SITE HAZARD ASSESSMENT

WORKSHEET 1

Summary Score Sheet

SITE INFORMATION:

Site Name: Miller's Market
Address: 3152 Washington Way, Longview
Ecology Facility Site ID No.: 91861675
Township/Range/Section: 08 N/02 W/32 WM
Latitude: 46.13250 Longitude: -122.96615

Site scored/ranked for the February 2014 update
Today's date: January 22, 2014

SITE DESCRIPTION:

The subject site consists of a .32 acre parcel designated as "Commercial" in an area of Longview zoned for commercial and residential uses. The site is square-shaped and lies approximately ten feet above mean sea level. Washington Way borders the property to the south and 32nd Ave provides the western boundary for the property. The Columbia River, a salmon-bearing river, lies approximately 4,600 feet southwest of the subject site.

Currently the site houses a fueling station, convenience store, and parking lot. The subject site is almost entirely paved.

In November of 1991, Petroleum Services Unlimited Inc. removed five underground storage tanks (USTs) from the site. The five USTs consisted of a 1,000 gallon waste oil tank, a 8,000 gallon gasoline tank, a 675 gallon heating oil tank, and two 6,000 gallon gasoline tanks. A total of four excavation areas were completed at the site. Soil sample analysis results, for soil samples collected from the excavation of the two 6,000 gallon tanks, returned as high as 450 mg/kg for gasoline, 3.8 mg/kg for benzene, 36 mg/kg for toluene, 16 mg/kg for ethylbenzene, and 130 mg/kg for xylene. Excavation was limited by proximity of the site to a nearby road. Groundwater was encountered at approximately six feet below ground surface. A vapor extraction system was installed as a means of contamination remediation. Water sample results, for a water sample collected from the extraction pipe, returned with 9,400 µg/L for diesel, and 120,000 µg/L for gasoline.

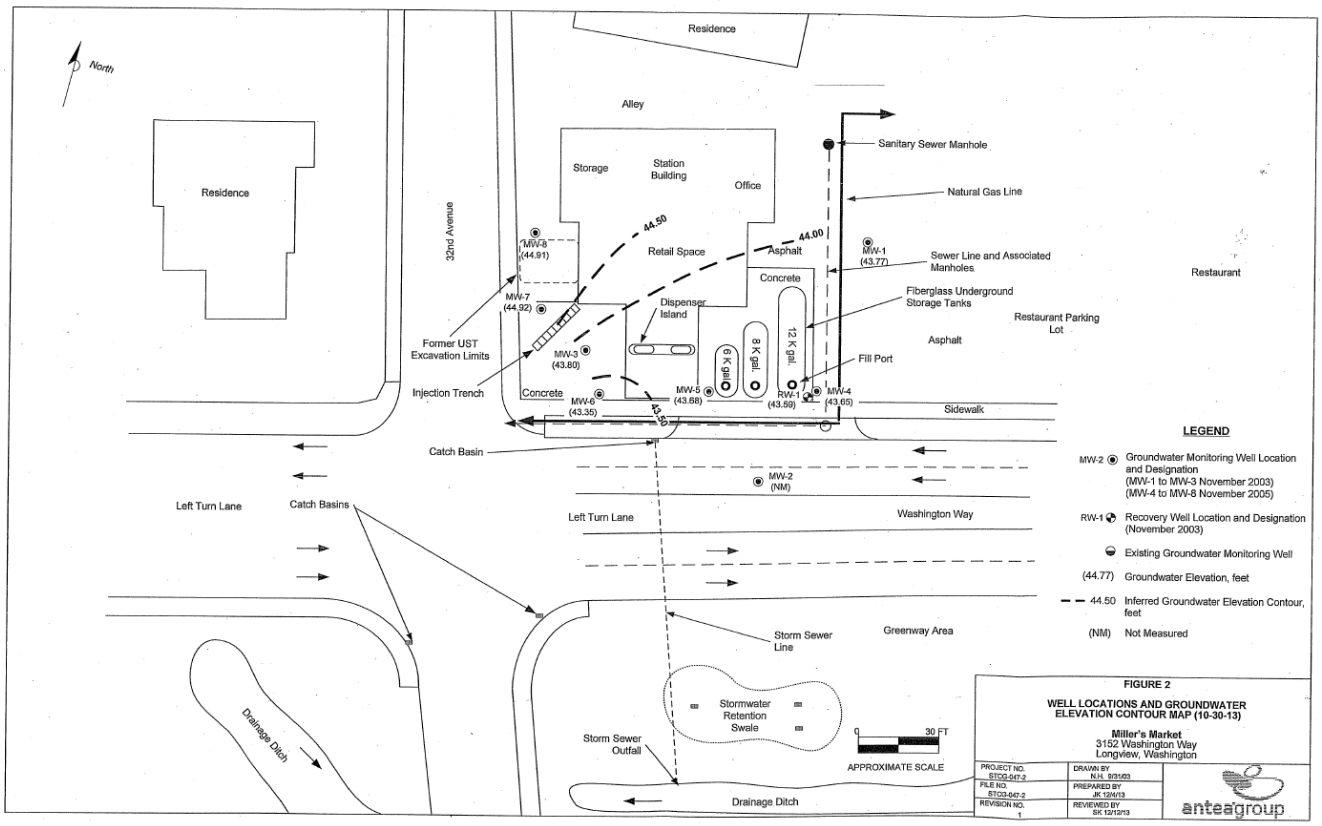
In 1998, the Washington State Department of Ecology (Ecology) stated that certain additional information, regarding the site, would be necessary before a designation of "No Further Action" could be given to the site. The information requested included a final destination for the soil removed from the excavations, and evidence of clean limits for groundwater.

In 2003, Ecology received a complaint on the Environmental Report Tracking System (ERTS) regarding the release of approximately 700 gallons of gasoline. The gasoline was released to the surface, which ran-off to a storm drain. The storm drain fed into a slough, Ditch #1, across the street. The slough was flushed and vacuumed twice. Five water samples were collected from the slough.

The groundwater sample results indicated small to large amounts of gasoline present, according to the HCID (Hydrocarbon Identification).

Delta Environmental Consultants Inc. completed an Initial Site Assessment of the subject site in 2003. A total of twelve soil samples and seven groundwater samples were collected at that time. The soil sample results showed remaining gasoline and benzene contamination above their MTCA Method A Cleanup Levels. The groundwater sample results showed remaining gasoline and BTEX (benzene, toluene, ethyl benzene, and xylene) above their MTCA Method A Cleanup Levels. A total of four soil borings were completed to a depth between 20.5 and 21.5 feet below ground surface. The borings were converted to three groundwater monitoring wells and a recovery well. Groundwater samples from the wells showed gasoline, benzene, toluene, and xylene contamination above their MTCA Method A Cleanup Levels.

Additional groundwater monitoring wells were installed in 2005, bringing the total to eight monitoring wells and one recovery well. From 2003 through 2013, routine quarterly groundwater monitoring occurred. The most recent set of groundwater monitoring sample results show remaining gasoline and benzene contamination above their MTCA Method A Cleanup Levels, however, the quantity of these substances has decreased over time.



SPECIAL CONSIDERATIONS (include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site):

The scope of this Site Hazard Assessment did not include a hydrogeologic survey of the subject site and surrounding area. The groundwater contamination documented or inferred at the subject site is therefore considered to have the potential to impact any well located within the prescribed 2-mile radius and all such wells were used in the scoring process.

ROUTE SCORES:

Surface Water/Human Health: **52.1 => 5**
Surface Water/Environmental.: **27.3 => 3**
Air/Human Health: **31.8 => 4**
Air/Environmental: **30.9 =>5**
Groundwater/Human Health: **39.4 => 3**

OVERALL RANK: 1

WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE**
   a. List those substances to be considered for scoring: Source: 1,2

      TPH as gasoline (from benzene)

   b. Explain basis for choice of substance(s) to be used in scoring.

      Gasoline was confirmed to be present in the groundwater at the site.

   c. List those management units to be considered for scoring: Source: 1,2

      Spills, discharges, and contaminated soil

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

      Spills, discharges, and contaminated soil will be the management unit used for scoring due to contaminated subsurface soils, verified through sampling and analysis.

2. **AIR ROUTE**
   a. List those substances to be considered for scoring: Source: 1,2

      TPH as gasoline (from benzene)

   b. Explain basis for choice of substance(s) to be used in scoring:

      Gasoline was confirmed to be present in the groundwater at the site.

   c. List those management units to be considered for scoring: Source: 1,2

      Spills, discharges, and contaminated soil

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

      Spills, discharges, and contaminated soil will be the management unit used for scoring due to contaminated subsurface soils, verified through sampling and analysis.

3. **GROUNDWATER ROUTE**
   a. List those substances to be considered for scoring: Source: 1,2

      TPH as gasoline (from benzene)

   b. Explain basis for choice of substance(s) to be used in scoring:

      Gasoline was confirmed to be present in the groundwater at the site.

   c. List those management units to be considered for scoring: Source: 1,2

      Spills, discharges and contaminated soil

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

      Spills, discharges, and contaminated soil will be the management unit used for scoring due to contaminated subsurface soils, verified through sampling and analysis.

WORKSHEET 4
Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	TPH as gasoline (from benzene)	5	8	3306	3	--	ND	A	.029	5
2										
3										
4										
5										
6										

** Potency Factor*

Source: 1,2,3

Highest Value: 8
(Max = 10)

Plus 2 Bonus Points? 0

Final Toxicity Value: 8
(Max = 12)

1.2 Environmental Toxicity (X) Freshwater ( ) Marine

	Substance	Acute Water Quality Criteria		Non-Human Mammalian Acute Toxicity	
		(µg/L)	Value	(mg/kg)	Value
1	TPH as gasoline (from benzene)	5300	2	3306	3
2					
3					
4					
5					
6					

Source: 2,3

Highest Value: 3
(Max = 10)

1.3 Substance Quantity

Explain Basis: The substance quantity was estimated using the total volume of all tanks and releases documented to have been on site. A volume of 35,675 gallons was used for this calculation	Source: 1,2 **Value: 6** (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment, Explain basis:** Spill, discharge, or contaminated soil at the surface with unknown run-on/off controls	1,2	**10** (Max = 10)
2.2	**Surface Soil Permeability:** Maytown silt loam	2,8	**1** (Max = 7)
2.3	**Total Annual Precipitation:** 50.1-60 inches	2,4	**4** (Max = 5)
2.4	**Max 2yr/24hr Precipitation:** 2.53 inches	2,15	**3** (Max = 5)
2.5	**Flood Plain:** Not in a flood plain	2,14	**0** (Max = 2)
2.6	**Terrain Slope:** 3.5 feet elevation change over a distance of 150 feet, slope is approximately 2.3%	2,7,16	**2** (Max = 5)

3.0 TARGETS

		Source	Value
3.1	**Distance to Surface Water:** The nearest surface water is Ditch#1 that lies approximately 150 feet south of the subject site	2,7	**10** (Max = 10)
3.2	**Population Served within 2 miles (see WARM Scoring Manual Regarding Direction):** The Longview Water Department Water System, supplied by the Columbia River, lies within two miles of the subject site and serves a population of 40,878 residents	2,7,9,10	**75** (Max = 75)
3.3	**Area Irrigated by surface water within 2 miles : (0.75)*√ # acres =** Approximately 758 acres irrigated by surface water within two miles of the subject site.	2,7,9,10	**21** (Max = 30)
3.4	**Distance to Nearest Fishery Resource:** The Columbia River, a salmon-bearing river, lies approximately 4,600 feet southwest of the subject site	2,7,17	**6** (Max = 12)
3.5	**Distance to, and Name(s) of, Nearest Sensitive Environment(s):** The Columbia River, a salmon-bearing river, lies approximately 4,600 feet southwest of the subject site	2,7,17	**6** (Max = 12)

4.0 RELEASE

Explain Basis: Release to surface water confirmed through visual observations and sample analysis	Source: 1,2 **Value: 5** (Max = 5)

WORKSHEET 5
Air Route

1.0 SUBSTANCE CHARACTERISTICS

1.1. Introduction (WARM Scoring Manual) – Please review before scoring

1.2 Human Toxicity

	Substance	Air Standard ($\mu g/m^3$)	Value	Acute Toxicity (mg/m^3)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	TPH as gasoline (from benzene)	.003	10	31947	3	--	ND	A	.029	5
2										
3										
4										
5										

* *Potency Factor*

Source: 1,2,3
Highest Value: 10
(Max = 10)
Plus 2 Bonus Points? 0
Final Toxicity Value: 10
(Max = 12)

1.3 Mobility (Use numbers to refer to above listed substances)

	1.3.1 Gaseous Mobility	1.3.2 Particulate Mobility		
	Vapor Pressure(s) (mmHg)	Soil Type	Erodibility	Climatic Factor
1	9.5E+01 = 3	Maytown silt loam	47	<1
2				
3				

Source: 2,3
Value: 3
(Max = 4)

Source:
Value: 1
(Max = 4)

1.4 Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)

(Use highest of:) **Final Matrix Value: 15**
(Max = 24)

1.5 Environmental Toxicity/Mobility –						
Substance		**Non-human Mammalian Inhalation Toxicity (mg/m^3)**	**Acute Value**	**Mobility (mmHg)**	**Value**	**Matrix Value**
2	TPH as gasoline (from benzene)	31947	3	9.5E+01	3	5
6						

Highest Environmental Toxicity/Mobility Matrix Value (Table A-7) = **Final Matrix Value: 5**
(Max = 24)

1.6 Substance Quantity	
Explain Basis: The substance quantity was estimated using the total volume of all tanks and releases documented to have been on site. A volume of 35,675 gallons was used for this calculation	Source: 1,2 **Value: 6** (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	**Value**
2.1	**Containment:** No cover, discharge/spill directly to surface soil with no known vapor collections system	1,2	**10** (Max = 10)

3.0 TARGETS

		Source	**Value**
3.1	**Nearest Population:** The nearest residence is located adjacent to the subject site	2,7	**10** (Max = 10)
3.2	**Distance to [and name(s) of] nearest sensitive environment(s):** A forested wetland lies approximately 480 feet southwest of the subject site	2,13	**7** (Max = 7)
3.3	**Population within 0.5 miles:** Approximately 1250 residences within a half mile of the subject site	2,7	**35** (Max = 75)

4.0 RELEASE

Explain Basis for scoring a release to air: Substances of concern were released to both surface and subsurface soils, making them available to the air route. Confirmation of a release to air was not documented	Source: 1,2 **Value: 0** (Max = 5)

WORKSHEET 6
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	TPH as gasoline (from benzene)	5	8	3306	3	--	ND	A	.029	5
2										
3										
4										
5										
6										

* *Potency Factor*

Source: 1,2,3

Highest Value: 8
(Max = 10)

Plus 2 Bonus Points? 0

Final Toxicity Value: 8
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)

Cations/Anions [Coefficient of Aqueous Migration (K)] OR	Solubility (mg/L)
1=	1= 1.8E+03 = 3
2=	2=
3=	3 =
4=	4=
5=	5=
6=	6=

Source: 2,3

Value: 3
(Max = 3)

1.3 Substance Quantity:

Explain basis: The substance quantity was estimated using the total volume of all tanks and releases documented to have been on site. A volume of 35,675 gallons was used for this calculation	Source: 1,2 **Value: 6** (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** For all spills, discharges, and contaminated soil, a containment value of 10 is assigned	1,2	**10** (Max = 10)
2.2	**Net precipitation:** 50.1-60 inches	2,4	**5** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** Maytown silt loam	2,8	**2** (Max = 4)
2.4	**Vertical depth to groundwater:** Contamination confirmed in the groundwater through sampling and analysis	1,2	**8** (Max = 8)

2.0 TARGETS

		Source	Value
3.1	**Groundwater usage:** Private supply, no alternate unthreatened sources available with minimal hookups	2,5,6	**5** (Max = 10)
3.2	**Distance to nearest drinking water well:** The nearest drinking water well is located approximately 660 feet southeast of the subject site	2,5,7,12	**4** (Max = 5)
3.3	**Population served within 2 miles:** Approximately six residents served by groundwater within two miles of the subject site	2,5,6	**2** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** **(0.75)***√ Approximately 146 acres of property are irrigated by groundwater within two miles of the subject site	2,9,10	**9** (Max = 50)

3.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: Documented release of substances of concern to the groundwater, confirmed though sample analysis	1,2	**5** (Max = 5)

SOURCES USED IN SCORING

1. Washington State Department of Ecology Site Hazard Assessment File/TCP file
2. Washington State Department of Ecology, WARM Scoring Manual, April 1992
3. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
4. U.S. Department of Interior Geological Survey Topographical Map
5. Washington State Department of Health, Public Water System Database
6. Washington State Department of Ecology, Water Resources Explorer
7. Cowlitz County GIS map
8. Washington State Department of Agriculture, soil maps
9. Washington State Department of Ecology Water Rights Tracking System
10. GeoCommunicator, Land Survey Information System
11. Model Toxics Control Act, Statue and Regulation, November 2007
12. Washington State Department of Ecology Well Log Viewer
13. Washington State Department of Ecology, Washington State Costal Atlas Map
14. Washington State Department of Ecology, Costal Atlas, Flood Hazard Maps
15. NOAA Atlas 2 Precipitation Frequency Estimates
16. Daft Logic, Google Maps Find Altitude
17. U.S. Fish & Wildlife Service, Critical Habitat Portal