

# SITE HAZARD ASSESSMENT

## Worksheet 1

### Summary Score Sheet

#### SITE INFORMATION:

Whitehead Tye Property

730 S Myrtle Street

Seattle, King County, WA 98108

Cleanup Site ID: 12115

Facility/Site ID: 9809

Section: 29

Latitude: 47.53984

Township: 24N

Longitude: -122.32542

Range: 4E

Tax/Parcel ID: 2734100270

*Site scored/ranked for the Hazardous Sites List Publication: August 2016*

#### SITE DESCRIPTION:

The Whitehead Tye Property site (Site) is a former lumber handling/treatment facility located in Seattle, King County, Washington. The 3.22-acre property is located approximately 625 feet from the Lower Duwamish Waterway (LDW), and zoned for industrial (IG1 U/85) use.

Adjacent properties are of an industrial nature. Seattle Boiler Works is located to the west, Cascade Columbia Distribution (also known as the Fox Avenue Site) is located to the north, Seattle Iron & Metals, a welding operation, and the Caffe D'Arte roasting plant are located to the south, a United Rentals yard is located to the southeast, and a bar/nightclub is located on the parcel to the east.

The Site is currently operated as vacant property and parking area by Reliable Transportation & Storage.

As of January 2008, the property was leased to Seattle Iron & Metals for use as an employee parking lot and for truck storage. The Vic Markov Tire site (Cleanup Site ID (CSID) 3987, not ranked) is located approximately 1/4 mile southeast of the Site along East Marginal Way. Arco 5218 (CSID 9979, not ranked) is located less than 1/4 mile southeast of the Site along East Marginal Way and is currently in the Voluntary Cleanup Program. The Sternoff Metals site (CSID 4466), also located less than 1/4 mile southeast of the Site, was assigned a rank of 5 in 1991 under the Washington Ranking Method (WARM) and is awaiting cleanup. Confirmed groundwater and soil impacts are present beneath and adjacent to the north-adjointing property, the Fox Avenue Building site (CSID 5082). The Fox Avenue site (formerly Great Western Chemical and currently Cascade Columbia Distribution) was previously operated as a chemical and petroleum repackaging and distribution facility and is currently under an Agreed Order with Ecology to clean up soil and groundwater impacted by chlorinated solvents, petroleum products, semi-volatile organic compounds (SVOCs), dioxins and furans. Solvent-impacted groundwater at the Fox Avenue site extends south onto the Whitehead Tye Property toward the Lower Duwamish Waterway and the South Myrtle Street Embayment.

The Site is located at the northeast corner of Fox Avenue South and South Myrtle Street, however a portion of the northeastern property line is adjacent to East Marginal Way South. A partially-open storage shed is located along the property line adjacent to East Marginal Way. The Site is unpaved with minimal landscaping. Aerial photographs from 1936 to 1994 show several buildings were previously present in the western portion of the site, most of which were removed by 1998.

The Site is physically located within the Seattle Boiler Works to Slip 4 Source Control Area for the Lower Duwamish Waterway (River Mile (RM) 2.3 to 2.8 East); however, stormwater from this facility is conveyed to Slip 3, which is managed as a separate Source Control Area.

#### SITE BACKGROUND:

A summary of prior operations/tenants at the subject property is presented below.

<u>From</u>	<u>To</u>	<u>Operator/Tenant</u>	<u>Activity</u>
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1906	1930	Williams Fir Finish (leased from King County)	Lumber resawing & finishing
1930	1953	Tyee Lumber and Manufacturing (leased from King County)	Lumber resawing & finishing
1953	1982	Tyee Lumber and Manufacturing	Lumber resawing & finishing
1982	1986	CECO Corporation/William & Ann Duncan	Leased to woodworking tenant
1986	1989	Tyee Dry Kilns	Lessee operating dry kilns
1986	2016	Whitehead Company/Reliable Transfer & Storage	Truck storage/parking and material storage

#### **SITE CONTAMINATION:**

In 2000 the Whitehead Tyee Property site was reported to Washington State Department of Ecology (Ecology) and placed on the Confirmed and Suspected Contaminated Sites List (CSCSL).

A pentachlorophenol (penta) dip tank was operated at the property prior to a change in ownership in 1982. The former dip tank was reportedly a top-loading tank with dimensions of approximately 10 to 15 feet long, 5 feet wide, and 5 to 6 feet deep, partially constructed below grade. The tank was reportedly located along the southern edge of the property and wood treatment activities were conducted along the southern property line and in the right-of-way of South Myrtle Street. Reportedly a 300-gallon penta underground storage tank (UST) (removed from service in 1986) was located adjacent to the penta dip tank shed.

In 1986, 300 gallons of penta were removed from a UST, and the UST was removed. Confirmation soil samples were reportedly collected following removal of the penta UST; however, the analytical results for these samples were not in Ecology's files. In August 2000, a Supplemental Investigation was conducted at the property to assess and document volatile organic compound (VOC) and SVOC impacts in soil and groundwater. Concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) were reported in soil samples above Model Toxics Control Act (MTCA) Method A cleanup levels and concentrations of penta and vinyl chloride were reported in soil samples above MTCA Method B cleanup levels. Groundwater sampled during the investigation contained concentrations of gasoline-range hydrocarbons up to 66,000 micrograms per liter (ug/L), PCE up to 63,000 ug/L, penta up to 1,500 ug/L, TCE up to 14,000 ug/L, toluene up to 21,000 ug/L, and vinyl chloride up to 18,000 ug/L. Gasoline and PCE were detected in multiple groundwater samples at concentrations above the corresponding MTCA Method A cleanup levels, and penta, TCE, toluene and vinyl chloride concentrations in groundwater samples were above the corresponding MTCA Method B cleanup levels.

In 1986 Ecology conducted a facility inspection to investigate a complaint regarding a discharge from the facility to an open pit (the location of the pit was not specified). The discharge was described as a "white milky liquid discharge" identified as polyvinyl acetate glue, and containing concentrations of copper and nickel above the National Toxics Rule Aquatic Life criteria for marine acute and chronic exposures. These criteria were promulgated in 1986. The pit receiving the discharge was reportedly connected to a second pit which was conveyed to the Fox Avenue storm drain system.

#### **REMEDIATION ACTIVITIES:**

During groundwater sampling in 1999 associated with the adjacent Fox Avenue site, light non-aqueous phase liquid (LNAPL) was encountered at well B-38. The LNAPL composition was evaluated to contain approximately 5% penta and 95% mineral spirits, a mixture used for wood preservation.

In 2000, Terra Vac and Floyd | Snider conducted remedial investigation activities at the Fox Avenue site (former Great Western Chemical Company [GWCC]), to characterize VOC and SVOC source areas and downgradient groundwater impacts. Investigation and cleanup activities at the Fox Avenue site began in approximately 1990

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and are ongoing. A Supplemental Remedial Investigation was conducted on the Whitehead/Tyee property in August 2000 and reported in January 2001. Terra Vac and Floyd Snider attributed the soil and groundwater VOC and SVOC impacts to sources related to GWCC activities, however they also identified a second source/release of penta in the vicinity of the former penta dip tank on the Tyee/Whitehead property.

A final Remedial Investigation/Feasibility Study (RI/FS) was prepared for the Fox Avenue site in 2011 and identifies impacted soils beneath the northern portion of the Whitehead Tyee property. Chemicals of concern include PCE, TCE and degradation products, penta, hydrocarbons, benzene, bis(2-ethylhexyl)phthalate, copper and nickel. Penta use and handling at the Fox Avenue site took place between 1966 and the early 1980s. Results of indoor air sampling conducted at the adjacent Seattle Boiler Works property identified concentrations of PCE and TCE above vapor intrusion screening levels.

Floyd | Snider conducted site investigation activities in March 2013, advancing eight soil borings at the Site. Penta was detected in soil samples at four locations (GP-2 from 10 to 13 feet, GP-3 from 10 to 13 feet, GP-4 from 10 to 13 feet, and GP-10 from 0 to 5 feet depths), at concentrations ranging from 0.19 to 9.76 milligrams per kilogram (mg/kg). The MTCA Method B (carcinogenic) cleanup level for penta in soil is 2.5 mg/kg.

The property was enrolled in the Voluntary Cleanup Program (VCP) between October 2013, and January 2016. In late 2013, Sound Earth Strategies conducted a Phase I Environmental Site Assessment (ESA) which identified several recognized environmental conditions (RECs) at the property, including: 1) Soil and groundwater impacts related to the Fox Avenue site, 2) Former use of a penta dip tank and UST in the southern portion of the property, 3) historic sawmill and lumber operations over a period of nearly 70 years, 4) presence of stoddard solvent and oil-range hydrocarbons above the MTCA Method A cleanup levels in soil borings from the former lumber manufacturing areas, 5) historic automotive repair operations in the southeastern portion of the property, and 6) records of former tanks at the property or addresses which may be associated with the property.

In late 2013 Sound Earth Strategies also prepared a Workplan for additional investigation at the property to address RECs identified in the Phase I ESA. The Workplan recommends 11 soil borings be advanced at the Site, four of which to be completed as groundwater monitoring wells, and associated soil and groundwater sampling and analysis at new and existing sampling points. The proposed drilling and sampling locations are located near the former pentachlorophenol dip tank and UST, a former refuse burner, and former automotive repair operational area located near the southeast corner of the property.

Under the VCP, the Ecology Site Manager prepared an opinion letter regarding the prepared Workplan and identified data gaps not addressed by the proposed scope of work:

- 1) Polychlorinated biphenyls (PCBs), oil, diesel, and metals have been reported in catch basin solids samples downgradient of the Site, and are not considered in the proposed scope of work.
- 2) Surface soils may be a source of metals, polycyclic aromatic hydrocarbons (PAHs), PCBs, and total petroleum hydrocarbons (TPH) in LDW sediment. Surface soils may also be a source of dioxins and furans in LDW sediment.
- 3) A ground penetrating radar (GPR) survey should be conducted in an attempt to identify the location of two former 1,000-gallon diesel USTs removed in 1989 & two former 1,000-gallon gasoline USTs removed in 1986. Additional soil & groundwater investigation near former USTs should be conducted once the former UST locations are identified.
- 4) Floyd Snider sampled shallow soils and upper groundwater units in 2013. The extent of PCE in soil and groundwater near locations GP-5, GP7 & GP-8 should be evaluated, as reported concentrations suggest a separate release of chlorinated solvent may have occurred.
- 5) The extent of oil-range hydrocarbons near GP-10 in soil should be delineated.
- 6) Soil samples should be collected near the location of "white milky liquid discharge" (polyvinyl acetate glue) identified during a 1986 Ecology inspection.
- 7) Soil and groundwater near the former steam dry kilns should be investigated.
- 8) Impacts of current parking/storage activities at the Site should be considered and evaluated.
- 9) All soil and groundwater samples should be analyzed for stoddard solvent (gasoline-range petroleum hydrocarbons).
- 10) Soil samples collected near the former automotive repair facilities should be analyzed for additional parameters associated with used oil.

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- 11) Soil and groundwater samples collected near the former refuse burner should be analyzed for petroleum hydrocarbons, PCBs, SVOCs, dioxins and furans; and
- 12) A conceptual site model should be developed.

#### **CURRENT SITE CONDITIONS:**

Groundwater conditions are tidally influenced west of Fox Avenue South and have been investigated by Floyd Snider in conjunction with the adjacent Fox Avenue site. Two groundwater-bearing zones have been identified, with a shallow zone located from 7 to 13 feet below ground surface (bgs), and a deeper semi-confined zone from 15 to 80 feet bgs.

Impacted soils are present beneath the northern portion of the Whitehead Tyee property, extending from the Fox Avenue Site located to the north. Chemicals of concern related to the Fox Avenue site include PCE, TCE and degradation products, penta, hydrocarbons, benzene, bis(2-ethylhexyl)phthalate, copper and nickel. Groundwater samples collected at the Whitehead Tyee property contain concentrations of PCE and gasoline above the MTCA Method A cleanup levels, and concentrations of TCE, toluene, vinyl chloride and penta above the MTCA Method B cleanup levels. Other chemicals of concern at the Site include dioxins and furans, PCBs, and PAHs, based on catch basin solids sampling results and sediment sample results from the LDW, downgradient from the Site.

The approximate depth to groundwater is 7 to 15 feet below ground surface, with groundwater flowing to the west to southwest (based on prior groundwater characterization activities for the adjacent Fox Avenue site). Subsurface soils are sand and silty sand with interbedded silts.

#### **SPECIAL CONSIDERATIONS:**

Checked boxes indicate routes applicable for Washington Ranking Method (WARM) scoring

**Surface Water**

The surface water route is scored on the basis of potential transport to surface water by overland flow and stormwater discharge as well as confirmed impacted groundwater discharge to surface water.

**Air**

The air route is scored on the basis of confirmed soil and/or groundwater impacts and the potential for vapor phase transport to air.

**Groundwater**

The groundwater route is scored on the basis of confirmed impacts to groundwater from an adjacent property, as well as potential groundwater and soil impacts from releases which have occurred at this property.

The hazards assessed at this Site are a combination of hazards due to releases that occurred or may have occurred at this property as well as known groundwater impacts from an upgradient/adjacent cleanup site (Fox Avenue site). This SHA does not distinguish between sources, but does consider the conditions currently believed to be present at the Site.

#### **ROUTE SCORES:**

Surface Water/ Human Health:	29.9	Surface Water/ Environment:	53.4
Air/ Human Health:	21.2	Air/ Environment:	2.1
Groundwater/ Human Health:	40.0		

**Overall Rank: 1**

#### **REFERENCES:**

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- 1 Ecology Water Resources Explorer, accessed June 2014.  
<https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx>
  - 2 FEMA Map Service Center, accessed June 2014.  
<https://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>
  - 3 Floyd|Snider, 2011, Final Fox Avenue Site Seattle, Washington Remedial Investigation/Feasibility Study. June 10, 2011.
  - 4 King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed June 2014.  
<http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx>
  - 5 Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. <http://mcdc.missouri.edu/websas/caps10c.html>. Accessed June 2014
  - 6 National Climatic Data Center 2011 Local Climatological Data for Seattle, Seattle Tacoma Airport. <http://www1.ncdc.noaa.gov/pub/orders/IPS-90B1F39F-6CFA-4A6B-AA82-5ED1FF897CCC.pdf>
  - 7 Science Applications International Corporation, 2008, Lower Duwamish Waterway RM 2.3 - 2.8 East Seattle Boiler Works to Slip 4 Summary of Existing Information and Identification of Data Gaps. May 2008.
  - 8 Sound Earth Strategies, Inc., 2013, Draft Subsurface Investigation Workplan Whitehead Tyee Property 730 South Myrtle Street Seattle, Washington. November 6, 2013.
  - 9 Sound Earth Strategies, Inc., 2013, Phase I Environmental Site Assessment Whitehead Property 730 South Myrtle Street Seattle, Washington. December 12, 2013.
  - 10 Terra Vac and Floyd|Snider, 2000, Supplemental Remedial Investigation and Feasibility Study Prepared for GW International 6900 Fox Avenue South Seattle, Washington. October 2000.
  - 11 Terra Vac and Floyd|Snider, 2001, Supplemental Remedial Investigation Report on the Whitehead Property, prepared for GW International. January 26, 2001.
  - 12 WARM Scoring Manual
  - 13 WARM Toxicological Database
  - 14 Washington Department of Ecology, 2014, Letter to Mr. Howard Giske Re: Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the Following Hazardous Waste Site: Whitehead Tyee Property. March 6, 2014
  - 15 Washington Department of Transportation 24-hour Isopleth Maps, January 2006 update. <http://www.wsdot.wa.gov/publications/fulltext/Hydraulics/Wa24hrIsoplethMaps.pdf>
  - 16 Washington State Department of Health Source Water Assessment Maps. March 2011 update. <https://fortress.wa.gov/doh/eh/dw/swap/maps/>
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# SITE HAZARD ASSESSMENT

## Worksheet 2

### Route Documentation

Cleanup Site ID: 12115

Whitehead Tyee Property

Facility/Site ID: 9809

#### 1. SURFACE WATER ROUTE

**List those substances to be considered for scoring:**

Gasoline/benzene, pentachlorophenol, tetrachloroethene, trichloroethene, oil-range petroleum hydrocarbons and lead. Other VOCs, SVOCs, PAHs, PCBs and metals have been confirmed or are suspected in impacted groundwater discharging to the Lower Duwamish Waterway downgradient from this site.

**Explain the basis for choice of substances to be used in scoring:**

Confirmed and/or suspected availability for transport to surface water. Other substances that may be present and were not individually listed would not affect the Human Health or Environmental Toxicity Values on Worksheet 4.

**List those management units to be considered for scoring:**

Overland flow, stormwater/storm drain discharge, and groundwater release to surface water.

**Explain basis for choice of unit to be used in scoring:**

All three units have been previously investigated and confirmed to discharge to surface water and exhibit evidence of release.

#### 2. AIR ROUTE

**List those substances to be considered for scoring:**

Tetrachloroethene, trichloroethene, vinyl chloride, and gasoline/benzene

**Explain the basis for choice of substances to be used in scoring:**

Other volatile substances may be available for vapor transport. The selected substances have been confirmed present in soil vapor or ambient air samples collected during investigation at the adjacent Fox Avenue site and are suspected to be present at the Whitehead Tyee Property.

**List those management units to be considered for scoring:**

Soil vapor and ambient air

**Explain basis for choice of unit to be used in scoring:**

Confirmed presence in indoor air at adjacent/downgradient property. Soil vapor and ambient have not been investigated at this site.

#### 3. GROUNDWATER ROUTE

**List those substances to be considered for scoring:**

Gasoline/benzene, pentachlorophenol, tetrachloroethene, trichloroethene, oil range hydrocarbons and lead

**Explain the basis for choice of substances to be used in scoring:**

Confirmed present in groundwater. Other chemicals of concern may be present but would not affect route score.

**List those management units to be considered for scoring:**

Two groundwater units present at the site.

**Explain basis for choice of unit to be used in scoring:**

Both units have confirmed impacts above cleanup levels and cleanup activities are occurring.

**Worksheet 4**  
**Surface Water Route**

CSID: 12115

Site Name: Whitehead Tyee Property

**1.0 Substance Characteristics**

**1.1 Human Toxicity**

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Gasoline/benzene	8	3	X	5
Pentachlorophenol	10	X	1	4
Tetrachloroethene	8	5	3	4
Trichloroethene	8	3	X	4
TPH-oil	4	5	3	X
Lead	6	X	10	X

Highest Value 10  
 Bonus Points? 2  
 Human Health Toxicity Value **12**

**1.2 Environmental Toxicity**

Substance	Acute Water Quality Criteria		Non-human Mammalian Acute Toxicity	
	ug/L	Value	mg/kg	Value
Gasoline/benzene	5,100	2	3,306	3
Pentachlorophenol	13	6	X	X
Tetrachloroethene	10,200	2	800	5
Trichloroethene	2,000	2	2,402	3
TPH-oil	2,350	2	490	5
Lead	140	4	X	X

Environmental Toxicity Value **6**

**1.3 Substance Quantity**

Amount: 3.22 acres

Basis: Assumes possible surface soil impacts across entire property (groundwater discharge may also contribute to surface water receptors)

Substance Quantity Value **9**

**2.0 Migration Potential**

**2.1 Containment**

Containment Value **10**

Explain Basis: Spill/discharge with no runoff controls (currently) and impacted groundwater discharges to surface water

**2.2 Surface Soil Permeability**

Soil Permeability Value **1**

Silty sand with some gravel

**2.3 Total Annual Precipitation**

Total Precipitation Value **3**

37 inches

**2.4 Max 2-yr/24-hour Precipitation**

2YR/24HR Precipitation Value **3**

2.4 inches

**2.5 Floodplain**

Floodplain Value **0**

Not in floodplain

**2.6 Terrain Slope**

Slope Value **3**

Conveyance by storm drain structure (piped) and groundwater discharge

**3.0 Targets**

**3.1 Distance to Surface Water**

625' to Lower Duwamish Waterway at Myrtle St embayment

Surface Water Distance Value

**3.2 Population Served within 2 miles**

0 people

Population Value

**3.3 Area Irrigated within 2 miles**

0 acres

Irrigation Value

**3.4 Distance to Nearest Fishery Resource**

Direct discharge to Lower Duwamish Waterway

Fishery Value

**3.5 Distance to and Name of Nearest Sensitive Environment**

Direct discharge to Lower Duwamish Waterway

Sensitive Environment Value

**4.0 Release**

Explain basis for scoring a release to surface water

Impacted groundwater is confirmed to discharge to surface water

Release to Surface Water Value

**Pathway Scoring - Surface Water Route, Human Health Pathway**

$$SW_H = (SUB_{SH} * 40 / 175) * [(MIG_S * 25 / 24) + REL_S + (TAR_{SH} * 30 / 115)] / 24$$

Where:

$SUB_{SH} = (\text{Human Toxicity Value} + 3) * (\text{Containment} + 1) + \text{Substance Quantity}$

$MIG_S = \text{Soil Permeability} + \text{Annual Precip} + \text{Rainfall Frequency} + \text{Floodplain} + \text{Slope}$

$REL_S = \text{Release to Surface Water}$

$TAR_{SH} = \text{Distance to Surface Water} + \text{Population Served by Surface Water} + \text{Area Irrigated}$

$SUB_{SH}$	174
$MIG_S$	10
$REL_S$	5
$TAR_{SH}$	10
$SW_H$	29.9

**Pathway Scoring -Surface Water Route, Environmental Pathway**

$$SW_E = (SUB_{SE} * 40 / 153) * [(MIG_S * 25 / 24) + REL_S + (TAR_{SE} * 30 / 34)] / 24$$

Where:

$SUB_{SE} = (\text{Env Tox Value} + 3) * (\text{Containment} + 1) + \text{Substance Qty}$

$MIG_S = \text{Soil Permeability} + \text{Annual Precip} + \text{Rainfall Frequency} + \text{Floodplain} + \text{Slope}$

$REL_S = \text{Release to Surface Water}$

$TAR_{SE} = \text{Distance to Surface Water} + \text{Distance to Fishery} + \text{Distance to Sensitive Environment}$

$SUB_{SE}$	108
$MIG_S$	10
$REL_S$	5
$TAR_{SE}$	34
$SW_E$	53.4



**Worksheet 5**

**Air Route**

**CSID:** 12115

**Site Name:** Whitehead Tye Property

**1.0 Substance Characteristics**

**1.1 Introduction (WARM Scoring Manual) - Please Review before scoring**

**1.2 Human Toxicity**

Substance	Ambient Air Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Tetrachloroethene	9	X	X	X
Trichloroethene	10	3	X	4
Vinyl chloride	10	1	X	X
Gasoline/benzene	10	3	X	5

Highest Value 10  
 Bonus Points? 2  
 Toxicity Value

**1.3 Mobility**

Gaseous Mobility	Max Value:	4
Particulate Mobility	Soil Type:	
	Erodibility:	
	Climatic Factor:	

Mobility Value

**1.4 Final Human Health Toxicity/Mobility Matrix Value**

**HH Final Matrix Value**

**1.5 Environmental Toxicity/Mobility**

Substance	Non-human Mammalian Inhalation Toxicity (mg/m3)	Acute Value	Mobility Value	Table A-7 Matrix Value
Tetrachloroethene	4,000	5	4	10
Trichloroethene	15,583	3	4	6
Vinyl chloride	460,123	1	4	2
Gasoline/benzene	31,947	3	4	6

Env. Final Matrix Value

**1.6 Substance Quantity**

Amount: Up to 3 acres of impacted soil/groundwater

Basis: Lateral extent not defined and may affect more than 50% of the property

Substance Quantity Value

**Worksheet 5**

**Air Route**

**CSID:** 12115

**Site Name:** Whitehead Tye Property

**2.0 Migration Potential**

**2.1 Containment**

Containment Value

Explain Basis: Impacted soil/groundwater with >2 foot cover, no vapor collection

Surface impacts may be present but less than confirmed subsurface impacts

**3.0 Targets**

**3.1 Nearest Population**

Population Distance Value

Within 500 feet

**3.2 Distance to and name of nearest sensitive environments**

Sensitive Environment Value

Approximately 625' to Lower Duwamish Waterway

**3.3 Population within 0.5 miles**

Population Value

755 population

**4.0 Release**

Release to Air Value

Explain basis for scoring a release to air:

No confirmed release to air at this property

**Pathway Scoring - Air Route, Human Health Pathway**

$$AIR_H = (SUB_{AH} * 60/329) * [REL_A + (TAR_{AH} * 35/85)] / 24$$

Where:

$$SUB_{AH} = (\text{Human toxicity} + 5) * (\text{Containment} + 1) + \text{Substance Qty}$$

REL<sub>A</sub> = Release to Air

$$TAR_{AH} = \text{Nearest Population} + \text{Population within 1/2 mile}$$

SUB <sub>AH</sub>	181
REL <sub>A</sub>	0
TAR <sub>AH</sub>	37
AIR <sub>H</sub>	21.2

**Pathway Scoring - Air Route, Environmental Pathway**

$$AIR_E = (SUB_{AE} * 60/329) * [REL_A + (TAR_{AE} * 35/85)] / 24$$

Where:

$$SUB_{AE} = (\text{Environmental Toxicity Value} + 5) * (\text{Containment} + 1) + \text{Substance Qty}$$

REL<sub>A</sub> = Release to Air

$$TAR_{AE} = \text{Nearest Sensitive Environment}$$

SUB <sub>AE</sub>	97
REL <sub>A</sub>	0
TAR <sub>AE</sub>	7
AIR <sub>E</sub>	2.1

**Worksheet 6**  
**Groundwater Route**

CSID: 12115

Site Name: Whitehead Tyee Property

**1.0 Substance Characteristics**

**1.1 Human Toxicity**

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Gasoline/benzene	8	3	X	5
Pentachlorophenol	10	X	1	4
Tetrachloroethene	8	5	3	4
Trichloroethene	8	3	X	4
TPH-oil	4	5	3	X
Lead	6	X	10	X

Highest Value 10  
 Bonus Points? 2  
 Toxicity Value

**1.2 Mobility**

Cations/Anions Max Value:  
 Solubility Max Value: 3 Mobility Value

**1.3 Substance Quantity**

Amount: 5,000-15,000 cubic yards  
 Basis: Assumes impacted soil may be present on up to 2/3 of the property at a thickness up to 5 feet.  
 Substance Quantity Value

**2.0 Migration Potential**

**2.1 Containment** Containment Value   
 Explain Basis: Contaminated soil with no cap

**2.2 Net Precipitation**  Net Precipitation Value

**2.3 Subsurface Hydraulic Conductivity** Conductivity Value   
 Silty sand and gravel

**2.4 Vertical Depth to Groundwater**   
 Confirmed release: Yes Depth to Aquifer Value

**3.0 Targets**

**3.1 Groundwater Usage** Aquifer Use Value   
 Private supply - irrigation

**3.2 Distance to Nearest Drinking Water Well**  Well Distance Value

**3.3 Population Served within 2 Miles** Population Served Value   
 0 people

**Worksheet 6**  
**Groundwater Route**

**CSID:** 12115

**Site Name:** Whitehead Tye Property

**3.4 Area Irrigated by GW Wells within 2 miles**

Area Irrigated Value

1 acres

**4.0 Release**

Release to Groundwater Value

Explain basis for scoring a release to groundwater:

Confirmed release to groundwater

**Pathway Scoring - Groundwater Route, Human Health Pathway**

$$GW_H = (SUB_{GH} * 40 / 208) * [(MIG_G * 25 / 17) + REL_G + (TAR_{GH} * 30 / 165)] / 24$$

Where:

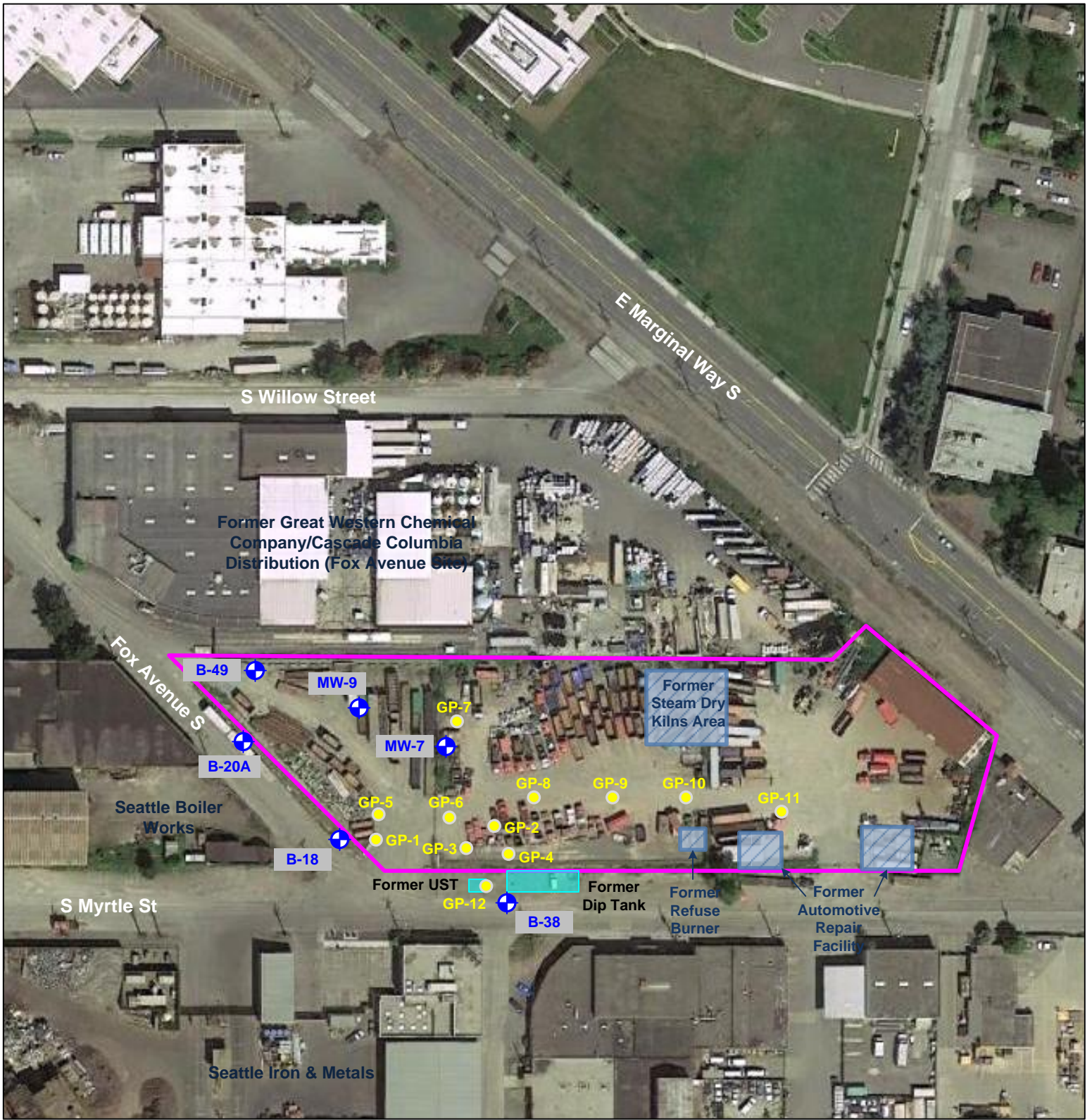
$SUB_{GH} = (\text{Human toxicity} + \text{mobility} + 3) * (\text{Containment} + 1) + \text{Substance Qty}$

$MIG_G = \text{Depth to Aquifer} + \text{Net Precip} + \text{Hydraulic Conductivity}$

$REL_G = \text{Release to Groundwater}$

$TAR_{GH} = \text{Aquifer Use} + \text{Well Distance} + \text{Population Served} + \text{Area Irrigated}$

$SUB_{GH}$	203
$MIG_G$	13
$REL_G$	5
$TAR_{GH}$	2.75
$GW_H$	40.0



**Legend:**

- Property location (approximate)
- Pentachlorophenol tank location (approximate)
- Former facility area (approximate)
- Geoprobe locations (approximate)
- ⊕ Monitoring well

**Notes:**

1. All locations are approximate, and not to scale.



**Whitehead Tye Property**  
**730 S Myrtle Street**  
**Seattle, WA 98108**

**Site Overview Map**

DEPARTMENT OF  
**ECOLOGY**  
 State of Washington

**CSID 12115**  
 CSID12115.vsd

## Washington Ranking Method

### Route Scores Summary and Ranking Calculation Sheet

**Site Name:** Whitehead Tye Property

**CSID:** 12115

**Site Address:** 730 S Myrtle Street, Seattle, WA 98108

**FSID:** 9809

#### HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	29.9	4
Air	21.2	3
Groundwater	40.0	3

H=	4
M=	3
L=	3

$$\begin{array}{c}
 H^2 + 2M + L \\
 \hline
 16 + 6 + 3 \\
 \hline
 8
 \end{array}$$

**Human Health  
Priority Bin Score:**  
4  
 rounded up to next whole number

#### ENVIRONMENT ROUTE SCORES

Enter Environment Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	53.4	5
Air	2.1	2

H=	5
L=	2

$$\begin{array}{c}
 H^2 + 2L \\
 \hline
 25 + 4 \\
 \hline
 7
 \end{array}$$

**Environment  
Priority Bin Score:**  
5  
 rounded up to next whole number

#### Comments/Notes:

The adjacent property, the Fox Avenue Building site (CSID 5082) is currently under Agreed Order No. DE8985 to address impacted soils, groundwater, vapor and air present at the site, adjacent properties and discharging to the LDW. A SHA was completed in 1993, resulting in a Rank of 1 for the adjacent site.

**FINAL MATRIX  
RANKING**

1

#### FOR REFERENCE:

##### Final WARM Bin Ranking Matrix

Human Health Priority	Environment Priority					
	5	4	3	2	1	N/A
5	1	1	1	1	1	1
4	1	2	2	2	3	2
3	1	2	3	4	4	3
2	2	3	4	4	5	3
1	2	3	4	5	5	5
N/A	3	4	5	5	5	NFA

##### Quintile Values for Route Scores - February 2015 Values

Quintile	Human Health			Environment	
	Surface Water	Air	Ground Water	Surface Water	Air
5	>= 30.7	>= 37.6	>= 51.6	>= 50.9	>= 29.9
4	>= 23.1	>= 23.8	>= 40.9	>= 31.2	>= 22.5
3	>= 14.1	>= 15.5	>= 33.2	>= 23.6	>= 14.0
2	>= 7.0	>= 8.5	>= 23.5	>= 11.0	>= 1.6
1	<= 6.9	<= 8.4	<= 23.4	<= 10.9	<= 1.5

Quintile value associated with each route score entered above