SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 11021

I & M Associates

Facility/Site ID: 91358149

7810 SE 27th Street

Mercer Island, King County, WA 98040

Section:	12	Latitude:	47.58690
Township:	24N	Longitude:	-122.23283
Range:	4E	Tax/Parcel ID:	531510-1235

Site Scored/ranked for the August 2013 Hazardous Sites List Publication

SITE DESCRIPTION:

The I & M Associates site is a former retail auto supply and service center located in Mercer Island, King County, Washington. The 0.28-acre property is located approximately 2,000 feet from Lake Washington, and zoned for public institution (P) use.

Adjacent properties include a multi-story apartment or condominium complex to the west, and public roadways to the north, east, and south.

The site is currently operated as a Tully's coffee shop by Parkway MGT Group.

Current activities at the site include restaurant operations and automobile parking. Except for a small landscaped planting area, the lot is paved with asphalt.

The site is located at the intersection of SE 27th Street and 80th Avenue SE in Mercer Island, Washington. The site is near I-90, less than 400 feet south of the interstate, near mile post 7B.

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
1955	1995	Fuji Auto	Automobile supply/servicing
1995	2013	Tully's Coffee	Fast food service

SITE CONTAMINATION:

In 1992 the I & M Associates site was reported to Washington Department of Ecology and placed on the LUST list with ID number 2030.

A site investigation, conducted on 16 April 1993 by Specialized Environmental Consulting, Inc., confirmed the presence of gasoline-range petroleum hydrocarbons in subsurface soils with concentrations up to 5,500 mg/kg, exceeding MTCA Method A cleanup levels. Benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds were also found to be above MTCA Method A cleanup levels for soils. Subsequent groundwater monitoring and sampling confirmed that the aforementioned compounds, along with diesel range petroleum hydrocarbons, were also released to groundwater at concentrations above MTCA Method A cleanup levels.

The 1993 investigation evidenced contamination in the range of 630 to 5,500 mg/kg gasoline throughout the site.

PAST REMEDIATION ACTIVITIES:

A soil vapor extraction / bioremediation system was installed at the site on 9 June 1993. The system is composed of seven extraction wells and three injection wells installed at 15 and 20 feet bgs, respectively. In 1995, following an inspection of the system, water was discovered in six of seven wells. The wells were purged and sampled and

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groundwater was found to be above MTCA Method A cleanup levels for gasoline, BTEX, and diesel.

A proposal exists in Ecology's file which outlines a system upgrade to account for remediation of groundwater and heavier diesel fuels. The scope of work oulines flushing the saturated zone with water that has been amended with oxygen, nutrients, surfactants, and biologically available nitrogen. There is no record on file as to whether this scope of work was conducted or not.

In 2003, Whitman Environmental Sciences upgraded the remediation system blower, replaced the condensate knock-out tank, installed a sound enclosure, and an activated carbon filter on the system discharge. At this time oil absorbent socks were added to well V-1 to remove accumulated free phase liquid (identified as oil) from the well.

In the most recent on file from Whitman Environmental, dated 17 November 2004, it is noted that several upgrades to the system would be completed before the end of 2004.

CURRENT SITE CONDITIONS:

A Tully's Coffee shop is located above diesel, gasoline, and BTEX contaminated groundwater. An operating vapor extraction system has been onsite since 1993. The system has gone through multiple iterations of maintenance and upgrades.

Well V-1, located immediately south of the former shop, continually contains a free product noted as oil.

Diesel, gasoline, and BTEX compounds impact site groundwater, as monitored by Whitman Environmental in 2004. Soil quality has not been tested since the startup of the system.

The approximate depth to groundwater is 10 to 22 feet below ground surface, with groundwater flowing to the northeast. Subsurface soils are fine silts and sands.

SPECIAL CONSIDERATIONS:

Checked boxes indicate routes applicable for WARM scoring

☐ **Surface Water**

☑ **Air**

Volatile compounds in shallow groundwater and soil.

☑ **Groundwater**

Most recent monitoring event records diesel, gasoline, and BTEX above MTCA cleanup levels.

The current status of the soil vapor extraction system is unknown. It was last reported to be maintained and running in 2004. The nature and extent of soil contamination has not been investigated since system startup.

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	6.8	Air/ Environment:	0.3
Groundwater/ Human Health:	45.1		

Overall Rank: 4

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REFERENCES:

WARM Toxicological Database

WARM Scoring Manual

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

King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed January 2013.
http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx

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

Washington State Department of Health Source Water Assessment Maps. March 2011 update.
https://fortress.wa.gov/doh/eh/dw/swap/maps/

Ecology Water Resources Explorer, accessed January 2013.
https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx

FEMA Map Service Center, accessed January 2013.
https://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1

Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location.
Http://mcdc.missouri.edu/websas/caps10c.html. Accessed February 2013

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 11021 I & M Associates

Facility/Site ID: 91358149

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:

Gasoline, benzene, toluene, ethylbenzene, and xylenes.

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

Present in shallow groundwater (and potential in soil).

List those management units to be considered for scoring:

Vapor

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

Present in shallow groundwater and potential presence in shallow soils.

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

Gasoline, diesel, benzene, toluene, ethylbenzene, and xylenes.

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

Analytical results confirm presence in groundwater.

List those management units to be considered for scoring:

Shallow groundwater.

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

Analytical results confirm impacted groundwater.

Worksheet 5

Air Route

CSID: 11021 **Site Name:** I & M Associates

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
Xylene	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
Benzene	31947	3	4	6
Xylene	21714	3	2	3

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: 10,000 sq feet

Basis: Estimated surface area of soil impacts

Substance Quantity Value 5

Worksheet 5

Air Route

CSID: 11021 **Site Name:** I & M Associates

2.0 Migration Potential

2.1 Containment Containment Value: 0

Explain Basis: Cover > 2 feet with operating vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

Residences within 1,000 feet

3.2 Distance to and name of nearest sensitive environments Sensitive Environment Value: 6

1,500 feet to Mercerdale hillside

3.3 Population within 0.5 miles Population Value: 62

3823 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}	30
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	72
	AIR_H	6.7

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}	16
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	6
	AIR_E	0.3

Worksheet 6

Groundwater Route

CSID: 11021 **Site Name:** I & M Associates

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
Diesel/Naphthalene	6	5	3	X
Toluene	2	3	1	X
Ethylbenzene	4	3	1	X
Xylene	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: Approximately 20,000 cubic yards of soil

Basis: Estimated volume of impacted soil

Does not account for affects of SVE system

Substance Quantity Value 5

2.0 Migration Potential

2.1 Containment Containment Value 10

Explain Basis: Soil contaminated with gasoline and other substances

2.2 Net Precipitation 10-20 inches Net Precipitation Value 2

2.3 Subsurface Hydraulic Conductivity Conductivity Value 3

Silty sands / sandy silts

2.4 Vertical Depth to Groundwater Depth to Aquifer Value 8

Within 25 feet

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 4

Drinking water, irrigation

3.2 Distance to Nearest Drinking Water Well Well Distance Value 1

Approximately 1 mile

3.3 Population Served within 2 Miles Population Served Value 12.4498996

155 people

Worksheet 6

Groundwater Route

CSID: 11021 **Site Name:** I & M Associates

3.4 Area Irrigated by GW Wells within 2 miles Area Irrigated Value 2.25

9 acres

4.0 Release Release to Groundwater Value 5

Explain basis for scoring a release to groundwater:

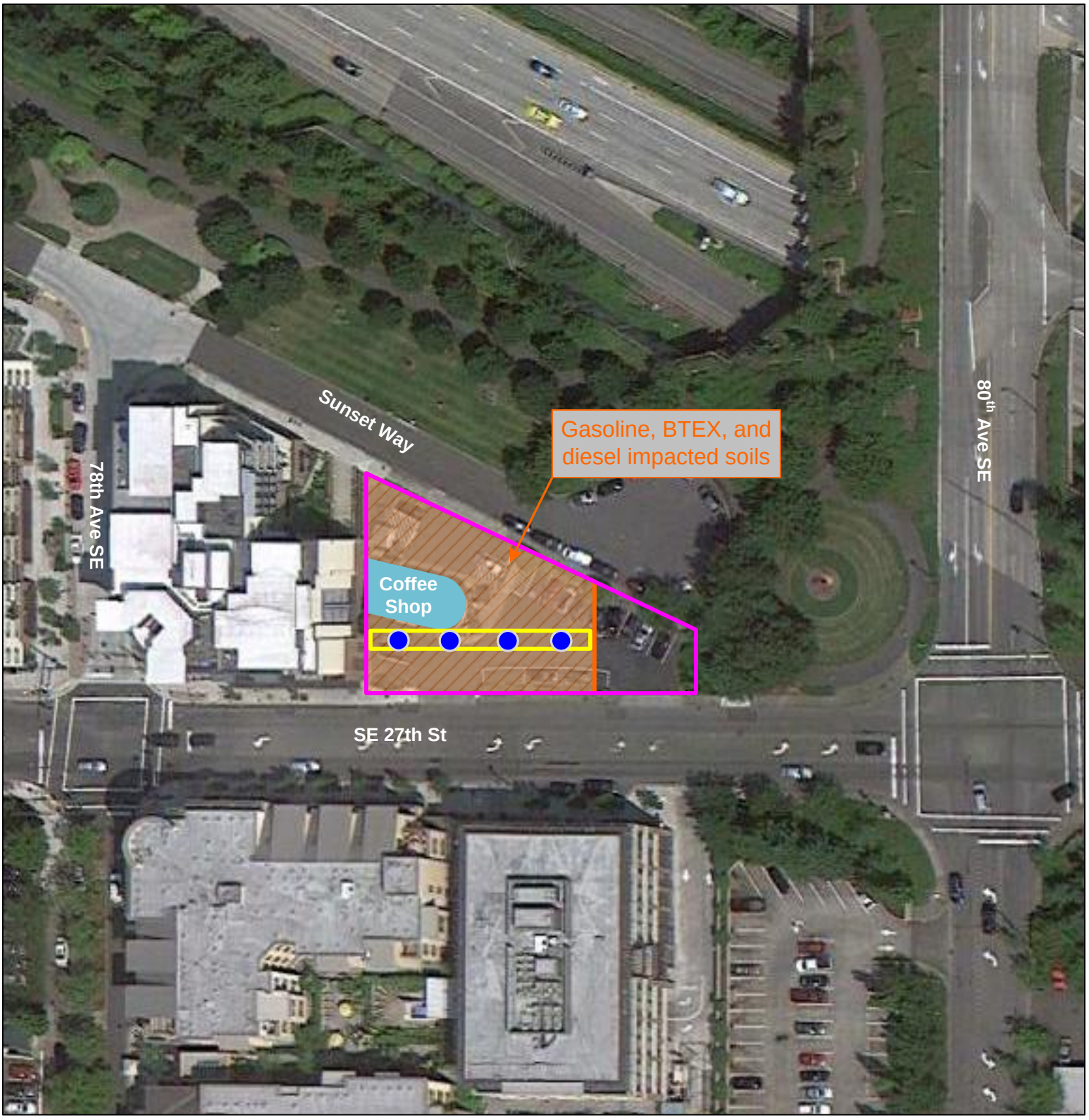
Confirmed release to groundwater

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}	203
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}	19.6998996
	GW_H	45.1



Legend:

- Property location (approximate)
- Impacted soils (approximate)
- Soil vapor extraction system location (approximate)
- Monitoring wells (approximate)

Notes:

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

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I & M Associates
7810 SE 27th Street
Mercer Island, WA 98040

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 11021
CSID11021.vsd

Washington Ranking Method
Route Scores Summary and Ranking Calculation Sheet

Site Name: I&M Associates **CSID:** 11021

Site Address: 7810 SE 27th Street, Mercer Island, King County **FSID:** 91358149

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	6.8	1
Groundwater	45.1	4

H=	4
M=	1
L=	0

$$\frac{H^2 + 2M + L}{8} = \frac{16 + 2 + 0}{8}$$

Human Health Priority Bin Score: **3**

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	0.3	1

H=	1
L=	0

$$\frac{H^2 + 2L}{7} = \frac{1 + 0}{7}$$

Environment Priority Bin Score: **1**

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

Quintile	Human Health: Surface Water	Human Health: Air	Human Health: Ground Water	Environment: Surface Water	Environment: Air
5	>= **27.0**	>= **32.0**	>= **50.6**	>= **47.1**	>= **30.3**
4	>= **17.3**	>= **21.1**	>= **40.4**	>= **30.2**	>= **25.3**
3	>= **11.0**	>= **13.4**	>= **31.4**	>= **22.2**	>= **17.0**
2	>= **5.0**	>= **7.2**	>= **22.4**	>= **10.6**	>= **6.2**
1	< **5.0**	< **7.2**	< **22.4**	< **10.6**	< **6.2**

Quintile value associated with each route score entered above