WASHINGTON RANKING METHOD

ROUTE SCORES SUMMARY AND RANKING CALCULATION SHEET

Site name: PIT STOP Region: CRO

City, county: NACHES (YAKIMA COUNTY)

This site was (X) ranked, ( ) re-ranked on ~~August 13, 1991~~, based on quintile values from 256 assessed/scored sites.

Pathway	Route Score(s)	Quintile Group number(s)
SW-HH	1.6	1
Air-HH	16.7	3
GW-HH	58.2	5
Sed-HH	N.A.	–
SW-En	3.0	1
Air-En	13.7	3
Sed-En	N.A.	–

Priority scores:

$\frac{H^a + 2M + L}{8}$ = 4

$\frac{H^a + 2L}{7}$ = 1.57 → 2

Use the matrix presented to the right, along with the two priority scores, to determine the site ranking. N/A refers to where there is no applicable pathway.

Human Health \ Environment	5	4	3	(2)	1	N/A
5	1	1	1	1	1	1
(4)	1	2	2	(2)	3	4
3	1	2	3	4	4	5
2	2	3	4	4	5	5
1	2	3	4	5	5	5
N/A	3	4	5	5	5	NFA

(DRAFT) / FINAL

Matrix ("bin") Ranking: 2, or _____ No Further Action

CONFIDENCE LEVEL: The relative position of this site within this bin is:

_____almost into the next higher bin.
_____right in the middle, unlikely to ever change.
_____almost into the next lower bin.

rev. 9/91

WORKSHEET 1
SUMMARY SCORE SHEET

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

The Pit Stop
10123 Highway 12
Naches, WA (Yakima County)

NW 1/4 of SW 1/4 of Section 3, T. 14 N., R 17 E. W. M.

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

The site consists of a convenience store/restaurant which conducts retail sale of petroleum products. Management areas include soil contamination and three underground storage tanks. Compounds of concern include benzene, toluene, ethylbenzene and xylene which have been detected in soil or groundwater onsite.

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:	1.6	Surface Water/Environ.:	3.0
Air/Human Health:	16.7	Air/Environmental:	13.7
Ground Water/Human Health:	58.2		

OVERALL RANK: 2

Rev. 5/31/91

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List substances to be considered for scoring: Source: 1

1. benzene
2. toluene
3. ethylbenzene
4. xylene
5. Total Petroleum Hydrocarbons

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

Benzene, toluene, ethylbenzene and xylene were used in scoring. TPH was not used in scoring because the threat posed by TPH was judged to be represented by the four substances that were used.

List management units to be considered in scoring: Source: 1

1. soil contamination
2. underground storage tanks (3)

Explain basis for choice of unit used in scoring. Source: 1

Soil contamination was used in scoring because it has been documented and was judged to best represent the overall threat.

2. AIR ROUTE

List substances to be considered for scoring: Source: 1

1. benzene
2. toluene
3. ethylbenzene
4. xylene
5. Total Petroleum Hydrocarbons

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

Benzene, toluene, ethylbenzene and xylene were used in scoring. TPH was not used in scoring because the threat posed by TPH was judged to be represented by the four substances that were used.

List management units to be considered in scoring: Source: 1

1. soil contamination
2. underground storage tanks (3)

Explain basis for choice of unit used in scoring. Source: 1

Soil contamination was used in scoring because it has been documented and was judged to best represent the overall threat.

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

3. GROUND WATER ROUTE

List substances to be considered for scoring: Source: 1

1. benzene
2. toluene
3. ethylbenzene
4. xylene
5. Total Petroleum Hydrocarbons

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

Benzene, toluene, ethylbenzene and xylene were used in scoring. TPH was not used in scoring because the threat posed by TPH was judged to be represented by the four substances that were used.

List management units to be considered in scoring: Source: 1

1. soil contamination
2. underground storage tanks (3)

Explain basis for choice of unit used in scoring. Source: 1

Soil contamination was used in scoring because it has been documented and was judged to best represent the overall threat.

WORKSHEET 3
SUBSTANCE CHARACTERISTICS WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Combination 2	Combination 3
Unit:			
Substance:			

SURFACE WATER ROUTE

Human Toxicity Value:

Environ. Toxicity Value:

Containment Value:

Surface Water Human Subscore:

Surface Water Environ. Subscore:

AIR ROUTE

Human Toxicity/Mobility Value:

Environ. Toxicity/ Mobility Value:

Containment Value:

Air Human Subscore:

Air Environ. Subscore:

GROUND WATER ROUTE

Human Toxicity/ Mobility Value:

Containment Value:

Ground Water Subscore:

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.benzene	5	8	3306	3	X	--	A	.029	5
2.toluene	2000	2	5000	3	.3	1	D	X	--
3.ethylbenzene	700	4	3500	3	.1	1	D	X	--
4.xylene	10000	2	50	10	2	1	X	--	--
5.									
6.									

*Potency Factor

Source: 2
Highest Value: 10
+2 Bonus Points? 2
Final Toxicity Value 12

1.2 Environmental Toxicity

Substance	Acute Criteria (ug/l)	Non-human Mammalian Acute Toxicity (mg/kg)	Value
1.benzene	5300		2
2.toluene	17500		2
3.ethylbenzene	32000		2
4.xylene	X	5000	3
5.			
6.			

Source: 2,3 **Value:** 3

1.3 Substance Quantity

Source: 1 **Value:** 5

Explain basis: 8,000 + 2,500 + 2,500 = 13,000 gallons. Total volume of USTs on site.

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment — Source: 1 Value: 0
Explain basis: contaminated soil only in subsurface = containment value of 0.

2.2 Surface Soil Permeability: high. poorly sorted river gravels. — Source: 1 Value: 1

2.3 Total Annual Precipitation: 7.2 inches — Source: 4 Value: 1

2.4 Max. 2-Yr/24-hour Precipitation: 1.0 inch — Source: 5 Value: 1

2.5 Flood Plain: not in flood plain. — Source: 6 Value: 0

2.6 Terrain Slope: 3.5 % — Source: 8 Value: 2

3.0 TARGETS

3.1 Distance to Surface Water: 0 ft. adjacent — Source: 1 Value: 10

3.2 Population Served within 2 miles: $\sqrt{0} = 0$ — Source: 10,11 Value: 0

3.3 Area Irrigated within 2 miles: $0.75\sqrt{6} = 2$ — Source: 11 Value: 2

3.4 Distance to Nearest Fishery Resource: 3800 ft. — Source: 7 Value: 6

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) — Source: 7 Value: 6
3800 feet Naches River (fishery resource).
Distance measured via drainage canal.

4.0 RELEASE
Explain basis for scoring a release to surface water: Documentation of release to surface water was not found. — Source: Value: 0

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/m3)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF*	Val.
1.benzene	.12	10	31947	3	X	--	A	.029	5
2.toluene	1248.8	1	X	--	.57	1	X	--	--
3.ethylbenzene	1448.6	1	X	--	X	--	X	--	--
4.xylene	1448.6	1	15000	3	.085	1	X	--	--
5.									
6.									

*Potency Factor

Source: 2
Highest Value: 10
+2 Bonus Points? 0
Final Toxicity Value: 10

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

1.3.1 Gaseous Mobility

Vapor Pressure(s): 1=95 ; 2=28 ; 3=7 Source: 2
4=10 ; 5= ; 6= **Value: 4**

1.3.2 Particulate Mobility

Soil type: N.A. Source:
Erodibility: **Value:**
Climatic Factor:

1.4 Final Human Health Toxicity/Mobility Matrix **Value: 20**

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian Acute Toxicity	Value	Mobility	Value
1.benzene	31947	3	4	6
2.toluene	X	--	4	--
3.ethylbenzene	X	--	3	--
4.xylene	15000	3	3	5
5.				
6.				

Environmental Toxicity/Mobility Matrix Source: 2 **Value: 6**

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.6 Substance Quantity: 13,000 gallons Source: 1 Value: 5
Explain basis: 8,000 + 2,500 + 2,500 = 13,000
Once-filled volume of USTs on site.

2.0 MIGRATION POTENTIAL

2.1 Containment: No cover or cover less than 2 feet Source: 1 Value: 4

3.0 TARGETS

3.1 Nearest Population: 0 ft. business onsite open to public. Source: 1 Value: 10

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) Source: 8 Value: 6
1400 feet. Naches River (fishery resource)
Distance measured in a straight line.

3.3 Population within 0.5 miles: $\sqrt{932} = 31$ Source: 9 Value: 31

4.0 RELEASE

Explain basis for scoring a release to air: Source: Value: 0
Documentation of release to air was not found.

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.benzene	5	8	3306	3	X	--	A	.029	5
2.toluene	2000	2	5000	3	.3	1	D	X	--
3.ethylbenzene	700	4	3500	3	.1	1	D	X	--
4.xylene	10000	2	50	10	2	1	X	--	--
5.									
6.									

*Potency Factor

Source: 2
Highest Value: 10
+2 Bonus Points? 2
Final Toxicity Value 12

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

Cations/Anions N.A. Source: 2 **Value:** 3

OR

Solubility(mg/l) 1.1800 2.540 3.150 4.200

1.3 Substance Quantity

Source: 1 **Value:** 5

Explain basis: 13,000 gallons.
8,000 + 2,500 + 2,500 = 13,000, once filled volume of USTs on site.

2.0 MIGRATION POTENTIAL

2.1 Containment

Source: 1 **Value:** 10

Explain basis: contaminated soil = containment value of 10.

2.2 Net Precipitation: 1.7 inches

Source: 4 **Value:** 1

2.3 Subsurface Hydraulic Conductivity: high. alluvium. cobbles,boulders

Source: 1 **Value:** 4

2.4 Vertical Depth to Ground Water: 13 feet

Source: 1 **Value:** 8

WORKSHEET 6 (CONTINUED)
GROUND WATER ROUTE

3.0 TARGETS

3.1 Ground Water Usage: public. no alternate. Source: 10,11 **Value:** 9

3.2 Distance to Nearest Drinking Water Well: 1100 ft Source: 10,11 **Value:** 4
Town of Naches

3.3 Population Served within 2 Miles: √783 = 28 Source: 10,11 **Value:** 28

3.4 Area Irrigated by (Groundwater) Wells within 2 miles: 0.75√929 = 23 Source: 11 **Value:** 23

4.0 RELEASE

Explain basis for scoring a release to ground water: Analytical evidence of contamination of groundwater and soil in contact with groundwater. Source: 1 **Value:** 5

SOURCES USED IN SCORING

1. Exploratory Investigation for Petroleum Contaminants at The Pit Stop Naches, WA., White Shield, July, 1991.
2. Toxicology Database For Use in WARM Scoring, SAIC, January, 1992.
3. RTECS, NIOSH, April, 1987.
4. Washington Climate, Cooperative Extension Service, Washington State University.
5. Isopluvials of 2-Yr 24-Hr Precipitation in Tenths of an Inch, NOAA Atlas 2, Volume IX, U.S. Dept. of Commerce.
6. Flood Boundary and Floodway Map, Town of Naches, Washington, Yakima County, Community-Panel Number 530223 0001, FEMA.
7. Naches Quadrangle Map, USGS 7.5 Minute Topographic Series.
8. Memorandum: Site Visit, Bob Swackhamer, Department of Ecology, 12-13-91.
9. Population Estimate, Bob Swackhamer, Department of Ecology, 12-16-91.
10. Public Water Supply System Listing, Washington Dept. of Health, 11-8-89.
11. Recorded Water Rights of the Department of Ecology Region 4, 8-16-90.