

CSID 4775

NFA

**WORKSHEET 1  
SUMMARY SCORE SHEET**

**Note: This document currently has no provision for sediment route scoring.**

Site Name/Location (City, County, Section/Township/Range):

Dunkin Diesel, 5303 Bickford, Snohomish, Snohomish County, 2/28N/5E

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

The building was constructed in 1967 and used as a truck repair business. A complaint was filed with the Department of Ecology in December of 1989. The company was alleged to be discharging oil onto the ground. A site visit by Ecology revealed heavy oil contamination around the waste oil tank filler neck and moderate contamination at the outlet at the oil/water separator to the ditch behind the property. The drainage ditch on the east side of the property empties into some wetlands north of the property. A letter was sent to Chuck Dunkin indicating that his property was being added to Ecology's list of known or suspected contaminated sites. The site was listed as confirmed for petroleum products in soil and surface water. Suspected for metals, petroleum products non-halogenated solvents in soil, groundwater, sediment and surface water. In August of 1994, AGI Technologies visited adjacent property owned by Bickford Ford Mercury and sampled ditch and found petroleum products in ditch that exceeded Model Toxics Control Act cleanup levels. A Site Hazard Assessment was conducted by the Snohomish Health District on November 6, 1997. One sample collected in ditch area exceeded cleanup levels for heavy oils and cadmium. Dunkin Diesel was given a six month extension to conduct a cleanup of the ditch area. Some cleanup was conducted of the ditch area. A followup site visit and sampling event revealed heavy oil contamination in all four samples collected in the ditch. One sample also showed diesel contamination. Two metals, lead and cadmium, were collected in two samples but did not exceed cleanup levels. Air Route was not scored because area adjacent to the site is not residential.

**ROUTE SCORES:**

Surface Water/Human Health:	<u>14.2</u>	Surface Water/Environ.:	<u>25.8</u>
Air/Human Health:	<u>NS</u>	Air/Environmental:	<u>NS</u>
Ground Water/Human Health:	<u>20.6</u>		

**OVERALL RANK: 5**



## WORKSHEET 2 ROUTE DOCUMENTATION

### 1. SURFACE WATER ROUTE

List those substances to be considered for scoring:Source: 2,3,13

WTPH Diesel

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

WTPH Diesel will be used in scoring the surface water route, as it's measured concentration exceeded MTCA cleanup in the sediments and soils in the drainage ditch and is available due to less than perfect containment.

List those management units to be considered for scoring:Source: 2,3,13

Contaminated surface soils

Explain basis for choice of unit to be used in scoring.Source: 2,3,13

Contaminated surface soils will be used as the measured concentration of diesel was from this management unit. No containment of this unit was observed allowing contaminants to be available to the surface water pathway..

### 2. AIR ROUTE

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

**Not applicable to site/not scored.**

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

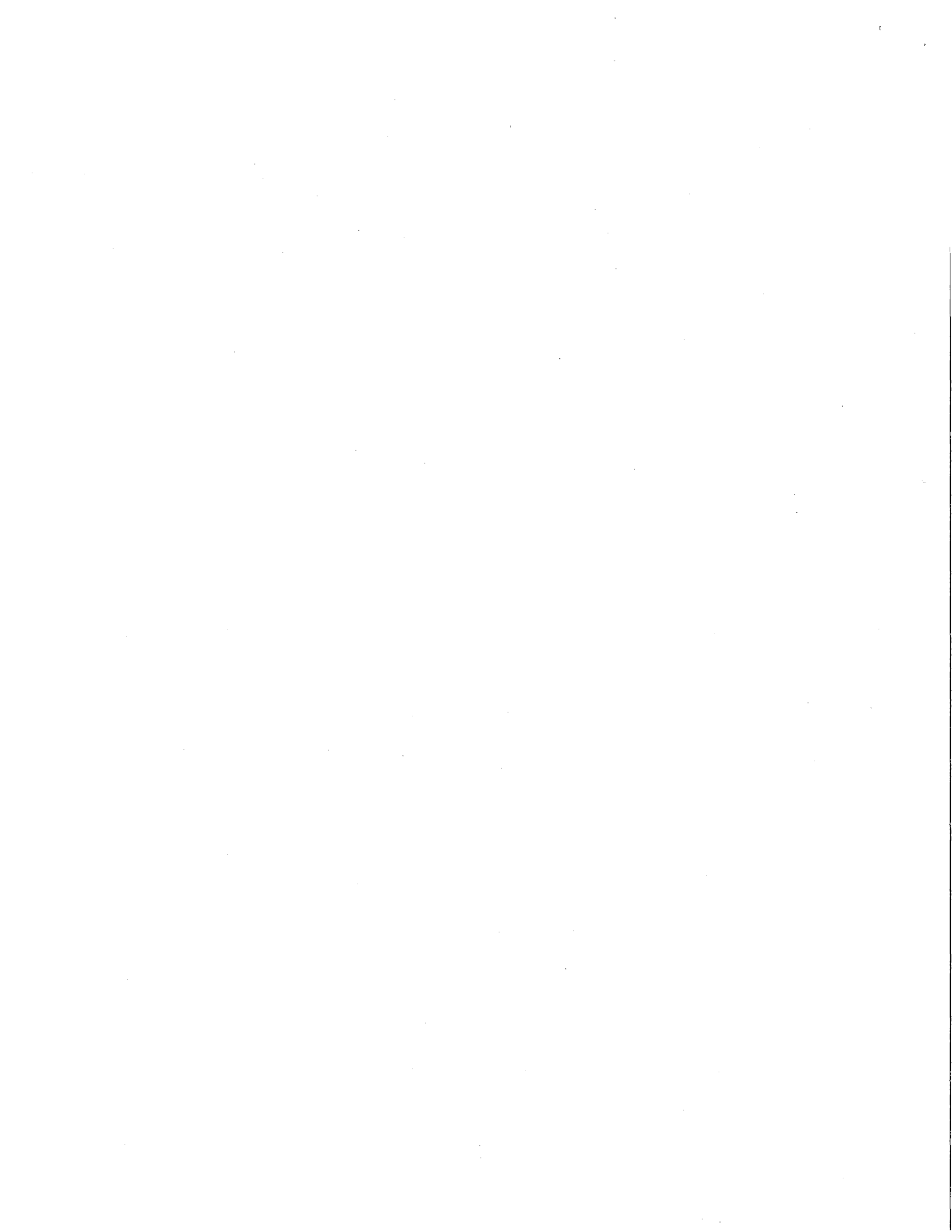
List those management units to be considered for scoring:Source:..

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

### 3. GROUND WATER ROUTE

List substances to be considered for scoring: Source: 2,3

Benzene, xylenes, diesel, gasoline, lead, benzo(a)pyrenes, chrysene, and other carcinogenic polyaromatic hydrocarbons.



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

The above listed substances will be used in scoring the ground water route, as their measured concentrations exceeded MTCA cleanup levels and are available due to less than perfect containment.

List management units to be considered in scoring:      Source: 2,3

Contaminated subsurface soil and ground water

Explain basis for choice of unit used in scoring. Source: 2,3

Contaminated subsurface soil will be used in scoring as the measured concentration of mercury was from this management unit. No containment was observed of this unit allowing contaminants to be available to the ground water pathway.



**WORKSHEET 4  
SURFACE WATER ROUTE**

**1.0 SUBSTANCE CHARACTERISTICS**

1.1 Human Toxicity

Substance	Drinking Water Standard	Val.	Acute Toxicity	Val.	Chronic Toxicity	Val.	Carcinogenicity		
	(ug/l)		(mg/kg-bw)		(mg/kg/day)		WOE	PF	Val.
Diesel	20	6	490	5	0.004	3	X	X	ND

Source: 1,2,3,4,5

Highest Value: 6

2 Bonus Points?         

Final Toxicity Value 6

1.2 Environmental Toxicity

Substance	(X) Freshwater ( ) Marine Acute Criteria	Val.	Non-human Mammalian Acute Toxicity	Val.	Source: <u>1,2,3,4,5</u> Value: <u>2</u>
	(ug/l)		(mg/kg)		
Diesel	2300	2	490	5	

1.3 Substance quantity

Explain basis: Unknown quantity

Source: 2,3,4 Value: 1





**WORKSHEET 4 (CONTINUED)**  
**SURFACE WATER ROUTE**

**2.0 MIGRATION POTENTIAL**

- 2.1 Containment Source: 2,3,4 Value: 10  
Explain basis: Spill and contaminated soil
- 2.2 Surface Soil Permeability: Sandy gravels Source: 2,3,4,10 Value: 1
- 2.3 Total Annual Precipitation 46 inches Source: 4,6 Value: 3
- 2.4 Max. 2-Yr/24-hour Precipitation 1.5 inches Source: 4 Value: 2
- 2.5 Flood Plain: Not in floodplain Source: 2,3,4 Value: 0
- 2.6 Terrain Slope: 3.00% Source: 3,4,7 Value: 1

**3.0 TARGETS**

- 3.1 Distance to Surface Water: 200 feet to drainage area Source: 2,3,4,7 Value: 10
- 3.2 Population Served within 2 miles: 0 Source: 8 Value: 0
- 3.3 Area Irrigated within 2 miles: 0 Source: 8 Value: 0
- 3.4 Distance to Nearest Fishery Resource: 700 feet to Creek Source: 2,4,12 Value: 12
- 3.5 Distance to, and Name (s) of, nearest Sensitive Environment (s) 200 feet to wetlands Source: 2,4,7 Value: 12

**4.0 RELEASE**

- Explain basis for scoring a release to surface water: Source: 2,3,4 Value: 5  
Visible signs of petroleum products on drainage and sediment testing demonstrating presence of hydrocarbons



**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.
Diesel	20	6	490	5	0.004	3	X	X	ND

Source: 1,2,3,4,5  
 Highest Value: 6  
 2 Bonus Points? \_\_\_\_\_  
**Final Toxicity Value: 6**

1.2 Mobility (Use numbers to refer to above listed substances)  
Cations/Anions

Source: 2,3,4,5 Value: 1

OR  
 Solubility (mg/l) 30 mg/l=1

1.3 Substance Quantity  
Explain basis: Unknown quantity - default value

Source: 2,3,4 Value: 1

**2.0 MIGRATION POTENTIAL**

2.1 Containment  
Explain basis: Discharge and contaminated soil

Source: 1,2,3,4 Value: 10

2.2 Net Precipitation: 21 inches

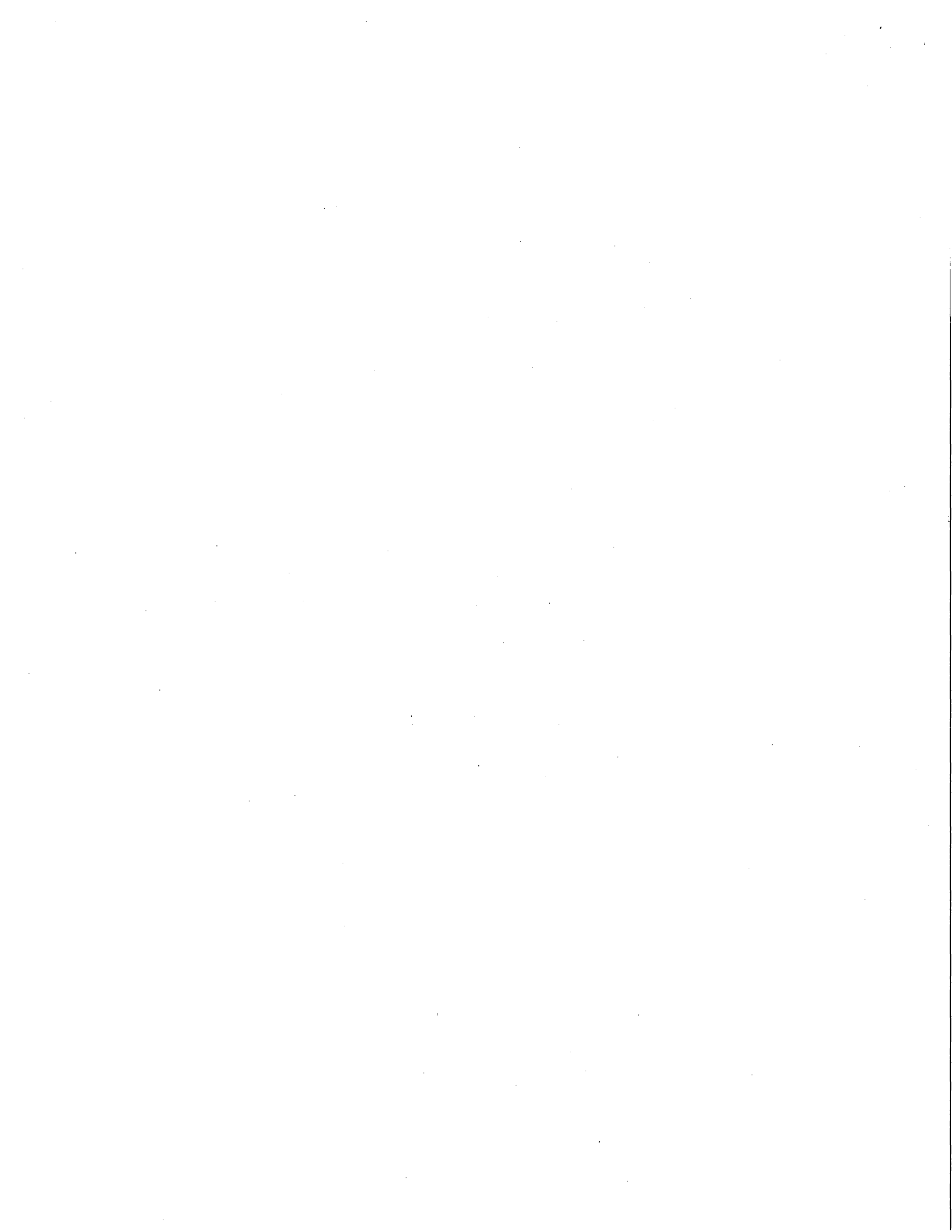
Source: 4,6 Value: 3

2.3 Subsurface Hydraulic Conductivity: Silty Clay

Source: 2,3,4 Value: 2

2.4 Vertical Depth to Ground Water: 9 feet

Source: 2,4 Value: 8



**WORKSHEET 6  
GROUND WATER ROUTE**

**3.0 TARGETS**

- 3.1 Ground Water Usage: Private with public available for hookup. Source: 4,8,9,11 Value: 4
- 3.2 Distance to Nearest Drinking Water Well: about 1400 feet Source: 4,11 Value: 3
- 3.3 Population Served within 2 Miles: sq root of 215 = 14.7 Source: 4,8,9,11 Value: 15
- 3.4 Area Irrigated by (Groundwater) Wells none Source: 4,8 Value: 0  
within 2 miles:

**4.0 RELEASE**

- Explain basis for scoring a release to ground water: Source: 1,2,3,4 Value: 0  
No confirmed release documented

**Sources Used in Scoring**

1. Washington Department of Ecology, Initial Investigation, Dunkin Diesel, Snohomish, WA, January, 1991.
2. Snohomish Health District, Site Hazard Assessment, Dunkin Diesel, Snohomish, WA, November 6, 1997.
3. Snohomish Health District, Site Sampling, Dunkin Diesel, Snohomish, WA, June 2, 1998.
4. Washington Department of Ecology, WARM Scoring Manual, April, 1992.
5. Washington Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January, 1992.
6. National Weather Service, Washington Climate Data, Snohomish County.
7. U.S.G.S. Topo. Map, East Edmonds Quad., 7.5 Min. Series, Photorev. 1981.
8. Washington Department of Ecology, Water Rights Information System (WRIS), November 4, 1992.
9. Washington Department of Health, Public Water System List, April 26, 1993.
10. Soil Conservation Service, Soil Survey of Snohomish County Area, July 1983.
11. Washington Department of Ecology, Well Logs, 1998.
12. Phone conversation with Tony Opperman of Dept of Fish and Wildlife
13. AGI Technologies, Environmental Assessment Results Snohomish Buildings, Inc. Parcel, Sept., 1994.



**PATHWAY SCORING FORMULAE WITH WEIGHTING AND  
NORMALIZATION FACTORS**

**Air Route - Human Health Pathway**

$$\text{AIR} = (\text{SUB} \times 60/329) \times \{ \text{REL} + (\text{TAR} \times 35/85) \} / 24 = \quad \underline{\underline{0.00}}$$

where

AIR =	Pathway score for Air-Human Health =	
SUB =	(Human Toxicity Value + 5) X (Containment +1) + Substance Quantity =	
	<u>5</u>	
REL =	Release to Air =	<u>0</u>
TAR =	Nearest population + Population within 1/2 mile =	<u>0</u>

**Air Route - Environmental Pathway**

$$\text{AIR} = (\text{SUB} \times 60/329) \times \{ \text{REL} + (\text{TAR} \times 35/85) \} / 24 = \quad \underline{\underline{0.00}}$$

where

AIR =	Pathway score for Air-Environmental =	
SUB =	(Env. Toxicity Value + 5) X (Containment +1) + Substance Quantity =	
	<u>5</u>	
REL =	Release to Air =	<u>0</u>
TAR =	Nearest Sensitive Environment =	<u>0</u>

**Surface Water Route - Human Health Pathway**

$$\text{SW} = (\text{SUB} \times 40/175) \times \{ (\text{MIG} \times 25/24) + \text{REL} + (\text{TAR} \times 30/115) \} / 24 = \quad \underline{\underline{14.19}}$$

where

SW =	Pathway Score for Surface Water-Human Health =	
SUB =	(Human Toxicity + 3) X (Containment + 1) + Substance Quantity =	
	<u>100</u>	
MIG =	Soil Permability + Annual Precip. + Rainfall Frequency + Floodplain + Slope =	<u>7</u>
REL =	Release to the Surface Water =	<u>5</u>
TAR =	Distance to Surface Water + Population Served by Surface Water + Area Irrigated =	<u>10</u>





**Table 2 (Continued)**

**Surface Water Route - Environmental Pathway**

$$SW = (SUB \times 40/175) \times \{(MIG \times 25/24)\} + REL + (TAR \times 30/115) / 24 = \quad \underline{\underline{25.80}}$$

where

SW =	Pathway Score for Surface Water-Environmental =	
SUB =	(Env. Toxicity + 3) X (Containment + 1) + Substance Quantity =	<u>56</u>
MIG =	Soil Permability + Annual Precip. + Rainfall Frequency + Floodplain + Slope =	<u>7</u>
REL =	Release to the Surface Water =	<u>5</u>
TAR =	Distance to Nearest Surface Water + Distance to Fisheries Resource + Distance to Sensitive Environment =	<u>34</u>

**Ground Water Route - Human Health Pathway**

$$GW = (SUB \times 40/208) \times \{(MIG \times 25/17) + REL + (TAR \times 30/165)\} / 24 = \quad \underline{\underline{20.56}}$$

GW =	Pathway Score For Ground Water-Human Health =	
SUB =	(Human Toxicity + Mobility + 3) X (Containment + 1 ) + Substance Quantity =	<u>111</u>
MIG =	Depth to Aquifer + Net Precipitation + Hydraulic Conductivity =	<u>13</u>
REL =	Release to the Ground Water =	<u>0</u>
TAR =	Aquifer Use + Well Distance + Population Served + Area Irrigated =	<u>22</u>