Attachment A

Summary Tables for all
Risk-Based Screening Concentrations
(backward calculation)

Table 1. Risk-based soil screening summary table.

OU: 1-03 (TSF-38 Earthen Mounds (full size)) TSF-38 Bottle Site

	Occupational Scenario										
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion		External Exposure
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk
Barium	1.40E+05	NA	NA	2.30E+06	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.00E+04	1.33E+00	NA	NA	5.37E+03	NA	NA	NA	NA	NA	NA
Cadmium	2.00E+03	NA	NA	NA	7.16E+03	NA	NA	NA	NA	NA	NA
Chromium-3	2.00E+06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium-6	1.00E+04	NA	NA	NA	1.10E+03	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	7.06E+06	NA	NA	NA	NA	NA	NA	NA
Manganese	2.80E+05	NA	NA	2.35E+05	NA	NA	NA	NA	NA	NA	NA
Mercury	6.00E+02	NA	NA	1.41E+06	NA	NA	NA	NA	NA	NA	NA
Molybdenum	1.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	4.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium	6.00E+03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	1.40E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	6.00E+05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Table 1. (continued)

OU: 1-03 (TSF-38 Earthen Mounds (full size)] TSF-38 Bottle Site

	Residential Scenario												
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion			External Exposure	
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at 1E-06 risk	Minimum SC
Barium	1.89E+04	NA	NA	1.67E+06	NA	NA	NA	NA	1.90E+04	NA	NA	NA	1.89E+04
Beryllium	1.35E+03	1.49E-01	NA	NA	3.26E+03	NA	NA	NA	5.11E+03	5.47E-01	NA	NA	1.49E-01
Cadmium	2.70E+02	NA	NA	NA	4.35E+03	NA	NA	NA	3.67E+01	NA	NA	NA	3.67E+01
Chromium-3	2.70E+05	NA	NA	NA	NA	NA	NA	NA	7.19E+04	NA	NA	NA	7.19E+04
Chromium-6	1.35E+03	NA	NA	NA	6.68E+02	NA	NA	NA	3.59E+02	NA	NA	NA	3.59E+02
Copper	NA	NA	NA	NA	NA	NA	NA	NA	4.19E+03	NA	NA	NA	4.19E+03
Lead	NA	NA	NA	5.03E+06	NA	NA	NA	NA	NA	NA	NA	NA	5.03E+06
Manganese	3.78E+04	NA	NA	1.70E+05	NA	NA	NA	NA	1.36E+03	NA	NA	NA	1.36E+03
Mercury	8.10E+01	NA	NA	1.02E+06	NA	NA	NA	NA	1.35E+02	NA	NA	NA	8.10E+01
Molybdenum	1.35E+03	NA	NA	NA	NA	NA	NA	NA	5.96E+02	NA	NA	NA	5.96E+02
Nickel	5.40E+03	NA	NA	NA	NA	NA	NA	NA	9.00E+03	NA	NA	NA	5.40E+03
Uranium	8.10E+02	NA	NA	NA	NA	NA	NA	NA	2.20E+02	NA	NA	NA	2.20E+02
Vanadium	1.89E+03	NA	NA	NA	NA	NA	NA	NA	2.75E+04	NA	NA	NA	1.89E+03
Zinc	8.10E+04	NA	NA	NA	NA	NA	NA	NA	3.12E+04	NA	NA	NA	3.12E+04

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Table 2. Risk-based soil screening summary table.

OU: 1-03 [TSF -38 Earthen Mounds (1/4 size)] TSF-38 Bottle Site

	Occupational Scenario										
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion		External Exposure
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk
Barium	1.40E+05	NA	NA	4.60E+06	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.00E+04	1.33E+00	NA	NA	1.07E+04	NA	NA	NA	NA	NA	NA
Cadmium	2.00E+03	NA	NA	NA	1.43E+04	NA	NA	NA	NA	NA	NA
Chromium-3	2.00E+06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium-6	1.00E+04	NA	NA	NA	2.20E+03	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	1.41E+07	NA	NA	NA	NA	NA	NA	NA
Manganese	2.80E+05	NA	NA	4.70E+05	NA	NA	NA	NA	NA	NA	NA
Mercury	6.00E+02	NA	NA	2.82E+06	NA	NA	NA	NA	NA	NA	NA
Molybdenum	1.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	4.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium	6.00E+03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	1.40E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	6.00E+05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Table 2. (continued)

OU: 1-03 [TSF -38 Earthen Mounds (1/4 size)] TSF-38 Bottle Site

	Residential Scenario												
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion			External Exposure	
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at 1E-06 risk	Minimum SC
Barium	1.89E+04	NA	NA	3.34E+06	NA	NA	NA	NA	3.35E+04	NA	NA	NA	1.89E+04
Beryllium	1.35E+03	1.49E-01	NA	NA	6.52E+03	NA	NA	NA	1.02E+04	1.09E+00	NA	NA	1.49E-01
Cadmium	2.70E+02	NA	NA	NA	8.69E+03	NA	NA	NA	7.31E+01	NA	NA	NA	7.31E+01
Chromium-3	2.70E+05	NA	NA	NA	NA	NA	NA	NA	1.38E+05	NA	NA	NA	1.38E+05
Chromium-6	1.35E+03	NA	NA	NA	1.34E+03	NA	NA	NA	6.92E+02	NA	NA	NA	6.92E+02
Copper	NA	NA	NA	NA	NA	NA	NA	NA	8.13E+03	NA	NA	NA	8.13E+03
Lead	NA	NA	NA	1.01E+07	NA	NA	NA	NA	NA	NA	NA	NA	1.01E+07
Manganese	3.78E+04	NA	NA	3.41E+05	NA	NA	NA	NA	2.39E+03	NA	NA	NA	2.39E+03
Mercury	8.10E+01	NA	NA	2.04E+06	NA	NA	NA	NA	2.99E+02	NA	NA	NA	8.10E+01
Molybdenum	1.35E+03	NA	NA	NA	NA	NA	NA	NA	1.16E+03	NA	NA	NA	1.16E+03
Nickel	5.40E+03	NA	NA	NA	NA	NA	NA	NA	2.00E+04	NA	NA	NA	5.40E+03
Uranium	8.10E+02	NA	NA	NA	NA	NA	NA	NA	4.39E+02	NA	NA	NA	4.39E+02
Vanadium	1.89E+03	NA	NA	NA	NA	NA	NA	NA	5.26E+04	NA	NA	NA	1.89E+03
Zinc	8.10E+04	NA	NA	NA	NA	NA	NA	NA	6.09E+04	NA	NA	NA	6.09E+04

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Table 3. Risk-based soil screening summary table.

OU: 1-03 [TSF-38 Earthen Mounds (1/8 size)] TSF-38 Bottle Site

	Occupational Scenario										
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion		External Exposure
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk
Barium	1.40E+05	NA	NA	4.60E+06	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.00E+04	1.33E+00	NA	NA	1.07E+04	NA	NA	NA	NA	NA	NA
Cadmium	2.00E+03	NA	NA	NA	1.43E+04	NA	NA	NA	NA	NA	NA
Chromium-3	2.00E+06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium-6	1.00E+04	NA	NA	NA	2.20E+03	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	1.41E+07	NA	NA	NA	NA	NA	NA	NA
Manganese	2.80E+05	NA	NA	4.70E+05	NA	NA	NA	NA	NA	NA	NA
Mercury	6.00E+02	NA	NA	2.82E+06	NA	NA	NA	NA	NA	NA	NA
Molybdenum	1.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	4.00E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium	6.00E+03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	1.40E+04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	6.00E+05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Table 3. (continued)

OU. 1-03 [TSF-38 Earthen Mounds (1/8 size)] TSF-38 Bottle Site

	Residential Scenario												
	Soil Ingestion			Inhalation of Dust			Inhalation of Volatiles		Groundwater Ingestion			External Exposure	
Contaminant	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at HQ=1	SC at 1E-06 risk	SC at HQ=1	SC at 1E-06 risk	SC at 1E-06 risk from radionuclide	SC at 1E-06 risk	Minimum SC
Barium	1.89E+04	NA	NA	3.34E+06	NA	NA	NA	NA	3.93E+04	NA	NA	NA	1.89E+04
Beryllium	1.35E+03	1.49E-01	NA	NA	6.52E+03	NA	NA	NA	1.09E+04	1.61E+00	NA	NA	1.49E-01
Cadmium	2.70E+02	NA	NA	NA	8.69E+03	NA	NA	NA	1.40E+02	NA	NA	NA	1.40E+02
Chromium-3	2.70E+05	NA	NA	NA	NA	NA	NA	NA	2.72E+05	NA	NA	NA	2.70E+05
Chromium-6	1.35E+03	NA	NA	NA	1.34E+03	NA	NA	NA	1.36E+03	NA	NA	NA	1.34E+03
Copper	NA	NA	NA	NA	NA	NA	NA	NA	1.17E+04	NA	NA	NA	1.17E+04
Lead	NA	NA	NA	1.01E+07	NA	NA	NA	NA	NA	NA	NA	NA	1.01E+07
Manganese	3.78E+04	NA	NA	3.41E+05	NA	NA	NA	NA	2.81E+03	NA	NA	NA	2.81E+03
Mercury	8.10E+01	NA	NA	2.04E+06	NA	NA	NA	NA	3.24E+02	NA	NA	NA	8.10E+01
Molybdenum	1.35E+03	NA	NA	NA	NA	NA	NA	NA	1.66E+03	NA	NA	NA	1.35E+03
Nickel	5.40E+03	NA	NA	NA	NA	NA	NA	NA	2.16E+04	NA	NA	NA	5.40E+03
Uranium	8.10E+02	NA	NA	NA	NA	NA	NA	NA	8.38E+02	NA	NA	NA	8.10E+02
Vanadium	1.89E+03	NA	NA	NA	NA	NA	NA	NA	5.56E+04	NA	NA	NA	1.89E+03
Zinc	8.10E+04	NA	NA	NA	NA	NA	NA	NA	9.33E+04	NA	NA	NA	8.10E+04

Risk-based soil concentrations are presented in mg/kg for all compounds except lead.

Lead is presented in mg/cubic meter.

NA=Not available

Attachment B

GWSCREEN Results for all
Risk-Based Screening Concentrations
(backward calculation)

FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.43E-09 mg/L
AVERAGE CONCENTRATION 9.42E-10 mg/L
PEAK TIME (y): 7.678987E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 8.945E+05
LIMITING SOIL CONCENTRATION (mg/kg): 5.963E+02
LIMITING SOIL AMOUNT (mg): 1.964E+08
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 10 *
****

TITLE: Nickel at TSF-38 Full Site
ZKDS 1.000E+02
ZKDU 1.000E+02
ZMW 5.870E+01
ZKDA 1.000E+02
DF 7.400E-01

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 6.6511E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 2.1121E+03
SOLUBILITY LIMITED MASS (mg) 3.3017E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 2.88E-10 mg/L
AVERAGE CONCENTRATION 2.50E-10 mg/L
PEAK TIME (y): 3.832229E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.349E+07
LIMITING SOIL CONCENTRATION (mg/kg): 8.995E+03
LIMITING SOIL AMOUNT (mg): 2.963E+09
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 11 *
****

TITLE: Uranium at TSF-38 Full Site
ZKDS 6.000E+00
ZKDU 6.000E+00
ZMW 2.380E+02
ZKDA 6.000E+00
DF 1.110E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****
LEACH RATE CONSTANT (1/y) 1.0695E-01
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 1.2767E+02
SOLUBILITY LIMITED MASS (mg) 2.0533E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.2980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.64E-09 mg/L
AVERAGE CONCENTRATION 1.53E-09 mg/L
PEAK TIME (y): 2.316414E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 3.299E+05
LIMITING SOIL CONCENTRATION (mg/kg): 2.199E+02
LIMITING SOIL AMOUNT (mg): 7.244E+07
EXECUTION TIME (seconds) 0
****
* RUN NUMBER 12 *
****
TITLE: Vanadium at TSF-38 Full Site
ZKDS 1.000E+03
ZKDU 1.000E+03
ZMW 5.090E+01
ZKDA 1.000E+03
DF 2.590E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****
LEACH RATE CONSTANT (1/y) 6.6651E-04
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9001E+04
RETARDATION FACTOR (UNSATURATED) 2.1112E+04
SOLUBILITY LIMITED MASS (mg) 3.2948E+14
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00

TRANSIT TIME IN UNSAT ZONE (years) 3.8002E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

>>> RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 2.88E-11 mg/L
AVERAGE CONCENTRATION 2.86E-11 mg/L
PEAK TIME (y): 3.830595E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 4.119E+07
LIMITING SOIL CONCENTRATION (mg/kg): 2.746E+04
LIMITING SOIL AMOUNT (mg): 9.045E+09
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 13 *
****

TITLE: Zinc at TSF-38 Full Site
ZKDS 1.600E+01
ZKDU 1.600E+01
ZMW 6.540E+01
ZKDA 1.600E+01
DF 1.110E+01

>>> VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 4.1068E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.0500E+02
RETARDATION FACTOR (UNSATURATED) 3.3878E+02
SOLUBILITY LIMITED MASS (mg) 5.3473E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 6.0980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

>>> RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.78E-09 mg/L
AVERAGE CONCENTRATION 1.08E-09 mg/L
PEAK TIME (y): 6.146822E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 4.677E+07
LIMITING SOIL CONCENTRATION (mg/kg): 3.118E+04
LIMITING SOIL AMOUNT (mg): 1.027E+10
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 14 *

****

TITLE: Beryllium (carcinogen) at TSF-38 Full Site
ZKDS 2.500E+02
ZKDU 2.500E+02
ZMW 9.010E+00
ZKDA 2.500E+02
DF 1.980E-05
AT 2.555E+04
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 2.6642E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.7510E+03
RETARDATION FACTOR (UNSATURATED) 5.2788E+03
SOLUBILITY LIMITED MASS (mg) 8.2427E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 9.5018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS
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MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.15E-10 mg/L
AVERAGE CONCENTRATION 1.10E-10 mg/L
PEAK TIME (y): 9.577850E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 8.209E+02
LIMITING SOIL CONCENTRATION (mg/kg): 5.472E-01
LIMITING SOIL AMOUNT (mg): 1.803E+05
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 15 *
****

TITLE: Barium TSF-38 Half Site
AL 9.000E+00
WA 6.000E+00
ZKDS 5.000E+01
ZKDU 5.000E+01
ZMW 1.370E+02
ZKDA 5.000E+01
DF 2.590E+00
AT 1.100E+04
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
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LEACH RATE CONSTANT (1/y) 1.3271E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
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DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 9.5100E+02
RETARDATION FACTOR (UNSATURATED) 1.0566E+03
SOLUBILITY LIMITED MASS (mg) 4.0689E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

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MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.23E-09 mg/L
AVERAGE CONCENTRATION 9.54E-10 mg/L
PEAK TIME (y): 1.909518E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 5.025E+07
LIMITING SOIL CONCENTRATION (mg/kg): 3.350E+04
LIMITING SOIL AMOUNT (mg): 2.714E+09
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 16 *

****

TITLE: Beryllium (noncarcinogen) at TSF-38 Half Site
ZKDS 2.500E+02
ZKDU 2.500E+02
ZMW 9.010E+00
ZKDA 2.500E+02
DF 1.850E-01

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 2.6642E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.7510E+03
RETARDATION FACTOR (UNSATURATED) 5.2788E+03
SOLUBILITY LIMITED MASS (mg) 2.0269E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 9.5018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

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MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 2.46E-10 mg/L
AVERAGE CONCENTRATION 2.24E-10 mg/L
PEAK TIME (y): 9.540359E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.531E+07

LIMITING SOIL CONCENTRATION (mg/kg): 1.021E+04
LIMITING SOIL AMOUNT (mg): 8.269E+08
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 17 *

****

TITLE: Cadmium at TSF-38 Half Site
ZKDS 6.000E+00
ZKDU 6.000E+00
ZMW 1.120E+02
ZKDA 6.000E+00
DF 1.850E-02

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 1.0695E-01
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 1.2767E+02
SOLUBILITY LIMITED MASS (mg) 5.0490E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.2980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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>>> RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 9.90E-09 mg/L
AVERAGE CONCENTRATION 3.13E-09 mg/L
PEAK TIME (y): 2.307336E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.096E+05
LIMITING SOIL CONCENTRATION (mg/kg): 7.308E+01
LIMITING SOIL AMOUNT (mg): 5.920E+06
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 18 *

****

TITLE: Chromium-3 at TSF-38 Half Site
ZKDS 1.200E+00
ZKDU 1.200E+00
ZMW 5.200E+01
ZKDA 1.200E+00
DF 3.700E+01

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 4.6512E-01
~~~~~~

UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 2.3800E+01
RETARDATION FACTOR (UNSATURATED) 2.6333E+01
SOLUBILITY LIMITED MASS (mg) 1.1610E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 4.7400E+01
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.33E-08 mg/L
AVERAGE CONCENTRATION 3.30E-09 mg/L
PEAK TIME (y): 4.759341E+01
LIMITING SOIL CONCENTRATION (mg/m**3): 2.076E+08
LIMITING SOIL CONCENTRATION (mg/kg): 1.384E+05
LIMITING SOIL AMOUNT (mg): 1.121E+10
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 19 *
****

TITLE: Chromium-6 at TSF-38 Half Site
DF 1.850E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 4.6512E-01
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 2.3800E+01
RETARDATION FACTOR (UNSATURATED) 2.6333E+01
SOLUBILITY LIMITED MASS (mg) 1.1610E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 4.7400E+01
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.33E-08 mg/L
AVERAGE CONCENTRATION 3.30E-09 mg/L
PEAK TIME (y): 4.759341E+01
LIMITING SOIL CONCENTRATION (mg/m**3): 1.038E+06
LIMITING SOIL CONCENTRATION (mg/kg): 6.921E+02
LIMITING SOIL AMOUNT (mg): 5.606E+07
EXECUTION TIME (seconds) 0

```
******************
*  RUN NUMBER  20 *
******************
 TITLE: Copper at TSF-38 Half Site
 ZKDS       2.000E+01
 ZKDU       2.000E+01
 ZMW        6.360E+01
 ZKDA       2.000E+01
 DF       1.300E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
 ********************************************************
 LEACH RATE CONSTANT (1/y)                3.2949E-02
 UNSATURATED PORE VELOCITY (m/y)          1.1111E+01
 DECAY CONSTANT(S) (1/y)                0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)        3.8100E+02
 RETARDATION FACTOR (UNSATURATED)         4.2322E+02
 SOLUBILITY LIMITED MASS (mg)           1.6389E+12
 SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
 TRANSIT TIME IN UNSAT ZONE (years)      7.6180E+02
 FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 >>> RESULTS OF CALCULATIONS
 ********************************************************
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
 MAXIMUM CONCENTRATION   3.05E-09 mg/L
 AVERAGE CONCENTRATION   1.97E-09 mg/L
 PEAK TIME (y):                   7.648922E+02
 LIMITING SOIL CONCENTRATION (mg/m**3):  1.219E+07
 LIMITING SOIL CONCENTRATION (mg/kg):   8.127E+03
 LIMITING SOIL AMOUNT (mg):           6.582E+08
 EXECUTION TIME (seconds)     0
******************
*  RUN NUMBER  21 *
******************
 TITLE: Manganese at TSF-38 Half Site
 ZKDS       5.000E+01
 ZKDU       5.000E+01
 ZMW        5.490E+01
 ZKDA       5.000E+01
 DF       1.850E-01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
 ********************************************************
 LEACH RATE CONSTANT (1/y)                1.3271E-02
 UNSATURATED PORE VELOCITY (m/y)          1.1111E+01
 DECAY CONSTANT(S) (1/y)                0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)        9.5100E+02
```

RETARDATION FACTOR (UNSATURATED) 1.0566E+03
SOLUBILITY LIMITED MASS (mg) 4.0689E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.23E-09 mg/L
AVERAGE CONCENTRATION 9.54E-10 mg/L
PEAK TIME (y): 1.909518E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 3.589E+06
LIMITING SOIL CONCENTRATION (mg/kg): 2.393E+03
LIMITING SOIL AMOUNT (mg): 1.938E+08
EXECUTION TIME (seconds) 0
****
* RUN NUMBER 22 *
****
TITLE: Mercury at TSF-38 Half Site
ZKDS 1.000E+02
ZKDU 1.000E+02
ZMW 2.010E+02
ZKDA 1.000E+02
DF 1.110E-02
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****
LEACH RATE CONSTANT (1/y) 6.6511E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 2.1121E+03
SOLUBILITY LIMITED MASS (mg) 8.1189E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 6.15E-10 mg/L
AVERAGE CONCENTRATION 4.58E-10 mg/L
PEAK TIME (y): 3.817228E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 4.490E+05
LIMITING SOIL CONCENTRATION (mg/kg): 2.993E+02
LIMITING SOIL AMOUNT (mg): 2.425E+07

```
EXECUTION TIME (seconds)    0
******************
* RUN NUMBER  23 *
******************
TITLE: Molybdenum at TSF-38 Half Site
ZKDS      2.000E+01
ZKDU      2.000E+01
ZMW       9.590E+01
ZKDA      2.000E+01
DF        1.850E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                  3.2949E-02
UNSATURATED PORE VELOCITY (m/y)            1.1111E+01
DECAY CONSTANT(S) (1/y)                    0.0000E+00
RETARDATION FACTOR(S) (SATURATED)          3.8100E+02
RETARDATION FACTOR (UNSATURATED)           4.2322E+02
SOLUBILITY LIMITED MASS (mg)               1.6389E+12
SOLUBILITY LIMITED ACTIVITY (Ci)           0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)         7.6180E+02
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-----------------------------------------------------------------------
> > > RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   3.05E-09 mg/L
AVERAGE CONCENTRATION   1.97E-09 mg/L
PEAK TIME (y):                       7.648922E+02
LIMITING SOIL CONCENTRATION (mg/m**3):   1.735E+06
LIMITING SOIL CONCENTRATION (mg/kg):     1.156E+03
LIMITING SOIL AMOUNT (mg):           9.367E+07
EXECUTION TIME (seconds)    0
******************
* RUN NUMBER  24 *
******************
TITLE: Nickel at TSF-38 Half Site
ZKDS      1.000E+02
ZKDU      1.000E+02
ZMW       5.870E+01
ZKDA      1.000E+02
DF        7.400E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                  6.6511E-03
UNSATURATED PORE VELOCITY (m/y)            1.1111E+01
DECAY CONSTANT(S) (1/y)                    0.0000E+00
```

RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 2.1121E+03
SOLUBILITY LIMITED MASS (mg) 8.1189E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 6.15E-10 mg/L
AVERAGE CONCENTRATION 4.58E-10 mg/L
PEAK TIME (y): 3.817228E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 2.993E+07
LIMITING SOIL CONCENTRATION (mg/kg): 1.995E+04
LIMITING SOIL AMOUNT (mg): 1.616E+09
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 25 *
****

TITLE: Uranium at TSF-38 Half Site
ZKDS 6.000E+00
ZKDU 6.000E+00
ZMW 2.380E+02
ZKDA 6.000E+00
DF 1.110E-01

> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 1.0695E-01
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 1.2767E+02
SOLUBILITY LIMITED MASS (mg) 5.0490E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.2980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 9.90E-09 mg/L
AVERAGE CONCENTRATION 3.13E-09 mg/L
PEAK TIME (y): 2.307336E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 6.578E+05
LIMITING SOIL CONCENTRATION (mg/kg): 4.385E+02

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 LIMITING SOIL AMOUNT (mg):              3.552E+07
 EXECUTION TIME (seconds)      0
******************
* RUN NUMBER  26 *
******************
 TITLE: Vanadium at TSF-38 Half Site
 ZKDS        1.000E+03
 ZKDU        1.000E+03
 ZMW         5.090E+01
 ZKDA        1.000E+03
 DF         2.590E-01
 > > > VALUES CALCULATED IN SOURCE SUBROUTINE
 ********************************************************
 LEACH RATE CONSTANT (1/y)              6.6651E-04
 UNSATURATED PORE VELOCITY (m/y)        1.1111E+01
 DECAY CONSTANT(S) (1/y)              0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)       1.9001E+04
 RETARDATION FACTOR (UNSATURATED)        2.1112E+04
 SOLUBILITY LIMITED MASS (mg)           8.1019E+13
 SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
 TRANSIT TIME IN UNSAT ZONE (years)      3.8002E+04
 FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------
 > > > RESULTS OF CALCULATIONS
 ******************************************************
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
 MAXIMUM CONCENTRATION   6.16E-11 mg/L
 AVERAGE CONCENTRATION   6.07E-11 mg/L
 PEAK TIME (y):                    3.815601E+04
 LIMITING SOIL CONCENTRATION (mg/m**3):   7.896E+07
 LIMITING SOIL CONCENTRATION (mg/kg):     5.264E+04
 LIMITING SOIL AMOUNT (mg):              4.264E+09
 EXECUTION TIME (seconds)      0
******************
* RUN NUMBER  27 *
******************
 TITLE: Zinc at TSF-38 Half Site
 ZKDS        1.600E+01
 ZKDU        1.600E+01
 ZMW         6.540E+01
 ZKDA        1.600E+01
 DF         1.110E+01
 > > > VALUES CALCULATED IN SOURCE SUBROUTINE
 ********************************************************
 LEACH RATE CONSTANT (1/y)              4.1068E-02
 UNSATURATED PORE VELOCITY (m/y)        1.1111E+01
```

DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.0500E+02
RETARDATION FACTOR (UNSATURATED) 3.3878E+02
SOLUBILITY LIMITED MASS (mg) 1.3149E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 6.0980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 3.80E-09 mg/L
AVERAGE CONCENTRATION 2.25E-09 mg/L
PEAK TIME (y): 6.122761E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 9.135E+07
LIMITING SOIL CONCENTRATION (mg/kg): 6.090E+04
LIMITING SOIL AMOUNT (mg): 4.933E+09
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 28 *
****

TITLE: Beryllium (carcinogen) at TSF-38 Half Site
ZKDS 2.500E+02
ZKDU 2.500E+02
ZMW 9.010E+00
ZKDA 2.500E+02
DF 1.980E-05
AT 2.555E+04

> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 2.6642E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.7510E+03
RETARDATION FACTOR (UNSATURATED) 5.2788E+03
SOLUBILITY LIMITED MASS (mg) 2.0269E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 9.5018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 2.46E-10 mg/L
AVERAGE CONCENTRATION 2.24E-10 mg/L
PEAK TIME (y): 9.540359E+03

LIMITING SOIL CONCENTRATION (mg/m**3): 1.639E+03
LIMITING SOIL CONCENTRATION (mg/kg): 1.093E+00
LIMITING SOIL AMOUNT (mg): 8.850E+04
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 29 *

****

TITLE: Barium TSF-38 Quarter Site

AL	9.000E+00
WA	6.000E+00
THICKS	5.000E-01
ZKDS	5.000E+01
ZKDU	5.000E+01
ZMW	1.370E+02
ZKDA	5.000E+01
DF	2.590E+00
AT	1.100E+04

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 2.6543E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 9.5100E+02
RETARDATION FACTOR (UNSATURATED) 1.0566E+03
SOLUBILITY LIMITED MASS (mg) 2.0344E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 2.33E-09 mg/L
AVERAGE CONCENTRATION 1.63E-09 mg/L
PEAK TIME (y): 1.909455E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 5.896E+07
LIMITING SOIL CONCENTRATION (mg/kg): 3.931E+04
LIMITING SOIL AMOUNT (mg): 1.592E+09
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 30 *

****

TITLE: Beryllium (noncarcinogen) at TSF-38 Quarter Site

ZKDS	2.500E+02
ZKDU	2.500E+02
ZMW	9.010E+00
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ZKDA      2.500E+02
DF       1.850E-01
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
****************************************************
LEACH RATE CONSTANT (1/y)             5.3284E-03
UNSATURATED PORE VELOCITY (m/y)          1.1111E+01
DECAY CONSTANT(S) (1/y)              0.0000E+00
RETARDATION FACTOR(S) (SATURATED)        4.7510E+03
RETARDATION FACTOR (UNSATURATED)          5.2788E+03
SOLUBILITY LIMITED MASS (mg)           1.0134E+13
SOLUBILITY LIMITED ACTIVITY (Ci)         0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)       9.5018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------
>>> RESULTS OF CALCULATIONS
****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION  4.68E-10 mg/L
AVERAGE CONCENTRATION  4.21E-10 mg/L
PEAK TIME (y):                  9.540041E+03
LIMITING SOIL CONCENTRATION (mg/m**3):  1.627E+07
LIMITING SOIL CONCENTRATION (mg/kg):    1.085E+04
LIMITING SOIL AMOUNT (mg):            4.393E+08
EXECUTION TIME (seconds)     0
*****************
* RUN NUMBER  31 *
*****************
TITLE: Cadmium at TSF-38 Quarter Site
ZKDS      6.000E+00
ZKDU      6.000E+00
ZMW       1.120E+02
ZKDA      6.000E+00
DF       1.850E-02
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
****************************************************
LEACH RATE CONSTANT (1/y)             2.1390E-01
UNSATURATED PORE VELOCITY (m/y)          1.1111E+01
DECAY CONSTANT(S) (1/y)              0.0000E+00
RETARDATION FACTOR(S) (SATURATED)        1.1500E+02
RETARDATION FACTOR (UNSATURATED)          1.2767E+02
SOLUBILITY LIMITED MASS (mg)           2.5245E+11
SOLUBILITY LIMITED ACTIVITY (Ci)         0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)       2.2980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------
>>> RESULTS OF CALCULATIONS
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 *******************************************************
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
 MAXIMUM CONCENTRATION   1.88E-08 mg/L
 AVERAGE CONCENTRATION   3.27E-09 mg/L
 PEAK TIME (y):                    2.307259E+02
 LIMITING SOIL CONCENTRATION (mg/m**3):  2.094E+05
 LIMITING SOIL CONCENTRATION (mg/kg):    1.396E+02
 LIMITING SOIL AMOUNT (mg):              5.654E+06
 EXECUTION TIME (seconds)     0
******************
* RUN NUMBER  32 *
******************
 TITLE: Chromium-3  at TSF-38 Quarter Site
 ZKDS       1.200E+00
 ZKDU       1.200E+00
 ZMW        5.200E+01
 ZKDA       1.200E+00
 DF        3.700E+01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
 *******************************************************
 LEACH RATE CONSTANT (1/y)               9.3023E-01
 UNSATURATED PORE VELOCITY (m/y)          1.1111E+01
 DECAY CONSTANT(S) (1/y)               0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)        2.3800E+01
 RETARDATION FACTOR (UNSATURATED)         2.6333E+01
 SOLUBILITY LIMITED MASS (mg)           5.8050E+10
 SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
 TRANSIT TIME IN UNSAT ZONE (years)      4.7400E+01
 FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 >>> RESULTS OF CALCULATIONS
 *******************************************************
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
 MAXIMUM CONCENTRATION   8.27E-08 mg/L
 AVERAGE CONCENTRATION   3.36E-09 mg/L
 PEAK TIME (y):                    4.759188E+01
 LIMITING SOIL CONCENTRATION (mg/m**3):  4.081E+08
 LIMITING SOIL CONCENTRATION (mg/kg):    2.720E+05
 LIMITING SOIL AMOUNT (mg):              1.102E+10
 EXECUTION TIME (seconds)     0
******************
* RUN NUMBER  33 *
******************
 TITLE: Chromium-6 at TSF-38 Quarter Site
 DF         1.850E-01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
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*****************************************************
LEACH RATE CONSTANT (1/y)             9.3023E-01
UNSATURATED PORE VELOCITY (m/y)         1.1111E+01
DECAY CONSTANT(S) (1/y)              0.0000E+00
RETARDATION FACTOR(S) (SATURATED)       2.3800E+01
RETARDATION FACTOR (UNSATURATED)         2.6333E+01
SOLUBILITY LIMITED MASS (mg)          5.8050E+10
SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)      4.7400E+01
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION  8.27E-08 mg/L
AVERAGE CONCENTRATION  3.36E-09 mg/L
PEAK TIME (y):                4.759188E+01
LIMITING SOIL CONCENTRATION (mg/m**3):  2.040E+06
LIMITING SOIL CONCENTRATION (mg/kg):   1.360E+03
LIMITING SOIL AMOUNT (mg):          5.509E+07
EXECUTION TIME (seconds)    0
******************
* RUN NUMBER  34 *
******************
TITLE: Copper at TSF-38 Quarter Site
ZKDS      2.000E+01
ZKDU      2.000E+01
ZMW       6.360E+01
ZKDA      2.000E+01
DF       1.300E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)             6.5898E-02
UNSATURATED PORE VELOCITY (m/y)         1.1111E+01
DECAY CONSTANT(S) (1/y)              0.0000E+00
RETARDATION FACTOR(S) (SATURATED)       3.8100E+02
RETARDATION FACTOR (UNSATURATED)         4.2322E+02
SOLUBILITY LIMITED MASS (mg)          8.1945E+11
SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)      7.6180E+02
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION  5.79E-09 mg/L
```

```
 AVERAGE CONCENTRATION   2.75E-09 mg/L
 PEAK TIME (y):                    7.648667E+02
 LIMITING SOIL CONCENTRATION (mg/m**3):  1.754E+07
 LIMITING SOIL CONCENTRATION (mg/kg):   1.169E+04
 LIMITING SOIL AMOUNT (mg):            4.735E+08
 EXECUTION TIME (seconds)     0
******************
*  RUN NUMBER  35 *
******************
 TITLE: Manganese at TSF-38 Quarter Site
 ZKDS       5.000E+01
 ZKDU       5.000E+01
 ZMW        5.490E+01
 ZKDA       5.000E+01
 DF       1.850E-01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
 ******************************************************
 LEACH RATE CONSTANT (1/y)            2.6543E-02
 UNSATURATED PORE VELOCITY (m/y)         1.1111E+01
 DECAY CONSTANT(S) (1/y)              0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)       9.5100E+02
 RETARDATION FACTOR (UNSATURATED)        1.0566E+03
 SOLUBILITY LIMITED MASS (mg)          2.0344E+12
 SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
 TRANSIT TIME IN UNSAT ZONE (years)      1.9018E+03
 FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------------------
 >>> RESULTS OF CALCULATIONS
 ******************************************************
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
 MAXIMUM CONCENTRATION   2.33E-09 mg/L
 AVERAGE CONCENTRATION   1.63E-09 mg/L
 PEAK TIME (y):                    1.909455E+03
 LIMITING SOIL CONCENTRATION (mg/m**3):  4.211E+06
 LIMITING SOIL CONCENTRATION (mg/kg):   2.808E+03
 LIMITING SOIL AMOUNT (mg):            1.137E+08
 EXECUTION TIME (seconds)     0
******************
*  RUN NUMBER  36 *
******************
 TITLE: Mercury at TSF-38 Quarter Site
 ZKDS       1.000E+02
 ZKDU       1.000E+02
 ZMW        2.010E+02
 ZKDA       1.000E+02
 DF       1.110E-02
```

```
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                    1.3302E-02
UNSATURATED PORE VELOCITY (m/y)              1.1111E+01
DECAY CONSTANT(S) (1/y)                      0.0000E+00
RETARDATION FACTOR(S) (SATURATED)            1.9010E+03
RETARDATION FACTOR (UNSATURATED)             2.1121E+03
SOLUBILITY LIMITED MASS (mg)                 4.0594E+12
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------
> > > RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   1.17E-09 mg/L
AVERAGE CONCENTRATION   8.45E-10 mg/L
PEAK TIME (y):                       3.817101E+03
LIMITING SOIL CONCENTRATION (mg/m**3):   4.865E+05
LIMITING SOIL CONCENTRATION (mg/kg):     3.244E+02
LIMITING SOIL AMOUNT (mg):               1.314E+07
EXECUTION TIME (seconds)      0
******************
* RUN NUMBER  37 *
******************
TITLE: Molybdenum at TSF-38 Quarter Site
ZKDS        2.000E+01
ZKDU        2.000E+01
ZMW         9.590E+01
ZKDA        2.000E+01
DF          1.850E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
*******************************************************
LEACH RATE CONSTANT (1/y)                    6.5898E-02
UNSATURATED PORE VELOCITY (m/y)              1.1111E+01
DECAY CONSTANT(S) (1/y)                      0.0000E+00
RETARDATION FACTOR(S) (SATURATED)            3.8100E+02
RETARDATION FACTOR (UNSATURATED)             4.2322E+02
SOLUBILITY LIMITED MASS (mg)                 8.1945E+11
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           7.6180E+02
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-------------------------------------------------------------
> > > RESULTS OF CALCULATIONS
*******************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
```

MAXIMUM CONCENTRATION 5.79E-09 mg/L
AVERAGE CONCENTRATION 2.75E-09 mg/L
PEAK TIME (y): 7.648667E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 2.496E+06
LIMITING SOIL CONCENTRATION (mg/kg): 1.664E+03
LIMITING SOIL AMOUNT (mg): 6.739E+07
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 38 *
****

TITLE: Nickel at TSF-38 Quarter Site
ZKDS 1.000E+02
ZKDU 1.000E+02
ZMW 5.870E+01
ZKDA 1.000E+02
DF 7.400E-01

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 1.3302E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 2.1121E+03
SOLUBILITY LIMITED MASS (mg) 4.0594E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

>>> RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.17E-09 mg/L
AVERAGE CONCENTRATION 8.45E-10 mg/L
PEAK TIME (y): 3.817101E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 3.244E+07
LIMITING SOIL CONCENTRATION (mg/kg): 2.162E+04
LIMITING SOIL AMOUNT (mg): 8.758E+08
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 39 *
****

TITLE: Uranium at TSF-38 Quarter Site
ZKDS 6.000E+00
ZKDU 6.000E+00
ZMW 2.380E+02
ZKDA 6.000E+00
~~~~~~

> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 1.3302E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 2.1121E+03
SOLUBILITY LIMITED MASS (mg) 4.0594E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.17E-09 mg/L
AVERAGE CONCENTRATION 8.45E-10 mg/L
PEAK TIME (y): 3.817101E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 4.865E+05
LIMITING SOIL CONCENTRATION (mg/kg): 3.244E+02
LIMITING SOIL AMOUNT (mg): 1.314E+07
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 37 *
****

TITLE: Molybdenum at TSF-38 Quarter Site
ZKDS 2.000E+01
ZKDU 2.000E+01
ZMW 9.590E+01
ZKDA 2.000E+01
DF 1.850E-01

> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 6.5898E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.8100E+02
RETARDATION FACTOR (UNSATURATED) 4.2322E+02
SOLUBILITY LIMITED MASS (mg) 8.1945E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 7.6180E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION

DF 1.110E-01

\> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 2.1390E-01
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 1.2767E+02
SOLUBILITY LIMITED MASS (mg) 2.5245E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.2980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

\> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.88E-08 mg/L
AVERAGE CONCENTRATION 3.27E-09 mg/L
PEAK TIME (y): 2.307259E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.257E+06
LIMITING SOIL CONCENTRATION (mg/kg): 8.377E+02
LIMITING SOIL AMOUNT (mg): 3.393E+07
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 40 *

****

TITLE: Vanadium at TSF-38 Quarter Site
ZKDS 1.000E+03
ZKDU 1.000E+03
ZMW 5.090E+01
ZKDA 1.000E+03
DF 2.590E-01

\> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 1.3330E-03
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9001E+04
RETARDATION FACTOR (UNSATURATED) 2.1112E+04
SOLUBILITY LIMITED MASS (mg) 4.0509E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.8002E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

\> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.17E-10 mg/L
AVERAGE CONCENTRATION 1.15E-10 mg/L
PEAK TIME (y): 3.815474E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 8.336E+07
LIMITING SOIL CONCENTRATION (mg/kg): 5.558E+04
LIMITING SOIL AMOUNT (mg): 2.251E+09
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 41 *

****

TITLE: Zinc at TSF-38 Quarter Site
ZKDS 1.600E+01
ZKDU 1.600E+01
ZMW 6.540E+01
ZKDA 1.600E+01
DF 1.110E+01

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 8.2136E-02
UNSATURATED PORE VELOCITY (m/y) 1.1111E+01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.0500E+02
RETARDATION FACTOR (UNSATURATED) 3.3878E+02
SOLUBILITY LIMITED MASS (mg) 6.5745E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 6.0980E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

> > > RESULTS OF CALCULATIONS

****

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 7.22E-09 mg/L
AVERAGE CONCENTRATION 2.94E-09 mg/L
PEAK TIME (y): 6.122549E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.399E+08
LIMITING SOIL CONCENTRATION (mg/kg): 9.328E+04
LIMITING SOIL AMOUNT (mg): 3.778E+09
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 42 *

****

TITLE: Beryllium (carcinogen) at TSF-38 Quarter Site
ZKDS 2.500E+02
ZKDU 2.500E+02
ZMW 9.010E+00
~~~~~~

```
ZKDA      2.500E+02
DF        1.980E-05
AT        2.555E+04
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
********************************************************
LEACH RATE CONSTANT (1/y)                    5.3284E-03
UNSATURATED PORE VELOCITY (m/y)              1.1111E+01
DECAY CONSTANT(S) (1/y)                      0.0000E+00
RETARDATION FACTOR(S) (SATURATED)            4.7510E+03
RETARDATION FACTOR (UNSATURATED)             5.2788E+03
SOLUBILITY LIMITED MASS (mg)                 1.0134E+13
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           9.5018E+03
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
********************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   4.68E-10 mg/L
AVERAGE CONCENTRATION   4.21E-10 mg/L
PEAK TIME (y):                   9.540041E+03
LIMITING SOIL CONCENTRATION (mg/m**3):   1.741E+03
LIMITING SOIL CONCENTRATION (mg/kg):     1.161E+00
LIMITING SOIL AMOUNT (mg):             4.702E+04
EXECUTION TIME (seconds)     0
******************
* RUN NUMBER 43 *
******************
```

Attachment C

GWSCREEN Results for Risk Assessment
(forward calculation)

```
*************************************
*          GWRUN.BAS                *
* This program is a shell for       *
* GWSCREEN to make multiple runs    *
*     A. S. Rood 11/93              *
*************************************
```

```
****************
* RUN NUMBER 1 *
****************
```

TIME OF RUN 07:14:13.6
DATE OF RUN 12/10/93
INPUT FILE NAME: GWSCREEN.PAR
OUTPUT FILE NAME: GWSCREEN.OUT

==========
==========

ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND

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```
*************************************************
*                                               *
*   This output was produced by the model:      *
*                                               *
*                GWSCREEN                       *
*      Version Control Copy, Version 2.02       *
*   A semi-analytical model for the assessment  *
*   'of the groundwater pathway from the leaching *
```

```
*    of surficial and buried contamination and     *
*  release of contaminants from percolation ponds *
*                10-11-93                    *
*              Arthur S. Rood               *
*       Idaho National Engineering Laboratory    *
*              EG&G Idaho Inc.              *
*     Subsurface and Environmental Modeling Unit  *
*               PO Box 1625                *
*          Idaho Falls, Idaho 83415          *
**************************************************
> > > TITLE OF PROJECT:
Barium TSF-38 Smallest Site
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 6
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED
SOURCE
> > > INPUT DATA
***********************************************************
NUMBER OF RADIOACTIVE PROGENY                0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)      9.00E+00
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)  6.00E+00
THICKNESS OF SOURCE (m)                  5.00E-01
PERCOLATION RATE (darcy vel m/y)          1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE           3.00E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE   3.00E-01

BULK DENSITY AT SOURCE  (g/cm**3)            1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)         5.00E+01
BULK DENSITY IN UNSAT ZONE (g/cm**3)         1.90E+00
UNSATURATED ZONE THICKNESS (m)               6.10E+00
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)     5.00E+01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1) 0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)          3.51E+06
MOLECULAR WEIGHT (g/mole)                  1.37E+02
SOLUBILITY LIMIT (mg/L)                  1.00E+06
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)   1.00E+38
BULK DENSITY OF AQUIFER (g/cm**3)           1.90E+00
POROSITY OF AQUIFER                      1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)     5.00E+01
DISPERSIVITY X DIRECTION (m)               9.00E+00
DISPERSIVITY Y DIRECTION (m)               4.00E+00
PORE VELOCITY  (m/y)                    5.70E+02
WELL SCREEN THICKNESS (m)                  1.50E+01
```

DISTANCE TO RECEPTOR ALONG X AXIS (m) 4.50E+00
DISTANCE TO RECEPTOR ALONG Y AXIS (m) 0.00E+00
NON-CARCINOGENIC REFERENCE DOSE RfD (mg/kg/d) 7.00E-02
UNITS OF CONTAMINANT mg

INPUT DATA FILE CREATED BY: Shannon M. Reed DATE 12/10/93

INPUT DATA CHECKED BY: [signature] DATE 12/10/93

LIMITING SOIL CONCENTRATION CALCULATION
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 2.6560E-03
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 9.5100E+02
RETARDATION FACTOR (UNSATURATED) 3.1767E+02
SOLUBILITY LIMITED MASS (mg) 2.0331E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 5.8133E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

****

INTEGRATION TIME (years) 30
BODY WEIGHT (kg) 7.000E+01
AVERAGING TIME (days) 1.095E+04
WATER INTAKE RATE (L/d) 2.000E+00
EXPOSURE FREQUENCY (days/year) 3.500E+02
EXPOSURE DURATION (years) 3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y) 4.000E-03
CARCINOGENIC RISK CRITERIA 1.000E-06
HAZARD QUOTIENT 1.000E+00

> > > RESULTS OF CALCULATIONS
****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 2.56E+00
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 4.39E-04
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 4.36E-04
HAZARD QUOTIENT FOR INPUT MASS: 1.71E-04
PEAK TIME (y): 5.858321E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 7.614E+08
LIMITING SOIL CONCENTRATION (mg/kg): 5.076E+05
LIMITING INVENTORY IN SOIL (mg): 2.056E+10

EXECUTION TIME (seconds) 1

****

* RUN NUMBER 2 *

****

TITLE: Beryllium (noncarcinogen) at TSF-38 Smallest Site
ZKDS 2.500E+02
ZKDU 2.500E+02
QI 1.850E+06
ZMW 9.010E+00
ZKDA 2.500E+02
DF 5.000E-03

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 5.3291E-04
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.7510E+03
RETARDATION FACTOR (UNSATURATED) 1.5843E+03
SOLUBILITY LIMITED MASS (mg) 1.0133E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.8993E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

> > > RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.82E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 4.64E-05
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 4.64E-05
HAZARD QUOTIENT FOR INPUT MASS: 2.54E-04
PEAK TIME (y): 2.921821E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 2.694E+08
LIMITING SOIL CONCENTRATION (mg/kg): 1.796E+05
LIMITING INVENTORY IN SOIL (mg): 7.274E+09
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 3 *

****

TITLE: Cadmium at TSF-38 Smallest Site
ZKDS 6.000E+00
ZKDU 6.000E+00
QI 8.640E+06
ZMW 1.120E+02
ZKDA 6.000E+00
DF 5.000E-04

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****
~~~~~~

LEACH RATE CONSTANT (1/y) 2.1505E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 3.9000E+01
SOLUBILITY LIMITED MASS (mg) 2.5110E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 7.1370E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

~~~~~~

>>> RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.82E-02
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 8.77E-03
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 7.52E-03
HAZARD QUOTIENT FOR INPUT MASS: 4.12E-01
PEAK TIME (y): 7.191441E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 7.771E+05
LIMITING SOIL CONCENTRATION (mg/kg): 5.181E+02
LIMITING INVENTORY IN SOIL (mg): 2.098E+07
EXECUTION TIME (seconds) 1

****

* RUN NUMBER 4 *

****

TITLE: Chromium-3 at TSF-38 Smallest Site
ZKDS 1.200E+00
ZKDU 1.200E+00
QI 7.880E+06
ZMW 5.200E+01
ZKDA 1.200E+00
DF 1.000E+00

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 9.5238E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 2.3800E+01
RETARDATION FACTOR (UNSATURATED) 8.6000E+00
SOLUBILITY LIMITED MASS (mg) 5.6700E+10
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.5738E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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>>> RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 3.65E+01

MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 3.57E-02
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 1.44E-02
HAZARD QUOTIENT FOR INPUT MASS: 3.95E-04
PEAK TIME (y): 1.585067E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 7.385E+08
LIMITING SOIL CONCENTRATION (mg/kg): 4.923E+05
LIMITING INVENTORY IN SOIL (mg): 1.994E+10
EXECUTION TIME (seconds) 1

****

* RUN NUMBER 5 *

****

TITLE: Chromium-6 at TSF-38 Smallest Site
QI 7.880E+06
DF 5.000E-03

\>>> VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 9.5238E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 2.3800E+01
RETARDATION FACTOR (UNSATURATED) 8.6000E+00
SOLUBILITY LIMITED MASS (mg) 5.6700E+10
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.5738E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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\>>> RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.82E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 3.57E-02
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 1.44E-02
HAZARD QUOTIENT FOR INPUT MASS: 7.90E-02
PEAK TIME (y): 1.585067E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 3.693E+06
LIMITING SOIL CONCENTRATION (mg/kg): 2.462E+03
LIMITING INVENTORY IN SOIL (mg): 9.970E+07
EXECUTION TIME (seconds) 1

****

* RUN NUMBER 6 *

****

TITLE: Copper at TSF-38 Smallest Site
ZKDS 2.000E+01
ZKDU 2.000E+01
QI 8.920E+06
ZMW 6.360E+01
ZKDA 2.000E+01
~~~~~~

DF 3.700E-02

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 6.6007E-03
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.8100E+02
RETARDATION FACTOR (UNSATURATED) 1.2767E+02
SOLUBILITY LIMITED MASS (mg) 8.1810E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.3363E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.35E+00
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 2.77E-03
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 2.63E-03
HAZARD QUOTIENT FOR INPUT MASS: 1.94E-03
PEAK TIME (y): 2.354337E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.699E+08
LIMITING SOIL CONCENTRATION (mg/kg): 1.133E+05
LIMITING INVENTORY IN SOIL (mg): 4.587E+09
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 7 *
****

TITLE: Manganese at TSF-38 Smallest Site
ZKDS 5.000E+01
ZKDU 5.000E+01
QI 7.200E+06
ZMW 5.490E+01
ZKDA 5.000E+01
DF 5.000E-03

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 2.6560E-03
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 9.5100E+02
RETARDATION FACTOR (UNSATURATED) 3.1767E+02
SOLUBILITY LIMITED MASS (mg) 2.0331E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 5.8133E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

```
> > > RESULTS OF CALCULATIONS
*****************************************************
LIMITING GROUNDWATER CONCENTRATION (mg/L):   1.82E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L):    9.01E-04
AVERAGE GROUNDWATER CONCENTRATION (mg/L):    8.95E-04
HAZARD QUOTIENT FOR INPUT MASS:              4.90E-03
PEAK TIME (y):                    5.858321E+03
LIMITING SOIL CONCENTRATION (mg/m**3):   5.439E+07
LIMITING SOIL CONCENTRATION (mg/kg):     3.626E+04
LIMITING INVENTORY IN SOIL (mg):         1.468E+09
EXECUTION TIME (seconds)     0
******************
* RUN NUMBER  8 *
******************
TITLE: Mercury at TSF-38 Smallest Site
ZKDS       1.000E+02
ZKDU       1.000E+02
QI        1.350E+10
ZMW        2.010E+02
ZKDA       1.000E+02
DF        3.000E-04
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                1.3307E-03
UNSATURATED PORE VELOCITY (m/y)          3.3333E-01
DECAY CONSTANT(S) (1/y)                 0.0000E+00
RETARDATION FACTOR(S) (SATURATED)        1.9010E+03
RETARDATION FACTOR (UNSATURATED)         6.3433E+02
SOLUBILITY LIMITED MASS (mg)            4.0581E+12
SOLUBILITY LIMITED ACTIVITY (Ci)         0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)       1.1608E+04
FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
-----------------------------------------------------------
> > > RESULTS OF CALCULATIONS
*****************************************************
LIMITING GROUNDWATER CONCENTRATION (mg/L):   1.09E-02
MAXIMUM GROUNDWATER CONCENTRATION (mg/L):    8.46E-01
AVERAGE GROUNDWATER CONCENTRATION (mg/L):    8.45E-01
HAZARD QUOTIENT FOR INPUT MASS:              7.71E+01
PEAK TIME (y):                    1.169829E+04
LIMITING SOIL CONCENTRATION (mg/m**3):   6.482E+06
LIMITING SOIL CONCENTRATION (mg/kg):     4.321E+03
LIMITING INVENTORY IN SOIL (mg):         1.750E+08
EXECUTION TIME (seconds)     0
******************
* RUN NUMBER  9 *
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******************
 TITLE: Molybdenum at TSF-38 Smallest Site
 ZKDS       2.000E+01
 ZKDU       2.000E+01
 QI       1.020E+07
 ZMW        9.590E+01
 ZKDA       2.000E+01
 DF       5.000E-03
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
 ******************************************************
 LEACH RATE CONSTANT (1/y)               6.6007E-03
 UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
 DECAY CONSTANT(S) (1/y)              0.0000E+00
 RETARDATION FACTOR(S) (SATURATED)       3.8100E+02
 RETARDATION FACTOR (UNSATURATED)        1.2767E+02
 SOLUBILITY LIMITED MASS (mg)          8.1810E+11
 SOLUBILITY LIMITED ACTIVITY (Ci)        0.0000E+00
 TRANSIT TIME IN UNSAT ZONE (years)      2.3363E+03
 FRACTION DECAYED DURING UNSAT TRANSPORT  0.0000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 >>> RESULTS OF CALCULATIONS
 ******************************************************
 LIMITING GROUNDWATER CONCENTRATION (mg/L):  1.82E-01
 MAXIMUM GROUNDWATER CONCENTRATION (mg/L):   3.17E-03
 AVERAGE GROUNDWATER CONCENTRATION (mg/L):   3.00E-03
 HAZARD QUOTIENT FOR INPUT MASS:            1.65E-02
 PEAK TIME (y):                    2.354337E+03
 LIMITING SOIL CONCENTRATION (mg/m**3):  2.296E+07
 LIMITING SOIL CONCENTRATION (mg/kg):   1.531E+04
 LIMITING INVENTORY IN SOIL (mg):       6.199E+08
 EXECUTION TIME (seconds)    0
******************
* RUN NUMBER  10 *
******************
 TITLE: Nickel at TSF-38 Smallest Site
 ZKDS       1.000E+02
 ZKDU       1.000E+02
 QI       8.900E+06
 ZMW        5.870E+01
 ZKDA       1.000E+02
 DF       2.000E-02
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
 ******************************************************
 LEACH RATE CONSTANT (1/y)               1.3307E-03
 UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
 DECAY CONSTANT(S) (1/y)              0.0000E+00
```

RETARDATION FACTOR(S) (SATURATED) 1.9010E+03
RETARDATION FACTOR (UNSATURATED) 6.3433E+02
SOLUBILITY LIMITED MASS (mg) 4.0581E+12
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.1608E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 7.30E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 5.58E-04
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 5.57E-04
HAZARD QUOTIENT FOR INPUT MASS: 7.63E-04
PEAK TIME (y): 1.169829E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 4.321E+08
LIMITING SOIL CONCENTRATION (mg/kg): 2.881E+05
LIMITING INVENTORY IN SOIL (mg): 1.167E+10
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 11 *
****

TITLE: Uranium at TSF-38 Smallest Site
ZKDS 6.000E+00
ZKDU 6.000E+00
QI 1.910E+07
ZMW 2.380E+02
ZKDA 6.000E+00
DF 3.000E-03

> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****

LEACH RATE CONSTANT (1/y) 2.1505E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.1500E+02
RETARDATION FACTOR (UNSATURATED) 3.9000E+01
SOLUBILITY LIMITED MASS (mg) 2.5110E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 7.1370E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.10E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 1.94E-02
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 1.66E-02
HAZARD QUOTIENT FOR INPUT MASS: 1.52E-01

PEAK TIME (y): 7.191441E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 4.663E+06
LIMITING SOIL CONCENTRATION (mg/kg): 3.108E+03
LIMITING INVENTORY IN SOIL (mg): 1.259E+08
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 12 *

****

TITLE: Vanadium at TSF-38 Smallest Site
ZKDS 1.000E+03
ZKDU 1.000E+03
QI 5.960E+06
ZMW 5.090E+01
ZKDA 1.000E+03
DF 7.000E-03

> > > VALUES CALCULATED IN SOURCE SUBROUTINE

****

LEACH RATE CONSTANT (1/y) 1.3331E-04
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 1.9001E+04
RETARDATION FACTOR (UNSATURATED) 6.3343E+03
SOLUBILITY LIMITED MASS (mg) 4.0508E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.1592E+05
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

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> > > RESULTS OF CALCULATIONS

****

LIMITING GROUNDWATER CONCENTRATION (mg/L): 2.56E-01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 3.74E-05
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 3.74E-05
HAZARD QUOTIENT FOR INPUT MASS: 1.46E-04
PEAK TIME (y): 1.168178E+05
LIMITING SOIL CONCENTRATION (mg/m**3): 1.508E+09
LIMITING SOIL CONCENTRATION (mg/kg): 1.005E+06
LIMITING INVENTORY IN SOIL (mg): 4.070E+10
EXECUTION TIME (seconds) 0

****

* RUN NUMBER 13 *

****

TITLE: Zinc at TSF-38 Smallest Site
ZKDS 1.600E+01
ZKDU 1.600E+01
QI 7.140E+06
ZMW 6.540E+01
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ZKDA 1.600E+01
DF 3.000E-01
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****
LEACH RATE CONSTANT (1/y) 8.2305E-03
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 3.0500E+02
RETARDATION FACTOR (UNSATURATED) 1.0233E+02
SOLUBILITY LIMITED MASS (mg) 6.5610E+11
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.8727E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****
LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.09E+01
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 2.77E-03
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 2.50E-03
HAZARD QUOTIENT FOR INPUT MASS: 2.29E-04
PEAK TIME (y): 1.887139E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.156E+09
LIMITING SOIL CONCENTRATION (mg/kg): 7.707E+05
LIMITING INVENTORY IN SOIL (mg): 3.122E+10
EXECUTION TIME (seconds) 0
****
* RUN NUMBER 14 *
****
TITLE: Beryllium (carcinogen) at TSF-38 Smallest Site
ZKDS 2.500E+02
ZKDU 2.500E+02
QI 1.850E+06
ZMW 9.010E+00
ZKDA 2.500E+02
IMODE 5.000E+00
DF 4.300E+00
AT 2.555E+04
> > > VALUES CALCULATED IN SOURCE SUBROUTINE
****
LEACH RATE CONSTANT (1/y) 5.3291E-04
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.7510E+03
RETARDATION FACTOR (UNSATURATED) 1.5843E+03
SOLUBILITY LIMITED MASS (mg) 1.0133E+13
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00

TRANSIT TIME IN UNSAT ZONE (years) 2.8993E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

> > > RESULTS OF CALCULATIONS
****

CARCINOGENIC RISK CALCULATION
LIMITING GROUNDWATER CONCENTRATION (mg/L): 1.98E-05
MAXIMUM GROUNDWATER CONCENTRATION (mg/L): 4.64E-05
AVERAGE GROUNDWATER CONCENTRATION (mg/L): 4.64E-05
CARCINOGENIC RISK FOR USER INPUT MASS: 2.34E-06
PEAK TIME (y): 2.921821E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 2.924E+04
LIMITING SOIL CONCENTRATION (mg/kg): 1.949E+01
LIMITING INVENTORY IN SOIL (mg): 7.895E+05
EXECUTION TIME (seconds) 0

****
* RUN NUMBER 15 *
****