



Source Control Evaluation Work Plan

REPORT DATE: January 11, 2024

SITE INFORMATION

3717 NW Saint Helens Road
Portland, Oregon 97210

PROJECT INFORMATION

AEI Project No. 484441
DEQ ECSI No. 6565

PREPARED FOR

Oregon Department of
Environmental Quality
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PREPARED BY

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January 11, 2024

Mr. Jim Orr, DEQ PM
Oregon Department of Environmental Quality
700 NE Multnomah Street, #600
Portland, Oregon 97232

Subject: Source Control Evaluation Work Plan
3717 NW Saint Helens Road
Portland, Oregon 97210
AEI Project No. 484441
DEQ ECSI No. 6565

Dear Mr. Orr,

On behalf of Norris & Stevens, AEI Consultants (AEI) has prepared the enclosed *Source Control Evaluation Work Plan* (Work Plan) for the stormwater investigation activities proposed at 3717 NW Saint Helens Road, Portland, Oregon (“the Site”). This Work Plan has been prepared in response to the email from Jim Orr of Oregon Department of Environmental Quality (DEQ) dated October 12, 2023, and the meeting between DEQ and AEI held on November 2, 2023. In order to obtain the Source Control Determination from DEQ, this Work Plan has been prepared to collect surface to storm drain samples and evaluate potential compounds of concern in stormwater at the Site that are discharging to the storm drain network, which could impact Willamette River.

AEI appreciates working with the Oregon DEQ and trusts that this work plan meets with your approval. Should you have any questions, please contact me at jday@aeiconsultants.com.

Sincerely,



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1.0 INTRODUCTION

On behalf of Norris & Stevens, AEI Consultants (AEI) has prepared the enclosed *Source Control Evaluation Work Plan* (Work Plan) for the stormwater investigation activities proposed at 3717 NW Saint Helens Road, Portland, Oregon (“the Site”). This Work Plan has been prepared in response to the email from Jim Orr of Oregon Department of Environmental Quality (DEQ) dated October 12, 2023, and the meeting between DEQ and AEI held on November 2, 2023. This Work Plan has been prepared to collect the stormwater samples to evaluate potential compounds of concern (COC) in stormwater at the Site that are discharging to the City of Portland storm drain network, which could impact Willamette River.

As presented below, AEI is proposing to collect four rounds of stormwater samples during four separate storm events at the Site to identify the potential COC in stormwater and obtain a Source Control Decision from the DEQ, as stated in the DEQ *Instructions for Developing a Stormwater Assessment Work Plan*, dated October 2010. The purpose of the stormwater assessment is to ensure that the stormwater discharge from the Site does not pose an unacceptable risk through transport of hazardous substances to the Willamette River.

2.0 SITE BACKGROUND AND GEOLOGY

2.1 Site Background

Based on the May 3, 2023 *Phase I Environmental Site Assessment Report* (ESA) prepared by AEI (AEI 2023a). The Site is located on the southwest side of NW Saint Helens Road in Portland, Oregon. The Site consists of approximately 1.25 acres of land that is improved with a single-story building with a mezzanine. The Site is currently occupied by Baxter & Flaming Industries, Inc., a hollow metal doors and frames, wood doors, timely frames, glass, and hardware supplier. On-site operations within the Site building consist of door frame warehousing and distribution, and minor assembly such as the welding of the frames. Truck storage by a third party is conducted on the rear lot and is not associated with the Baxter & Flaming Industries Inc. operation. The location of the Site is shown on Figure 1.

Information presented in the Phase I ESA indicated that the Site was formerly used for industrial purposes from as early as 1928 until 1988. Tenants have included varnish/paint manufacturing (1928-1955), Goss & Goss, putty manufacturers (1955-1960), Truck Parts Wrecking/auto repair (1970-1985), and Baxter & Flaming Industries, Inc. (1988-present). These operations typically use hazardous materials such as petroleum products and solvents in their daily operations. None of these tenants were listed in the regulatory database or agency records for the use of hazardous materials onsite; however, they operated prior to a time of regulatory oversight. Additionally, the Site building was initially connected to a septic tank until 1973, when it was then connected to the municipal sewer system. At least three interior catch basins were located in the Site building, which were capped with concrete in 1995. Due to their subsurface nature, these features can act as preferential pathways for contaminants such as oil, grease, fuel, or

cleaning solvents discharged or released during the former activities. Consequently, the potential exists that the former industrial operations and use of the septic tank and/or catch basin system may have resulted in an impact to the subsurface of the Site. Based on this information and the duration of use (at least 60 years), the former industrial operations at the Site and associated hazardous materials, catch basin system, and septic tank represent a recognized environmental condition (REC), including a potential vapor intrusion concern for the Site (AEI 2023a).

In November 2023, AEI reviewed further information pertaining to the interior drainage system from the City of Portland website (<https://www.portlandmaps.com>). According to a 1984 permit, Portland Power Train obtained a Plumbing Permit dated June 12, 1984, to connect three exterior rain drains and three interior drains within the Site warehouse to the existing storm sewer system. In 1995, Baxter & Flaming Industries, Inc. obtained a Plumbing Inspection permit dated December 22, 1995, to cap and cover the three interior drains. During a Site visit on December 6, 2023, AEI confirmed that the three interior drains are capped with concrete preventing liquids from entering the drainage system from within the Site building warehouse.

2.2 Site Geology and Hydrogeology

The ground surface at the Site, and nearby properties, appears to be sloped to the northeast and is situated at an elevation approximately 30 feet above mean sea level. Subsurface conditions observed during a Limited Phase II Subsurface Investigation (Phase II) conducted by AEI indicated that soils underlying the Site consisted primarily of silty clay, silty sand, gravelly sand, sand, and clay to a depth of 20 feet below ground surface (bgs), the total depth of the Phase II investigation (AEI 2023b).

Groundwater was encountered during drilling of borings SB-1, SB-2, and SB-3 at approximate depths of 14 feet bgs, 4 feet bgs, and 7 feet bgs, respectively. After approximately 30 minutes, the groundwater equilibrated to depths of 13.22 feet bgs, 3.50 feet bgs, and 6.51 feet bgs; respectively, in the three temporary wells installed (AEI 2023b).

3.0 REGULATORY HISTORY

The Site has no history of stormwater permitting. No summary of monitoring data and inspection reports and findings have been issued for the Site to date. Additionally, no other permits, including wastewater, solid waste, or air were reported for the Site. No above ground or underground petroleum storage tanks have been identified at the Site. No violations or environmental regulations have been identified. The Site does not have any history of hazardous waste management.

4.0 PREVIOUS ENVIRONMENTAL INVESTIGATIONS AND CLEANUPS

On May 12, 2023, AEI conducted a Phase II dated May 30, 2023, to investigate the RECs identified in the May 3, 2023 Phase I ESA report. Investigation efforts included a geophysical survey and advancing three exploratory soil borings at the Site to collect soil and groundwater samples. Figure 2 presents the Sample Location Map and the soil and groundwater sample results are presented in Tables 1 and 2. Results from the Phase II investigation activities were as follows:

- Evidence of the former septic tank in the area to the west-southwest of the Site building was not identified during the geophysical scan.
- An apparent hydrocarbon odor was observed in boring SB-2 (0.8-15 feet bgs). The maximum photoionization device (PID) reading was 528.7 parts per million (ppm) in boring SB-2 at 2.5 feet bgs.
- Chlorinated volatile organic compounds (VOCs) including chlorobenzene, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), 1,1-DCE, vinyl chloride and the petroleum hydrocarbon VOC benzene were not detected above the laboratory reporting limits in the three soil and groundwater samples collected during this investigation.
- Total Petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO) and residual range organics (RRO), and petroleum VOCs including toluene, ethylbenzene, and total xylenes (BTEX) were detected in soil sample SB-2-2.5 at concentrations above the laboratory reporting limits, but below the Occupational Risk-Based Concentrations (RBCs) in the three soil samples collected and analyzed as part of this investigation.
- TPH-GRO, TPH-DRO, and TPH-RRO were detected at maximum concentrations of 4,410 micrograms per liter ($\mu\text{g}/\text{L}$), 109,000 $\mu\text{g}/\text{L}$, and 3,440 $\mu\text{g}/\text{L}$, respectively, in one or more of the groundwater samples collected as part of this investigation. The detected concentrations exceed their respective Occupational RBC_{tw} of 450 $\mu\text{g}/\text{L}$, 430 $\mu\text{g}/\text{L}$, and 1,300 $\mu\text{g}/\text{L}$. The laboratory noted that the TPH in both soil and water at boring location SB-2 resembles the laboratory standard for mineral spirits.

Based on the investigation results, AEI recommended further subsurface assessment in connection with the apparent release from the catch basin at the Site to evaluate the extent of impacts to groundwater (AEI 2023b).

On September 26, 2023, the Client informed AEI that a Voluntary Cleanup Program (VCP) enrollment has been submitted to the DEQ. The DEQ assigned ECSI No. 6565 to the Site.

On October 12, 2023, DEQ case manager Jim Orr requested a Source Control Evaluation for the Site, as the Site is located within the upland area of the Portland Harbor Superfund site and the Site drains to City of Portland Outfall No. 18.

On November 2, 2023, AEI staff completed a conference call with the DEQ representatives Jim Orr and David Lacey to review the details of the Source Control Evaluation.

5.0 STORMWATER POLLUTION PREVENTION AND CONTROL MEASURES

To minimize the potential for contamination in stormwater as a result of daily operations, as well as any accidental spills or releases of COCs, the Site has implemented best management practices such as storing and correctly labeling any potentially hazardous materials to prevent leaks and spills into stormwater. All waste is recycled and/or properly disposed in onsite trash containers to eliminate exposure of pollutants to stormwater. In addition, the current tenant has capped the interior drains within the warehouse to prevent COCs from entering the stormwater drainage system inside the Site building.

6.0 CATCH BASIN SAMPLING PLAN

Catch basin sediment will not be sampled for the purpose of source control evaluation at this time.

7.0 STORMWATER SAMPLING PLAN

On December 6, 2023, during a rain event, AEI completed a Site visit to document the stormwater drainage at the Site for the purposes of creating the stormwater sampling plan. Figure 3 depicts the Site Drainage Map and Figure 4 shows Portland Harbor Drainage Map. Details for the stormwater sampling plan are presented below.

7.1 Sampling Locations

During the rain event on December 6, 2023, AEI noted seven potential stormwater sampling points at the Site, six storm drains (SWD-1 through SWD-6) and one rain gutter downspout (RGD-1). During the rain, the stormwater flow direction at the Site was established, as shown on Figure 3. The potential stormwater sampling points are as follows:

- Stormwater drains SWD-1 and SWD-2 are located within the parking lot area behind the Site building (upgradient),
- Stormwater drain SWD-3 is located adjacent to the east side of the Site building;
- Stormwater drain SWD-4 is located adjacent to the northeast corner of the Site building;
- Stormwater drain SWD-5 is located in the right-of-way, within the bike lane on the northeast corner of the Site building (downgradient);
- Stormwater drain SWD-6 is located in the right-of-way, within the bike line on the northwest corner of the Site building (downgradient); and
- Rain gutter downspout RGD-1 is a rain gutter drainage point located on the roof/wall, on the northwest side of the Site building.

Based on the available potential stormwater sampling points, stormwater from Site operations will be collected at stormwater drains SWD-1 through SWD-4, providing the most representative samples for stormwater leaving the Site. Rain gutter RDG-1 will be used as a background sample location to evaluate COC in rainwater that may impact sample quality at the Site. Locations SWD-5 and SWD-6 were collecting mainly stormwater from the street and are not representative of Site stormwater.

7.2 Sampling Schedule

Stormwater sampling will include a minimum of four separate storm events during the 2024-2025 rain years. At least two of the four sampling events will represent “flush” conditions. Sampling stormwater during the first two “flush” conditions will occur within the first 30 minutes of stormwater discharge. The remaining two samples will be collected within the first three hours of stormwater discharge. Samples will be collected from stormwater drains SWD-1 through SWD-4 and rain gutter downspout RGD-1.

7.3 Storm Event Criteria and Selection

Rainfall data for the stormwater sampling events will be obtained from the National Weather Service website or by contacting the National Weather Service by phone. Additionally, the data will be obtained from the City of Portland HYDRA Rainfall Network (<http://or.water.usgs.gov/non-usgs/bes/yeon.rain>). Target storm event criteria will be monitored prior to each sampling event. The stormwater sampling events will be performed according to the following storm event criteria:

- Following the antecedent dry period of at least 24 hours (as defined by <0.1 inches over the previous 24 hours);
- Minimum predicted rainfall volume of 0.2 inches or greater per event; and
- Each sampling event will have an expected storm duration of at least 3 hours.

During sampling, observations will be made regarding amount of flow and the area drained to ensure the water runoff is adequate for sample collection and the sample is representative of stormwater runoff. All sampling observations and details will be recorded on stormwater sample field logs for each sampling event, along with the rainfall data sheet for each sampling event.

7.4 Sampling Methods

As recommended by DEQ, the stormwater samples will be collected using “grab sample” collection procedures outlined in the following guidance:

- Washington Department of Ecology, *How To Do Stormwater Sampling: A Guide for Industrial Facilities*, Publication #02-10-071, December 2002 (revised March 2010).

Disposable nitrile gloves will be worn during all sampling activities. The stormwater samples will be collected using a decontaminated stainless steel sampling cup (attached to an

extendable pole, if necessary) before being transferred into the appropriate laboratory-supplied sample jars. Care will be taken to ensure that only water collected directly from the compliance sampling point out-flow will be captured. The stormwater samples will be observed for potential contamination such as odor, sheen, debris, water clarity, etc. The observations of each stormwater sample will be noted in the field by the AEI field personnel and recorded in the field notes.

The stormwater samples will not be filtered in the field during collection. Each of the sample containers will be immediately capped, labeled, and placed on ice in an insulated cooler for shipment to the laboratory. Chain-of-custody documentation will be prepared and accompany the samples to the laboratory.

7.5 Analytical Suite

AEI evaluated the Site history, previous sampling activities at the Site and the COC listed in US EPA Record of Decision Making (ROD) Table 17, January 14, 2020, to determine the analytical suite for the stormwater sampling. Table 3 presents the evaluation for each COC. Each stormwater sample will be analyzed for the following:

- Total suspended solids (TSS) using US EPA Testing Method SM 2540 D.
- Total organic carbon (TOC) using US EPA Testing Method SM 5310 C.
- BTEX using US EPA Testing Method 8260D.
- Total chromium and lead using US EPA Testing Method 6010B.
- Polychlorinated Biphenyls (PCBs) using US EPA Testing Method 8082 Low Level.
- Polycyclic aromatic Hydrocarbons (PAHs) using US EPA Testing Method 8270SIM.
- Dixons and Furans using US EPA Testing Method 1613B.
- TPH using NWTPH Methods.
- Aliphatic Hydrocarbons C10-C12 using NWTPH Methods.

The proposed Portland Harbor COC analyses for the four source control sampling events at the Site are presented in Table 3.

7.6 Analytical Methods and Detection Limits

The stormwater results will be compared to the screening level values (SLVs) presented in Appendix D: Storm Water Data Reporting and Screening Table for Portland Harbor Sites, as found in the *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (January 2009, updated October 2010).

The analytical laboratory will be directed to meet the lowest method detection limit (MDL) ranges for each constituent (provided by DEQ) in order that analytical results meet the established SLVs and are useful for source control evaluation purposes. A detailed list of the proposed COCs with the associated screening level values (SLVs), laboratory MDLs, and method reporting limits (MRLs) for each constituent is provided in Table 3.

7.7 Data Quality Assurance and Control

The analytical laboratory will conduct necessary quality assurance/quality control (QA/QC) calculations that will be summarized in laboratory reports. All final laboratory reports will be included as an appendix or appendices to the sampling event reports. In addition, all analytical data will be summarized in individual tables.

Analytical data will be assessed to ensure that they are of acceptable quality. This assessment will include a review of the following:

- Sampling dates
- Dates of analysis
- Requested analyses
- Chain-of-custody documentation
- Sample preservation
- Holding times
- Laboratory control samples
- Method blanks
- Surrogate recoveries
- Matrix spike results
- Method reporting limits or method detection limits above requested levels
- Any additional comments reported by the laboratory

The data assessment, including points of achievement and departure from project-specific objectives, will be discussed in the QA/QC section of the sampling event reports.

7.8 Reporting

As four separate stormwater sampling events will be conducted, the analytical results of the first three events will be presented to the DEQ as interim letter reports. Upon completion of the fourth stormwater sampling event, a final report will be compiled with each of the information from the reports for the first three events and the results of the fourth sampling event. The stormwater sampling reports will address the reporting requirements presented in Appendix A, Section 7.8, of DEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (January 2009, updated October 2010). Each of the letter reports will be submitted to the DEQ within 30 days of receipt of the final laboratory reports or as part of a quarterly report. The three interim stormwater sampling reports and the final report for each four events will include the following:

- Discussion of sampling activities and any deviations from the sampling plan;
- Field documentation - notes and photographs;
- A rainfall distribution graph for each storm event for the timeframe that begins 24 hours prior to the storm event, with the information indicating time of sampling;
- Copies of original laboratory reports and chain-of-custody documentation;
- Data summaries using the data summary and screening tables provided in Appendix D of the DEQ *Guidance for Evaluating the Stormwater Pathway at Upland Sites*, October

2010. The tables will present the sampling locations, unit of measurement, compounds detected, and laboratory MDLs for those compounds not detected, and JSCS SLVs.

- Discussion of compounds detected, and compounds detected above the SLVs;
- Screening of the analytical results using the charts presented in Appendix E: Tool for Evaluating Stormwater Data of the DEQ *Guidance for Evaluating the Stormwater Pathway at Upland Sites*, October 2010; and
- Discussion of findings, recommendations for further stormwater sampling and/or additional source control measures (if warranted), and a determination for DEQ Stormwater Source Control for the Site.

8.0 ATTACHMENTS

Figure 1 : Site Location Map

Figure 2 : Sample Location Map

Figure 3 : Site Drainage Map

Figure 4 : Portland Harbor Drainage Map

Table 1: Soil Sample Data Summary

Table 2: Groundwater Sample Data Summary

Table 3: Stormwater COCs, Analyses, Analytical Methods, Screening Level Values, Method Detection Limits and Method Reporting Limits

9.0 REFERENCES

AEI, 2023a, *Phase I Environmental Site Assessment, 3717 NW St. Helens Road, Portland, Multnomah County*, (AEI Project No. 473338), dated May 3.

AEI, 2023b, *Limited Phase II Subsurface Investigation, 3717 NW St. Helens Road, Portland*, dated May 30.

Oregon Department of Environmental Quality and the United States Environmental Protection Agency, 2005, *Portland Harbor Joint Source Control Strategy*, dated December.

Guidance for Evaluating the Stormwater Pathway at Upland Sites (January 2009, updated October 2010).

Oregon Department of Environmental Quality, 2023, *Risk-Based Concentrations Table*, dated June 2023.

Washington Department of Ecology, 2002, *How To Do Stormwater Sampling: A Guide for Industrial Facilities*, Publication #02-10-071, dated December (revised March 2010).

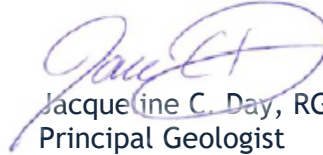
10.0 SIGNATURES

This document was prepared by, or under the direction of, the undersigned.

expires: 05/01/2024



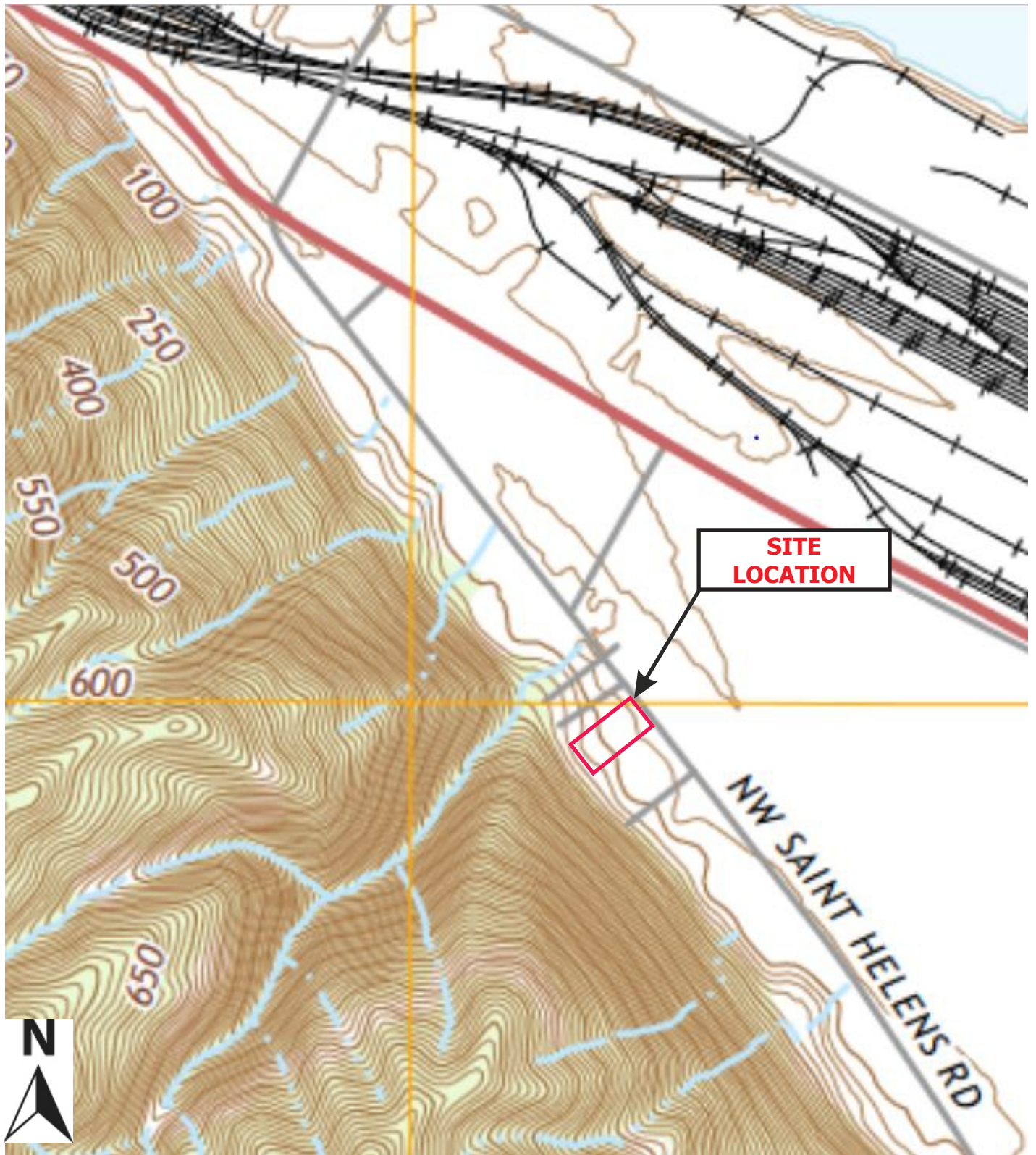
Natasha Budimirovic
Project Geologist



Jacqueline C. Day, RG G2377
Principal Geologist



FIGURES



LEGEND

 Approximate Site Boundary

Map: Portland Quadrangle, Oregon
 Date: 2020
 Source: USGS

SITE LOCATION MAP









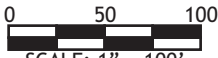


3717 NW SAINT HELENS ROAD
 PORTLAND, OREGON

FIGURE 1
 Project No. 484441



LEGEND

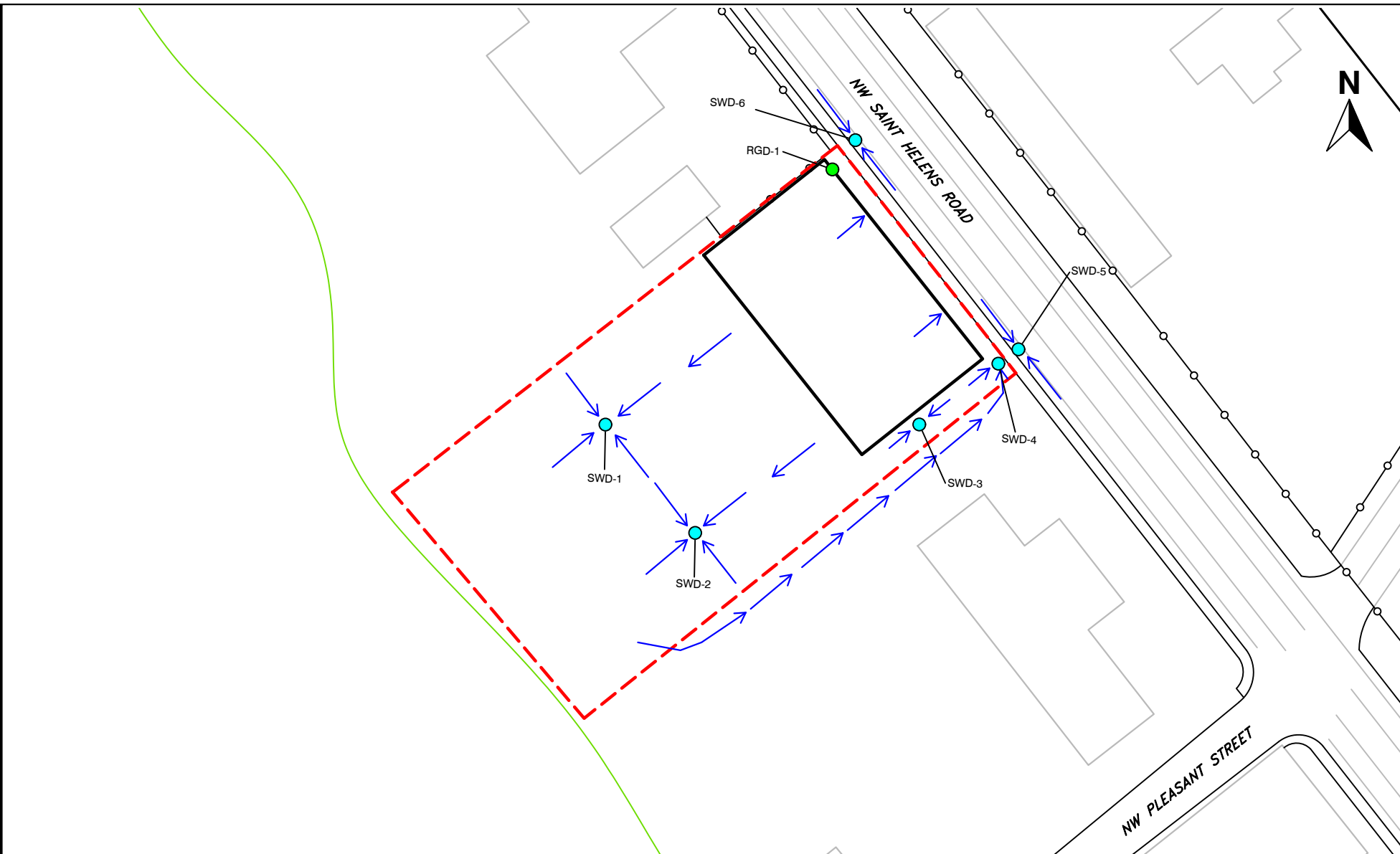
- | | |
|---|--|
|  Approximate Site Boundary |  Trench Drain |
|  Approximate Soil Boring Location |  Estimated Groundwater Flow Direction |
|  Capped Catch Basin |  Monitoring Well (Christenson Oil) |
|  Former Septic Tank (approximate) |  Proposed Soil Boring Location |
- 
 SCALE: 1" = 100'

SAMPLE LOCATION MAP



3717 NW ST HELENS ROAD
PORTLAND, OREGON

FIGURE 1
Project/Proposal No. 484441/91337



LEGEND

- - - - - Approximate Site Boundary
- SWD-1 Approximate Storm Water Drainage Location
- RGD-1 Rain Gutter Drainage Location

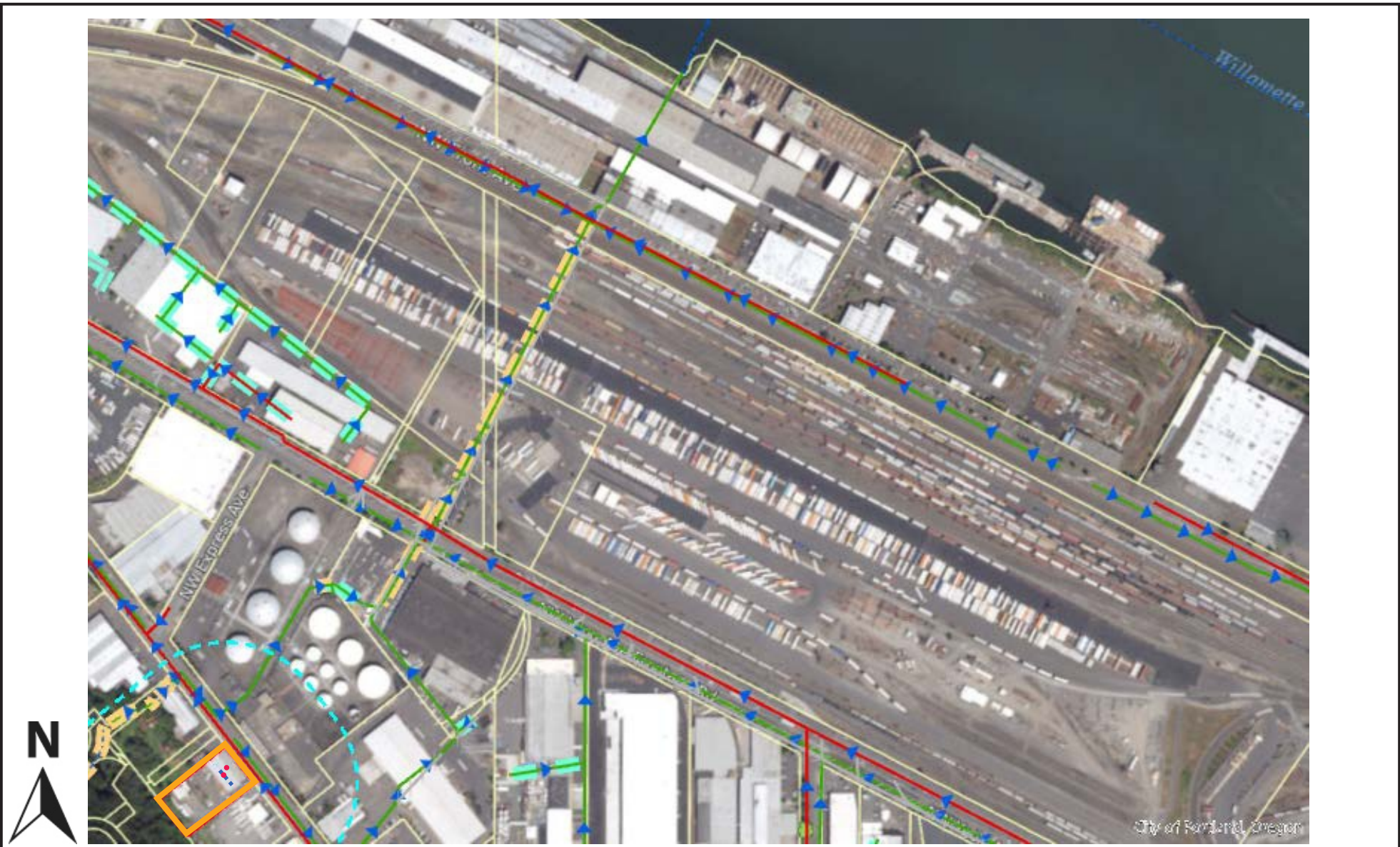


SITE DRAINAGE MAP



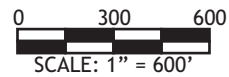
3717 NW Saint Helens Road
Portland, Oregon 97210

FIGURE 3
Project No. 484441



LEGEND

- Approximate Site Boundary
- - - Trench Drain
- Capped Catch Basin
- Storm Drain Line
- Sewer Line



PORTLAND HARBOR DRAINAGE MAP



3717 NW SAINT HELENS ROAD
PORTLAND, OREGON

FIGURE 4
Project No. 484441

TABLES

TABLE 1: SOIL SAMPLE DATA SUMMARY
3717 NW St. Helens Road, Portland, Oregon
Project Number: 484441

Location ID	Date	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	sec-Butylbenzene (mg/kg)	Remaining VOCs (mg/kg)
SB-1-12	5/12/2023	5.48	ND<5.59	ND<14.0	ND<0.00186	ND<0.00932	ND<0.00466	0.00306 J	ND<0.0233	ND<RDL
SB-2-2.5	5/12/2023	3,460	106	ND<12.5	ND<0.0626	0.313	0.157	0.0747	7.86	ND<RDL
SB-3-6	5/12/2023	16.9	2.76 J	4.66 J	ND<0.00132	ND<0.00662	0.00101 J	0.00199 J	ND<0.0165	ND<RDL
Comparison Values:										
ODEQ Occupational RBC _{si}		>Max	>Max	>Max	2.1	>Csat	17	>Csat	--	Various
ODEQ Occupational RBC _{ss}		20,000	14,000	36,000	37	88,000	150	25,000	--	Various

Notes:

- mg/kg milligrams per kilogram
- ND<RDL not detected above laboratory reporting detection limits
- No comparison value established
- J The identification of the analyte is acceptable; the reported value is an estimate.
- TPH Total Petroleum Hydrocarbons
- GRO Gasoline Range Organics
- DRO Diesel Range Organics
- RRO Residual Range Organics
- VOCs Volatile Organic Compounds
- RBC_{ss} Risk-Based Concentrations for Soil Ingestion, Dermal Contact, and Inhalation
- RBC_{si} Risk-Based Concentrations for Vapor Intrusion into Buildings

>Max The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg . Therefore, this substance is deemed not to pose risks in this scenario.

>Csat This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to "ChemData" page for the corresponding value of Csat. Soil concentrations in excess of Csat indicate that free product might be present.

Csat for toluene = 538 mg/kg per ODEQ ChemData

Csat for xylenes = 358 mg/kg per ODEQ ChemData

Comparison Values:

ODEQ Oregon Department of Environmental Quality Risk Based Concentrations, May, 2018.

TABLE 2: GROUNDWATER SAMPLE DATA SUMMARY
3717 NW St. Helens Road, Portland, Oregon
Project Number: 484441

Location ID	Date	TPH-GRO (µg/L)	TPH-DRO (µg/L)	TPH-RRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Bromo-benzene (µg/L)	sec-Butyl Benzene (µg/L)	tert-Butyl Benzene (µg/L)	Isopropyl-benzene (µg/L)	4-Methyl-2-Pentanone (MIBK) (µg/L)	n-Propyl-benzene (µg/L)	Remaining VOCs (µg/L)
SB-1-W	5/12/2023	ND<100	235 B	196 B J	ND<1.00	ND<1.00	ND<1.00	ND<3.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<10.0	ND<1.00	ND<RDL
SB-2-W	5/12/2023	4,410	109,000	3,440	ND<10.0*	ND<10.0	ND<10.0*	ND<30.0	1.48 J	182	13.5	35.5	121	29.9	ND<RDL
SB-3-W	5/12/2023	ND<2,000*	542 B	354 B	ND<1.00	ND<1.00	ND<1.00	0.544 J	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<10.0	ND<1.00	ND<RDL
Comparison Values:															
ODEQ Occupational RBC _{tw}		450	430	1,300	2.1	6,300	6.4	830	--	--	--	--	--	--	Various
ODEQ Occupational RBC _{wi}		>S	>S	>S	2,800	>S	8,200	>S	--	--	--	--	--	--	Various

Notes:

- µg/L micrograms per liter
- ND<RDL not detected above laboratory reporting detection limits
- No comparison value established
- B The same analyte is found in the associated blank.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- TPH Total Petroleum Hydrocarbons
- GRO Gasoline Range Organics
- DRO Diesel Range Organics
- RRO Residual Range Organics
- VOCs Volatile Organic Compounds
- Bold** Exceeds occupational screening level I RBC_{tw}
- >S This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicates that free product may be present.
- RBC_{wi} Risk-Based Concentrations for Vapor Intrusion into Buildings
- RBC_{tw} Risk-Based Concentrations for Ingestion & Inhalation from Tapwater

* The method detection limit (MDL) for TPH-GRO - 632 µg/L, for benzene = 0.941 µg/L, and for ethylbenzene = 1.37 µg/L.

Comparison Values:

ODEQ Oregon Department of Environmental Quality Risk Based Concentrations for Urban Residential Site users, May, 2018.

TABLE 3: Stormwater COCs, Analyses, Analytical Methods, Screening Level Values, Method Detection Limits, and Method Reporting Limits
 3771 NW Saint Helens Road, Portland, Oregon
 AEI Project No. 484441

Contaminants	Analysis in Surface Water	Rationale	Analytical Method	Laboratory Limits for Stormwater Sample Analyses		
				Screening Level Value (SLV) (ppb)	Method Detection Limit (MDL) (ppb)	Method Reporting Limit (MRL) (ppb)
Aldrin	No	No history of pesticides used on site	NA	NA	NA	NA
Arsenic	No	Metal not associated with auto shop	NA	NA	NA	NA
Benzene	Yes	Although not detected in Phase II investigation, TPH GRO detected	US EPA 8260D	1.2	0.100	0.200
BEHP	No	No PVC Production or vinyl chloride resin at the site	NA	NA	NA	NA
Cadmium	No	Metal not associated with auto shop	NA	NA	NA	NA
Chlordanes	No	No history of pesticides used on site	NA	NA	NA	NA
Chlorobenzene	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
Chromium	Yes	Found in auto-repair shop	US EPA 6020B Total	100	1.00	2.00
Copper	No	Metal not associated with auto shop	NA	NA	NA	NA
Cyanide	No	No history of cyanides used on site	NA	NA	NA	NA
DDx	No	No history of pesticides used on site	NA	NA	NA	NA
DDD	No	No history of pesticides used on site	NA	NA	NA	NA
DDE	No	No history of pesticides used on site	NA	NA	NA	NA
DDT	No	No history of pesticides used on site	NA	NA	NA	NA
1,1-Dichloroethene	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
cis-1,2-Dichloroethene	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
Dieldrin	No	No history of pesticides used on site	NA	NA	NA	NA
1,2-Dichlorophenoxyacetic acid	No	No history of pesticides used on site	NA	NA	NA	NA
Ethylbenzene	Yes	Detected in soil in Phase II Investigation	US EPA 8260D	7.3	0.250	0.500
Hexachlorobenzene	No	No history of pesticides used on site	NA	NA	NA	NA
Lindane	No	No history of pesticides used on site	NA	NA	NA	NA
Lead	Yes	Found in auto-repair shop	US EPA 6020B Total	0.54	0.110	0.200
Manganese	No	Metal not associated with auto shop	NA	NA	NA	NA
MCCP	No	No history of herbicides used on site	NA	NA	NA	NA
Mercury	No	Metal not associated with auto shop	NA	NA	NA	NA
Pentachlorophenol	No	No history of herbicides used on site	NA	NA	NA	NA
Perchlorate	No	No history of ammonium used on site	NA	NA	NA	NA
PBDEs	No	No flame retardants on site. PBDEs are used as flame retardants in a number of applications, including textiles, plastics, wire insulation, and automobiles.	NA	NA	NA	NA
PCBs	Yes	Required for Source Control Evaluation in Wilamette River	US EPA 8082 PCBs - Low Level	Varies	0.0100	0.0200
PAHs	Yes	TPHs found in exceedence in groundwater	US EPA 8270E	NA	NA	NA
cPAHs (BaP eq)	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Acenaphthene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Acenaphthylene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Anthracene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Benzo(a)anthracene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Benzo(a)pyrene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Benzo(b)fluoranthene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Benzo(g,h,i)perylene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.0160	0.0320
Benzo(k)fluoranthene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Chrysene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Dibenza(a,h)anthracene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
Fluoranthene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Fluorene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Indeno(1,2,3-c,d)pyrene	Yes	Part of the PAHs list	US EPA 8270E	0.018	0.00800	0.0160
2-Methylnaphthalene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0320	0.0640
Naphthalene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0320	0.0640
Phenanthrene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0320	0.0640
Pyrene	Yes	Part of the PAHs list	US EPA 8270E	0.2	0.0160	0.0320
Dioxins/Furans (2,3,7,8-TCDD eq)	Yes	Required for Source Control Evaluation in Wilamette River	1613B	5.1E-09	2.00E-06	5.00E-06
1,2,3,4,7,8-HxCDF	Yes	Part of Dioxane/Furan list	1613B	NA	5.00E-06	2.50E-05
1,2,3,4,7,8-PeCDD	Yes	Part of Dioxane/Furan list	1613B	NA	5.00E-06	2.50E-05
2,3,4,7,8-PeCDF	Yes	Part of Dioxane/Furan list	1613B	NA	5.00E-06	2.50E-05
2,3,7,8-TCDF	Yes	Part of Dioxane/Furan list	1613B	NA	2.00E-06	5.00E-06
2,3,7,8-TCDD	Yes	Part of Dioxane/Furan list	1613B	5.1E-09	5.00E-06	5.00E-06
Tetrachloroethene	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
Toluene	Yes	Detected in soil in Phase II Investigation	US EPA 8260D	9.8	0.500	1.00
TPH-Gasoline	Yes	Exceeded screening levels in groundwater during Phase II Investigation	NWTPH-Gx	NA	50	100
TPH-Diesel	Yes	Required for Source Control Evaluation in Wilamette River	NWTPH-Dx	NA	100	200
TPH-Residual Range Organics	Yes	Exceeded screening levels in groundwater during Phase II Investigation	NWTPH-Dx	NA	200	400
Aliphatic Hydrocarbons C10-C12	Yes	TPH-GRO found in exceedence in groundwater	NWTPH-EPH	NA	20	40
Tributyltin	No	No history of organotins used on site	NA	NA	NA	NA
Trichloroethene	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
2,4,5-TP (Silvex)	No	No history of herbicides used on site	NA	NA	NA	NA
Vanadium	No	Metal not associated with auto shop	NA	NA	NA	NA
Vinyl Chloride	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
Xylenes	No	No exceedence during Phase II Investigation	NA	NA	NA	NA
Zinc	No	Metal not associated with auto shop	NA	NA	NA	NA
Xylenes	Yes	Detected in soil in Phase II Investigation	US EPA 8260D	200	0.750	1.50
Zinc	No	Metal not associated with auto shop	NA	NA	NA	NA
Total Suspended Solids	Yes	Required for Source Control Evaluation in Wilamette River	SM 2540 D	NA	5,000	5,000
Total Organic Carbon	Yes	Required for Source Control Evaluation in Wilamette River	SM 5310 C	NA	1,000	1,000

EPA = Environmental Protection Agency
 NA = Not applicable
 cPAHs = Carcinogenic Hydrocarbons
 PAHs = Polycyclic aromatic Hydrocarbons
 PCBs = Polychlorinated Biphenyls
 ppb = Parts per billion (ug/kg or ug/L)
 TPH = Total Petroleum Hydrocarbon
 HxCDF = Hexachlorodibenzo-p-dioxin
 PeCDD = Pentachlorodibenzo-P-dioxin
 PeCDF = Pentachlorodibenzofuran
 TCDF = Tetrachlorodibenzofuran
 TCDD = Tetrachlorodibenzo-p-Dioxin

BEHP = Bis(2-ethylhexyl)phthalate
 DDD = Dichlorodiphenyltrichloroethane
 DDE = Dichlorodiphenyldichloroethylene
 DDT = Dichlorodiphenyltrichloroethane
 DDx = Collectively DDD, DDE, and DDT
 PBDEs = Polybrominated diphenyl ether
 ppb = parts per billion
 SLV = screening level values per Appendix D.

Method detection limits (MDL) and method reporting limit (MRL) values provided by Apex Laboratory, Tigard, Oregon