SITE HAZARD ASSESSMENT
WORKSHEET 1
Summary Score Sheet

SITE INFORMATION:

Bremerton Tunnel & Parking Garage
602/626/646 Burwell Street
Bremerton, WA 98337

Section/Township/Range: 13/24N/1E
Latitude: 47.56507
Longitude: -122.62836
Ecology Facility Site ID No: 10530
Cleanup Site ID: 7395
Site scored/ranked for the August 2013 update

August 5, 2013

SITE DESCRIPTION

The Burwell Tunnel & Parking Garage site is located in the City of Bremerton on the north side of Burwell Street adjacent to Puget Sound Naval Shipyard. Land use in the area is predominately commercial with nearby residential sites. The sites topography is generally flat and slopes to the southeast towards Sinclair Inlet, which is located approximately 1500' feet from the site.

The site is owned by the City of Bremerton and covers six individual tax parcels. Of the six tax parcels, three have been reported to have leaking underground storage tanks (UST). These parcels include 602, 626 and 646 Burwell Street.

The property located at 626 Burwell Street is approximately 0.18 acre in size and was formerly operated as a Les Schwab Tire Center. Based on Kitsap County Assessor records, global positioning system (GPS) coordinates and historical land use; 626 and 602 Burwell Street are the same tax parcel (3718-014-010-0006) and have likely been readdressed since reported to Washington State Department of Ecology (Ecology) in 2007. The property at 646 Burwell Street is approximately 0.12 acres in size and was formerly a single-family residence.

Properties located at 626 and 646 Burwell Street are currently asphalt-paved with a shared, two story parking garage structure. Utilities at the site include public water and connections to sanitary sewer. Storm drains identified on-site travel through underground pipe and south into the storm system along Burwell Street. See **Figure 1** for a vicinity map.

Owner contact information: City of Bremerton
345 6th Street, Suite 600
Bremerton, WA 98337

REMEDIAL ACTION AND EVALUATION

Following Ecology's receipt of Emergency Response Tracking System report, #561351 on March 2, 2007, Landau Associates (Landau) and NRC Environmental Services conducted an initial site inspection on February 1, 2007. During their site inspection, one 500 gallon heating oil UST was identified at 646 Burwell Street and the presence of two gasoline or diesel USTs were identified at 626 Burwell Street.

On February 22, 2007, Landau contracted with NRC to remove known USTs and to excavate and dispose of any petroleum contaminated soils (PCS) identified at 626 and 646 Burwell Street. Although the initial site inspection identified the presence of two USTs, a total of four USTs were identified during removal activities at 626 Burwell Street. The capacity and conditions of the four USTs identified ranged from 500 – 2,500 gallons, observations of small holes and corrosion was identified on all USTs. See **Figure 2 & 3** for a map of UST locations for 626 & 646 Burwell Street sites.

Soil excavated during removal activities were observed for physical signs of contamination and monitored for the presences of volatile organic compounds (VOCs) with a photoionization detector (PID). A target PID reading of 20 parts per million (ppm) was utilized to evaluate if excavated soil was considered petroleum contaminated soil (PCS). Excavated soil above 20ppm or visual indication of contamination were segregated and stockpiled on site. Stockpiles of PCS were later profiled by Landau and a total of 285 tons of PCS from UST-1, 3 and 4 were later transported to a Waste Management facility for disposal.

Confirmation soil samples were taken by Landau from the sidewalls and base of each excavated UST using an excavator bucket. Samples were collected and analyzed for total petroleum hydrocarbons as diesel (TPH- Dx), gasoline (TPH-Gx), BTEX (benzene, toluene, ethylbenzene, and xylenes), VOCs and metals to identify areas where additional excavation efforts were required per Model Toxics Control Act (MTCA) Method A clean up levels for soil.

SAMPLING RESULTS

All final confirmation samples collected at the 626 Burwell Street property indicate concentration below the MTCA Method A cleanup level with one exception. One final confirmation soil sample from UST-4-NW exceeded MTCA Method A cleanup levels with an oil range TPH concentration of 5,400 ppm. Based on telephone conversations with Landau, reasons for PCS left in the soil were to prevent potential structural issues with an existing building from excavation work. No MTCA Method A exceedences or PCS was observed for the UST removal at 646 Burwell Street. See **Table 1** for MTCA exceedences in soil from Landau Associates.

Table 1. MTCA Method A Cleanup Exceedences

Landau Associates Soil Analytical Results 626 Burwell Street						
Location	**Date Sampled**	**Sample Depth (feet bgs)**	**Analytical Results (ppm)**			
			TPH as Diesel	**TPH as Oil**	**BTEX**	**VOC**
UST-4 NW	3/1/2013	9'-10'	-	5,400	NA	NA

** highlighted results indicate MTCA exceedences*

SHA Site Visit

In preparation for conducting a site hazard assessment (SHA) for the Burwell Tunnel & Parking Garage site, a site visit was conducted by Kitsap Public Health District (KPHD) staff on July 26, 2013. The site visit was conducted to observe current conditions at the property and give KPHD staff a familiarity with the site and the surrounding area, including nearby drinking water well locations, and surface water flow directions. The area surrounding the subject properties is covered with impervious surfaces such as concrete, asphalt and the parking garage itself, which limit the surface infiltration of water into soil.

PATHWAY SCORING

Groundwater Pathway

The groundwater contaminant route was scored as a spill or discharge from contaminated soils. Vertical depth to groundwater is approximately 18 feet below ground surface (bgs). Based on Landau's observations during UST removals, the soil consisted of a light brown, fine to medium sand at shallow depth and gradually changing to a dark brown medium grained sand to the approximately 16 ft below grounds surface. The pathway was scored as contamination confirmed by analytical evidence. There appear to be no drinking water wells in the immediate vicinity of the site. The site is served by a public water system and public sewer.

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):

1) 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.

2) Multiple sites are in the vicinity of this site. Park Avenue Cleaners (FS ID 28884893), City Hand Laundry (FS ID 9475242), and the Puget Sound Naval Shipyard EPA Superfund site are all within 1,000 ft of the site.

ROUTE SCORES:

Surface Water/Human Health:	**NS**	Surface Water/Environmental:	**NS**
Air/Human Health:	**NS**	Air/Environmental:	**NS**
Groundwater/Human Health:	**19.16**		

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: 1,2

      TPH-Dx (Heavy Oil)

   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

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

      The contaminating substances were detected in on-site subsurface soil samples in concentrations exceeding their respective MTCA cleanup levels.

WORKSHEET 6
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.2 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	TPH-Dx	160	4	490	5	-	ND	-	-	ND
2										
3										
4										

** Potency Factor*

Source: 1,2,6
Highest Value: 5
(Max = 10)
Plus 2 Bonus Points? 0
Final Toxicity Value: 5
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)	
Cations/Anions	**OR** **Solubility (mg/L)**
1=	**1=** $3 \times 10^{1} = 1$
2=	**2=**
3=	**3=**
4 =	**4 =**
5=	**5=**

Source: 6,7
Value: 3
(Max = 3)

1.3 Substance Quantity:	
Explain basis: Unknown, use default = 1	Source: 1,2,6 **Value: 1** (Max=10)

2.0 MIGRATION POTENTIAL

		Source	**Value**
2.1	**Containment (explain basis):** Contaminated area capped, scored as a landfill: i) No liner (3); ii) Low permeability cover (1); iii) No leachate	6,7	**7** (Max = 10)

	collection system (2) = 6		
2.2	**Net precipitation:** 29.7”- 5.1”= 24.1”	8	**3** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** sandy loam	1,2	**3** (Max = 4)
2.4	**Vertical depth to groundwater:** 18’	1,2	**8** (Max = 8)

3.0 TARGETS

		Source	Value
3.1	**Groundwater usage:** Public supply	9	**4** (Max = 10)
3.2	**Distance to nearest drinking water well:** 2,500 feet	9	**3** (Max = 5)
3.3	**Population served within 2 miles:** >10,000 = 100	9	**100** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** None	9	**0** (Max = 50)

4.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: Confirmed by presence of product in groundwater.	1,2,6	**5** (Max = 5)

SOURCES

1. Underground Storage Tank Removal Characterization Report 626 & 646 Burwell Street Bremerton, WA, Landau Associates, April 5, 2007.
2. Analytical Data Results for 626 & 646 Burwell Street Bremerton, WA, CCI Analytical Laboratories, February 20, 2007.
3. Soil Survey of Kitsap County Area, WA, United States Department of Agriculture, Soil Conservation Service, September 1980.
4. Kitsap Public Health District site visit, Richard Bazzell, July 26, 2013
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. Kitsap Public Health District, Drinking Water Database, August 2013.

Figure 1. Burwell Tunnel & Parking Garage Vicinity Map

Figure 2. Map of UST locations for 626 Burwell Street

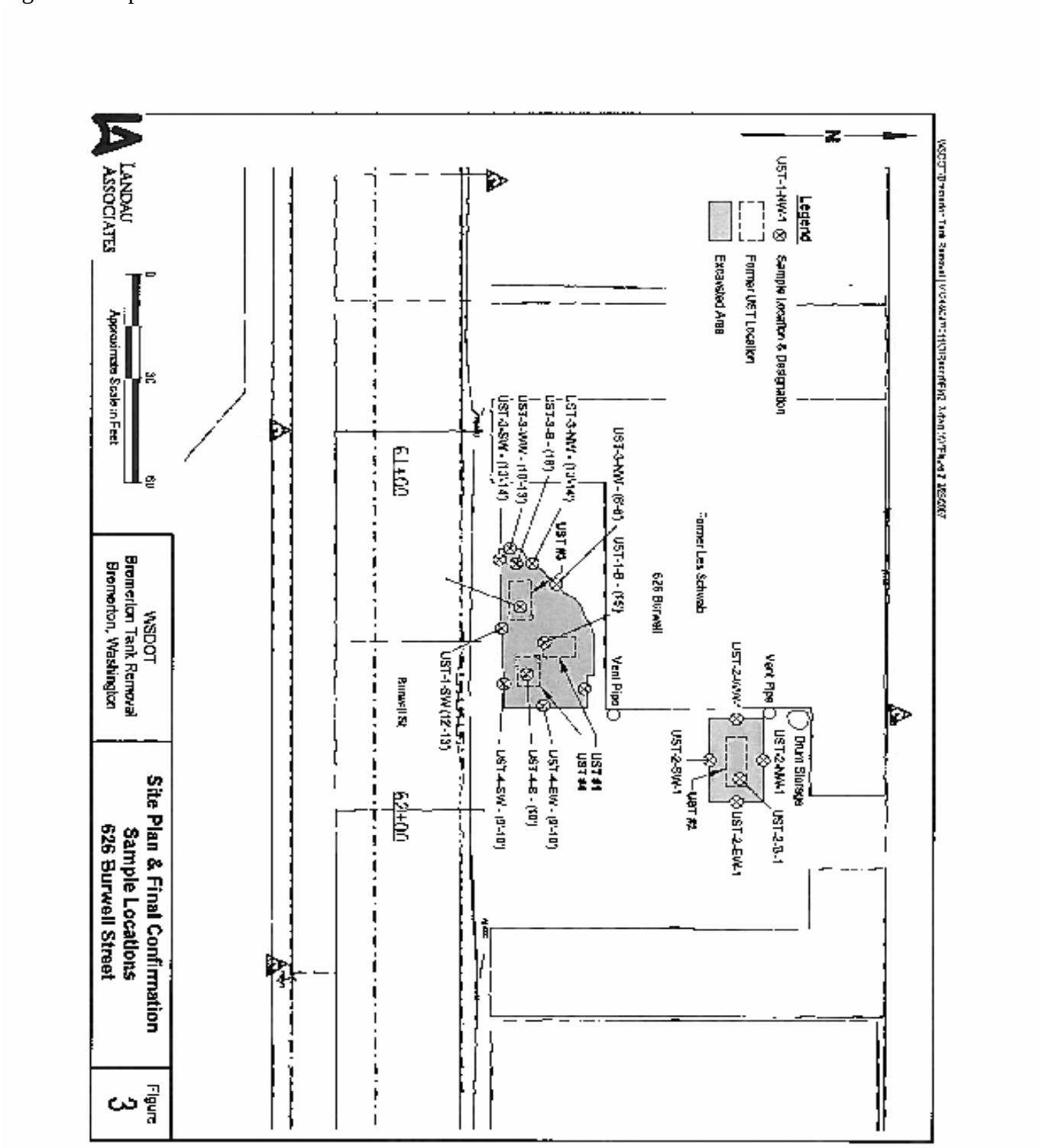

Figure 3. Map of UST locations for 646 Burwell Street