From: "Dave Levy" <DLevy@telesto-inc.com>
To: "Michalak, Paul" <pxm2@nrc.gov>
Date: 1/6/06 5:19PM
Subject: Gas Hills Model - 40-0299

Paul:

Attached is a PDF with 2 versions of the SWFR Gas Hills model-re-run. I'll give a call Monday morning to discuss.

Thanks.

Dave

David B. Levy, Ph.D.
Senior Geochemist/ Soil Scientist

Telesto Solutions, Inc.
1601 Prospect Parkway, Suite C
Fort Collins, CO 80525

Voice: (970) 484-7705
FAX: (970) 484-7789

Mail Envelope Properties (43BEECE4.B91 : 24 : 7057)

Subject:	Gas Hills Model
Creation Date:	*1/6/06 5:18PM*
From:	"Dave Levy" <DLevy@telesto-inc.com>
Created By:	DLevy@telesto-inc.com

Recipients
nrc.gov
TWGWPO01.HQGWDO01
PXM2 (Paul Michalak)

Post Office	**Route**
TWGWPO01.HQGWDO01	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	371	01/06/06 05:18PM
TEXT.htm	1174	
SWFR_1_6_06.pdf	85722	
Mime.822	120834	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

```
TITLE A-9 area (SW flow regime). FILE: SWFR1td_nrc2.in
#Concentration vs Time (0 to 1000 years) at the POE
#Using flow rate of 0.167 ft/d - DECREASING SOURCE TERM TO 90% REDUCTION
#DISPERSIVITY = 50
#SOLID PHASES ALLOWED
#Revised in 2005 for Pb-210
#Revised in 2006 for Solutions in Cells 6-54 and Source sulfate

PRINT
     -reset     false

KNOBS
      -iterations 100
      -tolerance 1.00E-13
      -step_size 100
      -pe_step_size 10
      -diagonal_scale TRUE
      -debug_prep FALSE
      -debug_set FALSE
      -debug_model FALSE
      -debug_inverse FALSE
      -logfile FALSE

SELECTED_OUTPUT
      -file C:\SWFR1td_nrc2.dat

USER_PUNCH

      -headings As Be Cl Pb U Ni Se SO4 Th Ra sOPb+
      -headings wOPb+ PbX2 Anglesite sOHUO2+2
      -headings wOUO2+ USiO4(C) Uraninite sONi+ wONi+
      -headings NiSe sOHRa+2 wORa+ RaX2 RaSO4 wSeO4-
      -headings wOHSeO4-2 wSeO3- wOHSeO3-2 Se(A)
      -headings FeSe2 sSO4- wSO4- sOHSO4-2 wOHSO4-2
      -headings gypsum wOTh+3 wOTh(OH)+2 wOTh(OH)2+
      -headings wOTh(OH)3 wOTh(OH)4- sH2AsO3 wH2AsO3
      -headings sH2AsO4 wH2AsO4 sHAsO4- wHAsO4- sAsO4-2
      -headings wAsO4-2 sOHAsO4-3 wOHAsO4-3 sOBe+ wOBe+
      -headings Calcite Ca Mg Na K HCO3 SO4 Cl TDS
      -start
      10  REM Convert to ppm and show molalities
      20  PUNCH TOT("As")*74.9216*1000
      30  PUNCH TOT("Be")*9.0122*1000
      40  PUNCH TOT("Cl")*35.453*1000
      50  PUNCH TOT("Pb")*207.19*1000/1.29e-11
      60  PUNCH TOT("U")*238.029*1000
      70  PUNCH TOT("Ni")*58.71*1000
      80  PUNCH TOT("Se")*78.96*1000
      90 PUNCH TOT("S(6)")*96.0616*1000
      100 PUNCH TOT("Th")*232.038*1000/4.96e-8
      110 PUNCH TOT("Ra")*226*1000/1.01e-9
      120 PUNCH MOL("Hfo_sOPb+")
      130 PUNCH MOL("Hfo_wOPb+")
      140 PUNCH MOL("PbX2")
      150 PUNCH EQUI("Anglesite")
      160 PUNCH MOL("Hfo_sOHUO2+2")
      170 PUNCH MOL("Hfo_wOUO2+")
      180 PUNCH EQUI("USiO4(C)")
      190 PUNCH EQUI("Uraninite")
      200 PUNCH MOL("Hfo_sONi+")
      210 PUNCH MOL("Hfo_wONi+")
      220 PUNCH EQUI("NiSe")
      230 PUNCH MOL("Hfo_sOHRa+2")
      240 PUNCH MOL("Hfo_wORa+")
      250 PUNCH MOL("RaX2")
      260 PUNCH EQUI("RaSO4")
      270 PUNCH MOL("Hfo_wSeO4-")
```

```
      280 PUNCH MOL("Hfo_wOHSeO4-2")
      290 PUNCH MOL("Hfo_wSeO3-")
      300 PUNCH MOL("Hfo_wOHSeO3-2")
      310 PUNCH EQUI("Se(A)")
      320 PUNCH EQUI("Ferroselite")
      330 PUNCH MOL("Hfo_sSO4-")
      340 PUNCH MOL("Hfo_wSO4-")
      350 PUNCH MOL("Hfo_sOHSO4-2")
      360 PUNCH MOL("Hfo_wOHSO4-2")
      370 PUNCH EQUI("gypsum")
      380 PUNCH MOL("Hfo_wOTh+3")
      390 PUNCH MOL("Hfo_wOTh(OH)+2")
      400 PUNCH MOL("Hfo_wOTh(OH)2+")
      410 PUNCH MOL("Hfo_wOTh(OH)3")
      420 PUNCH MOL("Hfo_wOTh(OH)4-")
      430 PUNCH MOL("Hfo_sH2AsO3")
      440 PUNCH MOL("Hfo_wH2AsO3")
      450 PUNCH MOL("Hfo_sH2AsO4")
      460 PUNCH MOL("Hfo_wH2AsO4")
      470 PUNCH MOL("Hfo_sHAsO4-")
      480 PUNCH MOL("Hfo_wHAsO4-")
      490 PUNCH MOL("Hfo_sAsO4-2")
      500 PUNCH MOL("Hfo_wAsO4-2")
      510 PUNCH MOL("Hfo_sOHAsO4-3")
      520 PUNCH MOL("Hfo_wOHAsO4-3")
      530 PUNCH MOL("Hfo_sOBe+")
      540 PUNCH MOL("Hfo_wOBe+")
      550 PUNCH EQUI("Calcite")
      560 PUNCH TOT("Ca")*40.08*1000
      570 PUNCH TOT("Mg")*24.312*1000
      580 PUNCH TOT("Na")*22.9898*1000
      590 PUNCH TOT("K")*39.102*1000
      600 PUNCH MOL("HCO3-")*61.018*1000
      610 PUNCH TOT("S(6)")*96.0616*1000
      620 PUNCH TOT("Cl")*35.453*1000
      630 A = (TOT("Ca")*40.08*1000)+(TOT("Mg")*24.312*1000)
      640 B = (TOT("Na")*22.9898*1000)+(TOT("K")*39.102*1000)
      650 C = MOL("HCO3-")*61.018*1000
      660 D = TOT("S(6)")*96.0616*1000
      670 E = TOT("Cl")*35.453*1000
      680 PUNCH A+B+C+D+E
      -end

PRINT
      -selected_output false


SOLUTION 0 # Initial Source Term

      units       ppm
      pe          8
      pH          4.33
      Th          2.22e-6
      Pb          2.44e-9   #Revised ACL 2005 (189 pCi/L)
      Be          1.7
      Ca          710  #increased to obtain CB for SO4 <15%
      Mg          174  #increased to obtain CB for SO4 <15%
      Na          117  #increased to obtain CB for SO4 <15%
      K           15
      Fe(2)       160  #increased to obtain CB for SO4 <15%
      Cl          161
      As          1.36
      Ni          9.34
      Se          0.53
      Si          56.4
      U           34.1
      Alkalinity 2.44 as HCO3
```

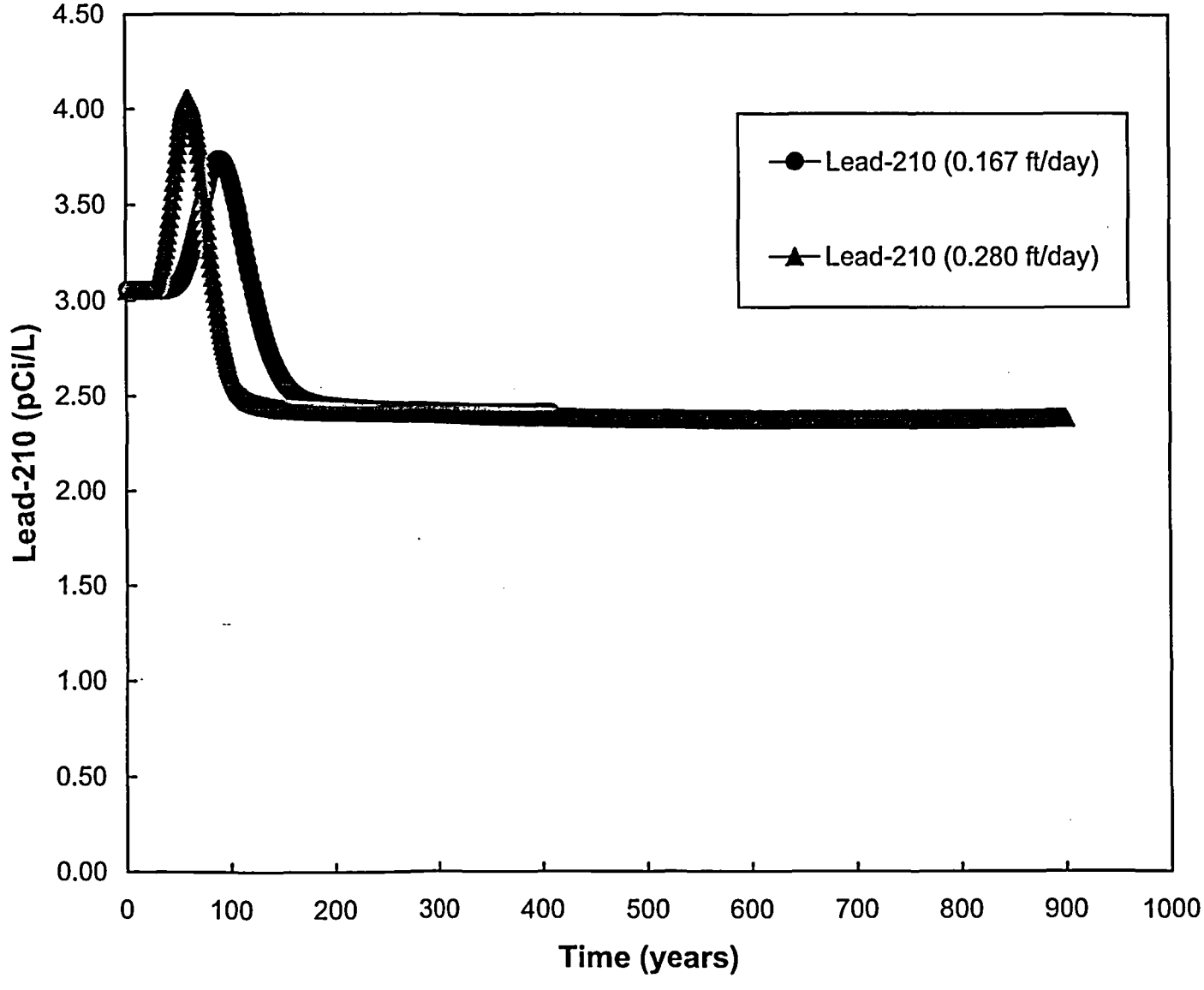
```
      S(6)        3500 #previously 2650
      Ra          3.57e-7

SOLUTION 1-5 GW8 January 2001

      units       ppm
      pe          7
      pH          4.73
      S(6)        1540
      Cl          97
      Alkalinity 2.0   as HCO3
      Ca          418
      Na          30.6
      Mg          70.8
      K           17.6
      Fe(2)       127
      As          0.007
      Be          0.076
      Th          7.97e-8
      Pb          2.58e-10
      Ra          6.25e-8
      Ni          1.31
      Se          0.001
      U           10.3

SOLUTION 6-54 GW-4 # Most recent data from GW-4 replaces MW-74 January 2001
      units       ppm
      pe          6
      pH          4.3    #May-05
      S(6)        1950   #Aug-01
      Cl          110    #Aug-01
      #Alkalinity      35 as HCO3
      Ca          271    #May-01
      Na          43.4   #Mar-01
      Mg          88.1   #Mar-01
      K           18.1   #Mar-01
      Fe(2)       174    #Aug-01
      As          0.0015      #1/2DL Aug-01
      Be          0.001       # 1/2 DL Aug-01
      #Th         negative value reported
      Pb          3.93e-11 #Aug-01
      Ra          4.59e-8     #Aug-01
      Ni          0.65        #Aug-01
      Se          0.011       #Aug-01
      U           0.0547      #Aug-01
      #S(-2)      not measured

EQUILIBRIUM_PHASES 1-54
      Calcite           0.0         0.0
      Gypsum            0.0         0.0
      USiO4(c)          0.0         0.0
      Ferroselite             0.0         0.0
      Se(A)             0.0         0.0
      RaSO4             0.0         0.0
      NiSe              0.0         0.0
      Anglesite         0.0         0.0

SURFACE 1-5
      -equilibrate 1
      Hfo_wOH     0.086       600      45.9
      Hfo_sOH     0.0021

SURFACE 6-54
      -equilibrate 6
      Hfo_wOH     0.086       600      45.9
      Hfo_sOH     0.0021
```

```
EXCHANGE 1-5
     -equilibrate 1
     X     1.2

EXCHANGE 6-54
        -equilibrate 6
     X       1.2

TRANSPORT
     -lengths         54*30.5
     -dispersivities  54*50
     -cells           54
     -shifts          4
     -punch_cells     54

PRINT
     -selected_output true

END

PRINT
     -selected_output false

SOLUTION 0 #33% REDUCTION

     units       ppm
     pe          5.6
     pH          4.47
     Th          1.47e-6
     Pb          1.63e-9    #Revised ACL 2005
     Ra          2.41E-07
     U           22.62
     Be          1.13
     Ca          570
     Mg          137
     Na          94
     K           16.2
     Fe(2)       109
     Cl          114.6
     As          0.90
     Ni          6.20
     Se          0.35
     Si          37.4
     Alkalinity 4.0 as HCO3
     S(6)        2546 #previously 1980.5

TRANSPORT
     -lengths         54*30.5
     -dispersivities  54*50
     -cells           54
     -shifts          2
     -punch_cells     54

PRINT
     -selected_output true

END

PRINT
     -selected_output false

SOLUTION 0 #50% Reduction

     units       ppm
     pe          5.5
     pH          4.57
     Th          1.12e-6
```

```
      Pb          1.22e-9    #Revised ACL 2005
      Ra          1.86E-07
      U           17.16
      Be          0.85
      Ca          503
      Mg          119
      Na          83
      K           16.8
      Fe(2)       85
      Cl          92.5
      As          0.68
      Ni          4.7
      Se          0.27
      Si          28.31
      Alkalinity 4.73 as HCO3
      S(6)        2089 #previously 1661

TRANSPORT
      -lengths          54*30.5
      -dispersivities   54*50
      -cells            54
      -shifts           4
      -punch_cells      54

PRINT
      -selected_output true

END

PRINT
      selected_output  false

SOLUTION 0 #75% Reduction

      units       ppm
      pe          5.1
      pH          4.85
      Th          5.65E-07
      Pb          6.1e-10    #Revised ACL 2005
      Ra          1.0E-07
      U           8.62
      Be          0.43
      Ca          398
      Mg          91
      Na          66
      K           17.7
      Fe(2)       47
      Cl          58
      As          0.34
      Ni          2.36
      Se          0.13
      Si          14.2
      Alkalinity 5.88 as HCO3
      S(6)        1375 #previously 1161

TRANSPORT
      -lengths          54*30.5
      -dispersivities   54*50
      -cells            54
      -shifts           12
      -punch_cells      54

PRINT
      selected_output  true

END
```

```
PRINT
     selected_output  false

SOLUTION 0 #90% Reduction

     units       ppm
     pe          4.4
     pH          5.27
     Th          2.33E-07
     Pb          2.45e-10   #Revised ACL 2005
     Ra          4.84e-8
     U           3.5
     Be          0.17
     Ca          334
     Mg          74
     Na          56
     K           18.2
     Fe(2)       24
     Cl          37.3
     As          0.14
     Ni          0.96
     Se          0.05
     Si          5.66
     Alkalinity 6.56 as HCO3
     S(6)        946 #previously 860.7

TRANSPORT
     -lengths         54*30.5
     -dispersivities  54*50
     -cells           54
     -shifts          588
     -punch_cells     54

PRINT
     -selected_output true
END

PRINT
     selected_output  false
```

Figure 2: Predicted Lead-210 Concentrations at the POE for the Southwestern Flow Regime for a 1000-Year Time Frame Using the Proposed Revised ACL of 189 pCi/L.



```
TITLE · A-9 area (SW flow regime). FILE: SWFR1td_nrc3.in
#Concentration vs Time (0 to 1000 years) at the POE
#Using flow rate of 0.167 ft/d - DECREASING SOURCE TERM TO 90% REDUCTION
#DISPERSIVITY = 50
#SOLID PHASES ALLOWED
#Revised in 2005 for Pb-210
#Revised in 2006 for Solutions in Cells 6-54 and Source sulfate

PRINT
     -reset     false

KNOBS
     -iterations 100
     -tolerance 1.00E-13
     -step_size 100
     -pe_step_size 10
     -diagonal_scale TRUE
     -debug_prep FALSE
     -debug_set FALSE
     -debug_model FALSE
     -debug_inverse FALSE
     -logfile FALSE

SELECTED_OUTPUT
     -file C:\SWFR1td_nrc3.dat

USER_PUNCH

     -headings As Be Cl Pb U Ni Se SO4 Th Ra sOPb+
     -headings wOPb+ PbX2 Anglesite sOHUO2+2
     -headings wOUO2+ USiO4(C) Uraninite sONi+ wONi+
     -headings NiSe sOHRa+2 wORa+ RaX2 RaSO4 wSeO4-
     -headings wOHSeO4-2 wSeO3- wOHSeO3-2 Se(A)
     -headings FeSe2 sSO4- wSO4- sOHSO4-2 wOHSO4-2
     -headings gypsum wOTh+3 wOTh(OH)+2 wOTh(OH)2+
     -headings wOTh(OH)3 wOTh(OH)4- sH2AsO3 wH2AsO3
     -headings sH2AsO4 wH2AsO4 sHAsO4- wHAsO4- sAsO4-2
     -headings wAsO4-2 sOHAsO4-3 wOHAsO4-3 sOBe+ wOBe+
     -headings Calcite Ca Mg Na K HCO3 SO4 Cl TDS
     -start
     10  REM Convert to ppm and show molalities
     20  PUNCH TOT("As")*74.9216*1000
     30  PUNCH TOT("Be")*9.0122*1000
     40  PUNCH TOT("Cl")*35.453*1000
     50  PUNCH TOT("Pb")*207.19*1000/1.29e-11
     60  PUNCH TOT("U")*238.029*1000
     70  PUNCH TOT("Ni")*58.71*1000
     80  PUNCH TOT("Se")*78.96*1000
     90 PUNCH TOT("S(6)")*96.0616*1000
     100 PUNCH TOT("Th")*232.038*1000/4.96e-8
     110 PUNCH TOT("Ra")*226*1000/1.01e-9
     120 PUNCH MOL("Hfo_sOPb+")
     130 PUNCH MOL("Hfo_wOPb+")
     140 PUNCH MOL("PbX2")
     150 PUNCH EQUI("Anglesite")
     160 PUNCH MOL("Hfo_sOHUO2+2")
     170 PUNCH MOL("Hfo_wOUO2+")
     180 PUNCH EQUI("USiO4(C)")
     190 PUNCH EQUI("Uraninite")
     200 PUNCH MOL("Hfo_sONi+")
     210 PUNCH MOL("Hfo_wONi+")
     220 PUNCH EQUI("NiSe")
     230 PUNCH MOL("Hfo_sOHRa+2")
     240 PUNCH MOL("Hfo_wORa+")
     250 PUNCH MOL("RaX2")
     260 PUNCH EQUI("RaSO4")
     270 PUNCH MOL("Hfo_wSeO4-")
```

```
      280 PUNCH MOL("Hfo_wOHSeO4-2")
      290 PUNCH MOL("Hfo_wSeO3-")
      300 PUNCH MOL("Hfo_wOHSeO3-2")
      310 PUNCH EQUI("Se(A)")
      320 PUNCH EQUI("Ferroselite")
      330 PUNCH MOL("Hfo_sSO4-")
      340 PUNCH MOL("Hfo_wSO4-")
      350 PUNCH MOL("Hfo_sOHSO4-2")
      360 PUNCH MOL("Hfo_wOHSO4-2")
      370 PUNCH EQUI("gypsum")
      380 PUNCH MOL("Hfo_wOTh+3")
      390 PUNCH MOL("Hfo_wOTh(OH)+2")
      400 PUNCH MOL("Hfo_wOTh(OH)2+")
      410 PUNCH MOL("Hfo_wOTh(OH)3")
      420 PUNCH MOL("Hfo_wOTh(OH)4-")
      430 PUNCH MOL("Hfo_sH2AsO3")
      440 PUNCH MOL("Hfo_wH2AsO3")
      450 PUNCH MOL("Hfo_sH2AsO4")
      460 PUNCH MOL("Hfo_wH2AsO4")
      470 PUNCH MOL("Hfo_sHAsO4-")
      480 PUNCH MOL("Hfo_wHAsO4-")
      490 PUNCH MOL("Hfo_sAsO4-2")
      500 PUNCH MOL("Hfo_wAsO4-2")
      510 PUNCH MOL("Hfo_sOHAsO4-3")
      520 PUNCH MOL("Hfo_wOHAsO4-3")
      530 PUNCH MOL("Hfo_sOBe+")
      540 PUNCH MOL("Hfo_wOBe+")
      550 PUNCH EQUI("Calcite")
      560 PUNCH TOT("Ca")*40.08*1000
      570 PUNCH TOT("Mg")*24.312*1000
      580 PUNCH TOT("Na")*22.9898*1000
      590 PUNCH TOT("K")*39.102*1000
      600 PUNCH MOL("HCO3-")*61.018*1000
      610 PUNCH TOT("S(6)")*96.0616*1000
      620 PUNCH TOT("Cl")*35.453*1000
      630 A = (TOT("Ca")*40.08*1000)+(TOT("Mg")*24.312*1000)
      640 B = (TOT("Na")*22.9898*1000)+(TOT("K")*39.102*1000)
      650 C = MOL("HCO3-")*61.018*1000
      660 D = TOT("S(6)")*96.0616*1000
      670 E = TOT("Cl")*35.453*1000
      680 PUNCH A+B+C+D+E
      -end

PRINT
      -selected_output false


SOLUTION 0 # Initial Source Term

      units       ppm
      pe          8
      pH          4.33
      Th          2.22e-6
      Pb          2.44e-9   #Revised ACL 2005 (189 pCi/L)
      Be          1.7
      Ca          710  #increased to obtain CB for SO4 <15%
      Mg          174  #increased to obtain CB for SO4 <15%
      Na          117  #increased to obtain CB for SO4 <15%
      K           15
      Fe(2)       160  #increased to obtain CB for SO4 <15%
      Cl          161
      As          1.36
      Ni          9.34
      Se          0.53
      Si          56.4
      U           34.1
      Alkalinity 2.44 as HCO3
```

```
      S(6)        3500 #previously 2650
      Ra          3.57e-7

SOLUTION 1-5 GW8 January 2001

      units       ppm
      pe          7
      pH          4.73
      S(6)        1540
      Cl          97
      Alkalinity 2.0   as HCO3
      Ca          418
      Na          30.6
      Mg          70.8
      K           17.6
      Fe(2)       127
      As          0.007
      Be          0.076
      Th          7.97e-8
      Pb          2.58e-10
      Ra          6.25e-8
      Ni          1.31
      Se          0.001
      U           10.3

SOLUTION 6-54 MW-72 # Data from MW-72 replaces MW-74 January 2001
      units       ppm
      pe          6
      pH          6.48   #Jun-04
      S(6)        1190   #Jun-04
      Cl          115    #Jun-04
      Alkalinity 400 as HCO3  #Jan-01
      Ca          580    #Jan-01
      Na          25     #Jan-01
      Mg          63     #Jan-01
      K           17     #Jan-01
      Fe(2)       4      #Jan-01
      As          0.0081      #Jun-05
      Be          0.0001      #Jun-05
      #Th         negative value reported
      Pb          2.97e-11  #Jan-01
      Ra          2.42e-8     #Jan-01
      Ni          0.0179      #Jun-05
      Se          0.017       #Jun-05
      U           0.609       #Jun-05
      #S(-2)      not measured

EQUILIBRIUM_PHASES 1-54
      Calcite           0.0         0.0
      Gypsum            0.0         0.0
      USiO4(c)          0.0         0.0
      Ferroselite             0.0         0.0
      Se(A)             0.0         0.0
      RaSO4             0.0         0.0
      NiSe              0.0         0.0
      Anglesite         0.0         0.0

SURFACE 1-5
      -equilibrate 1
      Hfo_wOH     0.086       600      45.9
      Hfo_sOH     0.0021

SURFACE 6-54
      -equilibrate 6
      Hfo_wOH     0.086       600      45.9
      Hfo_sOH     0.0021
```

```
EXCHANGE 1-5
     -equilibrate 1
     X    1.2

EXCHANGE 6-54
       -equilibrate 6
     X       1.2

TRANSPORT
     -lengths         54*30.5
     -dispersivities  54*50
     -cells           54
     -shifts          4
     -punch_cells     54

PRINT
     -selected_output true

END

PRINT
     -selected_output false

SOLUTION 0 #33% REDUCTION

     units       ppm
     pe          5.6
     pH          4.47
     Th          1.47e-6
     Pb          1.63e-9    #Revised ACL 2005
     Ra          2.41E-07
     U           22.62
     Be          1.13
     Ca          570
     Mg          137
     Na          94
     K           16.2
     Fe(2)       109
     Cl          114.6
     As          0.90
     Ni          6.20
     Se          0.35
     Si          37.4
     Alkalinity 4.0 as HCO3
     S(6)        2546 #previously 1980.5

TRANSPORT
     -lengths         54*30.5
     -dispersivities  54*50
     -cells           54
     -shifts          2
     -punch_cells     54

PRINT
     -selected_output true

END

PRINT
     -selected_output false

SOLUTION 0 #50% Reduction

     units       ppm
     pe          5.5
     pH          4.57
     Th          1.12e-6
```

```
      Pb          1.22e-9    #Revised ACL 2005
      Ra          1.86E-07
      U           17.16
      Be          0.85
      Ca          503
      Mg          119
      Na          83
      K           16.8
      Fe(2)       85
      Cl          92.5
      As          0.68
      Ni          4.7
      Se          0.27
      Si          28.31
      Alkalinity 4.73 as HCO3
      S(6)        2089 #previously 1661

TRANSPORT
      -lengths          54*30.5
      -dispersivities   54*50
      -cells            54
      -shifts           4
      -punch_cells      54

PRINT
      -selected_output true

END

PRINT
      selected_output  false

SOLUTION 0 #75% Reduction

      units       ppm
      pe          5.1
      pH          4.85
      Th          5.65E-07
      Pb          6.1e-10    #Revised ACL 2005
      Ra          1.0E-07
      U           8.62
      Be          0.43
      Ca          398
      Mg          91
      Na          66
      K           17.7
      Fe(2)       47
      Cl          58
      As          0.34
      Ni          2.36
      Se          0.13
      Si          14.2
      Alkalinity 5.88 as HCO3
      S(6)        1375 #previously 1161

TRANSPORT
      -lengths          54*30.5
      -dispersivities   54*50
      -cells            54
      -shifts           12
      -punch_cells      54

PRINT
      selected_output  true

END
```

```
PRINT.
      selected_output  false

SOLUTION 0 #90% Reduction

      units       ppm
      pe          4.4
      pH          5.27
      Th          2.33E-07
      Pb          2.45e-10    #Revised ACL 2005
      Ra          4.84e-8
      U           3.5
      Be          0.17
      Ca          334
      Mg          74
      Na          56
      K           18.2
      Fe(2)       24
      Cl          37.3
      As          0.14
      Ni          0.96
      Se          0.05
      Si          5.66
      Alkalinity 6.56 as HCO3
      S(6)        946 #previously 860.7

TRANSPORT
      -lengths         54*30.5
      -dispersivities  54*50
      -cells           54
      -shifts          588
      -punch_cells     54

PRINT
      -selected_output true
END

PRINT
      selected_output  false
```

Figure 2: Predicted Lead-210 Concentrations at the POE for the Southwestern Flow Regime for a 1000-Year Time Frame Using the Proposed Revised ACL of 189 pCi/L.