

# Site Hazard Assessment Worksheet 1 Summary Score Sheet

## SITE INFORMATION

**Name:** Naval Reserve Center Tacoma  
**Address:** 1001 Alexander Ave  
**City:** Tacoma      **County:** Pierce      **State:** WA      **Zip:** 98421  
**Section/Township/Range:** 27 / 21N / 03E  
**Latitude:** 47.275095      **Longitude:** -122.399556  
**Facility Site ID Number:** 93581722

*Site assessed/ranked for the August update.*

*April 14, 2011*

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

#### General Site Description

The subject site is defined by two tax parcels (APNs, 2275200532 and 2275200502), approximately ten acres (0.71 and 9.9 acres, respectively) in size. The Naval Reserve Center Tacoma site is designated with a landuse of "Military Bases" in an area of the City of Tacoma known as the Tideflats, zoned as "Port-Maritime Industrial" and "Combined Shoreline". It has been described as "Z-Shaped and flat"; it rests at approximately eighteen feet (18') above mean sea level. The Naval Reserve Center Tacoma site is legally known as the Naval Marine Corp Reserve Center Tacoma (NMCRC Tacoma) property and was last used as a drill facility for approximately four hundred fifty (450) Navy reservists. The *Hylebos Waterway* is the property's northern border. *East 11<sup>th</sup> Street* and a ten (10) acre parcel of vacant land owned by the Port of Tacoma, used as storage, borders the property to the southeast. *Alexander Avenue* and an approximately fifteen acre (specifically 14.86 acre) parcel owned by the Port of Tacoma, used as General Warehouse Storage, provide the site's southwestern border.

Currently the site has seven buildings, an asphalt parking lot, and two piers on the Hylebos Waterway. Most of the site is "capped" with various types of impervious surfaces; approximately ten percent (10%) of property is landscaped.

Subsurface conditions at the property were investigated from soil borings in 2004. During the site investigation it was discovered that much of the site was covered with concrete or pavement. Below that "cap" was a layer of sporadic fill material and below that was a layer of weathered till. The till was comprised of silty, clayey, sand and gravel. Perched water was encountered below the till, at about twenty five to thirty feet below ground surface (25' -30' bgs).<sup>1</sup>

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<sup>1</sup> *Robinson, Noble, & Saltbush. Limited Subsurface Investigation, 1929 Tacoma Avenue South, March 25, 2004.*

Groundwater is assumed to flow easterly, down gradient, towards the *Hylebos Waterway*. The closest active groundwater drinking well is a “Group A Water System” (City of Tacoma Municipal Well) that is approximately one thousand eight hundred feet (1,800’) to the southeast and has a depth of approximately seven hundred seventy nine feet bgs (779’ bgs).

### Historical Site Information

The Hylebos waterway is a listed United States Environmental Protection Agency (EPA) Superfund site. The Commencement Bay Nearshore/Tideflats (CB/NT) Superfund site is located in Tacoma, Washington at the southern end of Puget Sound. EPA placed the site on the Superfund National Priorities List (NPL) in 1983 after discovering widespread contamination.. The Hylebos waterway contains a “toxic blanket” of sediment contaminated with PCBs, PAHs, arsenic, hexachlorobenzene, hexachlorobutadiene, and other organics and metals. The contamination is from several industries established in the late 1800s, including chemical manufacturing plants, scrap metal recycling, log transfer facilities, and shipbuilding. The Port of Tacoma worked to extend the Hylebos waterway in the 1960s to a three (3) mile-long waterway, two hundred (200) feet wide. Today, one hundred sixty seven (167) acres of the two hundred eighty five (285) acre area that makes up the Hylebos Waterway requires cleanup.<sup>2</sup>

“Although the Naval Reserve has been active in Tacoma since 1911, the Naval Reserve did not occupy the current NMCRC Tacoma property until 1947. During the early 1900s the site of the current NMCRC Tacoma was part of a larger shipyard owned and operated by Todd-Pacific (Turner, Collie, & Braden 1988). The shipyard constructed naval ships during World War I and closed immediately following the war. Woodworking plants then occupied the former shipyard area during the 1920s and 1930s (URS 1996). In 1939, the Seattle-Tacoma Shipbuilding Corporation began construction of a new shipyard on the former Todd-Pacific property to support production of naval ships for World War II (Turner, Collie, & Braden 1998). At the end of the war, the shipyard closed, and the NMCRC Tacoma parcel was turned over to the War Assets Administration.

“Following the war, the Naval Reserve reorganized and established a peacetime reserve force. As a result of the reorganization, the Navy established the current location as a joint-use facility for the Naval and Marine Corps Reserve in 1947 (Turner, Collie, & Braden 1998). The Navy renovated 15 existing buildings and structures on the property originally constructed for the shipbuilding industry (Turner, Collie, & Braden 1998). In 1961, the Navy acquired a fueling pier operated by Fletcher Oil Company (URS 1996). Little information is available pertaining to the facility’s operations between 1948 and the early 1960s.

“To support a growing drilling population utilizing the facility, the Navy received federal appropriations to build a permanent facility in 1963. Most of the original buildings were demolished during the construction of three new buildings. Upon completion, the reserve center was dedicated in 1964 as a facility to support Army, Navy, Marine Corps, and Coast Guard Reserves. In 1995, the Army and Coast Guard Reserves relocated to other facilities (Turner, Collie, & Braden 1998).

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<sup>2</sup> [www.usepa.gov](http://www.usepa.gov)

“According to the *Historical Survey of the Naval and Marine Corps Reserve Center, Tacoma Washington* dated January 1996 (URS 1996), the Naval Reserve Maintenance Training Facility (NRMTF), Puget Sound, became a tenant of the Reserve Center from 1982 to 1988 and operated a repair and oily waste barge moored on the northern section of Pier 40. In 1988, the NRMTF repair barge was moved to the Puget Sound Naval Shipyard, Bremerton, Washington. The oily waste barge was also removed from the NMCRC Tacoma by early January 1995 after the oily waste contents were properly disposed and the barge was steam cleaned (URS 1996).”<sup>3</sup>

### Recent Site History

Six underground storage tanks (USTs) were decommissioned at the NMCRC Tacoma property during 1993. All six USTs previously contained fuel for the facility’s boilers. The USTs and their decommissioning are the cause of the site’s Confirmed and Suspected Contaminated Sites List (CSCSL) database listing, the focus of this Site Hazard Assessment (SHA) and are described as:

<u>Tank ID</u>	<u>Size (Gallons)</u>
1	12,000
1X	300
2	12,000
3	24,000
4	4,000
5	3,500

USTs 1, 1X, 2, 3 were located within one excavation. USTs 4 and 5 were located in separate excavations. Two samples were collected from the tank beds of USTs 1, 1X, 2, and 3. Three samples were collected from the excavations of USTs 4 and 5. The samples were analyzed for total petroleum hydrocarbons identification using WTPH-HCID and follow up analysis with WTPH-Gas, Diesel, and/or Oil as needed to confirm that all the PCS had been successfully removed. Significant Petroleum Contaminated Soil (PCS) was observed in two UST excavations: UST 2 and UST 4. Further excavation was conducted in these locations and two additional samples were collected from the tank basins to confirm the vertical extent of the contamination had been reached. Approximately one hundred sixty six (166) tons of PCS were removed from the site and transported for offsite recycling.

Two above ground storage tanks (ASTs) were removed from the property in 1996. The ASTs were associated with the oil/water separator system used to treat oily bilge water from marine vessels. Bilge water was initially pumped into a fifteen hundred to two thousand (1,500 – 2,000) gallon AST and then pumped into the oil/water separator system. Separated oil was stored in a seven hundred (700) gallon AST and then disposed by a contractor. During the AST removal, PCS was observed in the surrounding surface soils. Approximately seventy (70) tons of PCS was ultimately disposed.

Severson Construction (Severson) initially collected five (5) surface soil samples for WTPH-HCID analysis. These results indicated PCS diesel and oil contamination above current Model Toxics Control Act Method A Cleanup Levels for Unrestricted Landuse (MTCA Method A – Soil) in one

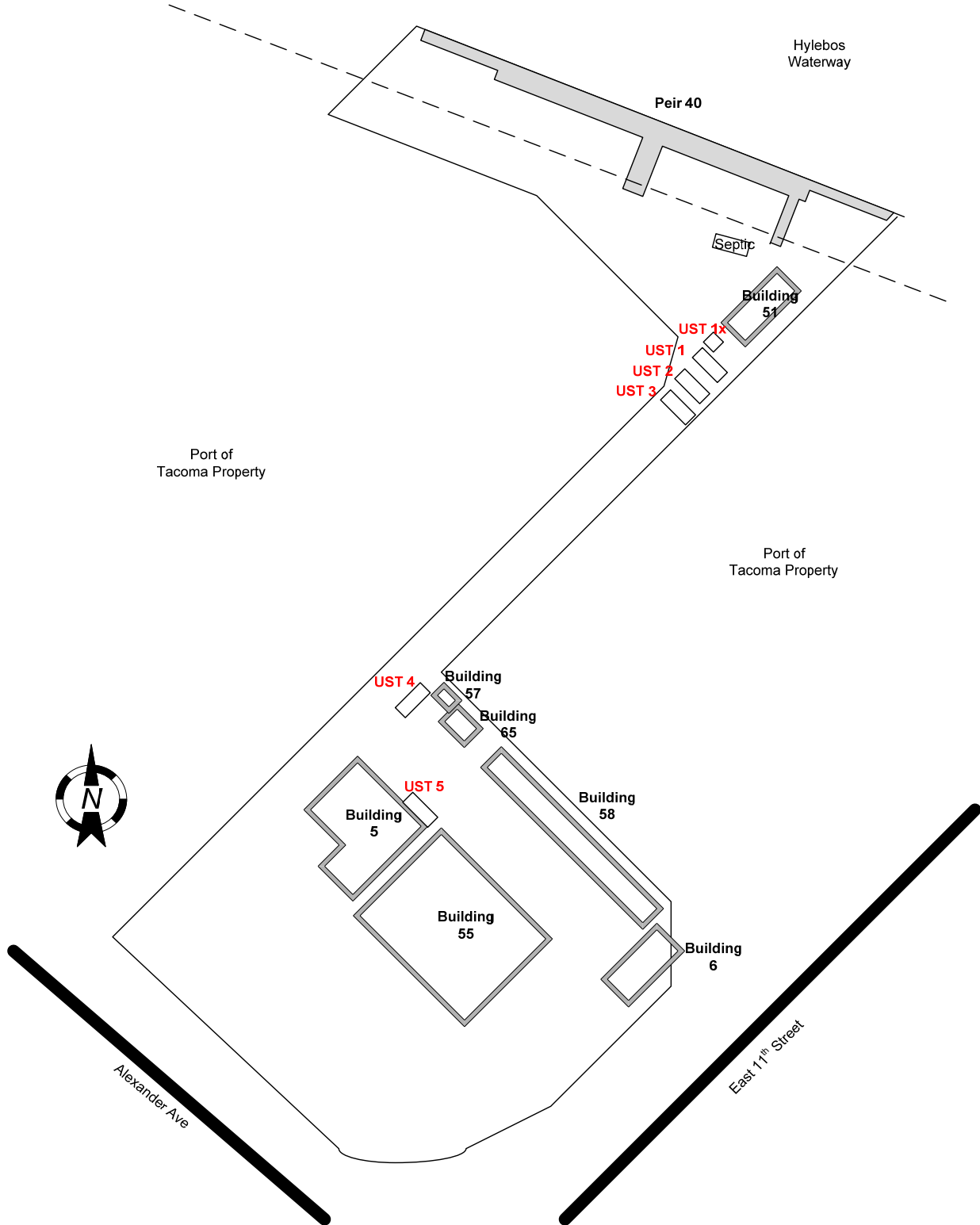
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<sup>3</sup> Department of the Navy BRAC Program Management Office, *FINAL Environmental Condition of Property Report Naval Reserve Center, Tacoma, Washington*, May 5, 2006.

sample, T-4, at 2,900 mg/kg. Severson proceeded with overexcavation and collected an additional five (5) confirmation samples. Two of the five (Ox-2 and Ox-4) still indicated detectable concentrations and more overexcavation was completed. A final two (2) samples were collected, in addition to two (2) stockpile samples. The stockpile samples were analyzed for waste disposal purposes using Toxicity Characteristic Leaching Procedure (TCLP) for metals. These samples were non-detect. The twelve (12) soil samples were collected from the bottom of the excavation.

The October 2009 Draft finding of Suitability to Transfer (FOST) document states that, “The decommissioning and removal of USTs and ASTs, and cleanup of petroleum contaminated soil was conducted by the DoN in accordance with Ecology’s Independent Cleanup Program. As such, no official concurrence of No Further Action required has been received by Ecology. Ecology states that the site will remain on its Confirmed and Suspected Contaminated Sites List until a No Further Action determination is made through Ecology’s Voluntary Cleanup Program.”

**Figure 1 – Site Diagram**



**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 documented contamination on this site is primarily subsurface. The Surface Water and Air routes have not been scored.

Groundwater and sediment samples on and adjacent to the subject site have concentrations of several hazardous substances including carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and benzene. It is believed that these concentrations are historical in nature and have been attributed to the Occidental Chemical site and the overall Commencement Bay Nearshore/Tideflats (CB/NT) Superfund site. These constituents have not been a factor in scoring this SHA.

**ROUTE SCORES:**

Surface Water/Human Health:	<u>NS</u>	Surface Water/Environ:	<u>NS</u>
Air/Human Health:	<u>NS</u>	Air/ Environmental:	<u>NS</u>
Ground Water/Human Health:	<u>32.7</u>		

**OVERALL RANK: 3**

## Worksheet 2--Route Documentation

### 1. SURFACE WATER ROUTE:

- a. List those substances to be considered for scoring: Source: 1,2,3
- b. Explain basis for choice of substances(s) to be used in scoring:
- c. List those management units to be considered for scoring: Source: 1,2,3
- d. Explain basis for choice of unit to be used in scoring:

### 2. AIR ROUTE:

- a. List those substances to be considered for scoring: Source: 1,2,3
- b. Explain basis for choice of substances(s) to be used in scoring:
- c. List those management units to be considered for scoring: Source: 1,2,3
- d. Explain basis for choice of unit to be used in scoring:

### 3. GROUND WATER ROUTE:

- a. List those substances to be considered for scoring: Source: 1,2,3

TPH-diesel

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

TPH-diesel will be used due to the fact that its presence is confirmed and available to the Groundwater route due to less than perfect containment.

- 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, Discharge, Contaminated Soil will be the management unit used for scoring due to contaminated subsurface soils, 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*		
<b>1</b>	TPH-Diesel (naphthalene)	20	6	490 (rat)	5	0.004	3	--	--	ND
<b>2</b>										
<b>3</b>										
<b>4</b>										
<b>5</b>										
<b>6</b>										

\*Potency Factor

Source: 2,3

**Highest Value: 6**  
(Max=10)

**Plus 2 Bonus Points? 0**

**Final Toxicity Value: 6**  
(Max=12)

1.2 Mobility (Use numbers to refer to above listed substances)	
Cations/Anions:	OR Solubility (mg/l):
1=	1= Naphthalene = 30 = 1
2=	2=
3=	3=
4=	4=
5=	5=
6=	6=
Source: <u>2,3</u>	
Value: <u>1</u> (Max=3)	
1.3 Substance Quantity: 5,001 – 25,000 gallons	
<b>Explain basis:</b> Estimated volume based on once filled volume of the two USTs that are known to have leaked. 12,400 gallons.	Source: <u>1,2</u> Value: <u>5</u> (Max=10)



**2.0 MIGRATION POTENTIAL**

2.1	<b>Containment</b> Spills, Discharges, and Contaminated Soil <b>Explain basis:</b> Scored as a landfill with cover (0), no liner (3), no leachate collection system (2), release (3)	Source: <u>1,2</u>	<b>Value: 8</b> (Max = 10)
2.2	<b>Net precipitation:</b> (Nov. – Apr.) <u>22.9</u> inches (29.3'' – 6.4'')	Source: <u>2,9</u>	<b>Value: 3</b> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> moderately permeable till	Source: <u>1,2</u>	<b>Value: 2</b> (Max = 4)
2.4	<b>Vertical depth to ground water:</b> <u>0-25 feet</u> feet	Source: <u>1,2,7</u>	<b>Value: 8</b> (Max = 8)

**3.0 TARGETS**

3.1	<b>Ground water usage:</b> Public supply; no alternate unthreatened sources available with minimal hookups.	Source: <u>2,11</u>	<b>Value: 9</b> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> <u>&gt;600 – 1,300 feet.</u> (City of Tacoma, Group A Water System, 1,165 ft )	Source: <u>2,7,11</u>	<b>Value: 4</b> (Max = 5)
3.3	<b>Population served within 2 miles:</b> $\sqrt{\text{pop.}} = \sqrt{0} = \geq 100$	Source: <u>2,8,11</u>	<b>Value: 100</b> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> $(0.75) \sqrt{539} \text{ No. acres} = 17.4$	Source: <u>2,6</u>	<b>Value: 18</b> (Max = 50)

**4.0 RELEASE**

	<b>Explain basis for scoring a release to ground water:</b> No release confirmed.	Source: <u>1,2</u>	<b>Value: 0</b> (Max = 5)
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## Sources Used in Scoring

1. Tacoma-Pierce County Health Department Site Hazard Assessment File/Ecology 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. Soil Survey of Pierce County, U.S.D.A. Soil Conservation Service
6. Water Rights Information System (WRIS), Ecology
7. Department of Ecology/Tacoma-Pierce County Health Department Well Logs
8. Washington State Department of Health Public Water Supply System
9. Washington Climate for Pierce County, National Weather Service Forecast Office
10. Department of Fish and Wildlife, Catalog of Washington Streams and Salmon
11. Pierce County Geographic Information System Countyview Database