

SITE HAZARD ASSESSMENT
WORKSHEET 1
GROUNDWATER
Summary Score Sheet

SITE INFORMATION:

Texaco #605
3805 S. Grand Blvd.
Spokane, WA 99203

Section 32, Township 25 N, Range 43 E. W. M.

Latitude 47.61974 Longitude -117.40159

Ecology Facility Site ID: 68473329
Cleanup Site ID: 10163

Site scored/ranked for the August 2014 update

Site Description:

The subject site is located at the southeast corner of 38th Street and Grand Blvd. in the city of Spokane, WA (Parcel number 35323.0812). The site parcel is 13,020 square feet and at the time of this Site Hazard Assessment (SHA) is under the ownership of Grand Boulevard Spokane, L.L.C. The property is currently used as a commercial business property and is fully paved.

The site is within a mixed residential commercial area. The site is bordered by an alleyway and residences to the east, a commercial property adjacent south, 38th Avenue and Divines 76 Gas Station (a known contaminated site) to the north and Grand Blvd with an Auto Repair shop to the west.

Contaminated subsurface soils were discovered during the decommissioning and removal of three underground storage tanks (USTs) and subsequent remedial investigations. Beginning in July of 1999 CDM Smith reports, including AGI Technologies (a subsidiary of CDM), indicated that contaminated subsurface soils remained and analytical results disclosed contaminants exceeding MTCA Method A cleanup levels for unrestricted land use in soil samples and in shallow groundwater.

The most recent report dated March 31, 2014 by CDM Smith display concentrations of gasoline in groundwater samples up to 332,000 ug/l, benzene levels in groundwater samples up to 2,190 ug/l, ethylbenzene levels in ground water samples up to 6,590 ug/l, toluene levels in groundwater samples up to 35,400 ug/l, and total xylenes in groundwater samples up to 64,600 ug/l.

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):

Soil Vapor/Groundwater Extraction and Ex-Situ Treatment. Soil vapor and groundwater has been extracted from the site since 2002, currently using a single high-vacuum liquid ring pump (LRP) technology. Since 2008, treated groundwater has been discharged on-site in a closed-loop system as authorized by an underground injection control permit. Treated soil vapor using granular activated carbon (GAC) is discharged into the atmosphere under a permit with Spokane Regional Clean Air. The system is currently operating using the LRP-GAC technology extracting both groundwater and soil vapor and the system operates continually. A local contractor performs bi-weekly checks on the system and as needed maintenance.

ROUTE SCORES:

Surface Water/Human Health: NS Surface Water/Environ.: NS

Air/Human Health: 31.9 Air/Environmental: NS

Ground Water/Human Health: 21.2

OVERALL RANK: 3

WORKSHEET 2 ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE - Not Applicable/not scored

The surface water pathway will not be scored on the basis that site contaminants are contained in subsurface soils and that no surface water exists within the impact potential to this site.

2. AIR ROUTE

List those substances to be considered for scoring:

Source: 1

- Gasoline
- Benzene
- Ethylbenzene
- Toluene
- Xylene

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

Contaminants of concern (COC's) exceed MTCA Method A Unrestricted Land Use values in soils and site groundwater. The most recent report dated March 31, 2014 by CDM Smith display concentrations of gasoline in groundwater samples up to 332,000 ug/l, benzene levels in groundwater samples up to 2,190 ug/l, ethylbenzene levels in groundwater samples up to 6,590 ug/l, toluene levels in groundwater samples up to 35,400 ug/l, and total xylenes in groundwater samples up to 64,600 ug/l.

With volatile chemical levels confirmed in groundwater the human health air pathway is possible via vapor intrusion. Referencing the Public Health Assessment Guidance Manual (PHAGM) prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) for vapor intrusion, structures that are within 100 feet of the site should be considered at risk. A commercial building with a basement is located immediately adjacent to the south property boundary, less than 25 feet and hydraulically downgradient from identified groundwater contamination. An operating retail business, built slab-on-grade, is located within the defined site and property boundaries.

List those management units to be considered for scoring:

Source: 1

Surface, Surface drainages, porous subsurface soils and groundwater

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

COCs exceed MTCA Method A Unrestricted Land Use and are exposed at ground surface. The most recent report dated March 31, 2014 by CDM Smith display concentrations of gasoline in groundwater samples up to 332,000 ug/l, benzene levels in groundwater samples up to 2,190 ug/l, ethylbenzene levels in groundwater samples up to 6,590 ug/l, toluene levels in groundwater samples

up to 35,400 ug/l, and total xylenes in groundwater samples up to 64,600 ug/l.

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3. GROUNDWATER ROUTE

List those substances to be considered for scoring: Source: 1

- Gasoline
- Benzene
- Ethylbenzene
- Toluene
- Xylene

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

Each of the above-listed contaminants exceed MTCA Method A cleanup levels for unrestricted use in soil samples and in shallow groundwater. Concentrations of gasoline detected in groundwater samples up to 332,000 ug/l, benzene levels in groundwater samples detected up to 2,190 ug/l, ethylbenzene levels in groundwater samples detected up to 6,590 ug/l, toluene levels in groundwater samples detected up to 35,400 ug/l, and total xylenes in groundwater samples detected up to 64,600 ug/l.

List those management units to be considered for scoring: Source: 1

Contaminated subsurface soil.

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

Contaminated subsurface soils disclosed during UST decommissioning. The contaminants exceed MTCA Method A cleanup levels for unrestricted use in soil samples and in shallow groundwater. Concentrations of gasoline detected in groundwater samples up to 332,000 ug/l, benzene levels in groundwater samples detected up to 2,190 ug/l, ethylbenzene levels in groundwater samples detected up to 6,590 ug/l, toluene levels in groundwater samples detected up to 35,400 ug/l, and total xylenes in groundwater samples detected up to 64,600 ug/l.

The site is currently fully capped with asphalt.

WORKSHEET 5

Air Route

1.0 SUBSTANCE CHARACTERISTICS

1.1. Toxicity/Mobility Introduction: All site discovered contaminants used for scoring.

1.2 Human Toxicity										
	Substance	Air Standard ($\mu\text{g}/\text{m}^3$)	Value	Acute Toxicity (mg/ kg BW)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	Benzene	0.12	10	31947	3	ND	ND	A	0.029	5
2	Ethylbenzene	1448.6	1	ND	ND	--	ND	ND	ND	ND
3	Toluene	1248.8	1	ND	ND	0.57	1	ND	ND	ND
4	Xylene	1448.6	1	21714	3	0.085	1	ND	ND	ND
5	TPH-Gasoline (from benzene)	0.12	10	31947	3	ND	ND	A	0.029	5

* Potency Factor

Source: 2, 3

Highest Value: 10

(Max = 10)

Plus 2 Bonus Points? Yes

Final Toxicity Value: 12

(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	Benzene 9.5E+01 = value 4	Hesseltine silt loam	47	1-10
2	Ethylbenzene 7.0E+00 = value 3	(same)	(same)	(same)
3	Toluene 2.8E+01 = value 4	(same)	(same)	(same)
4	Xylene 1.0E+01 = value 3	(same)	(same)	(same)

Value: 4

Source: 1 Source: 3

Value: 1

(Max = 4)

(Max = 4)

1.4 Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)**Final Matrix Value: 24**
(Max = 24)

1.5 Environmental Toxicity/Mobility						
Substance		Non-human Mammalian Inhalation Toxicity (mg/m ³)	Acute Value	Mobility (mmHg)	Value	Matrix Value
1	Environmental pathway not scored	ND	--	ND	--	--

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

1.6 Substance Quantity (aerial extent) 13020 square feet	
Explain Basis: Report discloses contaminated soils remain on site. Estimate based on parcels site square footage 13020sq-ft.	Source(s): 1, 3 Value: 5 (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment: Scored as Spills, Discharges, and Soil Contamination; Vapors Cover >2 feet thick or in subsurface only with no or non-functional vapor collection system.	3	<u>5</u> (Max = 10)

3.0 TARGETS

		Source	Value
3.1	Nearest Population: ≤ 1,000 ft. _____	12	<u>10</u> (Max = 10)
3.2	Distance to [and name(s) of] nearest sensitive environment(s) [fisheries excluded]: School District 81 Jefferson Elementary Commons. >1000 -2000 feet _	11	<u>6</u> (Max = 7)
3.3	Population served within 0.5 miles: √ pop. = √2200 = 46.9 2000 census data	12	<u>47</u> (Max = 75)

4.0 RELEASE

Explain Basis for scoring a release to air: No confirmed release under current conditions

Source: 3
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	Benzene	5	8	3306 LD 50 (rat)	3	--	ND	A	0.29	5
2	Ethylbenzene	700	4	3500 LD 50 (rat)	3	0.1	1	ND	ND	ND
3	Toluene	2000	2	5000	3	0.2	1	ND	ND	ND
4	Xylene	10000	2	50	10	2	1	ND	ND	ND
5	TPH-Gasoline	5	8	3306	3	--	ND	A	0.029	5

* Potency Factor

Source: 1, 2, 3

Highest Value: 10
(Max = 10)

Plus 2 Bonus Points? yes

Final Toxicity Value: 12
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)		
Cations/Anions	OR	Solubility (mg/L)
1.	1. Benzene	1.8E+03 = 3
2	2. Ethylbenzene	1.5E +02 = 2
	3. Toluene	5.4E+02 = 2

	4. Xylene	2.0E+02 = 2
	5. TPH-G	1.8E+03 = 3

Source: 3
Value: 3
(Max = 3)

1.3 Substance Quantity: <u>1447 cubic yards</u>	
Explain basis: Report discloses contaminated soils remain on site. Estimate based on site square footage multiplied by 3 foot depth using GW-Table7-A. 13020sq-ft. x 3 divided by 27 = 1447 cubic yards estimated. Value 7.	Source: <u>1, 3, 10</u> Value: <u>7</u> (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Site is fully capped with asphalt and concrete scored as landfill with cover no liner no leachate collection	1, 3	<u>5</u> (Max = 10)
2.2	Net precipitation: 14" – 6.8 = 7.2 net precipitation	4	<u>1</u> (Max = 5)
2.3	Subsurface hydraulic conductivity: Hesseltine silt loam	5	<u>3</u> (Max = 4)
2.4	Vertical depth to groundwater: Shallow groundwater encountered at 16 – 20'.	1	<u>8</u> (Max = 8)

2.0 TARGETS

		Source	Value
3.1	Groundwater usage: Groundwater not used, but usable	3, 8	<u>2</u> (Max = 10)
3.2	Distance to nearest drinking water well: >10,000 or up gradient from site	6	<u>0</u> (Max = 5)
3.3	Population served within 2 miles: 0	8	<u>0</u> (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: 0	9	<u>0</u> (Max = 50)

3.0 RELEASE

		Source	Value
	Explain basis for scoring a release to groundwater: Groundwater sample results indicate contaminant concentrations exceed cleanup levels.	1, 1a.	<u>5</u> (Max = 5)

SOURCES USED IN SCORING

1. CDM Smith Status Report Washington State Department of Ecology dated March 31, 2014
2. Toxicology Database WARM
3. WARM Scoring Manual
4. Washington Climate, Spokane Co. WSU Dept. of Agriculture
5. Soil Survey of Spokane Co. Washington, USDA Soil Conservation Svc.
6. Washington Department of Ecology Well Logs
7. Aquifer Sensitive Area Overlay Zone Map, Spokane Co. Washington
8. Washington Dept. of Health, Drinking Water Information Network
9. WRATS Washington Department of Ecology
10. City of Spokane GIS web site.
11. Quadrangle Maps of Washington, NE Spokane Regional Health District
12. Spokane County Census Information

