

Date: August 5, 2025
To: FILE: ECSI #6556
Through: Amanda Wozab and Wesley Thomas
From: Brian Church
Northwest Region
Subject: Gresham Memorial Chapel, ECSI #6556; Staff Memorandum in support of a Conditional No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended Conditional No Further Action (CNFA) determination for the Gresham Memorial Chapel facility, in Gresham, OR. As discussed in this memorandum, contaminant concentrations in soil and groundwater exceed DEQ's risk-based concentrations, however the DEQ believes that, based on currently available information, institutional controls are sufficient to mitigate risk at the site. The contents of this memo are largely based on initial reporting by DEQ (2023a), later Site Investigation and the *Independent Cleanup Program Report* (i.e., ICP Final Report) (Environmental Works 2024; 2025), and revisions to the ICP Final Report based on comments provided by DEQ (2025a).

The proposed CNFA determination meets the requirements of Oregon Administrative Rules Chapter 340 Division 122, Sections 010 to 0140 and ORS 465.200 through 465.455.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

1. BACKGROUND

Site location.

The site's location can be described as follows:

- Address: 257 SE Roberts Ave, Gresham, Multnomah County, Oregon.
- Latitude 49.495 North, longitude 122.428° West
- Tax lot 13000, Township 1S, Range 3E, Section 10

Site setting.

The Gresham Memorial Chapel property is approximately 1.36 acres in size with a 14,182 ft² two-story building used as a funeral home and mortuary as well as upstairs apartment dwellings. Current zoning is Low Density Residential-5 (LDR-5), and adjacent properties are single-family dwellings. Main City Park abuts the property to the west. The site boundary is roughly 140 ft northeast of Johnson Creek. The known petroleum source at the site is roughly 230 ft from Johnson Creek. Attachment 1 Figure 1 provides the site location and vicinity.

Physical setting.

The site is generally flat, sloping gently west and south toward Johnson Creek and Main City Park. Stormwater runoff discharges to Johnson Creek through a series of open and closed conveyances connected to an inlet at the site. Nearly all the site is paved (i.e., parking lot) or covered by the chapel building. Only a small unpaved (gravel) area exists along the southwestern building exterior near the historical spill area. The unpaved area is ~240 ft².

Groundwater depths ranged from 5 to 14 feet below ground surface (bgs).¹ Groundwater flow is assumed to be west/southwest toward Johnson Creek, which is 140 ft from the site. The spatial pattern of petroleum contamination in groundwater supports this assumption.

Site geology is characteristic of the northern Willamette Valley/Portland Basin, with underlying soils composed of fine-grained, unconsolidated sediments from the Missoula/Bonneville floods and deeper tuffaceous deposits. Soils have been characterized as predominately alluvial loams with high transmissivity. Gravels, sands, silts, and clays were noted in soil borings. The low-transmissivity clay/silt Confining Units 1 and 2 are assumed to separate shallow site groundwater from the deeper (~450 ft bgs) Sand and Gravel Aquifer.

Site history.

The property was originally developed for single-family occupancy prior to 1916. In 1916, the property was redeveloped with a funeral chapel adjoining the house. The chapel was redeveloped in 1955 after a fire damaged the building. Multiple owners operated the facility as a funeral chapel between 1916 and 1988. In 1988, the facility was converted to a wedding chapel (Parkside Wedding Chapel) but was converted back to a funeral chapel in 1998 by the current owner. The facility has been called the Carroll Funeral Home (prior to 1988), Gresham Funeral Chapel (1998-2005), and Gresham Memorial Chapel (2005-present). In addition to being a funeral home, the property is used for residential housing, with the historical single-family dwelling having been converted to two apartments at an unknown date.

The facility entered DEQ's Independent Cleanup Pathway (ICP) program in December 2023 (DEQ 2023b), after a May 2023 emergency response at the facility. An above-ground storage tank (AST) containing heating oil (diesel) ruptured, spilling petroleum to the ground surface, which then migrated to Upper Johnson Creek at Main City Park. DEQ (2023a) provides a summary of the emergency response, including work conducted by River City Environmental Inc. (2023). Emergency response involved collection and removal of petroleum-contaminated media from the facility and offsite in the park area and Johnson Creek. The emergency removal was completed with approval from DEQ Emergency Response and the City of Gresham, however the site was referred to DEQ Cleanup because of observed petroleum-contaminated soil remaining on the property under where the AST had been. DEQ's On-scene Coordinator suggested that the AST had been leaking for some time prior to rupturing.

¹ Environmental Works (2025) reports this range as 6-12 ft bgs in the ICP Final Report, however their data tables and Appendix B boring field notes include a wider range of groundwater depths. The discrepancy does not impact our conclusions about chemical risks.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.

The land use within the locality of facility (LOF) is mixed residential and commercial activity, with the likely future land use continuing to be some mixture of those uses. Zoning is currently LDR-5, therefore the construction and habitation of single-family residences is a reasonably expected future scenario for the site.

Adjacent properties to the northwest and southeast are zoned similarly and occupied by single-family dwellings. Main City Park to the southwest is an open area and is likely to remain in use as a park.

Groundwater use.

The property is connected to Gresham's municipal tap water. Gresham sources their water from both the local deep aquifers (Columbia South Shore Wellfield and Cascade Wellfield) and the Bull Run watershed via Portland. Given the current and likely future use of the property, groundwater use (i.e., installation of new wells) is unlikely.

The Beneficial Water Use Survey was conducted using the Oregon Water Resource Department online database and a quarter-mile search radius around the property. While there are seven domestic or irrigation wells within the small search radius, well depths in that area range from 147 to 715 ft bgs. Based the distance of groundwater resources and other considerations (i.e., attenuation of the plume; see Section 3 "Nature and extent"), it is not anticipated that impacted groundwater at the site will affect nearby drinking water resources.

Surface water use.

Johnson Creek is roughly 140 ft and downgradient from the LOF. Johnson Creek is a 25-mile, predominately urban tributary of the Willamette River that provides habitat and aesthetic value. It is currently listed as impaired for physical and chemical parameters including elevated temperature and pesticides. Stormwater at the facility drains to an inlet that ultimately discharges to Johnson Creek. Groundwater likely migrates and discharges to Johnson Creek, however (as noted in Section 3 "Nature and extent") petroleum in groundwater appears to attenuate within the property boundary prior to any discharge to surface water.

3. INVESTIGATION AND CLEANUP WORK

The primary area of concern within the LOF is in the immediate vicinity of the historical AST, which was at the southwest exterior wall of the Gresham Memorial Chapel building.

Soil, groundwater, and sub-slab soil vapor samples were collected at the site in 2023 to 2024. The LOF is shown in Attachment 1 Figure 2. Dashed black polygons encircle the area of concern. Attachment 1 Figure 3 shows samples within a smaller radius around the area of concern. Both figures present the results of sampling.² Methods and results are summarized in Section 3.

Sampling and analysis.

This section discussed the approaches used for sampling and analysis. Sample locations (and results) are visualized on maps in Attachment 1, and Attachment 2 is summary tables of results.

Soil

Twenty-four soil samples were collected by hand auger or direct push boring to varying depths (from 2.9 to 16 ft bgs), to evaluate conditions in surface soil or at the soil-water interface (SWI) with groundwater. Samples were collected from pits dug by removing the upper 6 inches of soil and pavement. Soil was screened for visual and olfactory clues of contamination, then submitted to a laboratory for petroleum-related analyses: NWTPH-Dx,³ BTEX+N,⁴ and/or EPA Method 8270E SIM (for semi-volatile organics, particularly polycyclic aromatic hydrocarbons [PAHs]⁵). All samples were analyzed for NWTPH-Dx, whereas a small subset was analyzed for BTEX+N (n=5) and/or Method 8270E SIM (n=2). Shallow and SWI samples were collected around the AST, whereas samples collected away from the AST were deeper (i.e., characterized SWI only). Soil sampling was conducted between mid-September and late-December 2023, with a later sampling event on August 22, 2024.

Groundwater

Six groundwater samples were collected from temporary wells (with 5-ft well screens) installed in soil borings. Three full well volumes were purged prior to sampling, but water quality parameters were not measured to confirm stabilization of well water. Samples were submitted the laboratory for petroleum-related analyses: NWTPH-Dx, BTEX+N, and EPA Method 8270E SIM (for PAHs). The full suite of analytes was measured in all groundwater samples.

Two groundwater samples were collected immediately adjacent to the former AST location (at 8 and 12 ft bgs), and 4 samples were collected at step-out locations (depths ranging from 5 ft bgs southwest of the AST to 14 ft bgs to the northeast of the building) to further delineate groundwater conditions within the LOF. Samples were collected between mid-October and early November 2023, with an additional sample collected in August 2024.

² Sample IDs in Attachment 1 Figures 2 and 3 include the sample depths (e.g., “S@35”BGS” was collected at 35 inches bgs); sample type is identifiable by the reported units – mg/kg for soil, ug/L for groundwater, and ug/m³ for soil vapor. Data tables are provided in the Independent Cleanup Program Report (Environmental Works 2025).

³ Extended diesel-range hydrocarbon method

⁴ Benzene; toluene; ethylbenzene; *o*-, *m*-, and *p*-xylenes; and naphthalene

⁵ PAHs analyzed were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene.

Soil Vapor

Four locations within the Gresham Memorial Chapel foundation footprint were sampled for sub-slab soil vapor at DEQ's request. These are shown most clearly in Attachment 1 Figure 2. Three samples were collected on August 22, 2024 during a period of declining barometric pressure (as reported by Weather Underground at Portland International Airport). Attachment 3 shows the barometric pressure pattern at the time of sampling.

An earlier sample (SS-1-110223-257) was also collected on November 2, 2023. Little information was initially provided for the single November 2023 sample, which prompted DEQ's request for confirmation monitoring. TO-17 method was used to evaluate petroleum VOCs in sub-slab vapor, and quality control measures were implemented to ensure sample integrity. Analytes included NWTPH-Dx and BTEX+N. Based on the results of soil vapor (discussed below), no indoor air samples were requested.

Nature and extent of contamination.

This section provides a summary and interpretation of site investigation data as they relate to the nature and extent of contamination at the site.

Soil

Soil samples contained detectable levels of NWTPH-Dx in both the oil and diesel range, though elevated oil range detections were limited to a single sample (5'S@3'BGS). There was a clear diminution of NWTPH-Dx concentration with both depth and distance from the historical AST, confirming that area as the source of diesel to soil. Attachments 2 and 3 provide a summary of soil chemical concentrations.

In the two samples analyzed for PAHs, several were detected at low concentrations, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, and indeno(1,2,3-cd)pyrene. Samples analyzed for PAHs were at down-gradient, subsurface (9 ft bgs), far-field locations, so likely underrepresent concentrations closer under the AST location or at shallower depths.

BTEX+N were not detected in the limited set of samples analyzed for soil. Among these was at one sample of soil from the soil-water interface (12 ft bgs) adjacent to the AST. There was elevated NWTPH-Dx in the sample, but BTEX+N chemicals were still non-detect.

Groundwater

Groundwater samples contained detectable levels of NWTPH-Dx, ethylbenzene, naphthalene, total xylenes, fluorene, phenanthrene, and pyrene. Most of these were detected in only one sample ("GW-SRC@12'BGS"), collected at 12 ft bgs immediately southwest of the AST. Other samples had detectable but much lower concentrations of NWTPH-Dx, indicating a significant diminution with distance from the source.

Concentrations remained elevated for NWTPH-Dx at the first set of step-out locations ("DG-NW-GW@10'BGS" and "DG-SW-GW@10'BGS"), but there was non-detectable levels both east of the Gresham Memorial Chapel building at "UG-E-GW@15'BGS" (upgradient) and at "DG-NW2-GW@5'BGS" (downgradient).

Attachment 1 Figures 1 and 2 provide rough estimates of the areas of impacted soil and groundwater within the LOF. While the method used by Environmental Works (2025) to draw the impacted area estimate is unclear, we believe the estimate to be reasonable given the available data.

Soil vapor

Sub-slab soil vapor samples had detectable levels of NWTPH-Dx and BTEX+N. Section 4 provides more detail on the risk evaluation.

4. RISK EVALUATION

Conceptual site model.

The conceptual site model (CSM) for Gresham Memorial Chapel is presented in Attachment 1 Figure 4. In general, all default exposure scenarios and receptor pathways are complete at the facility except for groundwater inhalation/ingestion for residential and occupational receptors. DEQ considers these pathways incomplete since municipal tap water is available and already provided to the site. Construction worker and excavation worker receptors may, however, be exposed to contaminated groundwater while working. Applicable human health risk-based concentrations (RBCs) were considered for complete pathways.⁶ Chemicals of interest are limited to petroleum-related contaminants associated with the release(s) of diesel from the AST.

While the property is adjacent to a park and potential ecological receptors, the LOF includes negligible habitat. Based on our understanding of groundwater (Section 3 “Nature and extent”), it is not expected that petroleum will reach surface waters at Johnson Creek. Therefore, no ecological risk assessment was required for the site, as there is not a complete exposure pathway.

To evaluate human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered, for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater and air. Table 1 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

⁶ Environmental Works (2025) also considered urban residential receptors their CSM (Attachment 1 Figure 4), which DEQ no longer uses as a default consideration. They also separated current and future uses and, in the case of soil exposures, however DEQ does not generally make this distinction when managing a site; current and likely future uses are both protected.

Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors

Pathway	Receptor	Applicable RBC?	Basis for Selection/Exclusion
Soil			
Ingestion, dermal contact, and inhalation	Residential	RBCss	Zoning is low-density residential; currently the facility has 2 apartment dwellings attached to a commercial establishment (mortuary, funeral home). Direct exposure to contaminated soil is limited currently by pavement over contamination. Fill and gravel were placed in the unpaved area at the building exterior, further limiting direct contact to contamination at depth. Contamination still exists within upper 3 ft.
	Occupational	RBCss	
	Construction Worker	RBCss	Construction at the site is possible in the future, but there is not an immediate risk for this receptor. Direct contact to soil would occur for work under the existing pavement. Contamination exists within the upper 15 ft.
	Excavation Worker	RBCss	Excavation workers could be exposed at the site at any time during utility work, etc. Contamination exists within the upper 15 ft.
Leaching to groundwater	Residential	NA	City water is provided. Local groundwater is not currently used for drinking water and is not likely to be used for this purpose in the future. This pathway is therefore not considered, per Section B.3.2.4 of DEQ’s RBDM guidance.
	Occupational	NA	
Groundwater			
Ingestion and inhalation from tap water	Residential	NA	City water is provided. Local groundwater is not currently used for drinking water and is not likely to be used for this purpose in the future. This pathway is therefore not considered, per Section B.3.2.4 of DEQ’s RBDM guidance.
	Occupational	NA	
Volatilization to outdoor air	Residential	RBCwo	Petroleum hydrocarbon components are volatile. While much of the site is paved or covered by a building, there is potential for volatilization to outdoor air. Occupational workers at Gresham Memorial Chapel will have limited exposure to outdoor air due to predominately indoor work.
	Occupational	RBCwo	
Vapor intrusion into buildings	Residential	RBCwi, Chronic Residential	Petroleum hydrocarbon contamination is immediately adjacent to and under the building foundation. Due to this proximity, vapor intrusion into the building was a key concern. The building is used for both commercial and residential purposes, so both receptors apply.
	Occupational	RBCwi, Chronic Commercial	
Groundwater in excavation	Construction Worker, Excavation Worker	RBCwe	Groundwater is contaminated at the site within 0 to 15 ft, where construction and excavation workers could be exposed if digging beneath the existing paved parking lot.
Soil Vapor			
Sub-slab vapor	Residential	RBCsv	Vapor intrusion from petroleum spilled adjacent to the Gresham Memorial Chapel building has the potential to impact sub-slab vapor and indoor air. Sub-slab soil vapor was monitored to determine the potential for indoor air impacts. The property is used for both residential and commercial purposes.
	Commercial	RBCsv	

NA – not applicable

RBC – risk-based concentration

Contaminant concentrations.

Contaminant concentrations in soil, groundwater, and sub-slab soil vapor are presented in Attachment 3. Those results are summarized in the following subsections.

Soil

NWTPH-Dx in soil exceeded the Residential RBCss value (1,100 mg/kg) in 8 of 24 soil samples at depths ranging from 2.9 to 12 ft bgs. The Construction Worker RBCss was exceeded in 3 of 24 samples between 2.9 and 8 ft bgs. The largest RBCss exceedances were observed immediately around the former AST. One sample (“5’E@6’BGS”; 1,366 mg/kg NWTPH-Dx) exceeded the Residential RBCss at 5 ft to the east of the former AST and 6 ft bgs, indicating that excessive subsurface diesel contamination extends from the former AST location eastward for several feet. Beyond that distance and in all other directions, NWTPH-Dx levels were below relevant RBCs.

Groundwater

NWTPH-Dx and ethylbenzene exceeded groundwater RBCs at the site. The greatest RBC exceedance was at the AST location (12 ft bgs). This was the only location (“GW-SRC@12’BGS”) that had elevated ethylbenzene, which exceeded the chronic residential vapor intrusion RBC (RBCwi). NWTPH-Dx exceeded the Residential RBCwi (400 ug/L) at 4 of 6 locations and the Commercial RBCwi (1,700 ug/L) at 2 of 6 locations. Exceedances were observed at the AST and downgradient locations, though concentrations declined substantially with distance from the AST (e.g., from 19,900 ug/L to 523 ug/L at the farthest southwest location and non-detect at the farthest northwest location). No exceedances were observed at upgradient locations.

There were no exceedances of the volatilization to outdoor air RBCs (RBCwo), suggesting that risks from outdoor air exposures caused by groundwater contamination are negligible.

There were no exceedances of the groundwater in excavation RBC for construction and excavation worker receptors (RBCwe), therefore it is assumed that the risk from contaminated groundwater is negligible.

Sub-slab vapor

Sub-slab vapor concentrations did not exceed RBCsv values in any of the 4 samples or 2 sample dates. At present, sampling results suggest that there is not a complete pathway from petroleum contamination in soil and groundwater to indoor air. Indoor air samples were not collected (nor were ambient outdoor air samples). Sub-slab samples provide sufficient evidence to conclude that risks are negligible from vapor intrusion.

Hot spot evaluations

No concentrations measured in soil, groundwater, or soil vapor rise to the level of being a hot spot for removal. Free product was not observed during sampling.

Human health risk.

A default RBC screen was used to evaluate potential chemical risk at Gresham Memorial Chapel; this is discussed in the prior section. While groundwater concentrations suggested the potential for vapor intrusion into the building at the facility, sub-slab soil vapor concentrations

did not pose an unacceptable risk. After eliminating this pathway for exposure, the only contaminant of concern for the site is NWTPH-Dx in soil. Concentrations range from non-detect to 7,540 mg/kg, with higher site concentrations posing a direct-contact risk to residential receptors and, within an isolated area around the former AST, construction workers.

Presently, the outdoor area around the Gresham Memorial Chapel building is almost entirely paved, with a small area (240 ft²) around the former AST being unpaved (gravel covered). During the emergency response to the AST rupture in May 2023, surface soils (to approximately 3 ft) around the former AST were removed and backfilled with clean material. Based on this limited area for residential exposures and the depth at which contamination exists in that area (as well as various conservative exposure assumptions that are used when calculating RBCs), risks to residential receptors is likely low. Maintaining pavement at the site (and potentially installing additional pavement to further cap the unpaved portion of the site) are recommended as additional measures to minimize residential risks. This and other conditions of site closure are summarized in Section 5.

Construction at the site is not currently planned, however reasonable future use of the site may include redevelopment of the property as residences. Construction workers may be exposed to concentrations of NWTPH-Dx above acceptable risk levels within the former AST area. Therefore, precautionary measures should be taken to ensure worker safety in that area during future redevelopment.

There is no immediate risk to human receptors at Gresham Memorial Chapel, therefore no further action is required. Residual human health risk can be effectively managed using engineering control/institutional control (EC/IC) methods.

Cumulative Risk

DEQ calculated cumulative risk calculation for cancer and non-cancer risks associated with multiple petroleum related chemicals in soil and groundwater. Carcinogenic risk was negligible when compared with DEQ's cumulative risk threshold of 1×10^{-5} excess cancer risk; where calculable, risks ranged from 2.8×10^{-10} to 1.8×10^{-7} . Cumulative non-cancer risks ranged from 7×10^{-5} to 3.46. Two locations had cumulative non-cancer risk hazard indices >1: Exca-W-Wall and Vert-W@8'BGS. In both cases, non-cancer risk was driven entirely by NWTPH-Dx. Based on these results, cumulative risk is no more notable than individual chemical risk, particularly with respect to diesel in soil.

Uncertainty

The key uncertainty remaining at the site relates to surface soil PAH contamination, which was not rigorously evaluated by the site investigation. Several PAHs were detected at distance from the AST site in deep soil (9 ft bgs), and a notable decline in TPH concentrations in soil and groundwater were observed with distance from the AST. Given this, DEQ expects that surface soil around the AST could theoretically have much higher levels of PAHs like benzo(a)pyrene. Given that other chemicals exceeded RBCs, effective management of soil and groundwater based on the presence of NWTPH-Dx contamination will also address potential PAH risk.

Metals are a possible co-contaminant in petroleum spills, but metals were not analyzed in soils or groundwater. As with PAHs, effective management of metals will limit exposures to excessive metals associated with the spilled heating oil.

Ecological risk.

As noted above (this section, “Conceptual Site Model”), ecological risks at the site are negligible because of a lack of habitat within the LOF and a low migration potential for nearby habitat areas.

5. RECOMMENDATION

Based on the conclusions stated in prior sections of the staff memo, we recommend that DEQ close the Gresham Memorial Chapel site conditioned on the following:

1. Groundwater wells will not be constructed without DEQ notification and approval; approval may be given only if the well is:
 - a. Greater than 100 ft outside the estimated groundwater contamination plume.
 - b. Upgradient of the contamination plume, for example near the northern extent of the property, where contamination was not detected.
 - c. Installed with a deep annulus seal to prevent downward migration of contamination.
2. The DEQ-approved Contaminated Media Management Plan will be implemented immediately at the site, including initiation of the cap inspection and maintenance schedule detailed therein.

6. ADMINISTRATIVE RECORD

DEQ. 2023a. Spill/Release Report, Gresham Funeral Chapel Inc. Prepared by Kevin Chan. May 4, 2023.

DEQ. 2023b. Independent Cleanup Pathway Intent to Participate Form. Prepared by John Gerbish of Gresham Funeral Chapel Inc. and filed by DEQ. Dated December 5, 2023.

DEQ. 2025a. DEQ Comments on the Independent Cleanup Program Report for Gresham Memorial Chapel. Prepared by Brian Church. January 2, 2025.

DEQ. 2025b. Compilation of electronic mail records exchanged between DEQ, John Gerbish, and their consultants, 2023 – 2025. Uploaded to ORMS, June 6, 2025.

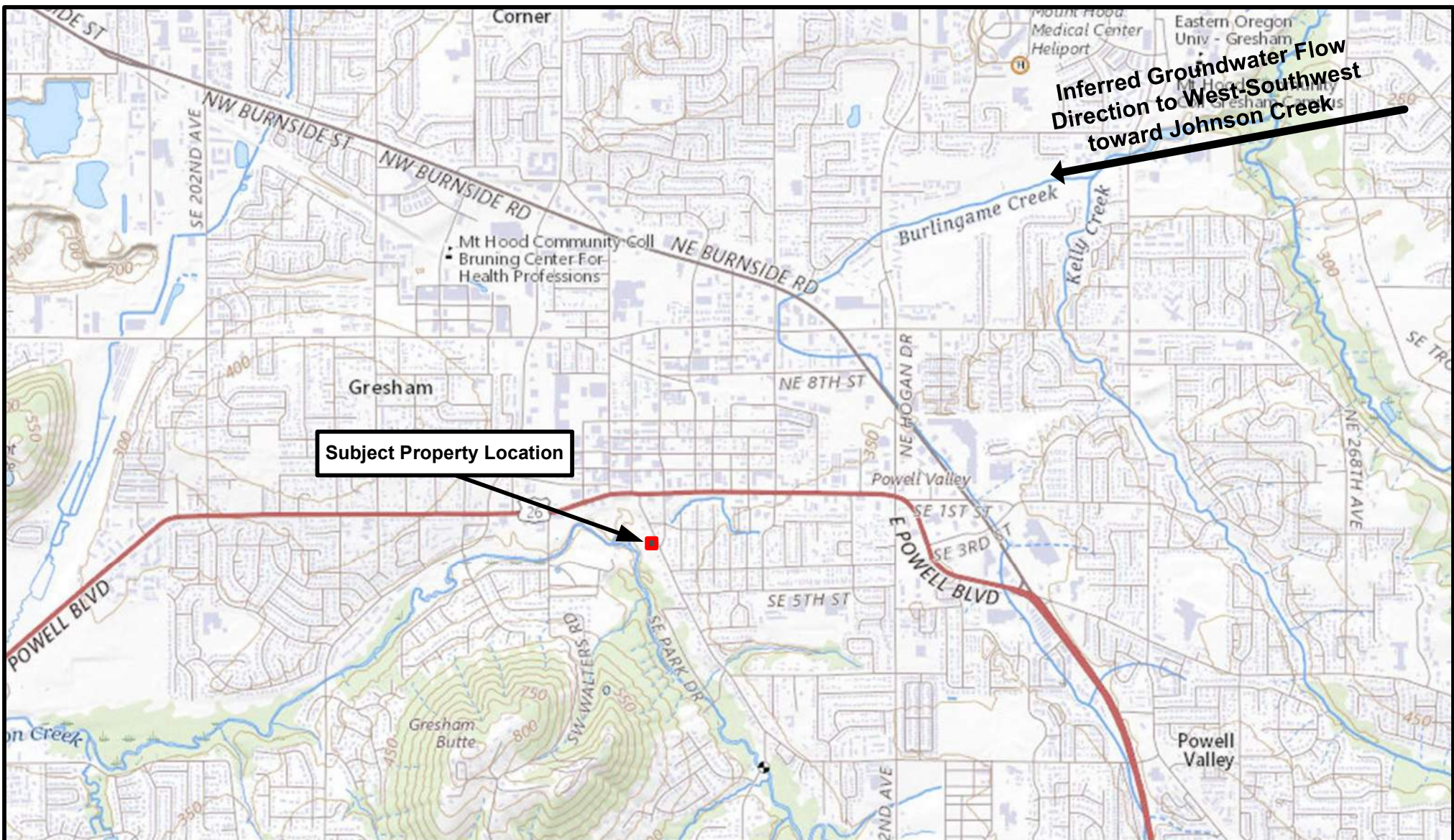
Environmental Works. 2024. Heating Oil Release Investigation and Risk-based Evaluation Report, Subject Property: 257 SE Roberts Ave, Gresham, OR 97080.

Environmental Works. 2025. Independent Cleanup Program Report, 257 SE Roberts Ave, Gresham, Oregon, ECSI No. 6556. Prepared for Gresham Memorial Chapel.

River City Environmental Inc. 2023. Gresham Memorial Spill Report. Provided as attachment to DEQ (2023) Spill/Release Report.

7. ATTACHMENTS

1. ICP Final Report Figures (from Environmental Works [2025])
2. Site Investigation Tables (adapted from Environmental Works [2025])
3. Barometric Pressure during 2024 Sub-slab Soil Vapor Sampling (Weather Underground)



U.S. Geological Survey, topoBuilder Application v: 1.5

Note: Scale and All Locations are Approximate



22820 NE Sandy Blvd
Fairview, OR 97024

FIGURE 1: SUBJECT PROPERTY LOCATION

ECSI 6556 ICP REPORT
GRESHAM MEMORIAL CHAPEL
257 SE ROBERTS AVE
GRESHAM, OR 97080

12/2024
AGS

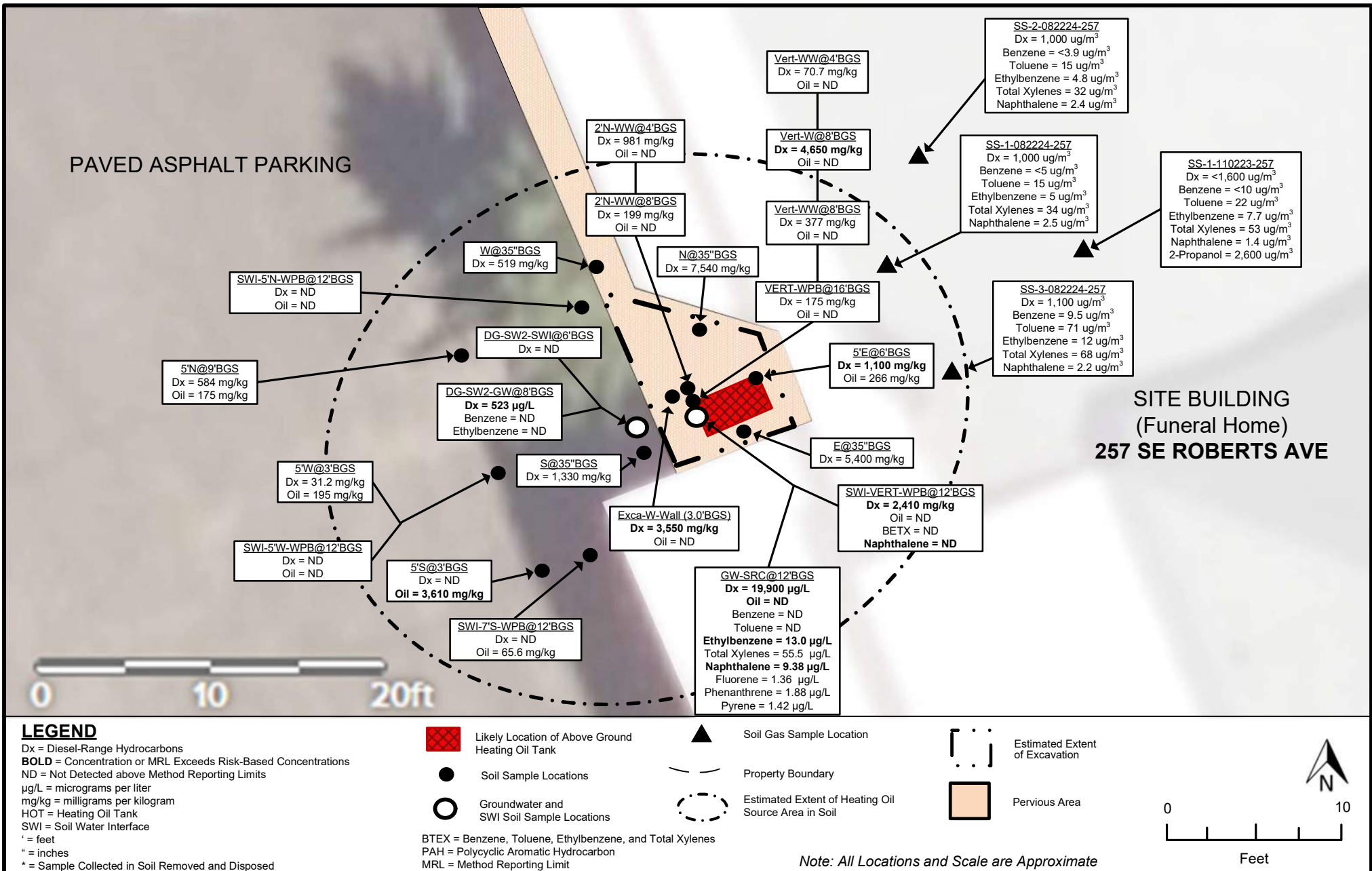


FIGURE 3: SITE PLAN MAP WITH SOIL, SWI SOIL, GROUNDWATER, AND SOIL VAPOR SAMPLE LOCATIONS



22820 NE Sandy Blvd
Fairview, OR 97024

ECSI 6556 ICP REPORT
GRESHAM MEMORIAL CHAPEL
257 SE ROBERTS AVE
GRESHAM, OR 97080

02/2025
ATK

FIGURE 4:
DEQ RBDM CONCEPTUAL SITE MODEL (CSM)
ABOVEGROUND STORAGE TANK (AST) LEAK –
RISK-BASED EVALUATION REPORT
257 SE ROBERTS AVE, GRESHAM, OR 97080
ECSI NO.: 6556

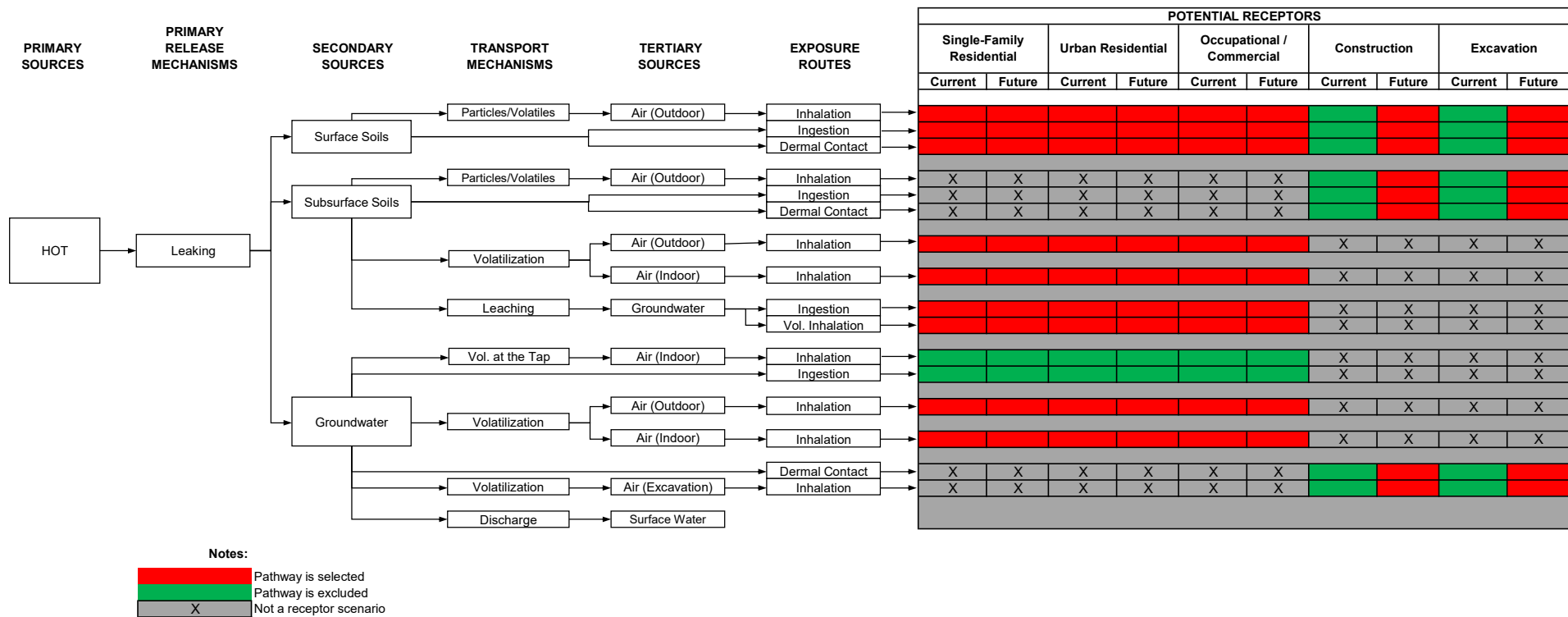


Table 1 - Gresham Memorial Chapel Soil RBC Screen

Sample Identification	Sample Location Descriptions	Sample Date	Sample Depth (ft bgs)	NWTPH-Dx Diesel-Range	NWTPH-Dx Oil-Range	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naphthalene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Chrysene	Fluor-anthene	Fluorene	Indeno (1,2,3-cd) pyrene	Pyrene
Exca-W-Wall	West Pit Wall	9/12/2023	3.0	3,550	<253	-	-	-	-	-	-	-	-	-	-	-	-	-
Vert-WW@4'BGS	Vertical West AST Side	12/26/2023	4.0	70.7	<42.1	-	-	-	-	-	-	-	-	-	-	-	-	-
2'N-WW@4'BGS	2 ft North of West AST Side	12/26/2023	4.0	981	<40.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Vert-W@8'BGS	Vertical West AST Side	9/12/2023	8.0	4,650	<531	-	-	-	-	-	-	-	-	-	-	-	-	-
Vert-WW@8'BGS	Vertical West AST Side	12/26/2023	8.0	377	<39.5	-	-	-	-	-	-	-	-	-	-	-	-	-
2'N-WW@8'BGS	2 ft North of West AST Side	12/26/2023	8.0	199	<40.2	-	-	-	-	-	-	-	-	-	-	-	-	-
SWI-VERT-WPB@12'BGS	SWI, West Pit Bottom	10/10/2023	12.0	2,410	<50.1	<0.0132	<0.0661	<0.0330	<0.0991	<0.132	-	-	-	-	-	-	-	-
VERT-WPB@16'BGS	Vertical, West Pit Bottom	10/10/2023	16.0	175	<50.0	-	-	-	-	-	-	-	-	-	-	-	-	-
5'W@3'BGS	5 ft West of West AST Side	9/12/2023	3.0	31.2	195	-	-	-	-	-	-	-	-	-	-	-	-	-
SWI-5'W-WPB@12'BGS	SWI, 5 ft West of West Pit Wall	10/10/2023	12.0	<26.6	<53.2	-	-	-	-	-	-	-	-	-	-	-	-	-
5'E@6'BGS	5 ft East of East AST Side	9/12/2023	6.0	1,100	266	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-E-SWI@14'BGS	SWI, Up-gradient, East	11/9/2023	14.0	<26.1	<52.2	<0.0142	<0.0712	<0.0356	<0.107	<0.285	-	-	-	-	-	-	-	-
5'N@9'BGS	5 ft Northwest of North AST Side	9/12/2023	9.0	584	175	-	-	-	-	-	-	-	-	-	-	-	-	-
SWI-5'N-WPB@12'BGS	SWI, 5 ft Northwest of West Pit Wall	10/10/2023	12.0	<25.7	<51.4	-	-	-	-	-	-	-	-	-	-	-	-	-
5'S@3'BGS	5 ft Southwest of South AST Side	9/12/2023	3.0	<218	3,610	-	-	-	-	-	-	-	-	-	-	-	-	-
SWI-7'S-WPB@12'BGS	SWI, 7 ft South of South Pit Wall	10/10/2023	12.0	<27.1	65.6	-	-	-	-	-	-	-	-	-	-	-	-	-
DG-SW-SWI@9'BGS	SWI, Down-gradient, Southwest	11/2/2023	9.0	37.8	481	<0.0249	<0.125	<0.0623	<0.187	<0.499	0.0197	0.0231	0.0293	0.0540	0.0336	<0.0166	<0.0166	0.0771
DG-NW-SWI@9'BGS	SWI, Down-gradient, Northwest	11/2/2023	9.0	40.8	342	<0.0146	<0.0732	<0.0366	<0.110	<0.293	0.0131	0.0216	0.0314	0.0409	0.0417	<0.0122	0.0193	0.0540
DG-NW2-SWI@4'BGS	SWI, Down-gradient, Northwest	11/9/2023	4.0	<25.5	<51.0	<0.0132	<0.0662	<0.0331	<0.0994	<0.265	-	-	-	-	-	-	-	-
DG-SW2-SWI@6'BGS	SWI, Down-gradient, Southwest	8/22/2024	6.0	<24.2	<48.3	-	-	-	-	-	-	-	-	-	-	-	-	-
E@35"BGS	1 ft South of South AST Side	8/22/2024	2.9	5,400	<173	-	-	-	-	-	-	-	-	-	-	-	-	-
S@35"BGS	2 ft West of West AST Side	8/22/2024	2.9	1,330	<90.0	-	-	-	-	-	-	-	-	-	-	-	-	-
N@35"BGS	3 ft North of North AST Side	8/22/2024	2.9	7,540	<438	-	-	-	-	-	-	-	-	-	-	-	-	-
W@35"BGS	5 ft North Northwest of North AST Side	8/22/2024	2.9	519	<44.5	-	-	-	-	-	-	-	-	-	-	-	-	-
DEQ RBC - Residential Soil Ingestion, Dermal Contact, and Inhalation				1,100	1,100	8.2	5,800	34	1,400	5.3	1.1	0.11	1.1	110	2,400	3,100	1.1	1,800
DEQ RBC - Occupational Soil Ingestion, Dermal Contact, and Inhalation				14,000	14,000	37	88,000	150	25,000	23	21	2.1	21	2,100	30,000	47,000	21	23,000
DEQ RBC - Construction Worker Soil Ingestion, Dermal Contact, and Inhalation				4,600	4,600	380	28,000	1,700	20,000	580	170	17	170	1,700	10,000	14,000	170	7,500
DEQ RBC - Excavation Worker Soil Ingestion, Dermal Contact, and Inhalation				>MAX	>MAX	11,000	770,000	49,000	560,000	16,000	4,800	490	4,900	490,000	280,000	390,000	4,900	210,000

NWTPH-Dx -- Northwest Total Petroleum Hydrocarbon - extended diesel range
bgs -- below ground surface
DEQ -- Oregon Department of Environmental Quality
RBC -- risk-based concentration
>MAX -- RBC calculated as exceeding possible concentration (therefore there is no risk)
AST -- above-ground storage tank
SWI -- soil water interface
Note: concentrations reported in mg/kg
Chemicals shown include only those with RBCs and analytical measurements; full dataset provided in the ICP Final Report (Environmental Works 2025)
Bold values were detects; green cells exceed residential RBCs, and purple cells exceed construction worker RBCs
Although TPH-Dx Diesel-Range and Oil-Range concentrations are presented separately, these should be summed when comparing to RBCs. When considering this, sample 5'E@6'BGS exceeds the residential RBC for NWTPH-Dx.

Table 2 - Gresham Memorial Chapel Groundwater RBC Screen

Sample Identification	Sample Location Descriptions	Sample Date	Sample Depth (ft bgs)	TPH-Dx Diesel-Range	TPH-Dx Oil-Range	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	Benzo(a) anthracene
GW-SRC@12'BGS	GW, West Pit Bottom, Source	10/10/2023	12.0	19,900	<1,680	<0.200	<1.00	13.0	55.5	9.38	<0.421
UG-E-GW@15'BGS	GW, Up-gradient, East	11/9/2023	15.0	<100	<200	<0.200	<1.00	<0.500	<1.50	<5.00	<0.0500
DG-SW-GW@10'BGS	GW, Down-gradient, Southwest	11/2/2023	10.0	786	<200	<0.200	<1.00	<0.500	<1.50	<5.00	<0.0500
DG-NW-GW@10'BGS	GW, Down-gradient, Northwest	11/2/2023	10.0	1,830	<381	<0.200	<1.00	<0.500	<1.50	<5.00	<0.0952
DG-NW2-GW@5'BGS	GW, Down-gradient, Northwest	11/9/2023	5.0	<123	<246	<0.200	<1.00	<0.500	<1.50	<5.00	<0.0615
DG-SW2-GW@8'BGS	GW, Down-gradient, Southwest	8/22/2024	8.0	523	<410	<0.200	<1.00	<0.500	<1.50	<5.0	<0.103
DEQ RBC - Groundwater Construction and Excavation Worker Groundwater in Excavation				>S	>S	1,800	220,000	4,500	23,000	500	>S
DEQ RBC - Groundwater Residential Volatilization to Outdoor Air				>S	>S	3,100	>S	9,900	>S	3,600	>S
DEQ RBC - Groundwater Urban Residential Volatilization to Outdoor Air				>S	>S	7,400	>S	23,000	>S	8,500	>S
DEQ RBC - Groundwater Occupational Volatilization to Outdoor Air				>S	>S	14,000	>S	43,000	>S	16,000	>S
DEQ RBC - Groundwater Chronic Residential Vapor Intrusion Into Buildings				400	360	2.80	36,000	7.10	780	11.0	190
DEQ RBC - Groundwater Acute Residential Vapor Intrusion Into Buildings				NA	NA	230	52,000	140,000	68,000	27,000	NA
DEQ RBC - Groundwater Chronic Commercial Vapor Intrusion Into Buildings				1,700	1,500	12.0	150,000	31.0	3,300	50.0	2,300
DEQ RBC - Groundwater Acute Commercial Vapor Intrusion Into Buildings				NA	NA	650	160,000	420,000	200,000	83,000	NA

AST -- above-ground storage tank
bgs -- below ground surface
DEQ -- Oregon Department of Environmental Quality
GW -- groundwater
>MAX -- RBC calculated as exceeding possible concentration (therefore there is no risk)
NA -- not applicable
NWTPH-Dx -- Northwest Total Petroleum Hydrocarbon - extended diesel range
RBC -- risk-based concentration
>S -- RBC calculated as a value exceeding physical saturation in water (this can still be encountered when free product is present)
SWI -- soil water interface
Note: concentrations reported in ug/L
Chemicals shown include only those with RBCs and analytical measurements; full dataset provided in the ICP Final Report (Environmental Works 2025)
Bold values were detects; green cells exceed residential RBCs, and purple cells exceed construction worker RBCs
Although TPH-Dx Diesel-Range and Oil-Range concentrations are presented separately, these should be summed when comparing to RBCs. Separating the values does not affect risk conclusion in this case.

Table 3 - Gresham Memorial Chapel Sub-slab Soil Vapor RBC Screen

Soil Vapor Sample ID	Sample Location Descriptions	Sample Date	Sample Depth (ft bgs)	NWTPH-Dx	Benzene	Toluene	Ethylbenzene	Total Xylene	Naphthalene
SS-1-110223-257	SS-1, sub-slab, approximate center of subject property building, 6" BGS	11/2/2023	0.5	<1,600	<10	22	7.7	53	1.4
SS-1-082224-257	SS-1, sub-slab, approximate center of subject property building, 6" BGS	8/22/2024	0.5	1,000	<5	15	5.0	34	2.5
SS-2-082224-257	SS-2, sub-slab, approximate center of subject property building, 6" BGS	8/22/2024	0.5	1,000	<3.9	15	4.8	32	2.4
SS-3-082224-257	SS-3, sub-slab, approximate center of subject property building, 6" BGS	8/22/2024	0.5	1,100	9.5	71	12	68	2.2
DEQ RBC - Soil Vapor Chronic Residential Inhalation				3,300	12	170,000	37	3,500	2.8
DEQ RBC - Soil Vapor Chronic Commercial Inhalation				14,000	52	730,000	160	15,000	12
DEQ RBC - Soil Vapor Acute Residential Inhalation				NA	970	250,000	730,000	290,000	6,700
DEQ RBC - Soil Vapor Acute Commerical Inhalation				NA	2,900	770,000	2,200,000	870,000	20,000

bgs -- below ground surface
DEQ -- Oregon Department of Environmental Quality
NA -- not applicable
NWTPH-Dx -- Northwest Total Petroleum Hydrocarbon - extended diesel range
RBC -- risk-based concentration
SS -- sub-slab

Note: concentrations reported in ug/m³
Chemicals shown include only those with RBCs and analytical measurements; full dataset provided in the ICP Final Report (Environmental Works 2025)
Bold values were detects; green cells exceed residential RBCs, and purple cells exceed construction worker RBCs

Attachment 3- Barometric Pressure during 2024 Sub-slab Soil Vapor Sampling

Daily Observations

Time	Temperature (°F)			Dew Point (°F)			Humidity (%)			Wind Speed (mph)			Pressure (in)			Precipitation
Aug	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Total
18	78	68.5	61	61	55.4	50	90	66.3	37	17	7.5	0	30.0	29.9	29.9	0.30
19	80	69.0	59	56	51.2	44	78	56.3	29	10	5.5	0	30.1	30.0	30.0	0.00
20	80	68.7	61	57	53.3	51	75	59.3	36	9	5.2	0	30.1	30.1	30.0	0.00
21	75	68.7	64	57	54.7	50	78	62.1	41	13	5.1	0	30.1	30.0	29.9	0.00
22	70	66.7	63	58	54.2	52	84	64.5	55	7	3.8	0	29.9	29.9	29.8	0.00
23	67	61.0	57	58	54.2	49	90	79.1	52	12	4.4	0	29.9	29.8	29.8	0.11
24	70	62.4	55	53	51.5	49	87	69.5	47	7	3.8	0	30.2	30.0	29.9	0.17

Source: Weather Underground (2024), Portland International Airport historical weather data. Accessed online: <https://www.wunderground.com/> .
 Note: sampling occurred on August 22, 2024; barometric pressure and sampling date are highlighted with pink and black boxes, respectively. Pressure was mildly decreasing but unlikely to represent a worst-case scenario for vapor intrusion.