Attachment A.
GWSCREEN Output Files

```
Scenario 1.  20 year release using HSSM source geometry

         ************************************
         *            GWRUN.BAS             *
         *  This program is a shell for     *
         *  GWSCREEN to make multiple runs  *
         *    For GWSCREEN Version 2.03 ONLY*
         *      A. S. Rood 01-11-95         *
         ************************************
****************
* RUN NUMBER 1 *
****************
 TIME OF RUN 01:33:05.0
 DATE OF RUN 07/06/95
 INPUT FILE NAME: GWSCREEN.PAR
 OUTPUT FILE NAME: GWSCREEN.OUT
  ================================================================================
           ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND
                    LIMITATION OF LIABILITY

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  DOE Field Office, Idaho, Contract Number DE-AC07-76ID01570.
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  ================================================================================

   ************************************************
   *                                              *
   *     This output was produced by the model:   *
   *                                              *
   *                  GWSCREEN                    *
   *        Version Control Copy, Version 2.03    *
   *    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*
   *                  03-08-94                    *
   *                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:
  PBF-742: Benzene        20 year release HSSM release parameters
  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  GAUSSIAN QUADRATURE SOLUTION
  MODEL OPTIONS
  IMODE: 4
  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)             4.75E+02
  WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)         4.75E+02
  THICKNESS OF SOURCE (m)                              5.40E-03
  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)                2.50E-01
  BULK DENSITY IN UNSAT ZONE (g/cm**3)                 1.90E+00
  UNSATURATED ZONE THICKNESS (m)                       4.00E+01
  SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)            2.50E-01
  OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)       0.00E+00
  INITIAL MASS OR ACTIVITY (mg or Ci)                  1.14E+07
  MOLECULAR WEIGHT (g/mole)                            1.00E+02
  SOLUBILITY LIMIT (mg/L)                              1.75E+03
  HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)          2.00E+00
  BULK DENSITY OF AQUIFER (g/cm**3)                    1.90E+00
  POROSITY OF AQUIFER                                  1.00E-01
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SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)      2.50E-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)    2.37E+02
DISTANCE TO RECEPTOR ALONG Y AXIS       (m)    0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)   8.00E-04
UNITS OF CONTAMINANT                           mg

INPUT DATA FILE CREATED BY:_____ DATE  /  /

INPUT DATA CHECKED BY:     _____ DATE  /  /

-------------------------------------------------------------
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                      2.7435E+01
UNSATURATED PORE VELOCITY (m/y)                3.3333E-01
DECAY CONSTANT(S) (1/y)                        3.4657E-01
RETARDATION FACTOR(S) (SATURATED)              5.7500E+00
RETARDATION FACTOR (UNSATURATED)               2.5833E+00
SOLUBILITY LIMITED MASS (mg)                   1.4392E+09
SOLUBILITY LIMITED ACTIVITY (Ci)               0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)             3.1000E+02
FRACTION DECAYED DURING UNSAT TRANSPORT        1.0000E+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)                1.000E-04
CARCINOGENIC RISK CRITERIA                     1.000E-06
HAZARD QUOTIENT                                1.000E+00
-------------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION    1.03E-49 mg/L
AVERAGE CONCENTRATION    9.57E-51 mg/L
PEAK TIME (y):                                 3.103687E+02
LIMITING SOIL CONCENTRATION (mg/m**3):         7.804E+50
LIMITING SOIL CONCENTRATION (mg/kg):           5.203E+47
LIMITING INVENTORY IN SOIL (mg):               9.509E+53
WARNING !!! THE LIMITING SOIL MASS OF  9.509E+53 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.439E+09 mg
EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  2 *
******************
TITLE: PBF-752:Benzene
AL             8.300E+02
WA             8.300E+02
XD             4.150E+02
QI             3.469E+07
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****************************************************
LEACH RATE CONSTANT (1/y)                      2.7435E+01
UNSATURATED PORE VELOCITY (m/y)                3.3333E-01
DECAY CONSTANT(S) (1/y)                        3.4657E-01
RETARDATION FACTOR(S) (SATURATED)              5.7500E+00
RETARDATION FACTOR (UNSATURATED)               2.5833E+00
SOLUBILITY LIMITED MASS (mg)                   4.3943E+09
SOLUBILITY LIMITED ACTIVITY (Ci)               0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)             3.1000E+02
FRACTION DECAYED DURING UNSAT TRANSPORT        1.0000E+00
-------------------------------------------------------------
>>> RESULTS OF CALCULATIONS
*****************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION    1.02E-49 mg/L
AVERAGE CONCENTRATION    1.12E-50 mg/L
PEAK TIME (y):                                 3.103787E+02
LIMITING SOIL CONCENTRATION (mg/m**3):         6.679E+50
LIMITING SOIL CONCENTRATION (mg/kg):           4.453E+47
LIMITING INVENTORY IN SOIL (mg):               2.485E+54
WARNING !!! THE LIMITING SOIL MASS OF  2.485E+54 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 4.394E+09 mg
EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  3 *
******************
TITLE: PBF-742:Toluene
AL             4.750E+02
WA             4.750E+02
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  XD            2.370E+02
  ZKDS          9.000E-01
  ZKDU          9.000E-01
  ZKDA          9.000E-01
  QI            2.846E+08
  DF            1.000E+00
  SL            5.350E+02
  THALF         1.000E-01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    1.1223E+01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E+00
  RETARDATION FACTOR(S) (SATURATED)            1.8100E+01
  RETARDATION FACTOR (UNSATURATED)             6.7000E+00
  SOLUBILITY LIMITED MASS (mg)                 1.0755E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           8.0400E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------

  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    7.42-220 mg/L
  AVERAGE CONCENTRATION    8.82-222 mg/L
  PEAK TIME (y):                               8.040908E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):       2.650+226
  LIMITING SOIL CONCENTRATION (mg/kg):         1.766+223
  LIMITING INVENTORY IN SOIL (mg):             3.228+229
  WARNING !!! THE LIMITING SOIL MASS OF  3.228+229 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.076E+09 mg
  EXECUTION TIME (seconds)       3
******************
*  RUN NUMBER  4 *
******************
  TITLE: PBF-752:Toluene
  QI            8.674E+08
  AL            8.300E+02
  WA            8.300E+02
  XD            4.150E+02
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    1.1223E+01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E+00
  RETARDATION FACTOR(S) (SATURATED)            1.8100E+01
  RETARDATION FACTOR (UNSATURATED)             6.7000E+00
  SOLUBILITY LIMITED MASS (mg)                 3.2839E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           8.0400E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------

  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    6.92-220 mg/L
  AVERAGE CONCENTRATION    8.44-222 mg/L
  PEAK TIME (y):                               8.040959E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):       2.763+226
  LIMITING SOIL CONCENTRATION (mg/kg):         1.842+223
  LIMITING INVENTORY IN SOIL (mg):             1.028+230
  WARNING !!! THE LIMITING SOIL MASS OF  1.028+230 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.284E+09 mg
  EXECUTION TIME (seconds)       3
******************
*  RUN NUMBER  5 *
******************
  TITLE: PBF-742:Ethylbenzene
  AL            4.750E+02
  WA            4.750E+02
  XD            2.370E+02
  ZKDS          3.300E+00
  ZKDU          3.300E+00
  ZKDA          3.300E+00
  QI            2.846E+08
  DF            2.000E+00
  SL            1.520E+02
  THALF         1.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    3.5273E+00
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)            6.3700E+01
  RETARDATION FACTOR (UNSATURATED)             2.1900E+01
  SOLUBILITY LIMITED MASS (mg)                 9.7226E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           2.6280E+03
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------
```

```
   >>> RESULTS OF CALCULATIONS
   ********************************************************
   MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
   MAXIMUM CONCENTRATION    3.78-220 mg/L
   AVERAGE CONCENTRATION    2.93-221 mg/L
   PEAK TIME (y):                          2.628587E+03
   LIMITING SOIL CONCENTRATION (mg/m**3):    1.592+226
   LIMITING SOIL CONCENTRATION (mg/kg):      1.061+223
   LIMITING INVENTORY IN SOIL (mg):          1.940+229
   WARNING !!! THE LIMITING SOIL MASS OF  1.940+229 mg
   EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 9.723E+08 mg
   EXECUTION TIME (seconds)       2
 ******************
 *  RUN NUMBER  6 *
 ******************
   TITLE: PBF-752:Ethylbenzene
   AL             8.300E+02
   WA             8.300E+02
   XD             4.150E+02
   QI             8.674E+08
  >>> VALUES CALCULATED IN SOURCE SUBROUTINE
   ********************************************************
   LEACH RATE CONSTANT (1/y)                  3.5273E+00
   UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
   DECAY CONSTANT(S) (1/y)                    6.9315E-01
   RETARDATION FACTOR(S) (SATURATED)          6.3700E+01
   RETARDATION FACTOR (UNSATURATED)           2.1900E+01
   SOLUBILITY LIMITED MASS (mg)               2.9686E+09
   SOLUBILITY LIMITED ACTIVITY (Ci)           0.0000E+00
   TRANSIT TIME IN UNSAT ZONE (years)         2.6280E+03
   FRACTION DECAYED DURING UNSAT TRANSPORT    1.0000E+00
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
   >>> RESULTS OF CALCULATIONS
   ********************************************************
   MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
   MAXIMUM CONCENTRATION    3.63-220 mg/L
   AVERAGE CONCENTRATION    2.86-221 mg/L
   PEAK TIME (y):                          2.628617E+03
   LIMITING SOIL CONCENTRATION (mg/m**3):    1.633+226
   LIMITING SOIL CONCENTRATION (mg/kg):      1.089+223
   LIMITING INVENTORY IN SOIL (mg):          6.076+229
   WARNING !!! THE LIMITING SOIL MASS OF  6.076+229 mg
   EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.969E+09 mg
   EXECUTION TIME (seconds)       2
 ******************
 *  RUN NUMBER  7 *
 ******************
   TITLE: PBF-742:XYLENE
   AL             4.750E+02
   WA             4.750E+02
   XD             2.370E+02
   ZKDS           7.200E-01
   ZKDU           7.200E-01
   ZKDA           7.200E-01
   DF             8.000E-01
   QI             2.846E+08
   SL             1.980E+02
   THALF          1.000E+00
  >>> VALUES CALCULATED IN SOURCE SUBROUTINE
   ********************************************************
   LEACH RATE CONSTANT (1/y)                  1.3419E+01
   UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
   DECAY CONSTANT(S) (1/y)                    6.9315E-01
   RETARDATION FACTOR(S) (SATURATED)          1.4680E+01
   RETARDATION FACTOR (UNSATURATED)           5.5600E+00
   SOLUBILITY LIMITED MASS (mg)               3.3291E+08
   SOLUBILITY LIMITED ACTIVITY (Ci)           0.0000E+00
   TRANSIT TIME IN UNSAT ZONE (years)         6.6720E+02
   FRACTION DECAYED DURING UNSAT TRANSPORT    1.0000E+00
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
   >>> RESULTS OF CALCULATIONS
   ********************************************************
   MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
   MAXIMUM CONCENTRATION    5.00-203 mg/L
   AVERAGE CONCENTRATION    3.38-204 mg/L
   PEAK TIME (y):                          6.675210E+02
   LIMITING SOIL CONCENTRATION (mg/m**3):    5.532+208
   LIMITING SOIL CONCENTRATION (mg/kg):      3.688+205
   LIMITING INVENTORY IN SOIL (mg):          6.740+211
   WARNING !!! THE LIMITING SOIL MASS OF  6.740+211 mg
   EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.329E+08 mg
   EXECUTION TIME (seconds)       1
 ******************
 *  RUN NUMBER  8 *
 ******************
   TITLE: PBF-752:XYLENE
   AL             8.300E+02
   WA             8.300E+02
   XD             4.150E+02
   QI             8.674E+08
```

```
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    1.3419E+01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)            1.4680E+01
  RETARDATION FACTOR (UNSATURATED)             5.5600E+00
  SOLUBILITY LIMITED MASS (mg)                 1.0165E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           6.6720E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    4.91-203 mg/L
  AVERAGE CONCENTRATION    3.35-204 mg/L
  PEAK TIME (y):                               6.675369E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):       5.574+208
  LIMITING SOIL CONCENTRATION (mg/kg):         3.716+205
  LIMITING INVENTORY IN SOIL (mg):             2.074+212
  WARNING !!! THE LIMITING SOIL MASS OF  2.074+212 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.016E+09 mg
  EXECUTION TIME (seconds)       2
******************
*  RUN NUMBER  9 *
******************
  TITLE: PBF-742:NAPTHALENE
  KFLAG          0.000E+00
  AL             4.750E+02
  WA             4.750E+02
  XD             2.370E+02
  ZKDS           3.900E+00
  ZKDU           3.900E+00
  ZKDA           3.900E+00
  DF             1.000E+00
  QI             3.415E+08
  SL             3.170E+01
  THALF          0.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    3.0111E+00
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      0.0000E+00
  RETARDATION FACTOR(S) (SATURATED)            7.5100E+01
  RETARDATION FACTOR (UNSATURATED)             2.5700E+01
  SOLUBILITY LIMITED MASS (mg)                 2.3753E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           3.0840E+03
  FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  >>> CONCENTRATION VS TIME MODE

   TIME          CUMULATIVE   CUMULATIVE    AQUIFER      GW CONC ...
                 SOURCE FLUX  AQUIFER FLUX    FLUX        member #1
   (years)         (mg)          (mg)       (mg/year)    (mg/m**3)
  ------------------------------------------------------------------------
   2.9500E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   2.9600E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   2.9700E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   2.9800E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   2.9900E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0000E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0100E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0200E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0300E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0400E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0500E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0600E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0700E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0800E+03   3.4150E+08   0.0000E+00   0.0000E+00   0.0000E+00
   3.0900E+03   3.4150E+08   3.4150E+08   1.5784E+01   1.2622E+01
   3.1000E+03   3.4150E+08   3.4150E+08   1.3213E-12   1.3313E+01
   3.1100E+03   3.4150E+08   3.4150E+08   1.1061E-25   1.3540E+01
   3.1200E+03   3.4150E+08   3.4150E+08   9.2588E-39   1.3324E+01
   3.1300E+03   3.4150E+08   3.4150E+08   7.7506E-52   1.2534E+01
   3.1400E+03   3.4150E+08   3.4150E+08   6.4881E-65   9.5646E+00
   3.1500E+03   3.4150E+08   3.4150E+08   5.4312E-78   5.3028E+00
  AVERAGE INTEGRATED CONCENTRATION FROM  2.9500E+03 TO  3.1500E+03 YEARS =  4.19E+00 mg/m**3
  MAXIMUM CONCENTRATION(S) mg/m**3
   1.35E+01
  TIME(S) OF MAXIMUM CONCENTRATIONS (years)
   3.11E+03
  EXECUTION TIME (seconds)       0
******************
*  RUN NUMBER  10 *
******************
  TITLE: PBF-752:NAPTHALENE
```

```
AL          8.300E+02
WA          8.300E+02
XD          4.150E+02
QI          1.041E+09
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
**************************************************
LEACH RATE CONSTANT (1/y)                    3.0111E+00
UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
DECAY CONSTANT(S) (1/y)                      0.0000E+00
RETARDATION FACTOR(S) (SATURATED)            7.5100E+01
RETARDATION FACTOR (UNSATURATED)             2.5700E+01
SOLUBILITY LIMITED MASS (mg)                 7.2524E+08
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           3.0840E+03
FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
--------------------------------------------------------
>>> RESULTS OF CALCULATIONS
**************************************************
>>> CONCENTRATION VS TIME MODE

 TIME          CUMULATIVE  CUMULATIVE   AQUIFER      GW CONC ...
               SOURCE FLUX AQUIFER FLUX   FLUX        member #1
 (years)         (mg)         (mg)      (mg/year)    (mg/m**3)
-------------------------------------------------------------------
 2.9500E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 2.9600E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 2.9700E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 2.9800E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 2.9900E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0000E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0100E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0200E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0300E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0400E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0500E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0600E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0700E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0800E+03  1.0410E+09  0.0000E+00  0.0000E+00  0.0000E+00
 3.0900E+03  1.0410E+09  1.0410E+09  4.8080E+01  1.2572E+01
 3.1000E+03  1.0410E+09  1.0410E+09  4.0248E-12  1.3290E+01
 3.1100E+03  1.0410E+09  1.0410E+09  3.3692E-25  1.3513E+01
 3.1200E+03  1.0410E+09  1.0410E+09  2.8204E-38  1.3323E+01
 3.1300E+03  1.0410E+09  1.0410E+09  2.3609E-51  1.3209E+01
 3.1400E+03  1.0410E+09  1.0410E+09  1.9764E-64  1.3170E+01
 3.1500E+03  1.0410E+09  1.0410E+09  1.6544E-77  1.3202E+01
AVERAGE INTEGRATED CONCENTRATION FROM  2.9500E+03 TO  3.1500E+03 YEARS =  7.37E+00 mg/m**3
MAXIMUM CONCENTRATION(S) mg/m**3
 1.35E+01
TIME(S) OF MAXIMUM CONCENTRATIONS (years)
 3.11E+03
EXECUTION TIME (seconds)      0
******************
*  RUN NUMBER  11 *
******************
TITLE: PBF-742:METHYLNAPHTHALENE
KFLAG       1.000E+00
AL          4.750E+02
WA          4.750E+02
XD          2.370E+02
ZKDS        2.550E+01
ZKDU        2.550E+01
ZKDA        2.550E+01
DF          1.000E+00
QI          8.537E+08
SL          2.540E+01
THALF       0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
**************************************************
LEACH RATE CONSTANT (1/y)                    4.8038E-01
UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
DECAY CONSTANT(S) (1/y)                      0.0000E+00
RETARDATION FACTOR(S) (SATURATED)            4.8550E+02
RETARDATION FACTOR (UNSATURATED)             1.6250E+02
SOLUBILITY LIMITED MASS (mg)                 1.1930E+09
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           1.9500E+04
FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
--------------------------------------------------------
>>> RESULTS OF CALCULATIONS
**************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION    5.19E-03 mg/L
AVERAGE CONCENTRATION    5.19E-03 mg/L
PEAK TIME (y):                          1.969558E+04
LIMITING SOIL CONCENTRATION (mg/m**3):  1.349E+08
LIMITING SOIL CONCENTRATION (mg/kg):    8.993E+04
LIMITING INVENTORY IN SOIL (mg):        1.644E+11
WARNING !!! THE LIMITING SOIL MASS OF  1.644E+11 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.193E+09 mg
EXECUTION TIME (seconds)      1
```

```
******************
*  RUN NUMBER  12 *
******************
  TITLE: PBF-752:METHYLNAPHTHALENE
  AL           8.300E+02
  WA           8.300E+02
  XD           4.150E+02
  QI           2.602E+09
  SL           2.540E+01
  THALF        0.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ********************************************************
  LEACH RATE CONSTANT (1/y)                    4.8038E-01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      0.0000E+00
  RETARDATION FACTOR(S) (SATURATED)            4.8550E+02
  RETARDATION FACTOR (UNSATURATED)             1.6250E+02
  SOLUBILITY LIMITED MASS (mg)                 3.6426E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           1.9500E+04
  FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
  --------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ********************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    5.19E-03 mg/L
  AVERAGE CONCENTRATION    5.19E-03 mg/L
  PEAK TIME (y):                          1.984720E+04
  LIMITING SOIL CONCENTRATION (mg/m**3):  1.349E+08
  LIMITING SOIL CONCENTRATION (mg/kg):    8.991E+04
  LIMITING INVENTORY IN SOIL (mg):        5.017E+11
  WARNING !!! THE LIMITING SOIL MASS OF  5.017E+11 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.643E+09 mg
  EXECUTION TIME (seconds)      1
******************
*  RUN NUMBER  13 *
******************
```

Scenario 2. 20 year release using DragunSource geometry

```
         ************************************
         *              GWRUN.BAS           *
         *  This program is a shell for     *
         *  GWSCREEN to make multiple runs  *
         *    For GWSCREEN Version 2.03 ONLY*
         *      A. S. Rood 01-11-95         *
         ************************************
****************
* RUN NUMBER 1 *
****************
 TIME OF RUN 00:49:37.2
 DATE OF RUN 07/06/95
 INPUT FILE NAME: GWSCREEN.PAR
 OUTPUT FILE NAME: GWSCREEN.OUT
  ================================================================================
           ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND
                    LIMITATION OF LIABILITY

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  DOE Field Office, Idaho, Contract Number DE-AC07-76ID01570.
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  Cambridge University Press.
  ================================================================================

   ************************************************
   *                                              *
   *     This output was produced by the model:   *
   *                                              *
   *                  GWSCREEN                    *
   *        Version Control Copy, Version 2.03    *
   *    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*
   *                  03-08-94                    *
   *                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:
PBF-742: Benzene        20 year release Dragun release parameters
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
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)         1.05E+02
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)     1.05E+02
THICKNESS OF SOURCE (m)                          7.69E-02
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)            2.50E-01
BULK DENSITY IN UNSAT ZONE (g/cm**3)             1.90E+00
UNSATURATED ZONE THICKNESS (m)                   4.00E+01
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)        2.50E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)   0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)              1.14E+07
MOLECULAR WEIGHT (g/mole)                        1.00E+02
SOLUBILITY LIMIT (mg/L)                          1.75E+03
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)      2.00E+00
BULK DENSITY OF AQUIFER (g/cm**3)                1.90E+00
POROSITY OF AQUIFER                              1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)        2.50E-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)      5.30E+01
DISTANCE TO RECEPTOR ALONG Y AXIS       (m)      0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)     8.00E-04
UNITS OF CONTAMINANT                             mg

INPUT DATA FILE CREATED BY:_____ DATE  /  /

INPUT DATA CHECKED BY:     _____ DATE  /  /

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LIMITING SOIL CONCENTRATION CALCULATION
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
******************************************************
LEACH RATE CONSTANT (1/y)                    1.9265E+00
UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
DECAY CONSTANT(S) (1/y)                      3.4657E-01
RETARDATION FACTOR(S) (SATURATED)            5.7500E+00
RETARDATION FACTOR (UNSATURATED)             2.5833E+00
SOLUBILITY LIMITED MASS (mg)                 1.0015E+09
SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)           3.1000E+02
FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+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)     1.000E-04
CARCINOGENIC RISK CRITERIA          1.000E-06
HAZARD QUOTIENT                     1.000E+00
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>> RESULTS OF CALCULATIONS
******************************************************
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION   1.31E-48 mg/L
AVERAGE CONCENTRATION   6.05E-50 mg/L
PEAK TIME (y):                          3.107421E+02
LIMITING SOIL CONCENTRATION (mg/m**3):  1.776E+50
LIMITING SOIL CONCENTRATION (mg/kg):    1.184E+47
LIMITING INVENTORY IN SOIL (mg):        1.506E+53
WARNING !!! THE LIMITING SOIL MASS OF  1.506E+53 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.001E+09 mg
EXECUTION TIME (seconds)      1
******************
*  RUN NUMBER  2 *
******************
TITLE: PBF-752:Benzene
AL          1.730E+02
```

```
  WA          1.730E+02
  XD          8.700E+01
  THICKS      8.690E-02
  QI          3.469E+07
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                   1.7048E+00
  UNSATURATED PORE VELOCITY (m/y)             3.3333E-01
  DECAY CONSTANT(S) (1/y)                     3.4657E-01
  RETARDATION FACTOR(S) (SATURATED)           5.7500E+00
  RETARDATION FACTOR (UNSATURATED)            2.5833E+00
  SOLUBILITY LIMITED MASS (mg)                3.0722E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)            0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)          3.1000E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT     1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    1.59E-48 mg/L
  AVERAGE CONCENTRATION    1.00E-49 mg/L
  PEAK TIME (y):                              3.110446E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):      1.065E+50
  LIMITING SOIL CONCENTRATION (mg/kg):        7.103E+46
  LIMITING INVENTORY IN SOIL (mg):            2.771E+53
  WARNING !!! THE LIMITING SOIL MASS OF  2.771E+53 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.072E+09 mg
  EXECUTION TIME (seconds)       1
*****************
*  RUN NUMBER  3 *
*****************
  TITLE: PBF-742:Toluene
  AL          1.730E+02
  WA          1.730E+02
  XD          8.700E+01
  THICKS      7.690E-02
  ZKDS        9.000E-01
  ZKDU        9.000E-01
  ZKDA        9.000E-01
  QI          2.846E+08
  DF          1.000E+00
  SL          5.350E+02
  THALF       1.000E-01
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                   7.8812E-01
  UNSATURATED PORE VELOCITY (m/y)             3.3333E-01
  DECAY CONSTANT(S) (1/y)                     6.9315E+00
  RETARDATION FACTOR(S) (SATURATED)           1.8100E+01
  RETARDATION FACTOR (UNSATURATED)            6.7000E+00
  SOLUBILITY LIMITED MASS (mg)                2.0317E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)            0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)          8.0400E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT     1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    5.85-220 mg/L
  AVERAGE CONCENTRATION    8.87-222 mg/L
  PEAK TIME (y):                              8.041567E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):      1.395+226
  LIMITING SOIL CONCENTRATION (mg/kg):        9.298+222
  LIMITING INVENTORY IN SOIL (mg):            3.210+229
  WARNING !!! THE LIMITING SOIL MASS OF  3.210+229 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.032E+09 mg
  EXECUTION TIME (seconds)       1
*****************
*  RUN NUMBER  4 *
*****************
  TITLE: PBF-752:Toluene
  QI          8.674E+08
  AL          1.730E+02
  WA          1.730E+02
  XD          8.700E+01
  THICKS      8.690E-02
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                   6.9742E-01
  UNSATURATED PORE VELOCITY (m/y)             3.3333E-01
  DECAY CONSTANT(S) (1/y)                     6.9315E+00
  RETARDATION FACTOR(S) (SATURATED)           1.8100E+01
  RETARDATION FACTOR (UNSATURATED)            6.7000E+00
  SOLUBILITY LIMITED MASS (mg)                2.2959E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)            0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)          8.0400E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT     1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
```

```
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    1.59-219 mg/L
  AVERAGE CONCENTRATION    2.41-221 mg/L
  PEAK TIME (y):                          8.041576E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):  1.382+226
  LIMITING SOIL CONCENTRATION (mg/kg):    9.213+222
  LIMITING INVENTORY IN SOIL (mg):        3.594+229
  WARNING !!! THE LIMITING SOIL MASS OF  3.594+229 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.296E+09 mg
  EXECUTION TIME (seconds)      1
******************
*  RUN NUMBER  5 *
******************
  TITLE: PBF-742:Ethylbenzene
  AL           1.050E+02
  WA           1.050E+02
  THICKS       7.690E-02
  XD           5.300E+01
  ZKDS         3.300E+00
  ZKDU         3.300E+00
  ZKDA         3.300E+00
  QI           2.846E+08
  DF           2.000E+00
  SL           1.520E+02
  THALF        1.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                  2.4769E-01
  UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
  DECAY CONSTANT(S) (1/y)                    6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)          6.3700E+01
  RETARDATION FACTOR (UNSATURATED)           2.1900E+01
  SOLUBILITY LIMITED MASS (mg)               6.7656E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)           0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)         2.6280E+03
  FRACTION DECAYED DURING UNSAT TRANSPORT    1.0000E+00
  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    1.48-219 mg/L
  AVERAGE CONCENTRATION    1.79-220 mg/L
  PEAK TIME (y):                          2.629439E+03
  LIMITING SOIL CONCENTRATION (mg/m**3):  3.756+225
  LIMITING SOIL CONCENTRATION (mg/kg):    2.504+222
  LIMITING INVENTORY IN SOIL (mg):        3.184+228
  WARNING !!! THE LIMITING SOIL MASS OF  3.184+228 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 6.766E+08 mg
  EXECUTION TIME (seconds)      1
******************
*  RUN NUMBER  6 *
******************
  TITLE: PBF-752:Ethylbenzene
  AL           1.730E+02
  WA           1.730E+02
  XD           8.700E+01
  THICKS       8.690E-02
  QI           8.674E+08
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                  2.1919E-01
  UNSATURATED PORE VELOCITY (m/y)            3.3333E-01
  DECAY CONSTANT(S) (1/y)                    6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)          6.3700E+01
  RETARDATION FACTOR (UNSATURATED)           2.1900E+01
  SOLUBILITY LIMITED MASS (mg)               2.0755E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)           0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)         2.6280E+03
  FRACTION DECAYED DURING UNSAT TRANSPORT    1.0000E+00
  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    1.50-219 mg/L
  AVERAGE CONCENTRATION    1.84-220 mg/L
  PEAK TIME (y):                          2.629461E+03
  LIMITING SOIL CONCENTRATION (mg/m**3):  3.625+225
  LIMITING SOIL CONCENTRATION (mg/kg):    2.417+222
  LIMITING INVENTORY IN SOIL (mg):        9.427+228
  WARNING !!! THE LIMITING SOIL MASS OF  9.427+228 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.075E+09 mg
  EXECUTION TIME (seconds)      1
******************
*  RUN NUMBER  7 *
******************
  TITLE: PBF-742:XYLENE
  AL           1.050E+02
  WA           1.050E+02
  THICKS       7.690E-02
  XD           5.300E+01
```

```
  ZKDS          7.200E-01
  ZKDU          7.200E-01
  ZKDA          7.200E-01
  DF            8.000E-01
  QI            2.846E+08
  SL            1.980E+02
  THALF         1.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    9.4231E-01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)            1.4680E+01
  RETARDATION FACTOR (UNSATURATED)             5.5600E+00
  SOLUBILITY LIMITED MASS (mg)                 2.3166E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           6.6720E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    4.25-202 mg/L
  AVERAGE CONCENTRATION    3.24-203 mg/L
  PEAK TIME (y):                               6.682536E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):       8.281+207
  LIMITING SOIL CONCENTRATION (mg/kg):         5.520+204
  LIMITING INVENTORY IN SOIL (mg):             7.021+210
  WARNING !!! THE LIMITING SOIL MASS OF  7.021+210 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.317E+08 mg
  EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  8 *
******************
  TITLE: PBF-752:XYLENE
  AL            1.730E+02
  WA            1.730E+02
  XD            8.700E+01
  THICKS        8.690E-02
  QI            8.674E+08
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    8.3388E-01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      6.9315E-01
  RETARDATION FACTOR(S) (SATURATED)            1.4680E+01
  RETARDATION FACTOR (UNSATURATED)             5.5600E+00
  SOLUBILITY LIMITED MASS (mg)                 7.1065E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           6.6720E+02
  FRACTION DECAYED DURING UNSAT TRANSPORT      1.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    4.44-202 mg/L
  AVERAGE CONCENTRATION    4.04-203 mg/L
  PEAK TIME (y):                               6.683085E+02
  LIMITING SOIL CONCENTRATION (mg/m**3):       6.600+207
  LIMITING SOIL CONCENTRATION (mg/kg):         4.400+204
  LIMITING INVENTORY IN SOIL (mg):             1.717+211
  WARNING !!! THE LIMITING SOIL MASS OF  1.717+211 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 7.107E+08 mg
  EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  9 *
******************
  TITLE: PBF-742:NAPTHALENE
  KFLAG         0.000E+00
  AL            1.050E+02
  WA            1.050E+02
  THICKS        7.690E-02
  XD            5.300E+01
  ZKDS          3.900E+00
  ZKDU          3.900E+00
  ZKDA          3.900E+00
  DF            1.000E+00
  QI            3.415E+08
  SL            3.170E+01
  THALF         0.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    2.1145E-01
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      0.0000E+00
  RETARDATION FACTOR(S) (SATURATED)            7.5100E+01
  RETARDATION FACTOR (UNSATURATED)             2.5700E+01
  SOLUBILITY LIMITED MASS (mg)                 1.6529E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           3.0840E+03
```

FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

>>> RESULTS OF CALCULATIONS

>>> CONCENTRATION VS TIME MODE

TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	3.4150E+08	2.0652E+08	2.8540E+07	1.3805E+02
3.1000E+03	3.4150E+08	3.2521E+08	3.4448E+06	1.6767E+02
3.1100E+03	3.4150E+08	3.3953E+08	4.1579E+05	5.5664E+01
3.1200E+03	3.4150E+08	3.4126E+08	5.0185E+04	1.1686E+01
3.1300E+03	3.4150E+08	3.4147E+08	6.0573E+03	2.0110E+00
3.1400E+03	3.4150E+08	3.4150E+08	7.3111E+02	3.1237E-01
3.1500E+03	3.4150E+08	3.4150E+08	8.8244E+01	4.5549E-02

AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 1.83E+01 mg/m**3
MAXIMUM CONCENTRATION(S) mg/m**3
1.68E+02
TIME(S) OF MAXIMUM CONCENTRATIONS (years)
3.10E+03
EXECUTION TIME (seconds) 0

* RUN NUMBER 10 *

TITLE: PBF-752:NAPTHALENE

AL	1.730E+02
WA	1.730E+02
XD	8.700E+01
THICKS	8.690E-02
QI	1.041E+09

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	1.8711E-01
UNSATURATED PORE VELOCITY (m/y)	3.3333E-01
DECAY CONSTANT(S) (1/y)	0.0000E+00
RETARDATION FACTOR(S) (SATURATED)	7.5100E+01
RETARDATION FACTOR (UNSATURATED)	2.5700E+01
SOLUBILITY LIMITED MASS (mg)	5.0704E+08
SOLUBILITY LIMITED ACTIVITY (Ci)	0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)	3.0840E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	0.0000E+00

>>> RESULTS OF CALCULATIONS

>>> CONCENTRATION VS TIME MODE

TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	1.0410E+09	5.6805E+08	8.8495E+07	1.3990E+02
3.1000E+03	1.0410E+09	9.6819E+08	1.3624E+07	2.6792E+02
3.1100E+03	1.0410E+09	1.0298E+09	2.0974E+06	1.9534E+02
3.1200E+03	1.0410E+09	1.0393E+09	3.2289E+05	7.6968E+01
3.1300E+03	1.0410E+09	1.0407E+09	4.9708E+04	2.1119E+01
3.1400E+03	1.0410E+09	1.0410E+09	7.6525E+03	4.7172E+00
3.1500E+03	1.0410E+09	1.0410E+09	1.1781E+03	9.3430E-01

AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 3.48E+01 mg/m**3
MAXIMUM CONCENTRATION(S) mg/m**3
2.68E+02

```
  TIME(S) OF MAXIMUM CONCENTRATIONS (years)
   3.10E+03
  EXECUTION TIME (seconds)       0
******************
*  RUN NUMBER  11 *
******************
  TITLE: PBF-742:METHYLNAPHTHALENE
  KFLAG          1.000E+00
  AL             1.050E+02
  WA             1.050E+02
  THICKS         7.690E-02
  XD             5.300E+01
  ZKDS           2.550E+01
  ZKDU           2.550E+01
  ZKDA           2.550E+01
  DF             1.000E+00
  QI             8.537E+08
  SL             2.540E+01
  THALF          0.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    3.3733E-02
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      0.0000E+00
  RETARDATION FACTOR(S) (SATURATED)            4.8550E+02
  RETARDATION FACTOR (UNSATURATED)             1.6250E+02
  SOLUBILITY LIMITED MASS (mg)                 8.3016E+08
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           1.9500E+04
  FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    7.97E-02 mg/L
  AVERAGE CONCENTRATION    7.83E-02 mg/L
  PEAK TIME (y):                        1.956374E+04
  LIMITING SOIL CONCENTRATION (mg/m**3):   1.286E+07
  LIMITING SOIL CONCENTRATION (mg/kg):     8.572E+03
  LIMITING INVENTORY IN SOIL (mg):         1.090E+10
  WARNING !!! THE LIMITING SOIL MASS OF  1.090E+10 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 8.302E+08 mg
  EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  12 *
******************
  TITLE: PBF-752:METHYLNAPHTHALENE
  AL             1.730E+02
  WA             1.730E+02
  XD             8.700E+01
  THICKS         8.690E-02
  QI             2.602E+09
  SL             2.540E+01
  THALF          0.000E+00
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE
  ******************************************************
  LEACH RATE CONSTANT (1/y)                    2.9851E-02
  UNSATURATED PORE VELOCITY (m/y)              3.3333E-01
  DECAY CONSTANT(S) (1/y)                      0.0000E+00
  RETARDATION FACTOR(S) (SATURATED)            4.8550E+02
  RETARDATION FACTOR (UNSATURATED)             1.6250E+02
  SOLUBILITY LIMITED MASS (mg)                 2.5467E+09
  SOLUBILITY LIMITED ACTIVITY (Ci)             0.0000E+00
  TRANSIT TIME IN UNSAT ZONE (years)           1.9500E+04
  FRACTION DECAYED DURING UNSAT TRANSPORT      0.0000E+00
  ------------------------------------------------------
  >>> RESULTS OF CALCULATIONS
  ******************************************************
  MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
  MAXIMUM CONCENTRATION    1.06E-01 mg/L
  AVERAGE CONCENTRATION    1.05E-01 mg/L
  PEAK TIME (y):                        1.959878E+04
  LIMITING SOIL CONCENTRATION (mg/m**3):   9.522E+06
  LIMITING SOIL CONCENTRATION (mg/kg):     6.348E+03
  LIMITING INVENTORY IN SOIL (mg):         2.476E+10
  WARNING !!! THE LIMITING SOIL MASS OF  2.476E+10 mg
  EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.547E+09 mg
  EXECUTION TIME (seconds)       1
******************
*  RUN NUMBER  13 *
******************
```

Attachment B
HSSM Output

1

```
**************************************************
HSSM            HYDROCARBON SPILL SIMULATION MODEL
**************************************************
KOPT            KINEMATIC OILY POLLUTANT TRANSPORT
OILENS          RADIAL OIL LENS MOTION
TSGPLUME        TRANSIENT SOURCE GAUSSIAN PLUME
**************************************************
Migration of bulk hydrocarbons from
 PBF-752 Tank


      INPUT DATA
      ==========

      DATA FILES:
       KOPT/OILENS INPUT:   C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.DAT
       KOPT/OILENS OUTPUT:  C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.HSS
       KOPT/OILENS PLOT 1:  C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL1
       KOPT/OILENS PLOT 2:  C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL2
       KOPT/OILENS PLOT 3:  C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL3
       TSGPLUME INPUT:      C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PMI
       TSGPLUME OUTPUT:     C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.TSG
       TSGPLUME PLOT:       C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PMP
      INTERFACE FLAG              = W
      WRITING CRITERIA            =          1
      KOPT RUN FLAG               =          1
      DISSOLVED CONSTITUENT FLAG  =          1
      OILENS RUN FLAG             =          1
      TSGPLUME RUN FLAG           =          1

      CONSTANTS & MATRIX PROPERTIES.....
      SAT. VERT. HYD.CONDUCTIVITY =  .6550E-01
      RATIO OF HORZIZONTAL TO
      VERTICAL CONDUCTIVITY       =  1.000
      RELATIVE PERMEABILITY INDEX =          2
      POROSITY                    =  .4870
      RESIDUAL WATER SATURATION   =  .1420
      VAN GENUCHTEN'S N           =  1.066

      WATER EVENT CHARACTERISTICS.....
      DYNAMIC VISCOSITY           =  1.000
      DENSITY                     =  1.000
      RAIN TYPE : 1-FLUX 2-SAT.   =          1
      WATER FLUX OR SATURATION    =  .2740E-03
      MAX KRW DURING INFILTRATION =  .5000
      DEPTH TO WATER TABLE        =  40.80

      POLLUTANT EVENT CHARACTERISTICS.....
      DYNAMIC VISCOSITY           =  5.900
      DENSITY                     =  .8500
      RESIDUAL OIL SATURATION     =  .1100
      OIL LOADING TYPE            =          1

      CAPILLARY SUCTION PARAMETERS.....
      VAN GENUCHTENS ALPHA        =  1.523
      WATER SURFACE TENSION       =  65.00
      OIL SURFACE TENSION         =  30.00

      FLUX LOADING RATE           =  .6670E-02
      BEGINNING TIME              =  .0000
      ENDING TIME                 =  183.0

      DISSOLVED CONSTITUENT PARAMETERS.....
      INITIAL CONC. IN OIL        =  170.0
      OIL/WATER PARTITION COEF.   =  300.0
      SOIL/WATER PARTITION COEF.  =  .2500
      SOIL/WATER (HYDROCARBON)    =  1.000
      BULK DENSITY                =  1.500

      OILENS SUBMODEL PARAMETERS.....
      RADIUS OF POLLUTANT SOURCE  =  1.153
      RADIUS MULTIPLYING FACTOR   =  1.001
      THICKNESS OF CAP. FRINGE    =  .1000E-01
      AQUIFER'S VERT DISPERSIVITY =  .1000
      GROUNDWATER GRADIENT        =  .2000E-01
      OIL RESIDUAL IN AQUIFER     =  .2000
      MAX OIL SATURATION IN LENS  =  .5000
      WATER SOLUBILITY CONTAMINANT=  1750.
      WATER SOLUBILITY OF OIL     =  200.0

      SIMULATION PARAMETERS.....
```

```
SIMULATION ENDING TIME       =  150.0
MAXIMUM RKF TIME STEP        =  1.000
MIN. TIME BETWEEN PRINTING   =  .1000
ENDING CRITERIA              =          4
FACTOR FOR ENDING CRITERIA 4=  .2000E-01

PROFILES.....................................
NUMBER OF PROFILES           =         10
AT TIMES:
      1.0000       20.0000       30.0000
     40.0000       50.0000       70.0000
    100.0000      150.0000      200.0000
    300.0000

TSGPLUME MODEL PARAMETERS.....................
LONGITUDINAL DISPERSIVITY (M)   9.000
TRANSVERSE DISPERSIVITY (M)     4.000
PERCENT MAX. RADIUS             100.0
MINIMUM OUTPUT CONC. (MG/L)     .1000E-01
CONSTITUENT HALF LIFE (D)       .0000
NUMBER OF RECEPTOR WELLS                6
BEGINNING TIME (D)              100.0
ENDING TIME (D)                 .1000E+05
TIME INCREMENT (D)              100.0
AQUIFER THICKNESS (M)           15.00

RECEPTOR WELL LOCATIONS
              X             Y
        10.00         .0000
        100.0         .0000
        200.0         .0000
        300.0         .0000
        400.0         .0000
        500.0         50.00

***END OF INPUT DATA***

CALCULATED PARAMETERS.....................
SAT. OIL   CONDUCTIVITY      =  .9436E-02
AREA OF THE SOURCE           =  4.180
APPROX. BROOKS AND COREY
LAMBDA                       =  .6600E-01
AIR ENTRY HEAD               =  .4039E-06
TRAPPED AIR SATURATION       =  .1767E-01
WATER SATURATION             =  .8699
WATER FLUX                   =  .2740E-03
MAX. OIL CONDUCTIVITY        =  .3633E-07
```

1

WATER-AIR CAPILLARY PRESSURE CURVE
****

WATER SATURATION	CAPILLARY HEAD (CM WATER)
.1620	**********
.1820	**********
.2020	**********
.2220	**********
.2420	**********
.2620	**********
.2820	**********
.3020	45444.3700
.3220	7628.3520
.3420	1545.7010
.3620	364.7161
.3820	97.5872
.4020	29.0193
.4220	9.4413
.4420	3.3192
.4620	1.2484
.4820	.4982
.5020	.2096
.5220	.0924
.5420	.0425
.5620	.0203
.5820	.0100
.6020	.0051
.6220	.0027
.6420	.0014
.6620	.0008
.6820	.0005
.7020	.0003
.7220	.0002
.7420	.0001
.7620	.0001
.7820	.0000
.8020	.0000

.8220	.0000
.8420	.0000
.8620	.0000
.8820	.0000
.9020	.0000
.9220	.0000
.9420	.0000
.9620	.0000
1.0000	.0000

1

OIL-AIR CAPILLARY PRESSURE CURVE

OIL SATURATION	CAPILLARY HEAD (CM OIL)
.1300	**********
.1500	**********
.1700	**********
.1900	**********
.2100	**********
.2300	**********
.2500	**********
.2700	42975.8000
.2900	7213.9740
.3100	1461.7370
.3300	344.9041
.3500	92.2861
.3700	27.4429
.3900	8.9285
.4100	3.1389
.4300	1.1806
.4500	.4712
.4700	.1982
.4900	.0874
.5100	.0402
.5300	.0192
.5500	.0095
.5700	.0048
.5900	.0025
.6100	.0014
.6300	.0008
.6500	.0004
.6700	.0002
.6900	.0001
.7100	.0001
.7300	.0001
.7500	.0000
.7700	.0000
.7900	.0000
.8100	.0000
.8300	.0000
.8500	.0000
.8700	.0000
.8900	.0000
.9100	.0000
.9300	.0000
.9500	.0000
.9700	.0000
1.0000	.0000

1

****
LOCATION OF THE OIL FRONT
****

Migration of bulk hydrocarbons from
P8F-752 Tank

		OIL							
STEP	TIME (D)	DEPTH (M)	SATURATION (*)	FLUX (M/D)	RUNOFF (KG/M/M)	MASS (KG)	PONDING (M)	UCHAR SPD. (M/D)	FRONT SPD. (M/D)	DCHAR SPD. (M/D)
1	.0000	.0010	.1124	.0000	.0000	.0000	.0000			
3	1.0000	.0010	.1124	.0000	5.669	.1965	.0000	.0001	.0000	.0000
4	2.0000	.0010	.1124	.0000	11.34	.1969	.0000	.0001	.0000	.0000
5	3.0000	.0010	.1124	.0000	17.01	.1972	.0000	.0001	.0000	.0000
6	3.6600	.0010	.1124	.0000	20.75	.1975	.0000	.0001	.0000	.0000
7	4.6600	.0010	.1124	.0000	26.42	.1978	.0000	.0001	.0000	.0000
8	5.6600	.0010	.1124	.0000	32.09	.1982	.0000	.0001	.0000	.0000
9	6.6600	.0010	.1124	.0000	37.76	.1985	.0000	.0001	.0000	.0000
10	7.3200	.0010	.1124	.0000	41.50	.1988	.0000	.0001	.0000	.0000
11	8.3200	.0010	.1124	.0000	47.17	.1992	.0000	.0001	.0000	.0000

117	105.0064	.0011	.1124	.0000	595.3	.2338	.0000	.0001	.0000	.0000
118	106.0064	.0011	.1124	.0000	601.0	.2342	.0000	.0001	.0000	.0000
119	107.0064	.0011	.1124	.0000	606.7	.2345	.0000	.0001	.0000	.0000
120	108.0064	.0011	.1124	.0000	612.3	.2349	.0000	.0001	.0000	.0000
121	109.0064	.0011	.1124	.0000	618.0	.2352	.0000	.0001	.0000	.0000
122	109.8000	.0011	.1124	.0000	622.5	.2355	.0000	.0001	.0000	.0000
123	110.8000	.0011	.1124	.0000	628.2	.2359	.0000	.0001	.0000	.0000
124	111.8000	.0011	.1124	.0000	633.8	.2362	.0000	.0001	.0000	.0000
125	112.8000	.0011	.1124	.0000	639.5	.2366	.0000	.0001	.0000	.0000
126	113.8000	.0011	.1124	.0000	645.2	.2370	.0000	.0001	.0000	.0000
127	114.8000	.0011	.1124	.0000	650.9	.2373	.0000	.0001	.0000	.0000
128	115.8000	.0011	.1124	.0000	656.5	.2377	.0000	.0001	.0000	.0000
129	116.8000	.0011	.1124	.0000	662.2	.2380	.0000	.0001	.0000	.0000
130	117.8000	.0011	.1124	.0000	667.9	.2384	.0000	.0001	.0000	.0000
131	118.8000	.0011	.1124	.0000	673.5	.2388	.0000	.0001	.0000	.0000
132	119.8000	.0011	.1124	.0000	679.2	.2391	.0000	.0001	.0000	.0000
134	120.8167	.0011	.1124	.0000	685.0	.2395	.0000	.0001	.0000	.0000
135	121.8167	.0011	.1124	.0000	690.6	.2398	.0000	.0001	.0000	.0000
136	122.8167	.0011	.1124	.0000	696.3	.2402	.0000	.0001	.0000	.0000
137	123.8167	.0011	.1124	.0000	702.0	.2406	.0000	.0001	.0000	.0000
138	124.8167	.0011	.1124	.0000	707.6	.2409	.0000	.0001	.0000	.0000
139	125.8167	.0011	.1124	.0000	713.3	.2413	.0000	.0001	.0000	.0000
140	126.8167	.0011	.1124	.0000	719.0	.2416	.0000	.0001	.0000	.0000
141	127.8167	.0011	.1124	.0000	724.7	.2420	.0000	.0001	.0000	.0000
142	128.1000	.0011	.1124	.0000	726.3	.2421	.0000	.0001	.0000	.0000
143	129.1000	.0011	.1124	.0000	731.9	.2424	.0000	.0001	.0000	.0000
144	130.1000	.0011	.1124	.0000	737.6	.2428	.0000	.0001	.0000	.0000
145	131.1000	.0011	.1124	.0000	743.3	.2432	.0000	.0001	.0000	.0000
146	132.1000	.0011	.1124	.0000	748.9	.2435	.0000	.0001	.0000	.0000
147	133.1000	.0011	.1124	.0000	754.6	.2439	.0000	.0001	.0000	.0000
148	134.1000	.0011	.1124	.0000	760.3	.2442	.0000	.0001	.0000	.0000
149	135.1000	.0011	.1124	.0000	765.9	.2446	.0000	.0001	.0000	.0000
150	136.1000	.0011	.1124	.0000	771.6	.2450	.0000	.0001	.0000	.0000
151	137.1000	.0011	.1124	.0000	777.3	.2453	.0000	.0001	.0000	.0000
152	138.1000	.0011	.1124	.0000	783.0	.2457	.0000	.0001	.0000	.0000
153	139.1000	.0011	.1124	.0000	788.6	.2460	.0000	.0001	.0000	.0000
155	140.1071	.0011	.1124	.0000	794.3	.2464	.0000	.0001	.0000	.0000
156	141.1071	.0011	.1124	.0000	800.0	.2467	.0000	.0001	.0000	.0000
157	142.1071	.0011	.1124	.0000	805.7	.2471	.0000	.0001	.0000	.0000
158	143.1071	.0011	.1124	.0000	811.3	.2475	.0000	.0001	.0000	.0000
159	144.1071	.0011	.1124	.0000	817.0	.2478	.0000	.0001	.0000	.0000
160	145.1071	.0011	.1124	.0000	822.7	.2482	.0000	.0001	.0000	.0000
161	146.1071	.0011	.1124	.0000	828.3	.2485	.0000	.0001	.0000	.0000
162	146.4000	.0011	.1124	.0000	830.0	.2486	.0000	.0001	.0000	.0000
163	147.4000	.0011	.1124	.0000	835.7	.2490	.0000	.0001	.0000	.0000
164	148.4000	.0011	.1124	.0000	841.3	.2494	.0000	.0001	.0000	.0000
165	149.4000	.0011	.1124	.0000	847.0	.2497	.0000	.0001	.0000	.0000
166	150.0000	.0011	.1124	.0000	850.4	.2499	.0000	.0001	.0000	.0000

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LOCATION OF THE CONSTITUENT FRONT
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Migration of bulk hydrocarbons from
PBF-752 Tank

STEP	TIME	CONSTITUENT DEPTHS LOWER	DEPTHS UPPER	CONC-WATER	MASS/AREA	CUMULATIVE VOLATILIZATION
3	1.0000	.0000	.0000	.5667	.8381E-07	.0000
4	2.0000	.0000	.0000	.5667	.1676E-06	.0000
5	3.0000	.0000	.0000	.5667	.2514E-06	.0000
6	3.6600	.0001	.0000	.5667	.3067E-06	.0000
7	4.6600	.0001	.0000	.5667	.3140E-06	.0000
8	5.6600	.0001	.0000	.5667	.3203E-06	.0000
9	6.6600	.0001	.0000	.5667	.3258E-06	.0000
10	7.3200	.0001	.0000	.5667	.3210E-06	.0000
11	8.3200	.0001	.0000	.5667	.3379E-06	.0000
12	9.3200	.0002	.0000	.5667	.3482E-06	.0000
13	10.3200	.0002	.0000	.5667	.3521E-06	.0000
14	10.9800	.0002	.0000	.5667	.3512E-06	.0000
15	11.9800	.0002	.0000	.5667	.3443E-06	.0000
16	12.9800	.0002	.0000	.5667	.3516E-06	.0000
17	13.9800	.0002	.0000	.5667	.3669E-06	.0000
18	14.6400	.0002	.0000	.5667	.3762E-06	.0000
19	15.6400	.0003	.0000	.5667	.3888E-06	.0000
20	16.6400	.0003	.0000	.5667	.3997E-06	.0000
21	17.6400	.0003	.0000	.5667	.4090E-06	.0000
22	18.3000	.0003	.0000	.5667	.4142E-06	.0000
23	19.3000	.0003	.0000	.5667	.4207E-06	.0000
24	20.0000	.0003	.0000	.5667	.4242E-06	.0000
25	21.0000	.0003	.0000	.5667	.4279E-06	.0000
26	22.0000	.0004	.0000	.5667	.4298E-06	.0000
27	23.0000	.0004	.0000	.5667	.4301E-06	.0000
28	24.0000	.0004	.0000	.5667	.4288E-06	.0000
29	25.0000	.0004	.0000	.5667	.4257E-06	.0000
30	26.0000	.0004	.0000	.5667	.4210E-06	.0000
31	27.0000	.0004	.0000	.5667	.4146E-06	.0000
32	28.0000	.0005	.0000	.5667	.4065E-06	.0000
33	29.0000	.0005	.0000	.5667	.4119E-06	.0000
34	30.0000	.0005	.0000	.5667	.4240E-06	.0000
35	31.0000	.0005	.0000	.5667	.4360E-06	.0000
36	32.0000	.0005	.0000	.5667	.4478E-06	.0000
37	33.0000	.0005	.0000	.5667	.4595E-06	.0000
38	34.0000	.0006	.0000	.5667	.4710E-06	.0000

39	35.0000	.0006	.0000	.5667	.4824E-06	.0000
40	36.0000	.0006	.0000	.5667	.4937E-06	.0000
41	36.6000	.0006	.0000	.5667	.5004E-06	.0000
42	37.6000	.0006	.0000	.5667	.5114E-06	.0000
43	38.6000	.0006	.0000	.5667	.5223E-06	.0000
44	39.6000	.0007	.0000	.5667	.5331E-06	.0000
45	40.0000	.0007	.0000	.5667	.5374E-06	.0000
46	41.0000	.0007	.0000	.5667	.5479E-06	.0000
47	42.0000	.0007	.0000	.5667	.5584E-06	.0000
48	43.0000	.0007	.0000	.5667	.5687E-06	.0000
49	44.0000	.0007	.0000	.5667	.5788E-06	.0000
50	45.0000	.0007	.0000	.5667	.5888E-06	.0000
51	46.0000	.0008	.0000	.5667	.5987E-06	.0000
52	47.0000	.0008	.0000	.5667	.6084E-06	.0000
53	48.0000	.0008	.0000	.5667	.6180E-06	.0000
54	49.0000	.0008	.0000	.5667	.6275E-06	.0000
55	50.0000	.0008	.0000	.5667	.6368E-06	.0000
56	51.0000	.0008	.0000	.5667	.6459E-06	.0000
57	52.0000	.0009	.0000	.5667	.6550E-06	.0000
58	53.0000	.0009	.0000	.5667	.6639E-06	.0000
59	54.0000	.0009	.0000	.5667	.6726E-06	.0000
60	54.9000	.0009	.0000	.5667	.6804E-06	.0000
61	55.9000	.0009	.0000	.5667	.6889E-06	.0000
62	56.9000	.0009	.0000	.5667	.6972E-06	.0000
63	57.9000	.0010	.0000	.5667	.7054E-06	.0000
64	58.9000	.0010	.0000	.5667	.7135E-06	.0000
65	59.9000	.0010	.0000	.5667	.7214E-06	.0000
66	60.9000	.0010	.0000	.5667	.7292E-06	.0000
67	61.9000	.0010	.0000	.5667	.7368E-06	.0000
68	62.9000	.0010	.0000	.5667	.7443E-06	.0000
70	63.9057	.0015	.0000	.5667	.5060E-06	.0000
71	64.9057	.0019	.0000	.5667	.5590E-06	.0000
72	65.9057	.0023	.0000	.5667	.6336E-06	.0000
73	66.8553	.0027	.0000	.5667	.7075E-06	.0000
74	67.8553	.0031	.0000	.5667	.7148E-06	.0000
75	68.8553	.0035	.0000	.5667	.7199E-06	.0000
76	69.8553	.0039	.0000	.5667	.7280E-06	.0000
77	70.0000	.0039	.0000	.5667	.7281E-06	.0000
78	70.6671	.0042	.0000	.5667	.7246E-06	.0000
79	71.6671	.0046	.0000	.5667	.7380E-06	.0000
80	72.6671	.0050	.0000	.5667	.7496E-06	.0000
81	73.2000	.0052	.0000	.5667	.7535E-06	.0000
82	74.2000	.0056	.0000	.5667	.7562E-06	.0000
84	75.2110	.0061	.0000	.5667	.7532E-06	.0000
85	76.2110	.0065	.0000	.5667	.7452E-06	.0000
86	77.2110	.0069	.0000	.5667	.7613E-06	.0000
87	78.2110	.0073	.0000	.5667	.7759E-06	.0000
89	79.2142	.0077	.0000	.5667	.7890E-06	.0000
90	80.2142	.0081	.0000	.5667	.8006E-06	.0000
91	81.2142	.0085	.0000	.5667	.8108E-06	.0000
92	82.1026	.0089	.0000	.5667	.8185E-06	.0000
93	83.1026	.0093	.0000	.5667	.8258E-06	.0000
94	84.1026	.0097	.0000	.5667	.8316E-06	.0000
95	85.1026	.0101	.0000	.5667	.8359E-06	.0000
96	86.1026	.0105	.0000	.5667	.8387E-06	.0000
97	87.1026	.0109	.0000	.5667	.8401E-06	.0000
98	88.1026	.0113	.0000	.5667	.8399E-06	.0000
99	89.1026	.0117	.0000	.5667	.8383E-06	.0000
100	90.1026	.0121	.0000	.5667	.8351E-06	.0000
101	91.1026	.0125	.0000	.5667	.8305E-06	.0000
102	91.5000	.0127	.0000	.5667	.8282E-06	.0000
103	92.5000	.0131	.0000	.5667	.8215E-06	.0000
104	93.5000	.0135	.0000	.5667	.8413E-06	.0000
105	94.5000	.0139	.0000	.5667	.8791E-06	.0000
106	95.5000	.0143	.0000	.5667	.8997E-06	.0000
107	96.5000	.0147	.0000	.5667	.9032E-06	.0000
108	97.5000	.0151	.0000	.5667	.8895E-06	.0000
109	98.5000	.0155	.0000	.5667	.9017E-06	.0000
110	99.5000	.0159	.0000	.5667	.9092E-06	.0000
111	100.0000	.0161	.0000	.5667	.9122E-06	.0000
112	101.0000	.0165	.0000	.5667	.9182E-06	.0000
114	102.0064	.0170	.0000	.5667	.9249E-06	.0000
115	103.0064	.0174	.0000	.5667	.9337E-06	.0000
116	104.0064	.0178	.0000	.5667	.9367E-06	.0000
117	105.0064	.0182	.0000	.5667	.9350E-06	.0000
118	106.0064	.0186	.0000	.5667	.9485E-06	.0000
119	107.0064	.0190	.0000	.5667	.9596E-06	.0000
120	108.0064	.0194	.0000	.5667	.9682E-06	.0000
121	109.0064	.0198	.0000	.5667	.9744E-06	.0000
122	109.8000	.0201	.0000	.5667	.9776E-06	.0000
123	110.8000	.0205	.0000	.5667	.9794E-06	.0000
124	111.8000	.0209	.0000	.5667	.9787E-06	.0000
125	112.8000	.0213	.0000	.5667	.9756E-06	.0000
126	113.8000	.0217	.0000	.5667	.9810E-06	.0000
127	114.8000	.0222	.0000	.5667	.9934E-06	.0000
128	115.8000	.0226	.0000	.5667	.1005E-05	.0000
129	116.8000	.0230	.0000	.5667	.1016E-05	.0000
130	117.8000	.0234	.0000	.5667	.1027E-05	.0000
131	118.8000	.0238	.0000	.5667	.1037E-05	.0000
132	119.8000	.0242	.0000	.5667	.1046E-05	.0000
134	120.8167	.0246	.0000	.5667	.1055E-05	.0000
135	121.8167	.0250	.0000	.5667	.1063E-05	.0000
136	122.8167	.0254	.0000	.5667	.1071E-05	.0000
137	123.8167	.0258	.0000	.5667	.1077E-05	.0000
138	124.8167	.0262	.0000	.5667	.1083E-05	.0000
139	125.8167	.0266	.0000	.5667	.1089E-05	.0000
140	126.8167	.0270	.0000	.5667	.1094E-05	.0000
141	127.8167	.0274	.0000	.5667	.1098E-05	.0000
142	128.1000	.0276	.0000	.5667	.1099E-05	.0000
143	129.1000	.0280	.0000	.5667	.1103E-05	.0000
144	130.1000	.0284	.0000	.5667	.1105E-05	.0000

145	131.1000	.0288	.0000	.5667	.1108E-05	.0000
146	132.1000	.0292	.0000	.5667	.1109E-05	.0000
147	133.1000	.0296	.0000	.5667	.1110E-05	.0000
148	134.1000	.0300	.0000	.5667	.1110E-05	.0000
149	135.1000	.0304	.0000	.5667	.1110E-05	.0000
150	136.1000	.0308	.0000	.5667	.1109E-05	.0000
151	137.1000	.0312	.0000	.5667	.1107E-05	.0000
152	138.1000	.0316	.0000	.5667	.1105E-05	.0000
153	139.1000	.0320	.0000	.5667	.1102E-05	.0000
155	140.1071	.0324	.0000	.5667	.1104E-05	.0000
156	141.1071	.0329	.0000	.5667	.1114E-05	.0000
157	142.1071	.0333	.0000	.5667	.1124E-05	.0000
158	143.1071	.0337	.0000	.5667	.1134E-05	.0000
159	144.1071	.0341	.0000	.5667	.1144E-05	.0000
160	145.1071	.0345	.0000	.5667	.1153E-05	.0000
161	146.1071	.0349	.0000	.5667	.1163E-05	.0000
162	146.4000	.0350	.0000	.5667	.1166E-05	.0000
163	147.4000	.0354	.0000	.5667	.1175E-05	.0000
164	148.4000	.0358	.0000	.5667	.1185E-05	.0000
165	149.4000	.0362	.0000	.5667	.1195E-05	.0000
166	150.0000	.0365	.0000	.5667	.1200E-05	.0000

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