INTERIM ACTION REPORT

Snopac Property
Seattle, Washington
Ecology Facility Site ID#1523145
Ecology Cleanup Site ID#12463

Prepared for: 5055 Properties LLC

Project No. 150054 • September 16, 2021 • FINAL

earth + water

Aspect
CONSULTING

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
AO	Agreed Order
Aspect	Aspect Consulting, LLC
City	City of Seattle
COC	contaminant of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
Ecology	Washington State Department of Ecology
FS	feasibility study
gpm	gallons per minute
GPS	global positioning system
Grady	Grady Excavating Inc.
IA	interim action
IAWP	Interim Action Work Plan
KCIW	King County Industrial Waste
LDW	Lower Duwamish Waterway
mg/kg	milligrams/kilograms
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NAVD88	North American Vertical Datum 1988
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PCUL	Preliminary Cleanup Level
PQL	practical quantification limit
RAL	remedial action levels
RI	remedial investigation
Roosevelt	Roosevelt Regional Municipal Solid Waste Landfill

ROD	Record of Decision
SBG	sand blast grit
TEF	toxicity equivalency factors
TEQ	toxic equivalent concentration
TESC	temporary erosion and sedimentation control
TPH	total petroleum hydrocarbons
UCL	upper confidence limit
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1 Introduction

Aspect Consulting, LLC (Aspect) has prepared this Final Interim Action Report (Report), on behalf of 5055 Properties LLC, to document and report completion of the uplands interim action (IA) conducted at the Snopac Site (Site). The Site is generally located at 5055 and 5053 East Marginal Way South in Seattle, Washington (Property), and borders the eastern portion of Slip 1 of the Lower Duwamish Waterway (LDW; Figure 1). The Site, as defined by Washington State's Model Toxics Control Act (MTCA), includes all upland and in-water areas impacted by historical releases of hazardous substances from the Property. The boundary between the upland and in-water areas of the Site is the mean higher high water (MHHW) level.

In 2019, 5055 Properties LLC entered Agreed Order No. DE16300 (AO) with the Washington State Department of Ecology (Ecology). The AO required 5055 Properties LLC to complete a Site Remedial Investigation (RI; Aspect, 2020b), separate feasibility study (FS) documents for the Site uplands and for in-water sediments, and a draft Cleanup Plan (dCAP) for the uplands. The AO also required the conduct of an IA that was approved by Ecology in the Final Interim Action Work Plan (IAWP; Aspect, 2020a).

The completed IA achieved the IAWP objectives for the Site uplands inland of the sheet pile wall: removal of all sand blast grit-containing (SBG) fill and achievement of soil remediation levels at the excavation limits. This Report completes the IAWP implementation and presents the IA soil compliance results. The final cleanup action for the Site uplands will be selected in the Uplands FS Report and Uplands dCAP.

This Report completes the AO requirements for the IA.

1.1 Site Description

The 1.33-acre Property has supported various industrial uses since the 1920s. Fill materials, composed of both soil and anthropogenic debris, including spent SBG, railroad ties, coal fragments, glass shards, concrete, and brick or masonry fragments, were placed landward of a former retaining wall to bring the area to current grade.

Site groundwater, groundwater seeps, soil, and Slip 1 sediments have been impacted by historical releases of hazardous substances from the Site. Public (Ecology 2014a and 2014b) and private Site investigation has been ongoing since 2004, which culminated in the AO finalized in 2019.

Ground surface elevation in the IA area is approximately elevation 16 feet NAVD88.[1] The hydrostratigraphic units at the Site are:

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[1] North American Vertical Datum of 1988. All elevations referenced in this Report hereafter are relative to that vertical datum.

- **Fill Unit** a heterogeneous mix of gravelly sand, silt, and silty sand (to approximate elevation 4 feet)
- **Estuarine Unit** a very soft/loose organic silt and clay, with shells, abundant organic (wood) debris, and a sulfur-like odor (to approximate elevation 0 feet)
- **Alluvium Unit** interbedded very loose to medium dense sand, sandy to very sandy silt, and very soft to stiff low-plasticity clay and silt (to approximate elevation -143 feet, significantly below the bottom of the IA work)

The Fill Unit is a water table (unconfined), water-bearing unit that is tidally influenced by the LDW. Based on tidal study work conducted in 2017 and 2018, the tidally influenced water level elevations in the Fill Unit range from about 3 to 9 feet (Aspect, 2020b). The Estuarine Unit functions as an aquitard, restricting groundwater flow between the Fill Unit and underlying Alluvium Unit.

A confined aquifer is present in the Alluvium Unit beneath the Estuarine Unit aquitard. The confined Alluvium Unit is also tidally influenced with water level elevations ranging from 4 to 7.5 feet based on the 2017 and 2018 tidal study work (Aspect, 2020b). For a more thorough review of site description and investigation summary, see the RI and IAWP (Aspect, 2020b and 2020a, respectively).

1.2 Interim Action Work Plan

The SBG-containing fill is the source of contaminants to upland groundwater discharging to the sediments and surface waters of the LDW. Therefore, the removal of the SBG-containing fill was planned as an IA in accordance with the purpose of an “Interim Action” defined in MTCA (Washington Administrative Code [WAC] 173-340-430 (1)). The IA permanently removes sources of contamination to groundwater and the LDW and will not conflict with reasonable alternatives for the final cleanup action as required by MTCA (WAC 173-340-430[3][b]). The construction of a sheet pile shoring wall (shoring wall) along the upland shoreline was required to complete the IA remedial excavation immediately inland of it. The plan for conduct of the IA was approved by Ecology in the Final IAWP (Aspect, 2020a).

The cleanup objectives identified in the Final IAWP were to remove SBG-containing fill and achieve the soil remediation levels at the excavation limits.

1.3 Implementation and Responsibilities

The IA was a component of construction permitted by the City of Seattle (City) Construction Permit 66942-CN (construction permit) issued on May 26, 2020 (included in Appendix C). The construction permit included building demolition, shoring (sheet pile) installation, contaminated soil excavation, temporary dewatering, and ground improvements (to be completed after IA). Construction permit plans relevant to IA completion are included in Appendix D. The construction sequence of IAWP implementation consisted of:

1. **Monitoring Well Decommissioning** was required to complete the IA. Decommissioning of wells within the planned IA construction footprint occurred on August 11, 2020.

2. **Shoring Wall Construction** was necessary to conduct the IA and stabilize the shoreface at the Property. The shoring wall was installed between August 31, 2020, and September 15, 2020.
3. **Building Demolition** was required to conduct the IA. Demolition of the Property's existing warehouse structure occurred November 9 through 13, 2020.
4. **Side Sewer Connection** was required for temporary dewatering discharges necessary to conduct the IA. Side sewer connection from the Property to the King County combined sewer system occurred on December 16 and 17, 2020.
5. **Excavation and off-Site Disposal** of all SBG-containing fill from the Site uplands inland (east) of the shoring wall. Excavation activities occurred from December 28, 2020, to January 22, 2021.
6. **Temporary Dewatering** and work conduct at low tides was required to remove SBG-containing fill below the water table (saturated zone). Temporary dewatering occurred only during saturated-zone excavation, January 11 through 14, 2021.
7. **Backfill** of final excavation extents to restore original grade. Backfill occurred between January 11 and 22, 2021.
8. **Engineering Controls** of interim fencing and signage to restrict human access and use of the shoreface and tidelands was implemented in August 2021.

Implementation of the Final IAWP consisted of the following parties and responsibilities:

- **City of Seattle.** The City issued their construction permit after receipt of the Ecology-approved Final IAWP.
- **King County Industrial Waste (KCIW).** KCIW issued the Wastewater Discharge Authorization No. 1092-01 (discharge authorization) permitting discharge of temporary dewatering to public treatment works (Appendix B).
- **Environmental Engineer.** Aspect prepared the Final IAWP (Aspect, 2020a) and oversaw the IAWP implementation as 5055 Properties LLC's representative.
- **Geotechnical Engineer.** GeoEngineers, Inc. was the geotechnical engineer of record for the City construction permit.
- **Excavation Contractor.** Grady Excavating Inc. (Grady) was the earthwork contractors responsible for temporary dewatering and excavation, transport, and handling of contaminated soils, and excavation backfill. Grady ensured conformance with conditions of the construction permit and discharge authorization. Grady was contracted by 5055 Properties LLC.
- **Demolition Contractor.** Rhine Demolition, LLC, was contracted by 5055 Properties LLC to complete building demolition.
- **Temporary Dewatering Plan and Preparation.** O'Neill Service Group, LLC, was contracted by 5055 Properties LLC to develop the temporary dewatering plan required by the City construction permit. KLB Construction Inc. was contracted

by 5055 Properties LLC to construct the permanent side sewer connection necessary for temporary dewatering.

- **Disposal Facility.** All contaminated soil removed during the IA was transported to Republic Services' 3rd and Lander facility for rail transport to and disposal at the Republic Services Roosevelt Regional Municipal Solid Waste Landfill (Roosevelt) in Roosevelt, Washington.

2 Soil Remediation Levels

The Final IAWP defined performance monitoring analytes for all areas of IA excavation as follows (Aspect, 2020a):

- Metals (arsenic, copper, lead, mercury, and zinc)
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)

In addition, the following analytes for performance monitoring in selected areas of the IA excavation were:

- Total petroleum hydrocarbons (TPH) as gasoline-, diesel-, and oil-range organics in the area around MW-2
- Pentachlorophenol (PCP) in the area around MW-11 (Figure 5 shows the locations of the Site monitoring wells)

The soil remediation levels in the Final IAWP were selected as the most stringent Preliminary Cleanup Levels (PCULs) established in the 2019 LDW *Preliminary Cleanup Level Workbook and Supplemental Information* (Ecology, 2019) and the generic direct contact cleanup level for combined TPH (Ecology, 2017). The IAWP remediation levels are presented in Table 1.

2.1 Adjustments to Soil Remediation Levels

During the IA, Ecology agreed to adjust soil remediation levels for two performance monitoring analytes—carcinogenic polycyclic aromatic hydrocarbons (cPAHs)[2] and naphthalene—based on empirical demonstration of soil concentrations protective of groundwater in accordance with MTCA. In addition, remediation levels are updated based on recent updates to Ecology's PCUL workbook (Ecology, 2020) and laboratory practical quantification limits (PQLs). Adjusted remediation levels used for determining IA soil compliance are described in the following subsections and are presented in Table 1.

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[2] Total toxic equivalent concentration (TEQ) of benzo(a)pyrene calculated in accordance with WAC 173-340-708(8)(e). **Hereafter, all references to cPAH concentrations are total cPAH TEQ concentrations.**

2.1.1 Empirical Demonstration for Carcinogenic Polycyclic Aromatic Hydrocarbons and Naphthalene

The IAWP soil remediation levels for cPAH and naphthalene are the LDW PCULs, based on predicted leaching to groundwater discharging to LDW sediment and surface water. The MTCA fixed-parameter three-phase partitioning model (WAC 173-340-747(4)) used to calculate those leaching-based soil screening levels is simplistic and highly conservative in terms of predicting contaminant leaching from soil to groundwater and intentionally ignores contaminant attenuation mechanisms in groundwater from the soil location to the marine receptors considered in the groundwater PCULs. Assuming a sufficiently robust data set of collocated soil and groundwater samples, the empirical upland groundwater data are a more reliable determination of whether contaminant leaching from soil is occurring at concentrations of concern, and thus whether the soil concentrations are protective of groundwater—measurements outweigh modeling.

The uplands soil and groundwater results presented in the RI (Aspect, 2020b) are the basis of the empirical demonstrations to update remediation levels for cPAH and naphthalene. The RI Report data excerpts used in the evaluation are included in Appendix A for reference.

Under MTCA, contaminant concentrations in soil can be demonstrated empirically to be protective of groundwater via leaching if there are reliable groundwater data demonstrating no exceedances of groundwater cleanup levels (WAC 173-340-747(9)). The MTCA requirements for making that empirical demonstration are that a sufficient length of time has elapsed for contaminant migration to have occurred, and that the current site characteristics are representative of future site conditions (WAC 173-340-747(9)(b)). As of 2004, high concentrations of contaminants (particularly arsenic) had migrated from the SBG-containing fill into upland groundwater and then to the intertidal Seep 76 (Figure 5), which is 13 to 15 years prior to collection of the Site groundwater monitoring data. Sufficient time has likely elapsed to observe contaminant migration into uplands groundwater based on the following considerations:

- Groundwater is shallow.
- The distance from contaminated soil to shoreline seeps is short.
- The data considered for evaluation of empirical demonstrations were obtained from collocated soil and groundwater samples or soil samples located close to and upgradient of groundwater samples.

The pre-IA Site conditions represented by the RI groundwater data represent worst-case conditions relative to future Site conditions, which include full removal of the SBG-containing fill from the uplands of the Site. Therefore, it is concluded that the MTCA requirements are met to allow using the existing groundwater data to empirically determine contaminant concentrations in soil that are protective of groundwater quality at the Site.

Post-IA confirmation groundwater monitoring will be used to verify the empirical evaluations of soil concentrations (thus soil cleanup levels) protective of groundwater. Additional remedial actions will be evaluated if groundwater concentrations do not meet the groundwater cleanup levels for cPAH toxic equivalent concentration (TEQ) and naphthalene within 12 months after the conclusion of the IA.

2.1.1.1 Carcinogenic Polycyclic Aromatic Hydrocarbons

There is no known source of cPAHs at the Site outside the footprint of the SBG-containing fill removed during the IA. Low-level soil cPAH concentrations in upland Site soils are known to be ubiquitous in urban soils (e.g., vehicle emissions, combustion, etc.).

The cPAH remediation level in the Final IAWP was the most-stringent PCUL of 0.00031 milligrams per kilogram (mg/kg) in vadose soils and 0.000016 mg/kg in saturated soils. These PCULs are based on leaching to groundwater for LDW surface water protection and are one to two orders of magnitude less than the 0.003 mg/kg analytical PQL for cPAH.[3]

In a January 12, 2021, memorandum, Aspect proposed an adjusted soil remediation level for cPAHs based on Site soil and groundwater quality data (Aspect, 2021a). Based on Ecology’s review of the data, they approved an adjusted cPAH soil remediation level of 0.074 mg/kg as protective of groundwater. The adjusted remediation level is less than the cPAH PCUL based on unrestricted child direct contact with soil of 0.19 mg/kg. Therefore, an adjusted soil remediation level for cPAH of 0.074 mg/kg is expected to be protective of all exposure pathways, and is used for evaluating vadose and saturated soil compliance for the IA.

2.1.1.2 Naphthalene

Naphthalene is identified as a sediment contaminant of concern (COC) for ecological benthic receptors in the LDW Record of Decision (ROD) based on 2 of 882 (0.23 percent of) samples of LDW sediment exceeding the state Sediment Management Standards sediment cleanup objective. No naphthalene exceedances of ROD remedial action levels (RAL) were detected in the Site sediment samples; therefore, naphthalene is not a COC for Site sediment (Aspect, 2020b).

The uplands RI groundwater results indicate naphthalene exceeded the most-stringent, PCUL[4] of 1.4 micrograms per liter (µg/L) in only 1 of 24 groundwater samples. There were no naphthalene exceedances detected in the six samples of seeps discharging to the LDW (Aspect, 2020b). The single groundwater exceedance occurred at MW-2 screened within the SBG-containing fill; the other MW-2 groundwater analytical result was less than the PCUL. The one groundwater exceedance at MW-2 exceeds the surface water aquatic-life PCUL, but is:

- Protective of LDW sediment (groundwater PCUL of 90 µg/L)
- Protective of human health for fish consumption[5]

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[3] The analytical reporting limits for individual cPAHs is 0.002 mg/kg; the PQL for total cPAH TEQ includes application of toxicity equivalency factors (TEFs) and summation of the individual cPAH reporting limits.

[4] The most stringent PCUL based on groundwater discharge to surface water is a literature value based on protection of aquatic life. There is no promulgated standard for naphthalene based on aquatic life.

[5] The only promulgated surface water standard for naphthalene is the MTCA surface water cleanup level of 1,370 µg/L based on humans eating fish.

The IAWP soil remediation levels for naphthalene in the Final IAWP—0.039 mg/kg in vadose soils and 0.0021 mg/kg in saturated soils—are predicted (modeled) values that the empirical groundwater data demonstrate to be conservative with respect to naphthalene migration to the LDW. The Site sediment naphthalene data in the RI Report empirically demonstrate that the Site uplands soils were protective of LDW sediment before the IA started. The naphthalene data from Site seeps indicate that groundwater discharge, and thus uplands groundwater and associated soils, are also protective of discharge to LDW surface water for all receptors.

In a January 21, 2021, memorandum, Aspect proposed an adjusted naphthalene soil remediation level for the IA that was protective of groundwater-to-surface water aquatic life pathway, and all other exposure pathways (Aspect, 2021b). Based on Ecology's review of the data, they approved an adjusted naphthalene soil remediation level of 0.056 mg/kg as protective of groundwater.

The adjusted remediation level for naphthalene is less than the 1,600 mg/kg PCUL based on unrestricted child direct contact with soil. Therefore, an adjusted soil remediation level for naphthalene of 0.056 mg/kg is protective of all exposure pathways, and is used for evaluating vadose and saturated soil compliance for the IA.

2.1.2 Other Remediation Level Adjustments

The most-stringent PCUL for 1-methylnaphthalene is 34 mg/kg based on the updated September 2020 LDW *Preliminary Cleanup Level Workbook and Supplemental Information* (Ecology, 2020). Therefore, the remediation level is adjusted to 34 mg/kg from the 29 mg/kg in the Final IAWP, which was based on an older preliminary cleanup level.

The most-stringent PCUL for arsenic in Ecology (2020) is 7.3 mg/kg. Therefore, the remediation level is adjusted to 7.3 mg/kg from the 7 mg/kg in the Final IAWP.

Soil samples were collected in the one location that PCP was detected in groundwater in accordance with IAWP. An analytical reporting limit of 0.05 mg/kg is achievable for PCP in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level for PCP is established at this PQL.

An analytical reporting limit of 0.002 mg/kg is achievable for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level for total PCBs is established at this PQL.

All remediation level adjustments are presented in Table 1; the adjusted remediation levels are applied as the remediation levels in the remainder of this Report and are used for evaluating IA soil compliance.

3 Interim Action Activities Completed

The IA was conducted in accordance with the Ecology-approved Final IAWP. Section 1.3 presents the IA implementation responsibilities and timeline. The implementation activities are detailed further in the following subsections.

3.1 Site Preparation

Site preparation consisted of monitoring well decommissioning, building demolition, shoring wall installation, and temporary erosion and sedimentation control (TESC) installation.

3.1.1 Monitoring Well Decommissioning

Prior to IA earthwork activities, nine groundwater monitoring wells at the Site were decommissioned in accordance with WAC 173-160-460. Holt Services Inc., a Washington State-licensed driller completed the decommissioning. Wells MW-1R, MW-2, MW-3R, MW-4R, MW-5, MW-6, MW-7, MW-10, and MW-11 (as shown on Plan Sheet 2, Appendix D) were decommissioned by filling the casing from bottom to land surface with bentonite. Holt Services, Inc., was responsible for filing the well decommissioning records with Ecology. Holt's well decommissioning logs are provided in Appendix E.

3.1.2 Building Demolition

The building at the Site was demolished by Rhine Demolition LLC under the City construction permit. Abatement of regulated building materials occurred prior to demolition. The building and its foundation elements were removed to the underlying fill soils. No evidence of contamination was apparent on the ground surface within the structure footprint following its demolition.

3.1.3 Sheet Pile Shoring Wall Installation

Fifty-one interlocking sheets were advanced to elevation -28 feet (depth of approximately 45 feet) to create the western boundary of the IA excavation. The sheet pile shoring wall extends approximately 285 linear feet from the northern to southern property line (see Figure 2). The sheets were installed with a track-mount M-80 crane with an APE 150 vibratory hammer. During installation, obstructions such as vertical wood pilings, were frequently encountered and removed via vibratory extraction as necessary to advance sheets.

3.1.4 Temporary Erosion and Sedimentation Controls

Prior to excavation, a temporary chain-link fence was installed as the construction permit boundary to control access into the construction site. The fence provided a physical barrier between the excavation and truck loading areas, and the adjacent railroad (Union Pacific) and public roads (East Marginal Way South).

TESC measures for the remedial excavation were implemented by Grady and per the plan sheet C200 included in Appendix D. TESC measures included storm drain inlet protection, spall-stabilized construction entrance, and maintaining internally draining conditions.

3.1.5 Grid Established for Soil Performance Monitoring

A grid system and corresponding grid-based naming convention was established across the IAWP-estimated excavation extents for tracking excavation and performance monitoring activities. The grid was used for identifying sample and Property feature locations, and for tracking and communicating excavation progress and limits. Figure 2 shows the grid system, consisting of roughly 20-foot grid squares—rows A through M in the north-south direction and columns 1 through 5 in the east-west direction. Spatial locations were identified based on the row and column (e.g., A-2, J-1, etc.).

A hand-held Trimble R1 submeter global positioning system (GPS) unit and cameras were used for documenting locations in the field along with Fulcrum, a cloud-based data collection app. This allowed excavation progress, the locations of collected soil samples, and other subsurface features to be accurately tracked and communicated to the project team (along with linked photographs) in real time.

3.2 Soil Removal and Sampling

Grady completed the IA excavation in phases that allowed excavation, dewatering, stockpiling, trucking, and backfill activities to proceed efficiently. The soil excavation and performance monitoring were conducted in three discrete phases:

1. **Vadose Zone Soil Excavation to IAWP-Estimated Extents. Removal of SBG-**contaminated fill to elevation 11.5 feet (above the water table) and to the IAWP-estimated lateral extents occurred the week of December 28, 2020. No dewatering was required during this first phase of excavation. Vadose soil sidewall samples ("SW-" in sample identification) were collected at these initial extents from elevations 11.5 to 14 feet.[6]

2. **Saturated Zone Soil Excavation.** Removal of SBG-contaminated fill below elevation 11.5 feet, including excavation dewatering, was conducted at night during low tides[7] during the week of January 11, 2021. The excavation extended down to the underlying native soil (Estuarine Unit) to ensure removal of all SBG-contaminated fill. Saturated soil sidewall samples were collected at these extents from elevations of 5 to 9 feet. Saturated soil bottom samples ("B-" in sample identification) were collected from the excavation bottom at elevations ranging from elevations 4 to 6 feet.

3. **Overexcavation[8] to Final Extents.** Overexcavation of vadose-zone fill with analytical results exceeding remediation levels was conducted along the north and south ends of the IAWP-estimated extents to achieve final lateral excavation extents meeting remediation levels. Following the additional soil removal, final SW samples were taken between elevations 12 and 14 feet during this final phase of excavation.

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[6] Preexcavation surface grade was at elevation approximately 16 feet NAVD88.

[7] Excavation below elevation 7 feet only occurred at LDW tides less than 1 feet in accordance with the IAWP.

[8] Overexcavation refers to excavation beyond IAWP-estimated extents based on performance monitoring results above remediation levels, or visual presence of SBG-containing fill.

The IAWP-estimated excavation extents and the completed IA excavation limits (Final Excavation Limits) are shown in plan view on Figure 2, and in cross section on Figures 3 and 4. A progression of IA photos are included in Appendix F.

3.2.1 Field Oversight and Sampling Methods

Aspect monitored excavation activities and was present for field screening and segregation of all excavated materials. Aspect directed Grady to excavate to the IAWP-estimated excavation extents and used field screening and analytical results to direct the overexcavation extents beyond that. Field screening relied on the visual presence of SBG, debris,[9] and organic content and odor (indicated the top of the Estuarine Unit at the excavation bottom). Excavated material was segregated according to the following types:

- Contaminated Soil
- Contaminated Debris[10]

All excavated soil was directly loaded for export because the Contaminated Soil had been precharacterized and designated as nondangerous solid waste, as described in the IAWP. Contaminated Debris was segregated during excavation and exported separately as required by Republic Services. The IAWP had designated a third soil segregation category, ‘Potentially Clean Soil,’ which was unused as no excavated soil was field screened as potentially clean.

When field screening indicated that the Contaminated Soil had been removed, or, IAWP-estimated excavation extents reached, excavation sidewall and bottom verification soils samples were collected for laboratory analysis to confirm compliance with the soil remediation levels. The verification soil sampling was conducted in accordance with the IAWP “Sampling and Analysis Plan for Performance Monitoring” (Appendix A in Aspect, 2020a).

Soil samples were obtained from relatively undisturbed *in situ* soil and handled according to industry-standard, chain-of-custody protocols and couriered to Friedman & Bruya, Inc., in Seattle, Washington a Washington-State-accredited laboratory. Twenty-four-hour analytical turnaround time was required to efficiently guide the excavation efforts, especially for saturated soils excavated in the low-tide windows.

3.2.2 Excavation Extents and Verification Soil Sample Results

This section discusses field observations and verification soil sampling results for each of the three excavation phases. The IAWP-estimated excavation extents, final extents, grid cells, and sample locations can be seen in plan view on Figure 2 and in cross-section views on Figures 3 and 4).

The vadose soil analytical results are tabulated separately from the saturated soil analytical results because there are differences in remediation levels for vadose versus saturated soils for some chemicals. Data for the samples that were collected at the final

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[9] Debris, henceforth, refers to comingled fill and anthropogenic material fragments, including metal, glass, brick, concrete, cinder block, cloth, and miscellaneous trash.

[10] Contaminated Debris refers to oversize materials segregated for disposal facility acceptance. This includes nonwood debris, whose largest dimension exceeds 1 foot, and woody debris, whose largest dimension exceeds 6 feet.

excavation limits, representing in-place soil used for soil compliance demonstration, are presented in Tables 2A and 3A. Sample results that exceeded remediation levels and were overexcavated are presented in Tables 2B and 3B—soils represented by those samples were removed from Site.

All data presented in this Report has gone through Aspect's independent data validation level 2a. All analytical data, as qualified during validation, are suitable for their intended purposes. The data validation report is included in Appendix G. Laboratory analytical reports for the verification soil sampling are included in Appendix H.

At the conclusion of the three excavation phases, the final verification analytical results indicate that all SBG-containing fill has been removed from the uplands Site east of the shoring wall, as required by the IAWP. Each phase of excavation is detailed below.

3.2.2.1 Vadose Zone Excavation (Phase 1)

The first phase of excavation was completed in the vadose zone and to elevation 11.5 feet (an average depth of 4 feet bgs) within the IAWP-estimated excavation extents. When the estimated excavation extents were achieved, samples were collected between elevations 11.5 and 14 feet to assess compliance with remediation levels. This first phase of excavation exported 2,568 tons of Contaminated Soil for disposal at the Roosevelt Subtitle D landfill.

At the IAWP-estimated extents, dark gray sand with no visual evidence of SBG was encountered where the former building existed. Verification soil samples that met remediation levels were collected from grid cells A-3, B-3[11], E-2[12], F-2, G-2, H-2, and I-3 at or within IAWP-estimated extents (Table 2A).

However, exceedances of remediation levels for one or more analyte(s) were detected in verification samples collected in cells A-1, A-2, C-3, D-3, J/K-2, and L-3 at the IAWP-estimated extents (Table 2B). Of these, SBG-containing fill was observed in cells A-1, J-2, and K-2. Overexcavation of this pure SBG and SBG-contaminated fill was conducted in the final phase of excavation, after saturated zone excavation.

3.2.2.2 Saturated Zone Excavation (Phase 2)

The deeper excavation into the saturated zone was completed in accordance with the IAWP. Temporary dewatering was required for this phase of excavation and is described in Section 3.3. The saturated zone excavation below elevation 7 feet occurred only during time periods when the predicted LDW tide was below elevation 1 foot[13]. Per the IAWP, it was required that only 40 lateral feet of excavation below elevation 7 feet be open at a time to mitigate potential liquefaction (heave) conditions at the excavation bottom. No heave conditions were observed when the Estuarine Unit (native soil) was encountered at the excavation bottom of the first 40-foot section, so the Environmental Engineer

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[11] SW-B-3-12 met remediation levels for all performance monitoring analytes except for arsenic and was not overexcavated based on statistical compliance evaluation for arsenic.

[12] SW-E-2-12 met remediation levels for all performance monitoring analytes except for arsenic and was later overexcavated and re-sampled just for arsenic.

[13] LDW tide predictions were based on the National Oceanic and Atmospheric Administration Station No. 9447130 in Seattle, Washington.

approved Grady to open more than 40 feet at a time, subject to excavation bottom stability being maintained. Even with the relaxed requirements, the area of open excavation below elevation 7 feet at any given time was generally limited to 60 feet by placing backfill to elevation 7 feet in completed cells as the excavation progressed.

The Estuarine Unit was identified at the bottom throughout the entire saturated-zone excavation extent. Verification bottom samples were collected from this unit from each 20-foot grid cell at elevations of 4 to 6 feet. The bottom soil sample analytical results confirmed compliance with remediation levels, except for cells J-1 and K-1, which exceeded for selected metals, selected PAHs, and total PCBs (Table 3B). Both cells were overexcavated by removing compacted backfill[14] and an additional 0.5 feet of depth into the Estuarine Unit throughout the cell and resampled. Final bottom verification results from those cells, collected from elevation 4 to 4.5 feet, confirmed compliance with remediation levels (Table 3A).

Sidewall verification samples were taken from each 20-foot grid cell at elevations of 7 to 9 feet. The visual indicator of gray to brown sand without visible SBG was used to estimate the saturated excavation lateral extents for sidewall sample collection. Final verification sidewall samples confirmed compliance with remediation levels for all analytes, all observable SBG was excavated and removed from the Site, and no additional saturated soil overexcavation was required.

The saturated zone excavation produced approximately 2,255 tons of Contaminated Soil.

The IA excavation encountered a high density of treated-wood pilings extending through the native Estuarine Unit and into the underlying Alluvium Unit. These pilings were present throughout the saturated zone excavation and were removed to the approximate bottom of the saturated zone excavation. A significant density of pilings also exists in the shoreface west of the sheet pile wall.

3.2.2.3 Overexcavation to Final Extents (Phase 3)

Overexcavation of vadose zone soil exceeding remediation levels was the final phase of excavation. This entire phase of excavation was beyond the IAWP-estimated extents and was conducted to meet the IAWP objectives.

Overexcavation was conducted to elevation of 12 feet (remaining above the water table) in three distinct areas of the Site uplands: (1) the northern extent to the Property boundary, (2) the north side of the former building footprint, and (3) southeastern extent to the former building footprint and the southern Property boundary (Figure 2). As shown on Figure 2, the southeastern overexcavation was the largest expansion of the IAWP-estimated extents. This area contained historical railroad tracks with collocated mixed SBG and debris in the upper 4 feet. This comingled debris became absent from the sand matrix as the excavation reached the former building footprint and southern property boundary. This phase of excavation produced 1,160 tons of Contaminated Soil.

At the overexcavation extents, remediation levels were met in final verification samples obtained from cells AA-1, AA-2, C-5, D-3, J-3, K-3, L-4, N-5, and M-3. Cells M-2, M-5,

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[14] Backfill was placed to elevation approximately 7 feet following excavation each night to preserve stability of the excavation bottom during subsequent rising tides.

and N-4 were not sampled because field screening indicated equivalent subsurface conditions between sidewall and bottom material in those cells with their sampled neighboring cells (L-4, N-5, and M-3), which had no detected concentrations exceeding remediation levels. Field indicators of SBG-contaminated fill were absent from unsampled cells.

3.3 Temporary Dewatering and Water Management

Temporary dewatering was necessary to conduct the saturated zone excavation (Phase 2). The dewatering system included pretreatment and monitoring conditions defined in the discharge authorization.

Dewatering performance criteria were to maintain unsaturated excavation conditions to facilitate soil excavation/handling/loading for transport, verification soil sampling in the excavation, and excavation backfilling. Dewatering occurred, as needed, to meet the performance criteria.

Grady was responsible for dewatering system construction, operation, and compliance with the KCIW discharge authorization (Section 1.3). The dewatering system was started up and operated the week of January 11, 2021, and removed on January 15, 2021, following completion of the saturated zone excavation. Grady's daily reports indicate the flow rates were 60 to 70 gallons per minute (gpm) and daily discharge varied from 1,531 gallons on January 11, 2021, to 24,876 gallons on January 12, 2021. The temporary dewatering system was operated below the discharge authorization maximum of 100 gpm or 72,000 gallons per day.

In total, approximately 79,540 gallons of groundwater were extracted from the Site and discharged to the combined sewer by the dewatering system. Treatment in the form of settling occurred between extraction and discharge. The water discharged to sewer was sampled for chemical analysis in accordance with the discharge authorization self-monitoring requirements. The analytical data confirm the water met KCIW's discharge limitations. Grady's self-monitoring report for the discharge authorization, including analytical results and daily discharge volumes, is included in Appendix I.

3.4 Offsite Disposal of Contaminated Soil

Soil with any field-screening indicators of contamination was either temporarily stockpiled or directly loaded into trucks and hauled for Contaminated Soil disposal. All Contaminated Soil stockpiles were managed per IAWP requirements and placed in a lined, bermed containment area, were covered overnight, and did not remain on-Site for more than 48 hours prior to being exported for disposal. As described in the IAWP, all contaminated material was preprofiled as Nondangerous Solid Waste suitable for disposal at a Resource Conservation and Recovery Act Subtitle D landfill. Republic Services was contracted by 5055 Properties LLC to dispose of the Contaminated Soil at the Republic Services Roosevelt Landfill.

Appendix J provides information on daily loadouts, including tonnages from the Republic Services summary report, as well as a Certificate of Disposal for the landfill material. In total, 5,983 tons of Contaminated Soil was permanently removed from the Site and disposed of properly.

3.5 Excavation Backfill

The excavations were backfilled to restore preconstruction grade with clean imported structural fill meeting Washington State Department of Transportation (WSDOT) classification 9.0314(1) for Gravel Borrow (COS Type 26) from Cadman's Black Diamond facility. The dewatering trenches were filled with material meeting WSDOT 9-03.12 classification for gravel drains (AASHTO #57) from Cadman's High Rock facility. Material specifications and clean certification provided to Ecology prior to construction are included in Appendix K.

All excavation backfill material was placed in lifts and compacted with the excavator bucket and/or an 8-ton double drum vibrating roller. The Geotechnical Engineer oversaw backfill and compaction operations.

3.6 Engineering Controls

Following completion of the IA excavation and backfilling, 5055 Properties LLC implemented interim fencing and signage (as required by the IAWP) to restrict human access and use of the shoreface and tidelands until completion of the subsequent shoreface and in-water cleanup actions west of shoring wall. Photos of the interim fencing and signage can be found in Appendix F.

4 Soil Compliance

The residual soils within the excavation sidewalls and bottom comply with the IA remediation levels when applying the MTCA three-fold soil compliance criteria (WAC 173-340-740(7)(d) and (e)).

Concentrations of arsenic, mercury, zinc, acenaphthene, naphthalene, and total PCBs exceeded remediation levels in one or more soil verification samples at the final excavation limits. However, the residual concentrations for each of these analytes in the collective soil at the final excavation limits (sample data combined) achieves the MTCA three-fold compliance criteria as follows:

- The 95 percent upper confidence limit (95 percent UCL) concentration is less than the remediation level.
- All residual soil concentrations are less than two times the remediation level.
- The frequency of soil sample exceedance is less than 10 percent.

These statistics are presented in Table 4. For this evaluation, the 95 percent UCL values were calculated using the Environmental Protection Agency's (EPA) ProUCL version 5.1

software.[15] The ProUCL calculation outputs for each constituent are included in Appendix L.

These results confirm that the residual soils in the excavation area comply with the remediation levels in accordance with MTCA.

5 Groundwater Confirmation Monitoring

As agreed to with Ecology during a May 2021 meeting, the goals of the post-IA groundwater confirmation monitoring are to:

- Assess Site groundwater quality following completion of the upland IA.
- Verify the empirical demonstration of soil compliance with remediation levels for cPAHs and naphthalene.

Groundwater well locations and the analyte schedule were approved by Ecology in the "Sampling and Analysis Plan for Groundwater Confirmation Monitoring" (SAP) (Aspect, 2021c). Details on field sampling procedures, analytes, practical quantification limits, quality assurance, and quality control can be found in the SAP.

Monitoring wells MW-13 through MW-17 were installed between June 21 and 23, 2021, by Cascade Drilling, LP, a Washington State-licensed resource protection well driller, in accordance with the SAP. The locations of the five new monitoring wells (MW-13 through MW-17) and the two existing monitoring wells (MW-8 and MW-12) are shown on Figure 5. Figure 5 also shows locations of former monitoring wells that were decommissioned prior to the IA, and it distinguishes wells screened in the Fill Unit versus the deeper Alluvium Unit. Table 5 presents well construction details and groundwater elevation data for the decommissioned and existing wells. Boring logs with well completion information are in Appendix M.

Wells MW-13, MW-15, and MW-16 are located near the sheet pile shoring wall to assess the quality of Fill Unit groundwater in the area as close as practicable to the LDW. The laterally extensive shoring wall greatly restricts flow of groundwater; therefore, wells MW-13 on the south and MW-16 on the north are positioned near the wall's ends, where the Site groundwater east of the wall is expected to discharge toward the LDW. MW-14 is also near the sheet pile wall and is screened in the deeper Alluvium Unit, as agreed to with Ecology. MW-17 is located east of the IA area to assess the quality of upgradient Fill Unit groundwater entering the Site.

5.1 Initial Groundwater Monitoring Event Results

The first groundwater monitoring event of all post-IA Site monitoring wells occurred on June 25, 2021. Samples were collected in accordance with procedures outlined in the SAP (Aspect, 2021c) and were maintained under chain-of-custody procedures until being

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[15] EPA's statistical software package for analysis of environmental data sets (https://www.epa.gov/land-research/proucl-software).

formally relinquished to the analytical laboratory, Friedman and Bruya, Inc. Monitoring wells MW-12, MW-15, and MW-17 had poor yield during purging and sample collection, and had to recharge prior to collecting sufficient sample volume for analysis. MW-12 in particular did not recharge sufficiently by the end of the field day, and was returned to on June 29, 2021, to complete sample collection.

The groundwater monitoring results were screened against the most stringent groundwater PCUL for nonpotable groundwater (GWs #2-5) established by the updated May 2021 LDW Preliminary Cleanup Level Workbook (Ecology, 2021). For cPAHs TEQ, total PCBs, and PCP, the analytical method reporting limit, which is the PQL for purposes of this monitoring program, is greater than the PCUL (Aspect, 2021c). In accordance with WAC 173-340-700(6)(d), the groundwater PCUL for those analytes is established at the respective PQL. Table 6 presents the groundwater analytical results from the first round of monitoring, with exceedances of PCULs highlighted in blue.

The first round of sampling indicates exceedances for selected constituents in some Fill Unit wells, and no exceedances for any constituent in the deeper Alluvium Unit wells.

More specifically for the Fill Unit wells, no exceedances were detected for the organic contaminants TPH, PCP, PCBs, and non-carcinogenic PAHs including naphthalene. Low-level exceedances of cPAHs were detected in new shoreline Fill Unit well MW-13 (0.009 µg/L) and previously existing Fill Unit well MW-12 (0.020 µg/L) located east (upgradient) of the IA excavation area (Table 6).

As discussed above, soil remediation levels for cPAH TEQ and naphthalene are dependent on an empirical demonstration of the protection of groundwater. There were no naphthalene PCUL exceedances in any of the monitoring wells, preliminarily indicating that the adjusted soil remediation level is protective of groundwater. cPAHs are highly hydrophobic and the part-per-trillion concentrations detected in the two samples can occur with minor particulate matter present in a groundwater sample. Additional monitoring is warranted to confirm the groundwater concentrations, and thus the empirical demonstration, for these PAHs.

The dissolved metals data from the first monitoring event indicate exceedances for arsenic, copper, nickel, and zinc in one or more Fill Unit wells, and the data exhibit some variability relative to prior Site data. Notably, concentrations of arsenic, the primary risk-driving contaminant associated with the SBG-containing fill removed in the IA, were below the PCUL in each of the shoreline wells except the northernmost one MW-16, where it was detected at approximately 24 µg/L (verified in field duplicate sample). Arsenic was also detected at approximately 24 µg/L in upgradient well MW-12 (Table 6).

In order to compare pre- and post- IA results, Table 7 presents groundwater data from new monitoring wells paired with the closest decommissioned monitoring well; pre- and post-IA data from upgradient wells MW-8 and MW-12 are also presented for comparison. Observations for the comparison are as follows:

- For shoreline Fill Unit well MW-15 (paired with former MW-3), the initial post-IA groundwater results indicate lower concentrations of arsenic, copper, and cPAH TEQ, and a similar concentration for nickel.

- For shoreline Fill Unit well MW-13 (paired with former MW-11), the initial post-IA groundwater results indicate a decrease in arsenic, copper, cPAH TEQ, and PCP concentrations, and anomalous increases for nickel and zinc.
- For shoreline Alluvial Unit well MW-14 (paired with former MW-1) the initial post-IA groundwater results indicate a decrease in arsenic, nickel, and zinc concentrations, with no exceedances of PCULs.
- Upgradient Fill Unit well MW-8 continues to show no exceedances for any constituent.
- Upgradient Fill Unit well MW-12 sample results indicate that concentrations of arsenic and nickel have increased since pre-IA, and lower reporting limits for cPAHs now indicate an exceedance for cPAH TEQ. As stated above, MW-12 went dry during sampling, and showed increases in turbidity with recharge, which may have contributed to the anomalous metals results.

Overall, the analytical results from the first monitoring event indicate variability relative to prior Site data, which warrants verification during subsequent groundwater monitoring. Initial groundwater results from newly installed monitoring wells may be biased by disturbance of the water-bearing formation next to the well screen created during the well drilling and installation process, and subsequent monitoring should indicate whether that affected the June 2021 monitoring results.

Continued groundwater sampling events are required for compliance monitoring. Per Section 2.1.1 above, 12 months is proposed as the timeline to complete the empirical demonstration of soil compliance for cPAHs and naphthalene.

6 Conclusions

The IA was completed by 5055 Properties, LLC at the Snopac Site landward (east) of the shoring wall in accordance with the Final IAWP. The IAWP goals for the IA were to remove SBG-containing fill east of the shoring wall and meet soil remediation levels at the excavation boundary. The soil remediation levels used in this Report were derived from the most stringent LDW PCULs for soil (Ecology, 2020) with Ecology-approved adjustments for cPAH and naphthalene based on the empirical demonstration described in Section 2.1.1.

The IA excavation footprint expanded substantially from that envisioned in the IAWP in order to fully remove SBG-containing fill encountered in the excavation effort. However, visual observations during excavation and the final excavation verification soil samples indicate that all the SBG-containing fill has been successfully removed from the Site uplands inland of the shoring wall. Consistent with that, the final verification soil sample results demonstrate the residual soils in the excavation area comply with remediation levels in accordance with MTCA, thus achieving the IAWP goals.

In total, the IA achieved permanent removal of 5,983 tons of contaminated material from the Site uplands immediately adjacent to the LDW. In addition, nearly 80,000 gallons of groundwater were extracted during excavation, providing additional removal of contamination (in dissolved phase) from within the source area. The IA has accomplished substantial contaminant source control along the LDW shoreline; thus, contributing to the long-term protection of the adjacent LDW.

Since completion of the IA, five new groundwater monitoring wells have been installed to commence confirmation groundwater monitoring. The new wells are primarily screened in the Fill Unit and located near the LDW. The groundwater PCULs used in this Report were derived from the most stringent LDW PCULs for nonpotable groundwater (GWs #2-5) (Ecology, 2021). The first round of confirmation groundwater monitoring results indicate scattered metals and cPAH exceedances in Fill Unit groundwater within the IA excavation footprint and in one upgradient well. The first round of groundwater results also indicate there are no remaining naphthalene and PCP exceedances. Continued sampling events are required to for compliance monitoring and to complete the empirical demonstration of soil compliance for cPAHs and naphthalene.

This Final Report completes the IAWP implementation and satisfies IA requirements of the AO.

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Limitations

Work for this project was performed for the 5055 Properties LLC (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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TABLES

Table 1. Soil Remediation Levels

Project 150054 - Snopac Site, Seattle, WA

Indicator Hazardous Substance	IAWP Soil Remediation Levels		Practical Quantitation Level (PQL)	Adjusted Soil Remediation Levels (mg/kg)	
	Vadose Zone Soil	Saturated Zone Soil		Vadose Zone Soil	Saturated Zone Soil
Metals					
Arsenic	7	7	1	7.3	7.3
Copper	36	36	1	36	36
Lead	50	50	1	50	50
Mercury	0.07	0.07	0.01	0.07	0.07
Zinc	86	85	1	86	85
Polycyclic Aromatic Hydrocarbons (PAH)					
1-Methylnaphthalene[1]	29	29	0.002	34	34
2-Methylnaphthalene	0.67	0.67	0.002	0.67	0.67
Acenaphthene	0.5	0.028	0.002	0.5	0.028
Acenaphthylene	1.3	1.3	0.002	1.3	1.3
Anthracene	0.96	0.051	0.002	0.96	0.051
Fluoranthene	1.7	0.09	0.002	1.7	0.09
Fluorene	0.54	0.029	0.002	0.54	0.029
Naphthalene[2]	0.039	0.0021	0.002	0.056	0.056
Phenanthrene	1.5	1.5	0.002	1.5	1.5
Pyrene	2.6	0.14	0.002	2.6	0.14
Total HPAHs	12	12	0.002	12	12
Total LPAHs	5.2	5.2	0.002	5.2	5.2
Total cPAHs TEQ[2,3]	0.00031	0.000016	0.003	0.074	0.074
Semivolatile Organic Compounds[4]					
Pentachlorophenol (PCP)	0.000032	0.0000018	0.05	0.05	0.05
Polychlorinated Biphenyls (PCB)[5]					
Total PCB Aroclors	0.000043	0.0000022	0.002	0.002	0.002
Total Petroleum Hydrocarbons (TPH)[6]					
Gasoline- Range Organics	1,500	1,500		1,500	1,500
Diesel-Range Organics					
Motor Oil-Range Organics					

Notes:

IAWP - Interim Action Work Plan (Aspect, 2020)

1. All concentrations are in milligrams per kilogram (mg/kg).

2. Remediation levels are based on the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020). A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Updated since IAWP based on Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020).

2. Remediation Level adjusted based on empirical demonstration of groundwater protectiveness.

3. TEQ: Total toxic equivalent concentration of benzo(a)pyrene, calculated in accordance with WAC 173-340-708(8)(e).

4. Soil samples collected in the one location that Pentachlorophenol was detected in groundwater in accordance with IAWP. An analytical reporting limit of 0.05 mg/kg is achievable for PCP in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

5. An analytical report limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

6. A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017). Performance samples were analyzed in the area of MW-2, the only location where soil concentrations exceeded the direct contact TPH cleanup level.

Table 2A. Analytical Results for In-Place Vadose Soil (Final Verification Samples)

Project No. 150054, Snopac, Seattle, Washington

Location		**B-A-2**	**B-B-2**	**B-C-2**	**B-F-2**	**SW-AA-1**	**SW-AA-2**	**SW-A-3**	**SW-B-3**	**SW-C-5**	**SW-D-3**	**SW-E-2.5**	**SW-F-2**	**SW-G-2**	**SW-H-2**
Date		**01/04/2021**	**01/04/2021**	**01/04/2021**	**01/05/2021**	**01/21/2021**	**01/21/2021**	**12/31/2020**	**12/31/2020**	**01/15/2021**	**01/15/2021**	**01/15/2021**	**12/30/2020**	**12/30/2020**	**12/30/2020**
Sample		**B-A-2-11.5**	**B-B-2-11.5**	**B-C-2-11.5**	**B-F-2-11.5**	**SW-AA-1-12.5**	**SW-AA-2-12.5**	**SW-A-3-12**	**SW-B-3-12**	**SW-C-5-12**	**SW-D-3-12**	**SW-E-2.5-12**	**SW-F-2-12**	**SW-G-2-12**	**SW-H-2-12**
Elevation (NAVD88)		**11.5**	**11.5**	**11.5**	**11.5**	**12.5**	**12.5**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**
Analyte	**Vadose Soil Remediation Level**						**Footnote 4**					**Footnote 5**			
Metals															
Arsenic	7.3	**1.34**	< 1 U	**1.63**	**3.49**	**1.08**	**1.14**	**1.6**	**8.55**	**1.86**	**2.02**	**4.88**	**1.8**	**1.32**	**3.33**
Copper	36	**6.79**	**5.98**	**5.92**	**9.67**	**5.88**	--	**4.1**	**11.2**	**7.81**	**6.96**		**7.16**	**5.77**	**7.04**
Lead	50	**1.45**	< 1 U	**1.26**	**3.29**	< 1	--	**1.02**	**10.1**	**5.41**	**2.14**	--	**1.7**	**1.02**	**2.56**
Mercury	0.07	**0.017**	**0.015**	**0.01**	**0.13**	< 0.01	--	**0.01**	**0.048**	**0.019**	**0.015**	--	**0.012**	< 0.01 U	**0.01**
Zinc	86	**16.8**	**12.6**	**13.5**	**87**	**12.2**	--	**11.4**	**34.8**	**20.2**	**16.8**	--	**33.3**	**12.8**	**18**
Polycyclic Aromatic Hydrocarbons (PAHs)															
1-Methylnaphthalene	34	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	**0.0022**	< 0.002 U	< 0.002 U	--	< 0.002 U	< 0.002 U	< 0.002 U
2-Methylnaphthalene	0.67	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	**0.0039 J**	< 0.002 U	< 0.002 U	--	< 0.002 U	< 0.002 U	< 0.002 U
Acenaphthene	0.5	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	**0.003**	< 0.002 U	< 0.002 U
Acenaphthylene	1.3	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	< 0.002 U	< 0.002 U	< 0.002 U
Anthracene	0.96	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	**0.0068**	**0.0037**	< 0.002 U
Fluoranthene	1.7	< 0.002 U	< 0.002 U	< 0.002 U	**0.0034**	< 0.002	--	**0.003**	**0.0048**	**0.0063**	**0.0029**	--	**0.041**	**0.025**	**0.0054**
Fluorene	0.54	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	**0.0021**	< 0.002 U	< 0.002 U
Naphthalene	0.056	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	< 0.002 U	**0.0022**	< 0.002 U	< 0.002 U	--	< 0.002 U	< 0.002 U	< 0.002 U
Phenanthrene	1.5	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002	--	**0.0021**	**0.0041**	**0.0042**	< 0.002 U	--	**0.029**	**0.017**	**0.0032**
Pyrene	2.6	< 0.002 U	< 0.002 U	< 0.002 U	**0.0027**	< 0.002	--	**0.0029**	**0.0053**	**0.0056**	**0.0026**	--	**0.042**	**0.024**	**0.0049**
Total HPAHs	12	< 0.002 U	< 0.002 U	< 0.002 U	**0.0109**	< 0.002 U	--	**0.0105**	**0.0379 J**	**0.0384**	**0.0076**	--	**0.2248 J**	**0.1183 J**	**0.0335 J**
Total LPAHs	5.2	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	**0.0021**	**0.0063**	**0.0042**	< 0.002 U	--	**0.0409**	**0.0207**	**0.0032**
Total cPAHs TEQ[1]	0.074	< 0.00302 U	< 0.00302 U	< 0.00302 U	**0.0033**	< 0.00302 U	--	**0.0033**	**0.0061 J**	**0.0057**	**0.0030**	--	**0.035 J**	**0.017 J**	**0.0054 J**
Semivolatile Organic Compounds (SVOCs)															
Pentachlorophenol[2]	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)															
Total PCBs Aroclors[3]	0.002	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	--	< 0.002 U	< 0.002 U	**0.0023**	< 0.002 U	--	< 0.002 U	< 0.002 U	< 0.002 U

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

All concentrations are in

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020) or established emperically and approved by Ecology. A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. Soil samples collected in the one location that Pentachlorophenol was detected in groundwater in accordance with IAWP. An analytical reporting limit of 0.05 mg/kg is achievable for PCP in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

3. An analytical reporting limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

4. Location SW-AA-2 was collected after overexcavation of Sample SW-A-2 to achieve compliance with arsenic remediation level (Figure 1). SW-A-2 results are in Table 2B.

5. Location SW-E-2.5 was collected after overexcavation of Sample SW-E-2 to achieve compliance with arsenic remediation level (Figure 1). SW-E-2 results are in Table 2B.

Table 2A. Analytical Results for In-Place Vadose Soil (Final Verification Samples)

Project No. 150054, Snopac, Seattle, Washington

	Location	SW-I-3	SW-J-3	SW-K-2	SW-K-3	SW-L-2	SW-L-4	SW-M-1	SW-M-3	SW-N-5
	Date	12/31/2020	01/15/2021	12/31/2020	01/15/2021	12/31/2020	01/22/2021	12/31/2020	01/22/2021	01/22/2021
	Sample	SW-I-3-12	SW-J-3-13	SW-K-2-12	SW-K-3-13	SW-L-2-12	SW-L-4-13	SW-M-1-12	SW-M-3-14	SW-N-5-13
	Elevation (NAVD88)	12	13	12	13	12	13	12	14	13
Analyte	**Vadose Soil Remediation Level**									
Metals										
Arsenic	7.3	**2.02**	**2.45**	**3.14**	**3.02**	**2.48**	**1.6**	**4.12**	**1.29**	**1.69**
Copper	36	**6.07**	**8.16**	**23.3**	**7.06**	**20.7**	**6.36**	**14.5**	**7.13**	**6.51**
Lead	50	**1.26**	**1.64**	**13.4**	**2.46**	**12.5**	**1.16**	**21.8**	**1.98**	**1.63**
Mercury	0.07	< 0.01 U	**0.088**	**0.061**	**0.017**	**0.033**	< 0.01 U	**0.025**	< 0.01 U	< 0.01 U
Zinc	86	**14.7**	**17**	**57.2**	**27.9**	**37.9**	**65**	**31.9**	**14**	**15.7**
Polycyclic Aromatic Hydrocarbons (PAHs)										
1-Methylnaphthalene	34	< 0.002 U	< 0.002 U	**0.056**	**0.0021**	**0.073**	< 0.002 U	**0.011**	< 0.002 U	< 0.002 U
2-Methylnaphthalene	0.67	< 0.002 U	< 0.002 U	**0.071 J**	**0.0024**	**0.095 J**	< 0.002 U	**0.015 J**	< 0.002 U	< 0.002 U
Acenaphthene	0.5	< 0.002 U	< 0.002 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Acenaphthylene	1.3	< 0.002 U	< 0.002 U	< 0.01 U	< 0.002 U	**0.0053**	< 0.002 U	**0.0027**	< 0.002 U	< 0.002 U
Anthracene	0.96	< 0.002 U	< 0.002 U	**0.015**	< 0.002 U	**0.0096**	< 0.002 U	**0.0066**	< 0.002 U	< 0.002 U
Fluoranthene	1.7	< 0.002 U	**0.0043**	**0.085**	**0.0029**	**0.041**	< 0.002 U	**0.036**	< 0.002 U	< 0.002 U
Fluorene	0.54	< 0.002 U	< 0.002 U	< 0.01 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Naphthalene	0.056	< 0.002 U	< 0.002 U	**0.093**	< 0.002 U	**0.076**	< 0.002 U	**0.013**	< 0.002 U	< 0.002 U
Phenanthrene	1.5	< 0.002 U	**0.0029**	**0.06**	**0.0037**	**0.045**	< 0.002 U	**0.02**	< 0.002 U	< 0.002 U
Pyrene	2.6	< 0.002 U	**0.0042**	**0.074**	**0.003**	**0.059**	< 0.002 U	**0.05**	< 0.002 U	< 0.002 U
Total HPAHs	12	< 0.002 UJ	**0.0194**	**0.607 J**	**0.0194**	**0.328 J**	< 0.002 U	**0.3877 J**	< 0.002 U	< 0.002 U
Total LPAHs	5.2	< 0.002 U	**0.0029**	**0.168**	**0.0037**	**0.1359**	< 0.002 U	**0.0423**	< 0.002 U	< 0.002 U
Total cPAHs TEQ[1]	0.074	< 0.00302 U	**0.0037**	**0.070 J**	**0.0041**	**0.046 J**	< 0.00302 U	**0.059 J**	< 0.00302 U	< 0.00302 U
Semivolatile Organic Compounds (SVOCs)										
Pentachlorophenol[2]	0.05	--	--	--	--	< 0.05 U	--	< 0.05 U	--	--
Polychlorinated Biphenyls (PCBs)										
Total PCBs Aroclors[3]	0.002	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0024**	< 0.002 U	**0.0025**	< 0.002 U	< 0.002 U

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

All concentrations are in

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020) or established emperically and approved by Ecology. A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. Soil samples collected in the one location that Pentachlorophenol was detected in groundwater in accordance with IAWP. An analytical reporting limit of 0.05 mg/kg is achievable for PCP in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

3. An analytical reporting limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

4. Location SW-AA-2 was collected after overexcavation of Sample SW-A-2 to achieve compliance with arsenic remediation level (Figure 1). SW-A-2 results are in Table 2B.

5. Location SW-E-2.5 was collected after overexcavation of Sample SW-E-2 to achieve compliance with arsenic remediation level (Figure 1). SW-E-2 results are in Table 2B.

Table 2B. Analytical Results for Overexcavated Vadose Soil (Removed from Site)

Project No. 150054, Snopac, Seattle, Washington

	Location	B-B-3	B-D-2	B-G-2	B-I-2	SW-A-1	SW-A-2	SW-C-3	SW-D-2	SW-D-3	SW-E-2	SW-JK-2	SW-L-3
	Date	01/04/2021	01/05/2021	01/05/2021	01/05/2021	12/30/2020	12/31/2020	12/31/2020	12/30/2020	12/31/2020	12/30/2020	12/31/2020	01/15/2021
	Sample	B-B-3-11.5	B-D-2-11.5	B-G-2-11.5	B-I-2-11.5	SW-A-1-12	SW-A-2-12.5	SW-C-3-12	SW-D-2-12	SW-D-3-12.5	SW-E-2-12	SW-JK-2-14	SW-L-3-14
	Elevation (NAVD88)	11.5	11.5	11.5	11.5	12	12.5	12	12	12.5	12	14	14
Analyte	**Vadose Soil Remediation Level**												
Metals													
Arsenic	7.3	**11**	**37.9**	**6.88**	**5.61**	**1190**	**9.4**	**508**	**12.5**	**31.9**	**18.9**	**5640**	**108**
Copper	36	**20.2**	**34.7**	**8.62**	**188**	**762**	**26.1**	**308**	**15.4**	**139**	**18.6**	**3350**	**108**
Lead	50	**17.8**	**63.2**	**165**	**32.3**	**1250**	**17.3**	**428**	**14.6**	**145**	**14**	**4120**	**73.3**
Mercury	0.07	**0.023**	**0.034**	**0.029**	**0.067**	**0.17**	**0.044**	**0.056**	**0.02**	**0.085**	**0.021**	**1**	**0.039**
Zinc	86	**52.2**	**162**	**60.6**	**72.6**	**3760**	**72.9**	**1550**	**54.5**	**674**	**67.4**	**17000**	**367**
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	34	< 0.002 U	**0.017**	< 0.002 U	**0.012**	**0.1**	**0.055**	**0.017**	**0.0065**	**0.026**	**0.0077**	< 0.05 U	**0.0072**
2-Methylnaphthalene	0.67	< 0.002 U	**0.018**	< 0.002 U	**0.016**	**0.16 J**	**0.058 J**	**0.026 J**	**0.0074 J**	**0.033 J**	**0.0094 J**	< 0.05 U	**0.0091**
Acenaphthene	0.5	< 0.002 U	**0.032**	< 0.002 U	< 0.01 U	**0.066**	**0.002**	**0.0022**	**0.011**	**0.0035**	**0.012**	**0.058**	**0.0037**
Acenaphthylene	1.3	< 0.002 U	< 0.01 U	< 0.002 U	< 0.01 U	< 0.05 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0037**	< 0.002 U	< 0.05 U	< 0.002 U
Anthracene	0.96	< 0.002 U	**0.06**	< 0.002 U	< 0.01 U	**0.14**	**0.0056**	**0.0054**	**0.026**	**0.0085**	**0.026**	**0.13**	**0.01**
Fluoranthene	1.7	**0.0072**	**0.24**	**0.0023**	**0.033**	**0.91**	**0.027**	**0.062**	**0.12**	**0.059**	**0.12**	**2**	**0.073**
Fluorene	0.54	< 0.002 U	**0.027**	< 0.002 U	< 0.01 U	**0.078**	< 0.002 U	**0.0024**	**0.011**	**0.0041**	**0.013**	< 0.05 U	**0.0036**
Naphthalene	0.056	< 0.002 U	**0.018**	< 0.002 U	**0.022**	**0.13**	**0.034**	**0.015**	**0.013**	**0.026**	**0.02**	< 0.05 U	**0.0083**
Phenanthrene	1.5	**0.0034**	**0.23**	< 0.002 U	**0.026**	**0.67**	**0.06**	**0.033**	**0.098**	**0.053**	**0.1**	**0.84**	**0.042**
Pyrene	2.6	**0.0072**	**0.22**	**0.0021**	**0.029**	**0.77**	**0.043**	**0.08**	**0.14**	**0.079**	**0.13**	**1.9**	**0.078**
Total HPAHs	12	**0.0497**	**1.119**	**0.0112**	**0.201**	**4.58 J**	**0.1689 J**	**0.4735 J**	**0.628 J**	**0.4259 J**	**0.6268 J**	**12.04 J**	**0.4373**
Total LPAHs	5.2	**0.0034**	**0.367**	< 0.002 U	**0.048**	**1.084**	**0.1016**	**0.058**	**0.159**	**0.0988**	**0.171**	**1.028**	**0.0676**
Total cPAHs TEQ[1]	0.074	**0.0081**	**0.16**	**0.0032**	**0.029**	**0.67 J**	**0.019 J**	**0.078 J**	**0.093 J**	**0.062 J**	**0.096 J**	**1.88 J**	**0.070**
Polychlorinated Biphenyls (PCBs)													
Total PCBs Aroclors[2]	0.002	< 0.002 U	**0.0141**	< 0.002 U	**0.0182**	**0.3**	**0.0033**	**0.105**	**0.0098**	**0.239**	**0.0027**	**0.33**	**0.038**

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

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

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020). A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. A report limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level will be established at this practical quantitation limit.

Table 3A. Analytical Results for In-Place Saturated Soil (Final Verification Samples)

Project No. 150054, Snopac, Seattle, Washington

	Location	B-A-1	B-B-1	B-C-1	B-D-1	B-E-1	B-F-1	B-G-1	B-H-1	B-I-1	B-J-1	B-K-1	B-L-1
	Date	01/13/2021	01/13/2021	01/13/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/11/2021	01/13/2021	01/15/2021	01/11/2021
	Sample	B-A-1-5	B-B-1-5	B-C-1-6	B-D-1-6	B-E-1-5.5	B-F-1-5	B-G-1-6	B-H-1-6	B-I-1-4.5	B-J-1-4	B-K-1-4.5	B-L-1-4
	Elevation (NAVD88)	5	5	6	6	5.5	5	6	6	4.5	4	4.5	4
Analyte	Saturated Soil Remediation Level												
Metals													
Arsenic	7.3	**7.57**	**5**	**5.23**	**7.05**	**4.58**	**3.33**	**3.66**	**4.69**	**4.92 J**	**3.24**	**10.1**	**5.13 J**
Copper	36	**17.4**	**17.5**	**31.2**	**19.9**	**26.1**	**24.7**	**18.2**	**27**	**16.9**	**22.8**	**19.7**	**23.7**
Lead	50	**2.69**	**2.65**	**4.62**	**3.42**	**3.98**	**3.57**	**3.76**	**3.93**	**3.07**	**3.22**	**3.85**	**3.27**
Mercury	0.07	**0.032**	**0.026**	**0.042**	**0.035**	**0.046**	**0.035**	**0.029**	**0.04**	**0.028**	**0.033**	**0.036**	**0.036**
Zinc	85	**15.9**	**20.1**	**23.9**	**27.9**	**20.4**	**19.9**	**21.8**	**22.5**	**20.9**	**20.3**	**23.9**	**26.1**
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	34	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.0038**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
2-Methylnaphthalene	0.67	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.004**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Acenaphthene	0.028	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.007**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Acenaphthylene	1.3	< 0.002 U	< 0.002 U	< 0.004 UJ	< 0.002 U	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Anthracene	0.051	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.0088**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Fluoranthene	0.09	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.056 J**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Fluorene	0.029	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.006**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Naphthalene	0.056	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.0057**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0021**	**0.0071**
Phenanthrene	1.5	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.055**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0029**
Pyrene	0.14	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.052**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Total HPAHs	12	< 0.002 U	< 0.002 U	< 0.004 UJ	**0.2458**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Total LPAHs	5.2	< 0.002 U	< 0.002 U	< 0.004 U	**0.0825**	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0021**	**0.01**
Total cPAHs TEQ[1]	0.074	< 0.00302 U	< 0.00302 U	< 0.00604 U	**0.035**	< 0.00604 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U
Polychlorinated Biphenyls (PCB)													
Total PCB Aroclors[3]	0.002	< 0.002 U	< 0.002 U	< 0.004 UJ	< 0.002 U	< 0.004 UJ	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Total Petroleum Hydrocarbons (TPH)[2]													
Gasoline-Range Organics	1,500	--	--	--	--	--	--	--	--	< 5 U	--	--	--
Diesel-Range Organics		--	--	--	--	--	--	--	--	< 50 U	--	--	--
Motor Oil-Range Organics		--	--	--	--	--	--	--	--	< 250 U	--	--	--

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

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

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020) or established emperically and approved by Ecology. A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. Soil samples collected in one location that exceeded generic direct contact cleanup level in accordance with IAWP performance monitoring plan.

3. An analytical reporting limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

Table 3A. Analytical Results for In-Place Saturated Soil (Final Verification Samples)

Project No. 150054, Snopac, Seattle, Washington

	Location	SW-A-1	SW-B-1	SW-C-1	SW-D-1	SW-E-1	SW-F-1	SW-G-1	SW-H-1	SW-I-1	SW-J-1	SW-K-1	SW-L-1
	Date	01/13/2021	01/13/2021	01/13/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021
	Sample	SW-A-1-8	SW-B-1-8	SW-C-1-9	SW-D-1-8	SW-E-1-8	SW-F-1-8	SW-G-1-7	SW-H-1-9	SW-I-1-8	SW-J-1-8	SW-K-1-5	SW-L-1-8
	Elevation (NAVD88)	8	8	9	8	8	8	7	9	8	8	8	8
Analyte	Saturated Soil Remediation Level												
Metals													
Arsenic	7.3	**1.11**	**1.45**	**1.4**	**1.29**	**2.33**	**2.23**	**1.14**	**1.17**	**1.05 J**	**1.12 J**	**1.16 J**	**5.59 J**
Copper	36	**6.45**	**7.26**	**5.17**	**6.07**	**7.45**	**20.7**	**6.39**	**6.77**	**6.54**	**6.78**	**6.29**	**18.1**
Lead	50	< 1 U	< 1 U	**1.73**	**1.11**	**1.12**	**1.95**	**1.38**	**2.42**	< 1 U	< 1 U	< 1 U	**3.45**
Mercury	0.07	**0.016**	**0.01**	< 0.01 U	< 0.01 U	**0.015**	**0.028**	**0.01**	**0.018**	< 0.1 U	< 0.1 U	< 0.1 U	**0.041**
Zinc	85	**48.3**	**29.3**	**21.3**	**14.6**	**17.1**	**73**	**44**	**19**	**20.6**	**21.8**	**25.3**	**50.4**
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	34	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.011**
2-Methylnaphthalene	0.67	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0075**
Acenaphthene	0.028	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0032**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.036**
Acenaphthylene	1.3	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Anthracene	0.051	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.008**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Fluoranthene	0.09	< 0.002 U	< 0.002 U	**0.0021 J**	< 0.002 U	< 0.002 U	**0.064 J**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.064**
Fluorene	0.029	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0046**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.018**
Naphthalene	0.056	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0023**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.01**
Phenanthrene	1.5	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0088**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Pyrene	0.14	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.046**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.11**
Total HPAHs	12	< 0.002 U	< 0.002 U	**0.021**	< 0.002 U	< 0.002 U	**0.3761**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.2198**
Total LPAHs	5.2	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.0269**	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	**0.064**
Total cPAHs TEQ[1]	0.074	< 0.00302 U	< 0.00302 U	**0.005**	< 0.00302 U	< 0.00302 U	**0.052**	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	< 0.00302 U	**0.008**
Polychlorinated Biphenyls (PCB)													
Total PCB Aroclors[3]	0.002	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Total Petroleum Hydrocarbons (TPH)[2]													
Gasoline-Range Organics	1,500	--	--	--	--	--	--	--	--	< 5 U	--	--	--
Diesel-Range Organics		--	--	--	--	--	--	--	--	< 50 U	--	--	--
Motor Oil-Range Organics		--	--	--	--	--	--	--	--	< 250 U	--	--	--

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

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

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020) or established emperically and approved by Ecology. A combined TPH remediation level is based on the generic direct contact cleanup level of 1,500 mg/kg. (Ecology, 2017).

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. Soil samples collected in one location that exceeded generic direct contact cleanup level in accordance with IAWP performance monitoring plan.

3. An analytical reporting limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

Table 3B. Analytical Results for Overexcavated Saturated Soil (Removed from Site)

Project No. 150054, Snopac, Seattle, Washington

	Location	B-J-1	B-K-1
	Date	01/11/2021	01/11/2021
	Sample	B-J-1-4.5	B-K-1-5
	Elevation (NAVD88)	4.5	5
Analyte	Saturated Soil Remediation Level		
Metals			
Arsenic	7.3	**19.5 J**	**10.3 J**
Copper	36	**51.9**	**24.3**
Lead	50	**26**	**7.35**
Mercury	0.07	**0.12**	**0.035**
Zinc	85	**81.7**	**34.3**
Polycyclic Aromatic Hydrocarbons (PAHs)			
1-Methylnaphthalene	34	**0.09**	**0.019**
2-Methylnaphthalene	0.67	**0.058**	**0.029**
Acenaphthene	0.028	**0.16**	**0.036**
Acenaphthylene	1.3	**0.0045**	< 0.002 U
Anthracene	0.051	**0.096**	**0.015**
Fluoranthene	0.09	**0.3**	**0.04**
Fluorene	0.029	**0.12**	**0.024**
Naphthalene	0.056	**0.18**	**0.11**
Phenanthrene	1.5	**0.43**	**0.071**
Pyrene	0.14	**0.26**	**0.034**
Total HPAHs	12	**1.216**	**0.1546**
Total LPAHs	5.2	**0.9905**	**0.256**
Total cPAHs TEQ[1]	0.074	**0.15**	**0.019**
Polychlorinated Biphenyls (PCB)			
Total PCB Aroclors[2]	0.002	**0.08 J**	**0.0208**

Notes:

Bold - detected

Blue Shaded - Detected result exceeded remediation level

IAWP - Interim Action Work Plan (Aspect, 2020)

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

HPAH = high-molecular weight PAH; LPAH = low-molecular weight PAH

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

Remediation levels are the most-stringent Preliminary Cleanup Levels (PCULs) from the Preliminary Cleanup Levels Workbook for the Lower Duwamish Waterway (Ecology, 2020) or established emperically and approved by Ecology.

1. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

2. A report limit of 0.002 mg/kg is achievable by the laboratory for PCB Aroclors in soil. In accordance with WAC 173-340-700(6)(d), the soil remediation level is established at this practical quantitation limit.

Table 4. Statistical Compliance Summary for In-Place Soil, Interim Action Excavation

Project No. 150054, Snopac, Seattle, Washington

	Remediation Levels (mg/kg)[4]			Exceedance Frequency (must be <10%)		Exceedance Factor (must be ≤2)		95% Upper Confidence Limit (UCL) Concentration (mg/kg) (must be < remediation level)	
Indicator Hazardous Substance	**Vadose Zone Soil**	**Saturated Zone Soil**	**Number of Samples**	**Number of Samples Exceeding Remediation Level**	**Frequency of Exceedance**	**Maximum Residual Concentration (mg/kg)**	**Exceedance Factor for Maximum Concentration**	**95% Upper Confidence Limit (UCL) Concentration (mg/kg)(1)**	**Notes re: 95% UCL Distribution**
Metals									
Arsenic	7.3	7.3	47	3	6%	10.1	1.4	4.408	Data do not follow any distribution; Maximum 95% UCL selected
Copper	36	36	45	0	0%	--	--	--	
Lead	50	50	45	0	0%	--	--	--	
Mercury	0.07	0.07	45	2	4%	0.13	1.9	0.039	Lognormal distribution
Zinc	86	85	45	1	2%	87.0	1.0	37.99	Data do not follow any distribution; Maximum 95% UCL selected
Polycyclic Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene	34	34	45	0	0%	--		--	
2-Methylnaphthalene	0.67	0.67	45	0	0%	--		--	
Acenaphthene	0.5	0.028	45	1	2%	0.036	1.3	0.00187	Lognormal distribution
Acenaphthylene	1.3	1.3	45	0	0%	--	--	--	
Anthracene	0.96	0.051	45	0	0%	--	--	--	
Fluoranthene	1.7	0.09	45	0	0%	--	--	--	
Fluorene	0.54	0.029	45	0	0%	--	--	--	
Naphthalene	0.056	0.056	45	2	4%	0.093	1.7	0.00425	Lognormal distribution
Phenanthrene	1.5	1.5	45	0	0%	--	--	--	
Pyrene	2.6	0.14	45	0	0%	--	--	--	
Total HPAHs	12	12	45	0	0%	--	--	--	
Total LPAHs	5.2	5.2	45	0	0%	--	--	--	
Total cPAHs TEQ[3]	0.074	0.074	45	0	0%	--	--	--	
Semivolatile Organic Compounds									
Pentachlorophenol	0.05	0.05	2	0	0%	--	--	--	
Polychlorinated Biphenyls (PCB)									
Total PCB Aroclors	0.002	0.002	45	3	7%	0.0025	1.3	0.00127	Normal distribution
Total Petroleum Hydrocarbons (TPH)									
Gasoline-Range Organics	1,500	1,500	2	0	0%	--	--	--	
Diesel-Range Organics									
Motor Oil-Range Organics									

Notes:

mg/kg - milligrams per kilogram

1. EPA software ProUCL v. 5.1 was used to calculate the 95% Upper Confidence Limit for analytes that exceed remediation levels

2. -- : No exceedances so exceedance magnitue and 95% UCL not calculated.

3. Carcinogenic PAHs total toxic equivalent concentration of benzo(a)pyrene (total cPAH s TEQ) calculated in accordance with WAC 173-340-708(8)(e).

4. Remediation level adjusted with respect to Interim Action Work Plan remediation levels (see Table 1).

J - Result value estimated

Table 5. Monitoring Well Construction and Water Level Data

Project No. 150054, SnoPac, Seattle, Washington

Well ID	Horizontal Coordinates (Washington State Plane, ft)		Ground Surface Elevation (ft)	Top of Casing Elevation (ft)	Screened Interval Depths (ft bgs)		2/5/2017(1)		1/28/2018(2)		6/22/2021(3)		6/24/2021(4)		6/25/2021(5)	
	Northing	Easting			Top	Bottom	Depth to Water Below TOC (ft)	Groundwater Elevation (ft)	Depth to Water Below TOC (ft)	Groundwater Elevation (ft)	Depth to Water Below TOC (ft)	Groundwater Elevation (ft)	Depth to Water Below TOC (ft)	Groundwater Elevation (ft)	Depth to Water Below TOC (ft)	Groundwater Elevation (ft)
MW-1	206441.5	1268610.7	16.4	16.14	8.0	18.0	8.70	7.44	8.42	7.72						
MW-2	206497.9	1268577.1	15.7	15.51	5.0	15.0	8.88	6.63	8.68	6.83						
MW-3	206538.6	1268552.1	15.7	15.20	2.5	12.5	11.69	3.51	11.50	3.70						
MW-4	206607.8	1268514.5	15.7	15.28	4.0	14.0	8.86	6.42	8.91	6.37						
MW-5	206491.4	1268605.2	15.8	15.49	4.0	14.0	6.93	8.56	7.28	8.21						
MW-6	206541.3	1268591.0	16.2	15.74	4.0	14.0	7.01	8.73	8.68	7.06						
MW-7	206620.1	1268549.2	15.5	15.17	4.0	14.0	6.59	8.58	6.68	8.49						
MW-8	206684.0	1268659.2	16.8	16.42	15.0	25.0	11.13	5.29	11.37	5.05	11.93	4.49	9.32	7.10	12.04	4.38
MW-9	206457.2	1268657.8	16.4	16.05	4.0	14.0	7.07	8.98	7.86	8.19						
MW-10	206402.6	1268749.2	17.0	16.60	15.0	25.0	10.60	6.00	9.98	6.62						
MW-11	206438.3	1268607.7	16.6	16.21	4.0	14.0	8.89	7.32	8.71	7.50						
MW-12	206678.8	1268632.2	16.5	16.15	4.0	14.0	7.94	8.21	7.61	8.54	NM	--	NM	--	9.84	6.31
MW-13	206432.9	1268602.4	15.1	14.86	2.5	12.5	--	--	--	--	8.92	5.94	8.62	6.24	8.56	6.30
MW-14	206447.3	1268601.4	15.0	14.61	16.0	21.0	--	--	--	--	10.04	4.57	7.92	6.69	9.46	5.15
MW-15	206548.0	1268558.9	15.0	14.48	6.0	11.0	--	--	--	--	7.68	6.80	7.45	7.03	7.42	7.06
MW-16	206644.7	1268498.6	14.5	14.28	5.5	10.5	--	--	--	--	7.32	6.96	6.74	7.54	6.81	7.47
MW-17	206420.9	1268745.8	16.0	15.61	2.5	12.5	--	--	--	--	NM	--	9.02	6.59	8.99	6.62

Notes:

Horizontal Datum: NAD83/11. Vertical Datum: NAVD88.

1: Water levels measured between approximately 1-1.5 hour before lower low tide on 2/5/17.

2: Water levels measured between approximately 2.5-3 hours before lower low tide on 1/28/18 .

3: Water levels measured between approximately 1-1.5 hours after lower low tide on 6/22/21

4:Water levels measured between approximately 1-1.5 hours after higher high tide on 6/24/21.

5: Water levels measured throughout the day on 6/25/21.

NM - Not measured. MW-12 was burried beneath quarry spalls until 6/25/21. MW-17 was not yet installed on 6/22/21.

bgs: Below ground surface.

Gray highlighted wells are decommissioned.

Table 6. Analytical Results for Groundwater Compliance Monitoring

Project No. 150054 , SnoPac, Seattle, Washington

			Location	**MW-8**	**MW-12**	**MW-13**	**MW-14**	**MW-15**	**MW-16**	**MW-16-FD**	**MW-17**
			Date	**06/25/2021**	**06/25/2021-06/29/2021**	**06/25/2021**	**06/25/2021**	**06/25/2021**	**06/25/2021**	**06/25/2021**	**06/25/2021**
			Sample	**MW-8-062521**	**MW-12-062521**	**MW-13-062521**	**MW-14-062521**	**MW-15-062521**	**MW-16-062521**	**MW-160-062521**	**MW-17-062521**
Analyte	Fraction	Unit	PCUL								
Metals											
Arsenic	D	ug/L	8	**1.17**	**23.7**	**2.97**	**1.03**	**5.55**	**24.1**	**23.6**	< 1 U
Copper	D	ug/L	3.1	< 1 U	< 1 U	**4.03**	< 1 U	**3.76**	**4.54**	**6.26**	< 1 U
Lead	D	ug/L	5.6	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Mercury	D	ug/L	0.025	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Nickel	D	ug/L	8.2	**1.74**	**14.1**	**42.6**	**2.79**	**12.9**	**10**	**11**	**2.19**
Zinc	D	ug/L	81	< 1 UJ	**1.99 J**	**161 J**	**1.62 J**	**4.57 J**	**5.07 J**	**17.4 J**	**5.85 J**
Organometallic											
Tributyltin	T	ug/L		< 0.34 U	< 0.35 U	< 0.33 U	< 0.34 U	< 0.35 U	< 0.35 U	< 0.35 U	< 0.35 U
Other SVOCs											
Pentachlorophenol(1)	T	ug/L	0.05	--	--	< 0.05 U	--	--	--	--	--
PAHs											
1-Methylnaphthalene	T	ug/L	800	< 0.05 U	< 0.05 U	**0.072**	**0.12**	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
2-Methylnaphthalene	T	ug/L	14	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Acenaphthene	T	ug/L	5.3	< 0.005 U	**0.007**	**3.4**	**0.87**	**0.013**	< 0.005 U	< 0.005 U	**0.0067**
Acenaphthylene	T	ug/L		< 0.005 U	< 0.005 U	**0.08**	**0.0055**	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Anthracene	T	ug/L	2.1	< 0.005 U	< 0.005 U	**0.095**	**0.039**	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Fluoranthene	T	ug/L	1.8	< 0.005 U	**0.029**	**0.86**	**0.11**	**0.012**	**0.0065**	**0.007**	**0.0065**
Fluorene	T	ug/L	3.7	< 0.005 U	< 0.005 U	**1.1**	**0.1**	**0.005**	< 0.005 U	< 0.005 U	< 0.005 U
Naphthalene	T	ug/L	1.4	**0.0068**	**0.016**	**0.005**	**0.62**	**0.011**	< 0.005 U	< 0.005 U	**0.015**
Phenanthrene	T	ug/L		**0.0085**	**0.022**	**0.014**	**0.092**	**0.016**	**0.014**	**0.0075**	**0.012**
Pyrene	T	ug/L	2	< 0.005 U	**0.031**	**0.56**	**0.11**	**0.012**	**0.008**	**0.0092**	**0.006**
Total cPAHs TEQ (ND=1)(1,2)	T	ug/L	0.008	< 0.00755 U	**0.02018**	**0.00909**	< 0.00755 U	< 0.00755 U	< 0.00755 U	< 0.00755 U	< 0.00755 U
Polychlorinated Biphenyls (PCBs)											
Total PCBs (Sum of Aroclors)(1,3)	T	ug/L	0.005	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
TPHs											
Diesel Range Organics	T	ug/L	500	--	--	**230 X**	--	--	--	--	--
Motor Oil Range Organics	T	ug/L	500	--	--	< 250 U	--	--	--	--	--
Extended Range Organics	T	ug/L	500	--	--	**230 X**	--	--	--	--	--

Notes:

Bold - detected

Blue Shaded - Detected result or non-detected RL exceeded PCUL

U - Analyte not detected at or above Reporting Limit (RL) shown

X - Chromatographic pattern does not match fuel standard used for quantitation

FD - Field Duplicate QC sample

D - Dissolved Fraction (filtered) sample result

T - Total Fraction (unfiltered) sample result

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

"--" - indicates results not available

µg/L = microgram per liter

ND = 1 - calculated using the reporting limit value for non-detected components

PCUL = Proposed Cleanup Level

Most stringent screening levels are the most stringent preliminary cleanup levels (PCULs) for groundwater (GWs #2-5) established by the May 2021 LDW Preliminary Cleanup Level Workbook (Ecology, 2021).

1. The Laboratory Method Reporting Limit (MRL) is the Practical Quantitation Limit (PQL), as per WAC 173-340-700(6)(d), for purposes of this monitoring program. In accordance with WAC 173-340-700(6)(d), the groundwater PCULs are established at the PQL.
2. TEQ: Total toxic equivalent concentration of benzo(a)pyrene, calculated in accordance with WAC 173-340-708(8)(e). The total cPAH TEQ PCUL incorporates TEF values for each individual cPAH and is set at the PQL.
3. Total PCBs is the sum of detected Aroclor concentrations.

Table 7. Select Groundwater Analytical Results Pre- and Post- IA

Project No. 150054. Snopac, Seattle, Washington

			Alluvium Wells MW-1 and MW-14			Fill wells MW-3 and MW-15			Fill Well MW-8 (upgradient of IA area)		
		Location Date Sample	MW-1 02/07/2017 MW1-020717	MW-1 01/29/2018 MW01-20180129	MW-14 06/25/2021 MW-14-062521	MW-3 02/08/2017 MW3-020817	MW-3 01/30/2018 MW-03-20180130	MW-15 06/25/2021 MW-15-062521	MW-8 02/08/2017 MW8-020817	MW-8 01/29/2018 MW08-20180129	MW-8 06/25/2021 MW-8-062521
Analyte	**Unit**	**PCUL**									
Metals											
Arsenic, dissolved	ug/L	8	**14.2 J**	**8.68 J**	**1.03**	**12.6 J**	**8.95 J**	**5.55**	**2.42**	**1.35**	**1.17**
Copper, dissolved	ug/L	3.1	**7.59 J**	< 5 UJ	< 1 U	**8.88 J**	**5.1 J**	**3.76**	< 5 U	< 5 U	< 1 U
Lead, dissolved	ug/L	8.1	< 1 UJ	< 1 UJ	< 1 U	< 1 UJ	< 1 UJ	< 1 U	< 1 U	< 1 U	< 1 U
Mercury, dissolved	ug/L	0.025	< 1 UJ	< 1 UJ	< 0.01 U	< 1 UJ	< 1 UJ	< 0.01 U	< 1 U	< 1 U	< 0.01 U
Nickel, dissolved	ug/L	8.2	**24.3 J**	**2.64 J**	**2.79**	**9.81 J**	**2.55 J**	**12.9**	**3.53**	**2.17**	**1.74**
Zinc, dissolved	ug/L	81	**12.3 J**	**12.4 J**	**1.62 J**	**15.3 J**	**7.49 J**	**4.57 J**	< 5 U	< 5 U	< 1 UJ
Polycyclic Aromatic Hydrocarbons (PAHs)											
1-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	**0.12**	< 0.2 U	< 0.2 U	< 0.05 U	< 0.2 U	< 0.2 U	< 0.05 U
2-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	< 0.05 U	< 0.2 U	< 0.2 U	< 0.05 U	< 0.2 U	< 0.2 U	< 0.05 U
Acenaphthene	ug/L	5.3	< 0.03 U	< 0.03 U	**0.87**	**0.59**	< 0.03 U	**0.013**	< 0.03 U	< 0.03 U	< 0.005 U
Acenaphthylene	ug/L		< 0.03 U	< 0.03 U	**0.0055**	< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Anthracene	ug/L	2.1	< 0.03 U	< 0.03 U	**0.039**	**0.052**	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Benz(a)anthracene	ug/L		< 0.03 U	< 0.03 U	< 0.01 U	< 0.03 U	**0.068**	< 0.01 U	< 0.03 U	< 0.03 U	< 0.01 U
Benzo(a)pyrene	ug/L		< 0.03 U	< 0.03 U	**0.11**	< 0.03 U	**0.14**	**0.012**	< 0.03 U	< 0.03 U	< 0.005 U
Benzo(b)fluoranthene	ug/L		< 0.03 U	< 0.03 U	**0.1**	**0.042**	**0.2**	**0.005**	< 0.03 U	< 0.03 U	< 0.005 U
Benzo(g,h,i)perylene	ug/L		< 0.03 U	< 0.03 U	**0.62**	< 0.03 U	**0.13**	**0.011**	< 0.03 U	< 0.03 U	**0.0068**
Benzo(k)fluoranthene	ug/L		< 0.03 U	< 0.03 U	**0.092**	< 0.03 U	**0.06**	**0.016**	< 0.03 U	< 0.03 U	**0.0085**
Chrysene	ug/L		< 0.03 U	< 0.03 U	**0.11**	**0.05**	**0.15**	**0.012**	< 0.03 U	< 0.03 U	< 0.005 U
Dibenzo(a,h)anthracene	ug/L		< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Fluoranthene	ug/L	1.8	< 0.03 U	< 0.03 U	< 0.005 U	**0.27**	**0.08**	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Fluorene	ug/L	3.7	< 0.03 U	< 0.03 U	< 0.005 U	**0.27**	**0.08**	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Indeno(1,2,3-cd)pyrene	ug/L		< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	**0.1**	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Naphthalene	ug/L	1.4	< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Phenanthrene	ug/L		< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Pyrene	ug/L	2	< 0.03 U	< 0.03 U	< 0.005 U	**0.062**	**0.14**	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Total cPAHs TEQ$^{(1,2)}$	ug/L	0.000016	< 0.02265 U	< 0.02265 U	< 0.00755 U	**0.0257**	**0.1858**	< 0.00755 U	< 0.02265 U	< 0.02265 U	< 0.00755 U
Other Semi-Volatile Organic Compounds (SVOCs)											
Pentachlorophenol	ug/L	0.002	< 2 U	< 2 U	--	< 2 U	< 2 U	--	< 2 U	< 2 U	--
Polychlorinated Biphenyls (PCBs)											
Total PCBs (Sum of Aroclors)$^{(1,3}$	ug/L	0.000007	< 0.1 U	< 0.1 U	< 0.005 U	< 0.1 U	< 0.1 U	< 0.005 U	< 0.1 U	< 0.1 U	< 0.005 U
Total Petroleum Hydrocarbons (TPH)											
Diesel-Range Organics	ug/L	500	< 50 U	< 50 U	--	< 70 U	< 50 U	--	**110 X**	**100 X**	--
Motor Oil-Range Organics	ug/L	500	< 250 U	< 250 U	--	< 350 U	< 250 U	--	< 250 U	< 250 U	--
Diesel + Oil-Range Organics	ug/L	500	< 250 U	< 250 U	--	< 350 U	< 250 U	--	**110 X**	**100 X**	--

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent

U - Analyte not detected at or above Reporting Limit (RL) shown.

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate.

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation.

Monitoring Well location names highlighted in gray were decommissioned prior to the interim action in 2020.

Metals are reported in the dissolved fraction (filtered) all of the analytes reported from the total fraction (unfiltered)

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

Most stringent screening levels are the most stringent preliminary cleanup levels (PCULs) for groundwater (GWs #2-5) established by the May 2021 LDW Preliminary Cleanup Level Workbook (Ecology, 2021).

1. The Laboratory Method Reporting Limit (MRL) is the Practical Quantitation Limit (PQL), as per WAC 173-340-700(6)(d), for purposes of this monitoring program. In accordance with WAC 173-340-700(6)(d), the groundwater PCULs are established at the PQL.

2. TEQ: Total toxic equivalent concentration of benzo(a)pyrene, calculated in accordance with WAC 173-340-708(8)(e). The total cPAH TEQ PCUL incorporates TEF values for each individual cPAH and is set at the PQL.

3. Total PCBs is the sum of detected Aroclor concentrations.

Table 7. Select Groundwater Analytical Results Pre- and Post- IA

Project No. 150054. Snopac, Seattle, Washington

			Fill Wells MW-11 and MW-13				Fill Well MW-12 (upgradient of IA area)		
		Location Date Sample	**MW-11** **02/08/2017** **MW11-020817**	**MW-11** **01/29/2018** **MW11-20180129**	**MW-11** **08/27/2019** **MW-11-082719**	**MW-13** **06/25/2021** **MW-13-062521**	**MW-12** **02/07/2017** **MW12-020717**	**MW-12** **01/28/2018** **MW12-20180128**	**MW-12** **06/25/2021** **MW-12-062521**
Analyte	**Unit**	**PCUL**							
Metals									
Arsenic, dissolved	ug/L	8	**12.8 J**	**7.84 J**	--	**2.97**	**1.1**	**2.19**	**23.7**
Copper, dissolved	ug/L	3.1	**11.8 J**	**9.7 J**	--	**4.03**	< 5 U	< 5 U	< 1 U
Lead, dissolved	ug/L	8.1	< 1 UJ	< 1 UJ	--	< 1 U	< 1 U	< 1 U	< 1 U
Mercury, dissolved	ug/L	0.025	< 1 UJ	< 1 UJ	--	< 0.01 U	< 1 U	< 1 U	< 0.01 U
Nickel, dissolved	ug/L	8.2	**5.34 J**	**3.12 J**	--	**42.6**	**5.08**	**3.27**	**14.1**
Zinc, dissolved	ug/L	81	**18.8 J**	**11.5 J**	--	**161 J**	< 5 U	< 5 U	**1.99 J**
Polycyclic Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	--	**0.072**	< 0.2 U	< 0.2 U	< 0.05 U
2-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	--	< 0.05 U	< 0.2 U	< 0.2 U	< 0.05 U
Acenaphthene	ug/L	5.3	< 0.03 U	< 0.03 U	--	**3.4**	< 0.03 U	< 0.03 U	**0.007**
Acenaphthylene	ug/L		< 0.03 U	< 0.03 U	--	**0.08**	< 0.03 U	< 0.03 U	< 0.005 U
Anthracene	ug/L	2.1	< 0.03 U	< 0.03 U	--	**0.095**	< 0.03 U	< 0.03 U	< 0.005 U
Benz(a)anthracene	ug/L		**0.046**	< 0.03 U	--	< 0.01 U	< 0.03 U	< 0.03 U	< 0.01 U
Benzo(a)pyrene	ug/L		**0.072**	< 0.03 U	--	**0.86**	< 0.03 U	< 0.03 U	**0.029**
Benzo(b)fluoranthene	ug/L		**0.11**	< 0.03 U	--	**1.1**	< 0.03 U	< 0.03 U	< 0.005 U
Benzo(g,h,i)perylene	ug/L		**0.062**	< 0.03 U	--	**0.005**	< 0.03 U	< 0.03 U	**0.016**
Benzo(k)fluoranthene	ug/L		**0.035**	< 0.03 U	--	**0.014**	< 0.03 U	< 0.03 U	**0.022**
Chrysene	ug/L		**0.073**	< 0.03 U	--	**0.56**	< 0.03 U	< 0.03 U	**0.031**
Dibenzo(a,h)anthracene	ug/L		< 0.03 U	< 0.03 U	--	**0.019**	< 0.03 U	< 0.03 U	**0.012**
Fluoranthene	ug/L	1.8	**0.082**	< 0.03 U	--	< 0.005 U	< 0.03 U	< 0.03 U	**0.015**
Fluorene	ug/L	3.7	**0.082**	< 0.03 U	--	< 0.005 U	< 0.03 U	< 0.03 U	**0.02**
Indeno(1,2,3-cd)pyrene	ug/L		**0.053**	< 0.03 U	--	< 0.005 U	< 0.03 U	< 0.03 U	**0.007**
Naphthalene	ug/L	1.4	< 0.03 U	< 0.03 U	--	**0.019**	< 0.03 U	< 0.03 U	**0.013**
Phenanthrene	ug/L		**0.044**	< 0.03 U	--	< 0.005 U	< 0.03 U	< 0.03 U	< 0.005 U
Pyrene	ug/L	2	**0.11**	< 0.03 U	--	< 0.005 U	< 0.03 U	< 0.03 U	**0.0065**
Total cPAHs TEQ(1,2)	ug/L	0.000016	**0.09863**	< 0.02265 U	--	**0.00909**	< 0.02265 U	< 0.02265 U	**0.02018**
Other Semi-Volatile Organic Compounds (SVOCs)									
Pentachlorophenol	ug/L	0.002	< 2 U	< 2 U	**0.44**	< 0.05 U	< 2 U	< 2 U	--
Polychlorinated Biphenyls (PCBs)									
Total PCBs (Sum of Aroclors)(1,3	ug/L	0.000007	< 0.1 U	< 0.1 U	--	< 0.005 U	< 0.1 U	< 0.1 U	< 0.005 U
Total Petroleum Hydrocarbons (TPH)									
Diesel-Range Organics	ug/L	500	**100 X**	< 60 U	--	**230 X**	< 50 U	**110 X**	--
Motor Oil-Range Organics	ug/L	500	< 250 U	< 300 U	--	< 250 U	< 250 U	**290**	--
Diesel + Oil-Range Organics	ug/L	500	**100 X**	< 300 U	--	**230 X**	< 250 U	**400 X**	--

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent

U - Analyte not detected at or above Reporting Limit (RL) shown.

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate.

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation.

Monitoring Well location names highlighted in gray were decommissioned prior to the interim action in 2020.

Metals are reported in the dissolved fraction (filtered) all of the analytes reported from the total fraction (unfiltered)

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

Most stringent screening levels are the most stringent preliminary cleanup levels (PCULs) for groundwater (GWs #2-5) established by the May 2021 LDW Preliminary Cleanup Level Workbook (Ecology, 2021).

1. The Laboratory Method Reporting Limit (MRL) is the Practical Quantitation Limit (PQL), as per WAC 173-340-700(6)(d), for purposes of this monitoring program. In accordance with WAC 173-340-700(6)(d), the groundwater PCULs are established at the PQL.

2. TEQ: Total toxic equivalent concentration of benzo(a)pyrene, calculated in accordance with WAC 173-340-708(8)(e). The total cPAH TEQ PCUL incorporates TEF values for each individual cPAH and is set at the PQL.

3. Total PCBs is the sum of detected Aroclor concentrations.

FIGURES

GIS Path: T:\projects_8\Snopac_150054\Delivered\InterimActionReport\01 Vicinity Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 1/22/2021 || User: scudd || Print Date: 1/22/2021

Vicinity Map

Interim Action Report
5055 Properties, LLC
Seattle, Washington

Aspect CONSULTING	JAN-2021	BY: MLK / TDR	FIGURE NO.
	PROJECT NO. 150054	REVISED BY: SCC	**1**

Basemap Layer Credits || Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

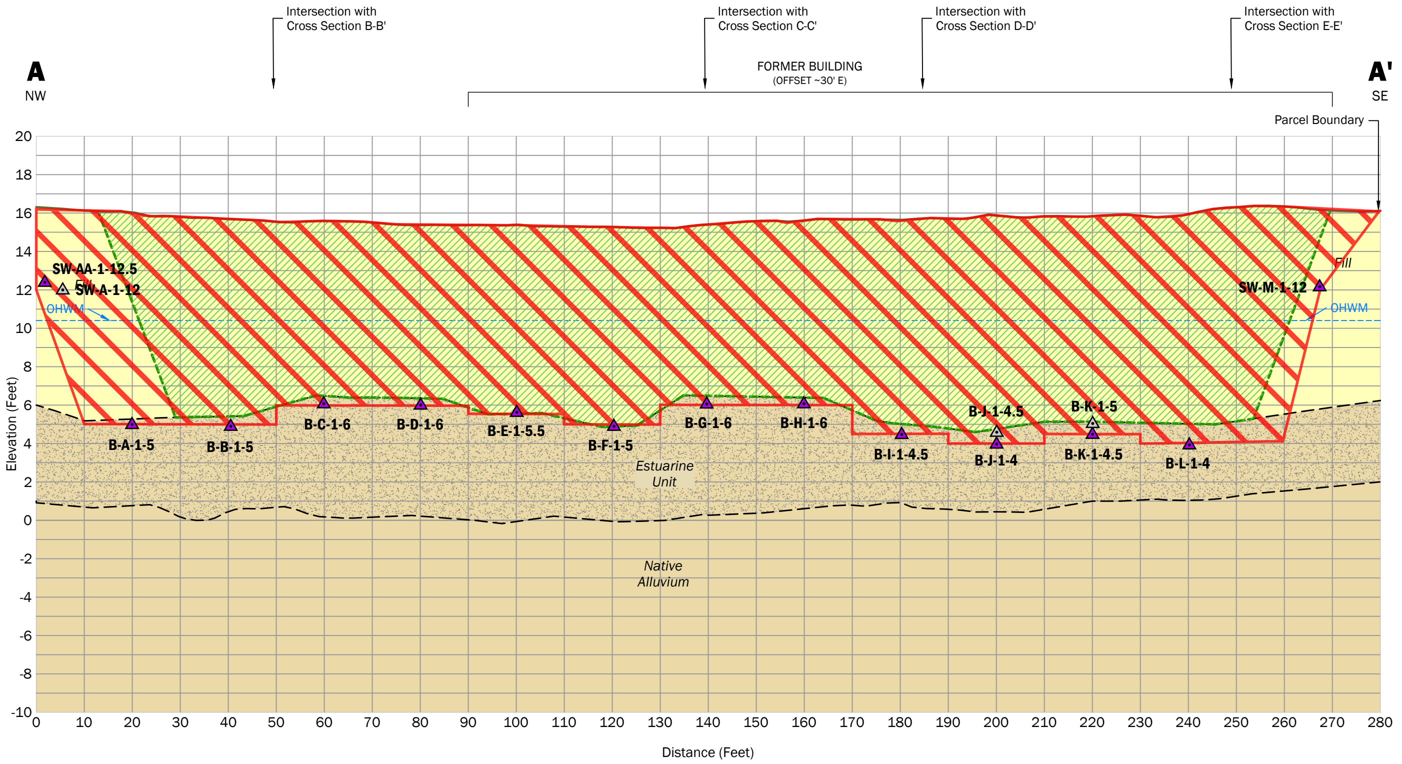
Completed Interim Action and Sample Locations

Interim Action Report
5055 Properties, LLC
Seattle, Washington

Aspect CONSULTING	JUL-2021	BY: BMG / SCC	FIGURE NO. 2
	PROJECT NO. 150054	REVISED BY: SCC	

GIS Path: T:\projects_8\Snopac_150054\Delivered\InterimActionReport\02 Completed Interim Action and Sample Locations_10_7.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 2021-07-15 || User: trulien || Print Date: 2021-07-15

Basemap Layer Credits || EagleView Technologies, Inc.



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LEGEND

▨	IAWP ESTIMATED EXCAVATION EXTENT (ASPECT, 2020)
🟥	FINAL EXCAVATION EXTENTS
🟨	**FILL UNIT** BLACK TO BROWN, GRAVELLY, SILTY, SAND WITH INTERSPERSED BRICK, WOOD CHIPS, GLASS, TRACE PAINT CHIPS, COAL AND SAND BLAST GRIT
▒	**ESTUARINE UNIT** BROWN, SILTY SAND WITH ABUNDANT WOODY DEBRIS AND SLIGHT SULFUR-LIKE ODOR
🟫	**NATIVE ALLUVIUM UNIT** BROWN TO GRAY, POORLY GRADED SAND TO SILTY SAND WITH TRACE ORGANICS
──	EXISTING GRADE
— — —	GEOLOGIC CONTACT
OHWM →	ORDINARY HIGH WATER MARK (ESA, 2018)
▲ SW-A-1-12	VERIFICATION SAMPLE LOCATION
△ SW-A-1-12	OVEREXCAVATED SAMPLE LOCATION

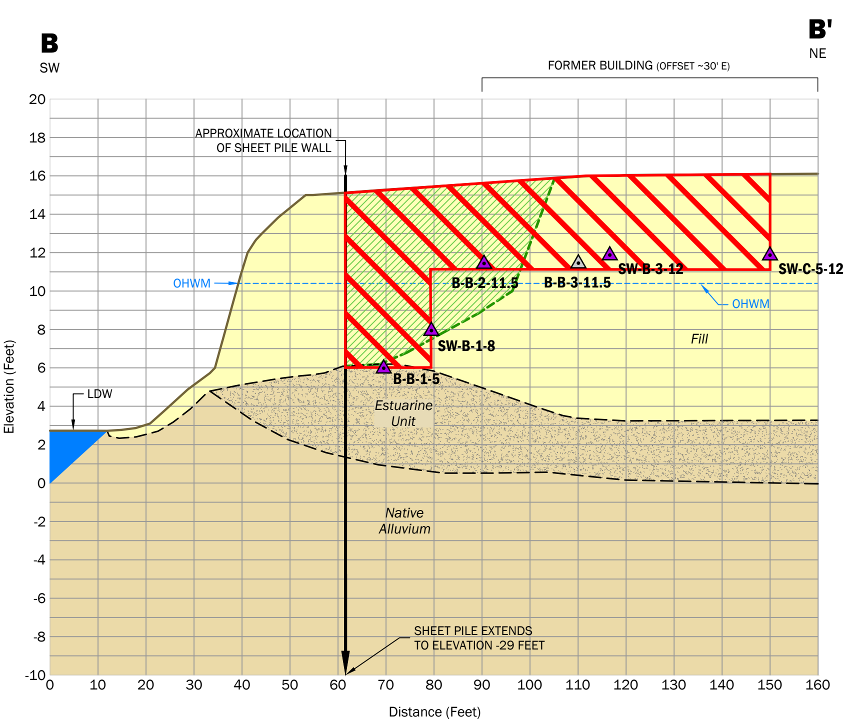
0 40 80
Feet

Cross Section A-A'
Completed Interim Action and Sample Locations

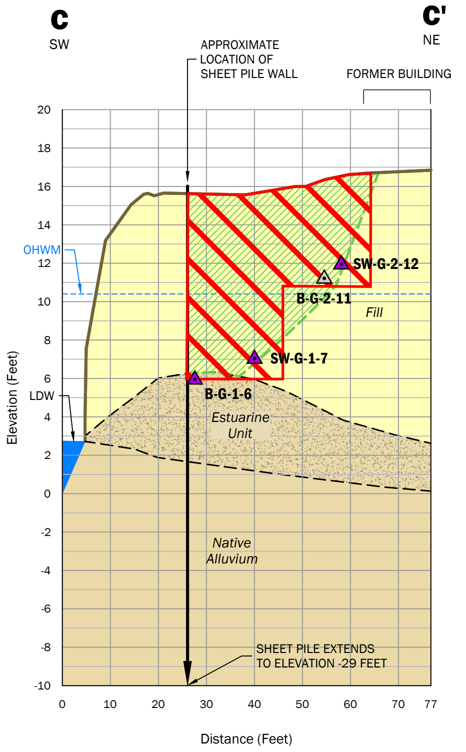
Interim Action Report
SnoPac Site
Seattle, Washington

Aspect CONSULTING

FEB-2021	BY: DAH/SCC/RAC	FIGURE NO.	
PROJECT NO. 150054	REV BY: BMG	3	



CROSS SECTION B-B'



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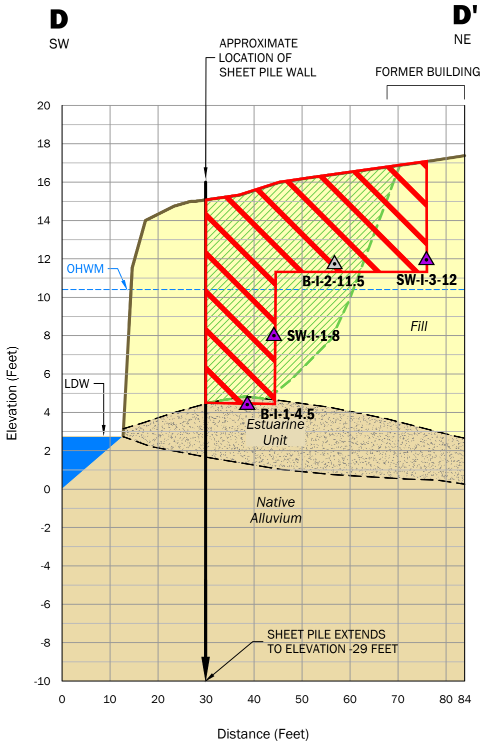

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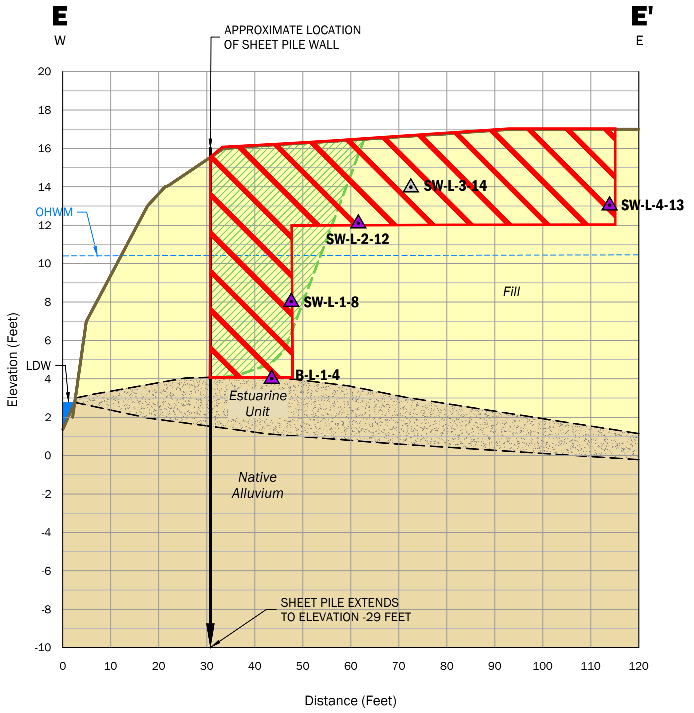


CROSS SECTION E-E'

LEGEND

🟨 **FILL UNIT**
BLACK TO BROWN, GRAVELLY, SILTY, SAND WITH INTERSPERSED BRICK, WOOD CHIPS, GLASS, TRACE PAINT CHIPS, COAL AND SAND BLAST GRIT

▨ **ESTUARINE UNIT**
BROWN, SILTY SAND WITH ABUNDANT WOODY DEBRIS AND SLIGHT SULFUR-LIKE ODOR

🟫 **NATIVE ALLUVIUM UNIT**
BROWN TO GRAY, POORLY GRADED SAND TO SILTY SAND WITH TRACE ORGANICS

0 40 80
Feet

▨ IAWP ESTIMATED EXCAVTION EXTENT (ASPECT, 2020)

🟥 ACTUAL EXCAVATION EXTENTS

— EXISTING GRADE

– – – – GEOLOGIC CONTACT

▲ **SW-A-1-12** CONFIRMATION SAMPLE LOCATION

△ **SW-A-1-12** OVEREXCAVATED SAMPLE LOCATION

OHWM → ORDINARY HIGH WATER MARK (ESA, 2018)

LDW LOWER DUWAMISH WATERWAY

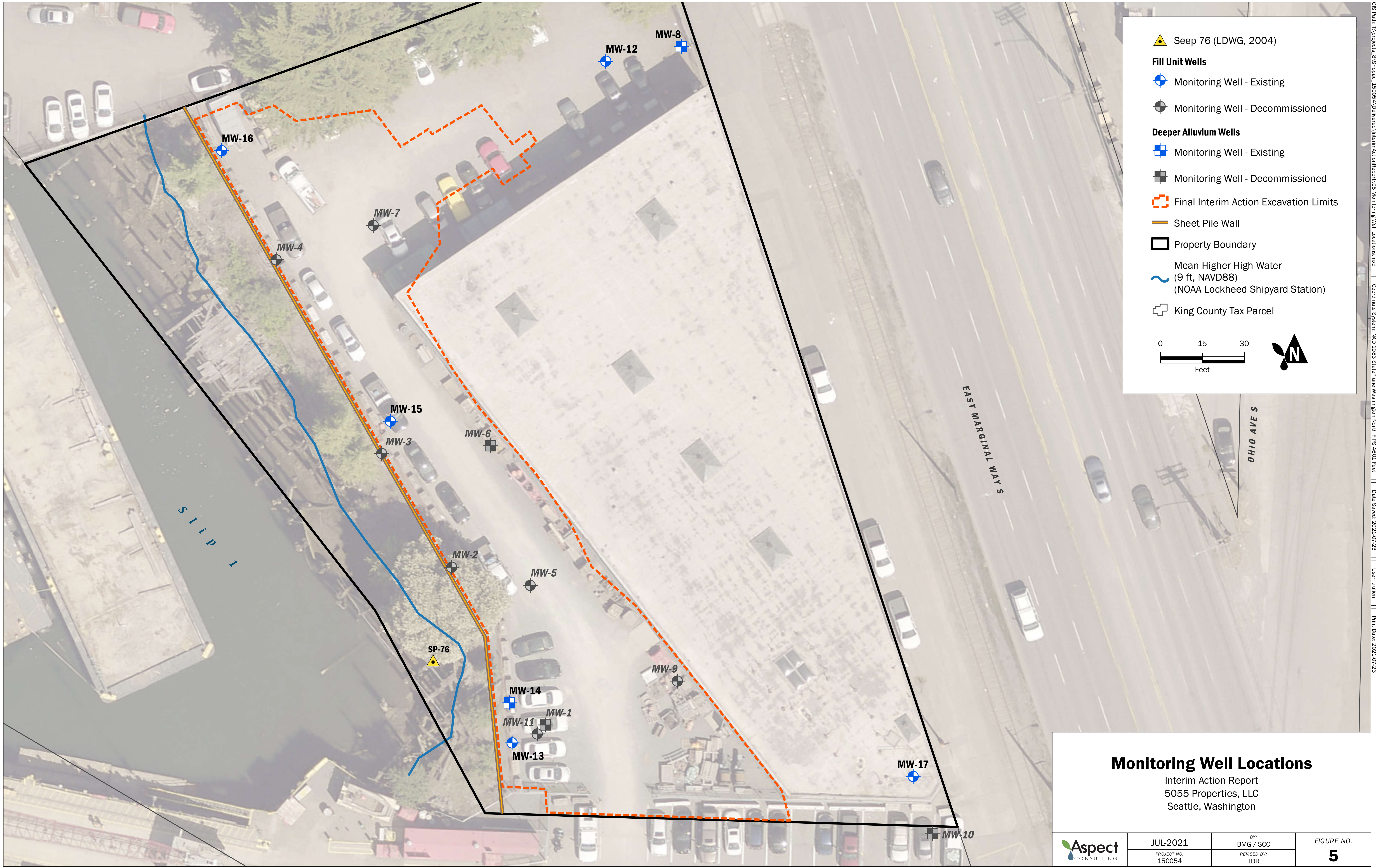
Cross Sections B-B', C-C', D-D', E-E' Completed Interim Action and Sample Locations

Interim Action Report
SnoPac Site
Seattle, Washington

Aspect CONSULTING

FEB-2021	BY: DAH/SCC/RAC	FIGURE NO. 4
PROJECT NO. 150054	REV BY: BMG	

GIS Path: T:\projects_8\Snopac_150054\Working\Completion Report 2021\03 Completion Report Cross Sections.ai || Date Saved: 7/18/2021 || User: rcornwell



Monitoring Well Locations

Interim Action Report
5055 Properties, LLC
Seattle, Washington

Aspect CONSULTING	JUL-2021	BY: BMG / SCC	FIGURE NO. 5
	PROJECT NO. 150054	REVISED BY: TDR	

Basemap Layer Credits || EagleView Technologies, Inc.

GIS Path: T:\projects_8\Snopac_150054\Delivered\InterimActionReport\05 Monitoring Well Locations.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 2021-07-23 || User: truiien || Print Date: 2021-07-23

APPENDIX A

Reference Remedial Investigation Tables and Figures

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	B3b	LDW-SS31	LDW-SC17	LDW-SC17	LDW-SC17	LDW-SC17	EST216	42
				Sample ID:	LDW-B3b-S	LDW-SS31_0-10	LDW-SC17_0-1	LDW-SC17_1-2	LDW-SC17_2-4	LDW-SC17_6-8.2	EST20-06	SD0044
				Sample Date:	8/17/2004	1/21/2005	2/23/2006	2/23/2006	2/23/2006	2/23/2006	9/17/1997	6/1/2015
				Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
		LDW ROD Remedial Action Levels		Sediment Interval (ft):	0 - 0.33	0 - 0.33	0 - 1	1- 2	2 - 4	6 - 8.2	0 - 0.33	0 - 0.33
Analyte	Units	Human Health & Benthic COC RALs	Upper Limit for ENR									
Polychlorinated Biphenyls (PCBs)												
Aroclor 1016	mg/kg dw	--	--		0.005 U	0.01 U	0.11 U	0.0425 U	0.45 U	0.09 U	--	0.0065 U
Aroclor 1221	mg/kg dw	--	--		0.01 U	0.01 U	0.11 U	0.0425 U	0.45 U	0.09 U	--	0.0125 U
Aroclor 1232	mg/kg dw	--	--		0.005 U	0.01 U	0.11 U	0.0425 U	0.45 U	0.09 U	--	0.0065 U
Aroclor 1242	mg/kg dw	--	--		0.005 U	0.01 U	0.11 U	0.0425 U	0.45 U	0.48	--	0.028
Aroclor 1248	mg/kg dw	--	--		0.005 U	0.195 U	0.39	0.32	1.7	0.09 U	--	0.0065 U
Aroclor 1254	mg/kg dw	--	--		0.18	0.053	0.51	0.5	2.7	1	--	0.1
Aroclor 1260	mg/kg dw	--	--		0.17	0.043	0.32	0.22	5.4	0.45	--	0.062
Total PCB Aroclors	mg/kg dw				0.35	0.096	1.22	1.04	9.8	1.9	0.3	0.19
Total PCB Aroclors	mg/kg OC	12 (195 for top 2 ft)	36 (195 for top 2 ft)		19.2	4.42	39.9	32	154	58.6	13.6	3.95
Polynuclear Aromatic Hydrocarbons (PAHs)												
1-Methylnaphthalene	mg/kg dw	--	--		0.014		0.031 U	0.05 U	2.6	0.4		0.013
2-Methylnaphthalene	mg/kg dw	--	--		0.034	0.049 U	0.069	0.050 U	4.5	0.61		0.021
Acenaphthene	mg/kg dw	--	--		0.035	0.049 U	0.065	0.38	4.6	1.2		0.034 J
Anthracene	mg/kg dw	--	--		1.1	0.17	0.52	1.60	1.9	1.7		0.71 J
Benz(a)anthracene	mg/kg dw	--	--		2.8	0.28	1.1	1.5 J	1.5	2.1		1.0 J
Benzo(a)pyrene	mg/kg dw	--	--		1.4	0.42	1.3	1.4	0.94	1.6		1.2 J
Benzo(b)fluoranthene	mg/kg dw	--	--		1.7	0.58	2.2	1.8	1.7	2.5		2.0 J
Benzo(k)fluoranthene	mg/kg dw	--	--		1.2	0.57	1.3	1.4	0.99	1.3		0.55 J
Chrysene	mg/kg dw	--	--		5.4	0.63	1.8	2.4 J	1.8	2.6		2.3 J
Dibenz(a,h)anthracene	mg/kg dw	--	--		0.24	0.049 U	0.08	0.14	0.07 U	0.26		0.21 J
Dibenzofuran	mg/kg dw	--	--		0.036	0.049 U	0.077	0.21	1.7	0.71		0.033 J
Fluoranthene	mg/kg dw	--	--		3.6	0.67	2	5.6	7.4	7.1		1.6 J
Fluorene	mg/kg dw	--	--		0.15	0.049 U	0.11	0.34	4.3	1.4		0.068 J
Indeno(1,2,3-cd)pyrene	mg/kg dw	--	--		0.66	0.11	0.32	0.57 J	0.18	0.32		0.82 J
Naphthalene	mg/kg dw	--	--		0.036	0.049 U	0.12	0.15	3.4	1.2		0.043
Pyrene	mg/kg dw	--	--		2.3	0.7	2.4	3.7 J	5.7	7.6		1.1 J
2-Methylnaphthalene	mg/kg OC	76	228		1.87	2.24 U	2.25	1.52 U	70.9	18.8		0.437
Acenaphthene	mg/kg OC	32	96		1.92	2.24 U	2.12	11.7	72.4	37		0.707 J
Acenaphthylene	mg/kg OC	--	--		4.40	2.24 U	2.19	2.77 J	1.46 J	3.02		1.02
Anthracene	mg/kg OC	440	1,320		60.4	7.83	17	49.2	29.9	52.5		14.8 J
Benz(a)anthracene	mg/kg OC	220	660		154	12.9	35.9	46.2 J	23.6	64.8		20.8 J
Benzo(a)pyrene	mg/kg OC	198	594		76.9	19.4	42.5	43.1	14.8	49.4		24.9 J
Benzo(g,h,i)perylene	mg/kg OC	62	186		33	5.07	8.17	15.1	2.2 J	10.8		15.4
Total benzofluoranthenes	mg/kg OC	460	1,380		159	53	114	98.5	42.5	117		53 J
Chrysene	mg/kg OC	220	660		297	29	58.8	73.8 J	28.3	80.2		47.8 J
Dibenz(a,h)anthracene	mg/kg OC	24	72		13.2	2.24 U	2.61	4.31	1.1 U	8.02		4.37 J
Dibenzofuran	mg/kg OC	30	90		1.98	2.24 U	2.52	6.46	26.8	21.9		0.686 J

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	B3b	LDW-SS31	LDW-SC17	LDW-SC17	LDW-SC17	LDW-SC17	EST216	42
				Sample ID:	LDW-B3b-S	LDW-SS31_0-10	LDW-SC17_0-1	LDW-SC17_1-2	LDW-SC17_2-4	LDW-SC17_6-8.2	EST20-06	SD0044
				Sample Date:	8/17/2004	1/21/2005	2/23/2006	2/23/2006	2/23/2006	2/23/2006	9/17/1997	6/1/2015
				Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
		LDW ROD Remedial Action Levels		Sediment Interval (ft):	0 - 0.33	0 - 0.33	0 - 1	1- 2	2 - 4	6 - 8.2	0 - 0.33	0 - 0.33
Analyte	Units	Human Health & Benthic COC RALs	Upper Limit for ENR									
Fluoranthene	mg/kg OC	320	960		198	30.9	65.4	172	117	219		33.3 J
Fluorene	mg/kg OC	46	138		8.24	2.24 U	3.59	10.5	67.7	43.2		1.41 J
Indeno(1,2,3-cd)pyrene	mg/kg OC	68	204		36.3	5.07	10.5	17.5 J	2.83	9.88		17 J
Naphthalene	mg/kg OC	198	594		1.98	2.24 U	3.92	4.62	53.5	37		0.894
Phenanthrene	mg/kg OC	200	600		41.8	11.1	18.3	36.9	205	130		6.86 J
Pyrene	mg/kg OC	2,000	6,000		126	32.3	78.4	114 J	89.8	235		22.9 J
Total HPAHs	mg/kg OC	1,920	5,760		1,090	188	418	585 J	321 J	793		240 J
Total LPAHs	mg/kg OC	740	2,220		121	18.9	47.1	117 J	425 J	302		25.7 J
cPAH	μg TEQ/kg dw	1000	3000		2,200	600	1,800	2,000 J	1,400	2,400		1,740 J
Metals												
Arsenic	mg/kg dw	57	171		725 J	122	110	170	60	76	--	24.9 J
Cadmium	mg/kg dw	10.2	30.6		1.67	3.2	4.5	7.6	15	20.4	--	0.6175 J
Chromium	mg/kg dw	520	1,560		42.5	55	47	47	386	50.3	--	25.8 J
Copper	mg/kg dw	780	2,340		495 J	245	187	224	219	235	--	87.3 J
Lead	mg/kg dw	900	2,700		437	172	173	286	1,740	470	--	39.85 J
Mercury	mg/kg dw	0.82	2.46		0.059	0.33	0.5	0.6	1.29	0.75	--	0.2405
Silver	mg/kg dw	12.2	36.6		0.891	1.2	1	1.4	2	2.2	--	0.274 J
Zinc	mg/kg dw	820	2,460		2,080	997	1,260	2,050	3,840	4,550	--	209 J
Organotin Compounds												
Tributyltin ion	μg/kg dw	--	--		320	81	--	--	--	--	--	--
Phthalates												
Bis(2-ethylhexyl)phthalate	mg/kg dw	--	--		0.26 J	0.16	0.570	0.44 J	2.3	1	--	--
Bis(2-ethylhexyl)phthalate	mg/kg OC	94	282		14.3 J	7.37	18.6	13.5 J	36.2	30.9	--	--
Chlorobenzenes												
1,2,4-Trichlorobenzene	mg/kg dw	--	--		0.025 U	0.049 U	0.009 J	0.017 J	0.11 J	0.003 U	--	--
1,2,4-Trichlorobenzene	mg/kg OC	1.62	4.86		1.37 U	2.24 U	0.304 J	0.523 J	1.73 J	0.102 U	--	--
Other SVOCs and COCs												
Benzoic acid	μg/kg dw	1,300	3,900		500 U	485 U	320	320	3,000 J	295 U	--	--
Organic Carbon												
Total Organic Carbon	%	--	--		1.82	2.17	3.06	3.25	6.35	3.24	2.21	4.81

Notes:

Results for core LDW-SC17 are shown for reference purposes only. With the exception of PCBs, RALs are not defined below 4 inches in Category 2/3 recovery areas.

Nondetects reported as 1/2 detection limit.

Lab duplicates have been averaged.

>Cat 2/3 RAL and ≤UL for ENR (ENR)

>UL for ENR (Active Remediation)

dw = dry weight

LDW = Lower Duwamish Waterway

RAL = remedial action level

ROD = record of decision

TEQ = toxicity equivalence

Data Qualifiers: J = result is estimated, U = result is not detected

COC = contaminant of concern

ENR = enhanced natural recovery

OC = organic carbon

SVOC = semivolatile organic compound

-- = no data available

Table data courtesy of Integral Consulting, Inc.

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**
				Sample ID:	**SD0046**	**SD0047**	**SD0048**	**SD0049**	**SD0050**	**SD0051**	**SD0052**	**SD0053**	**SD0054**	**SD0055**	**SD0056**
				Sample Date:	**6/2/2015**	**6/2/2015**	**6/4/2015**	**6/3/2015**	**6/3/2015**	**6/3/2015**	**6/1/2015**	**6/3/2015**	**6/3/2015**	**6/1/2015**	**6/1/2015**
				Matrix:	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**
		LDW ROD Remedial Action Levels		**Sediment Interval (ft):**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**
Analyte	**Units**	**Human Health & Benthic COC RALs**	**Upper Limit for ENR**												
Polychlorinated Biphenyls (PCBs)															
Aroclor 1016	mg/kg dw	--	--		0.006 U	0.0065 U	0.006 U	--	--	--	--	--	--	--	--
Aroclor 1221	mg/kg dw	--	--		0.0115 U	0.0125 U	0.012 U	--	--	--	--	--	--	--	--
Aroclor 1232	mg/kg dw	--	--		0.006 U	0.0065 U	0.006 U	--	--	--	--	--	--	--	--
Aroclor 1242	mg/kg dw	--	--		0.074	0.054	0.03	--	--	--	--	--	--	--	--
Aroclor 1248	mg/kg dw	--	--		0.006 U	0.0065 U	0.006 U	--	--	--	--	--	--	--	--
Aroclor 1254	mg/kg dw	--	--		0.11	0.11	0.24	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg dw	--	--		0.11	0.13	0.18	--	--	--	--	--	--	--	--
Total PCB Aroclors	mg/kg dw				0.294	0.294	0.45	--	--	--	--	--	--	--	--
Total PCB Aroclors	mg/kg OC	12 (195 for top 2 ft)	36 (195 for top 2 ft)		8.33	7	12.6	--	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons (PAHs)															
1-Methylnaphthalene	mg/kg dw	--	--		0.009	0.009	0.017 J	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg dw	--	--		0.013	0.015	0.024 J	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg dw	--	--		0.015	0.024	0.038 J	--	--	--	--	--	--	--	--
Anthracene	mg/kg dw	--	--		0.14	0.22	0.25 J	--	--	--	--	--	--	--	--
Benz(a)anthracene	mg/kg dw	--	--		0.44	0.53	0.5 J	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg dw	--	--		0.41	0.51	0.56 J	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg dw	--	--		0.68	0.83	0.94 J	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg dw	--	--		0.24	0.28	0.3 J	--	--	--	--	--	--	--	--
Chrysene	mg/kg dw	--	--		0.66	0.91	0.85 J	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg dw	--	--		0.068	0.087	0.096 J	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg dw	--	--		0.018	0.028	0.027 J	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg dw	--	--		0.8	0.96	0.85 J	--	--	--	--	--	--	--	--
Fluorene	mg/kg dw	--	--		0.03	0.049	0.045 J	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg dw	--	--		0.27	0.34	0.4 J	--	--	--	--	--	--	--	--
Naphthalene	mg/kg dw	--	--		0.022	0.021	0.042 J	--	--	--	--	--	--	--	--
Pyrene	mg/kg dw	--	--		0.76	0.86	0.85 J	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg OC	76	228		0.368	0.357	0.67 J	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg OC	32	96		0.425	0.571	1.06 J	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg OC	--	--		0.51	0.548	0.894 J	--	--	--	--	--	--	--	--
Anthracene	mg/kg OC	440	1,320		3.97	5.24	6.98 J	--	--	--	--	--	--	--	--
Benz(a)anthracene	mg/kg OC	220	660		12.5	12.6	14 J	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg OC	198	594		11.6	12.1	15.6 J	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg OC	62	186		7.08	7.62	10.6 J	--	--	--	--	--	--	--	--
Total benzofluoranthenes	mg/kg OC	460	1,380		26.1	26.4	34.6 J	--	--	--	--	--	--	--	--
Chrysene	mg/kg OC	220	660		18.7	21.7	23.7 J	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg OC	24	72		1.93	2.07	2.68 J	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg OC	30	90		0.51	0.667	0.754 J	--	--	--	--	--	--	--	--

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	44	45	46	47	48	49	50	51	52	53	54
				Sample ID:	SD0046	SD0047	SD0048	SD0049	SD0050	SD0051	SD0052	SD0053	SD0054	SD0055	SD0056
				Sample Date:	6/2/2015	6/2/2015	6/4/2015	6/3/2015	6/3/2015	6/3/2015	6/1/2015	6/3/2015	6/3/2015	6/1/2015	6/1/2015
				Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
		LDW ROD Remedial Action Levels		Sediment Interval (ft):	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
Analyte	Units	Human Health & Benthic COC RALs	Upper Limit for ENR												
Fluoranthene	mg/kg OC	320	960		22.7	22.9	23.7 J	--	--	--	--	--	--	--	--
Fluorene	mg/kg OC	46	138		0.85	1.17	1.26 J	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg OC	68	204		7.65	8.1	11.2 J	--	--	--	--	--	--	--	--
Naphthalene	mg/kg OC	198	594		0.623	0.5	1.17 J	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg OC	200	600		5.38	7.14	8.66 J	--	--	--	--	--	--	--	--
Pyrene	mg/kg OC	2,000	6,000		21.5	20.5	23.7 J	--	--	--	--	--	--	--	--
Total HPAHs	mg/kg OC	1,920	5,760		130	134	160 J	--	--	--	--	--	--	--	--
Total LPAHs	mg/kg OC	740	2,220		11.8	15.2	20 J	--	--	--	--	--	--	--	--
cPAH	µg TEQ/kg dw	1000	3000		607	752	821 J	--	--	--	--	--	--	--	--
Metals															
Arsenic	mg/kg dw	57	171		23.4	36.4	102 J	66.2	121	733	52 J	173	474	29.3 J	44.9 J
Cadmium	mg/kg dw	10.2	30.6		0.625	0.61	0.841 J	1.54	1.68	1.28	1.25 J	1.38	1.86	0.63 J	0.453 J
Chromium	mg/kg dw	520	1,560		32.5	31.9	36.4 J	38.6	30.2	47.8	36.8 J	44.3	50	29.5 J	21.7 J
Copper	mg/kg dw	780	2,340		91.1	100	143 J	156	143	240	128 J	199	308	114 J	89.3 J
Lead	mg/kg dw	900	2,700		41.2 J	45.1 J	81.2 J	88.7 J	113 J	176 J	66 J	155 J	299 J	41.4 J	36.5 J
Mercury	mg/kg dw	0.82	2.46		0.274	0.238	0.239	0.284 J	0.261 J	0.601 J	0.288	0.437 J	0.32 J	0.194	0.185
Silver	mg/kg dw	12.2	36.6		0.362	0.344	0.439	0.423	0.459	0.473	0.376 J	0.546	0.761	0.317 J	0.233 J
Zinc	mg/kg dw	820	2,460		194	206	406 J	527 J	639 J	804 J	421 J	720 J	1,560 J	216 J	193 J
Organotin Compounds															
Tributyltin ion	µg/kg dw	--	--		--	--	--	--	--	--	--	--	--	--	--
Phthalates															
Bis(2-ethylhexyl)phthalate	mg/kg dw	--	--		--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	mg/kg OC	94	282		--	--	--	--	--	--	--	--	--	--	--
Chlorobenzenes															
1,2,4-Trichlorobenzene	mg/kg dw	--	--		--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg OC	1.62	4.86		--	--	--	--	--	--	--	--	--	--	--
Other SVOCs and COCs															
Benzoic acid	µg/kg dw	1,300	3,900		--	--	--	--	--	--	--	--	--	--	--
Organic Carbon															
Total Organic Carbon	%	--	--		3.53	4.2	3.58	3.95	4.07	6.52	3.59	4.08	3.83	3.78	4.27

Notes:

Results for core LDW-SC17 are shown for reference purposes only. With the exception of PCBs, RALs are not defined below 4 inches in Category 2/3 recovery areas.

Nondetects reported as 1/2 detection limit.

Lab duplicates have been averaged.

>Cat 2/3 RAL and ≤UL for ENR (ENR)

>UL for ENR (Active Remediation)

dw = dry weight

LDW = Lower Duwamish Waterway

RAL = remedial action level

ROD = record of decision

TEQ = toxicity equivalence

Data Qualifiers: J = result is estimated, U = result is not detected

Table data courtesy of Integral Consulting, Inc.

COC = contaminant of concern

ENR = enhanced natural recovery

OC = organic carbon

SVOC = semivolatile organic compound

-- = no data available

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	**55**	**56**	**57**	**58**	**59**	**60**	**60**
				Sample ID:	**SD0057**	**SD0058**	**SD0059**	**SD0060**	**SD0061**	**SD0062**	**SD0063 (Field Rep)**
				Sample Date:	**6/1/2015**	**6/3/2015**	**6/1/2015**	**6/3/2015**	**6/4/2015**	**6/5/2015**	**6/5/2015**
				Matrix:	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**
		LDW ROD Remedial Action Levels		**Sediment Interval (ft):**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**	**0 - 0.33**
Analyte	**Units**	**Human Health & Benthic COC RALs**	**Upper Limit for ENR**								
Polychlorinated Biphenyls (PCBs)											
Aroclor 1016	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1221	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1232	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1242	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1248	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1254	mg/kg dw	--	--		--	--	--	--	--	--	--
Aroclor 1260	mg/kg dw	--	--		--	--	--	--	--	--	--
Total PCB Aroclors	mg/kg dw				--	--	--	--	--	--	--
Total PCB Aroclors	mg/kg OC	12 (195 for top 2 ft)	36 (195 for top 2 ft)		--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons (PAHs)											
1-Methylnaphthalene	mg/kg dw	--	--		--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg dw	--	--		--	--	--	--	--	--	--
Acenaphthene	mg/kg dw	--	--		--	--	--	--	--	--	--
Anthracene	mg/kg dw	--	--		--	--	--	--	--	--	--
Benz(a)anthracene	mg/kg dw	--	--		--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg dw	--	--		--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg dw	--	--		--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg dw	--	--		--	--	--	--	--	--	--
Chrysene	mg/kg dw	--	--		--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg dw	--	--		--	--	--	--	--	--	--
Dibenzofuran	mg/kg dw	--	--		--	--	--	--	--	--	--
Fluoranthene	mg/kg dw	--	--		--	--	--	--	--	--	--
Fluorene	mg/kg dw	--	--		--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg dw	--	--		--	--	--	--	--	--	--
Naphthalene	mg/kg dw	--	--		--	--	--	--	--	--	--
Pyrene	mg/kg dw	--	--		--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg OC	76	228		--	--	--	--	--	--	--
Acenaphthene	mg/kg OC	32	96		--	--	--	--	--	--	--
Acenaphthylene	mg/kg OC	--	--		--	--	--	--	--	--	--
Anthracene	mg/kg OC	440	1,320		--	--	--	--	--	--	--
Benz(a)anthracene	mg/kg OC	220	660		--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg OC	198	594		--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg OC	62	186		--	--	--	--	--	--	--
Total benzofluoranthenes	mg/kg OC	460	1,380		--	--	--	--	--	--	--
Chrysene	mg/kg OC	220	660		--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg OC	24	72		--	--	--	--	--	--	--
Dibenzofuran	mg/kg OC	30	90		--	--	--	--	--	--	--

Table 1. Historical Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	55	56	57	58	59	60	60
				Sample ID:	SD0057	SD0058	SD0059	SD0060	SD0061	SD0062	SD0063 (Field Rep)
				Sample Date:	6/1/2015	6/3/2015	6/1/2015	6/3/2015	6/4/2015	6/5/2015	6/5/2015
				Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
		LDW ROD Remedial Action Levels		Sediment Interval (ft):	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33	0 - 0.33
Analyte	**Units**	**Human Health & Benthic COC RALs**	**Upper Limit for ENR**								
Fluoranthene	mg/kg OC	320	960		--	--	--	--	--	--	--
Fluorene	mg/kg OC	46	138		--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg OC	68	204		--	--	--	--	--	--	--
Naphthalene	mg/kg OC	198	594		--	--	--	--	--	--	--
Phenanthrene	mg/kg OC	200	600		--	--	--	--	--	--	--
Pyrene	mg/kg OC	2,000	6,000		--	--	--	--	--	--	--
Total HPAHs	mg/kg OC	1,920	5,760		--	--	--	--	--	--	--
Total LPAHs	mg/kg OC	740	2,220		--	--	--	--	--	--	--
cPAH	µg TEQ/kg dw	1000	3000		--	--	--	--	--	--	--
Metals											
Arsenic	mg/kg dw	57	171		60.9 J	511	40.7 J	632	121.75 J	1,940	1,970
Cadmium	mg/kg dw	10.2	30.6		1.05 J	1.5	0.741 J	0.722	0.9635 J	2.44	2.45
Chromium	mg/kg dw	520	1,560		46 J	41.3	35.5 J	31.1	56.7 J	68.6 J	89.3 J
Copper	mg/kg dw	780	2,340		130 J	298	105 J	174	137 J	848	860
Lead	mg/kg dw	900	2,700		62.7 J	377 J	61.1 J	162 J	90.85 J	820	1,060
Mercury	mg/kg dw	0.82	2.46		0.224	0.136 J	0.255	0.118 J	0.213	0.129	0.069
Silver	mg/kg dw	12.2	36.6		0.357 J	0.669	0.385 J	0.389	0.4155	1.55	1.61
Zinc	mg/kg dw	820	2,460		424 J	1,580 J	278 J	799 J	448.5 J	3,960	5,590
Organotin Compounds											
Tributyltin ion	µg/kg dw	--	--		--	--	--	--	--	--	--
Phthalates											
Bis(2-ethylhexyl)phthalate	mg/kg dw	--	--		--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	mg/kg OC	94	282		--	--	--	--	--	--	--
Chlorobenzenes											
1,2,4-Trichlorobenzene	mg/kg dw	--	--		--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg OC	1.62	4.86		--	--	--	--	--	--	--
Other SVOCs and COCs											
Benzoic acid	µg/kg dw	1,300	3,900		--	--	--	--	--	--	--
Organic Carbon											
Total Organic Carbon	%	--	--		3.53	1.59	4.05	2.56	3.49	1.89	2.18

Notes:

Results for core LDW-SC17 are shown for reference purposes only. With the exception of PCBs, RALs are not defined below 4 inches in Category 2/3 recovery areas.

Nondetects reported as 1/2 detection limit.

Lab duplicates have been averaged.

🟧 >Cat 2/3 RAL and ≤UL for ENR (ENR)

🟥 >UL for ENR (Active Remediation)

dw = dry weight

LDW = Lower Duwamish Waterway

RAL = remedial action level

ROD = record of decision

TEQ = toxicity equivalence

Data Qualifiers: J = result is estimated, U = result is not detected

COC = contaminant of concern

ENR = enhanced natural recovery

OC = organic carbon

SVOC = semivolatile organic compound

-- = no data available

Table data courtesy of Integral Consulting, Inc.

Table 2 Excerpts - Saturated Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	**B-5**	**B-5**	**B-5**	**B-8**	**B-9**	**B-12**	**B-12**	**B-13**	**B-13**	**B-13**	**B-15**	**B-15**	**B-19**	**FB-1**	**FB-1A**	**FB-2**	**FB-2**	**FB-2A**	**FB-2A**	**FB-2A**	**FB-2D**
		Date	**01/24/2017**	**01/24/2017**	**01/24/2017**	**01/24/2017**	**01/24/2017**	**01/25/2017**	**01/25/2017**	**01/25/2017**	**01/25/2017**	**01/25/2017**	**01/27/2017**	**01/27/2017**	**01/27/2017**	**08/25/2011**	**10/05/2011**	**08/25/2011**	**08/25/2011**	**10/06/2011**	**10/06/2011**	**10/06/2011**	**10/06/2011**
		Sample	**B5-10-10.2**	**B5-13-14**	**B5-16-17**	**B8-12-13**	**B9-16-17**	**B12-5-6**	**B12-6-7**	**B13-5.5-6.5**	**B13-10-11**	**B13-17.5-18.5**	**B15-11-12**	**B15-16-17**	**B19-12-13**	**082511-FB1-9.5**	**100511-FB1A-9.8**	**082511-FB2-5.2**	**082511-FB2-16.0**	**100611-FB2A-5.3**	**100611-FB2A-10.0**	**100611-FB2A-16.0**	**100611-FB2D-5.2**
		Depth	**10 - 10.2 ft**	**13 - 14 ft**	**16 - 17 ft**	**12 - 13 ft**	**16 - 17 ft**	**5 - 6 ft**	**10 - 11 ft**	**5.5 - 6.5 ft**	**10 - 11 ft**	**17.5 - 18.5 ft**	**11 - 12 ft**	**16 - 17 ft**	**12 - 13 ft**	**9.5 ft**	**9.8 ft**	**5.2 ft**	**16 ft**	**5.3 ft**	**10 ft**	**16 ft**	**5.2 ft**
Analyte	**Unit**	**Most Stringent PCUL (saturated)**																					
Polycyclic Aromatic Hydrocarbons (PAHs)																							
1-Methylnaphthalene	mg/kg	29	< 0.5 U	--	--	--	--	--	--	--	< 0.05 U	< 0.05 U	--	--	--	< 0.0063 U	--	**0.94**	< 0.0098 U	--	--	--	--
2-Methylnaphthalene	mg/kg	0.67	< 0.5 U	--	--	--	--	--	--	--	< 0.05 U	< 0.05 U	--	--	--	< 0.0063 U	--	**1.1**	< 0.0098 U	--	--	--	--
Acenaphthene	mg/kg	0.028	**0.15**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.027**	< 0.0098 U	< 0.0324 U	< 0.0209 U	< 0.0193 U	--
Acenaphthylene	mg/kg	1.3	< 0.1 U	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.021**	< 0.0098 U	**0.0607**	< 0.0209 U	< 0.0193 U	--
Anthracene	mg/kg	0.051	**0.62**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.1**	< 0.0098 U	**0.199**	< 0.0209 U	< 0.0193 U	--
Benz(a)anthracene	mg/kg	0.000057	**2.4**	--	--	--	--	--	**0.84**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.14**	< 0.0098 U	**0.782**	< 0.0209 U	< 0.0193 U	--
Benzo(a)pyrene	mg/kg	0.000016	**3**	--	--	--	--	--	**0.59**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.12**	< 0.0098 U	**0.586**	< 0.0209 U	< 0.0193 U	--
Benzo(b)fluoranthene	mg/kg	0.0002	**3.5**	--	--	--	--	--	**0.73**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.3**	< 0.0098 U	**0.51**	**0.0337**	< 0.0193 U	--
Benzo(g,h,i)perylene	mg/kg	0.67	**1.6**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.1**	< 0.0098 U	**0.648**	< 0.0209 U	< 0.0193 U	--
Benzo(k)fluoranthene	mg/kg	0.002	**1.5**	--	--	--	--	--	**0.22**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.034**	< 0.0098 U	**0.386**	< 0.0209 U	< 0.0193 U	--
Chrysene	mg/kg	0.0064	**2.9**	--	--	--	--	--	**0.73**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**1.3**	< 0.0098 U	**0.73**	< 0.0209 U	< 0.0193 U	--
Dibenzo(a,h)anthracene	mg/kg	0.000029	**0.48**	--	--	--	--	--	< 0.1 U	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.026**	< 0.0098 U	**0.144**	< 0.0209 U	< 0.0193 U	--
Fluoranthene	mg/kg	0.09	**4.4**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.31**	< 0.0098 U	< 1.02 U	**0.035**	< 0.0193 U	--
Fluorene	mg/kg	0.029	**0.13**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.031**	< 0.0098 U	< 0.0647 U	< 0.0209 U	< 0.0193 U	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.000056	**2**	--	--	--	--	--	**0.31**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.064**	< 0.0098 U	**0.383**	< 0.0209 U	< 0.0193 U	--
Naphthalene	mg/kg	0.0021	< 0.1 U	--	--	--	< 0.05 U	--	--	--	< 0.01 U	< 0.01 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.0063 U	< 0.0234 U	**0.85**	< 0.0098 U	**3.8**	< 0.0209 U	< 0.0193 U	--
Phenanthrene	mg/kg	1.5	**1.8**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.48**	< 0.0098 U	**0.847**	< 0.0209 U	< 0.0193 U	--
Pyrene	mg/kg	0.14	**4.1**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	< 0.0063 U	< 0.0234 U	**0.29**	< 0.0098 U	**1.14**	**0.06**	< 0.0193 U	--
Total Benzofluoranthenes	mg/kg	3.2	**5**	--	--	--	--	--	**0.95**	< 0.01 U	< 0.01 U	< 0.01 U	--	--	--	--	--	--	--	--	--	--	--
Total HPAHs	mg/kg	12	**25.88**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	--	--	--	--	--	--	--	--
Total LPAHs	mg/kg	5.2	**2.7**	--	--	--	--	--	--	--	< 0.01 U	< 0.01 U	--	--	--	--	--	--	--	--	--	--	--
Total cPAHs TEQ	mg/kg	0.000016	**4.017**	--	--	--	--	--	**0.8123**	< 0.00755 U	< 0.00755 U	< 0.00755 U	--	--	--	< 0.005 U	< 0.018 U	**0.189**	< 0.007 U	**0.814**	**0.018**	< 0.015 U	--

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent preliminary cleanup level (PCUL)

U - Analyte not detected at or above Reporting Limit (RL) shown

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 2 Excerpts - Saturated Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	**FB-2E**	**FB-3**	**FB-3A**	**FB-3A**	**FB-4**	**FB-4A**	**FB-5**	**FB-5**	**FB-5**	**FB-5A**	**FB-5A**	**FB-5B**	**FB-5C**	**FB-5C**	**FB-6**	**FB-6A**	**FB-7**
		Date	**10/06/2011**	**08/25/2011**	**10/06/2011**	**10/06/2011**	**08/25/2011**	**10/05/2011**	**08/25/2011**	**08/25/2011**	**08/25/2011**	**10/05/2011**	**10/05/2011**	**10/05/2011**	**10/05/2011**	**10/05/2011**	**08/26/2011**	**10/05/2011**	**08/26/2011**
		Sample	**100611-FB2E-5.2**	**082511-FB3-14.9**	**100611-FB3A-7.6**	**100611-FB3A-14.5**	**082511-FB4-8.7**	**100511-FB4A-9.7**	**082511-FB5-6.2**	**082511-FB5-10.2**	**082511-FB5-18.0**	**100511-FB5A-8.4**	**100511-FB5A-18.0**	**100511-FB5B-18.0**	**100511-FB5C-10.2**	**100511-FB5C-14.8**	**082611-FB6-11.6**	**100511-FB6A-11.5**	**082611-FB7-11.8**
		Depth	**5.2 ft**	**14.9 ft**	**7.6 ft**	**14.5 ft**	**8.7 ft**	**9.7 ft**	**6.2 ft**	**10.2 ft**	**18 ft**	**8.4 ft**	**18 ft**	**18 ft**	**10.2 ft**	**14.8 ft**	**11.6 ft**	**11.5 ft**	**11.8 ft**
Analyte	**Unit**	**Most Stringent PCUL (saturated)**																	
Polycyclic Aromatic Hydrocarbons (PAHs)																			
1-Methylnaphthalene	mg/kg	29	--	< 0.0089 U	--	--	< 0.006 U	--	--	--	< 0.008 U	--	--	--	--	--	< 0.0078 U	--	< 0.0075 U
2-Methylnaphthalene	mg/kg	0.67	--	< 0.0089 U	--	--	< 0.006 U	--	--	--	< 0.008 U	--	--	--	--	--	< 0.0078 U	--	< 0.0075 U
Acenaphthene	mg/kg	0.028	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	**0.0458**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Acenaphthylene	mg/kg	1.3	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	< 0.0188 U	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Anthracene	mg/kg	0.051	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	**0.105**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Benz(a)anthracene	mg/kg	0.000057	--	< 0.0089 U	**0.024**	< 0.0228 U	< 0.006 U	**0.0947**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Benzo(a)pyrene	mg/kg	0.000016	--	< 0.0089 U	**0.0196**	< 0.0228 U	< 0.006 U	**0.0473**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Benzo(b)fluoranthene	mg/kg	0.0002	--	< 0.0089 U	**0.0219**	< 0.0228 U	< 0.006 U	**0.0556**	--	--	< 0.008 U	--	**0.0194**	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Benzo(g,h,i)perylene	mg/kg	0.67	--	< 0.0089 U	**0.0174**	< 0.0228 U	< 0.006 U	**0.0234**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Benzo(k)fluoranthene	mg/kg	0.002	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	**0.0383**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Chrysene	mg/kg	0.0064	--	< 0.0089 U	**0.0336**	< 0.0228 U	< 0.006 U	**0.124**	--	--	< 0.008 U	--	**0.0352**	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Dibenzo(a,h)anthracene	mg/kg	0.000029	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	< 0.0188 U	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Fluoranthene	mg/kg	0.09	--	< 0.0089 U	**0.0641**	**0.0508**	< 0.006 U	**0.434**	--	--	< 0.008 U	--	**0.0271**	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Fluorene	mg/kg	0.029	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	< 0.0188 U	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Indeno(1,2,3-cd)pyrene	mg/kg	0.000056	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	**0.021**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Naphthalene	mg/kg	0.0021	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	< 0.0188 U	--	--	**9.11**	< 0.739 U	< 0.0164 U	< 0.743 U	**54.9**	**69.8**	< 0.0078 U	< 0.0231 U	< 0.0075 U
Phenanthrene	mg/kg	1.5	--	< 0.0089 U	< 0.0168 U	< 0.0228 U	< 0.006 U	**0.0499**	--	--	< 0.008 U	--	< 0.0164 U	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Pyrene	mg/kg	0.14	--	< 0.0089 U	**0.072**	**0.0478**	< 0.006 U	**0.411**	--	--	< 0.008 U	--	**0.0274**	--	--	--	< 0.0078 U	< 0.0231 U	< 0.0075 U
Total Benzofluoranthenes	mg/kg	3.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total HPAHs	mg/kg	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total LPAHs	mg/kg	5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total cPAHs TEQ	mg/kg	0.000016	--	< 0.007 U	**0.027**	< 0.017 U	< 0.005 U	**0.07**	--	--	< 0.006 U	--	**0.014**	--	--	--	< 0.006 U	< 0.018 U	< 0.006 U

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent preliminary cleanup level (PCUL)

U - Analyte not detected at or above Reporting Limit (RL) shown

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 2 Excerpts - Saturated Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	FB-7A	FB-8	FB-8A	FB-9	FB-9A	MW-1	MW-1	MW-2	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4	MW-5	MW-5	MW-6	MW-6	MW-7	MW-7	MW-8	MW-9
		Date	10/05/2011	08/26/2011	10/05/2011	08/26/2011	10/05/2011	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/23/2017	01/25/2017	01/25/2017	01/26/2017	01/26/2017	01/26/2017	01/26/2017	01/25/2017	01/25/2017
		Sample	100511-FB7A-11.8	082611-FB8-11.6	100511-FB8A-11.7	082611-FB9-12.0	100511-FB9A-11.8	MW1-10-10.5	MW1-15-16	MW2-5-6	MW2-10	MW2-10-11	MW3-5.5-6	MW3-10-12	MW4-7-8	MW4-12.5-13.5	MW5-10-10.5	MW5-15.8-17	MW6-7-8	MW6-15-16	MW7-10-11	MW7-17-18	MW8-15.5-16.5	MW9-5-6
		Depth	11.8 ft	11.6 ft	11.7 ft	12 ft	11.8 ft	10 - 10.5 ft	15 - 16 ft	5 - 6 ft	10 ft	10 - 11 ft	5.5 - 6 ft	10 - 12 ft	7 - 8 ft	12.5 - 13.5 ft	10 - 10.5 ft	15.8 - 17 ft	7 - 8 ft	15 - 16 ft	10 - 11 ft	17 - 18 ft	15.5 - 16.5 ft	5 - 6 ft
Analyte	**Unit**	**Most Stringent PCUL (saturated)**																						
Polycyclic Aromatic Hydrocarbons (PAHs)																								
1-Methylnaphthalene	mg/kg	29	--	< 0.0088 U	--	< 0.0078 U	--	--	--	--	< 0.5 U	--	**16**	--	--	--	--	--	--	--	--	--	--	< 0.05 U
2-Methylnaphthalene	mg/kg	0.67	--	< 0.0088 U	--	< 0.0078 U	--	--	--	--	< 0.5 U	--	**22**	--	--	--	--	--	--	--	--	--	--	**0.056**
Acenaphthene	mg/kg	0.028	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.11**	--	**89**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Acenaphthylene	mg/kg	1.3	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	< 0.1 U	--	**2.1**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Anthracene	mg/kg	0.051	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	< 0.1 U	--	**120**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Benz(a)anthracene	mg/kg	0.000057	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.79**	--	**73**	--	--	--	--	--	--	--	--	--	--	**0.013**
Benzo(a)pyrene	mg/kg	0.000016	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.55**	--	**40**	--	--	--	--	--	--	--	--	--	--	**0.013**
Benzo(b)fluoranthene	mg/kg	0.0002	< 0.0223 U	< 0.0088 U	**0.0318**	< 0.0078 U	< 0.022 U	--	--	--	**0.79**	--	**65**	--	--	--	--	--	--	--	--	--	--	**0.025**
Benzo(g,h,i)perylene	mg/kg	0.67	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.41**	--	**12**	--	--	--	--	--	--	--	--	--	--	**0.021**
Benzo(k)fluoranthene	mg/kg	0.002	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.22**	--	**19**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Chrysene	mg/kg	0.0064	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.38**	--	**110**	--	--	--	--	--	--	--	--	--	--	**0.02**
Dibenzo(a,h)anthracene	mg/kg	0.000029	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	< 0.1 U	--	**4.1**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Fluoranthene	mg/kg	0.09	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**3.6**	--	**290**	--	--	--	--	--	--	--	--	--	--	**0.026**
Fluorene	mg/kg	0.029	< 0.0223 U	< 0.0088 U	< 0.0293 U	**0.014**	< 0.022 U	--	--	--	**0.14**	--	**63**	--	--	--	--	--	--	--	--	--	--	< 0.01 U
Indeno(1,2,3-cd)pyrene	mg/kg	0.000056	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.28**	--	**13**	--	--	--	--	--	--	--	--	--	--	**0.016**
Naphthalene	mg/kg	0.0021	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.19**	--	**24**	--	--	< 0.05 U	--	--	--	--	--	--	--	**0.04**
Phenanthrene	mg/kg	1.5	< 0.0223 U	< 0.0088 U	< 0.0293 U	< 0.0078 U	< 0.022 U	--	--	--	**0.33**	--	**270**	--	--	--	--	--	--	--	--	--	--	**0.033**
Pyrene	mg/kg	0.14	< 0.0223 U	< 0.0088 U	< 0.0293 U	**0.011**	**0.0227**	--	--	--	**3.8**	--	**250**	--	--	--	--	--	--	--	--	--	--	**0.024**
Total Benzofluoranthenes	mg/kg	3.2	--	--	--	--	--	--	--	--	**1.01**	--	**84**	--	--	--	--	--	--	--	--	--	--	**0.025**
Total HPAHs	mg/kg	12	--	--	--	--	--	--	--	--	**10.82**	--	**876.1**	--	--	--	--	--	--	--	--	--	--	**0.158**
Total LPAHs	mg/kg	5.2	--	--	--	--	--	--	--	--	**0.77**	--	**568.1**	--	--	--	--	--	--	--	--	--	--	**0.073**
Total cPAHs TEQ	mg/kg	0.000016	< 0.017 U	< 0.007 U	**0.024**	< 0.006 U	< 0.017 U	--	--	--	**0.7668**	--	**58.51**	--	--	--	--	--	--	--	--	--	--	**0.0196**

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent preliminary cleanup level (PCUL)

U - Analyte not detected at or above Reporting Limit (RL) shown

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 2 Excerpts - Saturated Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	MW-9	MW-10	MW-10	MW-11	MW-12	MW-12	SB-1	SB-2	SB-2	SB-3	SB-4	SB-4	SB-5	SB-6	SB-7	SB-8	SB-8	VSP-02	VSP-06	VSP-07	VSP-08	VSP-11
		Date	01/25/2017	01/25/2017	01/25/2017	01/26/2017	01/26/2017	01/26/2017	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	08/26/2019	11/12/2018	11/13/2018	11/12/2018	11/12/2018	11/12/2018
		Sample	MW9-15-16	MW10-5-6	MW10-15.5-16.5	MW11-10-11	MW12-11-12	MW12-17.5-18.5	SB1-10-11	SB2-10.5-11.5	SB2-13-14	SB3-10-11	SB4-8-9	SB4-13-14	SB5-9-10	SB6-10.5-11.5	SB7-10-11	SB8-10.5-11.5	SB8-13-14	VSP-2-5.1	VSP-6-6.2	VSP-7-8.2	VSP-8-5.6	VSP-11-5.6
		Depth	15 - 16 ft	5 - 6 ft	15.5 - 16.5 ft	10 - 11 ft	11 - 12 ft	17.5 - 18.5 ft	10 - 11 ft	10.5 - 11.5 ft	13 - 14 ft	10 - 11 ft	8 - 9 ft	13 - 14 ft	9 - 10 ft	10.5 - 11.5 ft	10 - 11 ft	10.5 - 11.5 ft	13 - 14 ft	5.1 ft	6.2 ft	8.2 ft	5.6 ft	5.6 ft
Analyte	**Unit**	**Most Stringent PCUL (saturated)**																						
Polycyclic Aromatic Hydrocarbons (PAHs)																								
1-Methylnaphthalene	mg/kg	29	--	**0.07**	--	< 0.5 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	0.67	--	**0.076**	--	< 0.5 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg	0.028	--	< 0.01 U	--	< 0.1 U	--	--	--	**0.0087 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	**0.003 J**	< 0.002 UJ	--	--	--	--	--
Acenaphthylene	mg/kg	1.3	--	< 0.01 U	--	< 0.1 U	--	--	--	< 0.002 U	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Anthracene	mg/kg	0.051	--	**0.015**	--	< 0.1 U	--	--	--	**0.0033 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Benz(a)anthracene	mg/kg	0.000057	--	**0.042**	--	**0.18**	--	--	--	**0.0061 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.000016	--	**0.053**	--	**0.25**	--	--	--	**0.0041 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg	0.0002	--	**0.087**	--	**0.35**	--	--	--	**0.0059 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	0.67	--	**0.039**	--	**0.2**	--	--	--	**0.0025 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg	0.002	--	**0.032**	--	< 0.1 U	--	--	--	**0.0023 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Chrysene	mg/kg	0.0064	--	**0.069**	--	**0.29**	--	--	--	**0.009 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg	0.000029	--	< 0.01 U	--	< 0.1 U	--	--	--	< 0.002 U	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Fluoranthene	mg/kg	0.09	--	**0.13**	--	**0.34**	--	--	--	**0.034 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	**0.0051 J**	< 0.002 UJ	--	--	--	--	--
Fluorene	mg/kg	0.029	--	**0.014**	--	< 0.1 U	--	--	--	< 0.002 UJ	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.000056	--	**0.039**	--	**0.18**	--	--	--	**0.0026 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Naphthalene	mg/kg	0.0021	--	**0.056**	--	< 0.1 U	--	--	--	< 0.002 U	< 0.002 UJ	--	< 0.002 U	--	--	--	--	< 0.002 UJ	< 0.002 UJ	--	--	--	--	--
Phenanthrene	mg/kg	1.5	--	**0.13**	--	**0.17**	--	--	--	< 0.002 UJ	< 0.002 UJ	--	< 0.002 U	--	--	--	--	**0.0033 J**	< 0.002 UJ	--	--	--	--	--
Pyrene	mg/kg	0.14	--	**0.12**	--	**0.4**	--	--	--	**0.024 J**	< 0.002 UJ	--	< 0.002 U	--	--	--	--	**0.0038 J**	< 0.002 UJ	--	--	--	--	--
Total Benzofluoranthenes	mg/kg	3.2	--	**0.119**	--	**0.35**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total HPAHs	mg/kg	12	--	**0.611**	--	**2.19**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total LPAHs	mg/kg	5.2	--	**0.215**	--	**0.17**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total cPAHs TEQ	mg/kg	0.000016	--	**0.07419**	--	**0.3339**	--	--	--	**0.00598 J**	< 0.00151 UJ	--	< 0.00151 U	--	--	--	--	< 0.00151 UJ	< 0.00151 UJ	--	--	--	--	--

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent preliminary cleanup level (PCUL)

U - Analyte not detected at or above Reporting Limit (RL) shown

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 4 Excerpts – Vadose Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

DRAFT

		Location Date Sample Depth	**B-4** **01/24/2017** **B4-SBG-0** **0 ft**	**B-6** **01/24/2017** **B6-0.8-1.1** **0.8 - 1.1 ft**	**B-9** **01/24/2017** **B9-0-1.5** **0 - 1.5 ft**	**FB-2B** **10/06/2011** **100611-FB2B-4.7** **4.7 ft**	**FB-2F** **10/06/2011** **100611-FB2F-2.2** **2.2 ft**	**FB-6** **08/26/2011** **082611-FB6-1.1** **1.1 ft**	**HA-1** **04/26/2019** **HA-1-0.5** **0.5 ft**	**HA-1** **04/26/2019** **HA-1-1.5** **1.5 ft**	**MW-3** **01/23/2017** **MW3-1-2** **1 - 2 ft**	**MW-6** **01/26/2017** **MW6-SBG-5.2-5.4** **5.2 - 5.4 ft**	**MW-8** **01/25/2017** **MW8-5-6** **5 - 6 ft**	**SB-1** **08/26/2019** **SB1-6-7** **6 - 7 ft**	**SB-2** **08/26/2019** **SB2-2-3** **2 - 3 ft**	**SB-3** **08/26/2019** **SB3-5-6** **5 - 6 ft**	**SB-4** **08/26/2019** **SB4-2-3** **2 - 3 ft**
Analyte	**Unit**	**Most Stringent PCUL (vadose)**															
Polycyclic Aromatic Hydrocarbons (PAHs)																	
1-Methylnaphthalene	mg/kg	29	< 0.5 U	< 0.5 U	--	--	--	--	--	--	< 0.5 U	< 2.5 U	< 0.05 U	--	--	--	--
2-Methylnaphthalene	mg/kg	0.67	< 0.5 U	< 0.5 U	--	--	--	--	--	--	< 0.5 U	< 2.5 U	< 0.05 U	--	--	--	--
Acenaphthene	mg/kg	0.5	**0.16**	**0.11**	--	--	--	--	--	--	**0.39**	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Acenaphthylene	mg/kg	1.3	< 0.1 U	< 0.1 U	--	--	--	--	--	--	**0.15**	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Anthracene	mg/kg	0.96	**0.53**	**0.21**	--	--	--	--	--	--	**1.2**	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Benz(a)anthracene	mg/kg	0.0011	**2**	**0.87**	**0.43**	--	--	--	--	--	**3**	**2.4**	< 0.01 U	< 0.002 U	**0.0023 J**	--	--
Benzo(a)pyrene	mg/kg	0.00031	**2.3**	**0.93**	**0.5**	--	--	--	--	--	**4.2**	**2.8**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Benzo(b)fluoranthene	mg/kg	0.0039	**3**	**1.2**	**0.74**	--	--	--	--	--	**7.3**	**3.4**	< 0.01 U	< 0.002 U	**0.0044 J**	--	--
Benzo(g,h,i)perylene	mg/kg	0.67	**1.2**	**0.51**	--	--	--	--	--	--	**2.2**	**1.6**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Benzo(k)fluoranthene	mg/kg	0.039	**1.2**	**0.42**	**0.21**	--	--	--	--	--	**2.5**	**1.4**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Chrysene	mg/kg	0.13	**2.3**	**1.2**	**0.53**	--	--	--	--	--	**12**	**2.9**	< 0.01 U	< 0.002 U	**0.0053 J**	--	--
Dibenzo(a,h)anthracene	mg/kg	0.00057	**0.35**	**0.15**	< 0.2 U	--	--	--	--	--	**0.59**	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Fluoranthene	mg/kg	1.7	**4.2**	**1.7**	--	--	--	--	--	--	**4.5**	**4.2**	< 0.01 U	< 0.002 U	**0.003 J**	--	--
Fluorene	mg/kg	0.54	**0.17**	< 0.1 U	--	--	--	--	--	--	**0.35**	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.011	**1.4**	**0.57**	**0.3**	--	--	--	--	--	**2**	**2**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Naphthalene	mg/kg	0.039	< 0.1 U	< 0.1 U	--	--	--	--	--	--	< 0.1 U	< 0.5 U	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Phenanthrene	mg/kg	1.5	**2.2**	**1.1**	--	--	--	--	--	--	**1.5**	**1.7**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Pyrene	mg/kg	2.6	**3.8**	**2**	--	--	--	--	--	--	**6.2**	**4.5**	< 0.01 U	< 0.002 U	< 0.002 UJ	--	--
Total Benzofluoranthenes	mg/kg	3.2	**4.2**	**1.62**	**0.95**	--	--	--	--	--	**9.8**	**4.8**	< 0.01 U	--	--	--	--
Total HPAHs	mg/kg	12	**21.75**	**9.55**	--	--	--	--	--	--	**44.49**	**25.2**	< 0.01 U	--	--	--	--
Total LPAHs	mg/kg	5.2	**3.06**	**1.42**	--	--	--	--	--	--	**3.59**	**1.7**	< 0.01 U	--	--	--	--
Total cPAHs TEQ	mg/kg	0.00031	**3.118**	**1.263**	**0.6833**	--	--	--	--	--	**5.859**	**3.774**	< 0.00755 U	< 0.00151 U	**0.002023 J**	--	--

Notes:

Bold - Analyte Detected

Highlighted cell indicates detected result exceeded most stringent preliminary cleanup level (PCUL).

U - Analyte not detected at or above Reporting Limit (RL) shown

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation.

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 4 Excerpts – Vadose Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	SB-5	SB-6	SB-7	SB-8	SSA-1	SSA-2	SSA-3	SSA-4	SUMP	VSP-01	VSP-03	VSP-04	VSP-05	VSP-09
		Date	08/26/2019	08/26/2019	08/26/2019	08/26/2019	07/02/2015	07/02/2015	07/02/2015	07/02/2015	08/26/2019	11/12/2018	11/12/2018	11/12/2018	11/12/2018	11/12/2018
		Sample	SB5-2-3	SB6-5-6	SB7-2-3	SB8-5.5-6.5	SSA-1	SSA-2	SSA-3	SSA-4	SUMP-6-7	VSP-1-2.2	VSP-3-3.6	VSP-4-4.5	VSP-5-2.6	VSP-9-3.2
		Depth	2 - 3 ft	5 - 6 ft	2 - 3 ft	5.5 - 6.5 ft	0 - 0.25 ft	0 - 0.25 ft	0 - 0.25 ft	0 - 0.25 ft	6 - 7 ft	2.2 ft	3.6 ft	4.5 ft	2.6 ft	3.2 ft
Analyte	**Unit**	**Most Stringent PCUL (vadose)**														
Polycyclic Aromatic Hydrocarbons (PAHs)																
1-Methylnaphthalene	mg/kg	29	--	--	--	--	**0.075**	**0.043**	**0.028**	**0.03**	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	0.67	--	--	--	--	**0.097**	**0.053**	**0.023**	**0.036**	--	--	--	--	--	--
Acenaphthene	mg/kg	0.5	--	< 0.002 U	--	< 0.002 U	**0.022**	**0.045**	**0.069**	**0.038**	< 0.002 U	--	--	--	--	--
Acenaphthylene	mg/kg	1.3	--	< 0.002 U	--	< 0.002 U	**0.027**	**0.042**	**0.019**	**0.018**	< 0.002 U	--	--	--	--	--
Anthracene	mg/kg	0.96	--	< 0.002 U	--	< 0.002 U	**0.16**	**0.2**	**0.14**	**0.078**	< 0.002 U	--	--	--	--	--
Benz(a)anthracene	mg/kg	0.0011	--	< 0.002 U	--	**0.013**	**0.78**	**0.6**	**0.59**	**0.27**	< 0.002 U	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.00031	--	< 0.002 U	--	**0.011**	**0.64**	**1.2**	**0.79 J**	**0.38**	< 0.002 UJ	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg	0.0039	--	< 0.002 U	--	**0.029**	**1.1**	**1.6**	**1.0 J**	**0.71**	< 0.002 UJ	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	0.67	--	< 0.002 U	--	**0.0087**	**0.26**	**1.4**	**0.44 J**	**0.25**	< 0.002 UJ	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg	0.039	--	< 0.002 U	--	**0.0089**	**0.43**	**0.59**	**0.35 J**	**0.24**	< 0.002 UJ	--	--	--	--	--
Chrysene	mg/kg	0.13	--	< 0.002 U	--	**0.026**	**0.82**	**1.5**	**0.73**	**0.53**	**0.0059**	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg	0.00057	--	< 0.002 U	--	**0.0024**	**0.085**	**0.26**	**0.12 J**	**0.067**	< 0.002 UJ	--	--	--	--	--
Fluoranthene	mg/kg	1.7	--	< 0.002 U	--	**0.05**	**0.65**	**0.83**	**0.99**	**0.53**	< 0.002 U	--	--	--	--	--
Fluorene	mg/kg	0.54	--	< 0.002 U	--	< 0.002 U	**0.046**	**0.058**	**0.054**	**0.034**	< 0.002 U	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.011	--	< 0.002 U	--	**0.011**	**0.3**	**1.1**	**0.50 J**	**0.25**	< 0.002 UJ	--	--	--	--	--
Naphthalene	mg/kg	0.039	--	< 0.002 U	--	< 0.002 U	**0.079**	**0.071**	**0.032**	**0.044**	< 0.002 U	--	--	--	--	--
Phenanthrene	mg/kg	1.5	--	< 0.002 U	--	**0.014**	**0.32**	**0.62**	**0.64**	**0.36**	< 0.002 U	--	--	--	--	--
Pyrene	mg/kg	2.6	--	< 0.002 U	--	**0.038**	**0.46**	**0.76**	**1.1**	**0.49**	< 0.002 U	--	--	--	--	--
Total Benzofluoranthenes	mg/kg	3.2	--	--	--	--	**1.53**	**2.19**	**1.35 J**	**0.95**	--	--	--	--	--	--
Total HPAHs	mg/kg	12	--	--	--	--	**5.525**	**9.84**	**6.61 J**	**3.717**	--	--	--	--	--	--
Total LPAHs	mg/kg	5.2	--	--	--	--	**0.654**	**1.036**	**0.954**	**0.572**	--	--	--	--	--	--
Total cPAHs TEQ	mg/kg	0.00031	--	< 0.00151 U	--	**0.01769**	**0.9177**	**1.63**	**1.0533 J**	**0.539**	**0.001559**	--	--	--	--	--

Notes:

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J - Result value estimated

X - Chromatographic pattern does not match fuel standard used for quantitation.

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 4 Excerpts – Vadose Zone PAH Data

Project No. 150054 - Snopac Property, Seattle, Washington

		Location	**VSP-10**	**VSP-12**	**VSP-13**	**VSP-14**	**VSP-15**
		Date	**11/13/2018**	**11/12/2018**	**11/13/2018**	**11/12/2018**	**11/12/2018**
		Sample	**VSP-10-4.6**	**VSP-12-3.3**	**VSP-13-2.2**	**VSP-14-4.1**	**VSP-15-4.8**
		Depth	**4.6 ft**	**3.3 ft**	**2.2 ft**	**4.1 ft**	**4.8 ft**
Analyte	**Unit**	**Most Stringent PCUL (vadose)**					
Polycyclic Aromatic Hydrocarbons (PAHs)							
1-Methylnaphthalene	mg/kg	29	--	--	--	--	--
2-Methylnaphthalene	mg/kg	0.67	--	--	--	--	--
Acenaphthene	mg/kg	0.5	--	--	--	--	--
Acenaphthylene	mg/kg	1.3	--	--	--	--	--
Anthracene	mg/kg	0.96	--	--	--	--	--
Benz(a)anthracene	mg/kg	0.0011	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.00031	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg	0.0039	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	0.67	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg	0.039	--	--	--	--	--
Chrysene	mg/kg	0.13	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg	0.00057	--	--	--	--	--
Fluoranthene	mg/kg	1.7	--	--	--	--	--
Fluorene	mg/kg	0.54	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.011	--	--	--	--	--
Naphthalene	mg/kg	0.039	--	--	--	--	--
Phenanthrene	mg/kg	1.5	--	--	--	--	--
Pyrene	mg/kg	2.6	--	--	--	--	--
Total Benzofluoranthenes	mg/kg	3.2	--	--	--	--	--
Total HPAHs	mg/kg	12	--	--	--	--	--
Total LPAHs	mg/kg	5.2	--	--	--	--	--
Total cPAHs TEQ	mg/kg	0.00031	--	--	--	--	--

Notes:

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X - Chromatographic pattern does not match fuel standard used for quantitation.

*: Ecology soil screening level for TPH model remedies (not LDW PCUL) that applies only if gasoline-range TPH is detected.

Most stringent PCUL for saturated soil (nonpotable groundwater) established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 5 Excerpts – Groundwater and Seeps Data

Project No. 150054. Snopac Property, Seattle, Washington

			Seeps													
		Location	**ASP-1**	**ASP-2**	**ASP-3**	**ASP-4**	**ASP-5**	**ASP-6**	**MW-1**	**MW-1**	**MW-2**	**MW-2**	**MW-2**	**MW-3**	**MW-3**	**MW-3**
		Date	**07/02/2015**	**07/02/2015**	**07/02/2015**	**07/02/2015**	**07/02/2015**	**07/02/2015**	**02/07/2017**	**01/29/2018**	**02/07/2017**	**01/30/2018**	**08/27/2019**	**02/06/2017**	**02/08/2017**	**01/30/2018**
		Sample	**ASP-1**	**ASP-2**	**ASP-3**	**ASP-4**	**ASP-5**	**ASP-6**	**MW1-020717**	**MW01-20180129**	**MW2-020717**	**MW-02-20180130**	**MW-2-082719**	**MW3-020617**	**MW3-020817**	**MW-03-20180130**
Analyte	**Unit**	**Most Stringent PCUL Non-Potable Water GW #s 2-5**														
Polycyclic Aromatic Hydrocarbons (PAHs)																
1-Methylnaphthalene	ug/L		< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	**0.033**	< 0.025 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	--	< 0.2 U	< 0.2 U
2-Methylnaphthalene	ug/L		< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	**0.026**	< 0.025 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	--	< 0.2 U	< 0.2 U
Acenaphthene	ug/L	5.3	< 0.025 U	**0.33**	**3.3**	< 0.025 U	**0.11**	< 0.025 U	< 0.03 U	< 0.03 U	**0.044**	**0.054**	--	--	**0.59**	< 0.03 U
Acenaphthylene	ug/L		< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	< 0.03 U
Anthracene	ug/L	2.1	< 0.025 U	< 0.025 U	**0.047**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	**0.052**	< 0.03 U
Benz(a)anthracene	ug/L	0.00016	< 0.025 U	< 0.025 U	**0.14**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	**0.032**	--	--	< 0.03 U	**0.068**
Benzo(a)pyrene	ug/L	0.000016	< 0.025 U	< 0.025 U	**0.089**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	**0.14**
Benzo(b)fluoranthene	ug/L	0.00016	< 0.025 U	< 0.025 U	**0.18**	< 0.025 U	< 0.025 U	**0.028**	< 0.03 U	< 0.03 U	< 0.03 U	**0.03**	--	--	**0.042**	**0.2**
Benzo(g,h,i)perylene	ug/L		< 0.025 U	< 0.025 U	**0.074**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	**0.13**
Benzo(k)fluoranthene	ug/L	0.0016	< 0.025 U	< 0.025 U	**0.051**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	**0.06**
Chrysene	ug/L	0.016	< 0.025 U	< 0.025 U	**0.084**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	**0.05**	**0.15**
Dibenzo(a,h)anthracene	ug/L	0.000016	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	< 0.03 U
Fluoranthene	ug/L	1.8	**0.03**	**0.035**	**2**	**0.028**	**0.19**	< 0.025 U	< 0.03 U	< 0.03 U	**0.24**	**0.37**	--	--	**0.27**	**0.08**
Fluorene	ug/L	3.7	**0.03**	**0.035**	**2**	**0.028**	**0.19**	< 0.025 U	< 0.03 U	< 0.03 U	**0.24**	**0.37**	--	--	**0.27**	**0.08**
Indeno(1,2,3-cd)pyrene	ug/L	0.00016	< 0.025 U	< 0.025 U	**0.073**	< 0.025 U	< 0.025 U	< 0.025 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	**0.1**
Naphthalene	ug/L	1.4	< 0.025 U	**0.033**	< 0.025 U	< 0.025 U	**0.47**	< 0.025 U	< 0.03 U	< 0.03 U	**0.73**	**10**	--	--	< 0.03 U	< 0.03 U
Phenanthrene	ug/L		**0.033**	**0.031**	**0.053**	**0.038**	**0.05**	**0.037**	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	--	< 0.03 U	< 0.03 U
Pyrene	ug/L	2	**0.03**	**0.035**	**1.2**	< 0.025 U	**0.28**	**2.2**	< 0.03 U	< 0.03 U	**0.18**	**0.25**	--	--	**0.062**	**0.14**
Total cPAHs TEQ	ug/L	0.000016	< 0.018875 U	< 0.018875 U	**0.13549**	< 0.018875 U	< 0.018875 U	**0.020425**	< 0.02265 U	< 0.02265 U	< 0.02265 U	**0.02585**	--	--	**0.0257**	**0.1858**

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Most stringent PCUL for non-potable groundwater established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 5 Excerpts – Groundwater and Seeps Data

Project No. 150054. Snopac Property, Seattle, Washington

			Groundwater													
		Location	**MW-4**	**MW-4**	**MW-4**	**MW-5**	**MW-5**	**MW-6**	**MW-6**	**MW-6**	**MW-7**	**MW-7**	**MW-8**	**MW-8**	**MW-9**	**MW-9**
		Date	**02/06/2017**	**01/28/2018**	**08/27/2019**	**02/05/2017**	**01/28/2018**	**02/06/2017**	**01/29/2018**	**08/27/2019**	**02/06/2017**	**01/30/2018**	**02/08/2017**	**01/29/2018**	**02/07/2017**	**01/30/2018**
		Sample	**MW4-020617**	**MW04-20180128**	**MW-4-082719**	**MW5-020517**	**MW05-20180128**	**MW6-020617**	**MW06-20180129**	**MW-6-082719**	**MW7-020617**	**MW-07-20180130**	**MW8-020817**	**MW08-20180129**	**MW9-020717**	**MW-09-20180130**
Analyte	**Unit**	**Most Stringent PCUL Non-Potable Water GW #s 2-5**														
Polycyclic Aromatic Hydrocarbons (PAHs)																
1-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
2-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Acenaphthene	ug/L	5.3	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Acenaphthylene	ug/L		< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Anthracene	ug/L	2.1	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benz(a)anthracene	ug/L	0.00016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benzo(a)pyrene	ug/L	0.000016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benzo(b)fluoranthene	ug/L	0.00016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benzo(g,h,i)perylene	ug/L		< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benzo(k)fluoranthene	ug/L	0.0016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Chrysene	ug/L	0.016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Dibenzo(a,h)anthracene	ug/L	0.000016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Fluoranthene	ug/L	1.8	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Fluorene	ug/L	3.7	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Indeno(1,2,3-cd)pyrene	ug/L	0.00016	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Naphthalene	ug/L	1.4	**0.081**	< 0.03 U	--	< 0.03 U	< 0.03 U	**0.031**	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Phenanthrene	ug/L		**0.056**	< 0.03 U	--	< 0.03 U	< 0.03 U	**0.033**	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Pyrene	ug/L	2	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Total cPAHs TEQ	ug/L	0.000016	< 0.02265 U	< 0.02265 U	--	< 0.02265 U	< 0.02265 U	< 0.02265 U	< 0.02265 U	--	< 0.02265 U	< 0.02265 U	< 0.02265 U	< 0.02265 U	< 0.02265 U	< 0.02265 U

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Most stringent PCUL for non-potable groundwater established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 5 Excerpts – Groundwater and Seeps Data

Project No. 150054. Snopac Property, Seattle, Washington

		Location	**MW-10**	**MW-10**	**MW-11**	**MW-11**	**MW-11**	**MW-12**	**MW-12**
		Date	**02/08/2017**	**01/30/2018**	**02/08/2017**	**01/29/2018**	**08/27/2019**	**02/07/2017**	**01/28/2018**
		Sample	**MW10-020817**	**MW-10-20180130**	**MW11-020817**	**MW11-20180129**	**MW-11-082719**	**MW12-020717**	**MW12-20180128**
Analyte	**Unit**	**Most Stringent PCUL Non-Potable Water GW #s 2-5**							
Polycyclic Aromatic Hydrocarbons (PAHs)									
1-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U
2-Methylnaphthalene	ug/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	--	< 0.2 U	< 0.2 U
Acenaphthene	ug/L	5.3	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U
Acenaphthylene	ug/L		< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U
Anthracene	ug/L	2.1	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U
Benz(a)anthracene	ug/L	0.00016	< 0.03 U	< 0.03 U	**0.046**	< 0.03 U	--	< 0.03 U	< 0.03 U
Benzo(a)pyrene	ug/L	0.000016	< 0.03 U	< 0.03 U	**0.072**	< 0.03 U	--	< 0.03 U	< 0.03 U
Benzo(b)fluoranthene	ug/L	0.00016	< 0.03 U	< 0.03 U	**0.11**	< 0.03 U	--	< 0.03 U	< 0.03 U
Benzo(g,h,i)perylene	ug/L		< 0.03 U	< 0.03 U	**0.062**	< 0.03 U	--	< 0.03 U	< 0.03 U
Benzo(k)fluoranthene	ug/L	0.0016	< 0.03 U	< 0.03 U	**0.035**	< 0.03 U	--	< 0.03 U	< 0.03 U
Chrysene	ug/L	0.016	< 0.03 U	< 0.03 U	**0.073**	< 0.03 U	--	< 0.03 U	< 0.03 U
Dibenzo(a,h)anthracene	ug/L	0.000016	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U
Fluoranthene	ug/L	1.8	< 0.03 U	< 0.03 U	**0.082**	< 0.03 U	--	< 0.03 U	< 0.03 U
Fluorene	ug/L	3.7	< 0.03 U	< 0.03 U	**0.082**	< 0.03 U	--	< 0.03 U	< 0.03 U
Indeno(1,2,3-cd)pyrene	ug/L	0.00016	< 0.03 U	< 0.03 U	**0.053**	< 0.03 U	--	< 0.03 U	< 0.03 U
Naphthalene	ug/L	1.4	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	--	< 0.03 U	< 0.03 U
Phenanthrene	ug/L		< 0.03 U	< 0.03 U	**0.044**	< 0.03 U	--	< 0.03 U	< 0.03 U
Pyrene	ug/L	2	< 0.03 U	< 0.03 U	**0.11**	< 0.03 U	--	< 0.03 U	< 0.03 U
Total cPAHs TEQ	ug/L	0.000016	< 0.02265 U	< 0.02265 U	**0.09863**	< 0.02265 U	--	< 0.02265 U	< 0.02265 U

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Most stringent PCUL for non-potable groundwater established by the July 2019 Lower Duwamish Waterway (LDW) Preliminary Cleanup Level Workbook (Ecology, 2019).

Table 7. RI Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	**C01**				**C02**		**C03**			
				Sample ID:	**C01-SD-3-5**		**CO1-PW-3-5 (W)**		**C02-SD-3-5**		**C03-SD-3-5**		**CO3-PW-3-5 (W)**	
				Sample Date:	**2/6/2018**				**2/6/2018**		**2/7/2018**			
				Matrix:	**Sediment**		**Porewater**		**Sediment**		**Sediment**		**Porewater**	
		LDW ROD Remedial Action Levels		**Sediment Interval (ft):**	**3 - 5**				**3 - 5**		**3 - 5**			
Analyte	**Units**	**Human Health & Benthic COC RALs**	**Upper Limit for ENR**				**µg/L**						**µg/L**	
Polychlorinated Biphenyls (PCBs)														
Aroclor 1016	mg/kg dw	--	--		0.0065	U	0.24	UJ	0.14	U	0.0055	U	0.20	UJ
Aroclor 1221	mg/kg dw	--	--		0.013	U	0.47	UJ	0.27	U	0.011	U	0.40	UJ
Aroclor 1232	mg/kg dw	--	--		0.0065	U	0.24	UJ	0.14	U	0.0055	U	0.20	UJ
Aroclor 1242	mg/kg dw	--	--		0.053	J	0.64	J	0.72		0.06	J	1.0	J
Aroclor 1248	mg/kg dw	--	--		0.0065	U	0.24	UJ	0.14	U	0.0055	U	0.2	UJ
Aroclor 1254	mg/kg dw	--	--		0.19		1.5	J	1.9		0.11		1.8	J
Aroclor 1260	mg/kg dw	--	--		0.2		0.45	J	0.56	J	0.025		0.51	J
Total PCB Aroclors	mg/kg dw				0.44	J	2.6		3.2	J	0.2	J	3.3	
Total PCB Aroclors	mg/kg OC	12 (195 for top 2 ft)	36 (195 for top 2 ft)		19	J	--		77	J	26	J	--	
Polynuclear Aromatic Hydrocarbons (PAHs)														
1-Methylnaphthalene	mg/kg dw	--	--											
2-Methylnaphthalene	mg/kg dw	--	--		0.099		0.011	U	0.033		0.012		12.00	
Acenaphthene	mg/kg dw	--	--		0.15		0.067	J	0.061		0.083		63.00	
Anthracene	mg/kg dw	--	--		0.24		0.14		0.39		5.4		6.50	
Benz(a)anthracene	mg/kg dw	--	--		0.47		0.15		1.7		14		6.40	
Benzo(a)pyrene	mg/kg dw	--	--		0.73		0.42		1.5		4		2.60	
Benzo(b)fluoranthene	mg/kg dw	--	--		1.1		0.69		2.3		7.6		4.50	
Benzo(k)fluoranthene	mg/kg dw	--	--		0.34		0.24		0.8		2.4		1.40	
Chrysene	mg/kg dw	--	--		0.78		0.09	J	2.0		16		3.40	
Dibenz(a,h)anthracene	mg/kg dw	--	--		0.096		0.05	J	0.18		0.43		0.22	
Dibenzofuran	mg/kg dw	--	--		0.13		0.024	U	0.053		0.034		26.00	
Fluoranthene	mg/kg dw	--	--		0.96		0.39		4.2		34		50.00	
Fluorene	mg/kg dw	--	--		0.15		0.047	J	0.086		0.26		29.00	
Indeno(1,2,3-cd)pyrene	mg/kg dw	--	--		0.35		0.16		0.67		1.3		0.81	
Naphthalene	mg/kg dw	--	--		0.28		0.03	U	0.094		0.028		0.41	
Pyrene	mg/kg dw	--	--		3.5		4.00		6.5		33		48.00	
2-Methylnaphthalene	mg/kg OC	76	228		4.2		--		0.8		1.6		--	
Acenaphthene	mg/kg OC	32	96		6.3		--		1.5		11		--	
Acenaphthylene	mg/kg OC	--	--		2.1		0.047	J	1.3		8.2		0.97	
Anthracene	mg/kg OC	440	1,320		10		--		9.4		710		--	
Benz(a)anthracene	mg/kg OC	220	660		20		--		41		1800		--	
Benzo(a)pyrene	mg/kg OC	198	594		31		--		36		530		--	
Benzo(g,h,i)perylene	mg/kg OC	62	186		14		0.19		13		120		0.75	
Total benzofluoranthenes	mg/kg OC	460	1,380		61		0.93		75		1300		5.90	
Chrysene	mg/kg OC	220	660		33		--		48		2100		--	
Dibenz(a,h)anthracene	mg/kg OC	24	72		4.1		--		4.3		57		--	
Dibenzofuran	mg/kg OC	30	90		5.5		--		1.3		4.5		--	

Table 7. RI Sediment Data

Project No. 150054, Snopac Property, Seattle, Washington

				Sample Location:	C01			C02	C03		
				Sample ID:	C01-SD-3-5	CO1-PW-3-5 (W)		C02-SD-3-5	C03-SD-3-5	CO3-PW-3-5 (W)	
				Sample Date:	2/6/2018			2/6/2018	2/7/2018		
				Matrix:	Sediment	Porewater		Sediment	Sediment	Porewater	
		LDW ROD Remedial Action Levels		Sediment Interval (ft):	3 - 5			3 - 5	3 - 5		
Analyte	Units	Human Health & Benthic COC RALs	Upper Limit for ENR			µg/L				µg/L	
Fluoranthene	mg/kg OC	320	960		41	--		100	4500	--	
Fluorene	mg/kg OC	46	138		6.3	--		2.1	34	--	
Indeno(1,2,3-cd)pyrene	mg/kg OC	68	204		15	--		16	170	--	
Naphthalene	mg/kg OC	198	594		12	--		2.3	3.7	--	
Phenanthrene	mg/kg OC	200	600		17	0.13		8.9	200	29.00	
Pyrene	mg/kg OC	2,000	6,000		150	--		160	4300	--	
Total HPAHs	mg/kg OC	1,920	5,760		370	5.07	J	490	15000	118.00	
Total LPAHs	mg/kg OC	740	2,220		54	0.46	J	25	960	129.00	
cPAH	µg TEQ/kg dw	1000	3000		1000	0.56	J	2100	6900	4.00	
Metals											
Arsenic	mg/kg dw	57	171		11	91		33	7.3	343	
Cadmium	mg/kg dw	10.2	30.6		0.77	0.18	J	16	10	0.16	J
Chromium	mg/kg dw	520	1,560		34	2.3	J	41	13	1.9	J
Copper	mg/kg dw	780	2,340		79	5.5		160	53	5.2	
Lead	mg/kg dw	900	2,700		71	11		410	79	6.33	
Mercury	mg/kg dw	0.82	2.46		0.42	0.2		0.6	0.13	<0.20	
Silver	mg/kg dw	12.2	36.6		0.84	0.4	U	1.9	0.65	0.2	U
Zinc	mg/kg dw	820	2,460		150	14	U	3900	2200	12	U
Organotin Compounds											
Tributyltin ion	µg/kg dw	--	--		--	--		--	--	--	
Phthalates											
Bis(2-ethylhexyl)phthalate	mg/kg dw	--	--		--	--		--	--	--	
Bis(2-ethylhexyl)phthalate	mg/kg OC	94	282		--	--		--	--	--	
Chlorobenzenes											
1,2,4-Trichlorobenzene	mg/kg dw	--	--		--	--		--	--	--	
1,2,4-Trichlorobenzene	mg/kg OC	1.62	4.86		--	--		--	--	--	
Other SVOCs and COCs											
Benzoic acid	µg/kg dw	1,300	3,900		--	--		--	--	--	
Organic Carbon											
Total Organic Carbon	%	--	--		2.4	NA		4.2	0.76	NA	

Notes:

Sampling results from 3-5 foot depth horizon were screened against surface RALs as they will be located immediately below the cap after dredging.

Nondetects reported as 1/2 detection limit.

Lab duplicates have been averaged.

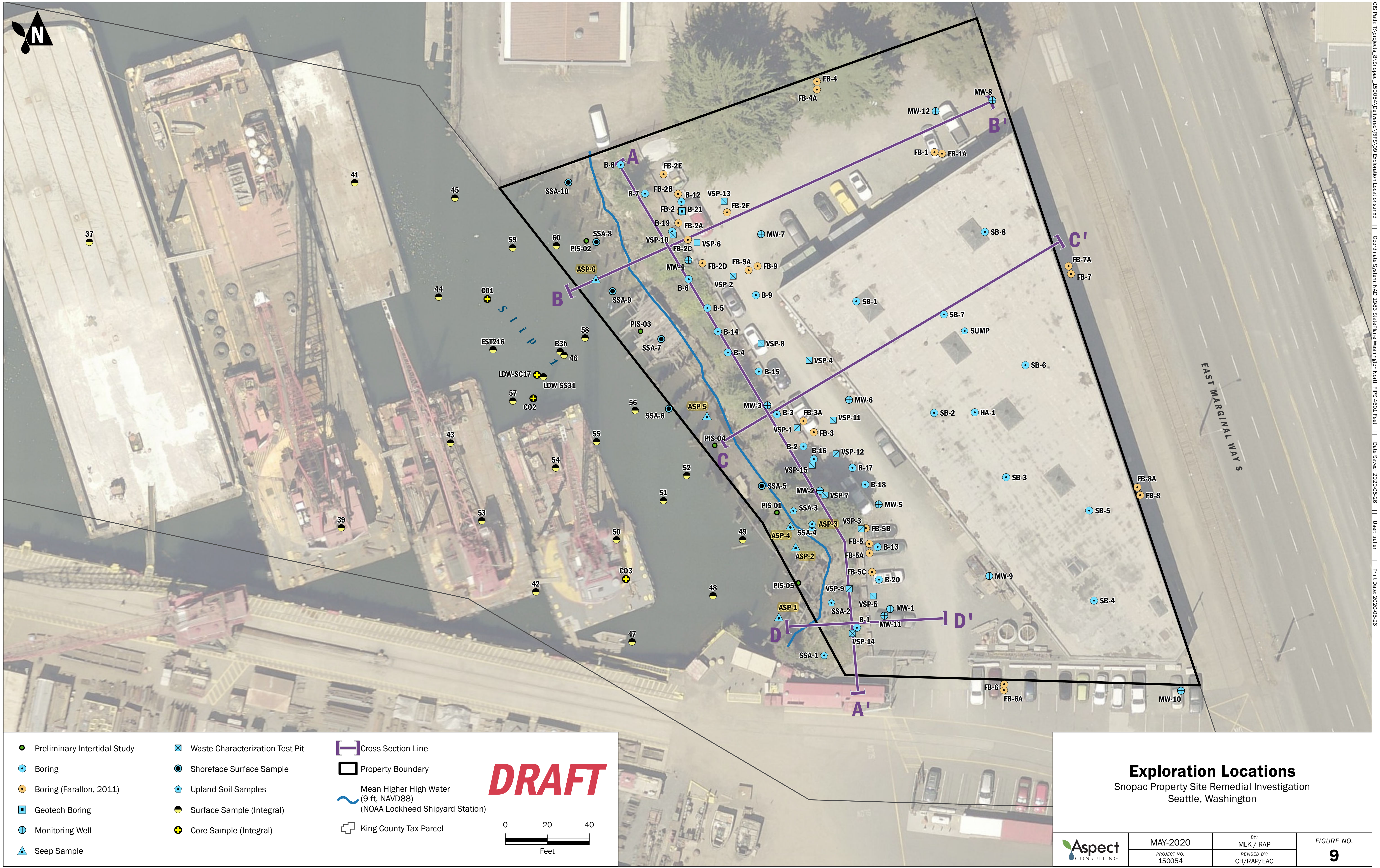
>Cat 2/3 RAL and ≤UL for ENR (ENR)

>UL for ENR (Active Remediation)

dw = dry weight
LDW = Lower Duwamish Waterway
RAL = remedial action level
ROD = record of decision
TEQ = toxicity equivalence
Data Qualifiers: J = result is estimated, U = result is not detected

COC = contaminant of concern
ENR = enhanced natural recovery
OC = organic carbon
SVOC = semivolatile organic compound
-- = no data available

Table data courtesy of Integral Consulting, Inc.



Basemap Layer Credits || Pictometry, King County

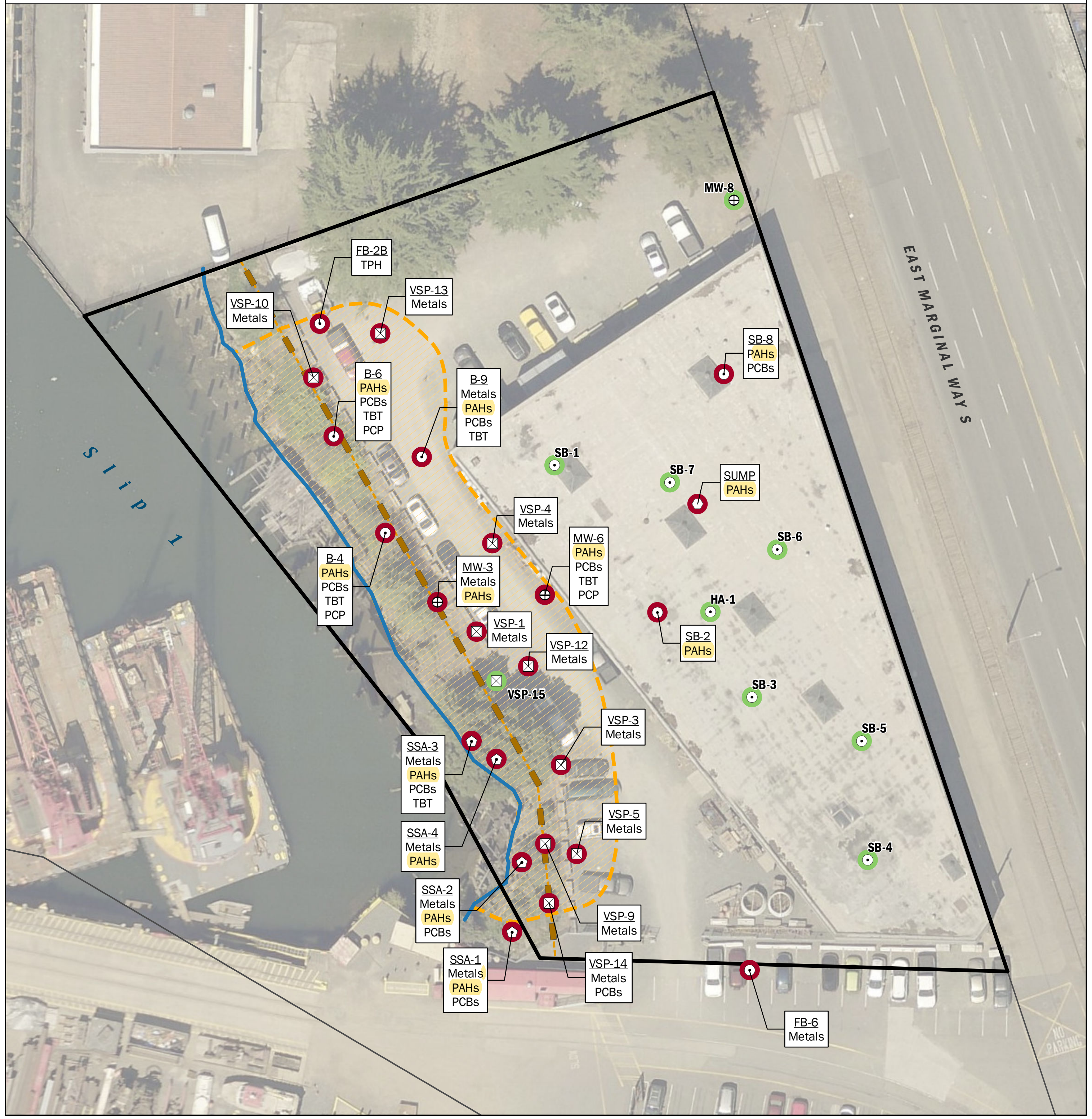
Exploration Locations

Snopac Property Site Remedial Investigation
Seattle, Washington

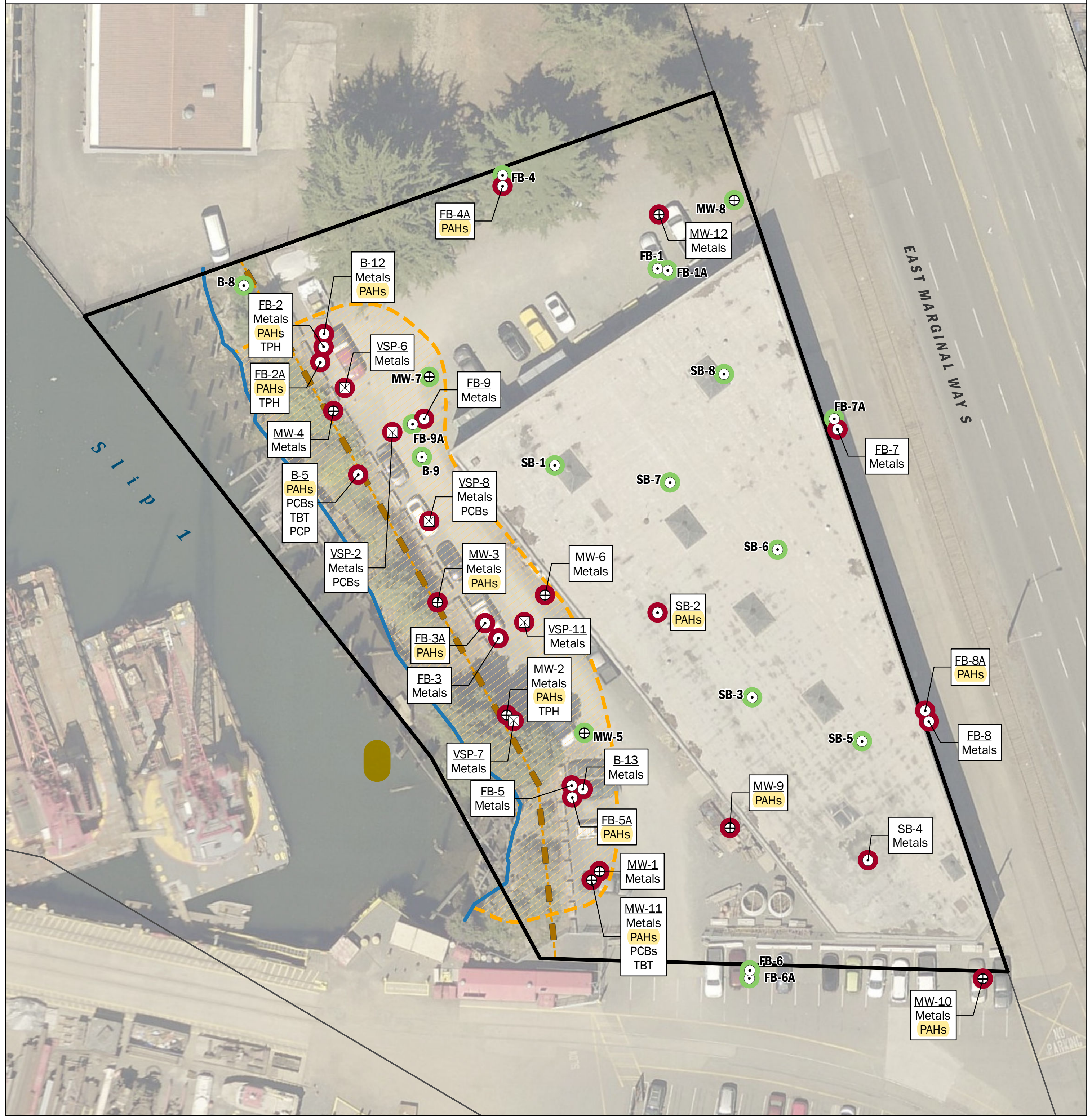
Aspect CONSULTING	MAY-2020	BY: MLK / RAP	FIGURE NO.
	PROJECT NO. 150054	REVISED BY: CH/RAP/EAC	9

GIS Path: T:\projects_8\Snopac_150054\Delivered\RIFS\09 Exploration Locations.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 2020-05-26 || User: trulien || Print Date: 2020-05-26

VADOSE SOIL EXCEEDANCE SUMMARY



SATURATED SOIL EXCEEDANCE SUMMARY



Analyte Groups with Exceedances include:

cPAHs
PCBs
TBT
Metals (including Arsenic, Copper, Lead, Mercury, Zinc)
PCP
TPH

Notes: *Exceedances represent detected concentration greater than the most stringent media-specific PCUL (Tables 5 and 6). Only analytes or analyte groups which have exceedances are labeled. Visible sandblast grit was found at locations B-4, B-5, B-6, MW-6, and VSP-12 to VSP-14.*

Exploration Type

- ⊙ Upland Soil Samples
- ☒ Waste Characterization Test Pit
- ⊙ Boring
- ⊕ Monitoring Well
- ○ Sump
- ▭ Property Boundary
- ▭ King County Tax Parcel

Analyte Group Exceedances

- ● One or More Analyte Groups Exceed
- ● No Exceedances
- ～ Mean Higher High Water (9 ft, NAVD88) (NOAA Lockheed Shipyard Station)
- --- Proposed Shoring Alignment
- --- Inferred Extent of Uplands Sandblast Grit-Containing Fill

N

0 25 50
Feet

DRAFT

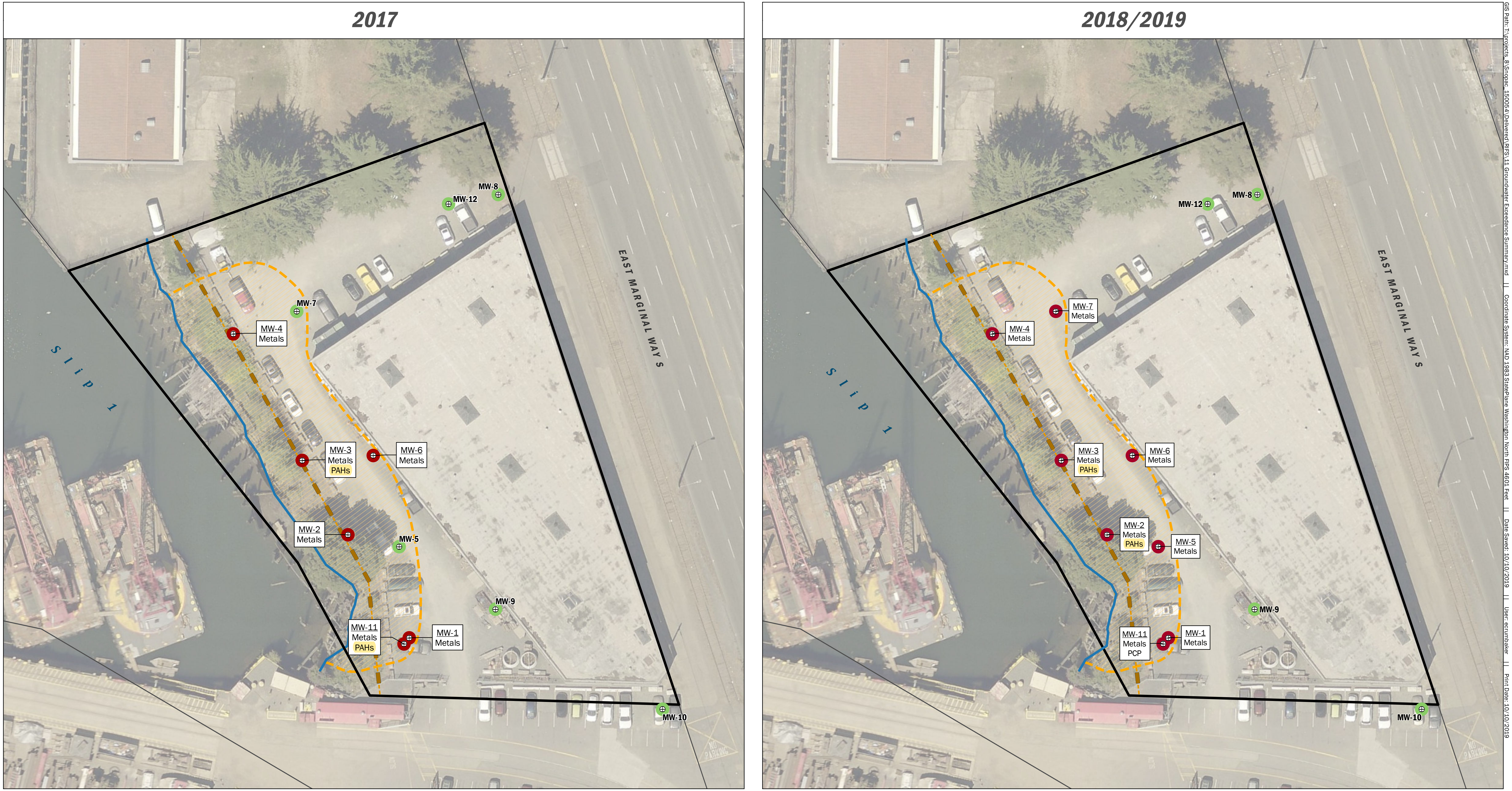
Vadose and Saturated Soil Exceedance Summary

Snopac Property Site Remedial Investigation
Seattle, Washington

Aspect CONSULTING

MAY-2020
PROJECT NO. 150054
BY: EAC / CH
REVISED BY: - - -
FIGURE NO. 10

T:\projects_8\Snopac_150054\Delivered\RIFS\10 Vadose and Saturated Soil Exceedances.mxd 2020-05-21 1:14:52 PM



Analyte Groups with Exceedances include:

cPAHs
PCP
Metals (including Arsenic, Copper, Zinc)

Notes: Exceedances represent detected concentration greater than the most stringent media-specific PCUL described in Table 4. Only analytes or analyte groups which have exceedances are labeled. See Table 4 for detailed analytical results.

Exploration Type

⊕ Monitoring Well

Analyte Group Exceedances

● One or More Analyte Groups Exceed

● No Exceedances

▭ Property Boundary

▭ King County Tax Parcel

~ Mean Higher High Water (9 ft, NAVD88) (NOAA Lockheed Shipyard Station)

- - Proposed Shoring Alignment

▭ Inferred Extent of Uplands Sandblast Grit-Containing Fill

N

0 25 50
Feet

DRAFT

Groundwater Exceedance Summary

Snopac Property Site Remedial Investigation
Seattle, Washington

Aspect CONSULTING

OCT-2019 PROJECT NO. 150054	BY: SJG / RAP REVISED BY: - - -	FIGURE NO. 11

Basemap Layer Credits || Pictometry, King County

GIS Path: T:\projects_8\Snopac_150054\Delivered\RIFS\11 Groundwater Exceedance Summary.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 10/10/2019 || User: ecrumbaker || Print Date: 10/10/2019

APPENDIX B

King County Industrial Waste Program - Issuance of Wastewater Discharge Authorization No. 1092-01

King County

MINOR DISCHARGE AUTHORIZATION

King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855

NUMBER 1092-01

for

5055 Properties, LLC

Site address: 5055 E Marginal Way S
Seattle, Washington

Mailing address: 5209 E Marginal Way S
Seattle,WA 98134

Phone: 206-762-0850

Emergency (24-hour) phone: 206-780-7746

Industry type: Construction Dewatering

Discharge to: West Point

*Note: This authorization is valid only for the specific discharges shown below:

Discharge process: Wastewater generated by Construction Dewatering operation

Pretreatment process: Gravity separation

Maximum discharge volume: 72,000 gallons per day
Maximum discharge rate: 100 gallons per minute

Effective date: September 9, 2020
Expiration date: January 30, 2022

Permission is hereby granted to discharge industrial wastewater from the above-identified facility into the King County sewer system in accordance with the effluent limitations and monitoring requirements set forth in this authorization.

If the industrial user wishes to continue to discharge after the expiration date, an application must be filed for re-issuance of this discharge authorization at least 90 days prior to the expiration date. For information concerning this King County Discharge Authorization please call Industrial Waste Compliance Investigator Todd Gowing at 206-477-5426.

24-HOUR EMERGENCY NOTIFICATION
West Point Treatment Plant: 206-263-3801
Washington State Department of Ecology: 425-649-7000

SPECIAL CONDITIONS

A. Discharge is to the new side sewer connection constructed under City of Seattle construction permit 6697427-CN as shown on sheet C200.

B. Dewatering and discharge to the sanitary sewer shall conform to the submitted Temporary Dewatering Plan. Reference the City of Seattle construction permit 6997427-CN

C. Discharge to the sanitary sewer shall not begin until KCIW has conducted a preoperative inspection of the pretreatment facilities and has sent written notification (email is sufficient) to the permittee that discharges may begin.

D. All persons responsible for monitoring the discharge to the sanitary sewer shall review a copy of this authorization.

E. A copy of this authorization shall be on site at all times for review and reference.

F. This authorization grants the discharge of limited amounts of wastewater from the following waste streams:

   1. Contaminated stormwater runoff
   2. Excavation dewatering

   Wastes or contaminants from sources other than permitted herein shall not be discharged to the sanitary sewer without prior approval from KCIW.

G. The discharge shall not cause hydraulic overloading conditions of the sewerage conveyance system. During periods of peak hydraulic loading KCIW and Seattle Public Utilities representatives reserve the authority to request that discharge to the sewer be stopped.

H. All wastewater shall be collected and treated in accordance with treatment methods approved by KCIW. Wastewater shall not bypass treatment systems. Modifications to wastewater treatment systems shall not occur without prior approval from KCIW.

I. Totalizing and non-resettable flow meters must be installed on all permitted discharge pipes to the sewer.

J. An accessible sampling spigot must be installed on the discharge pipe from the last treatment unit of the wastewater treatment system. The sample site shall be representative of all industrial waste streams discharged to the sewer from this site. Each sample site shall be accessible to KCIW representatives when discharge to the sewer is occurring.

K. The contractor shall implement erosion control best management practices to minimize the amount of solids discharged to the sanitary sewer system. As a minimum precaution, the wastewater must be pumped to an appropriately sized settling tank(s) prior to entering the sewer system.

L. The permittee shall properly operate and maintain all wastewater treatment units to ensure compliance with established discharge limits. Solids accumulation in tanks used for solids settling shall not exceed 25 percent of the tank's working hydraulic capacity. Each tank's working hydraulic capacity is based on the water column height as measured from the bottom of the tank to either the invert elevation of the tank's outlet pipe (gravity discharges) or discharge pump intake (pumped discharges).

M. Results of all required self-monitoring sampling must be recorded daily. Recorded information for each discharge site must include:

1. Sample date
2. Sample time
3. Sample results
4. Operator name
5. Comments (if applicable)

These records shall be maintained on site and shall be available for review by KCIW personnel during normal business hours.

N. The permittee must establish a sewer account with Seattle Public Utilities and provide necessary reports to ensure accurate assessment of sewer charges for all construction dewatering discharge sites associated with this project.

SELF-MONITORING REQUIREMENTS

A. The following self-monitoring requirements shall be met for this discharge authorization:

Parameter	Frequency	Sample Type/Method
Discharge volume	Daily	In-line flow meter
Discharge rate	Daily	In-line flow meter
Settleable solids	Daily	Grab by Imhoff cone
pH	Daily	Hand-held meter
Nonpolar FOG	Daily	3 Grabs
Arsenic	Weekly	Composite
Chromium	Weekly	Composite
Copper	Weekly	Composite
Lead	Weekly	Composite
Mercury	Weekly	Composite
Nickle	Weekly	Composite
Zinc	Weekly	Composite
PAH	Monthly	Composite

B. The settleable solids field test by Imhoff cone must be performed as follows:

1. Fill cone to one-liter mark with well-mixed sample
2. Allow 45 minutes to settle
3. Gently stir sides of cone with a rod or by spinning; settle 15 minutes longer
4. Record volume of settleable matter in the cone as ml/L

C. The three nonpolar fats, oils, and grease (FOG) grab samples shall be of equal volume, collected at least five minutes apart, and analyzed separately. When using U.S. Environmental Protection Agency approved protocols specified in 40 CFR Part 136, the individual grab samples may be composited (at the laboratory) prior to analysis. The result of the composite sample or the average of the concentrations of the three grab samples may be reported as Total FOG unless the value is 100 mg/L or greater, in which case the concentration of nonpolar FOG must be reported.

D. If a violation of any discharge limits or operating criteria is detected in monitoring, you shall notify KCIW immediately upon receipt of analytical data.

E. You shall submit an end-of project self-monitoring report (form enclosed) within 15 days from completion of all construction dewatering activities to the sewer or by **February 15, 2020**, whichever comes first. The report must contain results of required self-monitoring and total volume discharged to the sewer.

F. All self-monitoring data submitted to KCIW, which required a laboratory analysis, must have been performed by a laboratory accredited by the Washington State Department of Ecology for each parameter tested, using procedures approved by 40 CFR 136. This does not apply to field measurements performed by the industrial user such as pH, temperature, flow, atmospheric hydrogen sulfide, total dissolved sulfides, total settleable solids by Imhoff cone, or process control information.

G. All sampling data collected by the permittee and analyzed using procedures approved by 40 CFR 136, or approved alternatives, shall be submitted to KCIW whether required as part of this authorization or done voluntarily by the permittee.

H. Self-monitoring reports shall be signed by an authorized representative of the industrial user. The authorized representative of the industrial user is defined as:

1. The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation

2. The manager of one or more manufacturing, production, or operating facilities, but only if the manager:

    a. Is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations
    b. Can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements and knowledgeable of King County reporting requirements
    c. Has been assigned or delegated the authority to sign documents, in accordance with corporate procedures

3. A general partner or proprietor if the industrial user is a partnership or proprietorship, respectively

4. A director or highest official appointed or designated to oversee the operation and performance of the industry if the industrial user is a government agency

5. The individuals described in one through four above may designate an authorized representative if:

    a. The authorization is submitted to King County in writing
    b. The authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company or agency

GENERAL DISCHARGE LIMITATIONS

Operating criteria

There shall be no odor of solvent, gasoline, or hydrogen sulfide (rotten egg odor), oil sheen, unusual color, or visible turbidity. The discharge must remain translucent. If any of the discharge limits are exceeded, you must stop discharging and notify KCIW at 206-477-5300.

Corrosive substances

Limits

Maximum:	pH 12.0 (s.u.)
Instantaneous minimum[1]:	pH 5.0 (s.u.)
Daily minimum[2]:	pH 5.5 (s.u.)

The instantaneous minimum pH limit is violated whenever any single grab sample or any instantaneous recording is less than pH 5.0. The daily minimum pH limit is violated whenever any continuous recording of 15 minutes or longer remains below pH 5.5 or when each pH value of four consecutive grab samples collected at 15-minute intervals or longer within a 24-hour period remains below pH 5.5.

Discharges of more than 50 gallons per day of caustic solutions equivalent to more than 5 percent NaOH by weight or greater than pH 12.0 are prohibited unless authorized by KCIW and subject to special conditions to protect worker safety, the collection system, and treatment works.

Fats, oils, and grease

Discharge of FOG shall not result in significant accumulations that either alone or in combination with other wastes are capable of obstructing flow or interfere with the operation or performance of sewer works or treatment facilities.

Dischargers of polar FOG (oil and grease from animal and/or vegetable origin) shall minimize free-floating polar FOG. Dischargers may not add emulsifying agents exclusively for the purpose of emulsifying free-floating FOG.

Nonpolar FOG limit: 100 mg/L

The limit for nonpolar FOG is violated when the arithmetic mean of the concentration of three grab samples, taken no more frequently than at five minute intervals, or when the results of a composite sample exceed the limitation.

---

[1] The instantaneous minimum pH limit is violated whenever any single grab sample or any instantaneous recording is less than pH 5.0.

[2] The daily minimum pH limit is violated whenever any continuous recording of 15 minutes or longer remains below pH 5.5 or when each pH value of four consecutive grab samples collected at 15-minute intervals or longer within a 24-hour period remains below pH 5.5.

Flammable or explosive materials

No person shall discharge any pollutant, as defined in 40 CFR 403.5, that creates a fire or explosion hazard in any sewer or treatment works, including, but not limited to, waste streams with a closed cup flashpoint of less than 140° Fahrenheit or 60° Centigrade using the test methods specified in 40 CFR 261.21.

At no time shall two successive readings on an explosion hazard meter, at the point of discharge into the system (or at any point in the system), be more than 5 percent nor any single reading be more than 10 percent of the lower explosive limit (LEL) of the meter.

Pollutants subject to this prohibition include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, and sulfides, and any other substances that King County, the fire department, Washington State, or the U.S. Environmental Protection Agency has notified the user are a fire hazard or a hazard to the system.

Petroleum Compounds	**Maximum Concentration ppm (mg/L)**
Benzene	0.07
Ethylbenzene	1.7
Toluene	1.4
Total xylenes	2.2

Heavy metals/cyanide

The industrial user shall not discharge wastes, which exceed the following limitations:

Heavy Metals & Cyanide	**Instantaneous Maximum ppm (mg/L)[1]**	**Daily Average ppm (mg/L)[2]**
Arsenic	4.0	1.0
Cadmium	0.6	0.5
Chromium	5.0	2.75
Copper	8.0	3.0
Lead	4.0	2.0
Mercury	0.2	0.1
Nickel	5.0	2.5
Silver	3.0	1.0
Zinc	10.0	5.0
Cyanide	3.0	2.0

[1] The instantaneous maximum is violated whenever the concentration of any sample, including a grab within a series used to calculate daily average concentrations, exceeds the limitation.

[2] The daily average limit is violated: a) for a continuous flow system when a composite sample consisting of four or more consecutive samples collected during a 24-hour period over intervals of 15 minutes or greater exceeds the limitation, or b) for a batch system when any sample exceeds the limitation. A composite

sample is defined as at least four grab samples of equal volume taken throughout the processing day from a well-mixed final effluent chamber, and analyzed as a single sample.

High temperature

The industrial user shall not discharge material with a temperature in excess of 65° C (150° F).

Hydrogen sulfide

Atmospheric hydrogen sulfide:	10.0 ppm

(As measured at a monitoring manhole designated by KCIW)

Soluble sulfide limits may be established on a case-by-case basis depending upon volume of discharge and conditions in the receiving sewer, including oxygen content and existing sulfide concentrations.

Organic compounds

No person shall discharge any organic pollutants that result in the presence of toxic gases, vapors, or fumes within a public or private sewer or treatment works in a quantity that may cause worker health and safety problems.

Organic pollutants subject to this restriction include, but are not limited to: Any organic pollutants compound listed in 40 CFR Section 433.11 (e) (total toxic organics [TTO] definition), acetone, 2-butanone (MEK), 4-methyl-2-pentanone (MIBK), and xylenes.

Settleable solids

Settleable solids concentrations:	7.0 ml/L

GENERAL CONDITIONS

A. All requirements of King County Code pertaining to the discharge of wastes into the municipal sewer system are hereby made a condition of this discharge authorization.

B. The industrial discharger shall implement measures to prevent accidental spills or discharges of prohibited substances to the municipal sewer system. Such measures include, but are not limited to, secondary containment of chemicals and wastes, elimination of connections to the municipal sewer system, and spill response equipment.

C. Any facility changes, which will result in a change in the character or volume of the pollutants discharged to the municipal sewer system, must be reported to your KCIW representative. Any changes that will cause the violation of the effluent limitations specified herein will not be allowed.

D. In the event the permittee is unable to comply with any of the conditions of this discharge authorization because of breakdown of equipment or facilities, an accident caused by human error, negligence, or any other cause, such as an act of nature the company shall:

   1. Take immediate action to stop, contain, and clean up the unauthorized discharges and correct the problem.
   2. Immediately notify KCIW and, if after 5 p.m. weekdays and on weekends, call the emergency King County treatment plant phone number on Page 1 so steps can be taken to prevent damage to the sewer system.
   3. Submit a written report within 14 days of the event (*14-Day Report*) describing the breakdown, the actual quantity and quality of resulting waste discharged, corrective action taken, and the steps taken to prevent recurrence.

E. Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of the discharge authorization or the resulting liability for failure to comply.

F. The permittee shall, at all reasonable times, allow authorized representatives of KCIW to enter that portion of the premises where an effluent source or disposal system is located or in which any records are required to be kept under the terms and conditions of this authorization.

G. Nothing in this discharge authorization shall be construed as excusing the permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including discharge into waters of the state. Any such discharge is subject to regulation and enforcement action by the Washington State Department of Ecology.

H. This discharge authorization does not authorize discharge after its expiration date. If the permittee wishes to continue to discharge after the expiration date, an application must be filed for reissuance of this discharge authorization at least 90 days prior to the expiration date. If the permittee submits its reapplication in the time specified herein, the permittee shall be deemed to have an effective wastewater discharge authorization until KCIW issues or denies the new wastewater discharge authorization. If the permittee fails to file its reapplication in the time period specified herein, the permittee will be deemed to be discharging without authorization.

Compliance Investigator:______________________________Date: September 9, 2020
Todd Gowing

King County

Industrial Waste Program Self-Monitoring Report

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Project Name: 5055 Properties, LLC

Authorization No.: 1092-01

Project Location: 5055 E Marginal Way S, Seattle

Sample Date	pH (s.u.)		Settleable Solids (mL/L)	Nonpolar FOG (mg/L)	Arsenic (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Discharge Volume (gallons)	Name or initials of person collecting and recording samples and volume each day. If permitted for relief only, explain why you did not discharge to surface water for each day of discharge.
	Min.	Max.									
Total Discharge Volume:											

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

The authorization holder is responsible for monitoring the discharge in accordance with the monitoring requirements specified in King County Discharge Authorization No. 1092-01. This report form must be completed, signed, and submitted to KCIW by **February 15, 2022**.

Your King County Industrial Waste Program Contact: Todd Gowing, 206-477-5426

King County

Industrial Waste Program Self-Monitoring Report

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Project Name: 5055 Properties, LLC **Authorization No.:** 1092-01

Project Location: 5055 E Marginal Way S, Seattle

Sample Date			Nickle (mg/L)	Zinc (mg/L)	PAHs (mg/L)						Name or initials of person collecting and recording samples and volume each day. If permitted for relief only, explain why you did not discharge to surface water for each day of discharge.
									Total Discharge Volume:		

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

The authorization holder is responsible for monitoring the discharge in accordance with the monitoring requirements specified in King County Discharge Authorization No. 1092-01. This report form must be completed, signed, and submitted to KCIW by **February 15, 2022.Your King County Industrial Waste Program Contact:** Todd Gowing, 206-477-5426

APPENDIX C

Seattle Department of Construction and Inspections Construction Permit 669742-CN

Permit Number:
6697427-CN

DIST 10

CITY OF SEATTLE
Construction Permit

Seattle Department of Construction and Inspections
700 Fifth Ave, Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
(206) 684-8600

APN #:

Site Address: 5055 EAST MARGINAL WAY S SEATTLE, WA 98134
Building ID: None
Location:
Legal Description: 357320-1061: INDUSTRIAL ADD THAT POR OF LOTS 15 & 16 DAF - BEG ON E LN SD
Records Filed At: 5055 EAST MARGINAL WAY S

OWNER

5055 Properties LLC
John Heckel
5209 East Marginal Way S
SEATTLE, WA 98134
Ph: (206) 762-0850

CONTRACTOR

5055 Properties LLC
John Heckel
5209 East Marginal Way S
SEATTLE, WA 98134
Ph: (206) 762-0850

Application Date: 03/07/2019
Issue Date:
Expiration Date: 11/26/2021

Fees Paid: $45,376.25
As of Print Date: 05/26/2020

Description of Work: Install shoring near shoreline, demolish existing building, remediate contaminated soils, install ground improvement, install pinning pipe piles, per plan.

Permit Remarks:

Building Code: 2015 SBC
SDCI Valuation: $3,000,000
Occupancy Cert Required: N
Special Inspections: Y
Land Use Conditions: Y
Non-Separated Uses: N **Site Final Required:** Y

Building Info:
Basements:
Stories:
Mezzanines

Housing & Dwelling Unit(s) this Permit:

Unit Type	DU?	Units	Add	Remove
None	N	0	0	0

Zoning/Overlay:
Council District 2
IG1 U/85
Shoreline Yes
URBAN_VILLAGE Yes, Additional Information on File

Occupancy per Building Code					
Floors	**Type**	**Occupancy Group**	**Occupancy Type**	**Asmbly Load**	**Fire**
Shorin	Not	Not Reviewed			None

Approved Use per Land Use Code	
Use	**Location**
Light Manufacturing	0

A/P #	Related Cases/Permits
6715955-DM	Demolition Permit
6697427-CN-007	Upload Documents
6697427-CN-008	Upload Documents
20TMP-012056	Upload Documents
19TMP-040962	Construction Application Intake
6697427-CN-003	Upload Documents
Additional Information on File	

Project Contacts	Name	Phone
Ordinance Reviewer	Bill Whipkey	206-233-7229
Structural Reviewer	Bill Whipkey	206-233-7229
Zoning Reviewer	Christopher Ndifon	NA
Land Use Reviewer	Ben Perkowski	206-684-0347
Addressing Reviewer	Sandra Montgomery	206-684-4389

Applicant Signature: **Date:** 5/26/20

Permitted work must not progress without prior inspection approval. When ready for inspection, make request with the Seattle Department of Construction and Inspections at (206) 684-8900 or on the internet at: https://cosaccela.seattle.gov/Portal. **Provide the permit number, site address, and contact phone.** Permission is given to do the above work at the site address shown, according to the conditions hereon and according to the specification pertaining thereto, subject to compliance with the Ordinances of the City of Seattle. Correct information is the responsibility of the applicant. Permits with incorrect information may be subject to additional fees.

You must have a paper copy of your approved and stamped plan set available at your job site for the City Inspector to review. If you do not have your plans printed and ready for review, you may fail your inspection.

PERMIT # 6697427-CN

City of Seattle
Seattle Department of Construction and Inspections
700 Fifth Ave, Suite 2000

POST THIS SIDE OUT

TO THE CONTRACTOR/OWNER,

Additional permits may be required for work occurring under this permit. This permit does not authorize Sewer, Public Right-of-Way Shoring, Drainage and Street Use, Fire Department, Boiler, Electrical, Elevator, Furnace, Gas Piping, Plumbing, or Sign permits. If other permits are required, they must be applied for separately from this permit. The requirements for all other permits related to this Permit, must be completed prior to the Final Inspection of this permit.

The premises must not be occupied until the Final Inspection is completed and occupancy is authorized by the Seattle Department of Construction and Inspections.

PROPERTY LINES MUST BE ESTABLISHED BY SURVEY STAKES PRIOR TO SETBACK/FOUNDATION INSPECTION.

BEFORE BEGINNING CONSTRUCTION:

A) Before **First Ground Disturbance**, request an inspection of installed **Erosion Control Measures**.
B) When there is **Special Inspections**, Land Use conditions, and/or unusual design elements, a **Pre Construction Conference** is required **prior** to construction. Call 684-8860 to request a Pre Construction conference.
C) If this permit requires a **Soil Bearing Capacity** special inspection by a Geotechnical Engineer, that approval is required **before** the foundation pour.
D) When **Special Inspections** are required, notify the Special Inspection Agency at least 24 hours in advance.

INSPECTION REQUESTS: Please clarify which inspections your project requires **before** proceeding with your project.

You may request an inspection on the internet or by phone. Inspection requests received **before 7:00 AM** are scheduled for the same working day. Inspection requests received **after 7:00 AM** are scheduled for the next working day. Inspectors are available between the hours of 7:30 AM and 8:30 AM.

A) **Internet:** https://cosaccela.seattle.gov/Portal Search for your record and click on the **Inspections & Appointments** link to schedule your inspection.
B) **24 hour inspection request line at (206) 684-8900**, **cell phones are discouraged** due to frequent connection problems.
C) **Customer Service at (206) 684-8950** between the hours of 7:30 AM and 4:30 PM.

DURING CONSTRUCTION:

SDCI inspectors will provide an electronic copy of each inspection report through the Seattle Services Portal. Go to the portal, print a copy of the inspection reports, and keep them together or with this Permit, where they can be conveniently referenced,

a.	**FIRST GROUND** (non distrubance areas, erosion control, tree protection)	f.	**INSULATION** (Slab, Walls, Ceiling)
b.	**SETBACK** (Location)	g.	**MECHANICAL COVER** (If HVAC is authorized by this permit)
c.	**FOUNDATION** (Footings, Walls) [Soil bearing, Reinforcing steel, Foundation drainage]	h.	**MECHANICAL FINAL** (If HVAC is authorized by this permit)
d.	**STRUCTURAL** (Shear Wall, HD's/Straps, Diaphragms)	i.	**SITE FINAL** (If required by this permit)
e.	**FRAMING** (Sub floor prior to sheathing, Walls, Ceiling)	j.	**FINAL INSPECTION** (After all other related permit requirements are completed)

PRIOR TO FINAL BUILDING APPROVAL:

Other permit approval sign-offs may be required prior to the Final Inspection of this permit. To speed-up Final approval of this permit, we recommend you acquire other permit final approvals in the signature boxes provided below.

SOIL BEARING
Approved By Engineer Date

BOILER
Approved By Date

SEATTLE FIRE DEPARTMENT
Approved By Date

ELECTRICAL
Approved By Date

ELEVATOR
Approved By Date

LAND USE/DESIGN REVIEW
Approved By Date

PLUMBING / GASPIPING / BACKFLOW
Approved By Date

SITE / SIDE SEWER
Approved By Date

SDOT - PRVT CONTRACT/ST. USE
Approved By Date

MECHANICAL / REFRIGERATION
Approved By Date

OTHER
Approved By Date

STREET TREES / ARBORIST
Approved By Date

APPENDIX D

Seattle Department of Construction and Inspections Construction Permit 669742-CN Plans

REMEDIAL EXCAVATION

5055 E MARGINAL WAY S, SEATTLE, WASHINGTON

PROPERTIES ON WHICH CONSTRUCTION WILL OCCUR:

KING COUNTY PARCEL NO. :	357320-1061
STREET ADDRESS:	5055 E MARGINAL WAY S
PROPERTY OWNER:	5055 PROPERTIES, LLC
LEGAL DESCRIPTION:	INDUSTRIAL

GENERAL NOTES

1. THE WORK DESCRIBED HEREIN (THE WORK) IS BEING CONDUCTED AS AN INTERIM ACTION TO ADDRESS ECOLOGY SOURCE CONTROL PROGRAM OBJECTIVES AND IN ACCORDANCE WITH MODEL TOXICS CONTROL ACT (MTCA) CLEANUP REGULATION (WAC 173-340).
2. THE CONTRACTOR SHALL IMPLEMENT THE WORK ACCORDING TO THIS PLAN SET AND THE PROJECT TECHNICAL SPECIFICATIONS.
3. THE WORK INCLUDES EXCAVATION AND OFF-SITE DISPOSAL OF SANDBLAST GRIT AND SOIL CONTAINING SANDBLAST GRIT (CONTAMINATED SOIL) WHICH EXHIBITS ELEVATED CONCENTRATIONS OF METALS AND POLYCYCLIC AROMATIC HYDROCARBONS. THE WORK ALSO INCLUDES DEWATERING AND WATER MANAGEMENT, AND BACKFILLING OF THE EXCAVATION.
4. THE ESTIMATED AERIAL EXTENT OF CONTAMINATED SOIL REMOVAL COVERS APPROXIMATELY 9,565 SQUARE FEET AND EXTENDS TO A MAXIMUM DEPTH OF APPROXIMATELY 13 FEET BELOW GROUND SURFACE (BGS). THE FINAL DEPTH AND EXTENT OF EXCAVATION WILL BE BASED ON FIELD SCREENING AND CONFIRMATION SOIL SAMPLING PERFORMED BY THE ENGINEER.
5. THE WORK PRESENTED IN THESE PLANS SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR CONTAMINATED CONSTRUCTION SITES.
6. CONTRACTOR IS RESPONSIBLE FOR EXCAVATION SAFETY AND SHALL FOLLOW ALL APPLICABLE OSHA AND WISHA TRENCHING AND EXCAVATION REGULATIONS.
7. CONTRACTOR SHALL MAINTAIN DRY CONDITIONS TO THE EXTENT PRACTICAL DURING EXCAVATION.

MINIMUM HANDLING AND DISPOSAL REQUIREMENTS FOR CONTAMINATED MATERIALS

1. ALL CONTRACTOR REQUIREMENTS FOR SCREENING, HANDLING, AND DISPOSAL OF CONTAMINATED SOIL AND WATER ARE PRESENTED IN THE PROJECT TECHNICAL SPECIFICATIONS. THE CONTRACTOR REQUIREMENTS ARE BASED ON THE ECOLOGY-APPROVED FINAL INTERIM ACTION WORK PLAN.
2. EXCAVATED SOIL WILL BE SEGREGATED AND HANDLED AS 1) POTENTIAL CLEAN SOIL, 2) CONTAMIANTED SOIL, OR 3) CONTAMINATED DEBRIS. SEGREGATION WILL BE DIRECTED BY THE ENGINEER AND USE VISUAL FIELD SCREENING FOR PRESENCE OF SANDBLAST GRIT. POTENTIAL CLEAN SOIL WILL BE VERIFED WITH ANALYTICAL TESTING. CONTAMINATED SOIL DETERMINED BY FIELD SCREENING DOES NOT REQUIRE VERIFICATION WITH ANALYTICAL TESTING. OVERSIZED MATERIAL WILL BE SEGREGATED FROM EXCAVATED SOILS AND HANDLED AS CONTAMINATED DEBRIS.
3. IF TEMPORARY STOCKPILING IS NECCESARY, STOCKPILES LOCATIONS WILL BE APPROVED BY THE ENGINEER. EACH STOCKPILE WILL BE UNDERLAIN AND COVERED BY PLASTIC SHEETING.
4. ALL CONTAMINATED SOIL AND CONTAMINATED DEBRIS WILL BE LOADED AND TRANSPORTED OFF-SITE TO A PERMITTED SUBTITLE D DISPOSAL FACILITY. TRUCKS HAULING CONTAMINATED MATERIALS MUST BE COVERED DURING TRANSPORT.
5. ALL CONSTRUCTION-GENERATED WASTEWATER WILL BE PRE-TREATED ON-SITE AND DISCHARGED TO SEWER IN ACCORDANCE WITH CONDITIONS OF KING COUNTY INDUSTRIAL WASTE DISCHARGE AUTHORIZATION NO. 1092-01. SOURCES OF WATER INCLUDE TEMPORARY EXCAVATION DEWATERING AND STORMWATER GENERATED WITHIN THE PROJECT SITE. ON-SITE PRETREATMENT WILL CONSIST OF RETENTION IN TANKS FOR REMOVAL OF SETTLEABLE SOLIDS. THE PRE-TREATMENT SYSTEM WILL INCLUDE FLOW METERING, COMPLIANCE SAMPLING POINTS, AND CONVEYANCE TO THE DISCHARGE POINT.

CONSTRUCTION NOTES AND PROPOSED SEQUENCE

1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
2. VERIFY TREE PROTECTION FOR TREES ALONG NORTH PROPERTY BOUNDARY INSTALLED BY OTHERS.
3. REMOVE ANY SURFACE DEBRIS AND/OR EQUIPMENT REMAINING FROM THE BUILDING DEMOLITION TO THE EXTENT NEEDED TO COMPLETE THE EXCAVATION.
4. MARK LIMITS OF CONTAMINATED SOIL TO BE EXCAVATED.
5. INITIATE DEWATERING ACCORDING TO THE DEWATERING PLAN PREPARED BY THE CONTRACTOR.
6. EXCAVATE CONTAMINATED SOIL AND LOAD INTO TRUCKS FOR OFF-SITE DISPOSAL. IF NEEDED, SOIL CAN BE STOCKPILED.
7. THERE IS THE POTENTIAL FOR HEAVE OF THE ESTUARINE UNIT DURING EXCAVATION. TO MINIMIZE THE POTENTIAL FOR HEAVE, THE CONTRACTOR SHOULD CONDUCT EXCAVATION BELOW ELEVATION 7 FEET NAVD88 ONLY DURING TIME PERIODS WHEN THE TIDE IS BELOW ELEVATION 1 FEET NAVD88.
8. THE CONTRACTOR SHOULD MAINTAIN THE OPEN EXCAVATION (BELOW 7 FEET NAVD88) LENGTH TO LESS THAN 40 FEET (PARALLEL TO SHORELINE) TO MINIMIZE DEWATERING RATES AND THE POTENTIAL FOR HEAVE.
9. ADVANCE SOIL EXCAVATION TO THE APPROXIMATE LIMITS OF EXCAVATION. ANY EXCAVATION BEYOND THE APPROXIMATE LIMITS WILL BE DIRECTED BY THE ENGINEER.
10. THE ENGINEER IS RESPONSIBLE FOR CONDUCTING PERFORMANCE MONITORING AS REQUIRED BY THE ECOLOGY-APPROVED FINAL INTERIM ACTION WORK PLAN. WHEN FIELD SCREENING INDICATES THAT CONTAMINATED SOIL HAS BEEN REMOVED, THE ENGINEER WILL COLLECT SOIL SAMPLES FROM THE EXCAVATION SIDEWALL AND BOTTOM FOR LABORATORY ANALYSIS TO EVALUATE COMPLIANCE WITH REMEDIATION LEVELS. AT LEAST 12 BOTTOM SAMPLES AND 24 SIDEWALL SAMPLES WILL BE COLLECTED. IF RESULTS EXCEED REMEDIATION LEVELS, AND IF FEASIBLE, OVER-EXCAVATION WILL BE DIRECTED BY THE ENGINEER AND ADDITIONAL SOIL SAMPLING.

DEWATERING AND WATER MANAGEMENT NOTES

1. CONTRACTOR SHALL IMPLEMENT THE DEWATERING PLAN SUBMITTED IN PLAN SET DWP-1.
2. DEWATER EXCAVATIONS AS NEEDED TO MAINTAIN UNSATURATED CONDITIONS TO FACILITATE SOIL EXCAVATION, HANDLING, LOADING FOR TRANSPORT, CONFIRMATION SAMPLING BY THE ENGINEER, AND EXCAVATION BACKFILLING.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIREMENTS AND CONDITIONS OUTLINED IN KING COUNTY INDUSTRIAL WASTE (KCIW) MINOR DISCHARGE AUTHORIZATION NO. 1092-01.

BACKFILL NOTES

1. CONTRACTOR CAN BEGIN BACKFILLING AFTER ENGINEER APPROVAL TO A FINAL GRADE FOR GROUND IMPROVEMENTS AT ELEVATION 11.5 FEET NAVD 88 IN ACCORDANCE WITH THE PROJECT TECHNICAL SPECIFICATIONS AND THE GEOTECHNICAL REPORT.
2. AFTER GROUND IMPROVEMENTS BY OTHERS, CONTRACTOR SHALL BACKFILL TO THE FINAL GRADE FOR FOUNDATION AT ELEVATION 13.0 NAVD 88 IN ACCORDANCE WITH THE PROJECT TECHNICAL SPECIFICATIONS AND THE GEOTECHNICAL REPORT.

SITE LOCATION

SHEET NO.		SHEET INDEX
01	NOTES	1 OF 4
02	EXISTING CONDITIONS	2 OF 4
03	EXCAVATION MAP	3 OF 4
04	SECTIONS	4 OF 4

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

PERMIT SET

ADAM GRIFFIN
53094
4/2/19

REV.	DESCRIPTION	DATE	APPR.
A	NOTE REVISIONS	03-25-2020	AG
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Exhibit D.1
Contract Drawings

REVISED BY:	DRAWN BY:	DESIGNED BY:	PROJECT NUMBER:	REVISION:	DATE:
-	CMV	JCH	150054	-	Mar-20

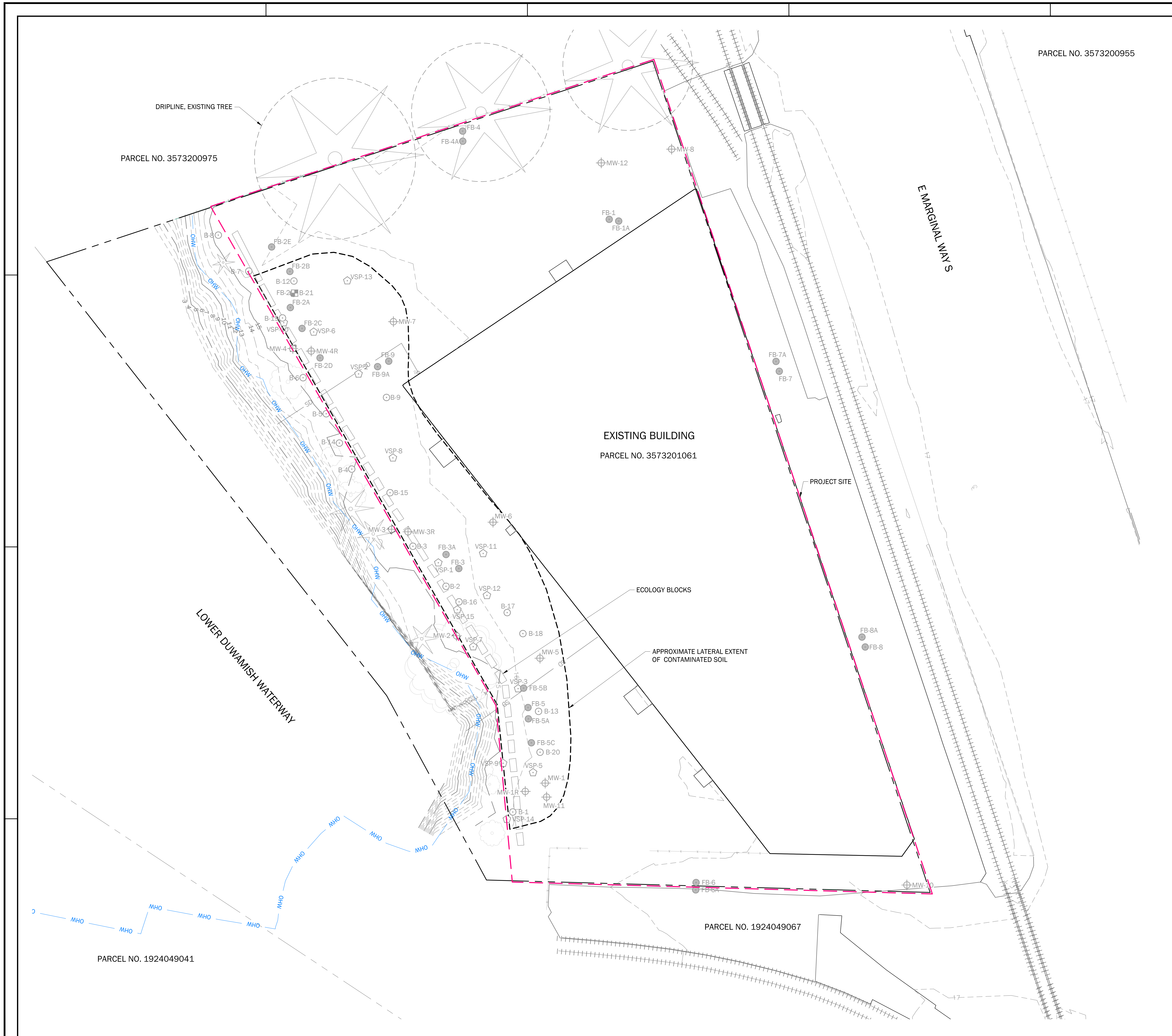
Aspect CONSULTING

NOTES

REMEDIAL EXCAVATION
5055 PROPERTIES, LLC
Seattle, Washington

SHEET NUMBER:
SHEET 1 OF 4

CAD Path: \\SEASTORE2\Drafting\Snopac Products\150054 Snopac Manson\2018-11 Cleanup Const Docs\150054-Plan set (22x34).dwg SHEET 01 || Date Saved: Mar 26, 2020 3:14pm || User: cvanslyke



LEGEND

⬭	APPROXIMATE LATERAL EXTENT OF CONTAMINATED SOIL
⊙	BORING LOCATION - ASPECT
●	BORING LOCATION - FARALLON
▨	GEOTECH BORING LOCATION - ASPECT
⊕	EXISTING MONITORING WELL - ASPECT
⬠	SOIL SAMPLE LOCATION - ASPECT
— — —	SUBJECT PROPERTY BOUNDARY
— — —	PROJECT SITE
— - —	PARCEL BOUNDARY
— OHW — OHW —	ORDINARY HIGH WATER MARK (ESA, 2018)
— SD —	EXISTING STORM DRAIN LINE
— — 18 — —	EXISTING TOPOGRAPHY

0 20 40 Feet

SCALE: 1" = 20'

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

PERMIT SET

ADAM GRIFFIN
53094
Adam Griffin 4/2/19

REV.	DESCRIPTION	DATE	APPR.
-	-	-	-
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-	-	-	-
-	-	-	-
A	NOTE REVISIONS	03-25-2020	AG

Exhibit D.1
Contract Drawings

REVISED BY: -
DRAWN BY: CMV
DESIGNED BY: JCH
PROJECT NUMBER: 150054
REVISION: -
DATE: Mar-20

Aspect CONSULTING

EXISTING CONDITIONS

REMEDIAL EXCAVATION
5055 PROPERTIES, LLC
Seattle, Washington

SHEET NUMBER:
SHEET 2 OF 4

LEGEND

A A' — CROSS-SECTION LOCATION

▨ — APPROXIMATE LIMITS OF EXCAVATION

— — PROPERTY BOUNDARY

— — PROJECT SITE

— — PARCEL LINE

〰 — SHEET PILE WALL

— OHW — OHW — ORDINARY HIGH WATER MARK

— SD — EXISTING STORM DRAIN LINE

— 18 — EXISTING TOPOGRAPHY

NOTES

1. CONSTRUCTION ENTRANCE TO BE DETERMINED BY CONTRACTOR.
2. APPROXIMATE LIMITS OF EXCAVATION ARE BASED ON A MAXIMUM EXCAVATION DEPTH OF 13 FEET AND A MAXIMUM SLOPE OF 1.5H:1V FOR TEMPORARY CUT SLOPES.
3. FINAL EXCAVATION LIMITS WILL BE APPROVED BY THE ENGINEER.

0 20 40 Feet

SCALE: 1" = 20'

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

PERMIT SET

ADAM GRIFFIN
53094
4/12/19

REV.	DESCRIPTION	DATE	APPR.
A	NOTE REVISIONS	03-25-2020	AG
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-	-	-	-
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-	-	-	-
-	-	-	-
-	-	-	-

Exhibit D.1
Contract Drawings

DESIGNED BY: JCH
DRAWN BY: CMV
REVISED BY: -

Aspect CONSULTING

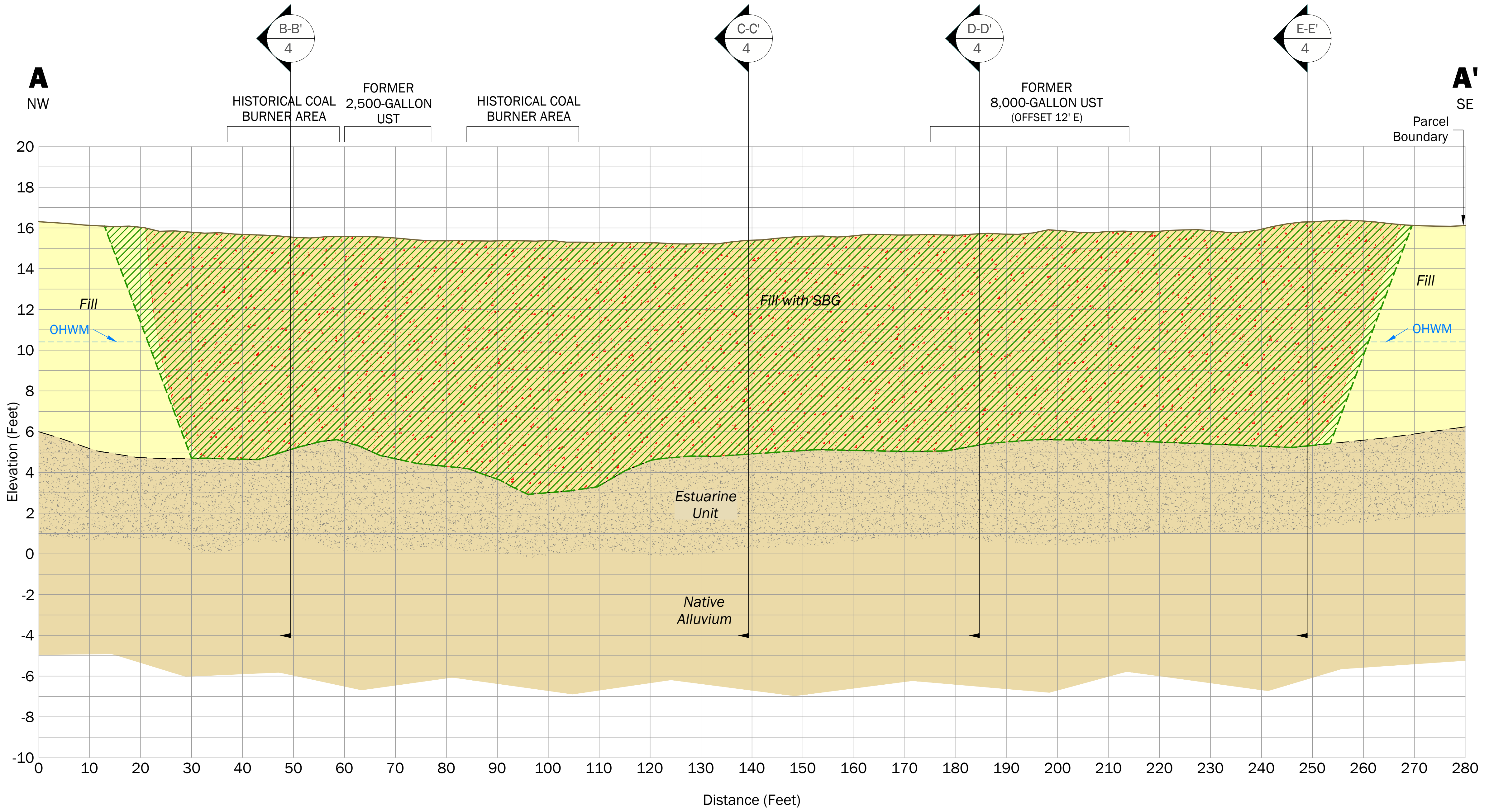
DATE: Mar-20
REVISION: -
PROJECT NUMBER: 150054

EXCAVATION MAP

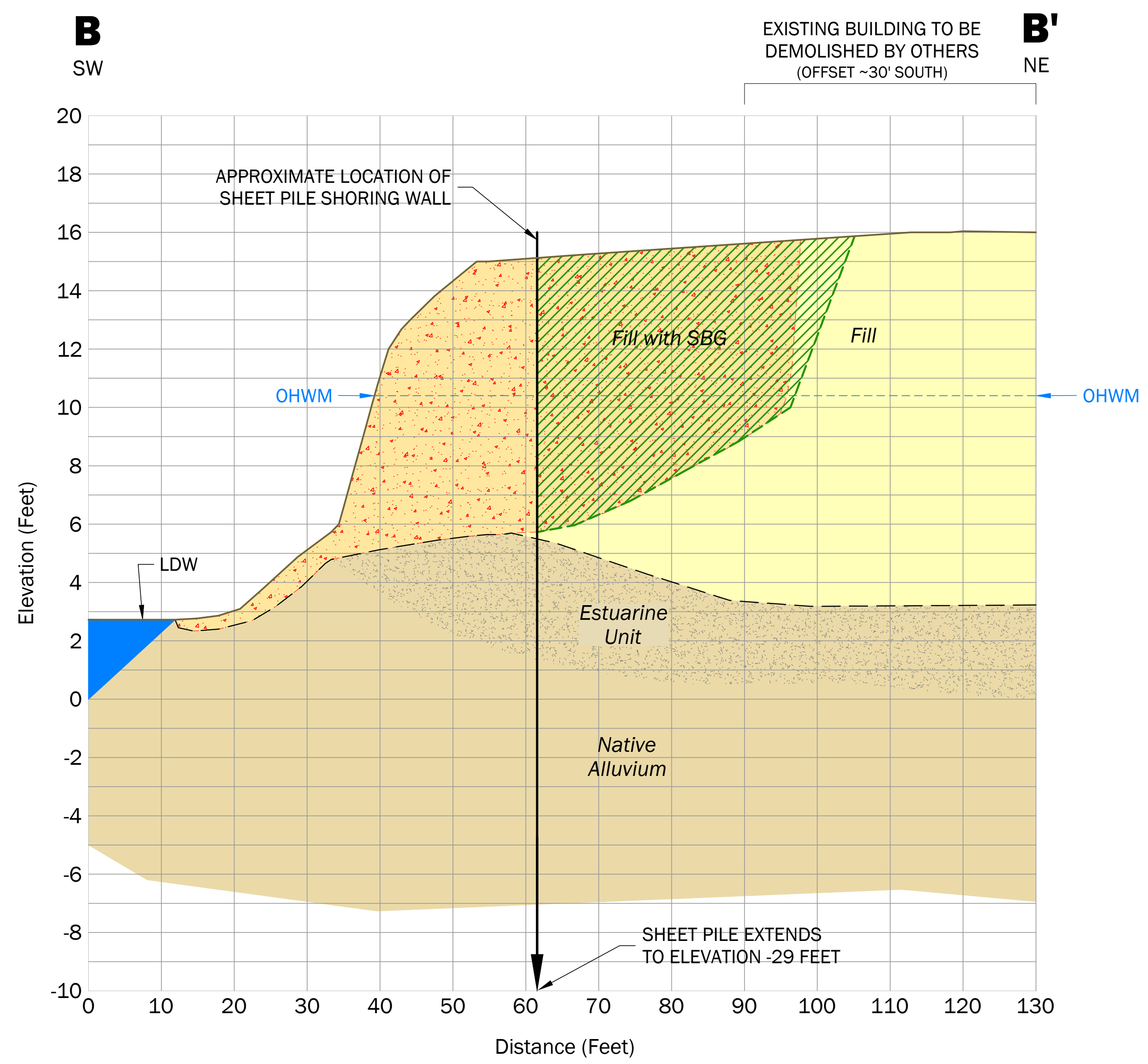
REMEDIAL EXCAVATION
5055 PROPERTIES, LLC
Seattle, Washington

SHEET NUMBER:
SHEET 3 OF 4

CAD Path: \\SEASTORE2\Drafting\Snopac Products\150054 Snopac Manson\2018-11 Cleanup Const Docs\150054-Plan set (22x34).dwg SHEET 03 || Date Saved: Mar 26, 2020 3:14pm || User: cvanslyke



SECTION A-A' (A-A' / 4)
SCALE: NOTED

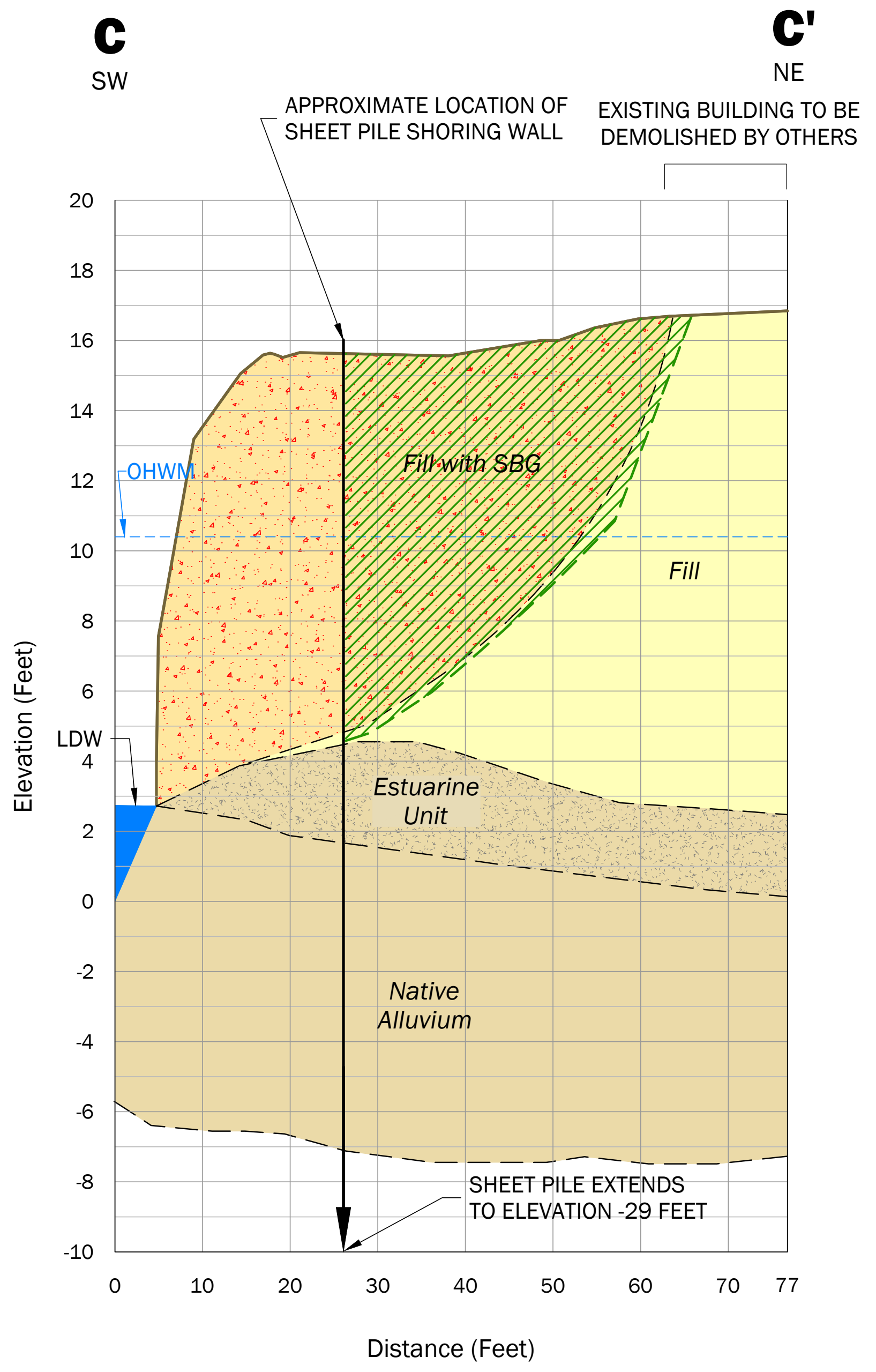


SECTION B-B' (B-B' / 4)
SCALE: NOTED

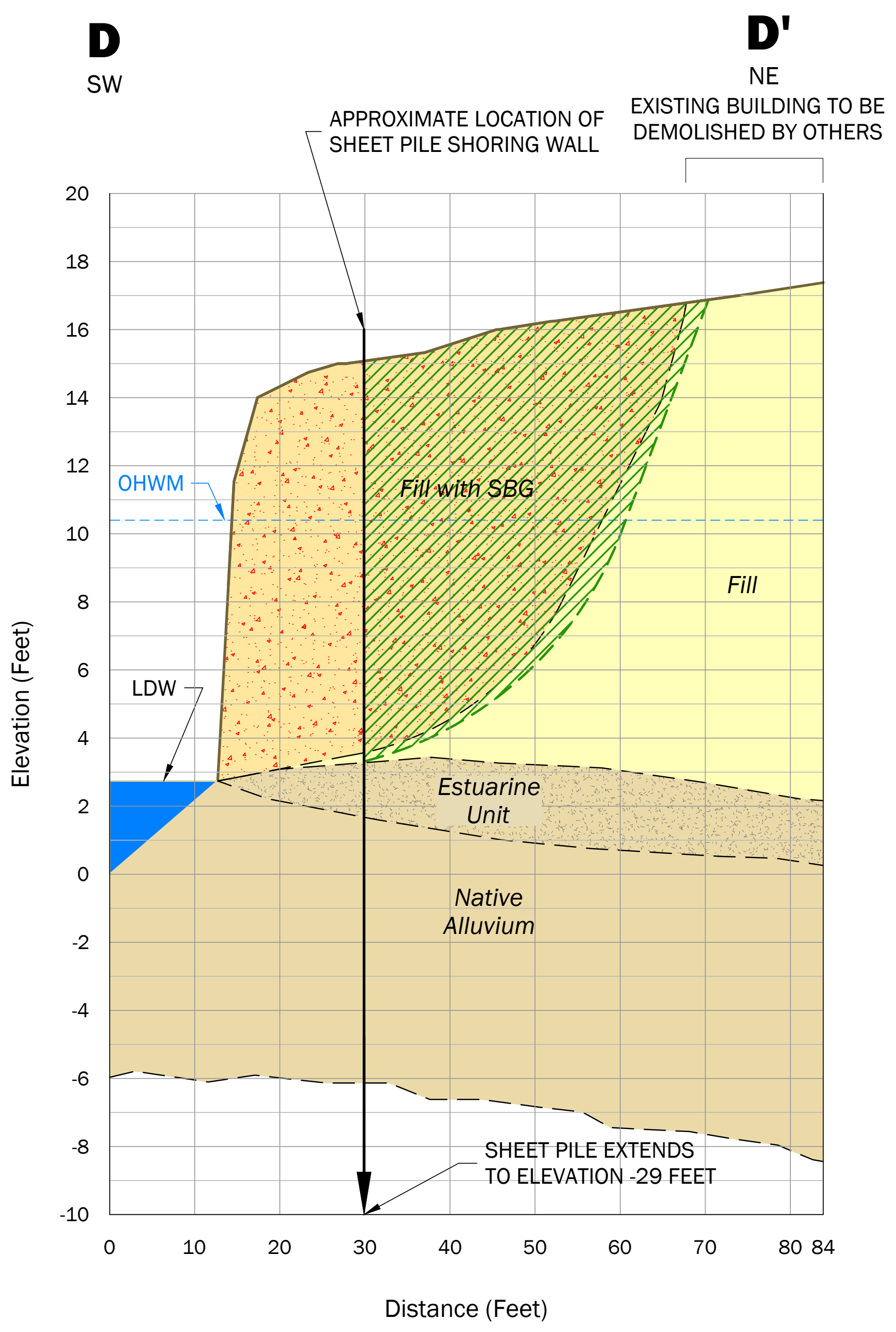
LEGEND

———	EXISTING GRADE
— — —	GEOLOGIC CONTACT
OHWM →	ORDINARY HIGH WATER MARK (ESA, 2018)
LDW	LOWER DUWAMISH WATERWAY
SBG	SANDBLAST GRIT
▨	ESTIMATED EXTENT OF SOILS TO BE EXCAVATED
🟨	**FILL UNIT** BLACK TO BROWN, GRAVELLY, SILTY, SAND WITH INTERSPERSED BRICK, WOOD CHIPS, GLASS, AND TRACE PAINT CHIPS AND COAL
▩	FILL WITH SANDBLAST GRIT
▩	**ESTUARINE UNIT** BROWN, SILTY SAND WITH ABUNDANT WOODY DEBRIS AND SLIGHT SULFUR-LIKE ODOR
■	**NATIVE ALLUVIUM UNIT** BROWN TO GRAY, POORLY GRADED SAND TO SILTY SAND WITH TRACE ORGANICS

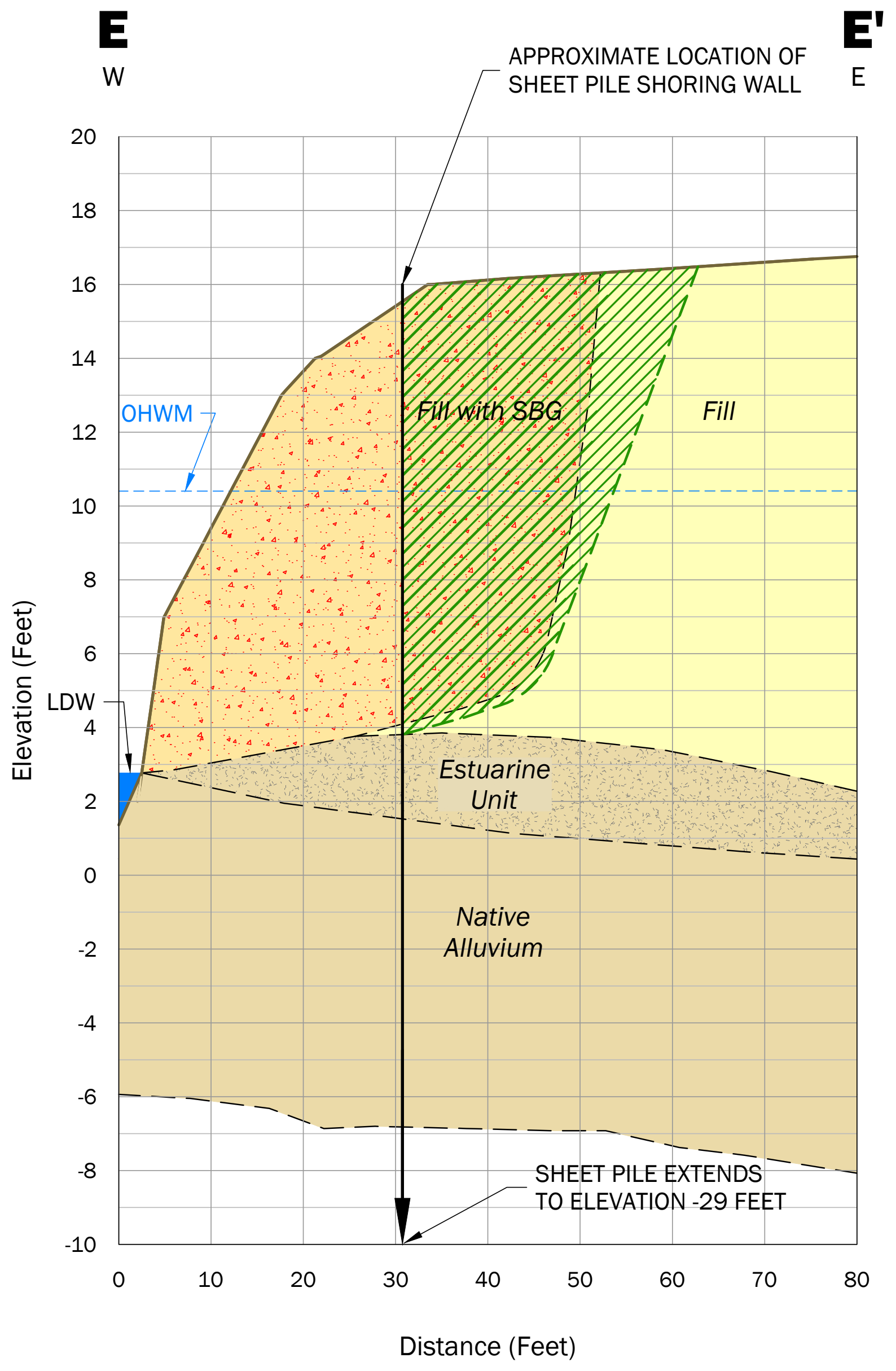
NOTES: DEPICTIONS OF LITHOLOGY AND EXTENT OF FILL AND FILL CONTAINING SANDBLAST GRIT ARE BASED ON DATA FROM THE FINAL REMEDIAL INVESTIGATION /FEASIBILITY STUDY REPORT DATED DECEMBER 21, 2018.



SECTION C-C' (C-C' / 4)
SCALE: NOTED



SECTION D-D' (D-D' / 4)
SCALE: NOTED



SECTION E-E' (E-E' / 4)
SCALE: NOTED

0 20 40 Feet

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'
Vertical Exaggeration 5x

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

PERMIT SET

ADAM GRIFFIN
53094
4/12/19

REV.	DESCRIPTION	DATE	APPR.
A	NOTE REVISIONS	03-25-2020	AG
-	-	-	-
-	-	-	-
-	-	-	-
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-	-	-	-
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Exhibit D.1
Contract Drawings

DESIGNED BY: JCH
DRAWN BY: CMV
REVISED BY: -

Aspect CONSULTING

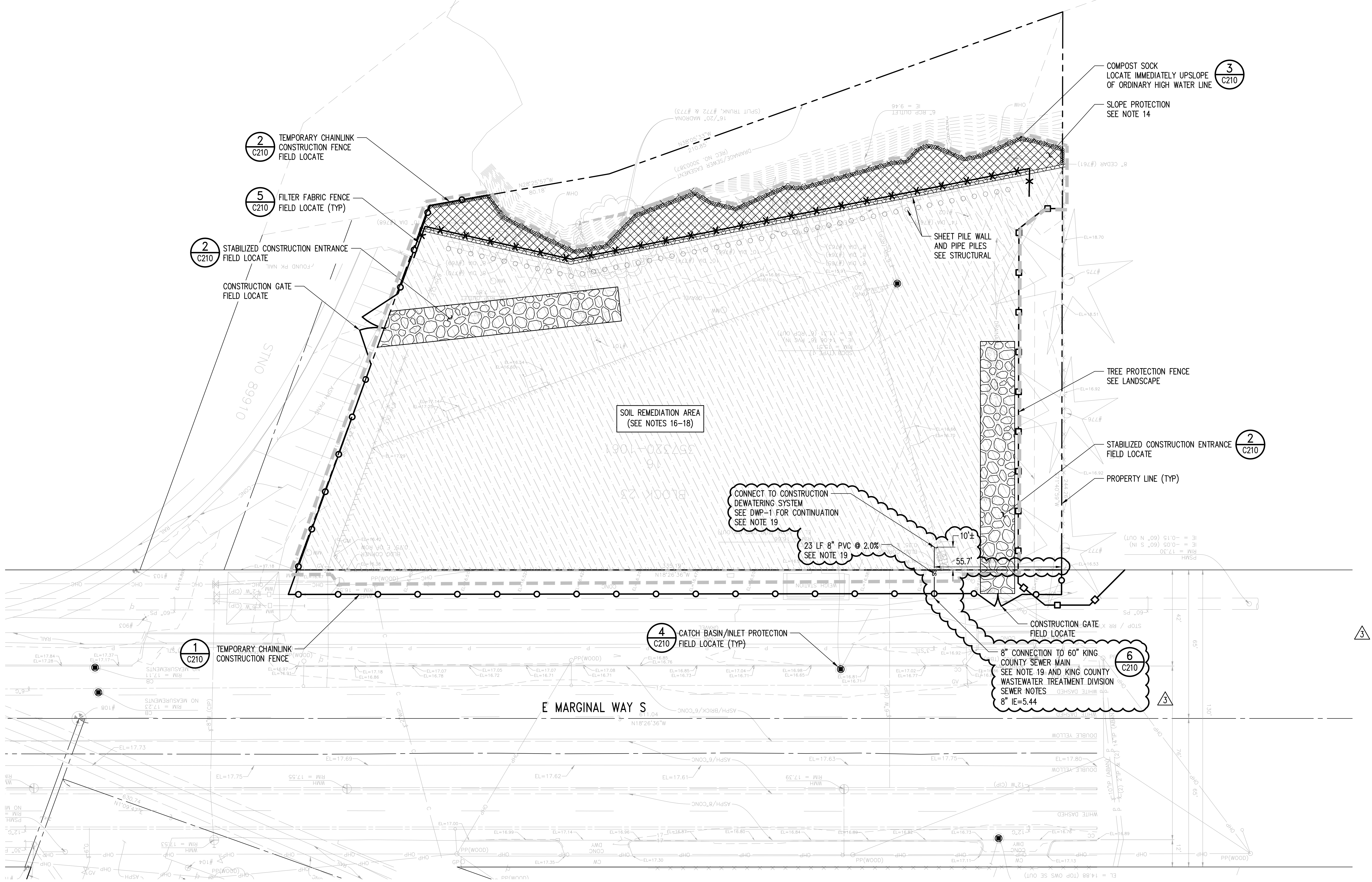
DATE: Mar-20
REVISION: -
PROJECT NUMBER: 150054

SECTIONS

REMEDIAL EXCAVATION
5055 PROPERTIES, LLC
Seattle, Washington

SHEET NUMBER:
SHEET **4** OF **4**

CAD Path: \\SEASTORE2\Drafting\Snopac Products\150054 Snopac Manson\2018-11 Cleanup Const Docs\150054-Plan set (22x34).dwg SHEET 04 || Date Saved: Mar 26, 2020 3:14pm || User: cvanslyke



TEMPORARY EROSION AND SEDIMENT CONTROL NOTES

1. ALL NOTES FOUND ON THE COS TESC STANDARD PLANS SHALL APPLY TO THIS PROJECT.
2. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT LEAVE THE SITE, ENTER THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
3. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. UPGRADE THE TESC FACILITIES AS NEEDED TO ACCOUNT FOR STORM EVENTS.
4. THE IMPLEMENTATION, MAINTENANCE, AND REPLACEMENT OF ALL TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED BY THE OWNER.
5. INSPECT AND MAINTAIN TESC FACILITIES AS NECESSARY OR AS DIRECTED BY THE CITY OF SEATTLE INSPECTOR.
6. PROVIDE TEMPORARY CHAINLINK CONSTRUCTION FENCING AS REQUIRED FOR SAFETY AND AS DIRECTED BY THE CITY OF SEATTLE INSPECTOR. PLACE FENCING IN A MANNER THAT ALLOWS FULL USE OF ADJACENT FACILITIES.
7. PROVIDE CATCH BASIN INSERTS FOR ALL STORM DRAIN INLETS AND CATCH BASINS DOWN SLOPE OF DISTURBED AREAS, WITHIN 500 FEET OF THE PROJECT SITE.
8. INSPECT STORM DRAIN INLETS AND CATCH BASINS IN THE ROW DAILY. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CARRIED BY TRUCK TIRES, SHALL BE CLEAN. IMPLEMENT ADDITIONAL SEDIMENTATION CONTROL METHODS AS NEEDED OR AS DIRECTED BY THE COS INSPECTOR.
9. PREVENT ON-SITE EROSION BY STABILIZING ALL DISTURBED SOILS, ROUGH GRADING AREAS RESULTING FROM TEMPORARY CUTS, BACKFILL OF TEMPORARY CUTS TO ROUGH FINAL GRADE, AND STOCK PILES THAT ARE TEMPORARILY EXPOSED. GRADING MUST BE STABILIZED BY OCTOBER 31, AND NO EXCAVATION ACTIVITIES SHALL BE PERFORMED BETWEEN OCTOBER 31 AND APRIL 1 WITHOUT AN APPROVED DRY SEASON GRADING EXTENSION LETTER FROM DPD.
10. GRADING MUST BE STABILIZED BY OCTOBER 31ST, AND NO EXCAVATION OR FILL PLACEMENT CAN BE PERFORMED BETWEEN OCTOBER 31ST AND APRIL 1ST WITHOUT WRITTEN PERMISSION FROM THE SDCI GEOTECHNICAL ENGINEERING GROUP.
11. NO SEDIMENT SHALL BE TRACKED INTO THE STREET OR ONTO PAVED SURFACES. SEDIMENT SHALL BE REMOVED FROM ALL TRUCKS AND EQUIPMENT PRIOR TO LEAVING THE SITE.
12. ALL TEMPORARY DISCHARGE TO THE PUBLIC SEWER SYSTEM MUST MEET ALL REQUIREMENTS OF THE KING COUNTY INDUSTRIAL WASTE PROGRAM DISCHARGE PERMIT, INCLUDING BUT NOT LIMITED TO WATER QUALITY, SPECIAL CONDITIONS, MONITORING, AND REPORTING REQUIREMENTS.
13. APPROVAL OF THE DRAINAGE PLAN AND TESC PLAN DOES NOT INCLUDE APPROVAL OF THE GRADING SHOWN HEREIN. GRADING ACTIVITIES WITHIN THE PUBLIC ROW REQUIRE A STREET USE PERMIT FROM SDOT. GRADING ACTIVITIES ON ADJACENT PROPERTIES REQUIRE WRITTEN APPROVAL FROM THE ADJACENT PROPERTY OWNER.
14. PROTECT SLOPE FROM EROSION BY EMPLOYING TEMPORARY COVER PRACTICES SUCH AS BMP E1.10: TEMPORARY SEEDING, BMP E1.15: MULCHING, MATTING, AND COMPOST BLANKETS, BMP E1.20: CLEAR PLASTIC COVERING, OR OTHER BMPS PER THE COS STORMWATER MANUAL.
15. CONTROL SURFACE AND AIR MOVEMENT OF DUST DURING LAND-DISTURBING, DEMOLITION, AND CONSTRUCTION ACTIVITIES THROUGH THE IMPLIMENTATION OF COS BMP E2.45: DUST CONTROL.

△3

16. SEE SOIL REMEDIATION SHEETS FOR SCOPE OF EXCAVATION AND SOIL REMEDIATION WORK.
17. EMPLOY EXCAVATION AND DEWATERING MEASURES IN ACCORDANCE WITH THE WASHINGTON STATE DEPARTMENT OF ECOLOGY APPROVED INTERIM ACTION WORK PLAN. SEE DWP-1 FOR DETAILS.
18. CONTAMINATED GROUNDWATER AND CONSTRUCTION STORMWATER ARE ANTICIPATED, THEREFORE ALL CONSTRUCTION STORMWATER AND GROUNDWATER SHALL BE CONTROLLED AND COLLECTED ON-SITE AND PREVENTED FROM ENTERING THE DUWAMISH WATERWAY. DISCHARGE SHALL BE COMPLIANT WITH REQUIREMENTS AND NUMERICAL WATER QUALITY LIMITS ASSOCIATED WITH THIS AUTHORIZATION. IMPLEMENT TREATMENT METHODS AS DESCRIBED IN THE INTERIM ACTION WORK PLAN ASSOCIATED WITH AGREED ORDER NO. DE 16300 WITH THE WASHINGTON STATE DEPARTMENT OF ECOLOGY TO BRING DISCHARGE WITHIN ALLOWABLE WATER QUALITY LIMITS.
19. CONTRACTOR IS RESPONSIBLE FOR OBTAINING SIDE SEWER PERMIT FROM THE CITY OF SEATTLE TO CONSTRUCT SIDE SEWER AS SHOWN. DISCHARGE TO SIDE SEWER SHALL MEET ALL REQUIREMENTS OF KING COUNTY INDUSTRIAL WASTE MINOR DISCHARGE AUTHORIZATION NO. 1092-01. AT PROJECT COMPLETION, INSTALL A PVC CLEANOUT AT THE END OF THE SIDE SEWER WITH THE RIM RAISED TO GRADE OF PAD-READY WORK SURFACE.

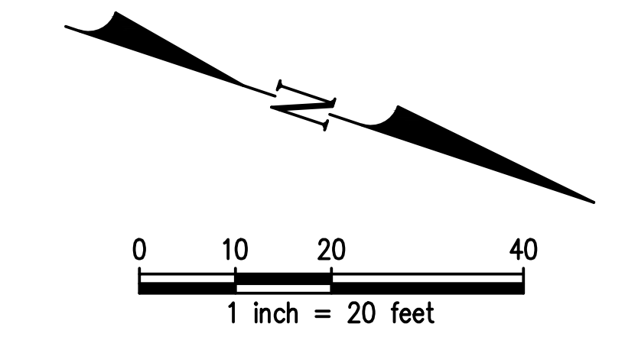
LEGEND

— – – —	PROPERTY LINE
▬ ▬ ▬	LIMIT OF WORK
—○—○—	TEMPORARY CHAINLINK CONSTRUCTION FENCE
—□—□—	TREE PROTECTION FENCE – SEE LANDSCAPE
—OHW—OHW—	ORDINARY HIGH WATER LINE
○	PIPE PILE – SEE STRUCTURAL
▭	SHEET PILE WALL – SEE STRUCTURAL
▬	COMPOST SOCK
▨	CONSTRUCTION ENTRANCE
▩	SLOPE PROTECTION – SEE NOTE 14
▧	SOIL REMEDIATION AREA – SEE NOTES 16–18

KING COUNTY WASTEWATER TREATMENT DIVISION SEWER NOTES

20. CONTACT MARK LAMPARD AT KING COUNTY WASTEWATER TREATMENT DIVISION AT 206-477-5414 AND mark.lampard@kingcounty.gov FIVE (5) WORKING DAYS IN ADVANCE OF THE PROJECT PRE-CONSTRUCTION CONFERENCE.
21. CONTACT MARK LAMPARD AT KING COUNTY WASTEWATER TREATMENT DIVISION AT 206-477-5414 THREE (3) WORKING DAYS IN ADVANCE OF CONSTRUCTION ACTIVITY WITHIN 50 FEET OF THE KING COUNTY PIPELINE.
22. THE PROPOSED CONNECTION TO THE 60-INCH DIAMETER ELLIOT BAY INTERCEPTOR SECTION 3 (EBI3) SHALL BE MADE BY USING AN INSERTA-TEE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
23. A KING COUNTY REPRESENTATIVE SHALL BE ON SITE DURING EXCAVATION, CORING, AND INSTALLATION OF THE CONNECTION TO THE EBI3.
24. NO DEBRIS SHALL BE ALLOWED TO ENTER THE KING COUNTY SEWER SYSTEM DURING CONNECTION TO THE EBI3.
25. ALL WORK ON THE KING COUNTY PIPELINES AND FACILITIES SHALL NOT BE BACKFILLED UNTIL WORK HAS BEEN INSPECTED AND APPROVED BY A KING COUNTY REPRESENTATIVE.
26. THE PROPOSED CONNECTION TO THE EBI3 SHALL BE PLUGGED AND NOT PUT INTO SERVICE UNTIL TRIBUTARY SYSTEM HAS BEEN CLEANED, INSPECTED, TESTED, AND APPROVED BY THE CITY OF SEATTLE.

△3



Z:\1800001-1800999\1800285 Manson HQ\CADD\Design\04-CD\MNSN-C200-SL-TESC.dwg

BradyR

Jan 08, 2020 – 1:47pm

ORIGINAL SHEET SIZE 30" x 42"

MITHŪN
SEATTLE / Pier 56, 1201 Alaskan Way, #200
Seattle, WA 98101 / 206.623.3344

SAN FRANCISCO / 660 Market Street, #300
San Francisco, CA 94104 / 415.956.0688

mithun.com

kpff
1601 5th Avenue, Suite 1600
Seattle, WA 98101
206.622.5822
www.kpff.com

PROJECT
MANSON CONSTRUCTION
ACCESSORY OFFICE
BUILDING

LOCATION
5055 EAST MARGINAL
WAY SOUTH
SEATTLE, WA 98134

PREPARED FOR
MANSON
CONSTRUCTION

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

NO.	DATE	REVISION
01	07/17/2019	6697427 CN-1
02	10/11/2019	6697427 CN-2
03	01/10/2020	6697427 CN-3

PRINCIPAL
TJE
PROJECT MANAGER
BCR
PROJECT ENGINEER
BCR
DRAWN BY
CM
CHECK
TJE

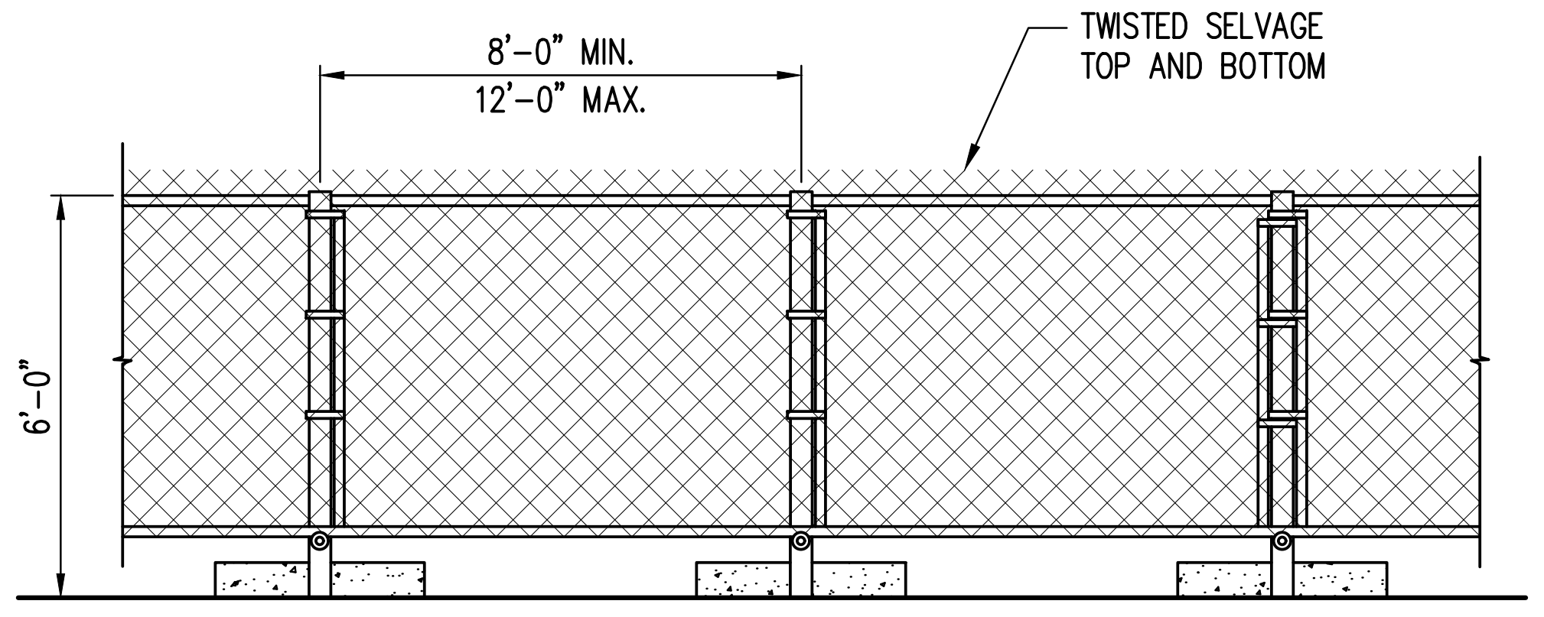
ENGINEER'S SEAL
THADDEUS J. EGGING
4276
01/08/2020

SEATTLE DCI / OPCD APPROVAL STAMP

TITLE
SHORELINE TEMPORARY
EROSION AND SEDIMENT
CONTROL

PROJECT NO.
1821100
DATE
02/28/19

SHEET NUMBER
C200
PERMIT SET - 6697427

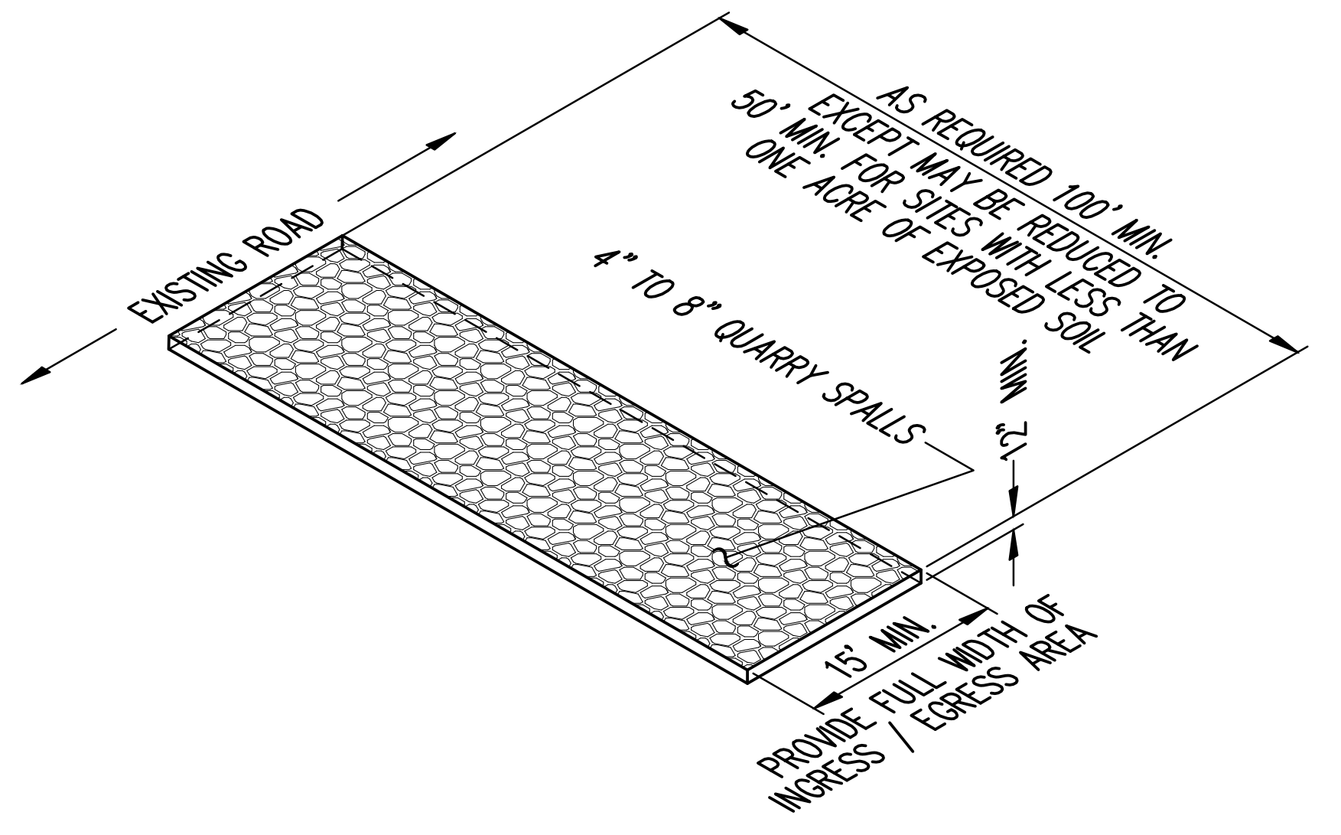


NOTES:

1. CHAIN LINK FABRIC TO BE MIN. 11 GAUGE, GALVANIZED. NO RUSTED OR EXCESSIVELY MALFORMED FABRIC.
2. FENCE BASES SHALL BE OF SUFFICIENT WEIGHT AND/OR SPREAD TO ADEQUATELY SUPPORT EACH PANEL.
3. PANEL-TO-PANEL CONNECTIONS SHALL BE MADE AT A MIN. TWO LOCATIONS PER CONNECTION UNLESS OTHERWISE APPROVED.

TEMPORARY CHAINLINK CONSTRUCTION FENCE (1/C200)

NTS

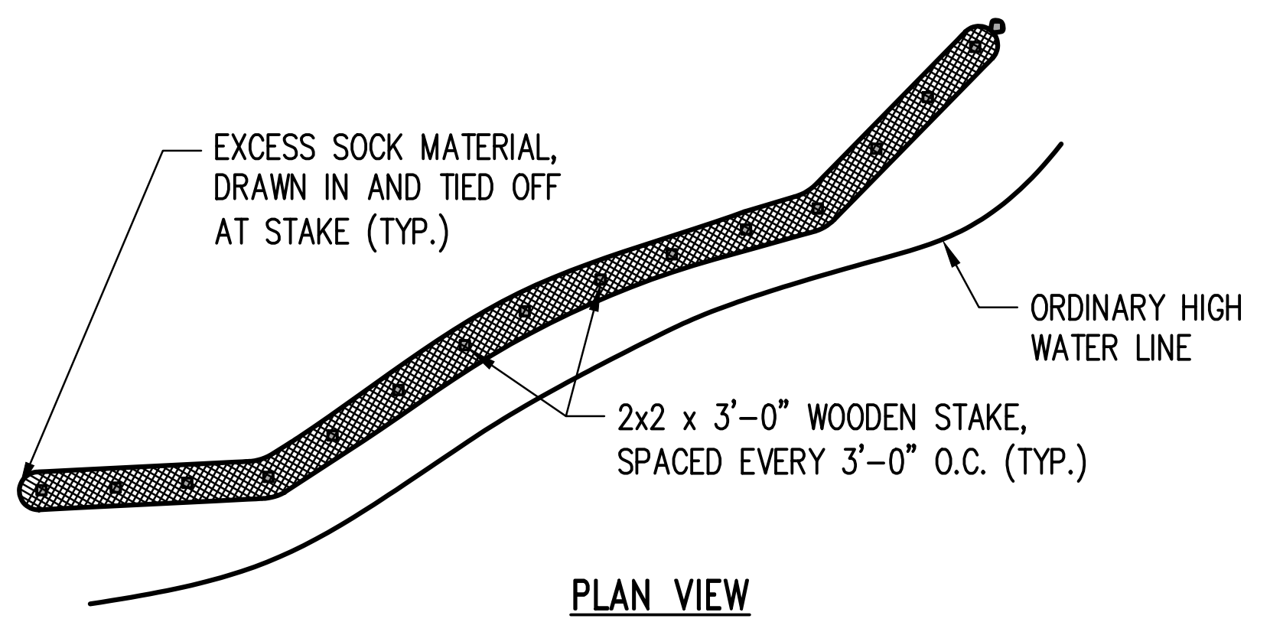


NOTES:

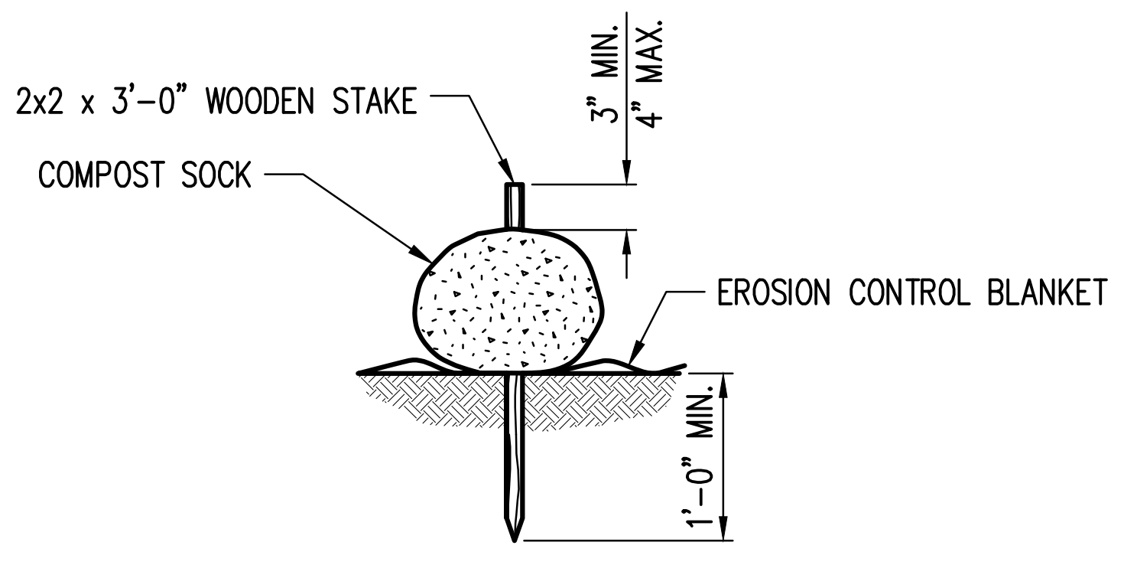
1. INSTALL AND MAINTAIN STABILIZED CONSTRUCTION ENTRANCE PER COS BMP E2.10

STABILIZED CONSTRUCTION ENTRANCE (2/C200)

NTS



PLAN VIEW



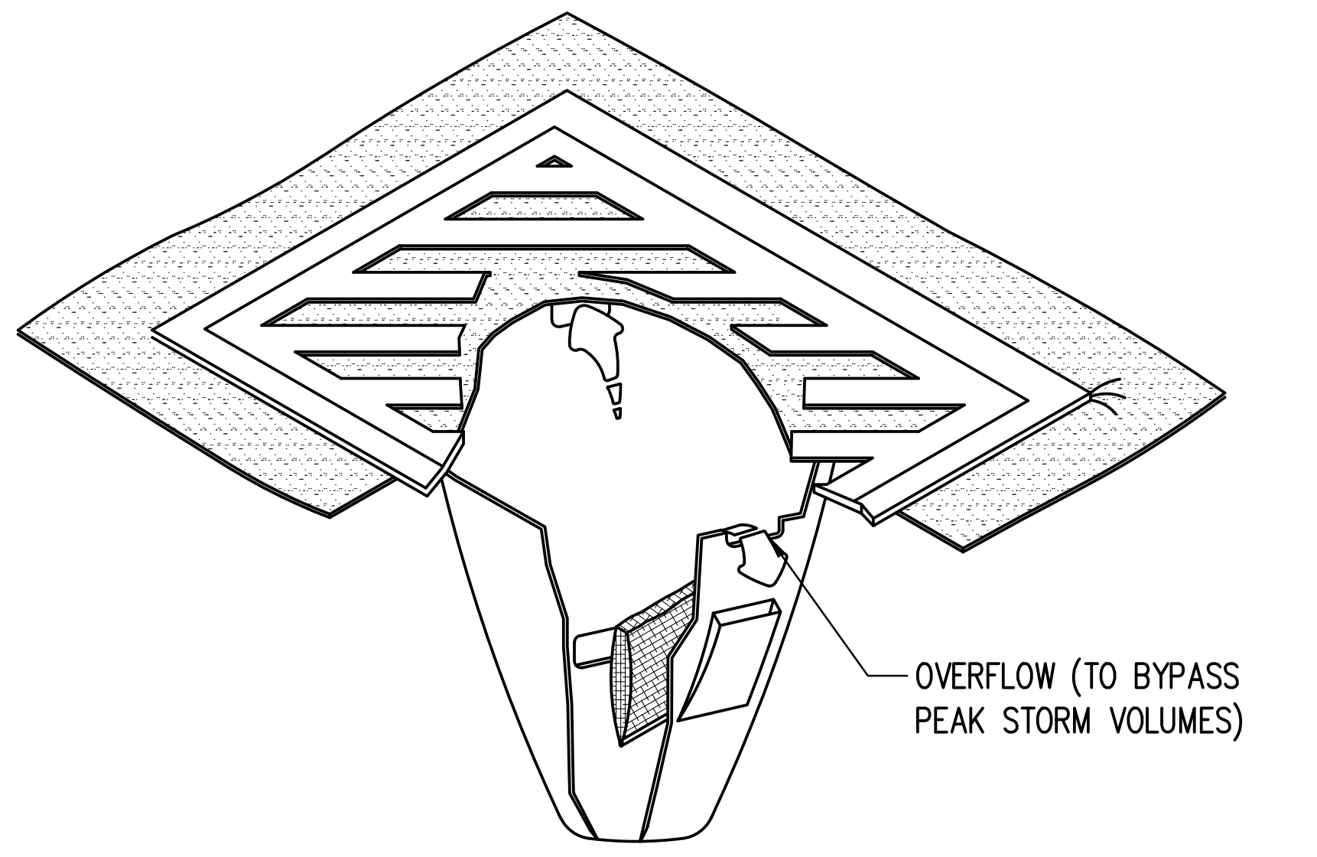
TYPICAL SECTION

NOTES:

1. INSTALL AND MAINTAIN COMPOST SOCK PER COS BMP E3.35

COMPOST SOCK (3/C200)

NTS

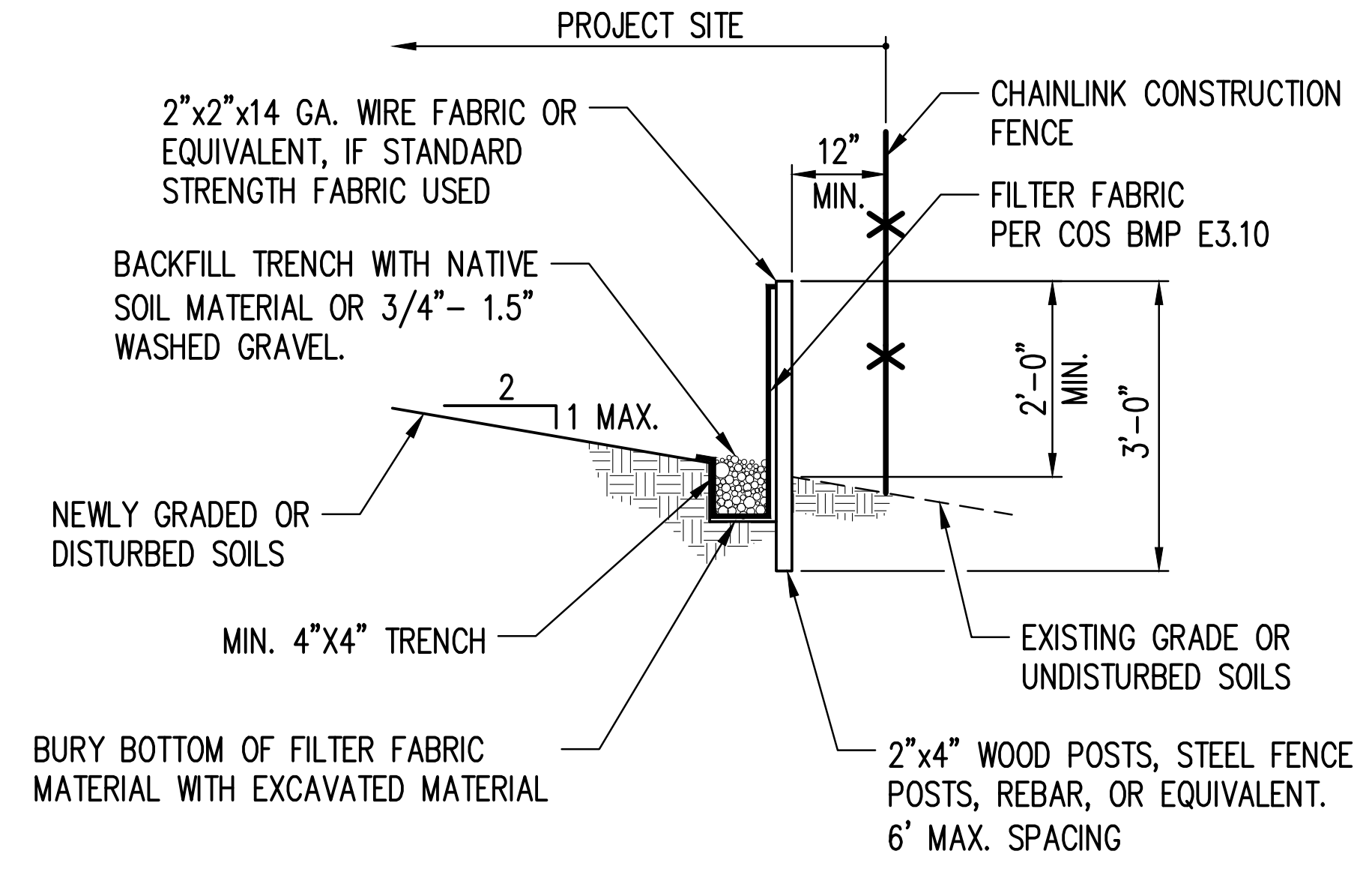


NOTES:

1. CATCH BASIN PROTECTION SHALL COMPLY WITH BMP E3.25 AS PUBLISHED IN THE CITY OF SEATTLE STORMWATER MANUAL.
2. INSERTS SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF SEATTLE STORMWATER MANUAL.
3. CATCH BASIN INSERTS SHALL BE INSTALLED IN DRAINAGE DEVICES PER THE MANUFACTURER'S RECOMMENDATIONS.
4. CLEAN AND/OR REPLACE INSERT WHEN ONE THIRD OF THE TRAP IS FILLED WITH SEDIMENTS.

CATCH BASIN PROTECTION (4/C200)

NTS



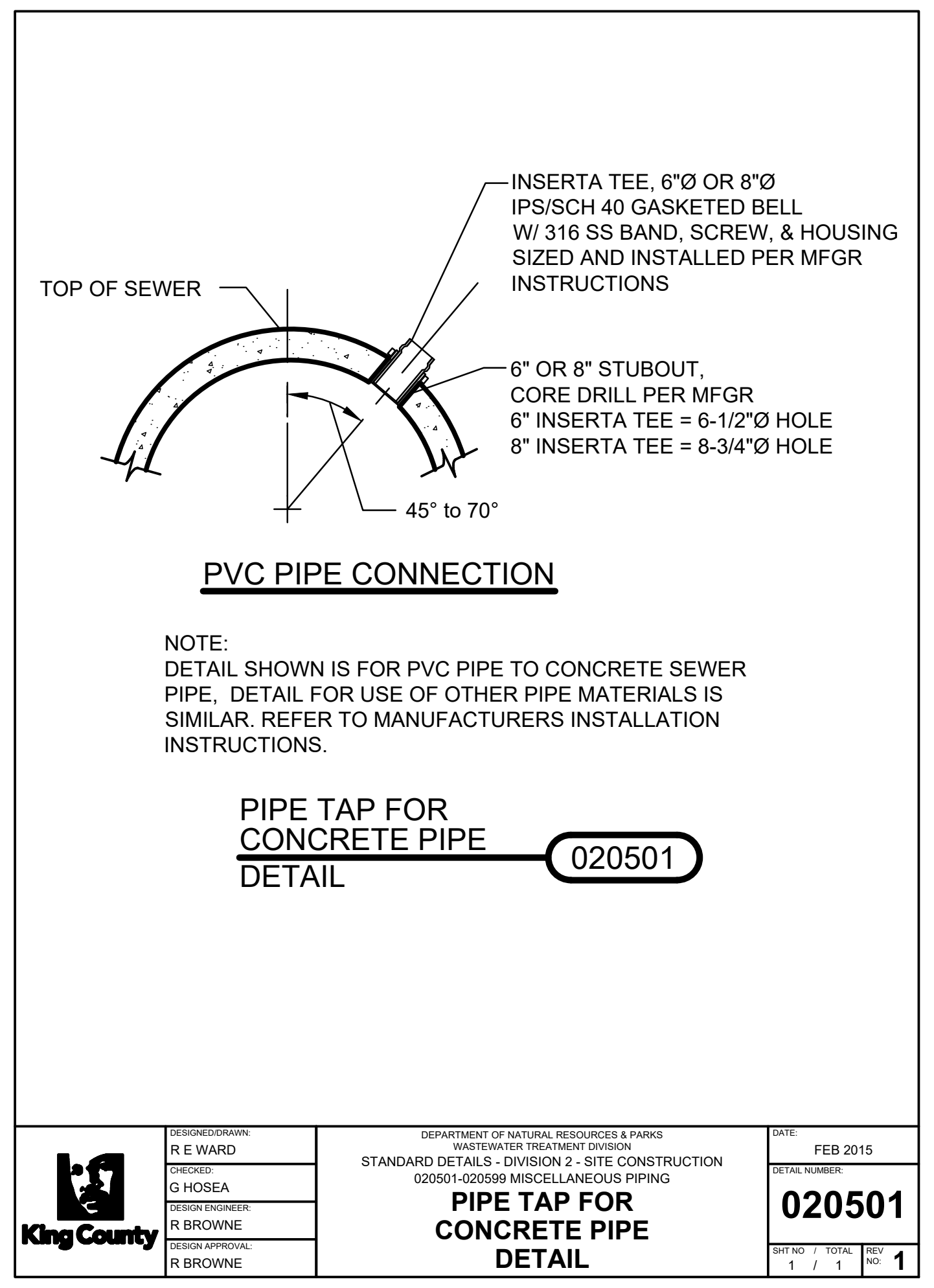
TYPICAL CROSS SECTION

NOTE:

1. INSTALL AND MAINTAIN FILTER FABRIC FENCE PER COS BMP E3.10

FILTER FABRIC FENCE (5/C200)

NTS



PVC PIPE CONNECTION

NOTE:
DETAIL SHOWN IS FOR PVC PIPE TO CONCRETE SEWER PIPE, DETAIL FOR USE OF OTHER PIPE MATERIALS IS SIMILAR. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS.

PIPE TAP FOR CONCRETE PIPE DETAIL 020501

King County

DESIGNED/DRAWN: R E WARD
CHECKED: G HOSEA
DESIGN ENGINEER: R BROWNE
DESIGN APPROVAL: R BROWNE

DEPARTMENT OF NATURAL RESOURCES & PARKS
WASTEWATER TREATMENT DIVISION
STANDARD DETAILS - DIVISION 2 - SITE CONSTRUCTION
020501-020599 MISCELLANEOUS PIPING
PIPE TAP FOR CONCRETE PIPE DETAIL

DATE: FEB 2015
DETAIL NUMBER: 020501
SHT NO / TOTAL 1 / 1
REV NO: 1

PIPE TAP FOR CONCRETE PIPE DETAIL (6/C200)

NTS

3

MITHŪN

SEATTLE / Pier 56, 1201 Alaskan Way, #200
Seattle, WA 98101 / 206.623.3344

SAN FRANCISCO / 660 Market Street, #300
San Francisco, CA 94104 / 415.956.0688

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kpff
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PROJECT
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PREPARED FOR
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02	10/11/2019	6697427 CN-2
03	01/10/2020	6697427 CN-3

PRINCIPAL
TJE
PROJECT MANAGER
BCR
PROJECT ENGINEER
BCR
DRAWN BY
CM
CHECK
TJE

ENGINEER'S SEAL
THADDEUS J. EGGING
42764
01/08/2020

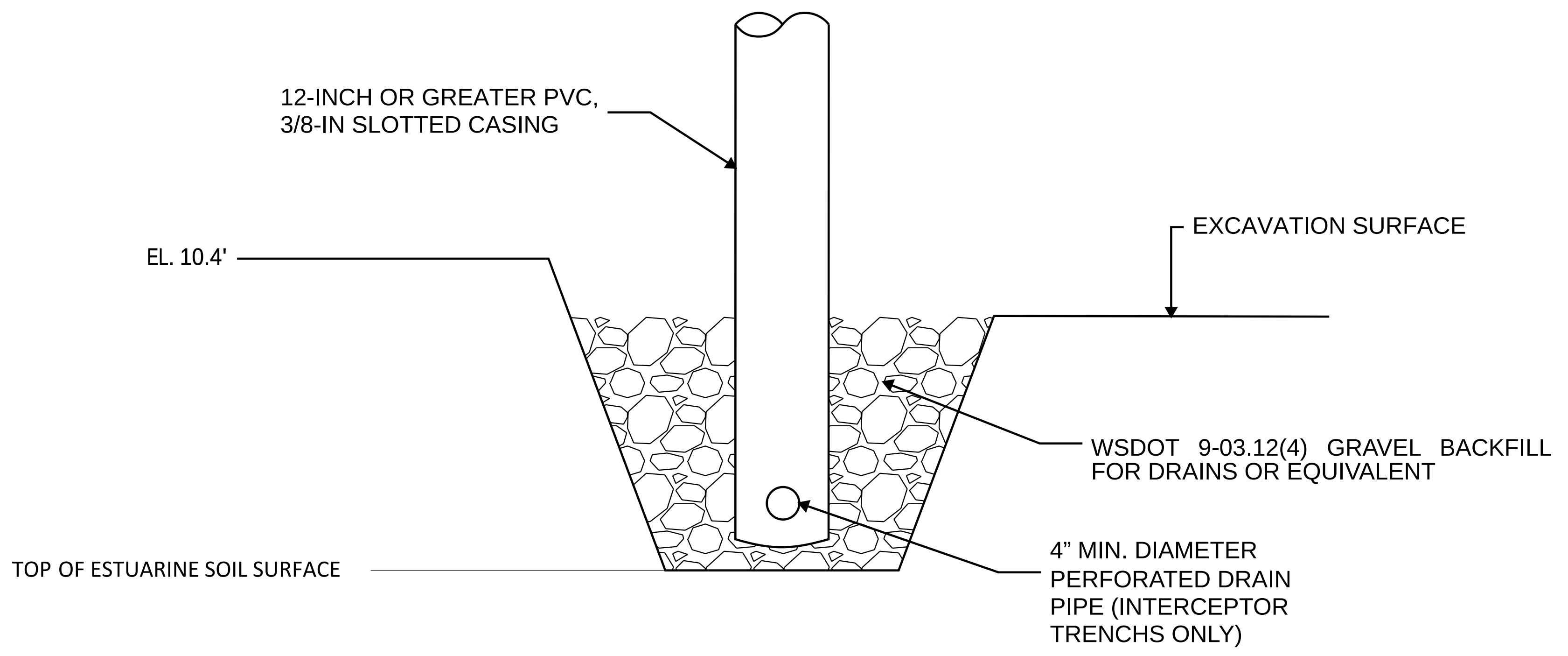
SEATTLE DCI / OPCD APPROVAL STAMP

TITLE
SHORELINE TEMPORARY
EROSION AND SEDIMENT
CONTROL DETAILS

PROJECT NO.
1821100
DATE
02/28/19

ORIGINAL SHEET SIZE 30" x 42"

SHEET NUMBER
C210
PERMIT SET - 6697427



General Note: The dewatering system should be in place and ready for operation prior to excavating below an elevation of 7 feet.

4

Not to Scale

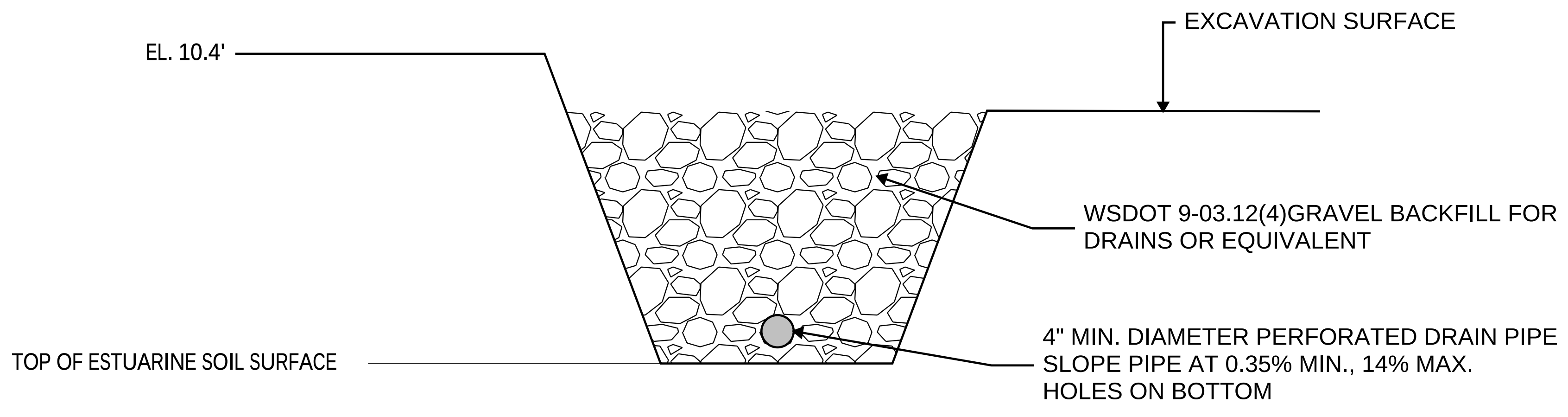
05/11/2020

O'Neill Service Group

MANSON CONSTRUCTION
DEWATERING PLAN

SUMP SCHEMATIC

Drawn By:	*S. Flowers*	FIGURE
Reviewed By:	*S. Darst*	
Approved By:	*S. Flowers*	**3**
Date:	*April 2020*	
Project No.:		



General Note: The dewatering system should be in place and ready for operation prior to excavating below an elevation of 7 feet.

4

Not to Scale

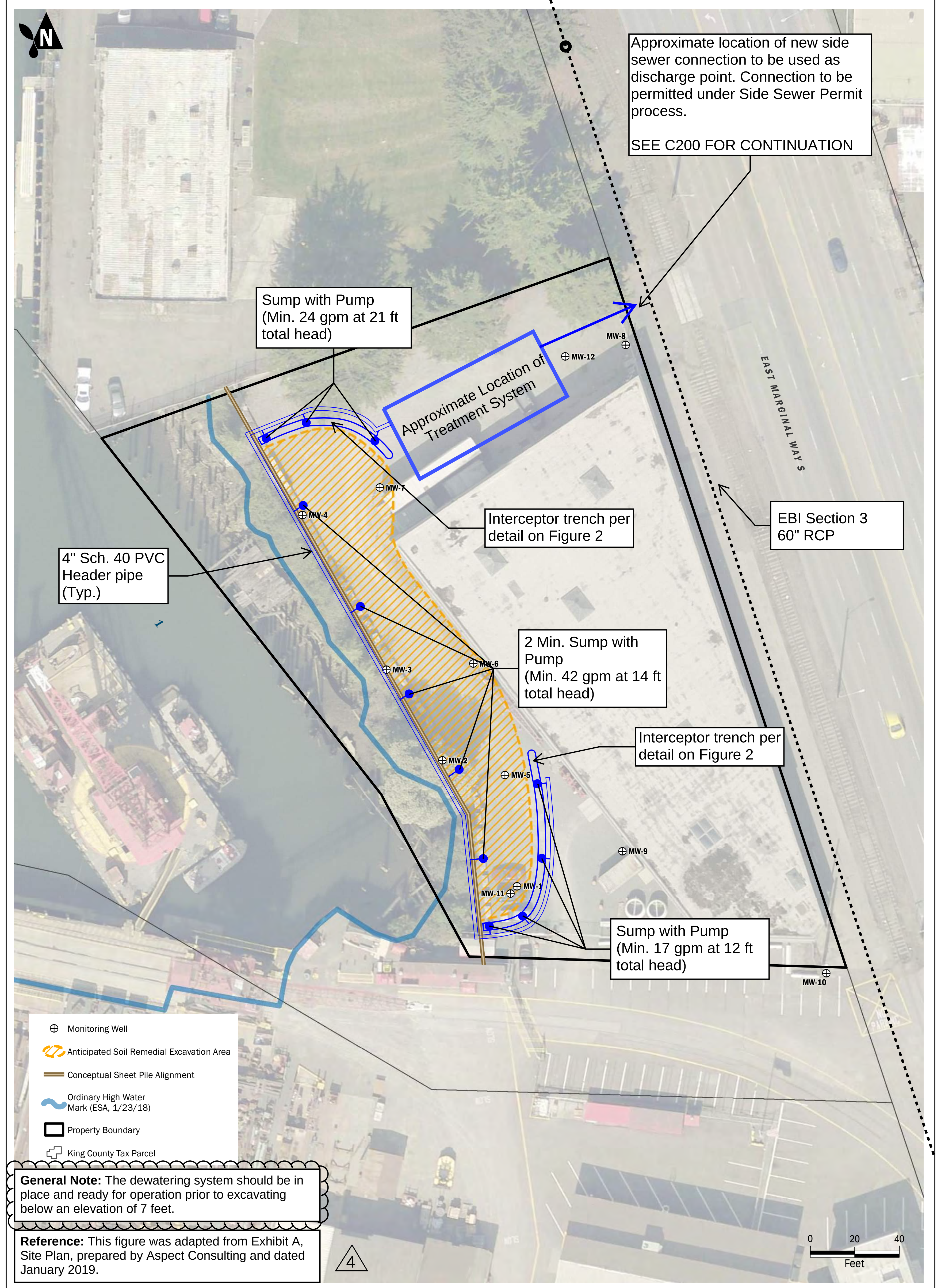
05/11/2020

O'Neill Service Group

MANSON CONSTRUCTION
DEWATERING PLAN

INTERCEPTOR TRENCH DETAIL

Drawn By:	*S. Flowers*	FIGURE
Reviewed By:	*S. Darst*	
Approved By:	*S. Flowers*	**2**
Date:	*April 2020*	
Project No.:		



General Note: The dewatering system should be in place and ready for operation prior to excavating below an elevation of 7 feet.

Reference: This figure was adapted from Exhibit A, Site Plan, prepared by Aspect Consulting and dated January 2019.

4

05/12/2020

O'Neill Service Group

MANSON CONSTRUCTION
DEWATERING PLAN

SITE AND DEWATERING SYSTEM PLAN

Drawn By:	*S. Flowers*	FIGURE
Reviewed By:	*S. Darst*	
Approved By:	*S. Flowers*	**1**
Date:	*April 2020*	
Project No.:		

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
APPROVED
Subject to Errors and Omissions
5/26/2020

PROJECT
MANSON CONSTRUCTION

LOCATION
5055 EAST MARGINAL WAY SOUTH
SEATTLE, WA 98134

PREPARED FOR

NO.	DATE	REVISION
8	03/27/20	6697427-CN - RESPONSE 4
4	**05/14/20**	**6697427-CN - RESPONSE 5**

DESIGN PARTNER

PROJECT MANAGER

PROJECT ARCHITECT

PROJECT DESIGNER

PROJECT TEAM MEMBERS

CHECK

TITLE
DEWATERING PLAN & DETAILS

PROJECT NO.

DATE
JANUARY 10, 2020

SHEET NUMBER
DWP-1
PERMIT SET

APPENDIX E

Well Decommissioning Logs

DEPARTMENT OF
ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Notice of Intent No. AE62078

Type of Work:
☐ Construction
☒ Decommission ⟹ Original NOI No. RE 13819

Ecology Well ID Tag No. BKY-325

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

Type of Well:
☒ Resource Protection Well
☐ Remediation Well
☐ Geotechnical Soil Boring
☐ Environmental Boring
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling
☐ Injection Point
☐ Grounding Well
☐ Ground Source Heat Pump
☐ Other

Property Owner Manson Construction

Well Street Address 5709 E Marginal Way S.

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

Borehole diameter ____ inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface.

Start Date 8-11-2020 Completed Date 8-11-2020

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

Driller/Engineer/Trainee Signature

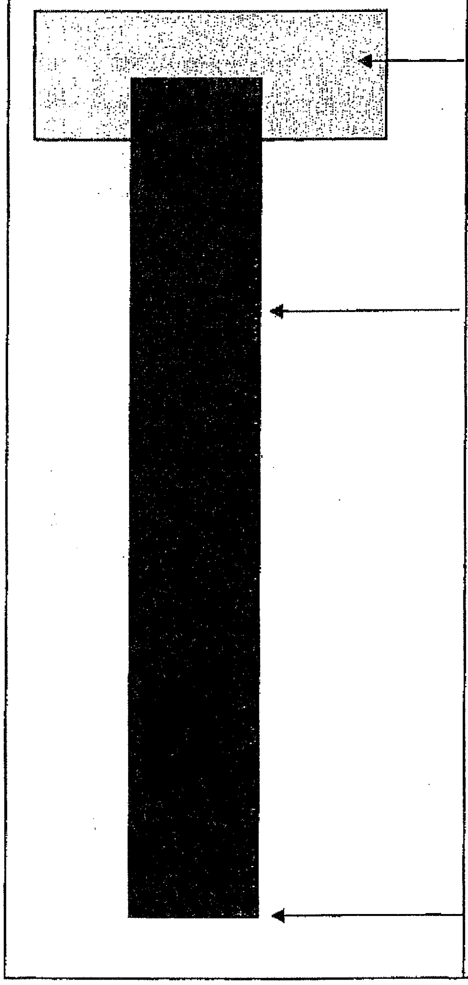
License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Construction/Design | Well Data | Formation Description



CONCRETE SURFACE SEAL
____ FT

BACKFILL 14 FT
Bentonite Chips.

DEPTH OF BORING ____ FT

0 - ____ FT

0 - ____ FT

0 - ____ FT

DEPARTMENT OF
ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE13819

Ecology Well ID Tag No. BKY-321

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

Driller/Engineer/Trainee Signature

License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE62078

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction

Well Street Address 5709 E Marginal Way S.

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

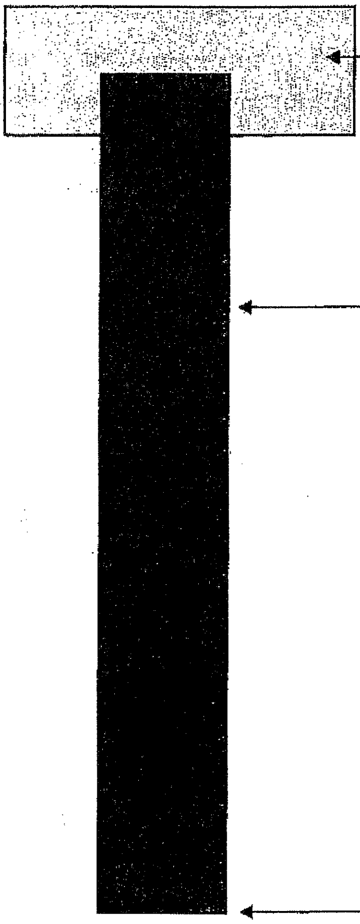
Borehole diameter ____ inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 8-11-2020 Completed Date 8-11-2020

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT BACKFILL 75 FT Bentonite Chips. DEPTH OF BORING ____ FT	0 - ____ FT 0 - ____ FT 0 - ____ FT

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction

☒ Decommission ⇨ Original NOI No. RE13819

Ecology Well ID Tag No. BKY-320

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

Driller/Engineer/Trainee Signature

License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE62078

Type of Well:

☒ Resource Protection Well ☐ Injection Point

☐ Remediation Well ☐ Grounding Well

☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump

☐ Environmental Boring ☐ Other

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction

Well Street Address 5709 E Marginal Way S.

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

Borehole diameter ____ inches Casing diameter 2 inches

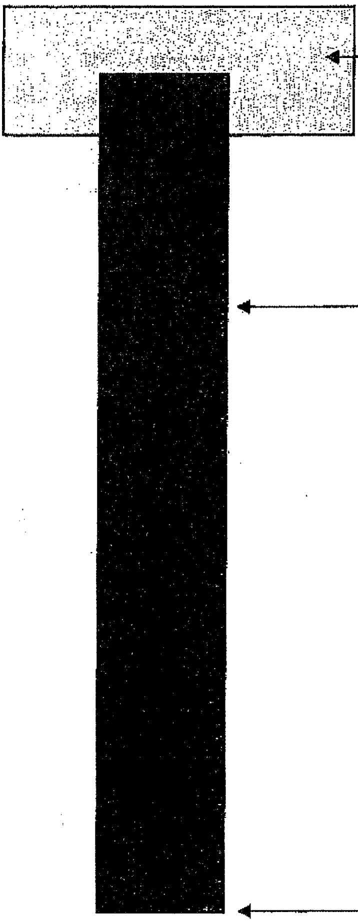
Static water level ____ ft below top of casing Date

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 8-11-2020 Completed Date 8-11-2020

Construction/Design | Well Data | Formation Description



CONCRETE SURFACE SEAL

____ FT

BACKFILL 12 FT

Bentonite Chips.

DEPTH OF BORING ____ FT

0 - ____ FT

0 - ____ FT

0 - ____ FT

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

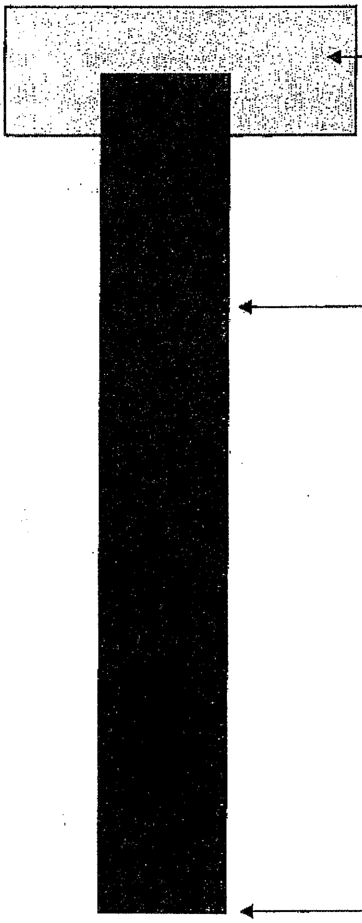
Type of Work:
☐ Construction
☒ Decommission ⟹ Original NOI No. RE13819
Ecology Well ID Tag No. BKY-319
Site Well Name
Consulting Firm Aspect
Was a variance approved for this well/boring? ☐ Yes ☒ No
If yes, what was the variance for?

Notice of Intent No. AE62078
Type of Well:
☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling
Property Owner Manson Construction
Well Street Address 5709 E Marginal Way S.
City Seattle County King
Tax Parcel No.
Location (see instructions): WWM ☐ or EWM ☐
NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E
Latitude (Example: 47.12345)
Longitude (Example: -120.12345)
(WGS 84 Coordinate System)
Borehole diameter ____ inches Casing diameter 2 inches
Static water level ____ ft below top of casing Date ____
☐ Above-ground completion with bollards ☐ Flush monument
↳ Stick-up of top of well casing ____ ft above ground surface
Start Date 8-11-2020 Completed Date 8-11-2020

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer
Name (Print Last, First Name) Dickinson, David
Driller/Engineer/Trainee Signature
License No. 3017
Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:
Sponsor's signature

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT	0 - ____ FT
	BACKFILL 13 FT Bentonite Chips.	0 - ____ FT
		0 - ____ FT
	DEPTH OF BORING ____ FT	

DEPARTMENT OF
ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE 13976

Ecology Well ID Tag No. BKY-318

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

Driller/Engineer/Trainee Signature

License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE62078

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction

Well Street Address 5209 E Marginal Way S.

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

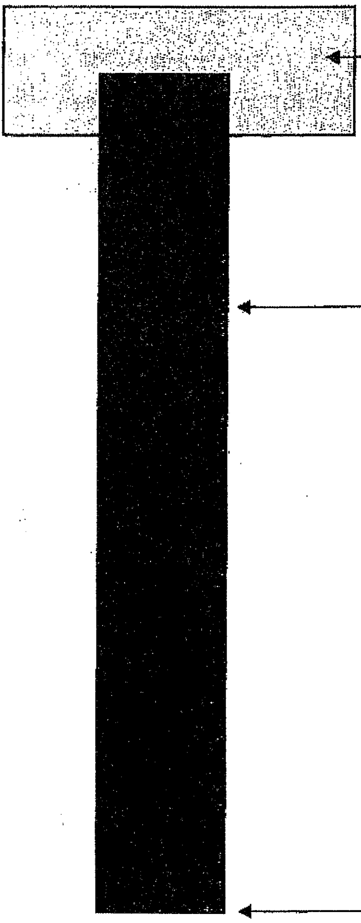
Borehole diameter ____ inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 8-11-2020 Completed Date 8-11-2020

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT BACKFILL 15 FT Bentonite Chips. DEPTH OF BORING ____ FT	0 - ____ FT 0 - ____ FT 0 - ____ FT

DEPARTMENT OF
ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE13819

Ecology Well ID Tag No. BKY-323

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

Driller/Engineer/Trainee Signature

License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE62078

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction

Well Street Address 5709 E Marginal Way S.

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

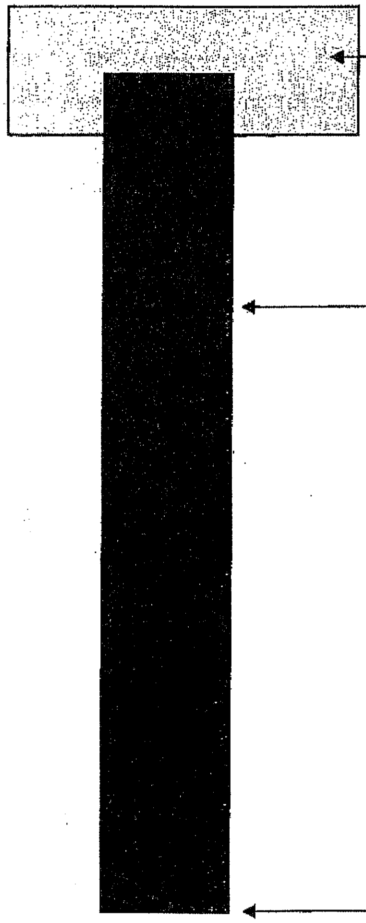
Borehole diameter ____ inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 8-11-2020 Completed Date 8-11-2020

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT BACKFILL 14 FT Bentonite Chips. DEPTH OF BORING ____ FT	0 - ____ FT 0 - ____ FT 0 - ____ FT

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

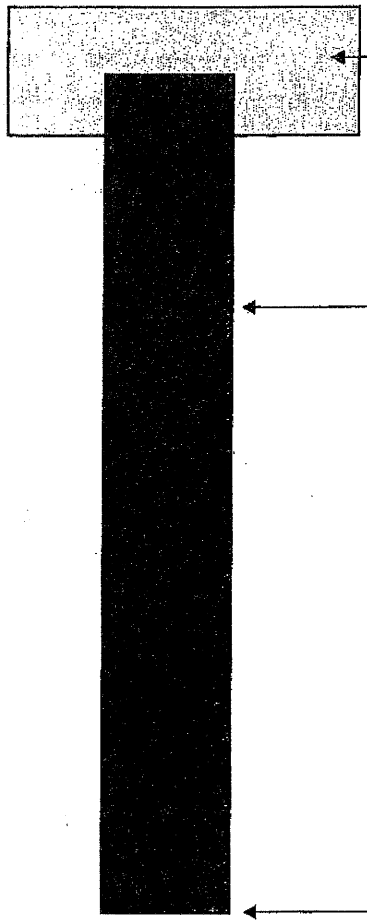
Type of Work:
☐ Construction
☒ Decommission ⇨ Original NOI No. RE13976
Ecology Well ID Tag No. BKY-317
Site Well Name
Consulting Firm Aspect
Was a variance approved for this well/boring? ☐ Yes ☒ No
If yes, what was the variance for?

Notice of Intent No. AE62078
Type of Well:
☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling
Property Owner Manson Construction
Well Street Address 5709 E Marginal Way S.
City Seattle County King
Tax Parcel No.
Location (see instructions): WWM ☐ or EWM ☐
NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E
Latitude (Example: 47.12345)
Longitude (Example: -120.12345)
(WGS 84 Coordinate System)
Borehole diameter ____ inches Casing diameter 2 inches
Static water level ____ ft below top of casing Date
☐ Above-ground completion with bollards ☐ Flush monument
↳ Stick-up of top of well casing ____ ft above ground surface
Start Date 8-11-2020 Completed Date 8-11-2020

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer
Name (Print Last, First Name) Dickinson, David
Driller/Engineer/Trainee Signature
License No. 3017
Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:
Sponsor's signature

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT BACKFILL 18 FT Bentonite Chips. DEPTH OF BORING ____ FT	0 - ____ FT 0 - ____ FT 0 - ____ FT

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:
☐ Construction
☒ Decommission ⇒ Original NOI No. RE13819

Ecology Well ID Tag No. BKY-148
Site Well Name
Consulting Firm Aspect
Was a variance approved for this well/boring? ☐ Yes ☒ No
If yes, what was the variance for?

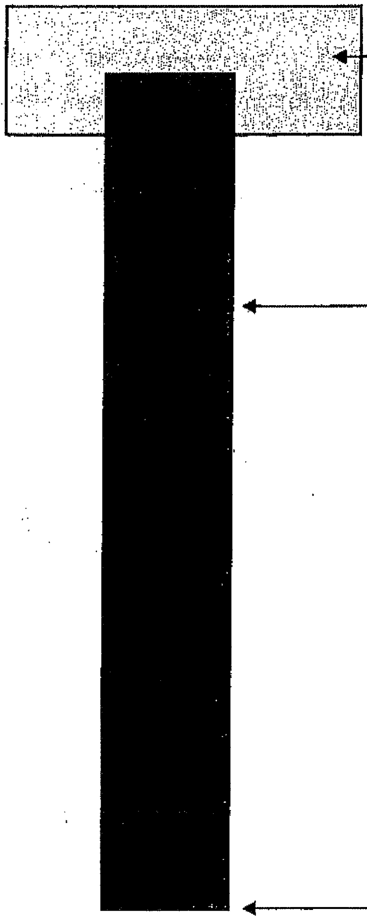
WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer
Name (Print Last, First Name) Dickinson, David
Driller/Engineer/Trainee Signature
License No. 3017
Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:
Sponsor's signature

Notice of Intent No. AE62078
Type of Well:
☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction
Well Street Address 5709 E Marginal Way S.
City Seattle County King
Tax Parcel No.
Location (see instructions): WWM ☐ or EWM ☐
NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E
Latitude (Example: 47.12345)
Longitude (Example: -120.12345)
(WGS 84 Coordinate System)
Borehole diameter ___ inches Casing diameter 2 inches
Static water level ___ ft below top of casing Date
☐ Above-ground completion with bollards ☐ Flush monument
↳ Stick-up of top of well casing ___ ft above ground surface.
Start Date 8-11-2020 Completed Date 8-11-2020

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ___ FT	0 - ___ FT
	BACKFILL 14 FT Bentonite Chips.	0 - ___ FT
		0 - ___ FT
	DEPTH OF BORING ___ FT	

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Notice of Intent No. AE67678

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. RE13819

Ecology Well ID Tag No. BKY-147

Site Well Name

Consulting Firm Aspect

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Manson Construction

Well Street Address 5209 E Marginal Way S

City Seattle County King

Tax Parcel No.

Location (see instructions): WWM ☐ or EWM ☐

NE ¼-¼ NE ¼, Section 19 Town 24N Range 4E

Latitude (Example: 47.12345)

Longitude (Example: -120.12345)

(WGS 84 Coordinate System)

Borehole diameter ____ inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date ____

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface.

Start Date 8-11-2020 Completed Date 8-11-2020

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Dickinson, David

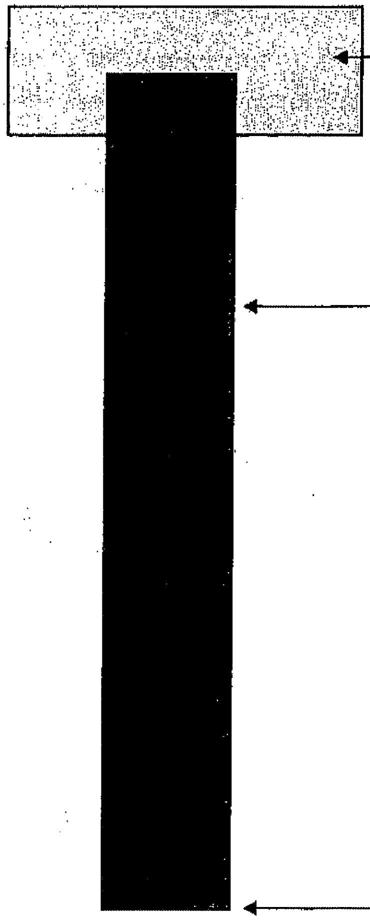
Driller/Engineer/Trainee Signature

License No. 3017

Company Name Holt Services Inc

If trainee box is checked, sponsor's license number:

Sponsor's signature

Construction/Design	Well Data	Formation Description
	CONCRETE SURFACE SEAL ____ FT BACKFILL 14 FT Bentonite Chips DEPTH OF BORING 14 FT	0 - ____ FT 0 - ____ FT 0 - ____ FT

APPENDIX F

Construction Photos

Photograph 1. 12/28/2020: North facing view of site from southwest corner of site, prior to excavation.

Photograph 2. 12/28/2020: Eastern excavation temporary cut wall excavated to elevation 12 feet (ft). Standing in Cell G-1 and facing south. Dark material in east cut slope is mixed fill, removed in overexcavation.

Photograph 3. 12/29/2020: East facing view of railroad tie and pipe in Cell K-2. Pure sandblast grit observed in sidewall at IAWP estimated extents.

Photograph 4. 12/30/2020: View of clean sand sidewall at eastern side of cell F-2 elevation.

Photograph 5. 12/30/2020: Northwest facing view of excavation progress and dewatering header pipe from approximate location cell I-2.

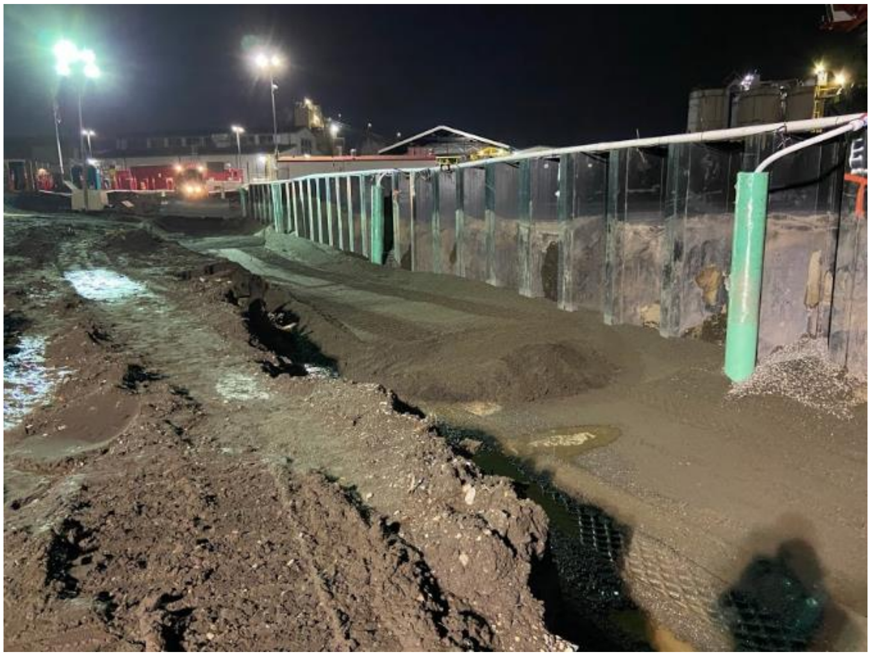
Photograph 6. 12/31/2020: Northern sidewall extended past planned excavation boundary approximately 5 to 8 ft further north.

Photograph 7. 01/07/2021: Northwest facing view of dewatering system installation. Sumps along shoring and in trenches on north and south ends of site, backfilled with gravel. Excavation currently at elevation 12 ft.

Photograph 8. 01/11/2021: South facing view of first 40 ft of saturated excavation in cells L-1 and K-1, backfilled with Type 26.

Photograph 9. 01/11/2021: Excavation extents bottom sampling in cell J-1, at elevation 4.5 ft in Estuarine Unit.

Photograph 10. 01/12/21: Northwest facing view of completed excavation and partial backfill through cell C-1.



Photograph 11. 01/12/21: South facing view of completed excavation and partial backfill through cell C-1.

Photograph 12. 01/13/21: South facing view of excavation from North of cell A-1. Backfill through cell C-1 and open excavation in cells A-1, B-1.

Photograph 13. 01/13/21: Over excavation in cell J-1 down to Estuarine Unit. Backfill removed and approximately 0.5 ft of Estuarine Unit removed to obtain new bottom sample.

Photograph 14. 01/15/21: South facing view of excavation from Northern limit. Excavation has been backfilled to approximately elevation 10 ft.

Photograph 15. 01/15/2021: Overexcavation to elevation 4.5 ft in cell K-1. Photo documents Estuarine Unit. Sheen and odor from creosote pile observed.

Photograph 16. 01/15/21: Seam of sandblast grit observed in eastern sidewall at K-3, elevation 15 ft, removed in overexcavation.

Photograph 17. 01/15/2021: SBG removed from sidewall. Limit of observed sand blast grit follows west side of original building footprint.

Photograph 18. 01/21/2021. North facing view of northern excavation limit. Cell A-1 is sloped away from retaining wall on property line down to elevation 12 ft.

Photograph 19. South property boundary in cell M-3. Dark gray soil is coal beneath asphalt, not sand blast grit.

Photograph 20. SE facing view – reaching edge of excavation along building footprint and property line in cell N-5.

Photograph 21. 01/22/2021 North facing view from south end of site of backfilled excavation area.

Photograph 22. 08/06/2021 South facing view of fenced off area with signage for access restriction.

APPENDIX G

Data Validation Report and 2a Standard Operating Procedures

DATA VALIDATION REPORT

SnoPac Mansion
Soil Sampling
November 2020 – January 2021
Sample Delivery Groups 012481, 012482, 101021, 101127, 101148, 101171, 101207, 101285, 101319

Prepared by:

Aspect Consulting, LLC
710 Second Ave, Suite 550
Seattle, WA 98104

Project No. 150054 • February 2021

V:\150054 Snopac-Manson\Deliverables\Interim Action Report\DRAFT\Appendix G Data Validation\Appendix G DV Report_Final.docx

Contents

1 Introduction

This report summarizes the findings of the analysis of soil sample collected from November 2020 through January 2021 at the SnoPac project site. A complete list of samples and analyses for the sample delivery groups (SDG) is provided in Section 2.

Samples were sent to Friedman & Bruya for analysis of various parameters. The analytical methods are summarized in Table 1 below:

Table 1. Analytical Methods

Analysis	Method	Lab	Validation Level
EPA1631E	Mercury	Friedman & Bruya, Inc.	2A
NWTPH-Dx*	Diesel Range TPH	Friedman & Bruya, Inc.	2A
NWTPH-Gx*	Gasoline Range TPH	Friedman & Bruya, Inc.	2A
SW6020B	Metals	Friedman & Bruya, Inc.	2A
SW8082	PCB Aroclors	Friedman & Bruya, Inc.	2A
SW8270E	PAHs	Friedman & Bruya, Inc.	2A

*only in SDG 101127

Data assigned a J/UJ qualifier (estimated) may be used for site evaluation purposes but the reasons for qualification should be considered approximate when interpreting sample concentrations. Values without qualification meet all data measurement quality objectives and are suitable for use.

Data qualifier definitions and a summary table of the qualified data are included in the Qualified Data Summary at the end of this report. Data qualifiers have been incorporated into the project chemistry database to reflect the validation in this report.

2 Data Validation Findings

Soil samples in these SDGs, and the chemical analyses performed on them, are tabulated below. The sections below describe the results of the data quality review by analyte group (analysis).

Table 2. Sample Index

SDG	Sample Name	Sample Date	EPA1631E	NWTPH-DX	NWTPH-GX	SW6020B	SW8082	SW8270E
12481	SW-A-1-12	12/30/2020	x			x	x	x
12481	SW-C-3-12	12/31/2020	x			x	x	x
12481	SW-D-3-12.5	12/31/2020	x			x	x	x
12481	SW-JK-2-14	12/31/2020	x			x	x	x

SDG	Sample Name	Sample Date	EPA1631E	NWTPH-DX	NWTPH-GX	SW6020B	SW8082	SW8270E
12482	SW-A-2-12.5	12/31/2020	x			x	x	x
12482	SW-A-3-12	12/31/2020	x			x	x	x
12482	SW-B-3-12	12/31/2020	x			x	x	x
12482	SW-D-2-12	12/30/2020	x			x	x	x
12482	SW-E-2-12	12/30/2020	x			x	x	x
12482	SW-F-2-12	12/30/2020	x			x	x	x
12482	SW-G-2-12	12/30/2020	x			x	x	x
12482	SW-H-2-12	12/30/2020	x			x	x	x
12482	SW-I-3-12	12/31/2020	x			x	x	x
12482	SW-K-2-12	12/31/2020	x			x	x	x
12482	SW-L-2-12	12/31/2020	x			x	x	x
12482	SW-M-1-12	12/31/2020	x			x	x	x
101021	B-A-2-11.5	1/4/2021	x			x	x	x
101021	B-B-2-11.5	1/4/2021	x			x	x	x
101021	B-B-3-11.5	1/4/2021	x			x	x	x
101021	B-C-2-11.5	1/4/2021	x			x	x	x
101021	B-D-2-11.5	1/5/2021	x			x	x	x
101021	B-F-2-11.5	1/5/2021	x			x	x	x
101021	B-G-2-11.5	1/5/2021	x			x	x	x
101021	B-I-2-11.5	1/5/2021	x			x	x	x
101127	B-I-1-4.5	1/11/2021	x	x	x	x	x	x
101127	B-J-1-4.5	1/11/2021	x			x	x	x
101127	B-K-1-5	1/11/2021	x			x	x	x
101127	B-L-1-4	1/11/2021	x			x	x	x
101127	SW-I-1-8	1/11/2021	x	x	x	x	x	x
101127	SW-J-1-8	1/11/2021	x			x	x	x
101127	SW-K-1-5	1/11/2021	x			x	x	x
101127	SW-L-1-8	1/11/2021	x			x	x	x
101148	B-C-1-6	1/13/2021	x			x	x	x
101148	B-D-1-6	1/12/2021	x			x	x	x
101148	B-E-1-5.5	1/12/2021	x			x	x	x
101148	B-F-1-5	1/12/2021	x			x	x	x
101148	B-G-1-6	1/12/2021	x			x	x	x
101148	B-H-1-6	1/12/2021	x			x	x	x
101148	SW-C-1-9	1/13/2021	x			x	x	x
101148	SW-D-1-8	1/12/2021	x			x	x	x
101148	SW-E-1-8	1/12/2021	x			x	x	x
101148	SW-F-1-8	1/12/2021	x			x	x	x
101148	SW-G-1-7	1/12/2021	x			x	x	x
101148	SW-H-1-9	1/12/2021	x			x	x	x
101171	B-A-1-5	1/13/2021	x			x	x	x
101171	B-B-1-5	1/13/2021	x			x	x	x
101171	B-J-1-4	1/13/2021	x			x	x	x
101171	SW-A-1-8	1/13/2021	x			x	x	x
101171	SW-B-1-8	1/13/2021	x			x	x	x
101207	B-K-1-4.5	1/15/2021	x			x	x	x

SDG	Sample Name	Sample Date	EPA1631E	NWTPH-DX	NWTPH-GX	SW6020B	SW8082	SW8270E
101207	SW-C-5-12	1/15/2021	x			x	x	x
101207	SW-D-3-12	1/15/2021	x			x	x	x
101207	SW-E-2.5-12	1/15/2021				x		
101207	SW-J-3-13	1/15/2021	x			x	x	x
101207	SW-K-3-13	1/15/2021	x			x	x	x
101207	SW-L-3-14	1/15/2021	x			x	x	x
101285	SW-AA-1-12.5	1/21/2021	x			x	x	x
101285	SW-AA-2-12.5	1/21/2021				x		
101319	SW-L-4-13	1/22/2021				x	x	x
101319	SW-M-3-14	1/22/2021				x	x	x
101319	SW-N-5-13	1/22/2021				x	x	x

2.1 Sample Receipt and Preservation

Sample receipt and preservation (2-6 degrees C) were acceptable for all SDGs.

In SDG 101207 the sample collector erroneously named sample SW-E-2.5-12 as SW-E-2-12 on the Chain of Custody (COC). The actual sample SW-E-2-12 was contained in SDG 012482, and could not be physically confused by the lab.

2.2 Mercury (EPA 1631E)

2.2.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.2.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.2.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.2.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

.

2.2.5 Case Narrative/Laboratory Qualification

No issues were noted in the laboratory case narrative. No further action was needed.

2.2.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R. Precision was acceptable based on the LCS/LCSD RPD values. The data are of known quality and are acceptable for use.

2.3 Diesel Range TPHs (NWTPH-DX)

2.3.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.3.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.3.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.3.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.3.5 Case Narrative/Laboratory Qualification

No issues were noted in the laboratory case narrative. No further action was needed.

2.3.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R. Precision was acceptable based on the LCS/LCSD RPD values. The data are of known quality and are acceptable for use.

2.4 Gasoline Range TPHs (NWTPH-GX)

2.4.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.4.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.4.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.4.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.4.5 Case Narrative/Laboratory Qualification

No issues were noted in the laboratory case narrative. No further action was needed.

2.4.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R. Precision was acceptable based on the LCS/LCSD RPD values. The data are of known quality and are acceptable for use.

2.5 Metals (SW 6010C)

2.5.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.5.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.5.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.5.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed with the following exception(s):

Arsenic (SDG: 101127) – MSD RPD exceeded the control limit. Associated detections are qualified as estimated (J). Non-detections do not require qualification.

Lead (SDG: 101285) – MSD RPD exceeded the control limit. No associated results were detected. No qualification or further action needed.

2.5.5 Case Narrative/Laboratory Qualification

No issues were noted in the laboratory case narrative. No further action was needed.

2.5.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, except as noted above. Precision was acceptable based on the LCS/LCSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

2.6 PCBs (SW 8082)

2.6.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.6.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.6.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.6.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.6.5 Case Narrative/Laboratory Qualification

In sample B-J-I-4.5 (SDG: 101171) the lab noted the high detection of Aroclor 1254 may cause a low level of Aroclor 1260 to go undetected. We have qualified the Aroclor 1260 result as an estimated non-detect (UJ) because of this.

Samples B-C-1-6 and B-E-1-5.5 (SDG: 101148) had reporting limits raised on their non-detected results due to a high moisture content, as noted by the lab. These results have been qualified UJ (estimated non-detect) to indicate this elevated reporting limit.

For sample SW-JK-2-14 (SDG: 012481) the initial analytical result for Aroclor 1254 exceeded the instrument calibration range and was flagged by the lab. The lab performed and reported a reanalysis at a 5x dilution. The original result is rejected (R) in favor of the dilution result.

No further action was needed.

2.6.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R and MS/MSD %R. Precision was acceptable based on the MS/MSD RPD values.

Rejected results (qualified R) should not be used.

The remaining data are of known quality and are acceptable for use as qualified.

2.7 PAHs (SW 8270E)

2.7.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.7.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.7.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.7.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits, with the following exception(s):

2-Methylnaphthalene (SDGs: 012481 and 012482) – MS [and/or MSD] %R above upper control limit. Associated detections are qualified as estimated (J). Non-detections do not require qualification.

Benzo(g,h,i)perylene (SDGs: 012481 and 012482) – MS [and/or MSD] %R below lower control limit. Associated results are qualified as estimated (J/UJ).

Fluoranthene (SDG: 101148) – MSD RPD exceeded the control limit. Associated detections are qualified as estimated (J). Non-detections do not require qualification.

Indeno(1,2,3-cd) pyrene (SDGs: 012481 and 012482) – MS [and/or MSD] %R below lower control limit. Associated results are qualified as estimated (J/UJ).

Pentachlorophenol (SDG: 101148) – MS [and/or MSD] %R below lower control limit. Associated results are qualified as estimated (J/UJ).

Pentachlorophenol (SDG: 101127)– No recovery [or exceptionally low recovery] of MS [and/or MSD]. Associated detections are qualified as estimated (J). Associated non-detections are rejected (R).

2.7.5 Case Narrative/Laboratory Qualification

The laboratory noted in the case narrative that Internal Standard recovery values were outside of compliance for sample SW-C-3-12 (SDG: -12481). The lab flagged associated results, which we have qualified as estimated (J/UJ).

Samples B-C-1-6 and B-E-1-5.5 (SDG: 101148) had reporting limits raised on their non-detected results due to a high moisture content, as noted by the lab. These results have been qualified UJ (estimated non-detect) to indicate this elevated reporting limit.

No further action was needed.

2.7.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R and MS/MSD %R, except as noted above. Precision was acceptable based on the MS/MSD RPD values, except as noted above.

Rejected results (qualified R) should not be used. Additionally, many of the Pentachlorophenol analyses were not requested, and their results have been marked as Do Not Report.

The remaining data are of known quality and are acceptable for use as qualified.

3 Qualified Data Summary

Qualified sample results are listed below. Results just flagged non-detect (U) by lab with no further qualification necessary are not listed.

Table 3. Qualified Data Summary

Sample	Method	Analyte	Report	Qualifier	Reason
B-C-1-6	SW8082	Aroclor 1016	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1221	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1232	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1242	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1248	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1254	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1260	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1262	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8082	Aroclor 1268	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	1-Methylnaphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	2-Methylnaphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Acenaphthene	Y	UJ	The reporting limits were raised due to

Sample	Method	Analyte	Report	Qualifier	Reason
					high moisture content in sample.
B-C-1-6	SW8270E	Acenaphthylene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Benz(a)anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Benzo(a)pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Benzo(b)fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Benzo(g,h,i)perylene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Benzo(k)fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Chrysene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Dibenzo(a,h)anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Fluorene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Indeno(1,2,3-cd)pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Naphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.

Sample	Method	Analyte	Report	Qualifier	Reason
B-C-1-6	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested; The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Phenanthrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-C-1-6	SW8270E	Pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-D-1-6	SW8270E	Fluoranthene	Y	J	MS/MSD RPD out
B-D-1-6	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
B-E-1-5.5	SW8082	Aroclor 1016	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1221	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1232	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1242	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1248	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1254	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1260	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8082	Aroclor 1262	Y	UJ	The reporting limits were raised due to high moisture content in sample.

Sample	Method	Analyte	Report	Qualifier	Reason
B-E-1-5.5	SW8082	Aroclor 1268	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	1-Methylnaphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	2-Methylnaphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Acenaphthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Acenaphthylene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Benz(a)anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Benzo(a)pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Benzo(b)fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Benzo(g,h,i)perylene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Benzo(k)fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Chrysene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Dibenzo(a,h)anthracene	Y	UJ	The reporting limits were raised due to high moisture content in sample.

Sample	Method	Analyte	Report	Qualifier	Reason
B-E-1-5.5	SW8270E	Fluoranthene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Fluorene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Indeno(1,2,3-cd)pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Naphthalene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested; The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Phenanthrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-E-1-5.5	SW8270E	Pyrene	Y	UJ	The reporting limits were raised due to high moisture content in sample.
B-F-1-5	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
B-G-1-6	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
B-H-1-6	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
B-I-1-4.5	SW6020B	Arsenic	Y	J	MS/MSD RPD out
B-J-1-4.5	SW6020B	Arsenic	Y	J	MS/MSD RPD out
B-J-1-4.5	SW8082	Aroclor 1260	Y	UJ	A low level of Aroclor 1260 may be present in the sample but cannot be quantified due to the level
B-K-1-5	SW6020B	Arsenic	Y	J	MS/MSD RPD out
B-L-1-4	SW6020B	Arsenic	Y	J	MS/MSD RPD out
B-L-1-4	SW8270E	Pentachlorophenol	N	R	MS/MSD %R=0
SW-A-1-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-A-1-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-A-1-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low

Sample	Method	Analyte	Report	Qualifier	Reason
SW-A-2-12.5	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-A-2-12.5	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-A-2-12.5	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-A-3-12	SW8270E	Benzo(g,h,i)perylene	Y	UJ	MS %R Low
SW-A-3-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	UJ	MS %R Low
SW-B-3-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-B-3-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-B-3-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-C-1-9	SW8270E	Fluoranthene	Y	J	MS/MSD RPD out
SW-C-1-9	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-C-3-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-C-3-12	SW8270E	Benzo(a)pyrene	Y	J	Internal Standard Out
SW-C-3-12	SW8270E	Benzo(b)fluoranthene	Y	J	Internal Standard Out
SW-C-3-12	SW8270E	Benzo(g,h,i)perylene	N	J	MS %R Low
SW-C-3-12	SW8270E	Benzo(g,h,i)perylene	Y	J	Internal Standard Out; MS %R Low
SW-C-3-12	SW8270E	Benzo(k)fluoranthene	Y	J	Internal Standard Out
SW-C-3-12	SW8270E	Dibenzo(a,h)anthracene	Y	J	Internal Standard Out
SW-C-3-12	SW8270E	Indeno(1,2,3-cd)pyrene	N	J	MS %R Low
SW-C-3-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	Internal Standard Out; MS %R Low
SW-D-1-8	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-D-2-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-D-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-D-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-D-3-12.5	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-D-3-12.5	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-D-3-12.5	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-E-1-8	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-E-2-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-E-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-E-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-F-1-8	SW8270E	Fluoranthene	Y	J	MS/MSD RPD out
SW-F-1-8	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-F-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-F-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-G-1-7	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-G-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-G-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low

Sample	Method	Analyte	Report	Qualifier	Reason
SW-H-1-9	SW8270E	Pentachlorophenol	N	UJ	Very Low MS/MSD %R; DNR - analysis not requested
SW-H-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-H-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-I-1-8	SW6020B	Arsenic	Y	J	MS/MSD RPD out
SW-I-3-12	SW8270E	Benzo(g,h,i)perylene	Y	UJ	MS %R Low
SW-I-3-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	UJ	MS %R Low
SW-J-1-8	SW6020B	Arsenic	Y	J	MS/MSD RPD out
SW-JK-2-14	SW8082	Aroclor 1254	N	R	Result Exceeds Calibration. Use dilution result.
SW-JK-2-14	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-JK-2-14	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-K-1-5	SW6020B	Arsenic	Y	J	MS/MSD RPD out
SW-K-2-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-K-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-K-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-L-1-8	SW6020B	Arsenic	Y	J	MS/MSD RPD out
SW-L-1-8	SW8270E	Pentachlorophenol	N	R	MS/MSD %R=0
SW-L-2-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-L-2-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-L-2-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low
SW-M-1-12	SW8270E	2-Methylnaphthalene	Y	J	MS %R High
SW-M-1-12	SW8270E	Benzo(g,h,i)perylene	Y	J	MS %R Low
SW-M-1-12	SW8270E	Indeno(1,2,3-cd)pyrene	Y	J	MS %R Low

Table 4. Data Qualifier Definitions

Data Qualifier	Definition
J	The analyte was detected above the reported quantitation limit, and the reported concentration was an estimated value.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
U	The analyte was analyzed for but was considered not detected at the reporting limit or reported value.
UJ	The analyte was analyzed for, and the associated quantitation limit was an estimated value.

Aspect Level 2A Data Validation SOP

This document explains Aspect's standard procedure for Level 2A Data Validation, which is performed by an experienced chemist and in accordance with the EPA National Functional Guidelines (NFG). This document serves as the baseline process and its parts may be modified or superseded when required by the Quality Assurance Project Plan (QAPP) or necessitated by the professional judgment of the validator.

Receiving

The sample receiving documentation provided by the lab is reviewed to verify that samples were handled correctly and received in good condition.

Samples should be received by the lab at temperatures ≤6°C. If the sample receipt temperature exceeds 6°C, the results will be evaluated using professional judgment. Key factors to consider include the duration between sample collection and receipt, the specific analyses requested, and other sample receipt conditions. A sample receipt temperature greater than 10°C is considered a more serious exceedance and will be evaluated using professional judgment accordingly. If qualification is deemed necessary, results will be qualified as estimated (J/UJ).

Samples should be received by the laboratory in the appropriate containers and with the required preservation for the requested analysis. Samples that do not meet the method specific criteria will be evaluated using professional judgment. Key factors to consider include the timing of any preservation adjustments by the laboratory, the types of containers used for collection, and the size of headspace/bubbles. If qualification is deemed necessary, results will be qualified as estimated (J/UJ).

Results may also be rejected (R) in extreme cases of poor sample receipt conditions.

Hold Times

Sample hold times are reviewed according to the method specific criteria. Sample results that exceed the hold time will be qualified as estimated (J/UJ). If a sample is extracted and/or analyzed at greater than 2x the hold time, it is considered a gross exceedance and any detections will be qualified as estimated (J), while nondetections will be rejected (R).

Blanks (Method, Trip, Field, and Equipment)

All blanks are reviewed to verify that they are free of analytes. Professional judgment is used to evaluate sample results in all cases when blanks contain detections, but in general the following logic is applied. If an analyte is detected in any blank, associated nondetections in the samples will not be qualified, while results that are less than the reporting limit (RL) are qualified as nondetect (U). If the blank detection is less than the RL, sample results that are greater than the RL will not be qualified. If the blank detection is ≥RL, sample result detections ≥RL and ≤10x the blank result will be qualified as estimated (J), while results greater than 10x the blank result will not be qualified.

Method blanks are associated with samples based on the analytical batch. Trip blanks are associated with samples based on the collection date. Field and equipment blanks are associated with samples based on the collection date and relevant collection methods.

Surrogates

The surrogate recoveries in all samples are reviewed to verify that they fall within the laboratory defined control limits. If the surrogate recovery is above the upper control limit, associated detections will be qualified as estimated (J), while associated nondetections will not be qualified. If the surrogate recovery is below the lower control limit, associated results will be qualified as estimated (J/UJ). If the surrogate recovery is zero, associated detections will be qualified as estimated (J), while associated nondetections will be rejected (R).

The surrogate-to-analyte association is determined by the laboratory. In general, QC samples are not evaluated for surrogate recovery.

Laboratory Control Samples and Laboratory Control Sample Duplicates (LCSs/LCSDs)

The LCS/LCSD recoveries in all samples are reviewed to verify that they fall within the laboratory defined control limits. If the LCS/LCSD recovery is above the upper control limit, associated detections will be qualified as estimated (J), while associated nondetections will not be qualified. If the LCS/LCSD recovery is below the lower control limit, associated results will be qualified as estimated (J/UJ). If the LCS/LCSD recovery is zero, associated detections will be qualified as estimated (J), while associated nondetections may be rejected (R), unless further evidence is provided that the instrument used was capable of detecting the specified analyte at the time of analysis.

The LCSD relative percent differences (RPDs) are reviewed to verify that they are less than or equal to the laboratory defined control limit. If the LCSD RPD is above the control limit, associated sample detections will be qualified as estimated (J), while associated nondetections will not be qualified.

LCSs and LCSDs are associated with samples based on the analytical batch.

Matrix Spikes and Matrix Spike Duplicates (MSs/MSDs)

The MS/MSD recoveries in all samples are reviewed to verify that they fall within the laboratory defined control limits. If the MS/MSD recovery is above the upper control limit, associated detections will be qualified as estimated (J), while associated nondetections will not be qualified. If the MS/MSD recovery is below the lower control limit, associated results will be qualified as estimated (J/UJ). If the MS/MSD recovery is zero, associated detections will be qualified as estimated (J), while associated nondetections may be rejected (R), unless further evidence is provided that the instrument used was capable of detecting the specified analyte at the time of analysis.

The MSD RPDs are reviewed to verify that they are less than or equal to the laboratory defined control limit. If the MSD RPD is above the control limit, associated sample detections will be qualified as estimated (J), while associated nondetections will not be qualified.

MSs and MSDs are typically only associated with the parent sample and its field duplicates but can be associated with other samples if the sample matrices and other qualities are known to be sufficiently similar. MSs/MSDs of samples not belonging to the specific Aspect project will not be considered for evaluation.

Duplicates (Lab and Field)

The duplicate RPDs are reviewed to verify that they are less than or equal to the laboratory (or QAPP, for field duplicates) defined control limit. If the duplicate RPD is above the control limit, associated sample detections will be qualified as estimated (J), while associated nondetections will not be qualified.

Duplicates are typically only associated with the parent sample and its field duplicates but can be associated with other samples if the sample matrices and other qualities are known to be sufficiently similar. Lab duplicates of samples not belonging to the specific Aspect project will not be considered for evaluation.

Case Narrative and Other Laboratory-Applied Flags

The case narrative, any other remaining laboratory-applied flags, and other notes from the laboratory are reviewed and professional judgment is used to determine if any qualification is warranted.

One common occurrence is when a result exceeds the calibration range. If the laboratory provided the results from a follow-up dilution analysis, only the result from the dilution analysis will be reported, while the original result will be set to do not report (DNR). If no dilution results were provided, the original result will be reported and qualified as estimated due to calibration range exceedance (E) or estimated (J).

Another common occurrence for total petroleum hydrocarbon (TPH) analyses is when a result’s chromatographic pattern does not match the fuel standard in which the result will be qualified as such (X).

Qualifiers

Aspect uses a controlled list of standardized validation qualifiers. Validation or Interpreted qualifiers may be different than laboratory-applied flags or qualifiers.

Data Qualifier	Definition
U	The analyte was analyzed for but was considered not detected at the reporting limit or reported value.

Data Qualifier	Definition
J	The analyte was detected above the reported quantitation limit, and the reported concentration was an estimated value.
UJ	The analyte was analyzed for, and the associated quantitation limit was an estimated value.
X	(Used exclusively for TPH analyses). The chromatographic pattern does not match the fuel standards used for quantitation. Result may not represent fuel contamination.
E	Result exceeded the instrument calibration range. Result is qualitatively useful as a detection, but the numeric value should not be used for quantitation.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

DATA VALIDATION REPORT

Snopac Property Uplands
Groundwater Sampling
June 2021
106490, 106507

Prepared by:

Aspect Consulting, LLC
710 Second Ave, Suite 550
Seattle, WA 98104

Project No. [150054] • [July 2021]

C:\Users\jsanford\Desktop\DV Report_Template.docx

Contents

1 Introduction

This report summarizes the findings of groundwater sample analysis collected in June 2021. A complete list of samples and analyses for each sample delivery group (SDG) is provided in Section 2.

Samples were sent to Friedman and Bruya for analysis of various parameters, and sub-contracted to Eurofins Test America for tributyltin analysis. The analytical methods are summarized in Table 1 below:

Table 1. Analytical Methods

SDG	Analysis	Method	Lab	Validation Level
106490	Mercury	EPA1631E	Friedman and Bruya	2A
106490	Metals	EPA200.8	Friedman and Bruya	2A
106490	Diesel Range	NWTPH-DX	Friedman and Bruya	2A
106490	PCBs	SW8082	Friedman and Bruya	2A
106490	SVOC	SW8270E	Friedman and Bruya	2A
106490	Pentachlorophenol	SW8270ESIM	Friedman and Bruya	2A
106490	Tributyltin	Butyltins by GC/MS	Eurofins/TestAmerica	2A
106507	PCBs	SW8082	Friedman and Bruya	2A
106507	SVOC	SW8270E	Friedman and Bruya	2A
106507	Tributyltin	Butyltins by GC/MS	Eurofins/TestAmerica	2A

Data assigned a J/UJ qualifier (estimated) may be used for site evaluation purposes but the reasons for qualification should be considered when interpreting sample concentrations. Values without qualification meet all data measurement quality objectives and are suitable for use.

Data qualifier definitions and a summary table of the qualified data are included in the Qualified Data Summary at the end of this report. Data qualifiers have been incorporated into the project chemistry database to reflect the validation in this report.

2 Data Validation Findings

Samples in these SDGs, and the chemical analyses performed on them, are tabulated below. The sections below describe the results of the data quality review by analyte group (analysis).

Table 2. Sample Index

Sample Name	Sample Date	EPA1631E	EPA200.8	Tributyltin	NWTPH-DX	SW8082	SW8270E	SW8270ESIM
MW-12-062521	06/25/2021	X	X					
MW-13-062521	06/25/2021	X	X	X	X	X	X	X
MW-14-062521	06/25/2021	X	X	X		X	X	
MW-15-062521	06/25/2021	X	X	X		X	X	
MW-160-062521	06/25/2021	X	X	X		X	X	
MW-16-062521	06/25/2021	X	X	X		X	X	
MW-17-062521	06/25/2021	X	X	X		X	X	
MW-8-062521	06/25/2021	X	X	X		X	X	
MW-12-062921	06/29/2021			X		X	X	

2.1 Sample Receipt and Preservation

Sample receipt and preservation (2-6 degrees C) were acceptable.

2.2 SVOCs (SW 8270EC & SW8270ESIM)

2.2.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.2.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.2.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.2.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.2.5 Field Duplicate (FD)

All FD RPD and Deltas were within the control limit, with the following exception:

Phenanthrene – The FD Delta exceeded the control limit. The associated results are qualified as estimated (J).

2.2.6 Other

The laboratory reported detections between the MDL and RL. These values are qualified as estimated (J). No further action was needed.

2.2.7 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, and the MS/MSD %R except as noted above. Precision was acceptable based on the LCS/LCSD RPD values and the MS/MSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

2.3 Metals & Mercury (EPA 200.8 and EPA 1631E)

2.3.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.3.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.3.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.3.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits, with the following exception:

Zinc – MS and MSD %R below lower control limit. Associated results are qualified as estimated (J/UJ).

2.3.5 Field Duplicate (FD)

All FD RPD were within the control limit, with the following exception(s):

Zinc – The FD delta exceeded the control limit. The associated results are qualified as estimated (J/).

2.3.6 Other

The laboratory reported detections between the MDL and RL. These values are qualified as estimated (J). No further action was needed.

2.3.7 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, and the MS/MSD %R except as noted above. Precision was acceptable based on the LCS/LCSD RPD values and the MS/MSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

2.4 PCBs (SW 8082)

2.4.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.4.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.4.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits, with the following exception(s):

Aroclor 1260 – LCS and LCSD %R above upper control limit. No associated results were detections. Non-detections do not require qualification.

2.4.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.4.5 Field Duplicate (FD)

All FD RPD were within the control limit. No qualification or action was needed.

2.4.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, and the MS/MSD %R except as noted above. Precision was acceptable based on the LCS/LCSD RPD values and the MS/MSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

2.5 TPH Diesel (NWTPH-DX)

2.5.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.5.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.5.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.5.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.5.5 Case Narrative/Laboratory Qualification

The laboratory noted that the chromatographic pattern for Diesel Range Organics detection did not match that for fuel/diesel standard used for quantitation. Detected value is likely not diesel fuel.

2.5.6 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, and the MS/MSD %R except as noted above. Precision was acceptable based on the LCS/LCSD RPD values and the MS/MSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

2.6 Tributyltin (by GC/MS)

2.6.1 Holding Times

Samples were analyzed within the requisite holding time limit.

2.6.2 Method Blanks

Target analytes were not detected at or above the reporting levels in the method blank. No qualification or action was needed.

2.6.3 Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD)

All LCS and LCSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.6.4 Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

All MS and MSD %R and RPD were within the laboratory specified control limits. No qualification or action was needed.

2.6.5 Field Duplicate (FD)

All FD RPD were within the control limit. No qualification or action was needed.

2.6.6 Case Narrative/Laboratory Qualification

The laboratory noted in the case narrative that the surrogate recovery in the LCS/LCSD was outside control. None of the analytical samples results appear to have been impacted. No further action was needed.

2.6.7 Overall Assessment

Accuracy was acceptable based on the LCS/LCSD %R, and the MS/MSD %R except as noted above. Precision was acceptable based on the LCS/LCSD RPD values and the MS/MSD RPD values, except as noted above. The data are of known quality and are acceptable for use as qualified.

3 Qualified Data Summary

Qualified sample results are listed below. Results just flagged non-detect (U) by lab with no further qualification necessary are not listed.

Table 3. Qualified Data Summary

Sample ID	Method	Analyte	Qualifier	Reason
MW-12-062521	EPA200.8	Zinc	J	MS/MSD %R Low; Reported as a detection between MDL and RL
MW-13-062521	EPA200.8	Copper	J	Reported as a detection between MDL and RL
MW-13-062521	EPA200.8	Zinc	J	MS/MSD %R Low
MW-13-062521	NWTPH-DX	Diesel Range Organics	X	Chromatographic pattern does not match fuel standard used for quantitation
MW-14-062521	EPA200.8	Zinc	J	MS/MSD %R Low; Reported as a detection between MDL and RL
MW-15-062521	EPA200.8	Copper	J	Reported as a detection between MDL and RL
MW-15-062521	EPA200.8	Zinc	J	MS/MSD %R Low; Reported as a detection between MDL and RL
MW-15-062521	SW8270E	Naphthalene	J	Reported as a detection between MDL and RL
MW-160-062521	EPA200.8	Copper	J	Reported as a detection between MDL and RL
MW-160-062521	EPA200.8	Zinc	J	MS/MSD %R Low; Field Dup Delta Out
MW-160-062521	SW8270E	Phenanthrene	J	Field Dup Delta Out
MW-16-062521	EPA200.8	Copper	J	Reported as a detection between MDL and RL
MW-16-062521	EPA200.8	Zinc	J	MS/MSD %R Low; Reported as a detection between MDL and RL; Field Dup Delta Out
MW-16-062521	SW8270E	Phenanthrene	J	Field Dup Delta Out
MW-17-062521	EPA200.8	Zinc	J	MS/MSD %R Low
MW-17-062521	SW8270E	Naphthalene	J	Reported as a detection between MDL and RL
MW-8-062521	EPA200.8	Zinc	UJ	MS/MSD %R Low
MW-8-062521	SW8270E	Naphthalene	J	Reported as a detection between MDL and RL

Table 4. Data Qualifier Definitions

Data Qualifier	Definition
J	The analyte was detected above the reported quantitation limit, and the reported concentration was an estimated value.
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Data Qualifier	Definition
U	The analyte was analyzed for but was considered not detected at the reporting limit or reported value.
UJ	The analyte was analyzed for, and the associated quantitation limit was an estimated value.
X	Chromatographic pattern does not match fuel standard used for quantitation.

APPENDIX H

Laboratory Analytical Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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www.friedmanandbruya.com

January 6, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on December 31, 2020 from the SnoPac-Manson PO 150054, F&BI 012481 project. There are 24 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0106R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 31, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac-Manson PO 150054, F&BI 012481 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
012481 -01	SW-A-1-12
012481 -02	SW-C-3-12
012481 -03	SW-D-3-12.5
012481 -04	SW-JK-2-14

An 8270E internal standard failed the acceptance criteria for sample SW-C-3-12. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

Several 8270E compounds failed below the acceptance criteria in the matrix spike sample. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-A-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-01 x10
Date Analyzed:	01/04/21	Data File:	012481-01 x10.079
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1,190
Copper	762
Lead	1,250
Zinc	3,760

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-C-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-02 x5
Date Analyzed:	01/04/21	Data File:	012481-02 x5.066
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	508
Copper	308
Lead	428
Zinc	1,550

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-D-3-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-03 x5
Date Analyzed:	01/04/21	Data File:	012481-03 x5.067
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	31.9
Copper	139
Lead	145
Zinc	674

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-JK-2-14	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-04 x20
Date Analyzed:	01/04/21	Data File:	012481-04 x20.068
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5,640
Copper	3,350
Lead	4,120
Zinc	17,000

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	I1-02 mb x0.4
Date Analyzed:	01/04/21	Data File:	I1-02 mb x0.4.037
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<0.4
Copper	<2
Lead	<0.4
Zinc	<2

Date of Report: 01/06/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012481
Date Extracted: 01/04/21
Date Analyzed: 01/04/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-A-1-12 012481-01	0.17
SW-C-3-12 012481-02	0.056
SW-D-3-12.5 012481-03	0.085
SW-JK-2-14 012481-04	1.0
Method Blank	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-A-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-01 1/25
Date Analyzed:	01/04/21	Data File:	010410.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45 d	32	100
Phenol-d6	52 d	46	107
Nitrobenzene-d5	55 d	24	127
2-Fluorobiphenyl	65 d	46	108
2,4,6-Tribromophenol	113 d ca	25	127
Terphenyl-d14	68 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.13
2-Methylnaphthalene	0.16
1-Methylnaphthalene	0.10
Acenaphthylene	<0.05
Acenaphthene	0.066
Fluorene	0.078
Phenanthrene	0.67
Anthracene	0.14
Fluoranthene	0.91
Pyrene	0.77
Benz(a)anthracene	0.41
Chrysene	0.46
Benzo(a)pyrene	0.50
Benzo(b)fluoranthene	0.61
Benzo(k)fluoranthene	0.23
Indeno(1,2,3-cd)pyrene	0.32
Dibenz(a,h)anthracene	0.070
Benzo(g,h,i)perylene	0.30

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-C-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-02
Date Analyzed:	01/04/21	Data File:	010417.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	48	36	114
Phenol-d6	57	47	116
Nitrobenzene-d5	54	38	117
2-Fluorobiphenyl	71	50	150
2,4,6-Tribromophenol	70 ca	25	187
Terphenyl-d14	88	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.015
2-Methylnaphthalene	0.026
1-Methylnaphthalene	0.017
Acenaphthylene	<0.002
Acenaphthene	0.0022
Fluorene	0.0024
Phenanthrene	0.033
Anthracene	0.0054
Fluoranthene	0.062
Pyrene	0.080
Benz(a)anthracene	0.033
Chrysene	0.045
Benzo(a)pyrene	0.058 J
Benzo(b)fluoranthene	0.088 J
Benzo(k)fluoranthene	0.030 J
Indeno(1,2,3-cd)pyrene	0.036 J
Dibenz(a,h)anthracene	0.0075 J
Benzo(g,h,i)perylene	0.034 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-C-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-02 1/5
Date Analyzed:	01/04/21	Data File:	010411.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	47 d	32	100
Phenol-d6	57 d	46	107
Nitrobenzene-d5	56 d	24	127
2-Fluorobiphenyl	72 d	46	108
2,4,6-Tribromophenol	70 d ca	25	127
Terphenyl-d14	75 d	50	150

Compounds:	Concentration mg/kg (ppm)
Benzo(a)pyrene	0.053
Benzo(b)fluoranthene	0.067
Benzo(k)fluoranthene	0.027
Indeno(1,2,3-cd)pyrene	0.046
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.047

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-D-3-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-03
Date Analyzed:	01/04/21	Data File:	010418.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	50	36	114
Phenol-d6	61	47	116
Nitrobenzene-d5	56	38	117
2-Fluorobiphenyl	70	50	150
2,4,6-Tribromophenol	75 ca	25	187
Terphenyl-d14	94	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.026
2-Methylnaphthalene	0.033
1-Methylnaphthalene	0.026
Acenaphthylene	0.0037
Acenaphthene	0.0035
Fluorene	0.0041
Phenanthrene	0.053
Anthracene	0.0085
Fluoranthene	0.059
Pyrene	0.079
Benz(a)anthracene	0.030
Chrysene	0.047
Benzo(a)pyrene	0.044
Benzo(b)fluoranthene	0.086
Benzo(k)fluoranthene	0.032
Indeno(1,2,3-cd)pyrene	0.022
Dibenz(a,h)anthracene	0.0049
Benzo(g,h,i)perylene	0.022

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-JK-2-14	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-04 1/25
Date Analyzed:	01/05/21	Data File:	010430.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	50 d	32	100
Phenol-d6	62 d	46	107
Nitrobenzene-d5	60 d	24	127
2-Fluorobiphenyl	68 d	46	108
2,4,6-Tribromophenol	123 d	25	127
Terphenyl-d14	73 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.05
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.05
Acenaphthene	0.058
Fluorene	<0.05
Phenanthrene	0.84
Anthracene	0.13
Fluoranthene	2.0
Pyrene	1.9
Benz(a)anthracene	1.1
Chrysene	1.3
Benzo(a)pyrene	1.4
Benzo(b)fluoranthene	1.8
Benzo(k)fluoranthene	0.56
Indeno(1,2,3-cd)pyrene	0.96
Dibenz(a,h)anthracene	0.21
Benzo(g,h,i)perylene	0.81

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	01-001 mb
Date Analyzed:	01/04/21	Data File:	010407.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	75	32	100
Phenol-d6	83	46	107
Nitrobenzene-d5	93	24	127
2-Fluorobiphenyl	96	46	108
2,4,6-Tribromophenol	72 ca	25	127
Terphenyl-d14	100	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-A-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-01
Date Analyzed:	01/04/21	Data File:	010406.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.14
Aroclor 1260	0.16
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-C-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-02
Date Analyzed:	01/04/21	Data File:	010407.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.046
Aroclor 1260	0.059
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-D-3-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-03
Date Analyzed:	01/04/21	Data File:	010408.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	88	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.089
Aroclor 1260	0.15
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-JK-2-14	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-04
Date Analyzed:	01/04/21	Data File:	010409.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	67	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.23 ve
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-JK-2-14	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012481-04 1/5
Date Analyzed:	01/05/21	Data File:	010517.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83 d	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1254	0.33

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	01-2 mb
Date Analyzed:	01/04/21	Data File:	010405.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/06/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012481

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

Laboratory Code: 012481-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	976	0 b	0 b	75-125	0 b
Copper	mg/kg (ppm)	50	635	0 b	0 b	75-125	0 b
Lead	mg/kg (ppm)	50	1,030	0 b	1910 b	75-125	200 b
Zinc	mg/kg (ppm)	50	3,180	0 b	0 b	75-125	0 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	87	80-120
Copper	mg/kg (ppm)	50	103	80-120
Lead	mg/kg (ppm)	50	100	80-120
Zinc	mg/kg (ppm)	50	99	80-120

Date of Report: 01/06/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012481

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 012481-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.1	192 b	159 b	71-125	19 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	125	68-125

Date of Report: 01/06/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012481

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 012482-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	0.012	124	50-150
2-Methylnaphthalene	mg/kg (ppm)	0.83	0.0064	166 vo	50-150
1-Methylnaphthalene	mg/kg (ppm)	0.83	0.0056	108	50-150
Acenaphthylene	mg/kg (ppm)	0.83	<0.002	76	50-150
Acenaphthene	mg/kg (ppm)	0.83	0.010	77	50-150
Fluorene	mg/kg (ppm)	0.83	0.0097	82	50-150
Phenanthrene	mg/kg (ppm)	0.83	0.085	95	50-150
Anthracene	mg/kg (ppm)	0.83	0.022	79	50-150
Fluoranthene	mg/kg (ppm)	0.83	0.10	84	50-150
Pyrene	mg/kg (ppm)	0.83	0.12	101	50-150
Benz(a)anthracene	mg/kg (ppm)	0.83	0.049	91	50-150
Chrysene	mg/kg (ppm)	0.83	0.054	147	50-150
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.062	105	50-150
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.065	129	50-150
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	0.023	106	50-150
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.032	44 vo	50-150
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	0.0070	56	50-150
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	0.028	46 vo	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	84	86	58-108	2
2-Methylnaphthalene	mg/kg (ppm)	0.83	89	89	70-130	0
1-Methylnaphthalene	mg/kg (ppm)	0.83	90	90	70-130	0
Acenaphthylene	mg/kg (ppm)	0.83	100	100	70-130	0
Acenaphthene	mg/kg (ppm)	0.83	95	95	70-130	0
Fluorene	mg/kg (ppm)	0.83	98	98	70-130	0
Phenanthrene	mg/kg (ppm)	0.83	102	102	70-130	0
Anthracene	mg/kg (ppm)	0.83	99	98	70-130	1
Fluoranthene	mg/kg (ppm)	0.83	109	109	70-130	0
Pyrene	mg/kg (ppm)	0.83	104	94	70-130	10
Benz(a)anthracene	mg/kg (ppm)	0.83	107	105	70-130	2
Chrysene	mg/kg (ppm)	0.83	110	106	70-130	4
Benzo(a)pyrene	mg/kg (ppm)	0.83	109	107	70-130	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	108	102	70-130	6
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	112	110	70-130	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	109	115	70-130	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	114	112	70-130	2
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	113	111	70-130	2

Date of Report: 01/06/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012481

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 012482-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.083	<0.002	54	53	29-125	2
Aroclor 1260	mg/kg (ppm)	0.083	0.0028	56	50	25-137	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.083	81	55-137
Aroclor 1260	mg/kg (ppm)	0.083	87	51-150

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.

012481

SAMPLE CHAIN OF CUSTODY ME 12/31/20

BT2

Page # 1 of 1

Report To Breeyn Greer / Adam Griffin
Company Aspect
Address 701 2nd Ave Ste 550
City, State, ZIP Seattle WA 98104
Phone 6122327343 Email bgreer; agriffin @aspectconsulting.com

SAMPLERS (*signature*) Breeyn Gr

PROJECT NAME	PO #
SnoPac - Manson	150054

REMARKS	INVOICE TO
Project specific RLs? - [✓ Yes] / No	AP

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 2-Day
Rush charges authorized by: BMG

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

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	Metals *				Notes *As,Cu,Pb,Hg,Zn
SW-A-1-12	01 A B	12/30/20	1600	S	2						X	X	X				
SW-C-3-12	02	12/31/20	1110	S	2						X	X	X				
SW-D-3-12.5	03	12/31/20	1115	S	2						X	X	X				
SW-JK-2-14	04	12/31/20	1135	S	2						X	X	X				

Samples received at 4 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Gr	Breeyn Greer	Aspect	12/31/20	1255
Received by:	Eric Young	F&B	12/31/20	1255
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 7, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on December 31, 2020 from the SnoPac-Manson PO 150054, F&BI 012482 project. There are 47 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0107R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 31, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac-Manson PO 150054, F&BI 012482 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
012482 -01	SW-D-2-12
012482 -02	SW-E-2-12
012482 -03	SW-F-2-12
012482 -04	SW-G-2-12
012482 -05	SW-H-2-12
012482 -06	SW-A-2-12.5
012482 -07	SW-A-3-12
012482 -08	SW-B-3-12
012482 -09	SW-I-3-12
012482 -10	SW-K-2-12
012482 -11	SW-L-2-12
012482 -12	SW-M-1-12

Several 8270E compounds did not pass the acceptance criteria in the matrix spike sample. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-D-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-01
Date Analyzed:	01/04/21	Data File:	012482-01.167
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	12.5
Copper	15.4
Lead	14.6
Zinc	54.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-E-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-02 x2
Date Analyzed:	01/04/21	Data File:	012482-02 x2.078
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	18.9
Copper	18.6
Lead	14.0
Zinc	67.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-F-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-03
Date Analyzed:	01/04/21	Data File:	012482-03.049
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.80
Copper	7.16
Lead	1.70
Zinc	33.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-G-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-04
Date Analyzed:	01/04/21	Data File:	012482-04.050
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.32
Copper	5.77
Lead	1.02
Zinc	12.8

Analysis For Total Metals By EPA Method 6020B

Client ID: SW-H-2-12
Date Received: 12/31/21
Date Extracted: 01/04/21
Date Analyzed: 01/04/21
Matrix: Soil
Units: mg/kg (ppm) Dry Weight

Client: Aspect Consulting, LLC
Project: SnoPac-Manson PO 150054
Lab ID: 012482-05
Data File: 012482-05.051
Instrument: ICPMS2
Operator: SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.33
Copper	7.04
Lead	2.56
Zinc	18.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-A-2-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-06
Date Analyzed:	01/04/21	Data File:	012482-06.052
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	9.40
Copper	26.1
Lead	17.3
Zinc	72.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-A-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-07
Date Analyzed:	01/04/21	Data File:	012482-07.053
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.60
Copper	4.10
Lead	1.02
Zinc	11.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-B-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-08 x2
Date Analyzed:	01/04/21	Data File:	012482-08 x2.070
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.55
Copper	11.2
Lead	10.1
Zinc	34.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-I-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-09
Date Analyzed:	01/04/21	Data File:	012482-09.055
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.02
Copper	6.07
Lead	1.26
Zinc	14.7

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-K-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-10 x2
Date Analyzed:	01/04/21	Data File:	012482-10 x2.071
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.14
Copper	23.3
Lead	13.4
Zinc	57.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-L-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-11 x2
Date Analyzed:	01/04/21	Data File:	012482-11 x2.072
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.48
Copper	20.7
Lead	12.5
Zinc	37.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-M-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/21	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-12 x2
Date Analyzed:	01/04/21	Data File:	012482-12 x2.077
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.12
Copper	14.5
Lead	21.8
Zinc	31.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	I1-02 mb x0.4
Date Analyzed:	01/04/21	Data File:	I1-02 mb x0.4.037
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<0.4
Copper	<2
Lead	<0.4
Zinc	<2

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482
Date Extracted: 01/04/21
Date Analyzed: 01/04/21 and 01/05/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-D-2-12 012482-01	0.020
SW-E-2-12 012482-02	0.021
SW-F-2-12 012482-03	0.012
SW-G-2-12 012482-04	<0.01
SW-H-2-12 012482-05	0.010
SW-A-2-12.5 012482-06	0.044
SW-A-3-12 012482-07	0.010
SW-B-3-12 012482-08	0.048
SW-I-3-12 012482-09	<0.01
SW-K-2-12 012482-10	0.061
SW-L-2-12 012482-11	0.033

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482
Date Extracted: 01/04/21
Date Analyzed: 01/04/21 and 01/05/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-M-1-12 012482-12	0.025
Method Blank	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-D-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-01
Date Analyzed:	01/05/21	Data File:	010431.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	54	32	100
Phenol-d6	61	46	107
Nitrobenzene-d5	65	24	127
2-Fluorobiphenyl	70	46	108
2,4,6-Tribromophenol	78	25	127
Terphenyl-d14	90	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.013
2-Methylnaphthalene	0.0074
1-Methylnaphthalene	0.0065
Acenaphthylene	<0.002
Acenaphthene	0.011
Fluorene	0.011
Phenanthrene	0.098
Anthracene	0.026
Fluoranthene	0.12
Pyrene	0.14
Benz(a)anthracene	0.056
Chrysene	0.062
Benzo(a)pyrene	0.072
Benzo(b)fluoranthene	0.075
Benzo(k)fluoranthene	0.026
Indeno(1,2,3-cd)pyrene	0.037
Dibenz(a,h)anthracene	0.0080
Benzo(g,h,i)perylene	0.032

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-E-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-02
Date Analyzed:	01/04/21	Data File:	010416.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	59	36	114
Phenol-d6	68	47	116
Nitrobenzene-d5	65	38	117
2-Fluorobiphenyl	78	50	150
2,4,6-Tribromophenol	81 ca	25	187
Terphenyl-d14	96	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.020
2-Methylnaphthalene	0.0094
1-Methylnaphthalene	0.0077
Acenaphthylene	<0.002
Acenaphthene	0.012
Fluorene	0.013
Phenanthrene	0.10
Anthracene	0.026
Fluoranthene	0.12
Pyrene	0.13
Benz(a)anthracene	0.055
Chrysene	0.061
Benzo(a)pyrene	0.075
Benzo(b)fluoranthene	0.078
Benzo(k)fluoranthene	0.029
Indeno(1,2,3-cd)pyrene	0.038
Dibenz(a,h)anthracene	0.0078
Benzo(g,h,i)perylene	0.033

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-F-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-03
Date Analyzed:	01/04/21	Data File:	010413.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	64	38	117
2-Fluorobiphenyl	75	50	150
2,4,6-Tribromophenol	78 ca	25	187
Terphenyl-d14	84	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	0.0030
Fluorene	0.0021
Phenanthrene	0.029
Anthracene	0.0068
Fluoranthene	0.041
Pyrene	0.042
Benz(a)anthracene	0.019
Chrysene	0.023
Benzo(a)pyrene	0.027
Benzo(b)fluoranthene	0.031
Benzo(k)fluoranthene	0.012
Indeno(1,2,3-cd)pyrene	0.014
Dibenz(a,h)anthracene	0.0028
Benzo(g,h,i)perylene	0.013

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-G-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-04
Date Analyzed:	01/04/21	Data File:	010406.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	53	36	114
Phenol-d6	62	47	116
Nitrobenzene-d5	66	38	117
2-Fluorobiphenyl	74	50	150
2,4,6-Tribromophenol	56 ca	25	187
Terphenyl-d14	81	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.017
Anthracene	0.0037
Fluoranthene	0.025
Pyrene	0.024
Benz(a)anthracene	0.010
Chrysene	0.012
Benzo(a)pyrene	0.013
Benzo(b)fluoranthene	0.013
Benzo(k)fluoranthene	0.0058
Indeno(1,2,3-cd)pyrene	0.0075
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0080

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-H-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-05
Date Analyzed:	01/04/21	Data File:	010407.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	71	38	117
2-Fluorobiphenyl	80	50	150
2,4,6-Tribromophenol	67 ca	25	187
Terphenyl-d14	87	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0032
Anthracene	<0.002
Fluoranthene	0.0054
Pyrene	0.0049
Benz(a)anthracene	0.0027
Chrysene	0.0040
Benzo(a)pyrene	0.0039
Benzo(b)fluoranthene	0.0052
Benzo(k)fluoranthene	0.0021
Indeno(1,2,3-cd)pyrene	0.0027
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0026

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-A-2-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-06
Date Analyzed:	01/04/21	Data File:	010408.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	53	36	114
Phenol-d6	65	47	116
Nitrobenzene-d5	67	38	117
2-Fluorobiphenyl	77	50	150
2,4,6-Tribromophenol	58 ca	25	187
Terphenyl-d14	88	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.034
2-Methylnaphthalene	0.058
1-Methylnaphthalene	0.055
Acenaphthylene	<0.002
Acenaphthene	0.0020
Fluorene	<0.002
Phenanthrene	0.060
Anthracene	0.0056
Fluoranthene	0.027
Pyrene	0.043
Benz(a)anthracene	0.013
Chrysene	0.028
Benzo(a)pyrene	0.014
Benzo(b)fluoranthene	0.019
Benzo(k)fluoranthene	0.0049
Indeno(1,2,3-cd)pyrene	0.0081
Dibenz(a,h)anthracene	0.0021
Benzo(g,h,i)perylene	0.0098

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-A-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-07
Date Analyzed:	01/04/21	Data File:	010409.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	53	36	114
Phenol-d6	61	47	116
Nitrobenzene-d5	57	38	117
2-Fluorobiphenyl	70	50	150
2,4,6-Tribromophenol	70 ca	25	187
Terphenyl-d14	85	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0021
Anthracene	<0.002
Fluoranthene	0.0030
Pyrene	0.0029
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	0.0022
Benzo(b)fluoranthene	0.0024
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-B-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-08
Date Analyzed:	01/04/21	Data File:	010410.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	36	114
Phenol-d6	70	47	116
Nitrobenzene-d5	68	38	117
2-Fluorobiphenyl	82	50	150
2,4,6-Tribromophenol	76 ca	25	187
Terphenyl-d14	85	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0022
2-Methylnaphthalene	0.0039
1-Methylnaphthalene	0.0022
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0041
Anthracene	<0.002
Fluoranthene	0.0048
Pyrene	0.0053
Benz(a)anthracene	0.0028
Chrysene	0.0048
Benzo(a)pyrene	0.0043
Benzo(b)fluoranthene	0.0060
Benzo(k)fluoranthene	0.0023
Indeno(1,2,3-cd)pyrene	0.0037
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0039

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-I-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-09
Date Analyzed:	01/04/21	Data File:	010411.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	57	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	64	38	117
2-Fluorobiphenyl	77	50	150
2,4,6-Tribromophenol	81 ca	25	187
Terphenyl-d14	90	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-K-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-10 1/5
Date Analyzed:	01/05/21	Data File:	010515.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	52 d	32	100
Phenol-d6	61 d	46	107
Nitrobenzene-d5	62 d	24	127
2-Fluorobiphenyl	73 d	46	108
2,4,6-Tribromophenol	90 d	25	127
Terphenyl-d14	77 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.093
2-Methylnaphthalene	0.071
1-Methylnaphthalene	0.056
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	0.060
Anthracene	0.015
Fluoranthene	0.085
Pyrene	0.074
Benz(a)anthracene	0.039
Chrysene	0.086
Benzo(a)pyrene	0.047
Benzo(b)fluoranthene	0.085
Benzo(k)fluoranthene	0.033
Indeno(1,2,3-cd)pyrene	0.050
Dibenz(a,h)anthracene	0.017
Benzo(g,h,i)perylene	0.091

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-L-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-11
Date Analyzed:	01/04/21	Data File:	010420.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	36	114
Phenol-d6	59	47	116
Nitrobenzene-d5	62	38	117
2-Fluorobiphenyl	74	50	150
2,4,6-Tribromophenol	69 ca	25	187
Terphenyl-d14	103	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.076
2-Methylnaphthalene	0.095
1-Methylnaphthalene	0.073
Acenaphthylene	0.0053
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.045
Anthracene	0.0096
Fluoranthene	0.041
Pyrene	0.059
Benz(a)anthracene	0.021
Chrysene	0.033
Benzo(a)pyrene	0.033
Benzo(b)fluoranthene	0.060
Benzo(k)fluoranthene	0.019
Indeno(1,2,3-cd)pyrene	0.024
Dibenz(a,h)anthracene	0.0060
Benzo(g,h,i)perylene	0.032
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-M-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-12
Date Analyzed:	01/04/21	Data File:	010419.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	36	114
Phenol-d6	70	47	116
Nitrobenzene-d5	67	38	117
2-Fluorobiphenyl	77	50	150
2,4,6-Tribromophenol	80 ca	25	187
Terphenyl-d14	109	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.013
2-Methylnaphthalene	0.015
1-Methylnaphthalene	0.011
Acenaphthylene	0.0027
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.020
Anthracene	0.0066
Fluoranthene	0.036
Pyrene	0.050
Benz(a)anthracene	0.021
Chrysene	0.046
Benzo(a)pyrene	0.040
Benzo(b)fluoranthene	0.096
Benzo(k)fluoranthene	0.029
Indeno(1,2,3-cd)pyrene	0.030
Dibenz(a,h)anthracene	0.0067
Benzo(g,h,i)perylene	0.033
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	01-001 mb
Date Analyzed:	01/04/21	Data File:	010407.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	75	32	100
Phenol-d6	83	46	107
Nitrobenzene-d5	93	24	127
2-Fluorobiphenyl	96	46	108
2,4,6-Tribromophenol	72 ca	25	127
Terphenyl-d14	100	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-D-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-01
Date Analyzed:	01/04/21	Data File:	010411.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	71	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0065
Aroclor 1260	0.0033
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-E-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-02
Date Analyzed:	01/04/21	Data File:	010414.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	82	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0027
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-F-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-03
Date Analyzed:	01/04/21	Data File:	010415.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	79	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-G-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-04
Date Analyzed:	01/04/21	Data File:	010416.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	87	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-H-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-05
Date Analyzed:	01/04/21	Data File:	010417.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-A-2-12.5	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-06
Date Analyzed:	01/04/21	Data File:	010419.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	65	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	0.0033
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-A-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-07
Date Analyzed:	01/04/21	Data File:	010420.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	70	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-B-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-08
Date Analyzed:	01/04/21	Data File:	010421.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	77	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-I-3-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-09
Date Analyzed:	01/04/21	Data File:	010422.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	95	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-K-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-10
Date Analyzed:	01/04/21	Data File:	010423.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	91	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-L-2-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-11
Date Analyzed:	01/04/21	Data File:	010424.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	89	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0024
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-M-1-12	Client:	Aspect Consulting, LLC
Date Received:	12/31/20	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	012482-12
Date Analyzed:	01/04/21	Data File:	010425.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	92	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	0.0025
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac-Manson PO 150054
Date Extracted:	01/04/21	Lab ID:	01-2 mb
Date Analyzed:	01/04/21	Data File:	010405.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482

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

Laboratory Code: 012481-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	976	0 b	0 b	75-125	0 b
Copper	mg/kg (ppm)	50	635	0 b	0 b	75-125	0 b
Lead	mg/kg (ppm)	50	1,030	0 b	1910 b	75-125	200 b
Zinc	mg/kg (ppm)	50	3,180	0 b	0 b	75-125	0 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	87	80-120
Copper	mg/kg (ppm)	50	103	80-120
Lead	mg/kg (ppm)	50	100	80-120
Zinc	mg/kg (ppm)	50	99	80-120

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 012481-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.1	192 b	159 b	71-125	19 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	125	68-125

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 012482-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	0.012	124	50-150
2-Methylnaphthalene	mg/kg (ppm)	0.83	0.0064	166 vo	50-150
1-Methylnaphthalene	mg/kg (ppm)	0.83	0.0056	108	50-150
Acenaphthylene	mg/kg (ppm)	0.83	<0.002	76	50-150
Acenaphthene	mg/kg (ppm)	0.83	0.010	77	50-150
Fluorene	mg/kg (ppm)	0.83	0.0097	82	50-150
Phenanthrene	mg/kg (ppm)	0.83	0.085	95	50-150
Anthracene	mg/kg (ppm)	0.83	0.022	79	50-150
Fluoranthene	mg/kg (ppm)	0.83	0.10	84	50-150
Pyrene	mg/kg (ppm)	0.83	0.12	101	50-150
Benz(a)anthracene	mg/kg (ppm)	0.83	0.049	91	50-150
Chrysene	mg/kg (ppm)	0.83	0.054	147	50-150
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.062	105	50-150
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.065	129	50-150
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	0.023	106	50-150
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.032	44 vo	50-150
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	0.0070	56	50-150
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	0.028	46 vo	50-150
Pentachlorophenol	mg/kg (ppm)	0.83	<0.05	83	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	84	86	58-108	2
2-Methylnaphthalene	mg/kg (ppm)	0.83	89	89	70-130	0
1-Methylnaphthalene	mg/kg (ppm)	0.83	90	90	70-130	0
Acenaphthylene	mg/kg (ppm)	0.83	100	100	70-130	0
Acenaphthene	mg/kg (ppm)	0.83	95	95	70-130	0
Fluorene	mg/kg (ppm)	0.83	98	98	70-130	0
Phenanthrene	mg/kg (ppm)	0.83	102	102	70-130	0
Anthracene	mg/kg (ppm)	0.83	99	98	70-130	1
Fluoranthene	mg/kg (ppm)	0.83	109	109	70-130	0
Pyrene	mg/kg (ppm)	0.83	104	94	70-130	10
Benz(a)anthracene	mg/kg (ppm)	0.83	107	105	70-130	2
Chrysene	mg/kg (ppm)	0.83	110	106	70-130	4
Benzo(a)pyrene	mg/kg (ppm)	0.83	109	107	70-130	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	108	102	70-130	6
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	112	110	70-130	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	109	115	70-130	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	114	112	70-130	2
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	113	111	70-130	2
Pentachlorophenol	mg/kg (ppm)	0.83	80	86	64-134	7

Date of Report: 01/07/21
Date Received: 12/31/20
Project: SnoPac-Manson PO 150054, F&BI 012482

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 012482-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.083	<0.002	54	53	29-125	2
Aroclor 1260	mg/kg (ppm)	0.083	0.0028	56	50	25-137	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.083	81	55-137
Aroclor 1260	mg/kg (ppm)	0.083	87	51-150

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.

012482

SAMPLE CHAIN OF CUSTODY

ME 12/31/20

BIY

Page # 1 of 2

Report To Breyn Greer / Adam Griffin
Company Aspect
Address 701 2nd Ave Ste 550
City, State, ZIP Seattle WA 98104
Phone 6122327343 Email bgreer; agriffin

SAMPLERS (signature) Breyn Gr

PROJECT NAME	PO #
SnoPac - Monson	150054

REMARKS

Project specific RLs? [✓ Yes] No

INVOICE TO
AP

TURNAROUND TIME
☒ ~~Standard turnaround~~
☒ RUSH 1/7/21 per BG 12/31/20 ME
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	Metals *				Notes * As, Cu, Pb, Hg, Zn
SW-D-2-12	01 AB	12/30/20	1620	S	2						X	X	X				
SW-E-2-12	02	12/30/20	1640	↓	↓						X	X	X				
SW-F-2-12	03	12/30	1625								X	X	X				
SW-G-2-12	04	12/30	1635								X	X	X				
SW-H-2-12	05	12/30	1555								X	X	X				
SW-A-2-12.5	06	12/31	1100	S	2						X	X	X				
SW-A-3-12	07	12/31	1120	S	2						X	X	X				
SW-B-3-12	08	12/31	1125	S	2						X	X	X				
SW-I-3-12	09	12/31	1215	S	2						X	X	X				
SW-K-2-12	10	12/31	1205	S	2						X	X	X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breyn Gr	Breyn Greer	Aspect	12/31/20	1255
Received by:	Eric Clarke	FEB	12/31/20	1255
Relinquished by:				
Received by:		Samples received at 4 °C		

012482

SAMPLE CHAIN OF CUSTODY

ME 12/31/20

BIY

Page # 2 of 2

Report To Breyn Grer / Adam Griffin

Company Aspect

Address

City, State, ZIP

Phone 6122327343 Email bgreen; agriffin

SAMPLERS (signature) Breyn Gr

PROJECT NAME Sne Pae - Manson

PO # 150054

REMARKS

Project specific RLs? [✓ Yes] / No

INVOICE TO AP

TURNAROUND TIME

☒ Standard turnaround

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Archive samples

☐ Other

Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED											Notes
						NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Metals *	PCP 8270			*As, Cu, Pb, Hg, Zn
~~SW-K-2-12~~ BG		~~12/31/20~~	~~1205~~	~~S~~	~~2~~					BG	~~X~~						on pg 1
SW-L-2-12	11 AB	12/31/20	1155	S	2						X	X	X	X			
SW-M-1-12	12 |	12/31/20	1150	S	2						X	X	X	X			

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breyn Gr	Breyn Grear	Aspect	12/31/20	1255
Received by:	Eric Young	F&B	12/31/20	1255
Relinquished by:				
Received by:		Samples received at 4 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 7, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 5, 2021 from the SnoPac- Manson PO 150054, F&BI 101021 project. There are 34 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0107R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 5, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac- Manson PO 150054, F&BI 101021 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101021 -01	B-A-2-11.5
101021 -02	B-B-2-11.5
101021 -03	B-B-3-11.5
101021 -04	B-C-2-11.5
101021 -05	B-D-2-11.5
101021 -06	B-F-2-11.5
101021 -07	B-G-2-11.5
101021 -08	B-I-2-11.5

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-A-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-01
Date Analyzed:	01/06/21	Data File:	101021-01.039
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.34
Copper	6.79
Lead	1.45
Zinc	16.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-B-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-02
Date Analyzed:	01/06/21	Data File:	101021-02.042
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	5.98
Lead	<1
Zinc	12.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-B-3-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-03
Date Analyzed:	01/06/21	Data File:	101021-03.045
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	11.0
Copper	20.2
Lead	17.8
Zinc	52.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-C-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-04
Date Analyzed:	01/06/21	Data File:	101021-04.046
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.63
Copper	5.92
Lead	1.26
Zinc	13.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-D-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-05
Date Analyzed:	01/06/21	Data File:	101021-05.047
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	37.9
Copper	34.7
Lead	63.2
Zinc	162

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-F-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-06
Date Analyzed:	01/06/21	Data File:	101021-06.048
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.49
Copper	9.67
Lead	3.29
Zinc	87.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-G-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-07
Date Analyzed:	01/06/21	Data File:	101021-07.049
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.88
Copper	8.62
Lead	165
Zinc	60.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-I-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-08 x5
Date Analyzed:	01/06/21	Data File:	101021-08 x5.057
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.61
Copper	188
Lead	32.3
Zinc	72.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	I1-06 mb
Date Analyzed:	01/06/21	Data File:	I1-06 mb.036
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/07/21
Date Received: 01/05/21
Date Extracted: 01/06/21
Date Analyzed: 01/06/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
B-A-2-11.5 101021-01 x0.5	0.017
B-B-2-11.5 101021-02 x0.5	0.015
B-B-3-11.5 101021-03 x0.5	0.023
B-C-2-11.5 101021-04 x0.5	0.010
B-D-2-11.5 101021-05 x0.5	0.034
B-F-2-11.5 101021-06 x0.5	0.13
B-G-2-11.5 101021-07 x0.5	0.029
B-I-2-11.5 101021-08 x0.5	0.067
Method Blank	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-A-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-01
Date Analyzed:	01/06/21	Data File:	010606.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	70	32	100
Phenol-d6	75	46	107
Nitrobenzene-d5	85	24	127
2-Fluorobiphenyl	87	46	108
2,4,6-Tribromophenol	90	25	127
Terphenyl-d14	93	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-B-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-02
Date Analyzed:	01/06/21	Data File:	010607.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	64	32	100
Phenol-d6	72	46	107
Nitrobenzene-d5	81	24	127
2-Fluorobiphenyl	84	46	108
2,4,6-Tribromophenol	95	25	127
Terphenyl-d14	96	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-B-3-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-03
Date Analyzed:	01/06/21	Data File:	010611.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	32	100
Phenol-d6	63	46	107
Nitrobenzene-d5	66	24	127
2-Fluorobiphenyl	73	46	108
2,4,6-Tribromophenol	85	25	127
Terphenyl-d14	84	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0034
Anthracene	<0.002
Fluoranthene	0.0072
Pyrene	0.0072
Benz(a)anthracene	0.0041
Chrysene	0.0056
Benzo(a)pyrene	0.0060
Benzo(b)fluoranthene	0.0076
Benzo(k)fluoranthene	0.0027
Indeno(1,2,3-cd)pyrene	0.0045
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0048

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-C-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-04
Date Analyzed:	01/06/21	Data File:	010608.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	75	32	100
Phenol-d6	80	46	107
Nitrobenzene-d5	88	24	127
2-Fluorobiphenyl	91	46	108
2,4,6-Tribromophenol	95	25	127
Terphenyl-d14	94	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-D-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-05 1/5
Date Analyzed:	01/06/21	Data File:	010613.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60 d	32	100
Phenol-d6	69 d	46	107
Nitrobenzene-d5	76 d	24	127
2-Fluorobiphenyl	80 d	46	108
2,4,6-Tribromophenol	100 d	25	127
Terphenyl-d14	83 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.018
2-Methylnaphthalene	0.018
1-Methylnaphthalene	0.017
Acenaphthylene	<0.01
Acenaphthene	0.032
Fluorene	0.027
Phenanthrene	0.23
Anthracene	0.060
Fluoranthene	0.24
Pyrene	0.22
Benz(a)anthracene	0.11
Chrysene	0.12
Benzo(a)pyrene	0.12
Benzo(b)fluoranthene	0.12
Benzo(k)fluoranthene	0.047
Indeno(1,2,3-cd)pyrene	0.066
Dibenz(a,h)anthracene	0.016
Benzo(g,h,i)perylene	0.060

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-F-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-06
Date Analyzed:	01/06/21	Data File:	010609.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	52	32	100
Phenol-d6	59	46	107
Nitrobenzene-d5	64	24	127
2-Fluorobiphenyl	67	46	108
2,4,6-Tribromophenol	78	25	127
Terphenyl-d14	78	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	0.0034
Pyrene	0.0027
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	0.0022
Benzo(b)fluoranthene	0.0026
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-G-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-07
Date Analyzed:	01/06/21	Data File:	010610.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	52	32	100
Phenol-d6	61	46	107
Nitrobenzene-d5	64	24	127
2-Fluorobiphenyl	69	46	108
2,4,6-Tribromophenol	83	25	127
Terphenyl-d14	81	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	0.0023
Pyrene	0.0021
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	0.0021
Benzo(b)fluoranthene	0.0026
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0021

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-I-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-08 1/5
Date Analyzed:	01/06/21	Data File:	010612.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61 d	32	100
Phenol-d6	69 d	46	107
Nitrobenzene-d5	73 d	24	127
2-Fluorobiphenyl	81 d	46	108
2,4,6-Tribromophenol	95 d	25	127
Terphenyl-d14	84 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.022
2-Methylnaphthalene	0.016
1-Methylnaphthalene	0.012
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	0.026
Anthracene	<0.01
Fluoranthene	0.033
Pyrene	0.029
Benz(a)anthracene	0.012
Chrysene	0.020
Benzo(a)pyrene	0.020
Benzo(b)fluoranthene	0.028
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	0.026
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.033

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	01-062 mb2
Date Analyzed:	01/06/21	Data File:	010604.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	78 vo	15	61
Phenol-d6	85 vo	10	46
Nitrobenzene-d5	111	17	143
2-Fluorobiphenyl	96	50	150
2,4,6-Tribromophenol	97	50	150
Terphenyl-d14	102	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID: B-A-2-11.5
Date Received: 01/05/21
Date Extracted: 01/06/21
Date Analyzed: 01/06/21
Matrix: Soil
Units: mg/kg (ppm) Dry Weight

Client: Aspect Consulting, LLC
Project: SnoPac- Manson PO 150054
Lab ID: 101021-01
Data File: 010606.D
Instrument: GC7
Operator: VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	63	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-B-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-02
Date Analyzed:	01/06/21	Data File:	010610.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-B-3-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-03
Date Analyzed:	01/06/21	Data File:	010611.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	66	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-C-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-04
Date Analyzed:	01/06/21	Data File:	010612.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	67	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-D-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-05
Date Analyzed:	01/06/21	Data File:	010613.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	62	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0056
Aroclor 1260	0.0085
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-F-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-06
Date Analyzed:	01/06/21	Data File:	010614.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-G-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-07
Date Analyzed:	01/06/21	Data File:	010615.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-I-2-11.5	Client:	Aspect Consulting, LLC
Date Received:	01/05/21	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	101021-08
Date Analyzed:	01/06/21	Data File:	010616.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	85	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0072
Aroclor 1260	0.011
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac- Manson PO 150054
Date Extracted:	01/06/21	Lab ID:	01-068 mb
Date Analyzed:	01/06/21	Data File:	010604.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/07/21
Date Received: 01/05/21
Project: SnoPac- Manson PO 150054, F&BI 101021

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

Laboratory Code: 101021-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	<1	88	86	75-125	2
Copper	mg/kg (ppm)	50	5.38	92	90	75-125	2
Lead	mg/kg (ppm)	50	<1	95	94	75-125	1
Zinc	mg/kg (ppm)	50	11.3	91	88	75-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	91	80-120
Copper	mg/kg (ppm)	50	107	80-120
Lead	mg/kg (ppm)	50	105	80-120
Zinc	mg/kg (ppm)	50	104	80-120

Date of Report: 01/07/21
Date Received: 01/05/21
Project: SnoPac- Manson PO 150054, F&BI 101021

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101021-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.1	91	96	71-125	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	90	68-125

Date of Report: 01/07/21
Date Received: 01/05/21
Project: SnoPac- Manson PO 150054, F&BI 101021

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	89	91	58-108	2
2-Methylnaphthalene	mg/kg (ppm)	0.83	93	94	70-130	1
1-Methylnaphthalene	mg/kg (ppm)	0.83	93	94	70-130	1
Acenaphthylene	mg/kg (ppm)	0.83	97	99	70-130	2
Acenaphthene	mg/kg (ppm)	0.83	92	94	70-130	2
Fluorene	mg/kg (ppm)	0.83	96	99	70-130	3
Phenanthrene	mg/kg (ppm)	0.83	97	101	70-130	4
Anthracene	mg/kg (ppm)	0.83	96	99	70-130	3
Fluoranthene	mg/kg (ppm)	0.83	103	106	70-130	3
Pyrene	mg/kg (ppm)	0.83	89	91	70-130	2
Benz(a)anthracene	mg/kg (ppm)	0.83	99	101	70-130	2
Chrysene	mg/kg (ppm)	0.83	100	103	70-130	3
Benzo(a)pyrene	mg/kg (ppm)	0.83	99	103	70-130	4
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	93	96	70-130	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	95	102	70-130	7
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	115	119	70-130	3
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	112	122	70-130	9
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	109	121	70-130	10

Date of Report: 01/07/21
Date Received: 01/05/21
Project: SnoPac- Manson PO 150054, F&BI 101021

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101021-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.083	<0.002	74	70	29-125	6
Aroclor 1260	mg/kg (ppm)	0.083	<0.002	79	74	25-137	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.083	93	55-137
Aroclor 1260	mg/kg (ppm)	0.083	101	51-150

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.

101021 [redacted]

SAMPLE CHAIN OF CUSTODY

ME 01-05-21 BI3

Report To Breeyn Greer/Adam Griffin
Company Aspect Consulting
Address 710 2nd Ave Ste 550
City, State, ZIP Seattle, WA 98104
Phone 612-232-7343 Email bgreer@aspectconsulting.com agriffin@aspectconsulting.com

SAMPLERS (signature) Rachel
PROJECT NAME Sno Pac - Manson
PO # 150054
REMARKS
INVOICE TO AP
Project specific RLs? [✓ Yes] / No

[redacted] # 1 of ____

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 2-Day per BG 1/5/21
Rush charges authorized by: ME

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	Metals*				Notes *As, Cu, Pb, Hg, Zn
B-A-2-11.5	01 A-B	1/4/21	1630	Soil	2						X	X	X				
B-B-2-11.5	02	↓	1715	↓	↓						X	X	X				
B-B-3-11.5	03		1730								X	X	X				
~~B-B~~ B-C-2-11.5	04		1740								X	X	X				
B-D-2-11.5	05	1/5/21	1245								X	X	X				
B-F-2-11.5	06	↓	1255								X	X	X				
B-G-2-11	07		1305								X	X	X				
B-I-2-11.5	08		1315								X	X	X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Rachel	Rachel Cornwell	Aspect	1/5/21	1430
Received by:	VWH	VINH	FBI	1/5/21	14:30
Relinquished by:					
Received by:			Samples received at 3 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 13, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 12, 2021 from the SnoPac PO 150054, F&BI 101127 project. There are 40 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0113R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 12, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac PO 150054, F&BI 101127 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101127 -01	B-L-1-4
101127 -02	SW-L-1-8
101127 -03	B-K-1-5
101127 -04	SW-K-1-5
101127 -05	B-J-1-4.5
101127 -06	SW-J-1-8
101127 -07	B-I-1-4.5
101127 -08	SW-I-1-8

All quality control requirements were acceptable.

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127
Date Extracted: 01/12/21
Date Analyzed: 01/12/21

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)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
B-I-1-4.5 101127-07	<5	100
SW-I-1-8 101127-08	<5	80
Method Blank 01-55 MB2	<5	94

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127
Date Extracted: 01/12/21
Date Analyzed: 01/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
B-I-1-4.5 101127-07	<50	<250	91
SW-I-1-8 101127-08	<50	<250	88
Method Blank 01-87 MB2	<50	<250	84

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-L-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-01 x2
Date Analyzed:	01/12/21	Data File:	101127-01 x2.077
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.13
Copper	23.7
Lead	3.27
Zinc	26.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-L-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-02 x2
Date Analyzed:	01/12/21	Data File:	101127-02 x2.078
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.59
Copper	18.1
Lead	3.45
Zinc	50.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-03 x2
Date Analyzed:	01/12/21	Data File:	101127-03 x2.079
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	10.3
Copper	24.3
Lead	7.35
Zinc	34.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-04
Date Analyzed:	01/12/21	Data File:	101127-04.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.16
Copper	6.29
Lead	<1
Zinc	25.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-J-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-05 x5
Date Analyzed:	01/12/21	Data File:	101127-05 x5.081
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	19.5
Copper	51.9
Lead	26.0
Zinc	81.7

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-J-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-06
Date Analyzed:	01/12/21	Data File:	101127-06.047
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.12
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID: SW-J-1-8
Date Received: 01/12/21
Date Extracted: 01/12/21
Date Analyzed: 01/12/21
Matrix: Soil
Units: mg/kg (ppm) Dry Weight

Client: Aspect Consulting, LLC
Project: SnoPac PO 150054, F&BI 101127
Lab ID: 101127-06 x2
Data File: 101127-06 x2.082
Instrument: ICPMS2
Operator: SP

Analyte:	Concentration mg/kg (ppm)
Copper	6.78
Zinc	21.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-I-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-07 x2
Date Analyzed:	01/12/21	Data File:	101127-07 x2.083
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.92
Copper	16.9
Lead	3.07
Zinc	20.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-I-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-08
Date Analyzed:	01/12/21	Data File:	101127-08.049
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.05
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-I-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-08 x2
Date Analyzed:	01/12/21	Data File:	101127-08 x2.086
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Copper	6.54
Zinc	20.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	I1-15 mb2
Date Analyzed:	01/12/21	Data File:	I1-15 mb2.039
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127
Date Extracted: 01/12/21
Date Analyzed: 01/12/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
B-L-1-4 101127-01	0.036
SW-L-1-8 101127-02	0.041
B-K-1-5 101127-03	0.035
SW-K-1-5 101127-04	<0.01
B-J-1-4.5 101127-05	0.12
SW-J-1-8 101127-06	<0.01
B-I-1-4.5 101127-07	0.028
SW-I-1-8 101127-08	<0.01
Method Blank i1-15 MB2	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-L-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-01
Date Analyzed:	01/12/21	Data File:	011206.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	70	38	117
2-Fluorobiphenyl	72	50	150
2,4,6-Tribromophenol	73	25	187
Terphenyl-d14	83	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0071
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0029
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-L-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-02
Date Analyzed:	01/12/21	Data File:	011207.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	70	36	114
Phenol-d6	79	47	116
Nitrobenzene-d5	87	38	117
2-Fluorobiphenyl	78	50	150
2,4,6-Tribromophenol	88	25	187
Terphenyl-d14	93	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.010
2-Methylnaphthalene	0.0075
1-Methylnaphthalene	0.011
Acenaphthylene	<0.002
Acenaphthene	0.036
Fluorene	0.018
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	0.064
Pyrene	0.11
Benz(a)anthracene	0.0084
Chrysene	0.0058
Benzo(a)pyrene	0.0048
Benzo(b)fluoranthene	0.011
Benzo(k)fluoranthene	0.0041
Indeno(1,2,3-cd)pyrene	0.0059
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0058
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-03
Date Analyzed:	01/12/21	Data File:	011208.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	69	38	117
2-Fluorobiphenyl	69	50	150
2,4,6-Tribromophenol	80	25	187
Terphenyl-d14	80	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.11
2-Methylnaphthalene	0.029
1-Methylnaphthalene	0.019
Acenaphthylene	<0.002
Acenaphthene	0.036
Fluorene	0.024
Phenanthrene	0.071
Anthracene	0.015
Fluoranthene	0.040
Pyrene	0.034
Benz(a)anthracene	0.011
Chrysene	0.015
Benzo(a)pyrene	0.014
Benzo(b)fluoranthene	0.018
Benzo(k)fluoranthene	0.0060
Indeno(1,2,3-cd)pyrene	0.0074
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0092

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-04
Date Analyzed:	01/12/21	Data File:	011207.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	32	100
Phenol-d6	67	46	107
Nitrobenzene-d5	72	24	127
2-Fluorobiphenyl	73	46	108
2,4,6-Tribromophenol	75	25	127
Terphenyl-d14	76	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-J-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-05
Date Analyzed:	01/12/21	Data File:	011210.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	32	100
Phenol-d6	69	46	107
Nitrobenzene-d5	78	24	127
2-Fluorobiphenyl	70	46	108
2,4,6-Tribromophenol	87	25	127
Terphenyl-d14	81	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.18
2-Methylnaphthalene	0.058
1-Methylnaphthalene	0.090
Acenaphthylene	0.0045
Acenaphthene	0.16
Fluorene	0.12
Phenanthrene	0.43
Anthracene	0.096
Fluoranthene	0.30
Pyrene	0.26
Benz(a)anthracene	0.11
Chrysene	0.14
Benzo(a)pyrene	0.11
Benzo(b)fluoranthene	0.13
Benzo(k)fluoranthene	0.046
Indeno(1,2,3-cd)pyrene	0.055
Dibenz(a,h)anthracene	0.014
Benzo(g,h,i)perylene	0.051

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-J-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-06
Date Analyzed:	01/12/21	Data File:	011208.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	56	32	100
Phenol-d6	61	46	107
Nitrobenzene-d5	68	24	127
2-Fluorobiphenyl	66	46	108
2,4,6-Tribromophenol	74	25	127
Terphenyl-d14	76	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-I-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-07
Date Analyzed:	01/12/21	Data File:	011209.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	65	32	100
Phenol-d6	71	46	107
Nitrobenzene-d5	82	24	127
2-Fluorobiphenyl	78	46	108
2,4,6-Tribromophenol	90	25	127
Terphenyl-d14	82	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-I-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-08
Date Analyzed:	01/12/21	Data File:	011209.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	57	36	114
Phenol-d6	65	47	116
Nitrobenzene-d5	62	38	117
2-Fluorobiphenyl	68	50	150
2,4,6-Tribromophenol	80	25	187
Terphenyl-d14	76	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	01-082 mb2
Date Analyzed:	01/12/21	Data File:	011206.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	71	32	100
Phenol-d6	77	46	107
Nitrobenzene-d5	89	24	127
2-Fluorobiphenyl	88	46	108
2,4,6-Tribromophenol	83	25	127
Terphenyl-d14	85	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-L-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-01
Date Analyzed:	01/12/21	Data File:	011210.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	30	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-L-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-02
Date Analyzed:	01/12/21	Data File:	011211.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	23	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-03
Date Analyzed:	01/12/21	Data File:	011212.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	26	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.011
Aroclor 1260	0.0098
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-K-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-04
Date Analyzed:	01/12/21	Data File:	011213.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	41	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-J-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-05
Date Analyzed:	01/12/21	Data File:	011204.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	25	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.080
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Note: A low level of Aroclor 1260 may be present in the sample but cannot be quantified due to the level of Aroclor 1254 present in the sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-J-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-06
Date Analyzed:	01/12/21	Data File:	011205.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	32	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-I-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-07
Date Analyzed:	01/12/21	Data File:	011206.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	30	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-I-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/12/21	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	101127-08
Date Analyzed:	01/12/21	Data File:	011207.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	23	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101127
Date Extracted:	01/12/21	Lab ID:	01-86 mb2
Date Analyzed:	01/12/21	Data File:	011209.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	36	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 101120-01 (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)	20	110	61-153

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 101110-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	29,000	18 b	92 b	64-133	135 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	58-147

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

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

Laboratory Code: 101101-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	5.15	144 b	82 b	75-125	55 b
Copper	mg/kg (ppm)	50	136	71 b	56 b	75-125	24 b
Lead	mg/kg (ppm)	50	125	126 b	98 b	75-125	25 b
Zinc	mg/kg (ppm)	50	182	428 b	87 b	75-125	132 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	95	80-120
Copper	mg/kg (ppm)	50	102	80-120
Lead	mg/kg (ppm)	50	101	80-120
Zinc	mg/kg (ppm)	50	100	80-120

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101101-01 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	111	113	71-125	2

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	113	68-125

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101102-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	0.056	73	76	50-150	4
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	84	83	50-150	1
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	85	84	50-150	1
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	92	91	50-150	1
Acenaphthene	mg/kg (ppm)	0.83	<0.01	86	85	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	86	88	50-150	2
Phenanthrene	mg/kg (ppm)	0.83	<0.01	89	77	50-150	14
Anthracene	mg/kg (ppm)	0.83	<0.01	91	90	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	<0.01	91	77	50-150	17
Pyrene	mg/kg (ppm)	0.83	<0.01	82	69	50-150	17
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	98	92	50-150	6
Chrysene	mg/kg (ppm)	0.83	<0.01	94	87	50-150	8
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	100	93	50-150	7
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	93	93	50-150	0
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	99	94	50-150	5
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	106	92	50-150	14
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	106	96	50-150	10
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	96	83	50-150	15
Pentachlorophenol	mg/kg (ppm)	0.83	<0.25	0 ip	0 ip	50-150	nm

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	94	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	92	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	92	70-130
Acenaphthylene	mg/kg (ppm)	0.83	103	70-130
Acenaphthene	mg/kg (ppm)	0.83	97	70-130
Fluorene	mg/kg (ppm)	0.83	99	70-130
Phenanthrene	mg/kg (ppm)	0.83	102	70-130
Anthracene	mg/kg (ppm)	0.83	103	70-130
Fluoranthene	mg/kg (ppm)	0.83	107	70-130
Pyrene	mg/kg (ppm)	0.83	100	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	105	70-130
Chrysene	mg/kg (ppm)	0.83	108	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	107	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	103	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	106	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	110	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	112	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	113	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	111	64-134

Date of Report: 01/13/21
Date Received: 01/12/21
Project: SnoPac PO 150054, F&BI 101127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101101-01 1/6 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	<0.02	<0.02	nm
Aroclor 1260	mg/kg (ppm)	0.24	0.26	8

Laboratory Code: 101101-01 ms 1/6 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	87	29-125
Aroclor 1260	mg/kg (ppm)	0.25	0.24	171 b	25-137

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	96	55-137
Aroclor 1260	mg/kg (ppm)	0.25	110	51-150

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

ME 01-12-21 VS2/ BI3

[redacted] 10/127

[redacted] Page # 1 of 1

Report To B. Green A. Griffin

Company Aspect

Address 710 2nd Ave ste 550

City, State, ZIP Seattle WA 98104

Phone 6122327343 Email bgreen; agriffin @ aspectconsulting.com

SAMPLERS (*signature*) Breeyn Green

PROJECT NAME	PO #
Sno Pal	150054

REMARKS

Project specific RLs? - [✓ Yes] / No

INVOICE TO AB

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 1/12 (pm) 1 day
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	Metals *	PCP			Notes * As, Cu, Pb, Hg, Zn
B-L-1-4	01A-B		1845	S	2						X	X	X	X			
SW-L-1-8	02		2000		2						X	X	X	X			
B-K-1-5	03		2015		2						X	X	X				
SW-K-1-5	04		2025		2						X	X	X				Label SWK-1-8
B-J-1-4.5	05		2245		2						X	X	X				
SW-J-1-8	06		2250		2						X	X	X				
B-I-1-4.5	07A-F		2300		6	X	X				X	X	X				B-I-1- Lbl 4oz ~~B-I-1-~~ VOA B-I-1-8
SW-I-1-8	08		2310		6	X	X				X	X	X				
																	JB 1/12

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Breeyn Green	Breeyn Green	Aspect	1/12/20	0125
Received by:	James Bruya	James Bruya	F&B	1/12	0320
Relinquished by:					
Received by:					

Samples received at 2 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 14, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 14, 2021 from the SnoPac 150054, F&BI 101171 project. There are 26 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data
ASP0114R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 14, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac 150054, F&BI 101171 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101171 -01	B-A-1-5
101171 -02	SW-A-1-8
101171 -03	B-B-1-5
101171 -04	SW-B-1-8
101171 -05	B-J-1-4

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-A-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-01
Date Analyzed:	01/14/21	Data File:	101171-01.035
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	7.57
Copper	17.4
Lead	2.69
Zinc	15.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-A-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-02
Date Analyzed:	01/14/21	Data File:	101171-02.036
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.11
Copper	6.45
Lead	<1
Zinc	48.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-B-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-03
Date Analyzed:	01/14/21	Data File:	101171-03.037
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.00
Copper	17.5
Lead	2.65
Zinc	20.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-B-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-04
Date Analyzed:	01/14/21	Data File:	101171-04.038
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.45
Copper	7.26
Lead	<1
Zinc	29.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-J-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-05
Date Analyzed:	01/14/21	Data File:	101171-05.041
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.24
Copper	22.8
Lead	3.22
Zinc	20.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	I1-20 mb2
Date Analyzed:	01/14/21	Data File:	I1-20 mb2.034
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171
Date Extracted: 01/14/21
Date Analyzed: 01/14/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
B-A-1-5 101171-01	0.032
SW-A-1-8 101171-02	0.016
B-B-1-5 101171-03	0.026
SW-B-1-8 101171-04	0.010
B-J-1-4 101171-05	0.033
Method Blank i1-20 MB2	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-A-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-01
Date Analyzed:	01/14/21	Data File:	011407.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	65	32	100
Phenol-d6	70	46	107
Nitrobenzene-d5	85	24	127
2-Fluorobiphenyl	79	46	108
2,4,6-Tribromophenol	96	25	127
Terphenyl-d14	86	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-A-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-02
Date Analyzed:	01/14/21	Data File:	011408.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	32	100
Phenol-d6	59	46	107
Nitrobenzene-d5	67	24	127
2-Fluorobiphenyl	65	46	108
2,4,6-Tribromophenol	90	25	127
Terphenyl-d14	82	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-B-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-03
Date Analyzed:	01/14/21	Data File:	011409.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	32	100
Phenol-d6	68	46	107
Nitrobenzene-d5	78	24	127
2-Fluorobiphenyl	75	46	108
2,4,6-Tribromophenol	97	25	127
Terphenyl-d14	84	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-B-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-04
Date Analyzed:	01/14/21	Data File:	011410.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	48	32	100
Phenol-d6	52	46	107
Nitrobenzene-d5	57	24	127
2-Fluorobiphenyl	56	46	108
2,4,6-Tribromophenol	81	25	127
Terphenyl-d14	79	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-J-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-05
Date Analyzed:	01/14/21	Data File:	011411.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	59	32	100
Phenol-d6	65	46	107
Nitrobenzene-d5	73	24	127
2-Fluorobiphenyl	72	46	108
2,4,6-Tribromophenol	89	25	127
Terphenyl-d14	79	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	01-108 mb
Date Analyzed:	01/14/21	Data File:	011406.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	75	32	100
Phenol-d6	79	46	107
Nitrobenzene-d5	93	24	127
2-Fluorobiphenyl	90	46	108
2,4,6-Tribromophenol	93	25	127
Terphenyl-d14	95	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-A-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-01
Date Analyzed:	01/14/21	Data File:	011407.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-A-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-02
Date Analyzed:	01/14/21	Data File:	011405.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	76	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-B-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-03
Date Analyzed:	01/14/21	Data File:	011408.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	71	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-B-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-04
Date Analyzed:	01/14/21	Data File:	011406.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	80	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-J-1-4	Client:	Aspect Consulting, LLC
Date Received:	01/14/21	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	101171-05
Date Analyzed:	01/14/21	Data File:	011409.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 101171
Date Extracted:	01/14/21	Lab ID:	01-102 mb2
Date Analyzed:	01/14/21	Data File:	011404.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	125	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171

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

Laboratory Code: 101136-02 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	<5	101	101	75-125	0
Copper	mg/kg (ppm)	50	<25	94	101	75-125	7
Lead	mg/kg (ppm)	50	<5	95	100	75-125	5
Zinc	mg/kg (ppm)	50	40.9	90	103	75-125	13

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	92	80-120
Copper	mg/kg (ppm)	50	102	80-120
Lead	mg/kg (ppm)	50	101	80-120
Zinc	mg/kg (ppm)	50	101	80-120

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101136-02 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	94	104	71-125	10

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	85	68-125

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101171-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.002	49 vo	54	50-150	10
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.002	54	57	50-150	5
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.002	54	57	50-150	5
Acenaphthylene	mg/kg (ppm)	0.83	<0.002	60	60	50-150	0
Acenaphthene	mg/kg (ppm)	0.83	<0.002	57	57	50-150	0
Fluorene	mg/kg (ppm)	0.83	<0.002	63	62	50-150	2
Pentachlorophenol	mg/kg (ppm)	0.83	<0.05	83	67	50-150	21 vo
Phenanthrene	mg/kg (ppm)	0.83	<0.002	66	64	50-150	3
Anthracene	mg/kg (ppm)	0.83	<0.002	65	64	50-150	2
Fluoranthene	mg/kg (ppm)	0.83	<0.002	75	73	50-150	3
Pyrene	mg/kg (ppm)	0.83	<0.002	68	65	50-150	5
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.002	75	69	50-150	8
Chrysene	mg/kg (ppm)	0.83	<0.002	75	70	50-150	7
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.002	78	73	50-150	7
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.002	80	76	50-150	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.002	78	76	50-150	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.002	69	66	50-150	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.002	69	65	50-150	6
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.002	63	59	50-150	7

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	79	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	81	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	81	70-130
Acenaphthylene	mg/kg (ppm)	0.83	91	70-130
Acenaphthene	mg/kg (ppm)	0.83	85	70-130
Fluorene	mg/kg (ppm)	0.83	88	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	114	64-134
Phenanthrene	mg/kg (ppm)	0.83	92	70-130
Anthracene	mg/kg (ppm)	0.83	90	70-130
Fluoranthene	mg/kg (ppm)	0.83	97	70-130
Pyrene	mg/kg (ppm)	0.83	90	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	94	70-130
Chrysene	mg/kg (ppm)	0.83	96	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	96	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	95	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	97	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	100	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	98	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	96	70-130

Date of Report: 01/14/21
Date Received: 01/14/21
Project: SnoPac 150054, F&BI 101171

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101148-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.83	<0.002	90	100	29-125	11
Aroclor 1260	mg/kg (ppm)	0.83	<0.002	86	101	25-137	16

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.83	101	55-137
Aroclor 1260	mg/kg (ppm)	0.83	108	51-150

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.

101171

SAMPLE CHAIN OF CUSTODY ME 01-14-21

BI3

Report To B. Greer, A. Griffin
Company Aspect
Address 710 2nd Ave Ste 550
City, State, ZIP Seattle, WA 98104
Phone 612 232 7345 Email bgreer@aspectconsulting.com agriffin@aspectconsulting.com

SAMPLERS (*signature*) Rachel C

PROJECT NAME	PO #
Sno Pac	150054
REMARKS Project specific RLs? - [✓ Yes] / No	INVOICE TO AP

Page # 1 of 1

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH ~~1/12~~ (pm) 1 day
Rush charges authorized by: 1/14 (pm)

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

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	Metals*				Notes
B-A-1-5	01	1/13/21	2100	S	1						X	X	X				*As, Cu, Pb, Hg, Zn
SW-A-1-8	02A,B	↓	2200	↓	2						X	X	X				
B-B-1-5	03		2145		1						X	X	X				
SW-B-1-8	04		2210		1						X	X	X				
B-J-1-4	05 A,B	↓	2330	↓	2						X	X	X				

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Rachel C	Rachel Cornwell	Aspect	1/14	0030
Received by: James Bruya	James Bruya	F&B	1/14	0310
Relinquished by:				
Received by:		Samples received at 3 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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www.friedmanandbruya.com

January 15, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 13, 2021 from the SnoPac PO 150054, F&BI 101148 project. There are 47 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0115R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 13, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac PO 150054, F&BI 101148 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101148 -01	B-H-1-6
101148 -02	SW-H-1-9
101148 -03	B-G-1-6
101148 -04	SW-G-1-8
101148 -05	B-F-1-5
101148 -06	SW-F-1-8
101148 -07	B-E-1-5.5
101148 -08	SW-E-1-8
101148 -09	SW-G-1-7
101148 -10	SW-D-1-8
101148 -11	B-D-1-6
101148 -12	B-C-1-6
101148 -13	SW-C-1-9

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-H-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-01
Date Analyzed:	01/13/21	Data File:	101148-01.036
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.69
Copper	27.0
Lead	3.93
Zinc	22.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-H-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-02
Date Analyzed:	01/13/21	Data File:	101148-02.037
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.17
Copper	6.77
Lead	2.42
Zinc	19.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-G-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-03
Date Analyzed:	01/13/21	Data File:	101148-03.038
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.66
Copper	18.2
Lead	3.76
Zinc	21.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-F-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-05
Date Analyzed:	01/13/21	Data File:	101148-05.041
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.33
Copper	24.7
Lead	3.57
Zinc	19.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-F-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-06
Date Analyzed:	01/13/21	Data File:	101148-06.042
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.23
Copper	20.7
Lead	1.95
Zinc	73.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-E-1-5.5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-07
Date Analyzed:	01/13/21	Data File:	101148-07.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.58
Copper	26.1
Lead	3.98
Zinc	20.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-E-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-08
Date Analyzed:	01/13/21	Data File:	101148-08.044
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.33
Copper	7.45
Lead	1.12
Zinc	17.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-G-1-7	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-09
Date Analyzed:	01/13/21	Data File:	101148-09.045
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.14
Copper	6.39
Lead	1.38
Zinc	44.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-D-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-10
Date Analyzed:	01/13/21	Data File:	101148-10.046
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.29
Copper	6.07
Lead	1.11
Zinc	14.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-D-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-11
Date Analyzed:	01/13/21	Data File:	101148-11.047
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	7.05
Copper	19.9
Lead	3.42
Zinc	27.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-C-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-12
Date Analyzed:	01/13/21	Data File:	101148-12.048
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.23
Copper	31.2
Lead	4.62
Zinc	23.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-C-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-13
Date Analyzed:	01/13/21	Data File:	101148-13.049
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.40
Copper	5.17
Lead	1.73
Zinc	21.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	I1-20 mb
Date Analyzed:	01/13/21	Data File:	I1-20 mb.034
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148
Date Extracted: 01/13/21
Date Analyzed: 01/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
B-H-1-6 101148-01	0.040
SW-H-1-9 101148-02	0.018
B-G-1-6 101148-03	0.029
B-F-1-5 101148-05	0.035
SW-F-1-8 101148-06	0.028
B-E-1-5.5 101148-07	0.046
SW-E-1-8 101148-08	0.015
SW-G-1-7 101148-09	0.010
SW-D-1-8 101148-10	<0.01
B-D-1-6 101148-11	0.035
B-C-1-6 101148-12	0.042

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148
Date Extracted: 01/13/21
Date Analyzed: 01/13/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-C-1-9 101148-13	<0.01
Method Blank i1-20 MB	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-H-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-01
Date Analyzed:	01/13/21	Data File:	011305.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	73	36	114
Phenol-d6	83	47	116
Nitrobenzene-d5	81	38	117
2-Fluorobiphenyl	87	50	150
2,4,6-Tribromophenol	85	25	187
Terphenyl-d14	87	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-H-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-02
Date Analyzed:	01/13/21	Data File:	011306.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45	36	114
Phenol-d6	51	47	116
Nitrobenzene-d5	49	38	117
2-Fluorobiphenyl	52	50	150
2,4,6-Tribromophenol	69	25	187
Terphenyl-d14	78	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-G-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-03
Date Analyzed:	01/13/21	Data File:	011304.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	69	32	100
Phenol-d6	75	46	107
Nitrobenzene-d5	97	24	127
2-Fluorobiphenyl	84	46	108
2,4,6-Tribromophenol	93	25	127
Terphenyl-d14	83	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-F-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-05
Date Analyzed:	01/13/21	Data File:	011305.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	75	32	100
Phenol-d6	80	46	107
Nitrobenzene-d5	95	24	127
2-Fluorobiphenyl	87	46	108
2,4,6-Tribromophenol	96	25	127
Terphenyl-d14	87	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-F-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-06
Date Analyzed:	01/13/21	Data File:	011306.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	32	100
Phenol-d6	66	46	107
Nitrobenzene-d5	75	24	127
2-Fluorobiphenyl	76	46	108
2,4,6-Tribromophenol	89	25	127
Terphenyl-d14	82	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0023
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	0.0032
Fluorene	0.0046
Phenanthrene	0.0088
Anthracene	0.0080
Fluoranthene	0.064
Pyrene	0.046
Benz(a)anthracene	0.024
Chrysene	0.070
Benzo(a)pyrene	0.038
Benzo(b)fluoranthene	0.050
Benzo(k)fluoranthene	0.022
Indeno(1,2,3-cd)pyrene	0.029
Dibenz(a,h)anthracene	0.0081
Benzo(g,h,i)perylene	0.025
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-E-1-5.5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-07
Date Analyzed:	01/13/21	Data File:	011307.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	50	32	100
Phenol-d6	63	46	107
Nitrobenzene-d5	72	24	127
2-Fluorobiphenyl	76	46	108
2,4,6-Tribromophenol	91	25	127
Terphenyl-d14	79	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.004
2-Methylnaphthalene	<0.004
1-Methylnaphthalene	<0.004
Acenaphthylene	<0.004
Acenaphthene	<0.004
Fluorene	<0.004
Phenanthrene	<0.004
Anthracene	<0.004
Fluoranthene	<0.004
Pyrene	<0.004
Benz(a)anthracene	<0.004
Chrysene	<0.004
Benzo(a)pyrene	<0.004
Benzo(b)fluoranthene	<0.004
Benzo(k)fluoranthene	<0.004
Indeno(1,2,3-cd)pyrene	<0.004
Dibenz(a,h)anthracene	<0.004
Benzo(g,h,i)perylene	<0.004
Pentachlorophenol	<0.1

Note: The reporting limits were raised due to high moisture content in sample.

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-E-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-08
Date Analyzed:	01/13/21	Data File:	011308.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	38	32	100
Phenol-d6	42 vo	46	107
Nitrobenzene-d5	47	24	127
2-Fluorobiphenyl	50	46	108
2,4,6-Tribromophenol	77	25	127
Terphenyl-d14	75	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-G-1-7	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-09
Date Analyzed:	01/13/21	Data File:	011309.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	40	32	100
Phenol-d6	45 vo	46	107
Nitrobenzene-d5	50	24	127
2-Fluorobiphenyl	54	46	108
2,4,6-Tribromophenol	80	25	127
Terphenyl-d14	77	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-D-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-10
Date Analyzed:	01/13/21	Data File:	011310.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	30 vo	32	100
Phenol-d6	41 vo	46	107
Nitrobenzene-d5	44	24	127
2-Fluorobiphenyl	51	46	108
2,4,6-Tribromophenol	79	25	127
Terphenyl-d14	80	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-D-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-11
Date Analyzed:	01/13/21	Data File:	011308.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	44	36	114
Phenol-d6	58	47	116
Nitrobenzene-d5	53	38	117
2-Fluorobiphenyl	65	50	150
2,4,6-Tribromophenol	77	25	187
Terphenyl-d14	76	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0057
2-Methylnaphthalene	0.0040
1-Methylnaphthalene	0.0038
Acenaphthylene	<0.002
Acenaphthene	0.0070
Fluorene	0.0060
Phenanthrene	0.055
Anthracene	0.0088
Fluoranthene	0.056
Pyrene	0.052
Benz(a)anthracene	0.019
Chrysene	0.024
Benzo(a)pyrene	0.027
Benzo(b)fluoranthene	0.027
Benzo(k)fluoranthene	0.011
Indeno(1,2,3-cd)pyrene	0.014
Dibenz(a,h)anthracene	0.0028
Benzo(g,h,i)perylene	0.013
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-C-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-12
Date Analyzed:	01/13/21	Data File:	011309.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	36	114
Phenol-d6	70	47	116
Nitrobenzene-d5	66	38	117
2-Fluorobiphenyl	77	50	150
2,4,6-Tribromophenol	88	25	187
Terphenyl-d14	90	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.004
2-Methylnaphthalene	<0.004
1-Methylnaphthalene	<0.004
Acenaphthylene	<0.004
Acenaphthene	<0.004
Fluorene	<0.004
Phenanthrene	<0.004
Anthracene	<0.004
Fluoranthene	<0.004
Pyrene	<0.004
Benz(a)anthracene	<0.004
Chrysene	<0.004
Benzo(a)pyrene	<0.004
Benzo(b)fluoranthene	<0.004
Benzo(k)fluoranthene	<0.004
Indeno(1,2,3-cd)pyrene	<0.004
Dibenz(a,h)anthracene	<0.004
Benzo(g,h,i)perylene	<0.004
Pentachlorophenol	<0.1

Note: The reporting limits were raised due to high moisture content in sample.

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-C-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-13
Date Analyzed:	01/13/21	Data File:	011307.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	44	36	114
Phenol-d6	58	47	116
Nitrobenzene-d5	54	38	117
2-Fluorobiphenyl	64	50	150
2,4,6-Tribromophenol	80	25	187
Terphenyl-d14	88	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	0.0021
Pyrene	<0.002
Benz(a)anthracene	0.0021
Chrysene	0.0025
Benzo(a)pyrene	0.0036
Benzo(b)fluoranthene	0.0058
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	0.0025
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0024
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	01-101 mb2
Date Analyzed:	01/13/21	Data File:	011304.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	74	36	114
Phenol-d6	88	47	116
Nitrobenzene-d5	90	38	117
2-Fluorobiphenyl	89	50	150
2,4,6-Tribromophenol	88	25	187
Terphenyl-d14	97	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-H-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-01
Date Analyzed:	01/13/21	Data File:	011308.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	80	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-H-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-02
Date Analyzed:	01/13/21	Data File:	011309.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-G-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-03
Date Analyzed:	01/13/21	Data File:	011310.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	93	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-F-1-5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-05
Date Analyzed:	01/13/21	Data File:	011311.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	91	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-F-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-06
Date Analyzed:	01/13/21	Data File:	011312.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	85	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-E-1-5.5	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-07
Date Analyzed:	01/13/21	Data File:	011315.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	74	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	<0.004
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Note: The reporting limits were raised due to high moisture content in sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-E-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-08
Date Analyzed:	01/13/21	Data File:	011316.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	68	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-G-1-7	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-09
Date Analyzed:	01/13/21	Data File:	011317.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	58	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-D-1-8	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-10
Date Analyzed:	01/13/21	Data File:	011313.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	86	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-D-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-11
Date Analyzed:	01/13/21	Data File:	011314.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	93	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-C-1-6	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-12
Date Analyzed:	01/13/21	Data File:	011318.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.004
Aroclor 1232	<0.004
Aroclor 1016	<0.004
Aroclor 1242	<0.004
Aroclor 1248	<0.004
Aroclor 1254	<0.004
Aroclor 1260	<0.004
Aroclor 1262	<0.004
Aroclor 1268	<0.004

Note: The reporting limits were raised due to high moisture content in sample.

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-C-1-9	Client:	Aspect Consulting, LLC
Date Received:	01/13/21	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	101148-13
Date Analyzed:	01/13/21	Data File:	011319.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	74	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101148
Date Extracted:	01/13/21	Lab ID:	01-102 mb
Date Analyzed:	01/13/21	Data File:	011306.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	94	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148

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

Laboratory Code: 101136-02 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	<5	101	101	75-125	0
Copper	mg/kg (ppm)	50	<25	94	101	75-125	7
Lead	mg/kg (ppm)	50	<5	95	100	75-125	5
Zinc	mg/kg (ppm)	50	40.9	90	103	75-125	13

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	92	80-120
Copper	mg/kg (ppm)	50	102	80-120
Lead	mg/kg (ppm)	50	101	80-120
Zinc	mg/kg (ppm)	50	101	80-120

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101136-02 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	94	104	71-125	10

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	85	68-125

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101142-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	0.013	79	76	10-188	4
2-Methylnaphthalene	mg/kg (ppm)	0.83	0.0080	85	82	50-150	4
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	85	82	43-132	4
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	89	86	50-150	3
Acenaphthene	mg/kg (ppm)	0.83	0.017	85	80	50-150	6
Fluorene	mg/kg (ppm)	0.83	0.015	89	83	46-140	7
Pentachlorophenol	mg/kg (ppm)	0.83	<0.25	13 vo	0 vo	32-151	nm
Phenanthrene	mg/kg (ppm)	0.83	0.15	85	75	15-244	12
Anthracene	mg/kg (ppm)	0.83	0.027	90	82	33-146	9
Fluoranthene	mg/kg (ppm)	0.83	0.15	98	78	19-162	23 vo
Pyrene	mg/kg (ppm)	0.83	0.16	92	84	10-238	9
Benz(a)anthracene	mg/kg (ppm)	0.83	0.069	95	91	50-150	4
Chrysene	mg/kg (ppm)	0.83	0.081	91	85	50-150	7
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.096	106	102	48-134	4
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.091	104	105	38-158	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	0.038	104	101	41-151	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.052	96	93	19-144	3
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	0.011	92	93	21-140	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	0.053	84	82	7-144	2

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	84	60-105
2-Methylnaphthalene	mg/kg (ppm)	0.83	91	64-107
1-Methylnaphthalene	mg/kg (ppm)	0.83	92	64-105
Acenaphthylene	mg/kg (ppm)	0.83	94	70-130
Acenaphthene	mg/kg (ppm)	0.83	88	70-130
Fluorene	mg/kg (ppm)	0.83	96	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	96	61-136
Phenanthrene	mg/kg (ppm)	0.83	90	70-130
Anthracene	mg/kg (ppm)	0.83	94	70-130
Fluoranthene	mg/kg (ppm)	0.83	101	70-130
Pyrene	mg/kg (ppm)	0.83	91	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	96	70-130
Chrysene	mg/kg (ppm)	0.83	97	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	108	64-112
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	109	61-118
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	111	61-116
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	96	52-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	93	54-125
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	85	47-128

Date of Report: 01/15/21
Date Received: 01/13/21
Project: SnoPac PO 150054, F&BI 101148

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101148-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.83	<0.002	90	100	29-125	11
Aroclor 1260	mg/kg (ppm)	0.83	<0.002	86	101	25-137	16

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.83	101	55-137
Aroclor 1260	mg/kg (ppm)	0.83	108	51-150

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.

101198

SAMPLE CHAIN OF CUSTODY

01-13-21

Page # 1 of 2 BI3

Report To B. Greer, A. Griffin
Company Aspect
Address 701 2nd Ave Ste 550
City, State, ZIP Seattle WA 98104
Phone 6012252 7343 Email bgreer; agriffin@aspectconsulting.com

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME Snopac

PO # 150054

REMARKS

INVOICE TO

Project specific RLs? - [✓ Yes] / No

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 1-day
Rush charges authorized by: Bang

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	Metals *				Notes *As, Cu, Pb, Hg, Zn
B-H-1-6	01 A-B	1/12/21	1950	S	2						X	X	X				
SW-H-1-9	02		2000		2						X	X	X				
BG-1-6	03		2010		2						X	X	X				
SW-G-1-8	04		2030		2						BG	–					HOLD
B-F-1-5	05		2045		1						X	X	X				
SW-F-1-8	06		2150		1						X	X	X				
B-E-1-5.5	07		2130		1						X	X	X				Time on label 2135 JB 1/13
SW-E-1-8	08		2220		1						X	X	X				
SW-G-1-7	09		2040		1						X	X	X				
SW-D-1-8	10		2330		1						X	X	X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	1/13/21	0130
Received by: James Bruya	James Bruya	F&B	1/13	0310
Relinquished by:				
Received by:				

~~Samples received at~~ 2 °C

101148

SAMPLE CHAIN OF CUSTODY

01-13-21

BI3

Page # 2 of 2

Report To B. Green A. Griffin

Company

Address

City, State, ZIP

Phone 6122327343 Email

SAMPLERS (signature)

PROJECT NAME Sno Pac

PO # 150054

REMARKS

INVOICE TO AP

Project specific RLs? - [✓ Yes] / No

TURNAROUND TIME
☐ Standard turnaround
☑ RUSH 1-day
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	Metals *				Notes * As, Cu, Pb, Hg, Zn
B-D-1-6	11	1/12/21	2320	S	1						X	X	X				
B-C-1-6	12	1/13/21	0030	S	1						X	X	X				
SW-C-1-9	13	1/13/21	0040	S	1						X	X	X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Breeyn Green	Aspect	1/13/21	8130
Received by:	James Bruya	F&B	1/13	0810
Relinquished by:				
Received by:		Samples received at 2 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 18, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 15, 2021 from the SnoPac PO 150054, F&BI 101207 project. There are 32 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data
ASP0118R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 15, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac PO 150054, F&BI 101207 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101207 -01	SW-C-5-12
101207 -02	SW-D-3-12
101207 -03	B-K-1-4.5
101207 -04	SW-E-2-12
101207 -05	SW-J-3-13
101207 -06	SW-K-3-13
101207 -07	SW-L-3-14

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-C-5-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-01
Date Analyzed:	01/18/21	Data File:	101207-01.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.86
Copper	7.81
Lead	5.41
Zinc	20.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-D-3-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-02
Date Analyzed:	01/18/21	Data File:	101207-02.050
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.02
Copper	6.96
Lead	2.14
Zinc	16.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-K-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-03
Date Analyzed:	01/18/21	Data File:	101207-03.051
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	10.1
Lead	3.85

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-K-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-03 x2
Date Analyzed:	01/18/21	Data File:	101207-03 x2.056
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Copper	19.7
Zinc	23.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-E-2-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-04
Date Analyzed:	01/18/21	Data File:	101207-04.052
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.88

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-J-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-05
Date Analyzed:	01/18/21	Data File:	101207-05.053
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.45
Copper	8.16
Lead	1.64
Zinc	17.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-K-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-06
Date Analyzed:	01/18/21	Data File:	101207-06.054
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.02
Copper	7.06
Lead	2.46
Zinc	27.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-L-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-07
Date Analyzed:	01/18/21	Data File:	101207-07.055
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	108
Lead	73.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-L-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-07 x5
Date Analyzed:	01/18/21	Data File:	101207-07 x5.057
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Copper	108
Zinc	367

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	I1-27 mb
Date Analyzed:	01/18/21	Data File:	I1-27 mb.041
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207
Date Extracted: 01/18/21
Date Analyzed: 01/18/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-C-5-12 101207-01	0.019
SW-D-3-12 101207-02	0.015
B-K-1-4.5 101207-03	0.036
SW-J-3-13 101207-05	0.088
SW-K-3-13 101207-06	0.017
SW-L-3-14 101207-07	0.039
Method Blank	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-C-5-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-01
Date Analyzed:	01/18/21	Data File:	011807.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	32	100
Phenol-d6	67	46	107
Nitrobenzene-d5	76	24	127
2-Fluorobiphenyl	77	46	108
2,4,6-Tribromophenol	82	25	127
Terphenyl-d14	87	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0042
Anthracene	<0.002
Fluoranthene	0.0063
Pyrene	0.0056
Benz(a)anthracene	0.0031
Chrysene	0.0040
Benzo(a)pyrene	0.0040
Benzo(b)fluoranthene	0.0059
Benzo(k)fluoranthene	0.0022
Indeno(1,2,3-cd)pyrene	0.0036
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0037
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-D-3-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-02
Date Analyzed:	01/18/21	Data File:	011808.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	32	100
Phenol-d6	59	46	107
Nitrobenzene-d5	65	24	127
2-Fluorobiphenyl	67	46	108
2,4,6-Tribromophenol	84	25	127
Terphenyl-d14	79	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	0.0029
Pyrene	0.0026
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	0.0021
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-K-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-03
Date Analyzed:	01/18/21	Data File:	011806.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	36	114
Phenol-d6	69	47	116
Nitrobenzene-d5	65	38	117
2-Fluorobiphenyl	72	50	150
2,4,6-Tribromophenol	82	25	187
Terphenyl-d14	86	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0021
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-J-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-05
Date Analyzed:	01/18/21	Data File:	011807.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	46	36	114
Phenol-d6	56	47	116
Nitrobenzene-d5	55	38	117
2-Fluorobiphenyl	71	50	150
2,4,6-Tribromophenol	87	25	187
Terphenyl-d14	89	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0029
Anthracene	<0.002
Fluoranthene	0.0043
Pyrene	0.0042
Benz(a)anthracene	0.0022
Chrysene	0.0030
Benzo(a)pyrene	0.0025
Benzo(b)fluoranthene	0.0032
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-K-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-06
Date Analyzed:	01/18/21	Data File:	011808.D
Matrix:	Soil	Instrument:	GCMS8
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	63	36	114
Phenol-d6	71	47	116
Nitrobenzene-d5	68	38	117
2-Fluorobiphenyl	77	50	150
2,4,6-Tribromophenol	91	25	187
Terphenyl-d14	88	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	0.0024
1-Methylnaphthalene	0.0021
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	0.0037
Anthracene	<0.002
Fluoranthene	0.0029
Pyrene	0.0030
Benz(a)anthracene	<0.002
Chrysene	0.0025
Benzo(a)pyrene	0.0029
Benzo(b)fluoranthene	0.0036
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	0.0022
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	0.0023
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-L-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-07
Date Analyzed:	01/18/21	Data File:	011809.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	50	32	100
Phenol-d6	60	46	107
Nitrobenzene-d5	65	24	127
2-Fluorobiphenyl	74	46	108
2,4,6-Tribromophenol	95	25	127
Terphenyl-d14	92	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.0083
2-Methylnaphthalene	0.0091
1-Methylnaphthalene	0.0072
Acenaphthylene	<0.002
Acenaphthene	0.0037
Fluorene	0.0036
Phenanthrene	0.042
Anthracene	0.010
Fluoranthene	0.073
Pyrene	0.078
Benz(a)anthracene	0.040
Chrysene	0.048
Benzo(a)pyrene	0.053
Benzo(b)fluoranthene	0.065
Benzo(k)fluoranthene	0.022
Indeno(1,2,3-cd)pyrene	0.028
Dibenz(a,h)anthracene	0.0063
Benzo(g,h,i)perylene	0.024
Pentachlorophenol	0.072

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	01-117 mb
Date Analyzed:	01/18/21	Data File:	011806.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	71	32	100
Phenol-d6	75	46	107
Nitrobenzene-d5	87	24	127
2-Fluorobiphenyl	87	46	108
2,4,6-Tribromophenol	92	25	127
Terphenyl-d14	93	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002
Pentachlorophenol	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-C-5-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-01
Date Analyzed:	01/18/21	Data File:	011808.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.0023
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-D-3-12	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-02
Date Analyzed:	01/18/21	Data File:	011806.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-K-1-4.5	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-03
Date Analyzed:	01/18/21	Data File:	011805.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	80	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-J-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-05
Date Analyzed:	01/18/21	Data File:	011806.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	72	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-K-3-13	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-06
Date Analyzed:	01/18/21	Data File:	011807.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	78	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-L-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/15/21	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	101207-07
Date Analyzed:	01/18/21	Data File:	011807.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	0.013
Aroclor 1260	0.025
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101207
Date Extracted:	01/18/21	Lab ID:	01-118 mb
Date Analyzed:	01/18/21	Data File:	011804.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	82	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207

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

Laboratory Code: 101207-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	1.75	98	94	75-125	4
Copper	mg/kg (ppm)	50	7.34	94	88	75-125	7
Lead	mg/kg (ppm)	50	5.08	91	87	75-125	4
Zinc	mg/kg (ppm)	50	18.9	94	84	75-125	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	94	80-120
Copper	mg/kg (ppm)	50	98	80-120
Lead	mg/kg (ppm)	50	96	80-120
Zinc	mg/kg (ppm)	50	100	80-120

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101207-01 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	98	94	71-125	4

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	102	68-125

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101207-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.002	58	61	50-150	5
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.002	67	68	50-150	1
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.002	67	69	50-150	3
Acenaphthylene	mg/kg (ppm)	0.83	<0.002	74	77	50-150	4
Acenaphthene	mg/kg (ppm)	0.83	<0.002	71	73	50-150	3
Fluorene	mg/kg (ppm)	0.83	<0.002	78	81	50-150	4
Pentachlorophenol	mg/kg (ppm)	0.83	<0.05	92	88	50-150	4
Phenanthrene	mg/kg (ppm)	0.83	0.0040	80	85	50-150	6
Anthracene	mg/kg (ppm)	0.83	<0.002	78	82	50-150	5
Fluoranthene	mg/kg (ppm)	0.83	0.0059	89	96	50-150	8
Pyrene	mg/kg (ppm)	0.83	0.0053	80	86	50-150	7
Benz(a)anthracene	mg/kg (ppm)	0.83	0.0029	87	91	50-150	4
Chrysene	mg/kg (ppm)	0.83	0.0038	86	90	50-150	5
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.0037	90	95	50-150	5
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.0056	92	93	50-150	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	0.0021	87	94	50-150	8
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.0034	82	82	50-150	0
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.002	81	84	50-150	4
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	0.0035	69	72	50-150	4

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	81	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	86	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	87	70-130
Acenaphthylene	mg/kg (ppm)	0.83	91	70-130
Acenaphthene	mg/kg (ppm)	0.83	86	70-130
Fluorene	mg/kg (ppm)	0.83	92	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	113	64-134
Phenanthrene	mg/kg (ppm)	0.83	93	70-130
Anthracene	mg/kg (ppm)	0.83	92	70-130
Fluoranthene	mg/kg (ppm)	0.83	101	70-130
Pyrene	mg/kg (ppm)	0.83	94	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	98	70-130
Chrysene	mg/kg (ppm)	0.83	99	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	98	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	94	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	95	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	112	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	111	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	109	70-130

Date of Report: 01/18/21
Date Received: 01/15/21
Project: SnoPac PO 150054, F&BI 101207

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101207-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.83	<0.002	87	84	29-125	4
Aroclor 1260	mg/kg (ppm)	0.83	<0.002	89	90	25-137	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.83	97	55-137
Aroclor 1260	mg/kg (ppm)	0.83	106	51-150

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.

101207

SAMPLE CHAIN OF CUSTODY ME 01-15-21

BI1

Report To B. Greer, A. Griffin
Company Aspect Consulting
Address 710 2nd Ave, Ste 550
City, State, ZIP Seattle, WA 98104
Phone 6122327343 Email bgreer@aspectconsulting.com agriffin@aspectconsulting.com

SAMPLERS (*signature*) Rachel C

PROJECT NAME Sno Pac

PO # 150054

REMARKS

INVOICE TO AP

Project specific RLs? - [✓ Yes] / No

Page # 1 of 1

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 1day- 1/18 (pm)
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED											Notes
						NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Metals*	RAE ~~Only~~ As.			*As, Cu, Pb, Hg, Zn
SW-C-5-12	01	1/15/21	1120	S	1						X	X	X				
SW-D-3-12	02		1130								X	X	X				
B-K-1-4.5	03		1230								X	X	X				
SW-E-2-12	04		1300											X			Arsenic only
SW-J-3-13	05		1700								X	X	X				
SW-K-3-13	06		1705								X	X	X				
SW-L-3-14	07	↓	1710	↓	↓						X	X	X				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Rachel C	Rachel Cornwell	Aspect	1/15/21	1830
Received by:	Eric Young	F&B	1/15/21	1830
Relinquished by:				
Received by:				

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 22, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 21, 2021 from the SnoPac PO 150054, F&BI 101285 project. There are 15 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 21, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac PO 150054, F&BI 101285 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101285 -01	SW-AA-1-12.5
101285 -02	SW-AA-2-12.5
101285 -03	SW-M-4-13

The 6020 lead sample and duplicate relative percent difference was outside of control limits. The data were qualified accordingly.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-AA-1-12.5	Client:	Aspect Consulting, LLC
Date Received:	01/21/21	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	101285-01
Date Analyzed:	01/21/21	Data File:	101285-01.101
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.08
Copper	5.88
Lead	<1
Zinc	12.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-AA-2-12.5	Client:	Aspect Consulting, LLC
Date Received:	01/21/21	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	101285-02
Date Analyzed:	01/21/21	Data File:	101285-02.102
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.14

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	I1-40 mb
Date Analyzed:	01/21/21	Data File:	I1-40 mb.099
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285
Date Extracted: 01/21/21
Date Analyzed: 01/21/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-AA-1-12.5 101285-01	<0.01
Method Blank i1-40 MB	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-AA-1-12.5	Client:	Aspect Consulting, LLC
Date Received:	01/21/21	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	101285-01
Date Analyzed:	01/22/21	Data File:	012142.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	54	32	100
Phenol-d6	66	46	107
Nitrobenzene-d5	61	24	127
2-Fluorobiphenyl	72	46	108
2,4,6-Tribromophenol	85	25	127
Terphenyl-d14	92	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	01-188 mb2
Date Analyzed:	01/22/21	Data File:	012152.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	74	32	100
Phenol-d6	83	46	107
Nitrobenzene-d5	76	24	127
2-Fluorobiphenyl	85	46	108
2,4,6-Tribromophenol	89	25	127
Terphenyl-d14	93	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-AA-1-12.5	Client:	Aspect Consulting, LLC
Date Received:	01/21/21	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	101285-01
Date Analyzed:	01/22/21	Data File:	012206.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	55	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101285
Date Extracted:	01/21/21	Lab ID:	01-190 mb
Date Analyzed:	01/22/21	Data File:	012204.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	85	23	120

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285

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

Laboratory Code: 101236-40 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	3.08	88	89	75-125	1
Copper	mg/kg (ppm)	50	21.9	60 b	69 b	75-125	14 b
Lead	mg/kg (ppm)	50	7.42	91	161 vo	75-125	56 vo
Zinc	mg/kg (ppm)	50	32.4	95	111	75-125	16

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	89	80-120
Copper	mg/kg (ppm)	50	99	80-120
Lead	mg/kg (ppm)	50	98	80-120
Zinc	mg/kg (ppm)	50	97	80-120

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101236-40 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	108	106	71-125	2

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	100	68-125

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101203-66 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.01	75	74	50-150	1
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	83	82	50-150	1
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	79	78	50-150	1
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	86	83	50-150	4
Acenaphthene	mg/kg (ppm)	0.83	<0.01	80	79	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	87	86	50-150	1
Phenanthrene	mg/kg (ppm)	0.83	<0.01	83	82	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	<0.01	96	96	50-150	0
Pyrene	mg/kg (ppm)	0.83	<0.01	79	82	50-150	4
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	85	86	50-150	1
Chrysene	mg/kg (ppm)	0.83	<0.01	84	84	50-150	0
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	92	93	50-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	86	89	50-150	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	82	77	50-150	6
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	80	74	50-150	8
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	73	70	50-150	4

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	83	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	88	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	85	70-130
Acenaphthylene	mg/kg (ppm)	0.83	93	70-130
Acenaphthene	mg/kg (ppm)	0.83	88	70-130
Fluorene	mg/kg (ppm)	0.83	91	70-130
Phenanthrene	mg/kg (ppm)	0.83	91	70-130
Anthracene	mg/kg (ppm)	0.83	93	70-130
Fluoranthene	mg/kg (ppm)	0.83	101	70-130
Pyrene	mg/kg (ppm)	0.83	93	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	95	70-130
Chrysene	mg/kg (ppm)	0.83	94	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	99	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	94	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	90	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	103	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	100	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	99	70-130

Date of Report: 01/22/21
Date Received: 01/21/21
Project: SnoPac PO 150054, F&BI 101285

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101285-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.083	<0.002	89	76	44-107	16
Aroclor 1260	mg/kg (ppm)	0.083	<0.002	98	86	38-124	13

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.083	88	47-158
Aroclor 1260	mg/kg (ppm)	0.083	99	69-147

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.

101285

SAMPLE CHAIN OF CUSTODY

01-21-21

B12

Report To B. Greer, A. Griffin

Company Aspect

Address 710 2nd Ave, Ste 550

City, State, ZIP Seattle, WA 98104

Phone 612232 7343 Email bgreer@aspectconsulting.com agriffin@aspectconsulting.com

SAMPLERS (*signature*) Rachel

PROJECT NAME	PO #
Snopac	150054
REMARKS	INVOICE TO
Project specific RLs? - [✓ Yes] / No	AP

Page # 1 of 1

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 1day 24hr TAT
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	Metals*	Arsenic			Notes * As, Cu, Pb, Hg, Zn
SW-AA-1-12.5 RAC ~~SW-A-A-1-12.5~~	01	1/21/21	0845	S	1						X	X	X				
SW-AA-2-12.5	02	↓	0900	↓	↓									X			As only
SW-M-4-13	03	↓	1130	↓	↓						~~X~~	~~X~~	~~X~~				HOLD per BC 1/21

Samples received at 6 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Rachel	Rachel Cornwell	Aspect	1/21/21	1135
Received by:		Ann W-Bruya	F&B	1/21/21	1135
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 26, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on January 22, 2021 from the SnoPac PO 150054, F&BI 101319 project. There are 19 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0126R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 22, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac PO 150054, F&BI 101319 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
101319 -01	SW-L-4-13
101319 -02	SW-M-3-14
101319 -03	SW-N-5-13

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-L-4-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/25/21	Lab ID:	101319-01
Date Analyzed:	01/25/21	Data File:	101319-01.039
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.60
Copper	6.36
Lead	1.16
Zinc	65.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-M-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/25/21	Lab ID:	101319-02
Date Analyzed:	01/25/21	Data File:	101319-02.040
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.29
Copper	7.13
Lead	1.98
Zinc	14.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	SW-N-5-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/25/21	Lab ID:	101319-03
Date Analyzed:	01/25/21	Data File:	101319-03.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.69
Copper	6.51
Lead	1.63
Zinc	15.7

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/25/21	Lab ID:	I1-44 mb
Date Analyzed:	01/25/21	Data File:	I1-44 mb.036
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Copper	<5
Lead	<1
Zinc	<5

Date of Report: 01/26/21
Date Received: 01/22/21
Project: SnoPac PO 150054, F&BI 101319
Date Extracted: 01/25/21
Date Analyzed: 01/25/21

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Total Mercury
SW-L-4-13 101319-01	<0.01
SW-M-3-14 101319-02	<0.01
SW-N-5-13 101319-03	<0.01
Method Blank	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-L-4-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-01
Date Analyzed:	01/22/21	Data File:	012211.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	73	32	100
Phenol-d6	79	46	107
Nitrobenzene-d5	87	24	127
2-Fluorobiphenyl	79	46	108
2,4,6-Tribromophenol	81	25	127
Terphenyl-d14	82	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-M-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-02
Date Analyzed:	01/22/21	Data File:	012212.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	66	32	100
Phenol-d6	74	46	107
Nitrobenzene-d5	68	24	127
2-Fluorobiphenyl	75	46	108
2,4,6-Tribromophenol	85	25	127
Terphenyl-d14	79	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SW-N-5-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-03
Date Analyzed:	01/22/21	Data File:	012213.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	70	32	100
Phenol-d6	76	46	107
Nitrobenzene-d5	80	24	127
2-Fluorobiphenyl	77	46	108
2,4,6-Tribromophenol	88	25	127
Terphenyl-d14	85	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	01-188 mb3
Date Analyzed:	01/22/21	Data File:	012209.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	67	32	100
Phenol-d6	73	46	107
Nitrobenzene-d5	76	24	127
2-Fluorobiphenyl	70	46	108
2,4,6-Tribromophenol	75	25	127
Terphenyl-d14	78	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.002
2-Methylnaphthalene	<0.002
1-Methylnaphthalene	<0.002
Acenaphthylene	<0.002
Acenaphthene	<0.002
Fluorene	<0.002
Phenanthrene	<0.002
Anthracene	<0.002
Fluoranthene	<0.002
Pyrene	<0.002
Benz(a)anthracene	<0.002
Chrysene	<0.002
Benzo(a)pyrene	<0.002
Benzo(b)fluoranthene	<0.002
Benzo(k)fluoranthene	<0.002
Indeno(1,2,3-cd)pyrene	<0.002
Dibenz(a,h)anthracene	<0.002
Benzo(g,h,i)perylene	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-L-4-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-01
Date Analyzed:	01/25/21	Data File:	012505.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	70	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-M-3-14	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-02
Date Analyzed:	01/25/21	Data File:	012506.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	70	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SW-N-5-13	Client:	Aspect Consulting, LLC
Date Received:	01/22/21	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	101319-03
Date Analyzed:	01/25/21	Data File:	012507.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	65	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac PO 150054, F&BI 101319
Date Extracted:	01/22/21	Lab ID:	01-190 mb2
Date Analyzed:	01/25/21	Data File:	012504.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 01/26/21
Date Received: 01/22/21
Project: SnoPac PO 150054, F&BI 101319

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 101294-02 1/20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	5	<2	83	88	71-125	6

Laboratory Code: Laboratory Control Sample 1/20

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	5	85	68-125

Date of Report: 01/26/21
Date Received: 01/22/21
Project: SnoPac PO 150054, F&BI 101319

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

Laboratory Code: 101294-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	<1	85	80	75-125	6
Copper	mg/kg (ppm)	50	9.00	88	81	75-125	8
Lead	mg/kg (ppm)	50	4.03	92	87	75-125	6
Zinc	mg/kg (ppm)	50	23.2	92	83	75-125	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	90	80-120
Copper	mg/kg (ppm)	50	103	80-120
Lead	mg/kg (ppm)	50	96	80-120
Zinc	mg/kg (ppm)	50	100	80-120

Date of Report: 01/26/21
Date Received: 01/22/21
Project: SnoPac PO 150054, F&BI 101319

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 101203-66 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.01	75	74	50-150	1
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	83	82	50-150	1
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	79	78	50-150	1
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	86	83	50-150	4
Acenaphthene	mg/kg (ppm)	0.83	<0.01	80	79	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	87	86	50-150	1
Pentachlorophenol	mg/kg (ppm)	0.83	<0.25	93	93	50-150	0
Phenanthrene	mg/kg (ppm)	0.83	<0.01	83	82	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	<0.01	96	96	50-150	0
Pyrene	mg/kg (ppm)	0.83	<0.01	79	82	50-150	4
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	85	86	50-150	1
Chrysene	mg/kg (ppm)	0.83	<0.01	84	84	50-150	0
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	92	93	50-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	86	89	50-150	3
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	82	77	50-150	6
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	80	74	50-150	8
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	73	70	50-150	4

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	83	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	88	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	85	70-130
Acenaphthylene	mg/kg (ppm)	0.83	93	70-130
Acenaphthene	mg/kg (ppm)	0.83	88	70-130
Fluorene	mg/kg (ppm)	0.83	91	70-130
Pentachlorophenol	mg/kg (ppm)	0.83	94	64-134
Phenanthrene	mg/kg (ppm)	0.83	91	70-130
Anthracene	mg/kg (ppm)	0.83	93	70-130
Fluoranthene	mg/kg (ppm)	0.83	101	70-130
Pyrene	mg/kg (ppm)	0.83	93	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	95	70-130
Chrysene	mg/kg (ppm)	0.83	94	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	99	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	94	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	90	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	103	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	100	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	99	70-130

Date of Report: 01/26/21
Date Received: 01/22/21
Project: SnoPac PO 150054, F&BI 101319

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 101285-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.083	<0.002	89	76	44-107	16
Aroclor 1260	mg/kg (ppm)	0.083	<0.002	98	86	38-124	13

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.083	88	47-158
Aroclor 1260	mg/kg (ppm)	0.083	99	69-147

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.

101319

SAMPLE CHAIN OF CUSTODY

01-22-21

BI2

Report To B. Greer; A. Griffin
Company Aspect
Address 710 2nd Ave, Ste 550
City, State, ZIP Seattle, WA 98104
Phone 6122321343 Email bgreer@aspectconsulting.com
agriffin@aspectconsulting.com

SAMPLERS (*signature*) Rachel C

PROJECT NAME SnoPac	PO # 150054
REMARKS	INVOICE TO AP

Project specific RLs? - [✓ Yes] / No

Page # 1 of 1

TURNAROUND TIME
☐ Standard turnaround
☒ RUSH 1 day, 1/25
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

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	Metals*				Notes
SW-L-4-13	01	1/22/21	1245	S	1						X	X	X				*As, Cu Pb, Hg, Zn
SW-M-3-14	02	↓	1255	↓	↓						X	X	X				
SW-N-5-13	03	↓	1310	↓	↓						X	X	X				

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Rachel C	Rachel Cornwell	Aspect	1/22/21	1420
Received by: Ann W Bruya	Ann W Bruya	FB	1/22/21	1420
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

eurofins | Environment Testing America

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ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-104116-1
Client Project/Site: 106490

For:
Friedman & Bruya
3012 16TH AVENUE WEST
Seattle, Washington 98119-2029

Attn: Michael Erdahl

Authorized for release by:
7/14/2021 3:04:25 PM

Nathan Lewis, Project Manager I
(253)922-2310
Nathan.Lewis@Eurofinset.com

Table of Contents

Case Narrative

Job ID: 580-104116-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-104116-1

Comments
No additional comments.

Receipt
The samples were received on 6/29/2021 1:55 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

GC/MS Semi VOA
Method Organotins: Surrogate recovery for the following sample was outside the upper control limit: MW16-062521 (580-104116-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client Sample ID: MW15-062521
Date Collected: 06/25/21 07:55
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-1
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/06/21 22:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*76*		*10 - 142*	*06/30/21 12:04*	*07/06/21 22:45*	*1*

Client Sample ID: MW16-062521
Date Collected: 06/25/21 08:00
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-2
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/06/21 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*151*	*S1+*	*10 - 142*	*06/30/21 12:04*	*07/06/21 23:11*	*1*

Client Sample ID: MW13-062521

Date Collected: 06/25/21 10:05
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-3
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.33		ug/L		06/30/21 12:04	07/06/21 23:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*84*		*10 - 142*	*06/30/21 12:04*	*07/06/21 23:37*	*1*

Client Sample ID: MW14-062521
Date Collected: 06/25/21 10:09
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-4
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.34		ug/L		06/30/21 12:04	07/07/21 00:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*35*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:03*	*1*

Client Sample Results

Client Sample ID: MW17-062521
Lab Sample ID: 580-104116-5
Date Collected: 06/25/21 11:47
Matrix: Water
Date Received: 06/29/21 13:55

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 00:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*38*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:30*	*1*

Client Sample Results

Client Sample ID: MW-8-062521

Lab Sample ID: 580-104116-6

Date Collected: 06/25/21 12:00

Matrix: Water

Date Received: 06/29/21 13:55

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.34		ug/L		06/30/21 12:04	07/07/21 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*36*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:56*	*1*

Client Sample Results

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Client Sample ID: MW-160-062521

Date Collected: 06/25/21 13:30
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-7
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*95*		*10 - 142*	*06/30/21 12:04*	*07/07/21 01:22*	*1*

QC Sample Results

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-360666/1-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.30		ug/L		06/30/21 12:04	07/06/21 21:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*103*		*10 - 142*	*06/30/21 12:04*	*07/06/21 21:26*	*1*

Lab Sample ID: LCS 580-360666/2-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360666

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tributyltin			1.79	0.295	J	ug/L		16	11 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*111*		*10 - 142*

Lab Sample ID: LCSD 580-360666/3-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 360666

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin			1.79	0.348		ug/L		19	11 - 150	16	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*140*		*10 - 142*

Lab Chronicle

Client Sample ID: MW15-062521

Lab Sample ID: 580-104116-1

Date Collected: 06/25/21 07:55
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 22:45	TL1	FGS SEA

Client Sample ID: MW16-062521

Lab Sample ID: 580-104116-2

Date Collected: 06/25/21 08:00
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 23:11	TL1	FGS SEA

Client Sample ID: MW13-062521

Lab Sample ID: 580-104116-3

Date Collected: 06/25/21 10:05
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 23:37	TL1	FGS SEA

Client Sample ID: MW14-062521

Lab Sample ID: 580-104116-4

Date Collected: 06/25/21 10:09
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:03	TL1	FGS SEA

Client Sample ID: MW17-062521

Lab Sample ID: 580-104116-5

Date Collected: 06/25/21 11:47
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:30	TL1	FGS SEA

Client Sample ID: MW-8-062521

Lab Sample ID: 580-104116-6

Date Collected: 06/25/21 12:00
Date Received: 06/29/21 13:55
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:56	TL1	FGS SEA

Client Sample ID: MW-160-062521
Date Collected: 06/25/21 13:30
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 01:22	TL1	FGS SEA

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Friedman & Bruya
Project/Site: 106490

Laboratory: Eurofins FGS, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	Dept. of Energy	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2954	06-30-21 *
Florida	NELAP	E87575	06-30-22
Kentucky (WW)	State	KY98042	12-31-21
Louisiana	NELAP	03073	06-30-22
Maine	State	2020012	05-02-22
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-22
New York	NELAP	11662	04-01-22
Oregon	NELAP	4167	07-07-21
US Fish & Wildlife	US Federal Programs	058448	05-31-22
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C788	07-13-21
Wisconsin	State	399133460	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-104116-1	MW15-062521	Water	06/25/21 07:55	06/29/21 13:55	
580-104116-2	MW16-062521	Water	06/25/21 08:00	06/29/21 13:55	
580-104116-3	MW13-062521	Water	06/25/21 10:05	06/29/21 13:55	
580-104116-4	MW14-062521	Water	06/25/21 10:09	06/29/21 13:55	
580-104116-5	MW17-062521	Water	06/25/21 11:47	06/29/21 13:55	
580-104116-6	MW-8-062521	Water	06/25/21 12:00	06/29/21 13:55	
580-104116-7	MW-160-062521	Water	06/25/21 13:30	06/29/21 13:55	

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Eurofins

PROJECT NAME/NO. 106490

PO # B-312

REMARKS

Please Email Results

Page # 1 of 1

TURNAROUND TIME

☑ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins/Furans	EPH	VPH	Tributyltin							Notes
MW15-062521		6/25/21	0755	Water	1				X							
MW16-062521		↓	0800		1				X							
MW13-062521			~~0915~~ 1005		1				X							
MW14-062521			~~1005~~ 1009		1				X							
MW17-062521			~~1009~~ 1147		1				X							
MW-8-062521			~~1147~~ 1200		1				X							
MW-160-062521			1330		1				X							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	6/28/21	
Received by:	Kim Chasler	EFGS	6/29/21	1355
Relinquished by:				
Received by:				

Therm. ID: IR9 Cor: 4.3 ° Unc: 4.3 °
Cooler Dsc: Lg B
Packing: [illegible]
Cust. Seal: Yes___ No X
[✓ Blue Ice], Wet, Dry, None
FedEx:
UPS:
Lab Cour: X
Other:

Login Sample Receipt Checklist

Client: Friedman & Bruya

Job Number: 580-104116-1

Login Number: 104116
List Number: 1
Creator: Greene, Ashton R

List Source: Eurofins FGS, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-104115-1
Client Project/Site: 106507

For:
Friedman & Bruya
3012 16TH AVENUE WEST
Seattle, Washington 98119-2029

Attn: Michael Erdahl

Authorized for release by:
7/14/2021 12:21:29 PM

Nathan Lewis, Project Manager I
(253)922-2310
Nathan.Lewis@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Job ID: 580-104115-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-104115-1

Comments
No additional comments.

Receipt
The sample was received on 6/29/2021 1:55 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

GC/MS Semi VOA
Method Organotins: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-360666 and analytical batch 580-361143 recovered outside control limits for the following analytes: Dibutyltin. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Client Sample ID: MW-12-062921

Date Collected: 06/29/21 10:55
Date Received: 06/29/21 14:03

Lab Sample ID: 580-104115-1

Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*48*		*10 - 142*	*06/30/21 12:04*	*07/07/21 01:48*	*1*

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-360666/1-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.30		ug/L		06/30/21 12:04	07/06/21 21:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*103*		*10 - 142*	*06/30/21 12:04*	*07/06/21 21:26*	*1*

Lab Sample ID: LCS 580-360666/2-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tributyltin	1.79	0.295	J	ug/L		16	11 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*111*		*10 - 142*

Lab Sample ID: LCSD 580-360666/3-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin	1.79	0.348		ug/L		19	11 - 150	16	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*140*		*10 - 142*

Lab Chronicle

Client Sample ID: MW-12-062921
Date Collected: 06/29/21 10:55
Date Received: 06/29/21 14:03

Lab Sample ID: 580-104115-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 01:48	TL1	FGS SEA

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Laboratory: Eurofins FGS, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	Dept. of Energy	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2954	06-30-21 *
Florida	NELAP	E87575	06-30-22
Kentucky (WW)	State	KY98042	12-31-21
Louisiana	NELAP	03073	06-30-22
Maine	State	2020012	05-02-22
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-22
New York	NELAP	11662	04-01-22
Oregon	NELAP	4167	07-07-21
US Fish & Wildlife	US Federal Programs	058448	05-31-22
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C788	07-13-21
Wisconsin	State	399133460	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-104115-1	MW-12-062921	Water	06/29/21 10:55	06/29/21 14:03	

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Eurofins

PROJECT NAME/NO.	PO #
106507	B-312

REMARKS

Please Email Results

Page # 1 of 1

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED										Notes
						Dioxins/Furans	EPH	VPH	Tributyltin							
MW-12-062921		6/29/21	1055	water	1				X							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	6/29/21	1225
Received by:	Kim Presley	EFGS	6/29/21	1355
Relinquished by:				
Received by:				

Therm. ID: TR7 Cor: 4.3° Unc: 4.3°
Cooler Dsc: Lg B
Packing: Bub
Cust. Seal: Yes___ No ✓
[✓ Blue Ice], Wet, Dry, None
FedEx:
UPS:
Lab Cour: ✓
Other:

1
2
3
4
5
6
7
8
9
10
11

Login Sample Receipt Checklist

Client: Friedman & Bruya

Job Number: 580-104115-1

Login Number: 104115
List Number: 1
Creator: Greene, Ashton R

List Source: Eurofins FGS, Seattle

Question	**Answer**	**Comment**
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 15, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the amended results from the testing of material submitted on June 25, 2021 from the SnoPac 150054, F&BI 106490 project. The naphthalene, mercury and metals reporting limits were lowered.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0708R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 8, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on June 25, 2021 from the SnoPac 150054, F&BI 106490 project. There are 42 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0708R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 25, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC SnoPac 150054, F&BI 106490 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
106490 -01	MW-15-062521
106490 -02	MW-16-062521
106490 -03	MW-12-062521
106490 -04	MW-13-062521
106490 -05	MW-14-062521
106490 -06	MW-17-062521
106490 -07	MW-8-062521
106490 -08	MW-160-062521

The samples were sent to Eurofins for tributyltin analysis. The report will be forwarded upon receipt.

Zinc in the 200.8 matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8082 laboratory control sample and laboratory control sample duplicate failed the relative percent difference for Aroclor 1260. PCBs were not detected, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490
Date Extracted: 06/28/21
Date Analyzed: 06/28/21

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW-13-062521 106490-04	230 x	<250	83
Method Blank 01-1504 MB	<50	<250	130

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-15-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-01
Date Analyzed:	07/01/21	Data File:	106490-01.148
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	5.55
Copper	3.76
Lead	<1
Nickel	12.9
Zinc	4.57

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-16-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-02 x2
Date Analyzed:	07/01/21	Data File:	106490-02 x2.157
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Copper	4.54
Lead	<1
Nickel	10.0
Zinc	5.07

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-16-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-02 x10
Date Analyzed:	06/30/21	Data File:	106490-02 x10.158
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	24.1

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-12-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-03
Date Analyzed:	07/01/21	Data File:	106490-03.149
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	23.7
Copper	<1
Lead	<1
Nickel	14.1
Zinc	1.99

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-13-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-04
Date Analyzed:	07/01/21	Data File:	106490-04.150
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.97
Copper	4.03
Lead	<1
Nickel	42.6

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-13-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-04 x10
Date Analyzed:	06/30/21	Data File:	106490-04 x10.147
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Zinc	161

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-14-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-05
Date Analyzed:	07/01/21	Data File:	106490-05.151
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.03
Copper	<1
Lead	<1
Nickel	2.79
Zinc	1.62

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-17-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-06
Date Analyzed:	07/01/21	Data File:	106490-06.152
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Copper	<1
Lead	<1
Nickel	2.19
Zinc	5.85

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-8-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-07
Date Analyzed:	07/01/21	Data File:	106490-07.153
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.17
Copper	<1
Lead	<1
Nickel	1.74
Zinc	<1

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-160-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-08 x2
Date Analyzed:	07/01/21	Data File:	106490-08 x2.158
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Copper	6.26
Lead	<1
Nickel	11.0
Zinc	17.4

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-160-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-08 x10
Date Analyzed:	06/30/21	Data File:	106490-08 x10.159
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	23.6

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	I1-407 mb
Date Analyzed:	06/30/21	Data File:	I1-407 mb.095
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Copper	<1
Lead	<0.5
Nickel	<1
Zinc	<1

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490
Date Extracted: 06/28/21
Date Analyzed: 06/29/21

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Dissolved Mercury
MW-15-062521 106490-01	<0.01
MW-16-062521 106490-02	<0.01
MW-12-062521 106490-03	<0.01
MW-13-062521 106490-04	<0.01
MW-14-062521 106490-05	<0.01
MW-17-062521 106490-06	<0.01
MW-8-062521 106490-07	<0.01
MW-160-062521 106490-08	<0.01
Method Blank i1-403 MB	<0.01

Analysis for Semivolatile Phenols By EPA Method 8270E SIM

Client Sample ID:	MW-13-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	07/01/21	Lab ID:	106490-04 1/0.25
Date Analyzed:	07/02/21	Data File:	070227.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	15 ip	50	150
Phenol-d6	10 ip	50	150
2,4,6-Tribromophenol	88	50	150

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<0.05

Analysis for Semivolatile Phenols By EPA Method 8270E SIM

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	07/01/21	Lab ID:	01-1540 mb 1/0.25
Date Analyzed:	07/02/21	Data File:	070225.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	13 vo	50	150
Phenol-d6	8 vo	50	150
2,4,6-Tribromophenol	74	50	150

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-15-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-01 1/0.25
Date Analyzed:	07/01/21	Data File:	070110.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	12	11	65
Phenol-d6	9 ip	11	65
Nitrobenzene-d5	59	50	150
2-Fluorobiphenyl	54	50	150
2,4,6-Tribromophenol	57	30	131
Terphenyl-d14	57	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.011
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	0.013
Fluorene	0.0050
Phenanthrene	0.016
Anthracene	<0.005
Fluoranthene	0.012
Pyrene	0.012
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-16-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-02 1/0.25
Date Analyzed:	07/01/21	Data File:	070111.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	14	11	65
Phenol-d6	10 ip	11	65
Nitrobenzene-d5	64	50	150
2-Fluorobiphenyl	68	50	150
2,4,6-Tribromophenol	81	30	131
Terphenyl-d14	76	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.005
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.014
Anthracene	<0.005
Fluoranthene	0.0065
Pyrene	0.0080
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-13-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-04 1/0.25
Date Analyzed:	07/01/21	Data File:	070112.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	10 ip	11	65
Phenol-d6	9 ip	11	65
Nitrobenzene-d5	60	50	150
2-Fluorobiphenyl	64	50	150
2,4,6-Tribromophenol	78	30	131
Terphenyl-d14	76	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.005
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	0.072
Acenaphthylene	0.080
Acenaphthene	3.4
Fluorene	1.1
Phenanthrene	0.014
Anthracene	0.095
Fluoranthene	0.86
Pyrene	0.56
Benz(a)anthracene	0.019
Chrysene	0.019
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-14-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-05 1/0.25
Date Analyzed:	07/01/21	Data File:	070113.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	10 ip	11	65
Phenol-d6	9 ip	11	65
Nitrobenzene-d5	50	50	150
2-Fluorobiphenyl	50	50	150
2,4,6-Tribromophenol	66	30	131
Terphenyl-d14	65	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.62
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	0.12
Acenaphthylene	0.0055
Acenaphthene	0.87
Fluorene	0.10
Phenanthrene	0.092
Anthracene	0.039
Fluoranthene	0.11
Pyrene	0.11
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-17-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-06 1/0.25
Date Analyzed:	07/01/21	Data File:	070114.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	7 ip	11	65
Phenol-d6	6 ip	11	65
Nitrobenzene-d5	42 ip	50	150
2-Fluorobiphenyl	43 ip	50	150
2,4,6-Tribromophenol	68	30	131
Terphenyl-d14	55	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.015
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	0.0067
Fluorene	<0.005
Phenanthrene	0.012
Anthracene	<0.005
Fluoranthene	0.0065
Pyrene	0.0060
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-8-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-07 1/0.25
Date Analyzed:	07/01/21	Data File:	070115.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	13	11	65
Phenol-d6	10 ip	11	65
Nitrobenzene-d5	63	50	150
2-Fluorobiphenyl	64	50	150
2,4,6-Tribromophenol	93	30	131
Terphenyl-d14	83	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.0068
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.0085
Anthracene	<0.005
Fluoranthene	<0.005
Pyrene	<0.005
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-160-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-08 1/0.25
Date Analyzed:	07/01/21	Data File:	070116.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	3 ip	11	65
Phenol-d6	3 ip	11	65
Nitrobenzene-d5	24 ip	50	150
2-Fluorobiphenyl	28 ip	50	150
2,4,6-Tribromophenol	44	30	131
Terphenyl-d14	41 ip	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.005
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	0.0075
Anthracene	<0.005
Fluoranthene	0.0070
Pyrene	0.0092
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	01-1531 mb 1/0.25
Date Analyzed:	07/01/21	Data File:	070109.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	15	11	65
Phenol-d6	10 vo	11	65
Nitrobenzene-d5	75	50	150
2-Fluorobiphenyl	76	50	150
2,4,6-Tribromophenol	78	30	131
Terphenyl-d14	89	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.005
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	<0.005
Anthracene	<0.005
Fluoranthene	<0.005
Pyrene	<0.005
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-15-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	106490-01 1/0.25
Date Analyzed:	06/29/21	Data File:	062907.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	37	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-16-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	106490-02 1/0.25
Date Analyzed:	06/29/21	Data File:	062908.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	24	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-13-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	106490-04 1/0.25
Date Analyzed:	06/29/21	Data File:	062910.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	28	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-14-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-05 1/0.25
Date Analyzed:	06/30/21	Data File:	063010.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-17-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	106490-06 1/0.25
Date Analyzed:	06/30/21	Data File:	063011.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	26	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-8-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	106490-07 1/0.25
Date Analyzed:	06/29/21	Data File:	062913.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	29	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-160-062521	Client:	Aspect Consulting, LLC
Date Received:	06/25/21	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	106490-08 1/0.25
Date Analyzed:	06/29/21	Data File:	062914.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	32	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/28/21	Lab ID:	01-1506 mb 1/0.25
Date Analyzed:	06/29/21	Data File:	062906.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	25	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	SnoPac 150054, F&BI 106490
Date Extracted:	06/30/21	Lab ID:	01-1532 mb 1/0.25
Date Analyzed:	06/30/21	Data File:	063007.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	47	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	132	140	63-142	6

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED METALS USING EPA METHOD 200.8

Laboratory Code: 106488-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	11.5	97	94	70-130	3
Copper	ug/L (ppb)	20	<5	70	70	70-130	0
Lead	ug/L (ppb)	10	<1	76	76	70-130	0
Nickel	ug/L (ppb)	20	6.52	73	71	70-130	3
Zinc	ug/L (ppb)	50	<5	68 vo	67 vo	70-130	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	94	85-115
Copper	ug/L (ppb)	20	100	85-115
Lead	ug/L (ppb)	10	97	85-115
Nickel	ug/L (ppb)	20	100	85-115
Zinc	ug/L (ppb)	50	92	85-115

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR DISSOLVED MERCURY USING EPA METHOD 1631E

Laboratory Code: 106490-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.01	79	82	71-125	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	96	99	78-125	3

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILE PHENOLS BY EPA METHOD 8270E SIM

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 30)
Pentachlorophenol	ug/L (ppb)	0.63	99	96	70-130	3

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	67	67	66-94	0
2-Methylnaphthalene	ug/L (ppb)	5	72	71	68-98	1
1-Methylnaphthalene	ug/L (ppb)	5	73	71	67-97	3
Acenaphthylene	ug/L (ppb)	5	77	76	70-130	1
Acenaphthene	ug/L (ppb)	5	73	72	70-130	1
Fluorene	ug/L (ppb)	5	79	77	70-130	3
Phenanthrene	ug/L (ppb)	5	79	80	70-130	1
Anthracene	ug/L (ppb)	5	80	81	70-130	1
Fluoranthene	ug/L (ppb)	5	88	87	70-130	1
Pyrene	ug/L (ppb)	5	86	84	70-130	2
Benz(a)anthracene	ug/L (ppb)	5	84	85	70-130	1
Chrysene	ug/L (ppb)	5	84	84	70-130	0
Benzo(a)pyrene	ug/L (ppb)	5	90	90	70-130	0
Benzo(b)fluoranthene	ug/L (ppb)	5	89	87	62-130	2
Benzo(k)fluoranthene	ug/L (ppb)	5	84	84	70-130	0
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	94	94	70-130	0
Dibenz(a,h)anthracene	ug/L (ppb)	5	89	91	70-130	2
Benzo(g,h,i)perylene	ug/L (ppb)	5	86	87	70-130	1

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	53	60	25-111	12
Aroclor 1260	ug/L (ppb)	0.13	65	81	23-123	22 vo

Date of Report: 07/08/21
Date Received: 06/25/21
Project: SnoPac 150054, F&BI 106490

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	66	64	25-111	3
Aroclor 1260	ug/L (ppb)	0.13	77	80	23-123	4

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.

106490

SAMPLE CHAIN OF CUSTODY

ME 06/25/21

AI6/1D04/1

Page # 1 of 1

Report To Breayn Greer
Company Aspect
Address
City, State, ZIP
Phone 316.617.0499 Email bgreer@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME SnoPac

PO # 150054

REMARKS

INVOICE TO

Project specific RLs? - [✓ Yes] / No

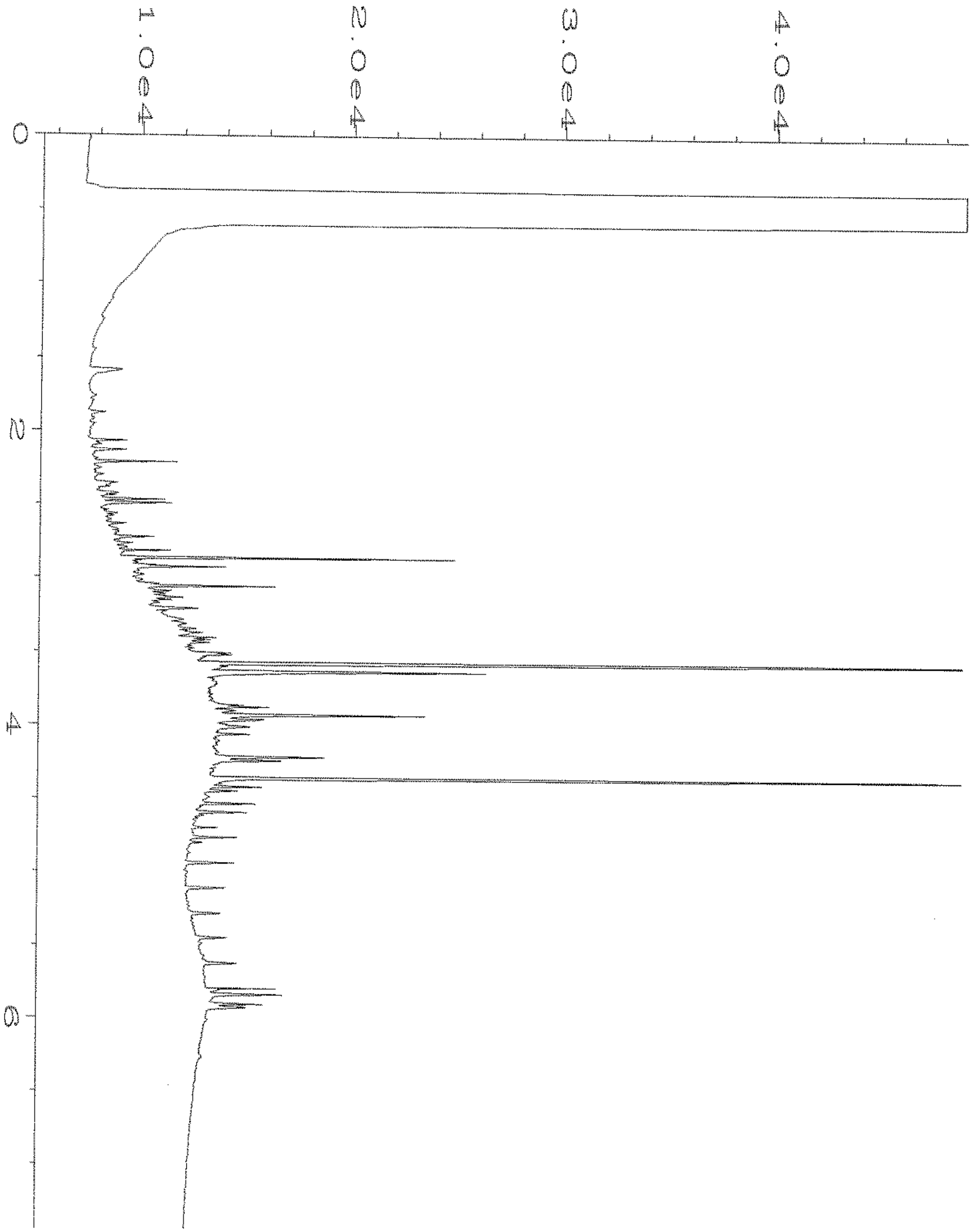
TURNAROUND TIME
☑ Standard turnaround
☐ RUSH
Rush charges authorized by:

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	Low-level PAH-8270SIM ~~PAHs EPA 8270~~	PCB-aroclors-8082B ~~PCBs EPA 8082~~	Dissolved As, Cu, Pb Ni, Zn - 200.8	Dissolved Hg Method 1631E	Tributyltin-ion SM2540S	PCP-8270-SIM	Turbidity & TDS ● PAHs, PCBs, TBT issued in SDG 106507 Notes Turbidity & TDS
MW-15-062521	01 A→J	6/25/21	0755	Water	10						X	X	X	X	X		6 / 6796
MW-16-062521	02 A→I	↓	0800	↓	9						↓	↓	↓	↓	↓		5 / 17840
MW-12-062521	03 A→E	↓	0915	↓	5						●	●	↓	↓	●		12 / 1230
MW-13-062521	04 A→K	↓	1005	↓	11	X					↓	↓	↓	↓	↓	X	2 / 5498
MW-14-062521	05 A→I	↓	1009	↓	9						↓	↓	↓	↓	↓		8 / 1270
MW-17-062521	06 A→J	↓	1147	↓	10						↓	↓	↓	↓	↓		<25 / 564
MW-8-062521	07 A→J	↓	1200	↓	10						↓	↓	↓	↓	↓		10 / 1375
MW-160-062521	08 A→I	↓	1330	↓	9						↓	↓	↓	↓	↓		5 / 17840

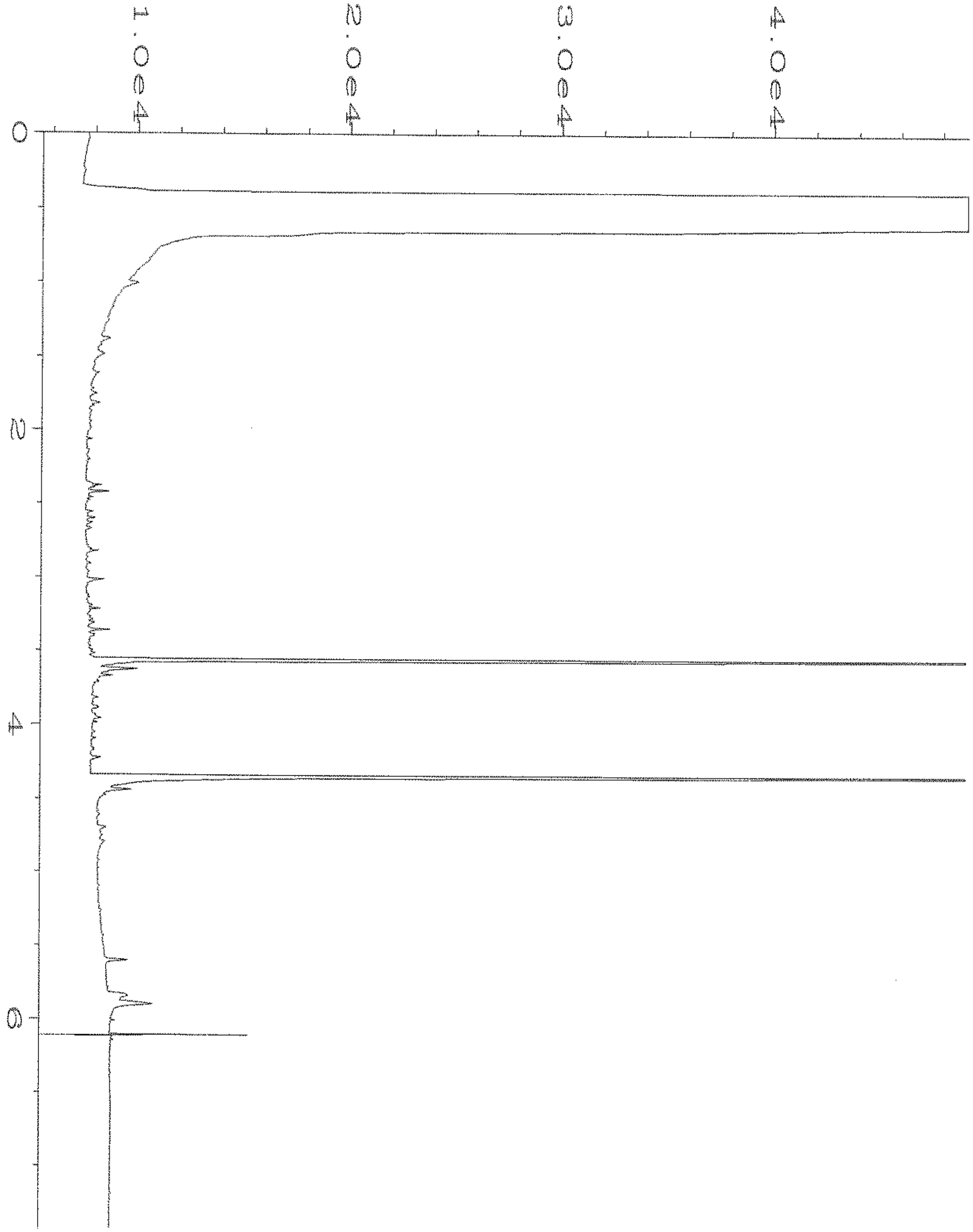
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Daniel [illegible]	Aspect	6/25/21	1717
Received by:	JOE MOHAMMED	FBI	6/25/21	1717
Relinquished by:				
Received by:		Samples received at 3 °C		



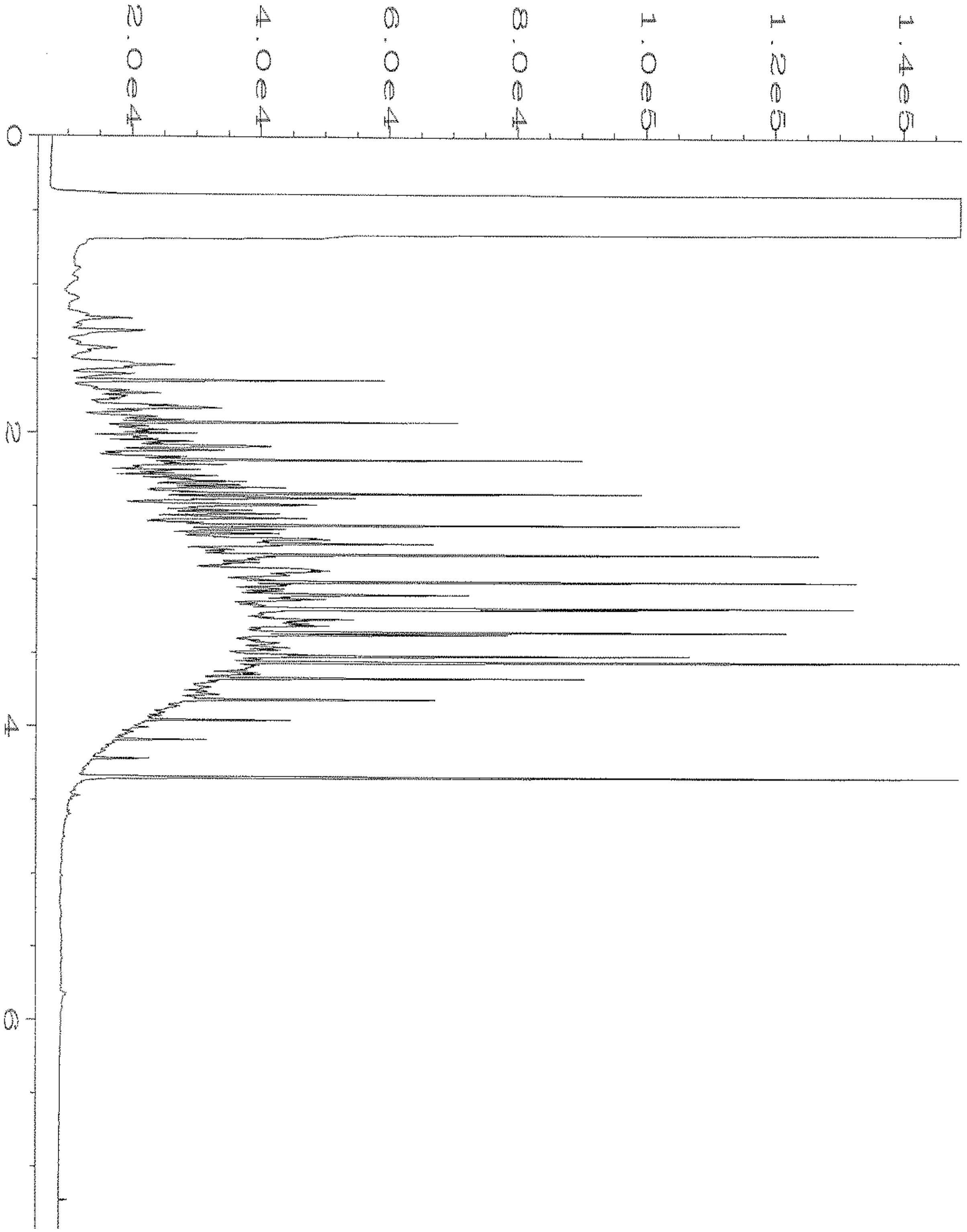
Data File Name   : C:\HPCHEM\1\DATA\06-28-21\030F0901.D
Operator   : TL
Instrument   : GC1
Sample Name   : 106490-04
Run Time Bar Code:
Acquired on   : 28 Jun 21   04:58 PM
Report Created on: 29 Jun 21   10:19 AM

Page Number   : 1
Vial Number   : 30
Injection Number : 1
Sequence Line   : 9
Instrument Method: DX.MTH
Analysis Method   : DEFAULT.MTH



Data File Name : C:\HPCHEM\1\DATA\06-28-21\024F0701.D
Operator : TL
Instrument : GC1
Sample Name : 01-1504 mb
Run Time Bar Code:
Acquired on : 28 Jun 21 03:19 PM
Report Created on: 29 Jun 21 10:26 AM

Page Number : 1
Vial Number : 24
Injection Number : 1
Sequence Line : 7
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



Data File Name : C:\HPCHEM\1\DATA\06-28-21\003F0801.D
Operator : TL
Instrument : GC1
Sample Name : 500 Dx 63-79C
Run Time Bar Code:
Acquired on : 28 Jun 21 04:20 PM
Report Created on: 29 Jun 21 10:19 AM

Page Number : 1
Vial Number : 3
Injection Number : 1
Sequence Line : 8
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH

Environment Testing
America

ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-104116-1
Client Project/Site: 106490

For:
Friedman & Bruya
3012 16TH AVENUE WEST
Seattle, Washington 98119-2029

Attn: Michael Erdahl

Authorized for release by:
7/14/2021 3:04:25 PM

Nathan Lewis, Project Manager I
(253)922-2310
Nathan.Lewis@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Table of Contents

Case Narrative

Job ID: 580-104116-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-104116-1

Comments
No additional comments.

Receipt
The samples were received on 6/29/2021 1:55 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

GC/MS Semi VOA
Method Organotins: Surrogate recovery for the following sample was outside the upper control limit: MW16-062521 (580-104116-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: MW15-062521
Date Collected: 06/25/21 07:55
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-1
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/06/21 22:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*76*		*10 - 142*	*06/30/21 12:04*	*07/06/21 22:45*	*1*

Client Sample Results

Client Sample ID: MW16-062521
Lab Sample ID: 580-104116-2
Date Collected: 06/25/21 08:00
Matrix: Water
Date Received: 06/29/21 13:55

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/06/21 23:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*151*	*S1+*	*10 - 142*	*06/30/21 12:04*	*07/06/21 23:11*	*1*

Client Sample Results

Client Sample ID: MW13-062521

Lab Sample ID: 580-104116-3

Date Collected: 06/25/21 10:05

Matrix: Water

Date Received: 06/29/21 13:55

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.33		ug/L		06/30/21 12:04	07/06/21 23:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*84*		*10 - 142*	*06/30/21 12:04*	*07/06/21 23:37*	*1*

Client Sample ID: MW14-062521
Date Collected: 06/25/21 10:09
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-4
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.34		ug/L		06/30/21 12:04	07/07/21 00:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*35*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:03*	*1*

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Client Sample ID: MW17-062521

Lab Sample ID: 580-104116-5

Date Collected: 06/25/21 11:47
Matrix: Water
Date Received: 06/29/21 13:55

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 00:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*38*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:30*	*1*

Client Sample Results

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Client Sample ID: MW-8-062521
Date Collected: 06/25/21 12:00
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-6
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.34		ug/L		06/30/21 12:04	07/07/21 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*36*		*10 - 142*	*06/30/21 12:04*	*07/07/21 00:56*	*1*

Client Sample Results

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Client Sample ID: MW-160-062521
Date Collected: 06/25/21 13:30
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-7
Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*95*		*10 - 142*	*06/30/21 12:04*	*07/07/21 01:22*	*1*

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-360666/1-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.30		ug/L		06/30/21 12:04	07/06/21 21:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*103*		*10 - 142*	*06/30/21 12:04*	*07/06/21 21:26*	*1*

Lab Sample ID: LCS 580-360666/2-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tributyltin	1.79	0.295	J	ug/L		16	11 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*111*		*10 - 142*

Lab Sample ID: LCSD 580-360666/3-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin	1.79	0.348		ug/L		19	11 - 150	16	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*140*		*10 - 142*

Lab Chronicle

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Client Sample ID: MW15-062521

Lab Sample ID: 580-104116-1

Date Collected: 06/25/21 07:55

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 22:45	TL1	FGS SEA

Client Sample ID: MW16-062521

Lab Sample ID: 580-104116-2

Date Collected: 06/25/21 08:00

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 23:11	TL1	FGS SEA

Client Sample ID: MW13-062521

Lab Sample ID: 580-104116-3

Date Collected: 06/25/21 10:05

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/06/21 23:37	TL1	FGS SEA

Client Sample ID: MW14-062521

Lab Sample ID: 580-104116-4

Date Collected: 06/25/21 10:09

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:03	TL1	FGS SEA

Client Sample ID: MW17-062521

Lab Sample ID: 580-104116-5

Date Collected: 06/25/21 11:47

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:30	TL1	FGS SEA

Client Sample ID: MW-8-062521

Lab Sample ID: 580-104116-6

Date Collected: 06/25/21 12:00

Matrix: Water

Date Received: 06/29/21 13:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 00:56	TL1	FGS SEA

Client Sample ID: MW-160-062521

Date Collected: 06/25/21 13:30
Date Received: 06/29/21 13:55

Lab Sample ID: 580-104116-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 01:22	TL1	FGS SEA

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Laboratory: Eurofins FGS, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	Dept. of Energy	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2954	06-30-21 *
Florida	NELAP	E87575	06-30-22
Kentucky (WW)	State	KY98042	12-31-21
Louisiana	NELAP	03073	06-30-22
Maine	State	2020012	05-02-22
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-22
New York	NELAP	11662	04-01-22
Oregon	NELAP	4167	07-07-21
US Fish & Wildlife	US Federal Programs	058448	05-31-22
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C788	07-13-21
Wisconsin	State	399133460	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Friedman & Bruya
Project/Site: 106490

Job ID: 580-104116-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-104116-1	MW15-062521	Water	06/25/21 07:55	06/29/21 13:55	
580-104116-2	MW16-062521	Water	06/25/21 08:00	06/29/21 13:55	
580-104116-3	MW13-062521	Water	06/25/21 10:05	06/29/21 13:55	
580-104116-4	MW14-062521	Water	06/25/21 10:09	06/29/21 13:55	
580-104116-5	MW17-062521	Water	06/25/21 11:47	06/29/21 13:55	
580-104116-6	MW-8-062521	Water	06/25/21 12:00	06/29/21 13:55	
580-104116-7	MW-160-062521	Water	06/25/21 13:30	06/29/21 13:55	

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Eurofins

PROJECT NAME/NO.	PO #
106490	B-312

REMARKS

Please Email Results

Page # 1 of 1

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins/Furans	EPH	VPH	Tributyltin							Notes
MW15-062521		6/25/21	0755	Water	1				X							
MW16-062521			0800		1				X							
MW13-062521			~~0915~~ 1005		1				X							
MW14-062521			~~1005~~ 1009		1				X							
MW17-062521			~~1009~~ 1147		1				X							
MW-8-062521			~~1147~~ 1200		1				X							
MW-160-062521			1330		1				X							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	6/28/21	
Received by:	Kim Chaske	EFGS	6/29/21	1355
Relinquished by:				
Received by:				

Therm. ID: IR9 Cor: 4.3 ° Unc: 4.3 °
Cooler Dsc: 4 B
Packing: Bucky
Cust. Seal: Yes___ No X
[✓ Blue Ice], Wet, Dry, None

FedEx:
UPS:
Lab Cour: X
Other:

Login Sample Receipt Checklist

Client: Friedman & Bruya

Job Number: 580-104116-1

Login Number: 104116
List Number: 1
Creator: Greene, Ashton R

List Source: Eurofins FGS, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 15, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the amended results from the testing of material submitted on June 29, 2021 from the Snopac 150054, F&BI 106507 project. The naphthalene reporting limits were lowered.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0708R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

July 8, 2021

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on June 29, 2021 from the Snopac 150054, F&BI 106507 project. There are 8 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data, Adam Griffin
ASP0708R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 29, 2021 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Snopac 150054, F&BI 106507 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
106507 -01	MW-12-062921

Sample MW-12-062921 was sent to Eurofins for tributyltin analysis. The report generated by Eurofins will be forwarded to your office upon receipt.

All quality control requirements were acceptable.

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-12-062921	Client:	Aspect Consulting, LLC
Date Received:	06/29/21	Project:	Snopac 150054, F&BI 106507
Date Extracted:	06/30/21	Lab ID:	106507-01 1/0.25
Date Analyzed:	07/01/21	Data File:	070117.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	16	11	65
Phenol-d6	14	11	65
Nitrobenzene-d5	56	50	150
2-Fluorobiphenyl	54	50	150
2,4,6-Tribromophenol	81	30	131
Terphenyl-d14	62	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	0.016
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	0.0070
Fluorene	<0.005
Phenanthrene	0.022
Anthracene	<0.005
Fluoranthene	0.029
Pyrene	0.031
Benz(a)anthracene	0.012
Chrysene	0.013
Benzo(a)pyrene	0.015
Benzo(b)fluoranthene	0.020
Benzo(k)fluoranthene	0.0070
Indeno(1,2,3-cd)pyrene	0.0065
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Snopac 150054, F&BI 106507
Date Extracted:	06/30/21	Lab ID:	01-1531 mb 1/0.25
Date Analyzed:	07/01/21	Data File:	070109.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	15	11	65
Phenol-d6	10 vo	11	65
Nitrobenzene-d5	75	50	150
2-Fluorobiphenyl	76	50	150
2,4,6-Tribromophenol	78	30	131
Terphenyl-d14	89	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.005
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.005
Acenaphthene	<0.005
Fluorene	<0.005
Phenanthrene	<0.005
Anthracene	<0.005
Fluoranthene	<0.005
Pyrene	<0.005
Benz(a)anthracene	<0.005
Chrysene	<0.005
Benzo(a)pyrene	<0.005
Benzo(b)fluoranthene	<0.005
Benzo(k)fluoranthene	<0.005
Indeno(1,2,3-cd)pyrene	<0.005
Dibenz(a,h)anthracene	<0.005
Benzo(g,h,i)perylene	<0.01

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-12-062921	Client:	Aspect Consulting, LLC
Date Received:	06/29/21	Project:	Snopac 150054, F&BI 106507
Date Extracted:	06/30/21	Lab ID:	106507-01 1/0.25
Date Analyzed:	06/30/21	Data File:	063012.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Snopac 150054, F&BI 106507
Date Extracted:	06/30/21	Lab ID:	01-1532 mb 1/0.25
Date Analyzed:	06/30/21	Data File:	063007.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	47	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.005
Aroclor 1232	<0.005
Aroclor 1016	<0.005
Aroclor 1242	<0.005
Aroclor 1248	<0.005
Aroclor 1254	<0.005
Aroclor 1260	<0.005
Aroclor 1262	<0.005
Aroclor 1268	<0.005

Date of Report: 07/08/21
Date Received: 06/29/21
Project: Snopac 150054, F&BI 106507

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	67	67	66-94	0
2-Methylnaphthalene	ug/L (ppb)	5	72	71	68-98	1
1-Methylnaphthalene	ug/L (ppb)	5	73	71	67-97	3
Acenaphthylene	ug/L (ppb)	5	77	76	70-130	1
Acenaphthene	ug/L (ppb)	5	73	72	70-130	1
Fluorene	ug/L (ppb)	5	79	77	70-130	3
Phenanthrene	ug/L (ppb)	5	79	80	70-130	1
Anthracene	ug/L (ppb)	5	80	81	70-130	1
Fluoranthene	ug/L (ppb)	5	88	87	70-130	1
Pyrene	ug/L (ppb)	5	86	84	70-130	2
Benz(a)anthracene	ug/L (ppb)	5	84	85	70-130	1
Chrysene	ug/L (ppb)	5	84	84	70-130	0
Benzo(a)pyrene	ug/L (ppb)	5	90	90	70-130	0
Benzo(b)fluoranthene	ug/L (ppb)	5	89	87	62-130	2
Benzo(k)fluoranthene	ug/L (ppb)	5	84	84	70-130	0
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	94	94	70-130	0
Dibenz(a,h)anthracene	ug/L (ppb)	5	89	91	70-130	2
Benzo(g,h,i)perylene	ug/L (ppb)	5	86	87	70-130	1

Date of Report: 07/08/21
Date Received: 06/29/21
Project: Snopac 150054, F&BI 106507

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	66	64	25-111	3
Aroclor 1260	ug/L (ppb)	0.13	77	80	23-123	4

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 ME 06/29/21 [redacted]

Page # 1 of 1

106507 [redacted]

Report To Breeyn Greer

Company Aspect

Address 710 2nd Ave Ste 550

City, State, ZIP Seattle, WA 98104

Phone 316-617-0499 Email bgreer@aspectconsulting.com

SAMPLERS (signature) Rachel C

PROJECT NAME SnoPac

PO # 150054

REMARKS

INVOICE TO AP

Project specific RLs? - [✓ Yes] / No

TURNAROUND TIME D07

☒ 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	low level PAH 8270	PCB - wooclorg 8082B	Tributyltin		Notes
MW-12-062921	01A-C	6/29/21	1055	W	3								X	X	X		additional volume for MW-12-0629
																	Samples received at 4 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Rachel C	Rachel Cornwell	Aspect	6/29/21	1210
Received by: James Bruya	James Bruya	F&B	6/29	1210
Relinquished by:				
Received by:				

eurofins

Environment Testing
America

1
2
3
4
5
6
7
8
9
10
11

ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-104115-1
Client Project/Site: 106507

For:
Friedman & Bruya
3012 16TH AVENUE WEST
Seattle, Washington 98119-2029

Attn: Michael Erdahl

Authorized for release by:
7/14/2021 12:21:29 PM

Nathan Lewis, Project Manager I
(253)922-2310
Nathan.Lewis@Eurofinset.com

Table of Contents

Case Narrative

Job ID: 580-104115-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative
580-104115-1

Comments

No additional comments.

Receipt

The sample was received on 6/29/2021 1:55 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

GC/MS Semi VOA

Method Organotins: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-360666 and analytical batch 580-361143 recovered outside control limits for the following analytes: Dibutyltin. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: MW-12-062921

Date Collected: 06/29/21 10:55
Date Received: 06/29/21 14:03

Lab Sample ID: 580-104115-1

Matrix: Water

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.35		ug/L		06/30/21 12:04	07/07/21 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*48*		*10 - 142*	*06/30/21 12:04*	*07/07/21 01:48*	*1*

QC Sample Results

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-360666/1-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		0.30		ug/L		06/30/21 12:04	07/06/21 21:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*103*		*10 - 142*	*06/30/21 12:04*	*07/06/21 21:26*	*1*

Lab Sample ID: LCS 580-360666/2-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tributyltin	1.79	0.295	J	ug/L		16	11 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*111*		*10 - 142*

Lab Sample ID: LCSD 580-360666/3-A
Matrix: Water
Analysis Batch: 361143

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 360666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin	1.79	0.348		ug/L		19	11 - 150	16	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*140*		*10 - 142*

Lab Chronicle

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Client Sample ID: MW-12-062921
Date Collected: 06/29/21 10:55
Date Received: 06/29/21 14:03

Lab Sample ID: 580-104115-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Organotin			360666	06/30/21 12:04	RJL	FGS SEA
Total/NA	Analysis	Organotins		1	361143	07/07/21 01:48	TL1	FGS SEA

Laboratory References:

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Laboratory: Eurofins FGS, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	Dept. of Energy	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2954	06-30-21 *
Florida	NELAP	E87575	06-30-22
Kentucky (WW)	State	KY98042	12-31-21
Louisiana	NELAP	03073	06-30-22
Maine	State	2020012	05-02-22
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-22
New York	NELAP	11662	04-01-22
Oregon	NELAP	4167	07-07-21
US Fish & Wildlife	US Federal Programs	058448	05-31-22
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C788	07-13-21
Wisconsin	State	399133460	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Friedman & Bruya
Project/Site: 106507

Job ID: 580-104115-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-104115-1	MW-12-062921	Water	06/29/21 10:55	06/29/21 14:03	

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Eurofins

PROJECT NAME/NO.	PO #
106507	B-312

REMARKS

Please Email Results

Page # 1 of 1

TURNAROUND TIME
☒ Standard TAT
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins/Furans	EPH	VPH	Tributyltin							Notes
MW-12-062921		6/29/21	1055	water	1				X							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	6/29/21	1225
Received by:	Kim Presley	EFGS	6/29/21	1355
Relinquished by:				
Received by:				

Therm. ID: IR 7 Cor: 4.3 ° Unc: 4.3 °
Cooler Dsc: Lg B
Packing: Bub
Cust. Seal: Yes___ No X
[✓ Blue Ice], Wet, Dry, None
FedEx:
UPS:
Lab Cour: ✓
Other:

Login Sample Receipt Checklist

Client: Friedman & Bruya

Job Number: 580-104115-1

Login Number: 104115

List Source: Eurofins FGS, Seattle

List Number: 1

Creator: Greene, Ashton R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX I

Dewatering Discharge Self-Monitoring Reports

King County

Industrial Waste Program Self-Monitoring Report

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Project Name: 5055 Properties, LLC **Authorization No.:** 1092-01

Project Location: 5055 E Marginal Way S, Seattle

Sample Date	pH (s.u.)		Settleable Solids (mL/L)	Nonpolar FOG (mg/L)	Arsenic (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Discharge Volume (gallons)	Name or initials of person collecting and recording samples and volume each day. If permitted for relief only, explain why you did not discharge to surface water for each day of discharge. AG
	Min.	Max.									
1/11/2021	6.80	6.82	< 0.1	< 3.0						1531	
1/12/2021	6.87	6.98	< 0.1	< 3.0						24876	
1/13/2021	6.98	7.01	< 0.1	< 3.0	0.0078	0.0018	0.0085	< 0.001	< 0.001	24367	
1/14/2021	7.03	7.08	< 0.1	< 3.0						21635	
1/15/2021	7.04	7.06	< 0.1	< 3.0						7132	
									Total Discharge Volume:		

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

The authorization holder is responsible for monitoring the discharge in accordance with the monitoring requirements specified in King County Discharge Authorization No. 1092-01. This report form must be completed, signed, and submitted to KCIW by **February 15, 2022**.

Your King County Industrial Waste Program Contact: Todd Gowing, 206-477-5426

King County

Industrial Waste Program Self-Monitoring Report

Send to: King County Industrial Waste Program
201 S. Jackson Street, Suite 513
Seattle, WA 98104-3855
Phone 206-477-5300 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Project Name: 5055 Properties, LLC

Authorization No.: 1092-01

Project Location: 5055 E Marginal Way S, Seattle

Sample Date			Nickle (mg/L)	Zinc (mg/L)	PAHs (mg/L)						Name or initials of person collecting and recording samples and volume each day. If permitted for relief only, explain why you did not discharge to surface water for each day of discharge.
1/13/2021			0.042	0.041							
1/14/2021					0.0018						
Total Discharge Volume:											

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

The authorization holder is responsible for monitoring the discharge in accordance with the monitoring requirements specified in King County Discharge Authorization No. 1092-01. This report form must be completed, signed, and submitted to KCIW by **February 15, 2022.Your King County Industrial Waste Program Contact:** Todd Gowing, 206-477-5426

APPENDIX J

Republic Soil Disposal Tracking

Appendix H. Republic Tonnage Report

Project No. 150054, Snopac, Seattle, Washington

011630- Manson Construction Co.

Ticket Date	Facility and Ticket Number	Truck #	Material	Material Total
12/28/2020 I	01 990543	G90 GRADY	SW-CONT SOIL	15.30 TN
12/28/2020 I	01 990544	G92 GRADY	SW-CONT SOIL	16.16 TN
12/28/2020 I	01 990545	G68 GRADY	SW-CONT SOIL	17.17 TN
12/28/2020 I	01 990547	G90 GRADY	SW-CONT SOIL	16.79 TN
12/28/2020 I	01 990548	G68 GRADY	SW-CONT SOIL	17.12 TN
12/28/2020 I	01 990549	G92 GRADY	SW-CONT SOIL	17.57 TN
12/28/2020 I	01 990551	G90 GRADY	SW-CONT SOIL	18.99 TN
12/28/2020 I	01 990552	G68 GRADY	SW-CONT SOIL	17.17 TN
12/28/2020 I	01 990553	G92 GRADY	SW-CONT SOIL	16.94 TN
12/28/2020 I	01 990554	G90 GRADY	SW-CONT SOIL	16.57 TN
12/28/2020 I	01 990556	G68 GRADY	SW-CONT SOIL	18.12 TN
12/28/2020 I	01 990557	G92 GRADY	SW-CONT SOIL	16.15 TN
12/28/2020 I	01 990559	G90 GRADY	SW-CONT SOIL	18.52 TN
12/28/2020 I	01 990561	G68 GRADY	SW-CONT SOIL	15.73 TN
12/28/2020 I	01 990562	G92 GRADY	SW-CONT SOIL	16.68 TN
12/28/2020 I	01 990563	G90 GRADY	SW-CONT SOIL	14.82 TN
12/28/2020 I	01 990566	G68 GRADY	SW-CONT SOIL	15.99 TN
12/28/2020 I	01 990567	G92 GRADY	SW-CONT SOIL	16.73 TN
12/28/2020 I	01 990569	G90 GRADY	SW-CONT SOIL	13.12 TN
12/28/2020 I	01 990571	G68 GRADY	SW-CONT SOIL	13.89 TN
12/28/2020 I	01 990572	G92 GRADY	SW-CONT SOIL	14.90 TN
12/28/2020 I	01 990573	G90 GRADY	SW-CONT SOIL	14.12 TN
12/28/2020 I	01 990574	G68 GRADY	SW-CONT SOIL	15.62 TN
12/28/2020 I	01 990575	G92 GRADY	SW-CONT SOIL	17.61 TN
12/28/2020 I	01 990576	G90 GRADY	SW-CONT SOIL	16.14 TN
12/28/2020 I	01 990578	G68 GRADY	SW-CONT SOIL	16.21 TN
12/28/2020 I	01 990579	G92 GRADY	SW-CONT SOIL	16.56 TN
12/28/2020 I	01 990583	G90 GRADY	SW-CONT SOIL	16.49 TN
12/28/2020 I	01 990584	G68 GRADY	SW-CONT SOIL	14.87 TN
12/28/2020 I	01 990585	G92 GRADY	SW-CONT SOIL	14.99 TN
12/28/2020 I	01 990586	G90 GRADY	SW-CONT SOIL	15.26 TN
12/28/2020 I	01 990587	G68 GRADY	SW-CONT SOIL	15.05 TN
12/28/2020 I	01 990588	G92 GRADY	SW-CONT SOIL	16.69 TN
12/28/2020 I	01 990589	G90 GRADY	SW-CONT SOIL	15.87 TN
12/28/2020 I	01 990590	G68 GRADY	SW-CONT SOIL	14.81 TN
12/28/2020 I	01 990591	G92 GRADY	SW-CONT SOIL	16.59 TN
12/28/2020 I	01 990592	G90 GRADY	SW-CONT SOIL	14.75 TN
12/28/2020 I	01 990593	G68 GRADY	SW-CONT SOIL	15.74 TN
12/28/2020 I	01 990595	G92 GRADY	SW-CONT SOIL	19.01 TN
12/28/2020 I	01 990596	G90 GRADY	SW-CONT SOIL	15.98 TN
12/28/2020 I	01 990597	G68 GRADY	SW-CONT SOIL	17.96 TN
12/28/2020 I	01 990598	G92 GRADY	SW-CONT SOIL	20.71 TN
12/28/2020 I	01 990600	G90 GRADY	SW-CONT SOIL	18.12 TN
12/28/2020 I	01 990601	G68 GRADY	SW-CONT SOIL	17.56 TN
12/28/2020 I	01 990602	G92 GRADY	SW-CONT SOIL	21.05 TN
12/29/2020 I	01 990610	G90 GRADY	SW-CONT SOIL	16.05 TN
12/29/2020 I	01 990611	G92 GRADY	SW-CONT SOIL	19.27 TN
12/29/2020 I	01 990612	G68 GRADY	SW-CONT SOIL	18.05 TN
12/29/2020 I	01 990616	G90 GRADY	SW-CONT SOIL	15.71 TN
12/29/2020 I	01 990618	G92 GRADY	SW-CONT SOIL	19.82 TN
12/29/2020 I	01 990619	G68 GRADY	SW-CONT SOIL	18.03 TN
12/29/2020 I	01 990623	G90 GRADY	SW-CONT SOIL	15.96 TN
12/29/2020 I	01 990627	G92 GRADY	SW-CONT SOIL	19.36 TN
12/29/2020 I	01 990628	G68 GRADY	SW-CONT SOIL	17.48 TN
12/29/2020 I	01 990633	G90 GRADY	SW-CONT SOIL	14.97 TN
12/29/2020 I	01 990637	G92 GRADY	SW-CONT SOIL	19.82 TN
12/29/2020 I	01 990639	G68 GRADY	SW-CONT SOIL	19.36 TN
12/29/2020 I	01 990640	G90 GRADY	SW-CONT SOIL	17.93 TN
12/29/2020 I	01 990644	G92 GRADY	SW-CONT SOIL	20.97 TN
12/29/2020 I	01 990645	G68 GRADY	SW-CONT SOIL	18.32 TN
12/29/2020 I	01 990646	G90 GRADY	SW-CONT SOIL	14.91 TN
12/29/2020 I	01 990652	G92 GRADY	SW-CONT SOIL	20.16 TN
12/29/2020 I	01 990653	G68 GRADY	SW-CONT SOIL	17.22 TN
12/29/2020 I	01 990656	G90 GRADY	SW-CONT SOIL	18.90 TN
12/29/2020 I	01 990660	G92 GRADY	SW-CONT SOIL	19.65 TN
12/29/2020 I	01 990661	G68 GRADY	SW-CONT SOIL	14.29 TN
12/29/2020 I	01 990663	G90 GRADY	SW-CONT SOIL	21.38 TN
12/29/2020 I	01 990669	G92 GRADY	SW-CONT SOIL	20.49 TN
12/29/2020 I	01 990670	G68 GRADY	SW-CONT SOIL	21.81 TN
12/29/2020 I	01 990672	G90 GRADY	SW-CONT SOIL	20.00 TN
12/29/2020 I	01 990674	G68 GRADY	SW-CONT SOIL	21.18 TN
12/29/2020 I	01 990676	G90 GRADY	SW-CONT SOIL	19.00 TN
12/29/2020 I	01 990677	G92 GRADY	SW-CONT SOIL	23.02 TN
12/29/2020 I	01 990679	G68 GRADY	SW-CONT SOIL	17.26 TN
12/29/2020 I	01 990681	G90 GRADY	SW-CONT SOIL	18.53 TN
12/29/2020 I	01 990683	G92 GRADY	SW-CONT SOIL	22.62 TN
12/29/2020 I	01 990684	G68 GRADY	SW-CONT SOIL	21.43 TN
12/29/2020 I	01 990685	G90 GRADY	SW-CONT SOIL	19.67 TN
12/29/2020 I	01 990686	G92 GRADY	SW-CONT SOIL	22.69 TN
12/29/2020 I	01 990689	G68 GRADY	SW-CONT SOIL	20.78 TN
12/29/2020 I	01 990690	G90 GRADY	SW-CONT SOIL	18.80 TN
12/29/2020 I	01 990691	G92 GRADY	SW-CONT SOIL	23.03 TN
12/29/2020 I	01 990693	G90 GRADY	SW-CONT SOIL	20.06 TN
12/29/2020 I	01 990694	G68 GRADY	SW-CONT SOIL	21.61 TN
12/29/2020 I	01 990695	G92 GRADY	SW-CONT SOIL	21.88 TN

Appendix H. Republic Tonnage Report

Project No. 150054, Snopac, Seattle, Washington

011630- Manson Construction Co.

Ticket Date	Facility and Ticket Number		Truck #	Material	Material Total	
12/29/2020 I	01	990696	G90 GRADY	SW-CONT SOIL	17.26	TN
12/29/2020 I	01	990697	G68 GRADY	SW-CONT SOIL	21.28	TN
12/29/2020 I	01	990698	G92 GRADY	SW-CONT SOIL	21.23	TN
12/29/2020 I	01	990699	G90 GRADY	SW-CONT SOIL	19.03	TN
12/29/2020 I	01	990700	G68 GRADY	SW-CONT SOIL	21.22	TN
12/29/2020 I	01	990701	G92 GRADY	SW-CONT SOIL	22.99	TN
12/29/2020 I	01	990702	G90 GRADY	SW-CONT SOIL	18.57	TN
12/29/2020 I	01	990703	G68 GRADY	SW-CONT SOIL	19.97	TN
12/29/2020 I	01	990704	G92 GRADY	SW-CONT SOIL	19.78	TN
12/29/2020 I	01	990705	G90 GRADY	SW-CONT SOIL	20.94	TN
12/30/2020 I	01	990719	G90 GRADY	SW-CONT SOIL	18.90	TN
12/30/2020 I	01	990720	G92 GRADY	SW-CONT SOIL	21.52	TN
12/30/2020 I	01	990724	G90 GRADY	SW-CONT SOIL	17.74	TN
12/30/2020 I	01	990726	G92 GRADY	SW-CONT SOIL	19.48	TN
12/30/2020 I	01	990727	G90 GRADY	SW-CONT SOIL	15.46	TN
12/30/2020 I	01	990728	G92 GRADY	SW-CONT SOIL	22.67	TN
12/30/2020 I	01	990729	G90 GRADY	SW-CONT SOIL	19.43	TN
12/30/2020 I	01	990731	G92 GRADY	SW-CONT SOIL	21.78	TN
12/30/2020 I	01	990732	G90 GRADY	SW-CONT SOIL	19.64	TN
12/30/2020 I	01	990733	G92 GRADY	SW-CONT SOIL	21.18	TN
12/30/2020 I	01	990734	G68 GRADY	SW-CONT SOIL	19.75	TN
12/30/2020 I	01	990735	G90 GRADY	SW-CONT SOIL	16.22	TN
12/30/2020 I	01	990736	G92 GRADY	SW-CONT SOIL	21.35	TN
12/30/2020 I	01	990737	G68 GRADY	SW-CONT SOIL	16.16	TN
12/30/2020 I	01	990738	G90 GRADY	SW-CONT SOIL	16.16	TN
12/30/2020 I	01	990739	G92 GRADY	SW-CONT SOIL	16.78	TN
12/30/2020 I	01	990740	G90 GRADY	SW-CONT SOIL	14.86	TN
12/30/2020 I	01	990741	G68 GRADY	SW-CONT SOIL	16.67	TN
12/30/2020 I	01	990743	G92 GRADY	SW-CONT SOIL	22.24	TN
12/30/2020 I	01	990744	G90 GRADY	SW-CONT SOIL	17.51	TN
12/30/2020 I	01	990746	G68 GRADY	SW-CONT SOIL	19.67	TN
12/30/2020 I	01	990747	G92 GRADY	SW-CONT SOIL	23.08	TN
12/30/2020 I	01	990749	G90 GRADY	SW-CONT SOIL	20.33	TN
12/30/2020 I	01	990750	G68 GRADY	SW-CONT SOIL	20.65	TN
12/31/2020 I	01	990756	G92 GRADY	SW-CONT SOIL	22.17	TN
12/31/2020 I	01	990757	G6 GRADY	SW-CONT SOIL	20.13	TN
12/31/2020 I	01	990758	G111 GRADY	SW-CONT SOIL	23.56	TN
12/31/2020 I	01	990760	G92 GRADY	SW-CONT SOIL	22.91	TN
12/31/2020 I	01	990761	G6 GRADY	SW-CONT SOIL	20.93	TN
12/31/2020 I	01	990763	G111 GRADY	SW-CONT SOIL	24.00	TN
12/31/2020 I	01	990765	G92 GRADY	SW-CONT SOIL	21.20	TN
12/31/2020 I	01	990766	G6 GRADY	SW-CONT SOIL	21.31	TN
12/31/2020 I	01	990767	G111 GRADY	SW-CONT SOIL	23.79	TN
12/31/2020 I	01	990770	G92 GRADY	SW-CONT SOIL	22.36	TN
12/31/2020 I	01	990771	G6 GRADY	SW-CONT SOIL	21.19	TN
12/31/2020 I	01	990773	G111 GRADY	SW-CONT SOIL	24.09	TN
12/31/2020 I	01	990775	G92 GRADY	SW-CONT SOIL	21.63	TN
12/31/2020 I	01	990778	G6 GRADY	SW-CONT SOIL	20.41	TN
12/31/2020 I	01	990781	G111 GRADY	SW-CONT SOIL	21.16	TN
12/31/2020 I	01	990782	G92 GRADY	SW-CONT SOIL	22.05	TN
12/31/2020 I	01	990783	G6 GRADY	SW-CONT SOIL	21.24	TN
12/31/2020 I	01	990787	G92 GRADY	SW-CONT SOIL	18.65	TN
01/06/2021 I	01	990857	G67 GRADY	SW-CONT SOIL	34.66	TN
01/06/2021 I	01	990859	G67 GRADY	SW-CONT SOIL	17.11	TN
01/06/2021 I	01	990860	G112 GRADY	SW-CONT SOIL	20.55	TN
01/06/2021 I	01	990861	G111 GRADY	SW-CONT SOIL	22.01	TN
01/06/2021 I	01	990863	G67 GRADY	SW-CONT SOIL	19.63	TN
01/06/2021 I	01	990864	G111 GRADY	SW-CONT SOIL	23.91	TN
01/06/2021 I	01	990865	G112 GRADY	SW-CONT SOIL	27.60	TN
01/06/2021 I	01	990866	G67 GRADY	SW-CONT SOIL	22.76	TN
01/06/2021 I	01	990867	G112 GRADY	SW-CONT SOIL	19.65	TN
01/06/2021 I	01	990868	G111 GRADY	SW-CONT SOIL	20.83	TN
01/07/2021 I	01	990876	G64 GRADY	SW-CONT SOIL	16.31	TN
01/07/2021 I	01	990878	G114 GRADY	SW-CONT SOIL	19.30	TN
01/07/2021 I	01	990879	G64 GRADY	SW-CONT SOIL	19.81	TN
01/07/2021 I	01	990880	G114 GRADY	SW-CONT SOIL	18.64	TN
01/07/2021 I	01	990881	G64 GRADY	SW-CONT SOIL	21.48	TN
01/07/2021 I	01	990883	G114 GRADY	SW-CONT SOIL	17.30	TN
01/07/2021 I	01	990884	G64 GRADY	SW-CONT SOIL	18.30	TN
01/07/2021 I	01	990885	G114 GRADY	SW-CONT SOIL	18.78	TN
01/07/2021 I	01	990887	G64 GRADY	SW-CONT SOIL	16.75	TN
01/07/2021 I	01	990889	G114 GRADY	SW-CONT SOIL	17.18	TN
01/07/2021 I	01	990891	G64 GRADY	SW-CONT SOIL	18.69	TN
01/07/2021 I	01	990892	G114 GRADY	SW-CONT SOIL	21.03	TN
01/07/2021 I	01	990893	G64 GRADY	SW-CONT SOIL	18.80	TN
01/07/2021 I	01	990894	G114 GRADY	SW-CONT SOIL	20.31	TN
01/07/2021 I	01	990897	G64 GRADY	SW-CONT SOIL	22.15	TN
01/07/2021 I	01	990898	G114 GRADY	SW-CONT SOIL	20.24	TN
01/07/2021 I	01	990900	G64 GRADY	SW-CONT SOIL	18.15	TN
01/07/2021 I	01	990901	G114 GRADY	SW-CONT SOIL	20.52	TN
01/07/2021 I	01	990905	G64 GRADY	SW-CONT SOIL	16.41	TN
01/07/2021 I	01	990906	G114 GRADY	SW-CONT SOIL	16.81	TN
01/07/2021 I	01	990909	G64 GRADY	SW-CONT SOIL	14.53	TN
01/07/2021 I	01	990910	G114 GRADY	SW-CONT SOIL	18.01	TN
01/07/2021 I	01	990914	G64 GRADY	SW-CONT SOIL	15.86	TN

Appendix H. Republic Tonnage Report

Project No. 150054, Snopac, Seattle, Washington

011630- Manson Construction Co.

Ticket Date	Facility and Ticket Number		Truck #	Material	Material Total	
01/07/2021 I	01	990915	G114 GRADY	SW-CONT SOIL	17.41	TN
01/11/2021 I	01	991013	G115 GRADY	SW-CONT SOIL	24.21	TN
01/11/2021 I	01	991014	57 GRADY	SW-CONT SOIL	21.93	TN
01/11/2021 I	01	991015	G115 GRADY	SW-CONT SOIL	20.38	TN
01/11/2021 I	01	991016	91 GRADY	SW-CONT SOIL	25.55	TN
01/11/2021 I	01	991017	57 GRADY	SW-CONT SOIL	20.94	TN
01/11/2021 I	01	991018	G115 GRADY	SW-CONT SOIL	19.26	TN
01/11/2021 I	01	991019	91 GRADY	SW-CONT SOIL	21.84	TN
01/11/2021 I	01	991020	57 GRADY	SW-CONT SOIL	16.93	TN
01/11/2021 I	01	991021	G115 GRADY	SW-CONT SOIL	15.23	TN
01/11/2021 I	01	991022	91 GRADY	SW-CONT SOIL	17.24	TN
01/11/2021 I	01	991023	57 GRADY	SW-CONT SOIL	17.61	TN
01/11/2021 I	01	991024	G115 GRADY	SW-CONT SOIL	13.29	TN
01/11/2021 I	01	991025	91 GRADY	SW-CONT SOIL	11.93	TN
01/11/2021 I	01	991026	57 GRADY	SW-CONT SOIL	14.32	TN
01/11/2021 I	01	991027	G115 GRADY	SW-CONT SOIL	14.31	TN
01/11/2021 I	01	991028	91 GRADY	SW-CONT SOIL	19.79	TN
01/11/2021 I	01	991029	57 GRADY	SW-CONT SOIL	17.11	TN
01/11/2021 I	01	991030	G115 GRADY	SW-CONT SOIL	16.07	TN
01/11/2021 I	01	991031	91 GRADY	SW-CONT SOIL	15.55	TN
01/11/2021 I	01	991032	57 GRADY	SW-CONT SOIL	14.50	TN
01/11/2021 I	01	991033	G115 GRADY	SW-CONT SOIL	16.96	TN
01/12/2021 I	01	991037	91 GRADY	SW-CONT SOIL	20.14	TN
01/12/2021 I	01	991038	57 GRADY	SW-CONT SOIL	16.47	TN
01/12/2021 I	01	991039	G115 GRADY	SW-CONT SOIL	16.69	TN
01/12/2021 I	01	991040	91 GRADY	SW-CONT SOIL	17.99	TN
01/12/2021 I	01	991041	57 GRADY	SW-CONT SOIL	14.40	TN
01/12/2021 I	01	991042	G115 GRADY	SW-CONT SOIL	11.14	TN
01/12/2021 I	01	991045	91 GRADY	SW-CONT SOIL	13.26	TN
01/12/2021 I	01	991046	57 GRADY	SW-CONT SOIL	12.72	TN
01/12/2021 I	01	991047	G115 GRADY	SW-CONT SOIL	14.75	TN
01/12/2021 I	01	991048	91 GRADY	SW-CONT SOIL	17.28	TN
01/12/2021 I	01	991049	57 GRADY	SW-CONT SOIL	18.66	TN
01/12/2021 I	01	991050	57 GRADY	SW-CONT SOIL	18.75	TN
01/12/2021 I	01	991064	G115 GRADY	SW-CONT SOIL	20.56	TN
01/12/2021 I	01	991065	57 GRADY	SW-CONT SOIL	23.40	TN
01/12/2021 I	01	991066	91 GRADY	SW-CONT SOIL	23.77	TN
01/12/2021 I	01	991067	G115 GRADY	SW-CONT SOIL	22.05	TN
01/12/2021 I	01	991068	57 GRADY	SW-CONT SOIL	16.48	TN
01/12/2021 I	01	991069	91 GRADY	SW-CONT SOIL	21.09	TN
01/12/2021 I	01	991070	G115 GRADY	SW-CONT SOIL	17.23	TN
01/12/2021 I	01	991071	57 GRADY	SW-CONT SOIL	16.81	TN
01/12/2021 I	01	991072	91 GRADY	SW-CONT SOIL	19.49	TN
01/12/2021 I	01	991073	G115 GRADY	SW-CONT SOIL	18.93	TN
01/12/2021 I	01	991074	91 GRADY	SW-CONT SOIL	19.78	TN
01/12/2021 I	01	991075	57 GRADY	SW-CONT SOIL	20.40	TN
01/12/2021 I	01	991076	G115 GRADY	SW-CONT SOIL	20.12	TN
01/12/2021 I	01	991077	91 GRADY	SW-CONT SOIL	19.55	TN
01/12/2021 I	01	991078	57 GRADY	SW-CONT SOIL	14.42	TN
01/12/2021 I	01	991079	G115 GRADY	SW-CONT SOIL	16.12	TN
01/12/2021 I	01	991080	91 GRADY	SW-CONT SOIL	16.03	TN
01/12/2021 I	01	991081	57 GRADY	SW-CONT SOIL	13.06	TN
01/12/2021 I	01	991082	G115 GRADY	SW-CONT SOIL	11.54	TN
01/12/2021 I	01	991083	91 GRADY	SW-CONT SOIL	13.98	TN
01/12/2021 I	01	991084	57 GRADY	SW-CONT SOIL	16.20	TN
01/12/2021 I	01	991086	G115 GRADY	SW-CONT SOIL	17.51	TN
01/12/2021 I	01	991087	91 GRADY	SW-CONT SOIL	19.09	TN
01/12/2021 I	01	991088	57 GRADY	SW-CONT SOIL	15.79	TN
01/12/2021 I	01	991089	G115 GRADY	SW-CONT SOIL	13.18	TN
01/12/2021 I	01	991090	91 GRADY	SW-CONT SOIL	16.61	TN
01/12/2021 I	01	991091	57 GRADY	SW-CONT SOIL	15.03	TN
01/12/2021 I	01	991092	G115 GRADY	SW-CONT SOIL	16.50	TN
01/12/2021 I	01	991093	91 GRADY	SW-CONT SOIL	18.26	TN
01/12/2021 I	01	991094	57 GRADY	SW-CONT SOIL	17.70	TN
01/12/2021 I	01	991095	G115 GRADY	SW-CONT SOIL	17.59	TN
01/12/2021 I	01	991096	91 GRADY	SW-CONT SOIL	18.56	TN
01/12/2021 I	01	991097	G115 GRADY	SW-CONT SOIL	15.64	TN
01/12/2021 I	01	991098	57 GRADY	SW-CONT SOIL	16.86	TN
01/12/2021 I	01	991099	91 GRADY	SW-CONT SOIL	20.40	TN
01/13/2021 I	01	991100	57 GRADY	SW-CONT SOIL	16.28	TN
01/13/2021 I	01	991101	91 GRADY	SW-CONT SOIL	20.07	TN
01/13/2021 I	01	991102	G115 GRADY	SW-CONT SOIL	17.50	TN
01/13/2021 I	01	991103	57 GRADY	SW-CONT SOIL	14.72	TN
01/13/2021 I	01	991104	G115 GRADY	SW-CONT SOIL	17.13	TN
01/13/2021 I	01	991105	91 GRADY	SW-CONT SOIL	17.78	TN
01/13/2021 I	01	991106	G115 GRADY	SW-CONT SOIL	16.22	TN
01/13/2021 I	01	991125	57 GRADY	SW-CONT SOIL	19.78	TN
01/13/2021 I	01	991126	57 GRADY	SW-CONT SOIL	20.09	TN
01/13/2021 I	01	991127	57 GRADY	SW-CONT SOIL	18.53	TN
01/13/2021 I	01	991128	57 GRADY	SW-CONT SOIL	18.37	TN
01/13/2021 I	01	991129	57 GRADY	SW-CONT SOIL	21.42	TN
01/13/2021 I	01	991130	57 GRADY	SW-CONT SOIL	18.14	TN
01/13/2021 I	01	991131	57 GRADY	SW-CONT SOIL	13.53	TN
01/13/2021 I	01	991132	57 GRADY	SW-CONT SOIL	19.55	TN
01/13/2021 I	01	991133	57 GRADY	SW-CONT SOIL	19.55	TN

Appendix H. Republic Tonnage Report

Project No. 150054, Snopac, Seattle, Washington

011630- Manson Construction Co.

Ticket Date	Facility and Ticket Number	Truck #	Material	Material Total	
01/14/2021 I	01 991134	57 GRADY	SW-CONT SOIL	16.00	TN
01/14/2021 I	01 991135	57 GRADY	SW-CONT SOIL	19.42	TN
01/14/2021 I	01 991136	57 GRADY	SW-CONT SOIL	18.84	TN
01/14/2021 I	01 991137	57 GRADY	SW-CONT SOIL	20.46	TN
01/14/2021 I	01 991138	57 GRADY	SW-CONT SOIL	18.11	TN
01/14/2021 I	01 991139	57 GRADY	SW-CONT SOIL	15.06	TN
01/15/2021 I	01 991203	G115 GRADY	SW-CONT SOIL	19.28	TN
01/15/2021 I	01 991205	G100 GRADY	SW-CONT SOIL	22.32	TN
01/15/2021 I	01 991208	G115 GRADY	SW-CONT SOIL	19.07	TN
01/15/2021 I	01 991213	G100 GRADY	SW-CONT SOIL	21.02	TN
01/15/2021 I	01 991214	G115 GRADY	SW-CONT SOIL	20.23	TN
01/15/2021 I	01 991215	G100 GRADY	SW-CONT SOIL	23.76	TN
01/15/2021 I	01 991218	G115 GRADY	SW-CONT SOIL	21.53	TN
01/15/2021 I	01 991219	G100 GRADY	SW-CONT SOIL	21.14	TN
01/15/2021 I	01 991224	G115 GRADY	SW-CONT SOIL	20.41	TN
01/15/2021 I	01 991225	G100 GRADY	SW-CONT SOIL	20.35	TN
01/15/2021 I	01 991229	G115 GRADY	SW-CONT SOIL	20.39	TN
01/15/2021 I	01 991231	G100 GRADY	SW-CONT SOIL	19.91	TN
01/15/2021 I	01 991242	G115 GRADY	SW-CONT SOIL	18.46	TN
01/15/2021 I	01 991245	G115 GRADY	SW-CONT SOIL	20.53	TN
01/15/2021 I	01 991247	G100 GRADY	SW-CONT SOIL	20.13	TN
01/15/2021 I	01 991248	G115 GRADY	SW-CONT SOIL	16.28	TN
01/15/2021 I	01 991250	G100 GRADY	SW-CONT SOIL	21.60	TN
01/15/2021 I	01 991251	G115 GRADY	SW-CONT SOIL	19.20	TN
01/15/2021 I	01 991252	G100 GRADY	SW-CONT SOIL	21.44	TN
01/15/2021 I	01 991253	G115 GRADY	SW-CONT SOIL	19.65	TN
01/15/2021 I	01 991254	G100 GRADY	SW-CONT SOIL	22.14	TN
01/15/2021 I	01 991255	G115 GRADY	SW-CONT SOIL	18.03	TN
01/15/2021 I	01 991256	G100 GRADY	SW-CONT SOIL	21.80	TN
01/15/2021 I	01 991257	G115 GRADY	SW-CONT SOIL	17.61	TN
01/21/2021 I	01 991430	50 JMR	SW-CONT SOIL	21.80	TN
01/21/2021 I	01 991439	16 JMR	SW-CONT SOIL	16.30	TN
01/21/2021 I	01 991441	50 JMR	SW-CONT SOIL	21.83	TN
01/21/2021 I	01 991449	16 JMR	SW-CONT SOIL	18.99	TN
01/21/2021 I	01 991454	50 JMR	SW-CONT SOIL	21.25	TN
01/21/2021 I	01 991455	16 JMR	SW-CONT SOIL	17.37	TN
01/21/2021 I	01 991464	50 JMR	SW-CONT SOIL	17.78	TN
01/21/2021 I	01 991470	16 JMR	SW-CONT SOIL	18.65	TN
01/21/2021 I	01 991474	50 JMR	SW-CONT SOIL	18.50	TN
01/21/2021 I	01 991480	16 JMR	SW-CONT SOIL	19.48	TN
01/21/2021 I	01 991486	50 JMR	SW-CONT SOIL	19.46	TN
01/21/2021 I	01 991493	16 JMR	SW-CONT SOIL	18.77	TN
01/21/2021 I	01 991501	50 JMR	SW-CONT SOIL	19.93	TN
01/21/2021 I	01 991505	16 JMR	SW-CONT SOIL	19.20	TN
01/21/2021 I	01 991513	50 JMR	SW-CONT SOIL	15.25	TN
01/21/2021 I	01 991515	16 JMR	SW-CONT SOIL	5.66	TN
01/21/2021 I	01 991520	16 JMR	SW-CONT SOIL	15.15	TN
01/21/2021 I	01 991523	50 JMR	SW-CONT SOIL	15.83	TN
01/21/2021 I	01 991525	16 JMR	SW-CONT SOIL	18.00	TN
01/21/2021 I	01 991528	50 JMR	SW-CONT SOIL	19.04	TN
01/21/2021 I	01 991530	16 JMR	SW-CONT SOIL	13.49	TN
01/22/2021 I	01 991550	550 JMR	SW-CONT SOIL	23.16	TN
01/22/2021 I	01 991551	16 JMR	SW-CONT SOIL	20.96	TN
01/22/2021 I	01 991553	50 JMR	SW-CONT SOIL	20.75	TN
01/22/2021 I	01 991554	550 JMR	SW-CONT SOIL	22.36	TN
01/22/2021 I	01 991558	16 JMR	SW-CONT SOIL	19.03	TN
01/22/2021 I	01 991560	50 JMR	SW-CONT SOIL	21.64	TN
01/22/2021 I	01 991561	550 JMR	SW-CONT SOIL	19.05	TN
01/22/2021 I	01 991562	16 JMR	SW-CONT SOIL	19.02	TN
01/22/2021 I	01 991563	50 JMR	SW-CONT SOIL	21.62	TN
01/22/2021 I	01 991565	550 JMR	SW-CONT SOIL	15.43	TN
01/22/2021 I	01 991568	16 JMR	SW-CONT SOIL	18.59	TN
01/22/2021 I	01 991574	550 JMR	SW-CONT SOIL	17.03	TN
01/22/2021 I	01 991575	50 JMR	SW-CONT SOIL	20.83	TN
01/22/2021 I	01 991576	16 JMR	SW-CONT SOIL	19.43	TN
01/22/2021 I	01 991578	50 JMR	SW-CONT SOIL	21.61	TN
01/22/2021 I	01 991582	50 JMR	SW-CONT SOIL	1.89	TN

Tickets Reported: 322 Items
Reported: 322

Material Summary

VG - SW-CONT SOIL	5983.31	TN

REPUBLIC SERVICES

CERTIFICATE OF DESTRUCTION

I, Don Tibbets, of Republic Services (RSI facility), hereby certify that the entire product described in Section A has been properly and legally disposed of in Roosevelt Regional MSW Landfill on 7/28/20 -7/26, 2021 (attach any appropriate documentation).

I understand that due to potential concerns related to such things as health, quality, and loss of goodwill, 5055 Properties LLC (Company) does not want this product to be distributed to consumers, even through so called "distressed merchandise" channels of trade, and I further certify that these items were destroyed in such a manner that it cannot be sold, and that the company has taken every reasonable step to prevent resale of said items.

Name (print): Don Tibbets

Signature: Don Tibbets

Title: Area Director of Operations

Date: 7/26/2021

Section A- Products Destroyed (attached additional sheets if needed):

Waste Profile Number (if applicable): 4178203185 / TB-3185

Description of Product	*Quantity or Weight*
Upland Soil	5,983.31 Tons

Summary Contract Activity Report

All Ticket Types
History and Waiting
* - Confirmed Qty Applied to Billing

July 28, 2020 to July 26, 2021
Specific Contract(s) : 'TB-3185'

All Facilities

	Weight		Volume		Count							
Contract	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Billing Qty	Material Total	Tax Total	Total	Item Count	Ticket Count
TB-3185												
SW-CONT SOIL	5,983.31	0.00 TN	0.00	0.00 YD	0.00	0.00	5,983.31 TN	$320,107.91	$0.00	$320,107.91	322	
Contract Totals:	5,983.31	0.00 TN	0.00	0.00 YD	0.00	0.00	5,983.31 TN	$320,107.91	$0.00	$320,107.91	322	322
	5,983.31	0.00 TN	0.00	0.00 YD	0.00	0.00	5,983.31 TN	$320,107.91	$0.00	$320,107.91	322	322

APPENDIX K

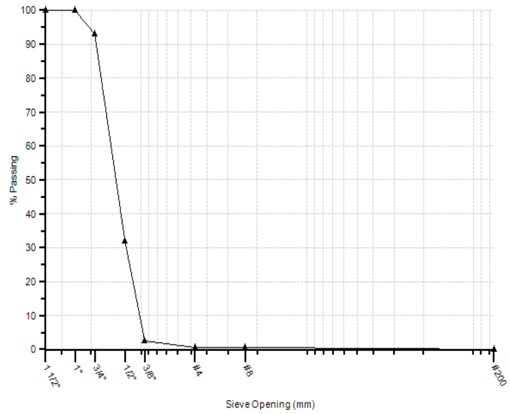
Material Specifications and Import Clean Certification

Compliance Report

Sample Information

Sample No	-1603881682
Product Id	91054
Product Name	AASHTO #57 - 3/4" Washed Gravel
Specification	WSDOT 9-03.12 (4) Gravel BFF Drains
Date Sampled	09/17/2020 16:16
Sampled By	Garret Varnell
Sample Type	Investigative
Sample Method	Loader Mixed Pad
Sample Location	Black Diamond A-511

Notes



D10(ES): 10.18 D30: 12.27 D50: 14.14 D60: 15.14 D15/D85: 0.59 Cu: 1.49 Cc: 0.98

Gradation Results

Quality Results

Date Tested 09/17/2020 16:16

Tested By Cassius Hughes

Sieve	% Passing	Tolerances	Test	Result	Unit	Tolerances	Method
1 1/2" (37.5mm)	100.0						
1" (25mm)	100.0	≤100					
3/4" (19mm)	93.1	80-100					
1/2" (12.5mm)	32.0						
3/8" (9.5mm)	2.6	0-40					
#4 (4.75mm)	0.7	0-4					
#8 (2.36mm)	0.5						
#200 (75µm)	0.12	0-2					

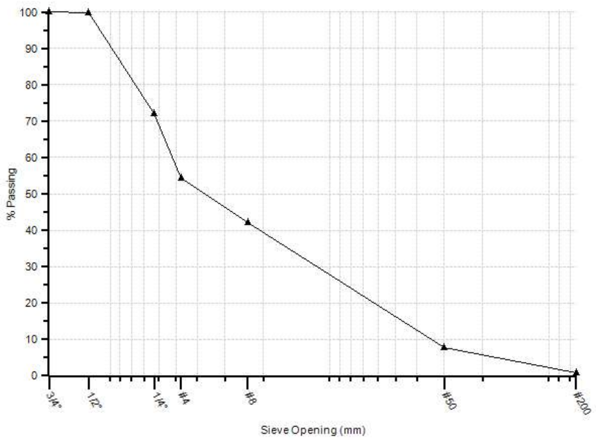
Compliance Report

Sample Information

Sample No	-1605806900
Product Id	91250
Product Name	COS Type 26
Specification	C.O.S. Type 26
Date Sampled	01/07/2020 13:03
Sampled By	Dan Reimland
Sample Type	Investigative
Sample Method	Loader Mixed Pad

Notes

stockpile sample



D10(ES): 0.34 D30: 1.14 D50: 3.70 D60: 5.20 D15/D85: 0.05 Cu: 15.10 Cc: 0.73

Gradation Results

Date Tested 01/07/2020 13:03

Tested By Dan Reimland

Sieve	% Passing	Tolerances
3/4" (19mm)	100.0	≤100
1/2" (12.5mm)	99.6	
1/4" (6.3mm)	72.0	
#4 (4.75mm)	54.3	28-56
#8 (2.36mm)	42.2	20-50
#50 (.3mm)	7.7	3-12
#200 (75µm)	0.93	0-1

Quality Results

Test	Result	Unit	Tolerances	Method

EXHIBIT E.6 Imported Fill Certification Form

The undersigned's signature on this form certifies the specification and quality of the imported fill to be used as backfill.

1. The imported fill is Type 26 mineral aggregate and complies with City of Seattle Standard Specification 9-03.16.
2. The imported materials is virgin native rock or aggregate produced from a quarry, with no man-made or recycled materials within it.
3. The supplier's quarry is free from environmental contamination defined as detectable concentrations of petroleum hydrocarbons or other organic chemicals (e.g., PCBs, solvents); concentrations of metals above Puget Sound natural background levels defined by Department of Ecology; or any other characteristic (e.g., unpleasant odor) making the fill unsuitable for use at the Project Site in the judgement of the Engineer or Owner.

By signing this form, I certify that all imported fill satisfies contractual requirements.

Contractor: Grady Excavating, Inc.

By: ______________________
(Signature)

Name: Allison Good
(Name, printed or typed)

Title: Project Manager

Date: 12/15/2020

APPENDIX L

ProUCL Outputs for Statistical Compliance Summary

	General UCL Statistics for Data Sets with Non-Detects		
User Selected Options			
From File	Sheet4.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
Arsenic			
General Statistics			
Number of Valid Data	47	Number of Detected Data	46
Number of Distinct Detected Data	41	Number of Non-Detect Data	1
		Percent Non-Detects	2.13%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.05	Minimum Detected	0.0488
Maximum Detected	10.1	Maximum Detected	2.313
Mean of Detected	3.074	Mean of Detected	0.909
SD of Detected	2.169	SD of Detected	0.649
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1	Maximum Non-Detect	0
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Test Statistic	0.922
5% Shapiro Wilk Critical Value	0.945	5% Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.019	Mean	0.875
SD	2.178	SD	0.683
95% DL/2 (t) UCL	3.552	95% H-Stat (DL/2) UCL	3.712
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.004	Mean in Log Scale	0.874
SD	2.178	SD in Log Scale	0.686
95% MLE (t) UCL	3.538	Mean in Original Scale	3.018
95% MLE (Tiku) UCL	3.505	SD in Original Scale	2.179
		95% t UCL	3.552
		95% Percentile Bootstrap UCL	3.516
		95% BCA Bootstrap UCL	3.596
		95% H UCL	3.72
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.344	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.311		
nu star	215.6		
A-D Test Statistic	1.235	Nonparametric Statistics	
5% A-D Critical Value	0.758	Kaplan-Meier (KM) Method	

K-S Test Statistic	0.758	Mean	3.031
5% K-S Critical Value	0.132	SD	2.142
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.316
		95% KM (t) UCL	3.561
Assuming Gamma Distribution		95% KM (z) UCL	3.55
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.56
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	3.677
Maximum	10.1	95% KM (BCA) UCL	3.57
Mean	3.008	95% KM (Percentile Bootstrap) UCL	3.543
Median	2.23	95% KM (Chebyshev) UCL	4.408
SD	2.192	97.5% KM (Chebyshev) UCL	5.004
k star	1.069	99% KM (Chebyshev) UCL	6.174
Theta star	2.815		
Nu star	100.4	Potential UCLs to Use	
AppChi2	78.32	95% KM (Chebyshev) UCL	4.408
95% Gamma Approximate UCL (Use when n >= 40)	3.858		
95% Adjusted Gamma UCL (Use when n < 40)	3.889		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Mercury

General Statistics

Number of Valid Data	45	Number of Detected Data	34
Number of Distinct Detected Data	23	Number of Non-Detect Data	11
		Percent Non-Detects	24.44%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.01	Minimum Detected	-4.605
Maximum Detected	0.13	Maximum Detected	-2.04
Mean of Detected	0.0314	Mean of Detected	-3.674
SD of Detected	0.0241	SD of Detected	0.641
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.78%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Test Statistic	0.948
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0279	Mean	-3.918
SD	0.024	SD	0.871

95% DL/2 (t) UCL	0.0339	95% H-Stat (DL/2) UCL	0.039
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.951
		SD in Log Scale	0.803
		Mean in Original Scale	0.0262
		SD in Original Scale	0.0232
		95% t UCL	0.032
		95% Percentile Bootstrap UCL	0.0321
		95% BCA Bootstrap UCL	0.0335
		95% H-UCL	0.0345
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.312	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0136		
nu star	157.2		
A-D Test Statistic	0.667	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	0.0271
5% K-S Critical Value	0.152	SD	0.0226
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00349
		95% KM (t) UCL	0.033
Assuming Gamma Distribution		95% KM (z) UCL	0.0329
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.033
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	0.0355
Maximum	0.13	95% KM (BCA) UCL	0.0328
Mean	0.0252	95% KM (Percentile Bootstrap) UCL	0.0333
Median	0.019	95% KM (Chebyshev) UCL	0.0423
SD	0.0246	97.5% KM (Chebyshev) UCL	0.0489
k star	0.329	99% KM (Chebyshev) UCL	0.0618
Theta star	0.0766		
Nu star	29.61	Potential UCLs to Use	
AppChi2	18.19	95% KM (Percentile Bootstrap) UCL	0.0333
95% Gamma Approximate UCL (Use when n >= 40)	0.041		
95% Adjusted Gamma UCL (Use when n < 40)	0.0417		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Zinc

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	41
Raw Statistics		Log-transformed Statistics	
Minimum	11.4	Minimum of Log Data	2.434
Maximum	87	Maximum of Log Data	4.466
Mean	27.09	Mean of log Data	3.162
Geometric Mean	23.63	SD of log Data	0.496

Median	20.9		
SD	16.78		
Std. Error of Mean	2.501		
Coefficient of Variation	0.619		
Skewness	1.964		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.768	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	31.29	95% H-UCL	30.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	35.63
95% Adjusted-CLT UCL (Chen-1995)	31.98	97.5% Chebyshev (MVUE) UCL	39.52
95% Modified-t UCL (Johnson-1978)	31.41	99% Chebyshev (MVUE) UCL	47.16
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.577	Data do not follow a Discernable Distribution (0.05)	
Theta Star	7.573		
MLE of Mean	27.09		
MLE of Standard Deviation	14.32		
nu star	322		
Approximate Chi Square Value (.05)	281.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	31.2
Adjusted Chi Square Value	280.1	95% Jackknife UCL	31.29
		95% Standard Bootstrap UCL	31.12
Anderson-Darling Test Statistic	1.787	95% Bootstrap-t UCL	32.4
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	31.94
Kolmogorov-Smirnov Test Statistic	0.171	95% Percentile Bootstrap UCL	31.47
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	31.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	37.99
		97.5% Chebyshev(Mean, Sd) UCL	42.71
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	51.97
95% Approximate Gamma UCL (Use when n >= 40)	30.99		
95% Adjusted Gamma UCL (Use when n < 40)	31.13		
Potential UCL to Use		Use 95% Student's-t UCL	31.29
		or 95% Modified-t UCL	31.41

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Acenaphthene

General Statistics

Number of Valid Data	45	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	40
		Percent Non-Detects	88.89%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	0.036	Maximum Detected	-3.324
Mean of Detected	0.0102	Mean of Detected	-5.211
SD of Detected	0.0145	SD of Detected	1.148
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.004	Maximum Non-Detect	-5.521
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.56%

Warning: There are only 5 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.658	Shapiro Wilk Test Statistic	0.857
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00207	Mean	-6.688
SD	0.00527	SD	0.648
95% DL/2 (t) UCL	0.00339	95% H-Stat (DL/2) UCL	0.00187
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-10.27
		SD in Log Scale	2.889
		Mean in Original Scale	0.00124
		SD in Original Scale	0.00544
		95% t UCL	0.0026
		95% Percentile Bootstrap UCL	0.00281
		95% BCA Bootstrap UCL	0.00381
		95% H-UCL	0.02
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.504	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0203		
nu star	5.036		
A-D Test Statistic	0.651	Nonparametric Statistics	
5% A-D Critical Value	0.693	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.693	Mean	0.00292
5% K-S Critical Value	0.365	SD	0.00505
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.4099E-4
		95% KM (t) UCL	0.00433
Assuming Gamma Distribution		95% KM (z) UCL	0.0043

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00402
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	0.00819
Maximum	0.036	95% KM (BCA) UCL	0.00893
Mean	0.00114	95% KM (Percentile Bootstrap) UCL	0.00547
Median	1.0000E-6	95% KM (Chebyshev) UCL	0.00658
SD	0.00546	97.5% KM (Chebyshev) UCL	0.00817
k star	0.135	99% KM (Chebyshev) UCL	0.0113
Theta star	0.00842		
Nu star	12.18	Potential UCLs to Use	
AppChi2	5.344	95% KM (t) UCL	0.00433
95% Gamma Approximate UCL (Use when n >= 40)	0.00259		
95% Adjusted Gamma UCL (Use when n < 40)	0.00267		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichleichle, and L2006).

ıal insight, th For additional insight, the user may want to consult a statistician.

Total PCB Aroclors

General Statistics

Number of Valid Data	45	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	42
		Percent Non-Detects	93.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0023	Minimum Detected	-6.075
Maximum Detected	0.0025	Maximum Detected	-5.991
Mean of Detected	0.0024	Mean of Detected	-6.033
SD of Detected	1.0000E-4	SD of Detected	0.0417
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.004	Maximum Non-Detect	-5.521
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00116	Mean	-6.803
SD	4.1963E-4	SD	0.272
95% DL/2 (t) UCL	0.00127	95% H-Stat (DL/2) UCL	0.00124
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.34
		SD in Log Scale	0.156
		Mean in Original Scale	0.00179
		SD in Original Scale	2.8040E-4
		95% t UCL	0.00186
		95% Percentile Bootstrap UCL	0.00185
		95% BCA Bootstrap UCL	0.00185
		95% H-UCL	0.00186
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.00231
5% K-S Critical Value	N/A	SD	3.3756E-5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.3793E-6
		95% KM (t) UCL	0.00232
Assuming Gamma Distribution		95% KM (z) UCL	0.00232
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00237
Minimum	N/A	95% KM (bootstrap t) UCL	0.00231
Maximum	N/A	95% KM (BCA) UCL	0.0025
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.00233
SD	N/A	97.5% KM (Chebyshev) UCL	0.00235
k star	N/A	99% KM (Chebyshev) UCL	0.00237
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.00232
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Total cPAHs TEQ

General Statistics

Number of Valid Data	45	Number of Detected Data	17
Number of Distinct Detected Data	17	Number of Non-Detect Data	28
		Percent Non-Detects	62.22%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00303	Minimum Detected	-5.799
Maximum Detected	0.07	Maximum Detected	-2.659
Mean of Detected	0.0213	Mean of Detected	-4.486
SD of Detected	0.023	SD of Detected	1.181
Minimum Non-Detect	0.00302	Minimum Non-Detect	-5.802
Maximum Non-Detect	0.00302	Maximum Non-Detect	-5.802

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.777	Shapiro Wilk Test Statistic	0.847
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00897	Mean	-5.736
SD	0.0169	SD	1.216
95% DL/2 (t) UCL	0.0132	95% H-Stat (DL/2) UCL	0.0109
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.772
		SD in Log Scale	2.238
		Mean in Original Scale	0.00839
		SD in Original Scale	0.0172
		95% t UCL	0.0127
		95% Percentile Bootstrap UCL	0.0128
		95% BCA Bootstrap UCL	0.0139
		95% H-UCL	0.0546
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.796	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0267		
nu star	27.06		
A-D Test Statistic	1.286	Nonparametric Statistics	
5% A-D Critical Value	0.769	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.769	Mean	0.00991
5% K-S Critical Value	0.216	SD	0.0163
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00251
		95% KM (t) UCL	0.0141
Assuming Gamma Distribution		95% KM (z) UCL	0.014
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0139
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	0.0166
Maximum	0.07	95% KM (BCA) UCL	0.0145
Mean	0.00803	95% KM (Percentile Bootstrap) UCL	0.0141
Median	1.0000E-6	95% KM (Chebyshev) UCL	0.0209
SD	0.0174	97.5% KM (Chebyshev) UCL	0.0256
k star	0.147	99% KM (Chebyshev) UCL	0.0349
Theta star	0.0546		
Nu star	13.24	Potential UCLs to Use	

AppChi2	6.055	95% KM (BCA) UCL	0.0145
95% Gamma Approximate UCL (Use when n >= 40)	0.0176		
95% Adjusted Gamma UCL (Use when n < 40)	0.018		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	Sheet4.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene

General Statistics

Number of Valid Data	45	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	36
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	0.093	Maximum Detected	-2.375
Mean of Detected	0.0235	Mean of Detected	-4.708
SD of Detected	0.035	SD of Detected	1.431
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.004	Maximum Non-Detect	-5.521

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	39
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	6
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	86.67%

Warning: There are only 9 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.651	Shapiro Wilk Test Statistic	0.871
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00554	Mean	-6.437
SD	0.0175	SD	1.076
95% DL/2 (t) UCL	0.00992	95% H-Stat (DL/2) UCL	0.00425
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-9.498
		SD in Log Scale	3.337
		Mean in Original Scale	0.00481
		SD in Original Scale	0.0177
		95% t UCL	0.00924
		95% Percentile Bootstrap UCL	0.00956

		95% BCA Bootstrap UCL	0.0121
		95% H-UCL	0.348
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.5	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.0469		
nu star	9.008		
A-D Test Statistic	0.833	Nonparametric Statistics	
5% A-D Critical Value	0.76	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.76	Mean	0.00638
5% K-S Critical Value	0.291	SD	0.0171
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.0027
		95% KM (t) UCL	0.0109
Assuming Gamma Distribution		95% KM (z) UCL	0.0108
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0106
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	0.0369
Maximum	0.093	95% KM (BCA) UCL	0.0116
Mean	0.0047	95% KM (Percentile Bootstrap) UCL	0.0114
Median	1.0000E-6	95% KM (Chebyshev) UCL	0.0181
SD	0.0177	97.5% KM (Chebyshev) UCL	0.0232
k star	0.126	99% KM (Chebyshev) UCL	0.0332
Theta star	0.0372		
Nu star	11.38	Potential UCLs to Use	
AppChi2	4.821	95% KM (t) UCL	0.0109
95% Gamma Approximate UCL (Use when n >= 40)	0.0111		
95% Adjusted Gamma UCL (Use when n < 40)	0.0114		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX M

Monitoring Well Installation Boring Logs

Coarse-Grained Soils - More than 50%[1] Retained on No. 200 Sieve	Gravels - More than 50%[1] of Coarse Fraction Retained on No. 4 Sieve	≤5% Fines	▨	**GW**	Well-graded GRAVEL Well-graded GRAVEL WITH SAND
			▨	**GP**	Poorly-graded GRAVEL Poorly-graded GRAVEL WITH SAND
		≥15% Fines	▨	**GM**	SILTY GRAVEL SILTY GRAVEL WITH SAND
			▨	**GC**	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	Sands - 50%[1] or More of Coarse Fraction Passes No. 4 Sieve	≤5% Fines	▨	**SW**	Well-graded SAND Well-graded SAND WITH GRAVEL
			▨	**SP**	Poorly-graded SAND Poorly-graded SAND WITH GRAVEL
		≥15% Fines	▨	**SM**	SILTY SAND SILTY SAND WITH GRAVEL
			▨	**SC**	CLAYEY SAND CLAYEY SAND WITH GRAVEL
Fine-Grained Soils - 50%[1] or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less than 50%		▨	**ML**	SILT SANDY or GRAVELLY SILT SILT WITH SAND SILT WITH GRAVEL
			▨	**CL**	LEAN CLAY SANDY or GRAVELLY LEAN CLAY LEAN CLAY WITH SAND LEAN CLAY WITH GRAVEL
			▨	**OL**	ORGANIC SILT SANDY or GRAVELLY ORGANIC SILT ORGANIC SILT WITH SAND ORGANIC SILT WITH GRAVEL
	Silts and Clays Liquid Limit 50% or More		▨	**MH**	ELASTIC SILT SANDY or GRAVELLY ELASTIC SILT ELASTIC SILT WITH SAND ELASTIC SILT WITH GRAVEL
			▨	**CH**	FAT CLAY SANDY or GRAVELLY FAT CLAY FAT CLAY WITH SAND FAT CLAY WITH GRAVEL
			▨	**OH**	ORGANIC CLAY SANDY or GRAVELLY ORGANIC CLAY ORGANIC CLAY WITH SAND ORGANIC CLAY WITH GRAVEL
Highly Organic Soils			▨	**PT**	PEAT and other mostly organic soils

"WITH SILT" or "WITH CLAY" means 5 to 15% silt and clay, denoted by a "-" in the group name; e.g., SP-SM • "SILTY" or "CLAYEY" means >15% silt and clay • "WITH SAND" or "WITH GRAVEL" means 15 to 30% sand and gravel. • "SANDY" or "GRAVELLY" means >30% sand and gravel. • "Well-graded" means approximately equal amounts of fine to coarse grain sizes • "Poorly graded" means unequal amounts of grain sizes • Group names separated by "/" means soil contains layers of the two soil types; e.g., SM/ML.

Soils were described and identified in the field in general accordance with the methods described in ASTM D2488. Where indicated in the log, soils were classified using ASTM D2487 or other laboratory tests as appropriate. Refer to the report accompanying these exploration logs for details.

1. Estimated or measured percentage by dry weight
2. (SPT) Standard Penetration Test (ASTM D1586)
3. Determined by SPT, DCPT (ASTM STP399) or other field methods. See report text for details.

GEOTECHNICAL LAB TESTS

MC = Natural Moisture Content
PS = Particle Size Distribution
FC = Fines Content (% < 0.075 mm)
GH = Hydrometer Test
AL = Atterberg Limits
C = Consolidation Test
Str = Strength Test
OC = Organic Content (% Loss by Ignition)
Comp = Proctor Test
K = Hydraulic Conductivity Test
SG = Specific Gravity Test

CHEMICAL LAB TESTS

Organic Chemicals

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
TPH-Dx = Diesel and Oil-Range Petroleum Hydrocarbons
TPH-G = Gasoline-Range Petroleum Hydrocarbons
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
PAHs = Polycyclic Aromatic Hydrocarbon Compounds
PCBs = Polychlorinated Biphenyls

Metals

RCRA8 = As, Ba, Cd, Cr, Pb, Hg, Se, Ag, (d = dissolved, t = total)
MTCA5 = As, Cd, Cr, Hg, Pb (d = dissolved, t = total)
PP-13 = Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn (d=dissolved, t=total)

FIELD TESTS

PID = Photoionization Detector
Sheen = Oil Sheen Test
SPT[2] = Standard Penetration Test
NSPT = Non-Standard Penetration Test
DCPT = Dynamic Cone Penetration Test

COMPONENT DEFINITIONS

Descriptive Term		***Size Range and Sieve Number***
Boulders	=	Larger than 12 inches
Cobbles	=	3 inches to 12 inches
Coarse Gravel	=	3 inches to 3/4 inches
Fine Gravel	=	3/4 inches to No. 4 (4.75 mm)
Coarse Sand	=	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	=	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	=	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	=	Smaller than No. 200 (0.075 mm)

ESTIMATED[1] PERCENTAGE

% by Weight		***Modifier***	***% by Weight***		***Modifier***
<1	=	Subtrace	15 to 25	=	Little
1 to <5	=	Trace	30 to 45	=	Some
5 to 10	=	Few	>50	=	Mostly

MOISTURE CONTENT

Dry = Absence of moisture, dusty, dry to the touch
Slightly Moist = Perceptible moisture
Moist = Damp but no visible water
Very Moist = Water visible but not free draining
Wet = Visible free water, usually from below water table

RELATIVE DENSITY

Non-Cohesive or Coarse-Grained Soils

Density[3]		***SPT[2] Blows/Foot***	***Penetration with 1/2" Diameter Rod***
Very Loose	=	0 to 4	≥ 2'
Loose	=	5 to 10	1' to 2'
Medium Dense	=	11 to 30	3" to 1'
Dense	=	31 to 50	1" to 3"
Very Dense	=	> 50	< 1"

CONSISTENCY

Cohesive or Fine-Grained Soils

Consistency[3]		***SPT[2] Blows/Foot***	***Manual Test***
Very Soft	=	0 to 1	Penetrated >1" easily by thumb. Extrudes between thumb & fingers.
Soft	=	2 to 4	Penetrated 1/4" to 1" easily by thumb. Easily molded.
Medium Stiff	=	5 to 8	Penetrated >1/4" with effort by thumb. Molded with strong pressure.
Stiff	=	9 to 15	Indented ~1/4" with effort by thumb.
Very Stiff	=	16 to 30	Indented easily by thumbnail.
Hard	=	> 30	Indented with difficulty by thumbnail.

GEOLOGIC CONTACTS

Observed and Distinct	Observed and Gradual	Inferred
———	———	— — — —

Aspect CONSULTING

Exploration Log Key

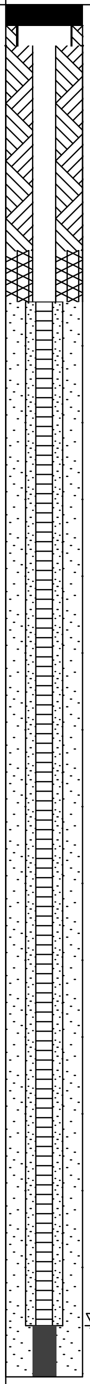
AI Path: Q:_ACAD Standards\FIELD REFERENCE\MASTERS\Exploration Log Key-2018.ai // user: jinman // last saved: 12/31/2018

Aspect CONSULTING

Snopac 2021 - 150054

Environmental Exploration Log

	Project Address & Site Specific Location 5055 E Marginal Way, SW corner of lot		*Coordinates (Lat,Lon WGS84)* 47.5560, -122.3392 (est)	*Exploration Number* **MW-13**
Contractor Cascade	*Equipment* Direct push rig	*Sampling Method* Percussion hammer	*Ground Surface Elev.* 15' (est)	Ecology Well Tag No. BMM669
Operator Scott	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 6/21/2021	*Top of Casing Elev.* NA	*Depth to Water (Below GS)* 12.5' (ATD)



Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	15	8" flush-mount steel monument			PID=0.0 Sheen=None		**FILL (EXCAVATION BACKFILL)** GRAVEL WITH SILT AND SAND (GW-GM); moist, dark gray, no odor; fine to coarse, subrounded to subangular gravel; fine to coarse sand	0
1	14	Concrete monument seal						1
2	13	Hydrated bentonite chips						2
3	12		○		PID=0.0 Sheen=None			3
4	11							4
5	10				PID=0.0 Sheen=None			5
6	9							6
7	8	2/12 silica sand filter pack			PID=0.0 Sheen=None			7
8	7	0.010" slotted screen						8
9	6		○		PID=0.0 Sheen=None			9
10	5							10
11	4				PID=0.0 Sheen=None		**FILL** SAND WITH SILT (SP-SM); wet, gray, no odor; subrounded, non-scintillant sand	11
12	3	∇ 6/21/2021					**ESTUARINE UNIT** SILT (ML); medium plasticity, very moist, brown, contains wood debris, no odor	12
13	2				Sheen=None PID=0.0		Bottom of exploration at 13 ft. bgs.	13
14	1							14

Legend

Sample Type

◎ No Soil Sample Recovery

◫ Continuous core 1.68" ID

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: AET 7/20/21

Exploration Log
MW-13
Sheet 1 of 1

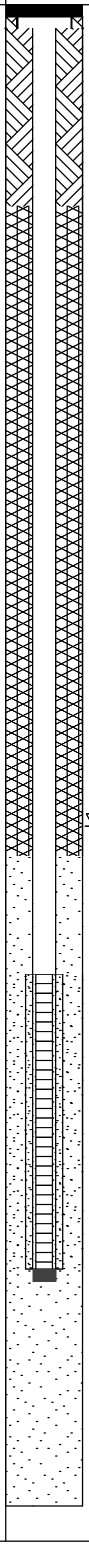
Snopac 2021 - 150054

Environmental Exploration Log

Project Address & Site Specific Location 5055 E Marginal Way, SW corner of lot, N of MW-13	*Coordinates (Lat,Lon WGS84)* 47.5560, -122.3392 (est)	*Exploration Number* **MW-14**
Contractor Cascade	*Equipment* Direct push rig	*Sampling Method* Percussion hammer
Ground Surface Elev. 15' (est)	Ecology Well Tag No. BMM670	
Operator Scott	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 6/21/2021
Top of Casing Elev. NA	*Depth to Water (Below GS)* 13.5' (ATD)	

Depth (feet)	Elev. (feet)
0	15
5	10
10	5
15	0
20	-5
25	-10

Exploration Notes and Completion Details



8" flush-mount steel monument

Concrete monument seal

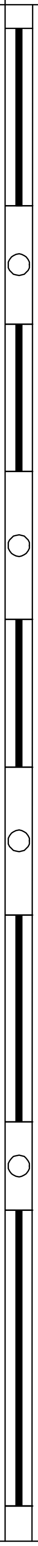
Hydrated bentonite chips

∇ 6/21/2021

2/12 silica sand filter pack

0.010" slotted screen

Sample Type/ID



Analytical Sample Number & Lab Test(s)

Field Tests

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

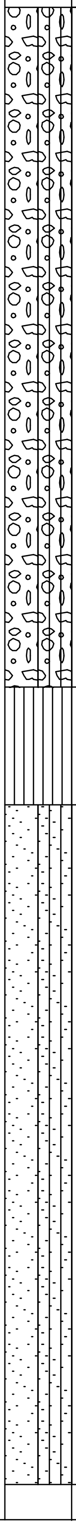
PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

PID=0.0 Sheen=None

Material Type



Description

FILL (EXCAVATION BACKFILL)

GRAVEL WITH SILT AND SAND (GW-GM); low plasticity, moist to very moist, dark gray, no odors; fine to coarse, subrounded to subangular gravel; fine to coarse sand

ESTUARINE UNIT

SILT (ML); medium plasticity, moist, brown, contains wood debris, no odor; brown silt; trace fine sand

ALLUVIUM

SAND WITH SILT (SP-SM); low plasticity, wet, gray, no odor; subrounded, non-scintillant sand; brown silt

Bottom of exploration at 25 ft. bgs.

Legend

Sample Type

▢ No Soil Sample Recovery

▮ Continuous core 1.68" ID

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: AET 7/20/21

Exploration Log MW-14

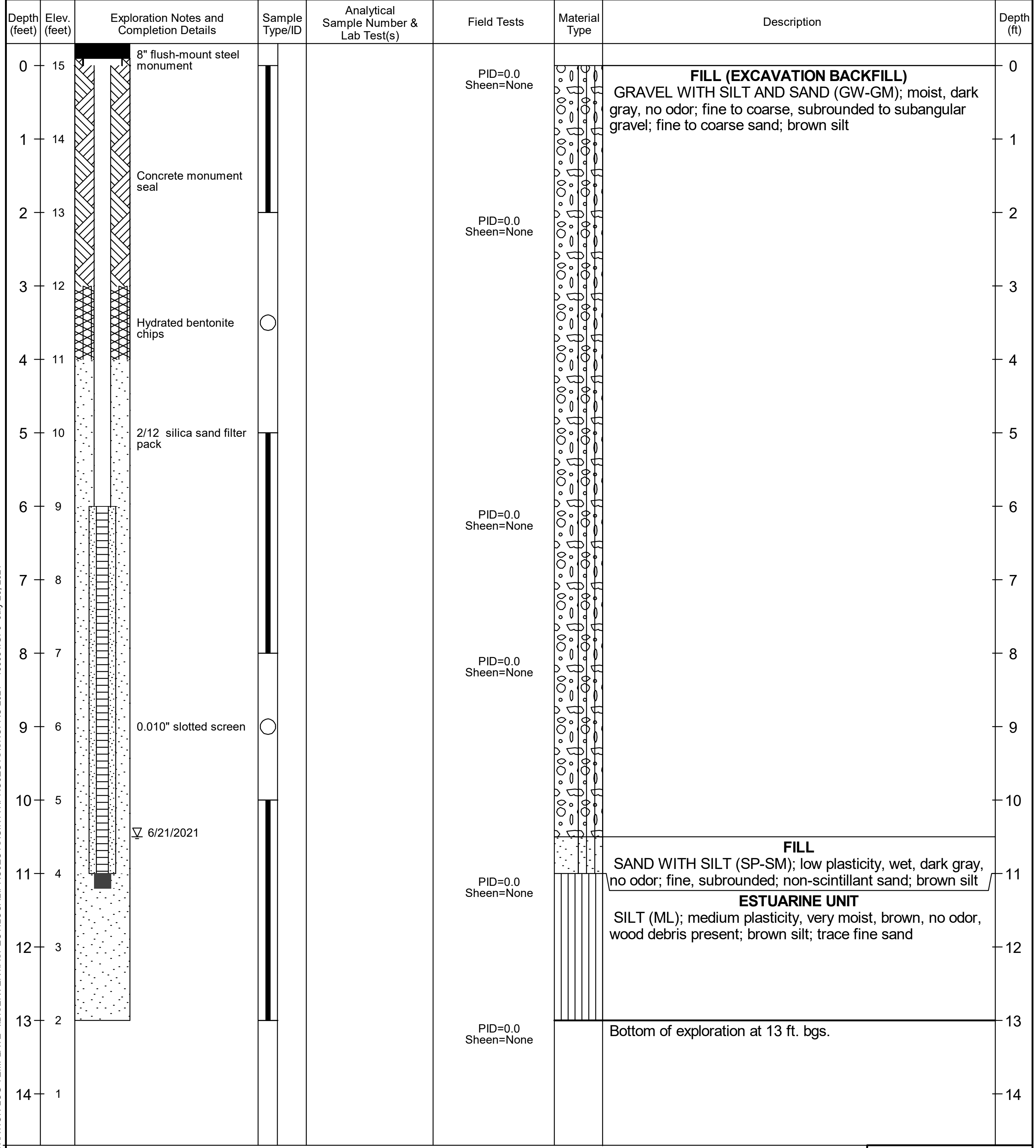
Sheet 1 of 1

Aspect CONSULTING

Snopac 2021 - 150054

Environmental Exploration Log

Project Address & Site Specific Location			*Coordinates (Lat,Lon WGS84)*	*Exploration Number*
5055 E Marginal Way, W edge of lot between MW-14 & MW-16			47.5563, -122.3394 (est)	**MW-15**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface Elev.*	Ecology Well Tag No.
Cascade	Direct push rig	Percussion hammer	15' (est)	BMM671
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Scott	Direct push	6/21/2021	NA	10.5' (ATD)



FILL (EXCAVATION BACKFILL)
GRAVEL WITH SILT AND SAND (GW-GM); moist, dark gray, no odor; fine to coarse, subrounded to subangular gravel; fine to coarse sand; brown silt

FILL
SAND WITH SILT (SP-SM); low plasticity, wet, dark gray, no odor; fine, subrounded; non-scintillant sand; brown silt

ESTUARINE UNIT
SILT (ML); medium plasticity, very moist, brown, no odor, wood debris present; brown silt; trace fine sand

Bottom of exploration at 13 ft. bgs.

Legend

Sample Type
- ▢ No Soil Sample Recovery
- ◫ Continuous core 1.68" ID

Water Level
- ▽ Water Level ATD

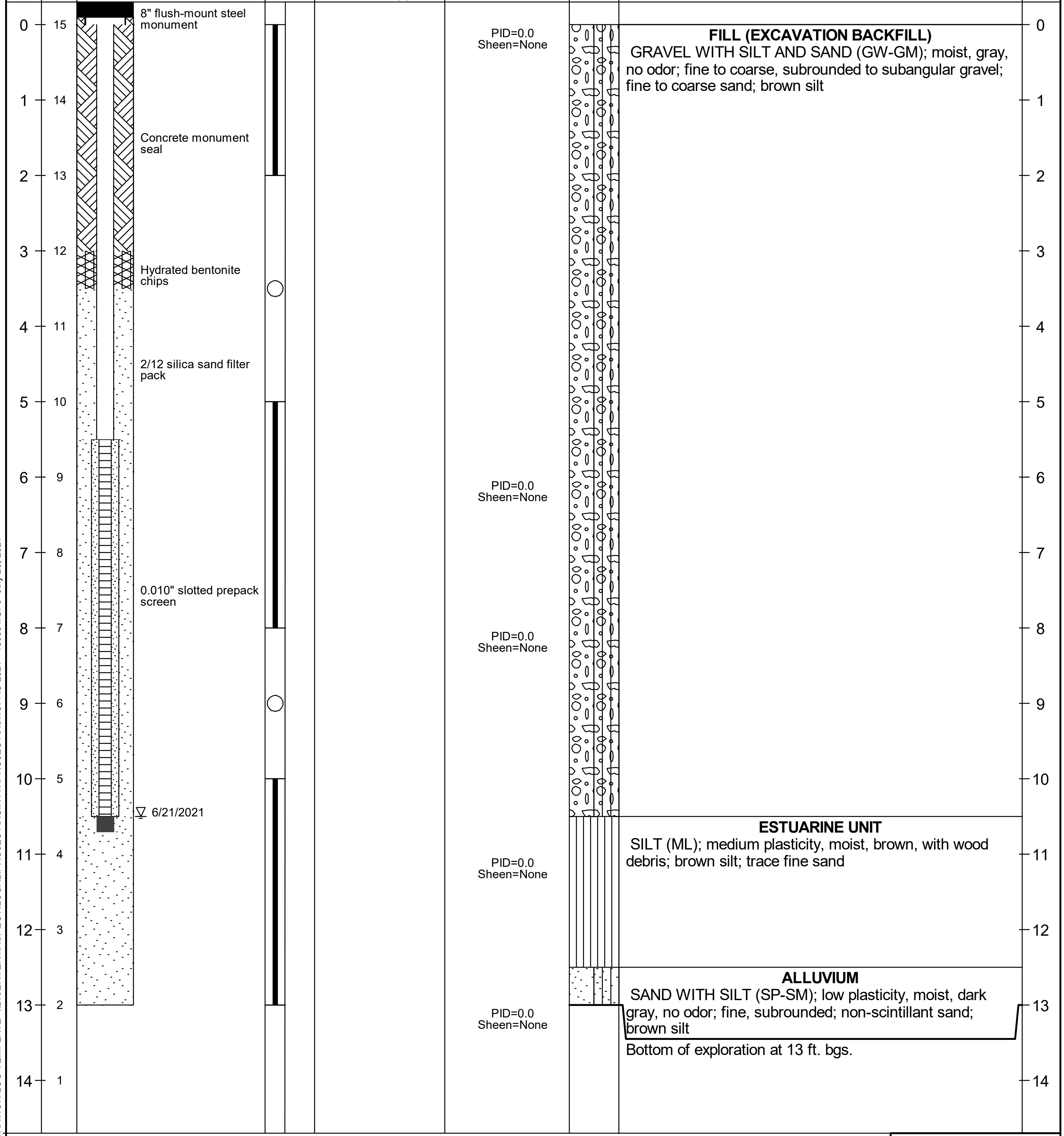
See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: AET 7/20/21

Exploration Log MW-15
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE \\BISERVER1.ASPECT.LOCAL\PROJECTS\GINTW\PROJECTS\SNOPAC 2021 - 150054.GPJ July 20, 2021

Aspect CONSULTING	**Snopac 2021 - 150054**		**Environmental Exploration Log**	
	Project Address & Site Specific Location 5055 E Marginal Way, NW corner of lot		*Coordinates (Lat,Lon WGS84)* 47.5565, -122.3397 (est)	*Exploration Number* **MW-16**
Contractor Cascade	*Equipment* Direct push rig	*Sampling Method* Percussion hammer	*Ground Surface Elev.* 15' (est)	Ecology Well Tag No. BMM672
Operator Scott	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 6/21/2021 to 6/22/2021	*Top of Casing Elev.* NA	*Depth to Water (Below GS)* 10.5' (ATD)



Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	15	8" flush-mount steel monument			PID=0.0 Sheen=None		**FILL (EXCAVATION BACKFILL)** GRAVEL WITH SILT AND SAND (GW-GM); moist, gray, no odor; fine to coarse, subrounded to subangular gravel; fine to coarse sand; brown silt	0
1	14	Concrete monument seal						1
2	13							2
3	12	Hydrated bentonite chips	○					3
4	11	2/12 silica sand filter pack						4
5	10							5
6	9				PID=0.0 Sheen=None			6
7	8	0.010" slotted prepack screen						7
8	7				PID=0.0 Sheen=None			8
9	6		○					9
10	5	⊻ 6/21/2021					**ESTUARINE UNIT** SILT (ML); medium plasticity, moist, brown, with wood debris; brown silt; trace fine sand	10
11	4				PID=0.0 Sheen=None			11
12	3						**ALLUVIUM** SAND WITH SILT (SP-SM); low plasticity, moist, dark gray, no odor; fine, subrounded; non-scintillant sand; brown silt	12
13	2				PID=0.0 Sheen=None		Bottom of exploration at 13 ft. bgs.	13
14	1							14

Legend

Sample Type
- ○ No Soil Sample Recovery
- ◨ Continuous core 1.68" ID

Water Level
- ⊻ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: AET 7/20/21

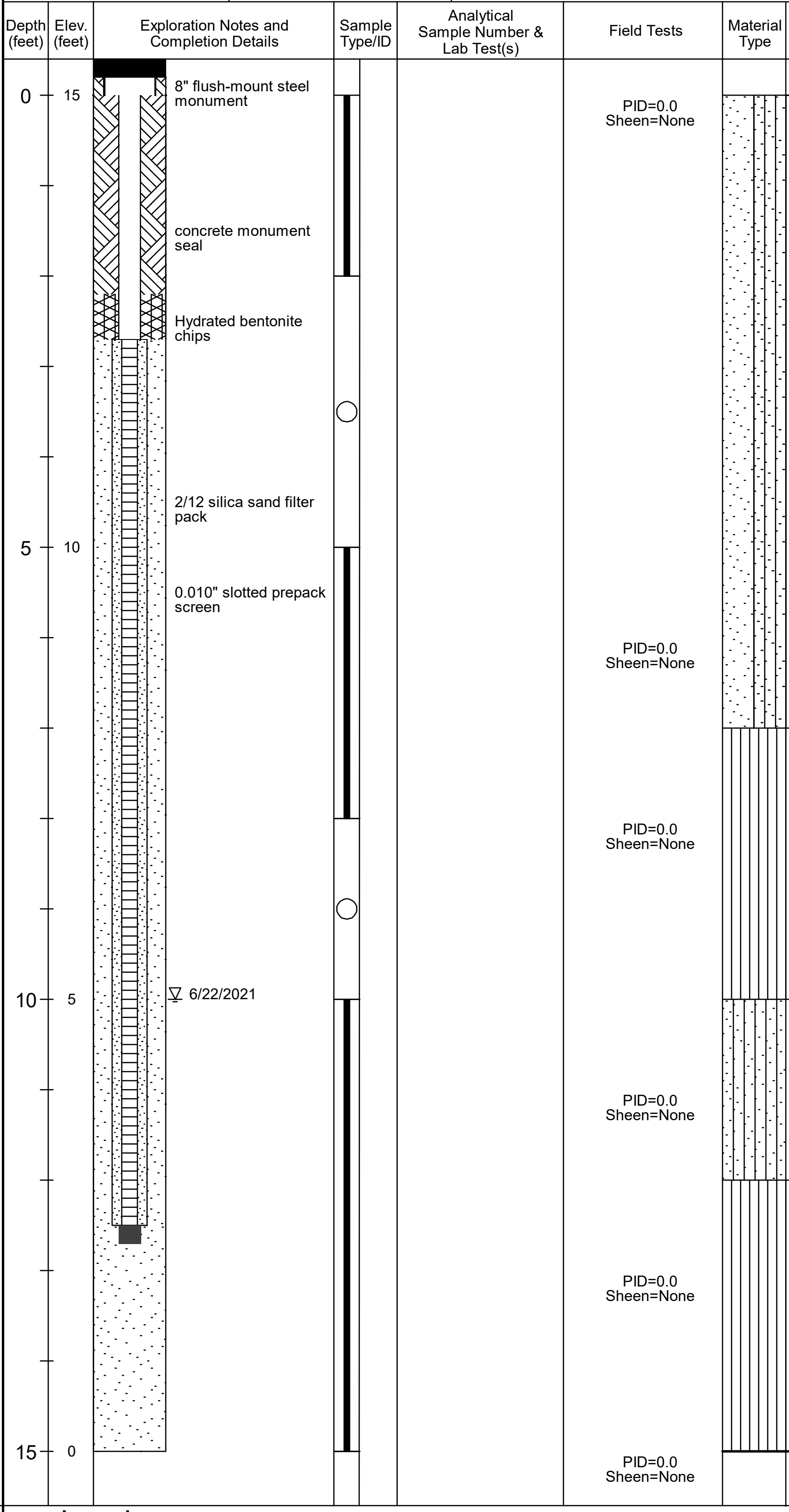
Exploration Log
MW-16
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE \\BISERVER1.ASPECT.LOCAL\PROJECTS\GINTW\PROJECTS\SNOPAC 2021 - 150054.GPJ July 20, 2021

Snopac 2021 - 150054

Environmental Exploration Log

Project Address & Site Specific Location			*Coordinates (Lat,Lon WGS84)*	*Exploration Number*
5055 E Marginal Way, SE corner of lot			47.5559, -122.3386 (est)	**MW-17**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface Elev.*	Ecology Well Tag No.
Cascade	Direct push rig	Percussion hammer	15' (est)	BMM673
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Scott	Direct push	6/22/2021	NA	10' (ATD)



Depth (ft)	Description
0	**FILL** SAND WITH SILT (SP-SM); moist, gray to gray brown, wood debris present, no odor, no sheen; fine to medium; non-scintillany sand; trace gray silt
5	
	ESTUARINE UNIT SILT (ML); medium plasticity, moist, dark gray, wood debris present, no odor; dark gray silt; trace fine sand
10	**ALLUVIUM** SILTY SAND (SM); low plasticity, wet, gray brown, no odor; fine to medium; non-scintillant sand; gray brown silt
	SANDY SILT (ML); low plasticity, moist, brown, no odor, with wood debris; brown silt; trace fine sand
15	Bottom of exploration at 15 ft. bgs.

Legend

Sample Type
- ▢ No Soil Sample Recovery
- ◫ Continuous core 1.68" ID

Water Level
- ∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: AET 7/20/21

Exploration Log MW-17

Sheet 1 of 1