CSID 1094

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location (Street, City, County, Section/Township/Range, TCP ID Number):

Lee Elementary School
1455 N. Baker Avenue
East Wenatchee, WA 98802
Latitude: 47° 25′ 39″
Longitude: 120° 17′ 24″

Douglas County
T22N/R20E/S2
Ecology Facility Site ID: 7763612

Site scored/ranked for August 2005 update

Site Description (Include management areas, substances of concern, and quantities):

The subject site is owned by the Eastmont School District and is occupied by the elementary school facility. The school yard consists of several play areas, landscaped grounds, and parking/access areas. Play yards are generally well-maintained, with grass cover, wood chips, gravel, or other barriers to native soil. Some small areas are worn from excessive traffic, such as areas beneath swings and slides, or main travel routes to/from the school building.

HISTORICAL BACKGROUND--INFO

The property where Lee Elementary School is located was previously used as orchard land for many years. Prior to the mid 1940's, lead arsenate was the most widely used chemical sprayed on fruit trees to control insect pests. Lead (Pb) and arsenic (As) are known to be very stable in soil and tend to stay near the surface. Because of this historical background, it was suspected that the soil in the school playground might be contaminated with Pb and As. In 2002 the Washington State Department of Ecology (Ecology) obtained permission from the Wenatchee School District to sample and test the soils for Pb and As from all of the Wenatchee area school playgrounds.

The soils throughout the property were sampled by Krystal Rodriguez from Ecology on July 2, 2002, and samples were analyzed for Pb and As. Samples were taken from the top 6 inches using a core sampler. The samples were analyzed using Inductively Coupled Plasma Spectrometry (ICP) by AmTest laboratory in Redmond, Washington.

Of the 22 soil samples analyzed for Pb and As, concentrations exceeded Model Toxics Control Act (MTCA) Method A cleanup levels for Unrestricted Land Use for Pb (250 mg/kg) in one of the samples and for As (20 mg/kg) in two of the samples. The highest Pb concentration was 260 mg/kg, while the highest As concentration was 71 mg/kg (see enclosed data table and site map).

Special Considerations: None

ROUTE SCORES:

Surface Water/Human Health: 8.8 Surface Water/Environ.: 12.6
Air/Human Health: 31.0 Air/Environmental: Not scored
Ground Water/Human Health: 24.8

OVERALL RANK: 4

WORKSHEET 2 - ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

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

Arsenic, lead.

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

Soil sample analysis--As and Pb were found above MTCA Level A

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

Contaminated on-site surface and subsurface soils.

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

As and Pb contamination confirmed by laboratory testing.

2. AIR ROUTE

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

Arsenic, lead.

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

Soil sample analysis-- As and Pb were found above MTCA Level A

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

Contaminated on-site surface and subsurface soils.

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

As and Pb contamination confirmed by laboratory testing.

3. GROUND WATER ROUTE

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

Arsenic, lead.

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

Soil sample analysis-- As and Pb were found above MTCA Level A

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

Contaminated on-site surface and subsurface soils.

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

As and Pb contamination confirmed by laboratory testing.

WORKSHEET 4
SURFACE 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. Arsenic	10	8	763(rat)	5	0.001	5	A	1.75	7
2. Lead	15	6	ND	-	ND	-	B2	ND	-

*Potency Factor

Source: 1,2,5
Highest Value: 8 (Max.=10)

+2 Bonus Points 2
Final Toxicity Value: 10 (Max.=12)

1.2 Environmental Toxicity

(X) Freshwater
( ) Marine

Substance	Acute Water Quality Criteria (ug/l)	Value	Non-human Mammalian Acute Toxicity (mg/kg)	Value
1. Arsenic	360	4		
2. Lead	82	6		

Source: 1,2,5 **Value: 6** (Max.=10)

1.3 Substance Quantity

Source: 1,6 **Value: 9** (Max.=10)

Explain basis: estimated 4 acres

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 1,6 **Value:** 4 (Max.=10)
Explain basis:
Management unit scored as a spills/discharges/contaminated soil at the surface, with ineffectively maintained run-on/runoff controls (vegetated buffer)

2.2 Surface Soil Permeability: sand,gravel,sandy loam Source: 1,3,6 **Value:** 1 (Max.=7)

2.3 Total Annual Precipitation: 10.1 inches Source: 7 **Value:** 1 (Max.=5)

2.4 Max. 2-Yr/24-hour Precipitation: 1.5 inches Source: 6 **Value:** 2 (Max.=5)

2.5 Flood Plain: Not in flood plain Source: **Value:** 0 (Max.=2)

2.6 Terrain Slope: Area surrounding school is piped and culverted
Source: 1,6 **Value:** 3 (Max.=5)

3.0 TARGETS

3.1 Distance to Surface Water: Distance to Wenatchee River estimated to be about 3000 feet. Source: 10 **Value:** 4 (Max.=10)

3.2 Population Served within 2 miles: No downstream water intakes within 2 miles, therefore population =0.
Source: 4,8 **Value:** 0 (Max.=75)

3.3 Area Irrigated within 2 miles: 443 acres irrigated from downstream intakes located within 2 miles. $0.75\sqrt{443} = (0.75)(21) = 15.8 = 16$
Source: 4,8 **Value:** 16 (Max.=30)

3.4 Distance to Nearest Fishery Resource: See 3.1 Source: 10 **Value:** 6 (Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) See 3.1 Source: 10 **Value:** 6 (Max.=12)

4.0 RELEASE

Explain basis for scoring a release to surface water: Source: 1 **Value:** 0 (Max.=5)
None documented by analytical evidence.

WORKSHEET 5
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction (WARM Scoring Manual)

1.2 Human Toxicity

Substance	Air Standard (ug/m^3)	Val.	Acute Toxicity (mg/m^3)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF*	Val.
1. Arsenic	0.00023	10	ND	-	ND	-	A	50	9
2. Lead	0.5	10	ND	-	ND	-	B2	ND	-

*Potency Factor

Source: 1,2,5
Highest Value: 10 (Max.=10)
+2 Bonus Points 2
Final Toxicity Value: 12 (Max.=12)

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

1.3.1 Gaseous Mobility
Vapor Pressure(s)(mm Hg): _____ Source: _____
_____ Value: ___ (Max.=4)
_____

1.3.2 Particulate Mobility
Soil type: sandy loam Source: 3,5,6
Erodibility: 86 Value: 2 (Max.=4)
Climatic Factor: 10 - 30

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7) equals **Final Matrix Value: 12** (Max.=24)

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.5 Environmental Toxicity/Mobility Source: 1,5

Substance	Non-human Mammalian Acute Inhal. Toxicity (mg/m^3)	Value	Mobility (mmHg)	Value	(Table A-7) Matrix Value
1. Arsenic	ND	-	ND	-	-
2. Lead	ND	-	ND	-	-

Highest Environmental Toxicity/Mobility Matrix Value
(From Table A-7) equals **Final Matrix Value: NS** (Max.=24)

1.6 Substance Quantity: estimated 4 acres Source: 1,6 **Value: 7** (Max.=10)
Explain basis:

2.0 MIGRATION POTENTIAL

2.1 Containment: No cover Source: 1,6 **Value: 10** (Max.=10)

3.0 TARGETS

3.1 Nearest Population: <1000 feet to school Source: 1,2 **Value: 10** (Max.=10)

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Distance >5280 feet
Source: 1,2 **Value: 0** (Max.=7)

3.3 Population within 0.5 miles: $\sqrt{0.25(1\ \text{mile pop.})} = \sqrt{0.25(6732)} = 41$
Source: 6,9 **Value: 41** (Max.=75)

4.0 RELEASE

Explain basis for scoring a release to air: None documented. Source: 1,6 **Value: 0** (Max.=5).

WORKSHEET 6
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. Arsenic	10	8	763(rat)	5	0.001	5	A	1.75	7
2. Lead	5	8	ND	-	ND	-	B2	ND	-

*Potency Factor

Source: 1,2,5
Highest Value: 8 (Max.=10)

+2 Bonus Points? 2
Final Toxicity Value: 10 (Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions: 1: 3, 2: 2 Source: 1,2,5 **Value: 3** (Max.=3)

Or

Solubility(mg/l): _____

1.3 Substance Quantity: _____ Source: 1,2,6 **Value: 5** (Max.=10)
Explain basis: 4 acres X 43,560 sq ft/acre/9 ~19,000 cu yds

2.0 MIGRATION POTENTIAL

2.1 Containment Source: 1,6 **Value: 10** (Max.=10)
Explain basis: Contaminated soil, no cap

2.2 Net Precipitation: 5.7 minus 3.0 = 2.7 inches Source: 7 **Value: 1** (Max.=5)

2.3 Subsurf.Hydraul.Conduct.: Silty sand Source: 1,3,6 **Value: 3** (Max.=4)

2.4 Vertical Depth to Ground Water: 25 to 50 feet Source: 1,4,6 **Value: 6** (Max.=8)

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: private wells, alternate sources Source: 8,9, **Value: 4** (Max.=10)

3.2 Distance to Nearest Drinking Water Well: 600-1300 ft Source: 8,9 **Value: 4** (Max.=5)

3.3 Population Served within 2 Miles: _____ Source: 8,9 **Value: 9** (Max.=100)
28 private wells x 3 residents/well =84 residents, $\sqrt{84}=9.2$

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: $0.75\sqrt{\text{no. acres}}=$ Source: 8 **Value: 7** (Max.=50)
$0.75\sqrt{81}=(0.75)(9)=6.8=7$

4.0 RELEASE

Explain basis for scoring a release to ground water: No documentation Source: 1,6 **Value: 0** (Max.=5)

SOURCES USED IN SCORING

1. Soil sampling by Ecology CRO staff on July 1, 2002.
2. Soil sample analysis reports summary from CRO staff.
3. Soil logs on file at Chelan-Douglas Health District.
4. Water well reports on file at Chelan-Douglas Health District
5. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992.
6. Washington Department of Ecology, WARM Scoring Manual, April 1992.
7. Table identified as Table 27, supplied by Michael Spencer (attached)
8. Water Rights Application Tracking System (WRATS) printout for two-mile radius of site.
9. U.S. EPA SITEINFO GIS Query for lat./long. of site.
10. U.S. EPA SITEINFO Map

Lee Elementary School*

Sample ID	Pb (mg/kg)	As (mg/kg)
243	74	16
244	120	27
245	44	10
246	47	11
247	55	13
248	53	7.3
249	260	71
250	40	13
251	150	20
252	47	13
253	100	18
254	47	15
255	53	13
256	10	1.9
257	34	6.1
258	120	18
259	44	11
260	66	13
261	100	20
262	29	6
263	77	18
264	72	15
Average	**74.6**	**16.2**
MTCA Level A	**250**	**20**

* Sampled by K. Rodriguez (Ecology CRO) July 2, 2002