Engineering Design Report

Former Park Laundry Site, Ridgefield Washington

Consent Decree No. 23-2-02783-06
Cleanup Site ID 4099

Prepared for:

City of Ridgefield

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Project No. M0239.33.007

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The material and data in this report were prepared under the supervision and direction of the undersigned.

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Abbreviations

1,1-DCE	1,1-dichloroethene
Agreed Order	Agreed Order No. DE 6829 between Ecology and Union Ridge Investment Company
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
City	City of Ridgefield
COC	contaminant of concern
Consent Decree	Consent Decree No. 23-2-02783-06
CUL	cleanup level
DCE	dichloroethene
DHC	Dehalococcoides sp
EC	environmental covenant
Ecology	Washington State Department of Ecology
EDR	engineering design report
Engineer	the on-site construction quality assurance office
EPA	U.S. Environmental Protection Agency
LWBZ	lower water bearing zone
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
PCE	tetrachloroethene
PDI	predesign investigation
POC	point of compliance
Port	Port of Ridgefield
Property	former Park Laundry property located at 122 N Main Avenue in Ridgefield, Washington
REL	remediation level
RI/FS	remedial investigation and feasibility study
SAP/QAPP	sampling and analysis plan/quality assurance project plan
Site	the Property and neighboring properties where contamination is present
Source Area	the Property and the two vacant lots located directly north of the former Park Laundry property, collectively
TCE	trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene

URIC	Union Ridge Investment Company
UWBZ	upper water bearing zone
WAC	Washington Administrative Code

1 Introduction

On behalf of the City of Ridgefield (the City), Maul Foster & Alongi, Inc. (MFA), has prepared this engineering design report (EDR) for the remedial action at the former Park Laundry Site located at 122 N Main Avenue in Ridgefield, Washington, (the Property) (see Figure 1-1). The Property is listed with the Washington State Department of Ecology (Ecology) under facility site no. 8100630 and cleanup site no. 4099. This document has been prepared for Ecology to summarize the remedial design for the Property consistent with Consent Decree No. 23-2-02783-06 (the Consent Decree; Ecology 2023b) and with Washington Administrative Code (WAC) 173-340-400(a).

1.1 Property and Site Description

The Site is defined by the extent of Property-related contamination, which in this case includes soil contamination in the Source Area and groundwater contamination beyond the Source Area,[1] which covers an estimated 22 acres. The plume generally follows the topography and extends to the north and west from the Source Area. The plume is bounded on the west by Lake River and to the north to approximately Division Street (see Figures 1-2 and 1-3). Soil gas and outdoor air samples previously collected from the Site during the remedial investigation did not identify impacts to human health from potential indoor air exposure from vapor intrusion (MFA 2019). However, soil impacts and, potentially, vapor intrusion or air impacts are located within the Source Area. The Source Area is defined as the area of the Site with the highest chlorinated solvent concentrations in soil, groundwater, and soil vapor, which includes the Property, and the two vacant lots located directly north of the Property (see Figure 1-4).

1.2 Regulatory Framework and Purpose

In 2009, Ecology and the Union Ridge Investment Company (URIC; the owner of the Property at that time) entered into Agreed Order No. DE 6829 (the Agreed Order). The Agreed Order required that URIC perform additional sampling and prepare a remedial investigation and feasibility study (RI/FS) and draft cleanup action plan (CAP) for the Property. The RI/FS and draft CAP were completed in July 2019 (MFA 2019). In September 2020, Ecology provided written notification that the actions required by the Agreed Order were satisfactorily completed (Ecology 2020).

Subsequent to finalizing the RI/FS, Ecology and the City entered into negotiations for a Consent Decree to implement the work described in the final CAP (Ecology 2023a). The City applied for a remedial action grant from Ecology and a brownfield cleanup grant from the Washington State Department of Commerce to help pay for the cleanup. The Consent Decree became effective on December 28, 2023, the date that transfer of the Property to the City by quitclaim was officially recorded.

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[1] Defined as having an exceedance of the Model Toxics Control Act Method A cleanup level.

The Consent Decree contains Ecology's CAP for the Site. The CAP is intended to meet the requirements of MTCA. This EDR defines the approach to implement the remedial action and follows the requirements of the CAP and WAC 173-340-400, and includes:

- General information on the Property, including a summary of information about the previous environmental investigations (see Sections 2.1 through 2.4).
- Contaminant and contaminated-media characteristics and relevant cleanup standards applied to the Property (see Section 2.5).
- The proposed remedial action, including design assumptions, calculations, and sampling specifications (see Section 3).
- Appendixes, including construction drawings (see Drawings) detailing the work to be performed; a baseline groundwater monitoring technical memorandum (see Appendix A); a Predesign Investigation (PDI) Report (Appendix B); a health and safety plan (see Appendix C); vendor proposals and product sheets for the in situ chemical reduction agents (see Appendix D); a sampling and analysis plan/quality assurance project plan (SAP/QAPP) (see Appendix E); and applicable or relevant and appropriate requirements for the project (see Appendix F).

1.3 Selected Remedial Action

The remedial action objectives identified in the CAP (Ecology 2023) were selected based on the findings of the RI/FS (MFA, 2019) and include:

- Source zone soil excavation to a depth of 15 feet below ground surface (bgs) with tetrachloroethene (PCE) concentrations exceeding the remediation level (REL) of 0.05 milligrams per kilogram (mg/kg). Excavated soil will be disposed of off-site. Backfill soil will be amended with a reducing agent and enhanced bioremediation solution where placed below the water table.
- In situ groundwater treatment by injection of a reducing agent and enhanced bioremediation solution within the Source Area (see Source Area location depicted on Figure 1-2).
- Baseline and performance groundwater monitoring at 19 wells, including the three wells located on the Port of Ridgefield (the Port) property and the three new wells in the lower water bearing zone (LWBZ; MW-23D, MW-24D, MW-25D; MFA 2024b).
- Institutional controls including:
    - An environmental covenant to prohibit groundwater use in the Source area and possibly other areas of the Site for irrigation, potable drinking water, or any use requiring human contact.
    - Requirements for a vapor mitigation system (e.g., vapor barrier) for any future building construction in the Source Area.

2 Property Background and Property Conditions

2.1 Property History

Historically, a building covered the western two-thirds of the Property. The building was constructed in approximately 1948 and removed in 2000. In the 1960s, an addition to the building to the east, covering the entire Property, was constructed. Park Laundry used the building from approximately 1965 to 1977. The former owner/operator, Mr. Alvin Johnson, is deceased. The laundry service is believed to have included dry cleaning services and self-service, coin-operated washers and dryers.

Park Laundry's operations had ceased by 1978; URIC purchased the Property on May 31, 1979. There was no dry-cleaning equipment in the building at the time of purchase. The Property was sold to Mr. Larry Beaman on February 15, 2000. Mr. Beaman removed the building and subsequently defaulted on his environmental obligations for the Property. The Property was quitclaimed to Mr. Robert Hyatt, representing URIC, who then quitclaimed the Property to URIC on November 19, 2007. As described above, URIC subsequently quitclaimed the Property to the City on December 28, 2023.

A gravel lot, formerly home to the Ridgefield Police Department and owned by the City, is located along the southern border of the Property. To the east is a one-lane, paved alleyway, bordered by a city skate park. To the west is North Main Avenue and mixed-use commercial businesses.

2.2 Geology and Hydrogeology

As described later in Section 4.2.1 additional deep groundwater monitoring wells were installed to provide groundwater monitoring data from the LWBZ. Borings were advanced as deep as 100 feet bgs on the Property. Borings to the west (hydraulically downgradient of the Source Area) were advanced as deep as 110 feet bgs. Figure 2-1 shows the location of the new monitoring wells. A baseline groundwater monitoring technical memorandum is included in Appendix A.

The geology beneath the Source Area, and upper terrace generally consists of fine-grained sand and silty sand to a depth of 15 feet bgs. The fine-grained sand is underlain by unsaturated silty clay (clay layer) that forms a groundwater perching layer beneath the shallow sand and silty sand. Generally, the depth to shallow perched groundwater beneath the upper terrace is approximately 5 to 10 feet bgs and will be referred to throughout this report as the "upper water-bearing zone" (UWBZ). The estimated perched groundwater potentiometric surface is shown on Figure 2-2.

On the Property and the upper terrace, the clay layer is unsaturated and is approximately 40 feet thick. The base of the clay layer ranges from 55 to 60 feet bgs. The clay layer was also observed in borings at shallower depths to the south and east of the Property. The clay layer is immediately underlain by silty gravel that is interpreted as the weathered upper surface of the Troutdale formation.

In the upland terrace, PCE is detected primarily in the surficial silty sand unit (Pleistocene alluvium) overlying the clay layer. Geologic characterization and groundwater monitoring data indicate that there is a hydraulic connection between the saturated silty sand unit in the uplands (Pleistocene alluvium) and the corresponding Pleistocene alluvium (sandy/silty gravel) unit on the lower terrace adjacent to Lake River. PCE has been detected in the deep portion of the UWBZ on the Port property.

2.3 Climate and Other Considerations

Climate trends for the northwest region of the U.S. include: increased temperatures during all seasons under all future scenarios; decreased snowpack; increased wildfires and insect infestations; decreased rainfall and water availability during the dry season; increased flooding during the wet season; a rising sea level; increased storm surge events; more frequent heat waves; and increased risk of landslide and erosion. The most applicable climate related vulnerabilities to the Property are decreased rainfall during the dry season and more frequent heat waves.

According to the University of Washington Climate Mapping tool for Clark County (https://data.cig.uw.edu/climatemapping), the Property is located in an area with predicted increased drought, higher extreme heat, increased frequent heavy magnitude precipitation events resulting in increased streamflow volumes, and increased high fire danger days. Other climate change impacts are not as likely to significantly affect the Property. The Property is well above the 100- and 500-year floodplains for the Lake River/Columbia River system.

Seismic risk is considered moderate in Ridgefield and while earthquakes can occur with some frequency, most are too small to be felt or cause damage (https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/earthquakes-and-faults). The remedial action will not include the construction of any structures or features (e.g., steep slopes) that would be vulnerable to seismic events. The Property is flat and will remain so after remedial action implementation; excavation backfill will be compacted to reduce the risk of land subsidence.

2.4 Environmental Conditions

As described in the CAP (Ecology 2023a), the contaminants of concern (COCs) in soil and groundwater for the Property are PCE and trichloroethene (TCE). The RI/FS (MFA 2019) provides a detailed summary of previous investigation results for the Property, including the nature and extent of contaminants and the risk associated with those contaminants. Ecology developed cleanup levels for PCE and its degradation products in the CAP (Ecology 2023) and selected a REL of 0.05 mg/kg for PCE to guide removal of soil in the Source Area.

2.4.1 Predesign Investigation

In May 2024, the City submitted a work plan to Ecology for additional PDI in the Source Area (MFA 2024a). Following Ecology review, the work plan was finalized on May 10, 2024. The PDI work was conducted on May 21 and 22, 2024 and consisted of advancing 22 shallow soil borings in a grid pattern using direct-push drilling methods. The soil boring locations were selected based on a review of existing soil data in the Source Area and were intended to evaluate the current extent of contamination and confirm/refine the extent of excavation in the Source Area.

Nineteen of the soil borings were advanced from the ground surface into the clay layer to approximately 15 feet bgs. Three of the borings were advanced to five feet bgs to confirm past shallow PCE concentrations in surface soil. Soil samples were collected from continuous soil cores at

5-foot intervals. The soil boring locations and PCE REL exceedances are shown on Figures 2-3 and 2-4. PCE concentrations exceeded the REL in most of the deeper soil intervals. A report detailing the full results of the PDI is provided as Appendix B.

2.4.2 Baseline Groundwater Monitoring

Ecology required installation of three deep monitoring wells to evaluate if contamination has migrated through the unsaturated clay layer into the underlying LWBZ. Monitoring well installation and baseline groundwater monitoring was conducted to supplement the EDR. Concentrations of PCE and TCE were detected in each of the three wells above their respective cleanup levels (CULs). A technical memorandum describing the monitoring well installation and baseline groundwater monitoring is provided as Appendix A.

2.5 Cleanup and Remediation Levels

The CAP provides CULs for PCE and TCE as well as for their natural degradation products; 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. A REL of 0.05 mg/kg in soil was selected to guide the removal of soil containing PCE in the Source Area at the Property. Removal of this material will aid in and increase property-wide degradation of COCs below proposed CULs (Ecology 2023) via soil excavation and in situ groundwater treatment.

3 Description of the Remedial Action

The selected remedial action involves removal of soil in the Source Area exceeding the PCE REL and chemical injections to treat shallow perched groundwater impacted with PCE. Contaminated soil will be excavated and transported off-site to a permitted disposal facility. The selected remedial action also includes injections of EHC (an in situ chemical reduction reagent) and Dehalococcoides species (DHC) mixture to treat contaminated perched shallow groundwater in and hydraulically downgradient of the Source Area. Following active remediation, groundwater across the Site will be monitored for natural attenuation.

3.1 Mobilization and Site Preparation

The City has begun site preparation by removing structures and other infrastructure in the Source Area. The soil excavation extents (both shallow and deep) will be located and painted by the contractor and will be verified by the on-site construction quality assurance office (the Engineer). Before excavation, the locations of subsurface utilities within 50 feet of the excavation area will be identified by the One Call Utility Notification Center and a private utility-locating company.

Exclusion zones using temporary fencing and warning tape, as well as any additional appropriate site controls necessary, will be established in accordance with the site-specific health and safety plan (Appendix C) and the contractor’s site-specific health and safety plan. The construction site will be secured and locked when the Engineer or contractor is not present. Mobilized equipment and contractor vehicles may be staged in the gravel areas on the construction site. Equipment that contacts contaminated soils must be cleaned prior to leaving the excavation area. The contractor will coordinate and mark any road closures with appropriate signage and traffic control.

Equipment will be mobilized to the construction site and is expected to include, but not be limited to the following:

- Trackhoe excavator, or equivalent
- Front-end loader
- Dump truck
- Water truck
- Support vehicles and equipment

3.1.1 Erosion and Sediment Control

Erosion-control best management practices will be implemented prior to any ground-disturbing activities and maintained or upgraded throughout construction as appropriate. The contractor will be required to provide an erosion and sediment control plan consistent with the contract drawings and the Stormwater Management Manual for Western Washington (Ecology 2024).

Contaminated soil from the excavation will be disposed of off-site at a permitted landfill but will be temporarily stockpiled and otherwise handled and managed on site. The erosion and sediment control plan requires soil stockpiles to be covered when not in use, overnight, and during significant rain or wind events. All erosion-control measures will be installed before excavation activities begin and will be maintained throughout the construction effort.

3.1.2 Monitoring Well Decommissioning

Monitoring wells MW01 and MW21 will be decommissioned prior to implementing the remedial action since they are located in or immediately adjacent to the area of the deeper soil excavation. Well decommissioning activities will be performed by a well driller licensed in the State of Washington consistent with Washington State well decommissioning standards (WAC Chapter 173-160).

3.2 Soil Excavation and Management

The removal of soil in the Source Area above the REL will include both shallow soil excavation (0 to 3 feet bgs) and deeper soil excavation (5 to 15 feet bgs, depending on the portion of the excavation). Shoring for the deeper excavation will be required and is anticipated to be a driven sheet-pile system, proposed and designed by the contractor and submitted as an excavation work plan before the start of construction. The shoring design will be stamped by a professional geotechnical or structural engineer licensed in the State of Washington.

3.2.1 Shallow Soil Excavation

The anticipated horizontal extents of excavation for the shallow soil excavation areas are defined on Sheet C2.0 of the attached Drawings. The horizonal extents shown on the Drawings represent the anticipated extent of soil concentrations above the REL based on previous environmental investigations and the recently completed PDI.

There are two areas for shallow soil excavation: one to the south of the Property to address soil at GP38 and PD-70-20 and one on the eastern end of the Property to address soil impacts at GP44 through GP46, GP51, PD-90-40, and PD-100-40 (Figure 2-3). The shallow soil excavation extent south of the Property is bounded on all sides by shallow soil sample locations with PCE concentrations below the REL. The shallow soil excavation extent on the eastern end of the Property is bounded by shallow soil sample locations with PCE concentrations below the REL, except for the eastern property boundary (sample locations GP44 and PD-100-40 are very close to the Property boundary). These sample results just slightly exceed the REL at 0.054 and 0.0721 mg/kg, respectively. Soil to the east of these sample locations is covered by the paved alley and is inaccessible.

The contractor will begin the excavations near the previous sample locations where exceedances were identified and dig outward toward the anticipated excavation boundaries. Confirmation samples will be collected from each of the shallow excavation sidewalls. The confirmation sample collected from the excavation sidewall along the eastern Property boundary will be collected for informational purposes only; excavation will not proceed under the existing roadway. A confirmation sample will also be collected from the floor of each excavation. The vertical extent of the excavation activities in the shallow soil excavation area will begin with a maximum depth of 3 feet bgs, and the lateral extent will be initially limited to the extent shown on Sheet C2.0 of the attached Drawings. The anticipated shallow soil excavation volume is 50 cubic yards (75 tons).

If confirmation samples indicate that soils with PCE concentrations above the REL are still present at the excavation limits, additional soil may be removed outside of the initial horizontal and vertical extents, except toward the east where excavation extent is limited by the existing alleyway and utilities. Following shallow soil excavation and confirmation sampling, the shallow soil excavation areas outside the limits of the deep soil excavation will be backfilled with clean, imported gravel.

3.2.2 Dewatering

Prior to beginning deep soil excavation, the contractor will develop an excavation and dewatering plan and submit this plan to MFA for review. This excavation and dewatering plan will identify the proposed method of dewatering (either temporary dewatering wells or sump(s) within the excavation as well the method of treatment prior to discharge. Treated water will either be discharged into the stormwater system or removed for off-site disposal. The contractor will be responsible for designing the dewatering system and obtaining the necessary discharge permits.

Groundwater dewatering will serve to both facilitate the excavation of soil below the water table and to serve as an additional source removal measure (by directly removing impacted groundwater from the aquifer).

3.2.3 Deep Soil Excavation

The purpose of the deep excavation is to remove soil in the Source Area with PCE concentrations above the REL. The previous environmental investigations have identified soil with PCE concentrations above the REL generally present between 10 and 14 ft bgs. Two previous samples collected from GP02 at 8 feet bgs and GP43 at 5 feet bgs also exceeded the REL. The PDI largely confirmed the previous findings.

As described above, shoring of the deep soil excavation will be required. This design component will be left for the contractor to propose in its work plan. Proposed shoring designs will be required as submittals and will be subject to review by the City and the Project Engineer.

Excavation of deep soil will extend to a depth of 14.5 feet bgs. This will result in a depth generally one foot below the top of the clay layer and at least as deep as any sample intervals collected with REL exceedances.

The lateral excavation extents will be confined by the shoring system; the excavation sidewalls will be fixed in place and confirmation sampling of the excavation sidewalls is not practicable. The lateral excavation extents were developed by adding the PDI soil sample locations to those used to develop the excavation extents described in the RI/FS (MFA 2019; see Figure 2-4). The excavation extent shown is largely consistent with the Alternative 4 deep excavation extent shown in the CAP and expands the area of deep soil excavation from an estimated 1,700 square feet described in the CAP to 1,940 square feet. The shape of the excavation extents was selected to bound soil PCE REL exceedances and be of a “constructable” shape. At soil boring PD-50-80, soil samples collected at 14 and 14.5 feet bgs exceeded the REL at concentrations of 1.31 mg/kg and 1.11 mg/kg, respectively. However, the CAP acknowledges that not all soil with concentrations exceeding RELs will be excavated (i.e., soil at B8 and MW03). Soil with concentrations potentially exceeding the PCE REL outside the shored excavation extents will be treated by the injection program described in Section 3.4.7 below.

During soil excavation, the Engineer will work with the contractor to identify and distinguish clean overburden from impacted soils. Soil from the excavation will be regularly screened in the field with a photoionization detector to confirm visual and olfactory observations. Soils that are determined to be impacted will be excavated and stockpiled separately for characterization and landfill disposal.

The volume of soil to be excavated for offsite disposal in the deep excavation area is approximately 430 cubic yards (650 tons). Approximately 830 cubic yards of clean, overburden soil will also be excavated and stockpiled for use as excavation backfill following confirmation sampling confirming compliance with the MTCA Method A cleanup level of 0.05 mg/kg.

3.2.3.1 Deep Soil Excavation Backfill Amendment

Prior to backfilling the excavation with overburden and clean imported soil, soil samples of the clean overburden soil will be collected as further described in the SAP/QAPP (Appendix E). Daramend® Reagent *In Situ* Chemical Reduction (ISCR) reagent will be mixed with granular, porous backfill material and placed in the saturated zone of the perched groundwater. The reagent will promote abiotic and biotic degradation, quickly creating reducing conditions and providing active treatment for 3 to 5 years. The ISCR powder will be applied dry to the backfill material at a typical application rate of 0.5 percent of ISCR by weight and mixed prior to placement in the excavation, for a total mass of 2,200 pounds of Daramend® (see Appendix D). The backfill material from the floor of the excavation to 10 feet bgs will be amended with ISCR reagent.

3.2.4 Dust and Vapor Mitigation

Excavation activities will disturb soil and have the potential to generate dust. Appropriate dust control methods will be employed during excavation as necessary to prevent the generation of airborne contaminants. These control methods will include, at a minimum, soil wetting and misting. Excessively dry soil in the excavation area may be wetted before excavation by spraying the area immediately around the excavation and spraying newly exposed soil during excavation so that visible dust emissions are controlled.

The contractor will locate a nearby water source (e.g., fire hydrant) to fill a water tank and keep water readily available during the construction activities. Soil will be kept wetted during handling until the soil is placed in haul trucks and covered, pending transport to an off-site permitted landfill. Dry excavation, dry shoveling, or dry sweeping of soil will not be allowed.

Soil wetting is also anticipated to aid in minimizing dry cleaning chemical odors during excavation. If the excavation is left open overnight, areas of chlorinated products contamination will be covered with plastic sheeting or with a six-inch layer of overburden soil in order to minimize the release of vapors. If significant vapors are reported in public areas, work will be stopped and impacts will be covered while mitigation approaches are evaluated by the Engineer and contractor.

3.2.5 Soil Stockpiling

It is expected that excavated contaminated soil will be temporarily stockpiled prior to off-site transportation and disposal. Stockpiles will be managed in accordance with the Stormwater Pollution Prevention Plan, which will be reviewed by Ecology. Stockpiles will be managed in a manner that minimizes erosion, contact with stormwater runoff, dust generation, worker and general public contact. Overburden soil will be temporarily stockpiled in a separate stockpile from the contaminated soil.

Soil stockpiles will be constructed on plastic sheeting liners and will be covered with plastic sheeting at the end of each workday to minimize erosion, dust generation, and direct contact by humans. The plastic sheeting that covers the pile(s) must be regularly inspected to ensure that it remains functional and protective of human health and the environment. Temporary stockpiles of contaminated soil must be properly managed and disposed of off-site within 60 days of completion of excavation work.

3.2.6 Waste Characterization and Disposal

The universal treatment standard for PCE is 6 mg/kg but, since the waste is soil, the alternative soil standard allows a 10x multiplier to the universal treatment standard (60 mg/kg) for disposal without treatment in a hazardous waste landfill.[2] The 2010 GP52 sample at 12.5 ft bgs (316 mg/kg) and the 2024 PD-70-50 sample at 12.5 ft bgs (82.5 mg/kg) exceed the alternative soil standard; it is expected that stockpiling and sampling of excavated soil will be required to verify that the soil is below the alternative soil standard prior to hazardous waste landfill disposal.

Samples will be collected in accordance with hazardous waste test methods SW-846 and in coordination with the receiving landfill facility, as further described in the SAP/QAPP (Appendix E); these sample results will be used to develop a waste profile for disposal.

3.2.7 Soil and Groundwater Injections

In situ injections will treat deep soil impacts and thicker overburden outside of the excavation area. EHC® Reagent and DHC inoculant materials will be injected to the subsurface using direct-push

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[2] Code of Federal Regulations, Title 40, Chapter I, Subchapter I, Part 268--Land Disposal Restrictions. Treatment Standards for Hazardous Wastes. Accessed October 17, 2024. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-268#268.48.

equipment. To raise the pH to 7, a magnesium hydroxide buffer will be included. The total expected mass of EHC is 17,950 pounds, the total volume of DHC inoculant is 66 liters, and the total mass of magnesium hydroxide is 4,794 pounds (see Appendix D). Injection spacing and intervals will be determined by the contractor to meet the performance specification and will be provided to MFA for review as a pre-construction submittal.

The EHC slurry will be produced on site since EHC is shipped as a dry powder. The material is mixed with water to make a 25 to 30 percent solids slurry using a mechanical mixer. The EHC injections will utilize a top-down approach from 5 feet bgs to 15 feet bgs to allow subsurface pressures associated with the addition of EHC to materials to be distributed deeper into the formation and result in less material being forced back out of the injection hole. Pressure in the formation will be allowed to decrease by waiting a minimum of 4 hours after completing the injection boring before removing the injection rods.

Once anaerobic conditions are met, DHC inoculant will be injected with a bottom-up technique at the same intervals where the EHC was initially injected. The injections will be abandoned using a bentonite slurry.

Following injections, performance monitoring data will be collected to measure progress of concentrations below RELs. Success will be demonstrated by reducing concentrations of PCE in downgradient monitoring wells.

3.3 Post-Remedy Monitoring

As detailed in the CAP, Ecology requires compliance groundwater monitoring to be conducted from 19 monitoring wells, including from three deep monitoring wells installed in the LWBZ adjacent to and downgradient of the Source Area, and from three monitoring wells located on the Port property to the west of the Site. This section describes the groundwater monitoring plan.

3.3.1 Groundwater compliance monitoring and restoration progress

Groundwater monitoring will be conducted in accordance with MTCA requirements (WAC 173-340-410) to confirm the long-term effectiveness of the remedial action. Concentrations will be monitored in 19 monitoring wells to meet the following specific objectives: confirm that the concentrations of PCE and its degradation products in impacted groundwater have been reduced to below the groundwater cleanup levels provided in Table 2-1 of the CAP; and collect the necessary data for a satisfaction of order determination.

Groundwater samples will be collected from monitoring wells located at the Site (including three monitoring wells located at the Port of Ridgefield and the three new monitoring wells installed in the LWBZ) and will be analyzed for PCE and its degradation products (i.e., TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) on a quarterly basis for a minimum of one year; thereafter, the monitoring frequency may be reduced to semiannually or less frequently and the number of monitoring wells may be reduced, depending on the observed concentration trends and Ecology's approval.

The first compliance monitoring event will be conducted approximately six months following injection activities. Following receipt of the groundwater analytical results, a quarterly groundwater monitoring report will be prepared summarizing the results, treatment effectiveness, and recommendations for additional work, if deemed necessary. Compliance monitoring will cease, and a satisfaction of order determination will be requested following four consecutive monitoring events with concentrations of PCE and its degradation products below associated CULs. Work will be conducted in accordance with the SAP/QAPP (Appendix E).

Groundwater samples will be submitted for analysis of PCE and its degradation products by EPA Method 8260D low-level. In addition, groundwater samples from select monitoring wells will also be analyzed for geochemical parameters to prescreen for the presence of electron acceptors for assessment of the potential reductive dechlorination process and to evaluate the efficacy of the remedial action (see Appendix E).

3.3.2 Institutional Controls

A restrictive environmental covenant (EC) will be filed for the properties that constitute the Source Area. As described in the CAP, the ECs will prohibit use at the Source Area for irrigation, potable drinking water, or any use involving human contact. The ECs will require a vapor barrier or control system (or other Ecology-approved approach) for any building constructed over areas where chlorinated solvents are present in the subsurface exceeding MTCA vapor intrusion screening levels. The ECs will remain in place until soil and groundwater CULs have been met.

3.3.3 Point of Compliance

The point of compliance (POC) for different environmental media are prescribed in the CAP. They include:

- For soil CULs protective of groundwater that is protective of surface water, the POC is soils throughout the site.
- The POC for groundwater is throughout the site between the uppermost level of the saturated zone and the lowest depth which is known to be affected by the Site.
- The POC for surface water is the point or points at which hazardous substances are released to a surface water body.

3.4 Compliance with Applicable State and Federal Laws

The remedial action will be conducted consistent with applicable state and federal laws, as discussed in Appendix F.

3.5 Cultural Resources

A report describing archaeological monitoring for the PDI (Willamette Cultural Resources Associates, LTD 2024) concludes that archaeological monitoring should be performed during all ground-disturbing work for this project. An archaeological monitor will be present during excavation to comply with this recommendation.

3.6 Schedule

The following schedule is anticipated to complete the work outlined in this report:

Task	Duration (Weeks)	Anticipated Start Date
Incorporate Ecology comments and finalize the EDR	2	Upon receiving Ecology comments
Project permitting (grading, underground injection control, construction stormwater)	6	November–December 2024
Out to public bid	4	September 26, 2024
Select contractor	2	November 18, 2024
Implement remedial action and perform sampling	8	To be determined
Draft construction completion report	8	Following final inspection
Construction completion Report	3	Following Ecology comments on draft

References

Clark County GIS. 2024. Maps online, property and lands information records. https://gis.clark.wa.gov/mapsonline/?site=LandRecords&ext=1 (accessed June 26, 2024).

Ecology. 2020. Marion Abbott, Washington State Department of Ecology. *Satisfaction of Agreed Order No.6829 for Investigation and Study Phase at the Park Laundry Site*. Letter to Phyllis Hyatt, Union Ridge Investment Company. September 16.

Ecology. 2023a. *Public Review Draft Cleanup Action Plan for the Former Park Laundry Site*. Washington State Department of Ecology: Lacey, WA. July 3.

Ecology. 2023b. *Consent Decree No. 23-2-02783-06, Park Laundry Site*. Washington State Department of Ecology. October 20.

Ecology. 2024. *Stormwater Management Manual for Western Washington*. Washington State Department of Ecology. July.

MFA. 2019. *Remedial Investigation and Feasibility Study Report for the Former Park Laundry Site*. Prepared for Union Ridge Investment Company. Maul Foster & Alongi, Inc: Vancouver, WA. July 11.

MFA. 2024a. *Predesign Investigation Work Plan for the Park Laundry Site, Ridgefield, Washington*. Prepared for the City of Ridgefield. Maul Foster & Alongi, Inc.: Vancouver, WA. May 2.

MFA. 2024b. *Groundwater Well Installation and Monitoring Work Plan for the Park Laundry Site, Ridgefield, Washington*. Prepared for the City of Ridgefield. Maul Foster & Alongi, Inc: Vancouver, WA. May 28.

Willamette Cultural Resources Associates, LTD. 2024. *Draft Technical Memorandum re: Archaeological Monitoring for the Ridgefield Park Laundry Site Clean Up Geoprobe Investigation.* Prepared for MFA. Willamette Cultural Resources Associates, LTD. Portland, OR. July 10.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figures

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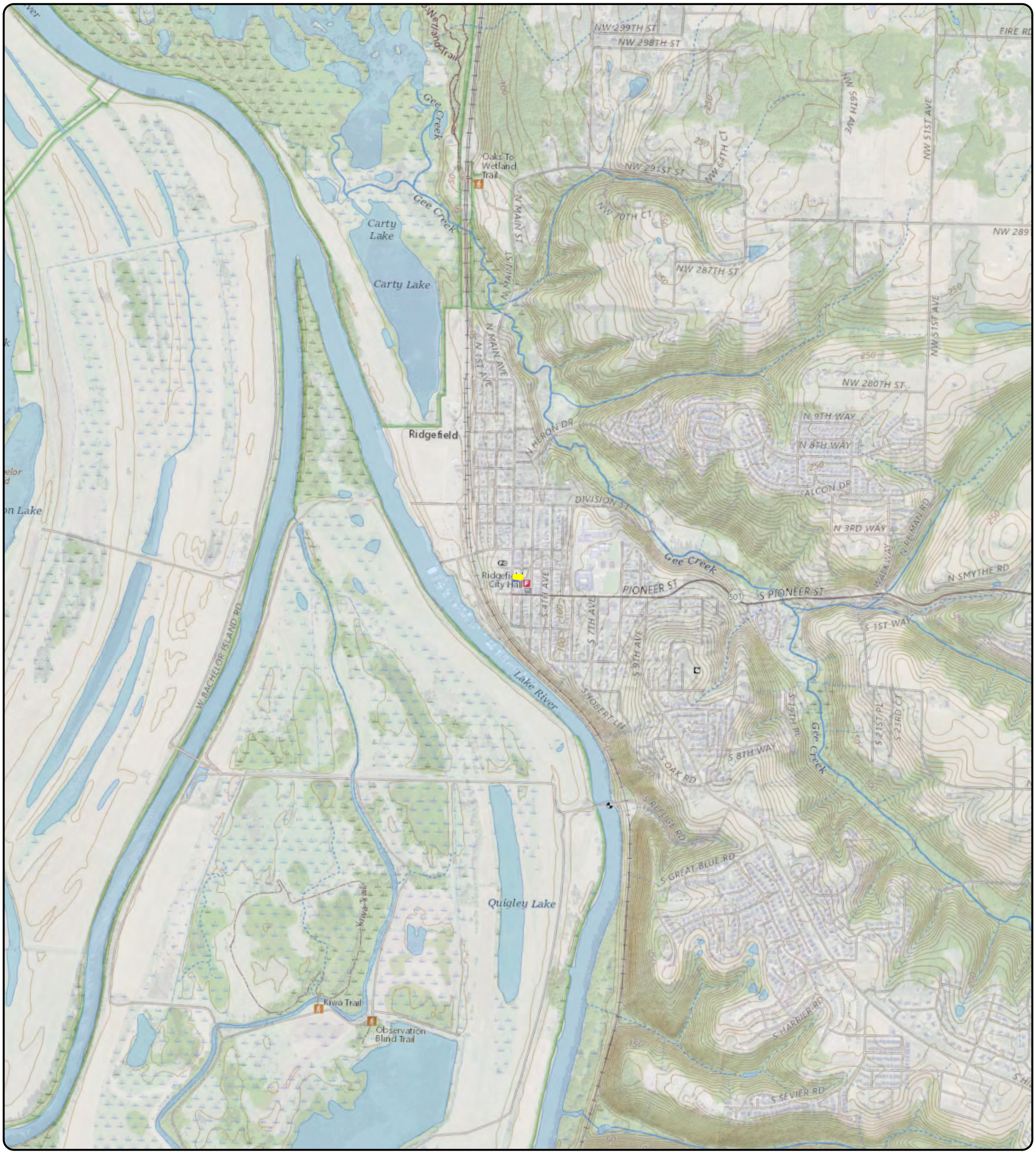
Path: X:\0239.33\007\Pro\M0239_33_007_004.aprx\Fig 1 Property Location

Print Date: 4/23/2024

Reviewed By: cbusch

Produced By: sturner

Project: M0239.33.007



Notes
U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Ridgefield.
Township 4 north, range 1 west, section 24.

Data Source
Property boundary obtained from Clark County.

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Legend

☐ Property Boundary

Figure 1-1
Property Location

Former Park Laundry
City of Ridgefield , WA

0 2,000
Feet

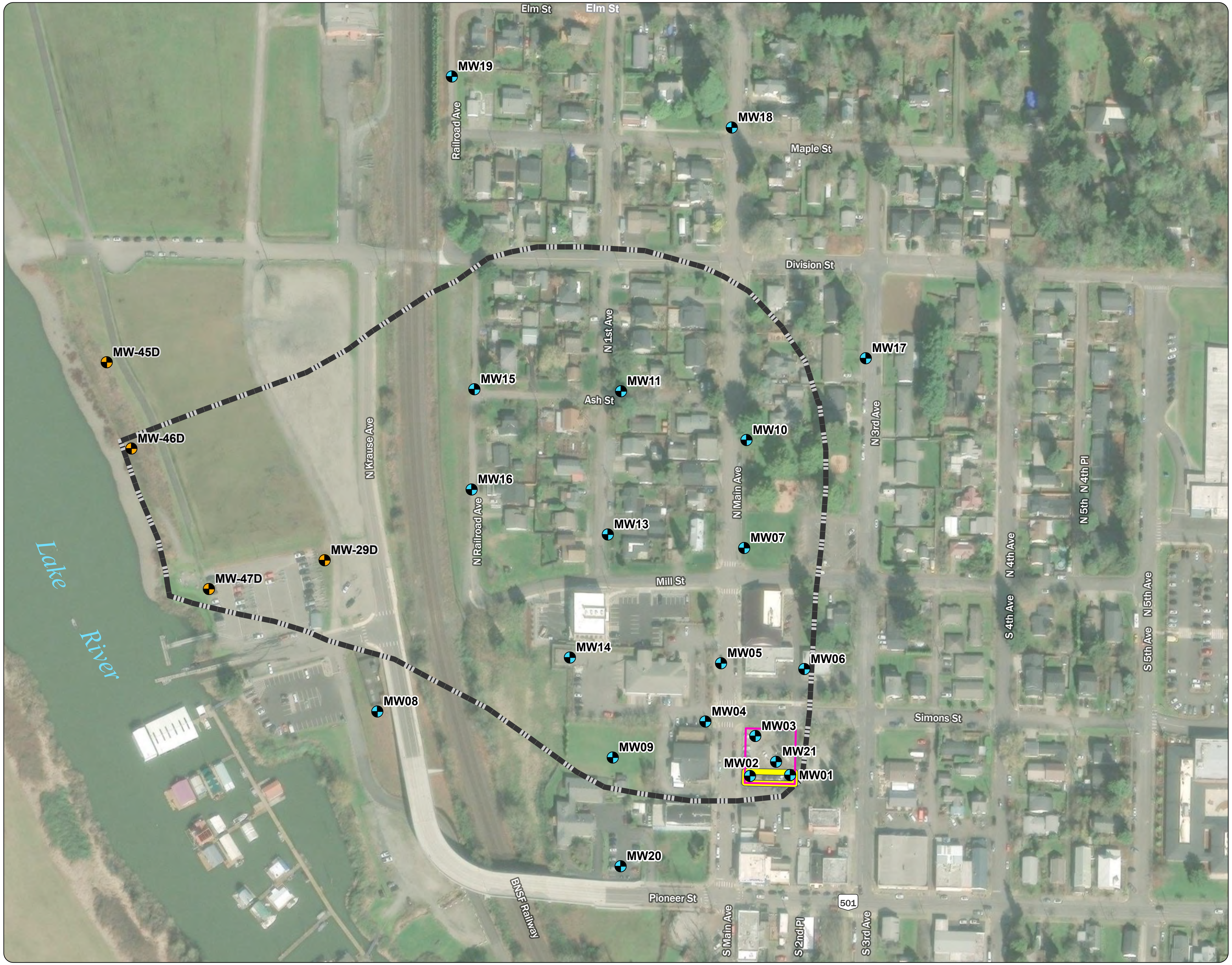

Figure 1-2
Site Location

Former Park Laundry
City of Ridgefield, WA

Legend

●	Park Laundry Monitoring Well
●	Port of Ridgefield Monitoring Well
▭	Property Boundary
▬	Estimated Site Boundary
▭	Source Area Boundary

Notes:
The Estimated Site Boundary extent was determined based on exceedances of the Model Toxics Control Act (MTCA) Method A cleanup levels for groundwater.

0 100 200
Feet

Data Sources:
Aerial photograph (2023) obtained rom Esri; taxlots obtained from Clark County GIS; port monitoring wells obtained from Port of Ridgefield.

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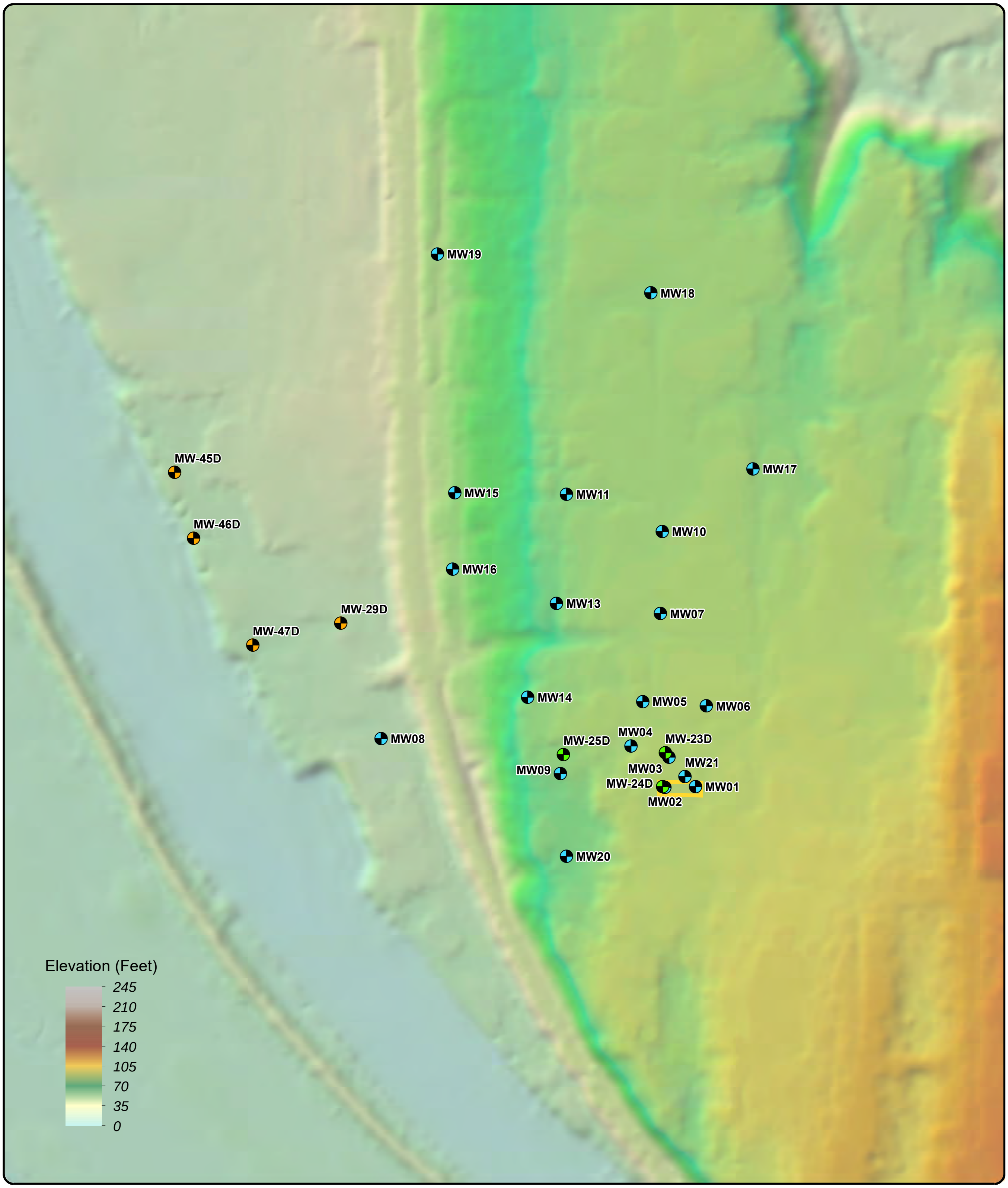
Figure 1-3
Topography

Former Park Laundry
City of Ridgefield, WA



Data Source:
Topographic surface generated from LiDAR-derived contours obtained from Clark County

Legend

- ● Monitoring Well, MFA July/August 2024
- ● Park Laundry Monitoring Well
- ● Port of Ridgefield Monitoring Well
- ▭ Property Boundary

0 250 500
Feet

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Path: X:\0239.33\007\Projects\Fig 2-3 Topography.mxd
Print Date: 8/8/2024
Reviewed by: mpollock
Produced By: gjaravata
Project: M0239.33.007

Figure 1-4
Adjoining Properties

Former Park Laundry
City of Ridgefield, WA

Legend

▚	Estimated Site Boundary
🟩	Residential
🟪	Commercial/Public Use
🟨	Property Tax Lot Boundary
☐	Tax Lot Boundary
🟦	Boundary (Port of Ridgefield)
🟥	Source Area Boundary
┼	Railroad (Union Pacific and Burlington Northern)

0 200
Feet

Data Sources
Aerial photograph (2023 obtained from Esri; tax lots, roads and railroad data obtained from Clark County.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0239.33\007\Pro\M0239_33_007_003_03A.aprx\Fig 1-3 Adjoining Properties

Print Date: 8/8/2024 Reviewed By: mpollock Produced By: sturner Project: M0239.33.007

Path: X:\0239.33\007\Pro\M0239_33_007_003_03A.aprx\Fig 2-7 Compliance Groundwater Monitoring Network

Print Date: 8/28/2024

Reviewed By: mpollock

Produced By: gjaravata

Project: M0239.33.007

Figure 2-1
Compliance Groundwater Monitoring Network

Former Park Laundry
City of Ridgefield, WA

Legend

Groundwater Wells Included in Monitoring

- ● Monitoring Well, MFA July/August 2024
- ● Monitoring Well, MFA June 2011
- ● Monitoring Well, MFA March 2012
- ● Port of Ridgefield Monitoring Well
- 🟨 Property Boundary
- ⬚ Estimated Site Boundary

Notes

The locations of monitoring wells MW-23D, MW-24D, and MW-25D are approximate.

0 110
Feet

Data Sources

Aerial photograph (2023) obtained from Esri.

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Figure 2-2
Estimated Perched Groundwater Potentiometric Surface Map
September 2016

Former Park Laundry
City of Ridgefield, WA

Legend

●	Park Laundry Monitoring Well
●	Port of Ridgefield Monitoring Well
⁓	Water Level Contour (Feet MSL)
↖	Groundwater Flow Direction
▭	Property Boundary

Notes:
Park Laundry monitoring well locations were surveyed by Minister-Glaeser on June 23, 2011, March 12, 2012, and April 4, 2013.
Potentiometric surface modeled using ArcGIS Spatial Analyst Natural Neighbor interpolation tool.
MSL = mean sea level.

0 100 200
Feet

Data Sources:
Aerial photograph (2023) obtained from Esri; taxlots obtained from Clark County GIS; port monitoring wells obtained from Port of Ridgefield.

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Project: M0239.33.007 Produced By: gjaravata Reviewed by: mpollock Print Date: 8/28/2024 Path: X:\0239.33\007\Projects\Fig 2-4 Estimated Potentiometric Surface Map Sept2016.mxd

Figure 2-3
Shallow Soil Excavation Area (3 feet bgs)

Former Park Laundry
City of Ridgefield, WA

Legend

- ● Soil Boring - 5 feet bgs
- ● Soil Boring - 15 feet bgs
- ◐ Monitoring Well
- ● Previous Boring
- 🟧 Shallow Soil Excavation Area
- 🟨 Property Boundary
- ☐ Parcel

Exceedance Key

- ○ Surface (< 1.25 feet bgs)

Notes

Exceedance is defined as a PCE concentration in soil within the top 15 feet in excess of the selected REL for PCE in soil. REL for PCE is 0.05 milligrams per kilogram.

PD-series soil boring locations logged using real-time kinematic global navigation satellite system receiver on May 20, 2024.

bgs = below ground surface.
PCE = tetrachloroethene.
REL = remediation level.

0 10
Feet

Data Sources

Aerial photograph obtained from Microsoft Bing; parcel data obtained from Clark County.

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p. 971 544 2139 | www.maulfoster.com

Path: X:\0239.33\007\Pro\M0239_33_007_003_03A.aprx\Fig 2-5 Shallow Soil Excavation Area
Print Date: 8/28/2024
Reviewed By: mpollock
Produced By: gjaravata
Project: M0239.33.007

Figure 2-4
Deep Soil Excavation Area (up to 14.5 feet bgs)

Former Park Laundry
City of Ridgefield, WA

Legend

● Soil Boring - 15 feet bgs

● Monitoring Well

● Previous Boring

▨ Deep Soil Excavation Area

☐ Property Boundary

☐ Parcel

Exceedance Key

● Mid-Depth (> 5 feet bgs)

● Deep (> 10 feet bgs)

Notes

Exceedance is defined as a PCE concentration in soil within the top 15 feet in excess of the selected REL for PCE in soil. REL for PCE is 0.05 milligrams per kilogram.

PD-series soil boring locations logged using real-time kinematic global navigation satellite system receiver on May 20, 2024.

bgs = below ground surface.

PCE = tetrachloroethene.

REL = remediation level.

0 10

Feet

Data Sources

Aerial photograph obtained from Microsoft Bing; parcel data obtained from Clark County.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\0239.33\007\Pro\M0239_33_007_003_03A.aprx\Fig 2-6 Deep Soil Excavation Area

Print Date: 8/28/2024

Reviewed By: mpollock

Produced By: gjaravata

Project: M0239.33.007

Drawings

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FOSTER
ALONGI

FORMER PARK LAUNDRY SITE REMEDIATION

PREPARED FOR:

CITY OF RIDGEFIELD

LOCATED IN SEC. 24, T. 4 N., R. 1 W., W.M., CLARK COUNTY, RIDGEFIELD, WASHINGTON

PROJECT CONTACTS

CONTRACTING AGENCY CITY OF RIDGEFIELD 487 S 56TH PLACE RIDGEFIELD, WA 98642 P: 360-857-5022 CHUCK GREEN, PE PUBLIC WORKS DIRECTOR CHUCK.GREEN@RIDGEFIELDWA.US	ENGINEER MAUL, FOSTER & ALONGI, INC. 330 EAST MILL PLAIN BLVD, SUITE 405 VANCOUVER, WA 98660 P: 503-501-5236 JOSHUA ELLIOTT, PE JELLIOTT@MAULFOSTER.COM
CITY REPRESENTATIVE GEMINI ENVIRONMENTAL STRATEGIES, LLC. RIDGEFIELD, WA 98642 P: 360-903-8633 JIM MAUL, RG, LHG JMAUL@GEMINIENVIRONMENTALSTRATEGIES.COM	

VICINITY MAP

NOT TO SCALE

SHEET INDEX

C0.0	COVER SHEET
C0.1	MASTER LEGEND
C1.0	EXISTING CONDITIONS & DEMOLITION PLAN
C1.1	EROSION & SEDIMENT CONTROL PLAN
C1.2	EROSION & SEDIMENT CONTROL DETAILS
C1.3	CONCEPTUAL TEMP TRAFFIC CONTROL PLAN
C2.0	SHALLOW SOIL EXCAVATION PLAN & TYPICAL SECTIONS
C2.1	DEEP SOIL EXCAVATION PLAN & TYPICAL SECTIONS
C2.2	IN SITU CHEMICAL REDUCTION PLAN
C2.3	REMEDIATION NOTES

PROJECT SUMMARY

SITE ADDRESS:
122 N MAIN AVE
RIDGEFIELD, WA 98642

WORK DESCRIPTION:
WORK INCLUDES TEMPORARY EROSION & SEDIMENT CONTROLS, CONSTRUCTION STAGING, SHALLOW SOIL EXCAVATION, SHORED DEEP SOIL EXCAVATION AND DEWATERING, SOIL STOCKPILING, OFF-SITE DISPOSAL OF CONTAMINATED SOIL, EXCAVATION BACKFILL AND SHORING REMOVAL, AND SOIL/GROUNDWATER INJECTIONS.

GENERAL NOTES

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE COORDINATE SYSTEM SOUTH ZONE, NAD 83/91.
2. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION. A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CALL 811 (UTILITY NOTIFICATION CENTER) FOR LOCATION MARK-UP OF EXISTING UTILITIES.
3. ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE LATEST STANDARDS AND PRACTICES OF THE CITY OF RIDGEFIELD AND THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION" PREPARED BY WSDOT/APWA.
4. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT WILL PREVAIL.
5. ANY CHANGES TO THE DESIGN AND/OR CONSTRUCTION SHALL BE APPROVED BY THE OWNER OR ENGINEER.
6. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE AN APPROVAL OF ANY OTHER CONSTRUCTION NOT SPECIFICALLY SHOWN ON THE PLANS. PLANS FOR STRUCTURES SUCH AS BRIDGES, BUILDINGS, TANKS, VAULTS, ROCKERIES, AND RETAINING WALLS MAY REQUIRE A SEPARATE REVIEW AND APPROVAL BY THE BUILDING DEPARTMENT PRIOR TO CONSTRUCTION.
7. A COPY OF THESE APPROVED PLANS SHALL BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL CONSTRUCTION EASEMENTS AND PERMITS NECESSARY TO PERFORM THE WORK.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING.
10. PUBLIC AND PRIVATE DRAINAGE WAYS SHALL BE PROTECTED FROM POLLUTION. NO MATERIAL IS TO BE DISCHARGED TO OR DEPOSITED IN STORMWATER SYSTEMS THAT MAY RESULT IN VIOLATION OF STATE OR FEDERAL WATER QUALITY STANDARDS.
11. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL HAVE AN APPROVED PUBLIC RIGHT-OF-WAY WORK PERMIT PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN THE RIGHT-OF-WAY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION. TWO-WAY TRAFFIC MUST BE MAINTAINED AT ALL TIMES ON THE ADJACENT PUBLIC STREETS.
13. ANY PUBLIC OR PRIVATE CURB, GUTTER, SIDEWALK, OR ASPHALT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO CITY OF RIDGEFIELD STANDARDS AND PRACTICES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ADJACENT UTILITIES WHICH MAY INCLUDE, BUT ARE NOT LIMITED TO, WATER, SANITARY SEWER, STORMWATER, POWER, TELEPHONE, CABLE TV, GAS, IRRIGATION, AND STREET LIGHTING. THE CONTRACTOR SHALL NOTIFY RESIDENTS AND BUSINESSES 48 HOURS IN ADVANCE OF ANY WORK AFFECTING ACCESS OR SERVICE AND SHALL MINIMIZE INTERRUPTIONS TO DRIVEWAYS FOR RESIDENTS AND BUSINESSES ADJACENT TO THE PROJECT.
15. ALL LAWN AND VEGETATED AREAS DISTURBED WILL BE RESTORED TO ORIGINAL CONDITION. ANY DISTURBANCE OR DAMAGE TO OTHER PROPERTY ON ADJACENT PARCELS OR IN THE PUBLIC RIGHT OF WAY SHALL ALSO BE REPAIRED OR RESTORED TO ORIGINAL CONDITION.

NOT FOR CONSTRUCTION

PLOTTED ON: 2024-09-05 1:22 PM PLOTTED BY: Josh Elliott FILENAME: G:\PROJECTS\M0239.33 City of Ridgefield\PLANS\COVER.dwg

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330 EAST MILL PLAIN BLVD, SUITE 405
VANCOUVER, WA 98660
360.694.2691
www.maulfoster.com

CITY OF RIDGEFIELD WASHINGTON

FORMER PARK LAUNDRY
CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

PROJECT: M0239.33
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----
SCALE

SHEET TITLE
COVER SHEET

SHEET
C0.0

ABBREVIATIONS

AC	ACRE, ASPHALT CONCRETE PAVEMENT	LB	POUND(-S)
		LF	LINEAR FEET
ACOE	ARMY CORPS OF ENGINEERS	LONG.	LONGITUDINAL
AD	AREA DRAIN	LT	LEFT
AGG	AGGREGATE		
AIR	AIR RELIEF	MAX	MAXIMUM
AMSL	ABOVE MEAN SEA LEVEL	MFA	MAUL FOSTER & ALONGI, INC.
AP	ANGLE POINT	MFR	MANUFACTURER
APN	APPARENT PARCEL NUMBER	MH	MANHOLE
APPD	APPROVED	MIC	MONUMENT (IN CASE)
APPROX, ±	APPROXIMAT(-E, -LY)	MIN	MINIMUM; MINUTE
ASPH	ASPHALT	MISC	MISCELLANEOUS
ASSY	ASSEMBLY	MJ	MECHANICAL JOINT
		MON	MONUMENT (SURFACE)
BCR	BEGIN CURB RETURN	MW	MONITORING WELL
BF	BUTTERFLY		
BGS	BELOW GROUND SURFACE	N	NORTH
BLDG	BUILDING	N/A	NOT APPLICABLE
BLVD	BOULEVARD	NAT G, NG	NATURAL GAS
BM	BENCHMARK	NE	NORTHEAST
BMP	BEST MANAGEMENT PRACTICE	NO.	NUMBER
BO	BLOW-OFF	NTS	NOT TO SCALE
BOC	BACK OF CURB	NW	NORTHWEST
BOT, BTM	BOTTOM		
B.O.W.	BOTTOM OF WALL	OC	ON CENTER
BVC	BEGING VERTICAL CURVE	OD	OUTSIDE DIAMETER
		OHP	OVERHEAD POWER
CB	CATCH BASIN	OT	OWNERSHIP TIE
CDF	CONTROLLED DENSITY FILL		
CEM	CEMENT	P	PIPE
CF	CUBIC FEET	P TRAN	PAD MOUNTED TRANSFORMER
CFS	CUBIC FEET PER SECOND	PC	POINT OF CURVATURE
CIP	CAST IRON PIPE	PCC	PORTLAND CEMENT CONCRETE
CIR	CIRCLE	PEN.	PENETRATION
CK	CHECK	PERF	PERFORAT(-E, -ED, -ES, -ION)
CL, ℄	CENTERLINE	PIP	PROTECT IN PLACE
CMP	CORRUGATED METAL PIPE	P.L., PL	PROPERTY LINE, PLACE
CO	CLEANOUT	POW V	POWER VAULT
COMP	COMPACTION	PP	POWER POLE
CONC	CONCRETE	PROP.	PROPOSED
CPE	CORRUGATED POLYETHYLENE	PS	PUMP STATION
CPL	COUPLING	PSF	POUNDS PER SQUARE FOOT
CSTC	CRUSHED SURFACING TOP COARSE	PSI	POUNDS PER SQUARE INCH
		PT	POINT OF TANGENT
CT	COURT	PV	PLUG VALVE
CTR	CENTER	PVI	POINT OF VERTICAL INTERSECTION
CULV	CULVERT	PVC	POLYVINYL CHLORIDE
CY	CUBIC YARD	PVMT	PAVEMENT
D	DEPTH	R, RAD	RADIUS
DEG	DEGREE(-S)	RC	REINFORCED CONCRETE
DI	DUCTILE IRON	RCP	REINFORCED CONCRETE PIPE
DIA	DIAMETER	RD	ROOF DRAIN
DIM.	DIMENSION(-S)	RED	REDUCER
DIP, D.I.P.	DUCTILE IRON PIPE	REQD	REQUIRED
DOT	DEPARTMENT OF TRANSPORTATION	REQT	REQUIREMENT
		REV	REVISION
DR	DIMENSION RATIO	R/W, ROW	RIGHT OF WAY
DTL	DETAIL	RT	RIGHT
DWG(S)	DRAWING(-S)		
		S	SOUTH, SLOPE
E	EAST	SB	SOIL BORING
EA	EACH	SCH	SCHEDULE
ECR	END CURB RETURN	SD	STORM DRAIN
EG	EXISTING GROUND	SDR	STANDARD DIMENSION RATIO
EL, ELEV	ELEVATION	SE	SOUTHEAST
ELB, ELL	ELBOW	SF	SQUARE FEET
ELEC	ELECTRIC(-AL)	SHT	SHEET
ENGR	ENGINEER	SL	SLOPE
ENTR	ENTRANCE	SPEC	SPECIFICATIONS
EP, EOP	EDGE OF PAVEMENT	SQ	SQUARE
EQ	EQUAL(-LY)	SQ IN	SQUARE INCHES
ESC	EROSION CONTROL	SRF	SURFACE
ESMT	EASEMENT	ST	STREET
EST	ESTIMATE(-D)	STA	STATION
EVC	END VERTICAL CURVE	STD	STANDARD
EXC	EXCAVATE	STL	STEEL
EX., EXTG.	EXISTING	STRM	STORM
EW	EACH WAY	STRUCT	STRUCTUR(-E, -AL)
		SSWR	SANITARY SEWER
FF	FINISH FLOOR	SW,S/W	SIDEWALK, SOUTHWEST
FG	FINISH GRADE		
FH	FIRE HYDRANT	TB	THRUST BLOCK
FL	FLOW LINE	TBM	TEMPORARY BENCHMARK
FLG	FLANGE	TC	TOP OF CURB
FM	FORCE MAIN	TEL, TELE	TELEPHONE
FT	FEET, FOOT	TEMP	TEMPORARY
		TP	TOP OF PAVEMENT, TEL POLE, TURNING POINT
GAL	GALLON(-S)		
GM	GAS METER	TW	TOP OF WALL
GND	GROUND	TYP	TYPICAL
GP	GUARD POST		
GPM	GALLONS PER MINUTE	UG	UNDERGROUND
GRD	GRADE	UGE	UNDERGROUND ELECTRIC
GV	GAS VALVE, GATE VALVE	UTIL	UTILITY
HDPE	HIGH DENSITY POLYETHYLENE	VC	VERTICAL CURVE
HGT, HT	HEIGHT	VERT	VERTICAL
HP	HORSEPOWER	VOL	VOLUME
HORZ	HORIZONTAL		
HYD	HYDRANT	W	WIDTH; WIDE; WEST
		W/	WITH
ID	INSIDE DIAMETER	WATR	WATER
IE	INVERT ELEVATION	WM	WATER METER
IN	INCH(-ES)	W/O	WITHOUT
INTX	INTERSECTION	WSE	WATER SURFACE ELEVATION
INV	INVERT	WV	GATE/GENERAL WATER VALVE
IP	IRON PIPE		
		YD	YARD
L	LENGTH	YR	YEAR
LAT	LATERAL		

GENERAL LEGEND

GAS/POWER/TELEPHONE SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
⊠		GAS METER
⊡		GAS VALVE
△		PAD MOUNTED TRANSFORMER
P		POWER VAULT
⊠		TRANSMISSION TOWER
-○-		UTILITY POLE
←		UTILITY POLE ANCHOR
□		TELEPHONE RISER
T		TELEPHONE VAULT
☼	☼	LIGHT POLE

SURVEY SYMBOLS

SYMBOL THEOR./ EXIST.	SYMBOL FOUND/ PROP.	DESCRIPTION
△	△	ANGLE POINT
⊕	⊕	BENCH MARK
○	●	BLOCK CORNER
○	•	IRON PIPE
⊕	⊕	MONUMENT
		OWNERSHIP TIE
		SECTION DATA:
○		SECTION CENTER
		SECTION CORNER
		QUARTER CORNER
○	○	SIXTEENTH CORNER
		CLOSING CORNER
MC	MC	MEANDER CORNER
WC	WC	WITNESS CORNER
⊡	■	SOIL BORING
×	⊗	SPOT ELEVATION

SYMBOL	DESCRIPTION
27	EXISTING GRADE MAJOR CONTOUR
27	EXISTING GRADE MINOR CONTOUR
SD_x	EXISTING STORM DRAIN PIPE
W_x	EXISTING WATER PIPE
SS_x	EXISTING SANITARY SEWER PIPE
▨	EXISTING AC PAVEMENT
▨	EXISTING CONCRETE SURFACING
▨	EXISTING GRAVEL SURFACING
▨	EXISTING BUILDING
	EXISTING FENCE LINE
	EXISTING ROAD CENTERLINE
	EXISTING RIGHT-OF-WAY
PL	EXISTING PROPERTY LINE

WATER SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		CAP/PLUG
#	#	COUPLING
○	●	GUARD POST / BOLLARD
▷	▶	REDUCER
◁	◁	THRUST BLOCK
⊞	■	WATER METER
□	■	DOUBLE CHECK VALVE ASSEMBLY
		FIRE HYDRANT
		AIR RELIEF
		BLOW-OFF VALVE
		CHECK VALVE
⊗	⊗	GATE VALVE
		BENDS:
		90 DEGREE BEND
		45 DEGREE BEND
		22.5 DEGREE BEND
		11.25 DEGREE BEND
		VERTICAL BEND
		TEE
		CROSS

SANITARY/STORM SEWER SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
○	●	SAN. SEWER CLEAN OUT
○	Ⓢ	SAN. SEWER MANHOLE
⊟	▣	STORM DRAIN CATCH BASIN
		STORM DRAIN CULVERT
○	Ⓓ	STORM DRAIN MANHOLE
⊙	⊙	DRY WELL
⊕	⊕	AREA DRAIN

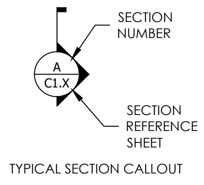
SYMBOL	DESCRIPTION
27	PROPOSED GRADE MAJOR CONTOUR (5.0' INTERVAL)
27	PROPOSED GRADE MINOR CONTOUR (1.0' INTERVAL)
	PROPOSED STORM DRAIN PIPE
	PROPOSED WATER PIPE
	PROPOSED SANITARY SEWER PIPE
▨	PROPOSED AC PAVEMENT
▨	PROPOSED CONCRETE SURFACING
▨	PROPOSED GRAVEL SURFACING
▨	PROPOSED BUILDING
X	PROPOSED FENCE LINE
	PROPOSED ROAD CENTERLINE
	PROPOSED RIGHT-OF-WAY
PL	PROPOSED PROPERTY LINE

CHANNELIZATION SYMBOLS

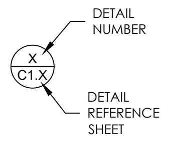
SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
		BIKE PATH
		HANDICAP SYMBOL
STOP	STOP	STOP
		RAISED MARKERS:
○	●	LANE MARKERS TYPE I
□	■	LANE MARKERS TYPE II
		SIGN

MISCELLANEOUS SYMBOLS

SYMBOL EXIST.	SYMBOL PROP.	DESCRIPTION
⊙	⊙	MONITORING WELL
	■	INLET PROTECTION PILLOW
	▨	CONSTRUCTION ENTRANCE
	FG 83.88	PROPOSED SPOT SHOT



TYPICAL SECTION CALLOUT



TYPICAL DETAIL CALLOUT

SYMBOL	DESCRIPTION
SF	PROPOSED SEDIMENT FENCE
← OR ← OR ←	PROPOSED FLOW DIRECTION
	PROPOSED GRADE BREAK
	PROPOSED DITCH FLOW LINE
	PROPOSED COMPOST SOCK
	PROPOSED PAINT STRIPE
▨	PROPOSED TRUNCATED DOMES
⇦	EXISTING FLOW DIRECTION
P	EXISTING OVERHEAD POWER
E_x	EXISTING UNDERGROUND POWER
T	EXISTING UNDERGROUND TELEPHONE
G	EXISTING UNDERGROUND GAS

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FORMER PARK LAUNDRY
CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

PROJECT: M0239.33
DESIGNED:----
DRAWN: ----
CHECKED: ----
SCALE

SHEET TITLE
MASTER LEGEND

SHEET
C 1.1

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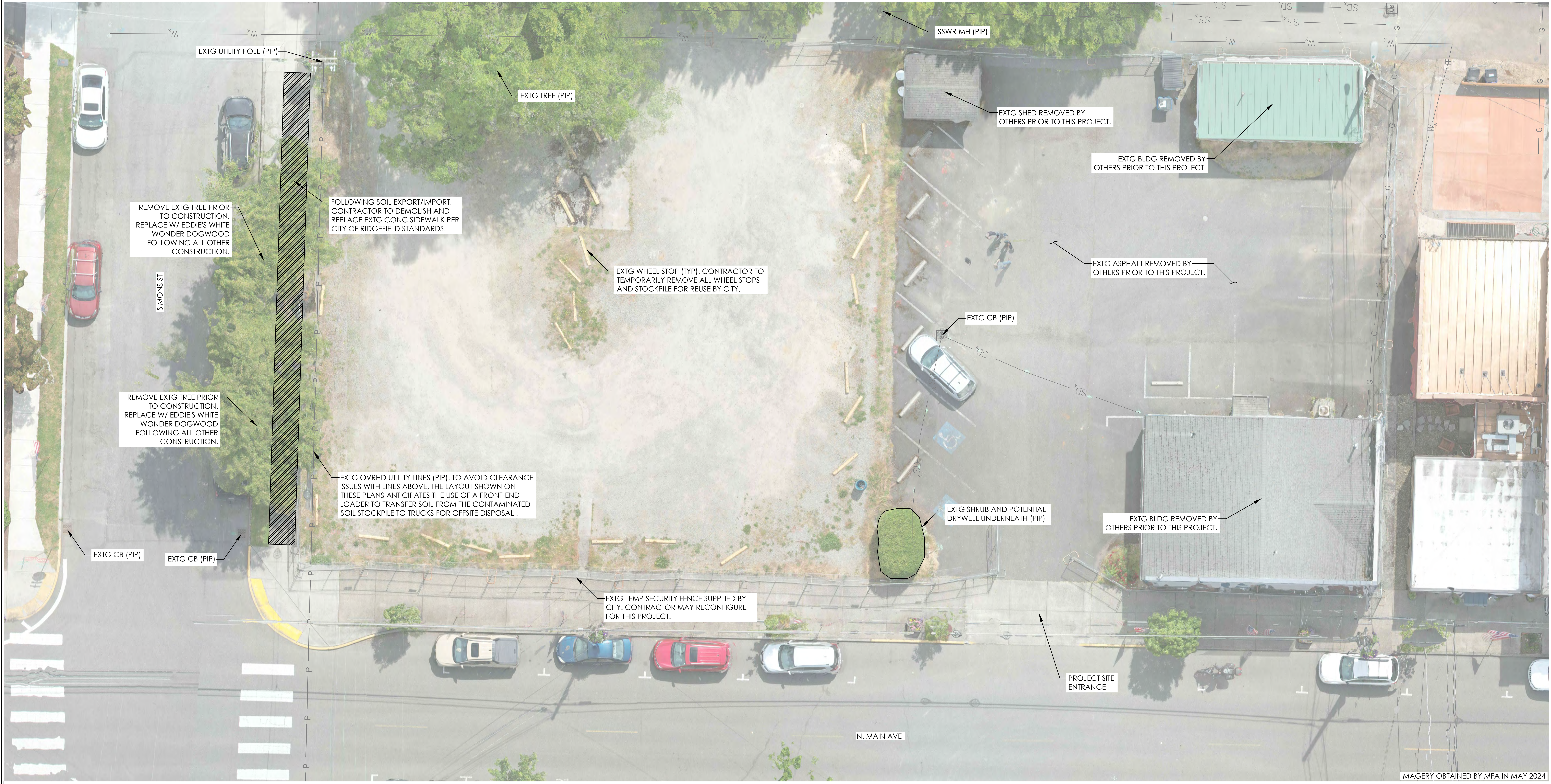
EXTG UTILITY POLE (PIP)

EXTG TREE (PIP)

SSWR MH (PIP)

EXTG SHED REMOVED BY OTHERS PRIOR TO THIS PROJECT.

EXTG BLDG REMOVED BY OTHERS PRIOR TO THIS PROJECT.

FOLLOWING SOIL EXPORT/IMPORT, CONTRACTOR TO DEMOLISH AND REPLACE EXTG CONC SIDEWALK PER CITY OF RIDGEFIELD STANDARDS.

REMOVE EXTG TREE PRIOR TO CONSTRUCTION. REPLACE W/ EDDIE'S WHITE WONDER DOGWOOD FOLLOWING ALL OTHER CONSTRUCTION.

EXTG WHEEL STOP (TYP). CONTRACTOR TO TEMPORARILY REMOVE ALL WHEEL STOPS AND STOCKPILE FOR REUSE BY CITY.

EXTG ASPHALT REMOVED BY OTHERS PRIOR TO THIS PROJECT.

EXTG CB (PIP)

REMOVE EXTG TREE PRIOR TO CONSTRUCTION. REPLACE W/ EDDIE'S WHITE WONDER DOGWOOD FOLLOWING ALL OTHER CONSTRUCTION.

EXTG OVRHD UTILITY LINES (PIP). TO AVOID CLEARANCE ISSUES WITH LINES ABOVE, THE LAYOUT SHOWN ON THESE PLANS ANTICIPATES THE USE OF A FRONT-END LOADER TO TRANSFER SOIL FROM THE CONTAMINATED SOIL STOCKPILE TO TRUCKS FOR OFFSITE DISPOSAL .

EXTG SHRUB AND POTENTIAL DRYWELL UNDERNEATH (PIP)

EXTG BLDG REMOVED BY OTHERS PRIOR TO THIS PROJECT.

EXTG CB (PIP)

EXTG CB (PIP)

EXTG TEMP SECURITY FENCE SUPPLIED BY CITY. CONTRACTOR MAY RECONFIGURE FOR THIS PROJECT.

PROJECT SITE ENTRANCE

IMAGERY OBTAINED BY MFA IN MAY 2024

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FORMER PARK LAUNDRY

CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

PROJECT: M0239.33
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE
0 10' 20'

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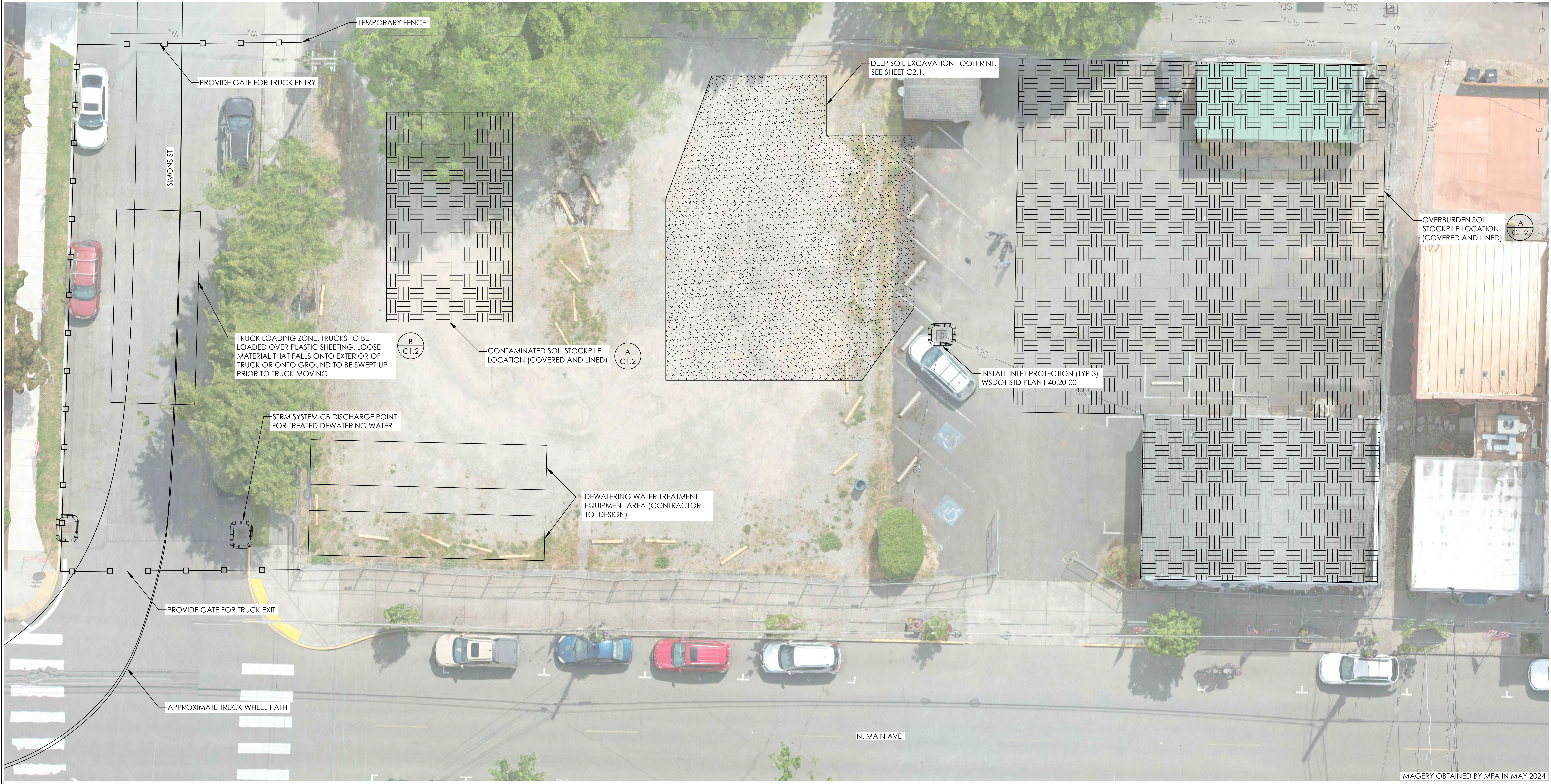
SHEET TITLE

EXISTING
CONDITIONS &
DEMOLITION PLAN

SHEET

C1.0



NOTES:

1. CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION STORMWATER GENERAL PERMIT (CSWGP), ANY ADMINISTRATIVE ORDERS TO THE CSWGP, AND THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.
2. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES).
3. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
4. CLEARLY FLAG THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT FOR THE DURATION OF CONSTRUCTION.
5. CONSTRUCT THE ESC BMPS SHOWN ON THIS PLAN IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
6. THE ESC BMPs SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE ESC BMPs AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
7. THE APPLICANT SHALL INSPECT THE ESC BMPS DAILY AND MAINTAIN THEM AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONALITY.
8. INSPECT AND MAINTAIN THE ESC BMPS ON INACTIVE SITES A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT (I.E. A 24-HR STORM EVENT WITH A 10-YR OR GREATER RECURRENCE INTERVAL).
9. AT NO TIME SHALL THE SEDIMENT EXCEED 60-PERCENT OF THE SUMP DEPTH OR HAVE LESS THAN 6-INCHES OF CLEARANCE FROM THE SEDIMENT SURFACE TO THE INVERT OF THE LOWEST PIPE. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.
10. DO NOT BEGIN CLEARING, GRADING, OR OTHER WORK INVOLVING DISTURBANCE OF GROUND SURFACE COVER UNTIL APPLICABLE PERMITS HAVE BEEN OBTAINED; FURNISH ALL DOCUMENTATION REQUIRED TO OBTAIN APPLICABLE PERMITS.
11. PREVENT RUNOFF INTO STORM AND SANITARY SEWER SYSTEMS, INCLUDING OPEN DRAINAGE CHANNELS, IN EXCESS OF ACTUAL CAPACITY OR AMOUNT ALLOWED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS LESS.
12. ANY WATER THAT COMES INTO CONTACT WITH THE SITE MAY BE POTENTIALLY CONTAMINATED. THE CONTRACTOR SHALL CONTAIN AND TREAT ANY STORMWATER (AND GROUNDWATER) PRIOR TO DISCHARGE. THE CONTRACTOR SHALL FOLLOW PROCEDURES AND PERMIT REQUIREMENTS SET BY THE DEPARTMENT OF ECOLOGY AND THE CITY OF RIDGEFIELD WHEN DISCHARGING TREATED STORMWATER OR GROUNDWATER TO THE STORMWATER SYSTEM.
13. ALL STORMWATER THAT COMES IN CONTACT WITH THE SITE THAT DOES NOT INFILTRATE SHALL BE CAPTURED, CONTAINED, AND TREATED TO APPROPRIATE LIMITS PRIOR TO DISCHARGE. AN ON-SITE WATER TREATMENT SYSTEM SHALL BE PROVIDED (AND MONITORED) BY THE CONTRACTOR WHICH IS CAPABLE OF MEETING THE PERMIT DISCHARGE REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE THESE DETAILS IN THEIR CONSTRUCTION STORMWATER CONTROL PLAN FOR ENGINEER REVIEW AND APPROVAL.
14. EROSION ON SITE: MINIMIZE WIND, WATER , AND VEHICULAR EROSION OF SOIL ON THE PROJECT SITE DUE TO CONSTRUCTION ACTIVITIES.
15. EROSION OFF SITE: PREVENT EROSION OF SOIL AND DEPOSITION OF SEDIMENT ON OTHER PROPERTIES CAUSED BY WATER OR WIND.
16. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR EROSION CONTROL IMPLEMENTATION, MAINTENANCE, AND REPAIRS TO THE SITE UNTIL WORK IS COMPLETE AND SOIL STABILIZING MEASURES HAVE BEEN ACCEPTED BY THE ENGINEER AND THE CITY OF RIDGEFIELD.

NOT FOR CONSTRUCTION

PLOTTED ON: 2024-09-05 1:24 PM PLOTTED BY: Josh Elliott FILENAME: G:\PROJECTS\M0239.33 City of Ridgefield\PLANS\EROSION & SEDIMENT CONTROL DETAILS.dwg

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FORMER PARK LAUNDRY
CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

PROJECT: M0239.33
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE
0 10' 20'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

EROSION & SEDIMENT CONTROL PLAN

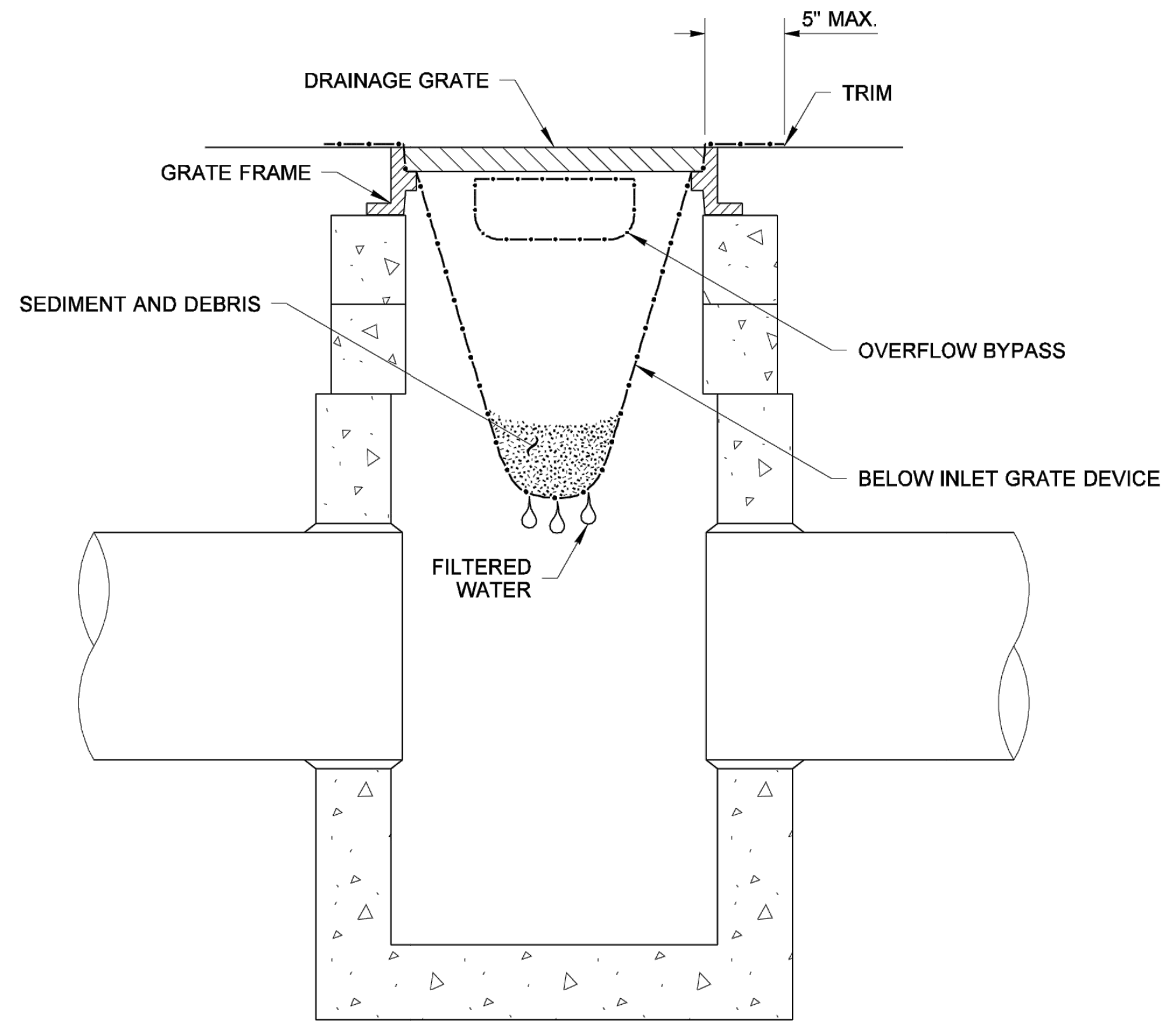
SHEET

C1.1

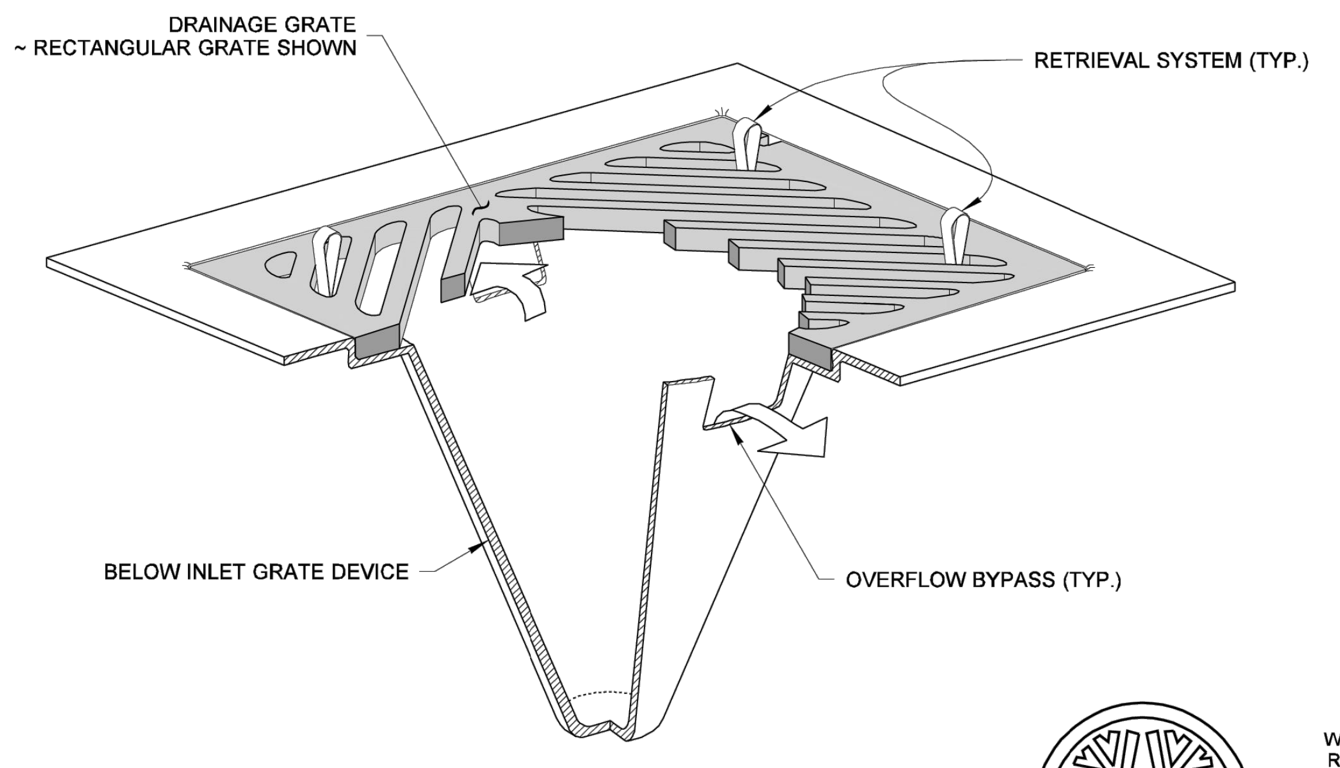
DRAWN BY: LISA CYFORD

NOTES

1. Size the Below Inlet Grate Device (BIGD) for the storm water structure it will service.
2. The BIGD shall have a built-in high-flow relief system (overflow bypass).
3. The retrieval system must allow removal of the BIGD without spilling the collected material.
4. Perform maintenance in accordance with Standard Specification 8-01.3(15).



SECTION VIEW
NOT TO SCALE



ISOMETRIC VIEW

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
MARK W. MAURER
CERTIFICATE NO. 000598

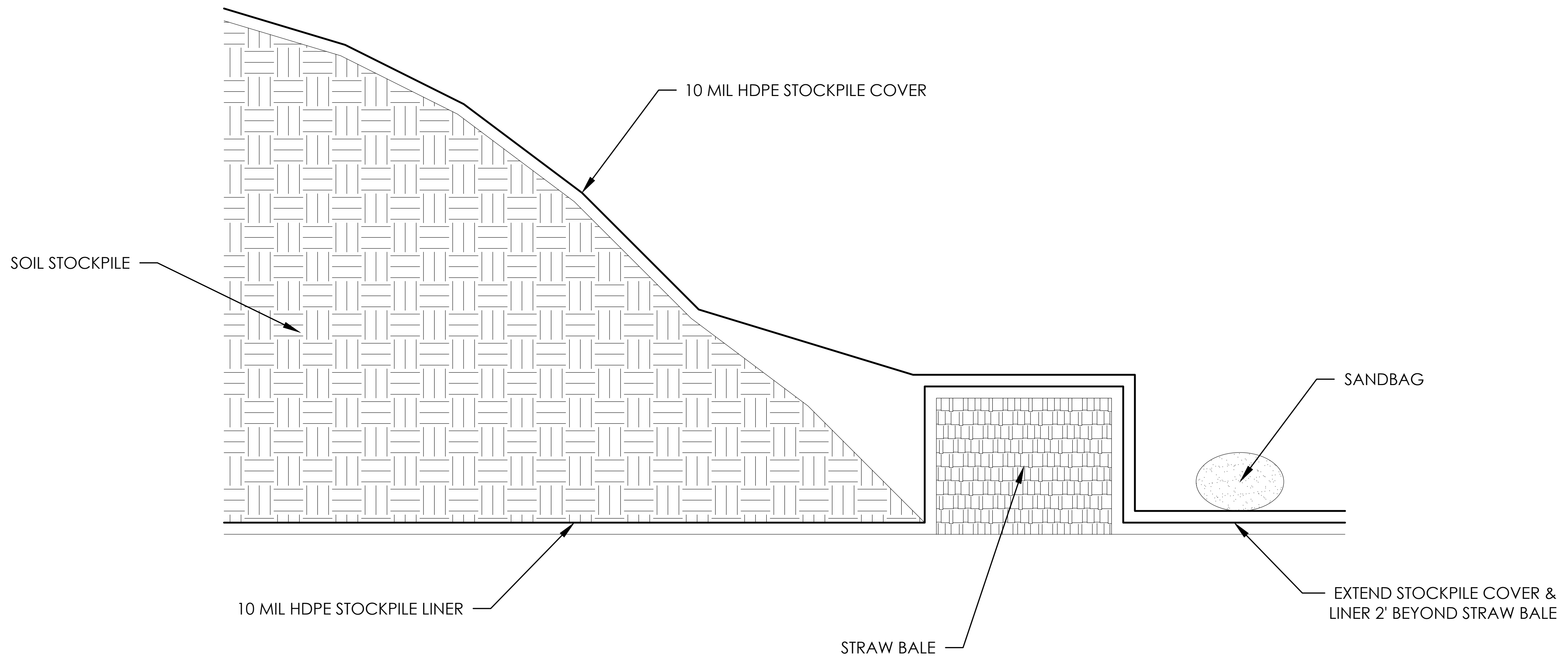
NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION, IS KEPT ON FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A COPY MAY BE OBTAINED UPON REQUEST.

STORM DRAIN INLET PROTECTION

STANDARD PLAN I-40.20-00

SHEET 1 OF 1 SHEET

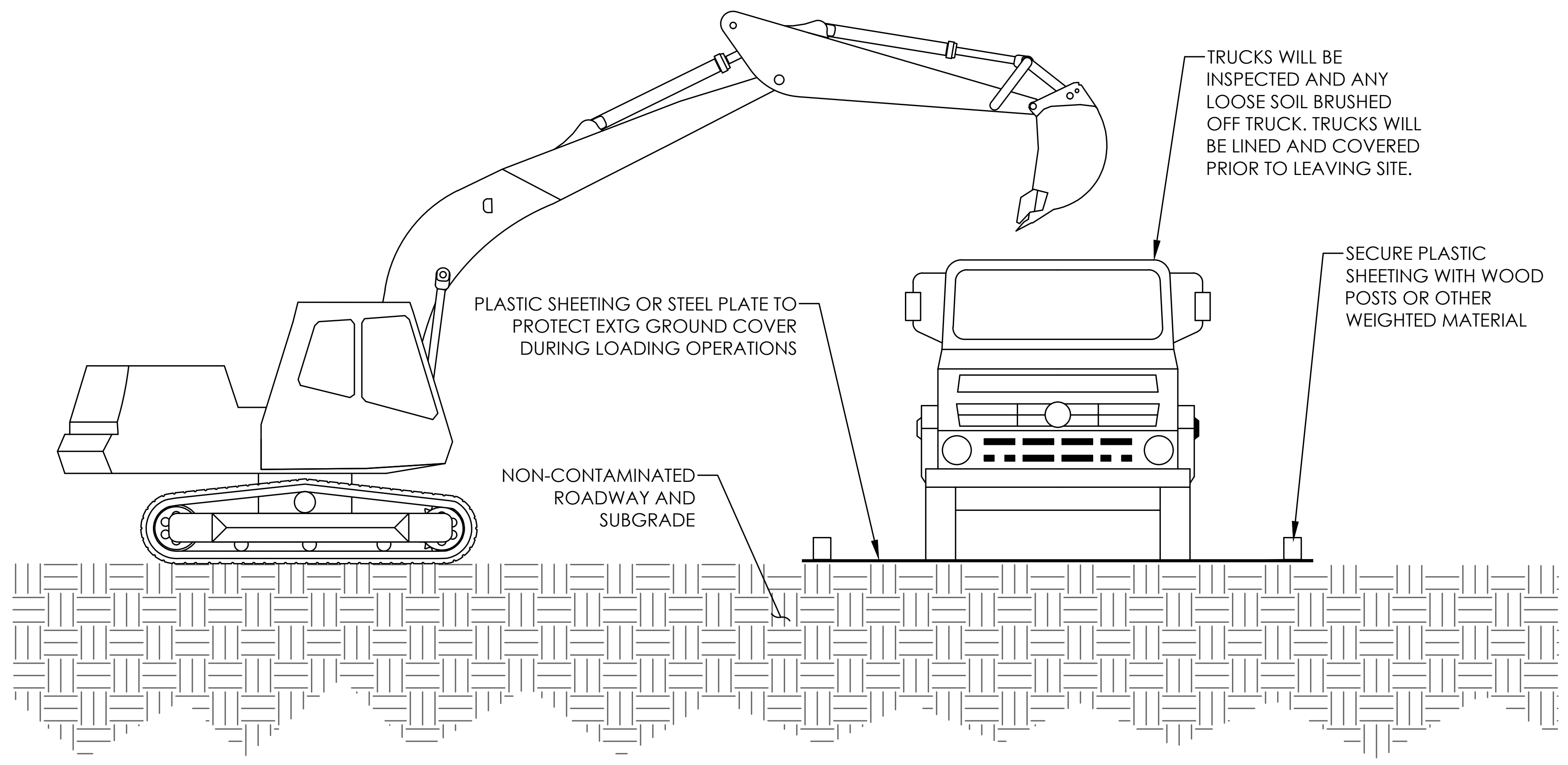
APPROVED FOR PUBLICATION
Pasco Bakotich III — *09-20-07*
STATE DESIGN ENGINEER — DATE
Washington State Department of Transportation



A
C1.1

STOCKPILE COVER AND LINER DETAIL:

NTS



B
C1.1

LOADING OPERATION DETAIL:

NTS

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CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

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DRAWING NOT TO SCALE

SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

SHEET

C1.2

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TEMPORARY TRAFFIC CONTROL SIGN SCHEDULE

SIGN NO.	QTY. USED	SIGN SIZE	SIGN CODE MUTCD	SIGN LEGEND/OTHER REMARKS
A	3	48X30	R11-2	"ROAD CLOSED"
B	2	24X24	R3-1	NO RIGHT TURN
C	2	24X24	R3-2	NO LEFT TURN
D	2	36X36	W20-3	"ROAD CLOSED AHEAD"

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SCALE
0 40' 80'

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SHEET TITLE

CONCEPTUAL TEMP TRAFFIC CONTROL PLAN

SHEET
C1.3

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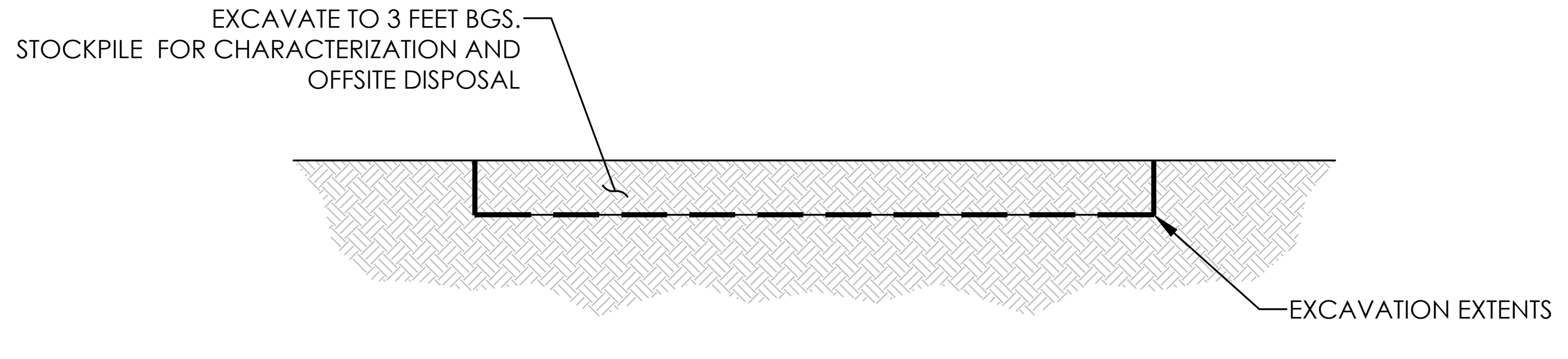
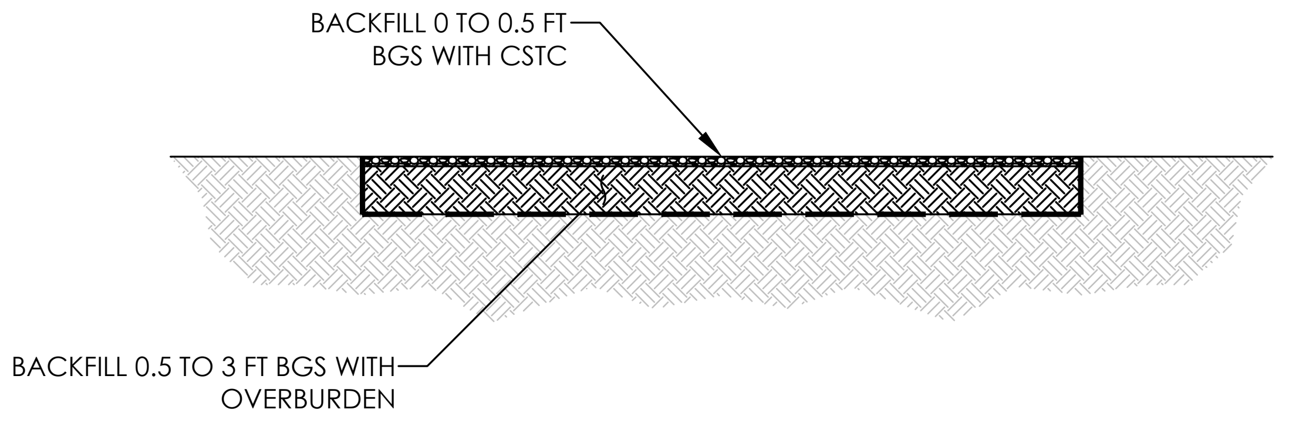


SHALLOW SOIL EXCAVATION TYPICAL SECTION:

NTS



SHALLOW SOIL EXCAVATION BACKFILL TYPICAL SECTION:

NTS

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SCALE

0 10' 20'

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SHEET TITLE

SHALLOW SOIL
EXCAVATION PLAN
& TYPICAL
SECTIONS

SHEET

C2.0

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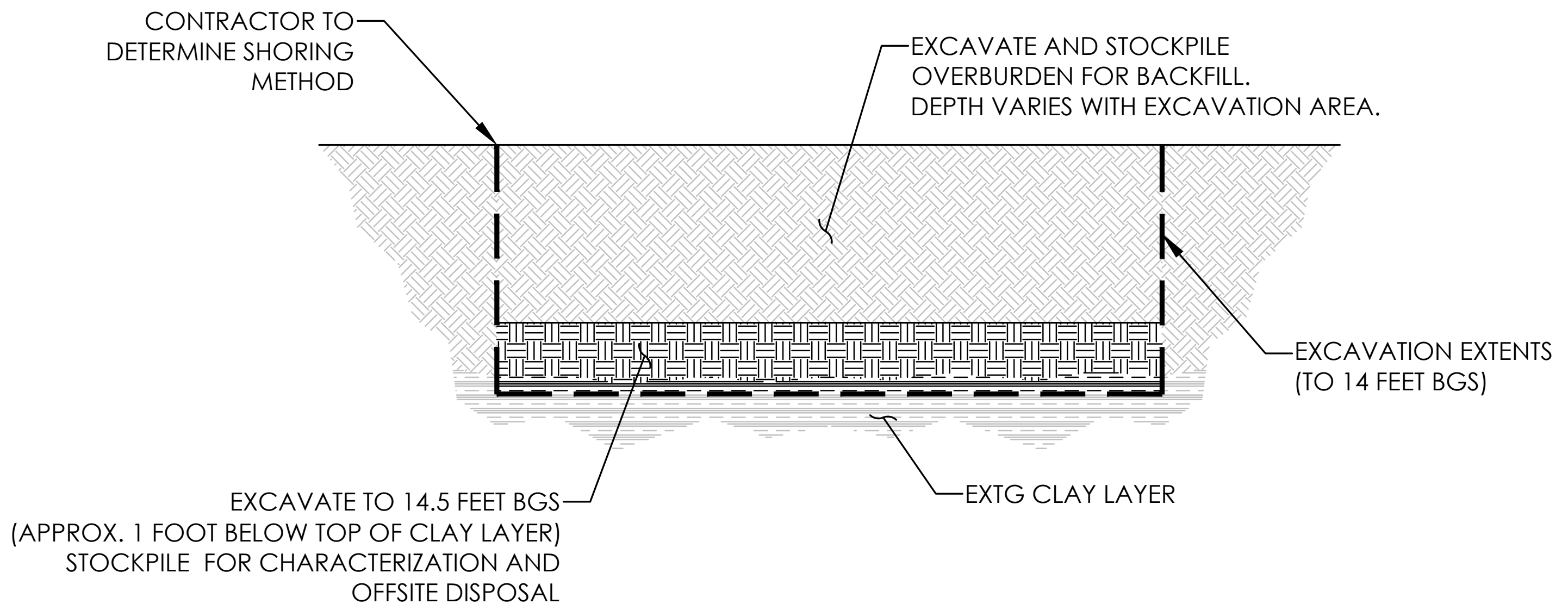
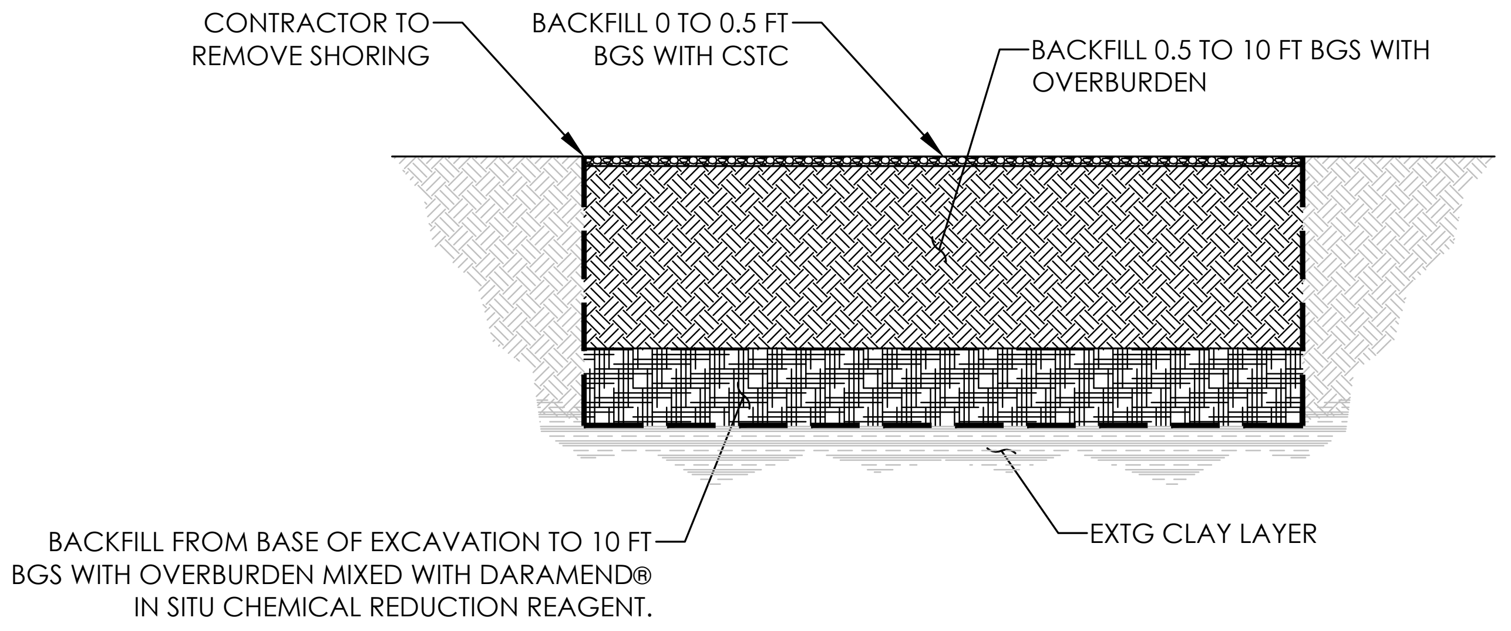
EXCAVATION AREAS

AREA A:	UP TO 14.5-FOOT-DEEP EXCAVATION. STOCKPILE UPPER 10 FEET OF SOIL. OFFSITE DISPOSAL OF SOIL FFROM 10 TO UP TO 14.5 FEET BGS
AREA B:	UP TO 14.5-FOOT-DEEP EXCAVATION. STOCKPILE UPPER 8 FEET OF SOIL. OFFSITE DISPOSAL OF SOIL FROM 8 TO UP TO 14.5 FEET BGS.
AREA C:	UP TO 14.5-FOOT-DEEP EXCAVATION. STOCKPILE UPPER 4 FEET OF SOIL. OFFSITE DISPOSAL OF SOIL FROM 4 TO UP TO 14.5 FEET BGS.



DEEP SOIL EXCAVATION TYPICAL SECTION:

NTS



DEEP SOIL EXCAVATION BACKFILL TYPICAL SECTION:

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SHEET TITLE
DEEP SOIL
EXCAVATION PLAN
& TYPICAL
SECTIONS

SHEET
C2.1

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IMAGERY OBTAINED BY MFA IN MAY 2024

NOTE:
EHC INJECTIONS INCLUDE EHC REAGENT, DHC INOCULUM, AND pH BUFFER. CONTRACTOR TO PROVIDE PROPOSED INJECTION SPACING AND INTERVALS FOR ENGINEER APPROVAL AS A PRE-CONSTRUCTION SUBMITTAL.

IN SITU CHEMICAL REDUCTION PLAN LEGEND:

▥	DARAMEND EXCAVATION BACKFILL AREA
⬡	GROUNDWATER EHC INJECTION AREA (SEE NOTE)

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SHEET TITLE
IN SITU CHEMICAL REDUCTION PLAN

SHEET
C2.2

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REMEDIATION NOTES

1. THIS WORK INCLUDES EXCAVATION AND HANDLING OF CONTAMINATED SOILS, EXCAVATION DEWATERING AND TREATMENT, ONSITE STOCKPILING, OFF-SITE DISPOSAL, BIOREMEDIATION COMPOUND APPLICATION, EXCAVATION BACKFILLING AND FINAL SITE GRADING/RESTORATION.

2. COPIES OF LICENSES AND CERTIFICATIONS AS REQUIRED BY ALL APPLICABLE JURISDICTIONS TO COMPLETE THE SPECIFIED WORK, INCLUDING ALL APPROPRIATE HAZWOPER CERTIFICATIONS, SHALL BE MAINTAINED ON SITE THROUGHOUT THE DURATION OF THE WORK.

3. CONSTRUCTION SUBMITTALS

3.1. DISPOSAL RECEIPTS FROM AN APPROVED DISPOSAL FACILITY FOR ALL MATERIALS DISPOSED OF OFF SITE.

3.2. THE CONTRACTOR SHALL FURNISH DAILY LOGS OF ALL EXCAVATION, DISPOSAL, CLEAN BACKFILL, AND BIOREMEDIATION COMPOUND QUANTITIES TO THE OWNER AND ENGINEER ON A WEEKLY BASIS.

3.3. RECEIPTS FOR ANY MATERIALS RECYCLED OR SALVAGED AT AN OFF-SITE FACILITY.

3.4. THE ENGINEER SHALL COLLECT SAMPLES FROM TREATED DEWATERING EFFLUENT AND PROVIDE ALL LAB REPORTS IN ACCORDANCE WITH THE PERMIT.

4. POST CONSTRUCTION SUBMITTALS

4.1. BIOREMEDIATION COMPOUND RECEIPTS.

4.2. CLEAN BACKFILL RECEIPTS FROM QUARRY.

5. GENERAL EXCAVATION

5.1. EXCAVATIONS SHALL BE PERFORMED IN A MANNER THAT WILL CONTROL DUST GENERATION, LIMIT SPILLS, AND PREVENT CONTAMINATED MATERIAL MIXING WITH UNCONTAMINATED MATERIAL.

5.2. EXCAVATIONS SHALL BE COMPLETED TO THE LATERAL EXTENTS AND VERTICAL DEPTHS SHOWN ON THE CONTRACT DRAWINGS.

5.3. EXCAVATIONS SHALL ONLY BE CONDUCTED IN THE PRESENCE OF ENGINEER.

5.4. FOR SHALLOW EXCAVATIONS, ONCE THE LATERAL AND VERTICAL EXTENTS OF ALL EXCAVATION AREAS HAVE BEEN REACHED, ENGINEER SHALL COLLECT CONFIRMATION SOIL SAMPLES. DISCRETE SOIL SAMPLES SHALL BE COLLECTED BY THE ENGINEER FROM EACH SIDE WALL OF THE EXCAVATION AT PREDETERMINED LOCATIONS.

5.5. SOIL SAMPLES SHALL BE SUBMITTED TO THE ENGINEER'S SELECTED ANALYTICAL LABORATORY FOR ANALYSIS. SOIL SAMPLES SHALL BE ANALYZED ON A RUSH TURNAROUND TIME. CONTRACTOR IS TO ASSUME UP TO 3 WORKING DAYS BETWEEN SAMPLE COLLECTION AND VALIDATED RESULTS.

5.6. EXCAVATIONS SHALL REMAIN OPEN, WITH SAFETY MEASURES IN PLACE, UNTIL ENGINEER INFORMS CONTRACTOR THAT THE EXCAVATION IS COMPLETE. ADEQUATE BARRIERS AND SIGNAGE SHALL BE INSTALLED TO PROTECT AGAINST UNAUTHORIZED ENTRY WHILE EXCAVATION IS OPEN.

6. UTILITIES:

6.1. UTILITIES ARE NOT ANTICIPATED IN THE EXCAVATION AREAS. HOWEVER, THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE EXCAVATION FOOTPRINT. UTILITIES SHALL BE ABANDONED VIA CAPPING AT THE EXCAVATION EXTENT IN ACCORDANCE WITH ENGINEER DIRECTION. THE LOCATION OF EACH ABANDONED UTILITY SHALL BE MARKED ON A COPY OF THESE PLANS BY THE CONTRACTOR AND PROVIDED TO ENGINEER.

7. SHORING:

7.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION SAFETY. SHORING IS REQUIRED FOR THE DEEP EXCAVATION AREA. CONTRACTOR SHALL USE APPROPRIATE SHORING METHODS/DESIGN TO PROTECT THE BUILDING. SPECIFIC SHORING MEANS AND METHODS TO BE DETERMINED BY CONTRACTOR.

8. GROUNDWATER AND DEWATERING:

8.1. DEPTH TO GROUNDWATER VARIES ACROSS THE SITE (AND BY SEASON). IT IS GENERALLY ENCOUNTERED BETWEEN 5 AND 10 FEET BGS (NEAR THE EXCAVATION). GROUNDWATER WILL LIKELY BE ENCOUNTERED DURING EXCAVATION.

8.2. GROUNDWATER ACCUMULATING IN THE EXCAVATION SHALL BE REMOVED USING PUMPS AND TREATED USING AN ON-SITE WATER TREATMENT SYSTEM (OWTS) PROVIDED BY THE CONTRACTOR. ALTERNATIVELY, CONTRACTOR MAY INSTALL WELL POINTS OUTSIDE THE EXCAVATION.

8.3. THE TREATED GROUNDWATER SHALL BE TESTED FOR COMPLIANCE AGAINST MAXIMUM CONCENTRATION LEVELS ESTABLISHED IN THE ADMINISTRATIVE ORDER ACCOMPANYING THE CONSTRUCTION STORMWATER GENERAL PERMIT AND THEN DISCHARGED TO THE STORMWATER SYSTEM .

8.4. THE STORMWATER/GROUNDWATER TREATMENT SYSTEM WILL LIKELY CONSIST OF A MULTI-UNIT SYSTEM, INCLUDING TWO STORAGE TANKS, PARTICULATE FILTER UNITS, AND GRANULAR ACTIVATED CARBON (GAC) VESSELS CONNECTED IN SERIES. THE CONTRACTOR SHALL PROVIDE SYSTEM DETAILS IN THEIR CONSTRUCTION STORMWATER CONTROL PLAN (REFERENCED IN THE CONSTRUCTION STORMWATER NOTES). THE SYSTEM SHALL BE PIPED AND VALVED IN SUCH A WAY THAT THE TWO VESSELS CAN BE SWITCHED IF CONTAMINANT BREAKTHROUGH OCCURS IN ONE OF THE VESSELS. A POST-TREATMENT WATER SAMPLE SHALL BE COLLECTED BY THE ENGINEER FROM THE STORAGE TANK AND ANALYZED FOR THE CHEMICALS SPECIFIED IN THE ADMINISTRATIVE ORDER. CONTRACTOR IS TO ASSUME UP TO 3 WORKING DAYS BETWEEN SAMPLE COLLECTION AND VALIDATED RESULTS.

9. STOCKPILE CONSTRUCTION

9.1. STOCKPILES SHALL BE CONSTRUCTED AT THE LOCATION INDICATED ON THE PLAN SHEETS OR AS OTHERWISE DIRECTED BY THE ENGINEER. THE STOCKPILE SHALL NOT COVER ANY MANHOLE OR CATCH BASIN.

9.2. STOCKPILES SHALL BE PLACED ON ASPHALT SURFACE (OR UNDERLAIN WITH 10-MIL PLASTIC SHEETING). BEFORE PLACING LINERS, THE CONTRACTOR SHALL CLEAR THE EXISTING GROUND SURFACE OF DEBRIS AND SHARP OBJECTS.

9.3. STOCKPILES SHALL BE CONSTRUCTED TO ALLOW ACCESS TO ALL PORTIONS OF THE SITE.

9.4. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT.

9.5. STOCKPILES SHALL BE COVERED USING LINERS MEETING THE FOLLOWING REQUIREMENTS:

9.5.1. STOCKPILE COVER MATERIALS SHALL BE PLASTIC SHEETING.

9.5.2. THE COVER LINER SHALL BE FREE OF HOLES OR OTHER DAMAGE TO PREVENT DUST GENERATION.

9.5.3. THE COVER MATERIAL SHALL BE ANCHORED AND BALLASTED TO PREVENT REMOVAL OR DAMAGE BY WIND.

9.6. THE CONTRACTOR SHALL COVER STOCKPILES OVERNIGHT, DURING HIGH WINDS OR PRECIPITATION EVENTS, OR AS DIRECTED BY THE ENGINEER.

9.7. EROSION CONTROL SHALL BE CONSTRUCTED AROUND STOCKPILES TO PREVENT RUN-ON AND RUN-OFF.

9.8. ALL EXCAVATED SOIL PLACED IN STOCKPILES SHALL AWAIT WASTE PROFILING ANALYTICAL RESULTS. THE ENGINEER SHALL COLLECT SOIL SAMPLES FOR DISPOSAL PURPOSES. THE ENGINEER SHALL PROVIDE ANALYTICAL RESULTS INDICATING DISPOSAL REQUIREMENTS WITHIN 5 DAYS OF OBTAINING THE CHARACTERIZATION SAMPLE(S).

10. CONTAMINATED MATERIAL TRANSPORT AND DISPOSAL

10.1. THE CONTRACTOR SHALL TRANSPORT ALL EXCAVATED SOILS DESIGNATED FOR DISPOSAL TO AN APPROPRIATE RCRA SUBTITLE C LANDFILL. THE SOIL SHALL BE TRANSPORTED BY A PROPERLY LICENSED HAULER OPERATING IN COMPLIANCE WITH WASHINGTON STATE DEPARTMENT OF ECOLOGY DANGEROUS AND HAZARDOUS WASTE REQUIREMENTS, WAC 173-303 AND USDOT HAZARDOUS AND NON-HAZARDOUS MATERIALS REQUIREMENTS.

10.2. THE CONTRACTOR SHALL LOAD THE CONTAMINATED MATERIAL ONTO TRUCKS IN A MANNER THAT PREVENTS SPILLING OR TRACKING OF CONTAMINATED SOIL.

10.3. LOOSE MATERIAL THAT FALLS ONTO THE TRUCK EXTERIOR DURING LOADING SHALL BE REMOVED BEFORE THE TRUCK LEAVES THE LOADING AREA.

10.4. ALL TRUCKLOADS OF CONTAMINATED SOIL SHALL BE TARPED PRIOR TO EXITING THE SITE.

10.5. ANY MATERIAL COLLECTED ON THE GROUND SURFACE IN THE LOADING AREA SHALL BE PLACED BACK INTO THE TRUCK.

11. BACKFILL

11.1. THE EXCAVATION EXTENTS SHALL BE FILLED USING ENGINEER-APPROVED, CLEAN BACKFILL MATERIAL. CLEAN IMPORT FROM A LOCAL SOURCE THAT HAS BEEN ACCEPTED BY ENGINEER. CONTRACTOR SHALL PROVIDE A WRITTEN, NOTARIZED CERTIFICATION FROM THE LANDOWNER OF EACH PROPOSED OFF-SITE SOIL BORROW SOURCE STATING THAT THE BORROW SITE HAS NEVER BEEN CONTAMINATED WITH HAZARDOUS OR TOXIC MATERIALS AND INCLUDE DETAILED HISTORICAL INFORMATION ON PAST BORROW SITE USE AS WELL AS ANALYTICAL LABORATORY TEST DATA. NO OTHER MATERIAL SHALL BE USED AS BACKFILL WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

11.2. EXCAVATIONS SHALL REMAIN OPEN UNTIL THE ENGINEER REVIEWS THE CONFIRMATION SAMPLING RESULTS OF THE EXCAVATION EXTENTS. UPON ENGINEER'S DETERMINATION THAT CONTAMINATION HAS BEEN REMOVED, CONTRACTOR WILL BEGIN BACKFILLING EXCAVATION WITH CLEAN BORROW SOIL. CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY OF THE FINAL EXCAVATION EXTENTS PRIOR TO BACKFILL.

11.3. BACKFILL SHALL BE PLACED IN MAXIMUM 12-INCH LIFTS. PLACED FILL SHALL BE MOISTURE CONDITIONED PRIOR TO COMPACTION.

11.4. ONCE PROCESSED AND MOISTURE CONDITIONED, EACH LIFT SHALL BE COMPACTED USING APPROPRIATE METHODS DETERMINED BY THE CONTRACTOR AND APPROVED BY THE PROJECT ENGINEER. BACKFILLED AREAS SHALL BE COMPACTED TO 98-PERCENT AS DETERMINED USING THE STANDARD PROCTOR TEST (ATSM D698) OR AS OTHERWISE DIRECTED BY THE 2020 WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.

11.5. ALL EXCAVATIONS SHALL BE BACKFILLED AND FINISH GRADED TO MATCH SURROUNDING EXISTING GRADE.

NOT FOR CONSTRUCTION

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FORMER PARK LAUNDRY
CITY OF RIDGEFIELD
RIDGEFIELD, WA

ISSUE	DATE	DESCRIPTION

PROJECT: M0239.33
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----
SCALE

SHEET TITLE
REMEDIATION NOTES

SHEET
C2.3

Appendix A

Baseline Groundwater Monitoring Technical Memorandum

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Technical Memorandum

To:	City of Ridgefield	Date:	November 14, 2024
From:	Meaghan Pollock, LG	Project No.:	M0239.33.007

Meaghan Pollock

Re: Former Park Laundry Site—Baseline Groundwater Monitoring

Maul Foster & Alongi, Inc. (MFA) has prepared this technical memorandum on behalf of the City of Ridgefield, to summarize monitoring well installation and subsequent baseline groundwater monitoring. This work was conducted per the Consent Decree between the Washington State Department of Ecology (Ecology) and City of Ridgefield and the Cleanup Action Plan, which is Part of the Consent Decree. The Park laundry Property is shown on Figure 1.

Background and Purpose

Park Laundry formerly operated at 122 N Main Avenue in Ridgefield, Washington (the Property) (see Figure 1). Soil, vapor, and groundwater impacts related to tetrachloroethene (PCE) and its degradation products resulting from former dry cleaner operations at the Property have been confirmed. The Site is defined by the extent of Property-related contamination, which in this case includes soil contamination in the Source Area and groundwater contamination beyond the Source Area, which covers an estimated 22 acres. The Source Area is defined as the former Park Laundry parcel and two adjoining parcels to the north (see Figure 2).

Ecology required installation of three deep monitoring wells (i.e., MW-23D, -24D, and -25D) to evaluate if volatile organic compound contamination has migrated through the unsaturated clay layer into the underlying lower water-bearing zone (LWBZ). Monitoring wells MW-23D and MW-24D were installed on the western and northern portion of the Source Area and monitoring well MW-25D was installed west and hydraulically downgradient of the Source Area (see Figure 2).

Field Activities

Monitoring wells were installed between July 30 and August 2, 2024, generally consistent with the *Groundwater Monitoring and Installation Work Plan*.[1] The three new deep monitoring wells were developed on August 5 and 6, 2024, and baseline groundwater monitoring was conducted on August 7 and 8, 2024, on all 19 compliance monitoring wells (see Figure 3). Geologic logs are provided as

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[1] MFA. 2024. *Groundwater Well Installation and Monitoring Work Plan for the Park Laundry Site, Ridgefield, Washington*. Prepared for the City of Ridgefield. Maul Foster & Alongi, Inc: Vancouver, WA. May 28.

Attachment A and field sampling data sheets from the baseline monitoring event are provided as Attachment B.

Data Validation and Analytical Results

Validation of the analytical data was performed by an MFA chemist independent of the analytical laboratory contractor. The data validator reviewed laboratory performance criteria and sample-specific criteria. The data validation memorandum is provided as Attachment C and found all data are considered acceptable for their intended use, with the appropriate data qualifiers assigned. The laboratory reports are provided as Attachment D and are provided in the attached Table.

Groundwater samples were submitted for analysis of PCE and its degradation products (i.e., trichloroethene [TCE], 1,1-dichloroethene [DCE], cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method 8260D and 8260D-SIM. In addition, groundwater samples collected from monitoring wells MW02 and MW03 within the Source Area were submitted for analysis of sulfate by EPA Method 300.0 to inform the chemical vendor for selection of an appropriate injection material.

PCE concentrations in groundwater samples collected from the shallow upper water-bearing zone (UWBZ) were generally consistent with historical monitoring and ranged from 0.47 milligrams per liter on the northern portion of the Site to 1,220 milligrams per kilogram within the Source Area. PCE and/or TCE were detected above their respective Ecology Model Toxics Control Act (MTCA) cleanup levels (CULs) in monitoring wells MW03 through MW06, MW09 through MW11, MW13, MW15, and MW16 in the shallow UWBZ. In addition, cis-1,2-DCE and vinyl chloride were detected in monitoring well MW09. PCE and its degradation products were not detected in monitoring wells MW02, MW07, or MW20 in the shallow UWBZ.

PCE and TCE were detected above their respective Ecology MTCA CULs in the three new monitoring wells installed in the LWBZ (i.e., MW-23D, MW-24D, MW-25D). In addition, PCE was detected above the CUL in two of the three wells on the Port of Ridgefield property (i.e., MW-46D and MW-47D) and TCE was detected above the CUL in Port well MW-46D. PCE and its degradation products were not detected in monitoring well MW-29D in the LWBZ.

Conclusions

Baseline groundwater monitoring results from the three new LBWZ monitoring wells confirm the presence of PCE and TCE above the CULs. Compliance groundwater monitoring will be conducted from the 19 compliance monitoring wells following implementation of the remedial action. Compliance groundwater monitoring procedures are discussed in the Engineering Design Report.

Attachments

Limitations

Figures

Table

A—Geologic Logs

B—Field Sampling Data Sheets

C—Data Validation Memorandum

D—Analytical Laboratory Reports

Limitations

The services undertaken in completing this technical memorandum were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This technical memorandum is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this technical memorandum apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this technical memorandum.

Figures

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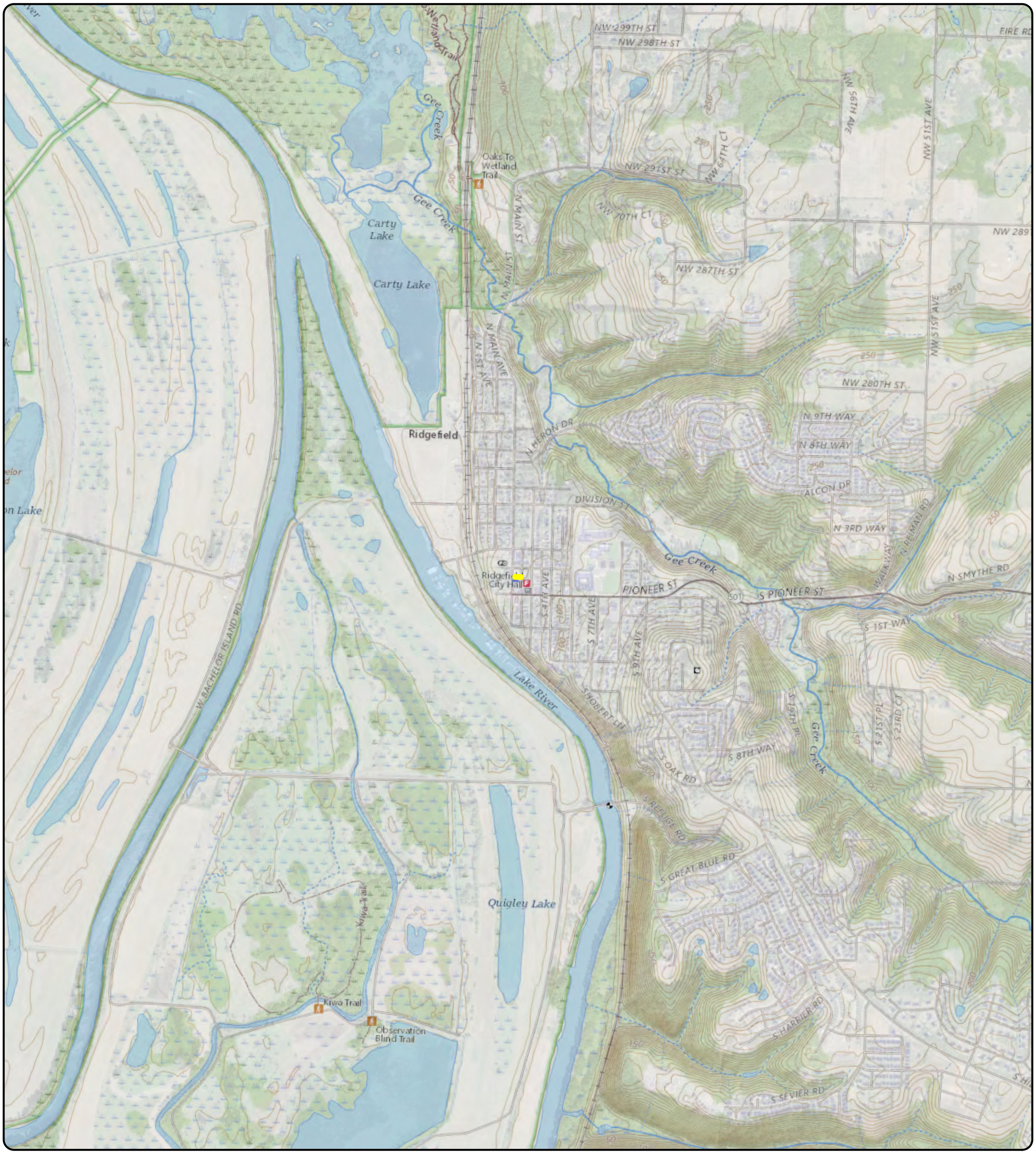
Path: X:\0239.33\007\Pro\M0239_33_007_004.aprx\Fig 1 Property Location

Print Date: 4/23/2024

Reviewed By: cbusch

Produced By: sturner

Project: M0239.33.007



Notes

U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Ridgefield.

Township 4 north, range 1 west, section 24.

Data Source

Property boundary obtained from Clark County.

Legend

☐ Property Boundary

Figure 1
Property Location

Former Park Laundry
City of Ridgefield, WA

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0 2,000
Feet

Figure 2
Site Features

Former Park Laundry
City of Ridgefield, WA

Legend

- ● Monitoring Well
- 🟨 Property Boundary
- 🟪 Source Area Boundary
- ☐ Tax Lot

0 30
Feet

Data Sources
Aerial photograph obtained from Bing; tax lot data obtained from Clark County.

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Project: M0239.33.007 Produced By: eswanson Reviewed By: mpollock Print Date: 8/29/2024 Path: X:\0239.33\007\Pro\M0239_33_007_003.aprx\Fig 2 Site Features

Figure 3
Compliance Groundwater Monitoring Network

Former Park Laundry
City of Ridgefield, WA

Legend

Groundwater Wells Included in Monitoring

- ● Monitoring Well, MFA July/August 2024
- ● Monitoring Well, MFA June 2011
- ● Monitoring Well, MFA March 2012
- ● Port of Ridgefield Monitoring Well
- 🟨 Property Boundary
- ▭ Estimated Site Boundary

0 110
Feet

Data Sources
Aerial photograph (2023) obtained from Esri.

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Path: X:\0239.33\007\Pro\M0239_33_007_003_03A.aprx\Fig 2-7 Compliance Groundwater Monitoring Network
Print Date: 8/28/2024
Reviewed By: mpollock
Produced By: gjaravata
Project: M0239.33.007

Table

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Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW01	MW1-12.5	06/24/2011	--	1 U	--	--	1 U	19.5	1 U	1 U	1 U
	MW01_031712	03/17/2012	--	0.0964 U	--	--	0.154 U	8.38	0.149 U	0.087 U	0.165 U
	MW01-061812	06/18/2012	--	1 U	--	--	1 U	16.2	1 U	1 U	1 U
	MW01-100312	10/03/2012	--	1 U	--	--	0.1 J	11.2	0.083 U	1	0.155 U
	MW01-121812	12/18/2012	--	1 U	--	--	0.81 J	7.26	0.16 UJ	0.39 J	0.155 U
	MW01-040413	04/04/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	8.72	0.083 U	0.087 U	0.155 U
	MW01-060313	06/03/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	9.67	0.083 U	0.087 U	0.155 U
	MW01-092713	09/27/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	5.44	0.083 U	1 U	3.29
	MW01-122313	12/23/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	5.05	0.083 U	1 U	3.29
	MW01-032414	03/24/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	3.37	0.083 U	0.087 U	0.155 U
	MW01-090914	09/09/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	3.37	0.083 U	0.44 J	0.155 U
	MW01-120414	12/04/2014	0.025 U	1 U	0.087 U	0.123 U	0.045 U	0.81 J	0.038 U	0.047 U	0.076 U
	MW01-030415	03/04/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	2 U	0.083 U	0.087 U	0.155 U
	MW01-091615	09/16/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1.42	0.083 U	0.087 U	0.155 U
	MW01-032116	03/21/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	32.1	0.083 U	0.37 J	0.155 U
	MW01-090816	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	9.98	0.083 U	0.087 U	0.155 U
	MW01-20180319-GW	03/19/2018	0.025 U	1 U	0.087 U	0.123 U	0.045 U	29.7	0.038 U	0.047 U	0.076 U
MW02	MW2-14.0	06/24/2011	--	1 U	0.087 U	--	1 U	8.84	1 U	1 U	1 U
	MW2_031712	03/17/2012	--	1 U	0.087 U	--	0.154 U	0.88 J	0.149 U	0.087 U	0.165 U
	MW02-061812	06/18/2012	--	1 U	0.087 U	--	1 U	9.37	1 U	1 U	1 U
	MW02-100512	10/05/2012	--	1 U	0.087 U	--	0.16 J	14.2	1 U	0.69 J	0.155 U
	MW02-122012	12/20/2012	--	1 U	0.087 U	--	0.54 J	11.8	1 U	0.087 U	0.155 U
	MW02-040413	04/04/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1 UJ	1 U	0.087 U	0.155 U
	MW02-060313	06/03/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	0.32 J	1 U	0.087 U	0.155 U
	MW02-092713	09/27/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1 U	1 U	0.087 U	0.155 U
	MW02-122313	12/23/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	1 U	1 U	1 U	1 U
	MW02-032414	03/24/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW02-090914	09/09/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	4.82	1 U	0.087 U	0.37 J
	MW02-120514	12/05/2014	0.025 U	1 U	0.087 U	0.123 U	0.045 U	0.14 J	1 U	0.047 U	0.076 U
	MW02-030415	03/04/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	0.17 U	1 U	0.087 U	0.155 U
	MW02-091615	09/16/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1.01	1 U	0.087 U	0.155 U
	MW02-032116	03/21/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	0.26 J	1 U	0.087 U	0.155 U
	MW02-090816	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	2.29	1 U	0.087 U	0.155 U
	MW02-20180319-GW	03/19/2018	0.025 U	1 U	0.087 U	0.123 U	0.045 U	0.058 U	1 U	0.047 U	0.076 U
	MW02-080724	08/07/2024	--	0.2 U	--	--	0.2 U	1.91	0.2 U	0.2 U	0.01 U
MW03	MW3-15.0	06/24/2011	--	1 U	0.087 U	--	1 U	12,500	1 U	3.47	1 U
	MW3_031712	03/17/2012	--	1 U	0.087 U	--	0.154 U	3,510	1 U	1.34	0.165 U
	MW03-061912	06/19/2012	--	1 U	0.087 U	--	1.04	2,250	1 U	2.77	1 U
	MW03_100512	10/05/2012	--	0.096 U	0.087 U	--	3.08	2,390	1 U	9.15	0.155 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW03	MW03-122012	12/20/2012	--	0.0964 U	0.087 U	--	1	1,120	1 U	2.24	0.155 U
	MW03-122012-DUP	12/20/2012	--	0.14 J	0.087 U	--	0.94 J	974	1 U	2.02	0.155 U
	MW03-040413	04/04/2013	0.0851	0.0964 U	0.087 U	0.203 U	0.61 J	532	1 U	1.92	0.155 U
	MW03-060313	06/03/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.52 J	653	1 U	1.91	0.155 U
	MW03-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	1,390	1 U	1.95	0.155 U
	MW03-122313	12/23/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	11,700	1 U	3.19	1 U
	MW03-032414	03/24/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	8,840	1 U	3.75	0.155 U
	MW03-062314	06/23/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	6,650	1 U	2.81	0.155 U
	MW03-090914	09/09/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	8,500	1 U	2.6	0.155 U
	MW03-120414	12/04/2014	0.025 U	0.069 U	0.087 U	0.123 U	1 U	2,900	1 U	2.63	0.076 U
	MW03-030415	03/04/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	5,640	1 U	3.32	0.155 U
	MW03-060915	06/09/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	16,500	1 U	1.82	0.155 U
	MW03-091615	09/16/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	8,710	1 U	1.95	0.155 U
	MW03-122115	12/21/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	4,970	1 U	2.7	0.155 U
	MW03-032116	03/21/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	4,900	1 U	1.73	0.155 U
	MW03-090816	09/08/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	2,450	1 U	0.087 U	0.155 U
	MW03-20180319-GW	03/19/2018	0.025 U	0.069 U	0.087 U	0.123 U	1 U	4,080	1 U	2.4	0.076 U
	MW03-080724	08/07/2024	--	0.2 U	--	--	0.97	1,220	0.2 U	1.08	0.1 U
MW04	MW4-16.0	06/24/2011	--	1 U	0.087 U	--	1 U	226	1 U	13.9	1 U
	MW4-16-DUP	06/24/2011	--	1 U	0.087 U	--	1 U	216	1 U	15.8	1 U
	MW04_031712	03/17/2012	--	1 U	0.087 U	--	1 U	63.6	1 U	3.83	0.165 U
	MW04-062112	06/21/2012	--	1 U	0.087 U	--	1 U	21.6	1 U	1 U	1 U
	MW04_100512	10/05/2012	--	0.096 U	0.087 U	--	0.1 J	24.4	1 U	0.087 U	0.155 U
	MW04-122112	12/21/2012	--	0.22 UJ	0.087 U	--	0.75 J	21.5	1 U	1.75	0.155 U
	MW04-040513	04/05/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	19	1 U	1.34	0.155 U
	MW04-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	29.2	1 U	0.087 U	0.155 U
	MW04-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	21.7	1 U	0.087 U	0.155 U
	MW04-122413	12/24/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	13.4	1 U	1 U	1 U
	MW04-032414	03/24/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	12.8	1 U	0.95	0.155 U
	MW04-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	17	1 U	0.82 J	0.155 U
	MW04-120814	12/08/2014	0.025 U	0.069 U	0.087 U	0.123 U	1 U	6.96	1 U	0.047 U	0.076 U
	MW04-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	11.6	1 U	0.91 J	0.155 U
	MW04-091415	09/14/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	11.9	1 U	0.44 J	0.155 U
	MW04-032316	03/23/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	35.4	1 U	3.1	0.155 U
	MW04-090816	09/08/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	18.4	1 U	1.39	0.155 U
	MW04-20180321-GW	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	1 U	120	1 U	1.58	0.076 U
	MW04-080724	08/07/2024	--	0.2 U	--	--	0.2 U	10.7	0.2 U	0.31 J	0.1 U
MW05	MW5-16.5	06/24/2011	--	1 U	0.087 U	--	1 U	2,240	1 U	3.61	1 U
	MW05_031712	03/17/2012	--	1 U	0.087 U	--	1 U	1,520	1 U	2.22	0.165 U
	MW05-062112	06/21/2012	--	1 U	0.087 U	--	1 U	1,380	1 U	5.89	1 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW05	MW05-100412	10/04/2012	--	1 U	0.087 U	--	0.27 J	2,400 J	1 U	2.63	0.155 U
	MWDUP-100412	10/04/2012	--	1 U	0.087 U	--	0.24 J	1,400 J	1 U	2.44	0.155 U
	MW05-122112	12/21/2012	--	1 U	0.087 U	--	0.8 J	1,030	1 U	3.29	0.155 U
	MW05-040513	04/05/2013	0.0851 U	1 U	0.087 U	0.203 U	0.14 J	2,330	1 U	4.07	0.155 U
	MW05-040513-Dup	04/05/2013	0.0851 U	1 U	0.087 U	0.203 U	0.12 J	1,740	1 U	3.32	0.155 U
	MW05-060313	06/03/2013	0.0851 U	1 U	0.087 U	0.203 U	0.16 J	950 J	1 U	2.53	0.155 U
	MW05-060313-DUP	06/03/2013	0.0851 U	1 U	0.087 U	0.203 U	0.18 J	1,790 J	1 U	2.7	0.155 U
	MW05-092713	09/27/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	624 J	1 U	2.63	0.155 U
	MW05-092713-DUP	09/27/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,270 J	1 U	3.92	0.155 U
	MW05-122413	12/24/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	1,790	1 U	3.98	1 U
	MW05-122413-DUP	12/24/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	1,740	1 U	3.55	1 U
	MW05-032414	03/24/2014	0.0851 U	1 U	0.087 U	0.203 U	0.25	1,960	1 U	4.64	0.155 U
	MW05-032414-DUP	03/24/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,790	1 U	5.87	0.155 U
	MW05-062314	06/23/2014	0.0851 U	1 U	0.087 U	0.203 U	0.16 J	1,220	1 U	3.66	0.155 U
	MW05-062314-DUP	06/23/2014	0.0851 U	1 U	0.087 U	0.203 U	0.22 J	1,300	1 U	3.89	0.155 U
	MW05-090914	09/09/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,470	1 U	2.72	0.155 U
	MW05-090914-DUP	09/09/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,490	1 U	2.65	0.155 U
	MW05-120514	12/05/2014	0.025 U	1 U	0.087 U	0.123 U	0.045 U	427	1 U	2.66	0.076 U
	MW05-120514-DUP	12/05/2014	0.025 U	1 U	0.087 U	0.123 U	0.045 U	426	1 U	2.85	0.076 U
	MW05-030515	03/05/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,460	1 U	6.41	0.155 U
	MW05-030515-DUP	03/05/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,540	1 U	5.83	0.155 U
	MW05-061115	06/11/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	890	1 U	3.79	0.155 U
	MW05-061115-DUP	06/11/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	865	1 U	3.14	0.155 U
	MW05-091615	09/16/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	832	1 U	2.28	0.155 U
	MW05-091615-DUP	09/16/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	846	1 U	2.1	0.155 U
	MW05-122215	12/22/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,270	1 U	2.35	0.155 U
	MW05-122215-DUP	12/22/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,250	1 U	2.41	0.155 U
	MW05-032116	03/21/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,090	1 U	3.97	0.155 U
	MW05-032116-DUP	03/21/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	1,040	1 U	3.69	0.155 U
	MW05-090816	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	971	1 U	3.01	0.155 U
	MW05-090816-DUP	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	895	1 U	2.68	0.155 U
	MW05-20180321-GW	03/21/2018	0.025 U	1 U	0.087 U	0.123 U	0.045 U	1,290	1 U	1.8	0.076 U
	MW05-DUP-20180321-GW	03/21/2018	0.025 U	1 U	0.087 U	0.123 U	0.045 U	1,450	1 U	1.82	0.076 U
	MW05-080724	08/07/2024	--	2 U	--	--	2 U	447	2 U	2 U	1 U
MW06	MW6-16.0	06/24/2011	--	1 U	0.087 U	--	1.31	3.77	1 U	19.1	1 U
	MW06_031712	03/17/2012	--	1 U	0.087 U	--	1.08	4.03	1 U	11.1	0.165 U
	MW06-062012	06/20/2012	--	1 U	0.087 U	--	1 U	2.79	1 U	9.84	1 U
	MW06-100412	10/04/2012	--	0.13 J	0.087 U	--	0.96 J	4.31	1 U	6.26	0.155 U
	MW06-122012	12/20/2012	--	0.0964 U	0.087 U	--	1.3	2.14	1 U	4.49	0.155 U
	MW06-040513	04/05/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1.07	2.65	1 U	7.41	0.155 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL(1):	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW06	MW06-060313	06/03/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1.1	3.92	1 U	6.61	0.155 U
	MW06-092613	09/26/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	3	5.6	1 U	12.1	0.155 U
	MW06-122413	12/24/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1.53	4.83	1 U	8.11	1 U
	MW06-032514	03/25/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1.29	2.39	1 U	7.29	0.155 U
	MW06-062314	06/23/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	1.61	2.77	1 U	8.94	0.155 U
	MW06-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.7 J	2.24	1 U	5.72	0.155 U
	MW06-120514	12/05/2014	0.025 U	0.069 U	0.087 U	0.123 U	2.32	1.46	1 U	8.92	0.076 U
	MW06-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	2.13	2.52 U	1 U	12.7	0.155 U
	MW06-061015	06/10/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1.68	2.78	1 U	7.98	0.155 U
	MW06-091615	09/16/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	2.09	2.71	1 U	6.32	0.155 U
	MW06-122215	12/22/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	1.66	2.54	1 U	6.36	0.155 U
	MW06-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	2.04	1.95	1 U	6.65	0.155 U
	MW06-090716	09/07/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.29	1 U	4.53	0.155 U
	MW06-032817	03/28/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.54 J	0.91 J	1 U	1.43	0.076 U
	MW06-091317	09/13/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	1.07	1 U	1.43	0.076 U
	MW06-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	3.69	2.7	1 U	2.46	0.076 U
	MW06-091318	09/13/2018	0.025 U	0.069 U	0.087 U	0.123 U	1.24	1.12	1 U	1.87	0.076 U
	MW06-031219	03/12/2019	0.025 U	0.069 U	0.025 U	0.123 U	2.4	0.93 J	0.31 J	2.68	0.076 U
	MW06-080824	08/08/2024	--	0.2 U	--	--	1.68	1.2	0.26 J	1.07	0.01 U
MW07	MW7-15.0	06/24/2011	--	1 U	0.087 U	--	1 U	11.7	1 U	1 U	1 U
	MW07_031612	03/16/2012	--	1 U	0.087 U	--	1 U	6.11	1 U	0.087 U	0.165 U
	MW07-062012	06/20/2012	--	1 U	0.087 U	--	1 U	12.3	1 U	1 U	1 U
	MW07-100412	10/04/2012	--	1 U	0.087 U	--	0.13 J	50.5	1 U	0.1 J	0.155 U
	MW07-121912	12/19/2012	--	1 U	0.087 U	--	0.55 J	10.2	1 U	0.087 U	0.155 U
	MW07-040913	04/09/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	8.9	1 U	0.1 J	0.155 U
	MW07-060413	06/04/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	12.7	1 U	0.087 U	0.155 U
	MW07-092513	09/25/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	126	1 U	0.087 U	0.155 U
	MW07-122413	12/24/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	108	1 U	1 U	1 U
	MW07-032514	03/25/2014	0.0851 U	1 U	0.087 U	0.203 U	1 U	11.7	1 U	0.087 U	0.155 U
	MW07-062414	06/24/2014	0.0851 U	1 U	0.087 U	0.203 U	1 U	3.12	1 U	0.087 U	0.155 U
	MW07-090914	09/09/2014	0.0851 U	1 U	0.087 U	0.203 U	1 U	17.9	1 U	0.087 U	0.155 U
	MW07-120814	12/08/2014	0.025 U	1 U	0.087 U	0.123 U	1 U	37.9	1 U	0.047 U	0.076 U
	MW07-030615	03/06/2015	0.0851 U	1 U	0.087 U	0.203 U	1 U	4.85	1 U	0.087 U	0.155 U
	MW07-061015	06/10/2015	0.0851 U	1 U	0.087 U	0.203 U	1 U	2.22	1 U	0.087 U	0.155 U
	MW07-091615	09/16/2015	0.0851 U	1 U	0.087 U	0.203 U	1 U	35	1 U	0.087 U	0.155 U
	MW07-122215	12/22/2015	0.0851 U	1 U	0.087 U	0.203 U	1 U	3.73	1 U	0.087 U	0.155 U
	MW07-032216	03/22/2016	0.0851 U	1 U	0.087 U	0.203 U	1 U	0.61 J	1 U	0.087 U	0.155 U
	MW07-090816	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	1 U	1.72	1 U	0.087 U	0.155 U
	MW07-032118	03/21/2018	0.025 U	1 U	0.087 U	0.123 U	1 U	0.67 J	1 U	0.047 U	0.076 U
	MW07-080724	08/07/2024	--	0.2 U	--	--	0.2 U	0.47	0.2 U	0.2 U	0.01 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW08	MW08_031612	03/16/2012	--	1 U	0.087 U	--	1 U	0.158 U	1 U	0.087 U	0.165 U
	MW08-061812	06/18/2012	--	1 U	0.087 U	--	1 U	1 U	1 U	1 U	1 U
	MW08_100512	10/05/2012	--	0.096 U	0.087 U	--	0.13 J	68.8	1 U	0.56 J	0.155 U
	MW08-121812	12/18/2012	--	0.16 J	0.087 U	--	0.64 J	0.0672 U	1 U	0.087 U	0.155 U
	MW08-040813	04/08/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 UJ	1 U	0.087 U	0.155 U
	MW08-060213	06/02/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW08-092413	09/24/2013	0.0851 UJ	0.0964 UJ	0.087 U	0.203 UJ	1 UJ	1 UJ	1 U	0.087 UJ	0.155 UJ
	MW08-122013	12/20/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	1 U	1 U	1 U
	MW08-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	1 U	0.087 U	0.155 U
	MW08-091014	09/10/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.13	1 U	0.44 J	0.155
	MW08-120414	12/04/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	1 U	0.047 U	0.076 U
	MW08-030415	03/04/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.37 U	1 U	0.087 U	0.155 U
	MW08-091415	09/14/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW08-032316	03/23/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW08-090916	09/09/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.36 J	1 U	0.087 U	0.155 U
	MW08-032118	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	1 U	0.047 U	0.076 U
MW09	MW09_031412	03/14/2012	--	0.0964 U	0.087 U	--	0.48	53.9	1 U	62.6	0.165 U
	MW09-062012	06/20/2012	--	1 U	0.087 U	--	1 U	52.4	1 U	99.8	1 U
	MW09-100312	10/03/2012	--	0.24 J	0.087 U	--	0.75 J	128	1 U	150	0.19 J
	MW09-121912	12/21/2012	--	0.22 UJ	0.087 U	--	0.77 J	33.7	1 U	44.2	0.155 U
	MW09-040813	04/08/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.23 J	34.7	1 U	55	0.155 U
	MW09-060313	06/03/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.43 J	62.1	1 U	93.4	0.155 U
	MW09-092713	09/27/2013	0.0851 U	0.19 J	0.087 U	0.203 U	1	90.9	1 U	148	0.155 U
	MW09-122313	12/23/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	29.9	1 U	64.4	1 U
	MW09-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	9.12	1 U	18.3	0.155 U
	MW09-062514	06/25/2014	0.0851 UR	0.0964 UR	0.087 U	0.203 UR	0.26	32.3	1 U	63.1	0.155 UR
	MW09-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	62.3	1 U	101	0.155 U
	MW09-120814	12/08/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	22.7	1 U	80.2	0.076 U
	MW09-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	25.5	1 U	75.5	0.155 U
	MW09-061115	06/11/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	48.4	1 U	85.3	0.155 U
	MW09-091415	09/14/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.49	71.4	1 U	104	0.155 U
	MW09-122215	12/22/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	23.6	1 U	39.8	0.155 U
	MW09-032116	03/21/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	25.4	1 U	69	0.155 U
	MW09-090816	09/08/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	31.3	1 U	115	0.155 U
	MW09-032817	03/28/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	8.26	1 U	30.9	0.076 U
	MW09-091317	09/13/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	28.5	1 U	93.1	0.076 U
	MW09-032118	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	16.7	1 U	70.7	0.076 U
	MW09-091218	09/12/2018	0.025 U	0.069 U	0.087 U	0.123 U	1.22	36.3	1 U	110	0.076 U
	MW09-031119	03/11/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.76 J	16.3	0.038 U	89.6	0.076 U
	MW09-080724	08/07/2024	--	0.2 U	--	--	121	1.38	1.27	72.1	0.3

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW10	MW10_031312	03/13/2012	--	0.0964 U	0.087 U	--	0.154 U	76.6	1 U	17.4	0.165 U
	MW10-062112	06/21/2012	--	1 U	0.087 U	--	1 U	65.5	1 U	31.8	1 U
	MW10-100412	10/04/2012	--	0.14 J	0.087 U	--	0.32 J	93.1	1 U	24.7	0.155 U
	MW10-121912	12/19/2012	--	0.0964 U	0.087 U	--	1.07	37.7	1 U	21.1	0.155 U
	MW10-040913	04/09/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	83.1	1 U	17.9	0.155 U
	MW10-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	101	1 U	32.2	0.155 U
	MW10-092513	09/25/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	135	1 U	33.1	0.155 U
	MW10-122413	12/24/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	75.4	1 U	18.9	1 U
	MW10-032514	03/25/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	74.2	1 U	12.4	0.155 U
	MW10-062414	06/24/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.18 J	83.6	1 U	41	0.155 U
	MW10-090914	09/09/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	82.2	1 U	35.7	0.23 J
	MW10-120814	12/08/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	54.5	1 U	45.4	0.076 U
	MW10-030615	03/06/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	62.4	1 U	24.6	0.155 U
	MW10-061015	06/10/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	75.5	1 U	16.3	0.155 U
	MW10-091715	09/17/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	85.9	1 U	19.5	0.155 U
	MW10-122215	12/22/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	77.8	1 U	12.6	0.155 U
	MW10-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	59.6	1 U	24.1	0.155 U
	MW10-090816	09/08/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	61.2	1 U	85.1	0.155 U
	MW10-032817	03/28/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	27.8	1 U	29.2	0.076 U
	MW10-032817-DUP	03/28/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	32.7	1 U	25.6	0.076 U
	MW10-091317	09/13/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.36 J	57.3	1 U	56.8	0.076 U
	MW10-091317-DUP	09/13/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.48 J	69.9	1 U	72.5	0.076 U
	MW10-032118	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	1.3	89.2	1 U	64.2	0.076 U
	MW10-091318	09/13/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.75 J	100	1 U	65.7	0.076 U
	MW10-091318-DUP	09/13/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.77 J	109	1 U	62.6	0.076 U
	MW10-031119	03/11/2019	0.025 U	0.069 U	0.025 U	0.123 U	1.42	93.7	0.038 U	114	0.076 U
	MW10-031119-DUP	03/11/2019	0.025 U	0.069 U	0.025 U	0.123 U	1.27	93	0.038 U	100	0.076 U
	MW10-080824	08/08/2024	--	2 U	--	--	4.8	14.9	2 U	144	1 U
MW11	MW11_031312	03/13/2012	--	0.0964 U	0.087 U	--	0.154 U	32.9	1 U	1.49	0.165 U
	MW11-062012	06/20/2012	--	1 U	0.087 U	--	1 U	26.4	1 U	3.17	1 U
	MW11_100512	10/05/2012	--	1 U	0.087 U	--	0.18 J	26.8	1 U	0.87 J	0.155 U
	MW11-122012	12/20/2012	--	1 U	0.087 U	--	0.6 J	13.1	1 U	0.61 J	0.155 U
	MW11-040913	04/09/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	34.8	1 U	1.99	0.155 U
	MW11-060413	06/04/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	49.8	1 U	3.56	0.155 U
	MW11-092413	09/24/2013	0.0851 UJ	1 U	0.087 UJ	0.203 UJ	1 UJ	34.1 J	1 U	1.72 J	0.155 UJ
	MW11-122413	12/24/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	17	1 U	1 U	1 U
	MW11-032714	03/27/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	27.1	1 U	2.58	0.155 U
	MW11-062414	06/24/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	22	1 U	1.33	0.155 U
	MW11-091014	09/10/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	18.4	1 U	1.09	0.155 U
	MW11-120914	12/09/2014	0.025 U	1 U	0.025 U	0.123 U	0.045 U	23.5	1 U	6.79	0.076 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW11	MW11-030615	03/06/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	33.6	1 U	11.3	0.155 U
	MW11-061015	06/10/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	42.8	1 U	4.9	0.155 U
	MW11-091515	09/15/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	43	1 U	5.9	0.155 U
	MW11-122315	12/23/2015	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	21.9	1 U	2.56	0.155 U
	MW11-032216	03/22/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	27.5	1 U	8.32	0.155 U
	MW11-090816	09/08/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	20.5	1 U	7.19	0.155 U
	MW11-032817	03/28/2017	0.025 U	1 U	0.025 U	0.123 U	0.045 U	16.8	1 U	9.64	0.076 U
	MW11-091317	09/13/2017	0.025 U	1 U	0.025 U	0.123 U	0.045 U	18.5	1 U	3.46	0.076 U
	MW11-032018	03/20/2018	0.025 U	1 U	0.025 U	0.123 U	0.045 U	27.1	1 U	6.33	0.076 U
	MW11-091218	09/12/2018	0.025 U	1 U	0.025 U	0.123 U	0.045 U	19.2	1 U	5.43	0.076 U
	MW11-031119	03/11/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	14.5	0.038 U	4.47	0.076 U
	MW11-080824	08/08/2024	--	0.2 U	--	--	0.2 U	26.8	0.2 U	7.77	0.1 U
MW13	MW13_031412	03/14/2012	--	1 U	--	--	2.01	447	1 U	65.4	0.165 U
	MW13-062112	06/21/2012	--	1 U	--	--	3.69	251	1 U	117	1 U
	MW13_100712	10/07/2012	--	1 U	--	--	0.4 J	176	1 U	13.1	0.155 U
	MW13-122012	12/20/2012	--	1 U	--	--	0.92 J	146	1 U	11.3	0.155 U
	MW13-040913	04/09/2013	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	948	1 U	32.5	0.155 U
	MW13-060413	06/04/2013	0.0851 U	1 U	0.087 U	0.203 U	0.39	114	1 U	21	0.155 U
	MW13-092513	09/25/2013	0.0851 U	1 U	0.087 U	0.203 U	3.36	105 J	1 U	80.2	0.155 U
	MW13-122413	12/24/2013	0.0851 U	1 U	0.087 U	0.203 U	1 U	151	1 U	11.2	1 U
	MW13-032714	03/27/2014	0.0851 U	1 U	0.087 U	0.203 U	0.34	259	1 U	25.6	0.155 U
	MW13-062414	06/24/2014	0.0851 UR	1 U	0.087 U	0.203 UR	1.34 J	159 J	1 U	53.2 J	0.155 UR
	MW13-091014	09/10/2014	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	111	1 U	13.9	0.155 U
	MW13-120914	12/09/2014	0.025 U	1 U	0.087 U	0.123 U	0.045 U	201	1 U	43.2	0.076 U
	MW13-030615	03/06/2015	0.0851 U	1 U	0.087 U	0.203 U	1.3	834	1 U	95.8	0.155 U
	MW13-061015	06/10/2015	0.0851 U	1 U	0.087 U	0.203 U	1.91	459	1 U	123	0.155 U
	MW13-091515	09/15/2015	0.0851 U	1 U	0.087 U	0.203 U	0.37 J	179	1 U	19.6	0.155 U
	MW13-122315	12/23/2015	0.0851 U	1 U	0.087 U	0.203 U	0.97 J	341	1 U	58.4	0.155 U
	MW13-032216	03/22/2016	0.0851 U	1 U	0.087 U	0.203 U	1.64	422	1 U	66.2	0.155 U
	MW13-090716	09/07/2016	0.0851 U	1 U	0.087 U	0.203 U	0.066 U	251	1 U	33.8	0.155 U
	MW13-032018	03/20/2018	0.025 U	1 U	0.087 U	0.123 U	4.93	361	1 U	71.3	0.076 U
	MW13-080824	08/08/2024	--	0.2 U	--	--	4.17	53.7	1.09	18.3	0.1 U
MW14	MW14_031212	03/12/2012	--	1 U	0.087 U	--	0.154 U	74.4	1 U	40.8	0.165 U
	MW14-062012	06/20/2012	--	1 U	0.087 U	--	1 U	15.8	1 U	7.31	1 U
	MW14-100312	10/03/2012	--	0.096 U	0.087 U	--	0.2 J	1.17	1 U	0.34 J	0.155 U
	MW14-121912	12/19/2012	--	0.11 J	0.087 U	--	0.53 UJ	0.44 J	1 U	0.087 U	0.155 U
	MW14-040913	04/09/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	3.29	1 U	1.1	0.155 U
	MW14-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.14	1 U	0.087 U	0.155 U
	MW14-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	1 U	1 U	1 U	0.155 U
	MW14-122313	12/23/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	15.9	1 U	1.86	1 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL$^{(1)}$:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW14	MW14-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.12	1 U	0.52	0.155 U
	MW14-062514	06/25/2014	0.0851 UR	0.0964 UR	0.087 U	0.203 UR	0.066 UR	0.45 J	1 U	0.3 J	0.155 U
	MW14-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW14-120814	12/08/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.29 J	1 U	0.047 U	0.076 U
	MW14-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.88 U	1 U	0.087 U	0.155 U
	MW14-061115	06/11/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	1 U	0.087 U	0.155 U
	MW14-091715	09/17/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.62	1 U	0.087 U	0.155 U
	MW14-122215	12/22/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.4	1 U	0.087 U	0.155 U
	MW14-032116	03/21/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.47 J	1 U	0.087 U	0.155 U
	MW14-090716	09/07/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	1 U	0.087 U	0.155 U
	MW14-032118	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	1 U	0.047 U	0.076 U
MW15	MW15_031512	03/15/2012	--	0.0964 U	0.087 U	--	0.154 U	6.89	1 U	0.45	0.165 U
	MW15-061912	06/19/2012	--	1 U	0.087 U	--	1 U	9.84 J	1 U	1 U	1 U
	MW15_100712	10/07/2012	--	0.096 U	0.087 U	--	0.066 U	17.1	1 U	0.52	0.155 U
	MW15-122112	12/21/2012	--	0.22 UJ	0.087 U	--	0.64 UJ	13	1 U	0.97	0.155 U
	MW15-041013	04/10/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	10.5	1 U	0.087 U	0.155 U
	MW15-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.5	1 U	0.087 U	0.155 U
	MW15-092413	09/24/2013	0.0851 UJ	0.0964 UJ	0.087 U	0.203 UJ	1.46 J	32.4 J	1 U	1 UJ	0.155 UJ
	MW15-122013	12/20/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	18	1 U	1 U	1 U
	MW15-032514	03/25/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	13.1	1 U	0.63	0.155 U
	MW15-062414	06/24/2014	0.0851 UR	0.0964 UR	0.087 U	0.203 UR	0.066 UR	10.1 J	1 U	0.45 J	0.155 UR
	MW15-091014	09/10/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.1	1 U	0.42 J	0.155 U
	MW15-120314	12/03/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	4.62	1 U	0.047 U	0.076 U
	MW15-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11	1 U	0.087 U	0.155 U
	MW15-060915	06/09/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	8.24	1 U	0.42 J	0.155 U
	MW15-091515	09/15/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.9	1 U	0.32 J	0.155 U
	MW15-122115	12/21/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	10.6	1 U	0.087 U	0.155 U
	MW15-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	10.6	1 U	0.083 J	0.155 U
	MW15-090916	09/09/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	6.81	1 U	0.087 U	0.155 U
	MW15-032817	03/28/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	5.58	1 U	0.58 J	0.076 U
	MW15-091317	09/13/2017	0.025 U	0.069 U	0.087 U	0.123 U	0.48 J	9.94	1 U	0.6 J	0.076 U
	MW15-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	13.6	1 U	0.047 U	0.076 U
	MW15-091318	09/13/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	14.6	1 U	0.43 J	0.076 U
	MW15-031219	03/12/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	10.4	0.038 U	0.52 J	0.076 U
	MW15-080824	08/08/2024	--	0.2 U	--	--	0.2 U	16.9	0.2 U	0.9	0.1 U
MW16	MW16_031512	03/15/2012	--	0.0964 U	0.087 U	--	0.154 U	7.1	1 U	0.68 J	0.165 U
	MW16-061912	06/19/2012	--	1 U	0.087 U	--	1 U	7.77	1 U	1 U	1 U
	MW16_100712	10/07/2012	--	0.096 U	0.087 U	--	0.066 U	17.2	0.083 U	0.36 J	0.155 U
	MW16-122112	12/21/2012	--	0.31 J	0.087 U	--	0.64 UJ	9.04	0.25 UJ	0.91 J	0.155 U
	MW16-041013	04/10/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	7.68	0.083 U	0.087 U	0.155 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL[(1)]:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW16	MW16-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	9.21	0.083 U	0.61 J	0.155 U
	MW16-092413	09/24/2013	0.11 J	0.0964 UJ	0.087 U	0.203 UJ	0.066 U	13.9 J	0.16 J	1.21 J	1.57
	MW16-122013	12/20/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.6	0.083 U	1 U	1 U
	MW16-032514	03/25/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.5	0.083 U	1.35	0.155 U
	MW16-062414	06/24/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	9.79	0.083 U	1.17	0.155 U
	MW16-091014	09/10/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	8.68	0.083 U	0.94 J	0.155 U
	MW16-120314	12/03/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.066 U	5.1	0.038 U	0.8 J	0.076 U
	MW16-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	11.4	0.083 U	1.75	0.155 U
	MW16-060915	06/09/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	12	0.083 U	1	0.155 U
	MW16-091515	09/15/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	13.4	0.083 U	0.75 J	0.155 U
	MW16-122115	12/21/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	13.7	0.083 U	1.15	0.155 U
	MW16-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	12	0.083 U	1.36	0.155 U
	MW16-090916	09/09/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	7.71	0.083 U	0.087 U	0.155 U
	MW16-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.066 U	18.8	0.038 U	1.18	0.076 U
	MW16-080724	08/07/2024	--	0.2 U	--	--	0.2 U	13.9	0.2 U	1.86	0.1 U
MW17	MW17-040913	04/09/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-092613	09/26/2013	0.29 J	0.0964 U	0.087 U	0.203 U	1 U	0.0672 U	0.083 U	1 U	0.155 U
	MW17-122313	12/23/2013	0.13 J	0.0964 U	0.087 U	0.203 U	1 U	4.83	0.083 U	1 U	1 U
	MW17-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-120914	12/09/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.39 J	0.038 U	0.047 U	0.076 U
	MW17-030615	03/06/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.55	0.083 U	0.087 U	0.155 U
	MW17-091715	09/17/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	0.083 U	0.087 U	0.155 U
	MW17-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-090716	09/07/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW17-032118	03/21/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	0.038 U	0.047 U	0.076 U
MW18	MW18-041013	04/10/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW18-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW18-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	1 U	0.083 U	0.087 U	0.155 U
	MW18-122313	12/23/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	7	0.083 U	1 U	1 U
	MW18-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	0.083 U	0.087 U	0.155 U
	MW18-062414	06/24/2014	0.0851 UR	0.0964 UR	0.087 U	0.203 UR	0.066 UR	0.0672 UR	0.083 UR	0.22 J	0.155 UR
	MW18-091014	09/10/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.41 J	0.083 U	0.087 U	0.155 U
	MW18-120414	12/04/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	0.038 U	0.047 U	0.076 U
	MW18-030515	03/05/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW18-061015	06/10/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	0.083 U	0.087 U	0.155 U
	MW18-091615	09/16/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW18-122215	12/22/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.35 J	0.083 U	0.087 U	0.155 U
	MW18-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL[(1)]:	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW18	MW18-090716	09/07/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW18-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	1.63	0.038 U	0.047 U	0.076 U
MW19	MW19-041013	04/10/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.69	0.083 U	0.087 U	0.155 U
	MW19-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.91	0.083 U	0.087 U	0.155 U
	MW19-092413	09/24/2013	0.0851 UJ	0.0964 UJ	0.087 U	0.203 UJ	1.36 J	2.49 J	0.11 J	1 UJ	0.155 UJ
	MW19-122013	12/20/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	1.92	0.083 U	1 U	1 U
	MW19-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.03	0.083 U	0.28	0.155 U
	MW19-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.95 J	0.083 U	0.42	0.155 U
	MW19-120514	12/05/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.51 J	0.038 U	0.047 U	0.076 U
	MW19-030615	03/06/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.91 U	0.083 U	0.087 U	0.155 U
	MW19-091515	09/15/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.39	0.083 U	0.087 U	0.155 U
	MW19-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW19-090916	09/09/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.48 J	0.083 U	0.087 U	0.155 U
	MW19-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	1.01	0.038 U	0.047 U	0.076 U
MW20	MW20-040913	04/09/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-060413	06/04/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.96 J	0.083 U	0.087 U	0.155 U
	MW20-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-122413	12/24/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1.08	0.083 U	1 U	1 U
	MW20-032714	03/27/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	1 U	0.083 U	0.087 U	0.155 U
	MW20-091114	09/11/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.18 J	0.083 U	0.087 U	0.155 U
	MW20-120514	12/05/2014	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	0.058 U	0.038 U	0.047 U	0.076 U
	MW20-030615	03/06/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-091615	09/16/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-032216	03/22/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-090716	09/07/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	0.0672 U	0.083 U	0.087 U	0.155 U
	MW20-032018	03/20/2018	0.025 U	0.069 U	0.087 U	0.123 U	0.045 U	2.93	0.038 U	0.047 U	0.076 U
	MW20-080824	08/08/2024	--	0.2 U	--	--	0.2 U	0.2 U	0.2 U	0.2 U	0.01 U
MW21	MW21-040813	04/08/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	23.9	0.083 U	0.087 U	0.155 U
	MW21-060313	06/03/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	14	0.083 U	0.087 U	0.155 U
	MW21-092713	09/27/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	53.8	0.083 U	1 U	0.155 U
	MW21-122313	12/23/2013	0.0851 U	0.0964 U	0.087 U	0.203 U	1 U	602	0.083 U	1 U	1 U
	MW21-032414	03/24/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	45.3	0.083 U	0.22	0.155 U
	MW21-062314	06/23/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	75.8	0.083 U	0.087 U	0.155 U
	MW21-090914	09/09/2014	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	47.5	0.083 U	0.087 U	0.155 U
	MW21-120514	12/05/2014	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	104	0.038 U	0.047 U	0.076 U
	MW21-030415	03/04/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	79.4	0.083 U	0.087 U	0.155 U
	MW21-060915	06/09/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	12.6	0.083 U	0.087 U	0.155 U
	MW21-091615	09/16/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	17.3	0.083 U	0.087 U	0.155 U
	MW21-122115	12/21/2015	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	88.1	0.083 U	0.087 U	0.155 U
	MW21-032116	03/21/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	23.4	0.083 U	0.087 U	0.155 U

Table
Volatile Organic Compounds in Groundwater
Former Park Laundry Site

Location	Sample ID	Sample Date	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	PCE	trans-1,2-Dichloroethene	TCE	Vinyl chloride
		Units:	ug/L								
		Groundwater CUL(1):	NV	7	NV	NV	16	2.4	100	0.3	0.02
MW21	MW21-090816	09/08/2016	0.0851 U	0.0964 U	0.087 U	0.203 U	0.066 U	5,810	0.083 U	0.087 U	0.155 U
	MW21-032817	03/28/2017	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	49.7	0.038 U	0.33 J	0.076 U
	MW21-031918	03/19/2018	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	65.9	0.038 U	0.047 U	0.076 U
	MW21-091218	09/12/2018	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	852	0.038 U	0.34 J	0.076 U
	MW21-031119	03/11/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	268	0.038 U	0.31 J	0.076 U
MW23D	MW23D-080724	08/07/2024	--	0.2 U	--	--	0.2 U	11.7	0.2 U	1.5	0.1 U
MW24D	MW24D-080724	08/07/2024	--	0.2 U	--	--	0.2 U	14.4	0.2 U	1.63	0.1 U
MW25D	MW25D-080724	08/07/2024	--	0.2 U	--	--	0.2 U	10.1	0.2 U	0.85	0.1 U
MW-29D	MW29D010818	01/08/2018(a)	--	--	--	--	--	5.92	--	--	--
	MW29D-032019	03/20/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	1.26	0.038 U	0.047 U	0.076 U
	MW-29D-080824	08/08/2024	--	0.2 U	--	--	0.2 U	0.82	0.2 U	0.2 U	0.01 U
MW-45D	MW45D010818	01/08/2018(a)	--	--	--	--	--	3.84	--	--	--
	MW45D-032019	03/20/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	2.92	0.038 U	0.047 U	0.076 U
MW-46D	MW46D010818	01/08/2018(a)	--	--	--	--	--	1 U	--	--	--
	MW46D-032019	03/20/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	5.01	0.038 U	0.047 U	0.076 U
	MW-46D-080824	08/08/2024	--	0.2 U	--	--	0.2 U	8.35	0.2 U	0.34 J	0.1 U
MW-47D	MW47D010818	01/08/2018(a)	--	--	--	--	--	1	--	--	--
	MW47D-032019	03/20/2019	0.025 U	0.069 U	0.025 U	0.123 U	0.045 U	5.29	0.038 U	0.047 U	0.076 U
	MW-47D-080824	08/08/2024	--	0.2 U	--	--	0.2 U	5.25	0.2 U	0.2 U	0.1 U

Notes

Shading indicates values that exceed screening criteria; non-detects (U, UJ, UR) were not compared with screening criteria.

-- = not analyzed.

CUL = cleanup level.

Ecology = Washington State Department of Ecology.

NV = no value.

PCE = tetrachloroethene.

TCE = trichloroethene.

U = not detected at or above method reporting limit (2011) or method detection limit (2012 on).

UJ = analyte estimated, not detected at or above method reporting limit (2011) or method detection limit (2012 on). Reported detection limit is approximate and may or may not represent actual limit of quantitation necessary to accurately and precisely measure analyte in sample.

UR = analyte not detected above detection limit; result rejected.

ug/L = micrograms per liter.

VOC = volatile organic compound.

(a)Results are from 05/10/2018 Port of Ridgefield Groundwater Monitoring report. Non-detect results are reported to method reporting limits.

Reference

(1)Ecology. 2023. *Former Park Laundry: Public Review Final Cleanup Action Plan."* Table 2-1: Park Laundry Cleanup Levels." Washington State Department of Ecology, Toxics Cleanup Program. Lacey, WA.

Attachment A

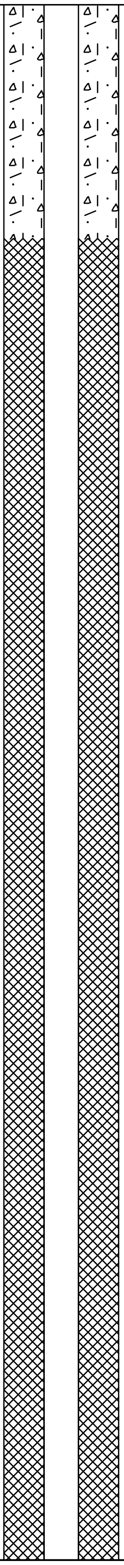
Geologic Logs

MAUL
FOSTER
ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-23D**	**1 of 6**

Project Name	**City of Ridgefield - Former Park Laundry**	TOC Elevation (feet)	**88.17**
Project Location	**Ridgefield, Washington**	Surface Elevation (feet)	**88.5**
Start/End Date	**7/30/2024 to 7/31/2024**	Northing	**184275.3**
Driller/Equipment	**Anderson Environmental Consulting, LLC/Sonic D107 Drilling Rig**	Easting	**1067804.3**
Geologist/Engineer	**C. Anderson**	Total Depth of Borehole	**110.0 feet**
Sample Method	**Core Barrel (6-inch or 8-inch)**	Outer Hole Diam	**6 inch**



Depth (feet, bgs)	Percent Recovery	Sample ID	PID (ppm)	Soil Description
0.0–0.4				0.0 to 0.4 feet: SILTY GRAVEL (GM); gray; 40% fines, low plasticity; 60% gravel, fine to coarse; dry.
0.4–3.0	**60**		**0.0**	0.4 to 3.0 feet: SILT with SAND (ML); brown; 70% fines, low plasticity; 30% sand, fine to coarse; dry.
3.0–5.0				3.0 to 5.0 feet: NO RECOVERY.
5.0–6.0				5.0 to 6.0 feet: SILT with SAND (ML); brown; 70% fines, low plasticity; 30% sand, fine to coarse; dry.
6.0–8.0	**60**		**0.0**	6.0 to 8.0 feet: SILTY SAND (SM); brown; 40% fines, low plasticity; 60% sand, fine to coarse; dry.
8.0–10.0				8.0 to 10.0 feet: NO RECOVERY.
10.0–13.5	**100**		**0.0**	10.0 to 13.5 feet: SILTY SAND (SM); brown; 40% fines, low plasticity; 60% sand, fine to coarse; wet.
13.5–20	**100**		**0.0**	13.5 to 30.0 feet: CLAY (CL); brown; 100% fines, high plasticity; very stiff; dry.

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-23D**	**2 of 6**

Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample ID	PID (ppm)	Lithologic Column	Soil Description
20							20.0 to 25.0 feet: Bentonite seal observed.
21							
22							
23			**100**				
24							
25					**0.0**		
26							
27							
28			**100**				
29							
30							@ 30.0 feet: Trace mica observed; becomes wet.
31							
32							
33			**100**				@ 33.0 feet: Becomes dry.
34							
35							35.0 to 52.0 feet: SILTY SAND (SM); light brown; 30% fines, low plasticity; 70% sand, fine to medium; dry.
36					**0.0**		
37							
38			**100**				
39							
40							
41			**100**				
42							

MAUL FOSTER ALONGI

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-23D**	**3 of 6**

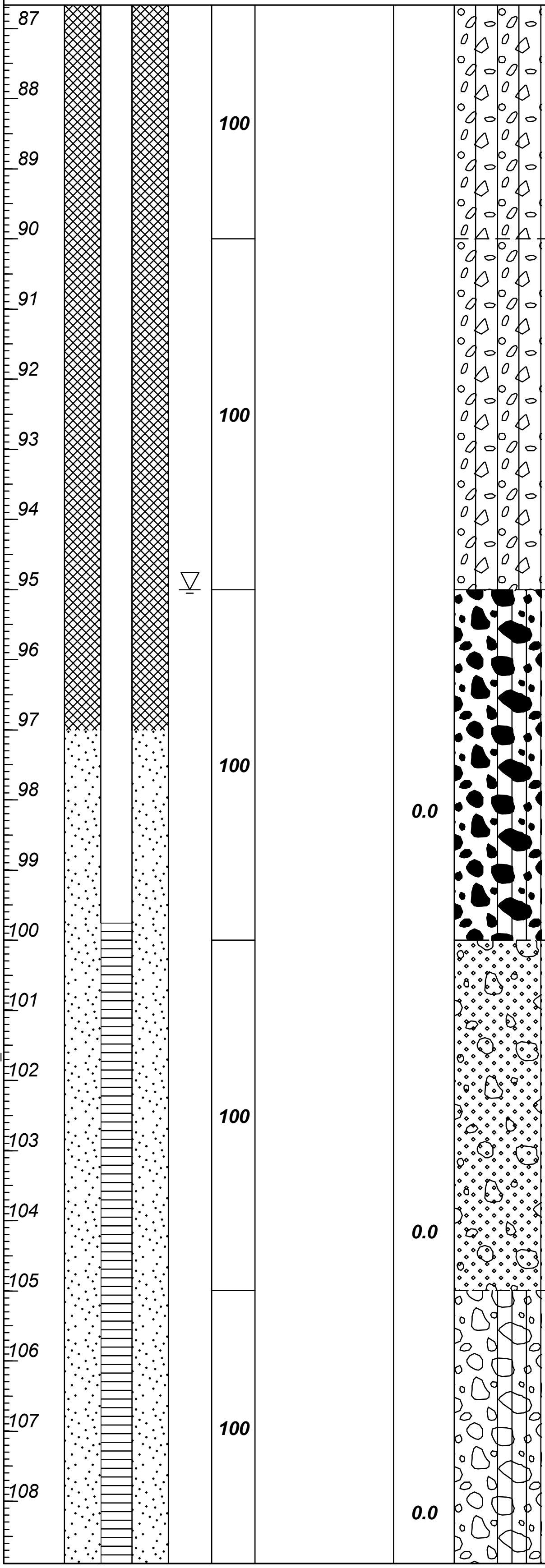
Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample Data Sample ID	PID (ppm)	Lithologic Column	Soil Description
43					**0.0**		
44			**100**				
45							
46							
47							
48			**100**		**0.0**		
49							
50							
51							
52							52.0 to 53.0 feet: SANDY SILT (ML); brown; 60% fines, low plasticity; 40% sand, fine to medium; dry.
53			**100**		**0.0**		53.0 to 55.0 feet: SILTY SAND (SM); light brown; 30% fines, low plasticity; 70% sand, fine to medium; dry.
54							
55							55.0 to 60.0 feet: SANDY GRAVEL (GW); light brown; 40% sand, fine to medium; 60% gravel, fine to coarse, subrounded; trace fines; trace mica; dry.
56					**0.0**		
57							
58			**100**				
59							
60							60.0 to 61.0 feet: SILTY SAND (SM); brown; 40% fines, low plasticity; 60% sand, fine to medium; dry.
61							61.0 to 68.0 feet: SANDY GRAVEL with SILT (GW-GM); gray; 10% fines, low plasticity; 30% sand, fine to medium; 60% gravel, fine to coarse, subrounded; dry.
62			**100**				
63							
64					**0.0**		

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-23D**	**4 of 6**

Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample Data Sample ID	PID (ppm)	Lithologic Column	Soil Description
65			**100**				
66							
67			**100**				
68							68.0 to 70.0 feet: NO RECOVERY.
69							
70							70.0 to 75.0 feet: SILTY GRAVEL with SAND (GM); dark gray; 30% fines, low plasticity; 10% sand, fine to medium; 60% gravel, fine to coarse, subangular; moist.
71							
72			**100**				
73					**0.0**		
74							
75							75.0 to 76.0 feet: SILTY SANDY GRAVEL (GM); gray; 20% fines, low plasticity; 20% sand, fine to medium; 60% gravel, fine to coarse, subrounded; dry.
76							76.0 to 90.0 feet: SILTY SANDY GRAVEL (GM); dark gray; 30% fines, low plasticity; 20% sand, fine to medium; 50% gravel, fine to coarse, subrounded; moist.
77			**100**				
78							
79							
80							
81							
82			**100**				
83							
84							
85							
86			**100**		**0.0**		

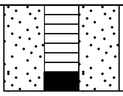
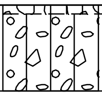
Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample ID	PID (ppm)	Lithologic Column	Soil Description



Percent Recovery	PID (ppm)	Soil Description
100		
100		90.0 to 95.0 feet: SANDY SILTY GRAVEL (GM); dark gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; trace mica; moist.
100	**0.0**	95.0 to 100.0 feet: SANDY GRAVEL with SILT (GW-GM); dark gray; 10% fines, low plasticity; 30% sand, fine to coarse; 60% gravel, fine to coarse, rounded to subrounded; trace mica; wet.
100	**0.0**	100.0 to 105.0 feet: GRAVELLY SAND (SW); brown; 70% sand, fine to coarse; 30% gravel, medium to coarse, rounded to subrounded; trace fines; trace mica; moist.
100	**0.0**	105.0 to 109.0 feet: SANDY GRAVEL with SILT (GP-GM); brown; 10% fines, low plasticity; 30% sand, fine to coarse; 60% gravel, medium to coarse, rounded to subrounded; trace mica; moist.

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-23D**	**6 of 6**

Depth (feet, bgs)	Well Details		Sample Data			Lithologic Column	Soil Description
		Water Levels	Percent Recovery	Sample ID	PID (ppm)		
110			**100**				109.0 to 110.0 feet: SILTY SANDY GRAVEL (GM); gray; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, medium to coarse, rounded to subrounded; moist.

Total Depth = 110.0 feet bgs

NOTES:

1) bgs = below ground surface. 2) ppm = parts per million. 3) PID = photoionization detector.

Borehole Completion Details
0.0 to 25.0 feet: 8-inch-diameter borehole.
20.0 to 25.0 feet: Bentonite chips hydrated with potable water and allowed to cure for at least one hour prior to telescoping 6-inch-diameter casing through bentonite seal.
20.0 to 110.0 feet: 6-inch-diameter borehole.

0.0 to 2.0 feet: Concrete.
2.0 to 97.0 feet: Bentonite chips hydrated with potable water.
97.0 to 110.0 feet: 12/20 silica sand filter pack.

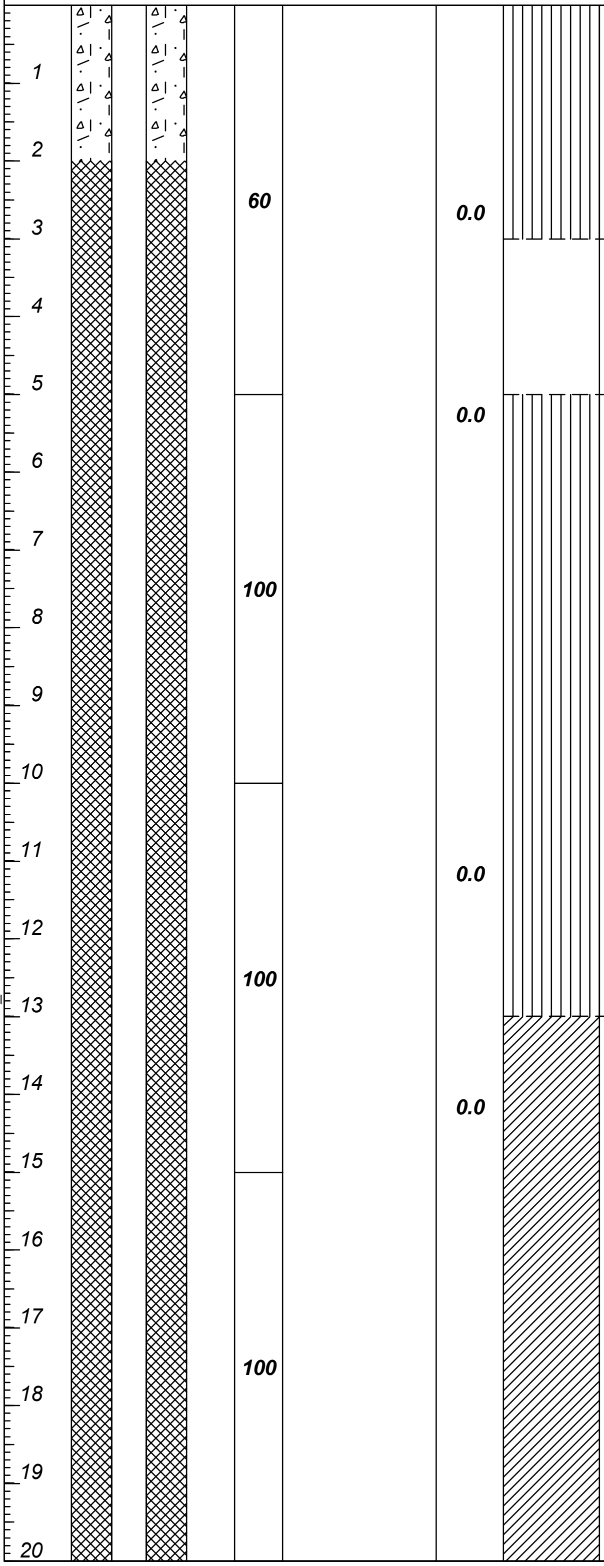
Monitoring Well Completion Details
Washington State Department of Ecology Well No. BQG-872
Flush-mounted monitoring well monument set in concrete.
0.0 to 99.75 feet: 2-inch-diameter, schedule 40, PVC blank riser pipe.
99.75 to 109.75 feet: 2-inch-diameter, schedule 40, 0.010-inch machine slotted PVC well screen.
109.75 to 110.0 feet: 2-inch-diameter, flush-threaded PVC end cap.

⊻ ***Soil wet at 95.0 feet bgs, as observed in the core during drilling.***

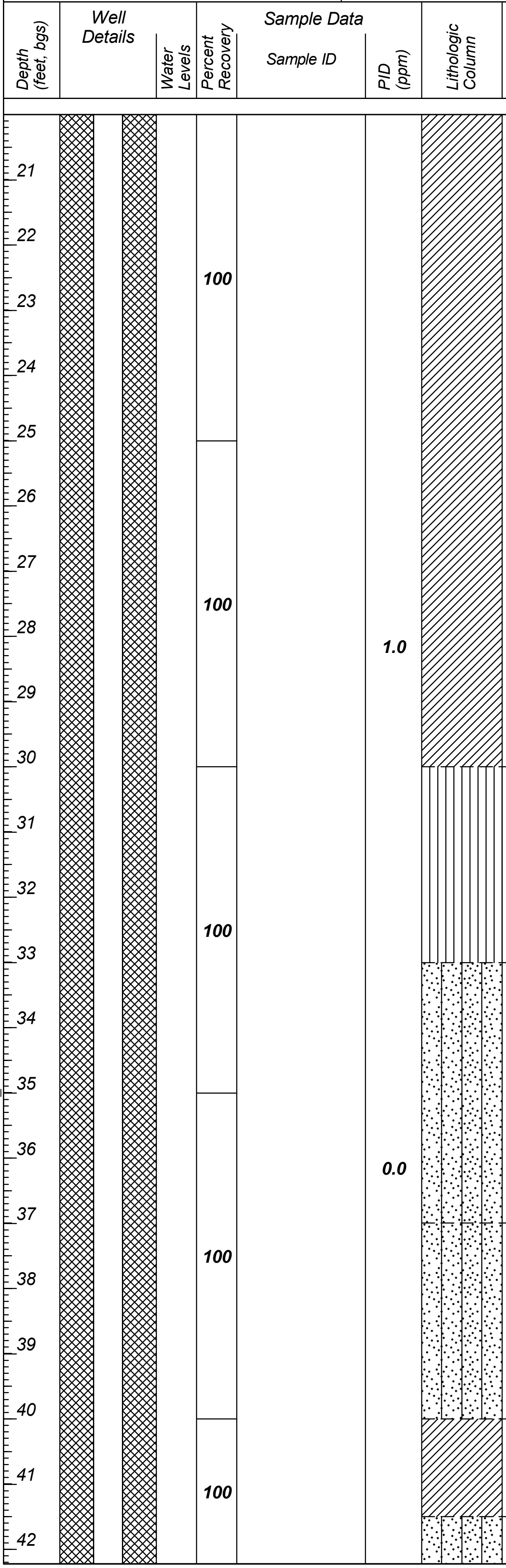
Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-24D**	**1 of 6**

Project Name	**City of Ridgefield - Former Park Laundry**	TOC Elevation (feet)	**88.39**
Project Location	**Ridgefield, Washington**	Surface Elevation (feet)	**88.69**
Start/End Date	**7/31/2024 to 8/1/2024**	Northing	**184186.9**
Driller/Equipment	**Anderson Environmental Consulting, LLC/Sonic D107 Drilling Rig**	Easting	**1067797.7**
Geologist/Engineer	**C. Anderson**	Total Depth of Borehole	**110.0 feet**
Sample Method	**Core Barrel (6-inch or 8-inch)**	Outer Hole Diam	**6 inch**



Depth (feet, bgs)	Percent Recovery	Sample ID	PID (ppm)	Soil Description
0–5	**60**		**0.0**	0.0 to 3.0 feet: SILT with SAND (ML); brown; 70% fines, low plasticity; 30% sand, fine to medium; trace mica; dry. 3.0 to 5.0 feet: NO RECOVERY.
5–10	**100**		**0.0**	5.0 to 13.0 feet: SILT with SAND (ML); brown; 70% fines, low plasticity; 30% sand, fine to medium; trace mica; dry.
10–15	**100**		**0.0** **0.0**	13.0 to 30.0 feet: CLAY (CL); brown; 100% fines, high plasticity; very stiff; dry.
15–20	**100**			17.0 to 19.0 feet: Gray streaks observed.



Soil Description

30.0 to 33.0 feet: SILT with SAND (ML); brown; 70% fines, medium plasticity; 30% sand, fine to medium; dry.

33.0 to 37.0 feet: SILTY SAND (SM); brown; 40% fines, low plasticity; 60% sand, fine to medium; trace mica; dry.

37.0 to 40.0 feet: SILTY SAND (SM); brown; 30% fines, low plasticity; 70% sand, fine to coarse; trace mica; dry.

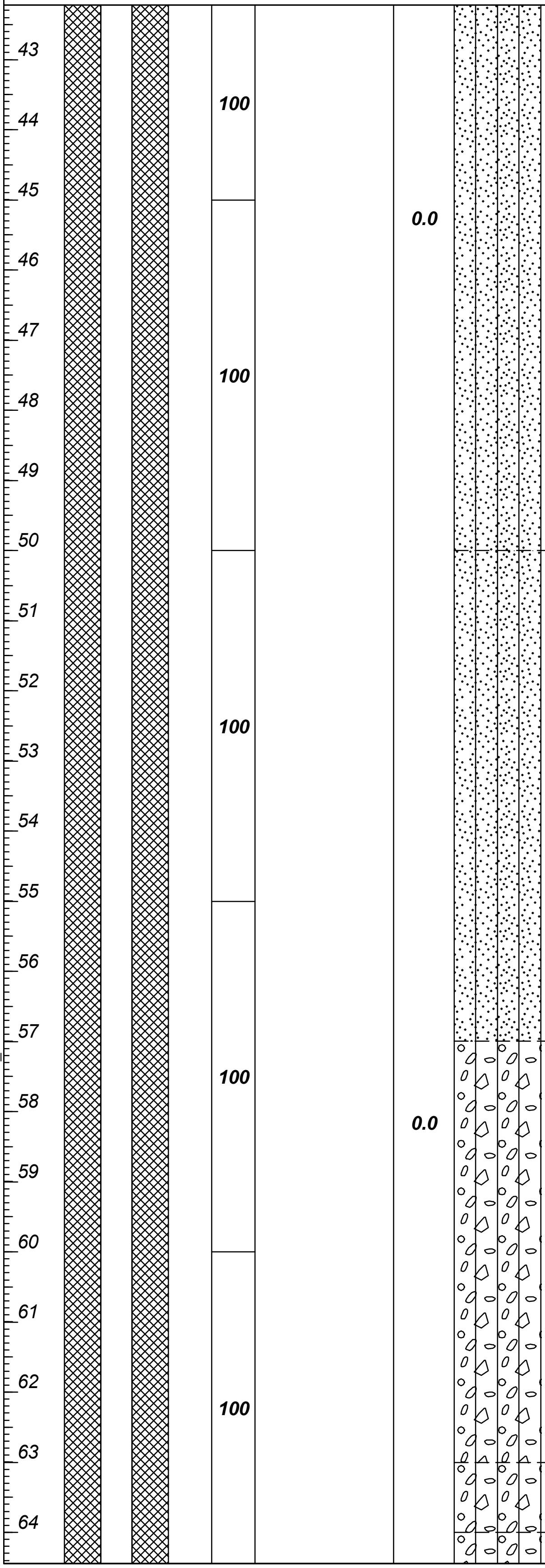
40.0 to 41.5 feet: CLAY (CL); brown; 100% fines, high plasticity; wet.

41.5 to 50.0 feet: SILTY SAND (SM); brown; 30% fines, low plasticity; 70% sand, fine to coarse; trace mica; dry.

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-24D**	**3 of 6**

Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample Data: Sample ID	Sample Data: PID (ppm)	Lithologic Column	Soil Description



50.0 to 57.0 feet: SILTY SAND (SM); light brown; 20% fines, low plasticity; 80% sand, fine to coarse; trace mica; dry.

57.0 to 63.0 feet: SANDY SILTY GRAVEL (GM); light brown; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, subrounded; trace mica; dry.

@ 59.0 feet: Becomes gray.

@ 60.0 feet: Becomes light gray.

63.0 to 64.0 feet: SILTY SANDY GRAVEL (GM); gray; 20% fines, low plasticity; 20% sand, fine to medium; 60% gravel, fine to coarse, subrounded; dry.

64.0 to 68.0 feet: SILTY GRAVEL with SAND (GM); gray; 30% fines, low plasticity; 10%

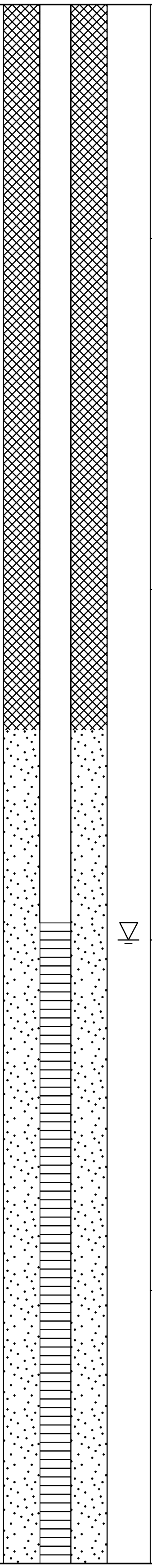
Geologic Borehole Log

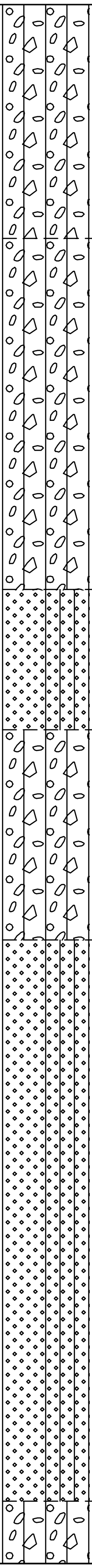
Project Number	Well Number	Sheet
M0239.33.007	**MW-24D**	**4 of 6**

Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample ID	PID (ppm)	Lithologic Column	Soil Description
			100				sand, fine to medium; 60% gravel, fine to coarse, subrounded; dry.
65							
66					**0.0**		
67			**60**				
68							68.0 to 70.0 feet: NO RECOVERY.
69							
70							70.0 to 71.0 feet: SANDY SILTY GRAVEL (GM); brown; 20% fines, low plasticity; 30% sand, fine to medium; 50% gravel, fine to coarse, subrounded; trace mica; dry.
71							71.0 to 73.0 feet: SILTY SAND with GRAVEL (SM); brown; 20% fines, low plasticity; 70% sand, fine to coarse; 10% gravel, fine to coarse, rounded to subrounded; dry; slough.
72			**100**				
73							73.0 to 80.0 feet: SILTY SANDY GRAVEL (GM); gray; 30% fines, low plasticity; 20% sand, fine to medium; 50% gravel, fine to coarse, subrounded; dry.
74							
75							
76							
77			**100**				
78					**0.0**		
79							
80							80.0 to 90.0 feet: SANDY SILTY GRAVEL (GM); dark gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; moist.
81							
82			**100**				
83							
84							
85					**0.0**		
86			**100**				

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-24D**	**5 of 6**





Depth (feet, bgs)	Percent Recovery	Sample ID	PID (ppm)	Soil Description
87–90	**100**			
90–95	**100**		**0.0**	90.0 to 95.0 feet: SILTY SANDY GRAVEL (GM); dark gray; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; wet.
95–97	**100**			95.0 to 97.0 feet: GRAVELLY SAND with SILT (SW-SM); grayish-brown; 10% fines, low plasticity; 70% sand, fine to coarse; 20% gravel, fine to coarse, rounded to subrounded; moist.
97–100			**0.0**	97.0 to 100.0 feet: SILTY SANDY GRAVEL (GM); dark gray; 30% fines, low plasticity; 20% sand, fine to medium; 50% gravel, fine to coarse, rounded to subrounded; moist.
100–108	**100** **100**		**0.0**	100.0 to 108.0 feet: SAND with SILT (SW-SM); brown; 10% fines, low plasticity; 90% sand, fine to coarse; trace gravel; trace mica; wet. @ 106.0 feet: Becomes grayish-brown.
108–110				108.0 to 110.0 feet: SILTY SANDY GRAVEL (GM); gray; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, medium to coarse, rounded to subrounded; moist.

Depth (feet, bgs)	Well Details	Water Levels	Sample Data			Lithologic Column	Soil Description
			Percent Recovery	Sample ID	PID (ppm)		
110			**100**				

Total Depth = 110.0 feet bgs

NOTES:

1) bgs = below ground surface. 2) ppm = parts per million. 3) PID = photoionization detector.

<u>Borehole Completion Details</u>
0.0 to 20.0 feet: 8-inch-diameter borehole.
15.0 to 20.0 feet: Bentonite chips hydrated with potable water allowed to cure for at least one hour prior to telescoping 6-inch-diameter casing through bentonite seal.
15.0 to 110.0 feet: 6-inch-diameter borehole.

0.0 to 2.0 feet: Concrete.
2.0 to 97.0 feet: Bentonite chips hydrated with potable water.
97.0 to 110.0 feet: 12/20 silica sand filter pack.

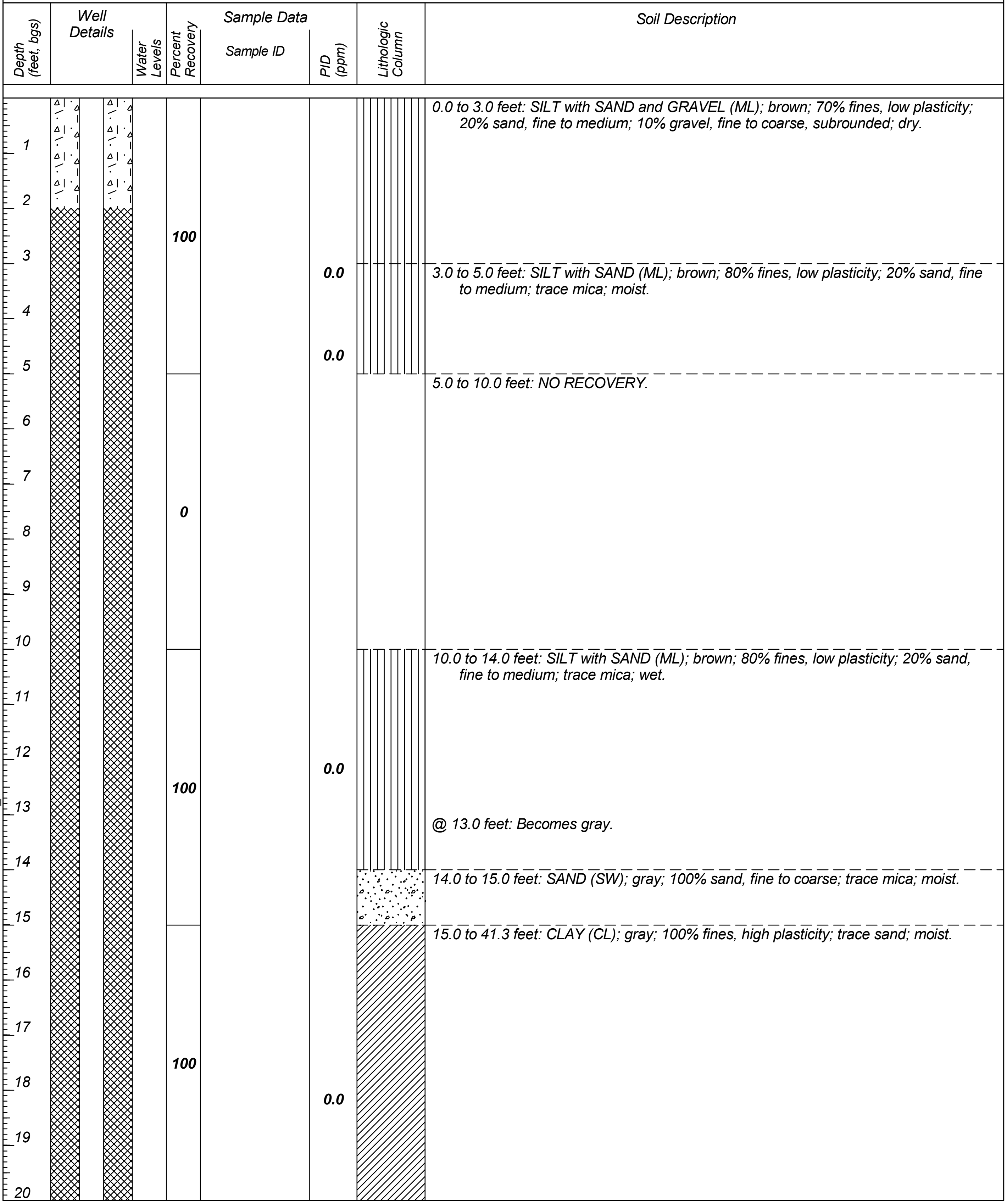
<u>Monitoring Well Completion Details</u>
Washington State Department of Ecology Well No. BQG-873
Flush-mounted monitoring well monument set in concrete.
0.0 to 99.75 feet: 2-inch-diameter, schedule 40, PVC blank riser pipe.
99.75 to 109.75 feet: 2-inch-diameter, schedule 40, 0.010-inch machine slotted PVC well screen.
109.75 to 110.0 feet: 2-inch-diameter, flush-threaded PVC end cap.

⊻ ***Soil wet at 100.0 feet bgs, as observed in the core during drilling.***

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-25D**	**1 of 5**

Project Name	**City of Ridgefield - Former Park Laundry**	TOC Elevation (feet)	**81.23**
Project Location	**Ridgefield, Washington**	Surface Elevation (feet)	**81.72**
Start/End Date	**8/1/2024 to 8/2/2024**	Northing	**184270.7**
Driller/Equipment	**Anderson Environmental Consulting, LLC/Sonic D107 Drilling Rig**	Easting	**1067536.9**
Geologist/Engineer	**C. Anderson**	Total Depth of Borehole	**100.0 feet**
Sample Method	**Core Barrel (6-inch or 8-inch)**	Outer Hole Diam	**6 inch**



0.0 to 3.0 feet: SILT with SAND and GRAVEL (ML); brown; 70% fines, low plasticity; 20% sand, fine to medium; 10% gravel, fine to coarse, subrounded; dry.

3.0 to 5.0 feet: SILT with SAND (ML); brown; 80% fines, low plasticity; 20% sand, fine to medium; trace mica; moist.

5.0 to 10.0 feet: NO RECOVERY.

10.0 to 14.0 feet: SILT with SAND (ML); brown; 80% fines, low plasticity; 20% sand, fine to medium; trace mica; wet.

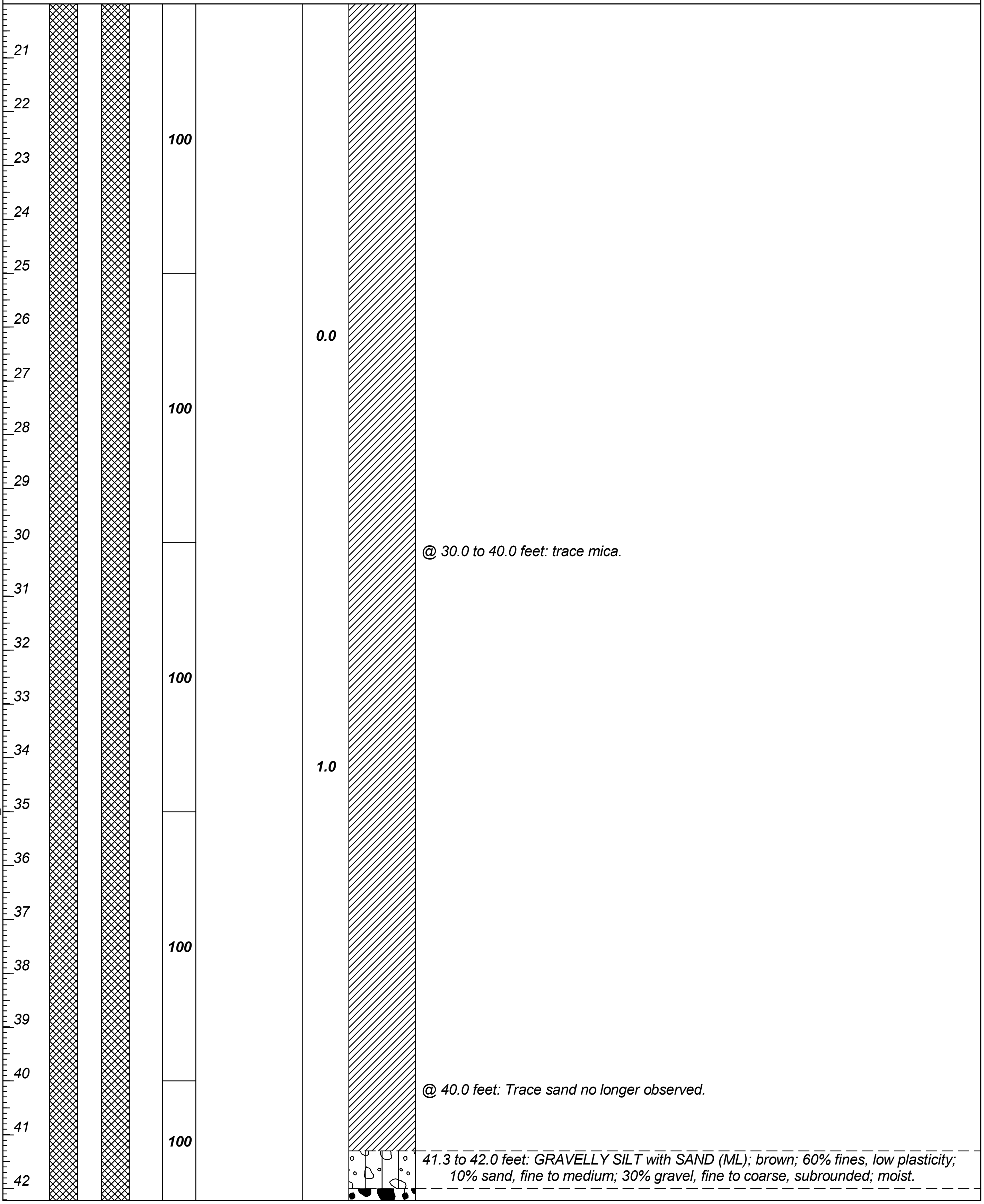
@ 13.0 feet: Becomes gray.

14.0 to 15.0 feet: SAND (SW); gray; 100% sand, fine to coarse; trace mica; moist.

15.0 to 41.3 feet: CLAY (CL); gray; 100% fines, high plasticity; trace sand; moist.

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-25D**	**2 of 5**



Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample ID	PID (ppm)	Lithologic Column	Soil Description
21							
22							
23			**100**				
24							
25							
26					**0.0**		
27							
28			**100**				
29							
30							@ 30.0 to 40.0 feet: trace mica.
31							
32							
33			**100**				
34					**1.0**		
35							
36							
37							
38			**100**				
39							
40							@ 40.0 feet: Trace sand no longer observed.
41			**100**				41.3 to 42.0 feet: GRAVELLY SILT with SAND (ML); brown; 60% fines, low plasticity; 10% sand, fine to medium; 30% gravel, fine to coarse, subrounded; moist.
42							

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-25D**	**3 of 5**

Depth (feet, bgs)	Well Details	Water Levels	Percent Recovery	Sample Data Sample ID	PID (ppm)	Lithologic Column	Soil Description
							42.0 to 48.0 feet: SANDY GRAVEL with SILT (GW-GM); gray; 10% fines, low plasticity; 40% sand, fine to coarse; 50% gravel, fine to coarse, subrounded; trace mica; dry.
43							
44			**100**				
45					**1.0**		
46							
47							
48			**100**				48.0 to 49.0 feet: CLAY (CL); brown; 100% fines, high plasticity; trace sand; trace gravel; trace mica; dry.
49							49.0 to 50.0 feet: SANDY GRAVEL with SILT (GW-GM); brown; 10% fines, low plasticity; 40% sand, fine to coarse; 50% gravel, fine to coarse, subrounded; trace mica; dry.
50							50.0 to 62.5 feet: SANDY SILTY GRAVEL (GM); gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, subrounded; dry.
51							
52							
53			**100**		**0.0**		
54							
55							
56							
57							57.3 to 57.5 feet: lens of 100% fines.
58			**100**				
59							
60							60.0 to 62.5 feet: Trace mica observed.
61							
62							62.5 to 66.0 feet: SILTY SANDY GRAVEL (GM); brown; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, fine to coarse, subrounded; dry.
63			**100**		**0.0**		
64							

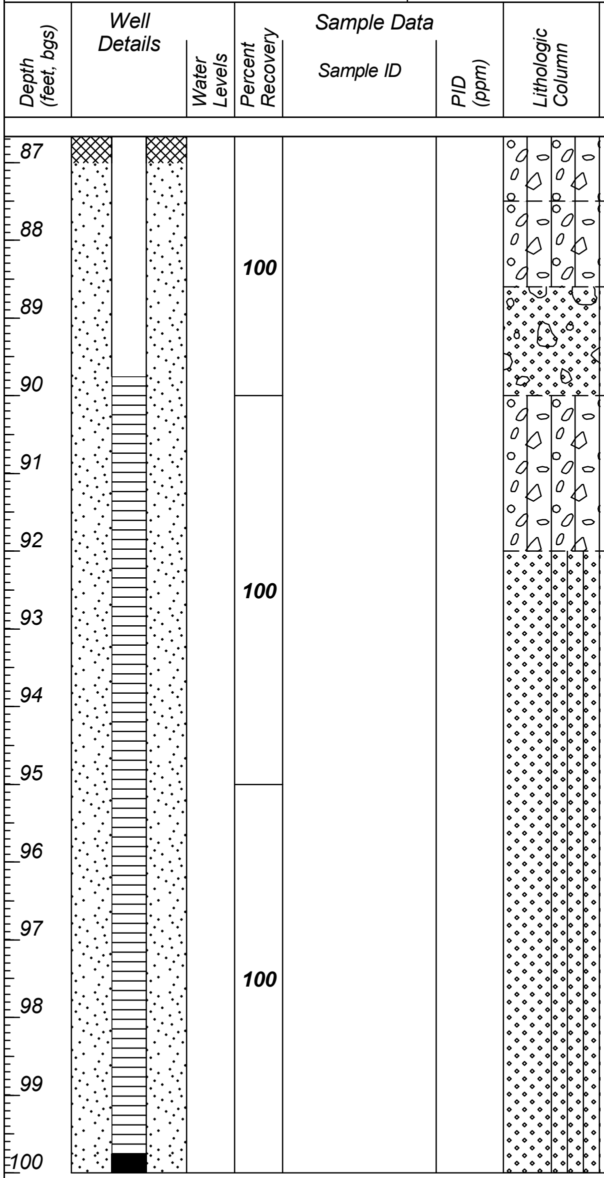
Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-25D**	**4 of 5**

Depth (feet, bgs)	Water Levels	Percent Recovery	Sample ID	PID (ppm)	Soil Description
65		**100**			64.5 to 65.3 feet: crushed rock present.
66–70		**100**			66.0 to 70.0 feet: NO RECOVERY.
70–75		**100**		**0.0**	70.0 to 75.4 feet: SILTY SANDY GRAVEL (GM); gray; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; moist.
75–78		**100**			75.4 to 78.0 feet: SANDY SILTY GRAVEL (GM); gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; moist.
78					78.0 to 78.6 feet: SAND with GRAVEL (SW); brown; 90% sand, fine to coarse; 10% gravel, fine to coarse, rounded to subrounded; trace fines; trace mica; moist.
79					78.6 to 80.0 feet: SANDY SILTY GRAVEL (GM); gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; moist.
80–83	▽	**100**			80.0 to 83.0 feet: SILTY SANDY GRAVEL (GM); dark gray; 30% fines, low plasticity; 20% sand, fine to coarse; 50% gravel, fine to coarse, subrounded to rounded; wet.
83					83.0 to 84.0 feet: SANDY SILTY GRAVEL (GM); brown; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; trace mica; wet.
84					84.0 to 85.0 feet: SANDY GRAVEL (GW); brown; 20% sand, fine to coarse; 80% gravel, fine to coarse, subrounded to rounded; trace fines; wet.
85–86		**100**		**0.0**	85.0 to 87.5 feet: SANDY SILTY GRAVEL (GM); brown; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; wet.

Geologic Borehole Log

Project Number	Well Number	Sheet
M0239.33.007	**MW-25D**	**5 of 5**



Soil Description

87.5 to 88.6 feet: SILTY SANDY GRAVEL (GM); gray; 30% fines, low plasticity; 20% sand, fine to medium; 50% gravel, fine to coarse, rounded to subrounded; wet.

88.6 to 90.0 feet: GRAVELLY SAND (SW); brown; 80% sand, fine to coarse; 20% gravel, fine to medium, rounded to subrounded; trace fines; trace mica; wet.

90.0 to 92.0 feet: SANDY SILTY GRAVEL (GM); gray; 20% fines, low plasticity; 30% sand, fine to coarse; 50% gravel, fine to coarse, rounded to subrounded; wet.

92.0 to 100.0 feet: SAND with SILT (SW-SM); grayish-brown; 10% fines, low plasticity; 90% sand, fine to coarse; trace gravel; trace mica; wet.

Total Depth = 100.0 feet bgs

NOTES:

1) bgs = below ground surface. 2) ppm = parts per million. 3) PID = photoionization detector.

Borehole Completion Details
0.0 to 20.0 feet: 8-inch-diameter borehole.
15.0 to 20.0 feet: Bentonite chips hydrated with potable water allowed to cure for at least one hour prior to telescoping 6-inch-diameter casing through bentonite seal.
15.0 to 100.0 feet: 6-inch-diameter borehole.

0.0 to 2.0 feet: Concrete.
2.0 to 87.0 feet: Bentonite chips hydrated with potable water.
87.0 to 100.0 feet: 12/20 silica sand filter pack.

Monitoring Well Completion Details
Washington State Department of Ecology Well No. BQG-874
Flush-mounted monitoring well monument set in concrete.
0.0 to 89.75 feet: 2-inch-diameter, schedule 40, PVC blank riser pipe.
89.75 to 99.75 feet: 2-inch-diameter, schedule 40, 0.010-inch machine slotted PVC well screen.
99.75 to 100.0 feet: 2-inch-diameter, flush-threaded PVC end cap.

⊻ Soil wet at 80.0 feet bgs, as observed in the core during drilling.

Attachment B

Field Sampling Data Sheets

MAUL
FOSTER
ALONGI

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-2	Monitoring	Flush-mount	Top of Casing	2.0	9.5-14.5	12.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:14	14.87		7.79		7.08	1.15

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump
Purge Start Time	9:16

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
9:16	1.0	0.2	7.21	--	--	--	--	--	--
9:37	1.15	0.2	--	--	--	--	--	--	--
9:40	1.20	0.2	8.20	6.54	17.1	540	0.27	39	41.9
9:43	1.26	0.2	8.20	6.39	16.2	180	0.09	47	29.4
9:46	1.31	0.2	8.22	6.34	15.8	180	0.09	49	26.5
9:51	1.36	0.2	8.24	6.32	15.8	170	0.09	50	19.2
9:54	1.41	0.2	8.29	6.30	15.6	170	0.09	51	11.5
9:57	1.47	0.2	8.32	6.36	15.6	170	0.09	49	11.0
10:00	1.52	0.2	8.46	6.36	15.6	170	0.08	48	10.9

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-2-080724		
Sample Date	08/07/2024	**Sample Time**	10:00
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
Poly	None	N	1
		Total No. Containers:	4

General Comments

Variable flow with peristaltic pump. Removed 5 bailers of groundwater on 8/6/24. PDX p-pump #1; Vancouver Hanna meter; Vancouver turbidimeter #2.

-- = not collected.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-3	Monitoring	Flush-mount	Top of Casing	2.0	10-15	12.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:23	15.57		6.01		9.56	1.56

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump		*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*						
Purge Start Time	10:45		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
10:45	0.0	0.2	7.69	--	--	--	--	--	--
11:09	1.3	0.2	8.49	6.31	19.7	340	0.17	52.0	12.3
11:12	1.4	0.2	8.49	6.31	18.2	340	0.17	51	9.48
11:15	1.5	0.2	8.51	6.32	17.4	340	0.17	50	8.07
11:18	1.6	0.2	8.57	6.32	17.2	340	0.17	50	8.42
11:21	1.7	0.2	8.64	6.32	17.4	350	0.17	50	7.89

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*

Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-3-080724		
Sample Date	08/07/2024	**Sample Time**	11:21
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
Poly	None	N	1
		Total No. Containers:	4

General Comments

PDX p-pump #2; Vancouver Hanna meter; Vancouver turbidimeter #2.

-- = not collected.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-4	Monitoring	Flush-mount	Top of Casing	2.0	11.5-16.5	14.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	15:47	16.40		7.39		9.01	1.47

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*
Purge Start Time	12:21	

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
12:35	1.4	0.4	6.57	15.50	15.5	270	0.14	38	14.0
12:38	1.6	0.4	6.51	15.40	15.4	280	0.14	40	11.4
12:41	1.8	0.4	6.51	15.40	15.4	280	0.14	40	9.42
12:44	2.0	0.4	6.51	15.40	15.4	280	0.14	40	8.48
12:47	2.2	0.4	6.51	15.40	15.4	280	0.14	40	4.91
12:50	2.4	0.4	6.51	15.30	15.3	280	0.14	40	5.71
12:53	2.6	0.4	6.51	15.40	15.4	280	0.14	40	5.56

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-4-080724		
Sample Date	08/07/2024	**Sample Time**	12:53
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #2; Vancouver Hanna meter; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-5	Monitoring	Flush-mount	Top of Casing	2.0	12-17	14.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	15:40	17.40		9.30		8.10	1.32

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump		*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*						
Purge Start Time	13:08		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
13:23	1.0	0.35	10.78	6.34	19.6	280	0.14	49	19.0
13:26	1.2	0.35	10.73	6.34	19.0	290	0.14	49	16.5
13:29	1.4	0.35	10.78	6.34	18.6	290	0.15	49	11.6
13:32	1.6	0.35	10.80	6.35	18.4	290	0.15	48	8.81
13:35	1.8	0.35	10.85	6.38	18.0	300	0.15	47	4.80
13:38	2.0	0.35	10.87	6.38	18.0	300	0.15	47	4.48
13:41	2.2	0.35	10.88	6.38	17.7	300	0.15	47	3.54

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-5-080724		
Sample Date	08/07/2024	**Sample Time**	13:41
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #2; Vancouver Hanna meter; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-6	Monitoring	Flush-mount	Top of Casing	2.0	12-17	14.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:30	16.63		10.19		6.44	1.05

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method Peristaltic Pump

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time 9:16

			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
13:40	0.0	0.2	11.08	6.53	23.5	280	0.14	41	4.19

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-6-080724		
Sample Date	08/08/2024	**Sample Time**	13:40
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #1; Vancouver Hanna meter; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-7	Monitoring	Flush-mount	Top of Casing	2.0	11-16	13.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:30	16.63		10.73		5.90	0.96

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump		*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*						
Purge Start Time	15:06		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
15:22	0.9	0.2	11.17	6.32	21.3	170	0.09	59	3.18
15:25	1.0	0.2	11.12	6.05	20.2	170	0.09	65.0	2.96
15:28	1.1	0.2	11.15	6.03	19.2	170	0.09	66	2.49
15:31	1.2	0.2	11.11	6.06	18.7	180	0.09	64	2.74
15:34	1.3	0.2	11.10	6.06	18.7	180	0.09	64	2.95

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-7-080724		
Sample Date	08/07/2024	**Sample Time**	15:34
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #2; Vancouver Hanna meter; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-9	Monitoring	Flush-mount	Top of Casing	2.0	10-15	11.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	15:53	13.89		9.00		4.89	0.80

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method Peristaltic Pump

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time 13:56

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
14:06	0.8	0.35	9.57	6.57	17.1	250	0.13	37	50.3
14:09	1.2	0.35	10.89	6.54	16.8	260	0.13	38	45.8
14:12	1.4	0.25	10.95	6.59	17.0	260	0.13	36	32.5
14:15	1.6	0.25	11.00	6.55	16.9	260	0.13	38	28.7
14:18	1.9	0.25	11.05	6.55	17.4	260	0.13	38	21.2
14:21	2.1	0.25	11.07	6.56	17.4	260	0.13	37	17.1
14:24	2.4	0.25	11.09	6.56	17.5	270	0.13	37	10.9
14:27	2.6	0.25	11.10	6.57	17.5	270	0.13	37	6.42
14:30	2.8	0.25	11.10	6.57	17.6	270	0.13	37	6.07
14:33	3.0	0.25	11.10	6.57	17.6	270	0.13	37	6.01

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-9-080724		
Sample Date	08/07/2024	**Sample Time**	14:33
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #1; Vancouver Hanna meter; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-10	Monitoring	Flush-mount	Top of Casing	2.0	25-30	27.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	14:53	29.77		10.58		19.19	3.13

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*
Purge Start Time	9:16	

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
12:43	2.7	0.40	11.14	--	--	--	--	--	--
13:13	3.1	0.20	15.30	6.73	17.3	170	0.09	16	9.8
13:16	3.2	0.20	15.00	6.70	17.1	170	0.09	17	10.2
13:19	3.4	0.21	15.13	6.72	16.2	170	0.09	15	10.0
13:22	3.6	0.20	14.90	6.74	16.0	170	0.09	14	10.7

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Yellowish-brown with suspended solids at start of purging; Clear and colorless during sampling.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW02-080724		
Sample Date	08/07/2024	**Sample Time**	13:23

Container Type	Preservative	Filtered (Y/N)	No. Containers
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #1; Vancouver Hanna meter #2; Vancouver turbidimeter #3.

-- = not measured.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-11	Monitoring	Flush-mount	Top of Casing	2.0	15-20	17.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	15:04	19.88		11.16		8.72	1.42

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*

Purge Start Time	10:36		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
10:39	0.2	0.25	11.05	--	--	--	--	--	--
11:02	1.5	0.25	12.81	6.33	17.1	230	0.12	38	8.82
11:05	1.7	0.25	12.70	6.33	17.1	230	0.12	38	6.67
11:08	1.9	0.25	12.69	6.34	16.9	230	0.12	37	6.42
11:11	2.1	0.25	12.70	6.35	16.8	230	0.12	36	5.92

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW02-080724		
Sample Date	08/07/2024	**Sample Time**	11:12
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #1; Vancouver Hanna meter #2; Vancouver turbidimeter #2.

-- = not measured.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-13	Monitoring	Flush-mount	Top of Casing	2.0	15-20	17.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:14	19.74		9.53		10.21	1.66

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump		*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*						
Purge Start Time	11:39		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
11:39	0.0	0.21	9.59	--	--	--	--	--	--
12:09	1.7	0.19	11.30	6.47	20.8	260	0.13	30	5.49
12:12	1.9	0.20	11.32	6.50	20.2	260	0.13	28	4.01
12:15	2.1	0.20	11.35	6.51	20.1	260	0.13	28	3.76
12:18	2.3	0.20	11.37	6.50	20.3	260	0.13	29	3.58

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-13-080724		
Sample Date	08/07/2024	**Sample Time**	12:18
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX p-pump #1; Vancouver Hanna meter #2; Vancouver turbidimeter #2.

-- = not measured.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-15	Monitoring	Flush-mount	Top of Casing	2.0	55-65	60.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	7:12	65.30		40.86		24.44	3.98

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Submersible Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
Purge Start Time	8:58		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
9:35	8.0	0.6	40.96	6.27	17.3	450	0.23	41	2.45
9:38	8.2	0.2	40.96	6.25	16.8	240	0.12	43	2.00
9:41	8.4	0.2	40.97	6.22	16.5	220	0.11	44	2.42
9:44	8.6	0.2	40.96	6.20	16.6	220	0.11	45	1.87

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Submersible Pump		
Sample Name	MW-15-080724		
Sample Date	08/08/2024	**Sample Time**	9:44
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX Geosub pump; Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-16	Monitoring	Flush-mount	Top of Casing	2.0	55-65	60.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	15:17	64.79		39.48		25.31	4.13

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Submersible Pump		*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*						
Purge Start Time	14:50		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
15:15	6.0	0.25	39.50	6.06	12.8	216.7	15.13	33.5	37.7
15:20	6.20	0.25	39.50	6.08	14.6	217.2	7.06	30.5	26.7
15:25	6.40	0.25	39.50	6.08	14.7	217.5	7.01	30.1	19.8
15:30	6.60	0.25	39.50	6.08	14.7	217.8	6.72	29.5	18.2
13:35	6.80	0.25	39.50	6.08	14.7	217.0	6.70	29.5	17.2

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

General Comments

PDX Geosub pump; Vancouver YSI #1; Vancouver turbidimeter #1.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW02-080724		
Sample Date	08/07/2024	**Sample Time**	15:40
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-20	Monitoring	Flush-mount	Top of Casing	2.0	5-10	7.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:01	9.84		5.71		4.13	0.67

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method Peristaltic Pump

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time 13:15

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
13:15	0.7	0.3	5.73	6.27	25.6	270	0.13	54.0	16.1

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; yellowish tint; small dark particles.

Sample Information

Sampling Method	Peristaltic Pump
Sample Name	MW-20-080724
Sample Date	08/07/2024
Sample Time	13:15

Container Type	Preservative	Filtered (Y/N)	No. Containers
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Variable flow with peristaltic pump. Removed 0.7 gallons of groundwater via bailer on 8/7/24. PDX p-pump #1; Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-23D	Monitoring	Flush-mount	Top of Casing	2.0	100-110	105.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:20	109.33		74.28		35.05	5.71

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Submersible Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
Purge Start Time	11:25		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
12:05	8.0	0.25	74.4	6.19	14.7	340.5	10.76	23.0	5.39
12:10	8.1	0.25	74.4	6.20	14.7	300.6	6.34	20.4	6.05
12:15	8.3	0.25	74.4	6.20	14.7	299.0	6.26	18.4	3.02

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-23D-080724		
Sample Date	08/07/2024	**Sample Time**	12:20
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

PDX Geosub pump; Vancouver YSI #1; Vancouver turbidimeter #1.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-24D	Monitoring	Flush-mount	Top of Casing	2.0	100-110	104.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	16:16	106.78		74.71		32.07	5.23

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method: Submersible Pump

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time: 9:20

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
10:00	5.5	0.90	75.7	6.57	15.1	320	0.16	38	85.8
10:10	6.00	0.25	75.3	6.54	15.2	320	0.16	38	65.5
10:15	6.20	0.25	75.0	6.53	15.3	320	0.16	39	36.1
10:25	6.60	0.25	75.0	6.54	15.3	320	0.16	38	22.4
10:30	6.80	0.25	75.0	6.54	15.3	320	0.16	38	20.6
10:35	7.00	0.25	75.0	6.54	15.3	320	0.16	38	10.0
10:40	7.20	0.25	75.0	6.53	15.4	320	0.16	39	9.95
10:45	7.40	0.25	75.0	6.53	15.4	320	0.16	39	9.38

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Initially Cloudy; brown tint; no odor; no sheen; Cleared up after approximately 5 gallons purged.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-24D-080724		
Sample Date	08/07/2024	**Sample Time**	10:45
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Initial purge setting = 99 ; lowered setting to 85 for parameters and sample collection; PDX geosub pump; Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-25D	Monitoring	Flush-mount	Top of Casing	2.0	90-100	95.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	11:55	99.40		67.21		32.19	5.25

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method: Submersible Pump

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time: 13:15

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
13:40	6.0	0.30	67.4	6.26	10.0	246.4	5.84	4.2	11.4
13:45	6.80	0.25	67.4	6.30	9.9	248.0	4.50	-2.7	11.5
13:50	7.20	0.25	67.3	6.34	9.8	254.0	3.72	-9.3	9.98
13:55	7.40	0.20	67.3	6.34	10.1	256.5	3.81	-13.0	8.39
14:00	7.80	0.20	67.3	6.39	13.0	261.5	3.03	-18.4	7.04
14:05	8.00	0.20	67.3	6.37	13.0	260.7	2.84	-19.8	7.13
14:10	8.30	0.20	67.3	6.34	13.0	258.5	2.87	-18.9	4.62

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW25D-080724		
Sample Date	08/07/2024	**Sample Time**	14:15
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Initial purge setting = 99 ; lowered setting to 85 for parameters and sample collection; PDX geosub pump; Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-29D	Monitoring	Stick-up	Top of Casing	2.0	45-55	48.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	14:31	55.84		15.87		39.97	6.52

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method Other (specify in notes)

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time 12:10

Time	Cumulative Purge Volume	Flowrate	Water Level	pH	Temperature	Conductivity	Dissolved Oxygen	ORP	Turbidity
			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
12:25	1.1	0.3	15.91	6.37	16.3	400	0.20	48	0.67
12:28	1.3	0.3	15.93	6.32	16.0	390	0.20	50	0.40
12:31	1.5	0.3	15.92	6.31	16.0	390	0.20	50	0.26

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Other (specify in notes)		
Sample Name	MW-29D-080824		
Sample Date	08/08/2024	**Sample Time**	12:31
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Sampled using dedicated bladder pump. Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-46D	Monitoring	Stick-up	Top of Casing	2.0	38-48	45.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	14:25	50.09		10.62		39.47	6.43

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Other (specify in notes)	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*

Purge Start Time	11:20		*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
11:35	1.2	0.3	10.58	6.21	17.6	270	0.14	56	2.81
11:38	1.4	0.3	10.62	6.22	16.8	270	0.14	55	2.40
11:41	1.6	0.3	10.63	6.22	16.5	270	0.14	55	1.42
11:44	1.8	0.3	10.63	6.23	16.5	270	0.14	55	3.02

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*	Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Other (specify in notes)		
Sample Name	MW-46D-080824		
Sample Date	08/08/2024	**Sample Time**	11:44
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Sampled using dedicated bladder pump. Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Groundwater Field Sampling Data Sheet

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0239.33.007	City of Ridgefield	Former Park Laundry	August 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-47D	Monitoring	Flush-mount	Top of Casing	2.0	41-51	48.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
08/06/2024	14:21	51.50		14.39		37.11	6.05

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method Other (specify in notes)

Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other

Purge Start Time 10:30

			ideally < 0.3 ft drawdown	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
10:52	1.0	0.2	14.31	6.26	18.1	430	0.22	53	2.48
10:55	1.2	0.2	14.33	6.26	16.4	410	0.21	53	4.02
10:58	1.4	0.2	14.33	6.28	16.3	410	0.20	52	4.14
11:01	1.6	0.2	14.33	6.28	16.1	400	0.20	52	4.08

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear; colorless; no odor; no sheen.

Sample Information

Sampling Method	Other (specify in notes)		
Sample Name	MW-47D-080824		
Sample Date	08/08/2024	**Sample Time**	11:01
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	3
		Total No. Containers:	3

General Comments

Sampled using dedicated bladder pump. Vancouver Hanna meter #1; Vancouver turbidimeter #2.

Attachment C

Data Validation Memorandum

MAUL
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Data Validation Memorandum

Project No. M0239.33.007 | August 19, 2024 | City of Ridgefield

Maul Foster & Alongi, Inc. (MFA), conducted an independent Stage 2A review of the quality of analytical results for groundwater and associated quality control samples collected on August 7 and 8, 2024 at the Former Park Laundry site.

Apex Laboratories LLC., (Apex) performed the analyses. MFA reviewed Apex report numbers A4H0962 and A4H1008. The analyses performed and the samples analyzed are listed in the following tables.

Analysis	Reference
Sulfate	EPA 300.0
Volatile organic compounds	EPA 8260D, EPA 8260D-SIM

Notes
EPA = U.S. Environmental Protection Agency.
SIM = selected ion monitoring.

Samples Analyzed	
Report A4H0962	
MW02-080724	MW09-080724
MW03-080724	MW16-080724
MW04-080724	MW23D-080724
MW05-080724	MW24D-080724
MW07-080724	MW25D-080724
--	Trip Blank
Report A4H1008	
MW06-080824	MW13-080824
MW20-080824	MW11-080824
Rinsate-080824	MW10-080824
MW-29D-080824	MW15-080824
MW-47D-080824	Trip Blank
MW-46D-080824	--

Data Validation Procedures

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020a, 2020b) and appropriate laboratory- and method-specific guidelines (Apex 2023, EPA 1986).

Based on the data quality assurance/quality control review described herein, the data, with the appropriate final data qualifiers assigned, are considered acceptable for their intended use. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, and data qualifiers assigned by the reviewer during validation.

Final data qualifiers:

- U = result is non-detect at the laboratory detection limit (LDL).

Sample Conditions

Sample Custody

Sample custody was appropriately documented on the chain-of-custody form accompanying the report.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

Reporting Limits

The laboratory evaluated results to LDL. Samples that required dilutions because of high analyte concentrations, matrix interferences, and/or dilutions necessary for preparation and/or analysis were reported with raised LDLs and method reporting limits (MRLs).

The laboratory qualified results between the LDL and the MRL with J, as estimated.

Blank Results

Method Blanks

Laboratory method blanks are used to evaluate whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies, in accordance with laboratory- and method-specific requirements.

All laboratory method blank results were non-detect to LDLs.

Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate the adequacy of the field equipment decontamination process when decontaminated sampling equipment is used to collect samples.

The groundwater samples provided in report A4H0962 were collected with dedicated equipment.

The equipment rinsate blank, Rinsate-080824, is associated with the groundwater sample results provided in report A4H1008 because all groundwater samples were collected using consistent sampling protocols. All equipment rinsate blank results were non-detect to LDLs.

Trip Blanks

Trip blanks are used to evaluate whether volatile organic compound contamination was introduced during shipping and field handling procedures.

Trip blanks were submitted with both sample delivery group A4G0962 and A4H1008 for EPA Method 8260D analysis.

The trip blanks were non-detect to LDLs for all target analytes.

Laboratory Control Sample and Laboratory Control Sample Duplicate Results

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) results are used to evaluate laboratory precision and accuracy.

Where LCSD results were not reported, laboratory precision was evaluated using laboratory duplicate results. The LCS samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All LCS and LCSD results were within acceptance limits for percent recovery and relative percent difference (RPD).

Laboratory Duplicate Results

Laboratory duplicate results are used to evaluate laboratory precision and sample homogeneity. All laboratory duplicate samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

Laboratory duplicate results greater than five times the MRL were evaluated using laboratory RPD control limits. A secondary criterion was used when laboratory duplicate results were non-detect or less than five times the MRL. Results meet the secondary criterion if the absolute difference of the laboratory duplicate sample result and the parent sample result, or the MRL for non-detects, is equal to or less than the MRL value of the parent sample.

All laboratory duplicate results met the acceptance criteria.

Matrix Spike and Matrix Spike Duplicate Results

Matrix spike (MS) and matrix spike duplicate (MSD) results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and target analyte recovery. Where MSD results were not reported, laboratory precision was evaluated using LCS and LCSD and/or laboratory duplicate results. The MS samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

When MS was prepared with a sample from unrelated projects, the MS percent recovery exceedances did not require qualification because these sample matrices were not representative of project sample matrices.

All MS results were within acceptance limits for percent recovery.

Surrogate Results

Surrogate results are used to evaluate laboratory performance of target organic compounds for individual samples.

All surrogate results were within percent recovery acceptance limits.

Field Duplicate Results

Field duplicate results are used to evaluate field precision and sample homogeneity.

No field duplicate samples were submitted for analysis.

Data Package

The data package was reviewed for transcription errors, omissions, and anomalies.

Vinyl chloride was analyzed with EPA Method 8260D-SIM analysis to meet project-specific needs.

No additional issues were found.

References

Apex. 2023. *Quality Systems Manual.* Rev. 11. Apex Laboratories, LLC: Tigard, OR. June 20.

EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA publication SW-846. 3rd ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), VI phase III (2019), VII phase I (2019), and VII phase II (2020).

EPA. 2020a. *National Functional Guidelines for Inorganic Superfund Methods Data Review.* EPA 542-R-20-006. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

EPA. 2020b. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

Attachment D

Analytical Laboratory Reports

MAUL
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ANALYTICAL REPORT

Apex Laboratories, LLC

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

Wednesday, August 21, 2024

Meaghan Pollock
Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

RE: A4H0962 - Former Park Laundry Site - M0239.33.007

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

Enclosed are the results of analyses for work order A4H0962, which was received by the laboratory on 8/8/2024 at 12:30:00PM.

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

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

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Default Cooler 2.2 degC

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

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4H0962 - 08 21 24 1715

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02-080724	A4H0962-01	Water	08/07/24 10:00	08/08/24 12:30
MW03-080724	A4H0962-02	Water	08/07/24 11:21	08/08/24 12:30
MW04-080724	A4H0962-03	Water	08/07/24 12:53	08/08/24 12:30
MW05-080724	A4H0962-04	Water	08/07/24 13:41	08/08/24 12:30
MW07-080724	A4H0962-05	Water	08/07/24 15:34	08/08/24 12:30
MW09-080724	A4H0962-06	Water	08/07/24 14:33	08/08/24 12:30
MW16-080724	A4H0962-07	Water	08/07/24 13:40	08/08/24 12:30
MW23D-080724	A4H0962-08	Water	08/07/24 12:20	08/08/24 12:30
MW24D-080724	A4H0962-09	Water	08/07/24 10:45	08/08/24 12:30
MW25D-080724	A4H0962-10	Water	08/07/24 14:15	08/08/24 12:30
Trip Blank	A4H0962-11	Water	08/07/24 00:00	08/08/24 12:30

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW02-080724 (A4H0962-01)				**Matrix: Water**		**Batch: 24H0335**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/09/24 12:57	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/09/24 12:57	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/09/24 12:57	EPA 8260D	
Tetrachloroethene (PCE)	**1.91**	0.200	0.400	ug/L	1	08/09/24 12:57	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/09/24 12:57	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 92 %*	*Limits: 80-120 %*	*1*	*08/09/24 12:57*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*08/09/24 12:57*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/09/24 12:57*	*EPA 8260D*	
MW03-080724 (A4H0962-02)				**Matrix: Water**		**Batch: 24H0335**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/09/24 13:18	EPA 8260D	
cis-1,2-Dichloroethene	**0.970**	0.200	0.400	ug/L	1	08/09/24 13:18	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/09/24 13:18	EPA 8260D	
Trichloroethene (TCE)	**1.08**	0.200	0.400	ug/L	1	08/09/24 13:18	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/09/24 13:18	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 96 %*	*Limits: 80-120 %*	*1*	*08/09/24 13:18*	*EPA 8260D*	
Toluene-d8 (Surr)			*109 %*	*80-120 %*	*1*	*08/09/24 13:18*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*08/09/24 13:18*	*EPA 8260D*	
MW03-080724 (A4H0962-02RE1)				**Matrix: Water**		**Batch: 24H0437**		
Tetrachloroethene (PCE)	**1220**	20.0	40.0	ug/L	100	08/13/24 12:12	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 91 %*	*Limits: 80-120 %*	*1*	*08/13/24 12:12*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/13/24 12:12*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*08/13/24 12:12*	*EPA 8260D*	
MW04-080724 (A4H0962-03RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:01	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:01	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:01	EPA 8260D	
Tetrachloroethene (PCE)	**10.7**	0.200	0.400	ug/L	1	08/14/24 13:01	EPA 8260D	
Trichloroethene (TCE)	**0.310**	0.200	0.400	ug/L	1	08/14/24 13:01	EPA 8260D	J
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/14/24 13:01	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*	*Limits: 80-120 %*	*1*	*08/14/24 13:01*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/14/24 13:01*	*EPA 8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW04-080724 (A4H0962-03RE1)				**Matrix: Water**		**Batch: 24H0520**		
Surrogate: 4-Bromofluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*08/14/24 13:01*	*EPA 8260D*	
MW05-080724 (A4H0962-04)				**Matrix: Water**		**Batch: 24H0437**		
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	08/13/24 12:55	EPA 8260D	
cis-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	08/13/24 12:55	EPA 8260D	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	08/13/24 12:55	EPA 8260D	
Tetrachloroethene (PCE)	**447**	2.00	4.00	ug/L	10	08/13/24 12:55	EPA 8260D	
Trichloroethene (TCE)	ND	2.00	4.00	ug/L	10	08/13/24 12:55	EPA 8260D	
Vinyl chloride	ND	1.00	2.00	ug/L	10	08/13/24 12:55	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*93 %*	*Limits: 80-120 %*	*1*	*08/13/24 12:55*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/13/24 12:55*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*08/13/24 12:55*	*EPA 8260D*	
MW07-080724 (A4H0962-05RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:23	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:23	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:23	EPA 8260D	
Tetrachloroethene (PCE)	**0.470**	0.200	0.400	ug/L	1	08/14/24 13:23	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/14/24 13:23	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*08/14/24 13:23*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/14/24 13:23*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/14/24 13:23*	*EPA 8260D*	
MW09-080724 (A4H0962-06RE1)				**Matrix: Water**		**Batch: 24H0566**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/15/24 16:09	EPA 8260D	
cis-1,2-Dichloroethene	**121**	0.200	0.400	ug/L	1	08/15/24 16:09	EPA 8260D	
trans-1,2-Dichloroethene	**1.27**	0.200	0.400	ug/L	1	08/15/24 16:09	EPA 8260D	
Tetrachloroethene (PCE)	**1.38**	0.200	0.400	ug/L	1	08/15/24 16:09	EPA 8260D	
Trichloroethene (TCE)	**72.1**	0.200	0.400	ug/L	1	08/15/24 16:09	EPA 8260D	
Vinyl chloride	**0.300**	0.100	0.200	ug/L	1	08/15/24 16:09	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*08/15/24 16:09*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/15/24 16:09*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*	*80-120 %*	*1*	*08/15/24 16:09*	*EPA 8260D*	
MW16-080724 (A4H0962-07RE1)				**Matrix: Water**		**Batch: 24H0520**		

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW16-080724 (A4H0962-07RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:46	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:46	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 13:46	EPA 8260D	
Tetrachloroethene (PCE)	**13.9**	0.200	0.400	ug/L	1	08/14/24 13:46	EPA 8260D	
Trichloroethene (TCE)	**1.86**	0.200	0.400	ug/L	1	08/14/24 13:46	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/14/24 13:46	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*08/14/24 13:46*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/14/24 13:46*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/14/24 13:46*	*EPA 8260D*	
MW23D-080724 (A4H0962-08RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:08	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:08	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:08	EPA 8260D	
Tetrachloroethene (PCE)	**11.7**	0.200	0.400	ug/L	1	08/14/24 14:08	EPA 8260D	
Trichloroethene (TCE)	**1.50**	0.200	0.400	ug/L	1	08/14/24 14:08	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/14/24 14:08	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*08/14/24 14:08*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/14/24 14:08*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/14/24 14:08*	*EPA 8260D*	
MW24D-080724 (A4H0962-09RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:31	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:31	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:31	EPA 8260D	
Tetrachloroethene (PCE)	**14.4**	0.200	0.400	ug/L	1	08/14/24 14:31	EPA 8260D	
Trichloroethene (TCE)	**1.63**	0.200	0.400	ug/L	1	08/14/24 14:31	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/14/24 14:31	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*08/14/24 14:31*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/14/24 14:31*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/14/24 14:31*	*EPA 8260D*	
MW25D-080724 (A4H0962-10RE1)				**Matrix: Water**		**Batch: 24H0520**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:53	EPA 8260D	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW25D-080724 (A4H0962-10RE1)				**Matrix: Water**		**Batch: 24H0520**		
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:53	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/14/24 14:53	EPA 8260D	
Tetrachloroethene (PCE)	**10.1**	0.200	0.400	ug/L	1	08/14/24 14:53	EPA 8260D	
Trichloroethene (TCE)	**0.850**	0.200	0.400	ug/L	1	08/14/24 14:53	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/14/24 14:53	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 104 %*	*Limits: 80-120 %*		*1*	*08/14/24 14:53*	*EPA 8260D*	
Toluene-d8 (Surr)		*100 %*	*80-120 %*		*1*	*08/14/24 14:53*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*101 %*	*80-120 %*		*1*	*08/14/24 14:53*	*EPA 8260D*	
Trip Blank (A4H0962-11)				**Matrix: Water**		**Batch: 24H0437**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/13/24 11:51	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/13/24 11:51	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/13/24 11:51	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	08/13/24 11:51	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/13/24 11:51	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/13/24 11:51	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 93 %*	*Limits: 80-120 %*		*1*	*08/13/24 11:51*	*EPA 8260D*	
Toluene-d8 (Surr)		*102 %*	*80-120 %*		*1*	*08/13/24 11:51*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*100 %*	*80-120 %*		*1*	*08/13/24 11:51*	*EPA 8260D*	

Philip Nerenberg

ANALYTICAL SAMPLE RESULTS

Vinyl Chloride by EPA 8260D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW02-080724 (A4H0962-01)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 20:31	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits: 80-120 %*	*1*	*08/20/24 20:31*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/20/24 20:31*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 20:31*	*EPA 8260D SIM*	
MW07-080724 (A4H0962-05)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 21:25	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*08/20/24 21:25*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 21:25*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/20/24 21:25*	*EPA 8260D SIM*	

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4H0962 - 08 21 24 1715

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW02-080724 (A4H0962-01)				Matrix: Water				
Batch: 24H0304								
Sulfate	**6.57**	0.500	1.00	mg/L	1	08/08/24 22:02	EPA 300.0	
MW03-080724 (A4H0962-02)				Matrix: Water				
Batch: 24H0304								
Sulfate	**8.01**	0.500	1.00	mg/L	1	08/08/24 23:50	EPA 300.0	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0335 - EPA 5030C							**Water**					
Blank (24H0335-BLK1)			Prepared: 08/09/24 05:58			Analyzed: 08/09/24 09:01						
EPA 8260D												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*93 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*103 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*		*"*					
LCS (24H0335-BS1)			Prepared: 08/09/24 05:58			Analyzed: 08/09/24 07:21						
EPA 8260D												
1,1-Dichloroethene	21.0	0.200	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	19.3	0.200	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	18.9	0.200	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
Tetrachloroethene (PCE)	20.1	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichloroethene (TCE)	17.4	0.200	0.400	ug/L	1	20.0	---	87	80-120%	---	---	
Vinyl chloride	18.8	0.100	0.200	ug/L	1	20.0	---	94	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*94 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*		*"*					
Duplicate (24H0335-DUP1)			Prepared: 08/09/24 05:58			Analyzed: 08/09/24 16:30						
QC Source Sample: Non-SDG (A4H0964-10)												
1,1-Dichloroethene	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.500	1.00	ug/L	5	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*92 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*102 %*		*80-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0335 - EPA 5030C							**Water**					
Duplicate (24H0335-DUP1)			Prepared: 08/09/24 05:58		Analyzed: 08/09/24 16:30							
QC Source Sample: Non-SDG (A4H0964-10)												
Surr: 4-Bromofluorobenzene (Surr)		*Recovery: 96 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Matrix Spike (24H0335-MS1)			Prepared: 08/09/24 05:58		Analyzed: 08/09/24 10:27							
QC Source Sample: Non-SDG (A4H0858-04)												
EPA 8260D												
1,1-Dichloroethene	23.1	0.200	0.400	ug/L	1	20.0	ND	115	71-131%	---	---	
cis-1,2-Dichloroethene	21.6	0.200	0.400	ug/L	1	20.0	ND	108	78-123%	---	---	
trans-1,2-Dichloroethene	22.1	0.200	0.400	ug/L	1	20.0	ND	110	75-124%	---	---	
Tetrachloroethene (PCE)	22.9	0.200	0.400	ug/L	1	20.0	ND	115	74-129%	---	---	
Trichloroethene (TCE)	19.3	0.200	0.400	ug/L	1	20.0	ND	97	79-123%	---	---	
Vinyl chloride	20.9	0.100	0.200	ug/L	1	20.0	ND	105	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery: 94 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)		*102 %*		*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)		*95 %*		*80-120 %*			*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0437 - EPA 5030C Water

Blank (24H0437-BLK1) Prepared: 08/13/24 06:53 Analyzed: 08/13/24 11:30

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 92 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 103 % 80-120 % "
4-Bromofluorobenzene (Surr) 100 % 80-120 % "

LCS (24H0437-BS1) Prepared: 08/13/24 06:53 Analyzed: 08/13/24 10:37

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethane	19.7	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,1-Dichloroethene	22.5	0.200	0.400	ug/L	1	20.0	---	113	80-120%	---	---	
1,2-Dichloroethane (EDC)	22.0	0.200	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
cis-1,2-Dichloroethene	20.3	0.200	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,2-Dichloroethene	21.1	0.200	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1,1-Trichloroethane	22.0	0.200	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
Tetrachloroethene (PCE)	21.4	0.200	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
Trichloroethene (TCE)	18.3	0.200	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
Vinyl chloride	19.1	0.100	0.200	ug/L	1	20.0	---	96	80-120%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 92 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 100 % 80-120 % "
4-Bromofluorobenzene (Surr) 92 % 80-120 % "

Duplicate (24H0437-DUP1) Prepared: 08/13/24 06:53 Analyzed: 08/13/24 20:02

QC Source Sample: Non-SDG (A4H1044-01)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethane	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0437 - EPA 5030C — **Water**

Duplicate (24H0437-DUP1) Prepared: 08/13/24 06:53 Analyzed: 08/13/24 20:02

QC Source Sample: Non-SDG (A4H1044-01)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,2-Dichloroethane (EDC)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	1.00	2.00	ug/L	10	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 101 % 80-120 % "
4-Bromofluorobenzene (Surr) 99 % 80-120 % "

Matrix Spike (24H0437-MS1) Prepared: 08/13/24 06:53 Analyzed: 08/13/24 15:25

QC Source Sample: Non-SDG (A4H0981-07)

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethane	21.9	0.200	0.400	ug/L	1	20.0	ND	110	77-125%	---	---	
1,1-Dichloroethene	24.7	0.200	0.400	ug/L	1	20.0	ND	124	71-131%	---	---	
1,2-Dichloroethane (EDC)	23.3	0.200	0.400	ug/L	1	20.0	ND	116	73-128%	---	---	
cis-1,2-Dichloroethene	21.8	0.200	0.400	ug/L	1	20.0	ND	109	78-123%	---	---	
trans-1,2-Dichloroethene	22.2	0.200	0.400	ug/L	1	20.0	ND	111	75-124%	---	---	
1,1,1-Trichloroethane	24.1	0.200	0.400	ug/L	1	20.0	ND	121	74-131%	---	---	
Tetrachloroethene (PCE)	22.0	0.200	0.400	ug/L	1	20.0	ND	110	74-129%	---	---	
Trichloroethene (TCE)	19.7	0.200	0.400	ug/L	1	20.0	ND	98	79-123%	---	---	
Vinyl chloride	20.6	0.100	0.200	ug/L	1	20.0	ND	103	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 94 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 98 % 80-120 % "
4-Bromofluorobenzene (Surr) 95 % 80-120 % "

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0520 - EPA 5030C							**Water**					
Blank (24H0520-BLK1)			Prepared: 08/14/24 09:31			Analyzed: 08/14/24 12:16						
EPA 8260D												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*101 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*		*"*					
LCS (24H0520-BS1)			Prepared: 08/14/24 09:31			Analyzed: 08/14/24 11:16						
EPA 8260D												
1,1-Dichloroethene	20.9	0.200	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.9	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
trans-1,2-Dichloroethene	20.6	0.200	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
Tetrachloroethene (PCE)	21.4	0.200	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
Trichloroethene (TCE)	20.2	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Vinyl chloride	20.3	0.100	0.200	ug/L	1	20.0	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*		*"*					
Duplicate (24H0520-DUP1)			Prepared: 08/14/24 09:31			Analyzed: 08/14/24 16:45						
QC Source Sample: Non-SDG (A4H1103-01)												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0520 - EPA 5030C							**Water**					
Duplicate (24H0520-DUP1)			Prepared: 08/14/24 09:31		Analyzed: 08/14/24 16:45							
QC Source Sample: Non-SDG (A4H1103-01)												
Surr: 4-Bromofluorobenzene (Surr)		*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Matrix Spike (24H0520-MS1)			Prepared: 08/14/24 09:31		Analyzed: 08/14/24 15:38							
QC Source Sample: Non-SDG (A4H0988-02)												
EPA 8260D												
1,1-Dichloroethene	47.4	0.200	0.400	ug/L	1	40.0	ND	119	71-131%	---	---	
cis-1,2-Dichloroethene	43.0	0.200	0.400	ug/L	1	40.0	ND	107	78-123%	---	---	
trans-1,2-Dichloroethene	44.8	0.200	0.400	ug/L	1	40.0	ND	112	75-124%	---	---	
Tetrachloroethene (PCE)	44.2	0.200	0.400	ug/L	1	40.0	ND	110	74-129%	---	---	
Trichloroethene (TCE)	43.3	0.200	0.400	ug/L	1	40.0	ND	108	79-123%	---	---	
Vinyl chloride	47.0	0.100	0.200	ug/L	1	40.0	ND	118	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery: 105 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)		*98 %*		*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)		*95 %*		*80-120 %*			*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0566 - EPA 5030C **Water**

Blank (24H0566-BLK1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 10:37

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 102 % 80-120 % "
4-Bromofluorobenzene (Surr) 104 % 80-120 % "

LCS (24H0566-BS1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 09:38

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	20.8	0.200	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.5	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
trans-1,2-Dichloroethene	19.6	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Tetrachloroethene (PCE)	20.1	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichloroethene (TCE)	19.1	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
Vinyl chloride	20.4	0.100	0.200	ug/L	1	20.0	---	102	80-120%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 99 % 80-120 % "
4-Bromofluorobenzene (Surr) 100 % 80-120 % "

Duplicate (24H0566-DUP1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 19:48

QC Source Sample: Non-SDG (A4H1008-02)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	1.00	2.00	ug/L	10	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 106 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 102 % 80-120 % "

Philip Nerenberg

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0566 - EPA 5030C							**Water**					
Duplicate (24H0566-DUP1)			Prepared: 08/15/24 08:09		Analyzed: 08/15/24 19:48							
QC Source Sample: Non-SDG (A4H1008-02)												
Surr: 4-Bromofluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*		*Dilution: 1x*					
Matrix Spike (24H0566-MS1)			Prepared: 08/15/24 08:09		Analyzed: 08/15/24 13:52							
QC Source Sample: Non-SDG (A4H1121-01)												
EPA 8260D												
1,1-Dichloroethene	22.5	0.200	0.400	ug/L	1	20.0	ND	112	71-131%	---	---	
cis-1,2-Dichloroethene	20.4	0.200	0.400	ug/L	1	20.0	ND	102	78-123%	---	---	
trans-1,2-Dichloroethene	20.9	0.200	0.400	ug/L	1	20.0	ND	104	75-124%	---	---	
Tetrachloroethene (PCE)	21.5	0.200	0.400	ug/L	1	20.0	ND	107	74-129%	---	---	
Trichloroethene (TCE)	20.0	0.200	0.400	ug/L	1	20.0	ND	100	79-123%	---	---	
Vinyl chloride	22.1	0.100	0.200	ug/L	1	20.0	ND	110	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution: 1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Vinyl Chloride by EPA 8260D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0738 - EPA 5030C							Water					
Blank (24H0738-BLK1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 19:38							
EPA 8260D SIM												
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 101 %*		*Limits: 80-120 %*		*Dilution: 1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*		*"*					
LCS (24H0738-BS1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 18:15							
EPA 8260D SIM												
Vinyl chloride	0.223	0.0100	0.0200	ug/L	1	0.200	---	111	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*		*Dilution: 1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*		*"*					
LCS Dup (24H0738-BSD1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 18:42							**Q-19**
EPA 8260D SIM												
Vinyl chloride	0.228	0.0100	0.0200	ug/L	1	0.200	---	114	80-120%	2	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*		*Dilution: 1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*		*"*					
Duplicate (24H0738-DUP1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 20:58							
QC Source Sample: MW02-080724 (A4H0962-01)												
EPA 8260D SIM												
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*		*Dilution: 1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0304 - Method Prep: Aq							**Water**					
Blank (24H0304-BLK1)			Prepared: 08/08/24 11:00			Analyzed: 08/08/24 14:08						
EPA 300.0												
Sulfate	ND	0.500	1.00	mg/L	1	---	---	---	---	---	---	
LCS (24H0304-BS1)			Prepared: 08/08/24 11:00			Analyzed: 08/08/24 14:29						
EPA 300.0												
Sulfate	7.91	0.500	1.00	mg/L	1	8.00	---	99	90-110%	---	---	
Duplicate (24H0304-DUP1)			Prepared: 08/08/24 11:00			Analyzed: 08/08/24 17:00						
QC Source Sample: Non-SDG (A4H0916-03)												
Sulfate	ND	0.500	1.00	mg/L	1	---	ND	---	---	---	4%	
Duplicate (24H0304-DUP2)			Prepared: 08/08/24 16:20			Analyzed: 08/08/24 22:24						
QC Source Sample: MW02-080724 (A4H0962-01)												
EPA 300.0												
Sulfate	**6.51**	0.500	1.00	mg/L	1	---	6.57	---	---	0.8	4%	
Matrix Spike (24H0304-MS1)			Prepared: 08/08/24 11:00			Analyzed: 08/08/24 17:22						
QC Source Sample: Non-SDG (A4H0916-03)												
EPA 300.0												
Sulfate	10.5	0.625	1.25	mg/L	1	10.0	ND	105	88-115%	---	---	
Matrix Spike (24H0304-MS2)			Prepared: 08/08/24 16:20			Analyzed: 08/08/24 22:45						
QC Source Sample: MW02-080724 (A4H0962-01)												
EPA 300.0												
Sulfate	16.6	0.625	1.25	mg/L	1	10.0	6.57	100	88-115%	---	---	

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24H0335							
A4H0962-01	Water	EPA 8260D	08/07/24 10:00	08/09/24 08:43	5mL/5mL	5mL/5mL	1.00
A4H0962-02	Water	EPA 8260D	08/07/24 11:21	08/09/24 08:43	5mL/5mL	5mL/5mL	1.00
Batch: 24H0437							
A4H0962-02RE1	Water	EPA 8260D	08/07/24 11:21	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0962-04	Water	EPA 8260D	08/07/24 13:41	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
A4H0962-11	Water	EPA 8260D	08/07/24 00:00	08/13/24 10:58	5mL/5mL	5mL/5mL	1.00
Batch: 24H0520							
A4H0962-03RE1	Water	EPA 8260D	08/07/24 12:53	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
A4H0962-05RE1	Water	EPA 8260D	08/07/24 15:34	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
A4H0962-07RE1	Water	EPA 8260D	08/07/24 13:40	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
A4H0962-08RE1	Water	EPA 8260D	08/07/24 12:20	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
A4H0962-09RE1	Water	EPA 8260D	08/07/24 10:45	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
A4H0962-10RE1	Water	EPA 8260D	08/07/24 14:15	08/14/24 09:58	5mL/5mL	5mL/5mL	1.00
Batch: 24H0566							
A4H0962-06RE1	Water	EPA 8260D	08/07/24 14:33	08/15/24 10:10	5mL/5mL	5mL/5mL	1.00

Vinyl Chloride by EPA 8260D SIM

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24H0738							
A4H0962-01	Water	EPA 8260D SIM	08/07/24 10:00	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00
A4H0962-05	Water	EPA 8260D SIM	08/07/24 15:34	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24H0304							
A4H0962-01	Water	EPA 300.0	08/07/24 10:00	08/08/24 16:20	5mL/5mL	5mL/5mL	1.00
A4H0962-02	Water	EPA 300.0	08/07/24 11:21	08/08/24 16:20	5mL/5mL	5mL/5mL	1.00

QUALIFIER DEFINITIONS

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

Apex Laboratories

J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified DL.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry"	Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry") See Percent Solids section for details of dry weight analysis.
" wet"	Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
" "	Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).

Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a ‘B-02’ qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a ‘B’ qualifier, per Apex Laboratories' Blank Policy. For further details, please request a copy of this document.

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

‘B’ and ‘B-02’ qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

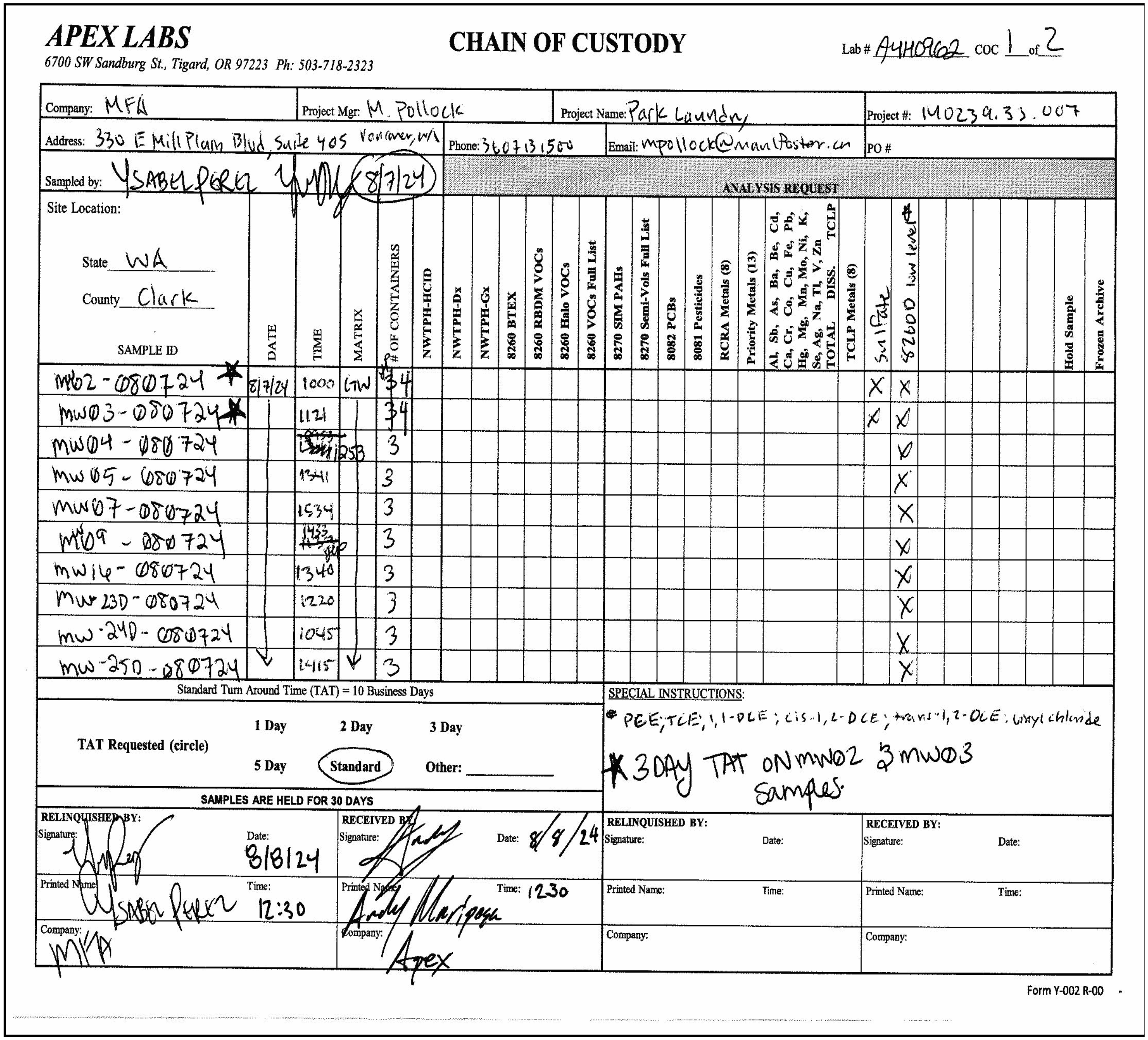
Field Testing Parameters

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

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4H0962 - 08 21 24 1715



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

CHAIN OF CUSTODY

Lab # A4H0962 COC 1 of 2

Company: MFA
Project Mgr: M. Pollock
Project Name: Park Laundry
Project #: M0239.33.007
Address: 330 E Mill Plain Blvd, Suite 405 Vancouver, WA
Phone: 360 713 1500
Email: mpollock@maulfoster.com
PO #
Sampled by: YSABEL PEREZ (8/7/24)
Site Location:
State WA
County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	sulfate	8260 low level*						Hold Sample	Frozen Archive
MW02-080724 *	8/7/24	1000	GW	~~3~~ 4																X	X							
MW03-080724 *	↓	1121	↓	~~3~~ 4																X	X							
MW04-080724		~~[illegible]~~ 1253		3																	X							
MW05-080724		1341		3																	X							
MW07-080724		1534		3																	X							
MW09-080724		~~1433~~		3																	X							
MW16-080724		1340		3																	X							
MW23D-080724		1220		3																	X							
MW-24D-080724		1045		3																	X							
MW-25D-080724	↓	1415	↓	3																	X							

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day [✓ Standard] Other: ____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
* PCE; TCE; 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE; vinyl chloride
* 3 DAY TAT ON MW02 & MW03 samples

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Date: 8/8/24	Signature: Date: 8/8/24	Signature: Date:	Signature: Date:
Printed Name: Ysabel Perez Time: 12:30	Printed Name: Andy Martiquez Time: 1230	Printed Name: Time:	Printed Name: Time:
Company: MFA	Company: Apex	Company:	Company:

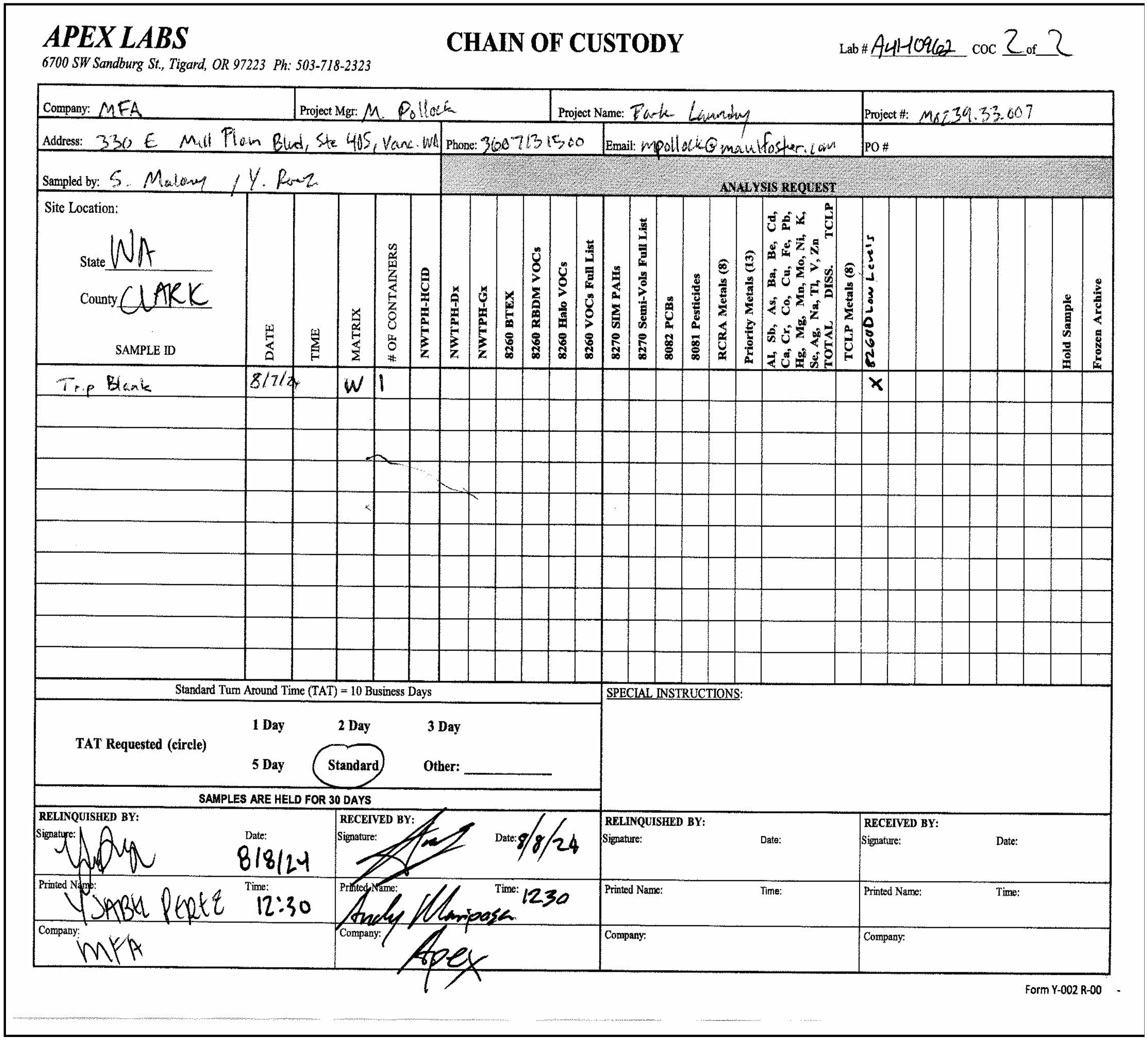
Form Y-002 R-00

Philip Nerenberg

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

ANALYTICAL REPORT



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

CHAIN OF CUSTODY

Lab # A4H0962 COC 2 of 2

Company: MFA
Project Mgr: M. Pollock
Project Name: Park Laundry
Project #: M0239.33.007
Address: 330 E Mill Plain Blvd, Ste 405, Vanc. WA
Phone: 3607131500
Email: mpollock@maulfoster.com
PO #
Sampled by: S. Malony / Y. Ruz

ANALYSIS REQUEST

Site Location:
State WA
County CLARK

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	8260D Low Levels							Hold Sample	Frozen Archive
Trip Blank	8/7/24		W	1																X								

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle) 1 Day 2 Day 3 Day 5 Day [✓ Standard] Other: ___________

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:
Signature:
Date: 8/8/24
Printed Name: YSABEL PEREZ
Time: 12:30
Company: MFA

RECEIVED BY:
Signature:
Date: 8/8/24
Printed Name: Andy Mariposa
Time: 1230
Company: Apex

RELINQUISHED BY:
Signature:
Date:
Printed Name:
Time:
Company:

RECEIVED BY:
Signature:
Date:
Printed Name:
Time:
Company:

Form Y-002 R-00

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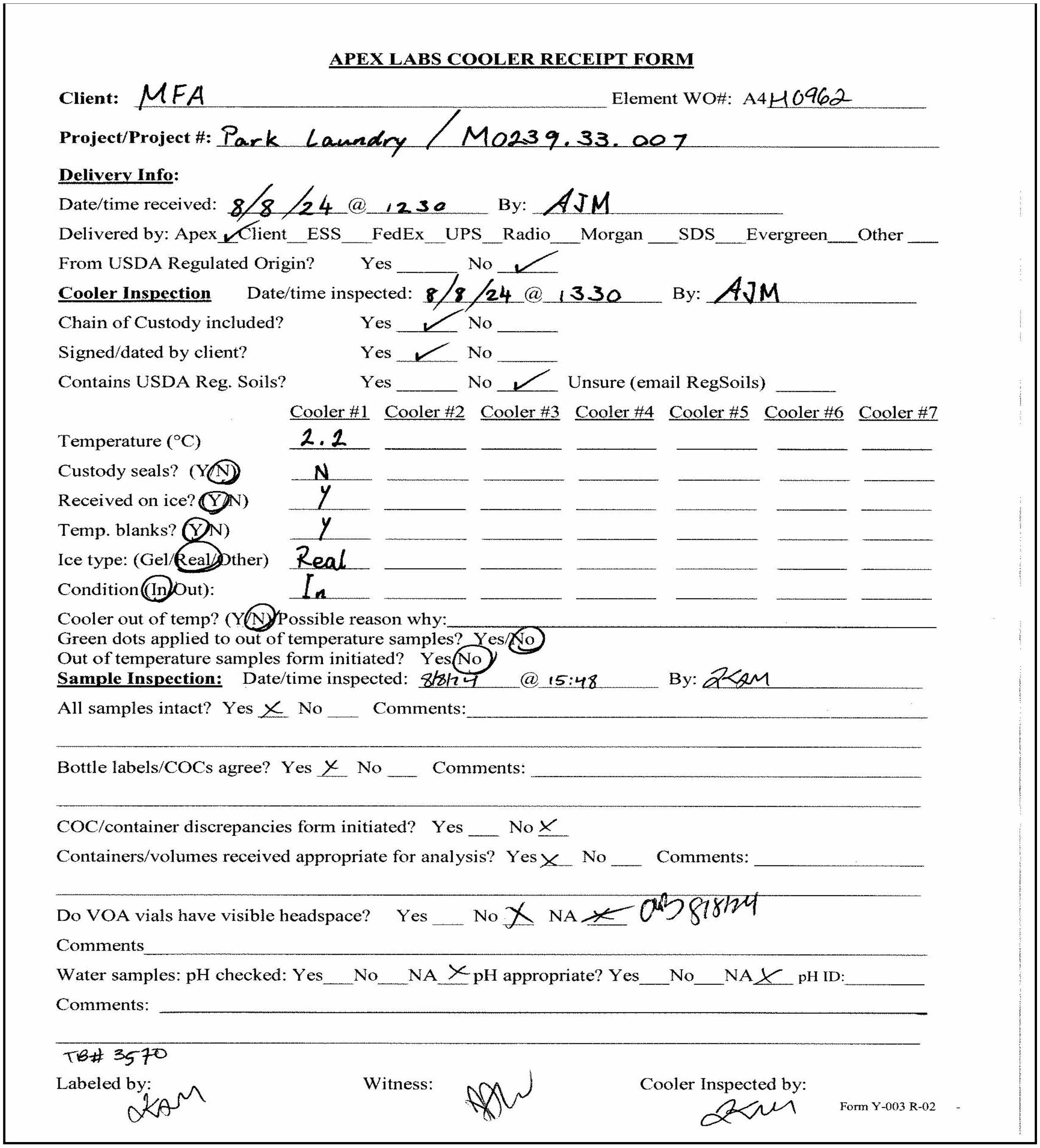
Philip Nerenberg

Philip Nerenberg, Lab Director



APEX LABS COOLER RECEIPT FORM

Client: MFA Element WO#: A4H0962

Project/Project #: Park Laundry / M0239.33.007

Delivery Info:

Date/time received: 8/8/24 @ 1230 By: AJM

Delivered by: Apex ✓ Client__ESS___FedEx__UPS__Radio___Morgan ___SDS___Evergreen___Other ___

From USDA Regulated Origin? Yes ______ No ✓

Cooler Inspection Date/time inspected: 8/8/24 @ 1330 By: AJM

Chain of Custody included? Yes ✓ No ______

Signed/dated by client? Yes ✓ No ______

Contains USDA Reg. Soils? Yes ______ No ✓ Unsure (email RegSoils) ______

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	2.2						
Custody seals? (Y/[✓ N])	N						
Received on ice? ([✓ Y]/N)	Y						
Temp. blanks? ([✓ Y]/N)	Y						
Ice type: (Gel/[✓ Real]/Other)	Real						
Condition ([✓ In]/Out):	In						

Cooler out of temp? (Y/[✓ N]) Possible reason why:______

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

Out of temperature samples form initiated? Yes/[✓ No]

Sample Inspection: Date/time inspected: 8/8/24 @ 15:48 By: AKM

All samples intact? Yes X No ___ Comments:______

Bottle labels/COCs agree? Yes X No ___ Comments: ______

COC/container discrepancies form initiated? Yes ___ No X

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

Do VOA vials have visible headspace? Yes ___ No X NA ~~X~~ AB 8/8/24

Comments______

Water samples: pH checked: Yes___No___NA X pH appropriate? Yes___No___NA X pH ID:______

Comments: ______

TB# 3570

Labeled by: AKM

Witness:

Cooler Inspected by: AKM

Form Y-003 R-02

Apex Laboratories, LLC

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

ANALYTICAL REPORT

Wednesday, August 21, 2024

Meaghan Pollock
Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

RE: A4H1008 - Former Park Laundry Site - M0239.33.007

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

Enclosed are the results of analyses for work order A4H1008, which was received by the laboratory on 8/9/2024 at 12:30:00PM.

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

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

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Default Cooler 3.4 degC

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

ORELAP

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4H1008 - 08 21 24 1719

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW06-080824	A4H1008-01	Water	08/08/24 13:40	08/09/24 12:30
MW20-080824	A4H1008-02	Water	08/08/24 13:15	08/09/24 12:30
Rinsate-080824	A4H1008-03	Water	08/08/24 14:15	08/09/24 12:30
MW-29D-080824	A4H1008-04	Water	08/08/24 12:31	08/09/24 12:30
MW-47D-080824	A4H1008-05	Water	08/08/24 11:01	08/09/24 12:30
MW-46D-080824	A4H1008-06	Water	08/08/24 11:44	08/09/24 12:30
MW13-080824	A4H1008-07	Water	08/08/24 12:18	08/09/24 12:30
MW11-080824	A4H1008-08	Water	08/08/24 11:12	08/09/24 12:30
MW10-080824	A4H1008-09	Water	08/08/24 13:23	08/09/24 12:30
MW15-080824	A4H1008-10	Water	08/08/24 09:44	08/09/24 12:30
Trip Blank	A4H1008-11	Water	08/08/24 00:00	08/09/24 12:30

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW06-080824 (A4H1008-01RE1)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 11:52	EPA 8260D	
cis-1,2-Dichloroethene	**1.68**	0.200	0.400	ug/L	1	08/19/24 11:52	EPA 8260D	
trans-1,2-Dichloroethene	**0.260**	0.200	0.400	ug/L	1	08/19/24 11:52	EPA 8260D	J
Tetrachloroethene (PCE)	**1.20**	0.200	0.400	ug/L	1	08/19/24 11:52	EPA 8260D	
Trichloroethene (TCE)	**1.07**	0.200	0.400	ug/L	1	08/19/24 11:52	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits: 80-120 %*	*1*	*08/19/24 11:52*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 11:52*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/19/24 11:52*	*EPA 8260D*	
MW20-080824 (A4H1008-02RE1)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:19	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:19	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:19	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	08/19/24 12:19	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/19/24 12:19	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits: 80-120 %*	*1*	*08/19/24 12:19*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 12:19*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/19/24 12:19*	*EPA 8260D*	
Rinsate-080824 (A4H1008-03RE1)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:46	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:46	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 12:46	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	08/19/24 12:46	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/19/24 12:46	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*08/19/24 12:46*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 12:46*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/19/24 12:46*	*EPA 8260D*	
MW-29D-080824 (A4H1008-04RE1)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:14	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:14	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:14	EPA 8260D	
Tetrachloroethene (PCE)	**0.820**	0.200	0.400	ug/L	1	08/19/24 13:14	EPA 8260D	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-29D-080824 (A4H1008-04RE1)				**Matrix: Water**		**Batch: 24H0656**		
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/19/24 13:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits: 80-120 %*	*1*	*08/19/24 13:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 13:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*08/19/24 13:14*	*EPA 8260D*	
MW-47D-080824 (A4H1008-05)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:03	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:03	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:03	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/19/24 15:03	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 15:03	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*08/19/24 15:03*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 15:03*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*08/19/24 15:03*	*EPA 8260D*	
MW-47D-080824 (A4H1008-05RE1)				**Matrix: Water**		**Batch: 24H0700**		
Tetrachloroethene (PCE)	**5.25**	0.200	0.400	ug/L	1	08/20/24 13:20	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*08/20/24 13:20*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/20/24 13:20*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/20/24 13:20*	*EPA 8260D*	
MW-46D-080824 (A4H1008-06)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:30	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:30	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 15:30	EPA 8260D	
Tetrachloroethene (PCE)	**8.35**	0.200	0.400	ug/L	1	08/19/24 15:30	EPA 8260D	
Trichloroethene (TCE)	**0.340**	0.200	0.400	ug/L	1	08/19/24 15:30	EPA 8260D	**J**
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 15:30	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*08/19/24 15:30*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*08/19/24 15:30*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/19/24 15:30*	*EPA 8260D*	
MW13-080824 (A4H1008-07RE1)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 14:36	EPA 8260D	
cis-1,2-Dichloroethene	**4.17**	0.200	0.400	ug/L	1	08/19/24 14:36	EPA 8260D	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW13-080824 (A4H1008-07RE1)				Matrix: Water		Batch: 24H0656		
trans-1,2-Dichloroethene	**1.09**	0.200	0.400	ug/L	1	08/19/24 14:36	EPA 8260D	
Tetrachloroethene (PCE)	**53.7**	0.200	0.400	ug/L	1	08/19/24 14:36	EPA 8260D	
Trichloroethene (TCE)	**18.3**	0.200	0.400	ug/L	1	08/19/24 14:36	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 14:36	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 109 %*	*Limits: 80-120 %*		*1*	*08/19/24 14:36*	*EPA 8260D*	
Toluene-d8 (Surr)		*105 %*	*80-120 %*		*1*	*08/19/24 14:36*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*102 %*	*80-120 %*		*1*	*08/19/24 14:36*	*EPA 8260D*	
MW11-080824 (A4H1008-08RE1)				Matrix: Water		Batch: 24H0656		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 14:08	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 14:08	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 14:08	EPA 8260D	
Tetrachloroethene (PCE)	**26.8**	0.200	0.400	ug/L	1	08/19/24 14:08	EPA 8260D	
Trichloroethene (TCE)	**7.77**	0.200	0.400	ug/L	1	08/19/24 14:08	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 14:08	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 106 %*	*Limits: 80-120 %*		*1*	*08/19/24 14:08*	*EPA 8260D*	
Toluene-d8 (Surr)		*104 %*	*80-120 %*		*1*	*08/19/24 14:08*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*101 %*	*80-120 %*		*1*	*08/19/24 14:08*	*EPA 8260D*	
MW10-080824 (A4H1008-09)				Matrix: Water		Batch: 24H0604		
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	08/16/24 19:17	EPA 8260D	
cis-1,2-Dichloroethene	**4.80**	2.00	4.00	ug/L	10	08/16/24 19:17	EPA 8260D	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	08/16/24 19:17	EPA 8260D	
Tetrachloroethene (PCE)	**14.9**	2.00	4.00	ug/L	10	08/16/24 19:17	EPA 8260D	
Trichloroethene (TCE)	**144**	2.00	4.00	ug/L	10	08/16/24 19:17	EPA 8260D	
Vinyl chloride	ND	1.00	2.00	ug/L	10	08/16/24 19:17	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 108 %*	*Limits: 80-120 %*		*1*	*08/16/24 19:17*	*EPA 8260D*	
Toluene-d8 (Surr)		*103 %*	*80-120 %*		*1*	*08/16/24 19:17*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*102 %*	*80-120 %*		*1*	*08/16/24 19:17*	*EPA 8260D*	
MW15-080824 (A4H1008-10RE1)				Matrix: Water		Batch: 24H0656		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:41	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:41	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 13:41	EPA 8260D	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW15-080824 (A4H1008-10RE1)				**Matrix: Water**		**Batch: 24H0656**		
Tetrachloroethene (PCE)	**16.9**	0.200	0.400	ug/L	1	08/19/24 13:41	EPA 8260D	
Trichloroethene (TCE)	**0.900**	0.200	0.400	ug/L	1	08/19/24 13:41	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 13:41	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*08/19/24 13:41*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 13:41*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/19/24 13:41*	*EPA 8260D*	
Trip Blank (A4H1008-11)				**Matrix: Water**		**Batch: 24H0656**		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 11:24	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 11:24	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	08/19/24 11:24	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	08/19/24 11:24	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	08/19/24 11:24	EPA 8260D	
Vinyl chloride	ND	0.100	0.200	ug/L	1	08/19/24 11:24	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*08/19/24 11:24*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*08/19/24 11:24*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*08/19/24 11:24*	*EPA 8260D*	

ANALYTICAL SAMPLE RESULTS

Vinyl Chloride by EPA 8260D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW06-080824 (A4H1008-01)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 21:52	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*08/20/24 21:52*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/20/24 21:52*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*08/20/24 21:52*	*EPA 8260D SIM*	
MW20-080824 (A4H1008-02)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 22:19	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits: 80-120 %*	*1*	*08/20/24 22:19*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 22:19*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 22:19*	*EPA 8260D SIM*	
Rinsate-080824 (A4H1008-03)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 22:46	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*08/20/24 22:46*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/20/24 22:46*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 22:46*	*EPA 8260D SIM*	
MW-29D-080824 (A4H1008-04)				**Matrix: Water**		**Batch: 24H0738**		
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	08/20/24 23:13	EPA 8260D SIM	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*08/20/24 23:13*	*EPA 8260D SIM*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*08/20/24 23:13*	*EPA 8260D SIM*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*08/20/24 23:13*	*EPA 8260D SIM*	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0566 - EPA 5030C **Water**

Blank (24H0566-BLK1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 10:37

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 102 % 80-120 % "
4-Bromofluorobenzene (Surr) 104 % 80-120 % "

LCS (24H0566-BS1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 09:38

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	20.8	0.200	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.5	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
trans-1,2-Dichloroethene	19.6	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Tetrachloroethene (PCE)	20.1	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichloroethene (TCE)	19.1	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
Vinyl chloride	20.4	0.100	0.200	ug/L	1	20.0	---	102	80-120%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 99 % 80-120 % "
4-Bromofluorobenzene (Surr) 100 % 80-120 % "

Duplicate (24H0566-DUP1) Prepared: 08/15/24 08:09 Analyzed: 08/15/24 19:48

QC Source Sample: MW20-080824 (A4H1008-02)

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	1.00	2.00	ug/L	10	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 106 % Limits: 80-120 % Dilution: 1x

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0566 - EPA 5030C							**Water**					
Duplicate (24H0566-DUP1)			Prepared: 08/15/24 08:09			Analyzed: 08/15/24 19:48						
QC Source Sample: MW20-080824 (A4H1008-02)												
Surr: Toluene-d8 (Surr)		*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*					
4-Bromofluorobenzene (Surr)		*103 %*		*80-120 %*			*"*					
Matrix Spike (24H0566-MS1)			Prepared: 08/15/24 08:09			Analyzed: 08/15/24 13:52						
QC Source Sample: Non-SDG (A4H1121-01)												
EPA 8260D												
1,1-Dichloroethene	22.5	0.200	0.400	ug/L	1	20.0	ND	112	71-131%	---	---	
cis-1,2-Dichloroethene	20.4	0.200	0.400	ug/L	1	20.0	ND	102	78-123%	---	---	
trans-1,2-Dichloroethene	20.9	0.200	0.400	ug/L	1	20.0	ND	104	75-124%	---	---	
Tetrachloroethene (PCE)	21.5	0.200	0.400	ug/L	1	20.0	ND	107	74-129%	---	---	
Trichloroethene (TCE)	20.0	0.200	0.400	ug/L	1	20.0	ND	100	79-123%	---	---	
Vinyl chloride	22.1	0.100	0.200	ug/L	1	20.0	ND	110	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery: 101 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)		*98 %*		*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)		*98 %*		*80-120 %*			*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0604 - EPA 5030C							**Water**					
Blank (24H0604-BLK1)			Prepared: 08/16/24 08:08		Analyzed: 08/16/24 09:41							
EPA 8260D												
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*102 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*		*"*					
LCS (24H0604-BS1)			Prepared: 08/16/24 08:08		Analyzed: 08/16/24 08:39							
EPA 8260D												
1,1-Dichloroethane	19.8	0.200	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,1-Dichloroethene	20.7	0.200	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.2	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
cis-1,2-Dichloroethene	19.3	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
trans-1,2-Dichloroethene	19.1	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,1,1-Trichloroethane	20.2	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Tetrachloroethene (PCE)	19.6	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Trichloroethene (TCE)	18.9	0.200	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
Vinyl chloride	20.2	0.100	0.200	ug/L	1	20.0	---	101	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*		*"*					
Duplicate (24H0604-DUP1)			Prepared: 08/16/24 08:08		Analyzed: 08/16/24 18:22							
QC Source Sample: MW13-080824 (A4H1008-07)												
EPA 8260D												
1,1-Dichloroethane	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0604 - EPA 5030C — **Water**

Duplicate (24H0604-DUP1) Prepared: 08/16/24 08:08 Analyzed: 08/16/24 18:22

QC Source Sample: MW13-080824 (A4H1008-07)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,2-Dichloroethane (EDC)	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**3.90**	2.00	4.00	ug/L	10	---	4.00	---	---	3	30%	J
trans-1,2-Dichloroethene	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	2.00	4.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**51.3**	2.00	4.00	ug/L	10	---	49.0	---	---	5	30%	
Trichloroethene (TCE)	**17.4**	2.00	4.00	ug/L	10	---	17.5	---	---	0.6	30%	
Vinyl chloride	ND	1.00	2.00	ug/L	10	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 106 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 102 % 80-120 % "
4-Bromofluorobenzene (Surr) 102 % 80-120 % "

Matrix Spike (24H0604-MS1) Prepared: 08/16/24 08:08 Analyzed: 08/16/24 20:11

QC Source Sample: MW15-080824 (A4H1008-10)

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethane	212	2.00	4.00	ug/L	10	200	ND	106	77-125%	---	---	
1,1-Dichloroethene	230	2.00	4.00	ug/L	10	200	ND	115	71-131%	---	---	
1,2-Dichloroethane (EDC)	211	2.00	4.00	ug/L	10	200	ND	106	73-128%	---	---	
cis-1,2-Dichloroethene	206	2.00	4.00	ug/L	10	200	ND	103	78-123%	---	---	
trans-1,2-Dichloroethene	207	2.00	4.00	ug/L	10	200	ND	103	75-124%	---	---	
1,1,1-Trichloroethane	216	2.00	4.00	ug/L	10	200	ND	108	74-131%	---	---	
Tetrachloroethene (PCE)	220	2.00	4.00	ug/L	10	200	16.5	102	74-129%	---	---	
Trichloroethene (TCE)	203	2.00	4.00	ug/L	10	200	ND	101	79-123%	---	---	
Vinyl chloride	220	1.00	2.00	ug/L	10	200	ND	110	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 99 % 80-120 % "
4-Bromofluorobenzene (Surr) 97 % 80-120 % "

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0656 - EPA 5030C							**Water**					
Blank (24H0656-BLK1)				Prepared: 08/19/24 08:11		Analyzed: 08/19/24 10:55						
EPA 8260D												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*103 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*		*"*					
LCS (24H0656-BS1)				Prepared: 08/19/24 08:11		Analyzed: 08/19/24 09:54						
EPA 8260D												
1,1-Dichloroethene	21.6	0.200	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,2-Dichloroethene	19.9	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
trans-1,2-Dichloroethene	20.1	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Tetrachloroethene (PCE)	20.4	0.200	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichloroethene (TCE)	19.5	0.200	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Vinyl chloride	20.8	0.100	0.200	ug/L	1	20.0	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*101 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*		*"*					
Duplicate (24H0656-DUP1)				Prepared: 08/19/24 08:11		Analyzed: 08/19/24 19:37						
QC Source Sample: Non-SDG (A4H1134-05)												
1,1-Dichloroethene	ND	4.00	8.00	ug/L	20	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	4.00	8.00	ug/L	20	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	4.00	8.00	ug/L	20	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	4.00	8.00	ug/L	20	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	4.00	8.00	ug/L	20	---	ND	---	---	---	30%	
Vinyl chloride	ND	2.00	4.00	ug/L	20	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*105 %*		*80-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24H0656 - EPA 5030C — **Water**

Duplicate (24H0656-DUP1) Prepared: 08/19/24 08:11 Analyzed: 08/19/24 19:37

QC Source Sample: Non-SDG (A4H1134-05)

Surr: 4-Bromofluorobenzene (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x

Matrix Spike (24H0656-MS1) Prepared: 08/19/24 08:11 Analyzed: 08/19/24 15:58

QC Source Sample: Non-SDG (A4H1134-01)

EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	26.9	0.200	0.400	ug/L	1	20.0	ND	**135**	**71-131%**	---	---	Q-01
cis-1,2-Dichloroethene	24.4	0.200	0.400	ug/L	1	20.0	ND	122	78-123%	---	---	
trans-1,2-Dichloroethene	25.2	0.200	0.400	ug/L	1	20.0	ND	**126**	**75-124%**	---	---	Q-01
Tetrachloroethene (PCE)	25.5	0.200	0.400	ug/L	1	20.0	ND	128	74-129%	---	---	
Trichloroethene (TCE)	24.2	0.200	0.400	ug/L	1	20.0	ND	121	79-123%	---	---	
Vinyl chloride	26.0	0.100	0.200	ug/L	1	20.0	ND	130	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 99 % 80-120 % "
4-Bromofluorobenzene (Surr) 97 % 80-120 % "

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0700 - EPA 5030C							**Water**					
Blank (24H0700-BLK1)			Prepared: 08/20/24 06:39		Analyzed: 08/20/24 09:41							
EPA 8260D												
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*104 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*		*"*					
LCS (24H0700-BS1)			Prepared: 08/20/24 06:39		Analyzed: 08/20/24 08:41							
EPA 8260D												
Tetrachloroethene (PCE)	19.3	0.200	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*		*"*					
Duplicate (24H0700-DUP1)			Prepared: 08/20/24 06:39		Analyzed: 08/20/24 21:04							**T-02**
QC Source Sample: Non-SDG (A4H1259-05RE1)												
Tetrachloroethene (PCE)	ND	1.00	2.00	ug/L	5	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*		*"*					
Matrix Spike (24H0700-MS1)			Prepared: 08/20/24 06:39		Analyzed: 08/20/24 12:25							
QC Source Sample: Non-SDG (A4H1134-12)												
EPA 8260D												
Tetrachloroethene (PCE)	25.8	0.200	0.400	ug/L	1	20.0	ND	129	74-129%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*		*"*					

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4H1008 - 08 21 24 1719

QUALITY CONTROL (QC) SAMPLE RESULTS

Vinyl Chloride by EPA 8260D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24H0738 - EPA 5030C							**Water**					
Blank (24H0738-BLK1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 19:38							
EPA 8260D SIM												
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*		*"*					
LCS (24H0738-BS1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 18:15							
EPA 8260D SIM												
Vinyl chloride	0.223	0.0100	0.0200	ug/L	1	0.200	---	111	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*98 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*		*"*					
LCS Dup (24H0738-BSD1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 18:42							**Q-19**
EPA 8260D SIM												
Vinyl chloride	0.228	0.0100	0.0200	ug/L	1	0.200	---	114	80-120%	2	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*99 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*		*"*					
Duplicate (24H0738-DUP1)			Prepared: 08/20/24 16:11		Analyzed: 08/20/24 20:58							
QC Source Sample: Non-SDG (A4H0962-01)												
Vinyl chloride	ND	0.0100	0.0200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*		*"*					

Philip Nerenberg

Philip Nerenberg, Lab Director

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24H0604							
A4H1008-09	Water	EPA 8260D	08/08/24 13:23	08/16/24 09:33	5mL/5mL	5mL/5mL	1.00
Batch: 24H0656							
A4H1008-01RE1	Water	EPA 8260D	08/08/24 13:40	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-02RE1	Water	EPA 8260D	08/08/24 13:15	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-03RE1	Water	EPA 8260D	08/08/24 14:15	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-04RE1	Water	EPA 8260D	08/08/24 12:31	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-05	Water	EPA 8260D	08/08/24 11:01	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-06	Water	EPA 8260D	08/08/24 11:44	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-07RE1	Water	EPA 8260D	08/08/24 12:18	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-08RE1	Water	EPA 8260D	08/08/24 11:12	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-10RE1	Water	EPA 8260D	08/08/24 09:44	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
A4H1008-11	Water	EPA 8260D	08/08/24 00:00	08/19/24 10:42	5mL/5mL	5mL/5mL	1.00
Batch: 24H0700							
A4H1008-05RE1	Water	EPA 8260D	08/08/24 11:01	08/20/24 09:36	5mL/5mL	5mL/5mL	1.00

Vinyl Chloride by EPA 8260D SIM

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24H0738							
A4H1008-01	Water	EPA 8260D SIM	08/08/24 13:40	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00
A4H1008-02	Water	EPA 8260D SIM	08/08/24 13:15	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00
A4H1008-03	Water	EPA 8260D SIM	08/08/24 14:15	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00
A4H1008-04	Water	EPA 8260D SIM	08/08/24 12:31	08/20/24 16:11	5mL/5mL	5mL/5mL	1.00

QUALIFIER DEFINITIONS

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

Apex Laboratories

J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified DL.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry"	Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry") See Percent Solids section for details of dry weight analysis.
" wet"	Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
" "	Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).

Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy. For further details, please request a copy of this document.

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

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

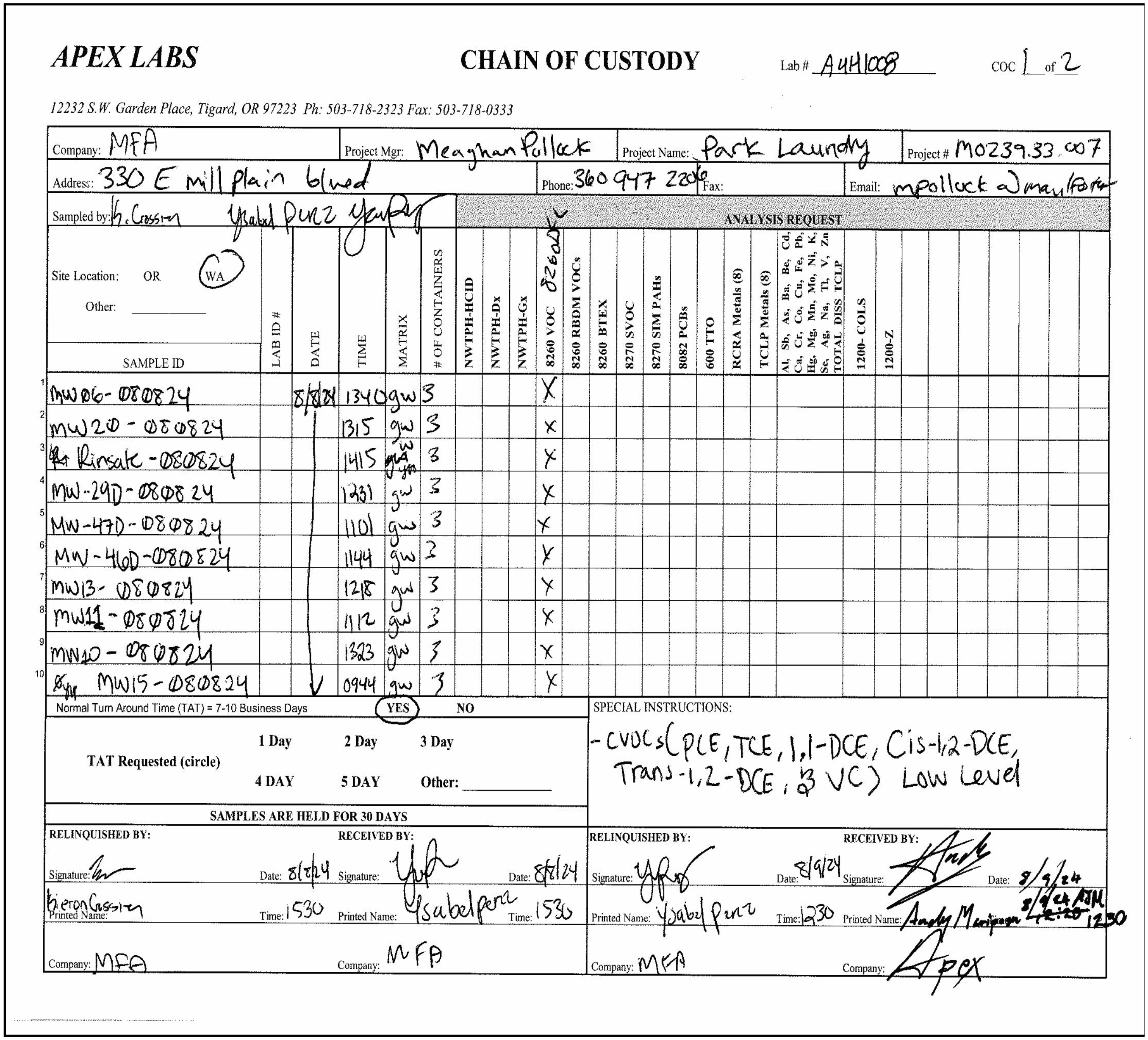
Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

ANALYTICAL REPORT



APEX LABS **CHAIN OF CUSTODY** Lab # A4H1008 COC 1 of 2

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: MFA
Project Mgr: Meaghan Pollock
Project Name: Park Laundry
Project # M0239.33.007
Address: 330 E mill plain blvd
Phone: 360 947 2206
Fax:
Email: mpollock@maulfoster
Sampled by: K. Crossin Ysabel Perez
Site Location: OR [✓ WA]
Other:

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOC 8260DL	8260 RBDM VOCs	8260 BTEX	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200-COLS	1200-Z
1	MW06-080824		8/8/24	1340	gw	3				X											
2	MW20-080824			1315	gw	3				X											
3	Rinsate-080824			1415	w	3				X											
4	MW-29D-080824			1231	gw	3				X											
5	MW-47D-080824			1101	gw	3				X											
6	MW-46D-080824			1144	gw	3				X											
7	MW13-080824			1218	gw	3				X											
8	MW11-080824			1112	gw	3				X											
9	MW10-080824			1323	gw	3				X											
10	MW15-080824			0944	gw	3				X											

Normal Turn Around Time (TAT) = 7-10 Business Days [✓ YES] NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
- CVOCs (PCE, TCE, 1,1-DCE, Cis-1,2-DCE, Trans-1,2-DCE, & VC) Low Level

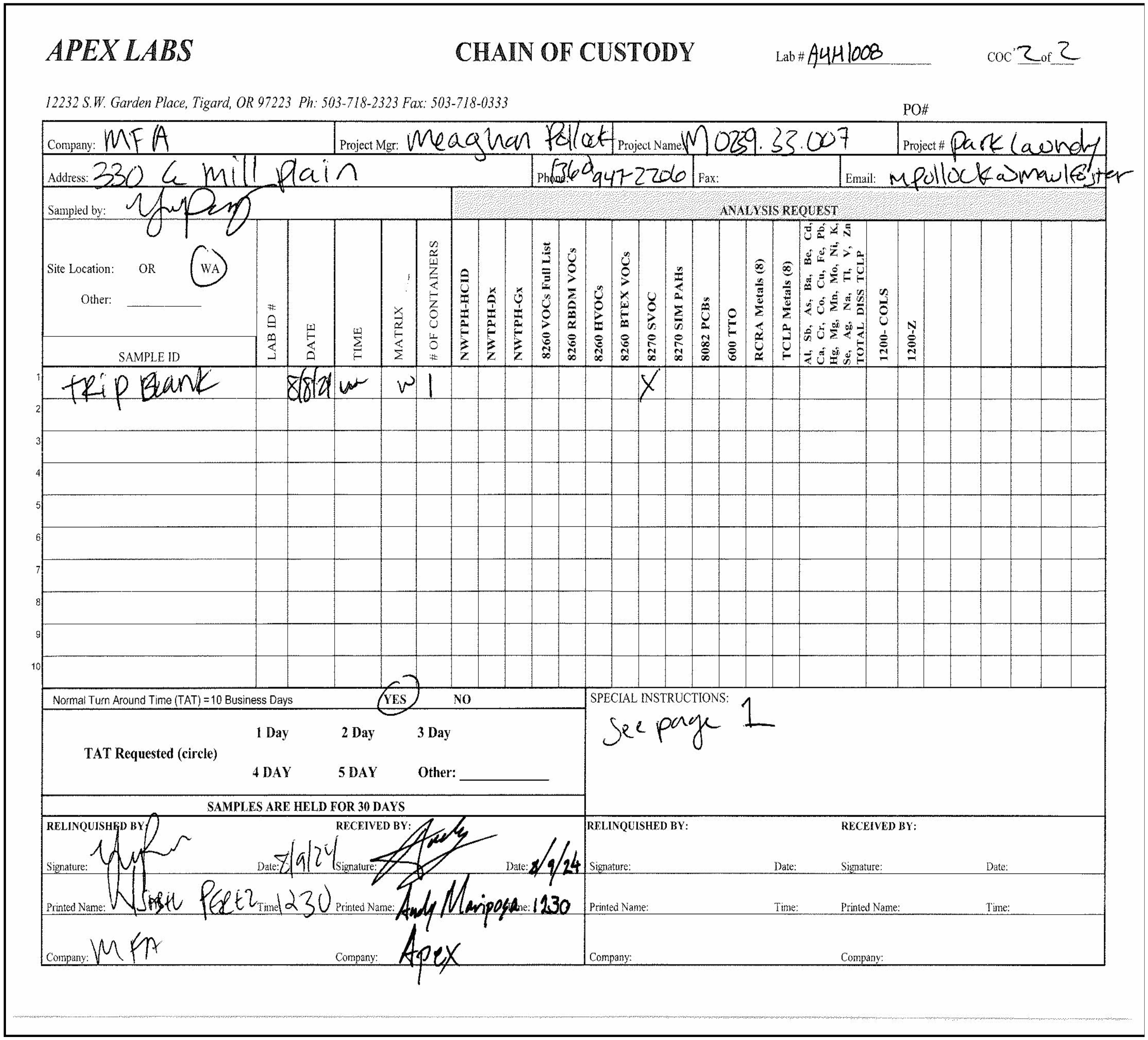
RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Date: 8/8/24	Signature: Date: 8/8/24	Signature: Date: 8/9/24	Signature: Date: 8/9/24
Printed Name: Kieron Crossin Time: 1530	Printed Name: Ysabel Perez Time: 1530	Printed Name: Ysabel Perez Time: 1230	Printed Name: Andy Martinez Time: 8/9/24 AM ~~12:20~~ 1230
Company: MFA	Company: MFA	Company: MFA	Company: Apex

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



APEX LABS CHAIN OF CUSTODY Lab # A4H1008 COC 2 of 2

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

PO#

Company: MFA
Project Mgr: Meaghan Pollock
Project Name: M0239.33.007
Project #: Park Laundry
Address: 330 E mill plain
Phone: (360) 947-2206
Fax:
Email: mpollock@maulfoster
Sampled by:
Site Location: OR [✓ WA]
Other:

ANALYSIS REQUEST

	SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200- COLS	1200-Z						
1	TRIP BLANK		8/8/24	—	W	1								X														
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Normal Turn Around Time (TAT) = 10 Business Days [✓ YES] NO

TAT Requested (circle) 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: ____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS: See page 1

RELINQUISHED BY:
Signature: Date: 8/9/24
Printed Name: Nissa Perez Time: 1230
Company: MFA

RECEIVED BY:
Signature: Date: 8/9/24
Printed Name: Andy Mariposa Time: 1230
Company: Apex

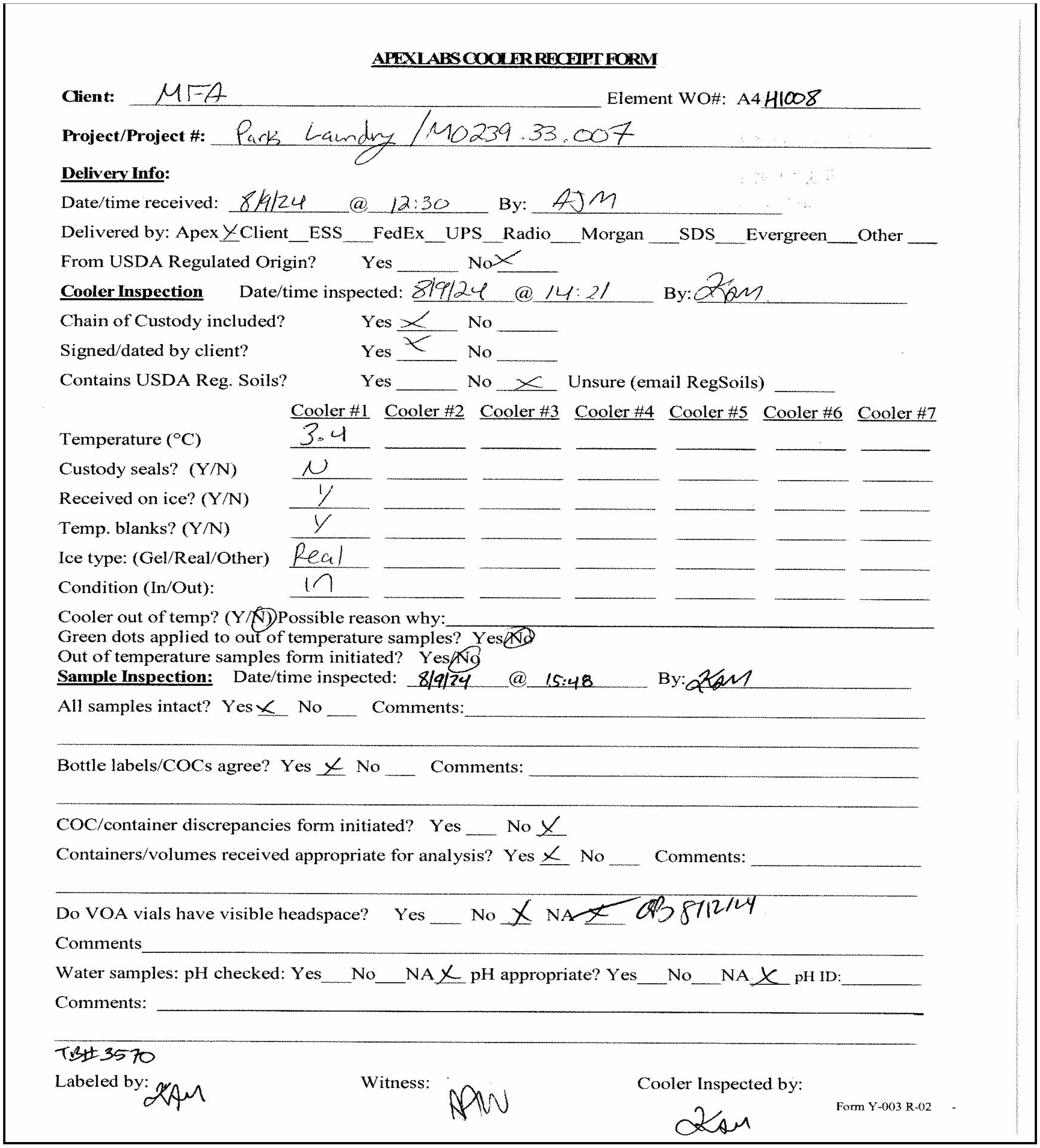
RELINQUISHED BY:
Signature: Date:
Printed Name: Time:
Company:

RECEIVED BY:
Signature: Date:
Printed Name: Time:
Company:

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



APEX LABS COOLER RECEIPT FORM

Client: MFA Element WO#: A4 H1008

Project/Project #: Park Laundry / M0239.33.007

Delivery Info:

Date/time received: 8/9/24 @ 12:30 By: AJM

Delivered by: Apex X Client__ ESS__ FedEx__ UPS__ Radio__ Morgan__ SDS__ Evergreen__ Other__

From USDA Regulated Origin? Yes __ No X

Cooler Inspection Date/time inspected: 8/9/24 @ 14:21 By: KAM

Chain of Custody included? Yes X No __

Signed/dated by client? Yes X No __

Contains USDA Reg. Soils? Yes __ No X Unsure (email RegSoils) __

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

Cooler out of temp? (Y/[✓ N]) Possible reason why: __
Green dots applied to out of temperature samples? Yes/[✓ No]
Out of temperature samples form initiated? Yes/[✓ No]

Sample Inspection: Date/time inspected: 8/9/24 @ 15:48 By: KAM

All samples intact? Yes X No __ Comments: __

Bottle labels/COCs agree? Yes X No __ Comments: __

COC/container discrepancies form initiated? Yes __ No X

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

Do VOA vials have visible headspace? Yes __ No X NA ~~X~~ AB 8/12/24

Comments __

Water samples: pH checked: Yes__ No__ NA X pH appropriate? Yes__ No__ NA X pH ID: __

Comments: __

TB#3570

Labeled by: KAM Witness: AMW Cooler Inspected by: KAM

Form Y-003 R-02

Appendix B

Predesign Investigation Report

MAUL
FOSTER
ALONGI

Predesign Investigation Report

Former Park Laundry Site, Ridgefield Washington

Consent Decree No. 23-2-02783-06
Cleanup Site ID 4099

Prepared for:

City of Ridgefield

November 14, 2024
Project No. M0239.33.007

Prepared by:

Maul Foster & Alongi, Inc.
330 E Mill Plain Boulevard, Suite 405, Vancouver, WA 98660

Predesign Investigation Report

Former Park Laundry Site, Ridgefield, Washington

Consent Decree No. 23-2-02783-06
Cleanup Site ID 4099

The material and data in this report were prepared
under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.

State of Washington
Licensed Geologist
21000260
Meaghan Pollock

MEAGHAN VICTORIA POLLOCK

11-14-2024

Meaghan Pollock, LG
Project Geologist

Ysabel Perez, GIT
Staff Geologist

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Boring Log

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Appendix C

Laboratory Reports

Abbreviations

bgs	below ground surface
CAP	Cleanup Action Plan
City	City of Ridgefield
DCE	dichloroethene
Ecology	Washington State Department of Ecology
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
Property	122 N. Main Avenue, Ridgefield, Washington
PCE	tetrachloroethene
REL	remediation level
RI/FS	Remedial Investigation/Feasibility Study
Site	the Property and neighboring properties where contamination has come to be
Source Area	the Property, two vacant lots located directly north, and the property directly south of the former Park Laundry property, collectively
TCE	trichloroethene
WBZ	water-bearing zone
Work Plan	Predesign Investigation Work Plan

1 Introduction

Maul Foster & Alongi, Inc. (MFA) has prepared this predesign investigation report on behalf of the City of Ridgefield (City) for a portion of the Former Park Laundry Site, the “Source Area.” Park Laundry formerly operated at 122 N. Main Avenue, Ridgefield, Washington (the Property) (see Figure 1). Volatile organic compounds are present in the Source Area (comprised of the Property and certain neighboring properties). Soil, vapor, and groundwater impacts related to tetrachloroethene (PCE) and its degradation products resulting from former dry cleaner operations at the Property have been confirmed. For the purposes of this predesign investigation, the Site is defined by the extent contamination[1] from Park Laundry in all environmental media. The Source Area is defined as the former Park Laundry parcel, the two adjoining parcels to the north, and the property to the south owned by the City and formerly occupied by the police station (see Figures 2 and 3),

1.1 Purpose and Objective

Predesign data collection in the Source Area was conducted to support development of the Draft Engineering Design Report, and Construction Plans and Specifications per the December 28, 2023, Consent Decree between the City and Washington State Department of Ecology (Ecology), which includes a Cleanup Action Plan (CAP; Ecology 2024). This report is included as an appendix to the Engineering Design Report. The CAP was developed to address the potential human health and environmental concerns associated with PCE and its degradation products based on Ecology’s selected remedy (Alternative 4) from the Remedial Investigation/Feasibility Study (RI/FS) analysis conducted by MFA (MFA 2019).

Ecology’s required remedy consists of soil excavation down to 15 feet (ft) below ground surface (bgs) in the Source Area, groundwater treatment, institutional controls, and groundwater monitoring. The data used in the FS to select the remedy described in Alternative 4 are from soil and groundwater data collected prior to 2011. Additional temporal and spatial data were needed to confirm and provide a more precise definition of the extent of the contamination in the Source area to support remedial design.

2 Background and Physical Setting

The sections below provide a summary of background and physical setting. Detailed descriptions of site history, topography, geology, hydrogeology, and past data collection are provided in the CAP (Ecology 2024) and RI/FS (MFA 2019).

---

[1] Defined as having an exceedance of the Model Toxics Control Act Method A cleanup level.

2.1 Source Area and Site Description

The Source Area is zoned as Downtown Mixed Use and is comprised of approximately five parcels. The parcel formerly occupied by Park Laundry was approximately 25 ft wide (north-south) and 100 ft long (east-west). The Property occupied by the former Ridgefield Police Department comprises the southern end of the Source Area. The Source Area is bounded on the east by a one-lane paved alleyway, which in turn is bordered by a city skate park and a former fire station. To the west is North Main Avenue and a restaurant. Land use in the downtown area is primarily residential and commercial.

The groundwater plume associated with the Source Area covers an estimated 22 acres. The plume generally follows the topography of the area, extending north and west from the Property, and is bounded on the west by Lake River (MFA 2019).

2.2 Property History

Park Laundry operated at the Property from approximately 1965 to 1977. The laundry service is believed to have included dry cleaning services and self-service, coin-operated washers and dryers. Park Laundry's operations had ceased by 1978 and in 2000 the former laundry service building was removed. The City of Ridgefield acquired the Property on December 28, 2023, at which time the Consent Decree with Ecology became effective (Ecology 2023b).

2.3 Site Topography, Geology and Hydrogeology

Site topography consists of upper and lower terrace areas trending north and south. The upper terrace forms a bluff above the Columbia River and the lower terrace abuts Lake River. The Source Area is located on the upper terrace in downtown Ridgefield.

Borings on and downgradient of the Property have been advanced as deep as 80 and 90 ft bgs, respectively. A generalized geologic cross section was prepared as part of the RI/FS (MFA 2019). Generally, the Site is underlain by Tertiary-age semi-consolidated alluvial deposits Troutdale formation, and Holocene alluvial deposits (lower terrace alluvial deposits). The shallow water-bearing zone (WBZ) on the upper terrace is perched above a massive silt and clay deposit (i.e., the clay layer) at about 12 to 20 ft bgs. The shallow WBZ in the upper terrace fluctuates seasonally from less than 2-ft bgs to greater than 10-ft bgs. The upper WBZ in the lower terrace is separated by an aquitard (weathered surface of the Troutdale formation), which in turn is underlain by a regional aquifer.

2.4 Past Site Investigations and Contaminants of Concern

The RI/FS report (MFA 2019) provides a detailed summary of the remedial investigation and previous investigation results for the Site including the nature and extent of contaminants and the risk associated with those contaminants. Previous sample locations are shown on Figures 2 and 3. Indicator hazardous substances identified for the Site consist of PCE and its degradation products (including trichloroethene [TCE], cis-1,2-dichloroethene [DCE], trans-1,2-DCE, and vinyl chloride).

2.5 Cleanup and Remediation Levels

The CAP provides cleanup levels for PCE and TCE as well as for their natural degradation products; 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. A remediation level (REL) of 0.05 milligrams per kilogram (mg/kg) in soil was selected to guide the removal of soil containing PCE in the Source Area at the Site. Removal of this material will aid in and increase site-wide degradation of COCs below proposed RELs (Ecology 2024) via soil excavation and in situ groundwater treatment.

3 Field Investigation Activities

Predesign investigation field activities were conducted on May 21 and 22, 2024 and were completed consistent with the methods and protocols described in the Predesign Investigation Work Plan (Work Plan; MFA 2024). Investigation locations are shown in Figure 3.

3.1 Utility Locate

Prior to subsurface investigation activities, public and private utility locates were conducted at all boring locations. MFA contracted Applied Professional Services, Inc., a private utility locate contractor, to locate on-site utilities, including the orientation of any water and sewer mains or laterals. Sampling locations were adjusted based on information obtained from the utility locates.

3.2 Soil

Twenty-two shallow soil borings were advanced using direct-push drilling methods in an approximate 10 foot grid pattern at the locations shown on Figure 3. The locations of the soil borings were selected based on a review of historical soil data in the Source Area and were intended to evaluate the current extent of contamination and confirm/refine the extent of excavation in the Source Area. Sample locations were named based on their position within the 10 foot by 10 foot grid system and depth bgs. For example, PD-50-30-12.0 is located 50 ft east and 30 ft north of the grid origin and the sample was collected approximately 12 ft bgs.

Consistent with previous investigations, 19 of the borings were advanced from ground surface though the surficial unit into the clay layer to approximately 15 ft bgs. Soil samples were collected from continuous soil cores at 5-foot intervals to allow for effective design of excavation prisms and allow effective soil management. Three borings were advanced to 5 ft bgs to collect surface soil samples to confirm historical surface soil PCE concentrations (see Figure 3). Surface soil samples were collected 0.5 ft below the native ground surface, generally above 1.25 feet bgs.

Continuous soil cores were retrieved from the completed borings for observation and field screening. A geologic log depicting the general subsurface conditions encountered is provided as Appendix A. The surface of the site was covered with gravel or asphalt and subgrade for the first 0.5 ft. Below the surface completion the site was generally underlain with sandy silt or silty sand to approximately 11.25 to 14 ft bgs where the clay layer was encountered. The depth of the clay layer increased from the south to the north. These observations are consistent with those previously described in past investigations on the Property (MFA 2019). Soil samples were screened using a photoionization detector, with the highest field screening values ranging from 38 to 44 parts per million at PD-100-50 and PD-40-60 (see Table 1). No visual or olfactory observations indicative of contamination were observed.

Consistent with the Work Plan, soil samples were collected based on past analytical results and field observations, placed in laboratory provided containers, and submitted under chain-of-custody procedures to Apex Laboratories, Inc. of Tigard, Oregon, a Washington State accredited environmental laboratory. Samples selected for analysis were chosen to confirm spatial distribution of PCE from past investigations in addition to their depth and relative proximity to the proposed excavation extents in order to inform the Engineering Design. The laboratory analysis focused on PCE (by U.S. Environmental Protection Agency Method 8260D) since it is the only indicator hazardous substance with a remediation level. Samples were collected from four categorized depths (i.e., surface, mid-depth, deep, and clay).

- Surface—samples were collected 0.5 feet below the surface completion, generally around 1.25 ft bgs.
- Mid-depth—samples were collected between the surface and the contact with the clay layer in the vadose zone, generally between 5 and 10 ft bgs.
- Deep—samples were collected in the sand unit above the contact with the clay layer, generally between 10 and 14 ft bgs.
- Clay—samples were collected approximately 0.5 ft into the clay layer, generally between 12 and 15 ft bgs.

3.3 Cultural Resources

The Final Determination for the Site (Ecology 2023a) indicated the Site has a high to very high risk for pre-historic artifacts or other archaeological resources and recommended cultural resource monitoring during subsurface work at the Site. MFA contracted an archaeologist with Willamette Cultural Resources Associates, ltd., to oversee and monitor the drilling activities. There were no previously unknown cultural resources identified during the predesign investigation activities (WCRA 2024).

3.4 Investigation-Derived Waste

Investigation-derived waste included approximately 20 gallons of soil and approximately 20 gallons of water used for decontamination The soil cuttings and decontamination water were placed in separate, labeled, 55-gallon steel drums on the northeast side of the Property.

4 Data Validation and Analytical Results

Validation of the analytical data was performed by an MFA chemist independent of the analytical laboratory contractor. The data validator reviewed laboratory performance criteria and sample-specific criteria. The data validation memorandum is provided as Appendix B. All data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

4.1 Analytical Results

The laboratory reports are provided as Appendix C. The soil analytical results are provided in Table 2. Data were screened against the PCE REL of 0.05mg/kg. Soil exceedances are shown in Figure 3 for this round of sampling only. Figure 3 does not show previous sample results; however, it does show the preliminary excavation boundaries developed based on previous sampling results.

PCE exceedances in soil generally correspond with concentrations observed during previous investigations (MFA 2019). Beneath the Property and in the immediate vicinity, concentrations exceeding the PCE REL were observed to be greatest in samples collected at the base of the sand unit just above the clay and in the clay layer.

The three locations sampled for specifically for surface soil (at 0.5 ft bgs in native soil surface) (i.e., PD-70-20, PD-90-40, and PD-100-40) had similar PCE concentrations as previously concentrations observed at their historically equivalent boring locations (MFA 2019), with the exception of surface soil at PD-70-20, where 2024 PCE concentrations were three times higher than those observed from the collocated boring in the RI/FS . The results indicated that the shallow soil in these areas still exceeds the REL.

PCE exceedances in mid-depth samples (i.e., those collected between 5 and 10 ft bgs) in borings PD-70-70 and PD-70-60 within the north-central portion of the Source Area. The samples just exceeded the REL and were near the water table at 9.0 ft bgs.

PCE REL exceedances in deep samples (i.e., those collected in sand unit between 10 and 13.5 ft bgs) and clay layer (i.e., those collected approximately 0.5 feet into the clay layer) were primarily observed in borings advanced within the northern and western portion of the Source Area (Figure 3), generally consistent with past results. These samples show that the PCE contamination is likely resting at the interface of the sand and clay layers. The highest concentrations of PCE were observed at boring PD-70-50, with concentrations of 82.5 mg/kg near the bottom of the sand unit and 34.1 mg/kg in the shallow clay layer. All other samples ranged from non-detect to a maximum of 4.02 mg/kg. Two samples (i.e., PD-100-50 and PD-100-60) show that PCE does not extend into the alley way east of the Site. Three samples (PD-60-20, PD-80-20, and PD-70-10) show that PCE extent south of the Site. The samples west and north also help redefine the extent of PCE exceedances in conjunction with previous samples.

The deep and clay samples also show that generally in many of the areas sampled the shallow clay layer is also contaminated and typically at similar or higher concentrations than the deep sand unit sample. In addition, three of the samples (PD-70-50, PD-70-60, and PD-70-70) indicate that a portion of the Site that was previously not planned to be excavated should be considered due to the concentrations observed.

5 Conclusions

PCE contamination was observed across the Source Area, generally consistent with past investigation results (MFA 2019). The additional PCE samples will allow the cleanup design to better refine the approach of the cleanup. Concentrations typically where highest in the deep and clay layer samples. These data will be used to refine the proposed extent of excavation in the Engineering Design Report, of which this report is an appendix.

References

Ecology. 2023a. Travis Wise, Washington State Department of Ecology. *Washington State Governor's Executive Order 21-02, Clark County, Park Laundry DAHP Project Number 2023-01-00083 Final Determination.* Memorandum to Cam Penner-Ash, Washington State Department of Ecology. July 3.

Ecology. 2023b. *Consent Decree. Former Park Laundry.* Issued by Washington State Department of Ecology. Lacey, WA.

Ecology. 2024. *Draft Cleanup Action Plan*. *Former Park Laundry*. Issued by Washington State Department of Ecology. Lacey, WA.

MFA. 2010. *Remedial Investigation Work Plan, former Park Laundry*. Prepared for Union Ridge Investment Company. Maul Foster & Alongi, Inc. January 21.

MFA. 2019. *Remedial Investigation and Feasibility Study Report, former Park Laundry,* Washington State Department of Ecology Agreed Order No. DE 6829. Maul Foster & Alongi, Inc., Vancouver, Washington. July 11.

MFA. 2024. *Predesign Investigation Work Plan, Park Laundry Site, Ridgefield, Washington*. Prepared for City of Ridgefield. Maul Foster & Alongi, Inc. May 10.

WCRA. 2024. *Archaeological Monitoring for the Ridgefield Park Laundry Site Clean Up Geoprobe Investigation: Ridgefield, Washington.* Memo prepared for Maul Foster & Alongi, Inc. Willamette Cultural Resources Associates, ltd. July 10.

Limitations

The services undertaken in completing this plan were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This plan is solely for the use and information of our client unless otherwise noted. Any reliance on this plan by a third party is at such party's sole risk.

Opinions and recommendations contained in this plan apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this plan.

Figures

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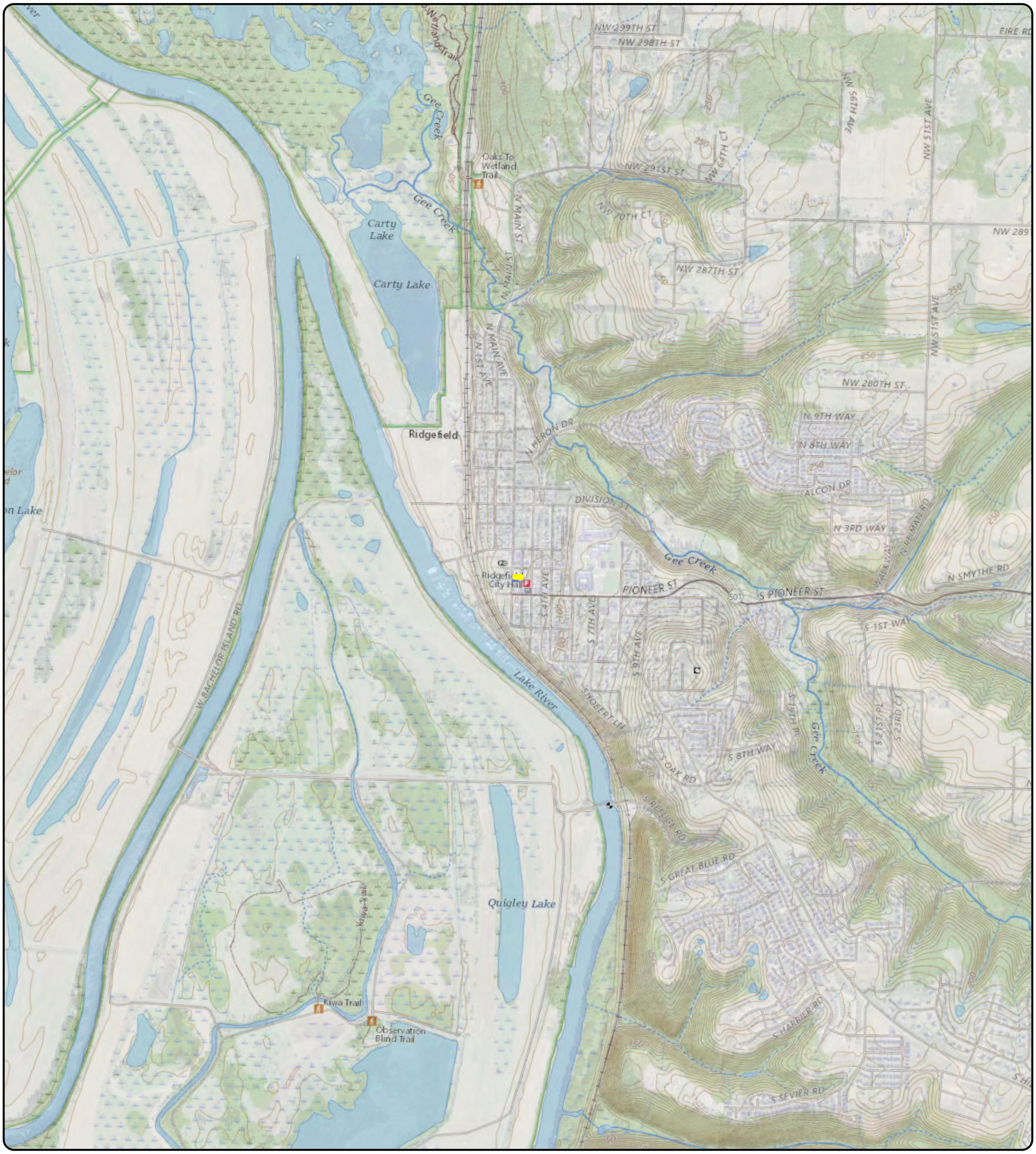
Path: X:\0239.33\007\Pro\M0239_33_007_004.aprx\Fig 1 Property Location

Print Date: 4/23/2024

Reviewed By: cbusch

Produced By: sturner

Project: M0239.33.007



Notes

U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Ridgefield.
Township 4 north, range 1 west, section 24.

Legend

☐ Property Boundary

Figure 1
Property Location

Former Park Laundry
City of Ridgefield, WA

Data Source

Property boundary obtained from Clark County.

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0 2,000
Feet

Figure 2
Site Features

Former Park Laundry
Ridgefield, WA

Legend

- ▭ Property Boundary
- ⬚ Estimated Site Boundary
- ● Port of Ridgefield Shallow Boring, 2012
- ◐ Port of Ridgefield Monitoring Wells
- ● Shallow Boring, MFA 2001
- ● Shallow Boring, MFA March 2010
- ● Deep Boring, MFA March 2010
- ● Shallow Boring, MFA October 2010
- ● Shallow Boring, MFA June 2011
- ◐ Monitoring Well, MFA June 2011
- ◐ Monitoring Well, MFA March 2012
- ◐ Monitoring Well, MFA April 2013
- ● Shallow Boring, MFA September 2014

0 200
Feet

Data Sources
Aerial photograph obtained from Bing and Google Earth.

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Path: X:\0239.33\007\Pro\M0239_33_007_004.aprx\Fig 2 Site Features

Project: M0239.33.007 Produced By: jroberts Reviewed By: cbusch Print Date: 7/8/2024

Path: X:\0239.33\007\Pro\M0239_33_007_006.aprx\Fig 3 Geoprobe Locs Remedial Design Support

Print Date: 7/16/2024 Reviewed By: yperez Produced By: jroberts Project: M0239.33.007

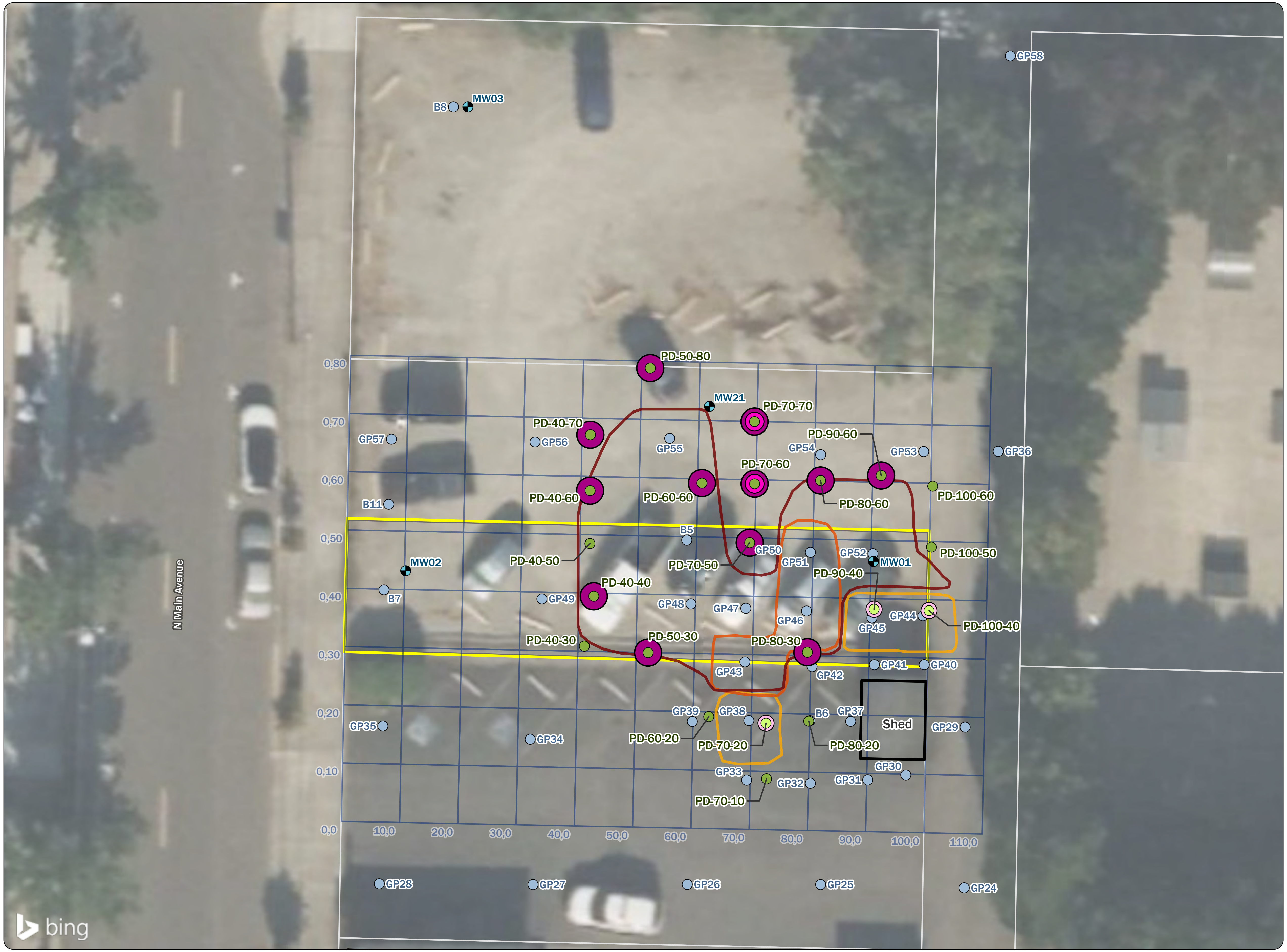

Figure 3
Geoprobe Locations to Support Remedial Design in Source Area

Former Park Laundry
Ridgefield, WA

Legend

- ● Soil Boring - 5 feet bgs
- ● Soil Boring - 15 feet bgs
- ● Monitoring Well
- ● Previous Boring

Preliminary Excavation Demarcation

- ○ 3-foot Proposed Excavation
- ○ 6-foot Proposed Excavation
- ○ 15-foot Proposed Excavation
- ☐ Building
- ☐ Sampling Grid (10 by 10 feet)
- ☐ Property Boundary
- ☐ Parcel

Exceedance Key

- ○ Surface (<1.25 feet bgs)
- ● Mid-Depth (5 feet bgs)
- ● Deep/Clay (> 10 feet bgs)

Notes

Exceedance is defined as a PCE concentration in soil within the top 15 feet in excess of the selected REL for PCE in soil. REL for PCE is 0.05 milligrams per kilogram.

Soil boring locations logged using real-time kinematic global navigation satellite system receiver on May 20, 2024.

bgs = below ground surface.

PCE = tetrachloroethene.

REL = remediation level.

0 10

Feet

Data Sources

Aerial photograph obtained from Microsoft Bing; parcel data obtained from Clark County.

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Tables

Table 1
PID Soil Screening Values
Former Park Laundry Site, Ridgefield, Washington

Boring Location	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)
PD-50-80	2.5	0	14	10
	9.5	0		
	14	2		
	14.5	0		
PD-40-70	2.5	0.6	13.5	10
	9.5	0		
	13	0		
	14	0.1		
PD-70-70	3	2.2	13.5	10
	9.5	0		
	13	0.7		
	14	1.6		
PD-70-60	9	0.8	12.5	10
	4	0.3		
	12.5	3.1		
	14	0.6		
PD-60-60	3.5	0	12.5	10
	8	0		
	12	0		
	14	0		
PD-70-50	3	0	12.75	10
	8.5	5		
	12.5	7.7		
	13.5	1.2		
PD-80-60	4	1.1	12.75	10
	8	0.7		
	12	3.5		
	13.5	1		
PD-90-60	0.75	9.1	13.5	11.5
	8	0.5		
	13	0.5		
	14	0.5		
PD-100-60	1.5	2.8	12.5	11
	8	2.3		
	12	0.5		
	13	0.4		

Table 1
PID Soil Screening Values
Former Park Laundry Site, Ridgefield, Washington

Boring Location	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)
PD-50-80	2.5	0	14	10
	9.5	0		
	14	2		
PD-100-50	1.25	41.7	13.5	10
	4	42.9		
	6	43.9		
	14	8.5		
	12.5	5.7		
PD-100-40	1.25	2.8	--	--
	4	1.1		
PD-90-40	1	3.2	--	--
	3	0.7		
PD-80-30	4	3.9	12	10
	8.5	1.5		
	11.5	1.3		
	12.5	0.9		
PD-50-30	1.5	1.8	12.75	10
	6	1.3		
	12	0.7		
	14	0.6		
PD-40-30	3	0	13	10
	9.5	0		
	13	0		
	13.5	0		
PD-40-40	3.75	0	13.25	10
	10	0		
	13.25	0		
	14	0		
PD-40-50	4	0	13	10
	10	0		
	13	0		
	13.5	0		
PD-40-60	4	38.7	13.5	10
	10	3.2		
	13.5	5.4		
	13.75	37		

Table 1
PID Soil Screening Values
Former Park Laundry Site, Ridgefield, Washington

Boring Location	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)
PD-50-80	2.5	0	14	10
	9.5	0		
	14	2		
PD-60-20	3.5	2	11.25	10
	10	0		
	11.25	2.7		
	11.5	2.7		
PD-70-20	1.25	0	--	--
	3.75	0		
	1.25	0		
PD-70-10	4	0.1	11.75	10
	9	0.1		
	11.75	0		
	12	0		
PD-80-20	3	0.9	12	10
	9	2.2		
	12	1.2		
	12.5	2.7		

Notes

bgs = below ground suface.

ft = feet.

PID = photoionization detector.

ppm = parts per million.

Table 2
Predesign Investigation Analytical Results
Former Park Laundry Site, Ridgefield, Washington

				Analyte:	Tetrachloroethene
				Units:	mg/kg
				Cleanup Level(1):	0.050
Location	Sample Name	Sample Date	Depth (ft bgs)	Unit	
PD-40-30	PD-40-30-SO-13.0	05/22/2024	13.0	Deep	0.0316
PD-40-40	PD-40-40-SO-13.25	05/22/2024	13.25	Clay	0.106
PD-40-50	PD-40-50-SO-13.0	05/22/2024	13.0	Deep	0.0291 J
PD-40-60	PD-40-60-SO-4.0	05/22/2024	4.0	Mid-Depth	0.0163 U
	PD-40-60-SO-13.5	05/22/2024	13.5	Deep	0.118
	PD-40-60-SO-13.75	05/22/2024	13.8	Clay	0.140
PD-40-70	PD-40-70-SO-2.5	05/21/2024	2.5	Mid-Depth	0.0264 U
	PD-40-70-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0168 U
	PD-40-70-SO-13.0	05/21/2024	13.0	Deep	0.0917
	PD-40-70-SO-14.0	05/21/2024	14.0	Clay	0.109
PD-50-30	PD-50-30-SO-12.0	05/21/2024	12.0	Deep	0.0225 J
	PD-50-30-SO-14.0	05/21/2024	14.0	Clay	0.422
	PD-50-30-SO-14.0-DUP	05/21/2024	14.0	Clay	0.281
PD-50-80	PD-50-80-SO-2.5	05/21/2024	2.5	Mid-Depth	0.0148 U
	PD-50-80-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0145 U
	PD-50-80-SO-14.0	05/22/2024	14.0	Deep	1.31
	PD-50-80-SO-14.5	05/21/2024	14.5	Clay	1.11
PD-60-20	PD-60-20-SO-3.5	05/22/2024	3.5	Mid-Depth	0.0280 J
	PD-60-20-SO-11.25	05/22/2024	11.25	Deep	0.0170 U
PD-60-60	PD-60-60-SO-3.5	05/21/2024	3.5	Mid-Depth	0.0147 U
	PD-60-60-SO-8.0	05/21/2024	8.0	Mid-Depth	0.0293 U
	PD-60-60-SO-12.0	05/21/2024	12.0	Deep	0.201
	PD-60-60-SO-14.0	05/21/2024	14.0	Clay	1.31
PD-70-10	PD-70-10-SO-4.0	05/22/2024	4.0	Mid-Depth	0.0171 U
PD-70-20	PD-70-20-SO-1.25	05/22/2024	1.25	Surface	0.236
	PD-70-20-SO-1.25-DUP	05/22/2024	1.25	Surface	0.207
PD-70-50	PD-70-50-SO-3.0	05/21/2024	3.0	Mid-Depth	0.0288 U
	PD-70-50-SO-8.5	05/21/2024	8.5	Mid-Depth	0.0175 J
	PD-70-50-SO-8.5-DUP	05/21/2024	8.5	Mid-Depth	0.0362 J
	PD-70-50-SO-12.5	05/21/2024	12.5	Deep	82.5
	PD-70-50-SO-13.5	05/21/2024	13.5	Clay	34.1
PD-70-60	PD-70-60-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0155 U
	PD-70-60-SO-9.0	05/21/2024	9.0	Deep	0.0583
	PD-70-60-SO-12.5	05/21/2024	12.5	Mid-Depth	1.87
	PD-70-60-SO-14.0	05/21/2024	14.0	Clay	4.02

Table 2
Predesign Investigation Analytical Results
Former Park Laundry Site, Ridgefield, Washington

				Analyte:	Tetrachloroethene
				Units:	mg/kg
				Cleanup Level[1]:	0.050
Location	Sample Name	Sample Date	Depth (ft bgs)	Unit	
PD-70-70	PD-70-70-SO-3.0	05/21/2024	3.0	Mid-Depth	0.0458
	PD-70-70-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0530
	PD-70-70-SO-13.0	05/21/2024	13.0	Deep	0.768
	PD-70-70-SO-14.0	05/21/2024	14.0	Clay	0.606
PD-80-20	PD-80-20-SO-3.0	05/22/2024	3.0	Mid-Depth	0.0180 U
PD-80-30	PD-80-30-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0152 U
	PD-80-30-SO-8.5	05/21/2024	8.5	Mid-Depth	0.0146 U
	PD-80-30-SO-11.5	05/21/2024	11.5	Deep	0.712
	PD-80-30-SO-12.5	05/21/2024	12.5	Clay	0.0274
PD-80-60	PD-80-60-SO-12.0	05/21/2024	12.0	Deep	3.04
PD-90-40	PD-90-40-SO-1.0	05/21/2024	1.0	Surface	0.218
PD-90-60	PD-90-60-SO-13.0	05/21/2024	13.0	Deep	0.168
PD-100-40	PD-100-40-SO-1.25	05/21/2024	1.25	Surface	0.0721
PD-100-50	PD-100-50-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0302 U
	PD-100-50-SO-12.5	05/21/2024	12.5	Deep	0.0148 U
	PD-100-50-SO-14.0	05/21/2024	14.0	Clay	0.0131 U
PD-100-60	PD-100-60-SO-12.0	05/21/2024	12.0	Deep	0.0175 J
	PD-100-60-SO-13.0	05/21/2024	13.0	Clay	0.0258 U
	PD-100-60-SO-13.0-DUP	05/21/2024	13.0	Clay	0.0269 U

Notes

Shading indicates values that exceed screening criteria; non-detects (U) were not compared with the cleanup level.

J = result is estimated.

mg/kg = milligrams per kilogram.

U = result is non-detect at the laboratory detection limit.

Reference

[1] MFA. 2019. *Draft Cleanup Action Plan, Former Park Laundry* . Prepared for Union Ridge Investment Company. Maul Foster & Alongi, Inc.: Vancouver, WA. July 19.

Table 2
Predesign Investigation Analytical Results
Former Park Laundry Site, Ridgefield, Washington

				Analyte:	Tetrachloroethene
				Units:	mg/kg
				Cleanup Level$^{(1)}$:	0.050
Location	Sample Name	Sample Date	Depth (ft bgs)	Unit	
PD-40-30	PD-40-30-SO-13.0	05/22/2024	13.0	Deep	0.0316
PD-40-40	PD-40-40-SO-13.25	05/22/2024	13.25	Clay	0.106
PD-40-50	PD-40-50-SO-13.0	05/22/2024	13.0	Deep	0.0291 J
PD-40-60	PD-40-60-SO-4.0	05/22/2024	4.0	Mid-Depth	0.0163 U
	PD-40-60-SO-13.5	05/22/2024	13.5	Deep	0.118
	PD-40-60-SO-13.75	05/22/2024	13.8	Clay	0.140
PD-40-70	PD-40-70-SO-2.5	05/21/2024	2.5	Mid-Depth	0.0264 U
	PD-40-70-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0168 U
	PD-40-70-SO-13.0	05/21/2024	13.0	Deep	0.0917
	PD-40-70-SO-14.0	05/21/2024	14.0	Clay	0.109
PD-50-30	PD-50-30-SO-12.0	05/21/2024	12.0	Deep	0.0225 J
	PD-50-30-SO-14.0	05/21/2024	14.0	Clay	0.422
	PD-50-30-SO-14.0-DUP	05/21/2024	14.0	Clay	0.281
PD-50-80	PD-50-80-SO-2.5	05/21/2024	2.5	Mid-Depth	0.0148 U
	PD-50-80-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0145 U
	PD-50-80-SO-14.0	05/22/2024	14.0	Deep	1.31
	PD-50-80-SO-14.5	05/21/2024	14.5	Clay	1.11
PD-60-20	PD-60-20-SO-3.5	05/22/2024	3.5	Mid-Depth	0.0280 J
	PD-60-20-SO-11.25	05/22/2024	11.25	Deep	0.0170 U
PD-60-60	PD-60-60-SO-3.5	05/21/2024	3.5	Mid-Depth	0.0147 U
	PD-60-60-SO-8.0	05/21/2024	8.0	Mid-Depth	0.0293 U
	PD-60-60-SO-12.0	05/21/2024	12.0	Deep	0.201
	PD-60-60-SO-14.0	05/21/2024	14.0	Clay	1.31
PD-70-10	PD-70-10-SO-4.0	05/22/2024	4.0	Mid-Depth	0.0171 U
PD-70-20	PD-70-20-SO-1.25	05/22/2024	1.25	Surface	0.236
	PD-70-20-SO-1.25-DUP	05/22/2024	1.25	Surface	0.207
PD-70-50	PD-70-50-SO-3.0	05/21/2024	3.0	Mid-Depth	0.0288 U
	PD-70-50-SO-8.5	05/21/2024	8.5	Mid-Depth	0.0175 J
	PD-70-50-SO-8.5-DUP	05/21/2024	8.5	Mid-Depth	0.0362 J
	PD-70-50-SO-12.5	05/21/2024	12.5	Deep	82.5
	PD-70-50-SO-13.5	05/21/2024	13.5	Clay	34.1
PD-70-60	PD-70-60-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0155 U
	PD-70-60-SO-9.0	05/21/2024	9.0	Deep	0.0583
	PD-70-60-SO-12.5	05/21/2024	12.5	Mid-Depth	1.87
	PD-70-60-SO-14.0	05/21/2024	14.0	Clay	4.02

Table 2
Predesign Investigation Analytical Results
Former Park Laundry Site, Ridgefield, Washington

				Analyte:	Tetrachloroethene
				Units:	mg/kg
				Cleanup Level(1):	0.050
Location	Sample Name	Sample Date	Depth (ft bgs)	Unit	
PD-70-70	PD-70-70-SO-3.0	05/21/2024	3.0	Mid-Depth	0.0458
	PD-70-70-SO-9.5	05/21/2024	9.5	Mid-Depth	0.0530
	PD-70-70-SO-13.0	05/21/2024	13.0	Deep	0.768
	PD-70-70-SO-14.0	05/21/2024	14.0	Clay	0.606
PD-80-20	PD-80-20-SO-3.0	05/22/2024	3.0	Mid-Depth	0.0180 U
PD-80-30	PD-80-30-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0152 U
	PD-80-30-SO-8.5	05/21/2024	8.5	Mid-Depth	0.0146 U
	PD-80-30-SO-11.5	05/21/2024	11.5	Deep	0.712
	PD-80-30-SO-12.5	05/21/2024	12.5	Clay	0.0274
PD-80-60	PD-80-60-SO-12.0	05/21/2024	12.0	Deep	3.04
PD-90-40	PD-90-40-SO-1.0	05/21/2024	1.0	Surface	0.218
PD-90-60	PD-90-60-SO-13.0	05/21/2024	13.0	Deep	0.168
PD-100-40	PD-100-40-SO-1.25	05/21/2024	1.25	Surface	0.0721
PD-100-50	PD-100-50-SO-4.0	05/21/2024	4.0	Mid-Depth	0.0302 U
	PD-100-50-SO-12.5	05/21/2024	12.5	Deep	0.0148 U
	PD-100-50-SO-14.0	05/21/2024	14.0	Clay	0.0131 U
PD-100-60	PD-100-60-SO-12.0	05/21/2024	12.0	Deep	0.0175 J
	PD-100-60-SO-13.0	05/21/2024	13.0	Clay	0.0258 U
	PD-100-60-SO-13.0-DUP	05/21/2024	13.0	Clay	0.0269 U

Notes

Shading indicates values that exceed screening criteria; non-detects (U) were not compared with the cleanup level.

J = result is estimated.

mg/kg = milligrams per kilogram.

U = result is non-detect at the laboratory detection limit.

Reference

(1)MFA. 2019. *Draft Cleanup Action Plan, Former Park Laundry* . Prepared for Union Ridge Investment Company. Maul Foster & Alongi, Inc.: Vancouver, WA. July 19.

Appendix A

Boring Log

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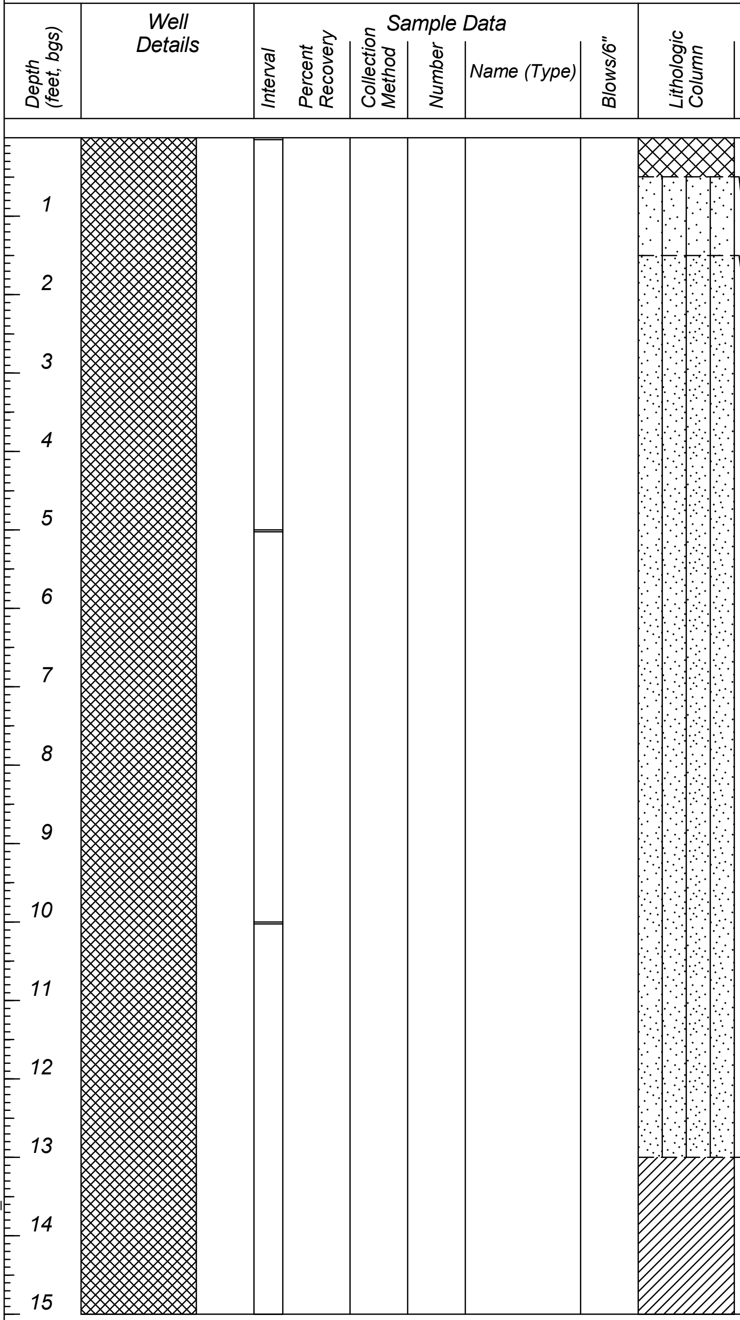
Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
M0239.33.007	**General Geology**	**1 of 1**

Project Name	**Former Park Laundry Predesign Investigation**	TOC Elevation (feet)	**N/A**
Project Location	**Ridgefield, Washington**	Surface Elevation (feet)	
Start/End Date	**5/21/2024 to 5/22/2024**	Northing	
Driller/Equipment	**Anderson Environmental Contracting, LLC./Geoprobe 7822DT**	Easting	
Geologist/Engineer	**Y. Perez; E. Aaser; I. Garcia**	Total Depth	**15.0-feet**
Sample Method	**Direct-Push**	Outer Hole Diam	**2.25-inch**



Soil Description

0.0 to 0.5 feet: SANDY GRAVEL (GW); gray; 40% sand, fine to coarse, subangular to subrounded; 60% gravel, fine to coarse, subangular to subrounded; trace fines; dry.

0.5 to 1.5 feet: SANDY SILT (ML); dark brown; 50% fines, nonplastic; 50% sand, fine to medium; medium density; trace woody debris; trace charcoal.

1.5 to 13.0 feet: SILTY SAND (SM); tan; 30% fines, nonplastic; 70% sand, fine to medium; medium density; heavy orange and gray mottling; trace black staining towards upper and lower boundaries on unit.

@ 10.0 feet: Becomes wet.

13.0 to 15.0 feet: SILT (ML); tan; 95% fines, nonplastic, stiff; 5% sand; medium density; heavy orange and gray mottling; trace black staining.

NOTES: (1) Borehole was backfilled with bentonite chips hydrated with potable water.

Appendix B

Data Validation Memorandum

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Data Validation Memorandum

Project No. M0239.33.007 | June 10, 2024 | City of Ridgefield

Maul Foster & Alongi, Inc. (MFA), conducted an independent Stage 2A review of the quality of analytical results for soil and associated quality control samples collected on May 21 and 22, 2024, at the Former Park Laundry Site in Ridgefield, Washington.

Apex Laboratories LLC, (Apex), performed the analyses. MFA reviewed Apex report numbers A4E1544 and A4E1657. The analyses performed and the samples analyzed are listed in the following tables. Samples submitted on hold are not shown below.

Analysis	Reference
Tetrachloroethene	EPA 8260D
Percent dry weight	EPA 8000D

Note
EPA = U.S. Environmental Protection Agency.

Samples Analyzed		
Report A4E1544		
PD-50-80-SO-2.5	PD-60-60-SO-14.0	PD-100-50-SO-4.0
PD-50-80-SO-9.5	PD-70-50-SO-3.0	PD-100-50-SO-6.0
PD-50-80-SO-14.5	PD-70-50-SO-8.5	PD-100-50-SO-14.0
PD-40-70-SO-2.5	PD-70-50-SO-12.5	PD-100-50-SO-12.5
PD-40-70-SO-9.5	PD-70-50-SO-13.5	PD-100-40-SO-1.25
PD-40-70-SO-13.0	PD-80-60-SO-4.0	PD-100-40-SO-4.0
PD-40-70-SO-14.0	PD-80-60-SO-8.0	PD-90-40-SO-1.0
PD-70-70-SO-3.0	PD-80-60-SO-12.0	PD-90-40-SO-3.0
PD-70-70-SO-9.5	PD-80-60-SO-13.5	PD-80-30-SO-4.0
PD-70-70-SO-13.0	PD-90-60-SO-0.75	PD-80-30-SO-8.5
PD-70-70-SO-14.0	PD-90-60-SO-8.0	PD-80-30-SO-11.5
PD-70-60-SO-9.0	PD-90-60-SO-13.0	PD-80-30-SO-12.5
PD-70-60-SO-4.0	PD-90-60-SO-14.0	PD-50-30-SO-1.5
PD-70-60-SO-12.5	PD-100-60-SO-1.5	PD-50-30-SO-6.0
PD-70-60-SO-14.0	PD-100-60-SO-8.0	PD-50-30-SO-12.0
PD-60-60-SO-3.5	PD-100-60-SO-12.0	PD-50-30-SO-14.0
PD-60-60-SO-8.0	PD-100-60-SO-13.0	PD-50-30-SO-14.0-DUP
PD-60-60-SO-8.0-DUP	PD-100-60-SO-13.0-DUP	PD-70-50-SO-8.5-DUP
PD-60-60-SO-12.0	PD-100-50-SO-1.25	--
Report A4E1657		
PD-40-30-SO-13.0	PD-40-60-SO-13.75	PD-70-20-SO-1.25-DUP
PD-40-40-SO-13.25	PD-50-80-SO-14.0	PD-70-10-SO-4.0
PD-40-50-SO-13.0	PD-60-20-SO-3.5	PD-80-20-SO-3.0
PD-40-60-SO-4.0	PD-60-20-SO-11.25	--
PD-40-60-SO-13.5	PD-70-20-SO-1.25	--

Data Validation Procedures

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020) and appropriate laboratory- and method-specific guidelines (Apex 2023, EPA 1986).

EPA Method 8000D percent solids results reported by the laboratory for dry-weight correction were reviewed for completeness but were not included in Stage 2A data validation.

Based on the data quality assurance/quality control review described herein, the data, with the appropriate final data qualifiers assigned, are considered acceptable for their intended use. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, and data qualifiers assigned by the reviewer during validation.

Final data qualifiers:

- J = result is estimated.
- U = result is non-detect at the laboratory detection limit (LDL).

Sample Conditions

Sample Custody

Sample custody was appropriately documented on the chain-of-custody (COC) forms accompanying the reports.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

Reporting Limits

The laboratory evaluated results to LDLs. Samples that required dilutions because of high analyte concentrations, matrix interferences, and/or dilutions necessary for preparation and/or analysis were reported with raised LDLs and method reporting limits (MRLs).

The laboratory qualified results between the LDL and the MRL with J, as estimated.

The reviewer confirmed that EPA Method 8260D soil results were reported with a base dilution factor of 50 due to a dilution required for analysis.

Blank Results

Method Blanks

Laboratory method blanks are used to evaluate whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies, in accordance with laboratory- and method-specific requirements.

All laboratory method blank results were non-detect to LDLs.

Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate the adequacy of the field equipment decontamination process when decontaminated sampling equipment is used to collect samples.

These blanks were not required for this sampling event, as all samples were collected using dedicated or single-use equipment.

Trip Blanks

Trip blanks are used to evaluate whether volatile organic compound contamination was introduced during shipping and field handling procedures.

Trip blanks were not submitted with the soil samples. The reviewer confirmed with the project manager and the laboratory that trip blanks are not necessary as the trip blank and sample concentrations are not comparable with the Stage 2A validation requirements. Stage 2A does not include raw instrument data, thus, the reviewer cannot compare concentrations of aqueous trip blanks and solid samples

Laboratory Control Sample and Laboratory Control Sample Duplicate Results

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) results are used to evaluate laboratory precision and accuracy. Apex did not report LCSDs and batch precision was evaluated based on laboratory duplicate results. All LCSs were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All LCS results were within acceptance limits for percent recovery.

Laboratory Duplicate Results

Laboratory duplicate results are used to evaluate laboratory precision and sample homogeneity. All laboratory duplicate samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

Laboratory duplicate results greater than five times the MRL were evaluated using laboratory relative percent difference (RPD) control limits. A secondary criterion was used when laboratory duplicate results were non-detect or less than five times the MRL. Results meet the secondary criterion if the absolute difference of the laboratory duplicate sample result and the parent sample result, or the MRL for non-detects, is equal to or less than the MRL value of the parent sample.

All laboratory duplicate results met the acceptance criteria.

Matrix Spike and Matrix Spike Duplicate Results

Matrix spike (MS) and matrix spike duplicate (MSD) results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and target analyte recovery. Apex did not report MSDs and batch precision was evaluated based on laboratory duplicate results. All MS samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All MS results were within acceptance limits for percent recovery.

Surrogate Results

Surrogate results are used to evaluate laboratory performance of target organic compounds for individual samples.

All surrogate results were within percent recovery acceptance limits.

Field Duplicate Results

Field duplicate results are used to evaluate field precision and sample homogeneity. The following field duplicate and parent sample pairs were submitted for analysis:

Report	Parent Sample	Field Duplicate Sample
A4E1544	PD-100-60-SO-13.0	PD-100-60-SO-13.0-DUP
	PD-50-30-SO-14.0	PD-50-30-SO-14.0-DUP
	PD-70-50-SO-8.5	PD-70-50-SO-8.5-DUP
A4E1657	PD-70-20-SO-1.25	PD-70-20-SO-1.25-DUP

MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL or 50 percent RPD for results that are greater than five times the MRL. RPD was not evaluated when both results in the sample pair were non-detect.

Field duplicate results that exceeded the acceptance criteria were qualified by the reviewer, as shown in the following table.

Report	Sample	Analyte	RPD (%)	Original Result (ug/kg)	Qualified Result (ug/kg)
A4E1544	PD-70-50-SO-8.5	Tetrachloroethene	69.6	17.5 J	17.5 J[(a)]
	PD-70-50-SO-8.5-DUP			36.2	36.2 J

Notes
J = result is estimated.
RPD = relative percent difference
ug/kg = micrograms per kilogram.
(a)Laboratory qualification was accepted by the reviewer

All remaining field duplicate results met the RPD acceptance criteria.

Data Package

The data package was reviewed for transcription errors, omissions, and anomalies.

The COC forms associated with reports A4E1544 and A4E1657 were revised on May 23, 2024, after laboratory receipt to place all samples on hold. On May 29, 2024, certain samples were taken off hold and analysis was initiated by the MFA project manager. Report A4E1657 was revised on June 11, 2024 to include the table of samples removed from hold. The reviewer confirmed the correct samples were analyzed.

According to the COC/Container Discrepancy and cooler receipt forms included in reports A4E1544 and A4E1657, multiple containers listed sample collection times and/or sample names that did not match the COC forms. The laboratory reported samples using the sample collection times and sample names listed on the original or revised COC forms. The reviewer confirmed with the field sampler that the information listed on the original or revised COC forms were correct.

According to the cooler receipt form accompanying report A4E1657, jars for EPA Method 8000D jars were received one-quarter full. The reviewer confirmed that the laboratory had sufficient sample volume to perform the analysis.

Report A4E1544 was revised on June 11, 2024, to remove erroneously reported dry weight results from samples that were not analyzed.

No additional issues were found.

References

Apex. 2023. *Quality Systems Manual*. Rev. 11. Apex Laboratories, LLC: Tigard, OR. June 20.

EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA publication SW-846. 3rd ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), VI phase III (2019), VII phase I (2019), and VII phase II (2020).

EPA. 2020. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

Appendix C

Laboratory Reports

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ANALYTICAL REPORT

Apex Laboratories, LLC

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

Tuesday, June 11, 2024

Meaghan Pollock
Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

RE: A4E1544 - Former Park Laundry Site - M0239.33.007

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

Enclosed are the results of analyses for work order A4E1544, which was received by the laboratory on 5/22/2024 at 11:37:00AM.

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

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

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Cooler #1 1.6 degC

Cooler #2 3.8 degC

Cooler #3 4.6 degC

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PD-50-80-SO-2.5	A4E1544-01	Soil	05/21/24 08:56	05/22/24 11:37
PD-50-80-SO-9.5	A4E1544-02	Soil	05/21/24 08:58	05/22/24 11:37
PD-50-80-SO-14.5	A4E1544-03	Soil	05/21/24 09:00	05/22/24 11:37
PD-40-70-SO-2.5	A4E1544-04	Soil	05/21/24 09:20	05/22/24 11:37
PD-40-70-SO-9.5	A4E1544-05	Soil	05/21/24 09:25	05/22/24 11:37
PD-40-70-SO-13.0	A4E1544-06	Soil	05/21/24 09:30	05/22/24 11:37
PD-40-70-SO-14.0	A4E1544-07	Soil	05/21/24 09:35	05/22/24 11:37
PD-70-70-SO-3.0	A4E1544-08	Soil	05/21/24 09:50	05/22/24 11:37
PD-70-70-SO-9.5	A4E1544-09	Soil	05/21/24 10:00	05/22/24 11:37
PD-70-70-SO-13.0	A4E1544-10	Soil	05/21/24 10:05	05/22/24 11:37
PD-70-70-SO-14.0	A4E1544-11	Soil	05/21/24 10:10	05/22/24 11:37
PD-70-60-SO-9.0	A4E1544-12	Soil	05/21/24 10:20	05/22/24 11:37
PD-70-60-SO-4.0	A4E1544-13	Soil	05/21/24 10:22	05/22/24 11:37
PD-70-60-SO-12.5	A4E1544-14	Soil	05/21/24 10:25	05/22/24 11:37
PD-70-60-SO-14.0	A4E1544-15	Soil	05/21/24 10:30	05/22/24 11:37
PD-60-60-SO-3.5	A4E1544-16	Soil	05/21/24 10:43	05/22/24 11:37
PD-60-60-SO-8.0	A4E1544-17	Soil	05/21/24 10:45	05/22/24 11:37
PD-60-60-SO-12.0	A4E1544-19	Soil	05/21/24 10:48	05/22/24 11:37
PD-60-60-SO-14.0	A4E1544-20	Soil	05/21/24 10:42	05/22/24 11:37
PD-70-50-SO-3.0	A4E1544-21	Soil	05/21/24 11:08	05/22/24 11:37
PD-70-50-SO-8.5	A4E1544-22	Soil	05/21/24 11:12	05/22/24 11:37
PD-70-50-SO-12.5	A4E1544-23	Soil	05/21/24 11:18	05/22/24 11:37
PD-70-50-SO-13.5	A4E1544-24	Soil	05/21/24 11:20	05/22/24 11:37
PD-80-60-SO-12.0	A4E1544-27	Soil	05/21/24 11:40	05/22/24 11:37
PD-90-60-SO-13.0	A4E1544-31	Soil	05/21/24 12:04	05/22/24 11:37
PD-100-60-SO-12.0	A4E1544-35	Soil	05/21/24 12:31	05/22/24 11:37
PD-100-60-SO-13.0	A4E1544-36	Soil	05/21/24 12:32	05/22/24 11:37
PD-100-60-SO-13.0-DUP	A4E1544-37	Soil	05/21/24 12:32	05/22/24 11:37
PD-100-50-SO-4.0	A4E1544-39	Soil	05/21/24 14:02	05/22/24 11:37
PD-100-50-SO-14.0	A4E1544-41	Soil	05/21/24 14:08	05/22/24 11:37
PD-100-50-SO-12.5	A4E1544-42	Soil	05/21/24 14:11	05/22/24 11:37
PD-100-40-SO-1.25	A4E1544-43	Soil	05/21/24 14:14	05/22/24 11:37
PD-90-40-SO-1.0	A4E1544-45	Soil	05/21/24 14:21	05/22/24 11:37

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PD-80-30-SO-4.0	**A4E1544-47**	**Soil**	**05/21/24 14:40**	**05/22/24 11:37**
PD-80-30-SO-8.5	**A4E1544-48**	**Soil**	**05/21/24 14:42**	**05/22/24 11:37**
PD-80-30-SO-11.5	**A4E1544-49**	**Soil**	**05/21/24 14:45**	**05/22/24 11:37**
PD-80-30-SO-12.5	**A4E1544-50**	**Soil**	**05/21/24 14:47**	**05/22/24 11:37**
PD-50-30-SO-12.0	**A4E1544-53**	**Soil**	**05/21/24 15:19**	**05/22/24 11:37**
PD-50-30-SO-14.0	**A4E1544-54**	**Soil**	**05/21/24 15:20**	**05/22/24 11:37**
PD-50-30-SO-14.0-DUP	**A4E1544-55**	**Soil**	**05/21/24 15:20**	**05/22/24 11:37**
PD-70-50-SO-8.5-DUP	**A4E1544-56**	**Soil**	**05/21/24 11:12**	**05/22/24 11:37**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-50-80-SO-2.5 (A4E1544-01)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	14.8	29.6	ug/kg dry	50	05/24/24 11:50	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits: 80-120 %*	*1*	*05/24/24 11:50*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 11:50*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 11:50*	*5035A/8260D*	
PD-50-80-SO-9.5 (A4E1544-02)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	14.5	29.1	ug/kg dry	50	05/24/24 12:15	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits: 80-120 %*	*1*	*05/24/24 12:15*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 12:15*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 12:15*	*5035A/8260D*	
PD-50-80-SO-14.5 (A4E1544-03)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**1110**	14.6	29.2	ug/kg dry	50	05/24/24 12:41	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits: 80-120 %*	*1*	*05/24/24 12:41*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 12:41*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 12:41*	*5035A/8260D*	
PD-40-70-SO-2.5 (A4E1544-04)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	26.4	26.4	ug/kg dry	50	05/24/24 13:07	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits: 80-120 %*	*1*	*05/24/24 13:07*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/24/24 13:07*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 13:07*	*5035A/8260D*	
PD-40-70-SO-9.5 (A4E1544-05)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	16.8	33.6	ug/kg dry	50	05/24/24 13:33	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits: 80-120 %*	*1*	*05/24/24 13:33*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 13:33*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/24/24 13:33*	*5035A/8260D*	
PD-40-70-SO-13.0 (A4E1544-06)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**91.7**	17.9	35.8	ug/kg dry	50	05/24/24 13:58	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 13:58*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/24/24 13:58*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 13:58*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-40-70-SO-14.0 (A4E1544-07)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**109**	18.1	36.2	ug/kg dry	50	05/24/24 14:24	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 14:24*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/24/24 14:24*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 14:24*	*5035A/8260D*	
PD-70-70-SO-3.0 (A4E1544-08)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**45.8**	15.9	31.8	ug/kg dry	50	05/24/24 14:50	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits: 80-120 %*	*1*	*05/24/24 14:50*	*5035A/8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*05/24/24 14:50*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 14:50*	*5035A/8260D*	
PD-70-70-SO-9.5 (A4E1544-09)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**53.0**	15.4	30.8	ug/kg dry	50	05/24/24 15:16	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits: 80-120 %*	*1*	*05/24/24 15:16*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/24/24 15:16*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*79-120 %*	*1*	*05/24/24 15:16*	*5035A/8260D*	
PD-70-70-SO-13.0 (A4E1544-10)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**768**	16.4	32.8	ug/kg dry	50	05/24/24 15:41	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*05/24/24 15:41*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 15:41*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/24/24 15:41*	*5035A/8260D*	
PD-70-70-SO-14.0 (A4E1544-11)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**606**	14.8	29.5	ug/kg dry	50	05/24/24 16:07	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 16:07*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 16:07*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 16:07*	*5035A/8260D*	
PD-70-60-SO-9.0 (A4E1544-12)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**58.3**	15.8	31.7	ug/kg dry	50	05/24/24 16:33	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 16:33*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 16:33*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 16:33*	*5035A/8260D*	

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-70-60-SO-4.0 (A4E1544-13)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	15.5	31.0	ug/kg dry	50	05/24/24 17:24	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*05/24/24 17:24*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 17:24*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 17:24*	*5035A/8260D*	
PD-70-60-SO-12.5 (A4E1544-14)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**1870**	16.4	32.7	ug/kg dry	50	05/24/24 17:50	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*05/24/24 17:50*	*5035A/8260D*	
Toluene-d8 (Surr)			*96 %*	*80-120 %*	*1*	*05/24/24 17:50*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/24/24 17:50*	*5035A/8260D*	
PD-70-60-SO-14.0 (A4E1544-15)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**4020**	13.5	27.0	ug/kg dry	50	05/24/24 18:16	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 18:16*	*5035A/8260D*	
Toluene-d8 (Surr)			*96 %*	*80-120 %*	*1*	*05/24/24 18:16*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*79-120 %*	*1*	*05/24/24 18:16*	*5035A/8260D*	
PD-60-60-SO-3.5 (A4E1544-16RE1)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	14.7	29.3	ug/kg dry	50	05/31/24 14:15	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*05/31/24 14:15*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 14:15*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 14:15*	*5035A/8260D*	
PD-60-60-SO-8.0 (A4E1544-17)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	29.3	29.3	ug/kg dry	50	05/24/24 19:07	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*05/24/24 19:07*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 19:07*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 19:07*	*5035A/8260D*	
PD-60-60-SO-12.0 (A4E1544-19)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**201**	17.6	35.3	ug/kg dry	50	05/24/24 19:33	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*05/24/24 19:33*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/24/24 19:33*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 19:33*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-60-60-SO-14.0 (A4E1544-20)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	**1310**	14.5	28.9	ug/kg dry	50	05/24/24 19:59	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*05/24/24 19:59*	*5035A/8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*05/24/24 19:59*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 19:59*	*5035A/8260D*	
PD-70-50-SO-3.0 (A4E1544-21)				**Matrix: Soil**		**Batch: 24E0892**		
Tetrachloroethene (PCE)	ND	28.8	28.8	ug/kg dry	50	05/24/24 20:25	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*05/24/24 20:25*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/24/24 20:25*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/24/24 20:25*	*5035A/8260D*	
PD-70-50-SO-8.5 (A4E1544-22)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**17.5**	15.6	31.2	ug/kg dry	50	05/31/24 14:41	5035A/8260D	**J**
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*05/31/24 14:41*	*5035A/8260D*	
Toluene-d8 (Surr)			*96 %*	*80-120 %*	*1*	*05/31/24 14:41*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*94 %*	*79-120 %*	*1*	*05/31/24 14:41*	*5035A/8260D*	
PD-70-50-SO-12.5 (A4E1544-23RE1)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**82500**	308	616	ug/kg dry	1000	06/03/24 14:42	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*06/03/24 14:42*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 14:42*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 14:42*	*5035A/8260D*	
PD-70-50-SO-13.5 (A4E1544-24RE1)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**34100**	135	271	ug/kg dry	500	06/03/24 14:16	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*06/03/24 14:16*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 14:16*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 14:16*	*5035A/8260D*	
PD-80-60-SO-12.0 (A4E1544-27RE1)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**3040**	14.3	28.7	ug/kg dry	50	06/03/24 13:50	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 13:50*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 13:50*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 13:50*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-90-60-SO-13.0 (A4E1544-31RE1)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**168**	15.0	30.0	ug/kg dry	50	06/03/24 12:59	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*06/03/24 12:59*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 12:59*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 12:59*	*5035A/8260D*	
PD-100-60-SO-12.0 (A4E1544-35RE1)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**17.5**	16.2	32.5	ug/kg dry	50	06/03/24 13:24	5035A/8260D	**J**
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 13:24*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 13:24*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 13:24*	*5035A/8260D*	
PD-100-60-SO-13.0 (A4E1544-36)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	25.8	25.8	ug/kg dry	50	05/31/24 16:49	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*05/31/24 16:49*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 16:49*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 16:49*	*5035A/8260D*	
PD-100-60-SO-13.0-DUP (A4E1544-37)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	26.9	26.9	ug/kg dry	50	05/31/24 17:15	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*05/31/24 17:15*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 17:15*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/31/24 17:15*	*5035A/8260D*	
PD-100-50-SO-4.0 (A4E1544-39)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	30.2	30.2	ug/kg dry	50	05/31/24 17:41	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*05/31/24 17:41*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 17:41*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*94 %*	*79-120 %*	*1*	*05/31/24 17:41*	*5035A/8260D*	
PD-100-50-SO-14.0 (A4E1544-41)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	13.1	26.2	ug/kg dry	50	05/31/24 18:07	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*05/31/24 18:07*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 18:07*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*94 %*	*79-120 %*	*1*	*05/31/24 18:07*	*5035A/8260D*	

Maul Foster & Alongi, INC.
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Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-100-50-SO-12.5 (A4E1544-42)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	14.8	29.6	ug/kg dry	50	05/31/24 18:32	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*05/31/24 18:32*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 18:32*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 18:32*	*5035A/8260D*	
PD-100-40-SO-1.25 (A4E1544-43)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**72.1**	15.0	30.0	ug/kg dry	50	05/31/24 18:58	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*05/31/24 18:58*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 18:58*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 18:58*	*5035A/8260D*	
PD-90-40-SO-1.0 (A4E1544-45)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**218**	12.8	25.6	ug/kg dry	50	05/31/24 19:24	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*05/31/24 19:24*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 19:24*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*94 %*	*79-120 %*	*1*	*05/31/24 19:24*	*5035A/8260D*	
PD-80-30-SO-4.0 (A4E1544-47)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	15.2	30.4	ug/kg dry	50	05/31/24 19:50	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*05/31/24 19:50*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 19:50*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/31/24 19:50*	*5035A/8260D*	
PD-80-30-SO-8.5 (A4E1544-48)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	ND	14.6	29.3	ug/kg dry	50	05/31/24 20:16	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*05/31/24 20:16*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 20:16*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 20:16*	*5035A/8260D*	
PD-80-30-SO-11.5 (A4E1544-49)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**712**	16.1	32.3	ug/kg dry	50	05/31/24 20:41	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*05/31/24 20:41*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*05/31/24 20:41*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/31/24 20:41*	*5035A/8260D*	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-80-30-SO-12.5 (A4E1544-50)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**27.4**	13.7	27.4	ug/kg dry	50	05/31/24 21:07	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*05/31/24 21:07*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 21:07*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*05/31/24 21:07*	*5035A/8260D*	
PD-50-30-SO-12.0 (A4E1544-53)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**22.5**	18.1	36.2	ug/kg dry	50	05/31/24 21:33	5035A/8260D	J
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*05/31/24 21:33*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 21:33*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*93 %*	*79-120 %*	*1*	*05/31/24 21:33*	*5035A/8260D*	
PD-50-30-SO-14.0 (A4E1544-54)				**Matrix: Soil**		**Batch: 24E1149**		
Tetrachloroethene (PCE)	**422**	14.6	29.1	ug/kg dry	50	05/31/24 21:59	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*05/31/24 21:59*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*05/31/24 21:59*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*05/31/24 21:59*	*5035A/8260D*	
PD-50-30-SO-14.0-DUP (A4E1544-55)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**281**	14.1	28.1	ug/kg dry	50	06/03/24 15:33	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*06/03/24 15:33*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 15:33*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 15:33*	*5035A/8260D*	
PD-70-50-SO-8.5-DUP (A4E1544-56)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**36.2**	16.2	32.4	ug/kg dry	50	06/03/24 15:59	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 15:59*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 15:59*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 15:59*	*5035A/8260D*	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-50-80-SO-2.5 (A4E1544-01)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**79.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-50-80-SO-9.5 (A4E1544-02)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**77.7**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-50-80-SO-14.5 (A4E1544-03)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**78.6**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-40-70-SO-2.5 (A4E1544-04)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**83.1**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-40-70-SO-9.5 (A4E1544-05)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**74.4**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-40-70-SO-13.0 (A4E1544-06)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**71.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-40-70-SO-14.0 (A4E1544-07)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**79.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-70-SO-3.0 (A4E1544-08)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**82.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-70-SO-9.5 (A4E1544-09)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.7**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-70-SO-13.0 (A4E1544-10)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**73.1**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-70-SO-14.0 (A4E1544-11)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**79.2**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-60-SO-9.0 (A4E1544-12)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-60-SO-4.0 (A4E1544-13)				**Matrix: Soil**		**Batch: 24E0898**		

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-70-60-SO-4.0 (A4E1544-13)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**77.6**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-60-SO-12.5 (A4E1544-14)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**71.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-60-SO-14.0 (A4E1544-15)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**80.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-60-60-SO-3.5 (A4E1544-16)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**77.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-60-60-SO-8.0 (A4E1544-17)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.3**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-60-60-SO-12.0 (A4E1544-19)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**70.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-60-60-SO-14.0 (A4E1544-20)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**80.3**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-50-SO-3.0 (A4E1544-21)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**78.1**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-50-SO-8.5 (A4E1544-22)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**75.2**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-50-SO-12.5 (A4E1544-23)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**74.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-50-SO-13.5 (A4E1544-24)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**80.1**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-80-60-SO-12.0 (A4E1544-27)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.7**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-90-60-SO-13.0 (A4E1544-31)				**Matrix: Soil**		**Batch: 24E0898**		

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-90-60-SO-13.0 (A4E1544-31)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-60-SO-12.0 (A4E1544-35)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**73.8**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-60-SO-13.0 (A4E1544-36)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**81.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-60-SO-13.0-DUP (A4E1544-37)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**80.4**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-50-SO-4.0 (A4E1544-39)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.6**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-50-SO-14.0 (A4E1544-41)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**81.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-50-SO-12.5 (A4E1544-42)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.2**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-100-40-SO-1.25 (A4E1544-43)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**82.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-90-40-SO-1.0 (A4E1544-45)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**84.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-80-30-SO-4.0 (A4E1544-47)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**77.3**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-80-30-SO-8.5 (A4E1544-48)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**76.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-80-30-SO-11.5 (A4E1544-49)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**75.5**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-80-30-SO-12.5 (A4E1544-50)				**Matrix: Soil**		**Batch: 24E0898**		

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-80-30-SO-12.5 (A4E1544-50)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**81.2**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-50-30-SO-12.0 (A4E1544-53)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**68.0**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-50-30-SO-14.0 (A4E1544-54)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**78.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-50-30-SO-14.0-DUP (A4E1544-55)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**78.9**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	
PD-70-50-SO-8.5-DUP (A4E1544-56)				**Matrix: Soil**		**Batch: 24E0898**		
% Solids	**74.3**	---	1.00	%	1	05/28/24 07:23	EPA 8000D	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0892 - EPA 5035A							**Soil**					
Blank (24E0892-BLK1)				Prepared: 05/24/24 09:00		Analyzed: 05/24/24 11:24						
5035A/8260D												
Tetrachloroethene (PCE)	ND	12.5	25.0	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*97 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*98 %*		*79-120 %*		*"*					
LCS (24E0892-BS1)				Prepared: 05/24/24 09:00		Analyzed: 05/24/24 10:32						
5035A/8260D												
Tetrachloroethene (PCE)	1040	12.5	25.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*110 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*95 %*		*79-120 %*		*"*					
Duplicate (24E0892-DUP1)				Prepared: 05/21/24 10:20		Analyzed: 05/24/24 16:59						
QC Source Sample: PD-70-60-SO-9.0 (A4E1544-12)												
5035A/8260D												
Tetrachloroethene (PCE)	**57.0**	15.8	31.7	ug/kg dry	50	---	58.3	---	---	2	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*97 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*79-120 %*		*"*					
Matrix Spike (24E0892-MS1)				Prepared: 05/21/24 11:08		Analyzed: 05/24/24 20:50						
QC Source Sample: PD-70-50-SO-3.0 (A4E1544-21)												
5035A/8260D												
Tetrachloroethene (PCE)	1250	14.4	28.8	ug/kg dry	50	1150	ND	107	73-128%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*97 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*92 %*		*79-120 %*		*"*					
Batch 24E1149 - EPA 5035A							**Soil**					
Blank (24E1149-BLK1)				Prepared: 05/31/24 10:00		Analyzed: 05/31/24 13:49						
5035A/8260D												

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24E1149 - EPA 5035A — **Soil**

Blank (24E1149-BLK1) Prepared: 05/31/24 10:00 Analyzed: 05/31/24 13:49

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Tetrachloroethene (PCE)	ND	12.5	25.0	ug/kg wet	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 115 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 98 % 80-120 % "
4-Bromofluorobenzene (Surr) 97 % 79-120 % "

LCS (24E1149-BS1) Prepared: 05/31/24 10:00 Analyzed: 05/31/24 12:58

5035A/8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Tetrachloroethene (PCE)	979	12.5	25.0	ug/kg wet	50	1000	---	98	80-120%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 112 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 99 % 80-120 % "
4-Bromofluorobenzene (Surr) 92 % 79-120 % "

Duplicate (24E1149-DUP1) Prepared: 05/21/24 11:18 Analyzed: 05/31/24 23:42

QC Source Sample: PD-70-50-SO-12.5 (A4E1544-23)

5035A/8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Tetrachloroethene (PCE)	**98000**	15.4	30.8	ug/kg dry	50	---	99600	---	---	2	30%	E

Surr: 1,4-Difluorobenzene (Surr) Recovery: 119 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 94 % 80-120 % "
4-Bromofluorobenzene (Surr) 94 % 79-120 % "

Matrix Spike (24E1149-MS1) Prepared: 05/21/24 15:20 Analyzed: 05/31/24 22:24

QC Source Sample: PD-50-30-SO-14.0 (A4E1544-54)

5035A/8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Tetrachloroethene (PCE)	1600	14.6	29.1	ug/kg dry	50	1160	422	101	73-128%	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 115 % Limits: 80-120 % Dilution: 1x
Toluene-d8 (Surr) 98 % 80-120 % "
4-Bromofluorobenzene (Surr) 92 % 79-120 % "

Philip Nerenberg

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0009 - EPA 5035A							**Soil**					
Blank (24F0009-BLK1)			Prepared: 06/03/24 08:00 Analyzed: 06/03/24 12:31									
5035A/8260D												
Tetrachloroethene (PCE)	ND	12.5	25.0	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*97 %*		*79-120 %*		*"*					
LCS (24F0009-BS1)			Prepared: 06/03/24 08:00 Analyzed: 06/03/24 11:39									
5035A/8260D												
Tetrachloroethene (PCE)	1020	12.5	25.0	ug/kg wet	50	1000	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*93 %*		*79-120 %*		*"*					
Duplicate (24F0009-DUP1)			Prepared: 05/22/24 11:25 Analyzed: 06/03/24 20:17									
QC Source Sample: Non-SDG (A4E1657-22)												
Tetrachloroethene (PCE)	ND	17.0	33.9	ug/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*79-120 %*		*"*					
Matrix Spike (24F0009-MS1)			Prepared: 05/22/24 12:10 Analyzed: 06/03/24 22:25									
QC Source Sample: Non-SDG (A4E1657-31)												
5035A/8260D												
Tetrachloroethene (PCE)	1560	18.0	36.0	ug/kg dry	50	1440	ND	108	73-128%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*91 %*		*79-120 %*		*"*					

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0898 - Total Solids (Dry Weight) - 2022							**Soil**					
Duplicate (24E0898-DUP1)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-01)												
% Solids	**44.4**	---	1.00	%	1	---	40.9	---	---	8	10%	
Duplicate (24E0898-DUP2)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-02)												
% Solids	**58.2**	---	1.00	%	1	---	57.3	---	---	2	10%	
Duplicate (24E0898-DUP3)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-03)												
% Solids	**55.8**	---	1.00	%	1	---	56.3	---	---	1	10%	
Duplicate (24E0898-DUP4)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-04)												
% Solids	**60.7**	---	1.00	%	1	---	61.8	---	---	2	10%	
Duplicate (24E0898-DUP5)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-05)												
% Solids	**67.6**	---	1.00	%	1	---	67.9	---	---	0.5	10%	
Duplicate (24E0898-DUP6)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-06)												
% Solids	**56.3**	---	1.00	%	1	---	58.7	---	---	4	10%	
Duplicate (24E0898-DUP7)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1506-07)												
% Solids	**55.5**	---	1.00	%	1	---	56.7	---	---	2	10%	
Duplicate (24E0898-DUP8)			Prepared: 05/24/24 09:35			Analyzed: 05/28/24 07:23						**CONT**
QC Source Sample: Non-SDG (A4E1506-08)												
% Solids	**55.0**	---	1.00	%	1	---	54.9	---	---	0.3	10%	

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0898 - Total Solids (Dry Weight) - 2022							**Soil**					
Duplicate (24E0898-DUP9)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							**CONT**
QC Source Sample: Non-SDG (A4E1506-09)												
% Solids	**51.7**	---	1.00	%	1	---	50.4	---	---	3	10%	
Duplicate (24E0898-DUPA)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-10)												
% Solids	**48.8**	---	1.00	%	1	---	49.4	---	---	1	10%	
Duplicate (24E0898-DUPB)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-11)												
% Solids	**59.9**	---	1.00	%	1	---	61.1	---	---	2	10%	
Duplicate (24E0898-DUPC)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							**CONT**
QC Source Sample: Non-SDG (A4E1506-12)												
% Solids	**62.0**	---	1.00	%	1	---	61.4	---	---	0.9	10%	
Duplicate (24E0898-DUPD)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-13)												
% Solids	**58.4**	---	1.00	%	1	---	56.9	---	---	3	10%	
Duplicate (24E0898-DUPE)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-14)												
% Solids	**64.7**	---	1.00	%	1	---	64.5	---	---	0.3	10%	
Duplicate (24E0898-DUPF)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-15)												
% Solids	**47.7**	---	1.00	%	1	---	48.2	---	---	1	10%	
Duplicate (24E0898-DUPG)			Prepared: 05/24/24 09:35		Analyzed: 05/28/24 07:23							
QC Source Sample: Non-SDG (A4E1506-16)												
% Solids	**70.8**	---	1.00	%	1	---	70.7	---	---	0.1	10%	

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0898 - Total Solids (Dry Weight) - 2022							**Soil**					
Duplicate (24E0898-DUPH)			Prepared: 05/24/24 18:50			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1605-01)												
% Solids	**87.5**	---	1.00	%	1	---	88.0	---	---	0.6	10%	
Duplicate (24E0898-DUPI)			Prepared: 05/24/24 18:50			Analyzed: 05/28/24 07:23						
QC Source Sample: Non-SDG (A4E1607-01)												
% Solids	**74.6**	---	1.00	%	1	---	74.0	---	---	0.9	10%	

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

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24E0892							
A4E1544-01	Soil	5035A/8260D	05/21/24 08:56	05/21/24 08:56	6.9g/5mL	5g/5mL	0.73
A4E1544-02	Soil	5035A/8260D	05/21/24 08:58	05/21/24 08:58	7.34g/5mL	5g/5mL	0.68
A4E1544-03	Soil	5035A/8260D	05/21/24 09:00	05/21/24 09:00	7.1g/5mL	5g/5mL	0.70
A4E1544-04	Soil	5035A/8260D	05/21/24 09:20	05/21/24 09:20	7.07g/5mL	5g/5mL	0.71
A4E1544-05	Soil	5035A/8260D	05/21/24 09:25	05/21/24 09:25	6.7g/5mL	5g/5mL	0.75
A4E1544-06	Soil	5035A/8260D	05/21/24 09:30	05/21/24 09:30	6.88g/5mL	5g/5mL	0.73
A4E1544-07	Soil	5035A/8260D	05/21/24 09:35	05/21/24 09:35	13.59g/13mL	5g/5mL	0.96
A4E1544-08	Soil	5035A/8260D	05/21/24 09:50	05/21/24 09:50	5.72g/5mL	5g/5mL	0.87
A4E1544-09	Soil	5035A/8260D	05/21/24 10:00	05/21/24 10:00	7.03g/5mL	5g/5mL	0.71
A4E1544-10	Soil	5035A/8260D	05/21/24 10:05	05/21/24 10:05	7.25g/5mL	5g/5mL	0.69
A4E1544-11	Soil	5035A/8260D	05/21/24 10:10	05/21/24 10:10	6.86g/5mL	5g/5mL	0.73
A4E1544-12	Soil	5035A/8260D	05/21/24 10:20	05/21/24 10:20	6.8g/5mL	5g/5mL	0.74
A4E1544-13	Soil	5035A/8260D	05/21/24 10:22	05/21/24 10:22	6.76g/5mL	5g/5mL	0.74
A4E1544-14	Soil	5035A/8260D	05/21/24 10:25	05/21/24 10:25	7.57g/5mL	5g/5mL	0.66
A4E1544-15	Soil	5035A/8260D	05/21/24 10:30	05/21/24 10:30	7.54g/5mL	5g/5mL	0.66
A4E1544-17	Soil	5035A/8260D	05/21/24 10:45	05/21/24 10:45	7.6g/5mL	5g/5mL	0.66
A4E1544-19	Soil	5035A/8260D	05/21/24 10:48	05/21/24 10:48	7.05g/5mL	5g/5mL	0.71
A4E1544-20	Soil	5035A/8260D	05/21/24 10:42	05/21/24 10:42	6.83g/5mL	5g/5mL	0.73
A4E1544-21	Soil	5035A/8260D	05/21/24 11:08	05/21/24 11:08	7.36g/5mL	5g/5mL	0.68
Batch: 24E1149							
A4E1544-16RE1	Soil	5035A/8260D	05/21/24 10:43	05/21/24 10:43	7.31g/5mL	5g/5mL	0.68
A4E1544-22	Soil	5035A/8260D	05/21/24 11:12	05/21/24 11:12	7.24g/5mL	5g/5mL	0.69
A4E1544-36	Soil	5035A/8260D	05/21/24 12:32	05/21/24 12:32	7.74g/5mL	5g/5mL	0.65
A4E1544-37	Soil	5035A/8260D	05/21/24 12:32	05/21/24 12:32	7.47g/5mL	5g/5mL	0.67
A4E1544-39	Soil	5035A/8260D	05/21/24 14:02	05/21/24 14:02	7.24g/5mL	5g/5mL	0.69
A4E1544-41	Soil	5035A/8260D	05/21/24 14:08	05/21/24 14:08	7.37g/5mL	5g/5mL	0.68
A4E1544-42	Soil	5035A/8260D	05/21/24 14:11	05/21/24 14:11	7.52g/5mL	5g/5mL	0.67
A4E1544-43	Soil	5035A/8260D	05/21/24 14:14	05/21/24 14:14	6.07g/5mL	5g/5mL	0.82
A4E1544-45	Soil	5035A/8260D	05/21/24 14:21	05/21/24 14:21	7.16g/5mL	5g/5mL	0.70
A4E1544-47	Soil	5035A/8260D	05/21/24 14:40	05/21/24 14:40	7.03g/5mL	5g/5mL	0.71
A4E1544-48	Soil	5035A/8260D	05/21/24 14:42	05/21/24 14:42	7.46g/5mL	5g/5mL	0.67
A4E1544-49	Soil	5035A/8260D	05/21/24 14:45	05/21/24 14:45	6.85g/5mL	5g/5mL	0.73
A4E1544-50	Soil	5035A/8260D	05/21/24 14:47	05/21/24 14:47	7.13g/5mL	5g/5mL	0.70
A4E1544-53	Soil	5035A/8260D	05/21/24 15:19	05/21/24 15:19	7.53g/5mL	5g/5mL	0.66
A4E1544-54	Soil	5035A/8260D	05/21/24 15:20	05/21/24 15:20	7.05g/5mL	5g/5mL	0.71

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0009							
A4E1544-23RE1	Soil	5035A/8260D	05/21/24 11:18	05/21/24 11:18	7.56g/5mL	5g/5mL	0.66
A4E1544-24RE1	Soil	5035A/8260D	05/21/24 11:20	05/21/24 11:20	7.48g/5mL	5g/5mL	0.67
A4E1544-27RE1	Soil	5035A/8260D	05/21/24 11:40	05/21/24 11:40	7.72g/5mL	5g/5mL	0.65
A4E1544-31RE1	Soil	5035A/8260D	05/21/24 12:04	05/21/24 12:04	7.31g/5mL	5g/5mL	0.68
A4E1544-35RE1	Soil	5035A/8260D	05/21/24 12:31	05/21/24 12:31	7.19g/5mL	5g/5mL	0.70
A4E1544-55	Soil	5035A/8260D	05/21/24 15:20	05/21/24 15:20	7.38g/5mL	5g/5mL	0.68
A4E1544-56	Soil	5035A/8260D	05/21/24 11:12	05/21/24 11:12	7.09g/5mL	5g/5mL	0.71

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24E0898							
A4E1544-01	Soil	EPA 8000D	05/21/24 08:56	05/24/24 09:35			NA
A4E1544-02	Soil	EPA 8000D	05/21/24 08:58	05/24/24 09:35			NA
A4E1544-03	Soil	EPA 8000D	05/21/24 09:00	05/24/24 09:35			NA
A4E1544-04	Soil	EPA 8000D	05/21/24 09:20	05/24/24 09:35			NA
A4E1544-05	Soil	EPA 8000D	05/21/24 09:25	05/24/24 09:35			NA
A4E1544-06	Soil	EPA 8000D	05/21/24 09:30	05/24/24 09:35			NA
A4E1544-07	Soil	EPA 8000D	05/21/24 09:35	05/24/24 09:35			NA
A4E1544-08	Soil	EPA 8000D	05/21/24 09:50	05/24/24 09:35			NA
A4E1544-09	Soil	EPA 8000D	05/21/24 10:00	05/24/24 09:35			NA
A4E1544-10	Soil	EPA 8000D	05/21/24 10:05	05/24/24 09:35			NA
A4E1544-11	Soil	EPA 8000D	05/21/24 10:10	05/24/24 09:35			NA
A4E1544-12	Soil	EPA 8000D	05/21/24 10:20	05/24/24 09:35			NA
A4E1544-13	Soil	EPA 8000D	05/21/24 10:22	05/24/24 09:35			NA
A4E1544-14	Soil	EPA 8000D	05/21/24 10:25	05/24/24 09:35			NA
A4E1544-15	Soil	EPA 8000D	05/21/24 10:30	05/24/24 09:35			NA
A4E1544-16	Soil	EPA 8000D	05/21/24 10:43	05/24/24 09:35			NA
A4E1544-17	Soil	EPA 8000D	05/21/24 10:45	05/24/24 09:35			NA
A4E1544-19	Soil	EPA 8000D	05/21/24 10:48	05/24/24 09:35			NA
A4E1544-20	Soil	EPA 8000D	05/21/24 10:42	05/24/24 09:35			NA
A4E1544-21	Soil	EPA 8000D	05/21/24 11:08	05/24/24 09:35			NA
A4E1544-22	Soil	EPA 8000D	05/21/24 11:12	05/24/24 09:35			NA
A4E1544-23	Soil	EPA 8000D	05/21/24 11:18	05/24/24 09:35			NA
A4E1544-24	Soil	EPA 8000D	05/21/24 11:20	05/24/24 09:35			NA

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4E1544-27	Soil	EPA 8000D	05/21/24 11:40	05/24/24 09:35			NA
A4E1544-31	Soil	EPA 8000D	05/21/24 12:04	05/24/24 09:35			NA
A4E1544-35	Soil	EPA 8000D	05/21/24 12:31	05/24/24 09:35			NA
A4E1544-36	Soil	EPA 8000D	05/21/24 12:32	05/24/24 09:35			NA
A4E1544-37	Soil	EPA 8000D	05/21/24 12:32	05/24/24 09:35			NA
A4E1544-39	Soil	EPA 8000D	05/21/24 14:02	05/24/24 09:35			NA
A4E1544-41	Soil	EPA 8000D	05/21/24 14:08	05/24/24 09:35			NA
A4E1544-42	Soil	EPA 8000D	05/21/24 14:11	05/24/24 09:35			NA
A4E1544-43	Soil	EPA 8000D	05/21/24 14:14	05/24/24 09:35			NA
A4E1544-45	Soil	EPA 8000D	05/21/24 14:21	05/24/24 09:35			NA
A4E1544-47	Soil	EPA 8000D	05/21/24 14:40	05/24/24 09:35			NA
A4E1544-48	Soil	EPA 8000D	05/21/24 14:42	05/24/24 09:35			NA
A4E1544-49	Soil	EPA 8000D	05/21/24 14:45	05/24/24 09:35			NA
A4E1544-50	Soil	EPA 8000D	05/21/24 14:47	05/24/24 09:35			NA
A4E1544-53	Soil	EPA 8000D	05/21/24 15:19	05/24/24 09:35			NA
A4E1544-54	Soil	EPA 8000D	05/21/24 15:20	05/24/24 09:35			NA
A4E1544-55	Soil	EPA 8000D	05/21/24 15:20	05/24/24 09:35			NA
A4E1544-56	Soil	EPA 8000D	05/21/24 11:12	05/24/24 18:58			NA

QUALIFIER DEFINITIONS

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

Apex Laboratories

CONT	The Sample Container provided for this analysis was not provided by Apex Laboratories, and has not been verified as part of the Apex Quality System.
E	Estimated Value. The result is above the calibration range of the instrument.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified DL.

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry"	Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry") See Percent Solids section for details of dry weight analysis.
" wet"	Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
" "	Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).

Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy. For further details, please request a copy of this document.

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

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

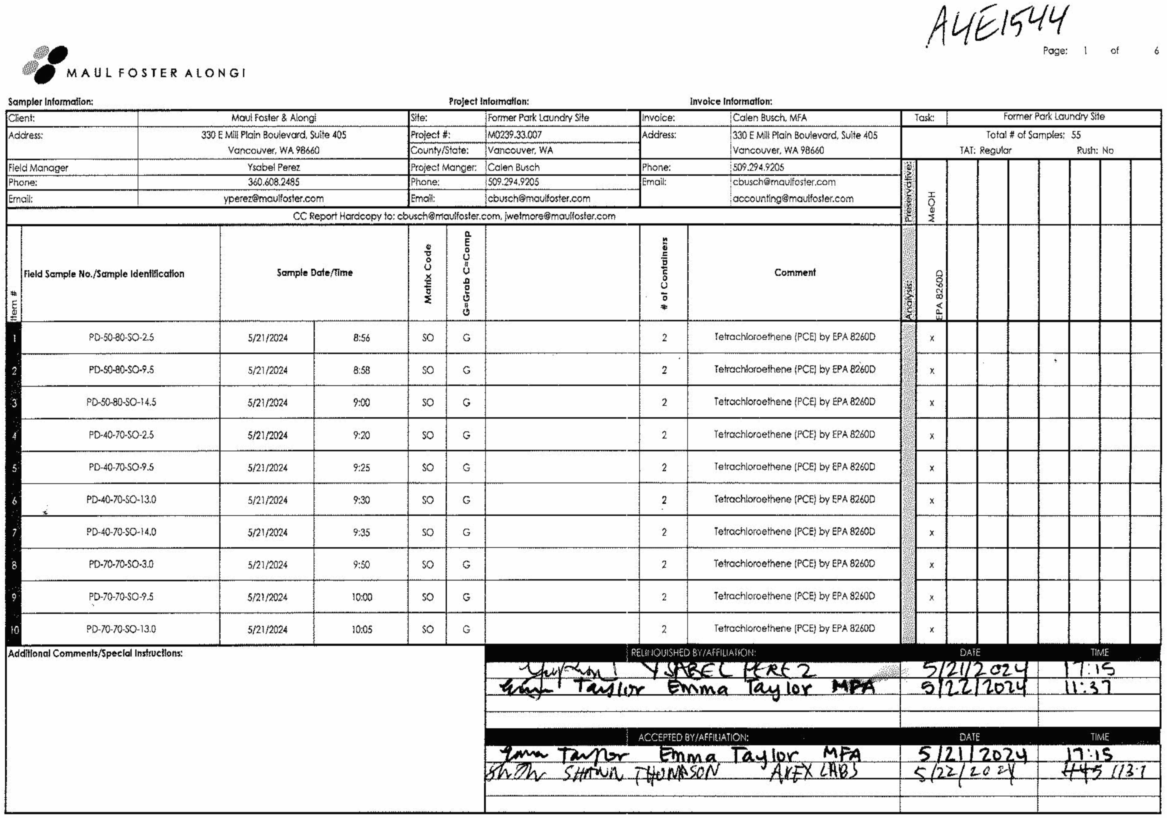
Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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



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MAUL FOSTER ALONGI

Sampler Information:		Project Information:		Invoice Information:			
Client:	Maul Foster & Alongi	Site:	Former Park Laundry Site	Invoice:	Calen Busch, MFA	Task:	Former Park Laundry Site
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Project #: County/State:	M0239.33.007 Vancouver, WA	Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Total # of Samples: 55 TAT: Regular	Rush: No
Field Manager	Ysabel Perez	Project Manger:	Calen Busch	Phone:	509.294.9205	Preservative:	MeOH
Phone:	360.608.2485	Phone:	509.294.9205	Email:	cbusch@maulfoster.com		
Email:	yperez@maulfoster.com	Email:	cbusch@maulfoster.com		accounting@maulfoster.com		

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

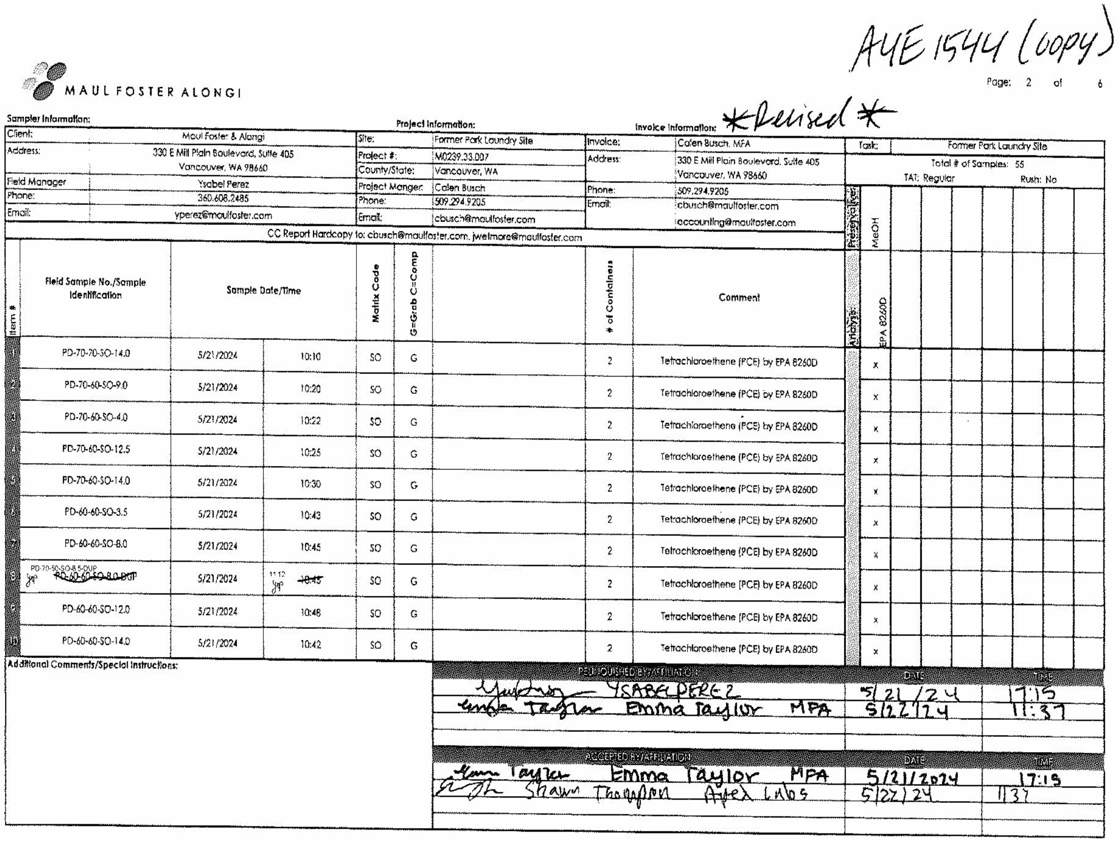
Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Analysis: EPA 8260D
1	PD-50-80-SO-2.5	5/21/2024	8:56	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
2	PD-50-80-SO-9.5	5/21/2024	8:58	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
3	PD-50-80-SO-14.5	5/21/2024	9:00	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
4	PD-40-70-SO-2.5	5/21/2024	9:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
5	PD-40-70-SO-9.5	5/21/2024	9:25	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
6	PD-40-70-SO-13.0	5/21/2024	9:30	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
7	PD-40-70-SO-14.0	5/21/2024	9:35	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
8	PD-70-70-SO-3.0	5/21/2024	9:50	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
9	PD-70-70-SO-9.5	5/21/2024	10:00	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
10	PD-70-70-SO-13.0	5/21/2024	10:05	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
YSABEL PEREZ	5/21/2024	17:15
Taylor Emma Taylor MFA	5/22/2024	11:37

ACCEPTED BY/AFFILIATION:	DATE	TIME
Emma Taylor Emma Taylor MFA	5/21/2024	17:15
SHAWN THOMASON APEX LABS	5/22/2024	~~1145~~ 1137

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



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MAUL FOSTER ALONGI

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Revised

Sampler Information:

Client:	Maul Foster & Alongi
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Field Manager	Ysabel Perez
Phone:	360.608.2485
Email:	yperez@maulfoster.com

Project Information:

Site:	Former Park Laundry Site
Project #:	M0239.33.007
County/State:	Vancouver, WA
Project Manger:	Calen Busch
Phone:	509.294.9205
Email:	cbusch@maulfoster.com

Invoice Information:

Invoice:	Calen Busch, MFA
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Phone:	509.294.9205
Email:	cbusch@maulfoster.com accounting@maulfoster.com

Task:	Former Park Laundry Site

Total # of Samples: 55
TAT: Regular
Rush: No

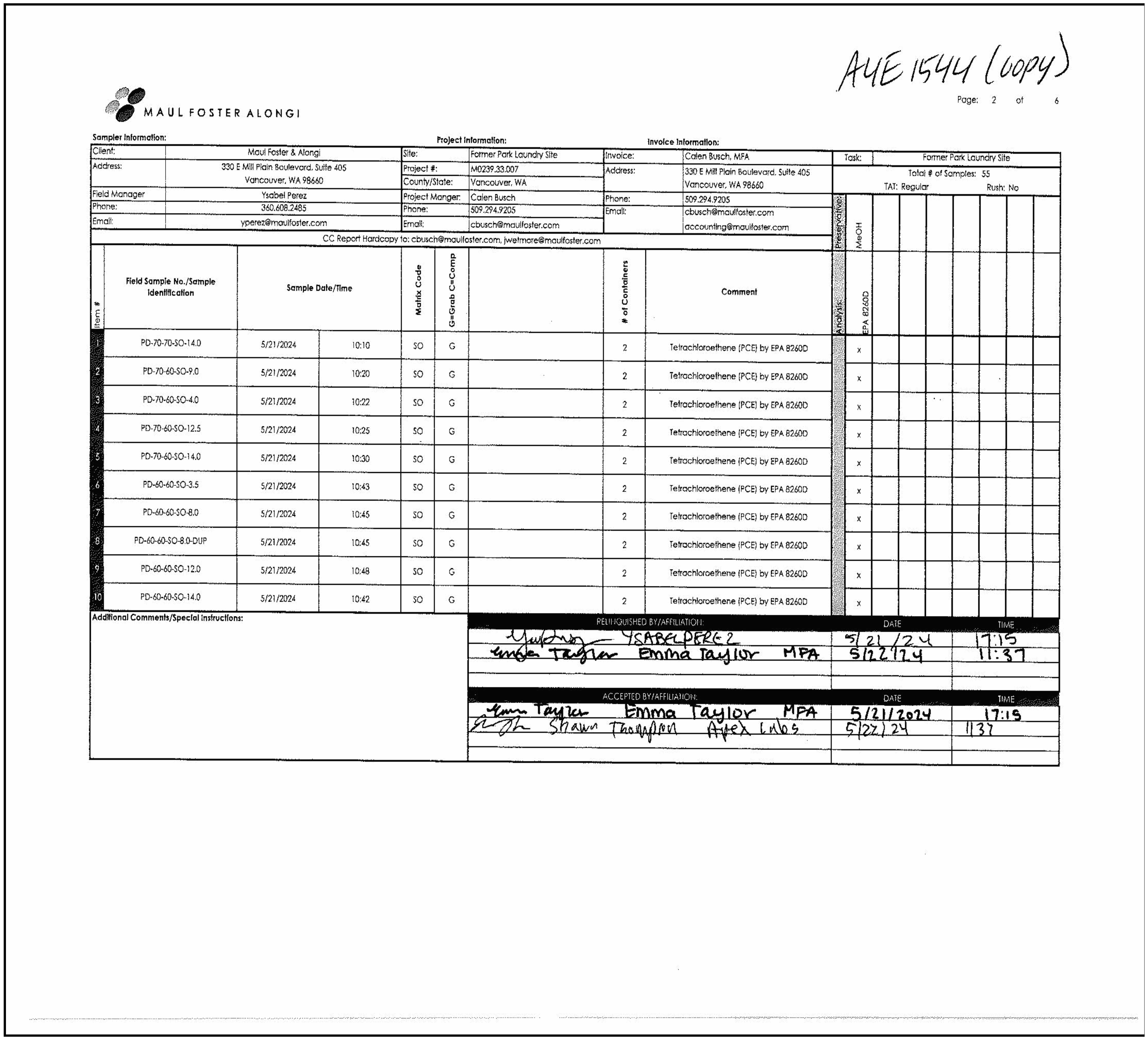
CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Preservative: MeOH Analysis: EPA 8260D							
1	PD-70-70-SO-14.0	5/21/2024	10:10	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
2	PD-70-60-SO-9.0	5/21/2024	10:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
3	PD-70-60-SO-4.0	5/21/2024	10:22	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
4	PD-70-60-SO-12.5	5/21/2024	10:25	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
5	PD-70-60-SO-14.0	5/21/2024	10:30	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
6	PD-60-60-SO-3.5	5/21/2024	10:43	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
7	PD-60-60-SO-8.0	5/21/2024	10:45	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
8	PD-70-50-SO-8.5-DUP ysp ~~PD-60-60-SO-8.0-DUP~~	5/21/2024	11:12 ysp ~~10:45~~	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
9	PD-60-60-SO-12.0	5/21/2024	10:48	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
10	PD-60-60-SO-14.0	5/21/2024	10:42	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION	DATE	TIME
Ysabel Perez YSABEL PEREZ	5/21/24	17:15
Emma Taylor Emma Taylor MPA	5/22/24	11:37

ACCEPTED BY/AFFILIATION	DATE	TIME
Emma Taylor Emma Taylor MPA	5/21/2024	17:19
Shawn Thompson Apex Labs	5/22/24	1137



A4E1544 (copy)

Page: 2 of 6

MAUL FOSTER ALONGI

Sampler Information:

Client: Maul Foster & Alongi
Address: 330 E Mill Plain Boulevard, Suite 405
Vancouver, WA 98660
Field Manager: Ysabel Perez
Phone: 360.608.2485
Email: yperez@maulfoster.com

Project Information:

Site: Former Park Laundry Site
Project #: M0239.33.007
County/State: Vancouver, WA
Project Manger: Calen Busch
Phone: 509.294.9205
Email: cbusch@maulfoster.com

Invoice Information:

Invoice: Calen Busch, MFA
Address: 330 E Mill Plain Boulevard, Suite 405
Vancouver, WA 98660
Phone: 509.294.9205
Email: cbusch@maulfoster.com
accounting@maulfoster.com

Task: Former Park Laundry Site
Total # of Samples: 55
TAT: Regular
Rush: No

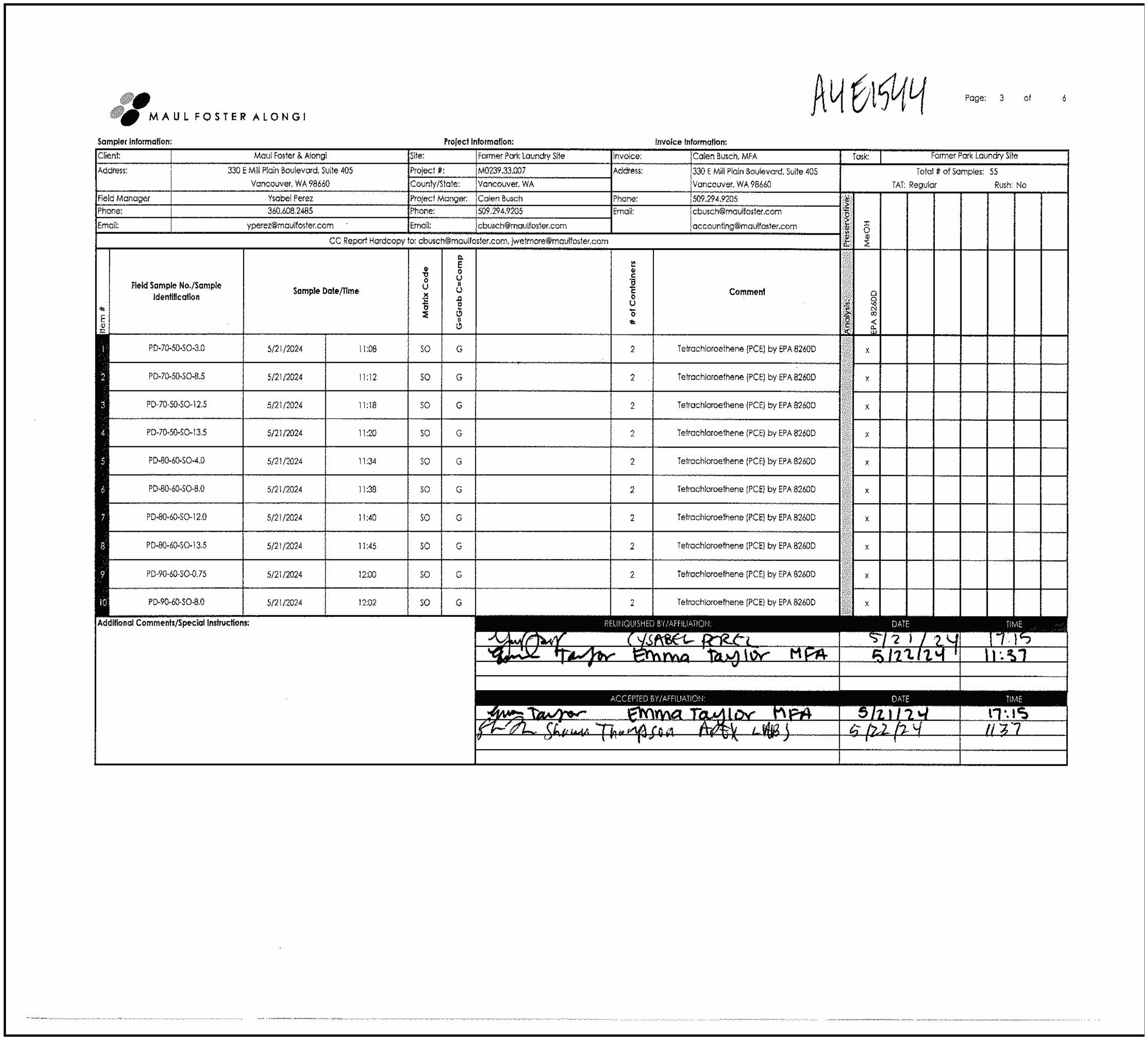
CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Preservative: MeOH Analysis: EPA 8260D
1	PD-70-70-SO-14.0	5/21/2024	10:10	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
2	PD-70-60-SO-9.0	5/21/2024	10:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
3	PD-70-60-SO-4.0	5/21/2024	10:22	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
4	PD-70-60-SO-12.5	5/21/2024	10:25	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
5	PD-70-60-SO-14.0	5/21/2024	10:30	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
6	PD-60-60-SO-3.5	5/21/2024	10:43	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
7	PD-60-60-SO-8.0	5/21/2024	10:45	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
8	PD-60-60-SO-8.0-DUP	5/21/2024	10:45	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
9	PD-60-60-SO-12.0	5/21/2024	10:48	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
10	PD-60-60-SO-14.0	5/21/2024	10:42	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
YSABEL PEREZ	5/21/24	17:15
Emma Taylor Emma Taylor MPA	5/22/24	11:37

ACCEPTED BY/AFFILIATION:	DATE	TIME
Emma Taylor Emma Taylor MPA	5/21/2024	17:15
Shawn Thompson Apex Labs	5/22/24	1137



MAUL FOSTER ALONGI

A4E1544

Page: 3 of 6

Sampler Information:		Project Information:		Invoice Information:			
Client:	Maul Foster & Alongi	Site:	Former Park Laundry Site	Invoice:	Calen Busch, MFA	Task:	Former Park Laundry Site
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Project #:	M0239.33.007	Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660		Total # of Samples: 55 TAT: Regular Rush: No
		County/State:	Vancouver, WA				
Field Manager	Ysabel Perez	Project Manger:	Calen Busch	Phone:	509.294.9205		
Phone:	360.608.2485	Phone:	509.294.9205	Email:	cbusch@maulfoster.com		
Email:	yperez@maulfoster.com	Email:	cbusch@maulfoster.com		accounting@maulfoster.com		

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Preservative: MeOH

Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Analysis: EPA 8260D
1	PD-70-50-SO-3.0	5/21/2024	11:08	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
2	PD-70-50-SO-8.5	5/21/2024	11:12	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
3	PD-70-50-SO-12.5	5/21/2024	11:18	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
4	PD-70-50-SO-13.5	5/21/2024	11:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
5	PD-80-60-SO-4.0	5/21/2024	11:34	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
6	PD-80-60-SO-8.0	5/21/2024	11:38	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
7	PD-80-60-SO-12.0	5/21/2024	11:40	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
8	PD-80-60-SO-13.5	5/21/2024	11:45	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
9	PD-90-60-SO-0.75	5/21/2024	12:00	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
10	PD-90-60-SO-8.0	5/21/2024	12:02	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
(YSABEL PEREZ	5/21/24	17:15
Taylor Emma Taylor MFA	5/22/24	11:37

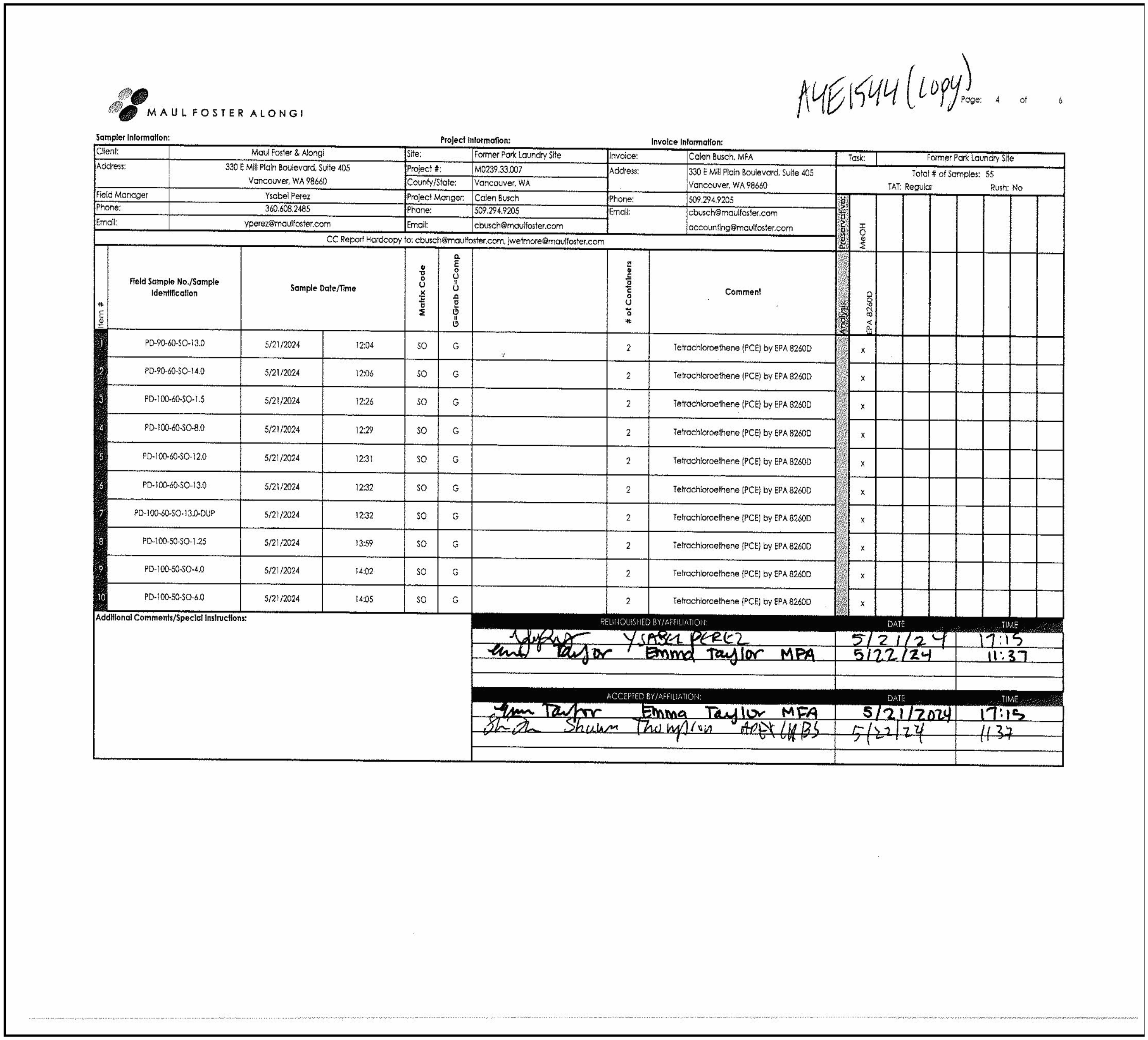
ACCEPTED BY/AFFILIATION:	DATE	TIME
Taylor Emma Taylor MFA	5/21/24	17:15
Shawn Thompson APEX LABS)	5/22/24	1137

ANALYTICAL REPORT

Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1544 - 06 11 24 1442



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MAUL FOSTER ALONGI

Page: 4 of 6

Sampler Information:

Client:	Maul Foster & Alongi
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Field Manager	Ysabel Perez
Phone:	360.608.2485
Email:	yperez@maulfoster.com

Project Information:

Site:	Former Park Laundry Site
Project #:	M0239.33.007
County/State:	Vancouver, WA
Project Manger:	Calen Busch
Phone:	509.294.9205
Email:	cbusch@maulfoster.com

Invoice Information:

Invoice:	Calen Busch, MFA
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Phone:	509.294.9205
Email:	cbusch@maulfoster.com accounting@maulfoster.com

Task: Former Park Laundry Site
Total # of Samples: 55
TAT: Regular Rush: No

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Preservative: MeOH

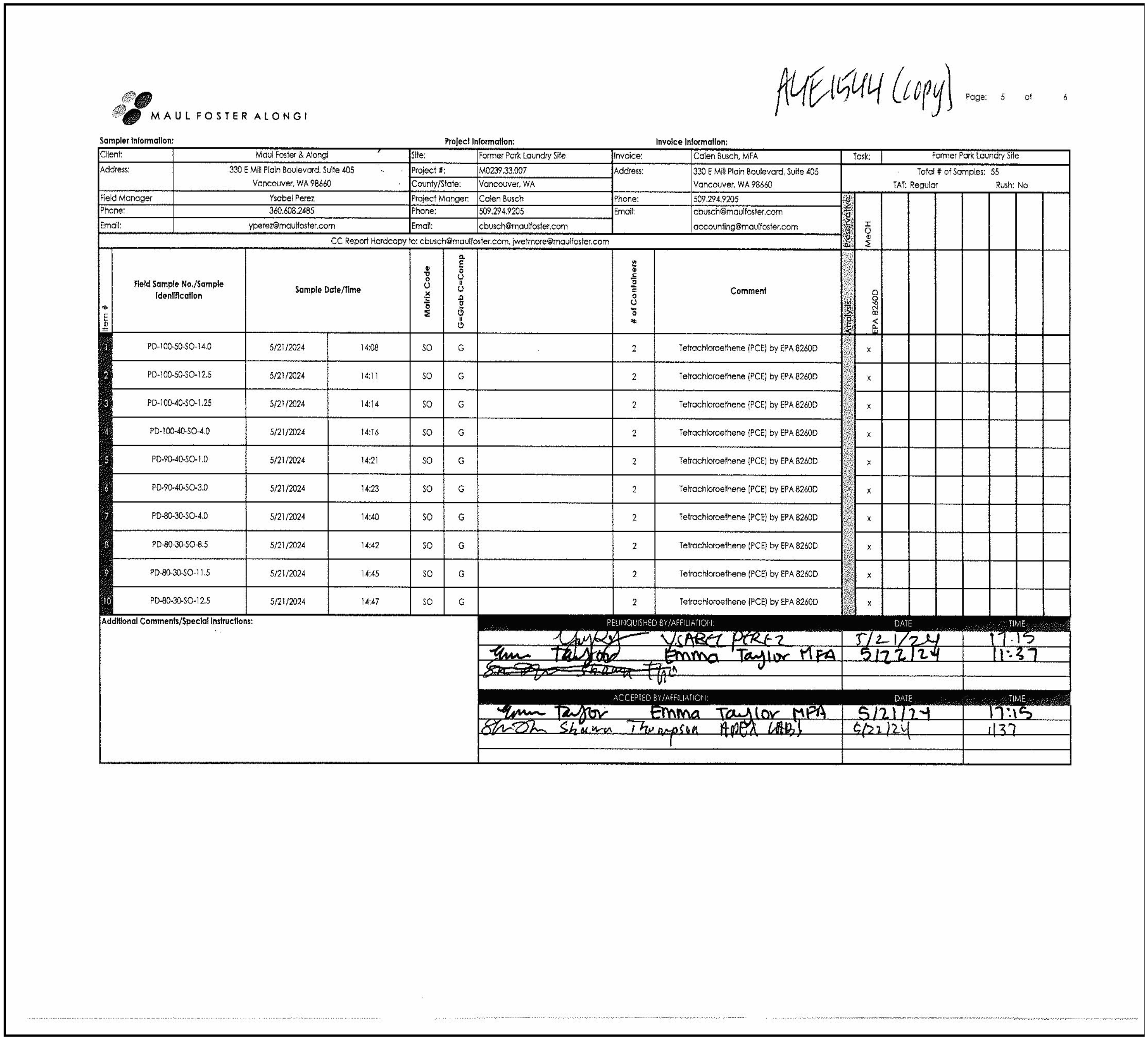
Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Analysis: EPA 8260D
1	PD-90-60-SO-13.0	5/21/2024	12:04	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
2	PD-90-60-SO-14.0	5/21/2024	12:06	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
3	PD-100-60-SO-1.5	5/21/2024	12:26	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
4	PD-100-60-SO-8.0	5/21/2024	12:29	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
5	PD-100-60-SO-12.0	5/21/2024	12:31	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
6	PD-100-60-SO-13.0	5/21/2024	12:32	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
7	PD-100-60-SO-13.0-DUP	5/21/2024	12:32	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
8	PD-100-50-SO-1.25	5/21/2024	13:59	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
9	PD-100-50-SO-4.0	5/21/2024	14:02	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
10	PD-100-50-SO-6.0	5/21/2024	14:05	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
YSABEL PEREZ	5/21/24	17:15
Emma Taylor Emma Taylor MPA	5/22/24	11:37

ACCEPTED BY/AFFILIATION:	DATE	TIME
Emm Taylor Emma Taylor MFA	5/21/2024	17:15
Shawn Thompson Apex LABS	5/22/24	1137

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



A4E1544 (copy)

Page: 5 of 6

MAUL FOSTER ALONGI

Sampler Information:

Client:	Maul Foster & Alongi
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Field Manager	Ysabel Perez
Phone:	360.608.2485
Email:	yperez@maulfoster.com

Project Information:

Site:	Former Park Laundry Site
Project #:	M0239.33.007
County/State:	Vancouver, WA
Project Manger:	Calen Busch
Phone:	509.294.9205
Email:	cbusch@maulfoster.com

Invoice Information:

Invoice:	Calen Busch, MFA
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Phone:	509.294.9205
Email:	cbusch@maulfoster.com accounting@maulfoster.com

Task:	Former Park Laundry Site
	Total # of Samples: 55
	TAT: Regular Rush: No

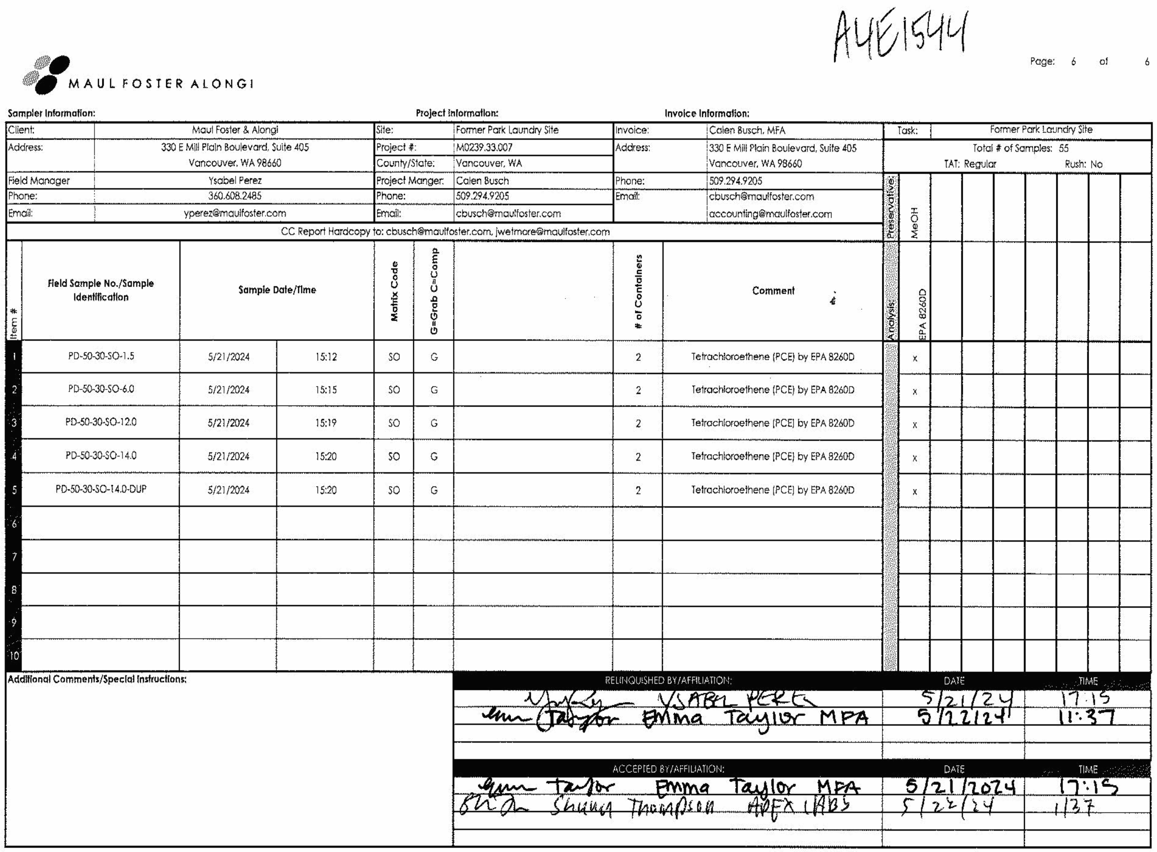
CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Preservative: MeOH Analysis: EPA 8260D
1	PD-100-50-SO-14.0	5/21/2024	14:08	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
2	PD-100-50-SO-12.5	5/21/2024	14:11	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
3	PD-100-40-SO-1.25	5/21/2024	14:14	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
4	PD-100-40-SO-4.0	5/21/2024	14:16	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
5	PD-90-40-SO-1.0	5/21/2024	14:21	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
6	PD-90-40-SO-3.0	5/21/2024	14:23	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
7	PD-80-30-SO-4.0	5/21/2024	14:40	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
8	PD-80-30-SO-8.5	5/21/2024	14:42	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
9	PD-80-30-SO-11.5	5/21/2024	14:45	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x
10	PD-80-30-SO-12.5	5/21/2024	14:47	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
YSABEL PEREZ	5/21/24	17:15
Emma Taylor Emma Taylor MFA	5/22/24	11:37
~~Shauna~~ FTC		

ACCEPTED BY/AFFILIATION:	DATE	TIME
Emma Taylor Emma Taylor MFA	5/21/24	17:15
Shauna Thompson APEX LABS	5/22/24	1137



A4E1544

Page: 6 of 6

MAUL FOSTER ALONGI

Sampler Information:		Project Information:		Invoice Information:			
Client:	Maul Foster & Alongi	Site:	Former Park Laundry Site	Invoice:	Calen Busch, MFA	Task:	Former Park Laundry Site
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Project #: County/State:	M0239.33.007 Vancouver, WA	Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Total # of Samples: 55 TAT: Regular	Rush: No
Field Manager	Ysabel Perez	Project Manger:	Calen Busch	Phone:	509.294.9205		
Phone:	360.608.2485	Phone:	509.294.9205	Email:	cbusch@maulfoster.com		
Email:	yperez@maulfoster.com	Email:	cbusch@maulfoster.com		accounting@maulfoster.com		

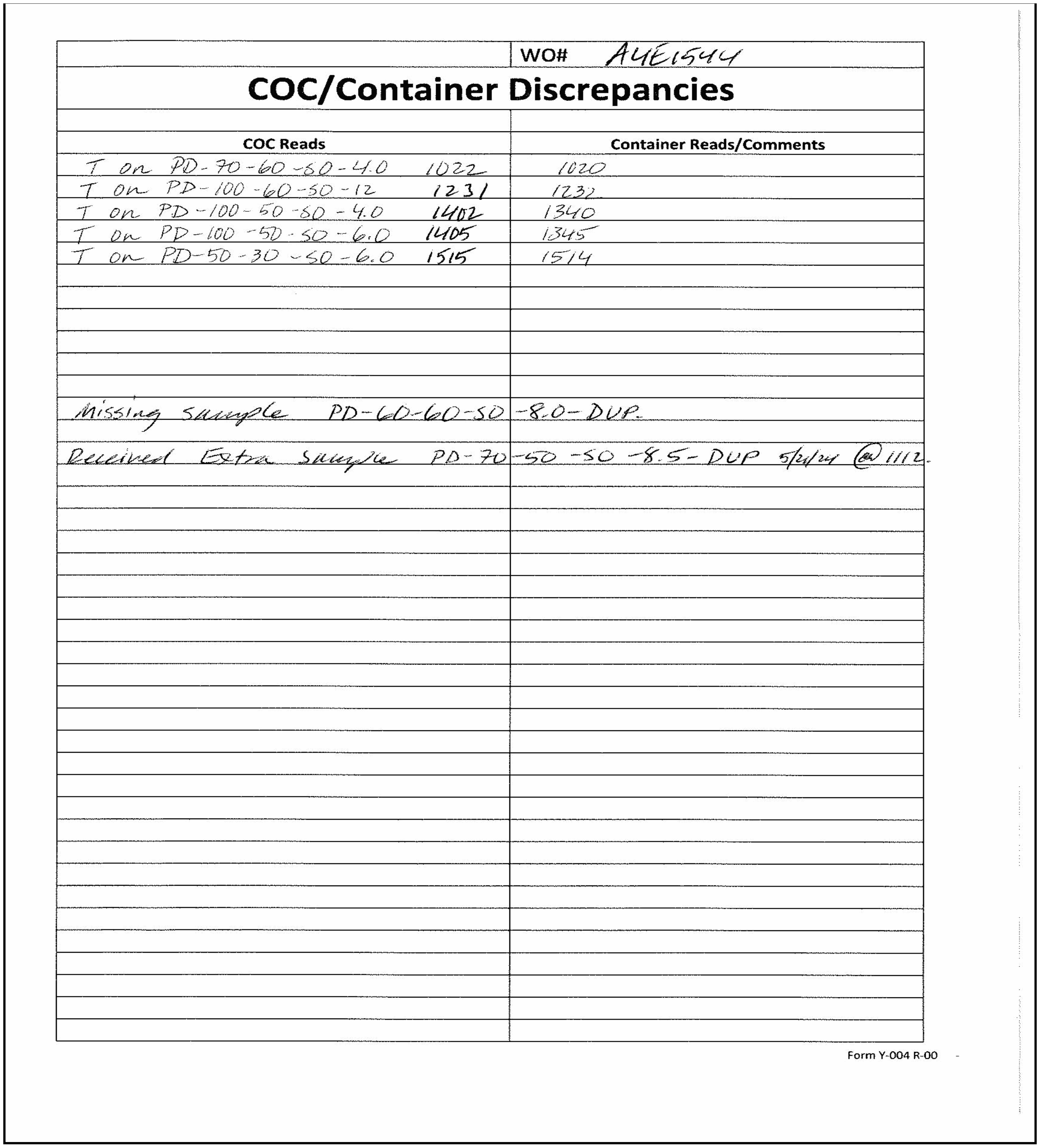
CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

									Preservative: MeOH							
Item #	Field Sample No./Sample Identification	Sample Date/Time		Matrix Code	G=Grab C=Comp		# of Containers	Comment	Analysis: EPA 8260D							
1	PD-50-30-SO-1.5	5/21/2024	15:12	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
2	PD-50-30-SO-6.0	5/21/2024	15:15	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
3	PD-50-30-SO-12.0	5/21/2024	15:19	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
4	PD-50-30-SO-14.0	5/21/2024	15:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
5	PD-50-30-SO-14.0-DUP	5/21/2024	15:20	SO	G		2	Tetrachloroethene (PCE) by EPA 8260D	x							
6																
7																
8																
9																
10																

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
YSABEL PEREZ	5/21/24	17:15
Emma Taylor MPA	5/22/24	11:37

ACCEPTED BY/AFFILIATION:	DATE	TIME
Emma Taylor Emma Taylor MPA	5/21/2024	17:15
Shanna Thompson APEX LABS	5/22/24	1137

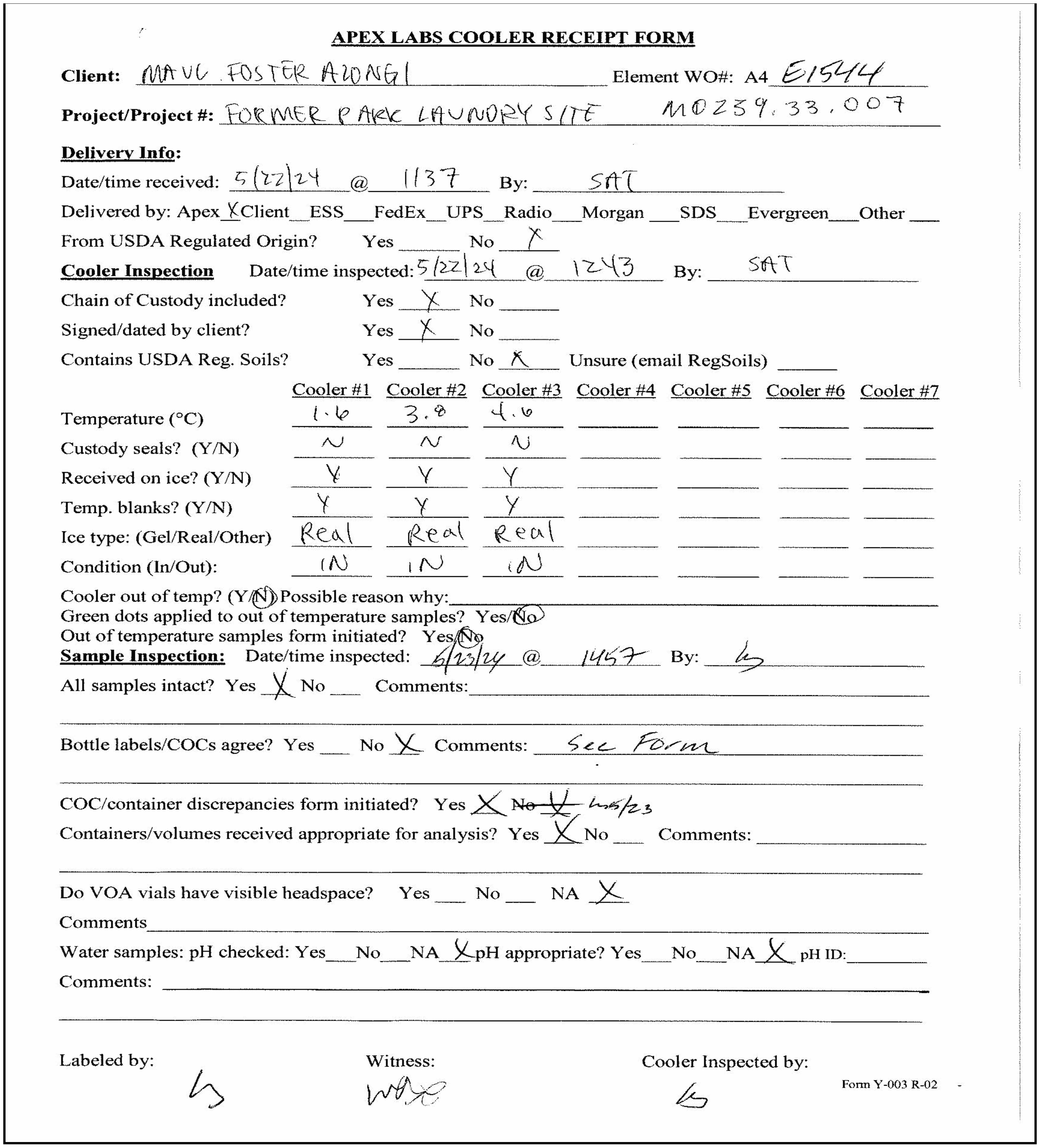


WO# A4E1544

COC/Container Discrepancies

COC Reads	Container Reads/Comments
T on PD-70-60-80-4.0 1022	1020
T on PD-100-60-50-12 1231	1232
T on PD-100-50-80-4.0 1402	1340
T on PD-100-50-50-6.0 1405	1345
T on PD-50-30-50-6.0 1515	1514
Missing sample PD-60-60-50-8.0-DUP.	
Received Extra sample PD-70-50-50-8.5-DUP 5/21/24 @ 1112.	

Form Y-004 R-00



APEX LABS COOLER RECEIPT FORM

Client: MAUL FOSTER ALONGI Element WO#: A4 E1544

Project/Project #: FORMER PARK LAUNDRY SITE M0239.33.007

Delivery Info:

Date/time received: 5/22/24 @ 1137 By: SAT

Delivered by: Apex_X_Client__ESS___FedEx__UPS__Radio___Morgan ___SDS___Evergreen___Other ___

From USDA Regulated Origin? Yes ______ No X

Cooler Inspection Date/time inspected: 5/22/24 @ 1243 By: SAT

Chain of Custody included? Yes X No ______

Signed/dated by client? Yes X No ______

Contains USDA Reg. Soils? Yes ______ No X Unsure (email RegSoils) ______

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	1.6	3.8	4.6				
Custody seals? (Y/N)	N	N	N				
Received on ice? (Y/N)	Y	Y	Y				
Temp. blanks? (Y/N)	Y	Y	Y				
Ice type: (Gel/Real/Other)	Real	Real	Real				
Condition (In/Out):	IN	IN	IN				

Cooler out of temp? (Y/[✓ N]) Possible reason why: ______

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

Out of temperature samples form initiated? Yes/[✓ No]

Sample Inspection: Date/time inspected: 5/23/24 @ 1457 By: ______

All samples intact? Yes X No ___ Comments: ______

Bottle labels/COCs agree? Yes ___ No X Comments: See Form

COC/container discrepancies form initiated? Yes X ~~No X~~ 5/23

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

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments ______

Water samples: pH checked: Yes___No___NA X pH appropriate? Yes___No___NA X pH ID: ______

Comments: ______

Labeled by: Witness: Cooler Inspected by:

Form Y-003 R-02

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

ANALYTICAL REPORT

Tuesday, June 11, 2024

Meaghan Pollock
Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

RE: A4E1657 - Former Park Laundry Site - M0239.33.007

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

Enclosed are the results of analyses for work order A4E1657, which was received by the laboratory on 5/22/2024 at 4:37:00PM.

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

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

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Cooler #1 4.6 degC	Cooler #2 1.5 degC

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PD-40-30-SO-3.0	A4E1657-01	Soil	05/22/24 08:51	05/22/24 16:37
PD-40-30-SO-9.5	A4E1657-02	Soil	05/22/24 08:55	05/22/24 16:37
PD-40-30-SO-13.0	A4E1657-03	Soil	05/22/24 08:58	05/22/24 16:37
PD-40-30-SO-13.5	A4E1657-04	Soil	05/22/24 09:00	05/22/24 16:37
PD-40-40-SO-3.75	A4E1657-05	Soil	05/22/24 09:20	05/22/24 16:37
PD-40-40-SO-10.0	A4E1657-06	Soil	05/22/24 09:22	05/22/24 16:37
PD-40-40-SO-13.25	A4E1657-07	Soil	05/22/24 09:25	05/22/24 16:37
PD-40-40-SO-14.0	A4E1657-08	Soil	05/22/24 09:28	05/22/24 16:37
PD-40-50-SO-4.0	A4E1657-09	Soil	05/22/24 09:50	05/22/24 16:37
PD-40-50-SO-10.0	A4E1657-10	Soil	05/22/24 09:52	05/22/24 16:37
PD-40-50-SO-13.0	A4E1657-11	Soil	05/22/24 09:55	05/22/24 16:37
PD-40-50-SO-13.5	A4E1657-12	Soil	05/22/24 09:58	05/22/24 16:37
PD-40-60-SO-4.0	A4E1657-13	Soil	05/22/24 10:10	05/22/24 16:37
PD-40-60-SO-10.0	A4E1657-14	Soil	05/22/24 10:12	05/22/24 16:37
PD-40-60-SO-13.5	A4E1657-15	Soil	05/22/24 10:14	05/22/24 16:37
PD-40-60-SO-13.75	A4E1657-16	Soil	05/22/24 10:17	05/22/24 16:37
PD-50-80-SO-14.0	A4E1657-17	Soil	05/22/24 10:40	05/22/24 16:37
PD-80-20-SO-12.0	A4E1657-18	Soil	05/22/24 12:14	05/22/24 16:37
PD-80-20-SO-12.5	A4E1657-19	Soil	05/22/24 12:16	05/22/24 16:37
PD-60-20-SO-3.5	A4E1657-20	Soil	05/22/24 11:22	05/22/24 16:37
PD-60-20-SO-1.0	A4E1657-21	Soil	05/22/24 11:24	05/22/24 16:37
PD-60-20-SO-11.25	A4E1657-22	Soil	05/22/24 11:25	05/22/24 16:37
PD-60-20-SO-11.50	A4E1657-23	Soil	05/22/24 11:27	05/22/24 16:37
PD-70-20-SO-1.25	A4E1657-24	Soil	05/22/24 11:50	05/22/24 16:37
PD-70-20-SO-3.75	A4E1657-25	Soil	05/22/24 11:52	05/22/24 16:37
PD-70-20-SO-1.25-DUP	A4E1657-26	Soil	05/22/24 11:50	05/22/24 16:37
PD-70-10-SO-4.0	A4E1657-27	Soil	05/22/24 12:45	05/22/24 16:37
PD-70-10-SO-9.0	A4E1657-28	Soil	05/22/24 12:48	05/22/24 16:37
PD-70-10-SO-11.75	A4E1657-29	Soil	05/22/24 12:50	05/22/24 16:37
PD-70-10-SO-12.0	A4E1657-30	Soil	05/22/24 12:52	05/22/24 16:37
PD-80-20-SO-3.0	A4E1657-31	Soil	05/22/24 12:10	05/22/24 16:37
PD-80-20-SO-9.0	A4E1657-32	Soil	05/22/24 12:12	05/22/24 16:37

Maul Foster & Alongi, INC.	Project: **Former Park Laundry Site**	
3140 NE Broadway Street	Project Number: **M0239.33.007**	**Report ID:**
Portland, OR 97232	Project Manager: **Meaghan Pollock**	**A4E1657 - 06 11 24 1447**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-40-30-SO-13.0 (A4E1657-03)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**31.6**	15.5	31.0	ug/kg dry	50	06/03/24 16:25	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 16:25*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 16:25*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 16:25*	*5035A/8260D*	
PD-40-40-SO-13.25 (A4E1657-07)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**106**	15.7	31.3	ug/kg dry	50	06/03/24 16:51	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*06/03/24 16:51*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 16:51*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 16:51*	*5035A/8260D*	
PD-40-50-SO-13.0 (A4E1657-11)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**29.1**	16.6	33.1	ug/kg dry	50	06/03/24 17:16	5035A/8260D	**J**
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*06/03/24 17:16*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 17:16*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 17:16*	*5035A/8260D*	
PD-40-60-SO-4.0 (A4E1657-13)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	ND	16.3	32.6	ug/kg dry	50	06/03/24 17:42	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 17:42*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 17:42*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 17:42*	*5035A/8260D*	
PD-40-60-SO-13.5 (A4E1657-15RE1)				**Matrix: Soil**		**Batch: 24F0062**		
Tetrachloroethene (PCE)	**118**	16.2	32.3	ug/kg dry	50	06/05/24 08:01	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits: 80-120 %*	*1*	*06/05/24 08:01*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/05/24 08:01*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*79-120 %*	*1*	*06/05/24 08:01*	*5035A/8260D*	
PD-40-60-SO-13.75 (A4E1657-16)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**140**	16.7	33.4	ug/kg dry	50	06/03/24 18:34	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*06/03/24 18:34*	*5035A/8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*06/03/24 18:34*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 18:34*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-50-80-SO-14.0 (A4E1657-17)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**1310**	15.8	31.5	ug/kg dry	50	06/03/24 18:59	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 18:59*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 18:59*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 18:59*	*5035A/8260D*	
PD-60-20-SO-3.5 (A4E1657-20)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**28.0**	17.1	34.1	ug/kg dry	50	06/03/24 19:25	5035A/8260D	J
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 19:25*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 19:25*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 19:25*	*5035A/8260D*	
PD-60-20-SO-11.25 (A4E1657-22)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	ND	17.0	33.9	ug/kg dry	50	06/03/24 19:51	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*06/03/24 19:51*	*5035A/8260D*	
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*06/03/24 19:51*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 19:51*	*5035A/8260D*	
PD-70-20-SO-1.25 (A4E1657-24)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**236**	24.9	49.9	ug/kg dry	50	06/03/24 20:42	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 20:42*	*5035A/8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*06/03/24 20:42*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 20:42*	*5035A/8260D*	
PD-70-20-SO-1.25-DUP (A4E1657-26)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	**207**	18.7	37.4	ug/kg dry	50	06/03/24 21:08	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/03/24 21:08*	*5035A/8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*06/03/24 21:08*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*79-120 %*	*1*	*06/03/24 21:08*	*5035A/8260D*	
PD-70-10-SO-4.0 (A4E1657-27)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	ND	17.1	34.1	ug/kg dry	50	06/03/24 21:34	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*06/03/24 21:34*	*5035A/8260D*	
Toluene-d8 (Surr)			*97 %*	*80-120 %*	*1*	*06/03/24 21:34*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*79-120 %*	*1*	*06/03/24 21:34*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-80-20-SO-3.0 (A4E1657-31)				**Matrix: Soil**		**Batch: 24F0009**		
Tetrachloroethene (PCE)	ND	18.0	36.0	ug/kg dry	50	06/03/24 22:00	5035A/8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 120 %*		*Limits: 80-120 %*	*1*	*06/03/24 22:00*	*5035A/8260D*	
Toluene-d8 (Surr)		*97 %*		*80-120 %*	*1*	*06/03/24 22:00*	*5035A/8260D*	
4-Bromofluorobenzene (Surr)		*94 %*		*79-120 %*	*1*	*06/03/24 22:00*	*5035A/8260D*	

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-40-30-SO-13.0 (A4E1657-03)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**75.7**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-40-40-SO-13.25 (A4E1657-07)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**75.7**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-40-50-SO-13.0 (A4E1657-11)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**74.0**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-40-60-SO-4.0 (A4E1657-13)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**75.8**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-40-60-SO-13.5 (A4E1657-15)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**75.0**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-40-60-SO-13.75 (A4E1657-16)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**80.3**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-50-80-SO-14.0 (A4E1657-17)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**74.4**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-60-20-SO-3.5 (A4E1657-20)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**76.8**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-60-20-SO-11.25 (A4E1657-22)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**77.5**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-70-20-SO-1.25 (A4E1657-24)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**79.9**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-70-20-SO-1.25-DUP (A4E1657-26)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**82.8**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-70-10-SO-4.0 (A4E1657-27)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**77.2**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	
PD-80-20-SO-3.0 (A4E1657-31)				**Matrix: Soil**		**Batch: 24E1150**		

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
PD-80-20-SO-3.0 (A4E1657-31)				**Matrix: Soil**		**Batch: 24E1150**		
% Solids	**79.2**	---	1.00	%	1	06/03/24 07:16	EPA 8000D	

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0009 - EPA 5035A							**Soil**					
Blank (24F0009-BLK1)			Prepared: 06/03/24 08:00			Analyzed: 06/03/24 12:31						
5035A/8260D												
Tetrachloroethene (PCE)	ND	12.5	25.0	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*97 %*		*79-120 %*		*"*					
LCS (24F0009-BS1)			Prepared: 06/03/24 08:00			Analyzed: 06/03/24 11:39						
5035A/8260D												
Tetrachloroethene (PCE)	1020	12.5	25.0	ug/kg wet	50	1000	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*93 %*		*79-120 %*		*"*					
Duplicate (24F0009-DUP1)			Prepared: 05/22/24 11:25			Analyzed: 06/03/24 20:17						
QC Source Sample: PD-60-20-SO-11.25 (A4E1657-22)												
5035A/8260D												
Tetrachloroethene (PCE)	ND	17.0	33.9	ug/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*99 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*79-120 %*		*"*					
Matrix Spike (24F0009-MS1)			Prepared: 05/22/24 12:10			Analyzed: 06/03/24 22:25						
QC Source Sample: PD-80-20-SO-3.0 (A4E1657-31)												
5035A/8260D												
Tetrachloroethene (PCE)	1560	18.0	36.0	ug/kg dry	50	1440	ND	108	73-128%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*	*Dilution:*	*1x*					
Toluene-d8 (Surr)			*98 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*91 %*		*79-120 %*		*"*					
Batch 24F0062 - EPA 5035A							**Soil**					
Blank (24F0062-BLK1)			Prepared: 06/04/24 16:06			Analyzed: 06/05/24 02:09						
5035A/8260D												

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0062 - EPA 5035A							**Soil**					
Blank (24F0062-BLK1)			Prepared: 06/04/24 16:06			Analyzed: 06/05/24 02:09						
Tetrachloroethene (PCE)	ND	12.5	25.0	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*79-120 %*			*"*				
LCS (24F0062-BS1)			Prepared: 06/04/24 16:06			Analyzed: 06/05/24 01:15						
5035A/8260D												
Tetrachloroethene (PCE)	1040	12.5	25.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*79-120 %*			*"*				
Duplicate (24F0062-DUP1)			Prepared: 06/03/24 13:15			Analyzed: 06/05/24 07:07						**V-15**
QC Source Sample: Non-SDG (A4F0782-01)												
Tetrachloroethene (PCE)	ND	41.3	82.7	ug/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*102 %*		*79-120 %*			*"*				
Matrix Spike (24F0062-MS1)			Prepared: 05/30/24 15:15			Analyzed: 06/05/24 05:46						
QC Source Sample: Non-SDG (A4E1772-02)												
5035A/8260D												
Tetrachloroethene (PCE)	1130	13.1	26.3	ug/kg dry	50	1050	ND	107	73-128%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*79-120 %*			*"*				

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E1150 - Total Solids (Dry Weight) - 2022							**Soil**					
Duplicate (24E1150-DUP1)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-01)												
% Solids	**80.9**	---	1.00	%	1	---	80.6	---	---	0.3	10%	
Duplicate (24E1150-DUP2)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-06)												
% Solids	**77.9**	---	1.00	%	1	---	77.5	---	---	0.5	10%	
Duplicate (24E1150-DUP3)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-07)												
% Solids	**77.9**	---	1.00	%	1	---	78.1	---	---	0.2	10%	
Duplicate (24E1150-DUP4)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-11)												
% Solids	**75.9**	---	1.00	%	1	---	75.6	---	---	0.4	10%	
Duplicate (24E1150-DUP5)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-12)												
% Solids	**76.3**	---	1.00	%	1	---	76.0	---	---	0.4	10%	
Duplicate (24E1150-DUP6)			Prepared: 05/31/24 11:15			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1518-16)												
% Solids	**63.9**	---	1.00	%	1	---	63.2	---	---	1	10%	
Duplicate (24E1150-DUP7)			Prepared: 05/31/24 18:38			Analyzed: 06/03/24 07:16						**PRO**
QC Source Sample: Non-SDG (A4E1511-54)												
% Solids	**100**	---	1.00	%	1	---	100	---	---	0	10%	
Duplicate (24E1150-DUP8)			Prepared: 05/31/24 18:38			Analyzed: 06/03/24 07:16						
QC Source Sample: Non-SDG (A4E1785-01)												
% Solids	**91.0**	---	1.00	%	1	---	90.7	---	---	0.4	10%	

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E1150 - Total Solids (Dry Weight) - 2022							**Soil**					
Duplicate (24E1150-DUP9)			Prepared: 05/31/24 18:38		Analyzed: 06/03/24 07:16							
QC Source Sample: Non-SDG (A4E1796-02)												
% Solids	**84.8**	---	1.00	%	1	---	84.9	---	---	0.1	10%	

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

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0009							
A4E1657-03	Soil	5035A/8260D	05/22/24 08:58	05/22/24 08:58	7.2g/5mL	5g/5mL	0.69
A4E1657-07	Soil	5035A/8260D	05/22/24 09:25	05/22/24 09:25	7.1g/5mL	5g/5mL	0.70
A4E1657-11	Soil	5035A/8260D	05/22/24 09:55	05/22/24 09:55	6.94g/5mL	5g/5mL	0.72
A4E1657-13	Soil	5035A/8260D	05/22/24 10:10	05/22/24 10:10	6.7g/5mL	5g/5mL	0.75
A4E1657-16	Soil	5035A/8260D	05/22/24 10:17	05/22/24 10:17	5.71g/5mL	5g/5mL	0.88
A4E1657-17	Soil	5035A/8260D	05/22/24 10:40	05/22/24 10:40	7.33g/5mL	5g/5mL	0.68
A4E1657-20	Soil	5035A/8260D	05/22/24 11:22	05/22/24 11:22	6.12g/5mL	5g/5mL	0.82
A4E1657-22	Soil	5035A/8260D	05/22/24 11:25	05/22/24 11:25	6.06g/5mL	5g/5mL	0.83
A4E1657-24	Soil	5035A/8260D	05/22/24 11:50	05/22/24 11:50	3.59g/5mL	5g/5mL	1.39
A4E1657-26	Soil	5035A/8260D	05/22/24 11:50	05/22/24 11:50	4.69g/5mL	5g/5mL	1.07
A4E1657-27	Soil	5035A/8260D	05/22/24 12:45	05/22/24 12:45	6.06g/5mL	5g/5mL	0.83
A4E1657-31	Soil	5035A/8260D	05/22/24 12:10	05/22/24 12:10	5.36g/5mL	5g/5mL	0.93
Batch: 24F0062							
A4E1657-15RE1	Soil	5035A/8260D	05/22/24 10:14	05/22/24 10:14	6.95g/5mL	5g/5mL	0.72

Percent Dry Weight

Prep: Total Solids (Dry Weight) - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24E1150							
A4E1657-03	Soil	EPA 8000D	05/22/24 08:58	05/31/24 11:15			NA
A4E1657-07	Soil	EPA 8000D	05/22/24 09:25	05/31/24 11:15			NA
A4E1657-11	Soil	EPA 8000D	05/22/24 09:55	05/31/24 11:15			NA
A4E1657-13	Soil	EPA 8000D	05/22/24 10:10	05/31/24 11:15			NA
A4E1657-15	Soil	EPA 8000D	05/22/24 10:14	05/31/24 11:15			NA
A4E1657-16	Soil	EPA 8000D	05/22/24 10:17	05/31/24 11:15			NA
A4E1657-17	Soil	EPA 8000D	05/22/24 10:40	05/31/24 11:15			NA
A4E1657-20	Soil	EPA 8000D	05/22/24 11:22	05/31/24 11:15			NA
A4E1657-22	Soil	EPA 8000D	05/22/24 11:25	05/31/24 11:15			NA
A4E1657-24	Soil	EPA 8000D	05/22/24 11:50	05/31/24 11:15			NA
A4E1657-26	Soil	EPA 8000D	05/22/24 11:50	05/31/24 11:15			NA
A4E1657-27	Soil	EPA 8000D	05/22/24 12:45	05/31/24 11:15			NA
A4E1657-31	Soil	EPA 8000D	05/22/24 12:10	05/31/24 11:15			NA

QUALIFIER DEFINITIONS

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

Apex Laboratories

J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified DL.
PRO	Sample has undergone sample processing prior to extraction and analysis.
V-15	Sample aliquot was subsampled from the sample container in the laboratory. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry"	Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry") See Percent Solids section for details of dry weight analysis.
" wet"	Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
" "	Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).
Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.
-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.
'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

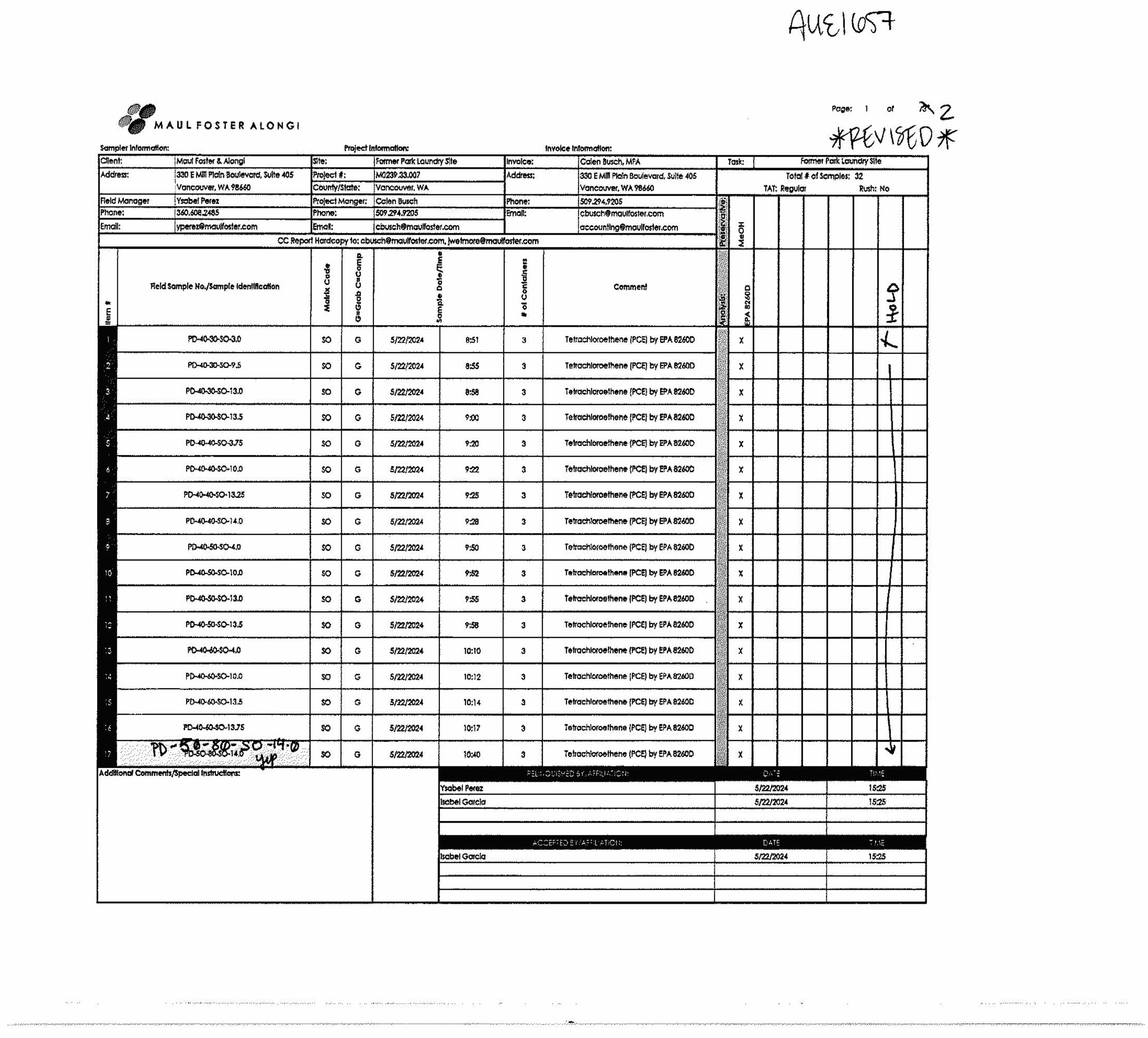
Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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



A4E1657

MAUL FOSTER ALONGI

Page: 1 of ~~1~~ 2

REVISED

Sampler Information:

Client:	Maul Foster & Alongi
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Field Manager	Ysabel Perez
Phone:	360.608.2485
Email:	yperez@maulfoster.com

Project Information:

Site:	Former Park Laundry Site
Project #:	M0239.33.007
County/State:	Vancouver, WA
Project Manger:	Calen Busch
Phone:	509.294.9205
Email:	cbusch@maulfoster.com

Invoice Information:

Invoice:	Calen Busch, MFA
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Phone:	509.294.9205
Email:	cbusch@maulfoster.com accounting@maulfoster.com

Task: Former Park Laundry Site
Total # of Samples: 32
TAT: Regular Rush: No

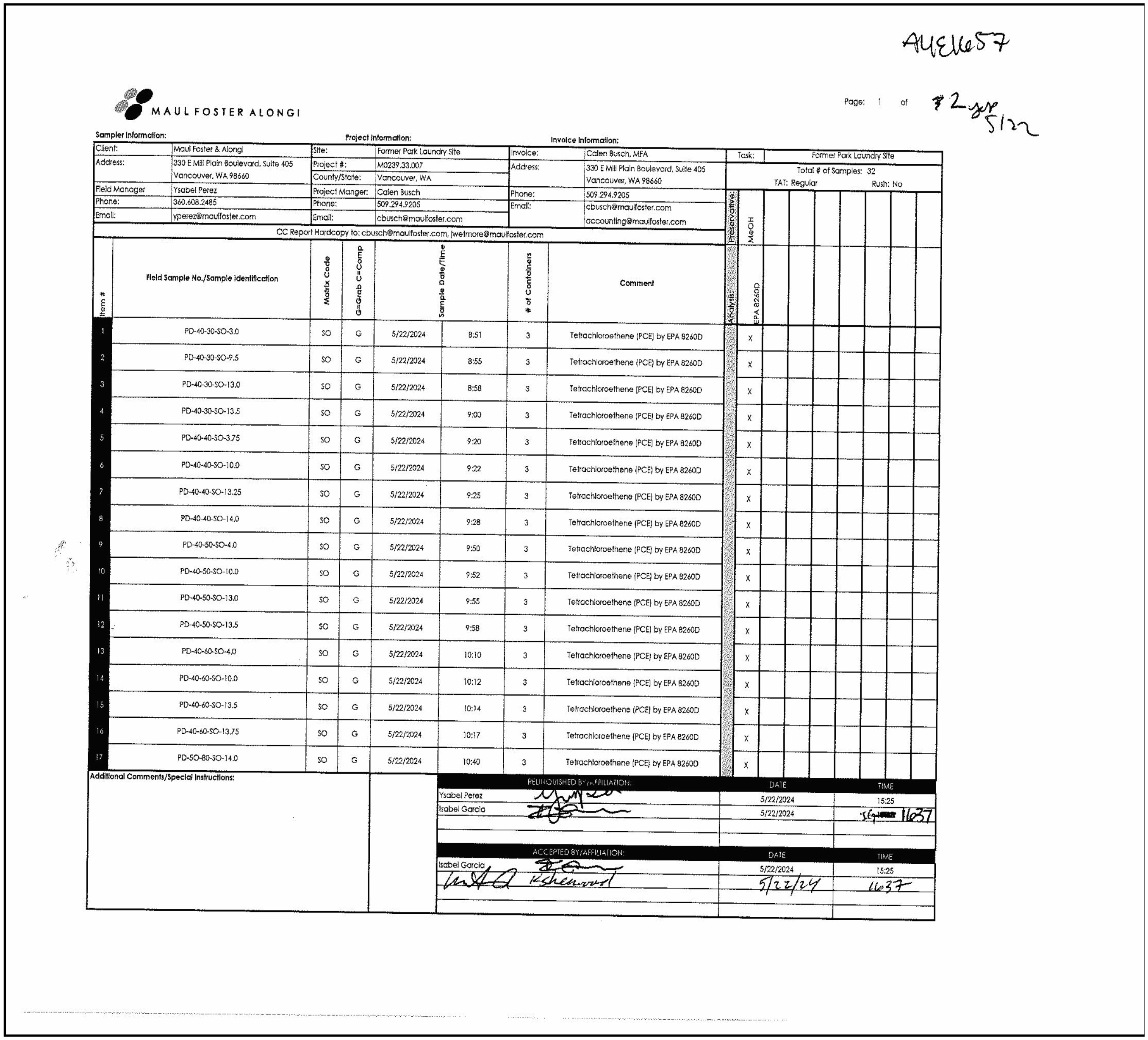
CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Item #	Field Sample No./Sample Identification	Matrix Code	G=Grab C=Comp	Sample Date/Time		# of Containers	Comment	Preservative:	MeOH							
								Analysis:	EPA 8260D						Hold	
1	PD-40-30-SO-3.0	SO	G	5/22/2024	8:51	3	Tetrachloroethene (PCE) by EPA 8260D		X						X	
2	PD-40-30-SO-9.5	SO	G	5/22/2024	8:55	3	Tetrachloroethene (PCE) by EPA 8260D		X							
3	PD-40-30-SO-13.0	SO	G	5/22/2024	8:58	3	Tetrachloroethene (PCE) by EPA 8260D		X							
4	PD-40-30-SO-13.5	SO	G	5/22/2024	9:00	3	Tetrachloroethene (PCE) by EPA 8260D		X							
5	PD-40-40-SO-3.75	SO	G	5/22/2024	9:20	3	Tetrachloroethene (PCE) by EPA 8260D		X							
6	PD-40-40-SO-10.0	SO	G	5/22/2024	9:22	3	Tetrachloroethene (PCE) by EPA 8260D		X							
7	PD-40-40-SO-13.25	SO	G	5/22/2024	9:25	3	Tetrachloroethene (PCE) by EPA 8260D		X							
8	PD-40-40-SO-14.0	SO	G	5/22/2024	9:28	3	Tetrachloroethene (PCE) by EPA 8260D		X							
9	PD-40-50-SO-4.0	SO	G	5/22/2024	9:50	3	Tetrachloroethene (PCE) by EPA 8260D		X							
10	PD-40-50-SO-10.0	SO	G	5/22/2024	9:52	3	Tetrachloroethene (PCE) by EPA 8260D		X							
11	PD-40-50-SO-13.0	SO	G	5/22/2024	9:55	3	Tetrachloroethene (PCE) by EPA 8260D		X							
12	PD-40-50-SO-13.5	SO	G	5/22/2024	9:58	3	Tetrachloroethene (PCE) by EPA 8260D		X							
13	PD-40-60-SO-4.0	SO	G	5/22/2024	10:10	3	Tetrachloroethene (PCE) by EPA 8260D		X							
14	PD-40-60-SO-10.0	SO	G	5/22/2024	10:12	3	Tetrachloroethene (PCE) by EPA 8260D		X							
15	PD-40-60-SO-13.5	SO	G	5/22/2024	10:14	3	Tetrachloroethene (PCE) by EPA 8260D		X							
16	PD-40-60-SO-13.75	SO	G	5/22/2024	10:17	3	Tetrachloroethene (PCE) by EPA 8260D		X							
17	PD-50-80-SO-14.0 PD-50-80-SO-14.0 yup	SO	G	5/22/2024	10:40	3	Tetrachloroethene (PCE) by EPA 8260D		X							

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
Ysabel Perez	5/22/2024	15:25
Isabel Garcia	5/22/2024	15:25

ACCEPTED BY/AFFILIATION:	DATE	TIME
Isabel Garcia	5/22/2024	15:25



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MAUL FOSTER ALONGI

Page: 1 of #2 yr 5/22

Sampler Information:

Client:	Maul Foster & Alongi
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Field Manager	Ysabel Perez
Phone:	360.608.2485
Email:	yperez@maulfoster.com

Project Information:

Site:	Former Park Laundry Site
Project #:	M0239.33.007
County/State:	Vancouver, WA
Project Manger:	Calen Busch
Phone:	509.294.9205
Email:	cbusch@maulfoster.com

Invoice Information:

Invoice:	Calen Busch, MFA
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660
Phone:	509.294.9205
Email:	cbusch@maulfoster.com accounting@maulfoster.com

Task: Former Park Laundry Site
Total # of Samples: 32
TAT: Regular Rush: No

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

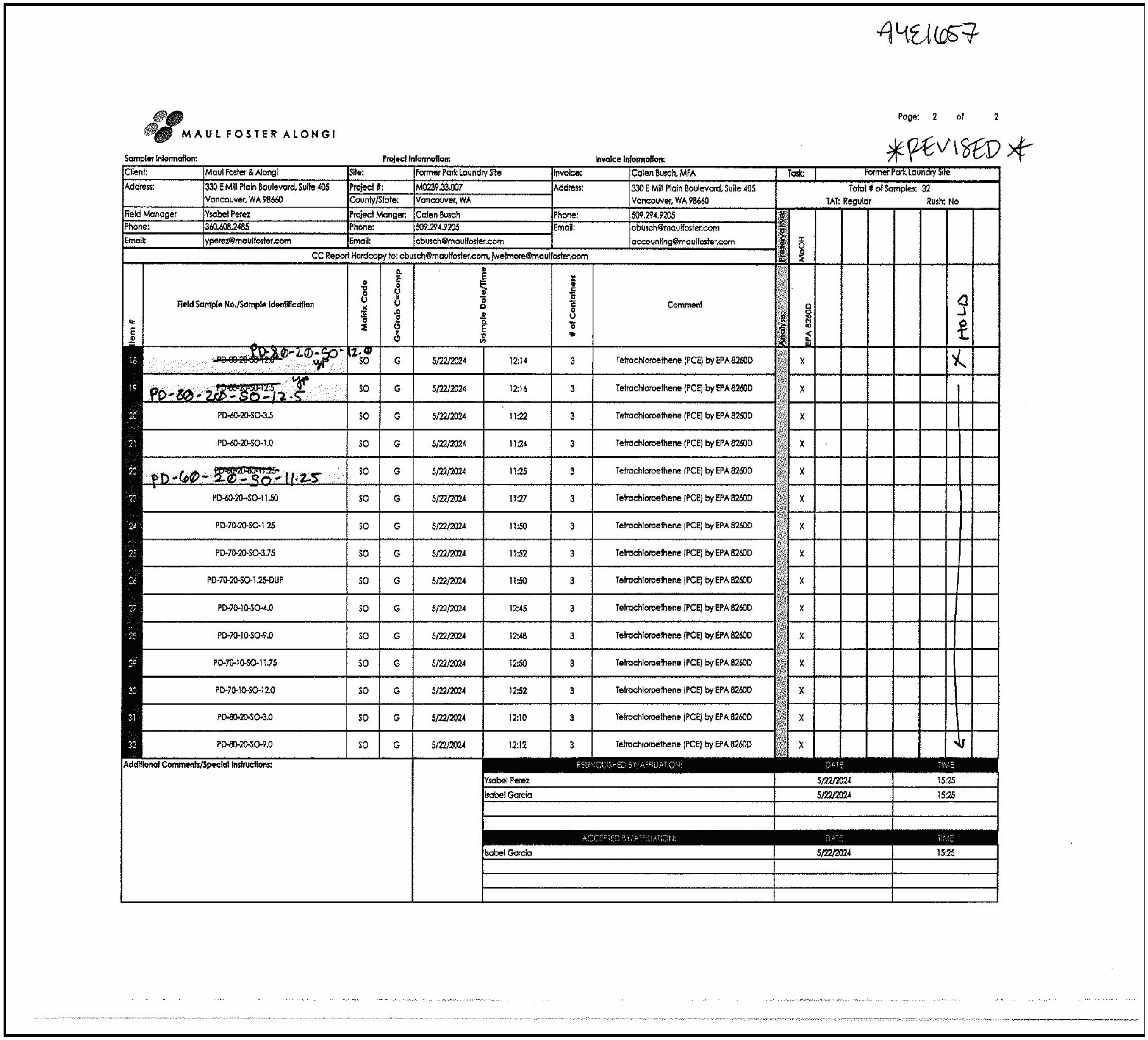
Item #	Field Sample No./Sample Identification	Matrix Code	G=Grab C=Comp	Sample Date/Time		# of Containers	Comment	Analysis: EPA 8260D Preservative: MeOH
1	PD-40-30-SO-3.0	SO	G	5/22/2024	8:51	3	Tetrachloroethene (PCE) by EPA 8260D	X
2	PD-40-30-SO-9.5	SO	G	5/22/2024	8:55	3	Tetrachloroethene (PCE) by EPA 8260D	X
3	PD-40-30-SO-13.0	SO	G	5/22/2024	8:58	3	Tetrachloroethene (PCE) by EPA 8260D	X
4	PD-40-30-SO-13.5	SO	G	5/22/2024	9:00	3	Tetrachloroethene (PCE) by EPA 8260D	X
5	PD-40-40-SO-3.75	SO	G	5/22/2024	9:20	3	Tetrachloroethene (PCE) by EPA 8260D	X
6	PD-40-40-SO-10.0	SO	G	5/22/2024	9:22	3	Tetrachloroethene (PCE) by EPA 8260D	X
7	PD-40-40-SO-13.25	SO	G	5/22/2024	9:25	3	Tetrachloroethene (PCE) by EPA 8260D	X
8	PD-40-40-SO-14.0	SO	G	5/22/2024	9:28	3	Tetrachloroethene (PCE) by EPA 8260D	X
9	PD-40-50-SO-4.0	SO	G	5/22/2024	9:50	3	Tetrachloroethene (PCE) by EPA 8260D	X
10	PD-40-50-SO-10.0	SO	G	5/22/2024	9:52	3	Tetrachloroethene (PCE) by EPA 8260D	X
11	PD-40-50-SO-13.0	SO	G	5/22/2024	9:55	3	Tetrachloroethene (PCE) by EPA 8260D	X
12	PD-40-50-SO-13.5	SO	G	5/22/2024	9:58	3	Tetrachloroethene (PCE) by EPA 8260D	X
13	PD-40-60-SO-4.0	SO	G	5/22/2024	10:10	3	Tetrachloroethene (PCE) by EPA 8260D	X
14	PD-40-60-SO-10.0	SO	G	5/22/2024	10:12	3	Tetrachloroethene (PCE) by EPA 8260D	X
15	PD-40-60-SO-13.5	SO	G	5/22/2024	10:14	3	Tetrachloroethene (PCE) by EPA 8260D	X
16	PD-40-60-SO-13.75	SO	G	5/22/2024	10:17	3	Tetrachloroethene (PCE) by EPA 8260D	X
17	PD-50-80-SO-14.0	SO	G	5/22/2024	10:40	3	Tetrachloroethene (PCE) by EPA 8260D	X

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
Ysabel Perez	5/22/2024	15:25
Isabel Garcia	5/22/2024	~~15:25~~ 1637

ACCEPTED BY/AFFILIATION:	DATE	TIME
Isabel Garcia	5/22/2024	15:25
	5/22/24	1637

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.



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MAUL FOSTER ALONGI

Page: 2 of 2

REVISED

Sampler Information:		Project Information:		Invoice Information:			
Client:	Maul Foster & Alongi	Site:	Former Park Laundry Site	Invoice:	Calen Busch, MFA	Task:	Former Park Laundry Site
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Project #:	M0239.33.007	Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660		Total # of Samples: 32
		County/State:	Vancouver, WA				TAT: Regular Rush: No
Field Manager	Ysabel Perez	Project Manger:	Calen Busch	Phone:	509.294.9205		
Phone:	360.608.2485	Phone:	509.294.9205	Email:	cbusch@maulfoster.com		
Email:	yperez@maulfoster.com	Email:	cbusch@maulfoster.com		accounting@maulfoster.com		

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Preservative: MeOH

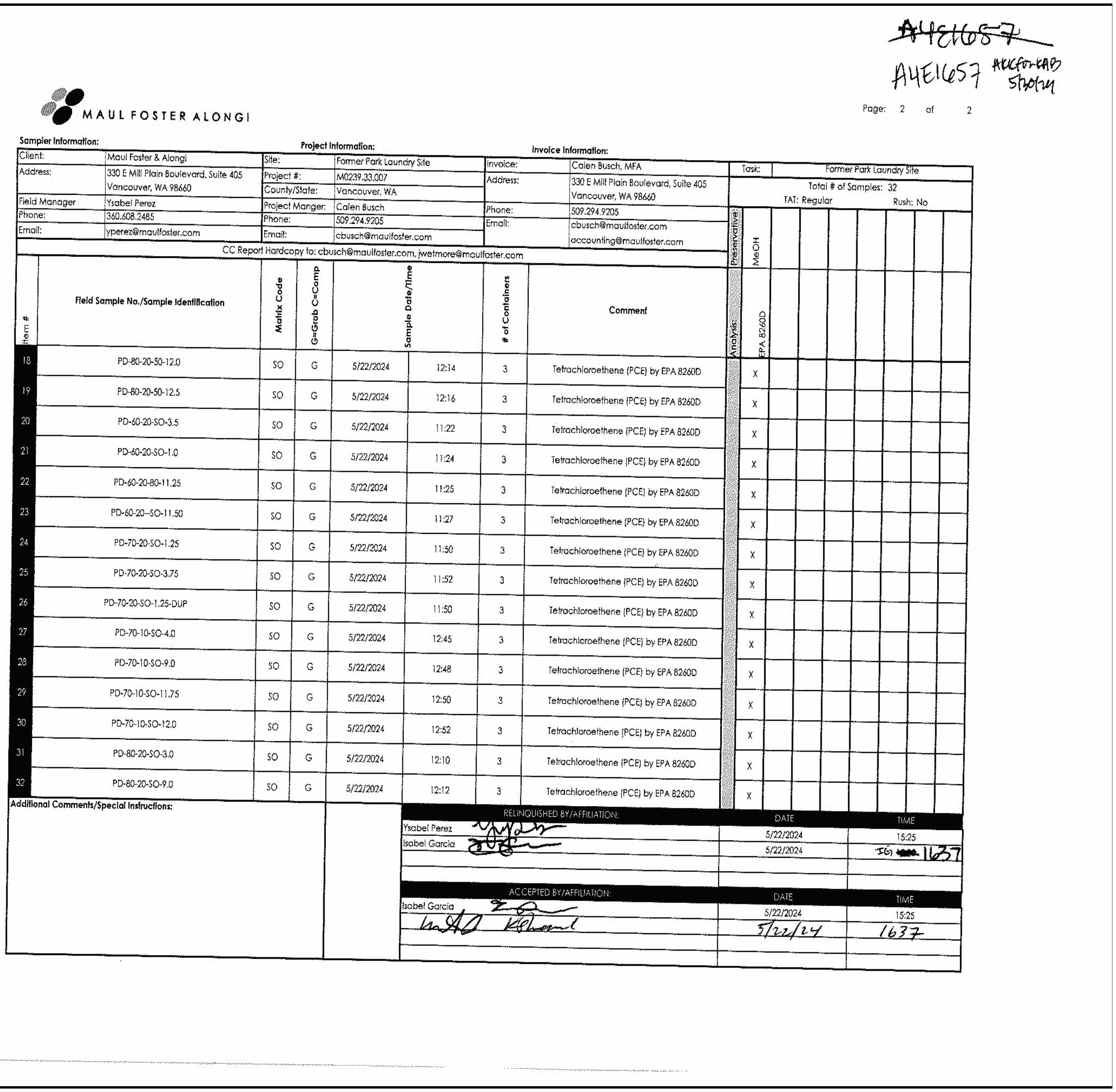
Item #	Field Sample No./Sample Identification	Matrix Code	G=Grab C=Comp	Sample Date/Time		# of Containers	Comment	Analysis: EPA 8260D						HOLD	
18	~~PD-80-20-SO-12.0~~ PD-80-20-SO-12.0 YP	SO	G	5/22/2024	12:14	3	Tetrachloroethene (PCE) by EPA 8260D	X						X	
19	~~PD-60-20-SO-12.5~~ YP PD-80-20-SO-12.5	SO	G	5/22/2024	12:16	3	Tetrachloroethene (PCE) by EPA 8260D	X							
20	PD-60-20-SO-3.5	SO	G	5/22/2024	11:22	3	Tetrachloroethene (PCE) by EPA 8260D	X							
21	PD-60-20-SO-1.0	SO	G	5/22/2024	11:24	3	Tetrachloroethene (PCE) by EPA 8260D	X							
22	~~PD-60-20-SO-11.25~~ PD-60-20-SO-11.25	SO	G	5/22/2024	11:25	3	Tetrachloroethene (PCE) by EPA 8260D	X							
23	PD-60-20–SO-11.50	SO	G	5/22/2024	11:27	3	Tetrachloroethene (PCE) by EPA 8260D	X							
24	PD-70-20-SO-1.25	SO	G	5/22/2024	11:50	3	Tetrachloroethene (PCE) by EPA 8260D	X							
25	PD-70-20-SO-3.75	SO	G	5/22/2024	11:52	3	Tetrachloroethene (PCE) by EPA 8260D	X							
26	PD-70-20-SO-1.25-DUP	SO	G	5/22/2024	11:50	3	Tetrachloroethene (PCE) by EPA 8260D	X							
27	PD-70-10-SO-4.0	SO	G	5/22/2024	12:45	3	Tetrachloroethene (PCE) by EPA 8260D	X							
28	PD-70-10-SO-9.0	SO	G	5/22/2024	12:48	3	Tetrachloroethene (PCE) by EPA 8260D	X							
29	PD-70-10-SO-11.75	SO	G	5/22/2024	12:50	3	Tetrachloroethene (PCE) by EPA 8260D	X							
30	PD-70-10-SO-12.0	SO	G	5/22/2024	12:52	3	Tetrachloroethene (PCE) by EPA 8260D	X							
31	PD-80-20-SO-3.0	SO	G	5/22/2024	12:10	3	Tetrachloroethene (PCE) by EPA 8260D	X							
32	PD-80-20-SO-9.0	SO	G	5/22/2024	12:12	3	Tetrachloroethene (PCE) by EPA 8260D	X							

Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
Ysabel Perez	5/22/2024	15:25
Isabel Garcia	5/22/2024	15:25

ACCEPTED BY/AFFILIATION:	DATE	TIME
Isabel Garcia	5/22/2024	15:25

Maul Foster & Alongi, INC.	Project: **Former Park Laundry Site**	
3140 NE Broadway Street	Project Number: **M0239.33.007**	**Report ID:**
Portland, OR 97232	Project Manager: **Meaghan Pollock**	**A4E1657 - 06 11 24 1447**



~~A4E1657~~
A4E1657 AKC for KAB 5/30/24

Page: 2 of 2

MAUL FOSTER ALONGI

Sampler Information:		Project Information:		Invoice Information:		Task:	Former Park Laundry Site
Client:	Maul Foster & Alongi	Site:	Former Park Laundry Site	Invoice:	Calen Busch, MFA		Total # of Samples: 32
Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660	Project #:	M0239.33.007	Address:	330 E Mill Plain Boulevard, Suite 405 Vancouver, WA 98660		TAT: Regular Rush: No
		County/State:	Vancouver, WA				
Field Manager	Ysabel Perez	Project Manger:	Calen Busch	Phone:	509.294.9205		
Phone:	360.608.2485	Phone:	509.294.9205	Email:	cbusch@maulfoster.com accounting@maulfoster.com		
Email:	yperez@maulfoster.com	Email:	cbusch@maulfoster.com				

CC Report Hardcopy to: cbusch@maulfoster.com, jwetmore@maulfoster.com

Item #	Field Sample No./Sample Identification	Matrix Code	G=Grab C=Comp	Sample Date/Time		# of Containers	Comment	Preservative: MeOH Analysis: EPA 8260D
18	PD-80-20-50-12.0	SO	G	5/22/2024	12:14	3	Tetrachloroethene (PCE) by EPA 8260D	X
19	PD-80-20-50-12.5	SO	G	5/22/2024	12:16	3	Tetrachloroethene (PCE) by EPA 8260D	X
20	PD-60-20-SO-3.5	SO	G	5/22/2024	11:22	3	Tetrachloroethene (PCE) by EPA 8260D	X
21	PD-60-20-SO-1.0	SO	G	5/22/2024	11:24	3	Tetrachloroethene (PCE) by EPA 8260D	X
22	PD-60-20-80-11.25	SO	G	5/22/2024	11:25	3	Tetrachloroethene (PCE) by EPA 8260D	X
23	PD-60-20--SO-11.50	SO	G	5/22/2024	11:27	3	Tetrachloroethene (PCE) by EPA 8260D	X
24	PD-70-20-SO-1.25	SO	G	5/22/2024	11:50	3	Tetrachloroethene (PCE) by EPA 8260D	X
25	PD-70-20-SO-3.75	SO	G	5/22/2024	11:52	3	Tetrachloroethene (PCE) by EPA 8260D	X
26	PD-70-20-SO-1.25-DUP	SO	G	5/22/2024	11:50	3	Tetrachloroethene (PCE) by EPA 8260D	X
27	PD-70-10-SO-4.0	SO	G	5/22/2024	12:45	3	Tetrachloroethene (PCE) by EPA 8260D	X
28	PD-70-10-SO-9.0	SO	G	5/22/2024	12:48	3	Tetrachloroethene (PCE) by EPA 8260D	X
29	PD-70-10-SO-11.75	SO	G	5/22/2024	12:50	3	Tetrachloroethene (PCE) by EPA 8260D	X
30	PD-70-10-SO-12.0	SO	G	5/22/2024	12:52	3	Tetrachloroethene (PCE) by EPA 8260D	X
31	PD-80-20-SO-3.0	SO	G	5/22/2024	12:10	3	Tetrachloroethene (PCE) by EPA 8260D	X
32	PD-80-20-SO-9.0	SO	G	5/22/2024	12:12	3	Tetrachloroethene (PCE) by EPA 8260D	X

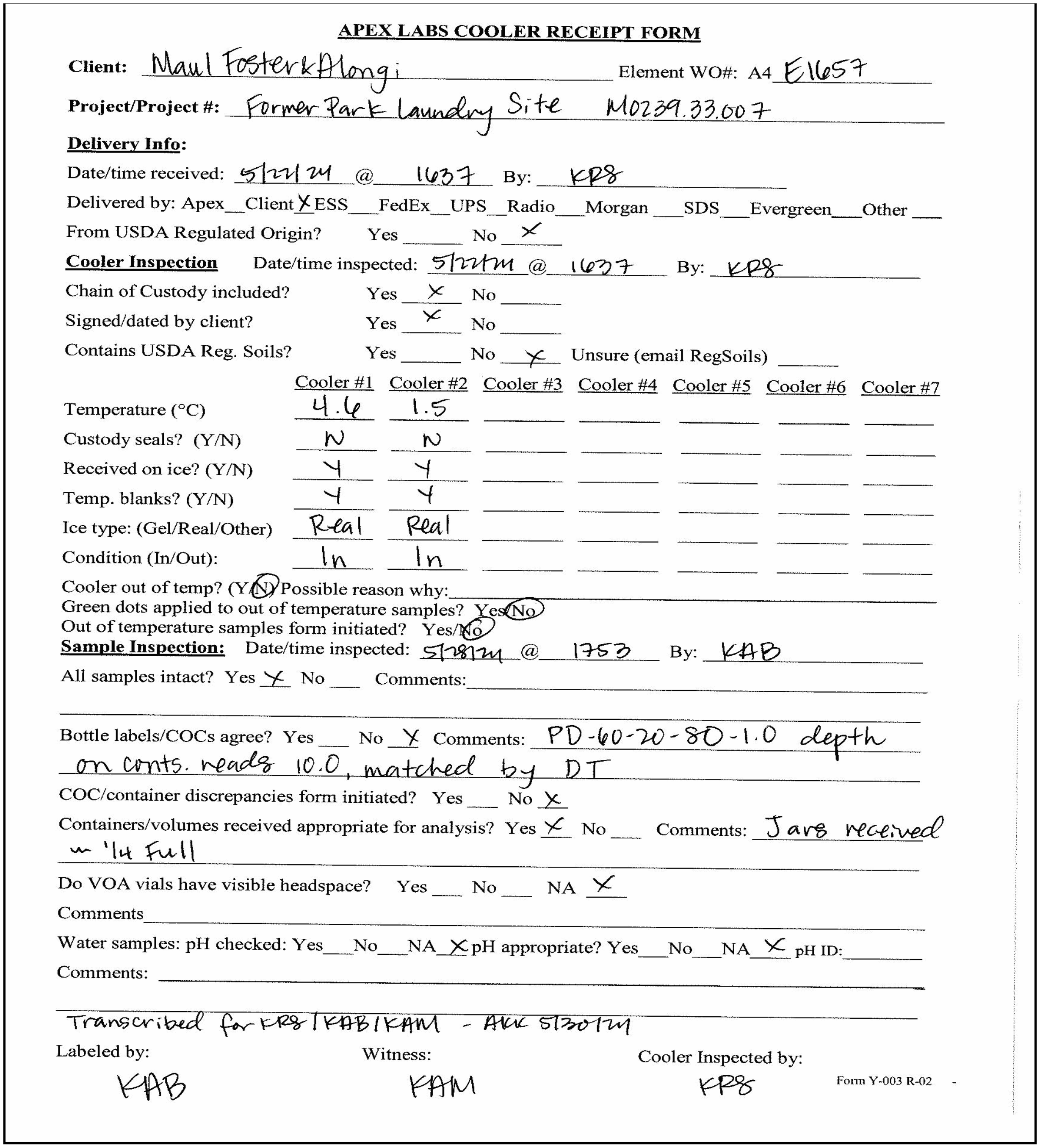
Additional Comments/Special Instructions:

RELINQUISHED BY/AFFILIATION:	DATE	TIME
Ysabel Perez	5/22/2024	15:25
Isabel Garcia	5/22/2024	IG ~~[illegible]~~ 1637

ACCEPTED BY/AFFILIATION:	DATE	TIME
Isabel Garcia	5/22/2024	15:25
	5/22/24	1637

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Philip Nerenberg



APEX LABS COOLER RECEIPT FORM

Client: Maul Foster & Alongi Element WO#: A4 E1657

Project/Project #: Former Park Laundry Site M0239.33.007

Delivery Info:

Date/time received: 5/22/24 @ 1637 By: KR8

Delivered by: Apex__ Client X ESS___ FedEx__ UPS__ Radio___ Morgan ___ SDS___ Evergreen___ Other ___

From USDA Regulated Origin? Yes ______ No X

Cooler Inspection Date/time inspected: 5/22/24 @ 1637 By: KR8

Chain of Custody included? Yes X No ______

Signed/dated by client? Yes X No ______

Contains USDA Reg. Soils? Yes ______ No X Unsure (email RegSoils) ______

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.6	1.5					
Custody seals? (Y/N)	N	N					
Received on ice? (Y/N)	Y	Y					
Temp. blanks? (Y/N)	Y	Y					
Ice type: (Gel/Real/Other)	Real	Real					
Condition (In/Out):	In	In					

Cooler out of temp? (Y/[✓ N]) Possible reason why:______

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

Out of temperature samples form initiated? Yes/[✓ No]

Sample Inspection: Date/time inspected: 5/28/24 @ 1753 By: KAB

All samples intact? Yes X No ___ Comments:______

Bottle labels/COCs agree? Yes ___ No X Comments: PD-60-20-80-1.0 depth on conts. reads 10.0, matched by DT

COC/container discrepancies form initiated? Yes ___ No X

Containers/volumes received appropriate for analysis? Yes X No ___ Comments: Jars received w/ 1/4 Full

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments______

Water samples: pH checked: Yes___No___NA X pH appropriate? Yes___No___NA X pH ID:______

Comments: ______

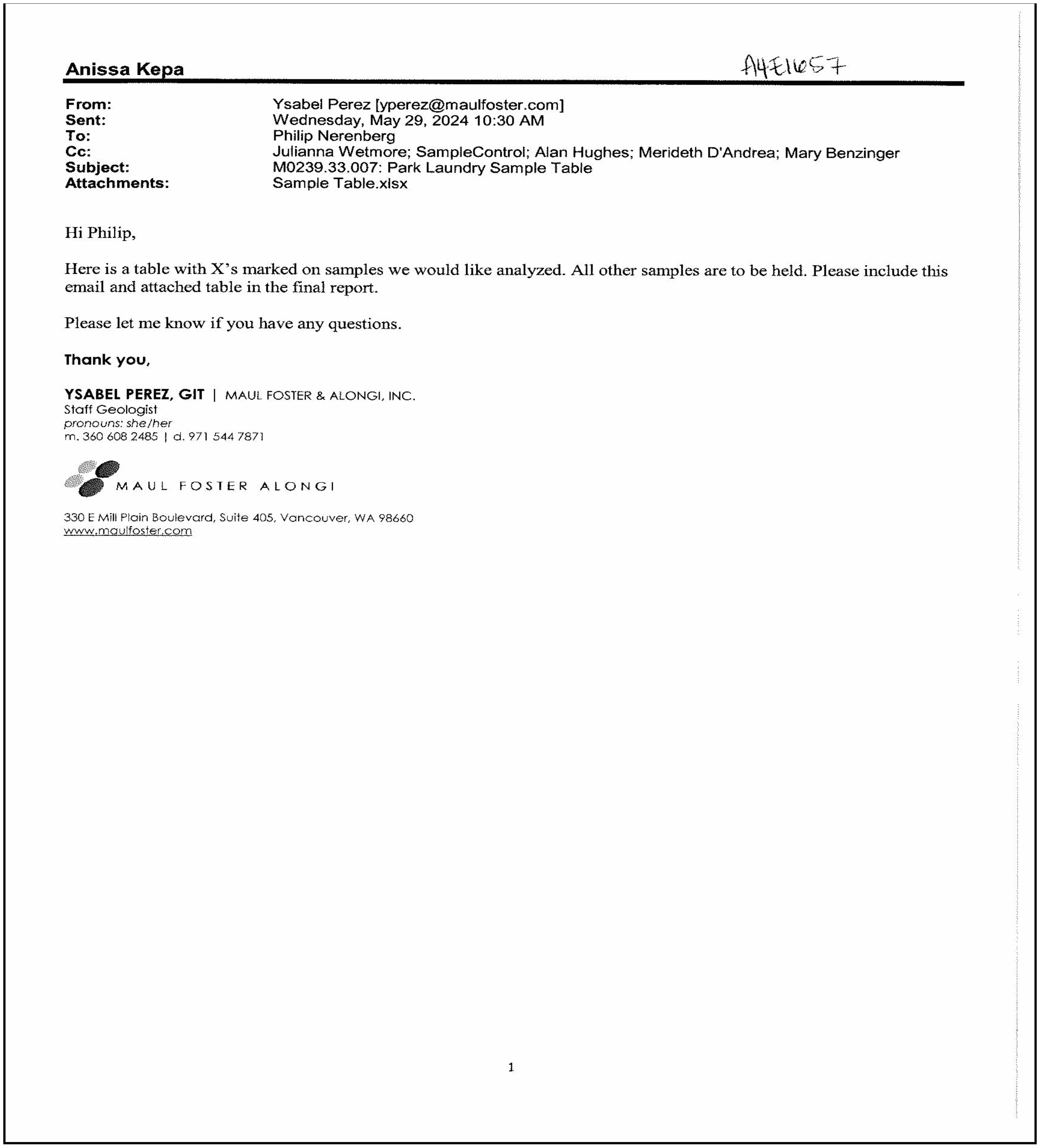
Transcribed for KR8/KAB/KAM - AKC 5/30/24

Labeled by: KAB

Witness: KAM

Cooler Inspected by: KR8

Form Y-003 R-02



Anissa Kepa

A4E1657

From: Ysabel Perez [yperez@maulfoster.com]
Sent: Wednesday, May 29, 2024 10:30 AM
To: Philip Nerenberg
Cc: Julianna Wetmore; SampleControl; Alan Hughes; Merideth D'Andrea; Mary Benzinger
Subject: M0239.33.007: Park Laundry Sample Table
Attachments: Sample Table.xlsx

Hi Philip,

Here is a table with X's marked on samples we would like analyzed. All other samples are to be held. Please include this email and attached table in the final report.

Please let me know if you have any questions.

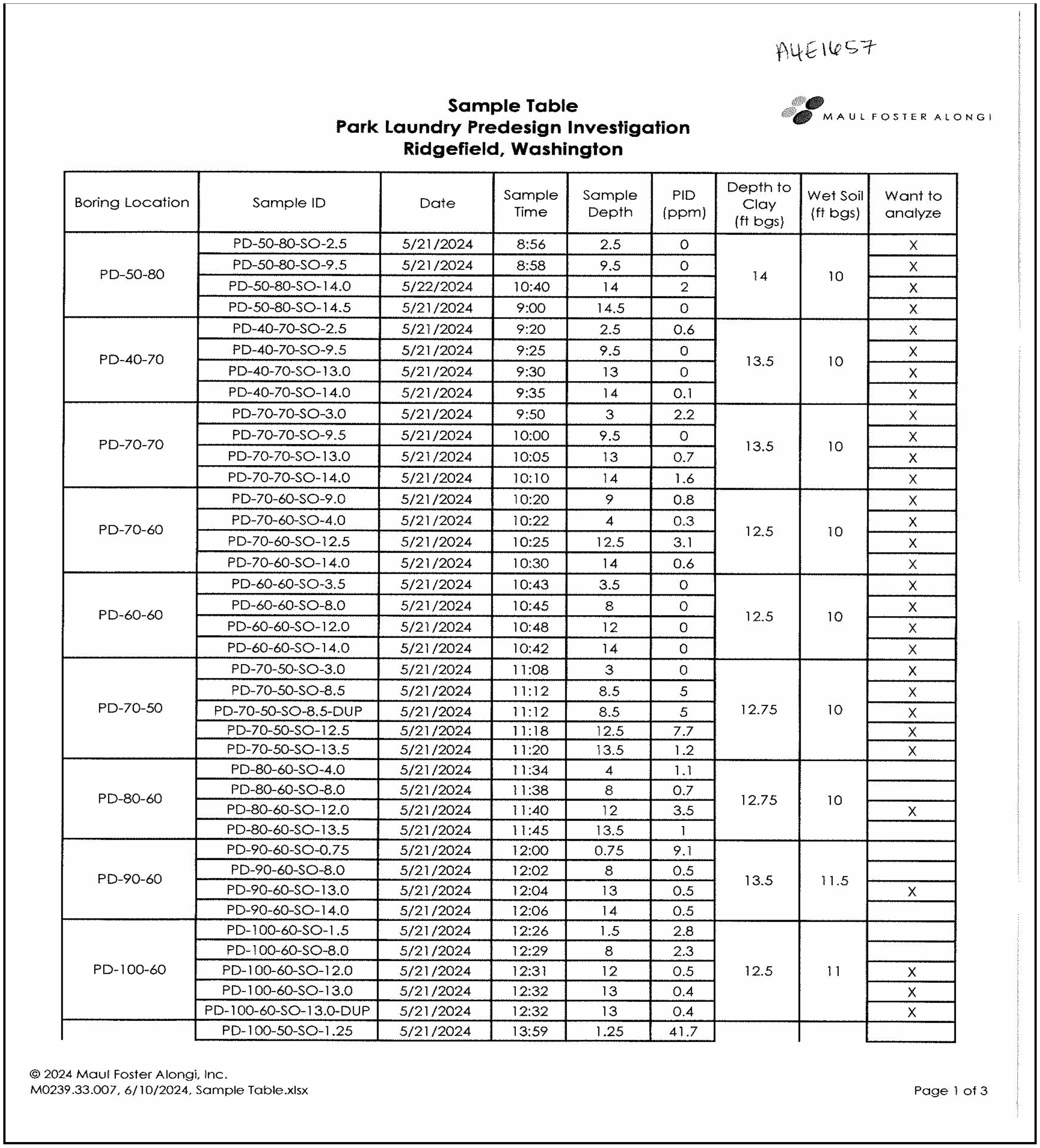
Thank you,

YSABEL PEREZ, GIT | MAUL FOSTER & ALONGI, INC.
Staff Geologist
pronouns: she/her
m. 360 608 2485 | d. 971 544 7871

MAUL FOSTER ALONGI

330 E Mill Plain Boulevard, Suite 405, Vancouver, WA 98660
www.maulfoster.com

1



A4E1657

MAUL FOSTER ALONGI

Sample Table
Park Laundry Predesign Investigation
Ridgefield, Washington

Boring Location	Sample ID	Date	Sample Time	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)	Want to analyze
PD-50-80	PD-50-80-SO-2.5	5/21/2024	8:56	2.5	0	14	10	X
	PD-50-80-SO-9.5	5/21/2024	8:58	9.5	0			X
	PD-50-80-SO-14.0	5/22/2024	10:40	14	2			X
	PD-50-80-SO-14.5	5/21/2024	9:00	14.5	0			X
PD-40-70	PD-40-70-SO-2.5	5/21/2024	9:20	2.5	0.6	13.5	10	X
	PD-40-70-SO-9.5	5/21/2024	9:25	9.5	0			X
	PD-40-70-SO-13.0	5/21/2024	9:30	13	0			X
	PD-40-70-SO-14.0	5/21/2024	9:35	14	0.1			X
PD-70-70	PD-70-70-SO-3.0	5/21/2024	9:50	3	2.2	13.5	10	X
	PD-70-70-SO-9.5	5/21/2024	10:00	9.5	0			X
	PD-70-70-SO-13.0	5/21/2024	10:05	13	0.7			X
	PD-70-70-SO-14.0	5/21/2024	10:10	14	1.6			X
PD-70-60	PD-70-60-SO-9.0	5/21/2024	10:20	9	0.8	12.5	10	X
	PD-70-60-SO-4.0	5/21/2024	10:22	4	0.3			X
	PD-70-60-SO-12.5	5/21/2024	10:25	12.5	3.1			X
	PD-70-60-SO-14.0	5/21/2024	10:30	14	0.6			X
PD-60-60	PD-60-60-SO-3.5	5/21/2024	10:43	3.5	0	12.5	10	X
	PD-60-60-SO-8.0	5/21/2024	10:45	8	0			X
	PD-60-60-SO-12.0	5/21/2024	10:48	12	0			X
	PD-60-60-SO-14.0	5/21/2024	10:42	14	0			X
PD-70-50	PD-70-50-SO-3.0	5/21/2024	11:08	3	0	12.75	10	X
	PD-70-50-SO-8.5	5/21/2024	11:12	8.5	5			X
	PD-70-50-SO-8.5-DUP	5/21/2024	11:12	8.5	5			X
	PD-70-50-SO-12.5	5/21/2024	11:18	12.5	7.7			X
	PD-70-50-SO-13.5	5/21/2024	11:20	13.5	1.2			X
PD-80-60	PD-80-60-SO-4.0	5/21/2024	11:34	4	1.1	12.75	10	
	PD-80-60-SO-8.0	5/21/2024	11:38	8	0.7			
	PD-80-60-SO-12.0	5/21/2024	11:40	12	3.5			X
	PD-80-60-SO-13.5	5/21/2024	11:45	13.5	1			
PD-90-60	PD-90-60-SO-0.75	5/21/2024	12:00	0.75	9.1	13.5	11.5	
	PD-90-60-SO-8.0	5/21/2024	12:02	8	0.5			
	PD-90-60-SO-13.0	5/21/2024	12:04	13	0.5			X
	PD-90-60-SO-14.0	5/21/2024	12:06	14	0.5			
PD-100-60	PD-100-60-SO-1.5	5/21/2024	12:26	1.5	2.8	12.5	11	
	PD-100-60-SO-8.0	5/21/2024	12:29	8	2.3			
	PD-100-60-SO-12.0	5/21/2024	12:31	12	0.5			X
	PD-100-60-SO-13.0	5/21/2024	12:32	13	0.4			X
	PD-100-60-SO-13.0-DUP	5/21/2024	12:32	13	0.4			X
	PD-100-50-SO-1.25	5/21/2024	13:59	1.25	41.7			

M0239.33.007, 6/10/2024, Sample Table.xlsx

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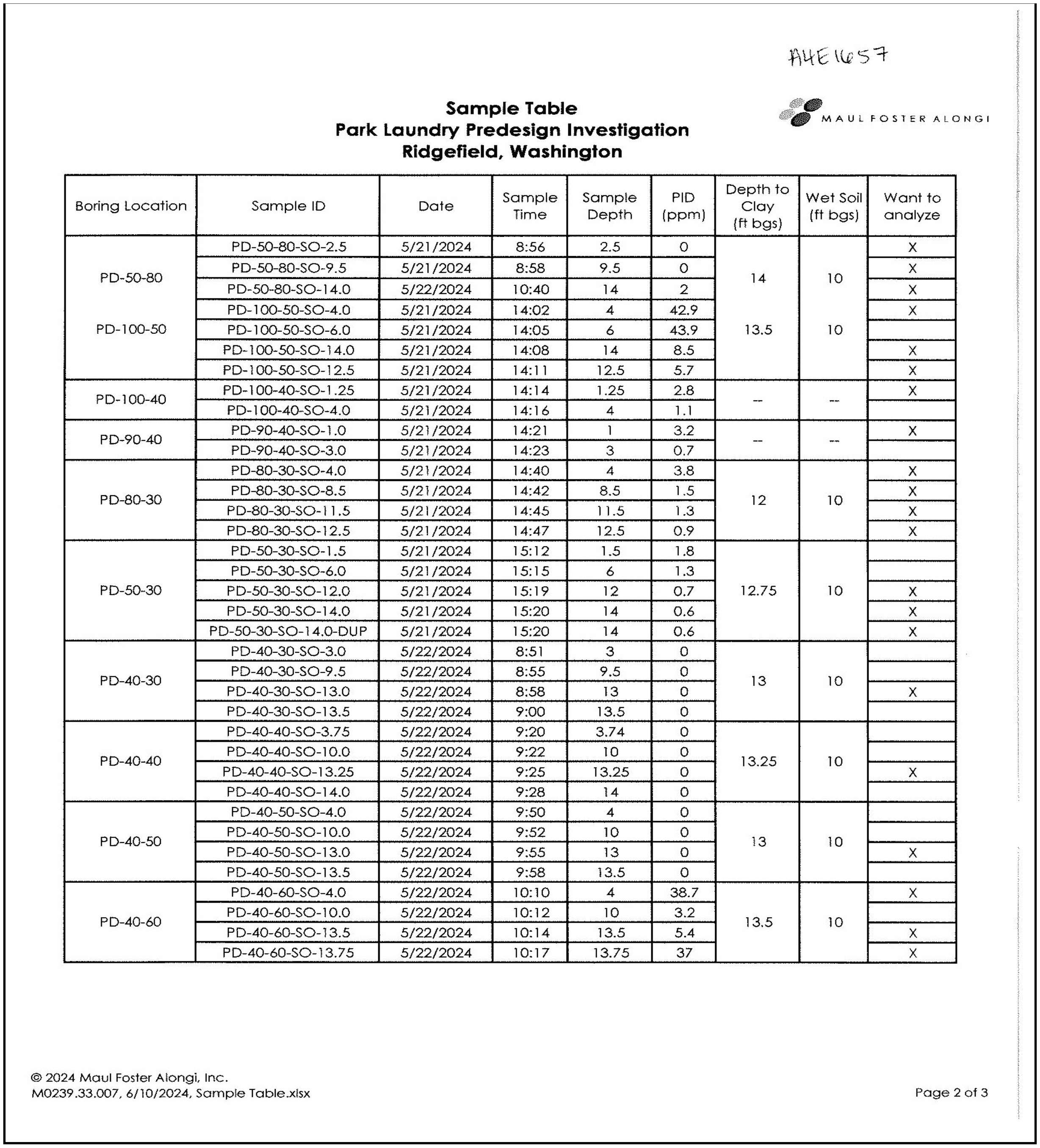
Maul Foster & Alongi, INC.
3140 NE Broadway Street
Portland, OR 97232

Project: **Former Park Laundry Site**
Project Number: **M0239.33.007**
Project Manager: **Meaghan Pollock**

Report ID:
A4E1657 - 06 11 24 1447



A4E1657

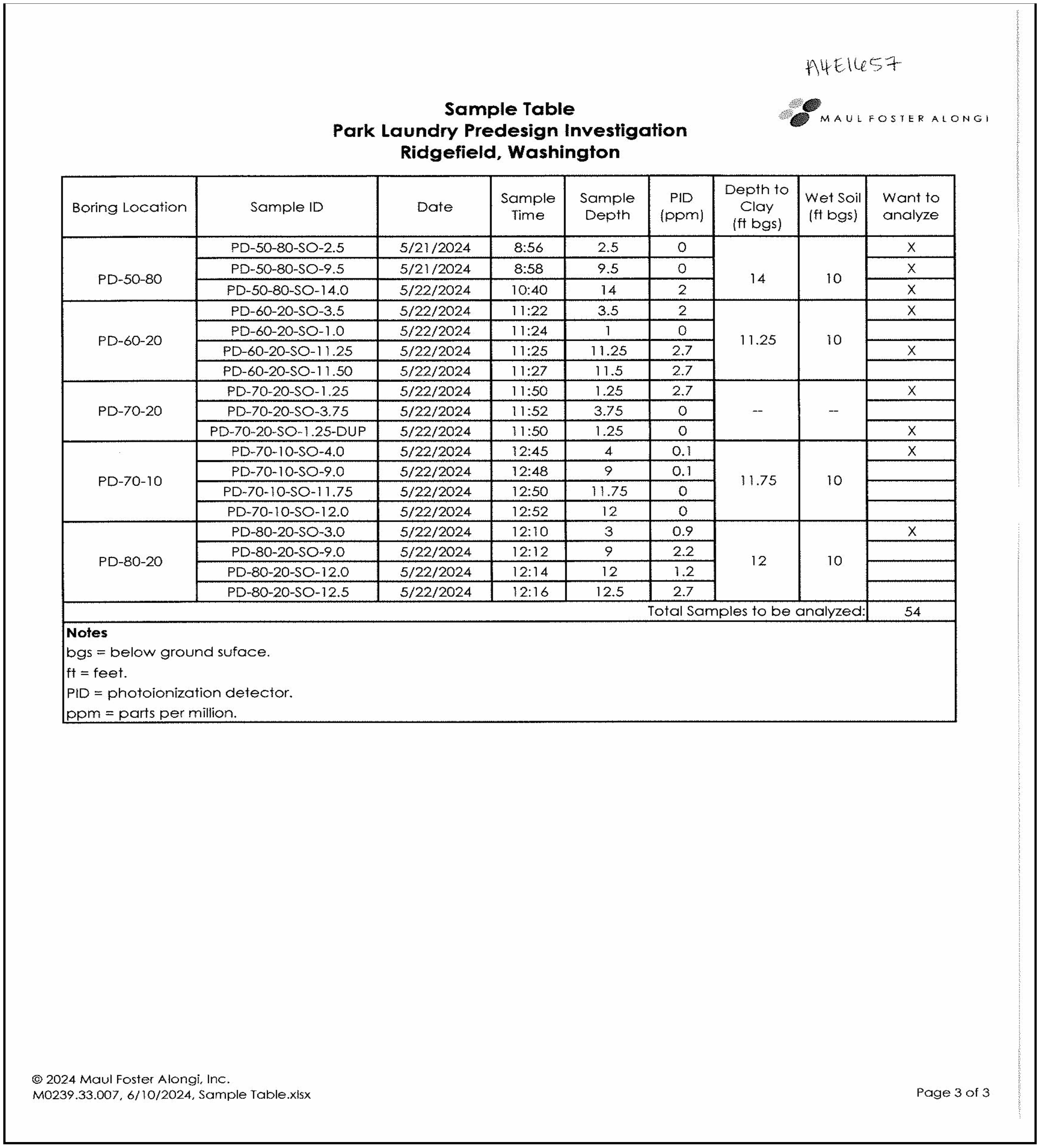
MAUL FOSTER ALONGI

Sample Table
Park Laundry Predesign Investigation
Ridgefield, Washington

Boring Location	Sample ID	Date	Sample Time	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)	Want to analyze
PD-50-80	PD-50-80-SO-2.5	5/21/2024	8:56	2.5	0	14	10	X
	PD-50-80-SO-9.5	5/21/2024	8:58	9.5	0			X
	PD-50-80-SO-14.0	5/22/2024	10:40	14	2			X
PD-100-50	PD-100-50-SO-4.0	5/21/2024	14:02	4	42.9	13.5	10	X
	PD-100-50-SO-6.0	5/21/2024	14:05	6	43.9			
	PD-100-50-SO-14.0	5/21/2024	14:08	14	8.5			X
	PD-100-50-SO-12.5	5/21/2024	14:11	12.5	5.7			X
PD-100-40	PD-100-40-SO-1.25	5/21/2024	14:14	1.25	2.8	--	--	X
	PD-100-40-SO-4.0	5/21/2024	14:16	4	1.1			
PD-90-40	PD-90-40-SO-1.0	5/21/2024	14:21	1	3.2	--	--	X
	PD-90-40-SO-3.0	5/21/2024	14:23	3	0.7			
PD-80-30	PD-80-30-SO-4.0	5/21/2024	14:40	4	3.8	12	10	X
	PD-80-30-SO-8.5	5/21/2024	14:42	8.5	1.5			X
	PD-80-30-SO-11.5	5/21/2024	14:45	11.5	1.3			X
	PD-80-30-SO-12.5	5/21/2024	14:47	12.5	0.9			X
PD-50-30	PD-50-30-SO-1.5	5/21/2024	15:12	1.5	1.8	12.75	10	
	PD-50-30-SO-6.0	5/21/2024	15:15	6	1.3			
	PD-50-30-SO-12.0	5/21/2024	15:19	12	0.7			X
	PD-50-30-SO-14.0	5/21/2024	15:20	14	0.6			X
	PD-50-30-SO-14.0-DUP	5/21/2024	15:20	14	0.6			X
PD-40-30	PD-40-30-SO-3.0	5/22/2024	8:51	3	0	13	10	
	PD-40-30-SO-9.5	5/22/2024	8:55	9.5	0			
	PD-40-30-SO-13.0	5/22/2024	8:58	13	0			X
	PD-40-30-SO-13.5	5/22/2024	9:00	13.5	0			
PD-40-40	PD-40-40-SO-3.75	5/22/2024	9:20	3.74	0	13.25	10	
	PD-40-40-SO-10.0	5/22/2024	9:22	10	0			
	PD-40-40-SO-13.25	5/22/2024	9:25	13.25	0			X
	PD-40-40-SO-14.0	5/22/2024	9:28	14	0			
PD-40-50	PD-40-50-SO-4.0	5/22/2024	9:50	4	0	13	10	
	PD-40-50-SO-10.0	5/22/2024	9:52	10	0			
	PD-40-50-SO-13.0	5/22/2024	9:55	13	0			X
	PD-40-50-SO-13.5	5/22/2024	9:58	13.5	0			
PD-40-60	PD-40-60-SO-4.0	5/22/2024	10:10	4	38.7	13.5	10	X
	PD-40-60-SO-10.0	5/22/2024	10:12	10	3.2			
	PD-40-60-SO-13.5	5/22/2024	10:14	13.5	5.4			X
	PD-40-60-SO-13.75	5/22/2024	10:17	13.75	37			X

M0239.33.007, 6/10/2024, Sample Table.xlsx

Page 2 of 3



A4E1657

MAUL FOSTER ALONGI

Sample Table
Park Laundry Predesign Investigation
Ridgefield, Washington

Boring Location	Sample ID	Date	Sample Time	Sample Depth	PID (ppm)	Depth to Clay (ft bgs)	Wet Soil (ft bgs)	Want to analyze
PD-50-80	PD-50-80-SO-2.5	5/21/2024	8:56	2.5	0	14	10	X
	PD-50-80-SO-9.5	5/21/2024	8:58	9.5	0			X
	PD-50-80-SO-14.0	5/22/2024	10:40	14	2			X
PD-60-20	PD-60-20-SO-3.5	5/22/2024	11:22	3.5	2	11.25	10	X
	PD-60-20-SO-1.0	5/22/2024	11:24	1	0			
	PD-60-20-SO-11.25	5/22/2024	11:25	11.25	2.7			X
	PD-60-20-SO-11.50	5/22/2024	11:27	11.5	2.7			
PD-70-20	PD-70-20-SO-1.25	5/22/2024	11:50	1.25	2.7	--	--	X
	PD-70-20-SO-3.75	5/22/2024	11:52	3.75	0			
	PD-70-20-SO-1.25-DUP	5/22/2024	11:50	1.25	0			X
PD-70-10	PD-70-10-SO-4.0	5/22/2024	12:45	4	0.1	11.75	10	X
	PD-70-10-SO-9.0	5/22/2024	12:48	9	0.1			
	PD-70-10-SO-11.75	5/22/2024	12:50	11.75	0			
	PD-70-10-SO-12.0	5/22/2024	12:52	12	0			
PD-80-20	PD-80-20-SO-3.0	5/22/2024	12:10	3	0.9	12	10	X
	PD-80-20-SO-9.0	5/22/2024	12:12	9	2.2			
	PD-80-20-SO-12.0	5/22/2024	12:14	12	1.2			
	PD-80-20-SO-12.5	5/22/2024	12:16	12.5	2.7			
							Total Samples to be analyzed:	54

Notes
bgs = below ground suface.
ft = feet.
PID = photoionization detector.
ppm = parts per million.

M0239.33.007, 6/10/2024, Sample Table.xlsx

Page 3 of 3

Appendix C

Health and Safety Plan

MAUL
FOSTER
ALONGI

Health and Safety Plan

Park Laundry Site
122 N Main Avenue
Ridgefield, Washington

Prepared for:

City of Ridgefield

May 16, 2024

Project No. M0239.33.007

Prepared by:

Maul Foster & Alongi, Inc.
330 E Mill Plain Boulevard, Suite 405, Vancouver, WA 98660

Health and Safety Plan

Park Laundry Site, Ridgefield, Washington

The material and data in this plan were prepared
under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.

Sean Maloney

Sean Maloney

Staff Geologist

Merideth D'Andrea

Principal Geologist

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Job Hazard Analyses

Appendix B

Chemicals of Potential Concern

Appendix C

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Appendix D

Incident Report Form

Appendix E

Tailgate Safety Meeting Checklist

Appendix F

HASP Audit Checklist

Abbreviations

AED	automated external defibrillator
CFR	Code of Federal Regulations
COPC	chemical of potential concern
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSC	health and safety coordinator
JHA	job hazard analysis
MFA	Maul Foster & Alongi, Inc.
PIC	principal in charge
PPE	personal protective equipment
the Property	122 N Main Avenue, Ridgefield, Washington
the Site	the Property and neighboring properties where contamination has come to be
Source Area	the Property and two vacant lots located directly north of the Park Laundry property, collectively
SSO	site safety officer
WBZ	water-bearing zone

Google Maps

122 N Main Ave, Ridgefield, WA 98642 to Legacy Salmon Creek Medical Center

Drive 10.5 miles, 16 min

Map data ©2024 Google 5000 ft

122 N Main Ave
Ridgefield, WA 98642

Get on I-5 S from Pioneer St

7 min (3.2 mi)

↑ 1. Head south on N Main Ave

240 ft

↰ 2. Turn left onto Pioneer St

1.6 mi

3. At the traffic circle, take the 2nd exit and stay on Pioneer St

0.5 mi

4. At the traffic circle, take the 2nd exit and stay on Pioneer St

0.6 mi

5. At the traffic circle, take the 2nd exit and stay on Pioneer St

0.2 mi

6. Use the right lane to merge onto I-5 S via the ramp to Portland

0.3 mi

Continue on I-5 S to Salmon Creek. Take exit 36 from I-205 S

6 min (6.7 mi)

7. Merge onto I-5 S

5.9 mi

8. Use the right lane to keep right at the fork, continue on I-205 S and follow signs for Salem/NE 134th St

0.6 mi

9. Take exit 36 for NE 134th St toward WSU Vancouver

0.2 mi

Continue on NE 134th St to your destination in Mount Vista

3 min (0.5 mi)

10. Turn left onto NE 134th St

0.3 mi

11. Turn left onto NE 23rd Ave

0.2 mi

12. Turn left

322 ft

13. Turn left

75 ft

Legacy Salmon Creek Medical Ctr

1 Nearest Hospital/Emergency Medical Center

1.1 Nearest Hospital

Legacy Salmon Creek Medical Center, 2211 NE 139th St, Vancouver, WA 98686

Phone: (360) 487-1000

Distance: 10.5 miles

Travel Time: 16 minutes

1.2 Route to Hospital from Property

See the map on the first page of this document.

1.2.1 Driving Directions to Hospital from Property

1. Head south on N Main Ave (240 feet)
2. Turn left onto Pioneer St (1.6 miles)
3. At the traffic circle, take the 2nd exit and stay on Pioneer St (0.5 miles)
4. At the traffic circle, take the 2nd exit and stay on Pioneer St (0.6 miles)
5. At the traffic circle, take the 2nd exit and stay on Pioneer St (0.2 miles)
6. Use the right lane to merge onto I-5 S via the ramp to Portland (0.3 miles)
7. Merge onto I-5 S (5.9 miles)
8. Use the right lane to keep right at the fork, continue on I-205 S and follow signs for Salem/NE 134th St (0.6 miles)
9. Take exit 36 for NE 134th St toward WSU Vancouver (0.2 miles)
10. Turn left onto NE 134th St (0.3 miles)
11. Turn left onto NE 23rd Ave (0.2 miles)
12. Turn left (322 feet)
13. Turn left (75 feet)

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	Dial 911
Merideth D'Andrea Project Manager	Phone: 503-501-5216 Cell: 503-209-4582
Nicole Bruneel Health and Safety Coordinator (HSC)	Phone: 208-784-1090 Cell: 208-949-3981

2 Plan Summary

This health and safety plan (HASP) was developed to describe the procedures and practices necessary for protecting the health and safety of Maul Foster & Alongi, Inc. (MFA), employees conducting activities at the Park Laundry Site at 122 N Main Avenue, Ridgefield, Washington (the Property). Other employers, including contractors and subcontractors, are expected to develop and implement their own HASPs to manage the health and safety of their personnel.

MFA personnel conducting activities at the Property are responsible for understanding and adhering to this HASP. Before fieldwork begins, the on-Property personnel will designate a site safety officer (SSO) who is familiar with health and safety procedures and with the Site. Safety deficiencies should be immediately communicated to the SSO and, if necessary, to the project manager, PIC/program manager, or MFA's HSC.

All contractors and subcontractors have the primary responsibility for the safety of their own personnel on the Property. All personnel on the Property have stop work authority if they observe conditions that they believe create an imminent danger.

If MFA employees work on the Property for more than a year, this HASP will be reviewed at least annually. Additionally, this HASP will be updated as new or changed conditions are encountered to ensure that it reflects the current known hazards and requirements associated with the Property.

MFA personnel who will be working on the Property are required to read and understand this HASP. MFA personnel entering the work area must sign the personnel acknowledgment sheet (Section 16), certifying that they have read and that they understand this HASP and agree to abide by it.

3 Key Project Personnel

Name	Responsibility
Merideth D'Andrea	Project Manager
Ysabel Perez	Field Personnel
Eric Aaser	Field Personnel
Isabel Garcia	Field Personnel

Name	Responsibility
Nicole Bruneel	HSC

4 Emergency Supplies and Equipment List

Equipment	Location and Notes
First Aid Kit	Inside work vehicle.
Fire Extinguishers	Inside work vehicle.
Mobile Phones	On MFA staff.
Traffic Cones	Inside work vehicle.
Water and Other Fluid Replenishment	Inside food-only cooler in work vehicle.
Eyewash	In work vehicle.
Spill Kit	In work vehicle.
Health and Safety Plan	In work vehicle.

5 Property Description and Background

5.1 Type of Property

The Site is defined as the Property and neighboring properties where contamination has come to be. The Source area is defined as the Property and two vacant lots located directly north of the Park Laundry property, collectively. The Source Area is zoned as Downtown Mixed Use and is comprised of approximately five parcels. The parcel formerly occupied by Park Laundry was approximately 25 feet wide (north-south) and 100 feet long (east-west). The property formerly occupied by the Ridgefield Police Department comprises the southern end of the Source Area. The Source Area is bounded on the east by a one-lane paved alleyway, which in turn is bordered by a city skate park and a former fire station. To the west is North Main Avenue and a restaurant. Land use is in the downtown is primarily residential and commercial.

5.2 Buildings/Structures

The Source Area contains a gravel parking lot.

5.3 Topography

Site topography consists of upper and lower terrace areas trending north and south. The upper terrace forms a bluff above the Columbia River and the lower terrace abuts Lake River. The Source Area is located on the upper terrace in downtown Ridgefield.

5.4 General Geologic/Hydrologic Setting

Borings on and downgradient of the Property have been advanced as deep as 80 and 90 feet bgs, respectively. Generally, the Site is underlain by Tertiary-age semi-consolidated alluvial Troutdale formation deposits, and Holocene alluvial deposits (lower terrace alluvial deposits). The shallow water-bearing zone (WBZ) on the upper terrace is perched above a massive silt and clay deposit at about 12 to 20 feet bgs. The shallow WBZ in the upper terrace fluctuates seasonally from less than 2-feet bgs to greater than 10-feet bgs. The upper WBZ in the lower terrace is separated by an aquitard (weathered surface of the Troutdale formation), which in turn is underlain by a regional aquifer.

5.5 Property Status

The groundwater plume associated with the Source Area covers an estimated 22 acres. The plume generally follows the topography of the area, extending north and west from the Property, and is bounded on the west by Lake River.

5.6 General Property History

Park Laundry operated at the Property from approximately 1965 to 1977. The laundry service is believed to have included dry cleaning services and self-service, coin-operated washers and dryers. Park Laundry's operations had ceased by 1978 and in 2000 the former laundry service building was removed. The City of Ridgefield acquired the Property on December 28, 2023, at which time the Consent Decree with Ecology became effective.

6 Hazard Evaluation

6.1 Site Tasks and Operations

MFA has completed job hazard analyses (JHAs) for specific tasks that may be conducted on the Property, depending on the scope of work. JHAs are provided in Appendix A. The following list summarizes planned tasks and operations:

- General work near heavy equipment
- Collecting soil samples
- Collecting groundwater samples
- Working in or near a public right-of-way or near vehicle traffic

The control measures that field personnel must implement to eliminate or minimize these hazards, such as air monitoring, personal protective equipment (PPE), engineering controls, and decontamination procedures, are detailed in the JHAs and in subsequent sections of this HASP.

6.2 Chemical Hazard Evaluation

Chemicals of potential concern (COPCs), including concentrations detected on the Property, are summarized in Appendix B.

6.3 Physical Hazards

The specific physical hazards and associated controls for work on the Property are described in the JHAs provided in Appendix A.

6.4 Other Hazards

Hazards may include COVID-19, which may require additional safety and health protocol.

7 Site-Control Measures

Control of access to the Property will be established before the work begins. Control measures may include fencing, gates, and signs limiting access to everyone except authorized personnel. Work/exclusion zones and contaminant reduction zones (and other relevant features, if any) will be designated by the SSO. The exclusion zone is defined as the area of known or suspected contamination (e.g., the area where a well is being installed), and the contaminant reduction zone is where support activities take place (e.g., packing sample coolers, decontamination activities).

MFA requires the buddy system if personnel conducting the work may potentially be exposed to chemical or physical hazards that would require immediate medical attention or rescue. The buddy system may involve working with non-MFA personnel.

8 Health and Safety Training

MFA personnel who could be exposed to COPCs while conducting work on the Property will have completed training consistent with the Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements in 29 Code of Federal Regulations (CFR) 1910.120(e) before beginning work on the Property. The training will include the following:

- Identification of an SSO, and other safety and health personnel, if applicable
- Identification of safety and health hazards specific to work being conducted
- Proper use of required PPE

- Safe work practices required (e.g., fall protection, confined-space entry procedures, hot-work permits, general safety rules)
- Safe use of engineering controls and equipment
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The project-specific emergency response plan/spill containment plan

The HSC will oversee training for MFA personnel conducting fieldwork. Training records, including an outline, signoffs, and competency records, will be maintained by the HSC.

While the HSC is responsible for maintaining training records, the project manager is responsible for verifying that the training status of field personnel is current before these personnel deploy to the field.

9 Safety Equipment

9.1 Personal Protective Equipment

Individuals on the Property must wear PPE to protect against physical hazards. PPE required on the Property is typically modified Level D, which consists of the following:

- Hard hat
- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent if handling media potentially impacted or known to be impacted
- Work gloves (if handling materials that might have sharp edges, protrusions, or splinters)

Additional PPE may be necessary for specific tasks with additional hazards. The SSO will be responsible for designating additional PPE for specific tasks. Depending on the activity, additional PPE may include the following:

- Hearing protection (to be worn during high-noise tasks)
- Chemical-resistant clothing, (e.g., Tyvek coveralls)
- Chemical-resistant boots
- Chemical-resistant goggles
- Chemical-resistant gloves
- Faceshield
- Respiratory protection

Additional PPE may be required if workers discover unexpected contamination. Characteristics of unexpected contamination could include unusual odors, discolored media, or a visible sheen. MFA employees should contact the SSO and, if necessary, the project manager and/or the HSC as soon as possible after the discovery of unexpected contamination. The SSO and, if applicable, the project manager and/or HSC will determine any need for additional controls and/or training.

PPE used at the Property must meet the requirements of recognized consensus standards (e.g., American National Standards Institute, National Institute for Occupational Safety and Health), and respiratory protection will comply with the requirements set forth in 29 CFR 1910.134.

Project personnel are not permitted to reduce the specified level of required PPE without approval from the SSO or the project manager and/or HSC.

9.2 Safety Equipment

The SSO will be responsible for ensuring that the following safety equipment is available during fieldwork and is properly inspected and maintained:

- Soap and water for decontamination
- Caution tape, traffic cones, and/or barriers
- First aid kit
- Automated external defibrillator (AED)
- Fire extinguisher
- Fluids for hydration, (e.g., drinking water or sports drink)
- Canopy for shade
- Hand-washing station
- Eye-flushing station

9.3 Air Monitoring Equipment

The following air monitoring equipment will be available to identify conditions that may require additional controls. See Appendix C for specified action levels and follow-up response actions.

- Photoionization detector

9.4 Communications Equipment

MFA personnel should have a mobile phone or a radio available in case of emergency.

10 Decontamination Procedures

10.1 Partial Decontamination Procedures

MFA employees will implement the following partial decontamination procedures when exiting the work/exclusion zone but remaining on the Property.

- Wash and rinse boots and outer gloves (if wearing two pairs) in containers in the contamination-reduction zone.
- Inspect Tyvek suit for stains, rips, or tears. If the suit is contaminated but is to be reused, full decontamination will be performed as described in Section 9.2. If the suit is damaged, it should not be reused; discard it in a container labeled for disposable items.
- Remove and inspect outer gloves. If they are ripped or otherwise damaged, discard them in a container labeled for disposable items.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Discard used cartridges at the frequency established by the SSO, project manager, or HSC.
- Wash hands and face with soap and water.

10.2 Full Decontamination Procedures

When exiting the exclusion zone and leaving the Property (e.g., at the end of the work shift), MFA employees will follow the full decontamination procedures listed below.

- Wash and rinse boots and outer gloves in containers in the contamination-reduction zone.
- Remove outer gloves and Tyvek suit and deposit in a container labeled for disposable items.
- Remove respirator and discard used cartridges at the frequency dictated by the SSO, project manager, or HSC.
- Wash and rinse respirator in decontamination container labeled “respirators only.”
- Remove work boots and put on street shoes. Place work boots in a plastic bag or container.
- Remove inner gloves and deposit in a container labeled for disposable items.
- Wash hands and face with soap and water.
- Shower as soon after the work shift as practicable.

11 Medical Surveillance

MFA will ensure that its employees who meet the following criteria are enrolled in a medical surveillance program consistent with 29 CFR 1910.120(f):

- The employees are, or may be, exposed to hazardous substances or health hazards at or above established permissible exposure limits for 30 or more days per year.
- The employees are required to wear a respirator for 30 or more days per year.

MFA employees who exhibit signs or symptoms consistent with overexposure to COPCs will be offered medical surveillance consistent with HAZWOPER requirements.

MFA will ensure that its employees who are authorized to wear respirators are medically evaluated and approved for respirator use, consistent with the respiratory protection standard (29 CFR 1910.134). The HSC or administrative designee (e.g., human resources manager) will maintain medical evaluation records, including respirator clearance documentation.

Personnel medically cleared for respirator use will undergo an annual qualitative fit test. The MFA HSC or administrative designee will conduct the annual qualitative fit tests and will manage the documentation.

If employees are required to wear a respirator on the Property, the project manager will verify that the employee has a current annual respirator fit test.

12 Air Monitoring

Based on Site conditions, it is not anticipated that air monitoring will be necessary; however, air monitoring equipment will be available in case workers encounter conditions, such as unusual odors, discolored media, or a visible sheen, that indicate the presence of unexpected contamination. If such conditions are discovered, workers will exit the area and contact the SSO and, as needed, the project manager or the HSC. If necessary, MFA will use the air monitoring equipment to evaluate the conditions and determine whether additional controls and/or training are required. Action levels and follow-up actions are provided in Appendix C.

If air monitoring is necessary, it must be performed by individuals familiar with the calibration, use, and care of the required instruments. Measurements will be documented, and the records must include the following information:

- The name of the person conducting the measurements
- The identity of workers, if any, who have exposure indicated by the measurement results
- Information about the instrument (e.g., type, make, model, serial number)
- The location where the measurement was taken
- The measurement date and start/stop time
- Conditions represented by the measurement, including applicable activities, work practices, weather conditions, Site conditions, and controls in place
- Measurement results
- Other relevant observations or notes

12.1 Air Monitoring Action Levels

If air monitoring is conducted, the results will be compared to the action levels provided in Appendix C. These levels have been established to comply with Occupational Safety and Health Administration permissible exposure limits, American Conference of Governmental Industrial Hygienists threshold limit values, and National Institute for Occupational Safety and Health recommendations for the chemicals that may be encountered on the Property. The action levels have been adjusted for the relative response of common photoionization detection instruments to motor-fuel vapors.

12.2 Explosion Hazard Action Levels

MFA employees will take measurements when working near known or suspected sources of explosive gases or vapors. The instrument alarm should be set to sound at 10 percent of the lower explosive limit. When measurements exceed this level, MFA employees will:

1. Extinguish ignition sources and shut down powered equipment in the work area.
2. Move personnel at least 100 feet away from the work area.
3. Contact the SSO, the project manager, and/or the HSC as applicable.
4. At the instruction of the project manager and/or the HSC and after waiting 15 minutes for explosive gases to dissipate, the SSO may use the combustible-gas meter to safely approach the work site to measure combustible gases in the work area. The SSO will not enter (or allow any personnel to enter) any area where the combustible-gas meter readings exceed the explosivity action level, nor will the SSO approach if there is a potential for fire or explosion.
5. The SSO may authorize personnel to reenter the work area after the source of the combustible gases has been identified and controlled.

12.3 Instrument Calibrations

Instruments will be calibrated consistent with manufacturers' recommendations. Calibrations will be coordinated by the SSO and the project manager. Calibration and monitoring records will be maintained by the SSO and/or the project manager.

13 Emergency Response, Spill Containment, and Confined Space

MFA employees will follow the emergency response, spill response, and confined-space procedures described in the MFA Policies and Procedures Manual. Incidents will be documented on the incident report form included as Appendix D.

14 Pre-entry Briefing

MFA employees will conduct pre-entry briefings prior to beginning work on the Property (e.g., tailgate meetings; see the checklist provided as Appendix E). Additional briefings shall be conducted as the scope of work or conditions change throughout the project to ensure that employees are familiar with and are adhering to the appropriate safety and health protocol. Attendance and discussion topics will be documented on sign-in sheets that will be maintained by the SSO.

15 Periodic Evaluation

The project manager or designee will evaluate the effectiveness of this HASP by conducting periodic HASP audits. A HASP audit form is included as Appendix F. In addition, HASP effectiveness will be evaluated by tracking ongoing health and safety feedback from field personnel working on the project. This feedback will be reviewed and incorporated into either immediate or annual updates of this HASP, as appropriate. This HASP will be reviewed and updated at least annually. Updating this HASP as necessary ensures that it reflects the known hazards, conditions, and requirements associated with the project. MFA will maintain HASP audit or other periodic evaluation records and track all revisions to this HASP.

16 Safe Work Practices

The following safe work practices are provided to supplement the other information in this HASP.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in areas with potentially contaminated materials.
2. Whenever practicable, field personnel will remain upwind of drilling rigs, open excavations, and other ground-disturbing activities.
3. Subsurface work will not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.

17 Acknowledgment

MFA cannot guarantee the health or safety of any person entering the Property. Because of the potentially hazardous nature of active sites, it is not possible to discover, evaluate, and provide protection against all possible hazards that may be encountered at the Property. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness. The health and safety guidelines in this HASP were prepared specifically for the Property and should not be used on any other site without prior evaluation by trained health and safety personnel.

MFA personnel who will work at the Property are to read, understand, and agree to comply with the specific practices and guidelines described in this HASP regarding field safety and health hazards.

This HASP has been developed for the exclusive use of MFA personnel. MFA may make this HASP available for review by contracted or subcontracted personnel for information only. This HASP does not cover the activities performed by employees of any other employer on the project. All contracted or subcontracted personnel are responsible for implementing their own health and safety program, including generating and using their own HASP.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date

Appendix A

Job Hazard Analyses

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Job Hazard Analysis

Task/Operation: Task-Specific Hazards

Project Number: M0239.33.007	**Location/Site Where Task/Operation Performed:** Park Laundry Site 122 N Main Ave, Ridgefield, WA
Date Prepared: 5/14/2024	**Employee Preparing this Job Hazard Analysis (JHA):** Sean Maloney
Date Reviewed: 5/14/2024	**Employee Reviewing and Certifying this JHA:** Y. Perez

Job/Task Description

This JHA is specific to certain elements of fieldwork that have unique hazards and require specific safe-work practices to mitigate those hazards. See the separate General Fieldwork Hazards JHA for hazards and safe-work practices that are common to most types of fieldwork.

Sampling Contaminated Solid and Liquid Media

Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Exposure to chemicals or hazardous substances (e.g., asbestos) via direct contact and inhalation	Chemicals or hazardous materials in soil, sediment, surface water, groundwater, NAPL, stormwater, injection fluids, and building materials.	See the chemical hazards summary table for applicable chemical hazards.
		Consult the HASP to identify the required PPE for preventing direct contact with contaminated media. Chemical-resistant Tyvek (yellow/coated) is strongly recommended for projects that include potential exposure to NAPL.
		Consult the HASP to identify required air monitoring equipment, respiratory protection, and action for preventing inhalation of contaminated dust and vapors.
		When around monitoring wells, avoid working with your breathing zone directly above the opening of the well casing. When possible, work upwind of the well casing. Keep your face away from the monument when removing the well cap.
		Ensure field staff have up-to-date AHERA certifications for asbestos sampling.

Task/Operation: Task-Specific Hazards		
		Use plastic garbage bags or plastic sheeting to cover the work area. It is preferable to roll/berm the edges to catch any drips/spills. If it is raining, work under a rain canopy.
Working around or in Excavations		
Bodily harm or death	Confined-space entry.	Excavations may be considered confined spaces. Contact the health and safety coordinator and the project manager if work in excavations will be necessary.
	Falling into open excavation from heights; engulfment/burial from working in excavations.	Ensure the HASP or Safe Work Plan identifies project-specific procedures and engineering controls to mitigate risk of fall, engulfment, and burial.
		Never enter an excavation deeper than 4 feet without first coordinating with the health and safety coordinator and the project manager. Ensure the excavation slope is appropriate for entry (i.e., 34 degrees), shoring/sheet pile is installed, and appropriate ingress and egress points are established.
		When working in an excavation, minimize time spent working near the excavation sidewall.
		Stay a safe distance from the excavation area—generally defined as a horizontal distance no less than the depth of the excavation.
		If close observation of an excavation is required (e.g., for describing soil stratigraphy, taking photos), slope or bench one side of the excavation sidewall to minimize potential for collapse.
		Use signs, cones, barrier tape, or equivalent methods to mark open excavations.
		Backfill excavations as soon as work is complete; never leave excavations unattended or open overnight.

<table>
<tr><th colspan="3">Task/Operation: Task-Specific Hazards</th></tr>
<tr><td></td><td>Exposure to chemicals in soil, groundwater, air.</td><td>See the “Sampling Contaminated Solid and Liquid Media” and “Sampling and/or Monitoring Vapors” task-specific hazards above.</td></tr>
<tr><td colspan="3">Additional Control Measures and Guidance</td></tr>
<tr><td colspan="3">Engineering Controls: No engineering controls specified. The need for engineering controls should be discussed with the project manager, health and safety coordinator, and subcontractors, and identified in the HASP or Safe Work Plan.</td></tr>
<tr><td colspan="3">General Safe-Work Practices and Guidance:
• See the General Fieldwork Hazards JHA for safe-work practices and guidance common to most types of fieldwork.
• If additional safe-work practices are needed to address unique, task-specific hazards, these should be specified in the HASP or Safe Work Plan.</td></tr>
</table>

Job Hazard Analysis

Task/Operation: Conducting Fieldwork	
Project Number: M0239.33.007	**Location/Site Where Task/Operation Performed:** Former Park Laundry Site
Date Prepared: 5/14/2024 **Date Reviewed:** 5/14/2024	**Employee Preparing this Job Hazard Analysis (JHA):** S. Maloney **Employee Reviewing and Certifying this JHA:** Y. Perez

Job/Task Description

This JHA describes hazards and required safe-work practices that are common to most types of fieldwork. See the separate task-specific JHA for hazards and safe-work practices that are unique to certain tasks (e.g., sampling contaminated media, working in remote areas).

Physical Hazards

Hazard/Risk	Source of Hazard/Risk	Hazard/Risk Mitigation
Heat/cold/sunburn	Weather.	Be aware of seasonal dangers, including frostbite, hypothermia, snow blindness, trench foot, and heat stress. Drink plenty of fluids, especially when perspiring. Wear sunscreen on exposed skin. Stop work if an employee feels symptoms of dehydration, overheating, or heat stroke. Move to a shaded area and drink water. During cold or wet conditions, wear adequate clothing to reduce the potential for hypothermia. If there is lightning in the area, seek indoor shelter immediately, if possible. If outdoors, get into a hard-topped vehicle and away from trees. Turn off all radios and electronic equipment.
Eye injury	Debris (e.g., soil, water, injection fluids) coming into contact with eyes; working in areas with low, dense vegetation.	Wear eye protection with side shields. If there is a splash hazard, wear tight-fitting chemical goggles. If chemicals come into contact with eyes, immediately wash chemicals out with water. Identify the location of the eyewash station before beginning the work.

Task/Operation: Conducting Fieldwork		
Head injury	Heavy equipment, tools, overhead hazards impacting the head.	Wear a hard hat. Do not work near moving or heavy equipment or under overhead hazards.
Foot injury	Sharp objects that could be stepped on; large objects falling on feet.	Wear protective boots (composite or steel-toe).
Hand injury	Pinch points, sharp objects, stress from pulling rope, dermal contact with chemicals and contaminated media.	Wear protective gloves. Appropriate gloves should be identified in the HASP or Safe Work Plan. Avoid placing hands near operating equipment.
Hearing loss	Noise generated by heavy equipment/machinery.	Wear hearing protection such as earplugs or earmuffs.
Bodily harm, including to bystanders and the public and pedestrians in the locality of work	Heavy equipment, drilling rigs, support vehicles, traffic and public rights-of-way; potential to be struck, crushed, or impacted by moving objects.	Wear a safety vest for enhanced visibility. Use cones and caution tape to cordon off the immediate work area. Watch for and escort pedestrians away from the work area. Pause work if necessary. Ensure traffic control measures (e.g., traffic cones, signage) are in place. Do not work near moving or heavy equipment or under overhead hazards. Maintain eye contact with equipment operators. When working around vehicles or heavy equipment, know the locations of emergency equipment (e.g., fire extinguishers, emergency shutoff features).
	Potential to be struck by pressurized equipment and hoses	Install cable guards to prevent a suddenly disconnected hose from striking an individual or confirm with subcontractor that such safeguards are in place. Ensure pressurized tanks have safety relief valves. Do not work around pressurized equipment or within the radius of pressurized hoses.
Physical stress	Lifting heavy equipment and objects; conducting strenuous activities; kneeling on hard or gravel surfaces.	Use proper lifting techniques, i.e., bending and lifting with the legs and not the back. Do not twist at the waist when turning. Use the buddy system for heavy objects. Use knee pads or a kneeling pad. Take breaks and rest as needed.

Task/Operation: Conducting Fieldwork		
Accidents with equipment/tools	Sample-collection equipment/tools.	Verify that you have the appropriate equipment/tools for your tasks. Use equipment/tools as intended by the manufacturer. Only use open blades or sharp-edged tools for their intended purposes. Stow tools in the vehicle properly; use appropriate cases and bags. Secure equipment (including compressed-gas cylinders) in the vehicle with netting and straps; do not leave loose—it can cause property damage or serious injuries to others or yourself.
Slips, trips, and falls	Uneven or unstable ground.	Maintain good housekeeping in work areas to minimize or eliminate slip/trip/fall hazards from equipment and supplies. Walk around rather than over hazards on the ground. Use caution when walking on uneven ground or in snowy and/or icy conditions. Dense vegetation may obscure dangerous features, including biological hazards, riverbanks, cliffs, unstable/steep slopes, excavations, and mine adits. Flagging or marking dangerous areas can help reduce the likelihood of injury.

Task/Operation: Conducting Fieldwork

Biological/Chemical Hazards

Biological/Chemical Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Biological—animals	Livestock, deer; biting or stinging insects, spiders, and snakes; animal feces.	Do not turn your back on animals even if they seem docile. Make sure you have an escape plan in case an animal becomes aggressive. Use bug repellent. Insect nests should never be disturbed. Use snake chaps or shin guards when grass is above the ankle. Employees who are allergic to stings should not work in areas where there is a high risk of encountering stinging insects. Use a bar to clear spiders and/or snakes from objects and/or vegetation. Check well vaults and security lids for insects; use caution when opening. Avoid contact with animal feces. When working indoors, remove animal feces from the work area—if possible, without creating dust.
Biological—plants	Poisonous plants and other irritant vegetation (e.g., blackberry canes).	Do not touch or approach poisonous or irritant vegetation. Wear long pants and a long-sleeved shirt while on the site if poisonous plants and other irritant vegetation is present.
Exposure to chemicals in environmental media	Chemicals or hazardous materials in soil, sediment, surface water, groundwater, NAPL, stormwater, building materials, indoor air, outdoor air, soil vapors, monitoring wells, borings, excavations, and manholes.	See the task-specific JHA.

Additional Control Measures and Guidance

Engineering Controls: No engineering controls specified. The need for engineering controls should be discussed with the project manager, health and safety coordinator, and subcontractors, and identified in the HASP or Safe Work Plan.

General Safe-Work Practices and Guidance:

- Employees should not eat or drink in the immediate area where sampling is being conducted. Employees should wash their hands and faces before eating or drinking. If used, nitrile gloves should be disposed of in a container labeled for disposable items.
- Cones, barrier tape, or equivalent methods will be used to establish the work area, if feasible.
- Tasks that must be conducted in the work area must be coordinated with equipment operators before work begins. Methods of communication, such as direct eye contact, hand signals, and/or verbal communication, will be established before work begins.
- Employees should carry a cellular phone and/or a security radio.

PPE: Hard hat (when working around heavy equipment, including drill rigs, or overhead hazards), work boots (protective composite or steel-toe boots when working around heavy equipment), high-visibility vest or outer garment, safety glasses with side shields, nitrile gloves (or other hand protection appropriate for the type of physical or chemical hazards present), hearing protection (earplugs or earmuffs) as needed. Use chemical goggles if there is a chemical splash hazard.

Appendix B

Chemicals of Potential Concern

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Table
Chemical Hazards

Analyte	Soil Range (mg/kg)		Groundwater Range (ppb)		OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH[1]	LEL (%)	IP (eV)	Other Hazard
	Low	High	Low	High						
VOCs										
1,1-Dichloroethane					100 ppm	100 ppm	3,000 ppm	5.4	11.06	
1,2-Dichloroethane					50 ppm	NE	50 ppm	6.2	11.05	
cis-1,2-Dichloroethene					200 ppm	NE	1,000 ppm	5.6	9.32	P
Tetrachloroethene	5	316	ND	34500	100 ppm	25 ppm	150 ppm	NA	9.32	C
Trichloroethylene	ND	ND	ND	17	100 ppm	300 ppm	1,000 ppm	NA	9.45	C, P

Table
Chemical Hazards

Notes

ACGIH = American Conference of Governmental Industrial Hygienists.
C = carcinogen.
F = flammable.
IDLH = immediately dangerous to life and health.
IP (eV) = ionization potential.
LEL = lower explosive limit.
NE = not established.
NIOSH = National Institute for Occupational Safety and Health.
OSHA = Occupational Safety and Health Administration.
P = poison.
PEL = permissible exposure level.
ppb = parts per billion.
ppm = parts per million.
TLV = threshold limit value.
TWA = time-weighted average.
VOC = volatile organic compound.

Reference

[1] CDC. 2019. "Immediately Dangerous to Life or Health (IDLH) Values." Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health (NIOSH). October 8. Accessed September 13, 2022. http://www.cdc.gov/niosh/idlh/intridl4.html.

Appendix C

Air Monitoring Action Levels

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Air Monitoring Procedures and Toxicity Action Levels

Instrument	Action Level	Initial Action	Follow-Up Action
PID[(a)]	Detection of 0.5 ppm (above ambient) or greater in breathing zone sustained for two minutes.	Dräger tube test for vinyl chloride. If 0.5 ppm vinyl chloride detected with Dräger tube, upgrade to Level C protection.	Ventilate area; always work upwind.
Dräger tube test (vinyl chloride)	Over 1 ppm vinyl chloride sustained in breathing zone.	After upgrade to Level C, continue to monitor breathing zone with Dräger tube. If 10 ppm or greater vinyl chloride, leave exclusion zone. Return only if levels decrease to below 10 ppm.	Ventilate area; always work upwind.
PID[(a)]	Detection of 10 ppm (above ambient) in breathing zone and determined not to be vinyl chloride.	Upgrade to Level C and continue to monitor breathing zone with Dräger tube. If 50 ppm, leave exclusion zone. Return only if levels decrease to below 50 ppm.	Ventilate area; always work upwind.
CGI[(b)]—LEL	At or above 10 percent of LEL.	Cease activities; turn off all potential sources of ignition. Evacuate.	Determine source of flammable vapors.

Notes
Bold text indicates an action level.
CGI = combustible-gas indicator.
HSC = health and safety coordinator.
LEL = lower explosive limit.
PID = photoionization detector.
ppm = parts per million.
[(a)] Some PIDs do not work in high (e.g., greater than 90%) humidity or rainy weather. Under these atmospheric conditions, only PIDs certified for use in high humidity should be used.
[(b)] See Appendix B for complete explosion hazard action levels.

Appendix D

Incident Report Form

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Health and Safety Incident Report

This report must be completed in full and submitted within 24 hours to the MFA health and safety coordinator.

Project Name: ______________________

Project Number: ______________________

Date and Time of Incident: ______________________

Location: ______________________

Type of Incident (check all applicable items):

☐ Illness

☐ Injury

☐ Property damage or theft

☐ Spill

☐ Health and safety infraction

☐ Fire, explosion, flash

☐ Chemical exposure

☐ Other (describe):

☐ Vehicular accident

☐ Electric shock

☐ Near miss

Description of Incident

Describe what happened and the possible cause of the incident. If reporting a spill, include the quantity or estimated quantity. Identify individual(s) involved, witnesses, and their affiliations. Describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.

Incident Reporter:

Name	Signature	Date

Health and Safety Coordinator:

Name	Signature	Date

R:\0239.33 City Of Ridgefield\Document\007_2024.05.16 HASP\Appendix D\Appendix D Incident Report Form.Docx

Appendix E

Tailgate Safety Meeting Checklist

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Tailgate Safety Meeting Checklist

MAUL FOSTER ALONGI

Client Name:	
Project No.:	
Communicated By:	
Date:	

Yes	**NA**	**Information Reviewed**
☐	☐	Emergency Response Procedures and Site Evacuation Routes
☐	☐	Route to Hospital
☐	☐	HASP Review and Location
☐	☐	Key Project Personnel
☐	☐	Emergency Phone Numbers
☐	☐	Stop Work Authority
☐	☐	General Site Description/History and Chemical Hazards
☐	☐	For Active Sites—Site Activities and Vehicular/Equipment Traffic
☐	☐	Site-Specific Physical Hazards
☐	☐	Required Personal Protective Equipment
☐	☐	Available Safety Equipment and Location
☐	☐	Daily Scope of Work (reference JHAs as applicable)
☐	☐	Decontamination Procedures
☐	☐	Identify Work Zones, Exclusion Zones, and Decontamination Zones
☐	☐	Hazardous Atmospheres
☐	☐	Air Monitoring Equipment and Procedures
☐	☐	Identify Potential Site-Specific Slip, Trip, and Fall Hazards
☐	☐	Dust and Vapor Control
☐	☐	Confined Space(s)
☐	☐	Open Pits and Excavation
☐	☐	Extreme Temperatures
☐	☐	Incident Reporting
☐	☐	Other: ______________________________

Additional Health and Safety Practices and Considerations

Attendees

Name	Signature	Company
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

Appendix F

HASP Audit Checklist

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HASP Audit Checklist

MAUL FOSTER ALONGI

Project Name:
Project No.:
Project Location:
Audit Date / Time:
Person / Persons Performing Audit:
MFA Personnel Interviewed or Conducting Fieldwork:

	Status			Comment	Recommendation	Assigned to:	Scheduled Completion Date:	Actions Completed:	Person Who Completed Actions:	Date Completed:	Current Status / Notes:
	Yes	No	N/A								
Audit Checklist Item											
1. Is there a written HASP for this project? If so, what is the revision date?											
2. Is the HASP available to project personnel?											
3. Does the HASP appear accurate and complete? For example, are the directions to the hospital and the emergency contact numbers accurate? Are the site contaminants listed?											
4. Do the JHAs appear accurate and complete? For example, do there appear to be risks addressed for all of the applicable activities?											
5. Do you observe violations of the HASP requirements?											
6. If applicable, are employees adhering to the respirator program (see SOP 03, Respiratory Protection)?											
Interview Questions											
7. Where do you keep the HASP for this project?											
8. Have you reviewed the HASP for this project? If so, what was your review process?											
9. Can you tell me how you conduct your site activities? Note to auditor—pick a JHA activity and identify major discrepancies between the answer and the JHA, if any.											
10. Do you have any health and safety questions or concerns? For example, have you observed things on this project that you thought were unsafe? Note to auditor—make sure we come up with a plan to promptly address any listed concerns.											

Signature of Person / Persons Conducting Audit

Name	Signature	Date

Signature of Project Manager and Principal in Charge Acknowledging Review of Completed HASP Audit Checklist

Name	Signature	Date

Appendix D

Evonik Proposals and Product Sheets

MAUL
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Customer:	**Maul Foster**		4-Sep-2024
Contact:	**Brooke Harmon**		**Prepared by:**
Site Location:	**Excavation Area, Ridgefield, WA**		**Stacey Telesz**
Proposal Number:	**OPP 18134**		**1-949-280-5765**
Application Type:	**Source Zone Treatment**		**Stacey.Telesz@evonik.com**

Daramend® Reagent Demand Calculations and Cost Estimate

Please find a reagent cost quotation below for the site and application referenced above. A product description, design assumptions, demand calculations and application guidelines are included as an appendix to this cost proposal.

Item	**Quantity**	**Unit**	**Unit Price ($USD)**	**Cost in $USD (FOB Origin)**
Daramend® Reagent	2,200	lbs	$1.25	$2,750
Estimated Total				**$2,750**

1) Price valid for 30 days from date at top of document. Terms: net 30 days. Prices are FOB Origin.

2) Any applicable taxes not included. Please provide a copy of your tax exempt certificate or resale tax number when placing your order. In accordance with the law, applicable state and local taxes will be applied at the time of invoicing if Evonik has not been presented with your fully executed tax exemption documentation.

3) Price excludes shipping. Freight estimates available upon request. Volumes were rounded up based on container size.

4) Return Policy: Within 90 days of sale and following written approval by Evonik, products in their unopened containers, which by analysis meet the original specifications and are in the same condition as they were shipped, will be accepted for return at invoiced price, less a 25% handling charge and return freight paid by buyer. Products that are made to order or custom blended are non-returnable. Returned products that are not received back by Evonik in the same condition as they were shipped or that have been stored outside, may be subject to a higher restocking fees or no refund at all.

5) All sales are per Evonik's Terms and Conditions.

Disclaimer:

The estimated dosage and recommended application methodology described in this document are based on the site information provided to us, but are not meant to constitute a guaranty of performance or a predictor of the speed at which a given site is remediated. The calculations in the Cost Estimate regarding the amount of product to be used in your project are based on stoichiometry or default minimum guideline values, and do not take into account the kinetics, or speed of the reaction. Note that the Stoichiometric mass represents the minimum anticipated amount needed to address the contaminants of concern (COCs). As a result, these calculations should be used as a general approximation for purposes of an initial economic assessment. Evonik recommends that you or your consultants complete a comprehensive remedial design that takes into consideration the precise nature of the COC impact and actual site conditions.

PROPOSAL ATTACHMENTS

PRODUCT OVERVIEW

Daramend® Reagent is composed of controlled-release carbon, zero valent iron (ZVI) particles and nutrients used for stimulating *in situ* chemical reduction (ISCR) of otherwise persistent organic compounds in groundwater. Following placement of Daramend® into the subsurface environment, a number of physical, chemical and microbiological processes combine to create very strong reducing conditions that stimulate rapid and complete dechlorination of organic solvents and other recalcitrant compounds (e.g., explosives and organochlorine pesticides).

SITE INFORMATION / DESIGN ASSUMPTIONS

	Value	Unit	Comment
Treatment Area Dimensions:			
Width of targeted zone (perpendicular to gw flow)	43	ft	customer supplied
Length of targeted zone (parallel to gw flow)	55	ft	customer supplied
Depth to top of treatment zone	10	ft bgs	customer supplied
Treatment zone thickness	2	ft	customer supplied
Treatment volume	4,783	ft3	calculated value
Total Porosity	35	%	default value
Groundwater volume	1,674	ft3	calculated value
Soil bulk density	90	lbs/ft3	default value
Soil mass	215	ton	calculated value
Transport characteristics:			
Treatment time / design life for one application	1	years	default value
Linear groundwater flow velocity	22	ft/year	customer provided
Distance of inflowing gw over design life	22	ft	calculated value
Effective porosity for groundwater flow	24	%	customer provided
Volume of water passing region over design life	459	ft3	calculated value
Soil type	low permeability		customer supplied
Fraction organic carbon in soil, foc	0.059		estimated value

CONTAMINANTS OF CONCERN (COCs)

Contaminant	GW (mg/L)	Soil* (mg/kg)	Total Mass** (lb)
PCE	6.1	5.8	3.3

*Unless provided, sorbed concentrations were roughly estimated based on expected groundwater concentrations, foc and Koc values. For a more refined estimate, it is recommended that actual values be verified via direct sampling of the targeted treatment interval.

**The total COC mass was estimated based on concentrations in soil and groundwater within the targeted area plus expected contributions from inflowing groundwater over the projected design life.

GEOCHEMICAL DATA

Competing Electron Acceptors	GW (mg/L)	
Dissolved oxygen	1.09	customer provided
Nitrate (as N)	0	customer provided
Manganese (dissolved)*	0	default value
Iron (III)*	0	default value
Sulfate	15	customer provided

*An estimated projection of dissolved concentrations of Mn and Fe following ERD/ISCR were used to estimate H demand from the reduction of oxidized Fe and Mn minerals (typically only a portion of actual soil concentrations will be reduced).

ORP (mV)	129.74	
pH	6.3	Note: It is recommended to inject a pH buffer together with the EHC to adjust the pH to around 7.

STOICHIOMETRIC DEMAND CALCULATIONS

	GW (mg/L)	Soil (mg/kg)
H2 Demand from COIs	0.3	0.3
H2 Demand from Competing Electron Acceptors	1.4	0.0
Total H2 Demand	1.7	0.3

H2 Demand from Soil within Targeted Area	0.1	lb
H2 Demand from GW within Targeted Area	0.2	lb
H2 Demand from Influx over Design Life	0.0	lb
Total Estimated H2 Demand	0.3	lb

Daramend® DEMAND CALCULATIONS

The stoichiometric demand for the targeted area was calculated using available data presented above, noting that the stoichiometric demand represents minimum requirements and require a complete geochemical data set to be calculated accurately. Therefore, the resulting Daramend® dosing required to meet the estimated stoichiometric demand was compared to our minimum guidelines for the selected type of application, selecting the higher number.

Application type: Source Zone Treatment

	Value	Unit
Minimum Daramend® application rate to meet H2 dem	<0.01	% by soil mass
Minimum recommended dosing for application type*	0.5	% by soil mass
Recommended Daramend® application rate	0.50	% by soil mass
Mass of Daramend® required	2,152	lbs
Mass of Daramend® bag	50	lbs
Number of bags required	44	bags
Mass Daramend® (rounded up based on bag size)	**2,200**	**lbs**

*Our general recommended minimum guideline for the proposed application exceeds the dose rate required based on hydrogen demand calculations and was therefore used for the purpose of this dosing calculation.

Product Sheet

DARAMEND® REAGENT

DARAMEND® Reagent

SOLID-PHASE TREATMENT OF SOILS AND SEDIMENTS

DARAMEND® In Situ Chemical Reduction (ISCR) Reagent represents a superior treatment technology for solid materials impacted by recalcitrant organic compounds. Since the first application in 1991, variations of the technology have been successfully used to treat millions of tons of soil, sediment and other solid materials. DARAMEND® has treated soils containing chlorinated herbicides and pesticides, organic explosive compounds, and chlorinated VOCs at many sites throughout the world.

The DARAMEND® technology is uniquely advantageous because it can often be applied in situ without excavation, is typically applied at less than 5 wt % of dry soil mass, and provides the ISCR benefits of very strongly reducing conditions (both biotic and abiotic degradation mechanisms), and near–neutral pH. Relative to traditional composting, DARAMEND® treatment results in significantly shorter treatment durations and eliminates bulking. From a sustainability perspective, because the DARAMEND® Reagent is composed of recycled iron and agricultural byproducts, the technology offers many benefits over “dig-and-dump” approaches.

KEY BENEFITS

- Improved soil health: Improves soil tilth and fertility, and reduces toxicity
- Hydrophilic character: Increases soil water holding capacity
- Balanced range of nutrients: Provides a broad range of major, minor and micronutrients
- Recalcitrant contaminants: Promotes remediation of most persistent contaminants in soils

APPLICATION METHODS

- In situ landfarming
- Ex situ treatment cells or windrows
- Shallow groundwater trench and excavation backfill applications

CONTAMINANTS TREATED

- ORGANIC EXPLOSIVES TNT, RDX, HMX, Tetryl, Nitrobenzene
- CHLORINATED VOCs Ethenes, Ethanes, Methanes
- CHLORINATED PESTICIDES Dieldrin, Toxaphene, Mirex, Chlordane, DDT, HCH, and others

For more information and detailed case studies, please visit our website.

Evonik Operations GmbH
Smart Materials
Active Oxygens Business Line
Soil & Groundwater Remediation

remediation@evonik.com
www.evonik.com/remediation

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SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

1. Identification

Product identifier: DARAMEND® Reagent

Other means of identification

None.

Recommended restrictions

Recommended use: Remediation of contaminated soil and groundwater.
Restrictions on use: Not known.

Manufacturer/Importer/Distributor Information

Company Name : Evonik Corporation
299 Jefferson Road
Parsippany, NJ 07054
USA

Telephone : +1 973 929 8000

Fax : +1 973 929 8040

E-mail : product-regulatory-services@evonik.com

Emergency telephone number:

24-Hour Health Emergency : +1 800 424 9300 (CHEMTREC - US & CANADA)
800 681 9531 (CHEMTREC MEXICO)
+1 703 527 3887 (CHEMTREC WORLD)

2. Hazard(s) identification

Hazard Classification

OSHA hazard(s)

Combustible dust

Label Elements

Hazard Symbol: No symbol

Signal Word: Warning

Hazard Statement:

May form combustible dust concentrations in air.
May form combustible dust concentrations in air.

Precautionary Statements

Prevention: Prevent dust accumulation to minimize explosion hazard. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment.

Disposal: Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
iron		7439-89-6	40 - 50%
Organic amendment	Trade Secret	Trade Secret	50 - 60%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Trade secret information: A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Description of necessary first-aid measures

Inhalation: Move to fresh air. Get medical attention if symptoms persist.

Skin Contact: Wash with soap and water. If skin irritation persists, call a physician.

Eye contact: Rinse the eye with water immediately. If eye irritation persists: Get medical advice/attention.

Ingestion: Rinse mouth. Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Call a physician or poison control center immediately.

Personal Protection for First-aid Responders: No data available.

Most important symptoms and effects, both acute and delayed

Symptoms: No data available.

Hazards: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: No data available.

5. Fire-fighting measures

General Fire Hazards: Keep away from sources of ignition - No smoking.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	Dry chemical. Dry sand. Dry earth. Water, CO2 or Foam
Unsuitable extinguishing media:	No data available.
Special hazards arising from the substance or mixture:	Formation of flammable or explosive dust/air mixtures possible. Formation of flammable or explosive vapour/air mixtures possible.

Special protective equipment and precautions for fire-fighters

Special fire-fighting procedures:	No data available.
Special protective equipment for fire-fighters:	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Avoid dust formation. For personal protection see section 8.
Accidental release measures:	No data available.
Methods and material for containment and cleaning up:	Cover powdered spills with plastic sheet or tarpaulin to minimize spreading and protect from water. Sweep up or vacuum up spillage and collect in suitable container for disposal.
Environmental Precautions:	No data available.

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation):	No data available.
Safe handling advice:	Use work methods which minimize dust production. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. See Section 8 of the SDS for Personal Protective Equipment.
Contact avoidance measures:	No data available.

Storage

Safe storage conditions:	Container must be kept tightly closed. Store in cool, dry place.
Safe packaging materials:	No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

Biological Limit Values

No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls	No data available.

Individual protection measures, such as personal protective equipment

Eye/face protection:	Safety glasses with side shields

Skin Protection

Hand Protection:	Additional Information: Use protective gloves.
Skin and Body Protection:	Wear suitable protective clothing.
Respiratory Protection:	In case of inadequate ventilation use suitable respirator.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	
Physical state:	solid
Form:	Flakes
Color:	Light brown, Brown
Odor:	No data available.
Odor Threshold:	No data available.
Melting Point:	No data available.
Boiling Point:	No data available.
Flammability:	Not classified as a flammability hazard
Upper/lower limit on flammability or explosive limits	
Explosive limit - upper:	No data available.
Explosive limit - lower:	No data available.
Flash Point:	No data available.
Autoignition Temperature:	The substance or mixture is not classified as pyrophoric.
Decomposition Temperature:	The substance or mixture is not classified self-reactive.
pH:	6
Viscosity	
Dynamic viscosity:	No data available.
Kinematic viscosity:	No data available.
Flow Time:	No data available.
Solubility(ies)	
Solubility in Water:	Insoluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Vapor pressure:	No data available.

Relative density:	No data available.
Density:	No data available.
Bulk density:	0.75 - 0.95 kg/l
Vapor density (air=1):	No data available.

Other information

Oxidizing properties:	The substance or mixture is not classified as oxidizing.
Self-heating:	The substance or mixture is not classified as self heating.
Formation of Flammable Gases:	Substance or mixture, which in contact with water, does not emit flammable gas
Peroxides:	The substance or mixture is not classified as organic peroxide.
Metal Corrosion:	Not corrosive to metals
Dust explosion properties:	ST-1 (Weak to moderate explosion characteristics)
Dust Explosion Description Number Kst:	17 m.b_/s

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	No data available.
Possibility of hazardous reactions:	Avoid dust formation. The product itself is not explosive; however, fine dust may mix with air to product explosive mixtures.
Conditions to avoid:	Heat, sparks, flames.
Incompatible Materials:	Oxidizing agent Strong acids.
Hazardous Decomposition Products:	Burning produces noxious and toxic fumes.

11. Toxicological information

Information on toxicological effects

Information on likely routes of exposure

Inhalation:	No data available.
Skin Contact:	No data available.
Eye contact:	No data available.
Ingestion:	No data available.

Acute toxicity (list all possible routes of exposure)

Oral

Product:	ATEmix: 10,526.32 mg/kg

Dermal

Product:	Not classified for acute toxicity based on available data.

Inhalation

Product: Not classified for acute toxicity based on available data.

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: No data available.

Components:

iron	OECD 404 (Rabbit): Not irritating
Organic amendment	Not irritating

Serious Eye Damage/Eye Irritation

Product: No data available.

Components:

iron	Not irritating OECD 405 Rabbit:
Organic amendment	Irritating.

Respiratory or Skin Sensitization

Product: No data available.

Components:

iron	Optimizations-test (Guinea Pig): Not a skin sensitizer.
Organic amendment	Not a skin sensitizer.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogens present or none present in regulated quantities

ACGIH: US.ACGIH Threshold Limit Values:

No carcinogens present or none present in regulated quantities

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogens present or none present in regulated quantities

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogens present or none present in regulated quantities

Germ Cell Mutagenicity

In vitro

Product: No data available.

Components:

iron	gene mutation test (OECD 471): negative gene mutation test (OECD 476): negative

In vivo

Product: No data available.

Reproductive toxicity

Product: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Aspiration Hazard

Product: Not applicable

Information on health hazards

Other hazards

Product:	No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product:	No data available.

Aquatic Invertebrates

Product:	No data available.
Components:	
Organic amendment	EL50 (Daphnia magna, 48 h): > 100 mg/l

Toxicity to Aquatic Plants

Product:	No data available.

Toxicity to microorganisms

Product:	No data available.

Chronic hazards to the aquatic environment:

Fish

Product:	No data available.

Aquatic Invertebrates

Product:	No data available.

Toxicity to Aquatic Plants

Product:	No data available.

Toxicity to microorganisms

Product:	No data available.

Persistence and Degradability

Biodegradation

Product:	No data available.

BOD/COD Ratio

Product:	No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.

Partition Coefficient n-octanol / water (log Kow)

Product:	No data available.
Components:	
Organic amendment	Log Kow: < -0.07 25 °C

Mobility in soil:

Product	No data available.

Results of PBT and vPvB assessment:

Product	No data available.

Other adverse effects:

Other hazards

Product:	No data available.

13. Disposal considerations

General information:	Dispose of waste and residues in accordance with local authority requirements.
Disposal methods:	Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Contaminated Packaging:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

Domestic regulation

49 CFR
Not regulated as a dangerous good

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):
None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Combustible dust

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances

None present or none present in regulated quantities.

US. EPCRA (SARA Title III Section 313 Toxic Chemical Release Inventory (TRI) Reporting

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
No ingredient requiring a warning under CA Prop 65.

16.Other information, including date of preparation or last revision

HMIS Hazard ID

Health		1
Flammability		2
Physical Hazards		0
PERSONAL PROTECTION		

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

Issue Date:	11/03/2022
Version #:	1.1
Further Information:	No data available.
Revision Information	Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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EHC® Reagent

EVONIK
Leading Beyond Chemistry

Customer:	**Maul Foster**		4-Sep-2024
Contact:	**Brooke Harmon**		**Prepared by:**
Site Location:	**Area B, Ridgefield, WA**		**Stacey Telesz**
Proposal Number:	**OPP 18134**		**1-949-280-5765**
Application Type:	**Plume Treatment (grid)**		**Stacey.Telesz@evonik.com**

EHC® Reagent Demand Calculations and Cost Estimate

Please find a reagent cost quotation below for the site and application referenced above. A product description, design assumptions, demand calculations and application guidelines are included as an appendix to this cost proposal.

Item	Quantity	Unit	Unit Price ($USD)	Cost in $USD (FOB Origin)
EHC® Reagent	17,950	lbs	$2.20	$39,490
Optional items:				
DHC Inoculum	66	L	$120	$7,920
pH buffer (Mg(OH)2)	4,794	lbs	$1.05	$5,033
Estimated Total				**$52,443**

1) Price valid for 30 days from date at top of document. Terms: net 30 days. Prices are FOB Origin.

2) Any applicable taxes not included. Please provide a copy of your tax exempt certificate or resale tax number when placing your order. In accordance with the law, applicable state and local taxes will be applied at the time of invoicing if Evonik has not been presented with your fully executed tax exemption documentation.

3) Price excludes shipping. Freight estimates available upon request. Volumes were rounded up based on container size.

4) Return Policy: Within 90 days of sale and following written approval by Evonik, products in their unopened containers, which by analysis meet the original specifications and are in the same condition as they were shipped, will be accepted for return at invoiced price, less a 25% handling charge and return freight paid by buyer. Products that are made to order or custom blended are non-returnable. Returned products that are not received back by Evonik in the same condition as they were shipped or that have been stored outside, may be subject to a higher restocking fees or no refund at all.

5) All sales are per Evonik's Terms and Conditions.

Disclaimer:

The estimated dosage and recommended application methodology described in this document are based on the site information provided to us, but are not meant to constitute a guaranty of performance or a predictor of the speed at which a given site is remediated. The calculations in the Cost Estimate regarding the amount of product to be used in your project are based on stoichiometry or default minimum guideline values, and do not take into account the kinetics, or speed of the reaction. Note that the Stoichiometric mass represents the minimum anticipated amount needed to address the contaminants of concern (COCs). As a result, these calculations should be used as a general approximation for purposes of an initial economic assessment. Evonik recommends that you or your consultants complete a comprehensive remedial design that takes into consideration the precise nature of the COC impact and actual site conditions.

PROPOSAL ATTACHMENTS

PRODUCT OVERVIEW

EHC® Reagent is composed of controlled-release carbon, zero valent iron (ZVI) particles and nutrients used for stimulating *in situ* chemical reduction (ISCR) of otherwise persistent organic compounds in groundwater. Following placement of EHC® into the subsurface environment, a number of physical, chemical and microbiological processes combine to create very strong reducing conditions that stimulate rapid and complete dechlorination of organic solvents and other recalcitrant compounds (e.g., explosives and organochlorine pesticides).

EHC® is delivered as a dry powder in 50-lb / 25-kg bags or super-sacs. EHC® can be placed into the saturated zones in a variety of ways including direct push injections, hydraulic and pneumatic fracturing, and direct soil mixing. EHC® is completely non-hazardous and safe to handle. EHC® is manufactured in the USA, EU and Brazil.

SITE INFORMATION / DESIGN ASSUMPTIONS

	Value	Unit	Comment
Treatment Area Dimensions:			
Width of targeted zone (perpendicular to gw flow)	89	ft	customer supplied
Length of targeted zone (parallel to gw flow)	100	ft	customer supplied
Depth to top of treatment zone	5	ft bgs	customer supplied
Treatment zone thickness	15	ft	customer supplied
Treatment volume	132,945	ft3	calculated value
Total Porosity	35	%	customer supplied
Groundwater volume	46,531	ft3	calculated value
Soil bulk density	90	lbs/ft3	customer supplied
Soil mass	5,983	ton	calculated value
Transport characteristics:			
Treatment time / design life for one application	1	years	default value
Linear groundwater flow velocity	22	ft/year	calculated value
Distance of inflowing gw over design life	22	ft	calculated value
Effective porosity for groundwater flow	24	%	customer supplied
Volume of water passing region over design life	7012	ft3	calculated value
Soil type	low permeability		customer supplied
Fraction organic carbon in soil, foc	0.059		estimated value

CONTAMINANTS OF CONCERN (COCs)

Contaminant	GW (mg/L)	Soil* (mg/kg)	Total Mass** (lb)
PCE	1.2	0.17	6.0
TCE	0.0011	0.0069443	0.1

*Unless provided, sorbed concentrations were roughly estimated based on expected groundwater concentrations, foc and Koc values. For a more refined estimate, it is recommended that actual values be verified via direct sampling of the targeted treatment interval.

**The total COC mass was estimated based on concentrations in soil and groundwater within the targeted area plus expected contributions from inflowing groundwater over the projected design life.

GEOCHEMICAL DATA

Competing Electron Acceptors	GW (mg/L)	
Dissolved oxygen	2.3	customer provided
Nitrate (as N)	0	customer provided
Manganese (dissolved)*	0	default value
Iron (III)*	0	default value
Sulfate	8	customer provided

*An estimated projection of dissolved concentrations of Mn and Fe following ERD/ISCR were used to estimate H demand from the reduction of oxidized Fe and Mn minerals (typically only a portion of actual soil concentrations will be reduced).

ORP (mV)	81.54	
pH	6.3	Note: It is recommended to inject a pH buffer together with the EHC to adjust the pH to around 7.

STOICHIOMETRIC DEMAND CALCULATIONS

	GW (mg/L)	Soil (mg/kg)
H2 Demand from COIs	0.1	0.0
H2 Demand from Competing Electron Acceptors	1.0	0.0
Total H2 Demand	1.0	0.0

H2 Demand from Soil within Targeted Area	0.1	lb
H2 Demand from GW within Targeted Area	3.0	lb
H2 Demand from Influx over Design Life	0.4	lb
Total Estimated H2 Demand	3.5	lb

EHC® DEMAND CALCULATIONS

The stoichiometric demand for the targeted area was calculated using available data presented above, noting that the stoichiometric demand represents minimum requirements and require a complete geochemical data set to be calculated accurately. Therefore, the resulting EHC® dosing required to meet the estimated stoichiometric demand was compared to our minimum guidelines for the selected type of application, selecting the higher number.

Application type: Plume Treatment (grid application)

	Value	Unit
Minimum EHC® application rate to meet H2 demand	<0.01	% by soil mass
Minimum recommended dosing for application type*	0.15	% by soil mass
Recommended EHC® application rate	0.15	% by soil mass
Mass of EHC® required	17,948	lbs
Mass of EHC per bag	50	lbs
Number of bags required	359	bags
Mass EHC® (rounded up based on bag size)	**17,950**	**lbs**

*Our general recommended minimum guideline for the proposed application exceeds the dose rate required based on hydrogen demand calculations and was therefore used for the purpose of this dosing calculation.

OPTIONAL DHC INOCULANT

Dehalococcoides sp (Dhc) are the only microorganisms demonstrated to completely degrade chlorinated ethenes to non-toxic end products (ethene). Dhc are also capable of degrading other chlorinated organics such as chlorinated ethanes. Bioaugmentation with a Dhc containing consortium is conducted during the substrate injection process, either as a discrete slug of the culture in anaerobic water or distributed through the entire injection solution immediately prior to injection. Dissolved oxygen and chlorine should be removed from the injection solution prior to adding the bioaugmentation culture. The Dhc inoculate will contain at least 1X10^11 cells per liter of Dhc. The recommended target concentration of Dhc in the treatment area is 1x10^7 cells per liter, however the application concentration can be modified based on site conditions (e.g., an existing Dhc population is present).

	Value	**Unit**
Dechlorinating consortium concentration in inoculant	1.00E+11	DHC/L
Design final concentration after dilution in aquifer	5.00E+06	DHC/L
Volume of Inoculant Required	66	L

pH BUFFER

EHC® Reagent is designed to maintain neutral pH during tretament. However, if the groundwater pH is acidic at the baseline, pH buffers may be recommended to raise the pH to 7 in order to establish optimal conditions for biotic treatment. The amount of buffer required to raise the pH of the groundwater to 7 will depend on the site-specific buffering capacity of the soil and will have to be determined by conducting a pH titration test.

	Value	**Unit**	
Baseline pH	6.3	SI unit	
Type of pH buffer recommended	Mg(OH)2		
Soil titration amount	0.04	% by soil mass	estimated value
Estimated mass pH buffer to raise pH to 7	4,786	lbs	calculated value

INSTALLATION

EHC® Reagent is supplied as a dry powder which can be mixed with soil or slurried in water. Installation techniques vary widely depending on the application. For example, the powder can be directly mixed into the soil using deep soil mixing equipment or placed into an open excavation where prior soil removal has been conducted. A slurry can be made and the mixture can be injected into the subsurface using techniques such as injection through direct push rods or hydraulic fracturing. Injection through fixed wells is not recommended given that the product does not dissolve in water. If application via wells or injection networks were to be the preferred installation method at your site, we instead recommend our soluble ISCR substrate EHC® Liquid. **Review and follow guidance in the appropriate Safety Data Sheet (SDS) with all workers prior to use.**

EHC® Slurry Preparation:

The EHC® slurry can been prepared in a variety of ways, including using paddle mixers. However, particularly for larger projects, Evonik recommends having a mechanical mixing system available on site. In general we recommend continuous mixing in smaller batches (<100 USG / 400 L) to avoid settling of solids at the bottom. For example Chem Grout's high pressure mixing and injection units are ideal for continuous preparation and injection of EHC®.

The amount of water to prepare the EHC® slurry could be varied depending on the desired injection volume and slurry properties. When applied via direct injection, normally a concentration of between 25 and 35% is targeted. The below table shows the amount of water needed per 50-lb / 25-kg bag depending on the targeted concentration and the resulting total injection volumes and percent pore fill (injection volume to total pore volume). Note that a thinner slurry will promote permeation into more permeable formations, whereas a more concentrated/more viscous slurry will promote fracturing and horizontal propagation into more fine-grained formations.

Target concentration (% solids):	**25%**	**30%**	**35%**
Mass EHC® per bag (lbs)	50	50	50
Volume water per bag (USG)	18.0	14.0	11.1
Volume slurry per bag (USG)	22.0	18.0	15.2
Total mass EHC® (lbs)	17,950	17,950	17,950
Total volume water (USG)	6,453	5,019	3,995
Total injection volume (USG)	7,881	6,459	5,446
Injection volume to total pore volume	2.3%	1.9%	1.6%

Product Sheet

EHC® REAGENT

EHC® Reagent

EHC® THE ORIGINAL ISCR REAGENT

EHC® in situ chemical reduction (ISCR) reagent is the original patented combination of controlled-release organic carbon and zero valent iron (ZVI) used for the treatment of groundwater and saturated soil impacted by persistent halogenated compounds, including chlorinated solvents, pesticides and organic explosives. The EHC® formula is the culmination of years of research and successful field use. EHC® is comprised of a synergistic mixture of micro-scale ZVI and a solid organic carbon source, stimulating both abiotic and biotic dechlorination mechanisms.

CONTAMINANTS TREATED

- Chlorinated solvents including chlorinated ethenes, ethanes and methanes
- Energetic compounds such as TNT, DNT, HMX, RDX and perchlorate
- Most pesticides including DDT, DDE, dieldrin, 2,4-D and 2,4,5-T
- Chlorobenzenes including di- and tri-chlorobenzene
- Chloroflurocarbons
- Nitrate compounds

APPLICATION METHODS

EHC® can address a wide range of contaminant concentrations and has successfully been applied to treat large dilute plume areas, groundwater hots-spots, and high concentration source areas:

- Permeable Reactive Barriers (PRBs) for Plume Control: EHC® has an estimated lifetime > 5 years in the subsurface, which makes it ideal for placement into PRBs. The first full-scale EHC® PRB has been operating since 2005, and has continuously supported > 90% CVOC removal under flow-through conditions.

- Grid-Applications: EHC® is also commonly used for source area/hot-spot treatment, and the product's longevity allows for continued treatment of contaminants as they slowly back diffuse from the solid matrix to groundwater at sites with high concentrations of sorbed mass / NAPL. EHC® successfully treated a site with starting TCE concentrations > 600 mg/L.

- Plume Treatment: Designs with multiple PRBs have been employed for cost effective treatment of large dilute plume areas.

INSTALLATION METHODS

- Injection of EHC® Slurry via Direct Push Technology (DPT)
- Hydraulic or Pneumatic Fracturing (applied to fine-grain formations including weathered and fractured bedrock)
- Direct placement into open excavations or trench PRBs
- Deep soil mixing

SPECIFICATIONS

COMPOSITION
- Micro-scale ZVI
- Controlled-release, food grade, complex organic carbon
- Major, minor, and micronutrients
- Food grade organic binding agent

PACKAGING
Delivered as a dry powder, available in 50-lb / 25 kg bags and 1 ton bulk sack.

HEALTH AND SAFETY
Non-hazardous and safe to handle.

LONGEVITY
3 to 5+ years, depending on application.

THE SOUND SCIENCE OF EHC®

EHC® will rapidly create strong reducing conditions via biotic and abiotic mechanisms as detailed below:

- The addition of organic carbon to the subsurface will support the growth of indigenous heterotrophic bacteria in the groundwater environment. As the bacteria feed on the organic carbon particles, the bacteria consume dissolved oxygen and other electron acceptors, thereby reducing the redox potential in groundwater.

- The ZVI particles will scavenge oxygen as it undergoes oxidation promoting an additional drop in the redox potential of groundwater.

EHC® promotes both biotic and abiotic dechlorination reactions:

- As the bacteria ferment the organic portion of EHC®, they release a variety of volatile fatty acids (VFAs) such as lactic, propionic and butyric acids, which diffuse from the site of fermentation into the groundwater plume and serve as electron donors for other bacteria, including dehalogenators.

- The small ZVI particles (i.e., < 100 µm) provide substantial reactive surface area that stimulates direct chemical dechlorination. Furthermore, as the ZVI is corroding ferrous iron is released into the groundwater. As the dissolved iron travels into areas with higher redox potential, it will precipitate out as a number of ferrous and ferric precipitates, including, but not limited to iron oxide and sulfide. These ferrous iron precipitates have also been proven to be reactive with CVOCs and will stimulate abiotic dechlorination mechanisms in an extended area downgradient of the points of application.

Synergistic benefits of combining organic carbon and ZVI:

- Redox potentials as low as –500 mV have been observed in groundwater after EHC® addition. These Eh values are significantly lower than those achieved when using either organic materials (e.g. lactate and molasses) or reduced metal alone. These low Eh potentials not only improve the kinetics of the dechlorination reactions but also support more complete decomposition of chlorinated solvents.

- Self-buffered – the alkalinity generated from ZVI corrosion (release of hydroxide) is off-set by the acidity from organic carbon fermentation (VFAs). Maintaining a near neutral pH is beneficial for microbial growth and also serves to prevent ZVI passivation from mineral coatings, hence extending the reactive life of the ZVI.

EHC® Slurry for DPT Injection

Multiple degradation pathways:

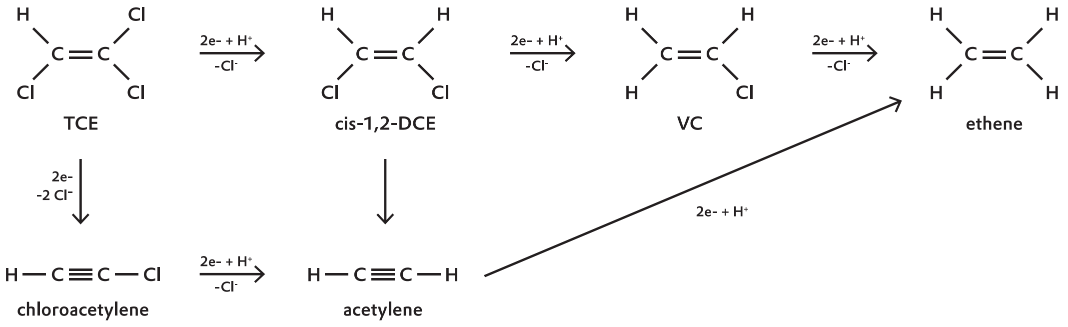
The addition of organic carbon will promote conventional step-wise reductive dechlorination reactions, whereas the dominant abiotic pathway observed in contact with zero-valent iron and ferrous iron precipitates is beta-elimination; minimizing the generation of daughter products (specifically vinyl chloride).

Key Benefits

- Abiotic and Biotic Degradation
- pH Balanced
- Long-Lasting
- Field-Proven
- Quickly Generates Reducing Conditions
- Minimal Generation of Daughter Products
- Manufactured from Sustainable Recycled Materials

For more information and detailed case studies, please visit our website.

Biotic Pathway (Step-Wise Reductive Dechlorination)



Main Abiotic Pathway (˜ -Elimination)

Evonik Operations GmbH
Smart Materials
Active Oxygens Business Line
Soil & Groundwater Remediation

remediation@evonik.com
www.evonik.com/remediation

EVONIK
Leading Beyond Chemistry

SAFETY DATA SHEET

Classified in accordance with 29 CFR 1910.1200

1. Identification

Product identifier: EHC® Reagent

Other means of identification
None.

Recommended restrictions

Recommended use: For the remediation of contaminated groundwater.
Restrictions on use: Not known.

Manufacturer/Importer/Distributor Information

Company Name : Evonik Corporation
2 Turner Place
Piscataway, NJ 08854
USA

Telephone : +1 732 981 5000

E-mail : product-regulatory-services@evonik.com

Emergency telephone number:
24-Hour Health Emergency : +1 800 424 9300 (CHEMTREC - US & CANADA)
800 681 9531 (CHEMTREC MEXICO)
+1 703 527 3887 (CHEMTREC WORLD)

2. Hazard(s) identification

Hazard Classification

OSHA hazard(s)
Combustible dust

Label Elements

Hazard Symbol: No symbol

Signal Word: Warning

Hazard Statement:
May form combustible dust concentrations in air.
May form combustible dust concentrations in air.

Precautionary Statements

Prevention: Prevent dust accumulation to minimize explosion hazard. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Any vessel that contains wet product must be vented due to potential pressure build up from fermentation gases.

Disposal: Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
iron		7439-89-6	25 - 50%
Organic amendment	Trade Secret	Trade Secret	50 - 75%
Soybean oil		8001-22-7	2%
Viscosity Modifier	Trade Secret	Trade Secret	0 - 4%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Trade secret information: A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Description of necessary first-aid measures

Inhalation: Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

Skin Contact: Wash skin with soap and water.

Eye contact: If in eyes wash out immediately with water. Get medical attention if any discomfort continues.

Ingestion: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF SWALLOWED: Immediately call a POISON CENTER/doctor.

Personal Protection for First-aid Responders: No data available.

Most important symptoms and effects, both acute and delayed

Symptoms: Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat.

Hazards: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: Avoid dust formation. Dust may form explosive mixture with air.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Dry chemical. Dry earth. Dry sand. Water, CO2 or Foam

Unsuitable extinguishing media: No data available.

Special hazards arising from the substance or mixture: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Dust may form explosive mixture with air.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Avoid dust formation.

Accidental release measures: Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

Methods and material for containment and cleaning up: Cover powdered spills with plastic sheet or tarpaulin to minimize spreading and protect from water. Sweep up or vacuum up spillage and collect in suitable container for disposal. Eliminate sources of ignition. No sparking tools should be used.

Environmental Precautions: Do not allow to enter drains or waterways

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation): Use explosion-proof ventilation equipment to stay below exposure limits.

Safe handling advice: Wash hands at the end of each workshift and before eating, smoking or using the toilet.Avoid dust formation. Do not breathe dust or vapor. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid contact with eyes. Use only in well-ventilated areas.Use dust collection systems and filters. Minimize the escape of dust from process equipment and ventilation systems. Utilize surfaces that minimize dust accumulation and facilitate cleaning. Dust accumulations should be avoided to prevent secondary dust explosions.
Provide adequate ventilation.

Contact avoidance measures: No data available.

Storage

Safe storage conditions: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid contact with acids. Avoid contact with oxidizing agents.

Safe packaging materials: No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Soybean oil - Total mist	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Soybean oil - Respirable mist.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Soybean oil - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (03 2016)
Soybean oil - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (03 2016)

Please refer to the latest edition of the appropriate source text and consult an industrial hygienist or similar professional, or local agencies, for further information.

Biological Limit Values

No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls Use explosion-proof ventilation equipment to stay below exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection: goggles with side pieces

Skin Protection

Hand Protection: Material: Neoprene.
Additional Information: For prolonged or repeated contact use protective gloves.

Skin and Body Protection: Long sleeved clothing

Respiratory Protection: Effective dust mask

Hygiene measures: General industrial hygiene practice. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state:	solid
Form:	Flakes
Color:	Brown
Odor:	Odorless
Odor Threshold:	No data available.
Melting Point:	No data available.
Boiling Point:	No data available.
Flammability:	No data available.
Upper/lower limit on flammability or explosive limits	
Explosive limit - upper:	No data available.
Explosive limit - lower:	No data available.
Flash Point:	No data available.
Auto-ignition temperature:	No data available.
Decomposition Temperature:	No data available.
pH:	5.6 (as aqueous solution)
Viscosity	
Dynamic viscosity:	No data available.
Kinematic viscosity:	No data available.
Flow Time:	No data available.
Solubility(ies)	
Solubility in Water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Vapor pressure:	No data available.
Relative density:	No data available.
Density:	0.5 - 0.8 g/cm3
Bulk density:	No data available.
Vapor density (air=1):	No data available.

Other information

Dust explosion properties:	ST-1
Dust Explosion Description Number Kst:	19 m.b_/s

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	No data available.
Possibility of hazardous reactions:	May generate flammable hydrogen gas. Avoid contact with water, alcohols, acidic, basic, or oxidizing materials.
Conditions to avoid:	Heat, sparks, flames.
Incompatible Materials:	Strong acids. Oxidizing agent
Hazardous Decomposition Products:	By heating and fire, toxic vapors/gases may be formed.

11. Toxicological information

Information on toxicological effects

Information on likely routes of exposure

Inhalation:	No data available.
Skin Contact:	No data available.
Eye contact:	No data available.
Ingestion:	No data available.

Acute toxicity (list all possible routes of exposure)

Oral	
Product:	Not classified for acute toxicity based on available data.
Dermal	
Product:	Not classified for acute toxicity based on available data.
Inhalation	
Product:	Not classified for acute toxicity based on available data.

Repeated dose toxicity

Product:	No data available.

Skin Corrosion/Irritation

Product:	No data available.
Components:	
iron	OECD 404 (Rabbit): Not irritating
Viscosity Modifier	Not irritating

Serious Eye Damage/Eye Irritation

Product:	No data available.
Components:	
iron	Not irritating OECD 405 Rabbit:
Viscosity Modifier	Not irritating

Respiratory or Skin Sensitization

Product:	No data available.
Components:	
iron	Optimizations-test (Guinea Pig): Not a skin sensitizer.
Viscosity Modifier	Not a skin sensitizer. Not a respiratory sensitizer

Carcinogenicity

Product:	No data available.
Components:	
Viscosity Modifier	Not classified

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogens present or none present in regulated quantities

ACGIH: US.ACGIH Threshold Limit Values:
No carcinogens present or none present in regulated quantities

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogens present or none present in regulated quantities

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:
No carcinogens present or none present in regulated quantities

Germ Cell Mutagenicity

In vitro

Product:	No data available.
Components:	
iron	gene mutation test (OECD 471): negative gene mutation test (OECD 476): negative

In vivo

Product:	No data available.

Reproductive toxicity

Product:	No data available.
Components:	
Viscosity Modifier	Not classified

Specific Target Organ Toxicity - Single Exposure

Product:	No data available.
Components:	
Viscosity Modifier	Not classified

Specific Target Organ Toxicity - Repeated Exposure

Product:	No data available.
Components:	
Viscosity Modifier	Not classified

Aspiration Hazard

Product:	No data available.
Components:	
iron	Not applicable
Organic amendment	Not classified
Soybean oil	Not classified
Viscosity Modifier	Not classified

Information on health hazards

Other hazards

Product:	No data available.

12. Ecological information

Ecotoxicity:
Acute hazards to the aquatic environment:

Fish

Product:	No data available.

Aquatic Invertebrates

Product:	No data available.

Toxicity to Aquatic Plants

Product:	No data available.

Toxicity to microorganisms

Product:	No data available.

Chronic hazards to the aquatic environment:

Fish

Product:	No data available.

Aquatic Invertebrates

Product:	No data available.

Toxicity to Aquatic Plants

Product:	No data available.

Toxicity to microorganisms

Product:	No data available.

Persistence and Degradability

Biodegradation

Product:	No data available.

BOD/COD Ratio

Product:	No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.

Partition Coefficient n-octanol / water (log Kow)

Product:	No data available.

Mobility in soil:

Product	No data available.

Results of PBT and vPvB assessment:

Product	No data available.

Other adverse effects:

Other hazards

Product:	No data available.

13. Disposal considerations

Disposal methods:	Waste must be disposed of in accordance with federal, state, provincial and local regulations.
Contaminated Packaging:	Packaging material should be recycled or disposed of in accordance with federal, state and local regulations.

14. Transport information

Domestic regulation

49 CFR
Not regulated as a dangerous good

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good
Remarks : Not hazardous freight in air traffic (ICAO-TI / IATA-DGR).

IMDG-Code
Not regulated as a dangerous good
Remarks : Not classified as hazardous sea cargo (IMDG code)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):
None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Combustible dust

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances

None present or none present in regulated quantities.

US. EPCRA (SARA Title III Section 313 Toxic Chemical Release Inventory (TRI) Reporting

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
No ingredient requiring a warning under CA Prop 65.

Inventory Status:

US TSCA Inventory:	Included on Inventory.	

16.Other information, including date of preparation or last revision

HMIS Hazard ID

Health		1
Flammability		2
Physical Hazards		0
PERSONAL PROTECTION		

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

Issue Date: 09/08/2022

Version #: 1.2

Further Information: No data available.

Revision Information Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DHC microbial consortium (SDC-9)

Manufacturer Aptim 17 Princess Road, Lawrenceville,
NJ 08648. Phone (609) 895-5340

CAS #: N/A (Not Applicable)

Product Use: For remediation of contaminated groundwater (environmental applications).

Material Description: Non-toxic, naturally occurring, non-pathogenic, non-genetically altered anaerobic microbes in a water-based medium.

IN CASE OF EMERGENCY CALL CHEMTREC 24 HOUR EMERGENCY RESPONSE PHONE NUMBER (800) 424-9300

SECTION 2 – COMPOSITIONS AND INFORMATION ON INGREDIENTS

Components	%	OSHA PEL	ACGIH TLV	OTHER LIMITS
Non-Hazardous Ingredients	100	N/A	N/A	N/A

Based on Microbial Insights QuantArray® analysis, the DHC microbial consortium (SDC-9) is comprised of microorganisms of the genera *Dehalococcoides, Desulfovibrio, Desulfitobacterium, Dehalobium, and Dehalobacter* as well as sulfate reducing bacteria and methanogenic archaebacteria.

SECTION 3 – HAZARDS IDENTIFICATION

The available data indicates no known hazards associated with exposure to this product. Nevertheless, individuals who are allergic to enzymes or other related proteins should avoid exposure and handling. Health effects associated with exposure to similar organisms are listed below.

Ingestion: Ingestion of large quantities may result in abdominal discomfort including nausea, vomiting, cramps, diarrhea, and fever.

Inhalation: Hypersensitive individuals may experience breathing difficulties after inhalation of aerosols.

Skin Absorption: May cause irritation upon prolonged contact. Hypersensitive individuals may experience allergic reactions.

Eye contact: May cause irritation unless immediately rinsed.

SECTION 4 – FIRST-AID MEASURES

Ingestion: Thoroughly rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Get medical attention if allergic symptoms develop.

Skin Absorption: N/A

Skin Contact: Wash affected area with soap and water. Get medical attention if allergic symptoms develop.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Get medical attention if irritation occurs.

NOTE TO PHYSICIANS: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this material may have occurred.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammability of the Product: Non-flammable

Flash Point: N/A

Flammable Limits: N/A

Fire Hazard in Presence of Various Substances: N/A

Explosion Hazard in Presence of Various Substances: N/A

Extinguishing Media: Foam, carbon dioxide, water

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Reportable quantities (in lbs of EPA Hazardous Substances): N/A

No emergency results from spillage. However, spills should be cleaned up promptly. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. All personnel involved in the cleanup must wear protective clothing and avoid skin contact. After clean-up, disinfect all cleaning materials and storage containers that come in contact with the spilled liquid.

SECTION 7 – HANDLING AND STORAGE

Avoid breathing breathe aerosol. Avoid contact with skin. Use personal protective equipment recommended in Section 8.
Keep containers tightly closed in a cool, well-ventilated area. The DHC microbial consortium (SDC-9) is typically supplied in stainless steel kegs equipped with pressure relief valves. The kegs are pressurized with Nitrogen gas (N_2) up to the pressure of 15 psi. **Do not exceed pressure of 15 psi during transfer of DHC microbial consortium (SDC-9) from kegs.** Don't open keg if content of the keg is under pressure.

DHC microbial consortium (SDC-9) may be stored for up to 4 weeks at temperature
2-4°C without aeration. Avoid freezing.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Hand Protection: Rubber, nitrile, or vinyl gloves.

Eye Protection: Safety goggles or glasses with side splash shields.

Protective Clothing: Use adequate clothing to prevent skin contact.

Respiratory Protection: N95 respirator if aerosols might be generated.

Ventilation: Provide adequate ventilation to remove odors.

Other Precautions: An eyewash station in the work area is recommended.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Light greenish murky liquid. Musty odor.

Boiling Point: 100°C (water)	Specific Gravity (H_2O = 1): 0.9 - 1.1
Vapor Pressure @ 25°C: 24 mm Hg (water)	Melting Point: 0°C (water)
Vapor Density: N/A	Evaporation Rate (H_2O = 1): 0.9 - 1.1
Solubility in Water: Soluble	Water Reactive: No
pH: 6.0 - 8.0	

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: None

Incompatibility (Materials to Avoid): Water-reactive materials

Hazardous Decomposition Byproducts: None

SECTION 11 – TOXICOLOGICAL INFORMATION

This product contains no toxic ingredients.
SDC-9 consortium has tested negative for pathogenic microorganisms such as *Bacillus cereus*, *Listeria monocytogens*, *Salmonella* sp., Fecal Coliforms, Total Coliforms, Yeast and Mold and *Pseudomonas* sp.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: this material will degrade in the environment.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: No special disposal methods are required. The material is compatible with all known biological treatment methods. To reduce odors and permanently inactivate microorganisms, mix 100 parts (by volume) of SDC-9 consortium with 1 part (by volume) of bleach. Dispose of in accordance with local, state and federal regulations.

SECTION 14 – TRANSPORT INFORMATION

DOT Classification:	N/A
Labeling:	NA
Shipping Name:	Not regulated

SECTION 15 – REGULATORY INFORMATION

Federal and State Regulations: N/A

SECTION 16 – OTHER INFORMATION

MSDS Code: ENV 1033
MSDS Creation Date: 10/06/2003
Last Revised: March 17, 2022.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, APTIM MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Appendix E

Sampling and Analysis Plan/Quality Assurance Project Plan

MAUL
FOSTER
ALONGI

Sampling and Analysis Plan/Quality Assurance Project Plan

Former Park Laundry Site, Ridgefield Washington

Consent Decree No. 23-2-02783-06
Cleanup Site ID 4099

Prepared for:

City of Ridgefield

November 14, 2024
Project No. M0239.33.007

Prepared by:

Maul Foster & Alongi, Inc.
330 E Mill Plain Boulevard, Suite 405, Vancouver, WA 98660

Sampling and Analysis Plan/Quality Assurance Project Plan

Former Park Laundry Site, Ridgefield, Washington

Consent Decree No. 23-2-02783-06
Cleanup Site ID 4099

The material and data in this report were prepared
under the supervision and direction of the undersigned.

Maul Foster & Alongi, Inc.

Krysta Krippaehne-Stein

Krysta Krippaehne-Stein
Staff Engineer

Alan Hughes, LG
Principal Geologist

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Abbreviations

Apex	Apex Laboratories, LLC
bgs	below ground surface
City	City of Ridgefield
COC	chain-of-custody
DCE	dichloroethene
DQO	data quality objectives
Ecology	Washington State Department of Ecology
EDR	engineering design report
EPA	U.S. Environmental Protection Agency
IDW	investigation-derived waste
LCS	laboratory control sample
MFA	Maul Foster & Alongi, Inc.
MS/MSD	matrix spike and matrix spike duplicate
PCE	tetrachloroethene
PID	photoionization detector
Property	former Park Laundry property located at 122 North Main Avenue in Ridgefield, Washington
QA	quality assurance
QAM	quality assurance manager
QAPP	Quality Assurance Project Plan
QC	quality control
REL	remediation level
RPD	relative percent difference
SAP	sampling and analysis plan
Site	the Property and neighboring properties where contamination is present
SM	standard method
SOP	standard operating procedure

1 Introduction

This sampling and analysis plan/quality assurance project plan (SAP/QAPP), prepared by Maul Foster & Alongi, Inc. (MFA), on behalf of the City of Ridgefield (the City), describes the scope of work for remedial action at the Former Park Laundry Site located at 122 N Main Avenue in Ridgefield, Washington, (the Property) (see Figure 1-1 in the Engineering Design Report [EDR]). The Property is listed with the Washington State Department of Ecology (Ecology) under facility site no. 8100630 and cleanup site no. 4099. The Site is defined as the Property and neighboring properties where contamination is present. This SAP/QAPP is an appendix to the EDR describing the selected remedy for the Site.

This SAP/QAPP has been prepared consistent with the following guidance:

- Ecology's *Guidance on Sampling and Data Analysis Methods* (1995)
- Ecology's *Guidance for Preparing Quality Assurance Project Plans for Environmental* Studies (2016b)
- 1993 Model Toxics Control Act (Washington Administrative Code Chapter 173-340-820).

1.1 SAP/QAPP Objectives

The purpose of this SAP/QAPP is to outline requirements for field sampling and laboratory analytical activities associated with the remedial action for the Property. This SAP/QAPP is provided as an appendix to and supplements the EDR, which provides additional property-specific background information, discusses proposed cleanup standards, and defines the scope of the remedial action to be completed under the Ecology Remedial Action Grant.

Minor deviations from this SAP/QAPP, if any, will be documented in field notes and described in the construction completion report submitted to Ecology.

This SAP/QAPP is designed to ensure the following:

- Data collected are of high quality, representative, and verifiable.
- Environmental data can be shown to be representative of site conditions.
- The quality assurance (QA) and quality control (QC) process allows for comparability of environmental data sets so that the Property can be characterized and assessed.

This SAP/QAPP describes methods that will be used for sampling environmental media, decontaminating equipment, and managing investigation-derived waste (IDW). It also includes procedures for collecting, analyzing, evaluating, and reporting useful data. This SAP/QAPP includes QA procedures for field activities, QC procedures, and data validation.

1.2 Report Organization

This document is organized as follows:

- Section 2 describes the project team organization, schedule, and deliverables.
- Section 3 presents soil sampling procedures to be followed during the remedial action.
- Section 4 presents groundwater monitoring procedures to be followed during compliance monitoring following the remedial action.
- Section 5 describes field procedures during remedy implementation.
- Section 6 describes the chemicals of interest and the laboratory test methods.
- Section 7 describes the sample handling procedures.
- Section 8 presents field and laboratory QC practices.
- Section 9 summarizes the review processes to ensure data usability.
- Section 10 defines data quality objectives (DQOs) specific to the remedial action.
- Section 11 summarizes the assessment and oversight QC practices.
- Section 12 summarizes the reporting requirements.

2 Project and Task Organization

2.1 Project Team Organization

This section provides the organizational structure, lines of authority, and responsibilities of key project individuals. Project activities will be performed within the framework of the organization and functions presented in this section. The organizational structure described in this SAP/QAPP provides lines of responsibility and authority based on the following objectives:

- Identify appropriate lines of communication and coordination.
- Monitor project schedules and performance of contractors.
- Coordinate support functions, such as laboratory analysis and data management.
- Provide progress QA reports.
- Provide corrective actions to rectify deficiencies.

This SAP/QAPP provides the general structure for environmental field sampling and laboratory analytical activities for the remedial action at the Property. Table 2-1 provides the contact information for the personnel listed in the following sections and will also act as a distribution list for this SAP/QAPP. An organizational chart is provided as an attached figure.

2.1.1 City of Ridgefield Project Manager Responsibilities

Kirk Johnson is the project manager for the City, which is the grant recipient. Kirk Johnson is responsible for budget and schedule control, contracting, and coordination between the City, Ecology, and the environmental consultant, MFA. In addition, James Maul of Gemini Environmental

Strategies, LLC, will serve as the City's representative and will coordinate with MFA to verify project progress, review deliverables, and engage with MFA, the City, and Ecology. The City is responsible for distributing the final approved SAP/QAPP to the project team.

2.1.2 Ecology Site Manager Responsibilities

Cam Penner-Ash is the Ecology site manager and primary Ecology contact for the Property. The Site is being cleaned up under a consent decree. The City and its consultant will design and perform the remedial action with assistance from Ecology, as requested. The final version of this SAP/QAPP and the EDR will be provided to Ecology.

2.1.3 MFA Program Manager Responsibilities

Joshua Elliott is the MFA program manager. Joshua Elliott will be responsible for planning technical and administrative components of work completed by the City. Joshua Elliott will oversee the following functions for the City:

- Development of scope, schedule, and budget
- Administration of these assignments via contracts with service providers
- Management of data and products developed throughout the course of the work
- Reporting to the City and Ecology

Joshua Elliot will be supported by the MFA project manager, Meaghan Pollock. Joshua Elliot and Meaghan Pollock will regularly communicate with the City and Ecology on progress and significant issues.

2.1.4 MFA Project Manager Responsibilities

Meaghan Pollock will be the project manager for the remedial action at the Property. Meaghan Pollock will be responsible for all aspects of implementation of assignments and will lead the remedial action and development of the EDR, this SAP/QAPP, and the completion report. Meaghan Pollock will report to Joshua Elliot.

2.1.5 Field Team Leader/On-Site Safety Officer Responsibilities

Krysta Krippaehne-Stein will be the field team leader. Krysta Krippaehne-Stein will be responsible for overseeing field activities and making sure that samples are collected properly; verifying that procedures for field activities related to characterization or remediation are properly executed; and ensuring that all activities are properly documented, the prescribed scope of work is completed, and communication protocols are met. Krysta Krippaehne-Stein will also act as the on-site safety officer and will be responsible for ensuring that the site-specific health and safety plan is followed by MFA personnel working on site.

2.1.6 Project Scientist/Geologist/Engineers

MFA scientists, geologists, or engineer will be assigned based on availability and relevant skills and experience. The scientists, geologists, or engineer will work under the field team leader and will be responsible for conducting construction oversight and compliance groundwater monitoring in accordance with the EDR and this SAP/QAPP. Personnel working on the Property and who could be exposed to chemical hazards will have completed training consistent with the HAZWOPER requirements in 29 Code of Federal Regulations 1910.120(e).

2.1.7 Quality Assurance Manager Responsibilities

Mary Benzinger of MFA has been identified as the quality assurance manager (QAM). Mary Benzinger will provide QA oversight for both the field sampling and laboratory programs, ensuring that samples are collected and documented appropriately, coordinating with the analytical laboratories, ensuring data quality, overseeing data validation, and supervising project QA coordination. Mary Benzinger will report directly to the MFA project manager.

2.1.8 Database Manager/Project Chemist Responsibilities

Mary Benzinger will be the database manager and project chemist. She will be responsible for uploading analytical results to the project EQuIS database and for ensuring that samples are documented appropriately. She will coordinate with the analytical laboratories and oversee data validation. Mary Benzinger will oversee the management and transfer of analytical, well, and boring logs; spatial analyses; and any other data generated during the project. Mary Benzinger will report directly to the MFA project manager.

2.1.9 Contract Administrator

Meaghan Pollock of MFA will be responsible for contract administration, including development and management of requests for proposals and bids and of contract documents for contractors providing services to the City. The contract administrator will be in close contact with the City.

2.1.10 Contractor Responsibilities

Contractors will perform work that strictly complies with this SAP/QAPP and the appropriate contract specifications. Contractors are responsible for implementation of work assignments under the direction of the project manager. Apex Laboratories, LLC (Apex), will be the laboratory contractor for this project.[1] Accreditations are provided in Appendix A.

The following describes the laboratory contractor’s responsibilities:

- Performing the test methods described in this SAP/QAPP or the EDR, including methods referenced for each analytical procedure
- Holding and maintaining accreditation for applicable analyses under the Washington State Environmental Laboratory Accreditation Program
- Following documentation, custody, and sample logbook procedures
- Meeting all reporting and QA/QC requirements
- Providing electronic data files as specified
- Meeting specified turnaround times for deliverables
- Allowing the QA/QC contractor to perform laboratory and data audits

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[1] Apex will subcontract with Alliance Technical Group (formerly Fremont Analytical, Inc.), an Ecology-accredited laboratory, for U.S. Environmental Protection Agency (EPA) Method RSK-175.

2.2 Schedule

The project schedule is outlined in the EDR, to which this SAP/QAPP is an appendix.

2.3 Documents

2.3.1 Data Validation Memoranda

Data validation memoranda will be prepared by the MFA project chemist, Mary Benzinger. The contents of the data validation memoranda are discussed in Section 5. Data validation memoranda will be submitted to the City and Ecology with the final reports (see Section 2.3.2).

2.3.2 Construction Completion and Monitoring Reports

MFA will prepare a final construction completion report describing the remedial action that will include field measurement data collected; confirmation and QC samples collected; confirmation sample results, including the location and extent of any contamination identified; a summary of any QA issues and corrective actions taken; and an interpretation of the analytical results. The City will submit the final completion report to Ecology.

Post-remedy monitoring reports will be prepared following each groundwater monitoring event. The first compliance monitoring event will be conducted approximately six months following injection activities. Following receipt of the groundwater analytical results, a quarterly groundwater monitoring report will be prepared summarizing the results, treatment effectiveness, and recommendations for additional work, if deemed necessary.

3 Soil Sampling

The remedial action described in the EDR will include the collection and analysis of soil samples from the excavations and soil stockpiles. Proposed sample locations in this SAP/QAPP may be adjusted as site conditions necessitate. Field conditions may prevent collection of some proposed samples and/or may necessitate the collection of additional samples. Standard operating procedures (SOPs) for the specific sampling methods to be used are provided in Appendix B.

Soil sampling frequency, field parameters, associated analyses, and sample collection timing are discussed in this section. The anticipated excavation extents are shown on drawing sheets C2.0 and C2.1 in the EDR. Field screening will be performed during excavation activities using a photoionization detector (PID) and visual and olfactory observations (see SOP 03 in Appendix B). Confirmation sampling will be conducted for using a PID and verified with results by an analytical laboratory. Locations of confirmation samples will be determined in the field.

3.1 Sampling Methods

All samples will be collected consistent with the requirements for the medium being sampled and the analyte of interest. Samples will be collected in containers supplied by the analyzing laboratory to ensure that the container has been properly cleaned and that sufficient sample material is collected. Sampling methods for the medium of interest (i.e., soil) are described below in general detail.

3.1.1 Confirmation Soil Sampling

Confirmation soil samples will be collected from the base and sidewalls of the two shallow soil excavation areas to evaluate compliance with the remediation level (REL). A minimum of one discrete confirmation soil sample will be collected from the floor of each shallow excavation for laboratory analysis. Discrete confirmation soil samples will also be collected along the base of each of the sidewalls of the shallow excavation, with a minimum of four sidewall samples collected. For the deep soil excavation, because a shoring system will be implemented during excavation, it may not be practicable to collect sidewall confirmation soil samples. Confirmation samples will be collected from the base of the deep excavation area.

Field screening results using a PID and confirmation samples analyzed by an analytical laboratory will be screened to the REL to verify excavation activities and guide removal of additional shallow soil with elevated contaminant concentrations where possible. Excavation activities for the shallow soil excavation areas will proceed laterally and vertically in the manner presented above once laboratory analytical results of confirmation samples indicate that the extent of impacted soil exceeding the REL has been reached or the maximum setback extent of the excavation has been reached (i.e., toward the east where the excavation extent is limited by the existing alleyway and utilities).

The frequency of confirmation sample collection will involve one confirmation sample collected per exposed sidewall surface, and at least one confirmation sample collected from the exposed base of each excavation. Initial sampling will include one confirmation sample from the base of each shallow soil excavation and at least three confirmation samples from the base of the deep soil excavation. For the deep soil excavation, because a shoring system will be implemented during excavation, it may not be practicable to collect sidewall confirmation soil samples.

Samples will be submitted to Apex each day confirmation samples are collected. Confirmation soil samples will be submitted for rushed, 24-hour turnaround time to expedite characterization of the extent of excavation. Soil samples and associated QC samples will be analyzed for tetrachloroethene (PCE).

3.1.2 Stockpile Sampling

Following excavation, impacted soil will be temporarily stockpiled on site prior to off-site disposal at the landfill. During soil excavation, the on-site scientist, geologist, or engineer shall work with the contractor to identify and distinguish clean overburden from impacted soils. Soil from the excavation will be regularly screened in the field with a PID to confirm visual and olfactory observations. Soils that are determined to be impacted will be excavated and stockpiled separately for characterization and landfill disposal. Stockpile sampling for characterization will be conducted as outlined below:

- Presumed clean overburden soil: discrete soil samples will be obtained at a rate consistent with Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2016b) for adequate stockpile characterization. The uppermost six inches of soil will be removed so samples can be collected from an unexposed area (Ecology 2021).

- Impacted soil: samples will be collected in accordance with hazardous waste test methods SW-846 and in coordination with the receiving landfill facility, and may include discrete or composite soil samples. The uppermost six inches of soil will be removed so samples can be collected from an unexposed area (Ecology 2021). If compositing is required, a 10-point composite sample will be collected using Terra Core Samplers. Five-gram soil plugs will be collected from each discrete sample location and placed in a glass jar containing methanol to minimize volatilization.
- A standard stainless steel spoon, hand auger, or tubular soil sampler will be used to obtain the samples from at least six inches below the stockpile surface to minimize soil disturbance and potential contaminant volatilization (Ecology 2021). Samples will be collected at random locations and depths to provide adequate spatial coverage of the stockpiles.
- The stainless steel spoon, hand auger, or tubular soil sampler will be decontaminated and gloves will be changed between sample locations. Rocks and debris will not be placed in the sample container.
- Samples will be labeled, stored in iced shipping containers with chain-of-custody (COC) documentation, and transported to the contract laboratory.

Stockpile soil samples of presumed clean overburden soil will be submitted for rushed, 24-hour turnaround time analysis to expedite characterization of stockpiled soil. Stockpile soil samples of impacted soils will be submitted on a standard turnaround time. Characterization samples will be analyzed for PCE. Based on the estimated volume of soil to be removed, it is assumed that up to ten characterization samples of impacted soil will be collected and between seven and ten characterization samples of presumed clean overburden soil will be collected.

Analytical results of the presumed clean overburden soil will be compared to the MTCA Method A cleanup level (i.e., 0.05 milligrams per kilogram) using the statistical evaluation approach from section 10.1.2 of Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2016b). If analytical results do not comply with the compliance cleanup standards, the presumed clean overburden soil will be appropriately disposed of offsite at a permitted landfill.

3.1.3 General Soil Sampling Procedures

Samples for laboratory analysis will be prepared, handled, and documented as follows and in accordance with standard operating procedures (EPA 2020b):

- Soil-sampling equipment will be decontaminated before it is used at each sampling location (see SOP 01 in Appendix B).
- Samples will be obtained with a decontaminated stainless steel spoon, hand auger, or tubular soil sampler.
- Soil samples analyzed for PCE will be collected in two 40-milliliter volatile organic analysis bottles with 5 milliliters of methanol and one 2-ounce jar (see SOP 05 in Appendix B).
- Large particles (i.e., larger than 0.25 inch) will be removed before the sample is placed in a laboratory-supplied container.
- Sample containers will be labeled, packed in ice in the shipping containers with COC documentation and delivered or shipped to the laboratory.

- Sampling information will be recorded in a field notebook, on a field sampling data sheet, and on the COC form.

Generally, duplicate soil samples should be collected at the frequency of one duplicate sample for every 20 samples collected.

3.2 Soil Sample Nomenclature

Stockpile soil samples will be labeled with either "COMP" (composite sample) or "GRAB" (discrete sample), "OV" (clean overburden soil) or "CS" (contaminated soil); numerically collected sample, an "S" to indicate a soil sample matrix. For example, the first composite soil sample collected from the impacted soil stockpile will have the sample nomenclature of COMP-CS-1-S and the second discrete soil sample collected from the presumed clean overburden soil will have the sample nomenclature of GRAB-OV-2-S.

Confirmation soil samples will be labeled with a prefix to describe the location identification number, numerically collected sample, an "S" to indicate a soil sample matrix, and the sample depth in feet below ground surface (bgs). The depth interval should be specified as the middle of the sampling interval.

- Shallow north excavation = SN
- Shallow south excavation = SS
- West wall = WW
- North wall = NW
- South Wall = WW
- Deep Base = DB

For example, the first confirmation soil sample collected from the west sidewall of the northernmost shallow soil excavation at 1 foot bgs will have the sample nomenclature of SN-WW-1-S-1.0. The third confirmation soil sample collected from the base of the deep soil excavation at 15 feet bgs will have the sample nomenclature of DB-3-S-15.0.

Duplicate soil samples will append the sample name with "DUP," and the sample will have the same sample time as the primary sample.

4 Groundwater Sampling

4.1 Dewatered Groundwater Sampling

Groundwater from temporary dewatering wells or from the excavation will be pumped into a storage tank and will be sampled prior to discharge or off-site disposal. A groundwater sample will be collected using a bailer and submitted for analysis of PCE. The first dewatered groundwater sample name will be TANK-1 followed by the date, for example if the first dewatered groundwater sample is collected on December 15, 2024, the sample name will be TANK-1-121524. If additional samples are collected, the numerical identifier and date at the end of the sample name will be modified. For example, a second sample collected on December 18, 2024, will have the sample name TANK-2-121824.

4.2 Compliance Groundwater Sampling

Compliance groundwater monitoring will be conducted on a quarterly basis for a minimum of one year; thereafter, the monitoring frequency may be reduced to semiannually or less frequently and the number of monitoring wells may be reduced, depending on the observed concentration trends and Ecology's approval. The first compliance monitoring event will be conducted approximately six months following injection activities.

4.2.1 Sampling Methodology

Groundwater samples will be collected from monitoring wells located at the Site (see Table 4-1), including three monitoring wells located at the Port of Ridgefield and the three monitoring wells installed in the lower water bearing zone (see Figure 3-1 in the EDR, to which this report is an appendix). Before collecting groundwater samples, the water level will be measured (see SOP 13 in Appendix B), and then the wells will be purged and sampled. The well should be purged at a low flow rate (e.g., 0.1 to 0.5 liter per minute; see SOP 09 in Appendix B). A minimum of one well volume will be purged before sample collection, or purging will continue until selected water quality field parameters (e.g., temperature, specific conductance, pH, turbidity) have stabilized. If the well goes dry during purging, a sample can be collected once the monitoring well recharges.

During purging, the flow rates, water levels, and water quality parameters will be recorded on an appropriate field form or in the field notes (see field sampling data sheet in Appendix C). Groundwater will be transferred directly into laboratory-supplied containers specific to the analysis required.

Sample containers will be labeled, packed in iced shipping containers with COC documentation, and delivered or shipped to the laboratory. Sampling information will be recorded in a field notebook, on a field sampling data sheet (see Appendix C), and on the COC form.

4.2.2 Groundwater Sample Nomenclature

Groundwater samples will be labeled with a prefix to describe the sampling location identification number and the date. For example, a groundwater sample collected from monitoring well MW01 on January 1, 2025, will have the sample nomenclature of MW01-010125.

Duplicate groundwater samples will append the sample name with "DUP," and the sample will have the same sample time as the primary sample. A duplicate sample of the abovementioned sample would appear as MW01-010125-DUP.

Relevant sample information will be documented on a field sampling data sheet (see Appendix B); documentation may include items such as the screened interval or open space, equipment used, water quality field parameters, and the amount of water purged before sampling.

5 Field Procedures

5.1 Sampling Equipment Decontamination

Non-disposable sampling equipment and reusable materials that contact the soil or water will be decontaminated on Property and before and after each sample collection (see SOP 01 in Appendix B). Decontamination will consist of the following:

- Tap-water rinse. Visible soil to be removed by scrubbing.
- Non-phosphate detergent wash, consisting of a dilute mixture of Liqui-Nox (or equivalent) and tap water.
- Distilled-water rinse.
- Allow equipment to air dry or dry it with paper towels.

Decontamination fluids will be transferred to drums and managed as described in Section 5.2.

5.2 Sample Documentation and Records

5.2.1 Field Logbook and Forms

Field personnel will be responsible for maintaining a daily record of significant events, observations, and measurements during construction oversight and compliance groundwater monitoring. Field records may be recorded in a bound logbook or on paper or electronic field data sheets. A separate entry will be made for each sample collected. Field logbooks and forms will be included in the project files at the end of field activities to provide a record of sampling.

5.2.2 Equipment Calibration Log

Field personnel will be responsible for maintaining an equipment calibration log to record the calibration measurements and frequencies of equipment calibration. This log may be incorporated into the field logbook notes for a specific date and activity.

5.2.3 Record Retention

All data collected will be stored on a server supported by MFA with minute-by-minute backups. Additionally, validated data will be uploaded to Ecology's Environmental Information Management System.

All project information will be stored for the duration of the project or ten years, at minimum.

5.3 PID Measurement

During excavation activities, sidewall soil will be screened at approximately 10-foot intervals along each new segment of sidewall exposed by excavation with a PID to confirm visual and olfactory observations made by the field team leader. The PID will be held in the ambient air space immediately adjacent to the exposed sidewall, and representative PID results (excluding possible erratic readings) will be recorded in the field notebook.

5.4 Instrument and Equipment Testing, Inspection, and Maintenance

Instruments for field parameter measurements will follow this SAP/QAPP protocol and manufacturers' recommendations for testing, inspection, and maintenance. Field equipment used for obtaining samples will be decontaminated as required and stored in a clean and secure location.

Laboratory instruments and equipment will comply with the contracted laboratories' QA/QC procedures for testing, inspection, and maintenance. Laboratory instrument and equipment testing, inspection, and maintenance documentation will be provided to the QAM if requested.

5.5 Instrument and Equipment Calibration and Frequency

Instruments for field parameter measurements will follow manufacturers' recommendations for calibration. Calibration will be conducted at the beginning of each sampling event. Calibration checks will be conducted at the beginning of each sampling day. Calibration may be conducted again during a sampling event, as necessary, based on the results of the calibration check. Calibration records will be recorded in the field logbooks.

5.6 Inspection and Acceptance of Supplies and Consumables

The supplies and consumables that will be used during field operations include, although are not limited to, the following: decontamination fluids, preservatives, reagent water for equipment blanks, and equipment tubing. No materials will be used after the manufacturers' expiration dates. Only water certified by the manufacturers will be used to prepare equipment blanks. If contamination is visible in materials, the item will be discarded. In accordance with SOP 01 (see Appendix B), nondedicated field equipment will be decontaminated prior to use.

The analytical laboratory will inspect supplies and consumables before their use in analysis. The materials description in the analytical methods will be used as a guideline for establishing acceptance criteria. Purity of reagents will be evaluated through analysis of laboratory control samples (LCSs) and method blank samples. The laboratory shall maintain an inventory of supplies and consumables.

5.7 Nondirect Measurements

Nondirect measurements are defined as existing data obtained from nonmeasurement sources, such as literature files or existing databases. To assess data usability, historical data will be reviewed for accordance with project-specific DQOs and QA/QC criteria. Historical data that may be relied on for this remedial action are provided in the remedial investigation and feasibility study (MFA 2019).

5.8 Management of Investigation-Derived Waste

IDW will include decontamination fluids generated through decontamination of field equipment. IDW will be disposed of with excavated material transported off site for disposal. Excavated soil will be characterized during excavation activities and may be temporarily stockpiled on site prior to disposal at a Subtitle D landfill.

6 Analytical Methods

In accordance with the QA/QC requirements set forth in this SAP/QAPP, Apex, a laboratory accredited by the State of Washington, will perform the laboratory analyses for the soil and groundwater samples collected at the Site.[2] Soil samples will be analyzed for PCE by U.S. Environmental Protection Agency (EPA) Method 8260D. Confirmation soil samples will be submitted for rushed, 24-hour turnaround time to expedite characterization of the extent of excavation and stockpile soil.

The dewatered groundwater sample(s) will be submitted for analysis of PCE by EPA Method 8260D low level.

Compliance groundwater samples collected will be analyzed for PCE and its degradation products (trichloroethene, 1,1-dichloroethene [DCE], cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) by EPA Method 8260D low level.

Consistent with the Cleanup Action Plan (Ecology 2023), groundwater samples from select monitoring wells (i.e., MW-03, MW-04, MW-05 and MW-13) will also be analyzed for the following geochemical parameters to prescreen for the presence of electron acceptors for assessment of the potential reductive dechlorination process and to evaluate the efficacy of the remedial action:

- Total metals (iron, calcium, magnesium, manganese) By EPA 6020B[3]
- Sulfate by ASTM D516-02
- Chloride by standard method (SM) 4500-Cl
- Nitrate by EPA 300.0
- Ferrous iron (Fe^{2+}) using a Hach field kit
- Total organic carbon by SM 5310 C
- Alkalinity by SM 2320B
- Dissolved gases (methane, ethane, ethene) by RSK 175

The analytical methods and performance criteria for the analyses for soil and groundwater are provided in Tables 6-1 and 6-2, respectively.

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[2] Apex will subcontract with an accredited laboratory for groundwater samples analyzed via method RSK-175.

[3] Total hardness will be calculated from total calcium and total magnesium concentrations.

7 Sample Handling

7.1 Preservation

Soil and groundwater samples will be collected in laboratory-supplied containers with appropriate preservation per analytical method requirements, as outlined in Table 7-1. The samples will be stored in iced coolers at approximately 4 degrees Celsius.

7.2 Sample Packing and Shipping

Soil and groundwater samples will be stored in iced coolers, and then transported to the analytical laboratory via courier.

7.3 Sample Custody

Sample custody will be tracked from point of origin through analysis and disposal using a COC form filled out with the appropriate sample and analytical information.

The following items will be recorded on the COC form:

- Project name
- Project number
- MFA project manager
- Sampler name(s)
- Sample number, date and time collected, media, number of bottles submitted
- Requested analyses for each sample
- Type of data package required
- Turnaround requirements
- Signature, printed name, and organization name of persons having custody of samples, and date and time of transfer
- Additional instructions or considerations that would affect analysis (nonaqueous layers, archiving, etc.)

Persons in possession of the samples will be required to sign and date the COC form whenever samples are transferred between individuals or organizations. The COC will be included in the shipping containers. The laboratory will implement its in-house custody procedures, which begin when sample custody is transferred to laboratory personnel.

At the analytical laboratory, a designated sample custodian will accept custody of the samples and will verify that the COC form matches the samples received. The shipping container or set of containers is given a laboratory identification number, and each sample is assigned a unique sequential identification number.

8 Quality Control

8.1 Field Quality Control Samples

The occurrence of field contamination will be assessed through the analysis of a variety of sample blanks described below (see Table 8-1).

8.1.1 Field Duplicates

Field duplicate samples are collected to assess reproducibility of field procedures. One duplicate sample will be collected per twenty (or fewer) samples per soil and aqueous matrix. It is anticipated that at least one field duplicate soil and one field duplicate groundwater sample will be collected per compliance monitoring event. It is noted that sample heterogeneity for nonaqueous matrices may affect the measured precision for the duplicate sample.

8.1.2 Equipment Rinsate Blanks

If nondedicated equipment is used, equipment blanks will be used to assess the efficiency of field equipment decontamination procedures in preventing cross-contamination of samples.

Analyses of equipment rinsate blanks will be used to assess the efficiency of field equipment decontamination procedures in preventing cross-contamination of samples. Rinsate blanks used to assess the efficiency of field equipment decontamination procedures will be collected at the end of each day of field sampling. Equipment rinsate blanks will be collected by pouring certified distilled water over or through decontaminated (clean) sampling equipment used in the collection of investigative samples and subsequently collected in prepared sampling containers. Additives or preservatives will be included in the equipment rinsate blanks as required for analysis. The rinsate blank will be shipped with the associated field samples.

For each sample matrix, a rinsate blank will be collected and analyzed at a minimum frequency of one equipment rinsate blank per 20 samples for each day of sample collection. Rinsate blanks will also be collected from precleaned, disposable equipment for each lot of disposable equipment used to demonstrate the cleanliness of the equipment lot. Rinsate blanks will not be required if dedicated equipment is used for sampling. The rinsate blanks will be analyzed for the same parameters as the investigative samples.

8.1.3 Trip Blanks

Trip blanks are collected for volatile organic compound sample analysis to assess the contamination of samples during transport to the Property, sampling collection, and transport to the laboratory. Trip blanks are prepared in the laboratory, using analyte-free water. Trip blanks should be inspected for air bubbles by both the laboratory (before shipping) and the field team. Any vials containing visible air bubbles should be discarded. One trip blank is included for each sample cooler collected for analysis of volatile organic compounds and shipped to the laboratory. The criterion for trip blanks is that target analyte concentrations must be below the method reporting limits. Consistent with EPA data validation guidelines, analytical results for investigative samples will be qualified if the target analyte is detected in the trip blank.

One trip blank will be included per batch of samples submitted to the analytical laboratory.

8.1.4 Temperature Blanks

Temperature blanks are prepared by the laboratory, using analyte-free (reagent) water. Temperature blanks are used by the laboratory to record the temperature of each cooler used to transport samples from the field to the laboratory. Each cooler containing samples that require temperature preservation will contain a temperature blank. The laboratory will verify that the temperature blank measurement is within the acceptable range specific to the analytical method.

8.2 Laboratory Quality Control Samples

In the laboratory, QC samples may include matrix spike and matrix spike duplicate (MS/MSD) samples, LCSs, surrogate spike samples, and method blanks, as well as other QC samples and procedures as required by the individual methods.

8.2.1 Calibration Verification

Instruments will initially be calibrated at the start of the project or sample run, as required, and when any ongoing calibration does not meet control criteria. The number of points used in the initial calibration is defined in the analytical method. Calibration will be continued as specified in the analytical method to track instrument performance. If a continuing calibration does not meet control limits, analysis of project samples will be suspended until the source of the control failure is either eliminated or reduced to within control specifications.

8.2.2 Method Blanks

Method blanks are prepared using analyte-free (reagent) water and are processed with the same methodology (e.g., extraction, digestion) as the associated investigative samples. Method blanks are used to document contamination resulting in the laboratory from the analytical process. A method blank shall be prepared and analyzed in every analytical batch. The method blank results are used to verify that reagents and preparation do not impart unacceptable bias to the investigative sample results. The presence of analytes in the method blank sample will be evaluated against method-specific thresholds. If analytes are present in the method blank above the method-specific threshold, corrective action will be taken to eliminate the source of contamination before proceeding with analysis. Investigative samples of an analytical batch associated with method blank results outside acceptance limits will be qualified as appropriate by the data validation contractor.

8.2.3 Laboratory Control Samples

LCSs are prepared by spiking laboratory-certified, reagent-grade water with the analytes of interest or a certified reference material that has been prepared and analyzed. The result for percent recovery of the LCS is a data quality indicator of the accuracy of the analytical method and laboratory performance.

8.2.4 Laboratory Duplicate Samples

Laboratory duplicate samples are prepared by the laboratory by splitting an investigative sample into two separate aliquots and performing separate sample preparation and analysis on each aliquot. The results for relative percent difference (RPD) of the primary investigative sample and the respective laboratory duplicate samples are used to measure precision in the analytical method and laboratory performance. For nonaqueous matrices, sample heterogeneity may affect the measured precision for the laboratory duplicate samples.

8.2.5 Matrix Spike/Matrix Spike Duplicate

MS samples are analyzed to assess the matrix effects on the accuracy of analytical measurements. MS/MSD samples will be prepared by spiking investigative samples with known amounts of analytes before extraction and preparation and analysis. The recoveries for the MS/MSD samples will be used to assess the accuracy and precision in the analytical method by measuring how well the analytical method recovers the target compounds in the investigative matrices. For each matrix type, at least one set of MS/MSD samples will be analyzed for each batch of samples for every 20 (or fewer) samples received.

8.2.6 Surrogate Spikes

Surrogate spiking consists of adding reference compounds to samples before sample preparation for organic analysis. Surrogate compound spiking is used to assess method accuracy on a sample-specific basis. Surrogate compounds will be added to samples in accordance with the analytical method requirements. Surrogate recoveries will be reported by the laboratory along with method-based or method performance-based surrogate percent recovery acceptance limits. The laboratory will not correct sample results using these recoveries.

8.3 Instrumentation

8.3.1 Field Instrumentation Calibration and Maintenance

Field instruments may be used during construction and subsequent compliance groundwater monitoring. The following field equipment may require calibration before use and periodically during sampling activities:

- Photoionization detector
- Water quality meter, including pH, conductivity, and temperature
- Turbidity meter
- Electronic water-level probe

Field-instrument calibration and preventive maintenance will follow the manufacturers' guidelines, and deviations from the established guidelines will be documented. Generally, field instruments should be calibrated before work begins. Field personnel may decide to calibrate more than once a day if inconsistent or unusual readings occur, or if conditions warrant more frequent calibration. Calibration activities should be recorded in logbooks or field notebooks. To ensure that field instruments are properly calibrated and remain operable, the following procedures will be used, at a minimum:

- Operation, maintenance, and calibration will be performed in accordance with the instrument manufacturers' specifications.
- Standards used to calibrate field instruments will meet the minimum requirements for source and purity recommended in the equipment operation manual. Standards will be checked for expiration dates that may be printed on the bottle. Standards that have expired should not be used.
- Acceptable criteria for calibration will be based on the limits set in the operations manual.
- Users of the equipment should be trained in the proper calibration and operation of the instrument.
- Operation and maintenance manuals for each field instrument should be available to persons using the equipment.
- Field instruments will be inspected before they are taken to the Property.
- Field instruments will be calibrated at the start of each workday. Meters will be recalibrated, as necessary, during the work period.
- Calibration procedures (including items such as time, standards used, and calibration results) should be recorded in a field notebook. The information should be available if problems are encountered.

Preventive maintenance of field instruments and equipment will follow the operations manuals. A schedule of preventive-maintenance activities should be followed to minimize downtime and ensure the accuracy of measurement systems. Maintenance will be documented in the field notebook.

Data collected during field activities will be evaluated for usability by conducting a QA review that consists of checking the procedures used and comparing the data to previous measurements. Field QC samples will be evaluated to ensure that field measurements and sampling protocols have been observed and followed.

The field data verification process will be performed at two levels. The first level will be conducted at the time of collection and consists of following standard procedures and QC checks. The second level will be performed during compilation of field data and will include checks for data anomalies. Inconsistent data or anomalies will be resolved by seeking clarification from field personnel responsible for collecting the data, and the resolution will be documented during the data verification process.

8.3.2 Laboratory Instrumentation Calibration and Maintenance

Specific laboratory instrument calibration procedures, frequency of calibration, and preparation of calibration standards will be according to the method requirements as developed by the EPA, following procedures presented in EPA Method Solid Waste-846 (EPA 1986).

Preventive maintenance of laboratory equipment will be the responsibility of the laboratory personnel and analysts. This maintenance includes routine care and cleaning of instruments and inspection and monitoring of carrier gases, solvents, and glassware used in analyses. The preventive-maintenance approach for specific equipment should follow the manufacturers' specifications, good laboratory practices, and industry standard techniques.

Precision and accuracy data will be examined for trends and excursions beyond control limits to determine evidence of instrument malfunction. Maintenance should be performed when an instrument begins to change, as indicated by the degradation of peak resolution, shift in calibration curves, decrease in sensitivity, or failure to meet any QC criterion.

9 Data Reduction, Validation, and Reporting

The analytical laboratory will submit analytical data packages that include laboratory QA/QC results to permit independent and conclusive determination of data quality. MFA will determine data quality, using the data evaluation procedures described in this section. The results of the MFA evaluation will be used to determine if the project data quality objectives are met.

9.1 Field Data Reduction

Daily internal QC checks will be performed for field activities. Checks will consist of reviewing field notes and field activity memoranda to confirm that the specified measurements, calibrations, and procedures are being followed. The need for corrective action will be assessed on an ongoing basis, in consultation with the project manager.

9.2 Laboratory Evaluation

Initial data reduction, evaluation, and reporting at the analytical laboratory will be carried out as described in EPA SW-846 manuals for analyses (EPA 1986), as appropriate. Additional laboratory data qualifiers may be defined and reported to further explain the laboratory's QC concerns about a particular sample result. Additional data qualifiers will be defined in the laboratory's case narrative reports.

9.3 Data Deliverables

Laboratory data deliverables are listed below. Electronic deliverables will contain the same data that are presented in the hard-copy report.

- Transmittal cover letter
- Case narrative
- Analytical results
- COC form
- Method blank results

- Laboratory duplicate results
- MS/MSD results
- Surrogate recoveries

9.4 MFA Evaluation

9.4.1 Data QA/QC Review

MFA will evaluate the laboratory data for precision, completeness, accuracy, and compliance with the analytical method. MFA will review data according to applicable sections of EPA inorganics and organics procedures (EPA 2020a, 2020b), as well as appropriate laboratory, method-specific guidelines (EPA 1986).

Data qualifiers, as defined by the EPA, are used to classify sample data according to their conformance to QC requirements. Common qualifiers are listed below:

- J—Estimate, qualitatively correct but quantitatively suspect.
- R—Reject, data not suitable for any purpose. The analyte may or may not be present in the sample.
- U—Not detected at a specified reporting limit.

Poor surrogate recovery, blank contamination, or calibration problems, among other things, can require qualification of the sample data. The reasons for sample qualification should be stated in the data evaluation report.

QC criteria not defined in the guidelines for evaluating analytical data are adopted, where appropriate, from the analytical method.

The following information will be reviewed during data evaluation, as applicable:

- Sampling locations and blind sample numbers
- Sampling dates
- Requested analysis
- COC documentation
- Sample preservation
- Holding times
- Method blanks
- Surrogate recoveries
- LCS results
- Laboratory duplicates (if analyzed)
- MS/MSD results
- Field duplicates
- Field blanks

- Method reporting limits above requested levels
- Additional comments or difficulties reported by the laboratory
- Overall assessment

The results of the data evaluation review will be summarized for each data package. Data qualifiers will be assigned to sample results on the basis of EPA guidelines, as applicable.

9.4.2 Data Management and Reduction

MFA uses a database (e.g., EQuIS) to manage laboratory data. The laboratory will provide the analytical results in electronic, EQuIS-compatible format. Following data evaluation, data qualifiers will be entered into the database.

Data may be reduced to summarize particular data sets and to aid interpretation of the results. Statistical analyses may also be applied to results. Data reduction QC checks will be performed on hand-entered data, calculations, and data graphically displayed. Data may be further reduced and managed using one or more of the following computer software applications:

- Microsoft Excel (spreadsheet)
- EQuIS (database)
- Microsoft Access (database)
- AutoCAD and/or ArcGIS (graphics)
- EPA ProUCL (statistical software)

10 Data Quality Objectives

The DQOs are used to establish performance and acceptance criteria, which serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of the study (EPA 2006). The seven steps of the DQO process outlined by the EPA are as follows:

- State the problem—Define the problem; identify members of the planning team; define the budget and schedule
- Identify the goal of the study—State how environmental data will be used to meet study objectives and solve the problem; identify study questions; define alternative outcomes
- Identify information inputs—Identify data and information needed to answer study questions
- Define the boundaries of the study—Specify target population and characteristics of interest; define spatial and temporal limits; define scale of inference
- Develop the analytic approach—Define parameters of interest; specify type of inference; develop logic for drawing conclusions from findings
- Specify performance or acceptance criteria—Specify criteria for new data collection (performance metrics) and decision making (probability limits)

- Develop the plan for obtaining data—Develop the SAP

This SAP/QAPP for environmental data collection was developed using the DQO process and presents performance metrics for collection and analysis for soil and groundwater that will be sampled.

Decision criteria will be identified and based on comparison of analytical laboratory results to applicable screening levels.

Data collected under this SAP/QAPP will be of sufficient quality to:

- Characterize excavated soils for a waste determination and disposal.
- Verify the shallow soil excavation extents have sufficiently removed contamination of PCE below the REL.
- Verify the PCE concentration in the base of the deep soil excavation.
- Support completion of the remedial activities described in the EDR.
- Evaluate the degradation of PCE through compliance groundwater monitoring.

10.1 Data Precision

Precision is the measure of agreement among repeated measurements of the same property under identical or substantially similar conditions, calculated as either the range or the standard deviation (EPA 2002). Precision is measured by making repeated analyses on the same analytical instrument (laboratory duplicates) or replicate collections of samples in the field (field duplicates). Precision criteria are expressed as the RPD between the primary and duplicate samples. The acceptance limits for RPD are based on the sample matrix and the analytical method used.

10.2 Data Bias

Bias is defined as the systematic or persistent distortion of a measurement process that causes error in one direction (EPA 2002). Data bias is addressed in the field and the laboratory through equipment calibration, collection and analysis of QC blank samples, and analysis of QC standard samples.

10.3 Data Accuracy

Accuracy is defined as the measure of the overall agreement of a measurement to a known value and includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations (EPA 2002). Since the “true” concentration of sampled media is not known, the degree of accuracy in the measurement is inferred from recovery data determined by sample spiking and/or the analyses of reference standards. The criterion for accuracy is expressed as the percent recovery of the sample spiking. The acceptance limits for percent recovery are based on the analytical method used.

Percent recovery is calculated using the equation:

$$Percent\ Recovery = \frac{x_{ss} - x_s}{T} \times 100\%$$

Where:

x_{ss} = result for spiked sample

x_s = result for sample

T = true value of added spike

10.4 Data Completeness

Data completeness is defined as a measure of the amount of valid data needed from a measurement system (EPA 2002). It is measured as the total number of samples collected for which the valid analytical data are obtained divided by the total number of samples collected and multiplied by 100.

10.5 Data Representativeness

Data representativeness is a qualitative term that expresses “the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition” (EPA 2002). Data representativeness is evaluated by assessing the accuracy and precision of the sampling program. The criterion for evaluating representativeness will be satisfied by confirming that the sample collection procedures are consistently followed.

10.6 Data Comparability

Data comparability is a qualitative term expressing the measure of confidence with which one data set can be compared to another and can be combined for decision-making purposes (EPA 2002). Data comparability will be achieved by using standard sampling and operating procedures and analytical methods. Data comparability will be assessed using documentation of QA/QC procedures.

10.7 Data Sensitivity

Data sensitivity is defined as the capability of a method or instrument to discriminate between measurement responses representing different levels of the variable of interest (EPA 2002). Results measured between the reporting limits and method detection limits will be reported for all analytes and assigned the appropriate qualifier.

11 Assessment and Oversight

11.1 Quality Assurance Assessment and Response Actions

The MFA project manager and QAM are responsible for developing and initiating corrective action if the data verification and validation identify unacceptable data or conditions. The project manager will notify the QAM if the project issues are significant.

Corrective action may include the following:

- Reanalyzing samples, if holding time criteria permit
- Resampling and analyzing
- Amending sampling procedures

Documentation of significant changes to this SAP/QAPP will be documented using a sample plan alteration form (see Appendix D) and approved by the original signatories.

11.2 Quality Assurance Reports to Management

If significant QA issues arise, the MFA QAM will be responsible for completion of QA progress reports to provide a summary of the project performance and data quality. The QA progress reports will be submitted to the program and project managers on a situation-specific basis. These reports will focus on a summary of specific QA problems encountered and corrective actions implemented. The QA progress reports may include the following:

- QA issues requiring corrective actions; status of corrective actions
- Assessment of completeness of measurement data, including a summary of data qualified as rejected during data verification and validation
- Assessment of representativeness of measurement data and compliance with the project DQOs
- Results of performance audits

Submittal of QA progress reports will be conducted if QA problems occur during implementation of the remedial action. If needed, submittal of QA progress reports is not anticipated to exceed once a week. A summary of QA issues and implemented corrective actions will also be provided in the final report. A field sampling report will be generated, summarizing the investigative samples and QC samples collected. A data report that will summarize sampling and field measurement data and results of the data verification and validation will also be generated.

12 Reporting

Following completion of the remedial action a construction completion report will be prepared summarizing the actions completed.

Following receipt of the post-remedy groundwater monitoring analytical results, quarterly groundwater monitoring reports will be prepared summarizing the results, treatment effectiveness, and recommendations for additional work, if deemed necessary.

Environmental data will be submitted to Ecology using the Environmental Information Management System.

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Limitations

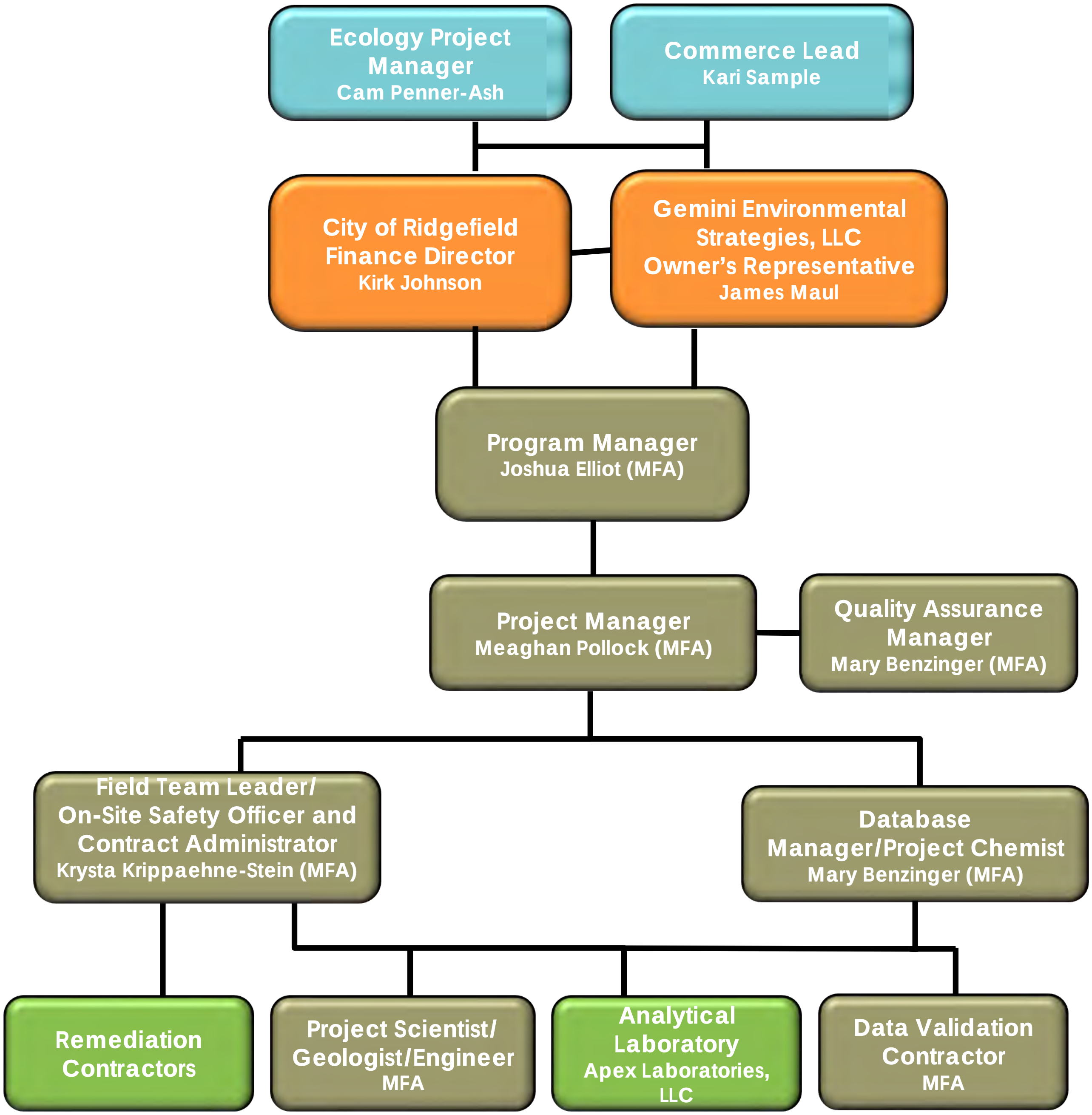
The services undertaken in completing this plan were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This plan is solely for the use and information of our client unless otherwise noted. Any reliance on this plan by a third party is at such party's sole risk.

Opinions and recommendations contained in this plan apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this plan.

Figure

MAUL
FOSTER
ALONGI

Figure
Organization Chart
Former Park Laundry Site, Ridgefield, Washington



Legend

🟧 City of Ridgefield administration: program planning and tracking, agency interface, strategy, stakeholder outreach

▨ Technical program administration: remedial design, deliverables, schedules, budgets, subcontractor administration, information management, project implementation

🟩 Contracted services

🟦 Washington State Department of Commerce and Ecology

Tables

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Table 2-1
Project Contact List
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Contact Name	Title	Organization	Email	Telephone
Kirk Johnson	Finance Director	City of Ridgefield	kirk.johnson@ridgefieldwa.us	360-857-5008
James Maul	Owner's Representative	Gemini	jmaul@geminienvironmentalstrategies.com	360-903-8633
Marian Abbett	Acting Section Manager - Toxics Cleanup Program	Ecology	mabb461@ecy.wa.gov	360-999-9603
Cam Penner-Ash	Ecology Site Manager	Ecology	cpen461@ecy.wa.gov	360-999-9590
Joshua Elliott	Program Manager	MFA	jelliott@maulfoster.com	503-501-5236
Meaghan Pollock	Project Manager	MFA	mpollock@maulfoster.com	360-947-2206
Krysta Krippaenhe-Stein	Field Team Leader/On-Site Safety Officer, and Contract Administration	MFA	kstein@maulfoster.com	360-947-2218
Nicole Bruneel	MFA Health and Safety Coordinator	MFA	nbruneel@maulfoster.com	208-949-3981
Mary Benzinger	Quality Assurance Manager/Database Manager/Project Chemist	MFA	mbenzinger@maulfoster.com	971-544-7845

Notes

Ecology = Washington State Department of Ecology.

Gemini = Gemini Environmental Strategies, LLC

MFA = Maul Foster & Alongi, Inc.

Table 4-1
Monitoring Well Sampling and Analysis Summary
Samplng and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Location	Screen Interval (ft bgs)	Sample Depth[(a)] (ft bgs)	Matrix	Analytical Suite						
				CVOCs[(b)]	Total Metals[(c)]	Ferrous Iron	Anions[(d)]	TOC	Alkalinity	Dissolved Gases[(e)]
MW02	9.5 - 14.5	12.0	GW	X						
MW03	10 - 15	12.5		X	X	X	X	X	X	X
MW04	11.5 - 16.5	14.0		X	X	X	X	X	X	X
MW05	12 - 17	14.5		X	X	X	X	X	X	X
MW06	12 - 17	14.5		X						
MW07	11 - 16	13.5		X						
MW09	9 - 14	11.5		X						
MW10	25 - 30	27.5		X						
MW11	15 - 20	17.5		X						
MW13	15 - 20	17.5		X	X	X	X	X	X	X
MW15	55 - 65	60.0		X						
MW16	55 - 65	60.0		X						
MW20	5 - 10	7.5		X						
MW-23D	100-110	105.0		X						
MW-24D	100-110	105.0		X						
MW-25D	90-100	95.0		X						
MW-29D	43-53	48.5		X						
MW-46D	38-48	45.0		X						
MW-47D	41-51	48.5		X						

Notes

BOD = biochemical oxygen demand.

COD = chemical oxygen demand.

CVOCs = chlorinated volatile organic compounds.

DOC = dissolved organic carbon.

EPA = U.S. Environmental Protection Agency.

ft bgs = feet below ground surface.

GW = groundwater.

LL = low level.

NA = not available.

TOC = total organic carbon.

VFA = volatile fatty acids.

VOC = volatile organic compound.

X = analyze.

(a) Sample depth is based on midpoint of screen interval and may change based on groundwater levels during monitoring.

(b) CVOCs to include tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, vinyl chloride.

(c) Total metals include iron, calcium, magnesium, and manganese.

(d) Anions include chloride, sulfate, and nitrate.

(e) Dissolved gases include ethene, ethane, and methane.

Table 6-1
Analytical Methods and Performance Criteria for Soil
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Method	Parameter	Soil REL[1] (mg/kg)	MDL (mg/kg)	MRL (mg/kg)	LCS Accuracy (%)	MS Accuracy (%)	Precision (RPD)	Completeness (%)
Volatile Organic Compounds								
EPA 8260D	Tetrachloroethene (PCE)	0.05	0.00100	0.00200	80-120	73-128	30	90

Notes

Limits provided by Apex Laboratories, LLC. Actual MDLs and MRLs may differ based on sample matrix and/or dilutions.

EPA = U.S. Environmental Protection Agency.

LCS = laboratory control sample.

MDL = method detection limit.

mg/kg = milligrams per kilogram.

MRL = method reporting limit.

MS = matrix spike.

REL = remediation level.

RPD = relative percent difference.

Reference

(1)Ecology. 2024. *Former Park Laundry: Draft Cleanup Action Plan.* Washington State Department of Ecology, Toxics Cleanup Program. Lacey, WA.

Table 6-2
Analytical Methods and Performance Criteria for Groundwater
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Method	Parameter	Units	Final Groundwater CUL(1)	MDL	MRL	LCS Accuracy (%)	MS Accuracy (%)	Precision (RPD)	Completeness (%)
Volatile Organic Compounds									
EPA 8260D (LL)	Tetrachloroethene (PCE)	ug/L	2.4	0.00100	0.00200	80-120	73-128	30	90
	Trichloroethene (TCE)	ug/L	0.3	0.00100	0.00200	80-120	77-123	30	90
	1,1-Dichloroethane	ug/L	7	0.00100	0.00200	80-120	76-125	30	90
	cis-1,2-Dichloroethene	ug/L	16	0.00100	0.00200	80-120	77-123	30	90
	trans-1,2-Dichloroethene	ug/L	100	0.00100	0.00200	80-120	74-125	30	90
	Vinyl chloride	ug/L	0.02	0.00500	0.01000	80-120	56-135	30	90
Geochemical Parameters									
EPA 6020B	Calcium (total)	ug/L	--	300	600	80-120	75-125	20	90
	Iron (total)	ug/L	--	25.0	50.0	80-120	75-125	20	90
	Magnesium (total)	ug/L	--	75.0	150	80-120	75-125	20	90
	Manganese (total)	ug/L	--	0.500	1.00	80-120	75-125	20	90
Hach Field Kit	Ferrous Iron(a)	mg/L	--	--	--	--	--	--	--
EPA 300.0	Sulfate	ug/L	--	500	1000	90-110	88-115	4	90
	Nitrate	ug/L	--	125	250	90-110	87-112	3	90
	Chloride	ug/L	--	500	1000	90-110	90-113	3	90
SM 5310C	TOC	ug/L	--	1,000	1,000	90-114	85-115	15	90
SM 2320B	Alkalinity	mg $CaCO_3$/L	--	20.0	20.0	90-115	--	--	90
RSK-175	Methane	mg/L	--	0.00451	0.005	73-124	--	30	90
	Ethane	mg/L	--	0.00754	0.01	76-123	--	30	90
	Ethene	mg/L	--	0.0061	0.01	76-122	--	30	90

Table 6-2
Analytical Methods and Performance Criteria for Groundwater
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Notes

[a] Detection range 0 to 15.0 mg/L ferrous iron in 0.5-mg/L increments. Testing conducted in the field using a Hach iron (ferrous) color disc test kit.

Limits provided by Apex Laboratories, LLC and Alliance Technical Group (formerly Fremont Analytical, Inc.). Actual MDLs and MRLs may differ based on sample matrix and/or dilutions.

-- = not applicable or not available.
BOD = biochemical oxygen demand.
COD = chemical oxygen demand.
CUL = cleanup level.
DOC = dissolved organic carbon.
EPA = U.S. Environmental Protection Agency.
LCS = laboratory control sample.
LL = low level.
MDL = method detection limit.
mg $CaCO_3$/L = milligrams calcium carbonate per liter.
mg/L = milligrams per liter.
MRL = method reporting limit.
MS = matrix spike.
NV = no value.
RPD = relative percent difference.
SM = standard method.
TOC = total organic carbon.
VFA = volatile fatty acids.

Reference

[1] Ecology. 2024. *Former Park Laundry: Draft Cleanup Action Plan.* Washington State Department of Ecology, Toxics Cleanup Program. Lacey, WA.

Table 7-1
Containers, Preservation, and Holding Times
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Sample Matrix	Method	Analyte	Container	Preservation (store all at 4°C)	Holding Time
Groundwater	EPA 8260D (LL)	Tetrachloroethene (PCE)	40-mL VOA vials	HCl to pH < 2	14 days
		Trichloroethene (TCE)			
		1,1-Dichloroethane			
		cis-1,2-Dichloroethene			
		trans-1,2-Dichloroethene			
		Vinyl chloride			
	EPA 6020B	Calcium (total)	250-mL poly	HNO_3 to pH <2	180 days
		Iron (total)			
		Magnesium (total)			
		Manganese (total)			
	EPA ApplEnvMic7-87-1536	Ferrous Iron	25-mL vial	None	15 minutes
	EPA 300.0	Sulfate	250-mL poly	None	48 hours
		Nitrate			
		Chloride			
	SM 5310C	TOC	250-mL poly	H_2SO_4 to pH<2	28 days
	SM 2320B	Alkalinity	250-mL poly	None	14 days
	RSK-175/ASTM D1945	Methane	40-mL VOA vials	HCl to pH < 2	14 days
		Ethane			
		Ethene			
Soil	EPA 8260D	Tetrachloroethene (PCE)	EPA 5035 kit[(a)]	MeOH	14 days

Notes

°C = degrees Celsius.

EPA = U.S. Environmental Protection Agency.

FF = field-filtered.

H_2SO_4 = sulfuric acid.

HCl = hydrochloric acid.

HNO_3 = nitric acid.

L = liter.

LL = low level.

MeOH = methanol.

mL = milliliter.

VOA = volatile organic analysis.

(a) 5035 sample kit includes two prepared 40-mL VOA bottles with 5 mL of methanol and one 2-ounce jar for moisture determination.

Table 8-1
Field Quality Control Sample Summary
Sampling and Analysis Plan/Quality Assurance Project Plan
Former Park Laundry Site, Ridgefield, Washington

Type	Frequency	Acceptance Criteria
Equipment Rinsate Blank	One per every 20 samples (or fewer) collected with non-dedicated equipment	Below MRL[(a)]
Trip Blank	One per sample cooler containing field samples analyzed for VOCs	Below MRL[(a)]
Temperature Blank	One per sample cooler	4°C (±2°C)
Field Duplicate	One per every twenty samples (or fewer) per sample matrix	50% RPD[(a)]

Notes

°C = degrees Celsius.

MRL = method reporting limit.

RPD = relative percent difference.

VOC = volatile organic compound.

(a)Criteria may change based on data validation.

Appendix A

Laboratory Accreditations

MAUL
FOSTER
ALONGI

The State of Washington
Department of Ecology

1889

Apex Laboratories, LLC

Tigard, OR

has complied with provisions set forth in Chapter 173-50 WAC and is hereby recognized by the Department of Ecology as an ACCREDITED LABORATORY for the analytical parameters listed on the accompanying Scope of Accreditation.

This certificate is effective November 1, 2023 and shall expire October 31, 2024.

Witnessed under my hand on November 06, 2023.

Rebecca Wood

Rebecca Wood
Lab Accreditation Unit Supervisor

Laboratory ID
C903

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

SCOPE OF ACCREDITATION

Apex Laboratories, LLC

Tigard, OR

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. EPA is the U.S. Environmental Protection Agency. SM is "Standard Methods for the Examination of Water and Wastewater." SM refers to EPA approved method versions. ASTM is the American Society for Testing and Materials. USGS is the U.S. Geological Survey. AOAC is the Association of Official Analytical Chemists. Other references are described in notes.

Matrix/Analyte	Method	Notes
Drinking Water		
Arsenic	EPA 200.8_5.4_1994	1
Copper	EPA 200.8_5.4_1994	1
Lead	EPA 200.8_5.4_1994	1
Non-Potable Water		
Cyanide, Free	ASTM D4282-02	1
Cyanide, Available	ASTM D6888-09	1
Cyanide, Free	ASTM D7237-15A	1
Cyanide, Total	ASTM D7511-12 (2017)	1
Silica Gel Treated-Hexane Extractable Material	EPA 1664B (SGT-HEM)	1
n-Hexane Extractable Material (O&G)	EPA 1664B -10 (HEM)	1
Bromide	EPA 300.0_2.1_1993	1
Chloride	EPA 300.0_2.1_1993	1
Fluoride	EPA 300.0_2.1_1993	1
Nitrate as N	EPA 300.0_2.1_1993	1,6
Nitrite as N	EPA 300.0_2.1_1993	1
Sulfate	EPA 300.0_2.1_1993	1
Cyanide, Total	EPA 335.4_1_1993	1
Nitrogen, Total Kjeldahl	EPA 351.2_2_1993	1
Nitrate + Nitrite	EPA 353.2_2_1993	1
Nitrate as N	EPA 353.2_2_1993	1
Nitrite as N	EPA 353.2_2_1993	1
Turbidity	SM 2130 B-2011	1
Alkalinity	SM 2320 B-2011	1
Hardness (calc.)	SM 2340 B-2011	1
Specific Conductance	SM 2510 B-2011	1
Solids, Total	SM 2540 B-2015	1

Matrix/Analyte	**Method**	**Notes**
Non-Potable Water		
Solids, Total Dissolved	SM 2540 C-2015	1
Solids, Total Suspended	SM 2540 D-2015	1
Solids, Total, Fixed and Volatile	SM 2540 E-2011	1,7
Solids, Settleable	SM 2540 F-2015	1,6
Chromium, Hexavalent	SM 3500-Cr B-2011	1
Chlorine (Residual), Total	SM 4500-Cl G-2011	1,2,3
Cyanide, Total	SM 4500-CN¯ E-2016	1
Cyanides, Amenable to Chlorination	SM 4500-CN¯ G-2016	1
Cyanide, Weak Acid Dissociable	SM 4500-CN¯ I-2016	1,10
Fluoride	SM 4500-F¯ C-2011	1
pH	SM 4500-H+ B-2011	1
Ammonia	SM 4500-NH3 G-2011	1
Nitrogen, Total Kjeldahl	SM 4500-Norg D-2011	1
Organic Nitrogen	SM 4500-Norg D-2011	1
Dissolved Oxygen	SM 4500-O H-2016	1
Orthophosphate	SM 4500-P E-2011	1
Phosphorus, Total	SM 4500-P E-2011	1
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	1,3
Carbonaceous BOD (CBOD)	SM 5210 B-2016	1,3
Chemical Oxygen Demand (COD)	SM 5220 D-2011	1
Dissolved Organic Carbon	SM 5310 C-2014	1
Total Organic Carbon	SM 5310 C-2014	1
Mercury	EPA 1631 E-02	1
Aluminum	EPA 200.8_5.4_1994	1
Antimony	EPA 200.8_5.4_1994	1
Arsenic	EPA 200.8_5.4_1994	1
Barium	EPA 200.8_5.4_1994	1
Beryllium	EPA 200.8_5.4_1994	1
Bismuth	EPA 200.8_5.4_1994	1
Boron	EPA 200.8_5.4_1994	1,6
Cadmium	EPA 200.8_5.4_1994	1
Calcium	EPA 200.8_5.4_1994	1
Chromium	EPA 200.8_5.4_1994	1
Cobalt	EPA 200.8_5.4_1994	1
Copper	EPA 200.8_5.4_1994	1
Iron	EPA 200.8_5.4_1994	1
Lanthanum	EPA 200.8_5.4_1994	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
Lead	EPA 200.8_5.4_1994	1
Lithium	EPA 200.8_5.4_1994	1
Magnesium	EPA 200.8_5.4_1994	1
Manganese	EPA 200.8_5.4_1994	1
Mercury	EPA 200.8_5.4_1994	1
Molybdenum	EPA 200.8_5.4_1994	1
Nickel	EPA 200.8_5.4_1994	1
Phosphorus, Total	EPA 200.8_5.4_1994	1
Potassium	EPA 200.8_5.4_1994	1
Selenium	EPA 200.8_5.4_1994	1
Silicon	EPA 200.8_5.4_1994	1
Silver	EPA 200.8_5.4_1994	1
Sodium	EPA 200.8_5.4_1994	1
Strontium	EPA 200.8_5.4_1994	1
Thallium	EPA 200.8_5.4_1994	1,6
Tin	EPA 200.8_5.4_1994	1
Titanium	EPA 200.8_5.4_1994	1
Uranium	EPA 200.8_5.4_1994	1
Vanadium	EPA 200.8_5.4_1994	1
Zinc	EPA 200.8_5.4_1994	1
Zirconium	EPA 200.8_5.4_1994	1
Silica	SM 4500-SiO2 C-2011	1
2,4'-DDD	EPA 608.3	1
2,4'-DDE	EPA 608.3	1
2,4'-DDT	EPA 608.3	1
4,4'-DDD	EPA 608.3	1
4,4'-DDE	EPA 608.3	1
4,4'-DDT	EPA 608.3	1
Aldrin	EPA 608.3	1
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608.3	1
alpha-Chlordane	EPA 608.3	1
Aroclor-1016 (PCB-1016)	EPA 608.3	1
Aroclor-1221 (PCB-1221)	EPA 608.3	1
Aroclor-1232 (PCB-1232)	EPA 608.3	1
Aroclor-1242 (PCB-1242)	EPA 608.3	1
Aroclor-1248 (PCB-1248)	EPA 608.3	1
Aroclor-1254 (PCB-1254)	EPA 608.3	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
Aroclor-1260 (PCB-1260)	EPA 608.3	1
Aroclor-1262 (PCB-1262)	EPA 608.3	1
Aroclor-1268 (PCB-1268)	EPA 608.3	1
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608.3	1
Chlordane (tech.)	EPA 608.3	1
cis-Nonachlor	EPA 608.3	1
delta-BHC	EPA 608.3	1
Dieldrin	EPA 608.3	1
Endosulfan I	EPA 608.3	1
Endosulfan II	EPA 608.3	1
Endosulfan sulfate	EPA 608.3	1
Endrin	EPA 608.3	1
Endrin aldehyde	EPA 608.3	1
Endrin ketone	EPA 608.3	1
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 608.3	1
gamma-Chlordane	EPA 608.3	1
Heptachlor	EPA 608.3	1
Heptachlor epoxide	EPA 608.3	1
Methoxychlor	EPA 608.3	1
Mirex	EPA 608.3	1
Oxychlordane	EPA 608.3	1
Toxaphene (Chlorinated camphene)	EPA 608.3	1
trans Nanochlor	EPA 608.3	1
Diesel range organics (DRO)	WDOE NWTPH-Dx_(1997)	1
1,1,1,2-Tetrachloroethane	EPA 624.1	1
1,1,1-Trichloroethane	EPA 624.1	1
1,1,2,2-Tetrachloroethane	EPA 624.1	1
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 624.1	1
1,1,2-Trichloroethane	EPA 624.1	1
1,1-Dichloroethane	EPA 624.1	1
1,1-Dichloroethylene	EPA 624.1	1
1,1-Dichloropropene	EPA 624.1	1
1,2,3-Trichlorobenzene	EPA 624.1	1
1,2,3-Trichloropropane	EPA 624.1	1
1,2,4-Trimethylbenzene	EPA 624.1	1
1,2-Dibromo-3-chloropropane (DBCP)	EPA 624.1	1
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 624.1	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
1,2-Dichlorobenzene	EPA 624.1	1
1,2-Dichloroethane (Ethylene dichloride)	EPA 624.1	1
1,2-Dichloropropane	EPA 624.1	1
1,3,5-Trimethylbenzene	EPA 624.1	1
1,3-Dichlorobenzene	EPA 624.1	1
1,3-Dichloropropane	EPA 624.1	1
1,4-Dichlorobenzene	EPA 624.1	1
2,2-Dichloropropane	EPA 624.1	1
2-Butanone (Methyl ethyl ketone, MEK)	EPA 624.1	1
2-Chloroethyl vinyl ether	EPA 624.1	1
2-Chlorotoluene	EPA 624.1	1
2-Hexanone	EPA 624.1	1
4-Chlorotoluene	EPA 624.1	1
4-Isopropyltoluene (p-Cymene)	EPA 624.1	1
4-Methyl-2-pentanone (MIBK)	EPA 624.1	1
Acetone	EPA 624.1	1
Acrolein (Propenal)	EPA 624.1	1
Acrylonitrile	EPA 624.1	1
Benzene	EPA 624.1	1
Bromobenzene	EPA 624.1	1
Bromochloromethane	EPA 624.1	1
Bromodichloromethane	EPA 624.1	1
Bromoform	EPA 624.1	1
Carbon disulfide	EPA 624.1	1
Carbon tetrachloride	EPA 624.1	1
Chlorobenzene	EPA 624.1	1
Chlorodibromomethane	EPA 624.1	1
Chloroethane (Ethyl chloride)	EPA 624.1	1
Chloroform	EPA 624.1	1
cis-1,2-Dichloroethylene	EPA 624.1	1
cis-1,3-Dichloropropene	EPA 624.1	1
Dibromomethane	EPA 624.1	1
Dichlorodifluoromethane (Freon-12)	EPA 624.1	1
Ethylbenzene	EPA 624.1	1
Hexachlorobutadiene	EPA 624.1	1
Isopropylbenzene	EPA 624.1	1
m+p-xylene	EPA 624.1	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
Methyl bromide (Bromomethane)	EPA 624.1	1
Methyl chloride (Chloromethane)	EPA 624.1	1
Methyl tert-butyl ether (MTBE)	EPA 624.1	1
Methylene chloride (Dichloromethane)	EPA 624.1	1
n-Butylbenzene	EPA 624.1	1
n-Propylbenzene	EPA 624.1	1
o-Xylene	EPA 624.1	1
sec-Butylbenzene	EPA 624.1	1
Styrene	EPA 624.1	1
tert-Butylbenzene	EPA 624.1	1
Tetrachloroethylene (Perchloroethylene)	EPA 624.1	1
Toluene	EPA 624.1	1
trans-1,2-Dichloroethylene	EPA 624.1	1
trans-1,3-Dichloropropylene	EPA 624.1	1
Trichloroethene (Trichloroethylene)	EPA 624.1	1
Trichlorofluoromethane (Freon 11)	EPA 624.1	1
Vinyl acetate	EPA 624.1	1
Vinyl chloride	EPA 624.1	1
Xylene (total)	EPA 624.1	1
1,1'-Biphenyl (BZ-0)	EPA 625.1	1
1,2,4-Trichlorobenzene	EPA 625.1	1
1,2-Dinitrobenzene	EPA 625.1	1
1,3-Dinitrobenzene (1,3-DNB)	EPA 625.1	1
1,4-Dinitrobenzene	EPA 625.1	1
1-Methylnaphthalene	EPA 625.1	1
2,2'-Oxybis(1-chloropropane)	EPA 625.1	1
2,3,4,6-Tetrachlorophenol	EPA 625.1	1
2,3,5,6-Tetrachlorophenol	EPA 625.1	1
2,4,5-Trichlorophenol	EPA 625.1	1
2,4,6-Trichlorophenol	EPA 625.1	1
2,4-Dichlorophenol	EPA 625.1	1
2,4-Dimethylphenol	EPA 625.1	1
2,4-Dinitrophenol	EPA 625.1	1
2,4-Dinitrotoluene (2,4-DNT)	EPA 625.1	1
2,6-Dichlorophenol	EPA 625.1	1
2,6-Dinitrotoluene (2,6-DNT)	EPA 625.1	1
2-Chloronaphthalene	EPA 625.1	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
2-Chlorophenol	EPA 625.1	1
2-Methylnaphthalene	EPA 625.1	1
2-Methylphenol (o-Cresol)	EPA 625.1	1
2-Nitroaniline	EPA 625.1	1
2-Nitrophenol	EPA 625.1	1
3 & 4-Methylphenol	EPA 625.1	1
3,3'-Dichlorobenzidine	EPA 625.1	1
3,4-Dichlorophenol	EPA 625.1	1
3-Nitroaniline	EPA 625.1	1
4,6-Dinitro-2-methylphenol	EPA 625.1	1
4-Bromophenyl phenyl ether (BDE-3)	EPA 625.1	1
4-Chloro-3-methylphenol	EPA 625.1	1
4-Chloroaniline	EPA 625.1	1
4-Chlorophenyl phenylether	EPA 625.1	1
4-Nitroaniline	EPA 625.1	1
4-Nitrophenol	EPA 625.1	1
Acenaphthene	EPA 625.1	1
Acenaphthylene	EPA 625.1	1
Aniline	EPA 625.1	1
Anthracene	EPA 625.1	1
Azobenzene	EPA 625.1	1
Benzidine	EPA 625.1	1
Benzo(a)anthracene	EPA 625.1	1
Benzo(a)pyrene	EPA 625.1	1
Benzo(g,h,i)perylene	EPA 625.1	1
Benzo(k)fluoranthene	EPA 625.1	1
Benzo[b]fluoranthene	EPA 625.1	1
Benzoic acid	EPA 625.1	1
Benzyl alcohol	EPA 625.1	1
bis(2-Chloroethoxy)methane	EPA 625.1	1
bis(2-Chloroethyl) ether	EPA 625.1	1
bis(2-Ethylhexyl) phthalate (DEHP)	EPA 625.1	1
Butyl benzyl phthalate	EPA 625.1	1
Carbazole	EPA 625.1	1
Chrysene	EPA 625.1	1
Coelution - 3-Chlorophenol + 4-Chlorophenol	EPA 625.1	1
Di(2-ethylhexyl)adipate	EPA 625.1	1

Matrix/Analyte	Method	Notes
Non-Potable Water		
Dibenz(a,h) anthracene	EPA 625.1	1
Dibenzofuran	EPA 625.1	1
Diethyl phthalate	EPA 625.1	1
Dimethyl phthalate	EPA 625.1	1
Di-n-butyl phthalate	EPA 625.1	1
Di-n-octyl phthalate	EPA 625.1	1
Fluoranthene	EPA 625.1	1
Fluorene	EPA 625.1	1
Hexachlorobenzene	EPA 625.1	1
Hexachlorobutadiene	EPA 625.1	1
Hexachlorocyclopentadiene	EPA 625.1	1
Hexachloroethane	EPA 625.1	1
Indeno(1,2,3-cd) pyrene	EPA 625.1	1
Isophorone	EPA 625.1	1
Naphthalene	EPA 625.1	1
n-Decane	EPA 625.1	1
Nitrobenzene	EPA 625.1	1
N-Nitrosodimethylamine	EPA 625.1	1
N-Nitroso-di-n-propylamine	EPA 625.1	1
N-Nitrosodiphenylamine	EPA 625.1	1
n-Octadecane	EPA 625.1	1
Pentachlorophenol	EPA 625.1	1
Perylene	EPA 625.1	1
Phenanthrene	EPA 625.1	1
Phenol	EPA 625.1	1
Pyrene	EPA 625.1	1
Pyridine	EPA 625.1	1
Gasoline range organics (GRO)	WDOE NWTPH-Gx_(1997)	1,9
Fecal coliform-count	Colilert 18® QTray® (Fecal coliform in wastewater)	1
E.coli-count	SM 9223 B Colilert® 24 QTray®	1
Total coliforms-count	SM 9223 B Colilert® 24 QTray®	1
Solid and Chemical Materials		
Percent Moisture	ASTM D2216-10	1
Cyanide, Total	ASTM D7511-12	1,6
Nitrite as N	EPA 353.2_2_1993	1
Chromium, Hexavalent	EPA 7196A_1_1992	1

Matrix/Analyte	**Method**	**Notes**
Solid and Chemical Materials		
Motor Oil	EPA 8015D_4_(6/03)	1
Cyanide, Total	EPA 9012 B-02	1
Cyanides, Amenable to Chlorination	EPA 9012 B-02	1
pH	EPA 9045D_2002	1
Bromide	EPA 9056A_(02/07)	1
Chloride	EPA 9056A_(02/07)	1
Fluoride	EPA 9056A_(02/07)	1
Nitrate as N	EPA 9056A_(02/07)	1
Nitrite as N	EPA 9056A_(02/07)	1
Sulfate	EPA 9056A_(02/07)	1
Total Organic Carbon	EPA 9060A_1_2004	1
Total Organic Carbon	PSEP 1986 Combust/Grav	1
Alkalinity	SM 2320 B-2011	1,4
Specific Conductance	SM 2510 B-2011	1,4
Solids, Total, Fixed and Volatile	SM 2540 G-2015	1,5
Cyanide, Total	SM 4500-CN$^-$ E-2016	1
Cyanides, Amenable to Chlorination	SM 4500-CN$^-$ G-2016	1
Cyanide, Weak Acid Dissociable	SM 4500-CN$^-$ I-2016	1
Fluoride	SM 4500-F$^-$ C-2011	1
Ammonia	SM 4500-NH3 G-2011	1
Phosphorus, Total	SM 4500-P E-2011	1
Total Organic Carbon	SM 5310 B-2011	1
Mercury	EPA 1631 E-02	1
Aluminum	EPA 6020B_(7/14)	1
Antimony	EPA 6020B_(7/14)	1
Arsenic	EPA 6020B_(7/14)	1
Barium	EPA 6020B_(7/14)	1
Beryllium	EPA 6020B_(7/14)	1
Bismuth	EPA 6020B_(7/14)	1
Boron	EPA 6020B_(7/14)	1
Cadmium	EPA 6020B_(7/14)	1
Calcium	EPA 6020B_(7/14)	1
Chromium	EPA 6020B_(7/14)	1
Cobalt	EPA 6020B_(7/14)	1
Copper	EPA 6020B_(7/14)	1
Iron	EPA 6020B_(7/14)	1
Lanthanum	EPA 6020B_(7/14)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Lead	EPA 6020B_(7/14)	1
Lithium	EPA 6020B_(7/14)	1
Magnesium	EPA 6020B_(7/14)	1
Manganese	EPA 6020B_(7/14)	1
Mercury	EPA 6020B_(7/14)	1
Molybdenum	EPA 6020B_(7/14)	1
Nickel	EPA 6020B_(7/14)	1
Phosphorus, Total	EPA 6020B_(7/14)	1
Potassium	EPA 6020B_(7/14)	1
Selenium	EPA 6020B_(7/14)	1
Silicon	EPA 6020B_(7/14)	1
Silver	EPA 6020B_(7/14)	1
Sodium	EPA 6020B_(7/14)	1
Strontium	EPA 6020B_(7/14)	1
Thallium	EPA 6020B_(7/14)	1
Tin	EPA 6020B_(7/14)	1
Titanium	EPA 6020B_(7/14)	1
Uranium	EPA 6020B_(7/14)	1
Vanadium	EPA 6020B_(7/14)	1
Zinc	EPA 6020B_(7/14)	1
Zirconium	EPA 6020B_(7/14)	1
Diesel range organics (DRO)	EPA 8015D_4_(6/03)	1
Gasoline range organics (GRO)	EPA 8015D_4_(6/03)	1
2,4'-DDD	EPA 8081B_(2/07)	1
2,4'-DDE	EPA 8081B_(2/07)	1
2,4'-DDT	EPA 8081B_(2/07)	1
4,4'-DDD	EPA 8081B_(2/07)	1
4,4'-DDE	EPA 8081B_(2/07)	1
4,4'-DDT	EPA 8081B_(2/07)	1
Aldrin	EPA 8081B_(2/07)	1
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081B_(2/07)	1
alpha-Chlordane	EPA 8081B_(2/07)	1
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081B_(2/07)	1
Chlordane (tech.)	EPA 8081B_(2/07)	1
cis-Nonachlor	EPA 8081B_(2/07)	1
delta-BHC	EPA 8081B_(2/07)	1
Dieldrin	EPA 8081B_(2/07)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Endosulfan I	EPA 8081B_(2/07)	1
Endosulfan II	EPA 8081B_(2/07)	1
Endosulfan sulfate	EPA 8081B_(2/07)	1
Endrin	EPA 8081B_(2/07)	1
Endrin aldehyde	EPA 8081B_(2/07)	1
Endrin ketone	EPA 8081B_(2/07)	1
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8081B_(2/07)	1
gamma-Chlordane	EPA 8081B_(2/07)	1
Heptachlor	EPA 8081B_(2/07)	1
Heptachlor epoxide	EPA 8081B_(2/07)	1
Methoxychlor	EPA 8081B_(2/07)	1
Mirex	EPA 8081B_(2/07)	1
Oxychlordane	EPA 8081B_(2/07)	1
Toxaphene (Chlorinated camphene)	EPA 8081B_(2/07)	1
trans-Nonachlor	EPA 8081B_(2/07)	1
Aroclor-1016 (PCB-1016)	EPA 8082A_(2/07)	1
Aroclor-1221 (PCB-1221)	EPA 8082A_(2/07)	1
Aroclor-1232 (PCB-1232)	EPA 8082A_(2/07)	1
Aroclor-1242 (PCB-1242)	EPA 8082A_(2/07)	1
Aroclor-1248 (PCB-1248)	EPA 8082A_(2/07)	1
Aroclor-1254 (PCB-1254)	EPA 8082A_(2/07)	1
Aroclor-1260 (PCB-1260)	EPA 8082A_(2/07)	1
Aroclor-1262 (PCB-1262)	EPA 8082A_(2/07)	1
Aroclor-1268 (PCB-1268)	EPA 8082A_(2/07)	1
Diesel range organics (DRO)	WDOE NWTPH-Dx_(1997)	1
Motor Oil	WDOE NWTPH-Dx_(1997)	1
1,1,1,2-Tetrachloroethane	EPA 8260D_4_(6/18)	1
1,1,1-Trichloroethane	EPA 8260D_4_(6/18)	1
1,1,2,2-Tetrachloroethane	EPA 8260D_4_(6/18)	1
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D_4_(6/18)	1
1,1,2-Trichloroethane	EPA 8260D_4_(6/18)	1
1,1-Dichloroethane	EPA 8260D_4_(6/18)	1
1,1-Dichloroethylene	EPA 8260D_4_(6/18)	1
1,1-Dichloropropene	EPA 8260D_4_(6/18)	1
1,2,3-Trichlorobenzene	EPA 8260D_4_(6/18)	1
1,2,3-Trichloropropane	EPA 8260D_4_(6/18)	1
1,2,4-Trichlorobenzene	EPA 8260D_4_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
1,2,4-Trimethylbenzene	EPA 8260D_4_(6/18)	1
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260D_4_(6/18)	1
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D_4_(6/18)	1
1,2-Dichlorobenzene	EPA 8260D_4_(6/18)	1
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D_4_(6/18)	1
1,2-Dichloropropane	EPA 8260D_4_(6/18)	1
1,3,5-Trimethylbenzene	EPA 8260D_4_(6/18)	1
1,3-Dichlorobenzene	EPA 8260D_4_(6/18)	1
1,3-Dichloropropane	EPA 8260D_4_(6/18)	1
1,4-Dichlorobenzene	EPA 8260D_4_(6/18)	1
2,2-Dichloropropane	EPA 8260D_4_(6/18)	1
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D_4_(6/18)	1
2-Chloroethyl vinyl ether	EPA 8260D_4_(6/18)	1,4
2-Chlorotoluene	EPA 8260D_4_(6/18)	1
2-Hexanone	EPA 8260D_4_(6/18)	1
4-Chlorotoluene	EPA 8260D_4_(6/18)	1
4-Isopropyltoluene (p-Cymene)	EPA 8260D_4_(6/18)	1
4-Methyl-2-pentanone (MIBK)	EPA 8260D_4_(6/18)	1
Acetone	EPA 8260D_4_(6/18)	1
Acrolein (Propenal)	EPA 8260D_4_(6/18)	1,4
Acrylonitrile	EPA 8260D_4_(6/18)	1
Benzene	EPA 8260D_4_(6/18)	1
Bromobenzene	EPA 8260D_4_(6/18)	1
Bromochloromethane	EPA 8260D_4_(6/18)	1
Bromodichloromethane	EPA 8260D_4_(6/18)	1
Bromoform	EPA 8260D_4_(6/18)	1
Carbon disulfide	EPA 8260D_4_(6/18)	1
Carbon tetrachloride	EPA 8260D_4_(6/18)	1
Chlorobenzene	EPA 8260D_4_(6/18)	1
Chlorodibromomethane	EPA 8260D_4_(6/18)	1
Chloroethane (Ethyl chloride)	EPA 8260D_4_(6/18)	1
Chloroform	EPA 8260D_4_(6/18)	1
cis-1,2-Dichloroethylene	EPA 8260D_4_(6/18)	1
cis-1,3-Dichloropropene	EPA 8260D_4_(6/18)	1
Dibromomethane	EPA 8260D_4_(6/18)	1
Dichlorodifluoromethane (Freon-12)	EPA 8260D_4_(6/18)	1
Di-isopropylether (DIPE)	EPA 8260D_4_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Ethanol	EPA 8260D_4_(6/18)	1
Ethylbenzene	EPA 8260D_4_(6/18)	1
Ethyl-t-butylether (ETBE)	EPA 8260D_4_(6/18)	1
Hexachlorobutadiene	EPA 8260D_4_(6/18)	1
Iodomethane (Methyl iodide)	EPA 8260D_4_(6/18)	1
Isobutyl alcohol (2-Methyl-1-propanol)	EPA 8260D_4_(6/18)	1
Isopropylbenzene	EPA 8260D_4_(6/18)	1
m+p-xylene	EPA 8260D_4_(6/18)	1
Methyl bromide (Bromomethane)	EPA 8260D_4_(6/18)	1
Methyl chloride (Chloromethane)	EPA 8260D_4_(6/18)	1
Methyl tert-butyl ether (MTBE)	EPA 8260D_4_(6/18)	1
Methylene chloride (Dichloromethane)	EPA 8260D_4_(6/18)	1
Naphthalene	EPA 8260D_4_(6/18)	1
n-Butylbenzene	EPA 8260D_4_(6/18)	1
n-Hexane	EPA 8260D_4_(6/18)	1
n-Propylbenzene	EPA 8260D_4_(6/18)	1
o-Xylene	EPA 8260D_4_(6/18)	1
sec-Butylbenzene	EPA 8260D_4_(6/18)	1
Styrene	EPA 8260D_4_(6/18)	1
tert-Amyl ethyl ether (TAEE)	EPA 8260D_4_(6/18)	1
tert-amylmethylether (TAME)	EPA 8260D_4_(6/18)	1
tert-Butyl alcohol	EPA 8260D_4_(6/18)	1
tert-Butylbenzene	EPA 8260D_4_(6/18)	1
Tetrachloroethylene (Perchloroethylene)	EPA 8260D_4_(6/18)	1
Tetrahydrofuran (THF)	EPA 8260D_4_(6/18)	1
Toluene	EPA 8260D_4_(6/18)	1
trans-1,2-Dichloroethylene	EPA 8260D_4_(6/18)	1
trans-1,3-Dichloropropylene	EPA 8260D_4_(6/18)	1
trans-1,4-Dichloro-2-butene	EPA 8260D_4_(6/18)	1
Trichloroethene (Trichloroethylene)	EPA 8260D_4_(6/18)	1
Trichlorofluoromethane (Freon 11)	EPA 8260D_4_(6/18)	1
Vinyl acetate	EPA 8260D_4_(6/18)	1,4
Vinyl chloride	EPA 8260D_4_(6/18)	1
Xylene (total)	EPA 8260D_4_(6/18)	1
1,1'-Biphenyl (BZ-0)	EPA 8270E_6_(6/18)	1
1,2,4-Trichlorobenzene	EPA 8270E_6_(6/18)	1
1,2-Dichlorobenzene	EPA 8270E_6_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
1,2-Dinitrobenzene	EPA 8270E_6_(6/18)	1
1,3-Dichlorobenzene	EPA 8270E_6_(6/18)	1
1,3-Dinitrobenzene (1,3-DNB)	EPA 8270E_6_(6/18)	1
1,4-Dichlorobenzene	EPA 8270E_6_(6/18)	1
1,4-Dinitrobenzene	EPA 8270E_6_(6/18)	1
1-Methylnaphthalene	EPA 8270E_6_(6/18)	1
1-Methylphenanthrene	EPA 8270E_6_(6/18)	1
2,2'-Oxybis(1-chloropropane)	EPA 8270E_6_(6/18)	1
2,3,4,6-Tetrachlorophenol	EPA 8270E_6_(6/18)	1
2,3,5,6-Tetrachlorophenol	EPA 8270E_6_(6/18)	1
2,4,5-Trichlorophenol	EPA 8270E_6_(6/18)	1
2,4,6-Trichlorophenol	EPA 8270E_6_(6/18)	1
2,4'-DDD	EPA 8270E_6_(6/18)	1
2,4'-DDE	EPA 8270E_6_(6/18)	1
2,4'-DDT	EPA 8270E_6_(6/18)	1
2,4-Dichlorophenol	EPA 8270E_6_(6/18)	1
2,4-Dimethylphenol	EPA 8270E_6_(6/18)	1
2,4-Dinitrophenol	EPA 8270E_6_(6/18)	1
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270E_6_(6/18)	1
2,6-Dichlorophenol	EPA 8270E_6_(6/18)	1
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270E_6_(6/18)	1
2-Chloronaphthalene	EPA 8270E_6_(6/18)	1
2-Chlorophenol	EPA 8270E_6_(6/18)	1
2-Methylnaphthalene	EPA 8270E_6_(6/18)	1
2-Methylphenol (o-Cresol)	EPA 8270E_6_(6/18)	1
2-Nitroaniline	EPA 8270E_6_(6/18)	1
2-Nitrophenol	EPA 8270E_6_(6/18)	1
3 & 4-Methylphenol	EPA 8270E_6_(6/18)	1
3,3'-Dichlorobenzidine	EPA 8270E_6_(6/18)	1
3-Nitroaniline	EPA 8270E_6_(6/18)	1
4,4'-DDD	EPA 8270E_6_(6/18)	1
4,4'-DDE	EPA 8270E_6_(6/18)	1
4,4'-DDT	EPA 8270E_6_(6/18)	1
4,6-Dinitro-2-methylphenol	EPA 8270E_6_(6/18)	1
4-Bromophenyl phenyl ether (BDE-3)	EPA 8270E_6_(6/18)	1
4-Chloro-3-methylphenol	EPA 8270E_6_(6/18)	1
4-Chloroaniline	EPA 8270E_6_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
4-Chlorophenyl phenylether	EPA 8270E_6_(6/18)	1
4-Nitroaniline	EPA 8270E_6_(6/18)	1
4-Nitrophenol	EPA 8270E_6_(6/18)	1
Acenaphthene	EPA 8270E_6_(6/18)	1
Acenaphthylene	EPA 8270E_6_(6/18)	1
Aldrin	EPA 8270E_6_(6/18)	1
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8270E_6_(6/18)	1
alpha-Chlordane	EPA 8270E_6_(6/18)	1
Aniline	EPA 8270E_6_(6/18)	1
Anthracene	EPA 8270E_6_(6/18)	1
Azinphos-methyl (Guthion)	EPA 8270E_6_(6/18)	1
Azobenzene	EPA 8270E_6_(6/18)	1
Benzidine	EPA 8270E_6_(6/18)	1
Benzo(a)anthracene	EPA 8270E_6_(6/18)	1
Benzo(a)pyrene	EPA 8270E_6_(6/18)	1
Benzo(e)pyrene	EPA 8270E_6_(6/18)	1
Benzo(g,h,i)perylene	EPA 8270E_6_(6/18)	1
Benzo(k)fluoranthene	EPA 8270E_6_(6/18)	1
Benzo[b]fluoranthene	EPA 8270E_6_(6/18)	1
Benzoic acid	EPA 8270E_6_(6/18)	1
Benzyl alcohol	EPA 8270E_6_(6/18)	1
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8270E_6_(6/18)	1
bis(2-Chloroethoxy)methane	EPA 8270E_6_(6/18)	1
bis(2-Chloroethyl) ether	EPA 8270E_6_(6/18)	1
Bolstar (Sulprofos)	EPA 8270E_6_(6/18)	1
Butyl benzyl phthalate	EPA 8270E_6_(6/18)	1
Carbazole	EPA 8270E_6_(6/18)	1
Chlorpyrifos	EPA 8270E_6_(6/18)	1
Chrysene	EPA 8270E_6_(6/18)	1
cis-Nonachlor	EPA 8270E_6_(6/18)	1
Coumaphos	EPA 8270E_6_(6/18)	1
delta-BHC	EPA 8270E_6_(6/18)	1
Demeton-o	EPA 8270E_6_(6/18)	1
Demeton-s	EPA 8270E_6_(6/18)	1
Di(2-ethylhexyl)adipate	EPA 8270E_6_(6/18)	1
Di(2-ethylhexyl)phthalate	EPA 8270E_6_(6/18)	1
Diazinon	EPA 8270E_6_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Dibenz(a,h) anthracene	EPA 8270E_6_(6/18)	1
Dibenz(a,j) acridine	EPA 8270E_6_(6/18)	1
Dibenzo(a,e) pyrene	EPA 8270E_6_(6/18)	1
Dibenzo(a,h) pyrene	EPA 8270E_6_(6/18)	1
Dibenzo(a,i) pyrene	EPA 8270E_6_(6/18)	1
Dibenzofuran	EPA 8270E_6_(6/18)	1
Dibenzothiophene	EPA 8270E_6_(6/18)	1
Dichlorovos (DDVP, Dichlorvos)	EPA 8270E_6_(6/18)	1
Dieldrin	EPA 8270E_6_(6/18)	1
Diethyl phthalate	EPA 8270E_6_(6/18)	1
Dimethoate	EPA 8270E_6_(6/18)	1
Dimethyl phthalate	EPA 8270E_6_(6/18)	1
Di-n-butyl phthalate	EPA 8270E_6_(6/18)	1
Di-n-octyl phthalate	EPA 8270E_6_(6/18)	1
Disulfoton	EPA 8270E_6_(6/18)	1
Endosulfan I	EPA 8270E_6_(6/18)	1
Endosulfan II	EPA 8270E_6_(6/18)	1
Endosulfan sulfate	EPA 8270E_6_(6/18)	1
Endrin	EPA 8270E_6_(6/18)	1
Endrin aldehyde	EPA 8270E_6_(6/18)	1
Endrin ketone	EPA 8270E_6_(6/18)	1
EPN	EPA 8270E_6_(6/18)	1
Ethoprop	EPA 8270E_6_(6/18)	1
Fensulfothion	EPA 8270E_6_(6/18)	1
Fenthion	EPA 8270E_6_(6/18)	1
Fluoranthene	EPA 8270E_6_(6/18)	1
Fluorene	EPA 8270E_6_(6/18)	1
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8270E_6_(6/18)	1
gamma-Chlordane	EPA 8270E_6_(6/18)	1
Heptachlor	EPA 8270E_6_(6/18)	1
Heptachlor epoxide	EPA 8270E_6_(6/18)	1
Hexachlorobenzene	EPA 8270E_6_(6/18)	1
Hexachlorobutadiene	EPA 8270E_6_(6/18)	1
Hexachlorocyclopentadiene	EPA 8270E_6_(6/18)	1
Hexachloroethane	EPA 8270E_6_(6/18)	1
Indeno(1,2,3-cd) pyrene	EPA 8270E_6_(6/18)	1
Isophorone	EPA 8270E_6_(6/18)	1

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Malathion	EPA 8270E_6_(6/18)	1
Merphos	EPA 8270E_6_(6/18)	1
Methoxychlor	EPA 8270E_6_(6/18)	1
Methyl parathion (Parathion, methyl)	EPA 8270E_6_(6/18)	1
Mevinphos	EPA 8270E_6_(6/18)	1
Mirex	EPA 8270E_6_(6/18)	1
Monocrotophos	EPA 8270E_6_(6/18)	1
Naled	EPA 8270E_6_(6/18)	1
Naphthalene	EPA 8270E_6_(6/18)	1
Nitrobenzene	EPA 8270E_6_(6/18)	1
N-Nitrosodimethylamine	EPA 8270E_6_(6/18)	1
N-Nitroso-di-n-propylamine	EPA 8270E_6_(6/18)	1
N-Nitrosodiphenylamine	EPA 8270E_6_(6/18)	1
Oxychlordane	EPA 8270E_6_(6/18)	1
Parathion, ethyl	EPA 8270E_6_(6/18)	1
Pentachlorophenol	EPA 8270E_6_(6/18)	1
Perylene	EPA 8270E_6_(6/18)	1
Phenanthrene	EPA 8270E_6_(6/18)	1
Phenol	EPA 8270E_6_(6/18)	1
Phorate	EPA 8270E_6_(6/18)	1
Pyrene	EPA 8270E_6_(6/18)	1
Pyridine	EPA 8270E_6_(6/18)	1
Ronnel	EPA 8270E_6_(6/18)	1
Sulfotepp	EPA 8270E_6_(6/18)	1
Tetrachlorvinphos (Stirophos, Gardona)	EPA 8270E_6_(6/18)	1
Tetraethyl pyrophosphate (TEPP)	EPA 8270E_6_(6/18)	1
Tokuthion (Prothiophos)	EPA 8270E_6_(6/18)	1
trans-Nonachlor	EPA 8270E_6_(6/18)	1
Trichloronate	EPA 8270E_6_(6/18)	1
Gasoline range organics (GRO)	WDOE NWTPH-Gx_(1997)	1,9
Particle Size Distribution	ASTM D422-63 (07)	1
Ignitability	EPA 1010A - 2002	1
Paint Filter Liquids	EPA 9095 B-04	1,8

Accredited Parameter Note Detail

(1)Accreditation based in part on recognition of Oregon NELAP accreditation. (2) Hach 8167.(3) Approved for compliance testing only when holding time is met.(4) Liquid only. (5) Includes: Total Fixed Soilds, Total Volatile Soilds, and Percent Moisture. (6) Provisional accreditation pending submittal of acceptable Proficiency Testing (PT) results (WAC 173-50-110). (7) Includes: Total Volatile Soilds, Total Volatile Dissolved Soilds, Total Volatile Suspended Solids, and Total Fixed Solids.(8) Paint Filter Test Free Liquid (9) By GC/MS.(10) Parameter not listed in 40CFR136.3

Rebecca Wood

11/07/2023

Authentication Signature
Rebecca Wood, Lab Accreditation Unit Supervisor

Date

The State of Washington
Department of Ecology

Fremont Analytical, Inc.

Seattle, WA

has complied with provisions set forth in Chapter 173-50 WAC and is hereby recognized by the Department of Ecology as an ACCREDITED LABORATORY for the analytical parameters listed on the accompanying Scope of Accreditation.

This certificate is effective July 9, 2024 and shall expire July 8, 2025.

Witnessed under my hand on July 15, 2024.

Rebecca Wood
Lab Accreditation Unit Supervisor

Laboratory ID
C910

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

SCOPE OF ACCREDITATION

Fremont Analytical, Inc.

Seattle, WA

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. EPA is the U.S. Environmental Protection Agency. SM is "Standard Methods for the Examination of Water and Wastewater." SM refers to EPA approved method versions. ASTM is the American Society for Testing and Materials. USGS is the U.S. Geological Survey. AOAC is the Association of Official Analytical Chemists. Other references are described in notes.

Matrix/Analyte	Method	Notes
Air		
Carbon dioxide	EPA 3C	
Carbon monoxide	EPA 3C	
Hydrogen	EPA 3C	
Methane	EPA 3C	
Nitrogen	EPA 3C	
Oxygen	EPA 3C	
Helium	FAL SOP 11	6
Carbon disulfide	ASTM D5504-08	
Carbonyl sulfide	ASTM D5504-08	
Dimethyl disulfide	ASTM D5504-08	
Dimethyl Sulfide	ASTM D5504-08	
Ethyl Mercaptan	ASTM D5504-08	
Hydrogen sulfide	ASTM D5504-08	
Isobutyl Mercaptan	ASTM D5504-08	
Isopropyl Mercaptan	ASTM D5504-08	
Methyl Mercaptan	ASTM D5504-08	
n-Butyl Mercaptan	ASTM D5504-08	
n-Propyl Mercaptan	ASTM D5504-08	
t-Butyl Mercaptan	ASTM D5504-08	
1,1,1-Trichloroethane	EPA TO-15 Rev. 2 (1999)	5
1,1,2,2-Tetrachloroethane	EPA TO-15 Rev. 2 (1999)	5
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA TO-15 Rev. 2 (1999)	5
1,1,2-Trichloroethane	EPA TO-15 Rev. 2 (1999)	5
1,1-Dichloroethane	EPA TO-15 Rev. 2 (1999)	5
1,1-Dichloroethylene	EPA TO-15 Rev. 2 (1999)	5
1,2,3-Trimethylbenzene	EPA TO-15 Rev. 2 (1999)	5

Matrix/Analyte	Method	Notes
Air		
1,2,4-Trichlorobenzene	EPA TO-15 Rev. 2 (1999)	5
1,2,4-Trimethylbenzene	EPA TO-15 Rev. 2 (1999)	5
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA TO-15 Rev. 2 (1999)	5
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	EPA TO-15 Rev. 2 (1999)	5
1,2-Dichlorobenzene	EPA TO-15 Rev. 2 (1999)	5
1,2-Dichloroethane (Ethylene dichloride)	EPA TO-15 Rev. 2 (1999)	5
1,2-Dichloropropane	EPA TO-15 Rev. 2 (1999)	5
1,3,5-Trimethylbenzene	EPA TO-15 Rev. 2 (1999)	5
1,3-Butadiene	EPA TO-15 Rev. 2 (1999)	5
1,3-Dichlorobenzene	EPA TO-15 Rev. 2 (1999)	5
1,4-Dichlorobenzene	EPA TO-15 Rev. 2 (1999)	5
1,4-Dioxane (1,4- Diethyleneoxide)	EPA TO-15 Rev. 2 (1999)	5
1-Propene	EPA TO-15 Rev. 2 (1999)	5
2,5-Dimethylthiophene	EPA TO-15 Rev. 2 (1999)	
2-Butanone (Methyl ethyl ketone, MEK)	EPA TO-15 Rev. 2 (1999)	5
2-Ethylthiophene	EPA TO-15 Rev. 2 (1999)	
2-Hexanone	EPA TO-15 Rev. 2 (1999)	5
2-Methylbutane (Isopentane)	EPA TO-15 Rev. 2 (1999)	5
2-Propanol	EPA TO-15 Rev. 2 (1999)	5
3-Methylthiophene	EPA TO-15 Rev. 2 (1999)	
4-Ethyltoluene	EPA TO-15 Rev. 2 (1999)	5
4-Isopropyltoluene (p-Cymene)	EPA TO-15 Rev. 2 (1999)	5
4-Methyl-2-pentanone (MIBK)	EPA TO-15 Rev. 2 (1999)	5
Acetone	EPA TO-15 Rev. 2 (1999)	5
Acrolein (Propenal)	EPA TO-15 Rev. 2 (1999)	5
APH Aliphatics C5-C8	EPA TO-15 Rev. 2 (1999)	5
APH Aliphatics C9-C12	EPA TO-15 Rev. 2 (1999)	5
APH Aromatics C9-C10	EPA TO-15 Rev. 2 (1999)	5
Benzene	EPA TO-15 Rev. 2 (1999)	5
Benzyl chloride	EPA TO-15 Rev. 2 (1999)	5
Bromodichloromethane	EPA TO-15 Rev. 2 (1999)	5
Bromoform	EPA TO-15 Rev. 2 (1999)	5
Carbon disulfide	EPA TO-15 Rev. 2 (1999)	5
Carbon tetrachloride	EPA TO-15 Rev. 2 (1999)	5
Carbonyl sulfide	EPA TO-15 Rev. 2 (1999)	
Chlorobenzene	EPA TO-15 Rev. 2 (1999)	5
Chlorodibromomethane	EPA TO-15 Rev. 2 (1999)	5

Matrix/Analyte	Method	Notes
Air		
Chloroethane	EPA TO-15 Rev. 2 (1999)	5
Chloroform	EPA TO-15 Rev. 2 (1999)	5
cis-1,2-Dichloroethylene	EPA TO-15 Rev. 2 (1999)	5
cis-1,3-Dichloropropene	EPA TO-15 Rev. 2 (1999)	5
Cyclohexane	EPA TO-15 Rev. 2 (1999)	5
Decamethylcyclopentasiloxane (D6)	EPA TO-15 Rev. 2 (1999)	
Decamethyltetrasiloxane-L4 (MD2M)	EPA TO-15 Rev. 2 (1999)	
Dichlorodifluoromethane (Freon-12)	EPA TO-15 Rev. 2 (1999)	5
Diethyl disulfide	EPA TO-15 Rev. 2 (1999)	
Dimethyl disulfide	EPA TO-15 Rev. 2 (1999)	
Dimethyl Sulfide	EPA TO-15 Rev. 2 (1999)	
Dodecamethylpentasiloxane (L5)	EPA TO-15 Rev. 2 (1999)	
Ethanol	EPA TO-15 Rev. 2 (1999)	5
Ethyl acetate	EPA TO-15 Rev. 2 (1999)	5
Ethyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
Ethylbenzene	EPA TO-15 Rev. 2 (1999)	5
Gasoline range organics (GRO)	EPA TO-15 Rev. 2 (1999)	5
Hexachlorobutadiene	EPA TO-15 Rev. 2 (1999)	5
Hexamethylcyclotrisiloxane (D3)	EPA TO-15 Rev. 2 (1999)	5
Hexamethyldisiloxane	EPA TO-15 Rev. 2 (1999)	5
Hexane	EPA TO-15 Rev. 2 (1999)	5
Hydrogen sulfide	EPA TO-15 Rev. 2 (1999)	
Isobutyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
Isopropyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
Isopropylbenzene	EPA TO-15 Rev. 2 (1999)	5
m+p-xylene	EPA TO-15 Rev. 2 (1999)	5
Methyl bromide (Bromomethane)	EPA TO-15 Rev. 2 (1999)	5
Methyl chloride (Chloromethane)	EPA TO-15 Rev. 2 (1999)	5
Methyl ethyl sulfide	EPA TO-15 Rev. 2 (1999)	
Methyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
Methyl tert-butyl ether (MTBE)	EPA TO-15 Rev. 2 (1999)	5
Methylene chloride (Dichloromethane)	EPA TO-15 Rev. 2 (1999)	5
Naphthalene	EPA TO-15 Rev. 2 (1999)	5
n-Butane	EPA TO-15 Rev. 2 (1999)	5
n-Butyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
n-Decane	EPA TO-15 Rev. 2 (1999)	5
n-Dodecane	EPA TO-15 Rev. 2 (1999)	5

Matrix/Analyte	Method	Notes
Air		
n-Heptane	EPA TO-15 Rev. 2 (1999)	5
n-Nonane	EPA TO-15 Rev. 2 (1999)	5
n-Octane	EPA TO-15 Rev. 2 (1999)	5
n-Propyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
n-Undecane	EPA TO-15 Rev. 2 (1999)	5
Octamethylcyclotetrasiloxane (D4)	EPA TO-15 Rev. 2 (1999)	5
Octamethyltrisiloxane-L3 (MDM)	EPA TO-15 Rev. 2 (1999)	5
o-Xylene	EPA TO-15 Rev. 2 (1999)	5
Pentamethyldisiloxane	EPA TO-15 Rev. 2 (1999)	5
Styrene	EPA TO-15 Rev. 2 (1999)	5
t-Butyl Mercaptan	EPA TO-15 Rev. 2 (1999)	
Tetrachloroethylene (Perchloroethylene)	EPA TO-15 Rev. 2 (1999)	5
Tetrahydrofuran (THF)	EPA TO-15 Rev. 2 (1999)	5
Tetrahydrothiophene	EPA TO-15 Rev. 2 (1999)	
Thiophene	EPA TO-15 Rev. 2 (1999)	
Toluene	EPA TO-15 Rev. 2 (1999)	5
trans-1,2-Dichloroethylene	EPA TO-15 Rev. 2 (1999)	5
trans-1,3-Dichloropropylene	EPA TO-15 Rev. 2 (1999)	5
Trichloroethene (Trichloroethylene)	EPA TO-15 Rev. 2 (1999)	5
Trichlorofluoromethane (Freon 11)	EPA TO-15 Rev. 2 (1999)	5
Vinyl acetate	EPA TO-15 Rev. 2 (1999)	5
Vinyl chloride	EPA TO-15 Rev. 2 (1999)	5
APH Aliphatics C5-C8	MADEP APH WSC-CAM-IX_July 2010	5
APH Aliphatics C9-C12	MADEP APH WSC-CAM-IX_July 2010	5
APH Aromatics C9-C10	MADEP APH WSC-CAM-IX_July 2010	5
Drinking Water		
Turbidity	EPA 180.1_2_1993	5
Chloride	EPA 300.0_2.1_1993	5
Nitrate + Nitrite as N	EPA 300.0_2.1_1993	5
Nitrate as N	EPA 300.0_2.1_1993	5
Nitrite as N	EPA 300.0_2.1_1993	5
Orthophosphate as P	EPA 300.0_2.1_1993	5
Sulfate	EPA 300.0_2.1_1993	5
Solids, Total Dissolved	SM 2540 C-2015	
Dissolved Organic Carbon	SM 5310 C-2014	
Total Organic Carbon	SM 5310 C-2014	
Aluminum	EPA 200.8_5.4_1994	5

Matrix/Analyte	Method	Notes
Drinking Water		
Antimony	EPA 200.8_5.4_1994	5
Arsenic	EPA 200.8_5.4_1994	5
Barium	EPA 200.8_5.4_1994	5
Beryllium	EPA 200.8_5.4_1994	5
Cadmium	EPA 200.8_5.4_1994	5
Chromium	EPA 200.8_5.4_1994	5
Copper	EPA 200.8_5.4_1994	5
Lead	EPA 200.8_5.4_1994	5
Manganese	EPA 200.8_5.4_1994	5
Nickel	EPA 200.8_5.4_1994	5
Selenium	EPA 200.8_5.4_1994	5
Silver	EPA 200.8_5.4_1994	5
Thallium	EPA 200.8_5.4_1994	5
Zinc	EPA 200.8_5.4_1994	5
Mercury	EPA 245.1_3_1994	
E.coli-count	SM 9223 B Colilert 24 Qtray	9,10
Total coliforms-count	SM 9223 B Colilert 24 Qtray	9,10
Non-Potable Water		
n-Hexane Extractable Material (O&G)	EPA 1664A_1_1999	5
Turbidity	EPA 180.1_2_1993	5
Bromide	EPA 300.0_2.1_1993	5
Chloride	EPA 300.0_2.1_1993	5
Fluoride	EPA 300.0_2.1_1993	5
Nitrate + Nitrite as N	EPA 300.0_2.1_1993	5
Nitrate as N	EPA 300.0_2.1_1993	5
Nitrite as N	EPA 300.0_2.1_1993	5
Orthophosphate as P	EPA 300.0_2.1_1993	1
Sulfate	EPA 300.0_2.1_1993	5
Alkalinity	EPA 310.2_1974	5
Phosphorus, total	EPA 365.3_1978	5
Alkalinity	SM 2320 B-2011	5
Hardness (calc.)	SM 2340 B-2011	5
Specific Conductance	SM 2510 B-2011	5
Salinity	SM 2520 B-2011	5
Solids, Total	SM 2540 B-2015	5,88
Solids, Total Dissolved	SM 2540 C-2015	5,88
Solids, Total Suspended	SM 2540 D-2015	5,88

Matrix/Analyte	Method	Notes
Non-Potable Water		
Volatile suspended solids	SM 2540 E-2015	
Solids, Settleable	SM 2540 F-2015	5,88
Chromium, Hexavalent	SM 3500-Cr B-2011	
Cyanide, Total	SM 4500-CN¯ E-2016	5,88
Ammonia as N	SM 4500-NH3 E-2011	5
Ammonia as N	SM 4500-NH3 G-2011	5
Sulfide	SM 4500-S2¯ F-2011	5
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	4
Chemical Oxygen Demand (COD)	SM 5220 D-2011	5
Dissolved Organic Carbon	SM 5310 C-2014	5,88
Total Organic Carbon	SM 5310 C-2014	5,88
Aluminum	EPA 200.8_5.4_1994	5
Antimony	EPA 200.8_5.4_1994	5
Arsenic	EPA 200.8_5.4_1994	5
Barium	EPA 200.8_5.4_1994	5
Beryllium	EPA 200.8_5.4_1994	5
Boron	EPA 200.8_5.4_1994	
Cadmium	EPA 200.8_5.4_1994	5
Calcium	EPA 200.8_5.4_1994	5
Chromium	EPA 200.8_5.4_1994	5
Cobalt	EPA 200.8_5.4_1994	5
Copper	EPA 200.8_5.4_1994	5
Iron	EPA 200.8_5.4_1994	5
Lead	EPA 200.8_5.4_1994	5
Magnesium	EPA 200.8_5.4_1994	5
Manganese	EPA 200.8_5.4_1994	5
Molybdenum	EPA 200.8_5.4_1994	5
Nickel	EPA 200.8_5.4_1994	5
Potassium	EPA 200.8_5.4_1994	5
Selenium	EPA 200.8_5.4_1994	5
Silver	EPA 200.8_5.4_1994	5
Sodium	EPA 200.8_5.4_1994	5
Strontium	EPA 200.8_5.4_1994	5
Thallium	EPA 200.8_5.4_1994	5
Tin	EPA 200.8_5.4_1994	5
Titanium	EPA 200.8_5.4_1994	5
Vanadium	EPA 200.8_5.4_1994	5

Matrix/Analyte	Method	Notes
Non-Potable Water		
Zinc	EPA 200.8_5.4_1994	5
Mercury	EPA 245.1_3_1994	5
Iron	SM 3500-Fe B-2011	5
4,4'-DDD	EPA 608.3	5
4,4'-DDE	EPA 608.3	5
4,4'-DDT	EPA 608.3	5
Aldrin	EPA 608.3	5
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608.3	5
alpha-Chlordane	EPA 608.3	5
Aroclor-1016 (PCB-1016)	EPA 608.3	5
Aroclor-1221 (PCB-1221)	EPA 608.3	5
Aroclor-1232 (PCB-1232)	EPA 608.3	5
Aroclor-1242 (PCB-1242)	EPA 608.3	5
Aroclor-1248 (PCB-1248)	EPA 608.3	5
Aroclor-1254 (PCB-1254)	EPA 608.3	5
Aroclor-1260 (PCB-1260)	EPA 608.3	5
Aroclor-1262 (PCB-1262)	EPA 608.3	5
Aroclor-1268 (PCB-1268)	EPA 608.3	5
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608.3	5
Chlordane (tech.)	EPA 608.3	5
delta-BHC	EPA 608.3	5
Dieldrin	EPA 608.3	5
Endosulfan I	EPA 608.3	5
Endosulfan II	EPA 608.3	5
Endosulfan sulfate	EPA 608.3	5
Endrin	EPA 608.3	5
Endrin aldehyde	EPA 608.3	5
Endrin ketone	EPA 608.3	5
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 608.3	5
gamma-Chlordane	EPA 608.3	5
Heptachlor	EPA 608.3	5
Heptachlor epoxide	EPA 608.3	5
Methoxychlor	EPA 608.3	5
Toxaphene (Chlorinated camphene)	EPA 608.3	5
Ethane	EPA RSK-175	
Ethene	EPA RSK-175	
Methane	EPA RSK-175	

Matrix/Analyte	**Method**	**Notes**
Non-Potable Water		
1,1,1,2-Tetrachloroethane	EPA 624.1	5
1,1,1-Trichloroethane	EPA 624.1	5
1,1,2,2-Tetrachloroethane	EPA 624.1	5
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 624.1	5
1,1,2-Trichloroethane	EPA 624.1	5
1,1-Dichloroethane	EPA 624.1	5
1,1-Dichloroethylene	EPA 624.1	5
1,1-Dichloropropene	EPA 624.1	5
1,2,3-Trichlorobenzene	EPA 624.1	5
1,2,3-Trichloropropane	EPA 624.1	5
1,2,4-Trimethylbenzene	EPA 624.1	5
1,2-Dibromo-3-chloropropane (DBCP)	EPA 624.1	5
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 624.1	5
1,2-Dichlorobenzene	EPA 624.1	5
1,2-Dichloroethane (Ethylene dichloride)	EPA 624.1	5
1,2-Dichloropropane	EPA 624.1	5
1,3,5-Trimethylbenzene	EPA 624.1	5
1,3-Dichlorobenzene	EPA 624.1	5
1,3-Dichloropropane	EPA 624.1	5
1,4-Dichlorobenzene	EPA 624.1	5
2-Butanone (Methyl ethyl ketone, MEK)	EPA 624.1	5
2-Chloroethyl vinyl ether	EPA 624.1	5
2-Chlorotoluene	EPA 624.1	5
2-Hexanone	EPA 624.1	1
4-Chlorotoluene	EPA 624.1	5
4-Isopropyltoluene (p-Cymene)	EPA 624.1	5
4-Methyl-2-pentanone (MIBK)	EPA 624.1	5
Acetone	EPA 624.1	5
Acrolein (Propenal)	EPA 624.1	5
Acrylonitrile	EPA 624.1	5
Allyl chloride (3-Chloropropene)	EPA 624.1	5
Benzene	EPA 624.1	5
Bromobenzene	EPA 624.1	5
Bromochloromethane	EPA 624.1	5
Bromodichloromethane	EPA 624.1	5
Bromoform	EPA 624.1	5
Carbon disulfide	EPA 624.1	5

Matrix/Analyte	Method	Notes
Non-Potable Water		
Carbon tetrachloride	EPA 624.1	5
Chlorobenzene	EPA 624.1	5
Chlorodibromomethane	EPA 624.1	5
Chloroethane (Ethyl chloride)	EPA 624.1	5
Chloroform	EPA 624.1	5
cis-1,2-Dichloroethylene	EPA 624.1	5
cis-1,3-Dichloropropene	EPA 624.1	5
Dibromomethane (Methylene bromide)	EPA 624.1	5
Di-isopropylether (DIPE)	EPA 624.1	5
Ethyl acetate	EPA 624.1	5
Ethyl methacrylate	EPA 624.1	5
Ethylbenzene	EPA 624.1	5
Ethyl-t-butylether (ETBE)	EPA 624.1	5
Iodomethane (Methyl iodide)	EPA 624.1	5
Isopropylbenzene	EPA 624.1	5
m+p-xylene	EPA 624.1	5
Methacrylonitrile	EPA 624.1	5
Methyl acrylate	EPA 624.1	5
Methyl bromide (Bromomethane)	EPA 624.1	5
Methyl chloride (Chloromethane)	EPA 624.1	5
Methyl methacrylate	EPA 624.1	5
Methyl tert-butyl ether (MTBE)	EPA 624.1	5
Methylene chloride (Dichloromethane)	EPA 624.1	5
n-Butylbenzene	EPA 624.1	5
n-Hexane	EPA 624.1	5
n-Propylbenzene	EPA 624.1	5
o-Xylene	EPA 624.1	5
sec-Butylbenzene	EPA 624.1	5
Styrene	EPA 624.1	5
tert-amylmethylether (TAME)	EPA 624.1	5
tert-Butylbenzene	EPA 624.1	5
Tetrachloroethylene (Perchloroethylene)	EPA 624.1	5
Tetrahydrofuran (THF)	EPA 624.1	5
Toluene	EPA 624.1	5
trans-1,2-Dichloroethylene	EPA 624.1	5
trans-1,3-Dichloropropylene	EPA 624.1	5
trans-1,4-Dichloro-2-butene	EPA 624.1	5

Matrix/Analyte	Method	Notes
Non-Potable Water		
Trichloroethene (Trichloroethylene)	EPA 624.1	5
Trichlorofluoromethane (Freon 11)	EPA 624.1	5
Vinyl acetate	EPA 624.1	5
Vinyl chloride	EPA 624.1	5
Xylene (total)	EPA 624.1	5
1,2,4-Trichlorobenzene	EPA 625.1	5
1,2-Dinitrobenzene	EPA 625.1	5
1,3-Dinitrobenzene (1,3-DNB)	EPA 625.1	5
1,4-Dinitrobenzene	EPA 625.1	5
1-Methylnaphthalene	EPA 625.1	5
2,3,4,6-Tetrachlorophenol	EPA 625.1	5
2,3,5,6-Tetrachlorophenol	EPA 625.1	5
2,4,5-Trichlorophenol	EPA 625.1	5
2,4,6-Trichlorophenol	EPA 625.1	5
2,4-Dichlorophenol	EPA 625.1	5
2,4-Dimethylphenol	EPA 625.1	5
2,4-Dinitrophenol	EPA 625.1	5
2,4-Dinitrotoluene (2,4-DNT)	EPA 625.1	5
2,6-Dinitrotoluene (2,6-DNT)	EPA 625.1	5
2-Chloronaphthalene	EPA 625.1	5
2-Chlorophenol	EPA 625.1	5
2-Methylnaphthalene	EPA 625.1	5
2-Methylphenol (o-Cresol)	EPA 625.1	5
2-Nitroaniline	EPA 625.1	5
2-Nitrophenol	EPA 625.1	5
3 & 4-Methylphenol	EPA 625.1	5
3,3'-Dichlorobenzidine	EPA 625.1	5
3-Nitroaniline	EPA 625.1	5
4,6-Dinitro-2-methylphenol	EPA 625.1	5
4-Bromophenyl phenyl ether (BDE-3)	EPA 625.1	5
4-Chloro-3-methylphenol	EPA 625.1	5
4-Chloroaniline	EPA 625.1	5
4-Chlorophenyl phenylether	EPA 625.1	5
4-Nitroaniline	EPA 625.1	5
4-Nitrophenol	EPA 625.1	5
Acenaphthene	EPA 625.1	5
Acenaphthylene	EPA 625.1	5

Matrix/Analyte	Method	Notes
Non-Potable Water		
Aniline	EPA 625.1	5
Anthracene	EPA 625.1	5
Azobenzene	EPA 625.1	5
Benzidine	EPA 625.1	5
Benzo(a)anthracene	EPA 625.1	5
Benzo(a)pyrene	EPA 625.1	5
Benzo(g,h,i)perylene	EPA 625.1	5
Benzo(k)fluoranthene	EPA 625.1	5
Benzo[b]fluoranthene	EPA 625.1	5
Benzoic acid	EPA 625.1	5
Benzyl alcohol	EPA 625.1	5
bis(2-Chloroethoxy)methane	EPA 625.1	5
bis(2-Chloroethyl) ether	EPA 625.1	5
Butyl benzyl phthalate	EPA 625.1	5
Carbazole	EPA 625.1	5
Chrysene	EPA 625.1	5
Di(2-ethylhexyl)adipate	EPA 625.1	5
Dibenz(a,h) anthracene	EPA 625.1	5
Dibenzofuran	EPA 625.1	5
Diethyl phthalate	EPA 625.1	5
Dimethyl phthalate	EPA 625.1	5
Di-n-butyl phthalate	EPA 625.1	5
Di-n-octyl phthalate	EPA 625.1	5
Diphenylamine	EPA 625.1	5
Fluoranthene	EPA 625.1	5
Fluorene	EPA 625.1	5
Hexachlorobenzene	EPA 625.1	5
Hexachlorobutadiene	EPA 625.1	5
Hexachlorocyclopentadiene	EPA 625.1	5
Hexachloroethane	EPA 625.1	5
Indeno(1,2,3-cd) pyrene	EPA 625.1	5
Isophorone	EPA 625.1	5
Naphthalene	EPA 625.1	5
Nitrobenzene	EPA 625.1	5
N-Nitrosodimethylamine	EPA 625.1	5
N-Nitroso-di-n-propylamine	EPA 625.1	5
N-Nitrosodiphenylamine	EPA 625.1	5

Matrix/Analyte	Method	Notes
Non-Potable Water		
Pentachlorophenol	EPA 625.1	5
Phenanthrene	EPA 625.1	5
Phenol	EPA 625.1	5
Pyrene	EPA 625.1	5
Pyridine	EPA 625.1	5
Fecal coliform-count	SM 9223 B Colilert 18® QTray®	9,10
E.coli-count	SM 9223 B Colilert 24 Qtray	9,10
Total coliforms-count	SM 9223 B Colilert 24 Qtray	9,10,11
Solid and Chemical Materials		
Total Organic Material	ASTM D2974-07A	5
Bromide	EPA 300.0_2.1_1993	1
Chloride	EPA 300.0_2.1_1993	1
Fluoride	EPA 300.0_2.1_1993	1,3
Nitrate + Nitrite as N	EPA 300.0_2.1_1993	1
Nitrate as N	EPA 300.0_2.1_1993	1
Nitrite as N	EPA 300.0_2.1_1993	1
Orthophosphate as P	EPA 300.0_2.1_1993	1
Sulfate	EPA 300.0_2.1_1993	1
Chromium, Hexavalent	EPA 7196A_1_1992	5
pH	EPA 9045 D_2004	
Total Organic Carbon	EPA 9060A_1_2004	5
Cation Exchange Capacity	EPA 9081	
Cyanide, Total	SM 4500-CN¯ E-2016	5,88
Ammonia as N	SM 4500-NH3 E-2011	5
Sulfide	SM 4500-S2¯ D-2011	2,9
Aluminum	EPA 6020B_(7/14)	5
Antimony	EPA 6020B_(7/14)	5
Arsenic	EPA 6020B_(7/14)	5
Barium	EPA 6020B_(7/14)	5
Beryllium	EPA 6020B_(7/14)	5
Boron	EPA 6020B_(7/14)	5
Cadmium	EPA 6020B_(7/14)	5
Calcium	EPA 6020B_(7/14)	5
Chromium	EPA 6020B_(7/14)	5
Cobalt	EPA 6020B_(7/14)	5
Copper	EPA 6020B_(7/14)	5
Iron	EPA 6020B_(7/14)	5

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Lead	EPA 6020B_(7/14)	5
Magnesium	EPA 6020B_(7/14)	5
Manganese	EPA 6020B_(7/14)	5
Mercury	EPA 6020B_(7/14)	5
Molybdenum	EPA 6020B_(7/14)	5
Nickel	EPA 6020B_(7/14)	5
Phosphorus, Total	EPA 6020B_(7/14)	5
Potassium	EPA 6020B_(7/14)	5
Selenium	EPA 6020B_(7/14)	5
Silver	EPA 6020B_(7/14)	2,5
Strontium	EPA 6020B_(7/14)	5
Thallium	EPA 6020B_(7/14)	5
Tin	EPA 6020B_(7/14)	5
Titanium	EPA 6020B_(7/14)	5
Vanadium	EPA 6020B_(7/14)	5
Zinc	EPA 6020B_(7/14)	5
Mercury, Liquid Waste	EPA 7470A_1_1994	2
Mercury, Solid Waste	EPA 7471B_(2/07)	
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8011-92	2,5
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8011-92	2,5
4,4'-DDD	EPA 8081B_(2/07)	5
4,4'-DDE	EPA 8081B_(2/07)	5
4,4'-DDT	EPA 8081B_(2/07)	5
Aldrin	EPA 8081B_(2/07)	5
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081B_(2/07)	5
alpha-Chlordane	EPA 8081B_(2/07)	5
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081B_(2/07)	5
Chlordane (tech.)	EPA 8081B_(2/07)	5
delta-BHC	EPA 8081B_(2/07)	5
Dieldrin	EPA 8081B_(2/07)	5
Endosulfan I	EPA 8081B_(2/07)	5
Endosulfan II	EPA 8081B_(2/07)	5
Endosulfan sulfate	EPA 8081B_(2/07)	5
Endrin	EPA 8081B_(2/07)	5
Endrin aldehyde	EPA 8081B_(2/07)	5
Endrin ketone	EPA 8081B_(2/07)	5
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	EPA 8081B_(2/07)	5

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
gamma-Chlordane	EPA 8081B_(2/07)	5
Heptachlor	EPA 8081B_(2/07)	5
Heptachlor epoxide	EPA 8081B_(2/07)	5
Methoxychlor	EPA 8081B_(2/07)	5
Toxaphene (Chlorinated camphene)	EPA 8081B_(2/07)	5
Aroclor-1016 (PCB-1016)	EPA 8082A_(2/07)	5
Aroclor-1221 (PCB-1221)	EPA 8082A_(2/07)	5
Aroclor-1232 (PCB-1232)	EPA 8082A_(2/07)	5
Aroclor-1242 (PCB-1242)	EPA 8082A_(2/07)	5
Aroclor-1248 (PCB-1248)	EPA 8082A_(2/07)	5
Aroclor-1254 (PCB-1254)	EPA 8082A_(2/07)	5
Aroclor-1260 (PCB-1260)	EPA 8082A_(2/07)	5
Aroclor-1262 (PCB-1262)	EPA 8082A_(2/07)	5
Aroclor-1268 (PCB-1268)	EPA 8082A_(2/07)	5
2,4,5-T	FAL SOP 24	7,8
2,4-D	FAL SOP 24	7,8
2,4-DB	FAL SOP 24	7,8
3,5-Dichlorobenzoic acid	FAL SOP 24	7,8
4-Nitrophenol	FAL SOP 24	7,8
Acifluorfen	FAL SOP 24	7,8
Bentazon	FAL SOP 24	7,8
Chloramben	FAL SOP 24	7,8
Dacthal (DCPA)	FAL SOP 24	7,8
Dalapon	FAL SOP 24	7,8
Dicamba	FAL SOP 24	7,8
Dichloroprop (Dichlorprop)	FAL SOP 24	7,8
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	FAL SOP 24	7,8
MCPA	FAL SOP 24	7,8
MCPP	FAL SOP 24	7,8
Pentachlorophenol	FAL SOP 24	7,8
Picloram	FAL SOP 24	7,8
Silvex (2,4,5-TP)	FAL SOP 24	7,8
>C10-C12 Aliphatic EPH	WDOE EPH_(1997)	
>C10-C12 Aromatic EPH	WDOE EPH_(1997)	
>C12-C16 Aliphatic EPH	WDOE EPH_(1997)	
>C12-C16 Aromatic EPH	WDOE EPH_(1997)	
>C16-C21 Aliphatic EPH	WDOE EPH_(1997)	

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
>C16-C21 Aromatic EPH	WDOE EPH_(1997)	
>C21-C34 Alpihatic EPH	WDOE EPH_(1997)	
>C21-C34 Aromatic EPH	WDOE EPH_(1997)	
C8-C10 Aliphatic EPH	WDOE EPH_(1997)	
C8-C10 Aromatic EPH	WDOE EPH_(1997)	
Diesel range organics (DRO)	WDOE NWTPH-Dx_(1997)	5
Motor Oil	WDOE NWTPH-Dx_(1997)	5
Gasoline range organics (GRO)	WDOE NWTPH-Gx_(1997)	3,5
>C10-C12 Aliphatic VPH	WDOE VPH_(1997)	
>C10-C12 Aromatic VPH	WDOE VPH_(1997)	
>C12-C13 Aromatic VPH	WDOE VPH_(1997)	
>C6-C8 Aliphatic VPH	WDOE VPH_(1997)	
>C8-C10 Aliphatic VPH	WDOE VPH_(1997)	
C5-C6 Aliphatic VPH	WDOE VPH_(1997)	
C8-C10 Aromatic VPH	WDOE VPH_(1997)	
1,1,1,2-Tetrachloroethane	EPA 8260D_4_(6/18)	5
1,1,1-Trichloroethane	EPA 8260D_4_(6/18)	5
1,1,2,2-Tetrachloroethane	EPA 8260D_4_(6/18)	5
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 8260D_4_(6/18)	5
1,1,2-Trichloroethane	EPA 8260D_4_(6/18)	5
1,1-Dichloroethane	EPA 8260D_4_(6/18)	5
1,1-Dichloroethylene	EPA 8260D_4_(6/18)	5
1,1-Dichloropropene	EPA 8260D_4_(6/18)	5
1,2,3-Trichlorobenzene	EPA 8260D_4_(6/18)	5
1,2,3-Trichloropropane	EPA 8260D_4_(6/18)	5
1,2,4-Trichlorobenzene	EPA 8260D_4_(6/18)	5
1,2,4-Trimethylbenzene	EPA 8260D_4_(6/18)	5
1,2-Dibromo-3-chloropropane (DBCP)	EPA 8260D_4_(6/18)	5
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260D_4_(6/18)	5
1,2-Dichlorobenzene	EPA 8260D_4_(6/18)	5
1,2-Dichloroethane (Ethylene dichloride)	EPA 8260D_4_(6/18)	5
1,2-Dichloropropane	EPA 8260D_4_(6/18)	5
1,3,5-Trimethylbenzene	EPA 8260D_4_(6/18)	5
1,3-Dichlorobenzene	EPA 8260D_4_(6/18)	5
1,3-Dichloropropane	EPA 8260D_4_(6/18)	5
1,4-Dichlorobenzene	EPA 8260D_4_(6/18)	5
1,4-Dioxane (1,4- Diethyleneoxide)	EPA 8260D_4_(6/18)	5

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260D_4_(6/18)	5
2-Chloroethyl vinyl ether	EPA 8260D_4_(6/18)	5
2-Chlorotoluene	EPA 8260D_4_(6/18)	5
2-Hexanone	EPA 8260D_4_(6/18)	5
4-Chlorotoluene	EPA 8260D_4_(6/18)	5
4-Isopropyltoluene (p-Cymene)	EPA 8260D_4_(6/18)	5
4-Methyl-2-pentanone (MIBK)	EPA 8260D_4_(6/18)	5
Acetone	EPA 8260D_4_(6/18)	5
Acrolein (Propenal)	EPA 8260D_4_(6/18)	5
Acrylonitrile	EPA 8260D_4_(6/18)	5
Allyl chloride (3-Chloropropene)	EPA 8260D_4_(6/18)	5
Benzene	EPA 8260D_4_(6/18)	5
Bromobenzene	EPA 8260D_4_(6/18)	5
Bromochloromethane	EPA 8260D_4_(6/18)	5
Bromodichloromethane	EPA 8260D_4_(6/18)	5
Bromoform	EPA 8260D_4_(6/18)	5
Carbon disulfide	EPA 8260D_4_(6/18)	5
Carbon tetrachloride	EPA 8260D_4_(6/18)	5
Chlorobenzene	EPA 8260D_4_(6/18)	5
Chlorodibromomethane	EPA 8260D_4_(6/18)	5
Chloroethane (Ethyl chloride)	EPA 8260D_4_(6/18)	5
Chloroform	EPA 8260D_4_(6/18)	5
cis-1,2-Dichloroethylene	EPA 8260D_4_(6/18)	5
cis-1,3-Dichloropropene	EPA 8260D_4_(6/18)	5
Dibromomethane	EPA 8260D_4_(6/18)	5
Dichlorodifluoromethane (Freon-12)	EPA 8260D_4_(6/18)	5
Di-isopropylether (DIPE)	EPA 8260D_4_(6/18)	5
Ethyl acetate	EPA 8260D_4_(6/18)	5
Ethyl methacrylate	EPA 8260D_4_(6/18)	5
Ethylbenzene	EPA 8260D_4_(6/18)	5
Ethyl-t-butylether (ETBE)	EPA 8260D_4_(6/18)	5
Hexachlorobutadiene	EPA 8260D_4_(6/18)	5
Iodomethane (Methyl iodide)	EPA 8260D_4_(6/18)	5
Isopropylbenzene	EPA 8260D_4_(6/18)	5
m+p-xylene	EPA 8260D_4_(6/18)	5
Methacrylonitrile	EPA 8260D_4_(6/18)	5
Methyl acrylate	EPA 8260D_4_(6/18)	5

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
Methyl bromide (Bromomethane)	EPA 8260D_4_(6/18)	5
Methyl chloride (Chloromethane)	EPA 8260D_4_(6/18)	5
Methyl methacrylate	EPA 8260D_4_(6/18)	5
Methyl tert-butyl ether (MTBE)	EPA 8260D_4_(6/18)	5
Methylene chloride (Dichloromethane)	EPA 8260D_4_(6/18)	5
Naphthalene	EPA 8260D_4_(6/18)	5
n-Butylbenzene	EPA 8260D_4_(6/18)	5
n-Hexane	EPA 8260D_4_(6/18)	5
n-Propylbenzene	EPA 8260D_4_(6/18)	5
o-Xylene	EPA 8260D_4_(6/18)	5
sec-Butylbenzene	EPA 8260D_4_(6/18)	5
Styrene	EPA 8260D_4_(6/18)	5
tert-amylmethylether (TAME)	EPA 8260D_4_(6/18)	5
tert-Butyl alcohol	EPA 8260D_4_(6/18)	5,12
tert-Butylbenzene	EPA 8260D_4_(6/18)	5
Tetrachloroethylene (Perchloroethylene)	EPA 8260D_4_(6/18)	5
Tetrahydrofuran (THF)	EPA 8260D_4_(6/18)	5
Toluene	EPA 8260D_4_(6/18)	5
trans-1,2-Dichloroethylene	EPA 8260D_4_(6/18)	5
trans-1,3-Dichloropropylene	EPA 8260D_4_(6/18)	5
trans-1,4-Dichloro-2-butene	EPA 8260D_4_(6/18)	5
Trichloroethene (Trichloroethylene)	EPA 8260D_4_(6/18)	5
Trichlorofluoromethane (Freon 11)	EPA 8260D_4_(6/18)	5
Vinyl acetate	EPA 8260D_4_(6/18)	5
Vinyl chloride	EPA 8260D_4_(6/18)	5
Xylene (total)	EPA 8260D_4_(6/18)	5
1,2,4-Trichlorobenzene	EPA 8270E_6_(6/18)	5
1,2-Dichlorobenzene	EPA 8270E_6_(6/18)	5
1,2-Dinitrobenzene	EPA 8270E_6_(6/18)	5
1,3-Dichlorobenzene	EPA 8270E_6_(6/18)	5
1,3-Dinitrobenzene (1,3-DNB)	EPA 8270E_6_(6/18)	5
1,4-Dichlorobenzene	EPA 8270E_6_(6/18)	5
1,4-Dinitrobenzene	EPA 8270E_6_(6/18)	5
1-Methylnaphthalene	EPA 8270E_6_(6/18)	5
2,2'-Oxybis(1-chloropropane)	EPA 8270E_6_(6/18)	5
2,3,4,6-Tetrachlorophenol	EPA 8270E_6_(6/18)	5
2,3,5,6-Tetrachlorophenol	EPA 8270E_6_(6/18)	5

Matrix/Analyte	Method	Notes
Solid and Chemical Materials		
2,4,5-Trichlorophenol	EPA 8270E_6_(6/18)	5
2,4,6-Trichlorophenol	EPA 8270E_6_(6/18)	5
2,4-Dichlorophenol	EPA 8270E_6_(6/18)	5
2,4-Dimethylphenol	EPA 8270E_6_(6/18)	5
2,4-Dinitrophenol	EPA 8270E_6_(6/18)	5
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270E_6_(6/18)	5
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270E_6_(6/18)	5
2-Chloronaphthalene	EPA 8270E_6_(6/18)	5
2-Chlorophenol	EPA 8270E_6_(6/18)	5
2-Methylnaphthalene	EPA 8270E_6_(6/18)	5
2-Methylphenol (o-Cresol)	EPA 8270E_6_(6/18)	5
2-Nitroaniline	EPA 8270E_6_(6/18)	5
2-Nitrophenol	EPA 8270E_6_(6/18)	5
3,3'-Dichlorobenzidine	EPA 8270E_6_(6/18)	5
3-Nitroaniline	EPA 8270E_6_(6/18)	5
4,6-Dinitro-2-methylphenol	EPA 8270E_6_(6/18)	5
4-Bromophenyl phenyl ether (BDE-3)	EPA 8270E_6_(6/18)	5
4-Chloro-3-methylphenol	EPA 8270E_6_(6/18)	5
4-Chloroaniline	EPA 8270E_6_(6/18)	5
4-Chlorophenyl phenylether	EPA 8270E_6_(6/18)	5
4-Nitroaniline	EPA 8270E_6_(6/18)	5
4-Nitrophenol	EPA 8270E_6_(6/18)	5
Acenaphthene	EPA 8270E_6_(6/18)	5
Acenaphthylene	EPA 8270E_6_(6/18)	5
Aniline	EPA 8270E_6_(6/18)	5
Anthracene	EPA 8270E_6_(6/18)	5
Azobenzene	EPA 8270E_6_(6/18)	5
Benzidine	EPA 8270E_6_(6/18)	5
Benzo(a)anthracene	EPA 8270E_6_(6/18)	5
Benzo(a)pyrene	EPA 8270E_6_(6/18)	5
Benzo(g,h,i)perylene	EPA 8270E_6_(6/18)	5
Benzo(k)fluoranthene	EPA 8270E_6_(6/18)	5
Benzo[b]fluoranthene	EPA 8270E_6_(6/18)	5
Benzoic acid	EPA 8270E_6_(6/18)	5
Benzyl alcohol	EPA 8270E_6_(6/18)	5
bis(2-Chloroethoxy)methane	EPA 8270E_6_(6/18)	5
bis(2-Chloroethyl) ether	EPA 8270E_6_(6/18)	5

Matrix/Analyte	**Method**	**Notes**
Solid and Chemical Materials		
Butyl benzyl phthalate	EPA 8270E_6_(6/18)	5
Carbazole	EPA 8270E_6_(6/18)	5
Chrysene	EPA 8270E_6_(6/18)	5
Di(2-ethylhexyl)adipate	EPA 8270E_6_(6/18)	5
Di(2-ethylhexyl)phthalate, [Bis(2-ethylhexyl) phthalate], [DEHP]	EPA 8270E_6_(6/18)	5
Dibenz(a,h) anthracene	EPA 8270E_6_(6/18)	5
Dibenzofuran	EPA 8270E_6_(6/18)	5
Diethyl phthalate	EPA 8270E_6_(6/18)	5
Dimethyl phthalate	EPA 8270E_6_(6/18)	5
Di-n-butyl phthalate	EPA 8270E_6_(6/18)	5
Di-n-octyl phthalate	EPA 8270E_6_(6/18)	5
Diphenylamine	EPA 8270E_6_(6/18)	5
Fluoranthene	EPA 8270E_6_(6/18)	5
Fluorene	EPA 8270E_6_(6/18)	5
Hexachlorobenzene	EPA 8270E_6_(6/18)	5
Hexachlorobutadiene	EPA 8270E_6_(6/18)	5
Hexachlorocyclopentadiene	EPA 8270E_6_(6/18)	5
Hexachloroethane	EPA 8270E_6_(6/18)	5
Indeno(1,2,3-cd) pyrene	EPA 8270E_6_(6/18)	5
Isophorone	EPA 8270E_6_(6/18)	5
m+p Cresol	EPA 8270E_6_(6/18)	5
Naphthalene	EPA 8270E_6_(6/18)	5
Nitrobenzene	EPA 8270E_6_(6/18)	5
n-Nitrosodimethylamine	EPA 8270E_6_(6/18)	5
N-Nitroso-di-n-propylamine	EPA 8270E_6_(6/18)	5
n-Nitrosodiphenylamine	EPA 8270E_6_(6/18)	5
Pentachlorophenol	EPA 8270E_6_(6/18)	5
Phenanthrene	EPA 8270E_6_(6/18)	5
Phenol	EPA 8270E_6_(6/18)	5
Pyrene	EPA 8270E_6_(6/18)	5
Pyridine	EPA 8270E_6_(6/18)	5
Particle Size Distribution	ASTM D422	1
Ignitability	ASTM D93-02	
Ignitability	EPA 1010A - 2002	

Accredited Parameter Note Detail

(1) Accreditation based in part on recognition of Laboratory Accreditation Bureau DoD accreditation. (2) Accreditation is limited to liquid matrix only. (3) Provisional accreditation pending submittal of acceptable corrective action report and Proficiency Testing (PT) results (WAC 173-50-110). (4) The Laboratory is permited to use BOD7 under 40cfr417 for use in monitoring the effluent discharges from soap and detergent manufacturing point sources. (5) Accreditation based in part on recognition of Oregon NELAP accreditation. (6) Modified EPA 3C for helium analysis. (7) Provisional accreditation pending acceptable audit corrective actions. (8) Based on EPA 8151A modified for MS. (9) Interim accreditation pending the successful completion of an on-site audit to verify method capabilities (WAC 173-50-100). (10) Provisional accreditation pending submittal of acceptable QA/QC and SOP documents. (11) Not approved for total coliform regulatory samples under 40CFR136. (12) Provisional accreditation pending submittal of acceptable Proficiency Testing (PT) results (WAC 173-50-110). (88) Interim Washington accreditation pending receipt of an updated Scope from your ORELAP accreditaiton. This accreditation is based in part on recognition of your currently held accreditations for previous method versions.

07/18/2024

Authentication Signature
Rebecca Wood, Lab Accreditation Unit Supervisor

Date

Appendix B

Standard Operating Procedures

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Standard Operating Procedure

Decontamination of Field Equipment

SOP Number: 1
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the decontamination procedure for field equipment that may come in contact with contaminated media and that Maul Foster & Alongi, Inc. (MFA) staff may reuse at multiple sample locations or sites. Decontamination is performed to reduce the potential for cross-contamination of samples that will be collected with multiuse equipment and that will undergo physical or chemical analyses. Other equipment that is multiuse—not used specifically for sample collection (e.g., water level meter, pump used for well development)—also requires decontamination. Finally, decontamination is necessary to minimize the potential for MFA staff's exposure to chemicals.

Typically, decontamination is not necessary for field equipment that is disposable and intended to be used only once (e.g., disposable bailer). Additionally, this SOP does not apply to equipment used by subcontractors, such as drilling equipment. However, MFA staff should confirm that subcontractors are implementing appropriate decontamination procedures to minimize the potential for cross-contamination of samples or MFA staff's exposure to chemicals.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Nonphosphate detergent solution (e.g., Alconox, Liquinox)
- Distilled and potable water
- Personal protective equipment (as specified in the site-specific health and safety plan)
- Buckets to contain rinsate, brushes, paper towels

Depending on the site conditions and the types of contaminants that may be present, the use of other decontamination materials, such as deionized water, methanol, hexane, or isopropyl alcohol, may be necessary. The need for other materials should be determined prior to fieldwork. The decontamination procedures using other materials should be described in a site-specific sampling and analysis plan (SAP).

Methodology

When the site-specific SAP specifies additional or different requirements for decontamination, it takes precedence over this SOP. In the absence of a SAP, the following procedures shall be used.

General Sampling Procedure:

1. Rinse the equipment with potable water to remove visible soil, petroleum sheen, or contamination.

2. Scrub the equipment with a brush and solution of distilled water and nonphosphate detergent.

3. Rinse the equipment with distilled water.

4. Allow equipment to air dry, or dry it with paper towels.

5. At all times, ensure that the decontaminated equipment is stored so as to prevent it from becoming contaminated while not in use. Depending on the size of the equipment, it can be wrapped with new aluminum foil or placed in a new plastic bag.

Rinsate Storage:

All fluids resulting from equipment decontamination shall initially be contained in a bucket and then transferred to a Department of Transportation-approved container (e.g., 55-gallon drum) stored on site at a location that does not interfere with on-site activities (e.g., vehicle traffic, pedestrian areas). Place a label on each container and include the following information:

- The date on which fluids were placed in the container
- Contents (e.g., “water from equipment decontamination”)
- Contact information, including MFA staff or client phone number

Note that labels on containers exposed to sunlight or precipitation are prone to fading. Use a waterproof, indelible ink pen (e.g., Sharpie®) whenever possible. In the field notebook, keep a detailed inventory of all containers, including the number of containers, the approximate quantity of liquids generated, and a description of the source of the fluids. Provide this information to the MFA project manager. For future reference, take photographs of (1) each drum label, (2) the drum(s), and (3) the drum storage vicinity on site.

Note that some clients and site owners have specific requirements for labeling and storage of containers. The requirements should be determined in advance of the fieldwork.

Standard Operating Procedure

Field Screening for VOCs in Soil

SOP Number: 3
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the use of a photoionization detector (PID) to field screen soil for evidence of organic vapors. The PID measures the organic vapor concentration in parts per million, is not compound-specific.

Never rely on a stand-alone PID reading to identify organic chemical contamination in soil. Always collect multiple PID readings (e.g., at multiple depths along the length of a soil core), since it is the relative difference in concentration between multiple readings (e.g., a sudden increase in concentration at a certain depth interval) that is the typical indictor of contamination. Additionally, PID readings should always be accompanied by observation of the soil samples for other indictors of contamination, such as soil staining or chemical odors, so that these multiple lines of evidence can be used together to identify potential organic chemical contamination in the field.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- PID with calibration gas
- Ziploc®-type bags
- Field forms or notebook for documenting PID readings

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for organic vapor field screening, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

The electron volt (eV) rating for the PID lamp (e.g., 9.8, 10.6, 11.7) must be greater than the ionization potential (in eV) of a compound in order for the PID to detect the compound. A lamp of at least 9.8 eV should be used for petroleum hydrocarbons. A lamp of at least 10.6 eV should be used for typical chlorinated alkenes. If the project health and safety plan does not specify the lamp size, verify the compatibility of the lamp size with the anticipated compounds expected to be present in soil prior to the field activities, and confirm with the project manager.

General Sampling Procedure (Heading 3 No Number Style):

Calibration:

- The PID should be calibrated daily (or more frequently, as needed).
- Calibrate the PID according to the manufacturer’s instructions.

- Document the calibration activities and results in the field notebook.

Measuring organic vapor content:

- Place a representative volume (generally, a “handful”) of freshly exposed soil into a Ziploc-type bag.
- Seal the bag and gently knead the bag to loosen the soil.
- Let the bag set for several minutes to allow organic vapors, if present, to volatilize from the soil into the headspace of the bag.
- Partially open the bag so that the tip of the PID intake tube can be inserted into the bag but is not in contact with the soil, then close the bag seal around the intake tube.
- Record the PID measurement and document results in the field notes or boring log.

Static Sheen Test Procedure and Observations:

Sheen Test Procedure:

- Following the PID screen discussed above, add enough water to cover the soil in the container.
- Observe the water for signs of discoloration/sheen and characterize per the table below.

When static sheen testing is required or when making observations of a water surface the following table presents descriptions to be used (consistent with Department of Ecology Guidance)[1].

No Sheen (NS)	No visible sheen on the water surface
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid. Natural organic oils or iron bacteria in the soil may produce a slight sheen.
Moderate Sheen (MS)	Pronounced sheen over limited area; probably has some color/iridescence; spread is irregular, may be rapid; sheen does not spread over entire water surface.
Heavy Sheen (HS)	Heavy sheen with pronounced color/iridescence; spread is rapid; the entire water surface is covered with sheen.
Biogenic Film (BF)	False positive results may be generated by the presence of decaying organic matter and iron bacteria, which can produce a rainbow-like sheen similar to an oil sheen. These sheens, unlike oil sheens, can typically be broken up creating platy or blocky fragments when agitated or disturbed. Biogenic films can also be foamy.

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[1] Department of Ecology. 2016. Guidance for remediation of petroleum contaminated sites. June.

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Standard Operating Procedure

Surface and Subsurface Soil Sampling Using Hand Tools

SOP Number: 4
Date: 09/13/2023
Revision Number: 0.2

Scope and Application

This standard operating procedure (SOP) describes the use of hand tools for obtaining surface and subsurface soil samples for physical and/or chemical analysis.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the Health and Safety Plan)
- Tools appropriate for the conditions that may be encountered (e.g., spoon, trowel, shovel, hand auger); tools constructed of stainless steel are preferred.
- Stainless steel bowls
- Tape measure with increments in feet and tenths of a foot.
- Laboratory-supplied sample containers
- Laboratory chain-of-custody form and cooler with ice.
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures).
- Field forms or notebook for documenting the sampling procedures.

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or other requirements for soil sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sampling Procedure:

- Don gloves as specified in the Health and Safety Plan; replace gloves with new gloves after each sample is collected.
- Clear the ground surface of brush, root mat, grass, leaves, and other debris.
- Use the selected hand tool to remove soil to the targeted sample depth. Use a measuring tape to verify that the sample depth is correct and record the depth in the field notebook or boring log.
- Describe and document the soil lithology in accordance with SOP 2.
- Use the selected hand tool to collect soil and homogenize in a decontaminated stainless-steel bowl or a dedicated Ziploc® bag and then transfer the sample to the sample container using hand tools.

- Before sample collection, and to the extent possible, use the selected hand tool to remove organic debris, anthropogenic material (e.g., brick, metal, glass), and gravels larger than 4 millimeters, unless a project-specific SAP directs otherwise.
- When sampling for gasoline-range total petroleum hydrocarbons (gasoline) or volatile organic compounds (VOCs), a subsample will be obtained from a discrete portion of the collected sample. To minimize the potential loss of volatiles during sampling, the subsample shall not be composited or homogenized. The sample container for gasoline and/or VOC analysis will be filled first if additional containers are necessary for other analysis. Specific procedures for collecting samples for gasoline and/or VOC analysis using the U.S. Environmental Protection Agency Method 5035 are specified in SOP 5.
- The sampling device and field equipment will be decontaminated between sample locations in accordance with SOP 1. Alternatively, new, disposable equipment can be used to collect each sample to preclude the need for equipment decontamination.

Backfilling Sample Locations:

Backfill in accordance with federal and state regulations (e.g., Oregon bentonite requirements per OAR 690-240-0035). Otherwise, manual excavations can be backfilled with excess soil remaining after sample collection, unless the project-specific SAP requires a different backfill procedure.

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Standard Operating Procedure

EPA Method 5035 Soil Sampling

SOP Number: 5
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the methods for obtaining soil samples for chemical analysis for gasoline-range petroleum hydrocarbons (gasoline) and volatile organic compounds (VOCs) by U.S. Environmental Protection Agency Method 5035A.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Sampling equipment (e.g., Terra Core Sampler™ or similar sampler capable of collecting a 5-gram soil sample).
- Laboratory-supplied sample containers:
  - Preweighed and labeled 40-milliliter volatile organic analysis (VOA) vials, including preservative (typically methanol)
  - Two-ounce jar for percent total solids/moisture (if required, confirm with the laboratory)
- Laboratory chain-of-custody form and cooler with ice.
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures).
- Field forms or notebook for documenting the sampling procedures.

Methodology

When the site-specific sampling and analysis plan (SAP) specifies additional or different requirements for soil sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Laboratory Analytical Considerations:

- VOCs must be analyzed within 14 days of sample collection.
- Samples must be maintained at less than 4°±2°C.
- Discrete VOC samples may be composited at the laboratory.

General Procedure:

- When using the Terra Core Sampler, seat the plunger in the handle.
- Collect the sample by pushing the sampler into the soil until the soil has filled the sampler.
- Remove the sampler and confirm that the soil in it is flush with the mouth of the sampler.

- Wipe all debris from the outside of the sampler. Remove any excess collected soil that extends beyond the mouth of the sampler.
- Rotate the plunger handle 90 degrees until it is aligned with the slots in the body of the sampler. Place the mouth of the sampler into the sample container and extrude the sample into the sample container by pushing the plunger down. Hold the sample at an angle when extruding to minimize splashing of the preservative.
- Immediately remove any soil or debris from the threads of the vial and place the lid on the vial.
- Gently swirl the vial (do not shake) to allow the preservative to uniformly penetrate and wet the soil.
- Repeat process for each additional sample container.
- If required by the laboratory, fill a 2-ounce container to capacity for percent total solids determination.

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Standard Operating Procedure

Low-Flow Groundwater Sampling

SOP Number: 9
Date: 07/25/2023
Revision Number: 0.3

Scope and Application

This standard operating procedure (SOP) describes use of the low-flow sampling method for collection of reconnaissance groundwater samples from borings and groundwater samples from monitoring wells. The method uses low pumping rates during purging and sample collection to minimize water-level drawdown and hydraulic stress at the well-aquifer interface.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- Water quality meter (e.g., Oakton, YSI Inc. multiparameter meter)
- Turbidity meter
- Water-level meter
- Peristaltic pump and tubing
- Laboratory-supplied sample containers
- Laboratory chain-of-custody form and cooler with ice
- Filter if dissolved analyses will be performed
- Well construction logs documenting the screen depth and interval for all wells to be sampled
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures)
- 5-gallon buckets with lids
- Department of Transportation-approved storage containers (e.g., drums, totes)
- Groundwater field sampling datasheet and notebook

Methodology

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for low-flow groundwater sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sampling Procedure:

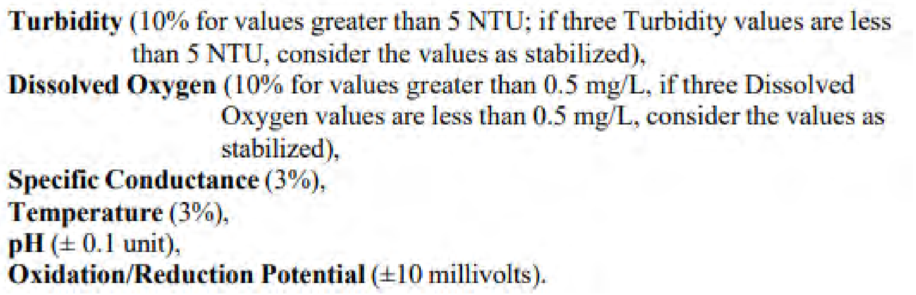
Water Level Measurement

- Water-level measurement procedures are described in detail in SOP 13.

- Open the well cap to allow the water level to equilibrate (approximately ten minutes).
- Measure the water level in the well, using an electronic water-level meter to the nearest 0.01 foot to determine the depth to groundwater below the top of the well casing.
- If light nonaqueous-phase liquid (LNAPL)is present (typically indicated by a dark, oily sheen on the top of the water level meter), discuss with the MFA project manager how to proceed.

Purging

- If the water level is above the top of the well screen, place the end of the sample tubing in the middle of the well screen interval. If the water level is below the top of the screen, place the end of the sample tubing at the midpoint between the water level and the bottom of the well screen.
- Typical low-flow sampling pumping rates range from 0.1 to 0.5 liters per minute, depending on the hydrogeologic characteristics at the site. The objective of the rate selected is to minimize excessive drawdown (<0.3 feet) of the water level.
- Measure water quality parameters (dissolved oxygen, pH, electrical conductivity, turbidity, and temperature) using a flow-through cell connected to the discharge end of the peristaltic pump tubing. Purging will be considered complete when the water quality parameters stabilize per the following for three consecutive readings taken over 3-minute intervals (consistent with EPA guidance)[1]:



Turbidity (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),
Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

- Document the purge procedures, including pumping rates, water quality parameter measurements, and the water level during purging, on the groundwater field sampling datasheet.
- Place purge water in Department of Transportation-approved containers (e.g., 55-gallon drum) stored on site. See SOP 1 for drum storage, labeling, and documentation procedures.

Sample Collection

- Following the purging process, collect groundwater samples in laboratory-supplied containers.
- Confirm the laboratory analytical methods and sample container requirement with the MFA project manager or project chemist. If analysis for gasoline-range petroleum hydrocarbons or volatile organic compounds (VOCs) is proposed, fill the sample containers for gasoline and VOC analysis before filling sample containers for other analytical methods. Sample containers for gasoline and VOC analysis shall be filled to capacity without overfilling and capped so that no headspace or air bubbles remain in the container.

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[1] EPA. 2017. Low stress (low flow) purging and sampling procedure for the collection of groundwater samples from monitoring wells. September 19.

Low Yield (Alternate Method)

- If drawdown of the water table cannot be avoided by reducing the pumping rate, and the well goes dry during purging, discontinue pumping and water quality parameter measurements.
- Collect the groundwater sample after the water level above the well bottom recovers to 90 percent of the prepurge water level. For example, if the water level was 10 feet above the well bottom before purging, begin sampling when the water level has recovered to 9 feet or more above the well bottom.
- If the water column volume is insufficient to meet the sample volume requirement, allow the water level to again recover to 90 percent before continuing sampling. Repeat this procedure until all sample containers are filled.

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Standard Operating Procedure

Monitoring Well—Water Elevation

SOP Number: 13
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the methods for obtaining groundwater level measurements and light nonaqueous-phase liquid (LNAPL) measurements from monitoring wells. Measurement may be collected as an independent event or in conjunction with groundwater sampling or sampling of removed LNAPL.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- Equipment decontamination supplies if equipment will be reused between well locations (see SOP 1 for equipment decontamination procedures)
- Field notebook
- Water-level meter or oil/water interface probe if water levels and LNAPL levels will be measured
- Bailers or tape/paste to confirm LNAPL detections if required; see SOP 10 for procedures for managing LNAPL when removing LNAPL from a well

Methodology

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for water-level and LNAPL measurements, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sampling Procedure:

Review well construction details and historical groundwater and LNAPL levels and thicknesses if available.

During groundwater sampling events, measurements should be collected before, during, and after purging and sampling. During purging and low-flow sampling, water-level measurements are conducted to ensure that drawdown is not occurring. Low-flow sampling methods are described in SOP 9. The following procedures should be followed when collecting groundwater-level and LNAPL measurements from wells.

Water Level Measurement

1. Test the water-level meter to ensure proper instrument response. This can be accomplished by immersing the probe tip in a small container of water.
2. Open the well cover and cap and allow the water level to equilibrate with atmospheric pressure for several minutes so that a static water level is attained. Audible air movement into or out of

the well upon loosening of the well cap is an indication that the water level is not in equilibrium with atmospheric pressure.

3. Locate the measurement reference point at the top of the well casing. Typically, this is a small notch in the casing or a point marked with a pen. If no measure point is present, measure the water level from the north side of the casing and note the result in the field notebook.
4. Lower the water-level meter probe into the well casing until the probe signal indicates that water has been contacted.
5. Observe the depth-to-water (DTW) reading from the measurement reference point at the top of the well casing to the nearest 0.01 foot. Over the course of about a minute, raise and re-lower the probe and observe the resulting DTW reading. If the reading remains unchanged to within 0.01 foot, this is an indication that the water level has equilibrated with atmospheric pressure; the reading can then be recorded in the field notebook as the static water level reading. If the reading changes, allow more time for the water level to become static.
6. If the work scope or SAP requires measurement of the depth-to-bottom (DTB), lower the probe to the bottom of the well and record the DTB reading from the reference point to the nearest 0.01 foot.
7. Remove the probe and decontaminate the probe and the portion of the probe tape inserted into the well casing.

Water Level and LNAPL Measurement

1. Repeat above steps 1 through 7.
2. Lower the interface probe into the well casing until the probe signal indicates that LNAPL has been contacted. Typically, the interface probe will signal by a repeating beep when LNAPL is present. A steady signal indicates that LNAPL is absent and that the probe is recording the DTW.
3. Observe the LNAPL reading as described in step 5 above until a static reading to the nearest 0.01 foot is achieved, and record the reading in the field notebook.
4. Lower the probe until a steady signal indicates that water has been contacted. Observe the water-level reading as described in step 5 above to confirm a static water level, and record the reading in the field notebook.
5. If LNAPL is detected in a well with no prior history of LNAPL presence, or the LNAPL thickness is greater than in prior observations, verify the presence and thickness using an alternative technique (e.g., bailer, tape, and water/petroleum colorimetric paste). See SOP 10 for procedures for managing LNAPL when removing LNAPL from a well.
6. Remove the interface probe and decontaminate the probe and the portion of the probe tape inserted into the well casing.

Appendix C

Water Field Sampling Data Sheet

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Water Field Sampling Data Sheet

Client Name		**Sample Location**	
Project #		**Sampler**	
Project Name		**Sampling Date**	
Sampling Event		**Sample Name**	
Sub Area		**Sample Depth**	
FSDS QA:			

Easting		**Northing**		**TOC**	

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity	Water Level
Final Field Parameters										

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
	Groundwater		VOA-Glass		
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles		

General Sampling Comments

Began purging at

Signature ______________________________

Appendix D

Sample Plan Alteration Form

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SAMPLE PLAN ALTERATION FORM

Project Name and Number:

Material to be Sampled:

Measurement Parameters:

Standard Procedure for Field Collection and Laboratory Analysis (cite references):

Reason for Change in Field Procedure or Analytical Variation:

Variation from Field or Analytical Procedure:

Special Equipment, Materials, or Personnel Required:

CONTACT, Title	APPROVED SIGNATURE	DATE
Initiator:		
Contractor PM:		
Ecology PM:		
Ecology QA Manager or designee:		

Appendix F

Applicable or Relevant and Appropriate Requirements

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1 Introduction

Washington Administrative Code (WAC) 173-340-710 states that cleanup actions conducted under the Model Toxics Control Act (MTCA) shall comply with applicable state and federal laws. This WAC section also addresses relevant and appropriate requirements, substantive (as opposed to procedural) requirements, and local government permits and approvals. This appendix summarizes the analysis completed to ensure conformance with WAC 173-340 710.

1.1 Exemptions for Remedial Actions

MTCA exempts persons conducting a remedial action at a facility, under a consent decree, order, or agreed order, from the procedural requirements of Chapters 70.94 (Air), 70.95 (Solid Waste), 70.105 (Hazardous Waste), 75.20 (Hydraulic Permit), 90.48 (Water Quality), and 90.58 (Shorelands) of the Revised Code of Washington (RCW), and the procedural requirements of any laws requiring or authorizing local government permits or approvals for the remedial action. This exemption does not apply to independent actions.

The Washington State Department of Ecology (Ecology) is required to ensure compliance with the substantive provisions of Chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW, and the substantive provisions for laws requiring or authorizing local government permits or approvals. Ecology makes the final decision regarding which substantive provisions are applicable. Under policy and procedure directive 130B, Ecology describes how compliance will be assured and these exemptions will be implemented.

The remedial action will be conducted in accordance with Consent Decree No. 23-2-02783-06. The following evaluation of the allowed exemptions to the laws, regulations, and rules has been prepared to ensure that the remedial action conforms to the substantive provisions of these laws, regulations, and rules.

2 Summary of Generally Applicable or Relevant and Appropriate Federal Laws and Regulations

Remediation at the Park Laundry Site will be subject to the variety of federal laws and regulations that govern site cleanup. The applicable or relevant and appropriate requirements (ARARs) are discussed below:

2.1 Clean Water Act

The Federal Water Pollution Control Act (FWPCA) Amendments of 1972, commonly referred to as the Clean Water Act (CWA), set forth a number of provisions that require the development of regulations to protect the nation's waters. Section 402 of the CWA requires the development of comprehensive programs for preventing, reducing, or eliminating pollution in the nation's waterways. National Pollutant Discharge Elimination System (NPDES) requirements are specified in Section 402. This program has been delegated to the State of Washington (see Section 3.4).

The objective of the CWA (33 U.S. Code [USC] 1251-1376 and 40 Code of Federal Regulations [CFR] 129 and 131) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Sections 303 and 304 of the CWA require the U.S. Environmental Protection Agency (USEPA) to issue ambient surface water quality criteria for the protection of aquatic life and human health. The federal water quality criteria (FWQC), as specified in 40 CFR 131, are non-enforceable guidelines to be used by states to set water quality standards for surface water. FWQC, based on chronic and acute effects to aquatic life, have been developed for 120 priority toxic pollutants and 45 non-priority pollutants for marine waters and freshwater.

Effect on Design:

During construction, stormwater will either infiltrate or be directed through erosion- and sediment-control features to meet any water quality standards. There should be no direct releases of stormwater to the surrounding waterways. Stockpiles will be covered and lined to prevent stormwater contact with potentially contaminated media.

Dewatering water will be treated to remove contaminants of concern and then discharged to the City of Ridgefield (the City) stormwater system, pending Ecology approval of the Stormwater Pollution Prevention Plan and issuance of a forthcoming Administrative Order.

Any water discharged to surface water (either directly or indirectly) will be required to meet the FWQC. The State of Washington has been delegated as the authority to implement the CWA and has rules and regulations corresponding to all of those stated in the CWA. Therefore, for the City, any discharges to surface water will be managed under the state program.

2.2 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to kill or harass migratory birds by any means unless permitted by regulations. Furthermore, the MBTA requires that identified ecosystems of special importance to migratory birds be protected against pollution, detrimental alterations, and other environmental degradations.

Effect on Design:

The work is planned for late summer/early fall. Any trees and shrubs to be removed will be removed outside the nesting season. No other additional actions are needed to conform to the MTBA.

2.3 The Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was initially passed by Congress in 1974 and then amended in 1986. The SDWA establishes maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) for the protection of the nation's public water systems. The USEPA has established MCLs in 40 CFR Part 141 as the maximum permissible concentrations of specific contaminants in water that is delivered to any user of a public water system. While non-enforceable, MCLGs represent the maximum level beyond which persons drinking the water may experience adverse effects.

Under the SDWA amendments, the USEPA is required, every three years, to develop a list of contaminants that must be regulated in the form of MCLs or MCLGs. Those regulations must be finalized within a year of its proposal. In addition, the USEPA identifies contaminants that are under consideration for listing as MCLs, as well as contaminants that are under consideration for modification of the MCL concentration.

The State of Washington has authorization from the USEPA to administer and enforce this act. Although the state has developed, and continues to develop state-specific MCLs and MCLGs, it incorporates the federal standards by reference.

Effect on Design:

The remedial action will actively remediate contaminated groundwater. Groundwater within the Site is not used as a drinking water source. The remedial action will have no effect on any other water source used as drinking water.

2.4 Natural Resource Damages

The Natural Resource Damage provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Oil Pollution Act of 1990, and the CWA allow natural-resource trustees to assess damages for losses arising from injury to public natural resources caused by the release of oil or hazardous substances. The 43 CFR 11.62 provides the definitions of what constitutes an injury to a natural resource, particularly the definitions of injury to surface-water resources, groundwater resources, air resources, geologic resources, and biological resources. The definition of injury either must be met, or will likely be met, for natural resource damages to be included for a given facility or property.

Once natural resource damages have been established by federal, state, or Native American Tribe trustees, the responsible party must take actions to restore the damaged resource. These actions can either take the form of cash payment to a trustee, or the responsible party can undertake its own restoration projects, or both.

Effect on Design:

Consistent with MTCA, the remedial design establishes means and methods to ensure that the remedial action minimizes short-term risks during implementation. Consequently, natural resource damages caused by implementing the remedial action will be avoided. Also, as a gravel lot, the remedial action area is currently devoid of natural resources.

2.5 National Pretreatment Standards for Discharges to a Publicly Owned Sewer System

In general, the discharge of wastewater to publicly owned treatment works is considered an off-site activity. Requirements of the National Pretreatment Program include general and specific discharge prohibitions (40 CFR 403).

Effect on Design:

The proposed discharge of treated dewatering water to the publicly owned sewer system will meet the general and specific discharge prohibitions of 40 CFR 403 ...

2.6 Identification and Listing of Hazardous Waste and Standards for Generators

The Solid Waste Disposal Act (42 USC 6921 Subtitle C) incorporated under the federal Resource Conservation and Recovery Act (RCRA, 40 CFR § 260 through 266) contains requirements for "cradle to grave" management of materials that meet the RCRA definition of hazardous waste. These requirements may apply to waste generated during a remedial action.

RCRA defines hazardous waste as either waste specifically listed in 40 CFR § 261 Subpart D or waste exhibiting one of four hazardous characteristics: ignitability, corrosivity, reactivity, or toxicity, as determined by the toxicity characteristic leaching procedure (TCLP). Requirements to determine whether waste being generated is hazardous, whether by sampling and analysis or by process knowledge, are listed in 40 CFR § 262.11.

Effect on Design:

The soil to be excavated from the remedial action area is an F002 listed hazardous waste per 40 CFR § 261 Subpart D. Waste will be managed as a hazardous waste with disposal at a permitted Subtitle C landfill.

2.7 Treatment, Storage, and Disposal Facility Standards

The Solid Waste Disposal Act (42 USC 6921 Subtitle C) incorporated under RCRA (40 CFR § 264) provides design standards for treatment, storage, and disposal (TSD) facilities. The TSD requirements for hazardous waste are normally associated with facilities applying for, or having received, a RCRA permit.

Effect on Design:

No treatment of the material is associated with the remedial action. Waste will be managed as a hazardous waste with disposal at a permitted Subtitle C landfill.

2.8 Land-Disposal Restrictions

LDRs for RCRA wastes characterized as toxic (40 CFR § 268) require that the waste be treated to specified concentrations before placement in a land-based unit. LDRs would apply to wastes removed from the site that exceed treatment standards for waste codes or that fail a TCLP analysis

Effect on Design:

The universal treatment standard (UTS) for PCE is 6 mg/kg but, since the waste is soil, the alternative soil standard allows a 10x multiplier to the universal treatment standard (60 mg/kg) for disposal without treatment in a hazardous waste landfill. The 2010 GP52 sample at 12.5 ft bgs (316 mg/kg) and the 2024 PD-70-50 sample at 12.5 ft bgs (82.5 mg/kg) exceed the alternative soil standard; it is expected that stockpiling and composite sampling of excavated soil will be required to verify that the soil is below the alternative soil standard prior to hazardous waste landfill disposal.

2.9 U.S. Department of Transportation Hazardous Materials Regulations

The U.S. Department of Transportation has published regulations, including requirements regarding communications and emergency response, shipping, and packaging (40 CFR 171 through 180), that govern the transportation of hazardous materials to or from the site.

The provisions of 40 CFR § 263 establish minimum standards that apply to persons transporting hazardous waste by air or water.

Effect on Design:

Waste will be handled as hazardous waste. Transportation of the waste will be in accordance with 40 CFR § 263.

2.10 National Ambient Air Quality Standards Attainment Area

The USEPA has established national ambient air quality standards (NAAQS) for a variety of potentially airborne substances known as criteria pollutants. NAAQS are ARARs for any conditions at a site that may result in emissions to the air of any listed criteria pollutant. Criteria pollutants include carbon monoxide, nitrogen dioxide, ozone, lead, particulates smaller than 10 micrometers, and sulfur dioxide.

Effect on Design:

The selected remedial alternative involves soil handling and excavation. The air emissions generated by handling soil at the site are subject to applicable air-quality standards to control or prevent the emission of air contaminants. Based on the contaminants present at the site, the applicable criteria pollutant would be particulate matter (dust).

2.11 Occupational Safety and Health Administration

Federal Occupational Safety and Health Administration (OSHA) regulations pertaining to hazardous waste sites are addressed under 29 CFR 1910.120, the Hazardous Waste Operations and Emergency Response Standard. This standard applies to cleanup and corrective actions, as well as to operations involving hazardous waste, that are conducted at a permitted TSD facility, unless the employer can demonstrate that the operations do not involve employee exposure or the reasonable possibility of employee exposure to safety or health hazards.

Effect on Design:

All work will be performed under a site health and safety plan in conformance with applicable federal and state OSHA regulations.

2.12 Cultural Resources

The federal Antiquities Act (1906) laid out penalties for the unauthorized excavation of archaeological sites, granted the president the authority to designate national monuments, and authorized the managers of federal lands to grant permits for examinations of archaeological resources. The law granted the government the authority not only to declare landmarks on federal lands but also to receive "relinquished" segments of private land. Permits for "examination, excavation, and gathering…of objects of an antiquity" are to be granted by the secretaries of the interior, agriculture, and army only to organizations conducting work to expand the knowledge of those objects and only so that they may be displayed in public museums 16 USC 431-433).

The 1966 National Historical Preservation Act (NHPA) states the importance of "historic heritage" to the nation and spells out in general terms the federal government's intentions to protect and administer cultural resources. Section 101 directs the secretary of the interior to establish the National Register of Historic Places (NRHP); to set rules and guidelines relating to nominations; to appoint state historic preservation officers and establish state preservation programs; to assist tribes in historic preservation and in designating tribal historic preservation officers; and to make traditional cultural properties eligible for listing. Section 106 has had a large impact on, and is central to, resource management. Section 106 requires that federal agencies that have any indirect or direct jurisdiction over undertakings that involve federal funds or federal licensing take into account the effect the undertaking will have on a resource that is listed, or that is potentially eligible for listing, on the NRHP. Agencies are required to allow the Advisory Council on Historic Preservation (ACHP) time to comment on the proposed undertakings. 36 CFR provides regulations regarding parks, forests, and public property; 36 CFR 60.4 outlines criteria used to evaluate the eligibility of a property for listing on the NRHP. Section 110 of the law makes it the specific responsibility of federal agencies to implement historic preservation plans, list eligible properties, appoint preservation officers, and generally comply with the NHPA for properties under the agencies' management. In other sections the law generally mandates federal agencies to protect, list on the NRHP, manage, and identify properties, and to assist and consult with other agencies and private groups on resource management. In Title II it establishes the ACHP and empowers it to implement NHPA regulations.

The 1978 American Indian Religious Freedom Act made it the policy of the U.S. government and federal agencies to "…protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions…." This protection is centered on religious practice but encompasses and recognizes the importance of place and objects. The act requires federal agencies to consult with traditional religious leaders on potential impacts to rights and practices (42 USC 1996).

The 1979 Archaeological Resources Protection Act (ARPA) defines archaeological resources and stipulates that the act applies to resources more than 100 years old; furthermore, it strengthens the permit process for work on these resources on federal and Indian lands. Permits granted under this law for work that may disturb archaeological resources are subject to review by tribes “which may consider the site as having religious or cultural importance” 16 USC 470cc(c)). The law grants the secretary of the interior authority to develop regulations regarding the exchange and curation of excavated materials and encourages the coordination of efforts between federal agencies and private individuals with archaeological collections. 43 CFR 7.9 outlines permit requirements, including an agreement about the final disposition of collected artifacts. It also criminalizes the removal of resources without a permit, specifies criminal and civil penalties for doing so, and exempts the disclosure of the location of archaeological resources from the public record (16 USC 470aa-470mm). 32 CFR 229 provides the regulations, definitions, and standards for implementation of ARPA.

The 1990 Native American Graves Protection and Repatriation Act deals with the disposition of indigenous tribal cultural items recovered on tribal or federal lands. It defines and addresses human remains, funerary goods, sacred objects, and objects of cultural patrimony, which are referred to as cultural items, and specifies the return of those objects to lineal descendants of the individual or tribe on whose land the items were recovered. The act further outlines the process by which permits are granted (under the ARPA framework) for excavation of described cultural items.

36 CFR 79 (Curation of Federally Owned and Administered Archeological Collections) was codified in 1990 to “…establish definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records…” as stipulated in the Antiquities Act, the Reservoir Salvage Act, the NHPA, and ARPA (36 CFR 79.1). This complicated set of regulations lays out many guidelines on the care and management of existing and future collections of archaeological material.

State-funded capital construction projects, with no federal funding or permits, must comply with the Governor's Executive Order 21-02 (GEO 21-02). GEO 21-02 requires a similar cultural resources review process to section 106

Effect on Design:

The remedial action will be conducted consistent with a cultural resources monitoring and inadvertent discovery plan to address any archaeological discoveries made during the proposed action.

3 Summary of Generally Applicable or Relevant and Appropriate Washington State Laws and Regulations

The following state laws, regulations, and requirements were determined to be ARARs.

3.1 Model Toxics Control Act

In Washington State, MTCA governs the investigation and cleanup of contaminated sites (Chapter 70.105D RCW). A contaminant is defined by MTCA 173-340-200 as any hazardous substance that does not occur naturally or that occurs at concentrations greater than natural levels.

MTCA became effective in March 1989 and was enacted through a voter-initiative process. The MTCA cleanup regulation, cited under Chapter 173 340 WAC, was amended in February 2001. MTCA contains provisions controlling site cleanup activities, including site discovery, priority, listing, investigation, and cleanup; liability provisions; administrative options for remedial actions, payment of costs, and funding; public participation; cleanup standards; and other general provisions. The law regulates the cleanup of sites contaminated with CERCLA hazardous substances, all state and federal RCRA hazardous and dangerous wastes, and petroleum products.

Effect on Design:

All elements of the remedial design and remedial action will comply with MTCA standards.

3.2 Water Quality Standards for Surface Waters and Ground Waters of the State

In Washington, water quality standards for surface waters of the state are promulgated under Chapter 173-201A WAC. The purpose of this chapter is to establish water quality standards for surface waters of Washington State that are consistent with public health and related public enjoyment, and with the propagation and protection of fish, shellfish, and wildlife, pursuant to the provisions of Chapter 90.48 RCW. The criteria listed in Chapter 173-201A WAC for surface water quality provide protective numbers for both freshwater and marine aquatic life regarding both acute and chronic exposure to toxic substances.

Water quality standards for groundwater are also promulgated under Chapter 173-200 WAC. This chapter implements the FWPCA and Chapters 90.48 and 90.54 of the RCW, as well as the federal Water Resources Act of 1971. Chapter 173-200 WAC applies to all groundwaters of the state that occur in a saturated zone, stratum beneath the land surface, or below a surface-water body. The water quality standards listed in Chapter 173-200 WAC apply to cleanup actions conducted under MTCA that involve potable groundwater.

Effect on Design:

Stormwater that does not infiltrate will be directed through erosion and sediment control best management practices to meet the water quality standards. Dewatering water will be treated for volatile organic compounds prior to discharge to the stormwater system.

3.3 Washington Dangerous Waste Regulations

Washington regulations identify RCRA F-listed and K-listed waste as dangerous waste (WAC 173-303-9904). Designated dangerous waste may be treated, stored, or disposed of at a permitted TSD facility.

Effect on Design:

Material generated from the site will be handled in accordance with WAC 173-303, following recordkeeping, reporting, and manifesting requirements.

3.4 National Pollutant Discharge Elimination System Stormwater Permit Program

Chapter 173-220 WAC establishes a state permit program, applicable to the discharge of pollutants and other wastes and materials to the surface waters of the state, operating under state law as part of the NPDES created by Section 402 of the FWPCA. Permits issued under this chapter are intended to satisfy the requirements for discharge permits issued under both Section 402(b) of the FWPCA and Chapter 90.48 RCW.

Effect on Design:

NPDES construction stormwater permits are required for construction sites of one acre or larger or, at Ecology's discretion, for construction sites smaller than one acre where construction will disturb contaminated soils or groundwater. As this site will involve both the excavation/handling of contaminated soil and dewatering of contaminated groundwater, the project will seek coverage under the NPDES construction stormwater general permit.

3.5 Shoreline Management Act

The state Shoreline Management Act (SMA) (Chapter 173-22 WAC) regulates any action within 200 feet of the ordinary high-water mark of a shoreline. Shorelines in towns and cities are regulated by shoreline master programs (Chapter 173-26 WAC) adopted by local municipalities.

Effect on Design:

The remedial action will take place well outside the shoreline jurisdiction; this requirement is not applicable.

3.6 Air Quality Standards

Chapters 173-400, -460, and -470 WAC establish provisions for general regulation of air pollution sources, ambient air quality standards, and acceptable levels for particulate matter, and stipulate requirements for new sources of toxic air pollutant emissions. These regulations may be applicable to cleanup actions at the site; for example, to control particulate emissions generated during soil excavation activities, or emissions resulting from air stripping or other groundwater treatment technologies. These standards are typically administered and enforced by the local clean air agency, which in this case would be the Southwest Clean Air Agency. Chapter 173-401 operating permits may be required for fugitive emissions from new sources. Emission standards for volatile organic compounds are set in Chapter 173-490.

Effect on Design:

The remedial work includes soil handling. During soil-excavation activities, it may be necessary to implement engineering controls such as soil wetting to control particulate emissions. Air testing may be required to show that emissions meet the substantive requirements of applicable air quality permits and rules. If results illustrate that substantive requirements have not been met, the design will require modification.

3.7 Noise Regulations

Maximum environmental noise levels have been determined and are contained in Chapter 173-60 WAC. Approved procedures for measurement of environmental noise are contained in Chapter 173-58 WAC.

Effect on Design:

During design, expected noise levels will be estimated and compared to the limitations established in 173-60 WAC. The need to adjust the approach to meet these requirements will be determined. For example, the noise level regulations may limit the hours of operation for some parts of the remedial action. Construction equipment may be required to be outfitted with additional noise-minimizing equipment (larger or additional mufflers, etc.).

3.8 State Environmental Policy Act

The State of Washington administers and enforces a program equivalent to the federal National Environmental Policy Act. The State Environmental Policy Act (SEPA), contained in Chapter 43.21C RCW, provides the framework for agencies to consider the environmental consequences of a proposal before taking action. It also gives agencies the ability to condition or deny a proposal because of identified likely significant adverse impacts. The act is implemented through the SEPA Rules and Procedures, Chapters 197-11 and 173-802 WAC, respectively.

SEPA review is a comprehensive assessment of potential environmental, economic, and cultural impacts from a specific development project or a proposed policy, plan, or program. The SEPA review process requires the preparation of an environmental checklist, which may be achieved by review of the environmental impacts and proposal of mitigation measures. The completed checklist helps to identify potential environmental impacts associated with the proposed action. Following a threshold determination, the lead agency will issue either a Determination of Non-Significance that will allow the action or permitting process to continue, or a Determination of Significance that will require that an environmental impact statement (EIS) be prepared before agency action can be taken. Typically, one checklist or EIS is required for a project, although it may require modification or application of numerous permits by federal, state, or local agencies.

Effect on Design:

SEPA review was initiated by the City with Ecology as the lead agency. A determination of nonsignificance was issued by Ecology on July 26, 2023. The requirement has been satisfied.

3.9 Washington Industrial Safety and Health Administration

Washington Industrial Safety and Health Administration (WISHA) regulations pertaining to hazardous waste sites are addressed under WAC 296-843, Hazardous Waste Operations. This standard applies to cleanup and corrective actions at MTCA-regulated sites.

Effect on Design:

All work will be performed under a site health and safety plan in conformance with the applicable WISHA regulations.

4 Local Requirements

The following local laws, regulations, and requirements were determined to be ARARs.

4.1 Shoreline Master Program

A cleanup action or “substantial development” conducted along any shoreline of statewide significance in the city of Ridgefield is regulated under the Shoreline Master Program (Chapter 18.820 of the Ridgefield Municipal Code [RMC]). A Substantial Development Permit (SDP) is required for such an action. In 2012, the City of Ridgefield adopted an updated Shoreline Master Program.

Effect on Design:

The remedial action area is well outside the shoreline jurisdiction.

4.2 City of Ridgefield Critical Areas Ordinance

The City of Ridgefield Critical Areas Ordinance designates and regulates projects that may impact ecologically sensitive areas, including wetlands, fish and wildlife habitat conservation areas, or geophysical hazards such as geologically hazardous areas and frequently flooded areas (RMC 18.280.120).

Effect on Design:

The remedial action area is part of a category 2 critical aquifer recharge area. The remedial action area is also identified as having a low to moderate liquefaction susceptibility, as indicated on the Alternative Liquefaction Susceptibility Map of Clark County, Washington. Relative to these items, the remedial design will meet the substantive requirements of the critical areas ordinance.

4.3 Street Tree Program

Work adjacent to street trees is regulated under Section 12.12 of the RMC. The RMC requires a permit for excavation within the drip line of any street tree and for the removal of any street tree. As a condition to the granting of a street tree permit, the director may require the applicant to relocate or replace trees. If a tree is interfering with the use of any utility that has been granted a franchise by the City, it is required that notice of removal and/or excavation within the dripline be given to the director, but a permit is not required.

Effect on Design:

The removal of street trees along N Main Avenue or Simons Street may be required to facilitate construction access to/egress from the remedial action area. Any street trees removed will be replaced in as required by the RMC.

4.4 Street/Right-of-Way Excavation Permit

Excavations within the city of Ridgefield rights-of-way are regulated under Section 12.15 of the RMC. An excavation permit is required for work that involves disturbing the surface of any street, alley, sidewalk, curb, drainage-way, or other structure within city right-of-way. Standards for work within the city rights-of-way are described in the City of Ridgefield Engineering Standards for Public Works Construction.

Effect on Design:

The remedial action will not require excavation within City rights-of-way; this requirement is not applicable.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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