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# Site Hazard Assessment Worksheet 1 Summary Score Sheet

DRAFT

## SITE INFORMATION

Name: Bruce Titus Chevrolet  
Address: 633 Division Ave  
City: Tacoma County: Pierce State: WA Zip: 98403  
Section/Township/Range: 32/21N/03E  
Latitude: 47° 26' 32.6"N Longitude: 122° 44' 83.6"W 47.44239  
Facility Site ID Number: 3427832 -122.

9.15.09

*Site assessed/ranked for the November update.*

### Site Description (Include management areas, substances of concern, and quantities):

The Bruce Titus Chevrolet site is located in a "neighborhood commercial mixed-use" zoned area of the City of Tacoma. Currently several businesses occupy the site including an auto dealership, a dry cleaning operation, and bakery. Although the actual extent of the contamination has not been fully delineated, for the purposes of this Site Hazard Assessment (SHA), the two properties owned/operated by Stadium Thriftway and Morrell's Dry Cleaners (APNs: 2030120040 and 2030120030, respectively) will comprise the site. These two properties form a rough triangle, and are bordered to the west by North 1<sup>st</sup> Street; to the north by several small retail businesses, beyond which lies Tacoma Avenue North; to the east by Division Avenue. The subject site is fairly level and rests at approximately two hundred seventy feet (270') above mean sea level. Commencement Bay is just over one thousand three hundred feet (1300'), down gradient, to the east. Groundwater is present at depths ranging from thirty five feet below ground surface to fifty five feet below ground surface (35' - 55' bgs) and flows in a northerly direction.<sup>1</sup>

In 1994 Bison Environmental removed seven (7) underground storage tanks (USTs) from parcel 2020120040. The tank pits and pump-island were over-excavated to clean limits. No outstanding issues related to the USTs were noted in a review of the old UST file. The tanks were located at the south end of this large triangular parcel located between N. 1st Street and Division Avenue. The large building present on this parcel was partially occupied at that time by a body shop/car repair facility operated by Walker Chevrolet at the south end, and a grocery store at the north end.

<sup>1</sup> Stemen Environmental, Inc., Interim Summary Letter for Phase II Environmental Site Assessment of the Commercial Properties Located at 633 Division Avenue, 633 N. 1<sup>st</sup>, and 100 N. G Street, Tacoma, Washington. June 4, 2007.

A 1994 subsurface assessment was conducted by Bison Environmental in the area of the paint booth associated with the body shop at this location. Two large floor drains, a tank cleanout, and an additional UST were investigated and then filled with concrete slurry. One of the floor drains may have been connected to the storm sewer system, but the connection was not confirmed. The other floor drain may have functioned as a dry well and/or connection to the UST. Sediments from the floor drains were sampled and found to be contaminated with metals (lead, cadmium, and chromium), petroleum hydrocarbons, chlorinated hydrocarbons (including tetrachloroethene) and volatiles organic compounds (toluene, xylenes) in concentrations exceeding MTCA Method A Cleanup Levels for Unrestricted Landuse (MTCA-Soil). Four subsurface borings were advanced to depths ranging from three to six feet (3'-6') bgs. One soil sample collected at 5.5 feet bgs was significantly contaminated with concentrations exceeding MTCA- Soil for several constituents: 8000 ppm TPH; 210 ppb tetrachloroethene; 85,000 ppb toluene; 143,000 ppb xylenes, with other contaminants also detected at lower concentrations. The Tacoma-Pierce County Health Department (TPCHD) has not received any documentation describing remediation of this contamination.

Stemen Environmental (Stemen) was hired by a prospective buyer in 2006 to conduct a Phase II Environmental Site Assessment (ESA) and reported the discovery of soil and groundwater contamination to the Washington State Department of Ecology (Ecology) in November 2006. A subsequent Initial Investigation (II) was conducted on behalf of Ecology, by the TPCHD. The II was completed in December, 2008 with a recommendation that it be placed on the database of Confirmed or Suspected Contaminated Sites (CSCS List). The site was officially entered onto the CSCS List on March 6, 2009.

Stemen continued to investigate the site in an attempt to delineate the full extent of the contamination. TPCHD has not received any formal or comprehensive documentation describing the investigative efforts at this site. However, verbal reports of the site status were routinely provided by Stemen to TPCHD, indicating the presence of significant concentrations of tetrachloroethene and its daughter products in both soil and groundwater. In addition, Stemen submitted a laboratory report to TPCHD for some soil sampling in support of a Waste Disposal Authorization (WDA) for investigative derived waste.

The reported contamination spans at least two adjacent but distinct parcels, with different addresses and listed taxpayers. The larger of the two parcels (2030120040) is located at 633 Division Avenue. The former UST locations and paint booth described above are located on this parcel. One large building is present on this parcel, currently occupied by Bruce Titus Chevrolet and Stadium Thriftway. A smaller, adjacent parcel (2030120030) is located at 608 N. 1st Street. This parcel has one building on it, occupied primarily by Morrell's Dry Cleaners. Stadium Thriftway rents space for an office and bakery in the same building.

Legal Counsel for Morrell's Dry Cleaners, submitted several documents to Ecology in November 2008. Included in these documents was a summary prepared by Stemen in June 2007, describing the results of the investigative efforts up to that point. Some tabulated analytical data was also provided, but not full lab reports. The result is an incomplete record. Following is a synopsis of the information made available to TPCHD to date.

Stemen investigated the subsurface soils and groundwater in the area of the former Bison tank removals, at the south end of the triangular parcel (2030120040). Stemen reported gasoline and BTEX in soil at concentrations above MTCA-Soil, and trichloroethene (TCE), and tetrachloroethene (PCE) in groundwater at concentrations above MTCA Method A Cleanup Levels for Groundwater (MTCA-Groundwater). The daughter product, cis-1,2-dichloroethene (DCE), was also reported at significant concentrations in groundwater sampled from this area. Stemen also collected subsurface soil samples from below the concrete floor of the paint booth and reported finding metals and halogenated hydrocarbons at concentrations above MTCA-Soil. The waste disposal authorization (WDA) data submitted by Stemen for this area showed paint booth subsurface soils from the south end of the site contaminated with gasoline, benzene, ethylbenzene, and xylenes above MTCA-Soil; subsurface soils collected from below the paint booth showed the same contaminants as well as arsenic in concentrations above MTCA-Soil.

Stemen conducted a subsurface investigation in the parking lot shared by Morrell's Dry Cleaners and the Stadium Thriftway, with three monitoring wells installed in the parking lot. It is not clear what parcel MW-2 is located on. Stemen reported that groundwater samples were contaminated with vinyl chloride, TCE, PCE, and benzene in concentrations exceeding MTCA. DCE was also reported at significant concentrations in groundwater sampled from this area.

Both soil and groundwater under the building occupied by Morrell's Dry Cleaner, located at 608 N. 1st Street, were reported by Stemen to be significantly contaminated with TCE and PCE in concentrations exceeding MTCA, along with DCE.

In summary, environmental sampling conducted at these two parcels has demonstrated or reported soil significantly contaminated with arsenic, cadmium, chromium, lead, benzene, toluene, xylenes, gasoline, TPH, TCE, PCE, and cis-1,2-dichloroethene (DCE). Similarly, groundwater has been reported as significantly contaminated with vinyl chloride, TCE, PCE, DCE, and benzene.

Significant groundwater and soil sample locations collected for halogenated hydrocarbon analysis by Stemen Environmental, Inc are depicted below in "Figure 1 – Groundwater" and "Figure 2 – Soil". Significant concentrations of halogenated hydrocarbon contaminants in groundwater and soil are presented below in "Table 1 – Groundwater" and "Table 2 – Soil".

Figure 1 – Groundwater

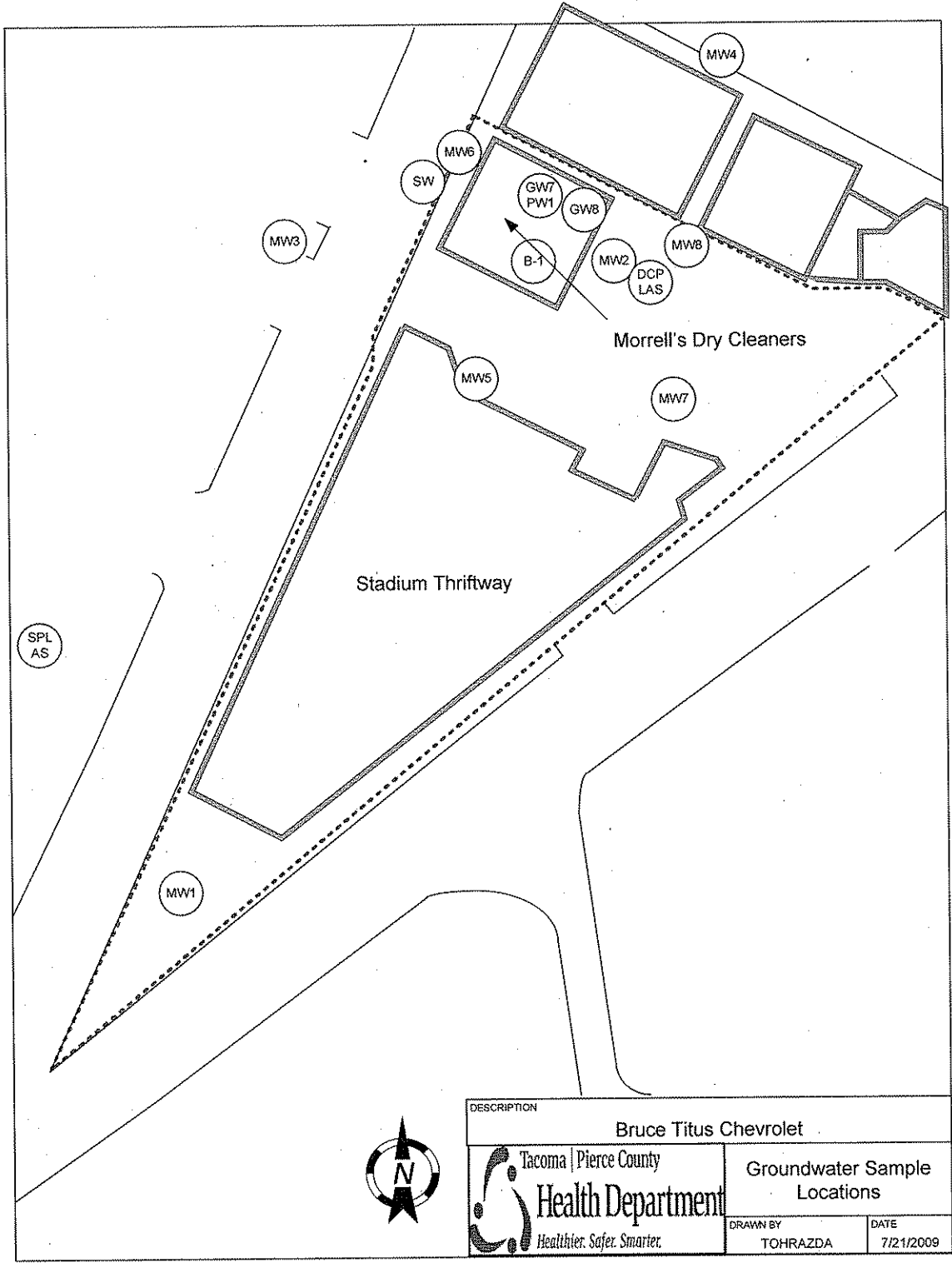


Figure 2 – Soil

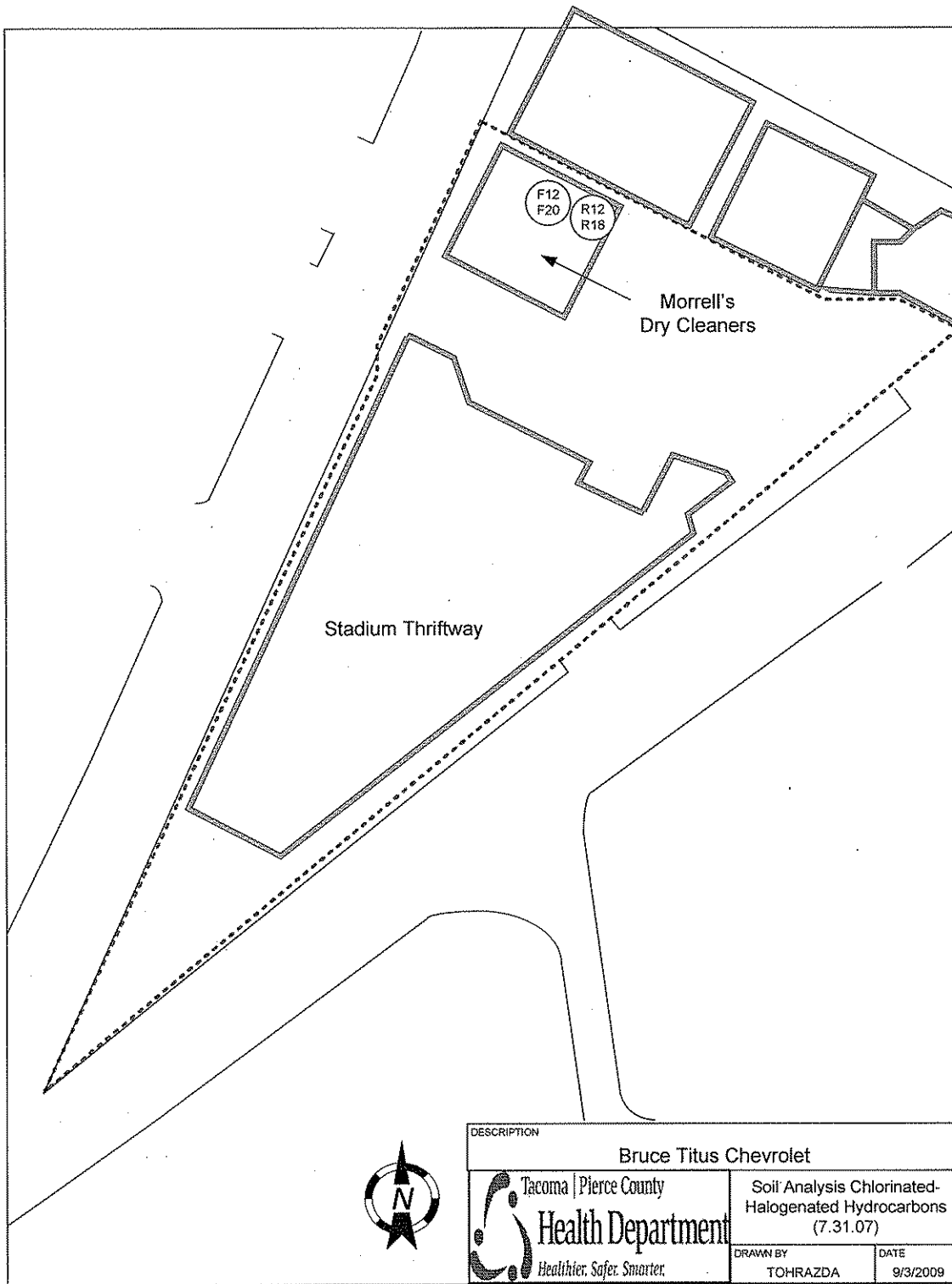


Table 1 – Groundwater

Stemen Environmental, Inc. - Groundwater Samples Reported Significant Halogenated Hydrocarbons EPA 8260 & EPA 8260 Chlorinated (ug/l)								
Sample ID	Date	Depth (ft bgs)	PCE	Vinyl Chloride	TCE	DCE	Benzene	Chloroform
B-1	4.29.07	0-6 inches	52	ND	5.6	8.7	NA	30
PW-1	7.11.07	unknown	1,700	0.51	17	24	NA	48
Street Water	7.11.07	unknown	ND	ND	ND	ND	NA	20
MW-1	8.28.07	52.8	1.3	ND	ND	ND	2.2	ND
MW-1	1.30.08	52.8	ND	ND	ND	ND	ND	ND
MW-2	8.28.07	52.21	2,900	19	ND	7,100	1,800	ND
MW-2	1.30.08	52.21	1,400	ND	520	2,000	ND	2.5
MW-5	1.22.08	unknown	67	ND	3	13	ND	2.1
MW-5	1.30.08	unknown	31	ND	1.1	4.5	ND	1.8
MW-7	1.22.08	unknown	6.6	ND	ND	ND	ND	ND
MW-7	1.30.08	unknown	1.5	ND		ND	ND	ND
MW-8	4.22.08	unknown	1,300	ND	780	2,400	ND	2.5
GW-7	5.8.08	4	13,000	ND	33	ND	ND	ND
GW-8	5.8.08	1	1,300	ND	21	7.9	ND	ND
MTC A Method A Cleanup Levels			5	0.2	5	NL	5	NL

Table 2 – Soil

Stemen Environmental, Inc. - Soil Samples Reported Significant Halogenated Hydrocarbons EPA 8260 & EPA 8260 Chlorinated (mg/kg)								
Sample ID	Date	Depth (ft bgs)	PCE	Vinyl Chloride	TCE	DCE	Benzene	Chloroform
F-12	7.31.07	12'	1.5	ND	ND	ND	NA	ND
F-20	7.31.07	20'	2	ND	ND	ND	NA	ND
R-12	7.31.07	12'	1.9	ND	0.28	0.06	NA	ND
R-18	7.31.07	18'	18	ND	0.85	ND	NA	ND
MTC A Method A Cleanup Levels			0.05	NL	0.03	NL	0.03	NL

**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.

Atmospheric Analysis & Consulting, Inc. (AAC) analyzed four (4) indoor air summa canisters obtained from "Mikes Bakery" via EPA Method TO-15. Mikes Bakery is adjacent to Morrell's Drycleaners. Analytical data indicates that chlorinated hydrocarbons and non-chlorinated hydrocarbons may be present at significant concentrations. Further indoor air quality (IAQ) assessment should be conducted to determine if the concentrations exceed applicable state occupational exposure thresholds. Due to the fact that the IAQ assessment did not consider ambient outdoor air quality the Air Pathway will not be scored for this site.

City of Tacoma began a sewer improvement project along North First Street in September, 2007. Tacoma-Pierce County Health Department staff noticed the construction and spoke with several City of Tacoma representatives regarding the soil that was being removed, and its likelihood of contamination. The City of Tacoma hired "Landau Associates" to conduct sampling of stockpiled soil for proper waste characterization prior to disposal. Landau Associates notes that several samples had concentrations of TCE and PCE at detectable concentrations but below MTCA-soil. Review of the data notes that composite sampling was performed, which may have impacted volatile component recovery results. Chromium metal was also detected at concentrations that exceed MTCA-soil for Chromium VI. The lab data does not indicate whether the detected chromium is trivalent (CrIII) or hexavalent (CrVI). CrVI is used industrially for "pigments in dyes, paints, inks, and plastics; chromates added as anticorrosive agents to paints, primers, and other surface coatings; and chromic acid electroplated onto metal parts to provide a decorative or protective coating. Hexavalent chromium can also be formed when performing "hot work" such as welding on stainless steel or melting chromium metal. In these situations the chromium is not originally hexavalent, but the high temperatures involved in the process result in oxidation that converts the chromium to a hexavalent state"<sup>2</sup>. The main purpose of presenting this information here is to inform the reader that the extent of the contamination has not been fully characterized and although the scorer used a "conservative" estimate for calculating the "substance quantity" component of the WARM model, it may be under representing the actual substance quantity. Additionally, due to the sites historical use, it is plausible that CrVI is present and any further metal contaminant characterization should examine the "species" of Cr that has been detected.

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.

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<sup>2</sup> <http://www.osha.gov/SLTC/hexavalentchromium/index.html>

**ROUTE SCORES:**

Surface Water/Human Health: NS

Surface Water/Environ. NS

Air/Human Health: NS

Air/ Environmental: NS

Ground Water/Human Health: 22.3

**OVERALL RANK:**

5



## Worksheet 2--Route Documentation

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

2. **AIR ROUTE:** Not Scored

3. **GROUND WATER ROUTE:** 22.3

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

Total Petroleum Hydrocarbons, Arsenic, Cadmium, Chromium, Lead, Benzene, Toluene, Xylenes, TCE, PCE, and DCE

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

Vinyl Chloride, TCE, PCE, and Benzene will be scored for the groundwater route due to concentrations detected in groundwater, verified through sample analysis.

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

Spills, discharge, or contaminated soil.

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

Contaminated subsurface soil and groundwater verified through sampling and analysis.

## Worksheet 6 – Ground Water Route

### 1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity										
Substance	Drinking Water Standard (ug/l)	Val	Acute Toxicity (mg/kg-bw)	Val	Chronic Toxicity (mg/kg/day)	Val	Carcinogenicity		Val	
							WOE	PF <sup>a</sup>		
1	Benzene	5	8	3306 (rat)	3	--	ND	A	0.029	5
2	PCE	5	8	800 (rat)	5	0.01	3	B2	0.051	4
3	TCE	5	8	2402 (mus)	3	--	ND	B2	0.011	4
4	Vinyl Chloride	2	8	500 (rat)	5	--	ND	A	2.3	7
5										
6										

\*Potency Factor

Source: 2,3

Highest Value: 8  
(Max=10)

Plus 2 Bonus Points? 2

Final Toxicity Value: 10  
(Max=12)

1.2 Mobility (Use numbers to refer to above listed substances)	
Cations/Anions:	OR Solubility (mg/l):
1=	1= Benzene = 1800 mg/l = 3
2=	2= PCE = 150 mg/l = 2
3=	3= TCE = 1,100 mg/l = 3
4=	4= Vinyl Chloride = 2,700 = 3
5=	5=
6=	6=
Source: <u>2,3</u> Value: <u>3</u> (Max=3)	
1.3 Substance Quantity: >5,000 – 50,000 Cubic Yards	
<p><b>Explain basis:</b> Quantity of contaminated soil impacting the groundwater beneath this site is unknown. Scorer is using a conservative estimate of the entire site. 150,963 cubic feet equals approximately 5991 cubic yards.</p>	<p>Source: <u>1,2</u> Value: <u>5</u> (Max=10)</p>

Worksheet 6 (cont'd)

**2.0 MIGRATION POTENTIAL**

2.1	<b>Containment</b> Spills, Discharges, Contaminated Soil <b>Explain basis:</b> score as landfill with no liner (3), engineered cover (0), no leachate collection system (2).	Source: <u>1, 2</u>	Value: <u>5</u> (Max = 10)
2.2	<b>Net precipitation:</b> <u>35</u> inches	Source: <u>2, 9</u>	Value: <u>4</u> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> low permeable till	Source: <u>1, 2</u>	Value: <u>1</u> (Max = 4)
2.4	<b>Vertical depth to ground water:</b> <u>0</u> feet (contaminated groundwater)	Source: <u>1, 2, 7</u>	Value: <u>8</u> (Max = 8)

**3.0 TARGETS**

3.1	<b>Ground water usage:</b> EPA Sole Source Aquifer	Source: <u>2, 11</u>	Value: <u>10</u> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> 9,725 feet (Tacoma Star Ice)	Source: <u>2, 7, 11</u>	Value: <u>1</u> (Max = 5)
3.3	<b>Population served within 2 miles:</b> $\sqrt{\text{pop.}} = \sqrt{3} = 1.7 = 2$	Source: <u>2, 8, 11</u>	Value: <u>2</u> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> $(0.75) \sqrt{65 \text{ No. acres}} = 6.05 = 6$	Source: <u>2, 6</u>	Value: <u>6</u> (Max = 50)

**4.0 RELEASE**

	<b>Explain basis for scoring a release to ground water:</b> Analytical evidence of a confirmed release.	Source: <u>1, 2</u>	Value: <u>5</u> (Max = 5)
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