CSID 1276 NFA

WORKSHEET 1
SUMMARY SCORE SHEET

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

Lake Hills STP - Former — Sec 13/T25N/R5E
W. Lake Sammamish Parkway/South of N.E. 51st — N-17-5015-000
Redmond, 98502

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

The (former) Lake Hills sewage treatment plant (LHSTP) is an approx. 18.5 acre site in the SE portion of Redmond, King county. It is bordered on the east by the Sammamish River, which flows NW from the site; on the west by West Lake Sammamish Parkway NW (SR 901), and on the north and south by pasture lands.

Aerial photos indicate that the western three-quarters of the site was under agricultural use from at least the mid-1930's until the LHSTP was constructed in 1958-60. The plant provided primary treatment of sewage, and the effluent was chlorinated and discharged into the Sammamish River. Initial structures constructed at the site included two gravel filters, two clarifiers, a large thickener tank, and a buried effluent pipeline to the Sammamish River. The Municipality of Metropolitan Seattle (METRO) operated the site from 1962 until it was closed in December 1973. From 1965-67, two newly constructed lagoons were used for disposal of sludge.

The results of a 1991-92 investigation by Metro consultant EMCON indicated that sediments and shallow soils associated with the lagoons, shallow soils in the south graded area, and sediments in the treatment area structures, have been impacted with metals including arsenic, cadmium, chromium, mercury, and lead, as well as polychlorinated biphenyls (PCBs). A 1992-93 remedial investigation (RI) by Woodward-Clyde supported the earlier findings, and detected concentrations of all the above metals, except chromium, at concentrations greater than Model Toxics Control Act (MTCA) Method B Cleanup Levels in on-site sediments and shallow soils. There appeared to be no significant threat to ground water based on monitoring well samples collected during the RI.

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):

The air route was not considered a significant threat to human health and /or the environment due to the primarily subsurface nature documented on-site contamination, and thus was not scored as part of the ranking process.

ROUTE SCORES:

Surface Water/Human Health: 25.8 — Surface Water/Environ.: 58.3
Air/Human Health: NS — Air/Environmental: NS
Ground Water/Human Health: 68.7

OVERALL RANK: 1

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

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

Arsenic, cadmium, mercury, and PCBs.

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

All of the above will be used for scoring this route, as their respective concentrations in sediment and soil samples associated with the lagoons, south graded, and treatment areas exceed their respective Model Toxics Cleanup Act (MTCA) Cleanup Levels.

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

Contaminated soils/sediments.

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

Metals/PCBs in on-site soils/sediments exceed their respective Model Toxics Cleanup Act (MTCA) Cleanup Levels.

2. AIR ROUTE - Route not applicable/not scored.

3. GROUND WATER ROUTE

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

Arsenic, cadmium, mercury, and PCBs.

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

All of the above will be used for scoring this route, as their respective concentrations in sediment and soil samples associated with the lagoons, south graded, and treatment areas exceed their respective Model Toxics Cleanup Act (MTCA) Cleanup Levels.

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

Contaminated soils/sediments.

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

Metals/PCBs in on-site soils/sediments exceed their respective Model Toxics Cleanup Act (MTCA) Cleanup Levels.

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.	Carcinogenicity WOE	PF*	Val.	
1. Arsenic	50	6	763	5	0.001	5	A=1	1.75=7	7	
2. Cadmium	5	8	225	5	0.0005	5	ND	-	-	
3. Mercury	2	8	ND	-	0.0003	5	ND	-	-	
4. PCBs	0.5	10	ND	3	ND	-	B2=.8	7.7=7	6	6

*Potency Factor

Source: 1,2
Highest Value: 10 (Max.=10)
+2 Bonus Points? 2
Final Toxicity Value 12 (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. Cadmium	3.9	8		
3. Mercury	2.4	8		
4. PCBs	2.0	8		

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

1.3 Substance Quantity: Source: 1,3 Value: 8 (Max.=10)

Explain basis: 2,500 + 26,450 + 39,500 = 68,450 square feet

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment — Source: 1 — Value: 10 (Max.=10)
Explain basis:
Contaminated soil - no/unknown run-on/runoff controls

2.2 Surface Soil Permeability: Silt/loams — Source: 1 — Value: 3 (Max.=7)

2.3 Total Annual Precipitation: ~~40 - 45~~ 39.8 inches — Source: 4 — Value: 3 (Max.=5)

2.4 Max. 2-Yr/24-hour Precipitation: 2 inches — Source: 4 — Value: 2 (Max.=5)

2.5 Flood Plain: 100 year — Source: 1 — Value: 2 (Max.=2)

2.6 Terrain Slope: < 2% — Source: 1,5 — Value: 1 (Max.=5)

3.0 TARGETS

3.1 Distance to Surface Water: ≤1000' - Hydraul. cont. — Source: 1,5 — Value: 10 (Max.=10)

3.2 Population Served within 2 miles (See WARM Scoring Manual Regarding Direction): √pop.=√0 = 0 — Source: 7 — Value: 0 (Max.=75)

3.3 Area Irrigated within 2 miles 0.75√no. acres= 0.75√60 = 0.75(7.75) = 5.8 = 6 — Source: 7 — Value: 6 (Max.=30)

3.4 Distance to Nearest Fishery Resource: ≤1000' (adj.) — Source: 1,5 — Value: 12 (Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Wetlands - on site
Fisheries - adjacent — Source: 1,5 — Value: 12 (Max.=12)

4.0 RELEASE

Explain basis for scoring a release to surface water: — Source: 1 — Value: 0 (Max.=5)
No analytical data available to show a release to surface water (currently) attributable to the site.

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.	Carcinogenicity WOE	PF*	Val.
1. Arsenic	50	6	763	5	0.001	5	A=1	1.75=7	7
2. Cadmium	5	8	225	5	0.0005	5	ND	-	-
3. Mercury	2	8	ND	-	0.0003	5	ND	-	-
4. PCBs	0.5	10	ND	3	ND	-	B2=.8	7.7=7	6 6

*Potency Factor

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

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

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

OR
Solubility(mg/l): 4) 3.1E-02 = 0

1.3 Substance Quantity: 90 + 980 + 2800 + 1200 + Source: 1,3 Value: 5 (Max.=10)
Explain basis: 1500 = 6570 cubic yards

2.0 MIGRATION POTENTIAL

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

2.2 Net Precipitation: 18.7 inches Source: 4 Value: 2 (Max.=5)

2.3 Subsurface Hydraulic Conductivity: Sandy silts Source: 1 Value: 3 (Max.=4)

2.4 Vertical Depth to Ground Water: Less than 25 feet Source: 1 Value: 8 (Max.=8)

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: Pub./priv. supply, alts. avail. Source: 6 Value: 4 (Max.=10)

3.2 Distance to Nearest Drinking Water Well: 2300 ft Source: 1 Value: 3 (Max.=5)

3.3 Population Served within 2 Miles: √pop.=√>10,000 = 100 Source: 6 Value: 100 (Max.=100)

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: 0.75√no.acres= 0.75√737 = 0.75(27.1) = 20.4 =20 Source: 7 Value: 20 (Max.=50)

4.0 RELEASE

Explain basis for scoring a release to ground water: Not significantly confirmed by analytical data. Source: 1 Value: 0 (Max.=5)

SOURCES USED IN SCORING

1. Former Lake Hills Sewage Treatment Plant Remedial Investigation, September 1973, Woodward-Clyde.
2. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992.
3. Washington Department of Ecology, WARM Scoring Manual, April 1992.
4. See attached table identified as Reference 4.
5. USGS 7.5 Topographic Map, Redmond, WA Quad.
6. DOH Public Water Supply System Listing.
7. Ecology Water Rights Information System (WRIS).