SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 6682

Rainier Beach Automotive

Facility/Site ID: 79391627

9479/ 9481 Rainier Avenue S

Seattle, King County, WA 98118

Section:	35	Latitude:	47.52002
Township:	24N	Longitude:	-122.26189
Range:	4E	Tax/Parcel ID:	7129304680

Site Scored/ranked for the February 2015 Hazardous Sites List Publication

SITE DESCRIPTION:

The Rainier Beach Automotive site (Site) is a former automotive repair shop and gas station located in Seattle, King County, Washington. The 0.17-acre property is located approximately 340 feet from Lake Washington, and zoned for neighborhood commercial (NC1-40) use.

Adjacent properties include retail space to the south and east, car repair and parts stores to the north and west, and an apartment building to the northeast.

The Site is currently operated as an automotive service shop by James A Campbell.

Current activities include automobile repairs and maintenance.

The Site is located along the south side of Rainier Avenue South, between 56th and 57th Avenue South. The Site is in the Rainier Beach neighborhood of Seattle.

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
		Safari Auto Repair	Automotive repair shop
		Rainier Texaco	Gas station
		Rainier Beach Automotive	Automotive repair shop

SITE CONTAMINATION:

In 1990 the Rainier Beach Automotive site was reported to Washington State Department of Ecology (Ecology) and placed on the Leaking Underground Storage Tank (LUST) list.

Ecology received notification of a release at the Site in October 1990 following the removal of several USTs and petroleum contaminated soil.

A second release was reported in January 2004, when a caller reported a surface spill of oil going into the storm drain. An initial investigation of the Site was completed in February of 2004.

PAST REMEDIATION ACTIVITIES:

Four USTs were formerly located at the Site, and were decommissioned and removed in October and November 1990. USTs at the Site included one 500-gallon used oil tank, and 2,000-gallon, 4,000-gallon, and 5,000-gallon gasoline USTs. Approximately 60 to 70 cubic yards of soil were excavated along with the USTs, and the soils were stockpiled onsite. The extent of the soil excavation was based on visual and olfactory evidence. The depth of excavation was approximately 8 to 10 feet, and no groundwater was encountered. The extent of the excavation was limited by the existing structure to avoid undermining the foundation of the building to the south, a service station canopy to the east, and a water main to the north. The west sidewall did not exhibit any visual or olfactory evidence of petroleum products.

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Four soil samples were collected during excavation activities, one below each former storage tank. Four additional soil samples were taken, three from the excavation walls, and one composite sample from the stockpiled soil. The southern wall was reportedly not sampled due to unsafe conditions. Gasoline, diesel, benzene, and ethylbenzene were not detected at or above laboratory detection limits in the sample collected from the west wall, and detected concentrations of toluene and xylenes were below Model Toxics Control Act (MTCA) Method A cleanup levels. The east wall sample contained concentrations of gasoline above the MTCA Method A cleanup level, but benzene, toluene, ethylbenzene and xylenes (BTEX) were not detected at or above laboratory reporting limits. The soil sample from the north wall contained concentrations of gasoline, benzene, and xylenes above the corresponding MTCA Method A cleanup levels. The soil sample collected from the stockpiled, excavated soil contained concentrations of gasoline and BTEX constituents above MTCA Method A cleanup levels. One sample was also analyzed for selected chlorinated organic compounds and metals, but these substances were below MTCA Method A cleanup levels.

Soils left in place within the excavation contained concentrations of gasoline, benzene, and xylenes at concentrations above their respective MTCA Method A cleanup levels. Approximately 30 cubic yards of the excavated soil were transported offsite to the owner's property in Snohomish County, Washington. The remaining soil was used as fill for the excavation site, along with imported fill. It is unknown whether the reused soil was impacted or clean.

Analytical information was not available for the second reported release at the Site, which occurred in January 2004. The business on the property at this time was Safari Auto Repair. A caller reported water suspected to be contaminated with used oil was collecting near a clogged storm drain, which discharges to Lake Washington. Ecology visited the Site, and informed the manager that cleanup was necessary. A contractor was called, and the majority of the oil was reportedly cleaned up.

CURRENT SITE CONDITIONS:

Soil contamination was identified in 1990, during removal of four USTs. Known contaminated soil is still present at the Site north and east of the original excavation area, possibly within the former tank excavation, as well as beneath existing buildings. The impact to groundwater at the Site has not been investigated.

Known Site contamination includes gasoline, benzene, and xylenes in soils at concentrations above MTCA Method A cleanup levels. A surface spill of used oil was documented in 2004.

The approximate depth to groundwater is estimated to be 10 to 20 feet below ground surface, with groundwater flowing to the north (estimated based on surface topography). Subsurface soils are silts and clays with varied cobble and sand content (based on soil encountered during the UST excavation).

SPECIAL CONSIDERATIONS:

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

☑ **Surface Water**

Used oil was reportedly released at the property in 2004, and an unknown quantity may have entered the storm drain. This release is assumed to be a single incident and not an ongoing or recurrent release to surface water.

☑ **Air**

Release of volatile compounds occurred in the subsurface. A parking lot and building are constructed over a portion of the suspected release area.

☑ **Groundwater**

Gasoline and BTEX were detected in soils at the Site at concentrations above MTCA Method A cleanup levels. Groundwater conditions at the Site have not been characterized.

A large municipal well (serves 9,890 people) is located approximately 1.9 miles from the Site, and is factored into the ranking for groundwater at this Site. At this time there is no information indicating a confirmed release to groundwater or impact to the municipal well from this Site.

SITE HAZARD ASSESSMENT
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Summary Score Sheet

ROUTE SCORES:

Surface Water/ Human Health:	17.0	Surface Water/ Environment:	27.2
Air/ Human Health:	37.0	Air/ Environment:	1.5
Groundwater/ Human Health:	59.7		

Overall Rank: 1

REFERENCES:

1 Ecology Water Resources Explorer, accessed February 2014. https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx

2 Enviros Applied Technology, 1991, Summary of field work conducted on November 12, 1990 and analytical results of soil samples collected from the Rainier Beach Texaco located at 9479 Rainier Avenue South, Seattle, Washington. January 11, 1991.

3 King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed January 2014. http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx

4 Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. http://mcdc.missouri.edu/websas/caps10c.html. Accessed February 2014.

5 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

6 WARM Scoring Manual

7 WARM Toxicological Database

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

9 Washington State Department of Ecology, 2004, Site visit followup, ERTS# 538309. January 21, 2004.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 6682 Rainier Beach Automotive

Facility/Site ID: 79391627

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Oil

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

Confirmed report of a surface spill of oil in 2004; the Washington Ranking Manual (WARM) does not contain ranking information for oil, so the surface water route is ranked for diesel instead

List those management units to be considered for scoring:

Surface water

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

Site is not covered by a stormwater permit, and discharges directly to a stormwater system (connected to surface water)

2. AIR ROUTE

List those substances to be considered for scoring:

Gasoline (benzene), toluene, ethylbenzene, xylenes

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

Presence in shallow soil

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:

gasoline (benzene), toluene, ethylbenzene, xylenes

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

Presence in shallow soil and suspected presence in groundwater

List those management units to be considered for scoring:

Groundwater

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

Detected in subsurface soils above MTCA Method A cleanup levels, potential for transport to groundwater

Worksheet 4

Surface Water Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Diesel	4	5	3	X

Highest Value: 5

Bonus Points?

Human Health Toxicity Value: 5

1.2 Environmental Toxicity

Substance	Acute Water Quality Criteria ug/L	Value	Non-human Mammalian Acute Toxicity mg/kg	Value
Diesel	2,300	2	490	5

Environmental Toxicity Value: 2

1.3 Substance Quantity

Amount: 100 gallons

Basis: Estimated volume of used oil released

Substance Quantity Value: 1

2.0 Migration Potential

2.1 Containment Containment Value: 10

Explain Basis: Spill at ground surface with no runoff controls

2.2 Surface Soil Permeability Soil Permeability Value: 5

silt and clay

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

Water is piped

Worksheet 4

Surface Water Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

3.0 Targets

3.1 Distance to Surface Water	Surface Water Distance Value	10
340 feet to Lake Washington		
3.2 Population Served within 2 miles	Population Value	6
39 people		
3.3 Area Irrigated within 2 miles	Irrigation Value	5
40 acres		
3.4 Distance to Nearest Fishery Resource	Fishery Value	12
340 feet to Lake Washington		
3.5 Distance to and Name of Nearest Sensitive Environment	Sensitive Environment Value	12
340 feet to Lake Washington		

4.0 Release	Release to Surface Water Value	0

Explain basis for scoring a release to surface water

No confirmed release to surface water

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} = (Human Toxicity Value + 3)*(Containment + 1) + Substance Quantity	SUB_{SH}	89
MIG_S = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope	MIG_S	14
REL_S = Release to Surface Water	REL_S	0
TAR_{SH} = Distance to Surface Water + Population Served by Surface Water + Area Irrigated	TAR_{SH}	21
	SW_H	17.0

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} = (Env Tox Value + 3) * (Containment + 1) + Substance Qty	SUB_{SE}	56
MIG_S = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope	MIG_S	14
REL_S = Release to Surface Water	REL_S	0
TAR_{SE} = Distance to Surface Water + Distance to Fishery + Distance to Sensitive Environment	TAR_{SE}	34
	SW_E	27.2

Worksheet 5

Air Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

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
Gasoline (benzene)	10	3	X	5
Toluene	1	X	1	X
Ethylbenzene	1	X	X	X
Xylenes	1	3	1	X

Highest Value 10

Bonus Points? 0

Toxicity Value 10

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** 20

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian Inhalation Toxicity (mg/m3)	Acute Value	Mobility Value	Table A-7 Matrix Value
Gasoline (benzene)	31947	3	4	6
Toluene	X	X	X	X
Ethylbenzene	X	X	X	X
Xylenes	21714	3	3	5

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: 1,600 square feet

Basis: Estimated surface area of remaining contaminated soil

Substance Quantity Value 4

Worksheet 5

Air Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

2.0 Migration Potential

2.1 Containment Containment Value: 5

Explain Basis: Release occurred in the subsurface with a 2 foot soil cover but no vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

150 feet

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

340 feet to Lake Washington; 470 feet to a municipal park

3.3 Population within 0.5 miles Population Value: 67

4,465 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}	154
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	77
	AIR_H	37.0

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}	70
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	7
	AIR_E	1.5

Worksheet 6

Groundwater Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

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
Toluene	2	3	1	X
Ethylbenzene	4	3	1	X
Xylenes	2	10	1	X

Highest Value 10

Bonus Points? 2

Toxicity Value 12

1.2 Mobility

Cations/Anions Max Value:

Solubility Max Value: 3 Mobility Value 3

1.3 Substance Quantity

Amount: 40 cubic yards

Basis: Estimated volume of petroleum-impacted soil remaining

Substance Quantity Value 2

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 2

Silt and clay

2.4 Vertical Depth to Groundwater 0 to 25 feet

Confirmed release: No 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 >2,640 to 5,000 feet

Well Distance Value 2

3.3 Population Served within 2 Miles Population Served Value 100

9,923 people

Worksheet 6

Groundwater Route

CSID: 6682 **Site Name:** Rainier Beach Automotive

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

10 acres

4.0 Release Release to Groundwater Value 0

Explain basis for scoring a release to groundwater:

No 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}	200
MIG_G=Depth to Aquifer+Net Precip + Hydraulic Conductivity	MIG_G	12
REL_G = Release to Groundwater	REL_G	0
TAR_{GH} = Aquifer Use + Well Distance + Population Served + Area Irrigated	TAR_{GH}	108.0
	GW_H	59.7

Washington Ranking Method

Route Scores Summary and Ranking Calculation Sheet

Site Name: Rainier Beach Automotive **CSID:** 6682

Site Address: 9479 Rainier Avenue South **FSID:** 79391627

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	17.0	3
Air	37.0	4
Groundwater	59.7	5

H=	5
M=	4
L=	3

$$\frac{H^2 + 2M + L}{8} = \frac{25 + 8 + 3}{8}$$

Human Health Priority Bin Score: **5**

rounded up to next whole number

ENVIRONMENT ROUTE SCORES

Enter Environment Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	27.2	3
Air	1.5	1

H=	3
L=	1

$$\frac{H^2 + 2L}{7} = \frac{9 + 2}{7}$$

Environment Priority Bin Score: **2**

rounded up to next whole number

Comments/Notes:

FINAL MATRIX RANKING **1**

FOR REFERENCE:

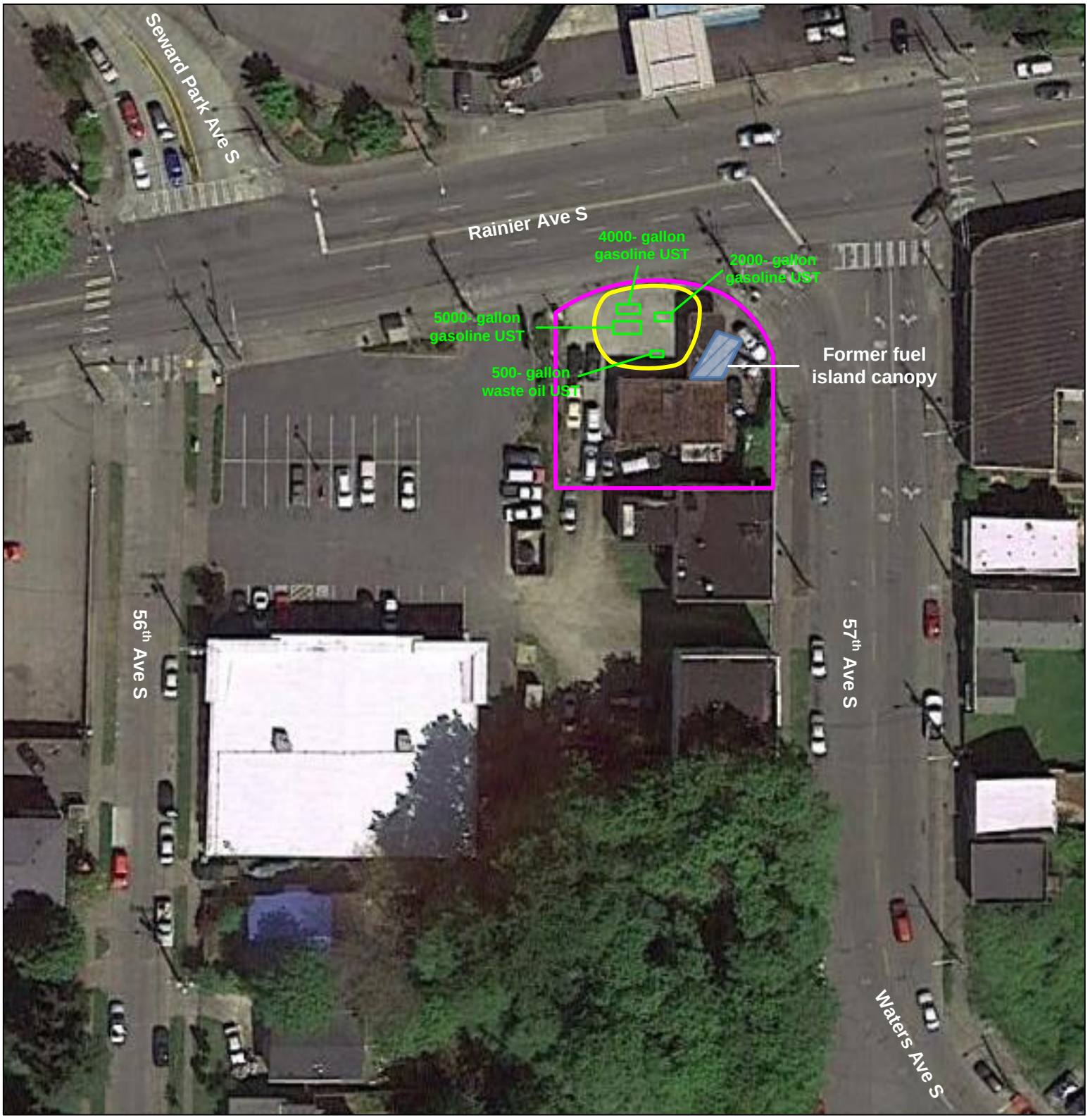
Final WARM Bin Ranking Matrix

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 - August 2014 Values

Quintile	Human Health: Surface Water	Human Health: Air	Human Health: Ground Water	Environment: Surface Water	Environment: Air
5	>= 30.7	>= 37.3	>= 51.9	>= 49.8	>= 30.3
4	>= 22.5	>= 23.0	>= 41.0	>= 30.9	>= 23.0
3	>= 13.0	>= 14.5	>= 33.1	>= 23.2	>= 14.1
2	>= 6.8	>= 8.1	>= 23.5	>= 10.7	>= 1.6
1	<= 6.7	< 8.1	<= 23.4	<= 10.6	<= 1.5

Quintile value associated with each route score entered above



Legend:

- Property location (approximate)
- Excavation area (approximate)
- Former UST location (approximate)
- Former building location (approximate)

Notes:

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

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Rainier Beach Automotive
9479/ 9481 Rainier Avenue South
Seattle, WA 98118

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 6682
CSID6682.vsd