SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 11906

Superior Cleaners

Facility/Site ID: 916588

1221 E Madison St

Seattle, King County, WA 98122

Section:	25N	Latitude:	47.61286
Township:	4E	Longitude:	-122.31669
Range:	32	Tax/Parcel ID:	6003000095

Site scored/ranked for the Hazardous Sites List Publication: August 2015

SITE DESCRIPTION:

The Superior Cleaners site (Site) is a former gasoline service station and dry cleaners located in Seattle, King County, Washington. The 0.07-acre property is located approximately 6,700 feet from Elliott Bay, and zoned for neighborhood commercial (NC3P-65) use.

Adjacent properties include apartment buildings to the east, north, and west, and Seattle Academy to the south. The Site is bordered on the north by East Madison Street, on the east by 13th Avenue South, and on the south by East Union Street.

The Site is currently operated as Pony Bar by Casita Grande LLC.

Current activities at the Site include the operation of a bar with an outdoor patio and fire ring.

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
	1904		Printing facility
1905	1951	C.B. Dodge/Tidewater Association/Associated Oil Company	Gasoline station
1960	1969	Jewel Cleaners	Dry cleaners
1969	1973	Superior Cleaners and Laundry	Tuxedo shop and dry cleaners
1973	2014	Acacia Florist	Florist
2014	2015	Pony	Bar with outdoor patio

SITE CONTAMINATION:

In 2009 the Superior Cleaners site was reported to Washington State Department of Ecology (Ecology) and placed on the Confirmed and Suspected Contaminated Sites (CSCSL) list with ID number 11906.

In 2008, a Phase II Environmental Site Assessment (ESA) was conducted at the Site by The Riley Group, Inc. Two abandoned underground storage tanks (USTs) were identified at the Site, and are suspected to be former gasoline and used oil USTs associated with the Site's former use as a gasoline service station. These USTs were partially filled with sand; however, residual product and water were present within each tank. The residual liquids present in the tanks were removed and disposed offsite. One concrete vault was identified at the Site, and reportedly formerly contained chlorinated solvents. A sample of the liquid present in the vault was analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), and volatile organic compounds (VOCs). Tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), and vinyl chloride were detected in the vault water at concentrations above the MTCA Method A cleanup levels. In 2009, the vault water was tested for

metals, and contained 170 micrograms per liter (ug/L) arsenic; 1,910 ug/L barium; 347 ug/L cadmium; 264 ug/L chromium; 42,600 ug/L lead; 4.4 ug/L mercury; and 58.5 ug/L selenium.

In October 2008, four hollow stem auger borings (B1 through B4) were advanced at the Site to depths of approximately 39 feet below ground surface (bgs), and six test probes were advanced to depths of between 3 and 10 feet bgs. Perched groundwater was encountered at 4 feet bgs in the northeastern portion of the property and at 9 feet bgs in other probe locations. The top of a deeper water bearing zone was encountered at approximately 29 feet bgs.

Soil samples were collected from each boring location and analyzed for petroleum hydrocarbons, BTEX constituents, VOCs, and total lead. Diesel, gasoline and BTEX constituents were not detected in soil at or above the laboratory reporting limits; oil was detected in a soil sample collected from boring B-2 at a concentration below the Model Toxics Control Act (MTCA) Method A cleanup level. Tetrachloroethylene (PCE) was detected in soil collected from 8 locations (B1, B4, P1B, P2, P3, P4, P5, and P6) at concentrations above the MTCA Method A cleanup level; depths of soil samples containing PCE above the MTCA Method A cleanup level were from 1 to 8 feet bgs. No other chlorinated solvents were detected in Site soil.

Groundwater grab samples were collected from seven locations at the Site (B1, B2, B3, B4, P1A, P2, and P5) and analyzed for BTEX and VOCs. Concentrations of PCE were above MTCA Method A cleanup levels in groundwater samples collected from B1 (5.9 ug/L; 28 feet bgs), P1A (43,000 ug/L; 1 foot bgs), P2 (6.8 ug/L; 9 feet bgs), and P5 (300 ug/L; 9 feet bgs). The groundwater sample collected at P1A also contained trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), 1,1-dichloroethylene (1,1-DCE), and vinyl chloride at concentrations above MTCA Method A cleanup levels. BTEX constituents were not detected above MTCA Method A cleanup levels.

PAST REMEDIATION ACTIVITIES:

In 2009, the onsite vault was cleaned out, and two soil samples (HA-2 and Vault Soil) were collected from soil beside the vault. Concentrations of PCE (both samples) and TCE (Vault Soil) were detected above MTCA Method A cleanup levels.

In February 2009, six monitoring wells were installed at the Site. Three wells were screened in the deeper groundwater unit (35-40 feet bgs; MW1, MW3, MW5), and three were screened from approximately 5 to 10 feet bgs in the perched zone (MW2, MW4, MW6). BTEX constitutents and VOCs were not detected in soil samples. Groundwater samples were collected in March and April 2009 and analyzed for TPH and VOCs. PCE was detected in samples collected from MW2 and MW4 at concentrations above the MTCA Method A cleanup level; TCE and cis-1,2-DCE were also present in the sample from MW2 above the MTCA Method A cleanup levels. Oil (830 ug/L) was detected in groundwater from MW4 at a concentration above the MTCA Method A cleanup level.

Groundwater at the Site has been monitored approximately yearly from 2009 through March 2014 (most recent report available for review in Ecology's files). Three additional groundwater monitoring wells (MW7 through MW9) were installed at the Site in March 2014. All three are screened from 5 to 10 feet bgs. As of March 2014, PCE was present in groundwater at MW2, MW7, MW8, and MW9 at concentrations above MTCA Method A cleanup levels. MW2 groundwater also contained TCE above the MTCA Method A cleanup level. As recently as August 2012, cis-1,2-DCE and vinyl chloride were also detected in MW2 and MW4 respectively, at concentrations above MTCA Method A cleanup levels. Groundwater was only analyzed for oil once following the detection in MW4, and was not detected at or above the laboratory reporting limit.

In 2014, one formerly identified 280-gallon UST was removed from the Site. The other UST known to be present at the Site was located beneath a part of the building and was not removed. A small volume of impacted soil was observed around the fill pipe of the 280-gallon UST. This soil was excavated and disposed offsite. Soil samples collected from the final excavation sidewalls did not contain PCE, TCE, BTEX, or petroleum hydrocarbons at or above the laboratory reporting limits. One soil sample (SP1-1) was collected from a pothole located near the UST excavation; this soil sample contained PCE at a concentration above the MTCA Method A cleanup level. This soil was left in place at the Site.

In October 2014, 3-D Microemulsion (3DME) and HRC Primer, manufactured by Regenesis, were injected at fourteen locations at the Site, followed by an injection of BDI Plus (Regenesis) in January 2015. The injection locations included six monitoring wells (MW2, MW6, MW7, MW8, MW9, and MW10) that were screened in the

shallow groundwater unit (5 to 10 feet bgs), and eight temporary injection points (IP1 through IP8).

In May 2015, groundwater samples were collected from seven wells screened in the shallow groundwater unit (MW2, MW4, MW6, MW7, MW8, MW9, and MW10) and analyzed for halogenated volatile organic compounds (HVOCs). Concentrations of HVOCs above the MTCA cleanup levels were detected in MW4 (vinyl chloride), MW7 (cis-1,2-DCE and vinyl chloride), MW8 (PCE and vinyl chloride), and MW10 (PCE and vinyl chloride).

CURRENT SITE CONDITIONS:

PCE is present in Site soil and groundwater at concentrations above MTCA Method A cleanup levels. The extent of PCE impacts are not well characterized. TCE, cis-1,2-DCE, and vinyl chloride have also been detected in groundwater (primarily shallow groundwater) at concentrations above MTCA Method A cleanup levels.

The approximate depth to groundwater is 4 to 35 feet below ground surface, with groundwater flowing to the west (estimated based on surface topography). Subsurface soils are silty sand (based on soil boring logs).

SPECIAL CONSIDERATIONS:

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

☐ **Surface Water**

Release occurred to subsurface soils.

☑ **Air**

Volatile compounds are present in shallow subsurface soils, and may be available for transport via the air pathway.

☑ **Groundwater**

PCE, TCE, cis-1,2-DCE, and vinyl chloride have been detected in Site groundwater at concentrations above MTCA Method A cleanup levels.

Though the most recent groundwater monitoring report did not detect all of the listed chemicals in groundwater above MTCA Method A cleanup levels, the Site is still ranked for these chemicals as four consecutive quarters of clean groundwater samples have not been submitted to Ecology. Furthermore, TCE, cis-1,2-DCE, and vinyl chloride are breakdown products of PCE.

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	85.9	Air/ Environment:	3.7
Groundwater/ Human Health:	37.8		

Overall Rank: 3

REFERENCES:

1 Ecology Water Resources Explorer, accessed April 2015. https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx

2 King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed April 2015. http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx

3 Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. http://mcdc.missouri.edu/websas/caps10c.html. Accessed April 2015.

4 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

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Summary Score Sheet

5 The Riley Group, Inc., 2008, Preliminary Phase II Subsurface Investigation, Former Gasoline Service Station & Dry Cleaners Site, 1221 East Madison Street, Seattle, Washington. 8 December.

6 The Riley Group, Inc., 2009, Interim Action Letter Report, Former Gasoline Service Station & Dry Cleaners Site, 1221 East Madison Street, Seattle, Washington. 20 July.

7 The Riley Group, Inc., 2014, First Quarter 2014 Groundwater Monitoring Report, Former Superior Dry Cleaners, 1221 East Madison Street, Seattle, Washington, 98122. 20 June.

8 The Riley Group, Inc., 2014, UST Removal and Site Assessment Report, Former Superior Dry Cleaners, 1221 East Madison Street, Seattle, Washington, 98122. 24 June.

9 The Riley Group, Inc., 2015, Groundwater Monitoring Report - Second Quarter 2015, The Pony (Former Gasoline Station and Superior Dry Cleaners), 1221 East Madison Street, Seattle, Washington 98122, Facility Site No. 916588, Cleanup Site No. 11906. Prepared for Mark Stoner, Casita Grande LLC. June 29.

10 WARM Scoring Manual

11 WARM Toxicological Database

12 Washington Department of Transportation 24-hour Isopluvial Maps, January 2006 update. http://www.wsdot.wa.gov/publications/fulltext/Hydraulics/Wa24hrIspoluvials.pdf

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 11906 Superior Cleaners

Facility/Site ID: 916588

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Not applicable

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

List those management units to be considered for scoring:

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

2. AIR ROUTE

List those substances to be considered for scoring:

Tetrachloroethylene, trichloroethylene, cis-1,2-dichloroethylene, vinyl chloride

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

Prior detection in Site soil and/or groundwater at concentrations above MTCA Method A cleanup levels

List those management units to be considered for scoring:

Soil vapor

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

Potential for vapor transport

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

Tetrachloroethylene, trichloroethylene, cis-1,2-dichloroethylene, vinyl chloride

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

Prior detection in Site groundwater at concentrations above MTCA Method A cleanup levels

List those management units to be considered for scoring:

Groundwater

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

Presence in Site groundwater

Worksheet 5

Air Route

CSID: 11906 **Site Name:** Superior Cleaners

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
Tetrachloroethylene	9	5	X	X
Trichloroethylene	10	3	X	4
Cis-1,2-dichloroethylene	1	3	X	X
Vinyl chloride	10	1	X	X

Highest Value 10

Bonus Points? 2

Toxicity Value 12

1.3 Mobility

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

Mobility Value 4

1.4 Final Human Health Toxicity/Mobility Matrix Value **HH Final Matrix Value** 24

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian Inhalation Toxicity (mg/m3)	Acute Value	Mobility Value	Table A-7 Matrix Value
Tetrachloroethylene	4,000	5	4	10
Trichloroethylene	15,583	3	4	6
Cis-1,2-dichloroethylene	65,000	3	4	6
Vinyl chloride	460,123	1	4	2

Env. Final Matrix Value 10

1.6 Substance Quantity

Amount: Approximately 1,500 square feet

Basis: Estimated extent of impacted soil

Substance Quantity Value 4

Worksheet 5

Air Route

CSID: 11906 **Site Name:** Superior Cleaners

2.0 Migration Potential

2.1 Containment Containment Value: 10

Explain Basis: Cover of less than 2 feet and
no vapor collection system present

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

Site is a bar; apartment buildings located within 125 feet

3.2 Distance to and name of nearest sensitive environments Sensitive Environment Value: 7

Approximately 820 feet to the open green space (Seattle University)

3.3 Population within 0.5 miles Population Value: 75

16,036 population

4.0 Release Release to Air Value: 0

Explain basis for scoring a release to air:

No confirmed release to air

Pathway Scoring - Air Route, Human Health Pathway

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

Where:

SUB_{AH} =(Human toxicity + 5) * (Containment + 1) + Substance Qty	SUB_{AH}	323
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	85.0
	AIR_H	85.9

Pathway Scoring - Air Route, Environmental Pathway

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

Where:

SUB_{AE} =(Environmental Toxicity Value +5)*(Containment +1) +Substance Qty	SUB_{AE}	169
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	7.0
	AIR_E	3.7

Worksheet 6

Groundwater Route

CSID: 11906 **Site Name:** Superior Cleaners

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Tetrachloroethylene	8	5	3	4
Trichloroethylene	8	3	X	4
Cis-1,2-dichloroethylene	6	X	3	X
Vinyl chloride	8	5	X	7

Highest Value 8

Bonus Points? 2

Toxicity Value 10

1.2 Mobility

Cations/Anions Max Value:

Solubility Max Value: 3 Mobility Value 3

1.3 Substance Quantity

Amount: Approximately 170 cubic yards

Basis: Estimated volume of impacted soil

Substance Quantity Value 3

2.0 Migration Potential

2.1 Containment Containment Value 10

Explain Basis: Contaminated soil

2.2 Net Precipitation >10 to 20 inches Net Precipitation Value 2

2.3 Subsurface Hydraulic Conductivity Conductivity Value 3

Silty sand

2.4 Vertical Depth to Groundwater 4 feet

Confirmed release: Yes Depth to Aquifer Value 8

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 4

Private supply but alternate sources available with minimum hookup requirements

3.2 Distance to Nearest Drinking Water Well 5,575 feet

Well Distance Value 1

3.3 Population Served within 2 Miles Population Served Value 2

6 people

Worksheet 6

Groundwater Route

CSID: 11906 **Site Name:** Superior Cleaners

3.4 Area Irrigated by GW Wells within 2 miles Area Irrigated Value 5

40 acres

4.0 Release Release to Groundwater Value 5

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} =(Human toxicity + mobility + 3) * (Containment + 1) + Substance Qty	SUB_{GH}	179
MIG_G=Depth to Aquifer+Net Precip + Hydraulic Conductivity	MIG_G	13
REL_G = Release to Groundwater	REL_G	5
TAR_{GH} = Aquifer Use + Well Distance + Population Served + Area Irrigated	TAR_{GH}	12.2
	GW_H	37.8

Washington Ranking Method

Route Scores Summary and Ranking Calculation Sheet

Site Name: Superior Cleaners **CSID:** 11906

Site Address: 1221 East Madison Street **FSID:** 34128282

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	85.9	5
Groundwater	37.8	3

H=	5
M=	3
L=	0

$$\frac{H^2 + 2M + L}{8} = \frac{25 + 6 + 0}{8}$$

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	ns	0
Air	3.7	2

H=	2
L=	0

$$\frac{H^2 + 2L}{7} = \frac{4 + 0}{7}$$

Environment Priority Bin Score: **1**

rounded up to next whole number

Comments/Notes:

FINAL MATRIX RANKING **3**

FOR REFERENCE:

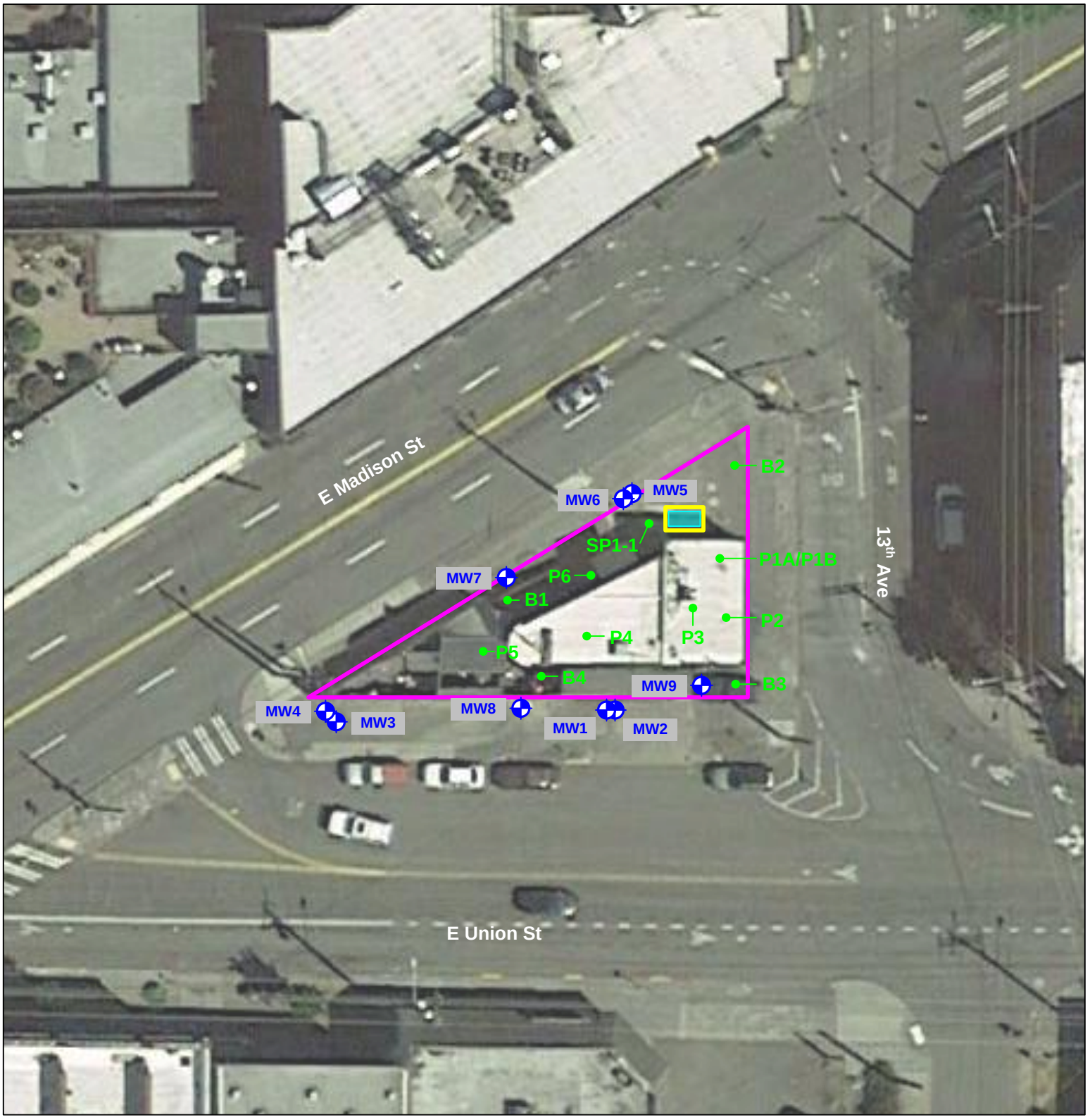
Final WARM Bin Ranking Matrix

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 Surface Water	Air	Ground Water	Environment 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



Legend:

- Property location (approximate)
- Excavation area (approximate)
- Former location of removed UST (approximate)
- Monitoring well (approximate)
- Soil sample (approximate)

Notes:

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

N

Superior Cleaners
1221 East Madison Street
Seattle, WA 98122

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 11906
CSID11906.vsd