

Reviewed 9/21
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SITE HAZARD ASSESSMENT

Worksheet 1

Summary Score Sheet

Site Information:

Site Name: USFS Quilcene Auto Shop
Address: 295142 Highway 101 South, Quilcene, WA 98376
Jefferson County Parcel # 702242004
Section/Township/Range: E ½ of W ½ of NW ¼; T 27N, R2W
Ecology Facility Site ID No. 56526929
ERTS # 546133
GPS: 47.82242 North and 122.88283 West
Site scored/ranked for the February 2010 update
August 11, 2009

Main Site Contacts: Dean Yoshina,
U.S. Forest Service, District Ranger, Hood Canal Ranger District
PO Box 280
Quilcene, WA 98376
(360) 765-2200

Miley Sutherland
U.S. Department of Agriculture
1835 Black Lake Blvd SW Suite A
Olympia, WA 98512-5601
Tel: (360) 956-2471

Jim Parker
Manager, Public Utility District #1 of Jefferson County
PO Box 929
Port Hadlock, WA 98339
(360) 385-5800 x307

Site Description: The subject property is an approximately 300' x 300' area owned by the Public Utility District (PUD) of Jefferson County. The property is surrounded by and used to be part of an approximately 20 acre parcel owned by the United States Forest Service (USFS). The subject property contains a public water well, a 30,000 gallon elevated water tank, a cinder block pump house, and, until approximately 1995, a 50' x 80' pole building that was used as an equipment storage area by USFS. The property is cleared and grassy. There is a gravel driveway that makes a loop around what used to be the pole building. The water well is 165 feet deep. The depth to the water level is reported to be 78 feet below ground surface. The soils on site are Hoodspout series; moderately well-drained with a very slow permeable cemented layer at a depth of 20-36 inches. A perched water table is on top of the cemented layer during the rainy season.

Background:

The subject property once belonged to the USFS as part of a larger 20 acre parcel. In preparation for the transfer of the subject property to the PUD for use as a public water supply, the USFS hired an Environmental Consulting firm, Tetra Tech Incorporated, to conduct an Environmental Site Assessment to identify any potential hazardous substances or petroleum products.

Several areas of concern were identified by Tetra Tech including an 8'x8' stained area and a smaller 2'x2' stain spot on the pole barn floor, two dry wells east of the pole building (reportedly to collect roof run-off), paint on the water tower, composite roofing, and water pipe stored in the pole barn. Approximately 75% of the barn floor was inaccessible at the time of inspection due to storage of various materials.

On March 18, 2004 Tetra Tech obtained samples from the cement pipe, composite roofing, and water-tower paint. On April 1, 2004 Tetra Tech performed limited Phase II soil sampling in areas where soil contamination was suspected, including the pole building and two dry wells on the eastern side of the pole building.

- The paint on the water-tower was found to contain lead greater than 0.5% by weight, but EPA and Ecology regulations addressing the management of lead paint do not apply until the paint becomes waste/ the paint is no longer attached to the structure. Tetra Tech recommended that if disturbance of the water-tower paint occurs, that WAC 155-176 be followed.
- The composite roofing did not contain asbestos above the one percent threshold level.
- The cement pipe was found to contain asbestos (35%). This was removed by Extreme Coatings Inc. on 1-27-05 and properly disposed.
- One of the two drywells had soil samples with arsenic levels above MCTA clean-up levels, No other contaminants were detected above MCTA. Tetra Tech recommended that the soil/sediment be removed and properly disposed. They also recommended that the two dry wells be registered with the Washington State Department of Ecology Underground Injection Control Program.
- Two soil samples from the 8'x8'stain area on the barn showed levels at or above MCTA for lube-oil range TPH. Tetra Tech recommended that the approximate 8'x8' soil stained area be excavated to a minimum depth of 24 inches bgs and the soil disposed of properly. They also recommended the removal of the 2'x2'stained area. Confirmation soil testing should then be performed in the base of the excavation area.

Extreme Coatings Inc. of Pasco Washington was contracted by USDA Forest Service to remove and properly dispose of the cement-asbestos pipe and contaminated soil. In January and February 2005 the cement pipe was removed and disposed of at the Columbia Ridge Landfill in Arlington, Oregon. Extreme Coatings'2005 report also states that "Twenty yards of contaminated soil was removed from the site and taken to a local asphalt batch plant for recycle." (see signed but undated statement by David

Hansen, Job Superintendent, in Extreme Coatings' report.) The report does not state if the soil is from the drywells, pole barn, or both.

Extreme Coatings makes no mention anywhere in their January 2005 report of addressing the lube oil range TPH contamination in the pole building. The confirmatory soil sample taken from the bottom of the one dry well excavated came back below MCTA for arsenic. There were no confirmatory soil samples for the pole barn.

During a May 20, 2008 telephone conversation between Marjorie Boyd, JCPH and Jessica Baca of USFS, Ms. Baca stated that she was present on the day Extreme Coatings did the clean-up. She stated that lube-oil clean-up "was never part of the contract with Extreme Coatings", and that the lube-oil contamination was never addressed.

On January 5, 2005 The US Department of Agriculture called in an ERTS to Ecology reporting the existence of soil contamination in the pole barn and dry wells as well as lead-based paint and cement-asbestos pipe.

In February 2005 approximately one half acre, including the water well, was transferred by USFS to PUD#1 for use as a public water supply. The well currently has 29 connections (residential and commercial) and is approved for 46 connections. The well water has been tested for arsenic and volatile organics, most recently in October and November 2007 respectively. No exceedences were noted, nor have they been noted in previous testing.

On May 25, 2005 Fern Svendsen of Ecology submitted an Initial Investigation report in response to the ERTS.

Follow-up Site Investigation: On January 26, 2009 Marjorie Boyd, JCPH; Susan Porto, JCPH; and Doug Reeder, PUD, visited the site. The pole building is no longer present. The area where it was previously located is currently a mixture of dirt and thin grass. There were no discernable stained areas of soil. There is no machinery or equipment currently stored on site. Measurements taken at the time show that most of the area where the pole barn stood is within 100 feet of the water well.

Table 1: Paint Samples from Water Tower; March 2004.

Sample Number	Location	% lead by weight
QEW-031804-01	Northern Support Column	2.2000
QEW-031804-02	Eastern Support Column	0.8400

*Lead-based paint definition: paint with greater than 0.5 % lead by weight(5000 ppm) or >1.0 mg/cm². The Lead Exposure Reduction Act, Section 401, Title IV, TSCA amendment, Public Law 102-550, 1992; Title X of the 1992 Housing and Community Development Act)

Table 2: Cement Pipe and Roofing Samples; March 2004

Sample Number	Material	Location	Friable?	% Asbestos	Comments
QEW-031804-03	Cement Water Pipe	Inside Pole Building	No	35%	Chrysotile
QEW-031804-04	Composite Roofing	Pump House Roof	No	N/D	

* **Asbestos-containing material (ACM)** is any material containing more than 1% asbestos

Table 3: Soil Samples from Pole Building Floor and Dry wells; April 2004.

Sample Number And location	TPHD MTCA-2,000mg/kg	Arsenic MTCA-20 mg/kg	Cadmium MTCA-2 mg/kg
QEW-040104-1 SE Drywell	ND	26 mg/kg	<u>1.9</u> mg/kg
QEW-040104-2 NE Drywell	ND	ND	0.81 mg/kg
QEW-040104-3 Barn 0-11 inches bgs	7,800 mg/kg	ND	ND
QEW-040104-4 Barn 12-24 inches bgs	1,800 mg/kg	ND	ND

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

Site Hazard Assessment

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): This site houses a public water supply well.

Route Scores:

Surface Water/ Human Health: **ROUTE SCORES:**

Surface Water/Human Health: ____

Air/Human Health: ____

Groundwater/Human Health: ____

Surface Water/Environmental.: ____

Air/Environmental: ____

OVERALL RANK: _____

WORKSHEET 2
Route Documentation

1. SURFACE WATER ROUTE

- a. List those substances to be considered for scoring: Source: 1,2,4,5
TPH-Diesel
- b. Explain basis for choice of substance(s) to be used in scoring.
This substance was detected in on-site surface samples in concentrations exceeding MTCA clean-up levels, and is potentially available to this route.
- c. List those management units to be considered for scoring: Source: 1,2,4,5
Surface and sub-surface soils.
- d. Explain basis for choice of unit to be used in scoring:
TPH-Diesel was confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels. There is no secondary containment system to prevent the contaminant from spreading into the adjacent water well.

2. AIR ROUTE

- a. List those substances to be considered for scoring: Source: 1,2,4,5
TPH-Diesel
- b. Explain basis for choice of substance(s) to be used in scoring:
This substance was detected in on-site surface samples in concentrations exceeding MTCA clean-up levels, the soil is uncovered, and is potentially available to this route.
- c. List those management units to be considered for scoring: Source: 1,2,4,5
Surface and sub-surface soils
- d. Explain basis for choice of unit to be used in scoring:
TPH-Diesel was confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels. There is no secondary containment system to prevent the contaminant from being released to the air.

3. GROUNDWATER ROUTE

- a. List those substances to be considered for scoring: Source: 1,2,4,5
TPH-Diesel

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

This substance was detected in on-site surface samples in concentrations exceeding MTCA clean-up levels, and is potentially available to this route.

- c. List those management units to be considered for scoring:

Source: 1,2,4,5

Surface and sub-surface soils.

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

TPH-Diesel was confirmed to be present in on-site surface and sub-surface soil samples in concentrations exceeding MTCA cleanup levels. There is no secondary containment system to prevent the contaminant from spreading into the groundwater or adjacent water well.

WORKSHEET 4
Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 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-diesel	160	4	490 (rat)	5	0.004 (RfD)	3	ND	ND	-

* Potency Factor

Source: 1-4

Highest Value: 4
(Max = 10)

Plus 2 Bonus Points? No

Final Toxicity Value: 4
(Max = 12)

1.2 Environmental Toxicity (X) Freshwater () Marine					
Substance	Acute Water Quality Criteria		Non-Human Mammalian Acute Toxicity		
	(µg/L)	Value	(mg/kg)	Value	
4 TPH-diesel	2300	2	-	-	

Source: 1-4

Highest Value: 2
(Max = 10)

1.3 Substance Quantity	
Explain Basis: Approximately 10 cubic yards of contaminated soil.	Source: 2,4 Value: 4 (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment: No run-off control, no cover. Explain basis: Contaminated surface soil with no containment.	2,4	<u>10</u> (Max = 10)
2.2	Surface Soil Permeability: Gravelly, sandy loam (High)	2,13	<u>1</u> (Max = 7)
2.3	Total Annual Precipitation: 55.44"	10	<u>4</u> (Max = 5)
2.4	Max 2yr/24hr Precipitation: 3.0"	9	<u>3</u> (Max = 5)
2.5	Flood Plain: Not in flood plain	12	<u>0</u> (Max = 2)
2.6	Terrain Slope: <2%	4,6	<u>1</u> (Max = 5)

3.0 TARGETS

		Source	Value
3.1	Distance to Surface Water: 1000-2500'	4, 12	<u>7</u> (Max = 10)
3.2	Population Served by Surface Drinking Water Within 2 miles (see WARM Scoring Manual Regarding Direction): 0	7	<u>0</u> (Max = 75)
3.3	Area Irrigated by surface water within 2 miles : $(0.75)*\sqrt{\text{\# acres}} = 0$	7	<u>0</u> (Max = 30)
3.4	Distance to Nearest Fishery Resource: 1666 feet	2,12	<u>7</u> (Max = 12)
3.5	Distance to, and Name(s) of, Nearest Sensitive Environment(s): Fishery Resource, 1666 feet, DNR Forest Practice Stream-Fish Habitat, Tributary to Big Quilcene River	2,12	<u>9</u> (Max = 12)

4.0 RELEASE

Explain Basis: None documented	Source: <u>1,2</u> Value: <u>0</u> (Max = 5)
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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 ($\mu\text{g}/\text{m}^3$)	Value	Acute Toxicity (mg/m^3)	Value	Chronic Toxicity ($\text{mg}/\text{kg}/\text{day}$)	Value	Carcinogenicity		Value
								WOE	PF*	
4	TPH-diesel	166.5	4	ND	-	ND	-	ND	ND	-

* Potency Factor

Source: 2,3

Highest Value: 4

(Max = 10)

Plus 2 Bonus Points? No

Final Toxicity Value: 4

(Max = 12)

1.3 Mobility (Use numbers to refer to above listed substances)				
1.3.1 Gaseous Mobility		1.3.2 Particulate Mobility		
Vapor Pressure(s) (mmHg)		Soil Type	Erodibility	Climatic Factor
1	TPH-diesel = $8.3\text{E}-02 = 3$			

Source: 3,4

Value: 3

(Max = 4)

1.4 Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)

(Use highest of: $4/3 = 6$)

Final Matrix Value: 6

(Max = 24)

1.6 Substance Quantity	
Explain Basis: Approximately 128 cubic feet of contaminated soil. (>110-325' - best fit range)	Source: 1,2,4 Value: 2 (Max = 10)

2.0 MIGRATION POTENTIAL

	Source	Value
2.1 Containment: Contaminated soil, no cover	1,2,4	10 (Max = 10)

3.0 TARGETS

		Source	Value
3.1	Nearest Population: < 1000'	2,4,8	<u>10</u> (Max = 10)
3.2	Distance to [and name(s) of] nearest sensitive environment(s): 1138', freshwater wetland	2,4,12	<u>6</u> (Max = 7)
3.3	Population within 0.5 miles: $\sqrt{150} = 12$ (estimate, likely low)	4,8	<u>12</u> (Max = 75)

4.0 RELEASE

<p>Explain Basis for scoring a release to air:</p> <p>None documented.</p>	<p>Source: <u>1,2,4</u></p> <p>Value: 0 (Max = 5)</p>
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WORKSHEET 6

Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 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-diesel	160	4	490 (rat)	5	0.004 (RfD)	3	ND	ND	-	

* Potency Factor

Source: 1-4

Highest Value: 5
(Max = 10)

Plus 2 Bonus Points? No

Final Toxicity Value: 5
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)	
Cations/Anions [Coefficient of Aqueous Migration (K)] OR	Solubility (mg/L)
1	1= 3.0E+01 = 1

Source: 1-4

Value: 1
(Max = 3)

1.3 Substance Quantity:
Explain basis: < 10 cubic yards=1
Source: 1,2,4 Value: 1 (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Contaminated area scored as spill/discharge to surface soil, no cover/liner	1,2,4	<u>10</u> (Max = 10)
2.2	Net Annual Precipitation: 38"-5.2"=32.8"	4,15	<u>4</u> (Max = 5)
2.3	Subsurface hydraulic conductivity: Least permeable layer: gravelly clay	2,4,13	<u>1</u> (Max = 4)
2.4	Vertical depth to groundwater: 78'	2,4	<u>4</u> (Max = 8)

2.0 TARGETS

		Source	Value
3.1	Groundwater usage: Public and private, no alternate unthreatened sources	2,4,7	<u>9</u> (Max = 10)
3.2	Distance to nearest drinking water well: <100'	2,4	<u>5</u> (Max = 5)
3.3	Population served within 2 miles: $\sqrt{521} = 23$	4,7,14	<u>23</u> (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: Insufficient data	4,7	<u>0</u> (Max = 50)

3.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: None documented	1,2,4	<u>0</u> (Max = 5)

Sources Used in Scoring

1. Initial Investigation Report, Washington State Department of Ecology, May 25, 2005, ERTS # 546133.
2. Phase I Environmental Site Assessment, Quilcene Ranger Station, Jefferson County Washington, Prepared for USDA Forest Service by Tetra Tech Incorporated, April 2004.
3. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
4. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
5. Washington State Department of Ecology, Model Toxics Control Act Chapter 70.105D RCW (Amended 2005) AND Cleanup Regulation Chapter 173-340 WAC (Amended February 12, 2001). Publication No. 94-06, revised October 2005.
6. U.S.G.S. Topographical map for area.
7. Washington State Department of Ecology, Water Rights Application System

8. Aerial Map of Jefferson County 2006, National Agriculture Imagery Program (NAIP), Washington State Plane North (FIPS 4601), NAD83-Feet, Jefferson County Central Services GIS.
9. NOAA Atlas 2, Volume IX, Isopluvials of 2-year 24-Hr. Precipitation in Tenths of an Inch. Figure SW-1.
10. Western Regional Climate Center, Washington Climate Summaries On-line Database.
11. Q3 Flood Data Map of Jefferson County Washington, Federal Emergency Management Agency, 1996.
<http://www.co.jefferson.wa.us/idms/metadata/FEMA%20FIRMS.shtml>
12. Streams Map, Washington State Plane North (5601), NAD 83, Washington State Department of Natural Resources, January 2009.
<http://www.co.jefferson.wa.us/idms/metadata/DNR%20FP%20Stream%20Classification.shtml>
13. Soil Survey of Jefferson County, Washington; U.S. Department of Agriculture Soil Conservation Service and Washington Agricultural Experiment Station, August, 1975.
14. Washington State Department of Health, Sentry Internet Database printout for public water supplies.
15. Washington Climate-Net Rainfall Table