

SITE HAZARD ASSESSMENT  
WORKSHEET 1  
Summary Score Sheet

**SITE INFORMATION:**

City Hand Laundry  
1002 4<sup>th</sup> Street  
Bremerton, WA 98310

Facility Site ID: 9475242  
Tax Parcel ID : 3718-023-017-0109  
Section/Township/Range: Sec 14/T24N/R1E  
Latitude: 47° 33' 56.62" N  
Longitude: 122° 37' 58.83" W

*Site assessed for the August 22, 2007, update of the Site Register.*  
July 5, 2007

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**Site Description**

The City Hand Laundry property is located between Fourth and Fifth Streets on the west side of Warren Avenue in Bremerton, Washington. The property slopes gently to the east and southeast toward Warren Avenue. Sinclair Inlet, the closest surface water, is approximately 1900 feet southeast. The New Life Assembly Church owns the former laundry property and occupies the adjacent parcel to the north. The primary areas of concern are the soils and groundwater beneath the parking lot on the east half of the former laundry parcel. Subsurface soils consist of silty sands, and gravely sands with lenses of finer grained silty and clayey fine sand to 30 feet below the ground surface. Groundwater is encountered at 45 feet to 48 feet below the ground surface. The surface is paved except for a few small landscaped areas around the perimeter of the parking lot.

A site investigation was conducted by SECOR in 1998. The report published on 6/12/1998 stated that two dry cleaning machines, a Stoddard solvent dry cleaning machine, laundry machine sumps and drains, and two underground storage tanks (USTs) existed on the site at various times from 1940 to 1985 when a laundry occupied the site. The USTs contained gasoline, heating oil and diesel fuel at different times. The tanks have been removed. Samples collected near the former USTs and Stoddard solvent dry cleaning machines, during the SECOR site investigation, reported benzene, toluene, ethylbenzene and xylene (BTEX) compounds at or below the laboratory reporting limits.

In December 1999, FARRALON Consulting performed a Phase II subsurface investigation at the site. The report stated that the results of the soil gas survey conducted for a Phase I

investigation indicated that the distribution of PCE in soil vapors is widespread throughout the site. Soil sample results from the 1999 Phase II investigation detected PCE concentrations from no detection to 7,200 ppm in thirty samples from eleven different sample locations. Sample depths ranged from six feet to thirty feet below the ground surface. The Model Toxics Control Act (MTCA) Method A soil cleanup level for unrestricted land use for PCE is 0.05 ppm. Trichloroethylene (TCE) was detected over its MTCA A cleanup level of 0.03 ppm in thirteen samples from six different locations.

FARRALON collected groundwater samples from three monitoring wells on site in 2000, and 2003. Additional monitoring wells were installed in 2005. All sample results reported from the three wells monitored in 2000, 2003 and 2006, exceeded MTCA Method A groundwater cleanup levels. Sample results exceeding their respective MTCA Method A cleanup levels for soil and groundwater are summarized in Table 1 and Table 2 respectively.

In January 2004 FARRALON followed up on the December 1999 subsurface investigation with a subsurface investigation and soil vapor extraction feasibility pilot test. The investigation concluded that PCE is widespread throughout the soils and groundwater at the site. It also stated that the limited analysis of petroleum hydrocarbons in groundwater and soils by the 1998 SECOR investigation did not indicate a significant release of petroleum hydrocarbons at the site. However, the 2004 FARRALON report also stated that further assessment of petroleum hydrocarbons in soil and groundwater may be required prior to requesting a no Further Action determination from Ecology.

A site visit on May 30, 2007, confirmed that the site was totally covered by pavement. No noticeable odors of petroleum products or solvents were noted during a thorough walk-around of the property. All nearby residents of the site are served by City of Bremerton sanitary sewer and water.

**Table 1. SOIL SAMPLING RESULTS SUMMARY**

Sample number	Analyte Found	Sample Result (ppm)	Applicable Standard	(ppm)
Farrallon Phase II Investigation September 1999				
GP1-6	PCE	7,200	MTCA A ULU*	0.05
GP1-6	Trichloroethylene (TCE)	30	"	0.03
GP3-18	PCE	2.4	"	0.05
GP3-18	TCE	0.1	"	0.03
GP3-30	PCE	1.4	"	0.05
GP3-30	TCE	ND**	"	0.03
GP4-10	PCE	2.4	"	0.05
GP4-10	TCE	0.24	"	0.03
GP5-10	PCE	4.0	"	0.05
GP5-10	TCE	0.08	"	0.03
GP5-18	PCE	1.10	"	0.05
GP5-18	TCE	ND**	"	0.03

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

\*\*ND-Not detected above the laboratory reporting limits

**Table 2. GROUNDWATER SAMPLING RESULTS**

Sample number	Analyte Found	Sample Result (ppb)	Applicable Standard	(ppb)
Farrallon Groundwater Monitoring 7/19/2000				
MW-1	PCE	560	MTCA A*	5
MW-2	PCE	1,100	"	5
MW-3	PCE	1,300	"	5
Farrallon Groundwater Monitoring 4/25/2003				
MW-1	PCE	1,600	MTCA A*	5
MW-2	PCE	3,700	"	5
MW-3	PCE	3,100	"	5
Farrallon Groundwater Monitoring 3/1/20006				
MW-1	PCE	600	MTCA A*	5
MW-2	PCE	2,700	"	5
MW-3	PCE	2,900	"	5

\*MTCA A refers to the Model Toxics Control Act Table 720-1 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.

**ROUTE SCORES:**

Surface Water/Human Health: NS

Surface Water/Environmental: NS

Air/Human Health: NS

Air/Environmental: NS

Groundwater/Human Health: 25.5

**OVERALL RANK: 5**

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: 9  
Tetrachloroethylene, Trichloroethylene
- b. Explain basis for choice of substance(s) to be used in scoring:  
Tetrachloroethylene and Trichloroethylene were detected in soil samples associated with the site in concentrations exceeding their respective MTCA cleanup levels.  
Tetrachloroethylene was detected in groundwater samples associated with the site in concentrations exceeding its MTCA cleanup level.
- c. List those management units to be considered for scoring: Source: 9  
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	Tetrachloroethylene	5	8	800	5	0.01	3	B2=0.8	0.051	4
2	Trichloroethylene	5	8	2402	3	-	ND	B2=0.8	0.011	4

\* Potency Factor

Source: 4,5,9

Highest Value: 8

(Max = 10)

Plus 2 Bonus Points? 2

Final Toxicity Value: 10

(Max = 12)

<b>1.2 Mobility (use numbers to refer to above listed substances)</b>		
Cations/Anions	OR	Solubility (mg/L)
	1= $1.5 \times 10^2 = 2$	
	2= $1.1 \times 10^3 = 3$	
		Source: <u>4,5</u> Value: <u>3</u> (Max = 3)

<b>1.3 Substance Quantity:</b>	
<p>Explain basis: 30 soil samples collected from 6 boreholes on site up to 30' bgs detected MTCA exceedences. Confirmed groundwater contamination above MTCA cleanup levels at three locations. Hence, entire site is impacted to a depth of 30'.</p> <p><math>70' \times 140' \times 30' = 294,000 \text{ ft}^3 = 10,888 \text{ CY}</math></p>	<p>Source: <u>4,5,9,10</u> Value: <u>9</u> (Max=10)</p>

## 2.0 MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment (explain basis):</b> Contaminated area is covered by a parking lot, score as a landfill: 1) No liner = 3; 2) Low permeability cover = 1; 3) No leachate collection system = 2.	4,5,11	<u>6</u> (Max = 10)
2.2	<b>Net precipitation:</b> 29.7" - 5.6" = 24.1"	6	<u>3</u> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> Silty sands, and gravelly sands with lenses of finer grained silty and clayey fine sand to 30' below the ground surface.	4,5,9,10	<u>3</u> (Max = 4)
2.4	<b>Vertical depth to groundwater:</b> Confirmed release to groundwater = 0'	4,5,9,10	<u>8</u> (Max = 8)

## 3.0 TARGETS

		Source	Value
3.1	<b>Groundwater usage:</b> Public supply, alternate supply available with minimum hookup requirements	1,2	<u>4</u> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> > 10,000 feet	1,2,3	<u>0</u> (Max = 5)
3.3	<b>Population served within 2 miles:</b> no connections, $\sqrt{0} = 0$	1,2,3	<u>0</u> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> (0.75)* $\sqrt{0}$ acres = 0	1,2,3	<u>0</u> (Max = 50)

## 4.0 RELEASE

		Source	Value
	<b>Explain basis for scoring a release to groundwater:</b> Confirmed by presence of PCE in groundwater at the site.	9,10	<u>5</u> (Max = 5)

## SOURCES USED IN SCORING

1. Kitsap County Health District (KCHD) public water system GIS map
2. KCHD public water system database
3. Washington State Department of Ecology well log viewer  
<http://apps.ecy.wa.gov/welllog/>
4. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
5. Washington State Department of Ecology, WARM Scoring Manual, April 1992
6. Washington Climate - Net Rainfall Table
7. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site
8. Washington State Department of Health, SADIE Database printout for public water supplies
9. Phase II Subsurface Investigation Land Title Building Parking Lot, 1002 4<sup>th</sup> Street, Bremerton, FARRALON Consulting, December 6, 1999
10. 2006 Groundwater Report, Land Title Building Parking Lot, 1002 4<sup>th</sup> Street, Bremerton, FARRALON Consulting, 2006
11. KCHD Site visit, May 30, 2007
12. Subsurface Investigation and Soil Vapor Extraction Feasibility Pilot Test, Former City Hand Laundry, 1002 4<sup>th</sup> Street, Bremerton, FARRALON Consulting, January 27, 2004