SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 1755

Facility/Site ID: 2337

Frank's Used Cars

6305 - 6309 E Marginal Way S

Seattle, King County, WA 98108

Section:	29	Latitude:	47.54611
Township:	24N	Longitude:	-122.33353
Range:	4E	Tax/Parcel ID:	5367203745

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

SITE DESCRIPTION:

The Frank's Used Cars site (Site) is a former Frank's Used Cars, transmission repair shop, and automobile wrecking yard located in Seattle, King County, Washington. The 0.19-acre property is located approximately 450 feet from the Duwamish River, and zoned for industrial (IG1 U/85) use.

Adjacent properties include Consolidated Freightways (cleanup site ID (CSID) 6262) to the east, and a property operated by Glacier Northwest to the west. Seattle Truck repair is located to the south of the site. The site is bordered on the east by East Marginal Way South, Highway 99/First Avenue Bridge South to the west, and South Front Street to the south.

The Site is currently operated as a vacant site with a billboard by AK Media/NW.

The site is located within the 1st Avenue Bridge Storm Drain (outfall 2503) drainage area. Stormwater at the site reportedly flows through an unlined ditch along the east side of the property, and passes through a biofiltration swale before discharging to the Lower Duwamish Waterway. The site is unpaved.

The site is located within the Lower Duwamish Water Source Control Investigation area between Slip 2 and Slip 3, on the east bank of the Lower Duwamish Waterway.

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
	1992	Frank and Ruth Lenci Trust	Frank's Used Cars
1992	1999	Lenci Corporation	
1999	2014	AK Media/NW	

SITE CONTAMINATION:

In 1991 the Frank's Used Cars site was reported to Washington State Department of Ecology (Ecology) and placed on the Confirmed and Suspected Contaminated Sites (CSCSL) list with ID number 1755.

The site was reported to Ecology in 1991, and visual evidence of oil stained soils was reported. An initial investigation was completed at the site in February 1991. At that time, Frank's Used Cars was out of business, and scrap metal, used oil, and waste containers were reportedly being removed from the property. Two composite soil samples were collected from surficial soils at the site and analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and metals. One surface water sample of ponded water at the site was collected for analysis of VOCs.

Benzene, toluene, ethylbenzene, and xylenes (BTEX), cadmium, and lead were detected in soil samples at concentrations above Model Toxics Control Act (MTCA) Method A cleanup levels. Total chromium was also detected at a concentration above the MTCA Method A cleanup level for chromium VI, but below the MTCA Method A cleanup level for chromium III. PCBs were detected in soil, at concentrations below the MTCA Method A cleanup level, but above the MTCA Method B (carcinogen) cleanup level. Acetone was detected in soil and

surface water, at concentrations below the MTCA Method B cleanup levels for soil and groundwater.

Three composited soil samples (surface soil samples 1 through 3) were collected in 1992 from shallow soils up to 2 feet below ground surface (bgs). Nine test pits (TP-1 though TP-9) were excavated to depths up to 12 feet bgs. During excavation activities, one monitoring well (MW-15) was discovered at the site. The well had reportedly been installed as part of the First Avenue South Bridge project.

Composite surface soil samples collected from the south end of the site (surface soil samples 2 and 3) contained cadmium and lead (sample 3 only) at concentrations above MTCA Method A cleanup levels. Heavy-oil range petroleum hydrocarbons were detected in soil at concentrations up to 810 mg/kg (composite surface soil sample 2), below the current MTCA Method A cleanup level. PCBs were detected in surface soil sample 3 at a concentration above the MTCA Method B cleanup level. Chromium was detected in soil at concentrations above the MTCA Method A cleanup level for chromium VI, but below the MTCA Method A cleanup level for chromium III. Oil, cadmium, and lead-impacted soil was reportedly limited to the top 3 feet of soil. One groundwater sample was collected from MW-15, and concentrations of undifferentiated TPH and metals were not detected at or above laboratory reporting limits.

Soil and groundwater samples were collected from MW-15 in 1992 and 1993 as part of the First Avenue South Bridge Project, when the First Avenue South Bridge was replaced by the Washington State Department of Transportation. Reportedly, soil contained diesel (26 mg/kg) at 2.5 feet bgs, below the MTCA Method A cleanup level. Soil from 10 feet bgs contained arsenic at a concentration above the MTCA Method B cleanup level, but below the Method A cleanup level, and total chromium was present at a concentration above the MTCA Method A cleanup level for chromium VI, but below the MTCA Method A cleanup level for chromium III. Groundwater was sampled in 1993, and contained 320 micrograms per liter (ug/L) diesel, below the MTCA Method A cleanup level.

In January 1993, the site owner vacated the former tenant (Frank's Used Cars) and reportedly removed the building and waste from the site. The site owner wanted to implement site stabilization to minimize future mobilization of contaminants, as suggested by their consultant. The proposed remediation method included mixing a small amount of lime into the soil, and installing an asphalt cap. Ecology did not approve this remediation approach given the close proximity to the Duwamish River.

PAST REMEDIATION ACTIVITIES:

No reports of subsequent remedial actions are on file at Ecology.

CURRENT SITE CONDITIONS:

Cadmium, lead, and BTEX constituents have been detected in shallow soils (upper 3 feet bgs) at concentrations above MTCA Method A cleanup levels. Arsenic and PCBs have been detected in soil at concentrations above the MTCA Method B cleanup level. Acetone was detected in Site soil, but concentrations were below the MTCA Method B cleanup level for soil. Petroleum hydrocarbons and metals were reportedly not detected in groundwater at or above laboratory reporting limits and/or MTCA Method A cleanup levels. Groundwater at the site has not been fully characterized.

The approximate depth to groundwater is 5 to 25 feet below ground surface, with groundwater flowing to the west towards the Duwamish River (estimated based on surface topography). Subsurface soils are silty sand.

SPECIAL CONSIDERATIONS:

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

☑ **Surface Water**

Impacted surface soil is present at the Site, and has the potential to impact surface water, as the site is unpaved. Stormwater at the Site flows through the 1st Avenue Bridge storm drain to the Duwamish River, approximately 450 feet to the west of the site.

☑ **Air**

Prior detection of volatile compounds in shallow soil above MTCA Method A cleanup levels.

SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

☑ **Groundwater**

Prior detection of contaminants of concern in site soils, and while no impacts to groundwater have been documented, there is potential for transport to groundwater.

ROUTE SCORES:

Surface Water/ Human Health:	10.0	Surface Water/ Environment:	26.9
Air/ Human Health:	16.7	Air/ Environment:	2.7
Groundwater/ Human Health:	31.9		

Overall Rank: 4

REFERENCES:

1 Bardy, Louise, 1993, Phone Record: Frank's Used Cars Property, 6305 E. Marginal Way S. Seattle. March 23, 1993.

2 Bardy, Louise, 1993, Phone Record: Frank's Used Cars/Lenci Trust Property Site. January 26, 1993.

3 Dames and Moore, 1994, Site Investigation Report Hazardous Waste Assessment, State Route 99 – First Avenue South Bridge Project, Seattle, Washington. Prepared for Washington Department of Transportation. March 10, 1994.

4 Environmental Associates, Inc., 1993, Preliminary Environmental Study 6305 East Marginal Way South Seattle, Washington. Prepared for Frank and Ruth Lenci Trust. January 8, 1993.

5 Frank and Ruth Lenci Trust, 1993, Letter Re: 6305 East Marginal Way South Seattle, Washington. January 12, 1993.

6 Good, Sarah, and Science Applications International Corporation, 2009, Lower Duwamish Waterway RM 1.7 to 2.0 East (Slip 2 to Slip 3) Source Control Action Plan. June 2009.

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

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

9 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

10 Pacific Northwest Environmental Laboratory, Inc., 1991, Data summary sheets and supporting documentation for the samples received on February 26, 1991 of the Frank's Used Cars project.

11 Science Applications International Corporation, 2009, Lower Duwamish Waterway RM 1.7 to 2.0 East (Slip 2 to Slip 3) Summary of Existing Information and Identification of Data Gaps. Prepared for Washington State Department of Ecology. February 2009.

12 WARM Scoring Manual

13 WARM Toxicological Database

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

15 Washington State Department of Ecology Environmental Investigations and Laboratory Services Manchester Laboratory, 1991, QA Memo, Frank's Used Cars. May 31, 1991.

16 Washington State Department of Ecology, 1991, Initial Investigation Inspection: Frank's Used Cars, Report # N 934. February 22, 1991.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 1755 Frank's Used Cars

Facility/Site ID: 2337

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Cadmium, lead, benzene, toluene, ethylbenzene, xylenes, arsenic, chromium, PCBs

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

Prior detection in surface soil at the site at concentrations above MTCA Method A or B cleanup levels, and potential for transport via the surface water route

List those management units to be considered for scoring:

Surface water

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

There is evidence of surface impacts, and surface conditions at the site may allow stormwater to transport to storm drain or Lower Duwamish Waterway

2. AIR ROUTE

List those substances to be considered for scoring:

Benzene, toluene, ethylbenzene, xylenes

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

Prior detection in surface soil at the site at concentrations above MTCA Method A cleanup levels; Worksheet 3 indicated that BTEX constituents, not metals (particulates) should be scored for the air pathway

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:

Cadmium, lead, benzene, toluene, ethylbenzene, xylenes, arsenic, chromium, PCBs

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

Prior detection in surface soil at the site at concentrations above MTCA Method A or B cleanup levels

List those management units to be considered for scoring:

Groundwater

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

Potential for transport to groundwater

Worksheet 3

Substance Characteristics Worksheet For Multiple Unit/Substance Sites

CSID 1755 **Site Name** Frank's Used Cars

	Combination 1	Combination 2	Combination 3
Management Unit:	Metals (particulates)	BTEX (soil vapor)	

1. Surface Water Route

Substance(s)			
Human Toxicity Value:			
Env. Toxicity Value:			
Containment Value:			
Rationale:			
Surface Water Human Subscore			
Surface Water Environment Subscore			

2. Air Route

Substance(s):	Cadmium, lead, arsenic	Benzene, toluene, ethylbenzene, xylenes	
Human Toxicity/Mobility Value:	6	24	
Env Toxicity/Mobility Value:	5	6	
Containment Value:	10	10	
Rationale:	Site is unpaved	No vapor collection system present; less than 2ft cover	
Air Human Subscore	99	297	3
Air Environment Subscore	88	99	3

3. Ground Water Route

Substance(s):			
Human Toxicity Value:			
Containment Value:			
Rationale:			
Groundwater Subscore			

Based on the highest scoring toxicity/containment combinations, the following management units will be used for route scoring:

Surface Water:	
Air:	BTEX (soil vapor)
Ground Water:	

Worksheet 4

Surface Water Route

CSID: 1755 **Site Name:** Frank's Used Cars

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Cadmium	8	5	5	X
Lead	6	X	10	X
Benzene	8	3	X	5
Toluene	2	3	1	X
Ethylbenzene	4	3	1	X
Xylenes	2	10	1	X
Arsenic	8	5	5	7
PCBs	10	3	X	6

Highest Value 10

Bonus Points? 2

Human Health Toxicity Value 12

1.2 Environmental Toxicity

Substance	Acute Water Quality Criteria ug/L	Value	Non-human Mammalian Acute Toxicity mg/kg	Value
Cadmium	43	6	225	5
Lead	140	4	X	X
Benzene	5100	2	3306	3
Toluene	6300	2	5000	3
Ethylbenzene	430	4	3500	3
Xylenes	X	X	5000	3
Arsenic	69	6	763	5
PCBs	10	8	1315	3

Environmental Toxicity Value 8

1.3 Substance Quantity

Amount: 1,750 square feet

Basis: Estimated extent of surface soil impacts

Substance Quantity Value 6

2.0 Migration Potential

2.1 Containment Containment Value 4

Explain Basis: Contaminated soil at the surface with unmaintained runoff controls

2.2 Surface Soil Permeability Soil Permeability Value 3

Silty sand

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

Worksheet 4

Surface Water Route

CSID: 1755 **Site Name:** Frank's Used Cars

2.5 Floodplain	Floodplain Value	0
Not in a floodplain		
2.6 Terrain Slope	Slope Value	1
Less than 2%		
3.0 Targets		
3.1 Distance to Surface Water	Surface Water Distance Value	10
Less than 100 feet to the storm drain		
3.2 Population Served within 2 miles	Population Value	0
0 people		
3.3 Area Irrigated within 2 miles	Irrigation Value	0
0 acres		
3.4 Distance to Nearest Fishery Resource	Fishery Value	12
Approximately 450 feet to the Duwamish River		
3.5 Distance to and Name of Nearest Sensitive Environment	Sensitive Environment Value	12
Approximately 450 feet to the Duwamish River		
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}	81
MIG_S = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope	MIG_S	10
REL_S = Release to Surface Water	REL_S	0
TAR_{SH} = Distance to Surface Water + Population Served by Surface Water + Area Irrigated	TAR_{SH}	10.0
	SW_H	10.0

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}	61
MIG_S = Soil Permeability + Annual Precip + Rainfall Frequency + Floodplain + Slope	MIG_S	10
REL_S = Release to Surface Water	REL_S	0
TAR_{SE} = Distance to Surface Water + Distance to Fishery + Distance to Sensitive Environment	TAR_{SE}	34.0
	SW_E	26.9

Worksheet 5

Air Route

CSID: 1755 **Site Name:** Frank's Used Cars

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
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** 24

1.5 Environmental Toxicity/Mobility

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

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: 1750 square feet

Basis: Estimated extent of impacted surface soil

Substance Quantity Value 4

Worksheet 5

Air Route

CSID: 1755 **Site Name:** Frank's Used Cars

2.0 Migration Potential

2.1 Containment Containment Value: 10

Explain Basis: Less than 2 foot soil cover and no vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 6

2,300 feet to South Seattle Community College Georgetown Campus

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

Approximately 450 feet to the Duwamish River

3.3 Population within 0.5 miles Population Value: 11

111 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}	16.5
	AIR_H	16.7

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}	125
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	7.0
	AIR_E	2.7

Worksheet 6

Groundwater Route

CSID: 1755 **Site Name:** Frank's Used Cars

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Cadmium	8	5	5	X
Lead	6	X	10	X
Benzene	8	3	X	5
Toluene	2	3	1	X
Ethylbenzene	4	3	1	X
Xylenes	2	10	1	X
Arsenic	8	5	5	7
PCBs	10	3	X	6

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: 130 cubic yards

Basis: Estimated extent of remaining 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 0 to 25 feet

Confirmed release: No Depth to Aquifer Value 8

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 3

Irrigation or Commercial/Industrial

3.2 Distance to Nearest Drinking Water Well >10,000 feet

Well Distance Value 0

3.3 Population Served within 2 Miles Population Served Value 0

0 people

Worksheet 6

Groundwater Route

CSID: 1755 **Site Name:** Frank's Used Cars

3.4 Area Irrigated by GW Wells within 2 miles Area Irrigated Value 1

1 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}	201
MIG_G=Depth to Aquifer+Net Precip + Hydraulic Conductivity	MIG_G	13
REL_G = Release to Groundwater	REL_G	0
TAR_{GH} = Aquifer Use + Well Distance + Population Served + Area Irrigated	TAR_{GH}	3.8
	GW_H	31.9

Washington Ranking Method

Route Scores Summary and Ranking Calculation Sheet

Site Name: Frank's Used Cars **CSID:** 1755

Site Address: 6305 East Marginal Way South **FSID:** 2337

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	10.0	2
Air	16.7	3
Groundwater	31.9	2

H=	3
M=	2
L=	2

$$\frac{H^2 + 2M + L}{8} = \frac{9 + 4 + 2}{8}$$

Human Health Priority Bin Score: **2**

rounded up to next whole number

ENVIRONMENT ROUTE SCORES

Enter Environment Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	26.9	3
Air	2.7	2

H=	3
L=	2

$$\frac{H^2 + 2L}{7} = \frac{9 + 4}{7}$$

Environment Priority Bin Score: **2**

rounded up to next whole number

Comments/Notes:

FINAL MATRIX RANKING **4**

FOR REFERENCE:

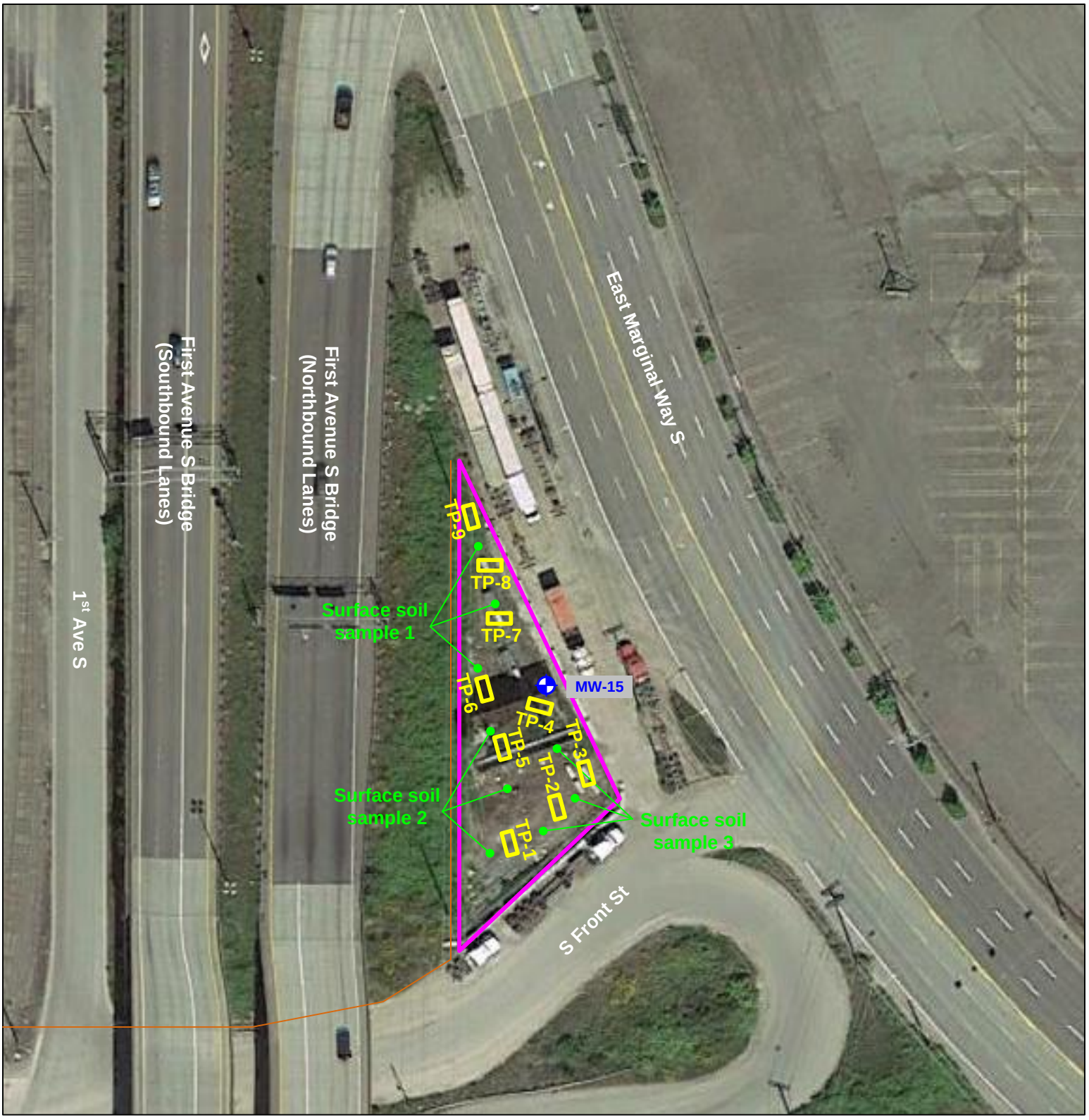
Final WARM Bin Ranking Matrix

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	Human Health: Air	Human Health: Ground Water	Environment: Surface Water	Environment: 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)
- Monitoring well (approximate)
- Soil sample (approximate)
- Storm drain location (approximate)

Notes:

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

N

Franks Used Cars
6309 East Marginal Way South
Seattle, WA 98108

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 1755
CSID1755.vsd