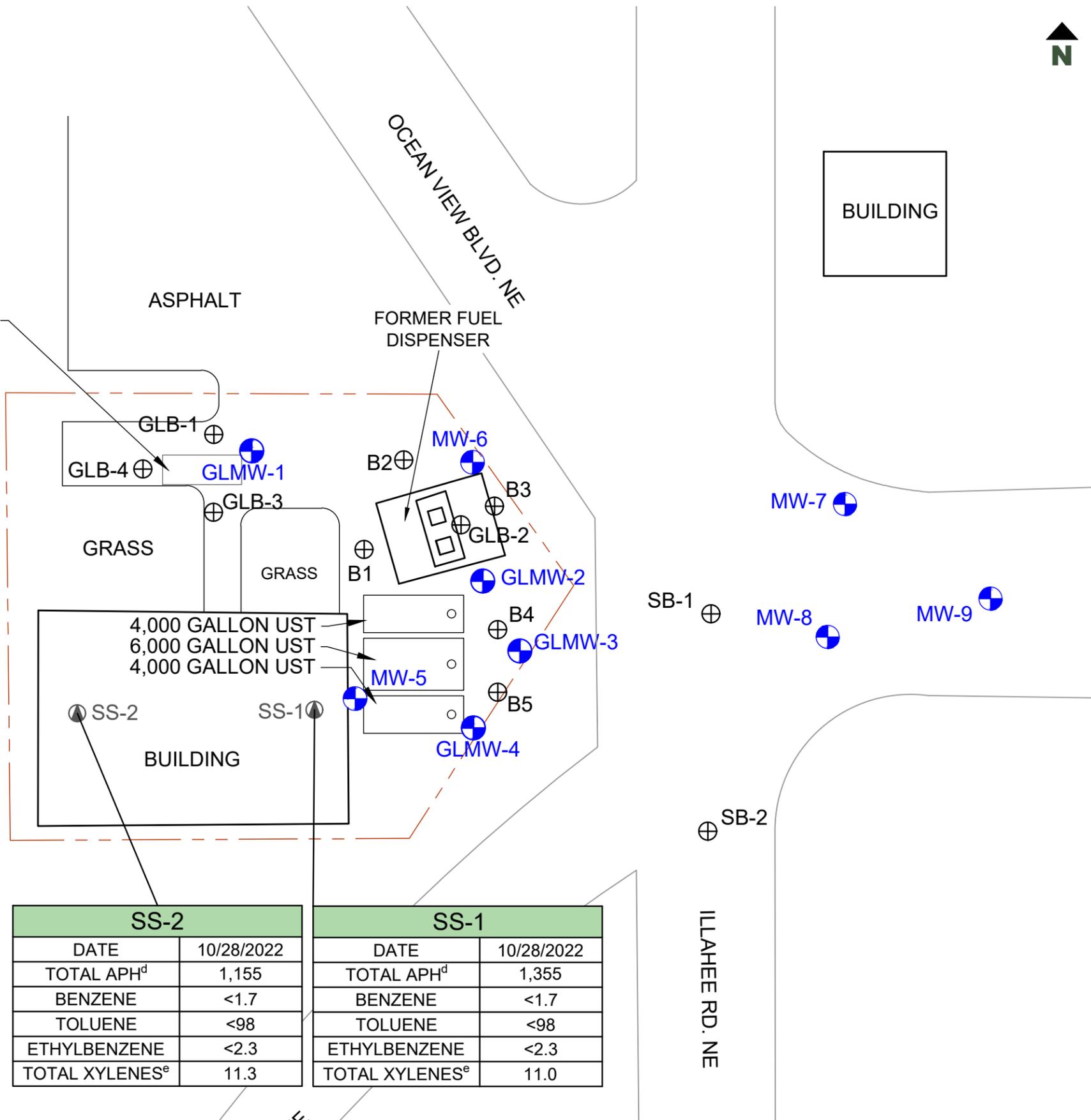
- 1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.
- 2) SAMPLE VALUES BOLDED IN RED INDICATE CONCENTRATIONS EXCEEDING MTCA CLEANUP LEVEL.
- 3) APH = AIR PHASE HYDROCARBONS.
- 4) d = TPH ANALYZED AS APH BY MASSACHUSETTS METHOD MA-APH.
- 5) e = TOTAL XYLENES IS EQUAL TO THE SUM OF INDIVIDUAL XYLENE COMPOUNDS.
- 6)  $\mu\text{g}/\text{m}^3$  = MICROGRAMS PER CUBIC METER

**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- ⊕ MW-1 MONITORING WELL LOCATION AND DESIGNATION
- ⊕ SS-1 SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
- ⊕ SB-1 SOIL BORING LOCATION AND DESIGNATION

SS-2	
DATE	10/28/2022
TOTAL APH <sup>d</sup>	1,155
BENZENE	<1.7
TOLUENE	<98
ETHYLBENZENE	<2.3
TOTAL XYLENES <sup>e</sup>	11.3

SAMPLE DESIGNATION: SS-2  
 ANALYTE ( $\mu\text{g}/\text{m}^3$ ): TOTAL APH<sup>d</sup>, BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES<sup>e</sup>  
 SAMPLE DATE: 10/28/2022



SS-2	
DATE	10/28/2022
TOTAL APH <sup>d</sup>	1,155
BENZENE	<1.7
TOLUENE	<98
ETHYLBENZENE	<2.3
TOTAL XYLENES <sup>e</sup>	11.3

SS-1	
DATE	10/28/2022
TOTAL APH <sup>d</sup>	1,355
BENZENE	<1.7
TOLUENE	<98
ETHYLBENZENE	<2.3
TOTAL XYLENES <sup>e</sup>	11.0

PORT OF ILLAHEE  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
 SVP CONCENTRATIONS - OCTOBER 28, 2022

Date	July 9, 2025	Scale	AS SHOWN	Figure No.	5
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



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GLMW-1				
DATE	07/13/2017			
DEPTH	5'	10'	15'	
GRO	NA	<5.65	<4.81	
B	NA	<0.0113	<0.00962	

B2		
DATE	12/12/2016	
DEPTH	2'	5'
GRO	<10	<10
B	<0.02	<0.02

MW-6		
DATE	07/25/2023	
DEPTH	10-11'	15-16'
GRO	<5	<5
B	<0.03	<0.03

GLB-2					
DATE	07/13/2017				
DEPTH	2'	5'	10'	10' (DUP)	15'
GRO	<6.08	<5.45	NA	NA	NA
B	<0.0122	<0.0109	NA	NA	NA



**NOTES**

- 1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.
- 2) SAMPLE VALUES BOLD IN RED INDICATE CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVEL.
- 3) GRO = GASOLINE RANGE ORGANICS.
- 4) B = BENZENE.
- 5) DUP = DUPLICATE SAMPLE FOR QA/QC.
- 6) NA = NOT ANALYZED.
- 7) mg/kg = MILLIGRAMS PER KILOGRAMS

**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- MW-1 MONITORING WELL LOCATION AND DESIGNATION
- SS-1 SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
- SB-1 SOIL BORING LOCATION AND DESIGNATION
- APPROXIMATE EXTENT OF CONTAMINATED SOIL

SAMPLE DESIGNATION: B4  
 SAMPLE DEPTH (FEET): 8', 11'  
 ANALYTE (mg/kg): GRO 37, B 0.028  
 SAMPLE DATE: 12/12/2016

B4		
DATE	12/12/2016	
DEPTH	8'	11'
GRO	<b>37</b>	<10
B	0.028	<0.02

GLB-1			
DATE	07/12/2017		
DEPTH	5'	6'	
GRO	NA	<4.60	
B	NA	<0.00920	

B1		
DATE	12/12/2016	
DEPTH	3'	6'
GRO	<10	<10
B	<0.02	<0.02

MW-6		
DATE	07/25/2023	
DEPTH	10-11'	15-16'
GRO	<5	<5
B	<0.03	<0.03

GLB-2					
DATE	07/13/2017				
DEPTH	2'	5'	10'	10' (DUP)	15'
GRO	<6.08	<5.45	NA	NA	NA
B	<0.0122	<0.0109	NA	NA	NA

B3			
DATE	12/12/2016		
DEPTH	2'	2' (DUP)	5'
GRO	<10	<10	<10
B	<0.02	<0.02	<0.02

APPROXIMATE LOCATION OF FORMER UST

ASPHALT

FORMER FUEL DISPENSER

GLB-4			
DATE	07/13/2017		
DEPTH	5'	7.5'	10'
GRO	NA	<4.23	<3.74
B	NA	<0.00846	<0.00748

GLB-1		
DATE	07/13/2017	
DEPTH	5'	6'
GRO	NA	NA
B	NA	NA

B2		
DATE	12/12/2016	
DEPTH	3'	6'
GRO	<10	<10
B	<0.02	<0.02

GLMW-2						
DATE	07/13/2017					
DEPTH	3'	5'	8'	8' (DUP)	10'	14'
GRO	NA	NA	<b>679</b>	<b>267</b>	<5.60	NA
B	NA	NA	<0.0101	<0.0103	<0.0112	NA

MW-7		
DATE	12/13/2022	
DEPTH	12-13'	24-26'
GRO	19.5	<5.42
B	<0.101	<0.0108

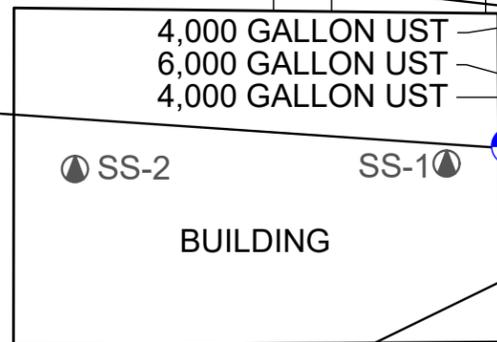
SB-1		
DATE	12/12/2022	
DEPTH	10-11'	19-20'
GRO	<b>160</b>	<4.82
B	<0.0101	<0.00965

GLB-3			
DATE	07/13/2017		
DEPTH	5'	6'	10'
GRO	NA	NA	<4.65
B	NA	NA	<0.00930

GRASS

GRASS

B4		
DATE	12/12/2016	
DEPTH	8'	11'
GRO	<b>37</b>	<10
B	0.028	<0.02



MW-5		
DATE	12/14/2022	
DEPTH	7-8'	14-15'
GRO	<6.89	<4.82
B	<0.0138	<0.00965

B5				
DATE	12/12/2016			
DEPTH	8'	11.5'	13'	
GRO	<b>810</b>	<10	<10	
B	<b>0.69</b>	<0.02	<0.02	

SB-2		
DATE	07/25/2023	
DEPTH	7.5-8'	15-15.5'
GRO	<5	<5
B	<0.03	<0.03

MW-9		
DATE	07/25/2023	
DEPTH	10-10.5'	25-25.5'
GRO	<b>510</b>	<5
B	<0.03	<0.03

GLMW-4				
DATE	07/13/2017			
DEPTH	5'	7.5'	10'	14'
GRO	NA	<4.55	NA	NA
B	NA	<0.00909	NA	NA

GLMW-3						
DATE	07/13/2017					
DEPTH	1.5'	4.5'	7.5'	10'	12'	15'
GRO	<b>167</b>	<6.27	<b>271</b>	<3.97	NA	NA
B	<b>0.0453</b>	<0.0125	<0.0109	<0.00794	NA	NA



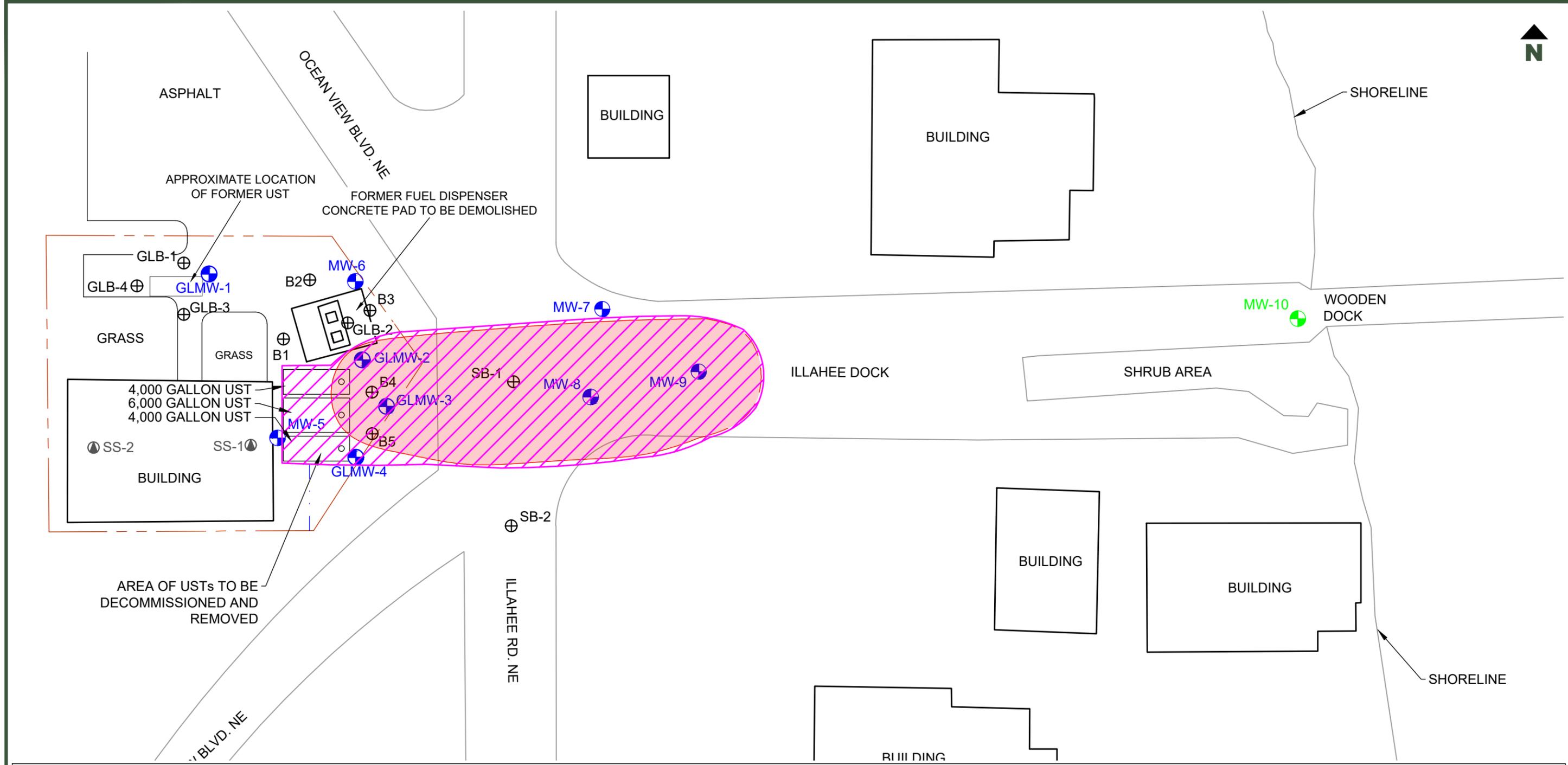
PORT OF ILLAHEE  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
 GRO AND BENZENE CONCENTRATIONS IN SOIL

Date	July 9, 2025	Scale	AS SHOWN	Figure No.	6
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



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**NOTES**

1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.

**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- PROPOSED MONITORING WELL LOCATION
- MONITORING WELL LOCATION AND DESIGNATION
- SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
- SOIL BORING LOCATION AND DESIGNATION
- APPROXIMATE EXTENT OF SITE-WIDE SOIL EXCAVATION
- APPROXIMATE EXTENT OF CONTAMINATED SOIL



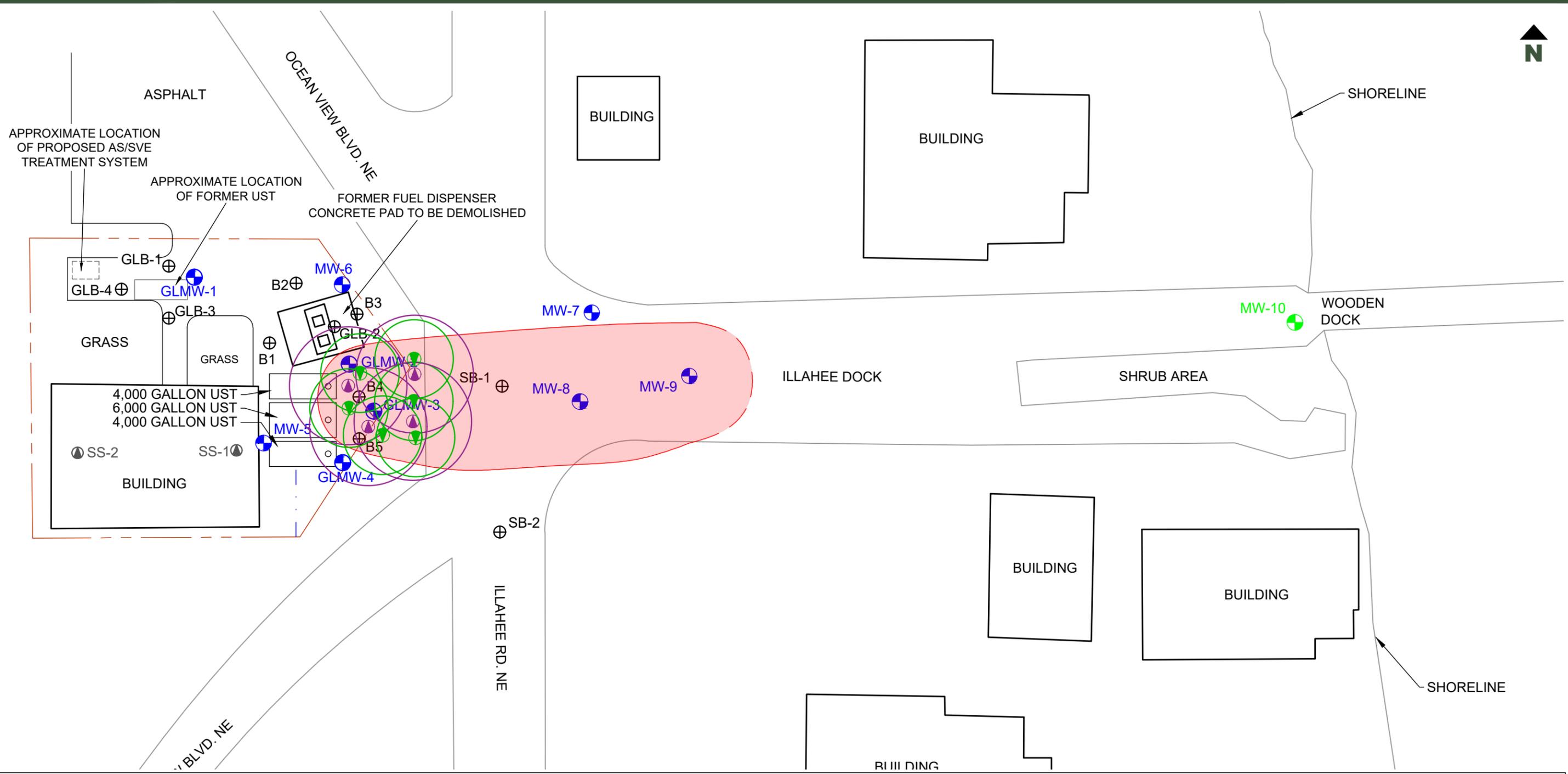
**PORT OF ILLAHEE**  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
**ALTERNATIVE 1: SITE-WIDE SOIL EXCAVATION AND OFFSITE DISPOSAL**

Date	July 28, 2025	Scale	AS SHOWN	Figure No.	
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		<b>7</b>



Drawing path: N:\Bothe\11 PROJECTS\Pollution Liability Insurance Agency - 1826\Port of Illahee\Feeability Study - CAP December 2023\Figures\Port of Illahee\_2025.dwg



**NOTES**  
 1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.  
 2) ROI = RADIUS OF INFLUENCE

LEGEND	
	APPROXIMATE PROPERTY BOUNDARY
	PROPOSED MONITORING WELL LOCATION
	MONITORING WELL LOCATION AND DESIGNATION
	SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
	SOIL BORING LOCATION AND DESIGNATION
	APPROXIMATE EXTENT OF CONTAMINATED SOIL
	PROPOSED AIR SPARGE POINT (10-FOOT ROI)
	PROPOSED SOIL VAPOR EXTRACTION POINT (15-FOOT ROI)



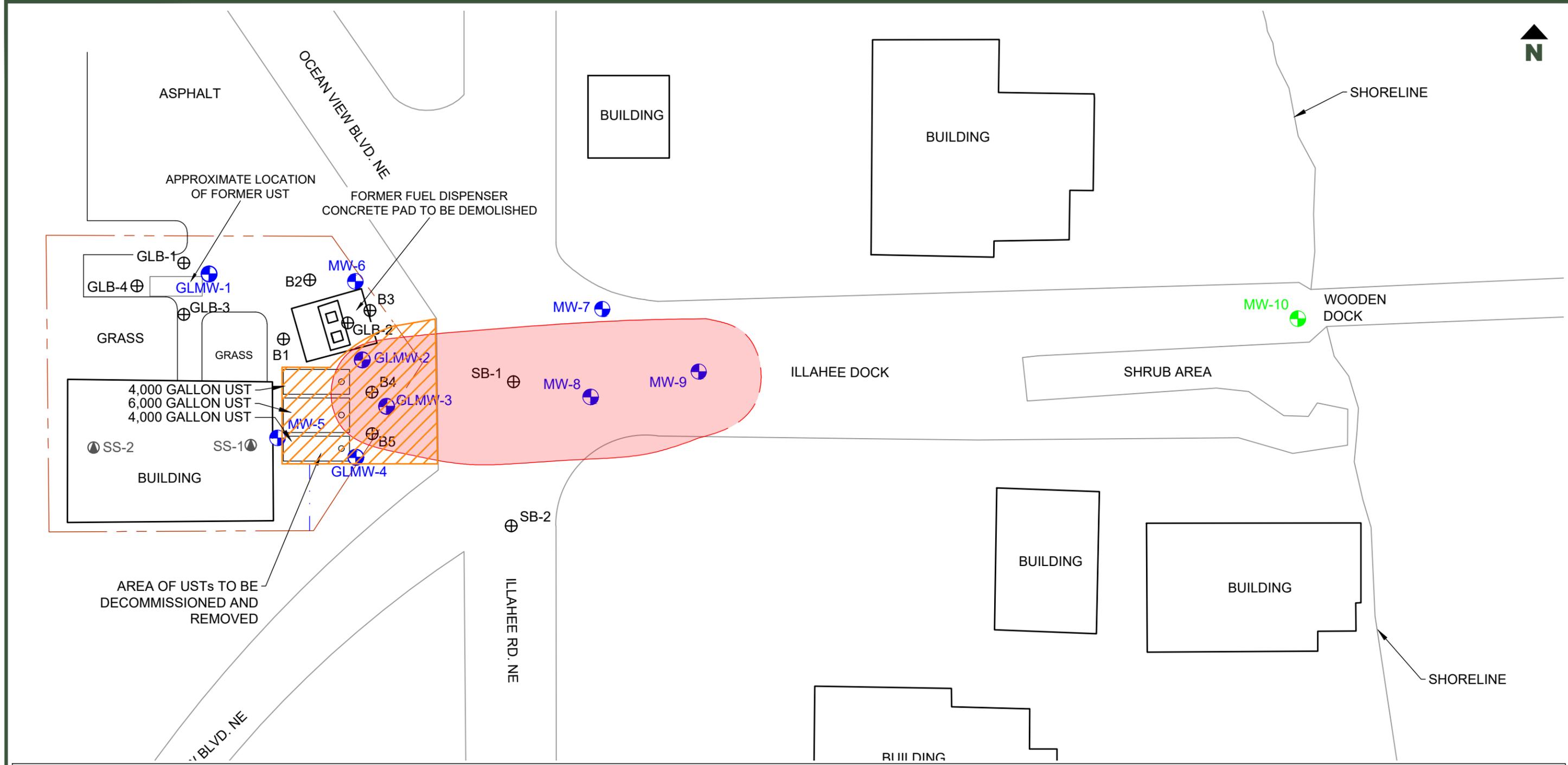
**PORT OF ILLAHEE**  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
**ALTERNATIVE 2: SOIL VAPOR EXTRACTION**

Date	July 28, 2025	Scale	AS SHOWN	Figure No.	8
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		



Drawing path: N:\Bothe\11 PROJECTS\Pollution Liability Insurance Agency - 1826\Port of Illahee\Feeability Study - CAP December 2023\Figures\Port of Illahee\_2025.dwg



**NOTES**

1) BUILDING AND STREET LOCATIONS ARE BASED ON GOOGLE EARTH PRO AERIAL IMAGERY, JUNE 2021.

**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- PROPOSED MONITORING WELL LOCATION
- MONITORING WELL LOCATION AND DESIGNATION
- SUB-SLAB SOIL VAPOR POINT LOCATION AND DESIGNATION
- SOIL BORING LOCATION AND DESIGNATION
- APPROXIMATE EXTENT OF TARGETED SOIL EXCAVATION
- APPROXIMATE EXTENT OF CONTAMINATED SOIL

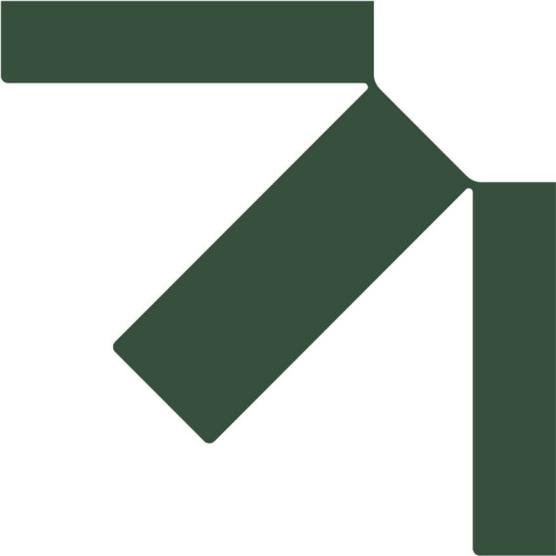


**PORT OF ILLAHEE**  
 5507 ILLAHEE ROAD NE.  
 BREMERTON, WA 98311

Figure  
**ALTERNATIVE 3: TARGETED SOIL EXCAVATION AND OFFSITE DISPOSAL**

Date	July 28, 2025	Scale	AS SHOWN	Figure No.	
File Name	Port of Illahee_2025	Project No.	128.V01826.00022		9





**Appendix A    Groundwater Sampling  
Field Data Sheets**



LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project No. 128.01826.00022 Purged By: EH Well I.D.: GLMW- 1
Project Name: Port of Illahee Sampled By: EH Sample I.D.: GLMW- 1 -1022
Location: Bremerton, WA QA Samples:

Date Purged: 10-24-2022 Start (2400hr): 1437 End (2400hr): 1458
Date Sampled: 10-24-2022 Sample Time (2400hr): 1458

Casing Diameter: 2" X 3" 4" 5" 6" 8" Other
Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

Total depth (feet) = 13.89 Casing Volume (gal) =
Depth to water (feet) = 7.57 Minimum Purge (gal) =
Water column height (feet) = Actual Purge (gal) =

FIELD MEASUREMENTS table with columns: Volume (Gal), Time (2400hr), Temp. (degrees C), Conductivity (mS/cm), TDS (g/L), DO (mg/L), pH (units), ORP (mV), Turbidity (Visual), Color (Visual). Includes handwritten data for volumes 0 to 1.75.

PURGING & SAMPLING EQUIPMENT
Well Wizard Bladder Pump
Active Extraction Well Pump
Submersible Pump
X Peristaltic Pump
Other:
Pump Intake Depth: 29.6 (feet)

SAMPLE VESSELS
40mL VOA
3 40mL VOA w/ HCL
mL amber glass
2 1000 mL amber glass w/ HCl
1 250 mL HDPE
1 250 mL HDPE w/ HNO3

Well Integrity: good Odor: none
Remarks: new tubing

Signature: [Handwritten Signature] Page 1 of 1



# LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project No. 128.01826.00022 Purged By: EH Well I.D.: GLMW- 2  
 Project Name: Port of Illahee Sampled By: EH Sample I.D.: GLMW- 2 -1022  
 Location: Bremerton, WA QA Samples: \_\_\_\_\_

Date Purged: 10- 24 -2022 Start (2400hr): 1525 End (2400hr): 1526  
 Date Sampled: 10- 24 -2022 Sample Time (2400hr): 1630

Casing Diameter: 2" X 3" \_\_\_\_\_ 4" \_\_\_\_\_ 5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

Total depth (feet) = 16.59 Casing Volume (gal) = \_\_\_\_\_  
 Depth to water (feet) = 16.12 Minimum Purge (gal) = \_\_\_\_\_  
 Water column height (feet) = \_\_\_\_\_ Actual Purge (gal) = \_\_\_\_\_

### FIELD MEASUREMENTS

Volume (Gal)	Time (2400hr)	Temp. (degrees C)	Conductivity (mS/cm)	TDS (g/L)	DO (mg/L)	pH (units)	ORP (mV)	Turbidity (Visual)	Color (Visual)
<u>0</u>	<u>1525</u>	<u>17.4</u>	<u>1585</u>	<u>—</u>	<u>0.92</u>	<u>6.61</u>	<u>20.5</u>	<u>clear</u>	<u>clear</u>
<u>Well went dry; will let recharge and sample immediately despite low-flow parameters.</u>									

PURGING & SAMPLING EQUIPMENT		SAMPLE VESSELS	
<input type="checkbox"/> Well Wizard Bladder Pump	<input type="checkbox"/> Bailer (disposable)	<input type="checkbox"/> 40mL VOA	<input type="checkbox"/> _____ mL HDPE w/ H2SO4
<input type="checkbox"/> Active Extraction Well Pump	<input type="checkbox"/> Bailer (PVC)	<u>3</u> 40mL VOA w/ HCL	_____
<input type="checkbox"/> Submersible Pump	<input type="checkbox"/> Bailer (Stainless Steel)	_____ mL amber glass	_____
<input checked="" type="checkbox"/> Peristaltic Pump	<input type="checkbox"/> Dedicated _____	<u>2 1000</u> mL amber glass w/ HCl	_____
Other: _____		<u>1 250</u> mL HDPE	_____
Pump Intake Depth: <u>~16.2</u> (feet)		<u>1 250</u> mL HDPE w/ HNO3	_____

Well Integrity: good Odor: none  
 Remarks: new tubing

Signature:  Page 1 of \_1\_

# LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project No. 128.01826.00022 Purged By: EH Well I.D.: GLMW-3  
 Project Name: Port of Illahee Sampled By: EH Sample I.D.: GLMW-3-1022  
 Location: Bremerton, WA QA Samples: \_\_\_\_\_

Date Purged: 10-24-2022 Start (2400hr): 1537 End (2400hr): 1604  
 Date Sampled: 10-24-2022 Sample Time (2400hr): 1604

Casing Diameter: 2" X 3" \_\_\_\_\_ 4" \_\_\_\_\_ 5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

Total depth (feet) = 13.83 Casing Volume (gal) = \_\_\_\_\_  
 Depth to water (feet) = 9.39 Minimum Purge (gal) = \_\_\_\_\_  
 Water column height (feet) = \_\_\_\_\_ Actual Purge (gal) = \_\_\_\_\_

### FIELD MEASUREMENTS

Volume (Gal)	Time (2400hr)	Temp. (degrees C)	Conductivity (mS/cm)	TDS (g/L)	DO (mg/L)	pH (units)	ORP (mV)	Turbidity (Visual)	Color (Visual)
<u>0</u>	<u>1537</u>	<u>17.9</u>	<u>1811</u>	<u>—</u>	<u>0.26</u>	<u>6.52</u>	<u>24.8</u>	<u>clear</u>	<u>clear</u>
<u>0.25</u>	<u>1540</u>	<u>18.3</u>	<u>1875</u>	<u>—</u>	<u>0.20</u>	<u>6.53</u>	<u>24.0</u>	<u> </u>	<u> </u>
<u>0.50</u>	<u>1543</u>	<u>18.2</u>	<u>1833</u>	<u>—</u>	<u>0.24</u>	<u>6.57</u>	<u>21.7</u>	<u> </u>	<u> </u>
<u>0.75</u>	<u>1546</u>	<u>18.2</u>	<u>1796</u>	<u>—</u>	<u>0.08</u>	<u>6.61</u>	<u>19.6</u>	<u> </u>	<u> </u>
<u>1</u>	<u>1549</u>	<u>18.2</u>	<u>1785</u>	<u>—</u>	<u>0.10</u>	<u>6.63</u>	<u>19.2</u>	<u> </u>	<u> </u>
<u>1.25</u>	<u>1552</u>	<u>18.2</u>	<u>1773</u>	<u>—</u>	<u>0.15</u>	<u>6.63</u>	<u>18.6</u>	<u> </u>	<u> </u>
<u>1.50</u>	<u>1555</u>	<u>18.2</u>	<u>1773</u>	<u>—</u>	<u>0.12</u>	<u>6.62</u>	<u>18.3</u>	<u> </u>	<u> </u>
<u>1.75</u>	<u>1558</u>	<u>18.1</u>	<u>1770</u>	<u>—</u>	<u>0.06</u>	<u>6.62</u>	<u>19.6</u>	<u> </u>	<u> </u>
<u>2</u>	<u>1601</u>	<u>18.1</u>	<u>1768</u>	<u>—</u>	<u>0.07</u>	<u>6.60</u>	<u>20.7</u>	<u> </u>	<u> </u>
<u>2.25</u>	<u>1604</u>	<u>18.1</u>	<u>1753</u>	<u>—</u>	<u>0.07</u>	<u>6.60</u>	<u>20.5</u>	<u>↓</u>	<u>↓</u>

#### PURGING & SAMPLING EQUIPMENT

Well Wizard Bladder Pump       Bailer (disposable)  
 Active Extraction Well Pump       Bailer (PVC)  
 Submersible Pump       Bailer (Stainless Steel)  
 Peristaltic Pump       Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Intake Depth: 11.4 (feet)

#### SAMPLE VESSELS

40mL VOA      \_\_\_\_\_ mL HDPE w/ H2SO4  
 40mL VOA w/ HCL      \_\_\_\_\_  
 \_\_\_\_\_ mL amber glass      \_\_\_\_\_  
 21000 mL amber glass w/ HCl      \_\_\_\_\_  
 1250 mL HDPE      \_\_\_\_\_  
 1250 mL HDPE w/ HNO3      \_\_\_\_\_

Well Integrity: good      Odor: none  
 Remarks: new tubing

Signature:       Page 1 of \_1\_

# LOW-FLOW GROUNDWATER SAMPLING FIELD DATA SHEET

Project No. 128.01826.00022 Purged By: EH Well I.D.: GLMW-4  
 Project Name: Port of Illahee Sampled By: EH Sample I.D.: GLMW-4-1022  
 Location: Bremerton, WA QA Samples: \_\_\_\_\_

Date Purged: 10-24-2022 Start (2400hr): 1633 End (2400hr): 1651  
 Date Sampled: 10-24-2022 Sample Time (2400hr): 1702

Casing Diameter: 2"  3" \_\_\_\_\_ 4" \_\_\_\_\_ 5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

Total depth (feet) = 15.49 Casing Volume (gal) = \_\_\_\_\_  
 Depth to water (feet) = 9.27 Minimum Purge (gal) = \_\_\_\_\_  
 Water column height (feet) = \_\_\_\_\_ Actual Purge (gal) = \_\_\_\_\_

### FIELD MEASUREMENTS

Volume (Gal)	Time (2400hr)	Temp. (degrees C)	Conductivity (mS/cm)	TDS (g/L)	DO (mg/L)	pH (units)	ORP (mV)	Turbidity (Visual)	Color (Visual)
<u>0</u>	<u>1633</u>	<u>16.4</u>	<u>.1451</u>	<u>—</u>	<u>2.44</u>	<u>6.60</u>	<u>20.9</u>	<u>clear</u>	<u>clear</u>
<u>0.25</u>	<u>1636</u>	<u>16.6</u>	<u>.1489</u>	<u>—</u>	<u>1.80</u>	<u>6.50</u>	<u>26.0</u>	<u>↓</u>	<u>↓</u>
<u>0.50</u>	<u>1639</u>	<u>16.5</u>	<u>.1458</u>	<u>—</u>	<u>1.96</u>	<u>6.50</u>	<u>26.0</u>	<u>↓</u>	<u>↓</u>
<u>0.75</u>	<u>1642</u>	<u>16.5</u>	<u>.1432</u>	<u>—</u>	<u>2.20</u>	<u>6.50</u>	<u>26.1</u>	<u>↓</u>	<u>↓</u>
<u>1</u>	<u>1645</u>	<u>16.5</u>	<u>.1430</u>	<u>—</u>	<u>2.28</u>	<u>6.49</u>	<u>26.1</u>	<u>↓</u>	<u>↓</u>
<u>1.25</u>	<u>1648</u>	<u>16.5</u>	<u>.1433</u>	<u>—</u>	<u>2.37</u>	<u>6.48</u>	<u>28.3</u>	<u>↓</u>	<u>↓</u>
<u>1.50</u>	<u>1651</u>	<u>well went dry upon stabilization; will let recharge 10 mins and collect sample</u>							

#### PURGING & SAMPLING EQUIPMENT

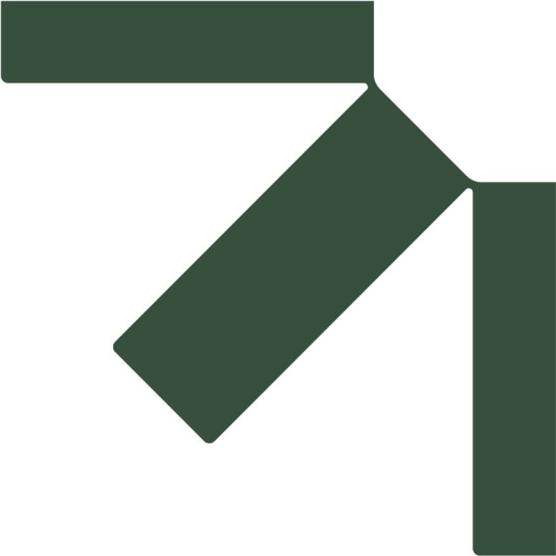
Well Wizard Bladder Pump     Bailer (disposable)  
 Active Extraction Well Pump     Bailer (PVC)  
 Submersible Pump     Bailer (Stainless Steel)  
 Peristaltic Pump     Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Intake Depth: 11.3 (feet)

#### SAMPLE VESSELS

40mL VOA     \_\_\_\_\_ mL HDPE w/ H2SO4  
 40mL VOA w/ HCL    \_\_\_\_\_  
 \_\_\_\_\_ mL amber glass    \_\_\_\_\_  
 2,100 mL amber glass w/ HCL    \_\_\_\_\_  
 1,250 mL HDPE    \_\_\_\_\_  
 1,250 mL HDPE w/ HNO3    \_\_\_\_\_

Well Integrity: good    Odor: none  
 Remarks: new tubing

Signature: \_\_\_\_\_ Page 1 of 1



## Appendix B Soil Boring Logs



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# BORING NUMBER MW-5

PAGE 1 OF 2

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/14/22 **COMPLETED** 12/14/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 10 ft  
**LOGGED BY** C. Blackburn **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0									
0.1					GP		<b>ASPHALT</b>		
1.5				100	GP-GM		<b>SANDY GRAVELS</b> , brown, fine to medium grained sands, moist, loose, no odor		
5				100	GP-GM		<b>GRAVELLY SILTY SAND</b> , brown, fine to coarse grained, few gravels, moist, loose, no odor		
6.0				100	SW-SM		<b>SANDY SILT</b> , brownish gray, fine grained sands with trace coarse sand, moist, loose	0.0	
7.5				100	GP-GM		<b>GRAVELLY SILTY SAND</b> , grayish brown, fine to medium grained sands	0.0	
10.0				100	SW-SM		<b>SANDY SILT</b> , brownish gray, few fine grained sand, wet, dense, no odor ▼ @ 10.0 feet: Becomes wet	0.0	
13.0				100	SM		<b>SILTY SAND</b> , grayish brown, fine to medium grained sands, trace fine gravel, wet, dense, no odor	0.0	
14.0				100	GP-GM		<b>GRAVELLY SILTY SAND</b> , grayish brown, fine to medium grained sands, fine to coarse gravel, wet, dense, no odor	0.0	
15.0				100	GP-GM		<b>GRAVELLY SILTY SAND</b> , grayish brown, fine to medium grained sands, fine to coarse gravel, wet, dense, no odor	0.0	

**REMARKS**

PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil samples collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.

▼ = Water level at time of drilling.

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(Continued Next Page)



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# BORING NUMBER MW-5

PAGE 2 OF 2

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/14/22 **COMPLETED** 12/14/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 10 ft  
**LOGGED BY** C. Blackburn **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
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**WELL COMPLETION DETAILS:**  
 Boring completed at 15.0 feet bgs.

0.0 to 2.0 feet: Concrete  
 2.0 to 3.5 feet: Hydrated bentonite chips  
 3.0 to 15.0 feet: 10x20 silica sand pack

0.0 to 5.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC riser.  
 5.0 to 14.8 feet: 2"-diameter, flush-threaded Sch. 40 PVC 0.020-slotted well screen.  
 14.8 to 15.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC cap.

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil sampes collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.

▼ = Water level at time of drilling.

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# BORING NUMBER MW-7

PAGE 1 OF 2

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/13/22 **COMPLETED** 12/13/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 10 ft  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0							<b>ASPHALT</b>		
0.8							<b>SILTY SAND</b> , brown, some gravels and cobbles, moist, dense		Concrete
5.0		Air Knife			SM				2-inch sch 40 PVC riser
5.0							<b>SILTY SAND</b> , brown, some gravels and cobbles, moist, loose		Hydrated bentonite chips
10.0		Direct Push		100	GP-GM			2.5	#10/20 silica sand
10.0					GP-GM		▼ @ 10.0 feet: Becomes wet	286.1	
10.5					SP-SM		<b>GRAVELLY SILTY SAND</b> , brown, fine to medium grained, some gravels, moist		
10.5					SP-SM		<b>SILTY SAND</b> , gray, some gravels and cobbles, moist, petroleum-like odor, dense		
12.5		Direct Push	MW-7-12'-13*	75	SP-SM		<b>SAND</b> , gray, fine to medium grained, some silt and gravels, wet, petroleum-like odor, dense	1,292	
13.0					SM		<b>SILTY SAND</b> , gray, fine to medium grained, some gravels and cobbles, wet, petroleum-like odor, dense	33.1	
13.5							@13.5 feet: Orange mottling		2-inch sch 40 PVC 0.01" slot screen
14.0							@14 feet: No recovery between 14 feet and 15 feet		

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil sampes collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.  
 ▼ = Water level at time of drilling.

SLR MW LOG ILLAHEE 2022 CB.GPJ GINT US.GDT 2/16/23



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# BORING NUMBER MW-7

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/13/22 **COMPLETED** 12/13/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 10 ft  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
15									
		Direct Push		100	GP-GM	16.0	<b>GRAVELLY SILTY SAND</b> , brownish gray, fine to medium grained, no odor, dense, wet	46.7	
					GP-GM	19.0	<b>GRAVELLY SILTY SAND</b> , gray, fine to medium grained, dense, dry, 1" sandy silt lens, wet	8.8	
20					GP-GM	22.5	<b>GRAVELLY SILTY SAND</b> , gray, medium grained sand, wet, dense	20.6	
		Direct Push		100	SP-SM	24.0	<b>SANDY SILT</b> , grey, fine grained sands, wet	14.9	
			MW-7-24'-26**		SP-SM	26.0	<b>SANDY SILT</b> , grey, fine grained sands, wet, no odor	34.7	
25		Direct Push		100	SP-SM			27.0	

**WELL COMPLETION DETAILS:**

Boring completed at 26.0 feet bgs.

- 0.0 to 2.0 feet: Concrete
- 2.0 to 3.5 feet: Hydrated bentonite chips
- 3.5 to 25.0 feet: 10x20 silica sand pack
- 25.0 to 26.0 feet: Backfill

- 0.0 to 5.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC riser.
- 5.0 to 24.8 feet: 2"-diameter, flush-threaded Sch. 40 PVC 0.020-slotted well screen.
- 24.8 to 25.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC cap.

**REMARKS**

PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil sampes collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.

▼ = Water level at time of drilling.



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# BORING NUMBER MW-8

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/12/22 **COMPLETED** 12/12/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 12.5 ft  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0						<b>ASPHALT</b>		
						0.8		
						<b>GRAVEL BACKFILL</b>		
						1.3		
		Air Knife				<b>GRAVELLY SILT</b> , medium brown, some cobbles, dry, organic roots observed		
						6.0		
5						<b>GRAVELLY SAND</b> , brownish gray, some silt and cobbles, dry, medium density, no odor		
						3.1		
		Direct Push				<b>GRAVELLY SILTY SAND</b> , brown, dense, moist		
						4.3		
10						<b>GRAVELLY SAND AND SILT</b> , gray, some silt and cobbles, moist, dense, petroleum-like odor ▼ @ 12.5 feet: Becomes wet		
						69.2		
						<b>SILTY SAND</b> , gray, fine to medium grained, some silt and cobbles, wet, dense, petroleum odor @ 14.5 feet: Few gravel		
						1,673		
						636.7		
15								

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil samplers collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.  
 ▼ = Water level at time of drilling.

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# BORING NUMBER MW-8

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/12/22 **COMPLETED** 12/12/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 12.5 ft  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
15								
		Direct Push		SW-SM	17.0	<b>SANDY SILT</b> , gray, fine to medium grained, some gravel, wet, dense, petroleum odor	92.1	
			GP-GM	19.0	<b>GRAVELLY SAND AND SILT</b> , gray, some silt and cobbles, moist, dense, petroleum-like odor	1,446		
			ML	20.0	<b>SILT</b> , gray, few fine grained sand, wet, dense, petroleum-like odor	1,557		
20		Direct Push		SM	22.0	<b>SILTY SAND</b> , gray, fine to medium grained, some gravel, wet, loose, petroleum-like odor	98.8	
			GP-GM	24.0	<b>GRAVELLY SILTY SAND</b> , gray, fine to medium grained, wet, loose, petroleum-like odor	176.0		
			SW-SM	24.5	<b>SANDY SILT</b> , gray, fine grained, few clay, wet, dense, petroleum-like odor	24.0		
25		Direct Push		GP-GM	25.0	<b>GRAVELLY SILTY SAND</b> , gray, fine to medium grained, wet, dense, petroleum-like odor	92.4	
			SW-SM	27.0	<b>SANDY SILT</b> , gray, fine grained, wet, dense, weak petroleum-like odor	93.7		
			SW-SM	28.5	<b>SANDY SILT</b> , gray, fine grained, wet, dense, weak petroleum-like odor	End cap		
			GP-GM	30.0	<b>GRAVELLY SILTY SAND</b> , gray, fine to medium grained, wet, dense, weak petroleum-like odor	93.7		
30							52.2	Backfill
							83.3	

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil samples collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.  
 ▼ = Water level at time of drilling.

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# BORING NUMBER MW-8

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/12/22 **COMPLETED** 12/12/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 6" - diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **▼ AT TIME OF DRILLING** 12.5 ft  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft) INTERVAL	TYPE	NAME	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
---------------------	------	------	----------	-------------	----------------------	-----------	--------------

**WELL COMPLETION DETAILS:**  
 Boring completed at 30.0 feet bgs.

0.0 to 2.0 feet: Concrete  
 2.0 to 3.5 feet: Hydrated bentonite chips  
 3.5 to 25.0 feet: 10x20 silica sand pack  
 25.0 to 30.0 feet: Backfill

0.0 to 5.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC riser.  
 5.0 to 24.8 feet: 2"-diameter, flush-threaded Sch. 40 PVC 0.020-slotted well screen.  
 24.8 to 25.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC cap.

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil sampes collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.

▼ = Water level at time of drilling.



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# BORING NUMBER SB-1

PAGE 1 OF 2

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/12/22 **COMPLETED** 12/12/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 2.25"- diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **AT TIME OF DRILLING** \_\_\_\_\_  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0								
		Air Knife		100	ML	0.5	ASPHALT	
						1.0	GRAVEL BACKFILL	
							SILT, medium brown, some gravel and cobbles, moist	
5		Direct Push		100	SM	5.0	SILTY SAND, brown, fine to medium grained, some grey gravel and cobbles, moist, dense	1.5
								2.5
10		Direct Push	SB-1-10'-11"*	75	GW	10.0	GRAVEL, dark gray, moist, petroleum-like odor	861.6
						14.0	SILTY SAND, brown, fine to medium grained, some grey gravel and cobbles, dry, dense	120.0
						15.0	SILTY SAND, grey, fine to medium grained, some crushed rock, dry, dense, petroleum-like odor	

**REMARKS**  
 PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil samples collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.  
 ▼ = Water level at time of drilling.

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# BORING NUMBER SB-1

PAGE 2 OF 2

**CLIENT** Pollution Liability Insurance Agency **PROJECT NAME** Port of Illahee  
**PROJECT NUMBER** 128.01826.00022 **PROJECT LOCATION** 5507 Illahee Road NE, Bremerton WA 98311  
**DATE STARTED** 12/12/22 **COMPLETED** 12/12/22 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 2.25"- diameter  
**DRILLING CONTRACTOR** Holt Drilling **GROUND WATER LEVELS:**  
**DRILLING METHOD** Direct Push/Hollow-Stem Auger **AT TIME OF DRILLING** \_\_\_\_\_  
**LOGGED BY** A. Pales **CHECKED BY** G. Lish **AFTER DRILLING** N/A  
**NOTES** \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	NAME	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
15								
		Direct Push	SB-1-19'-20**	100	GP-GM		<b>GRAVELLY SILTY SAND</b> , grey, fine to medium grained, moist, dense, weak petroleum-like odor	99.8
							18.0	
					SW-SM		<b>SANDY SILT</b> , grey, fine grained, moist, dense	10.8
					GP-GM		<b>GRAVELLY SILTY SAND</b> , grey, fine to medium grained, moist, dense	11.7
20								

**BORING COMPLETION DETAILS:**

Boring completed at 20.0 feet bgs.  
 Boring backfilled with bentonite chips and then concrete at ground surface.

**REMARKS**

PID = Photoionization detector readings in parts per million (ppm).  
 Air Knife = Removed soil with a vacuum truck.  
 Direct Push = Soil sampes collected as a continuous core within a 5-foot-long acetate liner.  
 \* = Soil sample submitted for laboratory analysis.

▼ = Water level at time of drilling.



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# BORING NUMBER MW-6

PAGE 1 OF 2

CLIENT PLIA PROJECT NAME Port of Illahee  
 PROJECT NUMBER 128.01826.00022 PROJECT LOCATION Bremerton, WA  
 DATE STARTED 7/25/23 COMPLETED 7/25/23 GROUND ELEVATION \_\_\_\_\_ HOLE SIZE 8" diameter  
 DRILLING CONTRACTOR Holt Drilling GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger ▼ AT TIME OF DRILLING 11.5 ft  
 LOGGED BY E. Hernandez CHECKED BY C.Lee AFTER DRILLING N/A  
 NOTES \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0										
0.4							0.4	<b>ASPHALT</b>		Concrete
5		Air Knife					0.4 - 5	<b>GRAVELLY SAND</b> , brown, fine-grained, some fine-to-coarse gravel, trace fine, moist, no odors or staining.		Hydrated bentonite chips
5		Split Spoon		50	20 27 35	SP	5 - 7.5	@ 7.5 feet: Almost no recovery; hard drilling.	0.3	2-inch sch 40 PVC riser
5		Split Spoon		5	12 50/5		7.5 - 10			
10		Split Spoon	*MW-6-10.0'-11.0'	70	45 37 27	ML	10 - 11.0	<b>SILT</b> , grayish brown, moist, no odors or staining. ▼ @ 11.5 feet: Becomes wet.	0.9	2-inch sch 40 PVC 0.01" slot screen 10X20 silica sand
10		Split Spoon		70	7 15 25	SP	11.0 - 12.5	<b>SAND</b> , brown, fine-grained, wet, no odors or staining.	0.3	
15						ML	12.5 - 14.5	<b>SILT</b> , grayish brown, moist, no odors or staining.		

### REMARKS

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.

▼ Water level at time of drilling.

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(Continued Next Page)



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# BORING NUMBER MW-6

PAGE 2 OF 2

CLIENT PLIA PROJECT NAME Port of Illahee  
 PROJECT NUMBER 128.01826.00022 PROJECT LOCATION Bremerton, WA

DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
15										
	X	Split Spoon	*MW-6-15.0'-16.0'	100	17 50/5	ML		SILT, grayish brown, moist, no odors or staining. (continued)	0.0	End cap Backfill
							16.0			

### BORING COMPLETION DETAILS:

Boring completed at 16.0 feet bgs.

- 0.0 to 2.0 feet: Concrete.
- 2.0 to 4.0 feet: Haliburton hydrated bentonite chips.
- 4.0 to 15.2 feet: 10x20 silica sand pack.
- 15.2 to 16.0 feet: Backfill

- 0.0 to 5.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC riser.
- 5.0 to 15.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.
- 15.0 to 15.2 feet: 2"-diameter, flush-threaded Sch. 40 PVC cap.

### REMARKS

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.

Water level at time of drilling.



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# BORING NUMBER MW-9

PAGE 1 OF 2

CLIENT PLIA PROJECT NAME Port of Illahee  
 PROJECT NUMBER 128.01826.00022 PROJECT LOCATION Bremerton, WA  
 DATE STARTED 7/25/23 COMPLETED 7/25/23 GROUND ELEVATION \_\_\_\_\_ HOLE SIZE 8" diameter  
 DRILLING CONTRACTOR Holt Drilling GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger ▼ AT TIME OF DRILLING 23 ft  
 LOGGED BY E. Hernandez CHECKED BY C.Lee AFTER DRILLING N/A  
 NOTES \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0										
0.5							0.5	<b>ASPHALT</b>		Concrete
5		Air Knife				SP	5	<b>GRAVELLY SAND</b> , brown, fine-grained, some gravel and cobbles, dry, no odors or staining.		Hydrated bentonite chips
5		Split Spoon		60	50 50/4					
8.0							8.0	<b>GRAVELLY SAND</b> , gray, fine-to-coarse grained, some fine gravel, moist, strong petroleum odor and gray staining.		
10		Split Spoon	*MW-9-10.0'-11.0'	40	48 23 41	SW	10		1,070	10X20 silica sand 2-inch sch 40 PVC riser
15							15.0			

**REMARKS**

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.

▼ Water level at time of drilling.

SLR SB LOG ILLAHEE.EH.GPJ GINT.US.GDT 12/28/23

(Continued Next Page)



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# BORING NUMBER MW-9

PAGE 2 OF 2

CLIENT PLIA

PROJECT NAME Port of Illahee

PROJECT NUMBER 128.01826.00022

PROJECT LOCATION Bremerton, WA

DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
15										
		Split Spoon		40	24 46 50/4			<b>SILT</b> , gray, moist, moderate petroleum-like odor.	376	<p>2-inch sch 40 PVC 0.01" slot screen</p> <p>End cap</p> <p>Backfill</p>
20						ML				
							▼ @ 23 feet: Becomes wet.			
25		Split Spoon	*MW-9-25.0'-25.5'	5	15 25 43			@ 25 feet: Most of sample fell out of sampler.	0.9	
							26.5			

**BORING COMPLETION DETAILS:**

Boring completed at 26.5 feet bgs.

- 0.0 to 2.0 feet: Concrete.
- 2.0 to 6.0 feet: Haliburton hydrated bentonite chips.
- 6.0 to 25.2 feet: 10x20 silica sand pack.
- 25.2 to 26.5 feet: Backfill

- 0.0 to 15.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC riser.
- 15.0 to 25.0 feet: 2"-diameter, flush-threaded Sch. 40 PVC 0.010-slotted well screen.
- 25.0 to 25.2 feet: 2"-diameter, flush-threaded Sch. 40 PVC cap.

**REMARKS**

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.

▼ Water level at time of drilling.



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# BORING NUMBER SB-2

PAGE 1 OF 2

CLIENT PLIA PROJECT NAME Port of Illahee  
 PROJECT NUMBER 128.01826.00022 PROJECT LOCATION Bremerton, WA  
 DATE STARTED 7/25/23 COMPLETED 7/25/23 GROUND ELEVATION \_\_\_\_\_ HOLE SIZE 8" diameter  
 DRILLING CONTRACTOR Holt Drilling GROUND WATER LEVELS:  
 DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING \_\_\_\_\_  
 LOGGED BY E. Hernandez CHECKED BY C.Lee AFTER DRILLING N/A  
 NOTES \_\_\_\_\_

DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0								
							0.5	ASPHALT
						SP		GRAVELLY SAND, brown, fine-grained, some fine gravel, moist-to-wet, no odors or staining. @ 1.5 feet: Becomes wet
		Air Knife					2.5	SILT, grayish-brown, moist, no odors or staining.
5						ML		
		Split Spoon		50	7 22 50/5.5			@ 6 feet: Sand lens
							7.0	GRAVELLY SAND, brownish-gray, fine-grained, little fine gravel, moist, no odors or staining.
		Split Spoon	*SB-2-7.5'-8.0'	80	36 50/3	SP		
							9.2	SILTY SAND, gray, fine-grained, some silt, moist, no odors or staining.
10								
		Split Spoon			48 50/5			@ 11.5 feet: Becomes brown, few coarse gravel
						SM		
		Split Spoon		100	13 50/3			
15								

## REMARKS

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.

SLR SB LOG ILLAHEE.EH.GPJ GINT.US.GDT 12/28/23

(Continued Next Page)



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# BORING NUMBER SB-2

PAGE 2 OF 2

CLIENT PLIA PROJECT NAME Port of Illahee  
 PROJECT NUMBER 128.01826.00022 PROJECT LOCATION Bremerton, WA

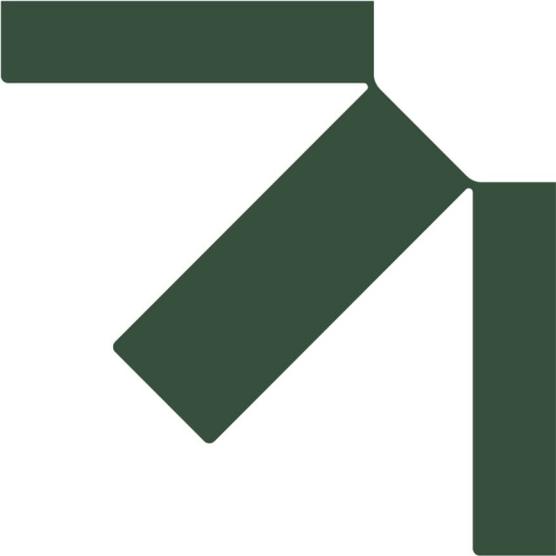
DEPTH (ft)	INTERVAL	TYPE	SAMPLE NAME	RECOVERY %	BLOW COUNTS PER FOOT (N VALUE)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
15								
	X Split Spoon		*SB-2-15.0'-15.5'	100	28 50/3	SM	 15.8	<b>SILTY SAND</b> , gray, fine-grained, some silt, moist, no odors or staining. <i>(continued)</i>

**BORING COMPLETION DETAILS:**

Boring completed at 15.75 feet bgs.

**REMARKS**

Air knife = Removed soil with a vacuum truck.  
 PID = Photoionization detector readings in parts per million (ppm).  
 Split-Barrel = Soil samples collected within 18-inch stainless-steel split-barrel sampler.  
 \* = Soil sample analyzed by laboratory.



## Appendix C Laboratory Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Michael Erdahl, B.S.  
Vineta Mills, M.S.  
Eric Young, B.S.

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

August 4, 2023

Chris Lee, Project Manager  
SLR International Corp.  
22118 20th Ave. SE, G-202  
Bothell, WA 98021

Dear Mr Lee:

Included are the results from the testing of material submitted on July 27, 2023 from the Port of Illahee 128.01826.00022, F&BI 307360 project. There are 22 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
SLR0804R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 27, 2023 by Friedman & Bruya, Inc. from the SLR International Corp. Port of Illahee 128.01826.00022, F&BI 307360 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>SLR International Corp.</u>
307360 -01	MW-6-10.0'-11.0'
307360 -02	MW-6-15.0'-16.0'
307360 -03	SB-2-7.5'-8.0'
307360 -04	SB-2-15.0'-15.5'
307360 -05	MW-9-10.0'-10.5'
307360 -06	MW-9-25.0'-25.5'

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

Date Extracted: 07/27/23

Date Analyzed: 07/28/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE  
USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
MW-6-10.0'-11.0' 307360-01	<5	125
MW-6-15.0'-16.0' 307360-02	<5	117
SB-2-7.5'-8.0' 307360-03	<5	116
SB-2-15.0'-15.5' 307360-04	<5	122
MW-9-10.0'-10.5' 307360-05 1/20	510	126
MW-9-25.0'-25.5' 307360-06	<5	121
Method Blank 03-1615 MB	<5	103

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

Date Extracted: 07/27/23

Date Analyzed: 07/28/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND MOTOR OIL  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
MW-6-10.0'-11.0' 307360-01	<50	<250	106
MW-6-15.0'-16.0' 307360-02	<50	<250	102
SB-2-7.5'-8.0' 307360-03	<50	<250	98
SB-2-15.0'-15.5' 307360-04	<50	<250	100
MW-9-10.0'-10.5' 307360-05	290 x	<250	106
MW-9-25.0'-25.5' 307360-06	<50	<250	102
Method Blank 03-1829 MB	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-6-10.0'-11.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-01
Date Analyzed:	07/29/23	Data File:	307360-01.213
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	2.81
------	------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-6-15.0'-16.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-02
Date Analyzed:	07/29/23	Data File:	307360-02.219
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	1.84
------	------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	SB-2-7.5'-8.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-03
Date Analyzed:	07/29/23	Data File:	307360-03.220
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Lead	1.54
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	SB-2-15.0'-15.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-04
Date Analyzed:	07/29/23	Data File:	307360-04.221
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	1.55
------	------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-9-10.0'-10.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-05
Date Analyzed:	07/29/23	Data File:	307360-05.222
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	2.29
------	------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-9-25.0'-25.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-06
Date Analyzed:	07/29/23	Data File:	307360-06.225
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	1.40
------	------

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	SLR International Corp.
Date Received:	NA	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	I3-588 mb
Date Analyzed:	07/28/23	Data File:	I3-588 mb.148
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Lead	<1
------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	MW-6-10.0'-11.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-01
Date Analyzed:	07/31/23	Data File:	073107.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	90	109
Toluene-d8	100	86	115
4-Bromofluorobenzene	98	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	MW-6-15.0'-16.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-02
Date Analyzed:	07/31/23	Data File:	073108.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	90	109
Toluene-d8	99	86	115
4-Bromofluorobenzene	99	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SB-2-7.5'-8.0'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-03
Date Analyzed:	07/28/23	Data File:	072814.D
Matrix:	Soil	Instrument:	GCMS13
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	84	120
Toluene-d8	92	73	128
4-Bromofluorobenzene	101	57	146

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	SB-2-15.0'-15.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-04
Date Analyzed:	07/31/23	Data File:	073109.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	90	109
Toluene-d8	98	86	115
4-Bromofluorobenzene	97	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	MW-9-10.0'-10.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-05
Date Analyzed:	07/31/23	Data File:	073110.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	90	109
Toluene-d8	103	86	115
4-Bromofluorobenzene	102	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	2.2
m,p-Xylene	3.4
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	MW-9-25.0'-25.5'	Client:	SLR International Corp.
Date Received:	07/27/23	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	307360-06
Date Analyzed:	07/31/23	Data File:	073111.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	90	109
Toluene-d8	101	86	115
4-Bromofluorobenzene	102	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.070
m,p-Xylene	0.10
o-Xylene	<0.05

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	SLR International Corp.
Date Received:	Not Applicable	Project:	Port of Illahee 128.01826.00022
Date Extracted:	07/28/23	Lab ID:	03-1783 mb
Date Analyzed:	07/28/23	Data File:	072812.D
Matrix:	Soil	Instrument:	GCMS13
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	84	120
Toluene-d8	104	73	128
4-Bromofluorobenzene	98	57	146

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR TPH AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**

Laboratory Code: 307147-19 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	107	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 307337-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	42,000	160 b	220 b	64-136	32 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	104	78-121

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL METALS USING EPA METHOD 6020B**

Laboratory Code: 307360-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	2.47	92	94	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	103	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 07/27/23

Project: Port of Illahee 128.01826.00022, F&BI 307360

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 307360-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	94	94	15-129	0
Toluene	mg/kg (ppm)	2	<0.05	91	94	15-129	3
Ethylbenzene	mg/kg (ppm)	2	<0.05	93	96	23-133	3
m,p-Xylene	mg/kg (ppm)	4	<0.1	94	96	19-134	2
o-Xylene	mg/kg (ppm)	2	<0.05	91	95	20-132	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	89	70-130
Toluene	mg/kg (ppm)	2	100	63-127
Ethylbenzene	mg/kg (ppm)	2	102	60-140
m,p-Xylene	mg/kg (ppm)	4	101	56-145
o-Xylene	mg/kg (ppm)	2	100	61-137

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.
- c - The presence of the analyte may be due to carryover from previous sample injections.
- cf - The sample was centrifuged prior to analysis.
- d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv - Insufficient sample volume was available to achieve normal reporting limits.
- f - The sample was laboratory filtered prior to analysis.
- fb - The analyte was detected in the method blank.
- fc - The analyte is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs - Headspace was present in the container used for analysis.
- ht - The analysis was performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of control limits due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- lc - The presence of the analyte is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

307360

Report To: SHARIS LEE

Company: SLR INTERNATIONAL CORPORATION

Address: 22118 207th Ave SE, G-202

City, State, ZIP: Bothell, WA 98021

Phone: (206) 915-5181 Email: clees@slrworld.com

SAMPLE CHAIN OF CUSTODY 07/27/23

B2/N2

SAMPLERS (signature)

PROJECT NAME

Port of Everett

PO#

128-01526-0022

REMARKS

INVOICE TO

Project specific RIs? - Yes / No

Page # 1 of 1

TURNAROUND TIME

Standard turnaround

RUSH  
Rush charges authorized by:

SAMPLE DISPOSAL

Archive samples

Other  
Default: Dispose after 30 days

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	BTEX 8260D	Lead & Copper EPA 6020	Notes
MW-6-10.0'-11.0'	01A-E	2023.07.25	1000	Soil	5	X	X						X	X	
MW-6-15.0'-16.0'	02		1045												
SB-2-7.5'-8.0'	03		1245												
SB-2-15.0'-15.5'	04		1300												
MW-9-10.0'-10.5'	05		1435												
MW-9-25.0'-25.5'	06		1535												

Samples received at 0 of

SIGNATURE

Relinquished by:

PRINT NAME

Emily Hernandez

COMPANY

SLR

DATE

7/27/23

TIME

0900

Friedman & Briya, Inc.  
Ph. (206) 285-8282

Received by:

VINU

EBI

7-27-23

12:00

Received by:



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

Friday, November 4, 2022

Greg Lish  
SLR Corporation-Bothell  
22118 20th Ave SE, Suite G202  
Bothell, WA 98021

RE: A2J0940 - Port of Illahee - 128.01826.00022

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A2J0940, which was received by the laboratory on 10/28/2022 at 12:36:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: [pnerenberg@apex-labs.com](mailto:pnerenberg@apex-labs.com), or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

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Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1	3.4 degC
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This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.  
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

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Apex Laboratories

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

*Philip Nerenberg*

---

Philip Nerenberg, Lab Director



**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**ANALYTICAL REPORT FOR SAMPLES**

**SAMPLE INFORMATION**

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GLMW-1-1022	A2J0940-01	Water	10/24/22 14:58	10/28/22 12:36
GLMW-2-1022	A2J0940-02	Water	10/24/22 16:30	10/28/22 12:36
GLMW-3-1022	A2J0940-03	Water	10/24/22 16:04	10/28/22 12:36
GLMW-4-1022	A2J0940-04	Water	10/24/22 17:02	10/28/22 12:36

Apex Laboratories

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**ANALYTICAL SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GLMW-1-1022 (A2J0940-01)</b>			<b>Matrix: Water</b>			<b>Batch: 22K0051</b>		
Diesel	ND	---	190	ug/L	1	11/03/22 03:52	NWTPH-Dx	
Oil	ND	---	381	ug/L	1	11/03/22 03:52	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 67 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>11/03/22 03:52</i>	<i>NWTPH-Dx</i>
<b>GLMW-3-1022 (A2J0940-03)</b>			<b>Matrix: Water</b>			<b>Batch: 22K0051</b>		
Diesel	ND	---	194	ug/L	1	11/03/22 04:15	NWTPH-Dx	
Oil	ND	---	388	ug/L	1	11/03/22 04:15	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 71 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>11/03/22 04:15</i>	<i>NWTPH-Dx</i>
<b>GLMW-4-1022 (A2J0940-04)</b>			<b>Matrix: Water</b>			<b>Batch: 22K0051</b>		
Diesel	ND	---	202	ug/L	1	11/03/22 04:38	NWTPH-Dx	
Oil	ND	---	404	ug/L	1	11/03/22 04:38	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 69 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>11/03/22 04:38</i>	<i>NWTPH-Dx</i>

Apex Laboratories

Philip Nerenberg, Lab Director

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	Report ID: <b>A2J0940 - 11 04 22 1522</b>
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**ANALYTICAL SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GLMW-1-1022 (A2J0940-01)</b>				<b>Matrix: Water</b>		<b>Batch: 22J1196</b>		
Gasoline Range Organics	ND	---	100	ug/L	1	10/31/22 12:37	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 102 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>10/31/22 12:37</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>109 %</i>		<i>50-150 %</i>		<i>1</i>	<i>10/31/22 12:37</i>	<i>NWTPH-Gx (MS)</i>
<b>GLMW-2-1022 (A2J0940-02)</b>				<b>Matrix: Water</b>		<b>Batch: 22J1196</b>		
Gasoline Range Organics	ND	---	100	ug/L	1	10/31/22 13:22	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>10/31/22 13:22</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>108 %</i>		<i>50-150 %</i>		<i>1</i>	<i>10/31/22 13:22</i>	<i>NWTPH-Gx (MS)</i>
<b>GLMW-3-1022 (A2J0940-03RE1)</b>				<b>Matrix: Water</b>		<b>Batch: 22K0017</b>		
Gasoline Range Organics	<b>351</b>	---	100	ug/L	1	11/01/22 16:43	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>11/01/22 16:43</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>99 %</i>		<i>50-150 %</i>		<i>1</i>	<i>11/01/22 16:43</i>	<i>NWTPH-Gx (MS)</i>
<b>GLMW-4-1022 (A2J0940-04)</b>				<b>Matrix: Water</b>		<b>Batch: 22J1197</b>		
Gasoline Range Organics	ND	---	100	ug/L	1	10/31/22 18:22	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>10/31/22 18:22</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>116 %</i>		<i>50-150 %</i>		<i>1</i>	<i>10/31/22 18:22</i>	<i>NWTPH-Gx (MS)</i>

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ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b>	Project: <b>Port of Illahee</b>	
22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2J0940 - 11 04 22 1522</b>

**ANALYTICAL SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GLMW-1-1022 (A2J0940-01)</b>			<b>Matrix: Water</b>			<b>Batch: 22J1196</b>		
Benzene	ND	---	0.200	ug/L	1	10/31/22 12:37	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	10/31/22 12:37	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	10/31/22 12:37	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	10/31/22 12:37	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		Recovery: 98 %		Limits: 80-120 %	1	10/31/22 12:37	EPA 8260D	
<i>Toluene-d8 (Surr)</i>		102 %		80-120 %	1	10/31/22 12:37	EPA 8260D	
<i>4-Bromofluorobenzene (Surr)</i>		96 %		80-120 %	1	10/31/22 12:37	EPA 8260D	
<b>GLMW-2-1022 (A2J0940-02)</b>			<b>Matrix: Water</b>			<b>Batch: 22J1196</b>		
Benzene	ND	---	0.200	ug/L	1	10/31/22 13:22	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	10/31/22 13:22	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	10/31/22 13:22	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	10/31/22 13:22	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		Recovery: 95 %		Limits: 80-120 %	1	10/31/22 13:22	EPA 8260D	
<i>Toluene-d8 (Surr)</i>		103 %		80-120 %	1	10/31/22 13:22	EPA 8260D	
<i>4-Bromofluorobenzene (Surr)</i>		95 %		80-120 %	1	10/31/22 13:22	EPA 8260D	
<b>GLMW-3-1022 (A2J0940-03RE1)</b>			<b>Matrix: Water</b>			<b>Batch: 22K0017</b>		
Benzene	ND	---	0.200	ug/L	1	11/01/22 16:43	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	11/01/22 16:43	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	11/01/22 16:43	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	11/01/22 16:43	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		Recovery: 98 %		Limits: 80-120 %	1	11/01/22 16:43	EPA 8260D	
<i>Toluene-d8 (Surr)</i>		100 %		80-120 %	1	11/01/22 16:43	EPA 8260D	
<i>4-Bromofluorobenzene (Surr)</i>		104 %		80-120 %	1	11/01/22 16:43	EPA 8260D	
<b>GLMW-4-1022 (A2J0940-04)</b>			<b>Matrix: Water</b>			<b>Batch: 22J1197</b>		
Benzene	ND	---	0.200	ug/L	1	10/31/22 18:22	EPA 8260D	
Toluene	ND	---	1.00	ug/L	1	10/31/22 18:22	EPA 8260D	
Ethylbenzene	ND	---	0.500	ug/L	1	10/31/22 18:22	EPA 8260D	
Xylenes, total	ND	---	1.50	ug/L	1	10/31/22 18:22	EPA 8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		Recovery: 91 %		Limits: 80-120 %	1	10/31/22 18:22	EPA 8260D	
<i>Toluene-d8 (Surr)</i>		103 %		80-120 %	1	10/31/22 18:22	EPA 8260D	
<i>4-Bromofluorobenzene (Surr)</i>		92 %		80-120 %	1	10/31/22 18:22	EPA 8260D	

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

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Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**ANALYTICAL SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
<b>GLMW-1-1022 (A2J0940-01)</b>				<b>Matrix: Water</b>					
Batch: 22K0039									
Lead	ND	---	0.200	ug/L	1	11/03/22 05:14	EPA 6020B		
<b>GLMW-2-1022 (A2J0940-02)</b>				<b>Matrix: Water</b>					
Batch: 22K0039									
Lead	ND	---	0.200	ug/L	1	11/03/22 05:19	EPA 6020B		
<b>GLMW-3-1022 (A2J0940-03)</b>				<b>Matrix: Water</b>					
Batch: 22K0039									
Lead	ND	---	0.200	ug/L	1	11/03/22 05:25	EPA 6020B		
<b>GLMW-4-1022 (A2J0940-04)</b>				<b>Matrix: Water</b>					
Batch: 22K0039									
Lead	ND	---	0.200	ug/L	1	11/03/22 05:30	EPA 6020B		

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**ANALYTICAL SAMPLE RESULTS**

**Dissolved Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>GLMW-1-1022 (A2J0940-01)</b>				<b>Matrix: Water</b>				
Batch: 22J1226								
Lead	ND	---	0.200	ug/L	1	11/01/22 05:13	EPA 6020B (Diss)	
<b>GLMW-3-1022 (A2J0940-03)</b>				<b>Matrix: Water</b>				
Batch: 22J1226								
Lead	ND	---	0.200	ug/L	1	11/01/22 05:29	EPA 6020B (Diss)	
<b>GLMW-4-1022 (A2J0940-04)</b>				<b>Matrix: Water</b>				
Batch: 22J1226								
Lead	ND	---	0.200	ug/L	1	11/01/22 05:34	EPA 6020B (Diss)	

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22K0051 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (22K0051-BLK1)</b>						Prepared: 11/02/22 06:31 Analyzed: 11/03/22 00:47						
<u>NWTPH-Dx</u>												
Diesel	ND	---	182	ug/L	1	---	---	---	---	---	---	
Oil	ND	---	364	ug/L	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (22K0051-BS1)</b>						Prepared: 11/02/22 06:31 Analyzed: 11/03/22 01:10						
<u>NWTPH-Dx</u>												
Diesel	934	---	200	ug/L	1	1250	---	75	36-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (22K0051-BS1)</b>						Prepared: 11/02/22 06:31 Analyzed: 11/03/22 03:05						
<u>NWTPH-Dx</u>												
Diesel	976	---	200	ug/L	1	1250	---	78	36-132%	4	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1196 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22J1196-BLK1)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 10:47									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>103 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (22J1196-BS2)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 10:25						
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	446	---	100	ug/L	1	500	---	89	80-120%	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>102 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22J1196-DUP1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 13:00						
<u>QC Source Sample: GLMW-1-1022 (A2J0940-01)</u>												
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>106 %</i>		<i>50-150 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director

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ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1197 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22J1197-BLK1)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 16:08									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>112 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (22J1197-BS2)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 15:46									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	505	---	100	ug/L	1	500	---	101	80-120%	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>112 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22J1197-DUP1)</b>			Prepared: 10/31/22 08:42 Analyzed: 11/01/22 01:02									
<u>QC Source Sample: Non-SDG (A2J0981-01)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>119 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22J1197-DUP2)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 19:51									
<u>QC Source Sample: Non-SDG (A2J0948-04)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>116 %</i>		<i>50-150 %</i>		<i>"</i>						

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--	--	---

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22K0017 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22K0017-BLK1)</b>			Prepared: 11/01/22 08:20 Analyzed: 11/01/22 15:49									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>100 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (22K0017-BS2)</b>			Prepared: 11/01/22 08:20 Analyzed: 11/01/22 15:21									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	507	---	100	ug/L	1	500	---	101	80-120%	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>98 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22K0017-DUP1)</b>			Prepared: 11/01/22 10:20 Analyzed: 11/01/22 18:58									
<u>QC Source Sample: Non-SDG (A2J1029-07)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	56.2	---	---	---	***	30%
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 101 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>101 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22K0017-DUP2)</b>			Prepared: 11/01/22 10:20 Analyzed: 11/01/22 22:35									
<u>QC Source Sample: Non-SDG (A2J0945-02)</u>												
Gasoline Range Organics	ND	---	100	ug/L	1	---	ND	---	---	---	---	30%
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 103 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>104 %</i>		<i>50-150 %</i>		<i>"</i>						

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22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2J0940 - 11 04 22 1522</b>

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1196 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22J1196-BLK1)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 10:47									
<u>EPA 8260D</u>												
Benzene	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Toluene	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Xylenes, total	ND	---	1.50	ug/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>LCS (22J1196-BS1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 10:03						
<u>EPA 8260D</u>												
Benzene	20.1	---	0.200	ug/L	1	20.0	---	100	80-120%	---	---	
Toluene	20.4	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Ethylbenzene	21.6	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
Xylenes, total	65.2	---	1.50	ug/L	1	60.0	---	109	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Duplicate (22J1196-DUP1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 13:00						
<u>QC Source Sample: GLMW-1-1022 (A2J0940-01)</u>												
<u>EPA 8260D</u>												
Benzene	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Matrix Spike (22J1196-MS1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 11:53						
<u>QC Source Sample: Non-SDG (A2J0901-01)</u>												
<u>EPA 8260D</u>												

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1196 - EPA 5030C</b>						<b>Water</b>						
<b>Matrix Spike (22J1196-MS1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 11:53						
<b>QC Source Sample: Non-SDG (A2J0901-01)</b>												
Benzene	20.4	---	0.200	ug/L	1	20.0	ND	102	79-120%	---	---	
Toluene	20.2	---	1.00	ug/L	1	20.0	ND	101	80-121%	---	---	
Ethylbenzene	21.7	---	0.500	ug/L	1	20.0	ND	109	79-121%	---	---	
Xylenes, total	66.0	---	1.50	ug/L	1	60.0	ND	110	79-121%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director



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<b>SLR Corporation-Bothell</b>	Project: <b>Port of Illahee</b>	
22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2J0940 - 11 04 22 1522</b>

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1197 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22J1197-BLK1)</b>			Prepared: 10/31/22 08:42 Analyzed: 10/31/22 16:08									
<u>EPA 8260D</u>												
Benzene	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Toluene	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Xylenes, total	ND	---	1.50	ug/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>LCS (22J1197-BS1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 15:23						
<u>EPA 8260D</u>												
Benzene	18.8	---	0.200	ug/L	1	20.0	---	94	80-120%	---	---	
Toluene	19.0	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Ethylbenzene	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Xylenes, total	62.3	---	1.50	ug/L	1	60.0	---	104	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>95 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Duplicate (22J1197-DUP1)</b>						Prepared: 10/31/22 08:42 Analyzed: 11/01/22 01:02						
<u>QC Source Sample: Non-SDG (A2J0981-01)</u>												
Benzene	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>106 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Duplicate (22J1197-DUP2)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 19:51						
<u>QC Source Sample: Non-SDG (A2J0948-04)</u>												
Benzene	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

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Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b>	Project: <b>Port of Illahee</b>	
22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2J0940 - 11 04 22 1522</b>

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1197 - EPA 5030C</b>						<b>Water</b>						
<b>Duplicate (22J1197-DUP2)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 19:51						
<b>QC Source Sample: Non-SDG (A2J0948-04)</b>												
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>104 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>94 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Matrix Spike (22J1197-MS1)</b>						Prepared: 10/31/22 08:42 Analyzed: 10/31/22 22:49						
<b>QC Source Sample: Non-SDG (A2J0948-32)</b>												
<b>EPA 8260D</b>												
Benzene	22.2	---	0.200	ug/L	1	20.0	ND	111	79-120%	---	---	
Toluene	22.2	---	1.00	ug/L	1	20.0	ND	111	80-121%	---	---	
Ethylbenzene	23.4	---	0.500	ug/L	1	20.0	ND	117	79-121%	---	---	
Xylenes, total	70.4	---	1.50	ug/L	1	60.0	ND	117	79-121%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>105 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>92 %</i>		<i>80-120 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director



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ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22K0017 - EPA 5030C</b>						<b>Water</b>						
<b>Blank (22K0017-BLK1)</b>			Prepared: 11/01/22 08:20 Analyzed: 11/01/22 15:49									
<u>EPA 8260D</u>												
Benzene	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Toluene	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Xylenes, total	ND	---	1.50	ug/L	1	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>105 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>LCS (22K0017-BS1)</b>			Prepared: 11/01/22 08:20 Analyzed: 11/01/22 14:54									
<u>EPA 8260D</u>												
Benzene	19.6	---	0.200	ug/L	1	20.0	---	98	80-120%	---	---	
Toluene	18.7	---	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
Ethylbenzene	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Xylenes, total	59.0	---	1.50	ug/L	1	60.0	---	98	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Duplicate (22K0017-DUP1)</b>			Prepared: 11/01/22 10:20 Analyzed: 11/01/22 18:58									
<u>QC Source Sample: Non-SDG (A2J1029-07)</u>												
Benzene	5.67	---	0.200	ug/L	1	---	4.93	---	---	14	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Duplicate (22K0017-DUP2)</b>			Prepared: 11/01/22 10:20 Analyzed: 11/01/22 22:35									
<u>QC Source Sample: Non-SDG (A2J0945-02)</u>												
Benzene	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
--	--	---

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22K0017 - EPA 5030C</b>						<b>Water</b>						
<b>Duplicate (22K0017-DUP2)</b>			Prepared: 11/01/22 10:20 Analyzed: 11/01/22 22:35									
<b>QC Source Sample: Non-SDG (A2J0945-02)</b>												
Ethylbenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Xylenes, total	ND	---	1.50	ug/L	1	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						
<b>Matrix Spike (22K0017-MS1)</b>						Prepared: 11/01/22 10:20 Analyzed: 11/02/22 02:11						
<b>QC Source Sample: Non-SDG (A2J0885-01)</b>												
<b>EPA 8260D</b>												
Benzene	219	---	2.00	ug/L	10	200	ND	109	79-120%	---	---	
Toluene	199	---	10.0	ug/L	10	200	ND	100	80-121%	---	---	
Ethylbenzene	228	---	5.00	ug/L	10	200	ND	114	79-121%	---	---	
Xylenes, total	651	---	15.0	ug/L	10	600	ND	109	79-121%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>99 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>80-120 %</i>		<i>"</i>						

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22K0039 - EPA 3015A</b>						<b>Water</b>						
<b>Blank (22K0039-BLK1)</b>			Prepared: 11/01/22 16:02 Analyzed: 11/03/22 04:16									
<u>EPA 6020B</u>												
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
<b>LCS (22K0039-BS1)</b>			Prepared: 11/01/22 16:02 Analyzed: 11/03/22 04:22									
<u>EPA 6020B</u>												
Lead	54.7	---	0.200	ug/L	1	55.6	---	98	80-120%	---	---	Q-41
<b>Duplicate (22K0039-DUP2)</b>			Prepared: 11/01/22 16:02 Analyzed: 11/03/22 20:52									
<u>QC Source Sample: Non-SDG (A2J0872-01RE1)</u>												
Lead	<b>0.474</b>	---	0.200	ug/L	1	---	0.473	---	---	0.1	20%	Q-16
<b>Matrix Spike (22K0039-MS2)</b>			Prepared: 11/01/22 16:02 Analyzed: 11/03/22 20:57									
<u>QC Source Sample: Non-SDG (A2J0872-01RE1)</u>												
<u>EPA 6020B</u>												
Lead	54.7	---	0.200	ug/L	1	55.6	0.473	98	75-125%	---	---	Q-16

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Philip Nerenberg, Lab Director

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Dissolved Metals by EPA 6020B (ICPMS)**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22J1226 - Matrix Matched Direct Inject</b>						<b>Water</b>						
<b>Blank (22J1226-BLK1)</b>			Prepared: 10/31/22 15:16 Analyzed: 11/01/22 03:44									
<u>EPA 6020B (Diss)</u>												
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
<b>LCS (22J1226-BS1)</b>			Prepared: 10/31/22 15:16 Analyzed: 11/01/22 03:49									
<u>EPA 6020B (Diss)</u>												
Lead	51.4	---	0.200	ug/L	1	55.6	---	92	80-120%	---	---	
<b>Duplicate (22J1226-DUP1)</b>			Prepared: 10/31/22 15:16 Analyzed: 11/01/22 03:59									
<u>QC Source Sample: Non-SDG (A2J0635-08)</u>												
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
<b>Matrix Spike (22J1226-MS1)</b>			Prepared: 10/31/22 15:16 Analyzed: 11/01/22 04:05									
<u>QC Source Sample: Non-SDG (A2J0635-08)</u>												
<u>EPA 6020B (Diss)</u>												
Lead	49.9	---	0.200	ug/L	1	55.6	ND	90	75-125%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

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**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	Report ID: <b>A2J0940 - 11 04 22 1522</b>
--	--	--

**SAMPLE PREPARATION INFORMATION**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Prep: EPA 3510C (Fuels/Acid Ext.)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 22K0051</u>							
A2J0940-01	Water	NWTPH-Dx	10/24/22 14:58	11/02/22 11:58	1050mL/5mL	1000mL/5mL	0.95
A2J0940-03	Water	NWTPH-Dx	10/24/22 16:04	11/02/22 11:58	1030mL/5mL	1000mL/5mL	0.97
A2J0940-04	Water	NWTPH-Dx	10/24/22 17:02	11/02/22 11:58	990mL/5mL	1000mL/5mL	1.01

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 22J1196</u>							
A2J0940-01	Water	NWTPH-Gx (MS)	10/24/22 14:58	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
A2J0940-02	Water	NWTPH-Gx (MS)	10/24/22 16:30	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
<u>Batch: 22J1197</u>							
A2J0940-04	Water	NWTPH-Gx (MS)	10/24/22 17:02	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
<u>Batch: 22K0017</u>							
A2J0940-03RE1	Water	NWTPH-Gx (MS)	10/24/22 16:04	11/01/22 10:20	5mL/5mL	5mL/5mL	1.00

**BTEX Compounds by EPA 8260D**

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 22J1196</u>							
A2J0940-01	Water	EPA 8260D	10/24/22 14:58	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
A2J0940-02	Water	EPA 8260D	10/24/22 16:30	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
<u>Batch: 22J1197</u>							
A2J0940-04	Water	EPA 8260D	10/24/22 17:02	10/31/22 08:42	5mL/5mL	5mL/5mL	1.00
<u>Batch: 22K0017</u>							
A2J0940-03RE1	Water	EPA 8260D	10/24/22 16:04	11/01/22 10:20	5mL/5mL	5mL/5mL	1.00

**Total Metals by EPA 6020B (ICPMS)**

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 22K0039</u>							
A2J0940-01	Water	EPA 6020B	10/24/22 14:58	11/01/22 16:02	45mL/50mL	45mL/50mL	1.00

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Philip Nerenberg, Lab Director



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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**SAMPLE PREPARATION INFORMATION**

Total Metals by EPA 6020B (ICPMS)

<u>Prep: EPA 3015A</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A2J0940-02	Water	EPA 6020B	10/24/22 16:30	11/01/22 16:02	45mL/50mL	45mL/50mL	1.00
A2J0940-03	Water	EPA 6020B	10/24/22 16:04	11/01/22 16:02	45mL/50mL	45mL/50mL	1.00
A2J0940-04	Water	EPA 6020B	10/24/22 17:02	11/01/22 16:02	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 6020B (ICPMS)

<u>Prep: Matrix Matched Direct Inject</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22J1226</u>							
A2J0940-01	Water	EPA 6020B (Diss)	10/24/22 14:58	10/31/22 15:16	45mL/50mL	45mL/50mL	1.00
A2J0940-03	Water	EPA 6020B (Diss)	10/24/22 16:04	10/31/22 15:16	45mL/50mL	45mL/50mL	1.00
A2J0940-04	Water	EPA 6020B (Diss)	10/24/22 17:02	10/31/22 15:16	45mL/50mL	45mL/50mL	1.00

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Philip Nerenberg, Lab Director

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--	--	---

**QUALIFIER DEFINITIONS**

**Client Sample and Quality Control (QC) Sample Qualifier Definitions:**

**Apex Laboratories**

- Q-16** Reanalysis of an original Batch QC sample.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.

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Philip Nerenberg, Lab Director



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**REPORTING NOTES AND CONVENTIONS:**

**Abbreviations:**

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

**Detection Limits: Limit of Detection (LOD)**

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).  
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

**Reporting Limits: Limit of Quantitation (LOQ)**

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

**Reporting Conventions:**

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.  
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.
- " dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")  
See Percent Solids section for details of dry weight analysis.
- " wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

**QC Source:**

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.  
  
Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

**Miscellaneous Notes:**

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " \*\*\* " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

**Blanks:**

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).  
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.  
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.  
For further details, please request a copy of this document.

Apex Laboratories

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

Table with 3 columns: Client (SLR Corporation-Bothell), Project (Port of Illahee), and Report ID (A2J0940 - 11 04 22 1522)

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

Philip Nerenberg (signature)

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

Table with 3 columns: Client (SLR Corporation-Bothell), Project (Port of Illahee), and Report ID (A2J0940 - 11 04 22 1522).

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Table with 6 columns: Matrix, Analysis, TNI\_ID, Analyte, TNI\_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Handwritten signature of Philip Nerenberg

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Philip Nerenberg, Lab Director



**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

**SLR Corporation-Bothell**      Project: **Port of Illahee**  
22118 20th Ave SE, Suite G202      Project Number: **128.01826.00022**  
Bothell, WA 98021      Project Manager: **Greg Lish**      **Report ID:**  
A2J0940 - 11 04 22 1522

**APEX LABS**  
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

**CHAIN OF CUSTODY**

Company: SLR      Project Mgr: Greg Lish      Lab # A2J0940 Coc 1 of 1

Address: 22118 20th Ave SE, Ste G202 Bothell WA      Project Name: Port of Illahee      Project #: 128.01826.00022

Phone: (425) 402-8800      Email: gl.lish@slrconsulting.com      PO #

Sampled by: Emily Hernandez

Site Location: WA CA

OR WA CA      AK ID \_\_\_\_\_

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx 120+ 820	NWTPH-Gx 610	8260 BTEX 8260 D	8260 Halo VOCs	8260 RBDM VOCs	8260 Halo VOCs	8270 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (9)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Cr, Cs, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, TL, V, Zn, TOTAL DISS, TCLP	TCLP Metals (9)	Total + Dissolved Lead	Frozen Archive	Hold Sample	
																								7
GLMW-1-1022	10/24/22	1455	Water	7		X	X	X																
GLMW-2-1022	1030			4		X	X	X																
GLMW-3-1022	1004			7		X	X	X																
GLMW-4-1022	1702			7		X	X	X																

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day    2 Day    3 Day    5 Day    Standard    Other: \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: _____ Printed Name: _____ Company: <u>SLR</u>	RECEIVED BY: Signature: _____ Printed Name: <u>Emily Hernandez</u> Company: <u>Apex</u>
Date: <u>10/26/22</u> Time: <u>1030</u>	Date: <u>10-27-22</u> Time: <u>12:36</u>

Apex Laboratories

*Philip Nerenberg*

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2J0940 - 11 04 22 1522</b>
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**APEX LABS COOLER RECEIPT FORM**

Client: SLR Element WO#: A2 A2J0940

Project/Project #: Port of Illahee 128.01826.00022

**Delivery Info:**  
 Date/time received: 10.27.22 @ 1236 By: DJS  
 Delivered by: Apex  Client  ESS  FedEx  UPS  Swift  Senvoy  SDS  Other

**Cooler Inspection** Date/time inspected: 10.27.22 @ 1236 By: DJS  
 Chain of Custody included? Yes  No  Custody seals? Yes  No   
 Signed/dated by client? Yes  No   
 Signed/dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>3.4</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N)  Possible reason why: \_\_\_\_\_  
 Green dots applied to out of temperature samples? Yes  No   
 Out of temperature samples form initiated? Yes  No   
**Sample Inspection:** Date/time inspected: 10/28/22 @ 905 By: KL  
 All samples intact? Yes  No  Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 Bottle labels/COCs agree? Yes  No  Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 COC/container discrepancies form initiated? Yes  No   
 Containers/volumes received appropriate for analysis? Yes  No  Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 Do VOA vials have visible headspace? Yes  No  NA   
 Comments: \_\_\_\_\_  
 Water samples: pH checked: Yes  No  NA  pH appropriate? Yes  No  NA   
 Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 Additional information: 2796 3361 2497  
 \_\_\_\_\_  
 \_\_\_\_\_

Labeled by: KL Witness: AKAC Cooler Inspected by: AJM Form Y-003 R-00

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

Wednesday, December 28, 2022

Greg Lish  
SLR Corporation-Bothell  
22118 20th Ave SE, Suite G202  
Bothell, WA 98021

RE: A2L0567 - Illahee - 128.01826.00022

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A2L0567, which was received by the laboratory on 12/14/2022 at 11:15:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: [pnerenberg@apex-labs.com](mailto:pnerenberg@apex-labs.com), or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

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Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1	2.1 degC
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This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.  
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

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Philip Nerenberg, Lab Director



**ANALYTICAL REPORT**

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ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilhaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**ANALYTICAL REPORT FOR SAMPLES**

**SAMPLE INFORMATION**

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1-10'-11'	A2L0567-01	Soil	12/12/22 13:30	12/14/22 11:15
SB-1-19'-20'	A2L0567-02	Soil	12/12/22 13:50	12/14/22 11:15
MW-8-12'-13'	A2L0567-03	Soil	12/12/22 17:30	12/14/22 11:15
MW-8-29'-30'	A2L0567-04	Soil	12/12/22 17:35	12/14/22 11:15
MW-7-12'-13'	A2L0567-05	Soil	12/13/22 13:20	12/14/22 11:15
MW-7-24'-26'	A2L0567-06	Soil	12/13/22 14:00	12/14/22 11:15

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Philip Nerenberg, Lab Director



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--	--	---

**ANALYTICAL SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>SB-1-10'-11' (A2L0567-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0738</b>		
Diesel	34.7	---	20.7	mg/kg dry	1	12/21/22 21:34	NWTPH-Dx	F-11, F-20
Oil	ND	---	41.4	mg/kg dry	1	12/21/22 21:34	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 91 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/21/22 21:34</i>	<i>NWTPH-Dx</i>	
<b>SB-1-19'-20' (A2L0567-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0738</b>		
Diesel	ND	---	21.1	mg/kg dry	1	12/21/22 21:54	NWTPH-Dx	
Oil	ND	---	42.3	mg/kg dry	1	12/21/22 21:54	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 86 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/21/22 21:54</i>	<i>NWTPH-Dx</i>	
<b>MW-8-12'-13' (A2L0567-03)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0738</b>		
Diesel	58.7	---	20.2	mg/kg dry	1	12/21/22 22:14	NWTPH-Dx	F-11, F-20
Oil	ND	---	40.5	mg/kg dry	1	12/21/22 22:14	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/21/22 22:14</i>	<i>NWTPH-Dx</i>	
<b>MW-8-29'-30' (A2L0567-04)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0738</b>		
Diesel	ND	---	21.1	mg/kg dry	1	12/21/22 22:34	NWTPH-Dx	
Oil	ND	---	42.1	mg/kg dry	1	12/21/22 22:34	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 91 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/21/22 22:34</i>	<i>NWTPH-Dx</i>	
<b>MW-7-12'-13' (A2L0567-05)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0816</b>		
Diesel	36.8	---	22.3	mg/kg dry	1	12/22/22 16:59	NWTPH-Dx	F-20
Oil	ND	---	44.6	mg/kg dry	1	12/22/22 16:59	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 90 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/22/22 16:59</i>	<i>NWTPH-Dx</i>	
<b>MW-7-24'-26' (A2L0567-06)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0816</b>		
Diesel	ND	---	24.0	mg/kg dry	1	12/22/22 17:40	NWTPH-Dx	
Oil	ND	---	48.0	mg/kg dry	1	12/22/22 17:40	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 80 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/22/22 17:40</i>	<i>NWTPH-Dx</i>	

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ANALYTICAL REPORT

**Apex Laboratories, LLC**

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ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**ANALYTICAL SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>SB-1-10'-11' (A2L0567-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	160	---	5.03	mg/kg dry	50	12/15/22 18:05	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 153 %	Limits: 50-150 %	1	12/15/22 18:05	NWTPH-Gx (MS)	S-08
1,4-Difluorobenzene (Sur)			117 %	50-150 %	1	12/15/22 18:05	NWTPH-Gx (MS)	
<b>SB-1-19'-20' (A2L0567-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	ND	---	4.82	mg/kg dry	50	12/15/22 18:32	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 101 %	Limits: 50-150 %	1	12/15/22 18:32	NWTPH-Gx (MS)	
1,4-Difluorobenzene (Sur)			100 %	50-150 %	1	12/15/22 18:32	NWTPH-Gx (MS)	
<b>MW-8-12'-13' (A2L0567-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	477	---	9.08	mg/kg dry	100	12/15/22 23:02	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 138 %	Limits: 50-150 %	1	12/15/22 23:02	NWTPH-Gx (MS)	
1,4-Difluorobenzene (Sur)			123 %	50-150 %	1	12/15/22 23:02	NWTPH-Gx (MS)	
<b>MW-8-29'-30' (A2L0567-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	ND	---	4.90	mg/kg dry	50	12/15/22 18:59	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 101 %	Limits: 50-150 %	1	12/15/22 18:59	NWTPH-Gx (MS)	
1,4-Difluorobenzene (Sur)			100 %	50-150 %	1	12/15/22 18:59	NWTPH-Gx (MS)	
<b>MW-7-12'-13' (A2L0567-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	19.5	---	5.05	mg/kg dry	50	12/15/22 20:47	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 102 %	Limits: 50-150 %	1	12/15/22 20:47	NWTPH-Gx (MS)	
1,4-Difluorobenzene (Sur)			108 %	50-150 %	1	12/15/22 20:47	NWTPH-Gx (MS)	
<b>MW-7-24'-26' (A2L0567-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Gasoline Range Organics	ND	---	5.42	mg/kg dry	50	12/15/22 19:26	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 103 %	Limits: 50-150 %	1	12/15/22 19:26	NWTPH-Gx (MS)	
1,4-Difluorobenzene (Sur)			103 %	50-150 %	1	12/15/22 19:26	NWTPH-Gx (MS)	

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**ANALYTICAL SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>SB-1-10'-11' (A2L0567-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>		
Benzene	ND	---	0.0101	mg/kg dry	50	12/15/22 18:05	5035A/8260D	
Toluene	ND	---	0.0503	mg/kg dry	50	12/15/22 18:05	5035A/8260D	
<b>Ethylbenzene</b>	<b>0.0720</b>	---	0.0252	mg/kg dry	50	12/15/22 18:05	5035A/8260D	
<b>Xylenes, total</b>	<b>0.132</b>	---	0.0755	mg/kg dry	50	12/15/22 18:05	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>12/15/22 18:05</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>		<i>103 %</i>		<i>80-120 %</i>		<i>1</i>	<i>12/15/22 18:05</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>79-120 %</i>		<i>1</i>	<i>12/15/22 18:05</i>	<i>5035A/8260D</i>
<b>SB-1-19'-20' (A2L0567-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>		
Benzene	ND	---	0.00965	mg/kg dry	50	12/15/22 18:32	5035A/8260D	
Toluene	ND	---	0.0482	mg/kg dry	50	12/15/22 18:32	5035A/8260D	
Ethylbenzene	ND	---	0.0241	mg/kg dry	50	12/15/22 18:32	5035A/8260D	
Xylenes, total	ND	---	0.0723	mg/kg dry	50	12/15/22 18:32	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>12/15/22 18:32</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>1</i>	<i>12/15/22 18:32</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>79-120 %</i>		<i>1</i>	<i>12/15/22 18:32</i>	<i>5035A/8260D</i>
<b>MW-8-12'-13' (A2L0567-03)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>		
Benzene	ND	---	0.0182	mg/kg dry	100	12/15/22 23:02	5035A/8260D	
Toluene	ND	---	0.0908	mg/kg dry	100	12/15/22 23:02	5035A/8260D	
<b>Ethylbenzene</b>	<b>0.351</b>	---	0.0454	mg/kg dry	100	12/15/22 23:02	5035A/8260D	
<b>Xylenes, total</b>	<b>0.622</b>	---	0.136	mg/kg dry	100	12/15/22 23:02	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>12/15/22 23:02</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>12/15/22 23:02</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>79-120 %</i>		<i>1</i>	<i>12/15/22 23:02</i>	<i>5035A/8260D</i>
<b>MW-8-29'-30' (A2L0567-04)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>		
Benzene	ND	---	0.00981	mg/kg dry	50	12/15/22 18:59	5035A/8260D	
Toluene	ND	---	0.0490	mg/kg dry	50	12/15/22 18:59	5035A/8260D	
<b>Ethylbenzene</b>	<b>0.0279</b>	---	0.0245	mg/kg dry	50	12/15/22 18:59	5035A/8260D	
Xylenes, total	ND	---	0.0736	mg/kg dry	50	12/15/22 18:59	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>12/15/22 18:59</i>	<i>5035A/8260D</i>
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>1</i>	<i>12/15/22 18:59</i>	<i>5035A/8260D</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>79-120 %</i>		<i>1</i>	<i>12/15/22 18:59</i>	<i>5035A/8260D</i>

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**ANALYTICAL SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-7-12'-13' (A2L0567-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Benzene	ND	---	0.0101	mg/kg dry	50	12/15/22 20:47	5035A/8260D	
Toluene	ND	---	0.0505	mg/kg dry	50	12/15/22 20:47	5035A/8260D	
<b>Ethylbenzene</b>	<b>0.0389</b>	---	0.0252	mg/kg dry	50	12/15/22 20:47	5035A/8260D	
<b>Xylenes, total</b>	<b>0.138</b>	---	0.0757	mg/kg dry	50	12/15/22 20:47	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 96 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>12/15/22 20:47</i>	<i>5035A/8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>104 %</i>	<i>80-120 %</i>	<i>1</i>	<i>12/15/22 20:47</i>	<i>5035A/8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>79-120 %</i>	<i>1</i>	<i>12/15/22 20:47</i>	<i>5035A/8260D</i>	
<b>MW-7-24'-26' (A2L0567-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0553</b>			
Benzene	ND	---	0.0108	mg/kg dry	50	12/15/22 19:26	5035A/8260D	
Toluene	ND	---	0.0542	mg/kg dry	50	12/15/22 19:26	5035A/8260D	
Ethylbenzene	ND	---	0.0271	mg/kg dry	50	12/15/22 19:26	5035A/8260D	
Xylenes, total	ND	---	0.0813	mg/kg dry	50	12/15/22 19:26	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 96 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>12/15/22 19:26</i>	<i>5035A/8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>	<i>1</i>	<i>12/15/22 19:26</i>	<i>5035A/8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>	<i>79-120 %</i>	<i>1</i>	<i>12/15/22 19:26</i>	<i>5035A/8260D</i>	

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**ANALYTICAL SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>SB-1-10'-11' (A2L0567-01)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>2.12</b>	---	0.209	mg/kg dry	10	12/21/22 19:38	EPA 6020B	
<b>SB-1-19'-20' (A2L0567-02)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>1.79</b>	---	0.232	mg/kg dry	10	12/21/22 19:53	EPA 6020B	
<b>MW-8-12'-13' (A2L0567-03)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>1.27</b>	---	0.214	mg/kg dry	10	12/21/22 19:58	EPA 6020B	
<b>MW-8-29'-30' (A2L0567-04)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>1.11</b>	---	0.232	mg/kg dry	10	12/21/22 20:03	EPA 6020B	
<b>MW-7-12'-13' (A2L0567-05)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>1.99</b>	---	0.237	mg/kg dry	10	12/21/22 20:08	EPA 6020B	
<b>MW-7-24'-26' (A2L0567-06)</b>				<b>Matrix: Soil</b>				
Batch: 22L0741								
<b>Lead</b>	<b>1.83</b>	---	0.249	mg/kg dry	10	12/21/22 20:13	EPA 6020B	

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**ANALYTICAL SAMPLE RESULTS**

Percent Dry Weight									
Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
<b>SB-1-10'-11' (A2L0567-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	96.3	---	1.00	%	1	12/19/22 05:29	EPA 8000D		
<b>SB-1-19'-20' (A2L0567-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	88.2	---	1.00	%	1	12/19/22 05:29	EPA 8000D		
<b>MW-8-12'-13' (A2L0567-03)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	93.8	---	1.00	%	1	12/19/22 05:29	EPA 8000D		
<b>MW-8-29'-30' (A2L0567-04)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	87.2	---	1.00	%	1	12/19/22 05:29	EPA 8000D		
<b>MW-7-12'-13' (A2L0567-05)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	88.7	---	1.00	%	1	12/19/22 05:29	EPA 8000D		
<b>MW-7-24'-26' (A2L0567-06)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0621</b>			
% Solids	83.2	---	1.00	%	1	12/19/22 05:29	EPA 8000D		

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0738 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (22L0738-BLK1)</b>			Prepared: 12/21/22 06:08 Analyzed: 12/21/22 20:54									
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.2	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	36.4	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (22L0738-BS1)</b>			Prepared: 12/21/22 06:08 Analyzed: 12/21/22 21:14									
<u>NWTPH-Dx</u>												
Diesel	114	---	20.0	mg/kg wet	1	125	---	91	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0738-DUP1)</b>			Prepared: 12/21/22 06:08 Analyzed: 12/21/22 23:34									
<u>QC Source Sample: Non-SDG (A2L0719-10)</u>												
Diesel	ND	---	21.9	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	43.9	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0738-DUP2)</b>			Prepared: 12/21/22 17:54 Analyzed: 12/22/22 00:33									
<u>QC Source Sample: Non-SDG (A2L0848-04)</u>												
Diesel	ND	---	26.2	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	52.3	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Batch 22L0816 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (22L0816-BLK1)</b>			Prepared: 12/22/22 09:11 Analyzed: 12/22/22 14:59									
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.2	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	36.4	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 82 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (22L0816-BS1)</b>			Prepared: 12/22/22 09:11 Analyzed: 12/22/22 15:19									
<u>NWTPH-Dx</u>												
Diesel	104	---	20.0	mg/kg wet	1	125	---	83	38-132%	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0816 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>LCS (22L0816-BS1)</b>						Prepared: 12/22/22 09:11 Analyzed: 12/22/22 15:19						
<i>Surr: o-Terphenyl (Surr)</i>						<i>Recovery: 87 % Limits: 50-150 % Dilution: 1x</i>						
<b>Duplicate (22L0816-DUP1)</b>						Prepared: 12/22/22 09:11 Analyzed: 12/22/22 17:19						
<b>QC Source Sample: MW-7-12'-13' (A2L0567-05)</b>												
<b>NWTPH-Dx</b>												
Diesel	38.7	---	22.3	mg/kg dry	1	---	36.8	---	---	5	30%	F-20
Oil	ND	---	44.6	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>						<i>Recovery: 90 % Limits: 50-150 % Dilution: 1x</i>						
<b>Duplicate (22L0816-DUP2)</b>						Prepared: 12/22/22 09:11 Analyzed: 12/22/22 19:02						
<b>QC Source Sample: Non-SDG (A2L0854-03)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	---	30.3	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	159	---	60.6	mg/kg dry	1	---	171	---	---	7	30%	F-03
<i>Surr: o-Terphenyl (Surr)</i>						<i>Recovery: 77 % Limits: 50-150 % Dilution: 1x</i>						
<b>Matrix Spike (22L0816-MS1)</b>						Prepared: 12/22/22 09:12 Analyzed: 12/22/22 15:59						
<b>QC Source Sample: Non-SDG (A2L0517-01)</b>												
<b>NWTPH-Dx</b>												
Diesel	232	---		ug/mL	1	250	ND	90	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>						<i>Recovery: 87 % Limits: 50-150 % Dilution: 1x</i>						
<b>Matrix Spike Dup (22L0816-MSD1)</b>						Prepared: 12/22/22 09:12 Analyzed: 12/22/22 16:19						
<b>QC Source Sample: Non-SDG (A2L0517-01)</b>												
<b>NWTPH-Dx</b>												
Diesel	343	---		ug/mL	1	250	ND	135	38-132%	39	30%	Q-04
<i>Surr: o-Terphenyl (Surr)</i>						<i>Recovery: 88 % Limits: 50-150 % Dilution: 1x</i>						

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0553 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (22L0553-BLK1)</b>			Prepared: 12/15/22 09:57 Analyzed: 12/15/22 12:41									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>96 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (22L0553-BS2)</b>			Prepared: 12/15/22 09:57 Analyzed: 12/15/22 12:14									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	26.3	---	5.00	mg/kg wet	50	25.0	---	105	80-120%	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 102 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>99 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22L0553-DUP1)</b>			Prepared: 12/14/22 17:00 Analyzed: 12/15/22 13:35									<b>V-15</b>
<u>QC Source Sample: Non-SDG (A2L0577-01)</u>												
Gasoline Range Organics	ND	---	4.94	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 103 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>101 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22L0553-DUP2)</b>			Prepared: 12/13/22 13:00 Analyzed: 12/15/22 22:08									
<u>QC Source Sample: Non-SDG (A2L0579-01)</u>												
Gasoline Range Organics	<b>1360</b>	---	35.8	mg/kg dry	200	---	1360	---	---	0.7	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 122 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>97 %</i>		<i>50-150 %</i>		<i>"</i>						

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22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2L0567 - 12 28 22 1730</b>

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0553 - EPA 5035A</b>												
<b>Soil</b>												
<b>Blank (22L0553-BLK1)</b>												
Prepared: 12/15/22 09:57 Analyzed: 12/15/22 12:41												
<u>5035A/8260D</u>												
Benzene	ND	---	0.00667	mg/kg wet	50	---	---	---	---	---	---	
Toluene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Xylenes, total	ND	---	0.0500	mg/kg wet	50	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 97 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 102 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 79-120 % "</i>												
<b>LCS (22L0553-BS1)</b>												
Prepared: 12/15/22 09:57 Analyzed: 12/15/22 11:47												
<u>5035A/8260D</u>												
Benzene	0.939	---	0.0100	mg/kg wet	50	1.00	---	94	80-120%	---	---	
Toluene	1.04	---	0.0500	mg/kg wet	50	1.00	---	104	80-120%	---	---	
Ethylbenzene	1.04	---	0.0250	mg/kg wet	50	1.00	---	104	80-120%	---	---	
Xylenes, total	3.11	---	0.0750	mg/kg wet	50	3.00	---	104	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 95 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 103 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 97 % 79-120 % "</i>												
<b>Duplicate (22L0553-DUP1)</b>												
Prepared: 12/14/22 17:00 Analyzed: 12/15/22 13:35												
<u>QC Source Sample: Non-SDG (A2L0577-01)</u>												
Benzene	ND	---	0.00989	mg/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	---	0.0494	mg/kg dry	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.0247	mg/kg dry	50	---	ND	---	---	---	30%	
Xylenes, total	ND	---	0.0742	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 97 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 101 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 101 % 79-120 % "</i>												
<b>Duplicate (22L0553-DUP2)</b>												
Prepared: 12/13/22 13:00 Analyzed: 12/15/22 22:08												
<u>QC Source Sample: Non-SDG (A2L0579-01)</u>												
Benzene	<b>0.107</b>	---	0.0716	mg/kg dry	200	---	0.140	---	---	26	30%	
Toluene	ND	---	0.358	mg/kg dry	200	---	ND	---	---	---	30%	

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0553 - EPA 5035A</b>						<b>Soil</b>						
<b>Duplicate (22L0553-DUP2)</b>			Prepared: 12/13/22 13:00 Analyzed: 12/15/22 22:08									
<b>QC Source Sample: Non-SDG (A2L0579-01)</b>												
Ethylbenzene	9.34	---	0.179	mg/kg dry	200	---	9.41	---	---	0.7	30%	
Xylenes, total	39.0	---	0.537	mg/kg dry	200	---	38.8	---	---	0.6	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>79-120 %</i>		<i>"</i>						
<b>Matrix Spike (22L0553-MS1)</b>						Prepared: 12/14/22 16:25 Analyzed: 12/15/22 17:11						
<b>QC Source Sample: Non-SDG (A2L0582-03)</b>												
<b>5035A/8260D</b>												
Benzene	1010	---		ng/mL	50	1000	ND	101	77-121%	---	---	
Toluene	1090	---		ng/mL	50	1000	11.5	108	77-121%	---	---	
Ethylbenzene	1080	---		ng/mL	50	1000	ND	108	76-122%	---	---	
Xylenes, total	3230	---		ng/mL	50	3000	18.0	107	78-124%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>79-120 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Illehee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0741 - EPA 3051A</b>						<b>Soil</b>						
<b>Blank (22L0741-BLK1)</b>			Prepared: 12/21/22 06:47 Analyzed: 12/21/22 19:18									
<u>EPA 6020B</u>												
Lead	ND	---	0.192	mg/kg wet	10	---	---	---	---	---	---	
<b>LCS (22L0741-BS1)</b>			Prepared: 12/21/22 06:47 Analyzed: 12/21/22 19:33									
<u>EPA 6020B</u>												
Lead	49.7	---	0.200	mg/kg wet	10	50.0	---	99	80-120%	---	---	
<b>Duplicate (22L0741-DUP1)</b>			Prepared: 12/21/22 06:47 Analyzed: 12/21/22 19:43									
<u>QC Source Sample: SB-1-10'-11' (A2L0567-01)</u>												
<u>EPA 6020B</u>												
Lead	<b>2.06</b>	---	0.203	mg/kg dry	10	---	2.12	---	---	3	20%	
<b>Matrix Spike (22L0741-MS1)</b>			Prepared: 12/21/22 06:47 Analyzed: 12/21/22 19:48									
<u>QC Source Sample: SB-1-10'-11' (A2L0567-01)</u>												
<u>EPA 6020B</u>												
Lead	510	---		ug/L	10	500	19.7	98	75-125%	---	---	

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Percent Dry Weight**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0621 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (22L0621-DUP1)</b>			Prepared: 12/16/22 11:56 Analyzed: 12/19/22 05:29									
<u>QC Source Sample: Non-SDG (A2K0581-03)</u>												
% Solids	56.8	---	1.00	%	1	---	54.2	---	---	5	10%	
<b>Duplicate (22L0621-DUP2)</b>			Prepared: 12/16/22 11:56 Analyzed: 12/19/22 05:29									
<u>QC Source Sample: Non-SDG (A2L0426-01)</u>												
% Solids	78.5	---	1.00	%	1	---	77.6	---	---	1	10%	
<b>Duplicate (22L0621-DUP3)</b>			Prepared: 12/16/22 11:56 Analyzed: 12/19/22 05:29									
<u>QC Source Sample: Non-SDG (A2L0426-02)</u>												
% Solids	76.3	---	1.00	%	1	---	75.9	---	---	0.5	10%	
<b>Duplicate (22L0621-DUP4)</b>			Prepared: 12/16/22 11:56 Analyzed: 12/19/22 05:29									
<u>QC Source Sample: Non-SDG (A2L0472-01)</u>												
% Solids	88.1	---	1.00	%	1	---	87.9	---	---	0.3	10%	
<b>Duplicate (22L0621-DUP5)</b>			Prepared: 12/16/22 11:56 Analyzed: 12/19/22 05:29									
<u>QC Source Sample: Non-SDG (A2L0652-03)</u>												
% Solids	79.1	---	1.00	%	1	---	82.6	---	---	4	10%	<b>TEMP</b>

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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22118 20th Ave SE, Suite G202	Project Number: <b>128.01826.00022</b>	<b>Report ID:</b>
Bothell, WA 98021	Project Manager: <b>Greg Lish</b>	<b>A2L0567 - 12 28 22 1730</b>

**SAMPLE PREPARATION INFORMATION**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0738</u>							
A2L0567-01	Soil	NWTPH-Dx	12/12/22 13:30	12/21/22 10:04	10.04g/5mL	10g/5mL	1.00
A2L0567-02	Soil	NWTPH-Dx	12/12/22 13:50	12/21/22 10:04	10.72g/5mL	10g/5mL	0.93
A2L0567-03	Soil	NWTPH-Dx	12/12/22 17:30	12/21/22 10:04	10.54g/5mL	10g/5mL	0.95
A2L0567-04	Soil	NWTPH-Dx	12/12/22 17:35	12/21/22 10:04	10.89g/5mL	10g/5mL	0.92
<u>Batch: 22L0816</u>							
A2L0567-05	Soil	NWTPH-Dx	12/13/22 13:20	12/22/22 09:11	10.11g/5mL	10g/5mL	0.99
A2L0567-06	Soil	NWTPH-Dx	12/13/22 14:00	12/22/22 09:11	10.02g/5mL	10g/5mL	1.00

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Prep: EPA 5035A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0553</u>							
A2L0567-01	Soil	NWTPH-Gx (MS)	12/12/22 13:30	12/12/22 13:30	5.36g/5mL	5g/5mL	0.93
A2L0567-02	Soil	NWTPH-Gx (MS)	12/12/22 13:50	12/12/22 13:50	6.82g/5mL	5g/5mL	0.73
A2L0567-03	Soil	NWTPH-Gx (MS)	12/12/22 17:30	12/12/22 17:30	6.33g/5mL	5g/5mL	0.79
A2L0567-04	Soil	NWTPH-Gx (MS)	12/12/22 17:35	12/12/22 17:35	6.87g/5mL	5g/5mL	0.73
A2L0567-05	Soil	NWTPH-Gx (MS)	12/13/22 13:20	12/13/22 13:20	6.39g/5mL	5g/5mL	0.78
A2L0567-06	Soil	NWTPH-Gx (MS)	12/13/22 14:00	12/13/22 14:00	6.82g/5mL	5g/5mL	0.73

**BTEX Compounds by EPA 8260D**

Prep: EPA 5035A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0553</u>							
A2L0567-01	Soil	5035A/8260D	12/12/22 13:30	12/12/22 13:30	5.36g/5mL	5g/5mL	0.93
A2L0567-02	Soil	5035A/8260D	12/12/22 13:50	12/12/22 13:50	6.82g/5mL	5g/5mL	0.73
A2L0567-03	Soil	5035A/8260D	12/12/22 17:30	12/12/22 17:30	6.33g/5mL	5g/5mL	0.79
A2L0567-04	Soil	5035A/8260D	12/12/22 17:35	12/12/22 17:35	6.87g/5mL	5g/5mL	0.73
A2L0567-05	Soil	5035A/8260D	12/13/22 13:20	12/13/22 13:20	6.39g/5mL	5g/5mL	0.78
A2L0567-06	Soil	5035A/8260D	12/13/22 14:00	12/13/22 14:00	6.82g/5mL	5g/5mL	0.73

**Total Metals by EPA 6020B (ICPMS)**

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Illehec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
--	--	---

**SAMPLE PREPARATION INFORMATION**

Total Metals by EPA 6020B (ICPMS)

<u>Prep: EPA 3051A</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0741</u>							
A2L0567-01	Soil	EPA 6020B	12/12/22 13:30	12/21/22 06:47	0.496g/50mL	0.5g/50mL	1.01
A2L0567-02	Soil	EPA 6020B	12/12/22 13:50	12/21/22 06:47	0.488g/50mL	0.5g/50mL	1.02
A2L0567-03	Soil	EPA 6020B	12/12/22 17:30	12/21/22 06:47	0.498g/50mL	0.5g/50mL	1.00
A2L0567-04	Soil	EPA 6020B	12/12/22 17:35	12/21/22 06:47	0.495g/50mL	0.5g/50mL	1.01
A2L0567-05	Soil	EPA 6020B	12/13/22 13:20	12/21/22 06:47	0.475g/50mL	0.5g/50mL	1.05
A2L0567-06	Soil	EPA 6020B	12/13/22 14:00	12/21/22 06:47	0.483g/50mL	0.5g/50mL	1.04

Percent Dry Weight

<u>Prep: Total Solids (Dry Weight)</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0621</u>							
A2L0567-01	Soil	EPA 8000D	12/12/22 13:30	12/16/22 11:56			NA
A2L0567-02	Soil	EPA 8000D	12/12/22 13:50	12/16/22 11:56			NA
A2L0567-03	Soil	EPA 8000D	12/12/22 17:30	12/16/22 11:56			NA
A2L0567-04	Soil	EPA 8000D	12/12/22 17:35	12/16/22 11:56			NA
A2L0567-05	Soil	EPA 8000D	12/13/22 13:20	12/16/22 11:56			NA
A2L0567-06	Soil	EPA 8000D	12/13/22 14:00	12/16/22 11:56			NA

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Philip Nerenberg, Lab Director

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**QUALIFIER DEFINITIONS**

**Client Sample and Quality Control (QC) Sample Qualifier Definitions:**

**Apex Laboratories**

- F-03** The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- F-11** The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
- F-20** Result for Diesel is Estimated due to overlap from Gasoline Range Organics or other VOCs.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- S-08** TPH-Gx Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract. See 8260 results for accurate Surrogate recovery.
- TEMP** Sample was received outside of recommended temperature. See Case Narrative.
- V-15** Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilhaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**REPORTING NOTES AND CONVENTIONS:**

**Abbreviations:**

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

**Detection Limits: Limit of Detection (LOD)**

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).  
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

**Reporting Limits: Limit of Quantitation (LOQ)**

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

**Reporting Conventions:**

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.  
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.
- " dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")  
See Percent Solids section for details of dry weight analysis.
- " wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

**QC Source:**

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.  
  
Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

**Miscellaneous Notes:**

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " \*\*\* " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

**Blanks:**

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).  
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.  
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.  
For further details, please request a copy of this document.

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**REPORTING NOTES AND CONVENTIONS (Cont.):**

**Blanks (Cont.):**

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

**Preparation Notes:**

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

**Sampling and Preservation Notes:**

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Table with 3 columns: Client (SLR Corporation-Bothell), Project (Illahec), and Report ID (A2L0567 - 12 28 22 1730)

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Table header with columns: Matrix, Analysis, TNI\_ID, Analyte, TNI\_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Handwritten signature of Philip Nerenberg

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Ilahaec</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0567 - 12 28 22 1730</b>
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**APEX LABS**  
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

**CHAIN OF CUSTODY**

Lab # **A2L0567** coc 1 of 1

Company: <b>SLR</b>	Project Mgr: <b>Greg Lish</b>	Project Name: <b>ILHAHEE</b>	Project #: <b>128.01826.00022</b>																			
Address: <b>22118 20th Ave SE #G202, Bothell, WA</b>		Phone: <b>425 402 3300</b>		Email: <b>glish@slrconsulting.com</b>		PO #																
Sampled by: <b>Ashley Piles</b> Site Location: <b>BREMERTON</b> State: <b>WA</b> County: <b>Kitsap</b>																						
SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-DX	NWTPH-GX	8260 RTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	R CRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Bi, Br, Cd, Cr, Cu, Fe, Hg, K, Mn, Mo, Ni, Pb, Se, Sn, Tl, V, Zn	TCLP Metals (8)	Hold Sample	Frozen Archive	
SB-1-10'-11'	12/14/22	1330	S	4		X	X	X														
SB-1-19'-20'	1350		S	4		X	X	X														
MW-3-12'-13'	1730		S	4		X	X	X														
MW-3-29'-30'	1735		S	4		X	X	X														
MW-7-12'-13'	12/13/22	1320	S	4		X	X	X														
MW-7-24'-26'	12/19/22	1400	S	4		X	X	X														

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day    2 Day    3 Day    5 Day    **Standard**    Other: \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <i>Ashley Piles</i> Date: 12/14/22 Printed Name: <b>Ashley Piles</b> Time: 11:15 Company: <b>SLR</b>	RECEIVED BY: Signature: <i>Greg Lish</i> Date: 12/14/22 Printed Name: <b>Greg Lish</b> Time: 11:15 Company: <b>Apex</b>
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Form V-002 R-00

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Philip Nerenberg

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

SLR Corporation-Bothell
22118 20th Ave SE, Suite G202
Bothell, WA 98021
Project: Illahec
Project Number: 128.01826.00022
Project Manager: Greg Lish
Report ID: A2L0567 - 12 28 22 1730

APEX LABS COOLER RECEIPT FORM

Client: SLR Element WO#: A2L0567

Project/Project #: Illahec / 128.01826 - 00022

Delivery Info:

Date/time received: 12/14/22 @ 11:15 By: RGM
Delivered by: Apex Client X ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 12/14/22 @ 11:15 By: RGM

Chain of Custody included? Yes X No Custody seals? Yes No X

Signed/dated by client? Yes X No

Signed/dated by Apex? Yes X No

Table with 7 columns: Cooler #1 to Cooler #7. Rows include Temperature (2.1), Received on ice (Y), Temp. blanks (N), Ice type (Real), Condition (In).

Cooler out of temp? (Y/N) Possible reason why:
Green dots applied to out of temperature samples? Yes No

Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 12/14/22 @ 12:53 By: RHP

All samples intact? Yes X No Comments:

Bottle labels/COCs agree? Yes X No Comments:

COC/container discrepancies form initiated? Yes No X

Containers/volumes received appropriate for analysis? Yes X No Comments:

Do VOA vials have visible headspace? Yes No NA X

Comments:

Water samples: pH checked: Yes No NA X pH appropriate? Yes No NA X

Comments:

Additional information:

Labeled by: RHP Witness: [Signature] Cooler Inspected by: RHP

Form Y-003 R-00

Philip Nerenberg (Signature)



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

Thursday, December 22, 2022

Greg Lish  
SLR Corporation-Bothell  
22118 20th Ave SE, Suite G202  
Bothell, WA 98021

RE: A2L0687 - Port of Illahee - 128.01826.00022

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A2L0687, which was received by the laboratory on 12/16/2022 at 10:58:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: [pnerenberg@apex-labs.com](mailto:pnerenberg@apex-labs.com), or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

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Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1	0.7 degC
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This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.  
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

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Philip Nerenberg, Lab Director



**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

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503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
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**ANALYTICAL REPORT FOR SAMPLES**

**SAMPLE INFORMATION**

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-7'-8'	A2L0687-01	Soil	12/14/22 15:40	12/16/22 10:58
MW-5-14'-15'	A2L0687-02	Soil	12/14/22 15:43	12/16/22 10:58

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Philip Nerenberg, Lab Director



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**ANALYTICAL SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-5-7'-8' (A2L0687-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0737</b>		
Diesel	ND	---	23.3	mg/kg dry	1	12/22/22 00:11	NWTPH-Dx	
Oil	ND	---	46.6	mg/kg dry	1	12/22/22 00:11	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/22/22 00:11</i>	<i>NWTPH-Dx</i>
<b>MW-5-14'-15' (A2L0687-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0690</b>		
Diesel	ND	---	21.1	mg/kg dry	1	12/20/22 23:23	NWTPH-Dx	
Oil	ND	---	42.2	mg/kg dry	1	12/20/22 23:23	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/20/22 23:23</i>	<i>NWTPH-Dx</i>

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Philip Nerenberg, Lab Director

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
--	--	---

**ANALYTICAL SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-5-7'-8' (A2L0687-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0657</b>		
Gasoline Range Organics	ND	---	6.89	mg/kg dry	50	12/19/22 15:03	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/19/22 15:03</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>105 %</i>		<i>50-150 %</i>		<i>1</i>	<i>12/19/22 15:03</i>	<i>NWTPH-Gx (MS)</i>
<b>MW-5-14'-15' (A2L0687-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0657</b>		
Gasoline Range Organics	ND	---	4.82	mg/kg dry	50	12/19/22 15:30	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 103 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/19/22 15:30</i>	<i>NWTPH-Gx (MS)</i>
<i>1,4-Difluorobenzene (Sur)</i>		<i>106 %</i>		<i>50-150 %</i>		<i>1</i>	<i>12/19/22 15:30</i>	<i>NWTPH-Gx (MS)</i>

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
--	--	---

**ANALYTICAL SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-5-7'-8' (A2L0687-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0657</b>			
Benzene	ND	---	0.0138	mg/kg dry	50	12/19/22 15:03	5035A/8260D	
Toluene	ND	---	0.0689	mg/kg dry	50	12/19/22 15:03	5035A/8260D	
Ethylbenzene	ND	---	0.0344	mg/kg dry	50	12/19/22 15:03	5035A/8260D	
Xylenes, total	ND	---	0.103	mg/kg dry	50	12/19/22 15:03	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>12/19/22 15:03</i>	<i>5035A/8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>103 %</i>	<i>80-120 %</i>	<i>1</i>	<i>12/19/22 15:03</i>	<i>5035A/8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>79-120 %</i>	<i>1</i>	<i>12/19/22 15:03</i>	<i>5035A/8260D</i>	
<b>MW-5-14'-15' (A2L0687-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 22L0657</b>			
Benzene	ND	---	0.00965	mg/kg dry	50	12/19/22 15:30	5035A/8260D	
Toluene	ND	---	0.0482	mg/kg dry	50	12/19/22 15:30	5035A/8260D	
Ethylbenzene	ND	---	0.0241	mg/kg dry	50	12/19/22 15:30	5035A/8260D	
Xylenes, total	ND	---	0.0724	mg/kg dry	50	12/19/22 15:30	5035A/8260D	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 80-120 %</i>	<i>1</i>	<i>12/19/22 15:30</i>	<i>5035A/8260D</i>	
<i>Toluene-d8 (Surr)</i>			<i>103 %</i>	<i>80-120 %</i>	<i>1</i>	<i>12/19/22 15:30</i>	<i>5035A/8260D</i>	
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>79-120 %</i>	<i>1</i>	<i>12/19/22 15:30</i>	<i>5035A/8260D</i>	

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503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
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**ANALYTICAL SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-5-7'-8' (A2L0687-01)</b>				<b>Matrix: Soil</b>				
Batch: 22L0689								
<b>Lead</b>	<b>1.57</b>	---	0.226	mg/kg dry	10	12/20/22 21:37	EPA 6020B	
<b>MW-5-14'-15' (A2L0687-02)</b>				<b>Matrix: Soil</b>				
Batch: 22L0689								
<b>Lead</b>	<b>1.09</b>	---	0.206	mg/kg dry	10	12/20/22 21:42	EPA 6020B	

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**ANALYTICAL SAMPLE RESULTS**

**Percent Dry Weight**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
<b>MW-5-7'-8' (A2L0687-01)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0652</b>		
% Solids	85.6	---	1.00	%	1	12/20/22 06:59	EPA 8000D	
<b>MW-5-14'-15' (A2L0687-02)</b>				<b>Matrix: Soil</b>		<b>Batch: 22L0652</b>		
% Solids	93.8	---	1.00	%	1	12/20/22 06:59	EPA 8000D	

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0690 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (22L0690-BLK1)</b>						Prepared: 12/20/22 07:05 Analyzed: 12/20/22 20:42						
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.2	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	36.4	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (22L0690-BS1)</b>						Prepared: 12/20/22 07:05 Analyzed: 12/20/22 21:02						
<u>NWTPH-Dx</u>												
Diesel	118	---	20.0	mg/kg wet	1	125	---	95	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0690-DUP1)</b>						Prepared: 12/20/22 07:05 Analyzed: 12/20/22 21:42						
<u>QC Source Sample: Non-SDG (A2L0618-01)</u>												
Diesel	ND	---	24.2	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	48.3	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 85 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0690-DUP2)</b>						Prepared: 12/20/22 07:05 Analyzed: 12/21/22 01:03						
<u>QC Source Sample: Non-SDG (A2L0740-05)</u>												
Diesel	ND	---	25.9	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	51.7	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Batch 22L0737 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (22L0737-BLK1)</b>						Prepared: 12/21/22 06:06 Analyzed: 12/21/22 10:35						
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.2	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	36.4	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (22L0737-BS1)</b>						Prepared: 12/21/22 06:06 Analyzed: 12/21/22 10:55						
<u>NWTPH-Dx</u>												
Diesel	112	---	20.0	mg/kg wet	1	125	---	89	38-132%	---	---	

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Philip Nerenberg, Lab Director



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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0737 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>LCS (22L0737-BS1)</b>						Prepared: 12/21/22 06:06 Analyzed: 12/21/22 10:55						
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0737-DUP1)</b>						Prepared: 12/21/22 06:06 Analyzed: 12/21/22 11:35						
<b>QC Source Sample: Non-SDG (A2L0603-01)</b>												
Diesel	ND	---	28.1	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	<b>157</b>	---	56.2	mg/kg dry	1	---	86.1	---	---	<b>58</b>	<b>30%</b>	F-03, Q-05
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 85 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>Duplicate (22L0737-DUP2)</b>						Prepared: 12/21/22 06:06 Analyzed: 12/21/22 12:20						
<b>QC Source Sample: Non-SDG (A2L0719-09)</b>												
Diesel	ND	---	22.6	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	45.3	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0657 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (22L0657-BLK1)</b>			Prepared: 12/19/22 07:51 Analyzed: 12/19/22 13:06									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 102 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>104 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (22L0657-BS2)</b>			Prepared: 12/19/22 07:51 Analyzed: 12/19/22 12:39									
<u>NWTPH-Gx (MS)</u>												
Gasoline Range Organics	25.8	---	5.00	mg/kg wet	50	25.0	---	103	80-120%	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 102 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>106 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22L0657-DUP1)</b>			Prepared: 12/15/22 14:00 Analyzed: 12/19/22 14:09									
<u>QC Source Sample: Non-SDG (A2L0700-01)</u>												
Gasoline Range Organics	ND	---	8.30	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 106 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>106 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (22L0657-DUP2)</b>			Prepared: 12/16/22 11:05 Analyzed: 12/19/22 16:51									
<u>QC Source Sample: Non-SDG (A2L0685-02)</u>												
Gasoline Range Organics	ND	---	6.06	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 105 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>107 %</i>		<i>50-150 %</i>		<i>"</i>						

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0657 - EPA 5035A</b>												
<b>Soil</b>												
<b>Blank (22L0657-BLK1)</b>												
Prepared: 12/19/22 07:51 Analyzed: 12/19/22 13:06												
<u>5035A/8260D</u>												
Benzene	ND	---	0.00667	mg/kg wet	50	---	---	---	---	---	---	
Toluene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Xylenes, total	ND	---	0.0500	mg/kg wet	50	---	---	---	---	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 93 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 104 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 100 % 79-120 % "</i>												
<b>LCS (22L0657-BS1)</b>												
Prepared: 12/19/22 07:51 Analyzed: 12/19/22 12:11												
<u>5035A/8260D</u>												
Benzene	0.939	---	0.0100	mg/kg wet	50	1.00	---	94	80-120%	---	---	
Toluene	1.01	---	0.0500	mg/kg wet	50	1.00	---	101	80-120%	---	---	
Ethylbenzene	1.01	---	0.0250	mg/kg wet	50	1.00	---	101	80-120%	---	---	
Xylenes, total	3.00	---	0.0750	mg/kg wet	50	3.00	---	100	80-120%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 93 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 105 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 96 % 79-120 % "</i>												
<b>Duplicate (22L0657-DUP1)</b>												
Prepared: 12/15/22 14:00 Analyzed: 12/19/22 14:09												
<u>QC Source Sample: Non-SDG (A2L0700-01)</u>												
Benzene	ND	---	0.0166	mg/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	---	0.0830	mg/kg dry	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	0.0415	mg/kg dry	50	---	ND	---	---	---	30%	
Xylenes, total	ND	---	0.125	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 93 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 101 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 79-120 % "</i>												
<b>Duplicate (22L0657-DUP2)</b>												
Prepared: 12/16/22 11:05 Analyzed: 12/19/22 16:51												
<u>QC Source Sample: Non-SDG (A2L0685-02)</u>												
Benzene	ND	---	0.0121	mg/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	---	0.0606	mg/kg dry	50	---	ND	---	---	---	30%	

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**BTEX Compounds by EPA 8260D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0657 - EPA 5035A</b>						<b>Soil</b>						
<b>Duplicate (22L0657-DUP2)</b>						Prepared: 12/16/22 11:05 Analyzed: 12/19/22 16:51						
<b>QC Source Sample: Non-SDG (A2L0685-02)</b>												
Ethylbenzene	ND	---	0.0303	mg/kg dry	50	---	ND	---	---	---	30%	
Xylenes, total	ND	---	0.0909	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>79-120 %</i>		<i>"</i>						
<b>Matrix Spike (22L0657-MS1)</b>						Prepared: 12/16/22 14:53 Analyzed: 12/19/22 20:00						<b>V-15</b>
<b>QC Source Sample: Non-SDG (A2L0676-01)</b>												
<b>5035A/8260D</b>												
Benzene	1.51	---	0.0150	mg/kg dry	50	1.50	ND	101	77-121%	---	---	
Toluene	1.63	---	0.0749	mg/kg dry	50	1.50	ND	109	77-121%	---	---	
Ethylbenzene	1.61	---	0.0374	mg/kg dry	50	1.50	ND	107	76-122%	---	---	
Xylenes, total	4.73	---	0.112	mg/kg dry	50	4.49	ND	105	78-124%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>105 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>79-120 %</i>		<i>"</i>						

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**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Total Metals by EPA 6020B (ICPMS)**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0689 - EPA 3051A</b>						<b>Soil</b>						
<b>Blank (22L0689-BLK1)</b>			Prepared: 12/20/22 06:51 Analyzed: 12/20/22 21:02									
<u>EPA 6020B</u>												
Lead	ND	---	0.192	mg/kg wet	10	---	---	---	---	---	---	
<b>LCS (22L0689-BS1)</b>			Prepared: 12/20/22 06:51 Analyzed: 12/20/22 21:07									
<u>EPA 6020B</u>												
Lead	49.8	---	0.200	mg/kg wet	10	50.0	---	100	80-120%	---	---	
<b>Duplicate (22L0689-DUP1)</b>			Prepared: 12/20/22 06:51 Analyzed: 12/20/22 21:17									
<u>QC Source Sample: Non-SDG (A2L0517-01)</u>												
Lead	4.71	---	0.250	mg/kg dry	10	---	5.95	---	---	23	20%	Q-04
<b>Matrix Spike (22L0689-MS1)</b>			Prepared: 12/20/22 06:51 Analyzed: 12/20/22 21:22									
<u>QC Source Sample: Non-SDG (A2L0517-01)</u>												
<u>EPA 6020B</u>												
Lead	63.8	---	0.250	mg/kg dry	10	62.6	5.95	92	75-125%	---	---	
<b>Matrix Spike Dup (22L0689-MSD1)</b>			Prepared: 12/20/22 06:51 Analyzed: 12/20/22 21:27									
<u>QC Source Sample: Non-SDG (A2L0517-01)</u>												
Lead	68.9	---	0.266	mg/kg dry	10	66.4	5.95	95	75-125%	8	20%	

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
--	--	---

**QUALITY CONTROL (QC) SAMPLE RESULTS**

**Percent Dry Weight**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
<b>Batch 22L0652 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (22L0652-DUP1)</b>			Prepared: 12/19/22 10:07 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0603-01)</u>												
% Solids	68.0	---	1.00	%	1	---	70.3	---	---	3	10%	
<b>Duplicate (22L0652-DUP2)</b>			Prepared: 12/19/22 10:07 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0603-02)</u>												
% Solids	88.9	---	1.00	%	1	---	88.9	---	---	0.04	10%	
<b>Duplicate (22L0652-DUP3)</b>			Prepared: 12/19/22 10:07 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0603-03)</u>												
% Solids	89.2	---	1.00	%	1	---	88.8	---	---	0.4	10%	
<b>Duplicate (22L0652-DUP4)</b>			Prepared: 12/19/22 10:07 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0603-04)</u>												
% Solids	67.1	---	1.00	%	1	---	67.8	---	---	1	10%	
<b>Duplicate (22L0652-DUP5)</b>			Prepared: 12/19/22 10:07 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0603-05)</u>												
% Solids	71.6	---	1.00	%	1	---	72.6	---	---	1	10%	
<b>Duplicate (22L0652-DUP6)</b>			Prepared: 12/19/22 18:13 Analyzed: 12/20/22 06:59									
<u>QC Source Sample: Non-SDG (A2L0741-01)</u>												
% Solids	94.6	---	1.00	%	1	---	95.0	---	---	0.4	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

Philip Nerenberg, Lab Director

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
--	--	---

**SAMPLE PREPARATION INFORMATION**

**Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0690</u>							
A2L0687-02	Soil	NWTPH-Dx	12/14/22 15:43	12/20/22 07:05	10.11g/5mL	10g/5mL	0.99
<u>Batch: 22L0737</u>							
A2L0687-01	Soil	NWTPH-Dx	12/14/22 15:40	12/21/22 06:06	10.02g/5mL	10g/5mL	1.00

**Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Prep: EPA 5035A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0657</u>							
A2L0687-01	Soil	NWTPH-Gx (MS)	12/14/22 15:40	12/14/22 15:40	4.83g/5mL	5g/5mL	1.04
A2L0687-02	Soil	NWTPH-Gx (MS)	12/14/22 15:43	12/14/22 15:43	5.93g/5mL	5g/5mL	0.84

**BTEX Compounds by EPA 8260D**

Prep: EPA 5035A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0657</u>							
A2L0687-01	Soil	5035A/8260D	12/14/22 15:40	12/14/22 15:40	4.83g/5mL	5g/5mL	1.04
A2L0687-02	Soil	5035A/8260D	12/14/22 15:43	12/14/22 15:43	5.93g/5mL	5g/5mL	0.84

**Total Metals by EPA 6020B (ICPMS)**

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0689</u>							
A2L0687-01	Soil	EPA 6020B	12/14/22 15:40	12/20/22 06:51	0.517g/50mL	0.5g/50mL	0.97
A2L0687-02	Soil	EPA 6020B	12/14/22 15:43	12/20/22 06:51	0.518g/50mL	0.5g/50mL	0.97

**Percent Dry Weight**

Prep: Total Solids (Dry Weight)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 22L0652</u>							
A2L0687-01	Soil	EPA 8000D	12/14/22 15:40	12/19/22 10:07			NA
A2L0687-02	Soil	EPA 8000D	12/14/22 15:43	12/19/22 10:07			NA

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Philip Nerenberg, Lab Director



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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> A2L0687 - 12 22 22 1221
--	--	--

**QUALIFIER DEFINITIONS**

**Client Sample and Quality Control (QC) Sample Qualifier Definitions:**

**Apex Laboratories**

- F-03** The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- V-15** Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

---

Apex Laboratories

Philip Nerenberg, Lab Director

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--	--	---

**REPORTING NOTES AND CONVENTIONS:**

**Abbreviations:**

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

**Detection Limits: Limit of Detection (LOD)**

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).  
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

**Reporting Limits: Limit of Quantitation (LOQ)**

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

**Reporting Conventions:**

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.  
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.
- " dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")  
See Percent Solids section for details of dry weight analysis.
- " wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

**QC Source:**

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.  
  
Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

**Miscellaneous Notes:**

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " \*\*\* " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

**Blanks:**

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).  
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.  
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.  
For further details, please request a copy of this document.

Apex Laboratories

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

Table with 3 columns: Client (SLR Corporation-Bothell), Project (Port of Illahee), and Report ID (A2L0687 - 12 22 22 1221)

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Handwritten signature of Philip Nerenberg



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

Table with 3 columns: Client (SLR Corporation-Bothell), Project (Port of Illahee), and Report ID (A2L0687 - 12 22 22 1221)

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Table with 6 columns: Matrix, Analysis, TNI\_ID, Analyte, TNI\_ID, Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Philip Nerenberg (signature)

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Philip Nerenberg, Lab Director



**ANALYTICAL REPORT**

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street  
Tigard, OR 97223  
503-718-2323  
ORELAP ID: OR100062

**SLR Corporation-Bothell** Project: **Port of Illahee**  
22118 20th Ave SE, Suite G202 Project Number: **128.01826.00022**  
Bothell, WA 98021 Project Manager: **Greg Lish** Report ID:  
A2L0687 - 12 22 22 1221

**CHAIN OF CUSTODY**

Company: **SLR Consulting** Project Mgr: **Greg Lish** Project Name: **Port of Illahee** Lab # **A2L0687** coc **1** of **1**  
Address: **22118 20th Ave SE Bothell WA** Phone: **425 402 8800** Email: **glish@slrconsulting.com** PO # **128.01826.00022**  
Sampled by: **Clayton Blackton**  
Site Location: \_\_\_\_\_

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID			NWTPH-GA	NWTPH-DX	8260 BTEX	8260 RDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Ni, Pb, Hg, Mn, Mo, Ni, K, Se, Ag, Na, TL, V, Zn, TCDF, TCDD, TCDF, TCDF	TCDF Metals (8)	Hold Sample	Frozen Archive	
					X	X	X																	
MW-5-7-15'	12/14/22	15:40	S-1	4			X	X	X															
MW-5-14-15'	12/14/22	15:45	S-1	4			X	X	X															

**ANALYSIS REQUEST**

SPECIAL INSTRUCTIONS:  
**5 day Standard IAT for SLR**

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle):  
 1 Day     2 Day     3 Day  
 5 Day     Standard    Other: \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <i>Clayton Blackton</i> Printed Name: <b>Clayton Blackton</b> Company: _____	RECEIVED BY: Signature: <i>[Signature]</i> Printed Name: <b>[Name]</b> Company: <b>APEX LABS</b>
Date: <b>12/15/22</b> Time: <b>10:30</b>	Date: <b>12/14/22</b> Time: <b>1058</b>

Form Y-002 R-00

Apex Laboratories

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*Philip Nerenberg*

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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<b>SLR Corporation-Bothell</b> 22118 20th Ave SE, Suite G202 Bothell, WA 98021	Project: <b>Port of Illahee</b> Project Number: <b>128.01826.00022</b> Project Manager: <b>Greg Lish</b>	<b>Report ID:</b> <b>A2L0687 - 12 22 22 1221</b>
--	--	---

**APEX LABS COOLER RECEIPT FORM**

Client: SLR Consulting Element WO#: A2L0687

Project/Project #: Port of Illahee 128 018 2600022

**Delivery Info:**  
 Date/time received: 12/16/22 @ 1058 By: EST

Delivered by: Apex  Client  ESS  FedEx  UPS  Swift  Senvoy  SDS  Other

**Cooler Inspection** Date/time inspected: 12/16/22 @ 1058 By: EST

Chain of Custody included? Yes  No  Custody seals? Yes  No

Signed/dated by client? Yes  No

Signed/dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>0.7</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) Y Possible reason why: \_\_\_\_\_

Green dots applied to out of temperature samples? Yes/No Yes

Out of temperature samples form initiated? Yes/No No

**Sample Inspection:** Date/time inspected: 12/16/22 @ 1058 By: RVP

All samples intact? Yes  No  Comments: \_\_\_\_\_

Bottle labels/COCs agree? Yes  No  Comments: \_\_\_\_\_

COC/container discrepancies form initiated? Yes  No

Containers/volumes received appropriate for analysis? Yes  No  Comments: \_\_\_\_\_

Do VOA vials have visible headspace? Yes  No  NA

Comments: \_\_\_\_\_

Water samples: pH checked: Yes  No  NA  pH appropriate? Yes  No  NA

Comments: \_\_\_\_\_

**Additional information:** 3927

Labeled by: RVP Witness: SKM Cooler Inspected by: W

Form Y-003 R-00

Apex Laboratories

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Philip Nerenberg

Philip Nerenberg, Lab Director

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Michael Erdahl, B.S.  
Vineta Mills, M.S.  
Eric Young, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

November 18, 2022

Greg Lish, Project Manager  
SLR International Corp.  
22118 20th Ave. SE, G-202  
Bothell, WA 98021

Dear Mr Lish:

Included are the results from the testing of material submitted on October 31, 2022 from the 128.01826.00022, F&BI 210476 project. There are 11 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
SLR1118R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 31, 2022 by Friedman & Bruya, Inc. from the SLR International Corp. 128.01826.00022, F&BI 210476 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>SLR International Corp.</u>
210476 -01	SS-1-1022
210476 -02	SS-2-1022

Non-petroleum compounds identified in the air phase hydrocarbon (APH) ranges were subtracted per the MA-APH method.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	SS-1-1022	Client:	SLR International Corp.
Date Received:	10/31/22	Project:	128.01826.00022, F&BI 210476
Date Collected:	10/28/22	Lab ID:	210476-01 1/5.2
Date Analyzed:	11/09/22	Data File:	110913.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	99	70	130

Compounds:	Concentration
	ug/m3
APH EC5-8 aliphatics	730
APH EC9-12 aliphatics	560
APH EC9-10 aromatics	<130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	SS-2-1022	Client:	SLR International Corp.
Date Received:	10/31/22	Project:	128.01826.00022, F&BI 210476
Date Collected:	10/28/22	Lab ID:	210476-02 1/5.2
Date Analyzed:	11/09/22	Data File:	110914.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration
	ug/m3
APH EC5-8 aliphatics	550
APH EC9-12 aliphatics	540
APH EC9-10 aromatics	<130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method MA-APH

Client Sample ID:	Method Blank	Client:	SLR International Corp.
Date Received:	Not Applicable	Project:	128.01826.00022, F&BI 210476
Date Collected:	11/09/22	Lab ID:	02-2642 MB
Date Analyzed:	11/09/22	Data File:	110911.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	99	70	130

Compounds:	Concentration
	ug/m3
APH EC5-8 aliphatics	<75
APH EC9-12 aliphatics	<25
APH EC9-10 aromatics	<25

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SS-1-1022	Client:	SLR International Corp.
Date Received:	10/31/22	Project:	128.01826.00022, F&BI 210476
Date Collected:		Lab ID:	210476-01 1/5.2
Date Analyzed:	11/09/22	Data File:	110913.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	103	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Benzene	<1.7	<0.52
Toluene	<98	<26
Ethylbenzene	<2.3	<0.52
m,p-Xylene	8.0	1.9
o-Xylene	3.0	0.69
Naphthalene	<1.4	<0.26

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SS-2-1022	Client:	SLR International Corp.
Date Received:	10/31/22	Project:	128.01826.00022, F&BI 210476
Date Collected:		Lab ID:	210476-02 1/5.2
Date Analyzed:	11/09/22	Data File:	110914.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Benzene	<1.7	<0.52
Toluene	<98	<26
Ethylbenzene	<2.3	<0.52
m,p-Xylene	8.2	1.9
o-Xylene	3.1	0.71
Naphthalene	<1.4	<0.26

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	SLR International Corp.
Date Received:	Not Applicable	Project:	128.01826.00022, F&BI 210476
Date Collected:	Not Applicable	Lab ID:	02-2642 MB
Date Analyzed:	11/09/22	Data File:	110911.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	102	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Naphthalene	<0.26	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/18/22

Date Received: 10/31/22

Project: 128.01826.00022, F&BI 210476

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES  
FOR VOLATILES BY METHOD MA-APH**

Laboratory Code: 210476-01 1/5.2

Date Analyzed: (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
APH EC5-8 aliphatics	ug/m3	726	735	1
APH EC9-12 aliphatics	ug/m3	560	617	10
APH EC9-10 aromatics	ug/m3	<130	<130	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	67	81	70-130
APH EC9-12 aliphatics	ug/m3	67	110	70-130
APH EC9-10 aromatics	ug/m3	67	113	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/18/22

Date Received: 10/31/22

Project: 128.01826.00022, F&BI 210476

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES  
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: 210476-01 1/5.2 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.7	<1.7	nm
Toluene	ug/m3	<98	<98	nm
Ethylbenzene	ug/m3	<2.3	<2.3	nm
m,p-Xylene	ug/m3	8.0	8.3	4
o-Xylene	ug/m3	3.0	3.1	3
Naphthalene	ug/m3	<1.4	1.6	nm

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/18/22

Date Received: 10/31/22

Project: 128.01826.00022, F&BI 210476

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES  
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	95	70-130
Toluene	ug/m3	51	99	70-130
Ethylbenzene	ug/m3	59	95	70-130
m,p-Xylene	ug/m3	120	104	70-130
o-Xylene	ug/m3	59	103	70-130
Naphthalene	ug/m3	71	102	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

**SAMPLE CHAIN OF CUSTODY**

16/31/22

210476  
Report To Greg Lish

Company SLR

Address 2218 20th SE Ave, Suite 6202

City, State, ZIP Bohemia, WA

Phone 425 402 8800 Email glis@slrconsulting.com

SAMPLERS (signature)

PROJECT NAME & ADDRESS

Part of Illahere Property

PO #

128.01826.00022

NOTES:

INVOICE TO

Page # 1 of 1

TURNAROUND TIME

Standard  
 RUSH  
Rush charges authorized by: \_\_\_\_\_

SAMPLE DISPOSAL  
Default: Clean following final report delivery  
 Hold (Fee may apply): \_\_\_\_\_

**SAMPLE INFORMATION**

Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	Notes
<del>SS-1-1022</del>	<del>01</del>	<del>8267</del>	<del>18</del>	IA / SG	<del>10-28-22</del>	<del>30</del>	<del>1425</del>	<del>5</del>	<del>1430</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>report CC9-10 chromiums</del>
SS-2-1022	02	8533	111	IA / SG	10-28-22	30	1515	5	1520	X	X	X	X	X	report CC5-10 chromiums
				IA / SG											
				IA / SG											
				IA / SG											
				IA / SG											

**ANALYSIS REQUESTED**

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COO\COOCTO-15.DOC

**SIGNATURE**

Relinquished by:

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**PRINT NAME**

Spencer Co

ANH PHAM

**COMPANY**

SLR

FRB

**DATE**

10-31-22

10/31/22

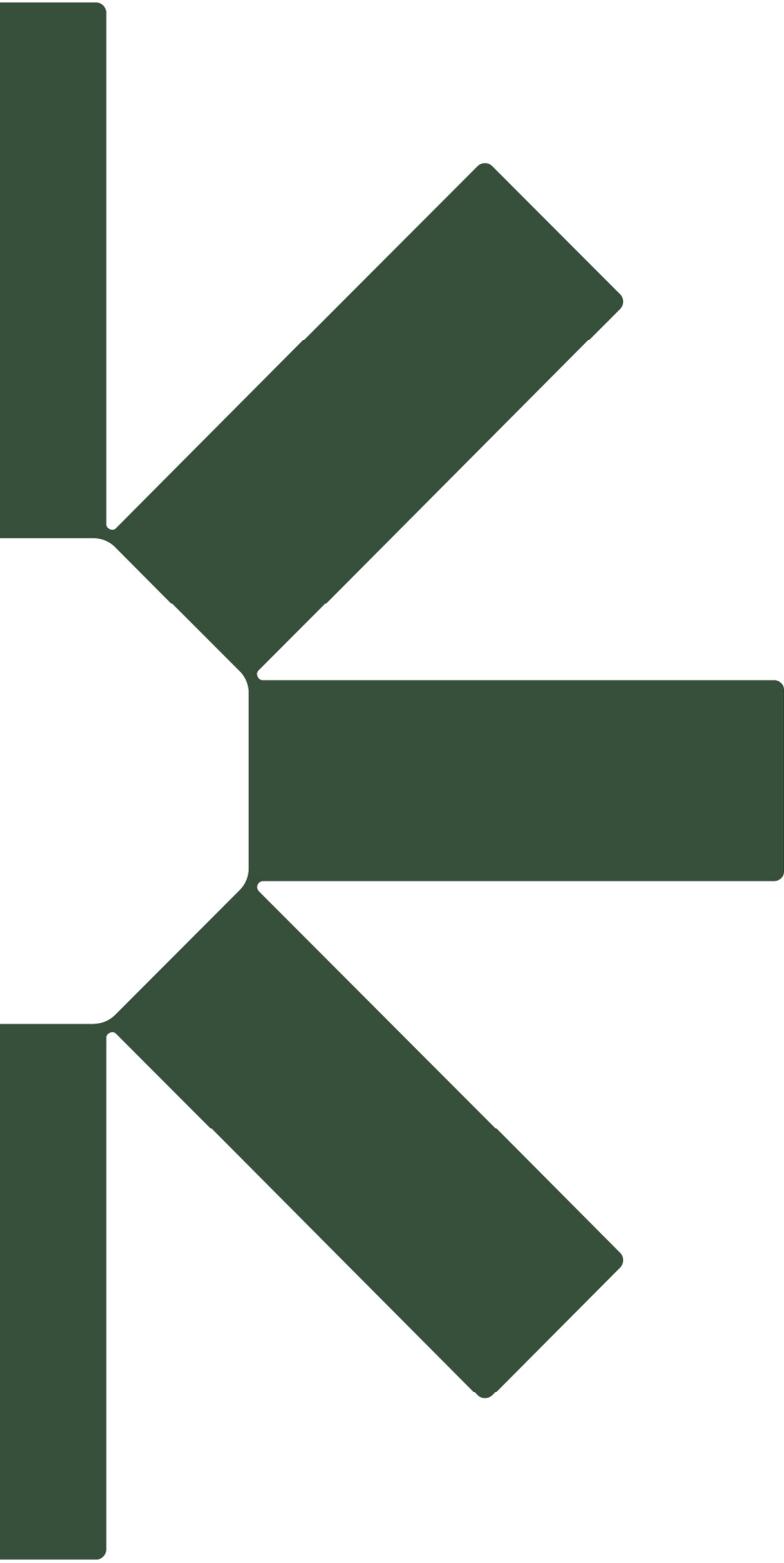
**TIME**

1500

15:00

Received by:

Samples received at DOOC



Making Sustainability Happen