# SITE HAZARD ASSESSMENT

## WORKSHEET 1

Summary Score Sheet

**SITE INFORMATION:**

**Site Name: Weyerhaeuser Bay City Shop**
Address: 425 E Perry St, Aberdeen
Ecology Facility Site ID No.: 45142528
Section/Township/Range: 10/17N/09W
Latitude: 46.96672 Longitude: -123.78307

*Site scored/ranked for the August update*
*Today's date: June 3, 2013*

**SITE DESCRIPTION:**

This site consists of a approximately 21 acre irregularly-shaped parcel, and rests at approximately 10-15 ft above mean sea level. The subject site is designated as "industrial" in an area of mixed industrial, residential and commercial designations. The Chehalis River, a salmon-bearing river, borders the property to the east, while Schley Street borders the property to the south. A shop building on the southern portion of the property is the only structure. The subject site is almost entirely paved.

In December of 1989 five underground storage tanks (USTs) were removed from the property. Four tanks were house inside the shop and were found to contain lubricating oils. The four tanks consisted of two 500 gallon tanks, a 1,000 gallon tank, and a 2,000 gallon tank. The fifth tank was discovered outside the building, it was a 3,000 gallon used oil tank.

In 1992 an additional two tanks were noted; a 1,000 gallon underground gasoline tank, and a 10,000 gallon above-ground diesel tank. Petroleum contaminated soil (PCS) and groundwater were discovered. Five groundwater monitoring wells were installed and 14 tests pits were dug to a depth between 3 and 7.5 feet below ground surface (bgs). All soil samples returned above the MTCA Method A Cleanup Levels for Gasoline, BTEX (specifically Xylenes), Diesel, heavy oils, and naphthalenes. The groundwater samples returned above the MTCA Method A Cleanup levels for BTEX.

In August of 1993, remedial activities began. Approximately 1,940 cubic yards of PCS was removed to a depth between 6.5 and 9 ft bgs. The excavation was located next to the concrete pad near the shop. During the excavation a metal pipe ruptured, releasing water with brown/black floating product into the excavation. Approximately 3,516 gallons of water were removed for treatment. Surface runoff and drainage from a sump pump to four catch basins potentially worsened site contamination. Forty soil samples were analyzed from the excavation, the results showed remaining contamination. An additional 60 cubic yards of soil were removed from the sump discharge and pipe excavation, but no additional confirmation samples were collected. Groundwater was observed with floating product in the excavation of the sump pump and discharge pipes. This area was excavated to replace broken lines from the sump pump to a swale on the southwest corner of the property. Groundwater

monitoring from 1994 showed continued contamination by toluene above the MTCA Method A Cleanup Level of 1,000 ug/L.

In February of 2003, a six gallon hydraulic oil release was reported. The oil was released to pavement on the site but flowed into the Chehalis River. Absorbent material was applied to the pavement to prevent further drainage to the river. Absorbent material, however, was not applied to the river because the current was too great and the source of the contamination was eliminated.

**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.

The Remediation Efforts Report states that wood and metal debris were discovered as fill between three and six feet below ground surface. The property has been capped by pavement and buildings, because of this the Remediation Efforts Report states there is no continued source of surface water contamination. However, surface water contamination was documented in four catch basins at the site by movements of the contaminants through the sump pump drainage lines and surface water runoff.

The contamination on this site is primarily subsurface with a documented release to surface water. The Air route was not scored.

Confirmation samples were taken during the scope of the remedial actions conducted at this site. The laboratory responsible for sample analysis had detection levels above the MTCA Method A cleanup levels for Arsenic, Cadmium, Mercury, and Lead. It is unclear if contamination above MTCA Method A remains at the site for these chemicals. Utility conduits were discovered through the property, including an abandoned sewer line, which provide a potential for contaminant movement through the strata.

The quantity of product released was estimated using the combined total volume for all seven storage tanks.

**ROUTE SCORES:**

Surface Water/Human Health: **5**
Air/Human Health: Not Scored
Groundwater/Human Health: **5**

Surface Water/Environmental.: **4**
Air/Environmental: Not Scored

**OVERALL RANK: 1**

## WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE**

   a. List those substances to be considered for scoring: Source:

   Gasoline, Diesel, Heavy Oil, Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene, Arsenic, Cadmium, Mercury and Lead.

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

Gasoline, Toluene, and Xylene were all chemicals with high toxicity ratings that are confirmed to be at the site above MTCA Method A cleanup levels.

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

   Spills, Discharges, and Contaminated Soil

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

Spills, Discharges, Contaminated Soils will be the management units 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:

   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: 1,2,3

   Gasoline, Diesel, Heavy Oil, Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene, Arsenic, Cadmium, Mercury and Lead.

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

Gasoline, Toluene, and Xylene were all chemicals with high toxicity ratings that are confirmed to be at the site above MTCA Method A cleanup levels.

   c. List those management units to be considered for scoring: Source: 1,2,3

Spills, Discharges, and Contaminated Soil

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

Spills, Discharges, Contaminated Soil will be the management units 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 | Toluene | | 2 | | 3 | | 1 | | | ND |
| 2 | TPH as Gasoline | | 8 | | 3 | | ND | | | 5 |
| 3 | Xylene | | 2 | | 10 | | 1 | | | ND |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |

* *Potency Factor*

Source:

**Highest Value: 10**
(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**
**(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 | Toluene | | 2 | 5000 | 1 |
| 2 | TPH as Gasoline | | 5 | 3306 | 3 |
| 3 | Xylene | | ND | 50 | 10 |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |

Source:

**Highest Value: 10**

(Max = 10)

| 1.3 Substance Quantity | |
|---|---|
| **Explain Basis:** Estimated 18,000 gallons of petroleum products released | Source:<br>**Value: 5**<br>(Max = 10) |

## 2.0 Migration Potential

| | | Source | Value |
|---|---|---|---|
| 2.1 | **Containment**<br>**Explain basis:** Documented drainage of contaminated material to catch basins | | **10**<br>(Max = 10) |
| 2.2 | **Surface Soil Permeability:** Udorthents: sandy and loamy river dredgings | | **1**<br>(Max = 7) |
| 2.3 | **Total Annual Precipitation:** 80.1-100 inches | | **5**<br>(Max = 5) |
| 2.4 | **Max 2yr/24hr Precipitation:** 3.64 inches | | **3**<br>(Max = 5) |
| 2.5 | **Flood Plain:** A small portion of this parcel is within the 100 yr flood plain | | **2**<br>(Max = 2) |
| 2.6 | **Terrain Slope:** less than 2% slope | | **1**<br>(Max = 5) |

## 3.0 Targets

| | | Source | Value |
|---|---|---|---|
| 3.1 | **Distance to Surface Water:** parcel lies on the shores of the Chehalis River | | **10**<br>(Max = 10) |
| 3.2 | **Population Served within 2 miles (see WARM Scoring Manual Regarding Direction ):** Only approximately 6 residences served by surface water | | **3**<br>(Max = 75) |
| 3.3 | **Area Irrigated by surface water within 2 miles : (0.75)*√# acres =** Approximately 64 acres irrigated by surface water | | **6**<br>(Max = 30) |
| 3.4 | **Distance to Nearest Fishery Resource:** Parcel lies on the shores of the Chehalis River | | **12**<br>(Max = 12) |
| 3.5 | **Distance to, and Name(s) of, Nearest Sensitive Environment(s):** Parcel lies on the shores of the Chehalis River | | **12**<br>(Max = 12) |

### 4.0 RELEASE

| | |
|---|---|
| **Explain Basis:** Documented release and confirmation samples | Source:<br>**Value: 5**<br>(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 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |

* *Potency Factor*

Source:
**Highest Value:**
(Max = 10)
**Plus 2 Bonus Points?**
**Final Toxicity Value:**
(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 | | | | |
| 2 | | | | |
| 3 | | | | |

Source:
**Value:**
(Max = 4)

Source:
**Value:**
(Max = 4)

**1.4** Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)
(Use highest of: )

**Final Matrix Value:**
(Max = 24)

| **1.5 Environmental Toxicity/Mobility –** | | | | | | |
|---|---|---|---|---|---|---|
| | **Substance** | **Non-human Mammalian Inhalation Toxicity ($mg/m^3$)** | **Acute Value** | **Mobility (mmHg)** | **Value** | **Matrix Value** |
| **2** | | | | | | |
| **6** | | | | | | |

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

| **1.6 Substance Quantity** | |
|---|---|
| **Explain Basis:** | Source:<br>**Value:**<br>(Max = 10) |

## 2.0 MIGRATION POTENTIAL

| | | **Source** | **Value** |
|---|---|---|---|
| **2.1** | **Containment:** | | (Max = 10) |

## 3.0 TARGETS

| | | **Source** | **Value** |
|---|---|---|---|
| **3.1** | **Nearest Population:** | | (Max = 10) |
| **3.2** | **Distance to [and name(s) of] nearest sensitive environment(s):** | | (Max = 7) |
| **3.3** | **Population within 0.5 miles:** | | (Max = 75) |

## 4.0 RELEASE

| Explain Basis for scoring a release to air: | Source:<br>**Value:**<br>(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 | Toluene | | 2 | | 3 | | 1 | | | ND |
| 2 | TPH as Gasoline | | 8 | | 3 | | ND | | | 5 |
| 3 | Xylene | | 2 | | 10 | | 1 | | | ND |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |

* *Potency Factor*

Source: 1,2,3

**Highest Value: 10**
(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**
(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= 2 |
| 2= | 2= 3 |
| 3= | 3 = 2 |
| 4= | 4= |
| 5= | 5= |
| 6= | 6= |

Source: 2,3

**Value: 3**
(Max = 3)

### 1.3 Substance Quantity:

| | |
|---|---|
| **Explain basis:** Estimated 18,000 gallons of petroleum products released | Source: 1,2<br>**Value: 5**<br>(Max=10) |

## 2.0 MIGRATION POTENTIAL

| | | Source | Value |
|---|---|---|---|
| 2.1 | **Containment (explain basis):** Contamination area capped with pavement and buildings, scored as a landfill with a cover and no liner or leachate collection system with known bulk liquid disposal | 1,2 | 9 (Max = 10) |
| 2.2 | **Net precipitation:** 80.1-100 inches | 2,4 | 5 (Max = 5) |
| 2.3 | **Subsurface hydraulic conductivity:** Udorthents: sandy and loamy river dredgings | 2,10 | 4 (Max = 4) |
| 2.4 | **Vertical depth to groundwater:** According to the monitoring report, groundwater was encountered between three and five feet below ground surface | 2,5,6 | 8 (Max = 8) |

## 2.0 TARGETS

| | | Source | Value |
|---|---|---|---|
| 3.1 | **Groundwater usage:** Public water supply with no alternative sources | 2,5,6 | 9 (Max = 10) |
| 3.2 | **Distance to nearest drinking water well:** Approximately 3150 ft | 2,5,6,7 | 2 (Max = 5) |
| 3.3 | **Population served within 2 miles:** Approximately 1850 people served by groundwater within two miles | 2,5 | 32 (Max = 100) |
| 3.4 | **Area irrigated by (groundwater) wells within 2 miles:** **(0.75)*√** approximately 22 acres irrigated by groundwater | 2,7,11,12 | 4 (Max = 50) |

## 3.0 RELEASE

| | Source | Value |
|---|---|---|
| **Explain basis for scoring a release to groundwater:** Documented release with confirmation samples showing groundwater contamination | 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. Grays Harbor County GIS map
8. Department of Commerce, NOAA Atlas 2, Volume IX
9. Washington State Department of Ecology DFIRM maps
10. Washington State Department of Agriculture, soil maps
11. Washington State Department of Ecology Water Rights Tracking System
12. GeoCommunicator, Land Survey Information System