

CS ID 1035

**WORKSHEET 1
SUMMARY SCORE SHEET**

Site Name/Location (Street, City, County, Section/Township/Range, TCP ID Number):

Bellingham Port Weldcraft Site T38/R02E/Section 23
2929 Roeder Ave. latitude 48° 45' 26.4"
Bellingham, WA 98225-2065 longitude 122° 30' 27.6"
 Facility Site I.D 9961698

Site assessed/ranked for February 26, 2002 Update.

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

Bellingham Port Weldcraft Site (Weldcraft Steel & Marine):

A Brief Summary of Events

Bellingham Port Weldcraft Site (Weldcraft) was established in 1946 as Weldcraft Steel Works, and is located at 2929 Roeder Avenue, along Bellingham Bay at Squalicum Way and Harbor Loop Drive in Bellingham, WA. The business maintained its lease with the Port of Bellingham (the Port), owner of the property, until February 2000. Weldcraft operated as a shipyard and conducted boat construction, repair and maintenance; wood and metal fabrication; marine pipefitting; electrical; sheet metal work; painting; machinery construction, installation and repair; vessel haul-out and launching; lofting and pattern-making; canvas and plastic work; storage, brokerage, retail and wholesale sales; and concrete work.

Landau Associates, contractor for the Port, completed three environmental site assessments (ESAs) at the Weldcraft site between the period of 1993 through 1998. The Phase I ESA was undertaken to resolve questions concerning potential impact by the operation at various locations onsite. Historical information was reviewed during this ESA, and areas identified as having been potentially impacted by the Weldcraft operation were sampled during the Phase II and III ESAs. Areas investigated and sampled included

- the location of a former UST
- oil stained areas
- boat maintenance work yards
- sediments in the vicinity of the site near shore activities and outfall areas (including catch basins)
- soil grab samples from the dry storage yard, and

- accumulated sediment and boat maintenance waste from Marine Way railway (submerged during high tide).

Bellingham Port Weldcraft Site was listed on Ecology's Confirmed and Suspected Contaminated Sites List on September 4, 2001.

Areas with contamination confirmed (and remaining to date) as a result of the three ESAs are summarized in the following table: (refer to Landau Associates, *Draft Work Plan*, March 28, 2001, for a complete description)

Contaminant	Removed UST (Northeast side of building)	Marine Railway (V144F)	Offshore sediments (SD2-01)	Soil under septic **	Soil under Catch basin 2**	Sandblast area
TPH - gas (mg/Kg)	3200 (SB-8) 180 (SB-25) 95 mg/L (SB-8W)	1600		470		
TPH - diesel (mg/Kg)		16000			2500	
TPH - heavy oil, (mg/Kg)		17000			1600	
BTEX (mg/Kg)	8.1 Benzene (SB-25) 31.6 xylenes (SB-25) 26 benzene (SB-30) all > MTCA (SB-8W)*					
Metals (mg/Kg)		28.7 Hg 110 As 10600 Cu 1610 Pb			8 As	1160 Pb (SB-20)
Benzo (a) pyrene (mg/Kg)		3.5				
Chrysene		11				
Benzo (b) fluoranthene		7.7				
Benzo (k) fluoranthene		6.3				
Benzo (a) pyrene		3.5				
Indeno (1,2,3- cd) pyrene		2.6				
Benzo (g,h,I) perylene		2.5				
Benzo (a) anthracene		8.8				
Tributlytin (mg/Kg)		19.6	120			

Note: The above table represents contamination remaining to date, and does not reflect areas where remediation has occurred.

* SB-8W is a groundwater sample collected at a depth of 9 - 10 feet.

** Sampled as part of an independent cleanup activity - technical memorandum not yet available.

The locations above are noted on the Landau Associates "Figure 2" and "Figure 3" which can be found at the end of this document.

Remedial activities that the Port has conducted at the site have included

- Removal of large quantities of waste materials including derelict boats, used oil, scrap metal and fiberglass, unused paints and solvents, and other boatyard wastes
- Cleaning out of three catch basins and two floor drains
- Removal of an apparent septic tank from the west side of Building 1 and sampling of soils underlying the septic tank - see above table for results
- Removal of concrete dispenser island pad from the northwest side of Building 1 that was associated with the former UST (removed previously), and sampling of soil under pad
- Sampling of soil under open bottomed Catch Basin 2 - see above table for results

The Port has outlined their future efforts at this site in their Remedial Investigation Feasibility Study Draft Work Plan, March 28, 2001.

Though further investigation and remedial action are planned, the Weldcraft property will be scored and ranked under MTCA, using the Washington Ranking Method (WARM), reflecting current conditions.

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):

None

ROUTE SCORES:

Surface Water/Human Health: 33.4

Surface Water/Environ.: 64.5

Air/Human Health: 39.0

Air/Environmental: 32.4

Ground Water/Human Health: 43.7

OVERALL RANK: 1

References

Landau Associates, Inc. Phase II Environmental Site assessment Weldcraft Steel and Marine Site Bellingham, Washington. 25 June 1998.

Landau Associates, Inc. Remedial Investigation and Feasibility Study Weldcraft Steel and Marine Facility Bellingham, Washington. Draft Work Plan. 28 March 2001.

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE :

List those substances to be considered for scoring: Source: 11
TPH gas, diesel and motor oil, benzene, toluene, ethylbenzene, xylenes, mercury, arsenic, copper, lead, benzo(a)pyrene, chrysene, benzo(a) anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, ineno(1,2,3-cd)pyrene, benzo(g,h,I)perylene, and tributyl tin.

Explain basis for choice of substance(s) to be used in scoring. Source: 11
Ground water monitoring and sampling of soils conducted at site

List those management units to be considered for scoring: Source: 11
Contaminated soil, surficial lead, depths of less than 2.5' and upper intertidal soils collected at 0.05'.

Explain basis for choice of unit to be used in scoring. Source: 11
Product found in soils at site

2. AIR ROUTE :

List those substances to be considered for scoring: Source: 11
TPH gas, diesel, mercury, arsenic, copper, lead, benzo(a)pyrene, chrysene, benzo(a) anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,I)perylene, and tributyl tin.

Explain basis for choice of substance(s) to be used in scoring. Source: 11
Surficial lead found in former sandblast area, gas, diesel, PAH's found in railway upper intertidal region at a depth of 0.05', which is exposed during low tide.

List those management units to be considered for scoring: Source: 11
Contaminated soils

Explain basis for choice of unit to be used in scoring. Source: 11
Product found in surficial soils and intertidal soils.

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source: 11
TPH gas, diesel and motor oil, benzene, toluene, ethylbenzene, xylenes, mercury, arsenic, copper, lead, benzo(a)pyrene, chrysene, benzo(a) anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,I)perylene, and tributyl tin.

Explain basis for choice of substance(s) to be used in scoring. Source: 11
Ground water monitoring and sampling of soils conducted at site

List those management units to be considered for scoring: Source: 11
Contaminated groundwater and soil

Explain basis for choice of unit to be used in scoring.
Product found subsurface in groundwater or in soil

Source: 11

**WORKSHEET 4
SURFACE WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg-bw)	Val.	(mg/kg/day)	Val.	WOE	PF	Val
1. TPH as Gas	5	8	3306rat	3	ND	ND	1.0	5	5
2. TPH as diesel	20	6	490rat	5	0.004	3	ND		ND
3. TPH as heavy oil		ND	ND	ND	2	1			ND
4. mercury	2	8	ND	ND	ND	5	ND		ND
5. arsenic	50	6	763rat	5	0.001	5	1.0	7	7
6. copper	1300	2	ND	ND	0.037	1	ND		ND
7. lead	5	8	ND	ND	ND	ND	0.8	ND	ND
8. benzo(a)pyrene	0.2	10	50rat	10	ND	ND	0.8	9	7
9. chrysene	0.2	10	ND	ND	ND	ND	0.8	9	7
10. benzo(b)fluoranthene	0.2	10	ND	ND	ND	ND	0.8	9	7
11. benzo(k)fluoranthene	0.2	10	ND	ND	ND	ND	0.8	9	7
12. indeno(1,2,3cd)pyrene	0.2	10	ND	ND	ND	ND	ND		ND
13. tributyltin		ND	46rat	10	ND	ND	ND		ND

Source: 11,3

Potency Factor

Highest Value: 10
(Max.=10)

+2 Bonus Points? 2

Final Toxicity Value: 12
(Max.=12)

1.2 Environmental Toxicity

- () Freshwater
(x) Marine

Substance	Acute Water Quality Criteria		Non-human Mammalian Acute Toxicity		Source: 11,3	Value: <u>8</u> <small>(Max.=10)</small>
	(ug/l)	Value	(mg/kg)	Value		
1. TPH as Gas	5	2				
2. TPH as diesel	20	2				
4. mercury	2	8				
5. arsenic	50	6				
6. copper	1300	8				
7. lead	5	4				
8. benzo(a)pyrene	0.2	4				
9. chrysene	0.2	4				
10. benzo(b)fluoranthene	0.2	4				
11. benzo(k)fluoranthene	0.2	4				
12. indeno(1,2,3-cd)pyrene	0.2	4				
13. benzo(g,h,i)perylene	0.2	4				
14. tributyltin		ND				

**WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE**

1.3 Substance Quantity: unknown, use default = 1. Source: 2 Value: 1
Explain basis: _____ (Max.=10)

2.0 MIGRATION POTENTIAL

2.1 Containment: no run-on/run-off control system or cover Source: 11,2 Value: 10
(Max.=10)

2.2 Surface Soil Permeability: adjacent to surface water Source: 11,2 Value: 7
(Max.=7)

2.3 Total Annual Precipitation: 33.6 Source: 4 Value: 3
(Max.=5)

2.4 Max. 2-Yr/24-hour Precipitation: 1.5-2 Source: 2 Value: 2
(Max.=5)

2.5 Flood Plain: not in 100 year flood plain Source: 12 Value: 0
(Max.=2)

2.6 Terrain Slope: 0-2% Source: 1,9 Value: 1
(Max.=5)

3.0 TARGETS

3.1 Distance to Surface Water: ≤1000' to Bay Source: 1 Value: 10
(Max.=10)

3.2 Population Served within 2 miles (See WARM Scoring Manual Regarding Direction): •pop.=•0 = 0 Source: 7 Value: 0
(Max.=75)

3.3 Area Irrigated within 2 miles 0.75•no. acres=
(Refer to note in 3.2.): 0.75 √0 = 0 Source: 7 Value: 0
(Max.=30)

3.4 Distance to Nearest Fishery Resource: ≤1000 ft Source: 1 Value: 12
(Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Bellingham Bay/fisheries/coastal Source: 1 Value: 12
(Max.=12)

4.0 RELEASE

5.0 Explain basis for scoring a release to surface water: soils in surface water during high tide Source: 11 Value: 5
(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 ($\mu\text{g}/\text{m}^3$)		Acute Toxicity (mg/m^3)		Chronic Toxicity ($\text{mg}/\text{kg}/\text{day}$)		Carcinogenicity		
	Val.		Val.		Val.		WOE	PF	Val.
1. TPH as Gas	0.12	10	31947rat	3			1.0	5	5
2. TPH as Diesel	166.5	4		ND		ND			ND
3. mercury	0.3	10		ND	8.5E-05	8			ND
4. Lead	0.5	10		ND		ND			ND
5. copper	3.3	9		ND		ND			ND
6. arsenic	.00023	10		ND		ND	1.0	9	9
7. benzo(a)pyrene	.0006	10		ND		ND			ND

Potency Factor Source: 3
Highest Value: 10
(Max.=10)

+2 Bonus Points? 2
Final Toxicity Value: 12
(Max.=12)

1.3 Mobility (Use numbers to refer to above listed substances)

1.3.1 Gaseous Mobility
Vapor Pressure(s) (mmHg): 1)= 4, 2)=3, 3)=3, 7)=1 Source: 2,3 Value: 4
(Max.=4)

1.3.2 Particulate Mobility -
Soil type: gravelly coarse to fine sand Source: 2 Value: 3
(Max.=4)
Erodibility: 220
Climatic Factor: 1-10

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7)
equals **Final Matrix Value: 24**
(Max.=24)

1.5 Environmental Toxicity/Mobility Source: 2,3

Substance	Non-human Mammalian Acute (Table A-7)		Mobility (mmHg)		Matrix Value	
	Inhal. Toxicity (mg/m^3)	Value	Value	Value	Value	Value
1. TPH as Gas	31947rat	3	95	4	6	

Highest Environmental Toxicity/Mobility Matrix Value
(From Table A-7) equals **Final Matrix Value: 6**
(Max.=24)

**WORKSHEET 5 (CONTINUED)
AIR ROUTE**

1.6 Substance Quantity: unknown Source: 2,3 Value: 1
(Max.=10)
Explain basis:

2.0 MIGRATION POTENTIAL

2.1 Containment: vapor-spill/discharges to surface soil Source: 2,11 Value: 10
(Max. =10)

3.0 TARGETS

3.1 Nearest Population: ≤1000 feet Source: 1 Value: 10
(Max. =10)

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) wetland ≤ 1000' Source: 1 Value: 7
Estuary/coastal (Max. =7)

3.3 Population within 0.5 miles: •pop.=√3441(.25)= 29 Source: 5 Value: 29
(Note: am using one-quarter of the 0-1 mile population determined from the U.S. EPA SITEINFO database) (Max. =75)

4.0 RELEASE

Explain basis for scoring a release to air: None documented. Source: 2 Value: 0
(Max. =5)

**WORKSHEET 6
GROUND WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg-bw)	Val.	(mg/kg/day)	Val.	WOE	PF	Val.
1. TPH as Diesel	20	6	490rat	5	0.004	3			ND
2. TPH as Gas	5	8	3306rat	3	ND	ND	1.0	5	5
3. TPH as heavy oil		ND		ND	2	1			ND
4. benzene	5	8	3306rat	3	ND	ND	1.0	5	5
5. toluene	2000	2	5000rat	3	0.2	1			ND
6. Ethylbenzene	700	4	3500rat	3	0.1	1			ND
7. xylenes	10000	2	50	10	2	1			ND
8. arsenic	50	6	763rat	5	0.001	5	1.0	7	7
9. lead	5	8	ND	ND	ND	ND			ND

Potency Factor Source: 3, 11
Highest Value: 10
(Max.=10)

+2 Bonus Points? 2
Final Toxicity Value: 12
(Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions: 8)=3, 9)=2 Source: 2, 3 Value: 3
(Max.=3)

OR
Solubility(mg/l): 1)=1, 2)=3, 3)=0, 4)=3, 5)=2, 6)=2 7)=2

1.3 Substance Quantity: Unknown = 1 Source: 2 Value: 1
(Max.=10)
Explain basis: _____

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 2 Value: 10
(Max.=10)
Explain basis spill/discharges to surface soil

2.2 Net Precipitation: 22.3-5.6= 16.7 inches Source: 4 Value: 2
(Max.=5)

2.3 Subsurface Hydraulic Conductivity: Source: 9 Value: 4
(Max.=4)

2.4 Vertical Depth to Ground Water: average depth of 3 wells = 9.94 feet; observed release to ground water Source: 2, 6 Value: 8
(Max.=8)

3.0 TARGETS

3.1 Ground Water Usage: private supply with unthreatened alternate available Source: 2, 6, 8 Value: 4
(Max.=10)

3.2 Dist. to Nearest Drinking Water Well: >5000-10000' Source: 6 Value: 1
(Max.=5)

3.3 Population Served within 2 Miles: √21=5 Source: 6, 8 Value: 5
(Max.=100)

3.4 Area Irrigated by (Groundwater) Wells within 2 miles:

3.5

0.75√no.acres = 0.75√0 = 0.75(0)=0

Source: 7

Value: 0
(Max.=50)

4.0 RELEASE

Explain basis for scoring a release to ground water:
Documented product recovery from on site wells

Source: 1

Value: 5
(Max.=5)

SOURCES USED IN SCORING

1. Relevant Site History/Investigations/Whatcom County Health & Human Services 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. Washington State University Cooperative Extension Service, Washington Climate.
5. U.S. EPA SITEINFO GIS Query for BMI location.
6. Whatcom County Health and Human Services, well logs.
7. Water Rights Application Tracking System, NWRO Ecology. List of Wells and Water Usage in Surrounding Area.
8. Washington State Department of Health Public Water Systems (list on file at Whatcom County Health and Human Services Drinking Water Program).
9. Goldin, Alan. PhD. Soil Survey of Whatcom County Area, Washington. United States Department of Agriculture, Soil Conservation Service, 1985.
10. Landau Associates, Inc. Phase II Environmental Site assessment Weldcraft Steel and Marine Site Bellingham, Washington. 25 June 1998.
11. Landau Associates, Inc. Remedial Investigation and Feasibility Study Weldcraft Steel and Marine Facility Bellingham, Washington. Draft Work Plan. 28 March 2001.
12. Whatcom County Planning & Development. CAO Articles III & IV (Geohaz. & Flooding) T38N - R2E. Map. 5/1/99.