STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Lacey HQ ● 300 Desmond Dr. ● Lacey, Washington 98503 ● (360) 407-6000

January 13th, 2017

TO: Kerry Graber, HWTR

FROM: Charles San Juan, LHG, TCP-HQ *Charles San Juan*

State of Washington
Hydrogeologist
566
Licensed Geologist
Charles F. San Juan

SUBJECT: Occidental Chemical (OCC) Site Vapor Intrusion Characterization Work

---

Summary

This transmittal provides Ecology's recommendations on the Occidental site vapor intrusion pathway. Vapor intrusion refers to the subsurface movement of vapors from chemicals (solvents). Historical Occidental operations have resulted in a significant release of chlorinated solvents (trichloroethylene, (TCE) and tetrachloroethylene (PCE). Both TCE and PCE are human carcinogens.

These chemicals are also known as volatile organic compounds (VOCs). When released to the subsurface (soil and groundwater), they will undergo chemical partitioning. This results in a corresponding vapor phase. This vapor phase typically migrates to land surface. If this occurs, then chemical vapors may seep into and penetrate buildings and other structures where humans live and work. In other words, this vapor phase may impact indoor air quality. If humans breathe these chemicals (TCE and PCE), then it may present some health risk.

Over the last several years (2013-16), Occidental has collected what are known as "sub-slab" soil gas samples from eight buildings, both on and off their property. To collect a sub-slab sample, you must drill a hole through the building foundation (concrete slab). A steel tube is inserted and connected to tubing. Vacuum pressure is then applied to the tubing and soil gas samples are collected. Indoor air samples were also collected. The soil gas and indoor air are then analyzed for various chemicals (TCE, PCE, etc.). Occidental collected sub-slab soil gas and indoor air samples from eight buildings (both on and off the Occidental property). The sub-slab soil gas and indoor air samples did contain chlorinated solvents (PCE and TCE).

Occidental's Findings

Occidental has concluded that the detection of chlorinated solvents within the indoor air are likely the result of indoor air sources (e.g. use of paints, solvents, etc. within these structures). Thus, Occidental has not proposed mitigation for any of these eight structures. However, Occidental has proposed monitoring for two structures (the Trident Seafoods warehouse Bldg 595 and the Occidental office).

Ecology's Findings and Recommendations

Ecology does concur with Occidental that the indoor air chlorinated solvent (PCE and TCE) detects are likely the result of indoor air sources. However, Ecology's analysis of the vapor intrusion study data indicates that there is a significant vapor footprint associated with the former Occidental solvent production settling ponds. These settling ponds (waste management unit's "A" and "G") are located south and east of the former plant production area. The estimated total size of this vapor footprint is about 21 acres. Ecology's review of the soil data within this vapor footprint indicates that there is a significant mass (about 60,000 lbs) of residual chlorinated solvents (PCE, TCE, etc.) about 10 feet below land surface (0 to -5 ft elevation). It is Ecology's opinion that this residual chlorinated solvent mass does pose a vapor intrusion risk.

Ecology has also concluded that permanent vapor observation (sample collection) points are necessary. The reason this is important is that most of the solvent mass is well below land surface (about 100 feet). Specifically, there is a significant mass of solvents (PCE and TCE) in what is known as the deep unit groundwater (-125 ft elevation). Chemical vapors from this deep unit groundwater solvent mass may take some time (decades) to migrate to land surface.

The vapor test points will need to be drilled throughout the vapor intrusion footprint. The depth of these points will likely be about 10-15 ft. The concept here is to collect vapor samples over time and monitor trends (increasing, decreasing or stable). Measurements of other soil gas parameters (oxygen, carbon dioxide, and methane) will also be made.

Lastly, Ecology has concluded that Occidental needs to notify the Port of Tacoma that their tenants (e.g. Trident Seafoods, etc.) may be at some level of risk for vapor intrusion.

Contents

Figures

Tables

Site Description

The Occidental Chemical (OCC) property (605 and 709 Alexander Avenue) is located within a man-made peninsula of land that extends roughly 0.8 miles northwest into Commencement Bay (Figure 1). The Port of Tacoma (POT) is the primary owner/operator for this area. The Occidental “site” (where hazardous substances are located, MTCA Section 200) is part of the EPA Commencement Bay Nearshore/Tideflats (CB/NT) Superfund Site. An affiliate of OCC (Mariana Properties), now owns the 605 Alexander Avenue parcel. The 709 Alexander parcel has also been conveyed to Mariana Properties (CRA, 2014).

Historical OCC Operations

Chlorinated solvents (TCE / PCE), were manufactured at the OCC facility from approximately 1947 – 1973. Historical solvent releases from former OCC operations have impacted the peninsula soil, groundwater and adjoining Hylebos Waterway sediment (CRA Site Characterization Report, 2014).

Land Use / History

Historical transcontinental railroad traffic to Commencement Bay resulted in the need for rail to sea transport. However, the tidal mud flats were not suitable for deep draft vessels. Consequently, to accommodate shipping traffic, five man-made peninsulas were constructed (from tidal mud flats dredge/fill). The former OCC site is located on the peninsula that intersects both the Blair and Hylebos waterways.

Site Geology / Hydrogeology

The former OCC site is located at the mouth of the Puyallup River valley, which empties into Commencement Bay. Several creeks also discharge to Commencement Bay (Ruston, Mason, Asarco, Puget, Hylebos, and Wapato). Historically, the hydrogeology of this area was tidal marsh/estuary, as well as Puyallup River deltaic deposits.

Vapor Intrusion

The term “vapor intrusion” refers to gaseous (vapor) phase movement from subsurface chemicals (e.g. PCE and TCE). Subsurface vapors migrate upwards to land surface and can intrude to buildings and other structures. This vapor phase movement can impact humans who live or work in in these buildings.

Historical production of chlorinated solvents (TCE and PCE) has resulted in releases from various historical Occidental chemical manufacturing operations. These releases have significantly impacted both soil and groundwater. When released to soil and groundwater, substances like trichloroethylene (TCE) and tetrachloroethylene (PCE) will undergo chemical partitioning. This partitioning typically results in four separate phases: 1) a solid phase in which the chemical adsorbs to soil, 2) a water phase (the substance mixes with water), 3) an air or vapor phase, and 4) a pure chemical phase (unaltered state).

Substances like TCE and PCE are known as volatile organic compounds (VOCs). These substances also have high Henry’s law constants (HLCs), which is the air (gas) / liquid concentration ratio. What that means is that there is a tendency for these substances to chemically partition to the air phase.

The reason this is an issue is because subsurface vapors, from chemical releases, can seep into or penetrate buildings and other structures. Substances like PCE and TCE are human carcinogens. Thus, if humans breathe these substances, then there may be some corresponding health risks.

Vapor Intrusion Study

Starting in 2013, Occidental has collected indoor air and sub-slab soil gas samples from several buildings both on and off their property. Most of the buildings are operated by Port of Tacoma tenants (e.g. Trident Seafoods, etc.). At each building, a hole was drilled through the concrete floor and soil gas (sub-slab) samples were collected. Indoor air samples were also collected. A total of 40 indoor air samples and 24 sub-slab soil gas samples were collected from 8 buildings (Figure 2).

Occidental conducted four rounds of vapor intrusion testing events (Apr-2013, June / July-2013, March-2014 and May / June-2015). Sub-slab soil gas and indoor air samples have been collected from eight buildings. These structures (Army Reserve, Bldg's 326, 407, 532, 592, 595, 596, and the OCC office) are located on both the Occidental and Port of Tacoma owned property. Two reports have been produced (CRA, 2014 and GHD, 2016).

Vapor Intrusion Study Results

The results of the vapor intrusion study indicate that there are high levels of chemical (TCE / PCE) soil gas near what was the former Occidental solvent production settling ponds (waste management unit's A and G). For example, a soil gas sample beneath the OCC office had 30,000 ug/m3 PCE. For reference, the Ecology PCE indoor air cleanup level (non-carcinogen, industrial land use) is 40 ug/m3. Thus, within the center of the vapor footprint, soil gas levels are roughly 1,000 times standards.

The estimated size of this vapor footprint is shown on Figure's 2 and 3. This vapor footprint is roughly 21 acres in size and extends north-northeast (and slightly southwest) from the former Occidental solvent production settling ponds. For reference, previous site characterization (CRA, 2014) found that that the soil and groundwater within these solvent production settling ponds are saturated with residual TCE / PCE.

Outside of the vapor footprint, soil gas levels are significantly lower. Specifically, vapor levels decrease significantly west-northwest of the former Occidental solvent production settling ponds. However, high levels of indoor air TCE and PCE were detected in several of the buildings. Conversely, for these same buildings, high levels of PCE and TCE were not detected in the sub-slab soil gas. What this therefore suggests is that the indoor air PCE and TCE levels are the result of indoor air chemical use, e.g. paints, solvents, etc. For example, Trident Seafoods conducts ship repair operations in several of their buildings. These operations require the use of various chemicals, which include TCE and PCE.

Based on all the data, Occidental (GHD, 2016) has concluded that only 2 of 8 buildings may be potentially impacted by vapor phase migration. Specifically, Occidental has proposed continued monitoring for one structure (Trident Seafoods warehouse 595). Occidental has also proposed some limited mitigation (opening doors and windows) for the OCC office. The reason this has been proposed is because this building is rarely used.

Ecology's Vapor Intrusion Study Conclusions

Ecology (San Juan, 2015) conducted a detailed review of the vapor intrusion study. Ecology's findings are in part consistent with Occidental. Specifically, there is a significant vapor footprint associated with the former Occidental solvent production settling ponds. Ecology also concurs that the high levels of indoor air PCE and TCE, for several of the buildings, are the result of indoor air sources (as opposed to subsurface vapor intrusion). However, based on the weight of evidence, it is Ecology's opinion that the residual chlorinated solvent mass associated with the former production settling ponds does pose a vapor intrusion risk. Specifically, there is a significant mass of residual solvents (PCE, TCE, etc.) roughly 10 feet below land surface. This mass, therefore, poses a vapor intrusion risk.

Ecology's Recommendations

- Use a soil total VOC level of 5 mg/kg as soil screening level (or MTCA remediation level) for the vapor intrusion pathway (Appendix A).

- Use a groundwater total VOC level of 700 ug/L as a screening level (or MTCA remediation level) for the vapor intrusion pathway (Appendix A).

- Install permanent soil gas probe observation points through the vapor footprint (Figure 4). Measure soil gas levels (and other parameters, e.g. methane, oxygen, carbon dioxide, etc.) over time and determine trends. This work should be done while collecting groundwater samples for future monitoring events. Paired groundwater/vapor results should add value to future trend assessments.

- Notify, in writing, the Port of Tacoma as to the nature and extent of this vapor intrusion footprint. In other words, inform the port that this vapor footprint extends onto their land. The reason this is an issue is because future tenants will need to be notified and appropriate institutional controls (MTCA Section 440) will need to be in place. Specifically, environmental covenants will be needed for this OCC vapor footprint. These covenants will need to stipulate future use, e.g. the potential need for vapor barriers (new construction), etc.

References

Brewer et al. (2014). Estimation of Generic Sub-slab Attenuation Factors for Vapor Intrusion Investigations. Groundwater Monitoring & Remediation 34, no. 4 / Fall 2014, pp. 79-92

CRA (2014). Site Characterization Report (SCR). Groundwater and Sediment Remediation. Occidental Chemical Corporation, Tacoma, Washington. Conestoga-Rovers & Associates. August 2014 • 007843 • Report No. 128.

CRA (2014). Vapor Investigation Report. Groundwater and Sediment Remediation Prepared for: Occidental Chemical Corporation, Tacoma, Washington. Conestoga-Rovers & Associates May 2014, #007843-M9-403 Report Number: 129.

Ecology Cleanup Level and Risk Calculation (CLAC) database.

EPA (1996). Soil Screening Guidance: Technical Background Document. EPA/540/R95/128 May 1996.

EPA (2001). FACT SHEET. Correcting the Henry's Law Constant for Soil Temperature.

Feenstra et al. (1991). A Method for Assessing Residual NAPL Based on Organic Chemical Concentrations in Soil Samples. Groundwater Monitoring and Remediation (Spring-1991), pp 128-136.

GHD e-dat database.

GHD (2016). Vapor Intrusion Investigation Report. Prepared for Occidental Corporation. Report No 129.

Golden Software (Surfer).

Model Toxics Control Act (MTCA). Chapter 173-340 WAC.

Ricker, J.A. (2008) A Practical Method to Evaluate Ground Water Contaminant Plume Stability. Ground Water Monitoring and Remediation 28, No. 4 (Fall, 2008), pp. 85-94.

San Juan, Charles (2015). Occidental Chemical Vapor Intrusion Review (November 13th, 2015). Internal Ecology memo from Charles San Juan, Toxics Cleanup Program to Kerry Graber, Ecology HWTR program.

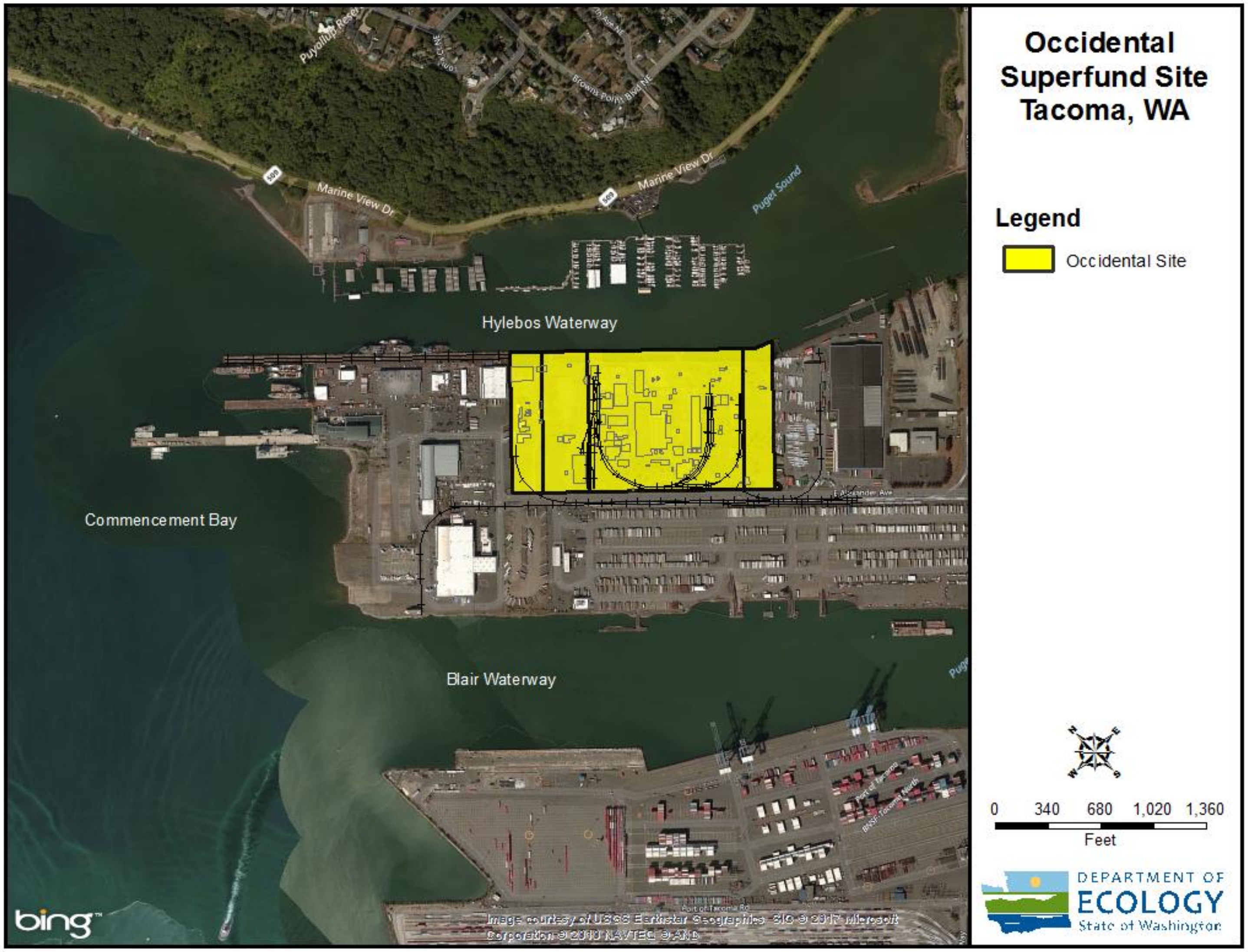

Figure 1 – Occidental Chemical Site.

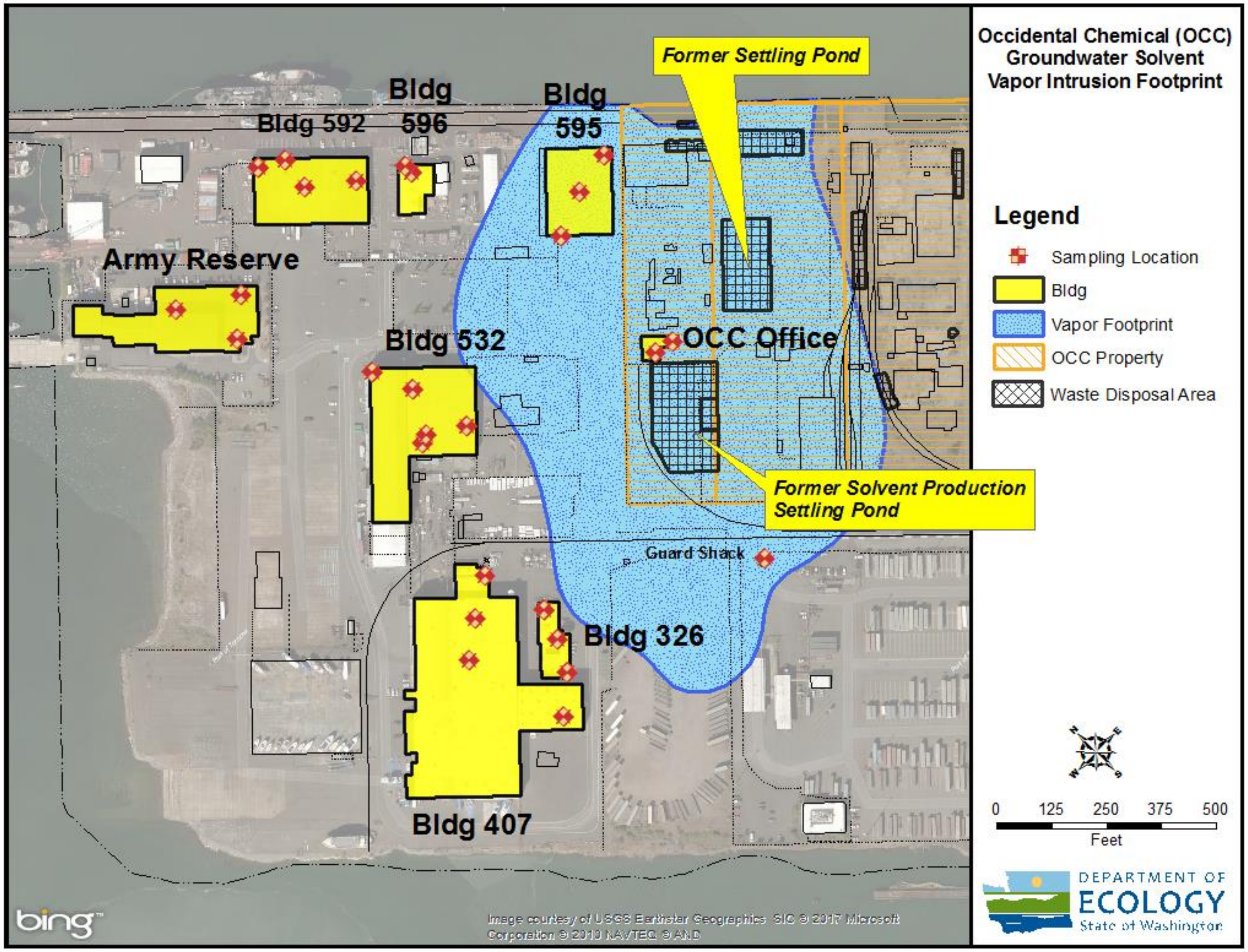

Figure 2 – Occidental Site Vapor Intrusion Footprint and Potentially Affected Building / Structures.

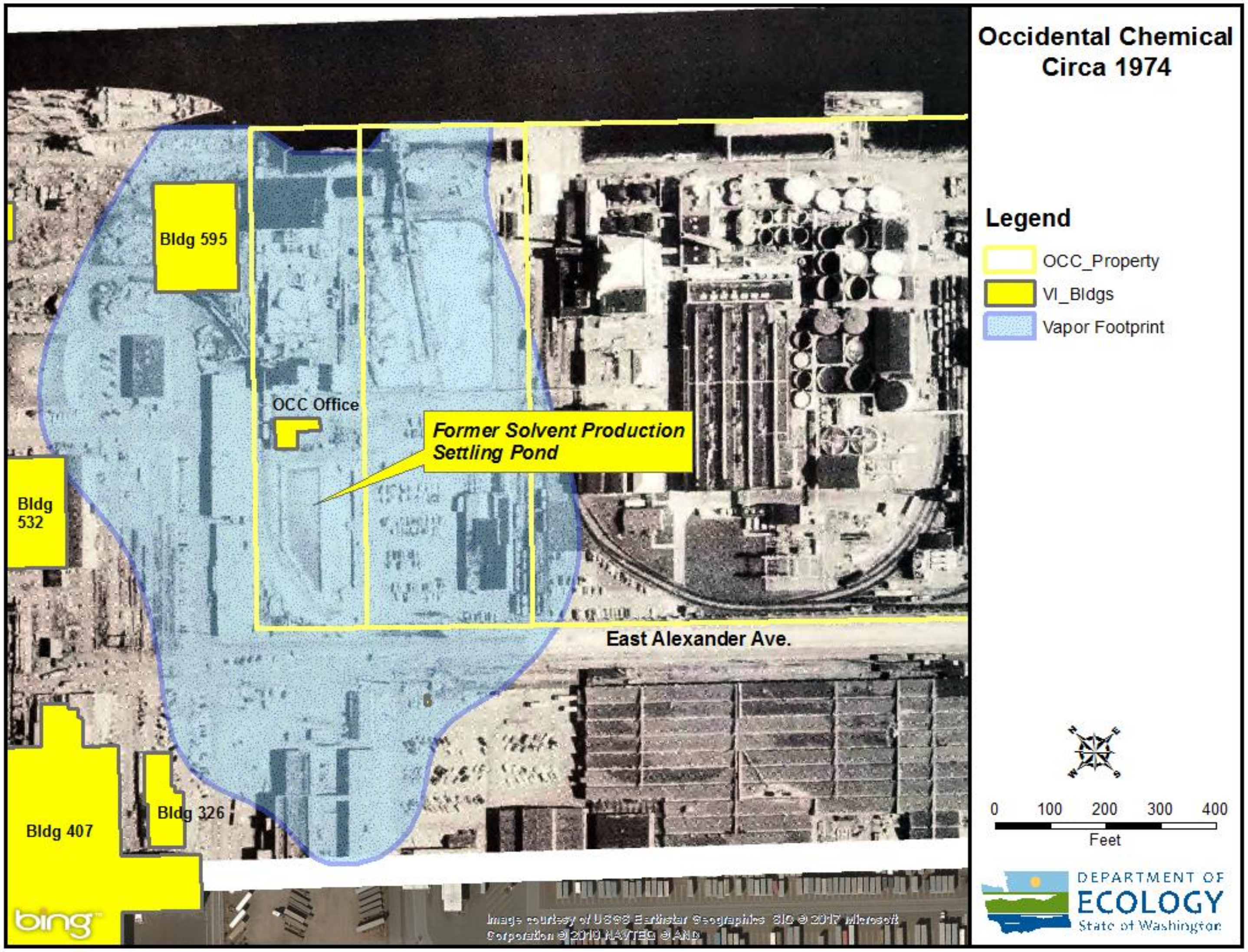

Figure 3 – Occidental Site (circa 1974).

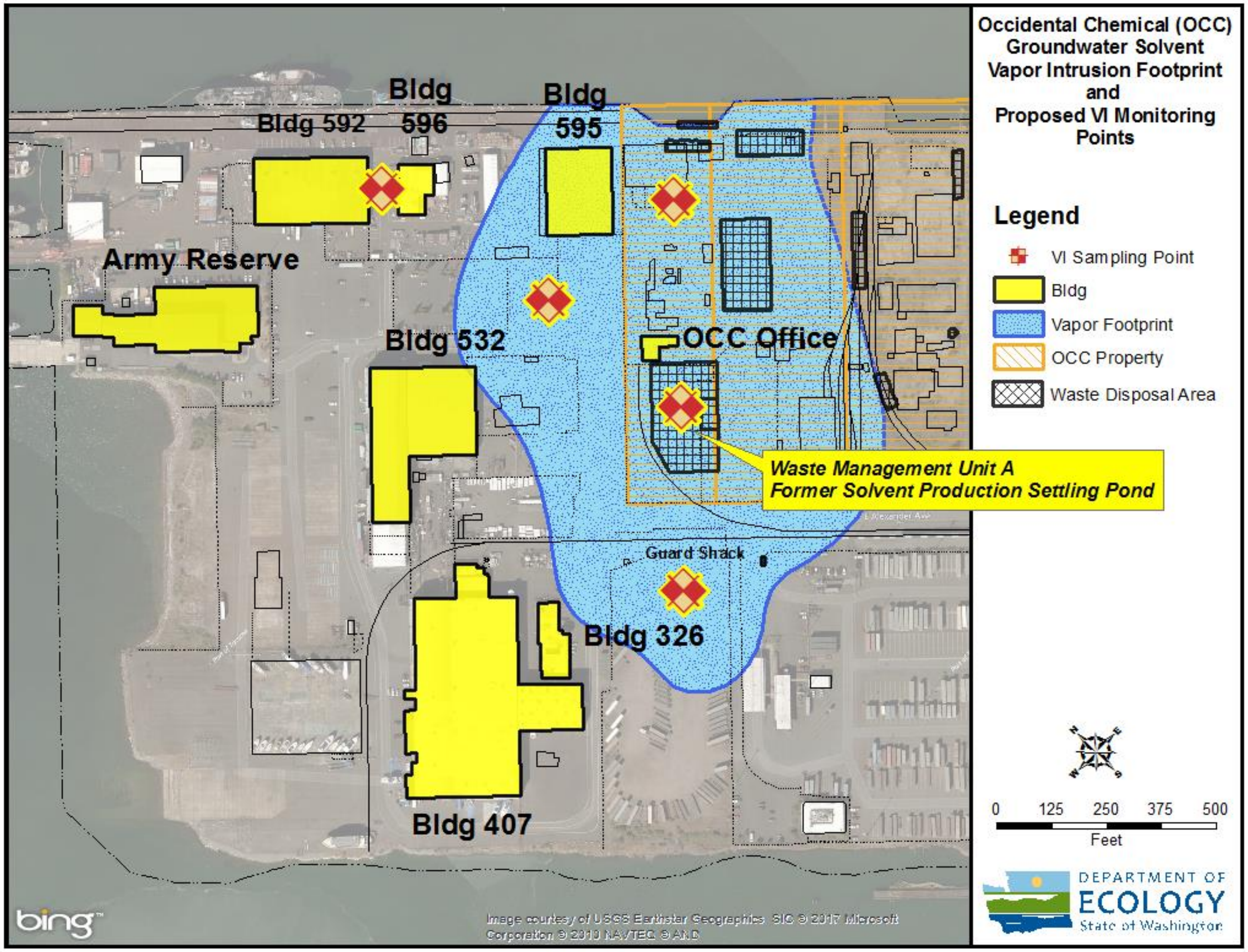

Figure 4 – Proposed Vapor Sampling Points.

Appendix A – Vapor Intrusion Soil and Groundwater Screening Levels

<u>Issue</u>

What are appropriate soil and groundwater screening levels for the vapor intrusion pathway?

<u>Methods</u>

Overview

Use the 3-phase solution to predict total VOC soil pore water, groundwater and vapor concentrations. Adjust the soil total VOC concentrations to measured composition ratios. Calculate soil and groundwater levels that account for vapor intrusion and are protective of indoor air.

Step 1 – Assemble Soil Total VOC Data

Query GHD's e-data database for total soil VOC (*cis*-1,2 dichloroethylene (1,2 DCE), tetrachloroethylene (PCE), trichloroethylene (TCE) and vinyl chloride (VC)) results. Map the data. Use total VOC results for those areas near the former Occidental production plant, as well as waste management unit's "A" and "G" (solvent production settling ponds). Filter the dataset to depths 0 to 25 ft deep (10.6 to -15.4 ft elevation).

Step 2 – Identify Composition Ratios

Collect same location/depth soil samples and determine the composition ratios for each of the four substances that comprise total VOCs. Use soil samples collected from 0 ft to -10 ft elevation and calculate the average composition ratios. The reason this is an issue is because the concentrations of these four substances (total VOCs) vary spatially and over depth.

Step 3 – Calculate Soil Pore Water Concentrations

Use the 3-phase solution (Equation 1; Feenstra, 1991) and the Table 1 physical/chemical properties to calculate a soil pore water concentration for each of the four substances that comprise total VOCs (1,2 DCE, PCE, TCE, and VC):

<u>Equation 1</u>

$$C_w = \frac{C_s \rho_b}{[K_d \rho_b + \theta_w + \theta_a HLC]}$$

C_w= soil pore water concentration (mg/L)
C_s = soil concentration (mg/kg)
K_d = distribution coefficient (L/kg)
θ_w = soil water content (mL water / mL soil)
θ_a = soil air content (mL air / mL soil)
HLC = Henry's law constant (dimensionless)
ρ_b = dry soil bulk density (kg/L)

Step 4 – Calculate Vapor Phase Concentrations (from Soil Pore Water)

Use Equation 2 to predict a corresponding vapor phase (from Equation 1 soil porewater):

<u>Equation 2</u>

$C_v = C_w * HLC * UCF * VAF$

C_v = vapor phase concentration (ug/m3)
C_w= soil pore water concentration (ug/L)
HLC = Henry's law constant (dimensionless; adjusted to groundwater temperature of 55°F; EPA, 2001)
UCF = unit conversion factor (1,000 L / m3)
VAF = vapor attenuation factor (α = 0.001, unitless)

Multiply the total VOC soil concentration by the individual substance composition ratios. Use an iterative process and adjust the predicted soil and vapor levels to meet target indoor air levels. Assume a site-specific vapor attenuation factor (VAF) of 0.001 (Brewer, 2014; San Juan, 2015).

Step 5 – Calculate Groundwater Screening Levels

Divide the Equation 1 soil pore water concentrations by a dilution factor (DF) of 20 (MTCA Section 747, Equation 747-1). This is the groundwater concentration protective of vapors.

Step 6 = Calculate Soil Total VOC Mass

Divide the soil total VOC data into five 5-ft thick layers (from 0 to -25 ft elevation). Use the Ricker (2008) method to calculate the total VOC mass for each of the five layers. Specifically, you can use the Surfer (Golden Software) program to grid each 5-ft thick layer. The grid volume divided by planar area is the average total soil VOC concentration for each layer. Use Equation 3 to calculate the total VOC mass for each layer:

<u>Equation 3</u>

$M = S * UCF * \rho * V * \eta$

M = total VOC soil mass (kg)
S = average soil total VOC concentration (mg/kg)
UCF = unit conversion factor (1 kg / 1,000,000 mg)
$\rho =$ dry soil bulk density (42.5 kg/ft3)
V = soil volume (ft3)
η = soil porosity (0.43, unitless)

<u>Results</u>

Composition ratios for the four substances that comprise total VOCs are provided in Table 2. On average, a typical subsurface (0 to -10 ft elevation) sample has about 50% TCE, 40% PCE, and about 10% cis-1,2 DCE + VC. Thus, if you adjust to these ratios, then a total VOC concentration of 5 mg/kg is protective of the vapor intrusion pathway (Table 3). This result is an artifact of the higher fraction of soil TCE (50%) and the TCE indoor air cleanup level (non-carcinogen of 2 ug/m3). If you assume a protective soil total VOC concentration of 5 mg/kg, then about 40% of the data (0 to -25 ft) exceeds (Figure 5 probability plot).

If you divide the predicted soil porewater concentrations by a dilution factor (DF) of 20, then the resulting total VOC groundwater concentration is 700 ug/L. This concentration (700 ug/L) is protective of vapor intrusion (Table 4).

Maps of the shallow soil (0 to -25 ft depth) total VOC soil footprint are provided in Figure's 6 and 7. There are three key areas with soil total VOC levels greater than 5 mg/kg: 1) the area immediately west-northwest of the former Occidental production plant (or just south of the Trident Seafoods warehouse Bldg 595), 2) former solvent production settling pond/waste management unit "G" (east-northeast of the former plant production area), and 3) former solvent production settling pond waste management unit "A" (south).

If you subdivide the 0 to -25 ft elevation soil total VOC data into 5-ft layers and calculate mass, then the 0 to -5 ft elevation layer contains the most mass (about 30,000 kg or 70% of the mass over 25 ft; Table's 5 and 6).

Conclusion / Recommendations

A soil total VOC level of 5 mg/kg should be used as a screening (remediation) level for the vapor intrusion pathway. The target soil horizon (for cleanup / remediation) is the 0 to -5 ft elevation. A groundwater total VOC concentration of 700 ug/L should be used as the screening level for vapor intrusion.

Table 1 – Physical / Chemical Properties.

Substance	**Dry Soil Bulk Density** (a)	**Soil_Water Content (a)**	**HLC** (b)	**Soil_Air Content (a)**	**Koc** (c)	**Kd** (d)	***foc*** (e)
	(kg/L)	mL_water / mL_soil	dimensionless	mL_air / mL_soil	(mL/g)	(L/kg)	%
cis-1,2-Dichloroethene (1,2 DCE)	1.5	0.3	0.10	0.13	35.5	0.036	0.001
Tetrachloroethylene (PCE)	1.5	0.3	0.40	0.13	265	0.265	0.001
Trichloroethylene (TCE)	1.5	0.3	0.24	0.13	94	0.094	0.001
vinyl chloride (VC)	1.5	0.3	0.81	0.13	18.6	0.0186	0.001

(a) MTCA Equation 747-1.
(b) Adjusted to groundwater temperature of 55°F (EPA, 2001).
(c) Soil organic carbon-water portioning coefficient; EPA Soil Screening Level Guidance (1996).
(d) Kd = Koc*foc (MTCA Eq. 747-2).
(e) Mass fraction of natural soil organic carbon (0.001 g carbon / g soil; MTCA Eq. 747-2)

Table 2 – Soil Composition Ratios.

Location	WMUA-34	WMUA-34	WMUA-34	WMUG-12	WMUA-41	WMUA-41	WMUG-01	WMUG-12	Average
Elevation_Ft	-3.12	-5.12	-7.12	-9.96	-6.15	-6.15	-5.23	-9.96	**%**
cis-1,2-Dichloroethene (1,2 DCE)	0.3%	5.0%	41.4%	0.5%	7.3%	7%	0.03%	0.05%	**7.7%**
Tetrachloroethylene (PCE)	43.1%	21.3%	7.1%	61.6%	33.1%	33%	94.7%	37.9%	**41.5%**
Trichloroethylene (TCE)	56.6%	73.8%	51.1%	37.9%	59.6%	60%	5.3%	61.6%	**50.7%**
vinyl chloride (VC)	--	--	0.4%	0.05%	--	--	0.04%	0.5%	**0.2%**
Total	**100.0%**	**100.0%**	**99.6%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100%**	

Table 3 – Vapor Intrusion Soil Screening Levels.

Substance	**Soil**	**%**	**Soil_Pore_ Water** (a)	**Predicted_ Vapor_Phase** (b)	**Soil_Gas_ Screening_Level** (c)	**Indoor_Air** (d)
	(mg/kg)		(ug/L)	(ug/m3)	(ug/m3)	(ug/m3)
cis-1,2-Dichloroethene (1,2 DCE)	**0.4**	7.7%	1,579	158	-- (e)	-- (e)
Tetrachloroethylene (PCE)	**2.1**	41.5%	4,152	1,655	40,000	40
Trichloroethylene (TCE)	**2.5**	50.7%	8,051	1,928	2,000	2.0
vinyl chloride (VC)	**0.01**	0.2%	42	34	2,800	2.8
Total_VOCs	**5.0**		**13,825**	**3,775**		

(a) Equation 1
(b) Equation 2
(c) Indoor air concentration * vapor attenuation factor (VAF) of 1,000 (unitless)
(d) Ecology CLARC database (lower of carcinogen / non-carcinogen).
(e) No toxicity information currently available for 1,2 DCE.

Table 4 – Soil and Groundwater Vapor Intrusion Screening Levels.

Substance	**Soil** (a)	**Groundwater** (b)
	(mg/kg)	(ug/L)
cis-1,2-Dichloroethene (1,2 DCE)	0.4	79
Tetrachloroethylene (PCE)	2.1	208
Trichloroethylene (TCE)	2.5	403
vinyl chloride (VC)	0.01	2
Total_VOCs	**5.0**	**691**

(a) Table 3
(b) Table 3 predicted soil porewater concentration divided by dilution factor (DF) of 20 (MTCA Eq. 747-1).

Table 5 – Average Soil Total VOC Concentrations v. Depth.

Layer	Start Elevation	End Elevation	Positive Grid Volume (a)	Grid Area (a)	Average Total VOC (b)
	ft	ft	ft2*mg/kg	ft2	mg/kg
1	9.6	4.6	1,661,612	173,544	15
2	4.6	-0.4	252,798	29,752	13
3	-0.4	-5.4	286,594,563	348,490	827
4 (c)	-5.4	-10.4	85,330,347	409,610	213
5	-10.4	-15.4	62,152,944	271,707	234

(a) Surfer grid volume function.
(b) Grid volume divided by planar area.
(c) Layer 4 results are based on the removal of one statistical outlier soil sample (WMU-G 10, -7.07 ft elevation, total VOC = 91,528 mg/kg).

Table 6 – Soil Total VOC Mass.

Layer	**Start**	**End**	**Total VOC**	**Percent**	**Average Total VOC**	**Soil**	**Soil**	**Soil**
	Elevation	Elevation	Mass (a)	of Total Mass	Concentration (b)	Bulk Density	Volume	Porosity (c)
	ft	ft	kg	%	mg/kg	kg/ft3 (c)	ft3	Unitless
1	9.6	4.6	231	0.6%	15	42.5	867,718	0.43
2	4.6	-0.4	37	0.1%	13	42.5	148,758	0.43
3	-0.4	-5.4	26,331	65.2%	827	42.5	1,742,448	0.43
4	-5.4	-10.4	7,980	19.8%	213	42.5	2,048,048	0.43
5	-10.4	-15.4	5,800	14.4%	234	42.5	1,358,536	0.43
Total	**--**	**--**	**40,379**	100%	--	**--**		

(a) Equation 3
(b) Table 5
(c) MTCA Eq. 747-1

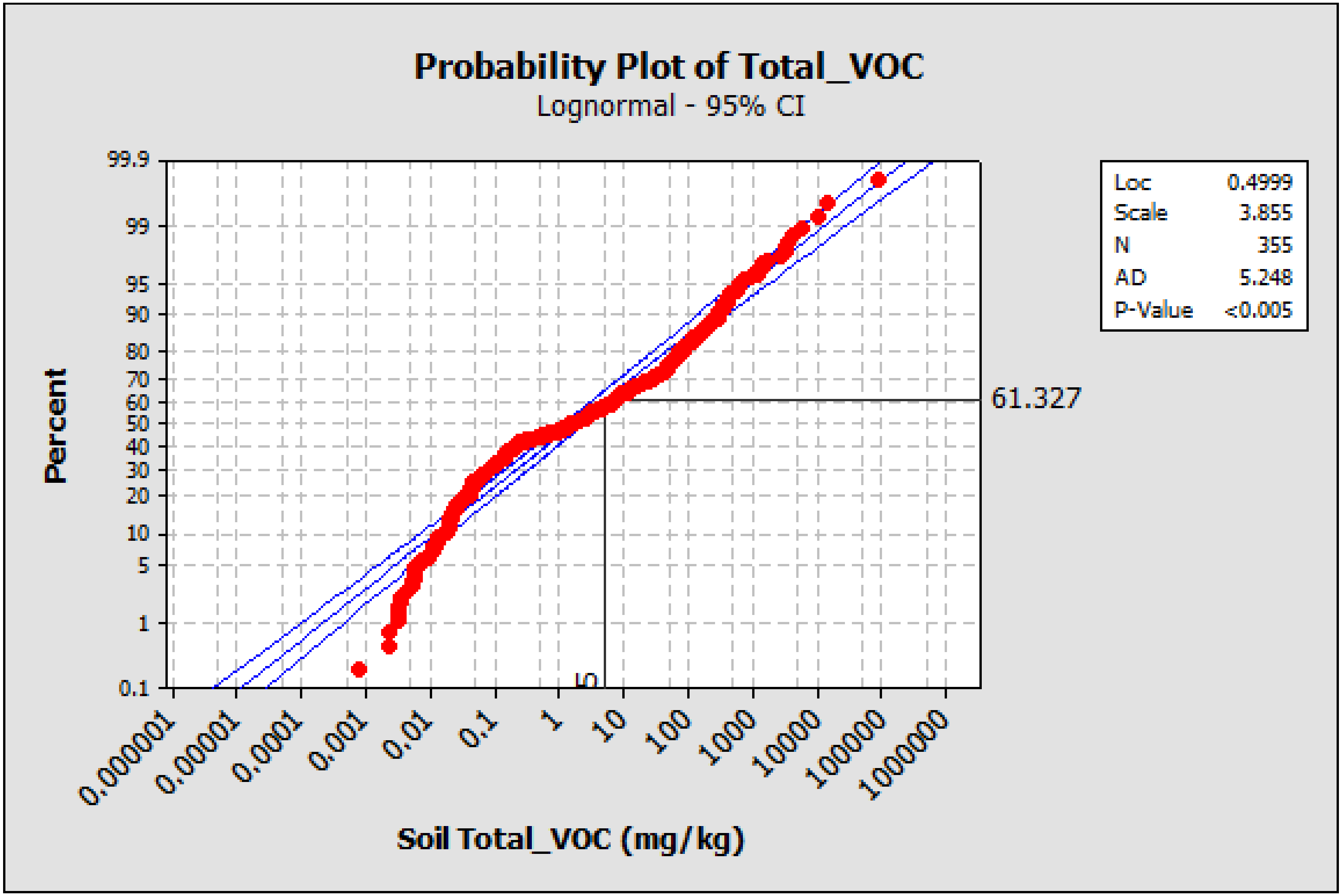

Figure 5 – Soil Total VOC (0 to -25 Ft) Probability Plot.

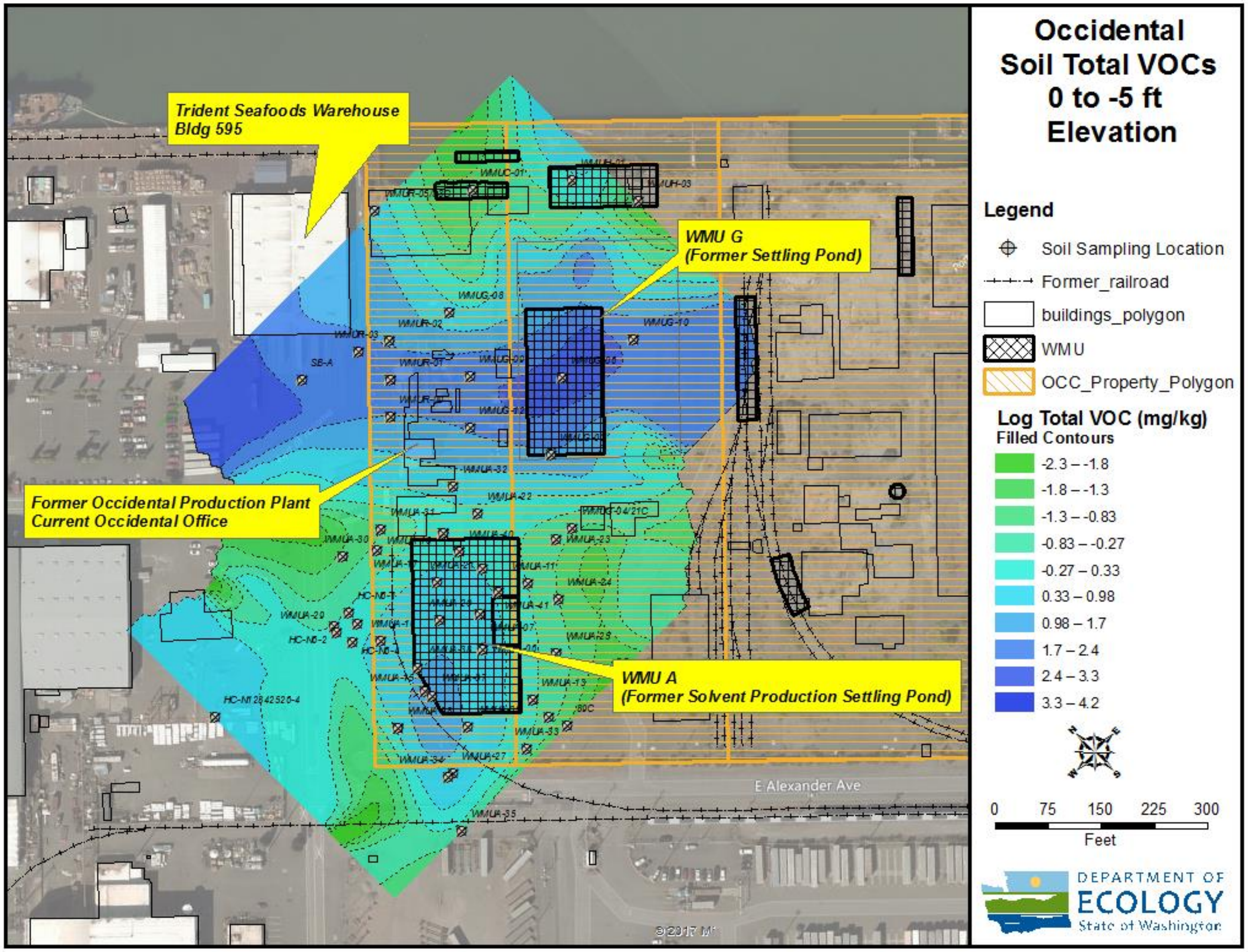

Figure 6 – Soil Total VOC Footprint (0 to -5 ft Elevation).

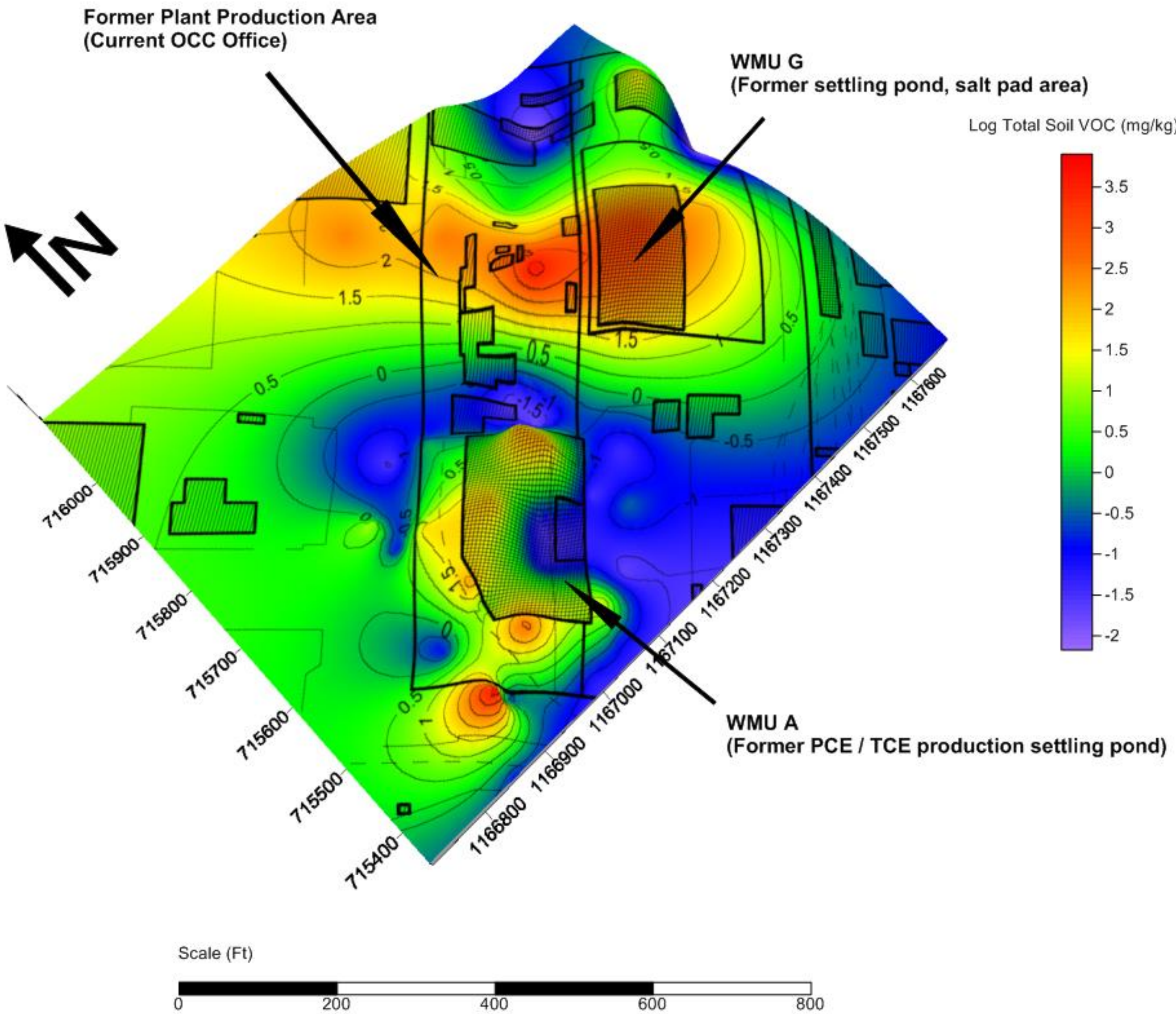

Figure 7 – 3D Total Soil VOCs Footprint, 0 to -5 Ft Elevation.