CSID 3735

FINAL VERSION December 30, 2004

WORKSHEET 1
SUMMARY SCORE SHEET

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

Sunnyslope Elementary School
3109 School St.
Wenatchee, WA 98801
Latitude: 47° 028′ 24″
Longitude: 120° 20′ 39″

Sec 21/T23N/R20E

Ecology Facility Site ID: 5951907

Site scored/ranked for 02/23/2005 update

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

The subject site is owned by the Wenatchee 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 Sunnyslope 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 1,2002, and samples were analyzed for Pb and As. The samples were analyzed both by portable X-Ray Fluoroscopy (XRF) on site and by Inductively Coupled Plasma Spectrometry (ICP) by Amtest Laboratory. Of the 18 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 11 of the samples and for As (20 mg/kg) in 13 of the samples. The highest Pb concentration was 750 mg/kg, while the highest As concentration was 110 mg/kg (see source #2).

The Wenatchee School District is currently addressing the issue of soil exposure in these areas, with assistance from Ecology.

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):

ROUTE SCORES:

Surface Water/Human Health: 7.5
Surface Water/Environ.: 12.6
Air/Human Health: 17.6
Ground Water/Human Health: 30.8
Air/Environmental: Not scored

OVERALL RANK: 5

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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.	WOE	Carcino-genicity 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 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 3 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: 132 acres irrigated from downstream intakes located within 2 miles. $0.75\sqrt{132} = (0.75)(11.5) = 8.6 = 9$
Source: 4,8 **Value:** 9 (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) - Please review before scoring

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. 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)

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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 3 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 to wetland >5280 feet
Source: 1,2 **Value: 0** (Max.=7)

3.3 Population within 0.5 miles: $\sqrt{0.25(1\ \text{mile pop.})} = \sqrt{0.25(1373)} = 18.5 = 19$
Source: 6,9 **Value: 19** (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: 3 acres X 43,560 sq ft/acre/9 ~14,000 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)

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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: 14** (Max.=100)
68 private wells x 3 residents/well =204 residents, $\sqrt{204}=14.3$

3.4 Area Irrigated by (Groundwater) Wells
within 2 miles: $0.75\sqrt{\text{no. acres}}=$ Source: 8 **Value: 14** (Max.=50)
$0.75\sqrt{296}=(0.75)(17.2)=13.9=14$

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