CSID 1618

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location:

Warden City Water Supply Wells 4 & 5
1900 Block West 1st Street
Warden, Grant County, WA 98857
Latitude: 46° 58′
Longitude: 119° 3′
January 10, 2005

Sec. 16/T17N/R30E
Ecology Facility Site ID: 2802409

Site scored/ranked for 02/22/05 update

Site Description:
The City of Warden is a town of about 2500 people located in southeast Grant County Washington. The town is largely dependant upon agriculture which includes farming, two large potato processing plants a railroad and an airport. Two of the city's three drinking water wells are located in close proximity to all of the agriculture associated operations.

In March 1989 new monitoring guidelines prompted the city to submit water samples to be tested for volatile organic compounds. When the samples were analyzed it was found that two of the wells contained ethylene-dibromide (EDB)at concentrations exceeding the drinking water standard of .05 ug/L established by the U.S. Environmental Protection Agency (EPA). The railroad is located to the east of the wells. Washington Potato, a large processor is located directly west of the well containing the highest levels of contamination and north of the other contaminated well. Ochoa Ag Unlimited Foods Inc. (Formerly Basin Frozen Foods) is located to the east of the well containing highest levels of contamination and northeast of the other contaminated well. The airport is located south of both wells and farming surrounds the entire city.

The city notified the water system customers of the contamination levels and some potential health effects. The customers were advised that the water would not likely affect the general population, and it was recommended that pregnant women and young children not drink the water. The city began seeking funding sources for remediation.

The city was/is able to blend the least contaminated well water with water from the third well that did not show contamination and come up with a final product that meets standards. Blending the two sources is not considered a long term fix for the problem and the city continued to look for funding. In July of 2004 the city received a grant of $75,750 from the Washington Department of Ecology to temporarily fix the contaminated wells. The long term permanent solution to the problem is to construct a well east of town.

Special Considerations:

The source of contamination is unknown. There are many sites and businesses surrounding the wells that could have played a part in the release of the EDB to the groundwater. There has not been any documentation of surface water contamination or air contamination due to EDB. One of the potato processors had positive hits on the effluent water, but the processing plant uses the water supplied by the contaminated wells and the level in the effluent was similar to the well water. These are the reasons why scoring and ranking under the Washington Ranking method will be based on groundwater-only contamination by Ethylene-dibromide.

ROUTE SCORES:

Surface Water/Human Health:	NS*	Surface Water/Environ.:	NS
Air/Human Health:	NS	Air/Environmental:	NS
Ground Water/Human Health:	51.5		

*Not scored

OVERALL RANK: 3

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE - Not Applicable/Not Scored.

2. AIR ROUTE - Not Applicable/Not Scored.

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source: 1,2

Ethylene dibromide (EDB)

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

Analytical results from recent well water samples showed concentrations greater than the Method A MTCA cleanup level.

List those management units to be considered for scoring: Source: 1-3

Contaminated subsurface soils/groundwater.

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

Spill/discharge caused contaminated subsurface soils/groundwater.

WORKSHEET 3 (If Required)
SUBSTANCE CHARACTERISTICS WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Combination 2	Combination 3

Unit: **Section Not Applicable.**

1. SURFACE WATER ROUTE

Substance(s):
Human Toxicity Value:
Environ. Toxicity Value:
Containment Value:
Rationale:

	Combination 1	Combination 2	Combination 3
Surface Water Human Subscore:	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) =
Surface Water Environ. Subscore:	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) =

2. AIR ROUTE

Substance(s):
Human Toxicity/Mobility Value:
Environ. Toxicity/ Mobility Value:
Containment Value:
Rationale:

	Combination 1	Combination 2	Combination 3
Air Human Subscore:	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) =
Air Environ. Subscore:	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) =

3. GROUND WATER ROUTE

Substance(s):
Human Toxicity Value:
Containment Value:
Rationale:

	Combination 1	Combination 2	Combination 3
Ground Water Subscore:	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) = ___	(+3)(+1)= ( )( ) =

Based on their respective highest scoring toxicity/containment combinations, the following management units will be used for route scoring:

Surface Water -
Air -
Ground Water -

WORKSHEET 4
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.	Carcino-genicity WOE	PF*	Val.
1. EDB	0.05	10	90	8	ND	-	B2=.8	8.5=7	6

*Potency Factor

Source: 1,2,5
Highest Value: 10 (Max.=10)

+2 Bonus Points? No
Final Toxicity Value: 10 (Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions: _____ Source: 2,5,8 **Value: 3** (Max.=3)

Or

Solubility(mg/l): 1) 4.3E+03 mg/l = 3

1.3 Substance Quantity: Unknown, use default value = 1 Source: 8 **Value: 1** (Max.=10)
Explain basis: _____

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 1-3,8 **Value: 10** (Max.=10)
Explain basis: Contaminated subsurface soil

2.2 Net Precipitation: Nov-April = 6.1''-3.0'' = 3.1'' Source: 11 **Value: 1** (Max.=5)

2.3 Subsurface Hydraulic Conduct.: Sands/gravels/silts Source: 4 **Value: 3** (Max.=4)

2.4 Vertical Depth to Ground Water: Obs. Rel. Source: 1-3 **Value: 8** (Max.=8)

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: Unthr. Alts available Source: 2,8 **Value: 4** (Max.=10)

3.2 Dist. to Nearest Drinking Water Well: >600' Source: 1-3 **Value: 5** (Max.=5)

3.3 Population Served within 2 Miles: $(2714)^{-1/2} = 52.09$ Source: 6-10 **Value: 52** (Max.=100)

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: $0.75(368)^{-1/2}=14.39$ Source: 8,10 **Value: 14** (Max.=50)

4.0 RELEASE

Explain basis for scoring a release to ground water: Documented by analytical data/contact with groundwater table Source: 1-3 **Value: 5** (Max.=5)

SOURCES USED IN SCORING

1. Report Regarding Ethylene-Dibromide Contamination/City of Warden Drinking Water, June 10, 1991 (Ecology File info.)
2. Laboratory Sample results from Anatek Labs Inc., Spokane, WA and Edge Analytical Inc. Burlington, WA taken quarterly from June 2003-May 2004
3. Summary Report Warden Project Warden, Washington, June 1990 (Ecology File info.)
4. Soil Survey of Grant County Washington, USDA Soil Conservation Service, January 1984
5. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992.
6. EPA Printout map of well and 2 mile radius
7. Grant County GIS Web Page Property information (2 mile radius of wells)
8. Washington Department of Ecology, WARM Scoring Manual, April 1992.
9. Washington Dept. of Health S.A.D.I.E. data for City of Warden Water System
10. Water Rights Application System (WRATS) printout for two-mile radius of site.
11. Table 27- Estimated Evapotranspiration (Inches of Water), Data Average from Ephrata, Hartline and Ruff (Attached)