

LSID 6914

## SITE HAZARD ASSESSMENT

### WORKSHEET 1

#### Summary Score Sheet

#### **SITE INFORMATION:**

Brumfield Twidwell  
301 East Pioneer Avenue  
Montesano, Grays Harbor County, WA 98563

Section/Township/Range: Sec 7/T17N/R7W

Latitude: 46° 58' 45"

Longitude: 123° 35' 51'

Ecology Facility Site ID No.: 94658144

*Site scored/ranked for the February 2006 update*  
November 10, 2005

#### **SITE DESCRIPTION (management areas, substances of concern, and quantities):**

The Brumfield Twidwell site is located within the City of Montesano, the county seat of Grays Harbor County. Montesano is located on Highway 12, approximately 10 miles east of Aberdeen, Washington. There were many service stations and other petroleum-product handling facilities in the downtown Montesano area from the early 1900's until 1967, when Highway 12 was relocated from along Pioneer Avenue to the current highway realignment just south of the downtown. Many service stations went out of business at that time, with many underground storage tanks (USTs) suspected of being left in place. Many of these possibly still had product in them, and since that time may have developed leaks.

In the late 1980's, the City of Montesano replaced its gravity flow sanitary sewer system with a pressurized system. Petroleum-related contaminants are suspected to exist in the former system, as well as in the City's stormwater drainage system. These utility corridors may be providing preferential pathways (conduits) for this contamination to spread towards the Chehalis River, south of the downtown area. Hydrogeologic studies have shown that the groundwater gradient is to the south.

The Washington Department of Ecology (Ecology) Toxics Cleanup Program (TCP) first became aware of a generalized subsurface petroleum release in the downtown Montesano area in the early through mid-1990's through reports of gasoline and solvent fumes being detected in basements of businesses such as the former Key Bank (now Sterling Savings Bank) at 301 Main Street. This location is midway between two of the several suspected contaminant sources identified during the first phase of an area-wide groundwater investigation by Ecology contractor GeoEngineers, conducted in May 2005.

The investigation area comprised sites in downtown Montesano that Ecology had previously identified as having known petroleum products releases to the environment, or where underground storage

tanks (USTs) had been removed or closed-in-place. The first phase of the investigation included:

- A review of historic and current land use for potential sources of contamination;
- A review of reports and state records related to properties with know contamination;
- Identification of groundwater flow direction and depth;
- Sampling of existing monitoring wells at sites with previously documented contamination, and testing of groundwater twice a year;
- Boring of 32 holes into downtown soil, and testing 57 soil samples and 37 groundwater samples; and
- Interviews with landowners and community members.

Two of the major findings were:

- Confirmation that: i) petroleum products are in the soil and groundwater of specific areas in downtown Montesano, and ii) there is not a widespread plume of contamination throughout the downtown. Groundwater and soil were documented to have petroleum product contaminants (gasoline-range hydrocarbons, benzene, toluene ethylbenzene, and xylenes) in concentrations posing a threat to human health and the environment.
- Identification of three areas with petroleum products contamination far in excess of state cleanup levels under the Model Toxics Control Act (MTCA).

The Brumfield Twidwell site was one of the three main contaminant source areas of concern initially identified for site hazard assessment (SHA), and ranking of its relative threat to human health and the environment under the Washington Ranking Method (WARM). This was based on detections of petroleum contaminants in both soil and groundwater samples (benzene, ethylbenzene, toluene and xylenes, diesel, and gasoline organics with benzene) far in excess of their allowable concentrations under MTCA Method A cleanup levels.

Specifically, no significant detections were made in upgradient boring/monitoring wells (SP-11 and SP-12). However, two boring/monitoring wells immediately adjacent and downgradient of the site (SP-25 and SP-26) showed significantly high concentrations of petroleum products in both soil and groundwater samples. The concentrations of these contaminants, compared to their respective cleanup levels, are summarized in Table 1 (soil samples) and Table 2 (groundwater samples) on the following page.

The property owner was notified on September 12, 2005, that this site would be added to Ecology's Confirmed and Suspected Contaminated Sites list, and they were further notified on September 26, 2005, that an SHA will be conducted. A site visit on November 8, 2005, visually confirmed an earlier conversation with the property owner's consultant that a large quantity of contaminated soil (approx. 2000 cubic yards) had been removed from the site and clean cover applied, and that the remaining contaminated soil yet to be removed was subsurface and covered with soil. No noticeable odors of petroleum products were noted during a thorough walk-around of the property border.

**Table 1. SOIL SAMPLING RESULTS**

Boring No.	Analyte Found	Sample Result (ppm)	Applicable Standard	(ppm)
SP25 - 11 foot depth	Benzene	1.45	MTCA A ULU*	0.03
	Ethylbenzene	33.7	"	6
	Xylenes	138	"	9
	Gasoline range organics with benzene	2,960	"	30
SP25 - 13 feet depth	Benzene	13.2	MTCA A ULU*	0.03
	Ethylbenzene	218	"	6
	Xylenes	894	"	9
	Gasoline range organics with benzene	15,500	"	30
SP26 - 1 foot depth	Benzene	0.102	"	0.03
	Gasoline range organics with benzene	373	"	30
	Diesel	3,320	"	2000
	Heavy Oil	15,600	"	2000
SP26 - 17 feet depth	Benzene	20.9	"	0.03
	Ethylbenzene	161	"	6
	Toluene	41.1	"	7
	Xylenes	793	"	9
	Gasoline range organics with benzene	12,800	"	30

\*MTCA A ULU refers to the Model Toxics Control Act Table 740-1 Method A Soil Cleanup Levels for Unrestricted Land Use

**Table 2. GROUNDWATER SAMPLING RESULTS**

Boring No.	Analyte Found	Sample Result (ppm)	Applicable Standard	(ppm)
SP25	Benzene	0.730	MTCA*	0.005
	Ethylbenzene	3.9	"	0.7
	Toluene	1.7	"	1.0
	Xylenes	17.6	"	1.0
	Gasoline range organics with benzene	79	"	0.80
SP26	Benzene	2.1	"	0.03
	Ethylbenzene	2.7	"	0.7
	Toluene	2.0	"	1.0
	Xylenes	11.8	"	1.0
	Gasoline range organics with benzene	56	"	0.80

\*MTCA A refers to the Model Toxics Control Act Table 740-1 Method A Cleanup Levels for Groundwater

**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):**

Due to the significant contamination documented on-site being primarily subsurface, the surface water and air routes are not applicable for WARM scoring for this site. Thus, only the groundwater route will be scored.

Further sampling activities are underway in the general site area to determine if contaminated subsurface soils/groundwater may be contributing to releases of petroleum contaminants either to the air, through subsurface portions of buildings, or into surface water, through hydraulic connection with contaminated groundwater. Pending the outcome of these studies, either or both of the pathways may be re-evaluated/scored at a future date to assess their contribution to this site's ranking.

**ROUTE SCORES:**

Surface Water/Human Health: NS  
Air/Human Health: NS  
Groundwater/Human Health: 71.0

Surface Water/Environmental.: NS  
Air/Environmental: NS

**OVERALL RANK: 2**

WORKSHEET 2  
Route Documentation

1. **SURFACE WATER ROUTE – Not Scored**

- a. List those substances to be considered for scoring: Source:
- b. Explain basis for choice of substance(s) to be used in scoring.
- c. List those management units to be considered for scoring: Source
- d. Explain basis for choice of unit to be used in scoring:

2. **AIR ROUTE – Not Scored**

- a. List those substances to be considered for scoring: Source:
- b. Explain basis for choice of substance(s) to be used in scoring:
- c. List those management units to be considered for scoring: Source:
- d. Explain basis for choice of unit to be used in scoring:

3. **GROUNDWATER ROUTE**

- a. List those substances to be considered for scoring: Source: 1,2  
Benzene, toluene, ethylbenzene, xylenes, diesel
- b. Explain basis for choice of substance(s) to be used in scoring:  
These substances were detected in on-site subsurface soil and groundwater samples associated with the site in concentrations exceeding their respective MTCA cleanup levels.
- c. List those management units to be considered for scoring: Source: 1,2  
Subsurface soils and groundwater.
- d. Explain basis for choice of unit to be used in scoring:  
The contaminating substances were detected in on-site subsurface soil and groundwater samples in concentrations exceeding their respective MTCA cleanup levels.

WORKSHEET 6  
Groundwater Route

**1.0 SUBSTANCE CHARACTERISTICS**

<b>1.2 Human Toxicity</b>										
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	3	ND	-	A=1	.029	5	
2 Toluene	2000	2	5000	3	0.2	1	ND	ND	1	
3 Ethylbenzene	700	4	3500	5	0.1	1	ND	ND	-	
4 Xylenes	10,000	2	50	10	2	1	ND	ND	-	
5 Diesel	160	4	490	5	0.004	3	ND	ND	-	

\* Potency Factor

Source: 1,2,5

**Highest Value: 10**

(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**

(Max = 12)

<b>1.2 Mobility (use numbers to refer to above listed substances)</b>		
Cations/Anions	OR	Solubility (mg/L)
1=		1= $1.8 \times 10^3 = 3$
2=		2= $5.4 \times 10^2 = 2$
3=		3= $1.5 \times 10^2 = 2$
4=		4= $2.0 \times 10^2 = 2$
5=		5= $3.0 \times 10^1 = 1$

Source: 1,4,5

**Value: 3**

(Max = 3)

<b>1.3 Substance Quantity:</b>	
Explain basis: Unknown, use default = 1	Source: <u>1,4,5</u> <b>Value: 1</b> (Max=10)

## 2.0 MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment (explain basis):</b> Spill, discharge, contaminated soil, leaking USTs = 10	1-5	<u>10</u> (Max = 10)
2.2	<b>Net precipitation:</b> 63.7" – 6.1" = 57.6"	7	<u>5</u> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> Silts/sands/gravels	1,2	<u>3</u> (Max = 4)
2.4	<b>Vertical depth to groundwater:</b> Obs. release to groundwater = 0'	1,2	<u>8</u> (Max = 8)

## 3.0 TARGETS

		Source	Value
3.1	<b>Groundwater usage:</b> Public supply, unthreatened alts. avail.	8,9	<u>4</u> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> <u>5,000</u> feet	8,9	<u>2</u> (Max = 5)
3.3	<b>Population served within 2 miles:</b> 4580 + 213 = $\sqrt{4793} = 69$	8,9	<u>69</u> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> (0.75)* $\sqrt{290}$ acres = 13	8,9	<u>13</u> (Max = 50)

## 4.0 RELEASE

		Source	Value
	<b>Explain basis for scoring a release to groundwater:</b> Confirmed by presence of free product in groundwater.	1,2	<u>5</u> (Max = 5)

## SOURCES USED IN SCORING

1. Groundwater Investigation, Downtown Montesano, Montesano, Washington, GeoEngineers Inc., August 5, 2005.
2. Memorandum, Marv Coleman to Kim Cross, Washington Department of Ecology Toxics Cleanup Program Southwest Regional Office, Site in Montesano to add to ISIS and to receive Early Notice Letters, September 8, 2005.
3. Focus on Montesano Soil & Groundwater Investigation, Washington Department of Ecology Toxics Cleanup Program Focus Sheet, September 2005.
4. Site Hazard Assessment Drive-by by Michael Spencer, Washington Department of Ecology Toxics Cleanup Program Headquarters, November 8, 2005.
5. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
6. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
7. Washington Climate – Net Rainfall Table
8. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.
9. Washington State Department of Health, SADIE Database printout for public water supplies

