

SITE HAZARD ASSESSMENT
Summary Score Sheet

Reviewed 1/6/10
E-mail sent

SITE INFORMATION:

Name: **ARCO 5581**
Address: **830 Moore Street**
City: **Sedro Woolley** County: **Skagit** State: **WA** Zip: **98284**
Parcels: **P37539 NW 1/4 NW 1/4 Section 24 Township 35 Range 04**
Latitude: **48.5108 DD** Longitude: **-122.2264 DD**
FSID #: **80819415**

Site scored/ranked for the February , 2010 update of the Site Register December 31, 2009 by Polly Dubbel, Skagit County Public Health Department

SITE DESCRIPTION:

The ARCO 5581 site is located on the east end of Sedro-Woolley at the northwest corner of State Route 20 (Moore Street) and State Route 9 (Township Street). The property was first developed as a gas station and mini-mart by ARCO in 1988. Three 12,000 gallon gasoline underground storage tanks (USTs) were placed on the central east portion of the site in November 1988. The tanks are double walled fiberglass and have not been altered since installation. Tank records indicate that one of the tanks was originally designated for leaded gasoline. Other site features include the covered fueling island on the south side of the property, the store building in the northwest corner, asphalt paved parking, and a car wash facility that was installed on the north central portion of the property in 2009. The one acre site is largely paved with grassy margins along the west and south sides.

The ARCO 5581 site is surrounded by mixed land use. Immediately adjacent to the site on all sides are commercial, industrial, and government facilities. A middle school lies just to the northeast of the site and single family homes are located within 500 feet of the site to the northwest and southwest. The area is served by PUD of Skagit County for drinking water although individual and small public water system wells are present starting approximately one mile from the site to the north, east, and southeast. The site and immediate area are served by city sewer. The Skagit River lies approximately 7800 feet to the south of the site. Soils at the site are sandy silt with groundwater found at 7-9 feet below ground surface (bgs) flowing in a presumed southerly direction.

The first documented environmental investigation at the site occurred as a result of the discovery of a leaking turbine on one of the USTs in December 1997. An unknown quantity of gasoline had leaked from the turbine. Separate phase hydrocarbon (SPH) extraction began December 9, 1997 using two observation wells (SW-OW and NE-OW) located at the southwest and northeast corners of the tank enclosure. Over the next 40 days 667 gallons of SPH were removed from the wells along with 1418 gallons of groundwater. The SPH and groundwater were taken off site for treatment.

In January 1998 four monitoring wells were installed to a depth of 20 feet bgs. The wells were centered on each of the north, south, east, and west sides of the tank basin within approximately 10 feet of the basin. Soil samples were taken at the time of drilling at depths of 4, 9, 14, and 19 feet bgs. Samples were screened on site using a Photo Ionization Detector and selected samples were sent for laboratory analysis for Total Petroleum Hydrocarbons-Gasoline (TPH-G) using method NWTPH-G and Benzene, Toluene, Ethylbenzene, and Xylenes (BETX) using EPA Method 8020. Soil samples from the 9 foot depth were analyzed from each well and samples from the 4 foot depth were analyzed

on MW-2 and MW-3. The only detection was Benzene from MW-1-9' at 0.499 mg/kg and from MW-2-8.5' at 0.0722 mg/kg. One sample from the drilling spoils pile was sampled for total lead using EPA Method 7420 with a result of ND (not detected). No further soil investigation has occurred at the site. No soil excavation has occurred other than the removal of the drilling spoils.

Groundwater from the wells was sampled on January 20, 1998 after the SPH pumping ceased. Depth to groundwater at that time was measured in all wells and ranged between 8 and 9 feet bgs.

Groundwater samples were analyzed for TPH-G using method NWTPH-G and BTEX using EPA Method 8020. All wells had detections of all or most analytes with the highest levels (by two orders of magnitude) found in MW-3, located on the south side of the tank basin. Results for MW-3 were TPH-G: 97,400ug/L; Benzene: 8,470 ug/L; Toluene: 18,400 ug/L; Ethylbenzene: 1,390 ug/L; and Xylenes: 8,500 ug/L. All results from MW-3 far exceeded the Model Toxics Control Act clean up levels for groundwater. A summary of the SPH removal and soil and groundwater investigation can be found in Pacific Environmental Group, March 13, 1998. Figure 2 from this report is reproduced and attached to provide a site diagram with well locations and TPH-G and Benzene results from groundwater.

Groundwater from all four monitoring wells continued to be sampled quarterly starting in the fall of 1998 and continuing through the summer of 2002. In December of 2003 Delta Environmental Consultants, on behalf of ARCO, submitted the 1998 PEG report and all subsequent groundwater monitoring results to the Washington State Department of Ecology Voluntary Clean Up Program with a request for review for No Further Action. Sample results from MW-1, 2, and 4 had remained below MTCA Method A clean up levels in all of the subsequent samples. MW-3 had results below the clean up levels starting with the December 2000 sample. Ecology denied the request for No Further Action in a June 2004 response to Delta Environmental. The reasons stated in the response related to the lack of an overall site evaluation, including investigation into the soil around the tank basin, and in particular evaluation of the movement of the groundwater contaminant plume to the south and potentially off site. Ecology was concerned that the only groundwater monitoring wells on site were placed immediately around the tank basin and no other evaluation had occurred.

Delta Environmental responded back to Ecology in November 2004 and argued that the data from the existing wells should be adequate for a No Further Action and that further site investigation was not called for as there was no evidence of releases at the site other than the 1997 leaking turbine. In August 2007 Ecology notified Delta Environmental that the ARCO 5581 site was terminated from the Voluntary Clean Up program due to lack of activity at the site. The need for further action on the site was re-iterated in this letter.

Delta Consultants resumed ground water monitoring at the site with sampling from monitoring wells in November 2007, October 2008, March and June 2009. Results from this monitoring were submitted to Ecology in March 2009 and September 2009. These results showed that TPH-G and BTEX analytes continued to be not detected in MW-1, 2, and 4 (not sampled in 2007). TPH-G was detected in MW-3 at 207 ug/L (10/14/08), 235 ug/L (3/27/09), and 121 ug/L (6/11/09). BTEX were not detected in these same samples.

I conducted a site visit for this Site Hazard Assessment on December 17, 2009. The property features are as shown in the attached Figure 2 with the addition of a car wash facility on the north central side of the site. Monitoring wells 1-4 were visible around the tank basin. There was no visual evidence of contamination from the surface view of the site. Photographs from the site visit are attached along with the 2007 aerial photograph of the site and immediate surroundings. This site is ranked for hazard

based on the potential for a groundwater contaminant plume to have extended to the south of MW-3 and off site.

ROUTE SCORES:

Surface Water/Human Health: NS
Air/Human Health: NS
Groundwater/Human Health: 51.8

Surface Water/Environmental: NS
Air/Environmental: NS

OVERALL RANK: 3

WORKSHEET 2

ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Source: 1,2,3,4,5

Route not scored, subsurface only contamination documented at site.

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

List those management units to be considered for scoring:

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

2. AIR ROUTE

List those substances to be considered for scoring:

Source: 1,2,3,4,5

Route not scored, subsurface only contamination documented at site.

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

List those management units to be considered for scoring:

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

3. GROUND WATER ROUTE

List those substances to be considered for scoring:

Source: 1,2,3,4,5

TPH-Gasoline (benzene), ethylbenzene, toluene, xylenes

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

Substances documented present in groundwater at site in 1998, contaminant plume never fully defined at site so assume substances may still pose a risk.

List those management units to be considered for scoring:

Source: 1,2,3,4,5

Contaminated groundwater

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

Contamination in groundwater documented in 1998 and plume never fully defined.

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/d ay)	Value	Carcinogenicity		Value
								WOE	PF*	
1	Benzene (TPH-GasolineTPH Gas	5	8	3306 rat	3	-ND	ND-	AA	0.0290 .029	5
2	Ethylbenzene	700	4	3500	3	0.1	1	-	-	ND
3	Toluene	2000	2	5000	3	0.2	1	-	-	ND
4	Xylenes	10000	2	50	10	2	1	-	-	ND

* Potency Factor

Source: 2,6,7

Highest Value: 10

(Max = 10)

Plus 2 Bonus Points? +2

Final Toxicity Value: 12

(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= 1800 (3)
	2= 150 (2)
	3= 540 (2)
	4= 200 (2)

Source: 2,6,7,6,7

Value: 3

(Max = 3)

1.3 Substance Quantity (volume):	
Explain basis: Unknown quantity, default to 1	Source: <u>2,4,6</u> Value: 1 (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Contaminated groundwater	1,2,61,2,3,6	10 (Max = 10)
2.2	Net precipitation: $(5.6+6.4+5.4+4.2+4.7+3.3)-(0.9+0.5+0.5+0.4+0.6+1.2) = 23.8''$	6,8	3 (Max = 5)
2.3	Subsurface hydraulic conductivity: sandy silt 10^{-5} to 10^{-3}	2,5,62,6,10	3 (Max = 4)
2.4	Vertical depth to groundwater: Soil borings on site found groundwater at 7-9' feet bgs	2,5,66,10	8 (Max = 8)

3.0 TARGETS

		Source	Value
3.1	Groundwater usage: Public and private supply, alternative source available	6,10,1211,12	4 (Max = 10)
3.2	Distance to nearest drinking water well: 2500 – 5000 feet	6,10,12	2 (Max = 5)
3.3	Population served within 2 miles: $\sqrt{\text{pop.}} = \sqrt{324} = 18$	6,10,11,12	18 (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: $(0.75) * \sqrt{\# \text{ acres}} = 0.75 * \sqrt{342.5} = 14$	6,109,12	14 (Max = 50)

4.0 RELEASE

		Source	Value
	Explain basis for scoring a release to groundwater: Documented release to groundwater	2,5,64,6	5 (Max = 5)

SOURCES USED IN SCORING

1. Skagit County Health Department, PSE Sedro Woolley Substation field notes and file, June 2009.
2. GeoEngineers, Report of Environmental Services Site Characterization Study Sedro Woolley Transmission Substation Skagit County, Washington, June 1995.
3. Puget Power, Independent Remedial Action – Sedro Woolley Transmission Substation 284 Minkler Lake Rd., Sedro Woolley, Washington, February 1996.
4. GeoEngineers, Annual Groundwater Monitoring Results December 2001 Sedro Woolley Substation, January 2002.
5. GeoEngineers, Soil Characterization and Remedial Excavation Report, Puget Sound Energy's Sedro Woolley Substation, 284 Minkler Road Sedro Woolley, Washington, June 2007.
6. Washington Department of Ecology, WARM Scoring Manual, April, 1992.
7. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January, 1992.
8. National Weather Service, Washington Climate Data.

9. Washington Department of Ecology, Water Rights Information System (WRIS), 1997.
10. Washington Department of Ecology, Well Logs.
11. Washing Department of Health Public Water Supply Data.
12. Skagit County Mapping, SkagitView Version 5.0, June 2008.

Sources