WORKSHEET 1
Summary Score Sheet

SITE INFORMATION:

Name: **Ward Rugh**
Address: **710 W University Way**
City: **Ellensburg** County: **Kittitas** State: **WA** Zip: **98926**
Section/Township/Range: **NW1/4, NW1/4, S2/T17N/R18E**
Latitude: **47.00089** Longitude: **-120.55893**
TCP ID #: **47245321**

Site scored/ranked for the February 2012 update

SITE DESCRIPTION (management areas, substances of concern, and quantities):

Ward Rugh is an importer/exporter of hay and alfalfa. The site consisted of several USTs ranging from 500 -10,000 gallons, an AST, and an old oil changing bay. The site is located in an industrial area and parallels the BNSF railroad. There is an unnamed creek nearby that, reportedly, receives all surface run-off from the site.

In January 1991 three steel underground storage tanks were removed from the Ward Rugh property. The capacities of the tanks were 10,000 5,000, and 500 gallons and, reportedly, contained diesel, gasoline, and waste oil, respectively. Groundwater was found at six feet bgs. A diesel odor was noticeable when the soil was disturbed. Soil samples were tested for TPH and BTEX. Laboratory analyses found 1720 ppm TPH. Approximately 1500 cubic yards of contaminated soil was to be landfarmed on site and then left in place as parking lot subgrade.

The March 1991 Site Closure Report (also prepared by PLSA) refers to just the two fuel tanks (diesel and gasoline) removed in January. It discusses additional cleanup efforts and sampling conducted. The report indicates the diesel tank basin contained soil contaminated with heavy, black oil on the east side of the excavation. A photoanalyzer was used to detect VOCs and determine when the contaminated soil had been sufficiently removed. Excavating continued to the Ward Rugh property and University Way (then 8th Avenue). The consultant contradicts himself by stating there was no evidence the

contamination had spread into the right-of way and then stating that PCS was left in the right-of-way as requested by the City of Ellensburg. Several soil samples were collected from the excavation but the sample depths are not provided. Samples were analyzed for TPH using EPA Method 418.1. Approximately 1500 cubic yards of PCS was removed. It's not clear if this is in addition to the 1500 yd^3 previous removed. On site landfarming was selected as the method for remediating the TPH-contaminated soil.

In 1987 a 2000-gallon gasoline UST was installed and used until October 1993. During this entire time, "inventory records for the tank show an apparent loss of product since January 1987." In December 1993, the tank was removed and a leak was confirmed when a gasoline odor and sheen on groundwater were discovered. Approximately, one inch of free product was observed on the groundwater surface encountered in the excavation. The excavation measured ~20' x 27' but was expanded to 40' x 30'. However, gasoline impacted soil still remained, based on field screening. The depth of the excavation did not extend beyond eight feet below ground surface. Groundwater was encountered at ~7' bgs and free product was found floating on it.

Remediation included the removal of 1500 gallons of gasoline-impacted water, which was stored in the 2,000-gallon UST that had been previously removed. According to the 1994 LUST Closure report, the excavated and stockpiled soil was hauled "to an area of land owned by Ward Rugh" and was defined as a "storage area". A work diary in the file is not clear whether or not the stockpiled soil is on or off site.

Three exploratory pits were dug on December 15-16 in an effort to define the contamination. Both field screening and lab analyses confirmed contamination at least 100 feet to the southwest. High levels of heavy oil were found about 15 feet to the northwest. The report indicates this was a separate source.

White Shield collected 15 soil samples from the final excavation; seven samples were shipped to a laboratory for analysis. Results indicate the presence of gasoline, oil, and BTEX in concentrations that exceed MTCA cleanup levels at six to eight feet bgs, which is in contact with groundwater. Water samples collected from the unnamed creek did not contain gasoline. A summary of soil sample results is presented in the chart below.

Sample	***Gasoline (ppm)***	***Oil (ppm)***	***Benzene (ppm)***	***Ethylbenzene (ppm)***	***Toluene (ppm)***	***Xylene (ppm)***
APE-3493-501	60	6600	nd	nd	nd	nd
APE-3493-502	12	n/a	nd	nd	nd	nd
APE-3493-503	16	n/a	nd	nd	nd	nd
APE-3493-504	160	n/a	0.72	1.80	3.40	12.00
APE-3493-505	4100	n/a	nd	19.00	13.0	210.0
APE-3493-506	1000	n/a	nd	3.30	3.90	55.0
APE-3493-507	21	n/a	nd	nd	nd	nd
MTCA Method A	**30**	**2000**	**0.03**	**6**	**7**	**9**

White Shield also installed a 10-foot absorbent sock on the nearby unnamed creek in what seems like a precautionary measure. The pit was lined with 10-mil plastic sheeting and backfilled with clean material. White Shield recommended a full site characterization, remedial investigation and treatment feasibility study; however, they do believe that source removal was effective.

Norm Peck (CRO-TCP) visited the site on January 20, 2010 to obtain historical information from a Ward Rugh manager.

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):

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.

ROUTE SCORES:

Surface Water/Human Health:	**n/a**	Surface Water/Environmental.:	**n/a**
Air/Human Health:	**n/a**	Air/Environmental:	**n/a**
Groundwater/Human Health:	**69.7**		

OVERALL RANK: 2

WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE –** *Not Scored*

2. **AIR ROUTE –** *Not Scored*

3. **GROUNDWATER ROUTE**

   a. List those substances to be considered for scoring: Source: 1

      Benzene, benzo(a)pyrene, ethylbenzene, toluene, zylenes

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

      Confirmed presence of benzene and suspected presence of benzo(a)pyrene

   c. List those management units to be considered for scoring: Source: 1

      Subsurface soil and groundwater

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

      Confirmed presence of benzene in subsurface soil and suspected presence of benzo(a)pyrene at depths below ground surface that would impact groundwater

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	Benzene	5	8	3306	3	--	ND	1.0	7	5
2	Benzo(a)pyrene	0.2	10	50	10	--	ND	0.8	5	7
3										
4										
5										
6										

** Potency Factor*

Source: 3

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= $1.8 \times 10^3 = 1800$ Value = 3
2=	2= $1.2 \times 10^3 = 1200$ Value = 3
3=	3=
4=	4=

Source: 4

Value: 3
(Max = 3)

1.3 Substance Quantity:

Explain basis: Norm Peck (TCP – CRO) conducted a site visit and provided the following estimate. About 2000 yd^3 in the right of way and about 6000 yd^3 for the LUST-affected soil plume area.	Source: 2 **Value: 8** (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** Leaking underground storage tank site with possible spills or discharges to soil; site is a mix of pavement and gravel	2	**9** (Max = 10)
2.2	**Net precipitation:** 4.4 total average – 1.9 ET = 2.5 net precipitation	5	**1** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** sand and gravel	4	**4** (Max = 4)
2.4	**Vertical depth to groundwater:** 6-7 feet bgs	1	**8** (Max = 8)

3.0 TARGETS

		Source	Value
3.1	**Groundwater usage:** Public supply; alternate sources available	4	**4** (Max = 10)
3.2	**Distance to nearest drinking water well:** 5000 **feet**	9	**1** (Max = 5)
3.3	**Population served within 2 miles:** √ **pop.**: 330 domestic wells; assume 3 persons per household; (330*3)+17326=18316; √18316 = 135	9	**100** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** **(0.75)*√# acres** = (0.75) * √531 acres = 17.28	9	**17** (Max = 50)

4.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: Contaminated soil left in place at the soil/groundwater interface.	1	**5** (Max = 5)

SOURCES USED IN SCORING

1. Lust Closure – Interim Cleanup Report, White Shield, Inc., January 1994
2. Site Hazard Assessment field visit and summary of observations by Norm Peck, January 20, 2011
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 Climate – Net Rainfall Table
6. US EPA SITEINFO GIS Query for Latitude/Longitude of site – Attached

7. Washington State Department of Ecology, Water Rights Application System (WRATS) printout for two-mile radius of site.
8. Washington State Department of Health, Office of Drinking Water Sentry website printout for public water supplies
9. Kittitas County Assessors well data