CSID 3420

Tacoma-Pierce County Health Department
Source Protection Programs/Site Hazard Assessment

Worksheet 1 - Summary Score Sheet

SITE INFORMATION

Name: Glassman Property
Address: 1535 4th Ave NW
City: Puyallup County: Pierce, State: WA Zip: 98371
Section/Township/Range: 29/20N/04E
Latitude: 47° 11' 44.0"N Longitude: 122° 18' 52.1"W
TCP ID Number: 1342017

Site assessed/ranked for the August 17, 2004 update.

Site Description

The Glassman site is a residential property located in the Puyallup Valley; the surrounding area is primarily residential as well. Properties to the south, east and west are all single-family residences. To the north is a Burlington Northern Railroad track. A public middle school, a public high school and a general store are located within 0.25 mile.

The Glassman property encompasses approximately 1.25 acres of land with a house and two garages constructed on it. One garage has walls constructed completely of car battery casings cemented together like cinder blocks. The house and second garage are constructed of traditional building materials. There is additionally an open pit latrine and two irrigation wells on site.

The general area of the subject property is underlain by well-sorted sand, with silt and clay layers. The depth to groundwater ranges from 8 to 14 feet below ground surface (bgs). A survey of known wells located within a 2-mile radius of the subject property identifies several agricultural wells, single and multi-family drinking water wells, in addition to City of Puyallup municipal production wells. This site lies within the Puyallup river sub-basin and overlies the Central Pierce County Sole Source Aquifer. Groundwater is inferred to flow north by northwest towards the Puyallup River.

The Glassman family has owned the property for approximately 50 years. The current owner, Mark Glassman, was using the property as his primary residence until December 18, 2003, when police discovered and shut down a clandestine drug lab that was manufacturing methamphetamine. The property is currently uninhabited due to confirmed methamphetamine contamination on the interior of the buildings.

Prior to the Glassman's, the Leanhart family owned the property. The Leanharts also owned the adjacent parcel to the west (APN 0420291007), which contains a second battery-constructed building. During the early to mid-1930's, the Leanharts reportedly

manufactured batteries on the adjacent property. Empty battery casings were used to construct the two battery buildings. The Leanharts sold the westerly parcel to the Stohl family in the late 1940's. A separate Site Hazard Assessment is being performed on the identified Stohl property concurrent with this assessment.

Between the months of January and June 2004, The Tacoma Pierce County Health Department performed a limited environmental assessment of the property. The assessment included visual inspections, surface soil sampling, and a subsurface soil and groundwater investigation.

Surface soil sampling involved taking two soil samples by hand within 18 inches of the battery building's northwest corner. Both were taken in the approximate same location. The first of these samples was taken in January 2004, and the second one was taken in June of 2004. The depths of the samples were from of 2 to 6 inches bgs. The two sets of samples were taken to determine and then confirm heavy metal concentrations in the surface soil. Lead concentrations detected during these sampling events were 1340 mg/kg and 1270 mg/kg respectively. The pH was also tested during the first sampling round and was found to be a pH of 4.55.

The subsurface investigation was conducted in May 2004 using a direct-push continuous core sampler to collect soil samples at two locations. Soils encountered were poorly graded sands. Boring GP1 was located about 6 feet north of the battery building and was advanced to a total depth of 10 bgs. Two soil samples were taken, the first at 2 feet bgs and second at 6 feet bgs. Boring GP5 was located about 12 feet north of the open-pit latrine and was advanced to a total depth of 12 feet bgs. A soil sample was collected from this boring at 7 feet bgs. Soil samples were submitted to an accredited laboratory for VOC's, SVOC's, and RCRA Metals analyses. Concentrations and compounds detected in these samples are listed below in Table 1.

Groundwater was encountered in both the borings at about 8 feet bgs. Temporary well points were installed with well screens spanning 8-10 feet bgs in Boring GP1, and 8-12 feet bgs in Boring GP5. Water samples were collected from each well and submitted to an accredited laboratory for VOCs, SVOCs, and RCRA Metals (total and dissolved) analyses. Concentrations and compounds detected in these samples are also listed below in Table 1.

Table 1

Location	Media sampled	Parameter	Result	units
GP1-S1-02	Soil	Arsenic	1.01	mg/kg
GP1-S1-02	Soil	Lead	1.52	mg/kg
GP1-S1-02	Soil	Barium	12.7	mg/kg
GP1-S1-02	Soil	Chromium	13	mg/kg
GP1-S1-06	Soil	Arsenic	1.42	mg/kg
GP1-S1-06	Soil	Lead	9.26	mg/kg
GP1-S1-06	Soil	Chromium	12.3	mg/kg
GP1-S1-06	Soil	Barium	21.2	mg/kg
GP1-S1-06	Soil	Toluene	1.27	ug/kg
GP1-S1-06	Soil	Methylene Chloride	4.44	ug/kg
GP1-W1-0504	Water	Barium (DISSOLVED)	0.0266	mg/L
GP1-W1-0504	Water	Chromium	0.00647	mg/L
GP1-W1-0504	Water	Barium	0.0384	mg/L
GP1-W1-0504	Water	Pyrene	0.0834	ug/L
GP1-W1-0504	Water	2-Methylnaphthalene	0.0943	ug/L
GP1-W1-0504	Water	Butylbenzylphthalate	1.65	ug/L
GP1-W1-0504	Water	Di-n-Butylphthatete	2.42	ug/L
GP5-S1-08	Soil	Arsenic	0.663	mg/kg
GP5-S1-08	Soil	Lead	1.32	mg/kg
GP5-S1-08	Soil	Chromium	14	mg/kg
GP5-S1-08	Soil	Barium	19.1	mg/kg
GP5-S1-08	Soil	Methylene Chloride	5.47	ug/kg
GP5-B-W1-0504	Water	Barium (DISSOLVED)	0.0169	mg/L
GP5-B-W1-0504	Water	Arsenic	0.014	mg/L
GP5-B-W1-0504	Water	Chromium	0.0206	mg/L
GP5-B-W1-0504	Water	Barium	0.0679	mg/L
GP5-B-W1-0504	Water	Pyrene	0.0921	ug/L
GP5-B-W1-0504	Water	Butylbenzylphthalate	1.64	ug/L
GP5-B-W1-0504	Water	Di-n-Butylphthatete	2.56	ug/L

Only the lead contamination was used to rank this site, as it was the only compound detected above the Model Toxics Control Act (MTCA) Method A, Cleanup Level.

Special Considerations :

The total population usage of groundwater for drinking water from all private and public supply wells is documented to be in excess of 10,000, so the maximum value of 100 will be used for that scoring value. The subject property overlies the Central Pierce County Aquifer, a federally designated sole source aquifer, resulting in the maximum value of 10 used for that scoring value.

Drinking Water Wells

For the purposes of this site hazard assessment, drinking water wells within a two-mile radius of the subject were located using the TPCHD's database. Wells located on the far side (north) of the Puyallup River were excluded from consideration, as they were considered unlikely to be hydraulically connected to groundwater on the south side of the river. While the direction of groundwater flow is expected to be north or northwest, towards the Puyallup River, flow direction

was not determined for the subject property. Because of this, all wells within the prescribed radius and south of the river were considered potentially downgradient.

The City of Puyallup has 4 municipal production wells that are located within a 2-mile radius of the site. The nearest production well is located 6,500 feet to the south the subject property.

ROUTE SCORES:

Surface Water/Human Health: 17.6

Surface Water/Environ. 33.1

Air/Human Health: 51.2

Air/ Environmental: N.S

Ground Water/Human Health: 52.5

OVERALL RANK: **1**

Worksheet 2--Route Documentation

1. SURFACE WATER ROUTE

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

Lead and methylene chloride

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

Only lead will be scored for the surface water route due to levels detected in contaminated soil, and it was available to the surface water route through less than perfect containment. Concentrations of methylene chloride detected were less than current cleanup standards so it was not used.

c. List those management units to be considered for scoring: Source: **1,2**

Contaminated soil, spills, discharges to surface soil and surface water with no run-on/run-off controls

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

Contaminated surface soils and/or groundwater as verified by sampling and analysis, with no run-on/run-off control.

2. AIR ROUTE

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

Lead

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

Lead will be scored for the air route due to the high concentrations detected in contaminated soil surfaces and because it is available to the air route through less than perfect containment.

c. List those management units to be considered for scoring: Source: **1,2**

Contaminated soil with no cover.

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

Contaminated soil verified by sampling and analysis.

Worksheet 2 (con'td)

3. GROUND WATER ROUTE

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

Lead and Arsenic

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

Lead will be scored for the groundwater route due to levels detected in contaminated soil and because it was available to the groundwater route through less than perfect containment. Arsenic will not be scored for the groundwater route due to the concentrations of dissolved arsenic detected in groundwater were below MTCA Method A Cleanup Levels.

c. List those management units to be considered for scoring: Source: **1,2**

Contaminated soil, spills, discharges to surface soil and ground water with no run-on/run-off controls.

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

Contaminated soils and/or groundwater as verified by sampling and analysis, with no run-on/run-off control.

Worksheet 4 - Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (ug/1)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg-bw)	Val.	Carcino-genicity WOE PF*	Val.
1	Lead	5	8	-	ND	-	ND	-	ND
2									
3									
4									

*Potency Factor

Source: 1, 2, 3
Highest Value: 8
(Max=10)

+2 Bonus Points?: 0
Final Toxicity Value: 8
(Max=12)

1.2 Environmental Toxicity

	Substance	☒ Freshwater ☐ Marine Acute Water Quality Criteria		Non-human Mammalian Acute Toxicity (mg/kg)	Val.
1	Lead	82	6		
2					
3					
4					

Source: 2, 3
Value: 6

1.3 Substance Quantity

Substance Quantity: Unknown

Source: 1, 2
Value: 1
(Max=10)

Explain Basis: Surface soils collected in the proximity of the battery building were found to have high concentrations of lead (1340 mg/kg and 1270 mg/kg). Subsurface soil samples collected did not reflect the same high concentrations of lead.

Worksheet 4 (cont'd)

2.0 MIGRATION POTENTIAL

		SOURCE	VALUE
2.1	**Containment:** **Explain Basis:** Spills, discharges, contaminated soil with no run-on, run-off control.	1, 2	**10** (Max = 10)
2.2	**Surface Soil Permeability:** Poorly graded sands	1, 2	**1** (Max = 7)
2.3	**Total Annual Precipitation:** 40.3 inches (Puyallup)	2, 9	**3** (Max = 5)
2.4	**Max. 2-Yr/24-hour Precipitation:** 2.5 inches	2	**3** (Max = 5)
2.5	**Flood Plain:** No	2, 11	**0** (Max = 2)
2.6	**Terrain Slope:** (14/2500)(100)=0.56%	2, 11	**1** (Max = 5)

3.0 TARGETS

		SOURCE	VALUE
3.1	**Distance to Surface Water:** Approximately 2500 feet to Clarks Creek.	2, 11	**7** (Max = 10)
3.2	**Population served within 2 miles (See WARM Scoring Manual regarding direction):** √ **pop.**= √ 33 = 5.7	2, 6	**6** (Max = 75)
3.3	**Area irrigated within 2 miles: (0.75) √ no. acres = (Refer to note in 3.2.)** (0.75) √ 289.65 = 12.76	2, 6	**13** (Max = 30)
3.4	**Distance to nearest fishery resource:** 2500 Feet to Clarks Creek.	2, 10, 11	**9** (Max = 12)
3.5	**Distance to, and name(s) of, nearest sensitive environment(s):** 2500 feet to Clarks Creek.	2, 10, 11	**9** (Max = 12)

4.0 RELEASE	Source	Value
Explain basis for scoring a release to surface water: No documented release.	1, 2	**0** (Max = 5)

Worksheet 5 – Air Route

1.0 SUBSTANCE CHARACTERISTICS

1.1

1.2 Human Toxicity

	Substance	Air Standard (ug/m^3)	Val	Acute Toxicity (mg/m^3)	Val	Chronic Toxicity (mg/kg/day)	Val	Carcino-genicity WOE PF*	Val
1	Lead	0.5	10	--	ND	--	ND	--	ND
2									
3									
4									

5									

***Potency Factor**

Source: 1,2,3
Highest Value: 10
(Max = 10)
Plus 2 Bonus Points? 0

Final Toxicity Value: 10
(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:** Fine sand
1=	**Erodibility:** 220 tons/acre/year
2=	**Climatic Factor:** 1 - 10
3=	**Particulate Mobility:** 3
4=	
5=	

Source: 1,2
Value: 3
(Max = 4)

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

Final Matrix Value: 15
(Max =24)

Worksheet 5 (cont'd)

1.5 Environmental Toxicity Mobility

	Substance	Non-Human Mammalia Inhal. Toxicity (mg/ m^3)	Acute Value	Mobility (mmHg)	Value
1	**Lead**	--	--	**0**	**1**
2					
3					
4					
5					

Highest Environmental Toxicity/Mobility Matrix Value (From Table A-7) equals

Final Matrix Value: NS
(Max.= 4)

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

2 MIGRATION POTENTIAL

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

3 TARGETS

3.1	**Nearest Population:** Neighbor is less than 1000 feet.	Source: 2,11	**Value: 10** (Max.=10)
3.2	**Distance to, and name(s) of, nearest sensitive environment(s):** 3200 feet to Puyallup River wetland zone	Source: 2,11	**Value: 3** (Max.=7)
3.3	**Population within 0.5 miles: $\sqrt{}$ pop.** = $\sqrt{}$ 4141=64.35	Source: 2,11	**Value: 64** (Max.=75)

4 RELEASE

Explain basis for scoring a release to air: No confirmed release	Source: 1,2	**Value: 0** (Max.=5)

Worksheet 6 – Ground Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

	Substance	Drinking Water Standard (ug/1)	Val	Acute Toxicity (mg/kg-bw)	Val	Chronic Toxicity (mg/kg/day)	Val	Carcino-genicity WOE PF*	Val
1	Lead	5	8	--	--	--	--	--	--
2									

***Potency Factor**

Source: 1,2,3
Highest Value: 8
(Max = 10)
Plus 2 Bonus Points? __

Final Toxicity Value: 8
(Max = 12)

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

Gastions/Anions:	OR	Solubility (mg/1):
1= Lead = 2		
2=		
3=		
4=		
		Source: 1, 2 **Value: 2**

1.3 Substance Quantity: Unknown

Explain basis: Extent of contamination remains undefined.	**Source: 1, 2** **Value: 1** (Max = 10)

Worksheet 6 (cont'd)

2.0 MIGRATION POTENTIAL

2.1	**Containment:** Spills, discharges, and contaminated soil with no cover or containment.	Source: 1, 2 **Value: 10** (Max = 10)
2.2	**Net precipitation:** 28.7 – 5.6 = 23.1 inches	Source: 2, 9 **Value: 3** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** Poorly sorted sand	Source: 1, 2 **Value: 4** (Max = 4)
2.4	**Vertical depth to ground water:** ≈ 8 feet	Source: 1, 2, 7 **Value: 8** (Max = 8)

3.0 TARGETS

3.1	**Ground water usage:** Federally designated sole source aquifer	Source: 1, 2 **Value: 10** (Max = 10)
3.2	**Distance to nearest drinking water well:** 2100 feet	Source: 2, 7, 11 **Value: 3** (Max = 5)
3.3	**Population served within 2 miles: √ pop.** = √ 29849 = 172.8	Source: 2, 7, 11 **Value: 100** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** (0.75) √ 459.57 = 16.07	Source: 2, 6 **Value: 16** (Max = 50)

4.0 RELEASE

Explain basis for scoring a release to ground water: No documented release.	Source: 1, 2 **Value: 0** (Max = 5)

Sources Used in Scoring
Glassman Property, 1535 4th Avenue NW, Puyallup

1. Tacoma-Pierce County Health Department Site Hazard Assessment File/Ecology TCP 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. U.S. Department of Interior Geological Survey Topographical Map
5. Soil Survey of Pierce County, U.S.D.A. Soil Conservation Service
6. Water Rights Information System (WRIS), Ecology
7. Department of Ecology/Tacoma-Pierce County Health Department Well Logs
8. Washington State Department of Health Public Water Supply System
9. Washington Climate for Pierce County, National Weather Service Forecast Office
10. Department of Fish and Wildlife, Catalog of Washington Streams and Salmon
11. Pierce County Geographic Information System Countyview Database