CSID 1613

FINAL VERSION July 27, 2004
WORKSHEET 1
SUMMARY SCORE SHEET

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

Washington Elementary School
1401 Washington St.
Wenatchee, WA 98801

Sec 9/T22N/R20E

Ecology Facility Site ID: 1104071

Latitude: 47° 025′ 17
Longitude: 120° 20′ 5

Site scored/ranked for August, 2004 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 good 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 Washington 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 16,2002, 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 Cascade Analytical Laboratory. Of the 21 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 9 of the samples and for As (20 mg/kg) in 18 of the samples. The highest Pb concentration was 1500 mg/kg, while the highest As concentration was 317.6 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): None.

ROUTE SCORES:

Surface Water/Human Health:	5.9	Surface Water/Environ.:	4.9
Air/Human Health:	42.7	Air/Environmental:	N/S
Ground Water/Human Health:	26.6		

OVERALL RANK: 3

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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.

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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	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 5 acres

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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 non-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:** 2 (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: There is no direct route from site to surface water other than storm drains. Route from site to nearest storm drain is <1000 ft. Route to Columbia River by storm drain is estimated to be >10,000 ft.
Source: 10 **Value:** 0 (Max.=10)

3.2 Population Served within 2 miles: Site is greater than 2 miles overland from Columbia River, therefore population =0.
Source: 4,8 **Value:** 0 (Max.=75)

3.3 Area Irrigated within 2 miles: Site is greater than 2 miles overland from Columbia river, therefore population =0.
Source: 4,8 **Value:** 0 (Max.=30)

3.4 Distance to Nearest Fishery Resource: See 3.1 Source: 10 **Value:** 0 (Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) None within 10,000 feet Source: 10 **Value:** 0 (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.

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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)(mmHg): _____ 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 5 acres Source: 1,6 **Value: 8** (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) Source: 1,2 **Value: NA** (Max.=7)

3.3 Population within 0.5 miles: $\sqrt{pop.} = \sqrt{3634} = 60.3 = 60$ Source: 6,9 **Value: 60** (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: 5 acres X 43,000 sq ft/acre/9 ~24,000 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: 3.0 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: 50 to 100 feet Source: 1,4,6 **Value: 4** (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: 2640-5000 ft Source: 8,9 **Value: 2** (Max.=5)

3.3 Population Served within 2 Miles: _____ Source: 8,9 **Value: 15** (Max.=100)
80 private wells x 3 residents/well =240 residents, $\sqrt{240}=15$

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: 0.75√no.acres= Source: 8 **Value: 15** (Max.=50)
$0.75\sqrt{420} = (0.75)(20.5) = 15.4 = 15$

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 16, 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