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Tailings Seepage

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MOAB PROJECT

U.S. Department of Energy Grand Junction Office

Calculation Cover Sheet

Calc. No. Moab 01-2003-01-06-00 **Discipline:** Hydrogeology **Number of Sheets:** 24

Project: Moab Ground Water

Site: Moab, Utah

Feature: Tailings Seepage

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Sources of Formulae and References:

Armstrong, A., B. Sager, and P.C. Mackin, 1998. "Infiltration, seepage, and ground water contamination modeling for the Atlas Corporation Uranium Mill Tailings Pile near Moab, Utah," prepared for Nuclear Regulatory Commission, Contract NRC–02–98–002, Center for Nuclear Waste Regulatory Analysis, San Antonio, Texas.

Ashcroft, G.L., D.T. Jensen, and J.L. Brown, 1992. Utah Climate, Utah Climate Center, Utah State University, Logan, Utah.

Atkinson, M.S., and P.J.L. Eldred, 1982. "Consolidation of soils using vertical drains," in *Vertical Drains*, The Institute of Civil Engineers, Thomas Telford Ltd. London, pp 33–43.

ConeTec, Inc., 2000. "Cone Penetration Test Report, Atlas Minerals Mill Tailings Impoundment" Moab, Utah, Volume I prepared for SRK Consulting.

Gee, G.W., P.J. Wierenga, B.J. Andraski, M.H. Young, M.J. Fayer, and M.L. Rockhold, 1994. "Variation in water balance and recharge potential at three Western desert sites," *Soil Sci. Soc. of Am. Journal* 58:63–72.

Henderson, M.E. 2001. "Closure of the Atlas uranium tailings impoundment," in Tailings and Mine Waste '01, Proceedings of the Eighth International Conference on Tailings and Mine Waste, Fort Collins, CO, January 27-30, A.A. Balkema, Roterdam, pages 123-136.

Henderson, M.E., J. Purdy, and T. Delaney, 2002. "Performance of vertical wick drains at the Atlas Moab Uranium Mill tailings facility after 1 year," in Tailings and Mine Waste '02, Proceedings of the Ninth International Conference on Tailings and Mine Waste, Fort Collins, Colorado, January 27-30, Swets & Zeitlinger, The Netherlands, pp 387–391.

Keshian, B. Jr., and R.E. Rager 1988. "Geotechnical properties of hydraulically placed uranium mill tailings," in Hydraulic Fill Structures, a specialty conference sponsored by the Geotechnical Engineering Division of the American Society of Civil Engineers, Geotechnical Special Publication No. 21, edited by D.J.A. van Zyl and Steven G. Vick, Colorado State University, Fort Collins, Colorado, August 15–18, pp 227–254.

Oak Ridge National Laboratory, 1998. :Tailings Pile Seepage Model," the Atlas Corporation Moab Mill, Moab, Utah.

Richards, L.A. 1931. "Capillary conduction of liquids in a porous mediums," *Physics*, 1:318–333.

Rosetta, version 1.1, 1999. Developed by Marcel G. Schaap, U.S. Salinity Laboratory ARS-USDA, Riverside, California.

Shepherd Miller, Inc. 2000. "Site Hydrogeological and Geochemical Characterization and Alternative Assessments for the Moab Uranium Mill Tailings Site, Moab, Utah."

Simunek, J., van Genuchten, M. Th., and M. Sejna, 1998. HYDRUS-1D, version 2.01, U.S. Salinity Laboratory ARS-USDA, Riverside, California.

SRK, 2000. Results of particle-size analyses, "Dewatering Options for Placement of Cover Moab Tailings Impoundment," prepared for Moab Mill Reclamation Trust, c/o PricewaterhouseCoopers LLP, June 2000, SRK Project Number 128702.

Terzaghi, K. 1943. Theoretical Soil Mechanics, John Wiley and Sons, New York, New York.

van Genuchten, M. Th. 1980. "A closed-form equation for predicting the hydraulic conductivity of unsaturated soils," *Soil Sci. Soc. Am. J.*, 44:892–898.

Sources of Formulae and References (continued):

Zapata, C.E., W.N. Houston, S.L. Houston, and K.D. Walsh, 2000. "Soil-water characteristic curve variability," in Advances in Unsaturated Geotechnics, Proceedings of Sessions of Geo-Denver 2000, The Geo-Institute of the American Society of Civil Engineers, edited by Charles D Shackelford, Sandra L. Houston, and Nien-Yin Chang, August 5–8, Denver, Colorado, pp 84–124.

Preliminary Calc. ☐ **Final Calc.** ☒ **Supersedes Calc. No.** _____

Rev. No.	Revision	Calculation by	Date	Checked by	Date	Approved by	Date
			1-14-03		1-14-03		1/15/03

Problem Statement

The purpose of this calculation is to estimate the volume and rate of seepage of waters from the existing Moab Project Site tailings impoundment (impoundment). Seepage is from both long-term, steady-state drainage (gravity drainage), and transient flux of water from tailings consolidation. Drainage is defined as the withdrawal of pore water from the impoundment and is governed by Darcy's Law. Drainage is assessed under current conditions and with cover systems operating under various degrees of impermeability. Consolidation is defined as a decrease of excess pore water pressure in a saturated soil without replacement of the water by air (Terzaghi 1943). The impoundment is currently assumed to exist in a variably saturated state; fine-grained slimes are saturated possessing some excess pore pressure, and sandier tailings are assumed to be variably saturated near their field capacity, where field capacity is defined as the soil water content after gravity drainage is complete. The estimated volume and rate of seepage will help to determine the allowable flux from the impoundment that will allow ground water compliance.

Remediation efforts undertaken in recent years are reviewed to gain an understanding of the current pore water pressure status and degree of consolidation of tailings in the impoundment.

Background

Information presented here was taken from Henderson (2001) and Henderson et al. (2002). The Moab tailings were owned by Atlas Minerals Corporation under a U.S. Nuclear Regulatory Commission (NRC) license until September 1998 when Atlas filed for bankruptcy. In March 1999 PriceWaterhouseCoopers was named Trustee to complete reclamation efforts required under the NRC license. PriceWaterhouseCoopers hired Shepherd Miller, Inc. (SMI) for ground water compliance issues, Steffen, Robertson, and Kristen Consulting (SRK) for geotechnical, hydrogeologic, and geochemical tailings issues, and Harding-Lawson Associates for construction management concerns to complete required reclamation. Past studies that considered drainage from the Moab tailings after operations had ceased include:

- SRK (2000)
- SMI (2000)
- Oak Ridge National Laboratory (1998)
- Armstrong et al. (1998)

Geotechnical characterization performed by SRK consisted of 96 direct-push cone penetrometer tests to collect in situ data. In addition, 13 continuous hollow-stem auger drilling with continuous sampling (at 13 locations) was undertaken to collect physical samples for laboratory testing. Testing included particle-size analyses. Figure 1 shows the locations of cone penetration tests and hollow-stem auger borings. In the summer of 2002, DOE installed three vibrating wire piezometers at depths of approximately 20 feet (ft), 40 ft, and 60 ft into the slimes at three locations (Figure 1). Copies of the cone penetration test data and discussions of the test are provided in ConeTec, Inc. (2000), and copies of hollow-stem auger boring logs are available in the referenced SRK report.

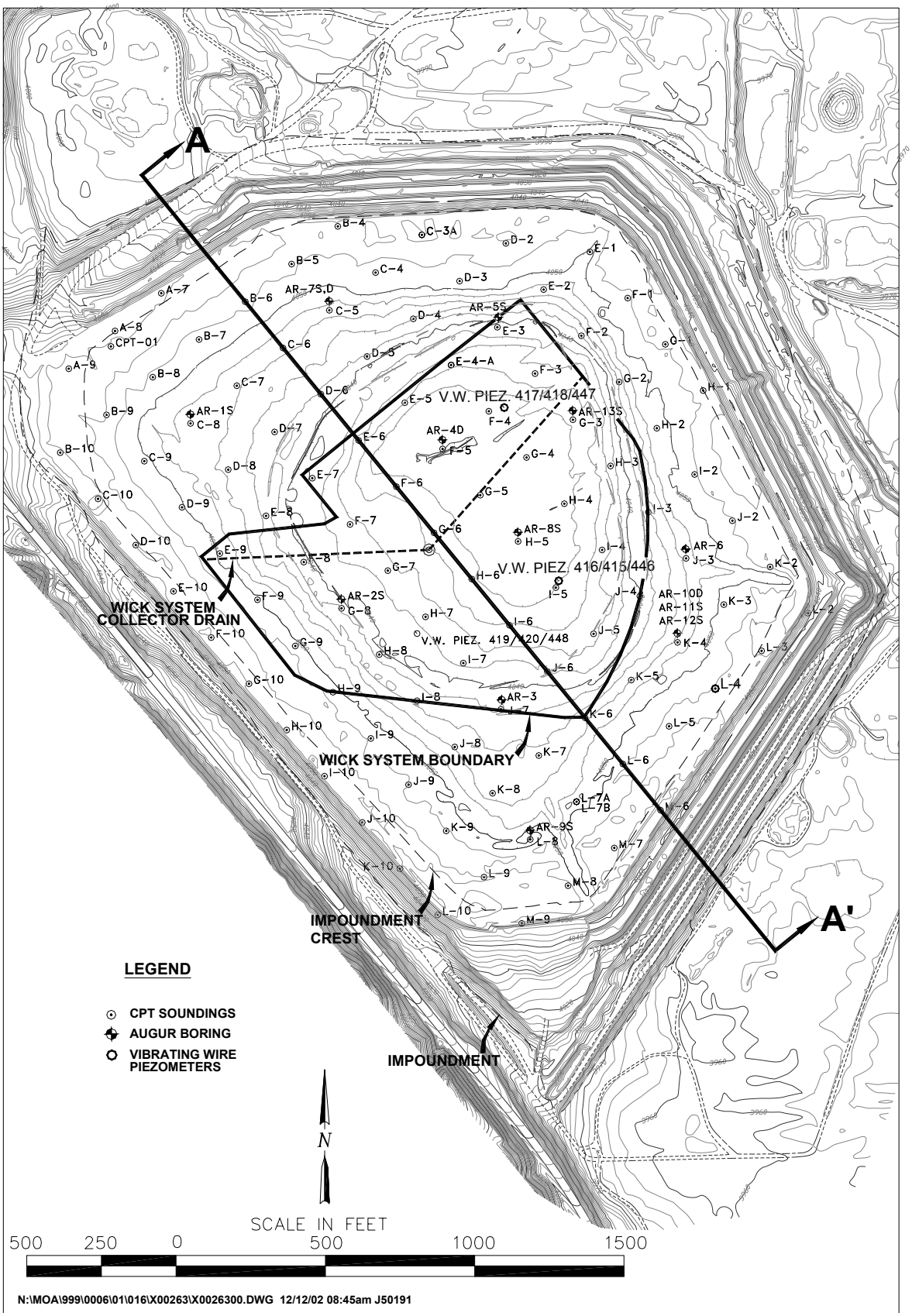


Figure 1. Locations of Geotechnical Investigations of the Tailings Pile

Results of the SRK investigation indicate a perched water table in the slimes. Before construction of a final cover, SRK recommended consolidating the slimes to mitigate cracking of the final cover and to decrease potential contaminant loading to the underlying alluvial ground water system from tailings seepage. Consolidation would be enhanced through dewatering of the saturated slimes with vertical drains, assisted by a vacuum extraction system to accelerate dewatering efforts. Consolidation could also be accelerated by surcharging the slime tailings, although this was not the preferred option. Approximately 17,000 vertical band drains were installed from September 2000 to December 2000. Vertical band drains measuring 100 millimeters (mm) H 4 mm were installed approximately 15.2 meters (m) (50 ft) into the slimes in a triangular pattern spaced 3 m apart. Installation details are provided in referenced SRK documentation.

PriceWaterhouseCoopers did not complete the planned vacuum extraction when the site was turned over to the U.S. Department of Energy (DOE) for final closure. An estimated 1 to 1.5 meters (3.3 to 4.9 ft) of surcharge fill was added to the slimes, and approximately 2 meters (6.6 ft) of fill was placed over the periphery sands.

Method of Solution

Gravity drainage

Long-term seepage is evaluated in saturated/unsaturated gravity drainage of porous media by simulation of variably saturated water flow as is a nonlinear problem requiring solutions typically obtained using computer numerical methods. The HYDRUS 1D (Simunek and others 1988) computer code written at the U.S. Salinity Laboratory, was selected to compute variably saturated gravity drainage.

Steps to compute gravity drainage are as follows:

1. Create a mathematical model of the existing impoundment by differentiating materials interpreted from results of the piezocone investigation performed by ConeTec for SRK in May 2000.
2. Separate tailings materials into categories of sands, sandy slimes, slimy sands, and slimes using the percentage passing through a U.S. standard No. 200 sieve (75 micrometers [µm]), as modified from Keshian and Rager (1988). The defining percentages for classification are shown in Table 1.

Table 1. Tailings Classification

Classification	Percent Passing the No. 200 Sieve
Sand	< 30
Sandy slime	> 30, < 50
Slimy sand	> 50, < 70
Slime	> 70

3. Choose representative one-dimensional profiles from the impoundment model to compute long-term drainage.

4. Compute steady-state drainage characteristics with the HYDRUS 1D computer model by initially saturating all materials and simulating drainage for a 1,000-year time period, or until drainage reaches a steady-state condition. Steady-state is defined as the condition when inflow equals outflow and drainage is constant. Initial saturation of all tailings materials captures the end of construction-operation phase of the impoundment. Tailings were slurried from the mill to the impoundment and hydraulically deposited by spigotting into the tailings cell. Spigotting results in deposition of mainly sands near the discharge point, grading to slimes with increasing distance from the discharge.

   The HYDRUS 1D computer program simulates one-dimensional variably saturated water flow in porous media. The code is written in FORTRAN-77 and employs fully implicit, Galerkin-type linear finite element solutions governing one-dimensional, vertical flow. The equation that governs saturated pore water flow is Darcy's Law. The extension to partially saturated pore water utilized Richards' equation (Richards 1931), which contains the provision that the hydraulic conductivity is a function of the volumetric water content, as discussed below.

   Variably saturated water flow requires a description of soil hydraulic properties, $\theta(h)$ and $K(\theta)$; where $\theta(h)$ is the volumetric water content (L^3L^{-3}) of the soil as a function of pressure head $h(L)$, and K is the hydraulic conductivity (LT^{-1}) as a function of the volumetric water content. All soil hydraulic properties are described by soil moisture characteristics (SMC). HYDRUS 1D requires SMC data to be defined by van Genuchten (1980) parameters for each material type considered. SMC data is estimated using pedotransfer functions (PTFs) from particle size analysis results using the Rosetta program (1999) developed at the U.S. Salinity Laboratory. Estimation of SMC data using PTFs and using a large database in conjunction with a knowledge-based program, such as Rosetta, is selected to achieve the best fit to the optimal SMC (Zapata et al. 2000). Particle size information was obtained from a previous geotechnical investigation performed by SRK.

Consolidation

As defined previously, consolidation is the dissipation of excess pore pressure from a saturated soil. Excess pore pressures can be created by external loading. In this case, the increase in stresses from soils applied to the surface of the impoundment will cause an increase in internal pore pressures. These additional pressures are initially carried by the pore water. Water will flow from the pores due to the pressure difference relieving excess pore pressures through consolidation.

Low conductivity fine-grained soils experience slow consolidation because of the time required to relieve excess pore pressures. Coarse-grained sands consolidate rapidly because of the rapid drainage and relief of excess pore pressures.

Fluids expelled as fine-grained slimes consolidate will be added to the steady-state drainage via superposition. Consolidation occurs until all excess pore pressures are relieved under the specific applied load. After consolidation is complete, the saturated tailings will have pore water pressure in equilibrium. The volume of pore water expelled during consolidation is approximately equal to the decrease in void ratio of the soil. The decrease in void ratio of a column of tailings is approximately equal to the surface settlement.

The ratio of settlement (D) at any time to the total settlement (D_t) is called the degree of consolidation (U). Terzaghi (1943) states that U is dependent on boundary conditions and a time factor T_v, or

$$U = \rho/\rho_t = f(T_v). \tag{1}$$

T_v is formulated as

$$T_v = c_v H\ t / H^2. \tag{2}$$

where c_v = coefficient of consolidation (L^2/T),
t = time (T),
H = length of drainage path (L).

The relationship between T_v and U varies with respect to boundary conditions. In this calculation the value of the time factor will be estimated by assuming two different boundary conditions. Two boundary conditions are analyzed because the inclusion of the vertical drains may or may not have significantly changed the consolidation characteristics of the slimes. The slimes may now behave as an individual soil unit possessing a higher vertical hydraulic conductivity, but with drainage still controlled by the underlying native sand layer. This process is described by Terzaghi (1943). Alternatively, the vertical drains may be assumed to be performing as designed, drainage controlled by two-dimensional radial drainage. In this case, drainage is occurring controlled by the horizontal distance between the vertical drains, as explained by Atkinson and Eldred (1982). For both conditions, the relationship between T_v and U is presented graphically, and T_v is read from the plot by knowing U.

Assumptions

1. For consolidation analysis, the impoundment currently exists in a variably saturate condition with slimes saturated and sands are variable saturated near their field capacity. Slimes are undergoing consolidation and sands are consolidated.
2. Superposition allows the future cover system to be decoupled from the tailings for analysis; thus, influx can be modeled as a constant flux over the entire surface area.
3. Not including hysteresis does not cause significant error in gravity drainage results.

Solution

Table 2 shows an interpretation of tailings materials from cone penetration test results and also indicates horizontal location of soundings made, surface elevation of the pre-2000 surface, and elevations of contacts between various tailings materials computed from depths. When the material description includes the number 2, the denoted material has previously occurred in an upper layer and is now separated by an interbedded material. From this information a mathematical model of the tailings impoundment can be constructed and cross-sections obtained. Conceptually, the impoundment can be described as a tailings sand donut surrounding a tailings slime center. Three one-dimensional profile sections described below were modeled with HYDRUS 1D to gain insight into steady-state drainage conditions of the impoundment.

Table 2. CPT Results

			Interface Elevation [1]								Depth						
ID	Easting	Northing	Pre-2000 Surface	Sand	Slimey Sand	Slimey Sand 2	Sandy Slime	Sandy Slime 2	Slime	Slime 2	Sand	Slimey Sand	Slimey Sand 2	Sandy Slime	Sandy Slime 2	Slime	Slime 2
CPT-01	2183182.60	6665516.45	4055.74	-	-	-	4032.7	-	-	-	-	-	-	23.0	-	-	-
A-7	2183351.26	6665694.75	4056.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A-8	2183196.30	6665568.25	4056.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A-9	2183041.34	6665441.85	4056.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-4	2183942.66	6665919.00	4052.00	4050.5	-	-	-	-	-	-	1.5	-	-	-	-	-	-
B-5	2183787.69	6665792.60	4052.41	4027.4	4020.4	-	-	-	-	-	25.0	32.0	-	-	-	-	-
B-6	2183632.63	6665666.19	4052.28	-	4034.3	-	4020.3	-	-	-	-	18.0	-	32.0	-	-	-
B-7	2183477.67	6665539.79	4051.36	-	4046.4	-	4014.4	-	-	-	-	5.0	-	37.0	-	-	-
B-8	2183322.71	6665413.29	4051.69	4046.7	-	-	4019.7	-	-	-	5.0	-	-	32.0	-	-	-
B-9	2183167.74	6665286.88	4053.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-10	2183012.78	6665160.48	4056.49	4048.9	-	-	-	-	4054.5	-	7.6	-	-	-	-	2.0	-
C-3A	2184224.02	6665890.54	4054.00	4037.4	-	-	-	-	-	-	16.6	-	-	-	-	-	-
C-4	2184069.06	6665764.04	4051.30	-	-	-	4007.3	-	-	-	-	-	-	44.0	-	-	-
C-5	2183914.10	6665637.64	4047.11	-	3993.1	-	4023.1	-	-	-	-	54.0	-	24.0	-	-	-
C-6	2183759.13	6665511.23	4046.58	-	-	-	4012.6	-	4021.6	4001.6	-	-	-	34.0	-	25.0	45.0
C-7	2183604.17	6665384.73	4046.38	-	-	-	-	-	4011.4	-	-	-	-	-	-	35.0	-
C-8	2183449.21	6665258.33	4047.64	4045.1	-	-	4018.6	-	-	-	2.5	-	-	29.0	-	-	-
C-9	2183294.25	6665131.92	4050.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-10	2183139.29	6665005.52	4056.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-2	2184505.39	6665861.98	4053.73	-	4029.7	-	-	-	3984.2	-	-	24.0	-	-	-	69.5	-
D-3	2184350.43	6665735.58	4050.56	-	-	-	4036.6	-	3984.6	-	-	-	-	14.0	-	66.0	-
D-4	2184195.46	6665609.08	4043.93	-	4036.9	-	3987.4	-	4009.9	-	-	7.0	-	56.5	-	34.0	-
D-5	2184040.50	6665482.67	4041.68	-	3982.7	-	4034.7	3992.7	4021.7	-	-	59.0	-	7.0	49.0	20.0	-
D-6	2183885.54	6665356.27	4041.65	-	4038.7	-	3999.2	-	-	-	-	3.0	-	42.5	-	-	-
D-7	2183730.58	6665229.77	4042.69	-	-	-	4006.7	-	4022.7	-	-	-	-	36.0	-	20.0	-
D-8	2183575.61	6665103.36	4045.52	4041.5	-	-	-	-	4015.5	-	4.0	-	-	-	-	30.0	-
D-9	2183420.65	6664976.96	4050.20	-	-	-	4040.2	-	4029.7	-	-	-	-	10.0	-	20.5	-
D-10	2183265.69	6664850.56	4055.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E-1	2184786.85	6665833.43	4050.00	-	4047.0	-	3954.0	-	-	-	-	3.0	-	96.0	-	-	-
E-2	2184631.89	6665707.02	4047.11	-	4045.1	-	3997.1	-	4001.1	3983.1	-	2.0	-	50.0	-	46.0	64.0
E-3	2184476.93	665580.62	4039.47	-	-	-	4034.5	-	3984.5	-	-	-	-	5.0	-	55.0	-
E-4-A	2184321.97	6665454.12	4034.52	-	4030.5	-	-	-	3985.5	-	-	4.0	-	-	-	49.0	-
E-5	2184166.90	6665327.71	4033.88	-	-	-	4031.4	-	3989.9	-	-	-	-	2.5	-	44.0	-
E-6	2184011.94	6665201.31	4035.10	-	-	-	4033.6	-	3995.1	-	-	-	-	1.5	-	40.0	-
E-7	2183856.98	6665074.80	4039.61	-	-	-	4035.6	-	4000.6	-	-	-	-	4.0	-	39.0	-
E-8	2183702.02	6664948.40	4043.03	-	-	-	4039.0	-	4009.0	-	-	-	-	4.0	-	34.0	-
E-9	2183547.06	6664822.00	4049.70	-	-	-	4035.7	-	4016.7	-	-	-	-	14.0	-	33.0	-
E-10	2183392.09	6664695.49	4054.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F-1	2184913.26	6665678.46	4051.82	3978.8	-	-	4029.8	-	4020.8	-	73.0	-	-	22.0	-	31.0	-
F-2	2184758.30	6665552.06	4042.29	-	4040.3	-	-	-	3983.3	-	-	2.0	-	-	-	59.0	-
F-3	2184603.33	6665425.66	4035.09	-	-	-	4032.1	-	3983.1	-	-	-	-	3.0	-	52.0	-
F-4	2184448.37	6665299.15	4031.21	-	4027.2	-	-	-	3982.2	-	-	4.0	-	-	-	49.0	-
F-5	2184293.41	6665172.75	4030.00	-	-	-	-	-	3990.0	-	-	-	-	-	-	40.0	-
F-6	2184138.45	6665046.35	4033.08	-	-	-	4029.1	-	3990.1	-	-	-	-	4.0	-	43.0	-
F-7	2183983.48	6664919.84	4036.50	-	-	-	4032.5	-	3992.5	-	-	-	-	4.0	-	44.0	-
F-8	2183828.52	6664793.44	4040.81	-	-	-	4037.8	-	4001.8	-	-	-	-	3.0	-	39.0	-
F-9	2183673.56	6664667.04	4050.17	-	4048.2	-	-	-	4015.2	-	-	2.0	-	-	-	35.0	-
F-10	2183518.60	6664540.53	4054.00	4033.0	-	-	-	-	-	-	21.0	-	-	-	-	-	-
G-1	2185039.66	6665523.50	4052.60	-	3978.6	-	4038.6	-	-	-	-	74.0	-	14.0	-	-	-

Table 2. CPT Results (continued)

			Interface Elevation [1]								Depth						
ID	Easting	Northing	Pre-2000 Surface	Sand	Slimey Sand	Slimey Sand 2	Sandy Slime	Sandy Slime 2	Slime	Slime 2	Sand	Slimey Sand	Slimey Sand 2	Sandy Slime	Sandy Slime 2	Slime	Slime 2
G-2	2184884.70	6665397.10	4044.56	-	4041.6	-	-	-	3980.6	-	-	3.0	-	-	-	64.0	-
G-3	2184729.74	6665270.69	4032.56	-	4028.6	-	-	-	3982.6	-	-	4.0	-	-	-	50.0	-
G-4	2184574.78	6665144.19	4030.68	-	4028.7	-	-	-	3980.7	-	-	2.0	-	-	-	50.0	-
G-5	2184419.81	6665017.79	4031.14	-	4026.1	-	3988.1	-	3995.6	-	-	5.0	-	43.0	-	35.5	-
G-6	2184264.85	6664891.38	4033.29	-	-	-	-	-	3990.8	-	-	-	-	-	-	42.5	-
G-7	2184109.89	6664764.88	4036.82	-	-	-	-	-	3993.8	-	-	-	-	-	-	43.0	-
G-8	2183954.93	6664638.48	4041.60	4038.6	-	-	-	-	3997.1	-	3.0	-	-	-	-	44.5	-
G-9	2183799.96	6664512.07	4050.82	-	-	-	4037.8	-	3999.8	-	-	-	-	13.0	-	51.0	-
G-10	2183645.00	6664385.57	4054.00	4046.0	-	-	-	-	-	-	8.0	-	-	-	-	-	-
H-1	2185166.17	6665368.54	4052.00	-	4037.0	-	-	-	-	-	-	15.0	-	-	-	-	-
H-2	2185011.20	6665242.14	4048.92	-	3998.9	-	3975.4	-	-	-	-	50.0	-	73.5	-	-	-
H-3	2184856.14	6665115.73	4036.95	4035.0	-	-	3978.0	-	3997.0	-	2.0	-	-	59.0	-	40.0	-
H-4	2184701.18	6664989.23	4030.89	-	-	-	-	-	3979.9	-	-	-	-	-	-	51.0	-
H-5	2184546.22	6664862.82	4031.07	-	-	-	-	-	3983.1	-	-	-	-	-	-	48.0	-
H-6	2184391.25	6664736.42	4032.42	-	-	-	-	-	3987.4	-	-	-	-	-	-	45.0	-
H-7	2184236.29	6664609.92	4037.24	-	-	-	4030.7	-	3989.7	-	-	-	-	6.5	-	47.5	-
H-8	2184081.33	6664483.50	4040.76	-	4035.8	-	-	-	3992.8	-	-	5.0	-	-	-	48.0	-
H-9	2183926.37	6664357.11	4050.92	4048.9	-	-	4013.4	-	3993.9	-	2.0	-	-	37.5	-	57.0	-
H-10	2183771.41	6664230.61	4056.00	4049.0	-	-	-	-	-	-	7.0	-	-	-	-	-	-
I-2	2185137.61	6665087.17	4051.66	-	4026.7	-	3971.7	-	-	-	-	25.0	-	80.0	-	-	-
I-3	2184982.64	6664960.77	4043.55	-	-	-	3980.6	-	3994.6	-	-	-	-	63.0	-	49.0	-
I-4	2184827.68	6664834.27	4034.89	-	-	-	-	-	3979.9	-	-	-	-	-	-	55.0	-
I-5	2184672.72	6664707.86	4032.08	-	-	-	-	-	3979.1	-	-	-	-	-	-	53.0	-
I-6	2184517.76	6664581.46	4034.17	-	-	-	-	-	3977.5	-	-	-	-	-	-	56.7	-
I-7	2184362.80	6664454.96	4037.72	-	-	-	4033.7	-	3984.7	-	-	-	-	4.0	-	53.0	-
I-8	2184207.83	6664328.55	4043.63	4039.6	3985.6	-	-	-	-	-	4.0	58.0	-	-	-	-	-
I-9	2184052.87	6664202.15	4051.56	-	4014.6	-	-	-	3991.1	-	-	37.0	-	-	-	60.5	-
I-10	2183897.91	6664075.65	4054.02	4047.5	0.0	-	-	-	-	-	6.5	-	-	-	-	-	-
J-2	2185264.01	6664932.21	4052.00	-	4008.0	3967.0	-	-	4005.0	-	-	44.0	85.0	-	-	47.0	
J-3	2185109.05	6664805.81	4046.64	-	4015.6	-	4044.6	-	4027.1	3975.6	-	31.0	-	2.0	-	19.5	71.0
J-4	2184954.09	6664679.30	4040.00	-	4038.0	-	3972.0	-	3980.0	-	-	2.0	-	68.0	-	60.0	-
J-5	2184799.12	6664552.90	4036.00	-	-	-	-	-	3977.0	-	-	-	-	-	-	59.0	-
J-6	2184644.16	6664426.50	4038.00	-	-	-	-	-	3979.0	-	-	-	-	-	-	59.0	-
J-7	2184489.20	6664299.99	4042.00	-	-	-	-	-	3977.0	-	-	-	-	-	-	65.0	-
J-8	2184334.24	6664173.59	4045.80	-	4042.8	-	4008.8	-	3979.3	-	-	3.0	-	37.0	-	66.5	-
J-9	2184179.27	6664047.19	4051.98	-	4049.0	-	-	-	3984.0	-	-	3.0	-	-	-	68.0	-
J-10	2184024.31	6663920.68	4053.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K-2	2185390.41	6664777.25	4052.29	-	4031.6	-	4050.8	-	-	-	-	20.7	-	1.5	-	-	-
K-3	2185235.45	6664650.84	4050.35	-	4037.4	3965.4	4048.4	4012.4	-	-	-	13.0	85.0	2.0	38.0	-	-
K-4	2185080.49	6664524.34	4046.53	-	-	-	-	-	3961.5	-	-	-	-	-	-	85.0	-
K-5	2184925.53	6664397.94	4045.91	-	-	-	4043.9	3969.4	3995.9	-	-	-	-	2.0	76.5	50.0	-
K-6	2184770.56	6664271.53	4045.43	-	-	-	4013.9	3970.4	3980.4	-	-	-	-	31.5	75.0	65.0	-
K-7	2184615.60	6664145.03	4044.54	-	4041.5	3991.5	-	-	3998.5	3971.5	-	3.0	53.0	-	-	46.0	73.0
K-8	2184460.64	6664018.63	4045.86	-	-	-	4042.9	4010.9	4026.9	3997.4	-	-	-	3.0	35.0	19.0	48.5
K-9	2184305.68	6663892.22	4052.13	-	4042.1	-	4046.1	3975.1	-	-	-	10.0	-	6.0	77.0	-	-
K-10	2184150.72	6663765.72	4051.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-2	2185516.92	6664622.29	4043.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-3	2185361.95	6664495.88	4054.00	-	4043.0	-	4050.0	-	-	-	-	11.0	-	4.0	-	-	-
L-4	2185206.99	6664369.38	4052.09	-	3960.6	-	-	-	-	-	-	91.5	-	-	-	-	-
L-5	2185052.03	6664242.98	4052.96	-	3983.0	3960.5	3977.0	-	-	-	-	70.0	92.5	76.0	-	-	-

Table 2. CPT Results (continued)

			Interface Elevation [1]								Depth						
ID	**Easting**	**Northing**	**Pre-2000 Surface**	**Sand**	**Slimey Sand**	**Slimey Sand 2**	**Sandy Slime**	**Sandy Slime 2**	**Slime**	**Slime 2**	**Sand**	**Slimey Sand**	**Slimey Sand 2**	**Sandy Slime**	**Sandy Slime 2**	**Slime**	**Slime 2**
L-6	2184897.07	6664116.57	4051.42	-	4045.4	-	4015.4	3963.9	4006.4	-	-	6.0	-	36.0	87.5	45.0	-
L-7-A, -B	2184742.11	6663990.07	4050.00	-	4047.5	-	3980.0	-	-	-	-	2.5	-	70.0	-	-	-
L-8	2184587.14	6663863.67	4050.00	-	4047.0	-	3963.5	-	-	-	-	3.0	-	86.5	-	-	-
L-9	2184432.18	6663737.26	4054.00	-	4015.0	-	4002.0	-	4012.0	3969.0	-	39.0	-	52.0	-	42.0	85.0
L-10	2184277.22	6663610.76	4045.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M-6	2185023.47	6663961.61	4056.00	4024.0	3961.0	-	-	-	-	-	32.0	95.0	-	-	-	-	-
M-7	2184868.51	6663835.11	4053.55	-	3958.6	-	-	-	-	-	-	95.0	-	-	-	-	-
M-8	2184713.55	6663708.70	4052.00	-	3987.0	-	3959.0	-	-	-	-	65.0	-	93.0	-	-	-
M-9	2184558.58	6663582.30	4052.00	-	-	-	4047.0	-	-	-	-	-	-	5.0	-	-	-

[1] adjusted to NAVD 1988 and modified State Plane Coordinates, Moab 1983, Utah Central Zone

Figure 2 shows cross-section A – A' taken through CPT soundings B6 to M6, revealing tailings material separations and the approximate installation depth of vertical drains. Two representative tailings profiles are taken from this cross-section: (1) an average slime thickness is approximately 18 m (60 ft) over a sandy alluvium, and (2) at M6, approximately 9.7 m (32 ft) of tailings sand overlies approximately 19 m (63 ft) of sandy slimes, which overlies the sandy alluvium. A third profile taken off the cross-section B6 to M6 at CPT location L4 consisting of a sandy section, with approximately 21 m (70 ft) of slimy sand over the alluvium. The two sandy profiles were analyzed to determine how the percentage of the tailings sands affect drainage.

Gravity Drainage

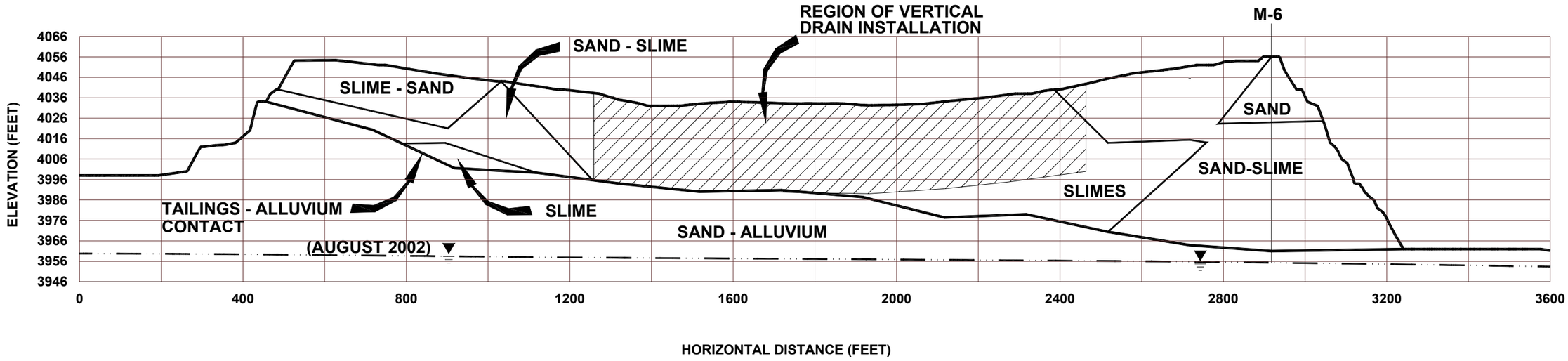
Results of particle-size testing performed by SRK were reviewed, and samples were divided into the tailings categories shown in Table 3 of the twenty-two samples tested, 4 are of underlying, native alluvial materials, 13 (72 percent) are slimes, 3 (17 percent) are sand, and 2 (11 percent) are slimy sands.

Table 3. Tailings Particle-Size Distribution

Sample ID	Depth (ft)	Percent sand[a]	Percent Silt	Percent Clay[b]	Tailings or Soil Classification[c]
AR7	10 – 15	15	74	11	SL
AR8	10 – 25	22	60	18	SL
AR4s	15 – 25	6	59	35	SL
AR5	20 – 24	14	83	3	SL
AR6	25 – 30	89	10	1	S
AR10	25 – 37	67	27	6	SL - S
AR9	2.5 – 5.0	87	10	3	S
AR4	40 – 44	1	60	39	Native ML
AR4	45 – 46	3	89	8	Native ML
AR5	50 – 55	10	89	1	SL
AR4	50 – 65	78	17	5	Native SP
AR9	5 – 25	8	86	6	SL
AR2	5.5 – 10	15	66	19	SL
AR6	55 – 60	0	95	5	SL
AR7	60 – 65	86	10	4	Native SP
AR3	6 – 10	12	74	14	SL
AR5	0 – 1	10	75	15	SL
AR1	10 – 15	9	77	14	SL
AR10	60 – 64	0	63	37	SL
AR3	25 – 30	73	27	0	S
AR5	40 – 45	5	55	40	SL
AR9	60 – 65	70	28	2	SL - S

[a]Coarser than No. 200 sieve (75 µm size)
[b]Finer than 2 µm
[c]SL = slimes; SL-S = slimy sand; S = sand; ML = low plasticity silt ; SP = poorly graded sand

Figure 2. Cross-Section Through Tailings Pile



An average particle-size distribution for the tailings categories sampled was computed before determining SMC data. These data are shown in Table 4. Because no sandy slimes were analyzed, an arbitrary particle-size split was assigned in this group. SMC data presented in Table 4 include the residual volumetric water content Θ_r, the saturated volumetric water content Θ_s, curve-fitting parameters α and n, and the saturated hydraulic conductivity K_s. Volumetric water content and n are unitless; α is per centimeter and K_s is centimeters per day. Because of the lack of in situ moisture values, drainage from the impoundment was simulated assuming all materials are initially saturated.

Table 4. Average Particle-Size Distribution with SMC Data (from Rossetta ver. 1.1, 1999)

Material	Percent Sand	Percent Silt	Percent Clay	Θ_r	Θ_s	Log α (cm^{-1})	Log n	Log K_s (cm/day)
Sand	83	16	1	0.0344	0.3934	–1.3230	0.2907	2.1883
Slimy Sand	68	28	4	0.0307	0.3951	–1.4244	0.1568	1.8247
Sand – Slimes	35	53	12	0.0504	0.4090	–2.2675	0.2127	1.5015
Slimes	10	73	17	0.0707	0.4532	–2.2691	0.2171	1.2338

*Assigned arbitrarily because no data was available.

Annual precipitation for the site is 9 inches (Ashcroft et al., 1992), which is conservatively simulated by applying a constant influx of 5 H 10^{-7} cm sec^{-1}. This influx corresponds to an infiltration rate of approximately 70 percent of annual precipitation, which has been measured in arid conditions for a sandy soil (Gee et al. 1994). Other influxes including 10^{-7} cm sec^{-1}, 10^{-8} cm sec^{-1}, and 10^{-9} cm sec^{-1} were also simulated to determine allowable cover flux for cover design. Copies of output files are provided in Appendix A.

Figures 3, 4, and 5 are plots of gravity drainage computed with HYDRUS 1D with respect to time for profile 1, an average slime thickness of approximately 60 ft (1,830 cm) over a sandy alluvium slime section; for profile 2, at M6 tailings profile consisting of approximately 32 ft (970 cm) of tailings sands overlying approximately 63 ft (1,920 cm) of sandy slimes over the sandy alluvium; and at profile 3, a sand section that has approximately 70 ft (2,130 cm) thick of slimy sand over alluvium. Tabular results are presented in Tables 5, 6 and 7, respectively. The HYDRUS 1D computer program computes a unit drainage in units of length with respect to time. To convert to a volumetric drainage value, the drainage footprint must be applied. Drainage from the slimes region is multiplied by 1,473,150 ft^2, and drainage from sandy regions is multiplied by 3,628,894 ft^2. These footprint areas are determined by approximating a slimes boundary from data in Table 2, with the sand footprint as the remainder of the impoundment area and sands extending to the approximate outslope midpoint.

Consolidation

A certain amount of consolidation has occurred after initial reclamation efforts by PricewaterhouseCoopers, and accelerated after installation of the vertical drains into the slime layer. Henderson et al. (2002) sampled the slimes and determined in situ consolidation properties before applying any surcharge loading. The Henderson 2002 study estimated total settlement of the slimes to be approximately 2.5 meters (8.2 ft) under loading from the final cover. In June 2001, a survey of three points on the tailings surface was performed and one point indicated that the tailings had settled approximately 1.3 meters (4.3 ft) after vertical drain installation and loading. This relates to approximately 50 percent consolidation after about 6 months.

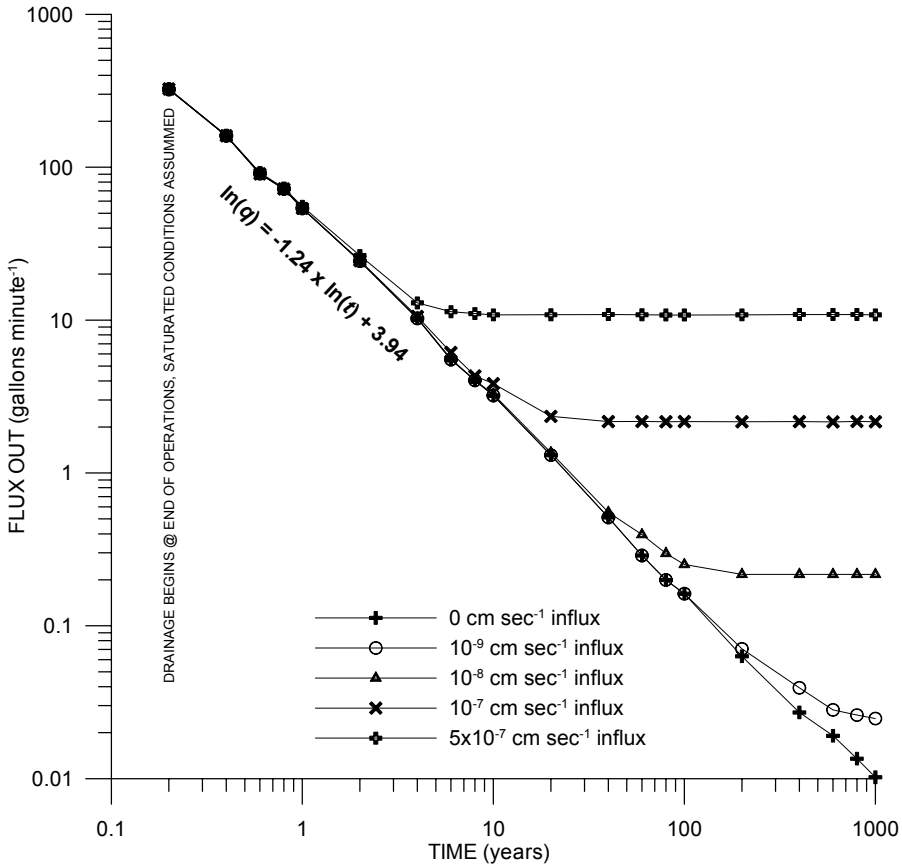


Figure 3. Profile 1: Steady-State Drainage—Slime, Sandy Alluvium

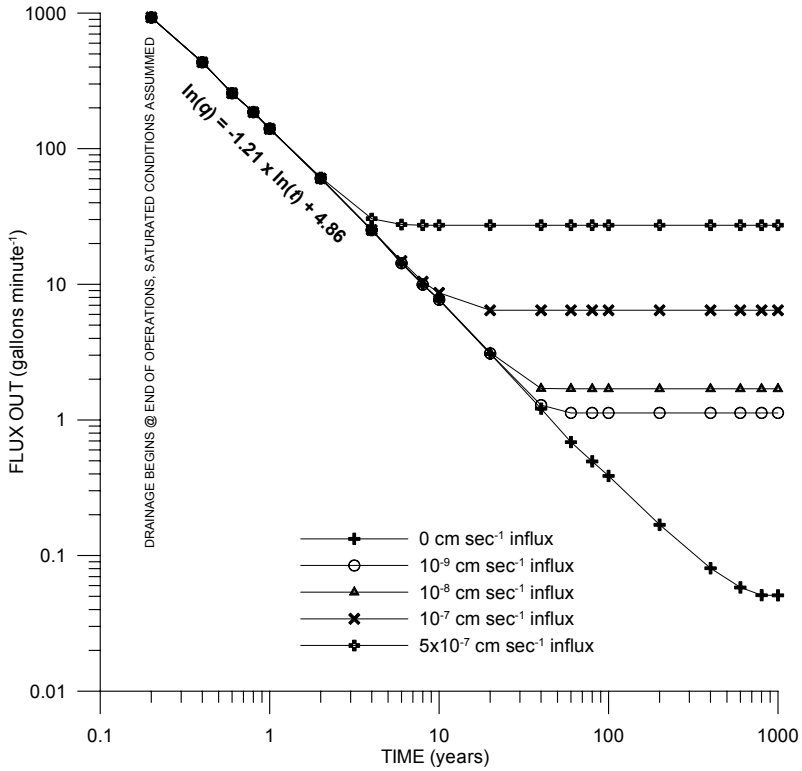


Figure 4. Profile 2: Steady-State Drainage—Sand, Sandy-Slime, Sand, Alluvium

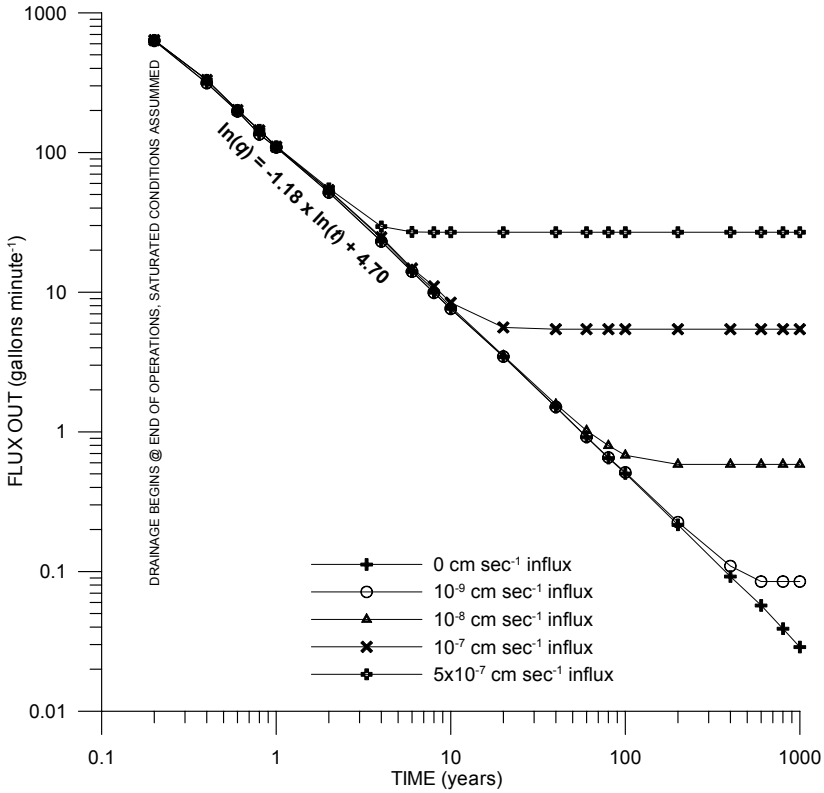


Figure 5. Profile 3: Steady-State Drainage—Slimy Sand, Sand, Alluvium

Table 5. Gravity Drainage from Profile 1: Slimes over Alluvium

	flux out (gpm)[a]				
time (yr)	0	1E-09	1E-08	1E-07	5E-07
0.2	323.20	323.20	325.37	325.37	325.37
0.4	160.73	160.73	160.73	160.73	161.82
0.6	91.10	90.89	90.45	90.45	92.19
0.8	72.01	72.23	72.23	72.23	73.10
1	53.79	53.79	53.79	53.79	55.53
2	24.29	24.29	24.29	24.51	26.46
4	10.28	10.26	10.30	10.56	12.95
6	5.51	5.53	5.57	6.14	11.34
8	4.03	4.03	4.03	4.32	11.02
10	3.21	3.21	3.28	3.84	10.82
20	1.31	1.31	1.36	2.34	10.85
40	0.51	0.51	0.55	2.17	10.89
60	0.29	0.29	0.39	2.17	10.85
80	0.20	0.20	0.30	2.16	10.80
100	0.16	0.16	0.25	2.17	10.80
200	0.06	0.07	0.22	2.16	10.82
400	0.03	0.04	0.22	2.17	10.89
600	0.02	0.03	0.22	2.16	10.89
800	0.01	0.03	0.22	2.17	10.89
1000	0.01	0.02	0.22	2.16	10.82

[a] used a slime footprint of 1,473,150 ft^2

Table 6. Gravity Drainage from Profile 2: Sand, Sandy Slime over Alluvium

	flux out (gpm)[a]				
time (yr)	0	1E-09	1E-08	1E-07	5E-07
0.2	927.66	927.66	927.66	929.74	927.66
0.4	434.15	434.15	434.15	434.41	434.76
0.6	257.27	256.65	257.27	256.48	256.65
0.8	186.15	186.15	186.15	185.95	186.15
1	140.39	140.39	140.39	140.00	140.39
2	60.38	60.38	60.38	60.36	61.41
4	25.11	25.11	25.11	25.17	30.49
6	14.32	14.32	14.37	14.84	27.58
8	9.94	9.94	9.99	10.45	27.27
10	7.69	7.69	7.75	8.66	27.27
20	3.07	3.10	3.13	6.43	27.27
40	1.21	1.29	1.70	6.43	27.27
60	0.69	1.13	1.70	6.43	27.27
80	0.49	1.13	1.69	6.43	27.27
100	0.39	1.13	1.69	6.43	27.27
200	0.17	1.13	1.69	6.43	27.27
400	0.08	1.13	1.69	6.43	27.27
600	0.06	1.13	1.69	6.43	27.27
800	0.05	1.13	1.69	6.43	27.27
1000	0.05	1.13	1.69	6.43	27.27

[a] used a sandy tailings footprint of 3,628,894 ft^2

Table 7. Gravity Drainage from Profile 3: Slimy Sands over Alluvium

	flux out (gpm)[a]				
time (yr)	0	1.00E-09	1.00E-08	1.00E-07	5.00E-07
0.2	630.81	630.81	636.99	636.99	636.99
0.4	313.55	313.55	330.25	330.25	330.87
0.6	197.28	197.28	200.99	200.99	201.61
0.8	134.82	134.82	144.10	144.10	145.33
1.0	108.85	108.85	110.08	110.08	110.70
2.0	51.76	51.76	53.62	53.80	55.29
4.0	23.07	23.07	24.30	24.74	29.50
6.0	14.04	14.04	14.47	14.78	27.03
8.0	9.90	9.90	10.39	11.01	26.84
10.0	7.61	7.61	7.85	8.41	26.84
20.0	3.46	3.46	3.51	5.59	26.84
40.0	1.50	1.51	1.58	5.44	26.84
60.0	0.92	0.92	1.02	5.44	26.84
80.0	0.65	0.66	0.80	5.44	26.84
100.0	0.50	0.51	0.68	5.44	26.84
200.0	0.22	0.23	0.59	5.44	26.84
400.0	0.09	0.11	0.59	5.44	26.84
600.0	0.06	0.08	0.59	5.44	26.84
800.0	0.04	0.08	0.59	5.44	26.84
1000.0	0.03	0.08	0.59	5.44	26.84

[a] used a sandy tailings footprint of 3,628,894 ft^2

Henderson et al. (2002) projected settlement to December 2003. Based on that projection, approximately 80 percent (5.0 ft) of the consolidation settlement should have occurred by December 2002. However, surface surveys performed by DOE in May 2002 show that settlements range up to 2 meters (6.5 ft) in some areas, although the average settlement is 0.84 meter (2.8 ft) after vertical drain installation. Figure 6 is a contour plot of the approximate extent of settlement determined in May 2002, and represents a settlement volume of 92,974 yd^3 (71,032 m^3). The average settlement relates to a degree of consolidation in 2.5 years of

$$U\ (\%) = 0.84\ \text{m}/2.5\ \text{m} = 34\%, \tag{3}$$

which is considerably less than the degree of settlement predicted in Henderson et al. (2002), although the tailings had consolidated for an extra year.

Pore pressures read from vibrating wire piezometers installed in the slimes also indicate that consolidation is still continuing. Figure 7 is a plot of average pore pressures with respect to installation depth for the tailings piezometers. Pore pressure is reported as feet of water and centimeters of water. The predicted steady-state pore pressure line shown on the plot assumes a constant influx of 5×10^{-7} cm sec^{-1}. Over the long-term, this approximate pressure distribution will exist within the slimes if current conditions continue. Consolidation will continue until the steady-state pressure is reached as saturated and unsaturated consolidation. Saturated consolidation occurs until the pore pressures reach zero gauge pressure. If pore pressures drop below zero gauge, unsaturated consolidation occurs until the steady-state pressure is achieved. This type of saturated/unsaturated, drainage-consolidation phenomenon controls an initially saturated fine-grained soil perched above the water table and is described by Terzaghi (1943). This is similar to the condition in the impoundment.

The change in pore pressure (u) with respect to time for vibrating wire piezometers installed at approximately 20, 40, and 60 ft into the tailings are presented on Figures 8-10. Shown on the plots are changes computed from the initial reading. Also shown are regressed lines representing trends in the data. Significant breaks in the data occur for wells 416 and 446. Both wells were installed in the same location. Some unknown transient pressure may have caused this discontinuity. Nevertheless, the trend of decreasing pore pressure continues at the same approximate rate.

Figure 7 indicates that at a depth of about 20 ft, about 15 ft of excess pore pressure exists before unsaturated consolidation will begin. Figure 8 shows a plot of the change in pore pressure, expressed in feet of water with respect to time, for piezometers installed about 20 ft into the slimes. This figure indicates a decreasing pore pressure of approximately 0.008 ft per day. Figure 7 indicates that at a depth of about 40 ft, 20 to 40 ft of excess pressure exists. Figure 9 shows a plot of the change in pore pressure with respect to time for piezometers at a depth of about 40 ft. All piezometers installed at this depth indicate a decreasing pore pressure around 0.013 ft per day. At the base of the slimes, some areas are consolidated, while at other locations excess pressures of more than 100 ft of water remain. Figure 10 shows the change in pore pressure with respect to time for these piezometers and indicates that in consolidated zones, little change in pore pressure is occurring. The most rapid change, 0.114 ft per day, occurs at piezometer 447, which has around 100 ft of excess pore pressure.

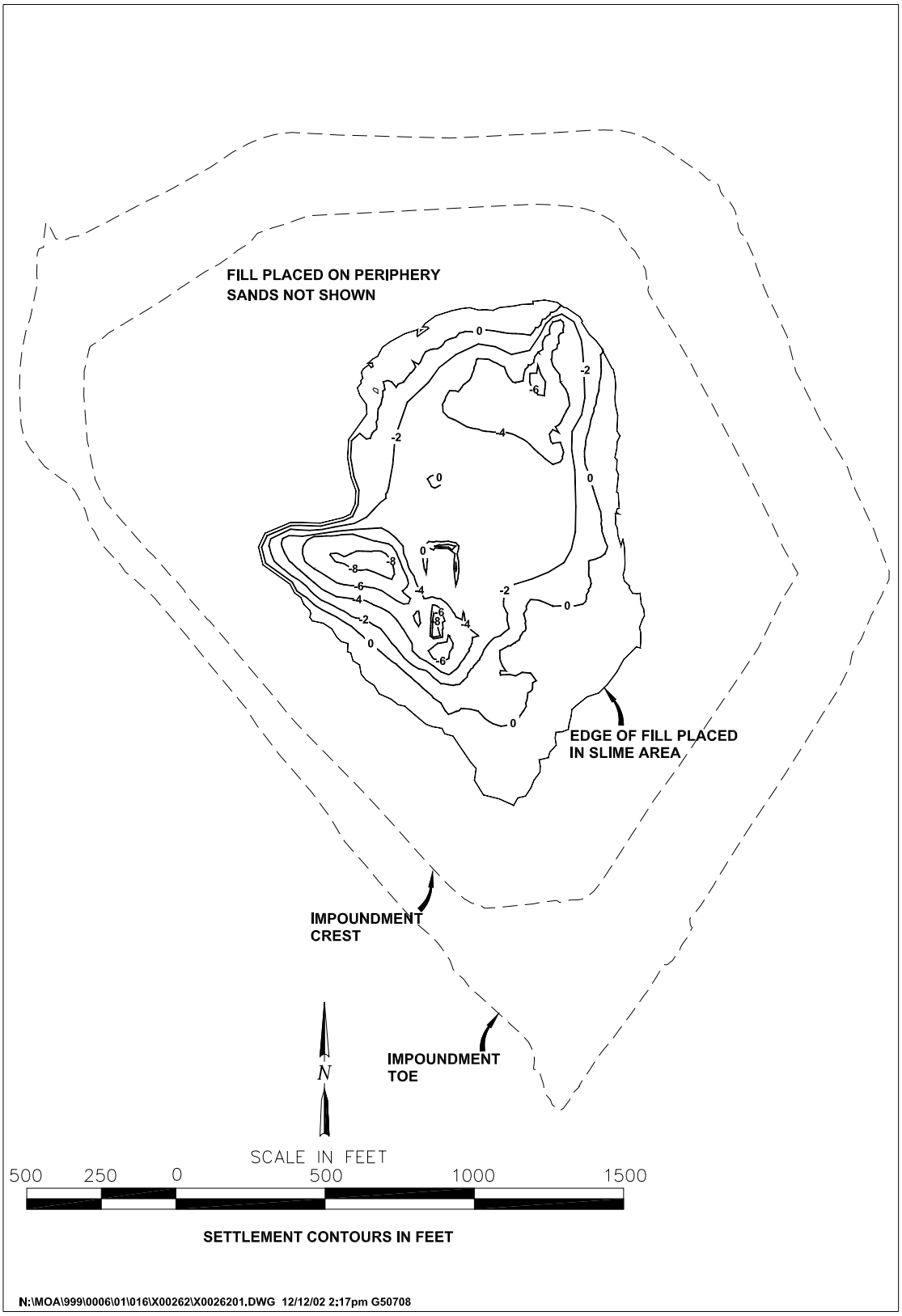


Figure 6. Settlement Contours After Installation of Vertical Drains, May 2002

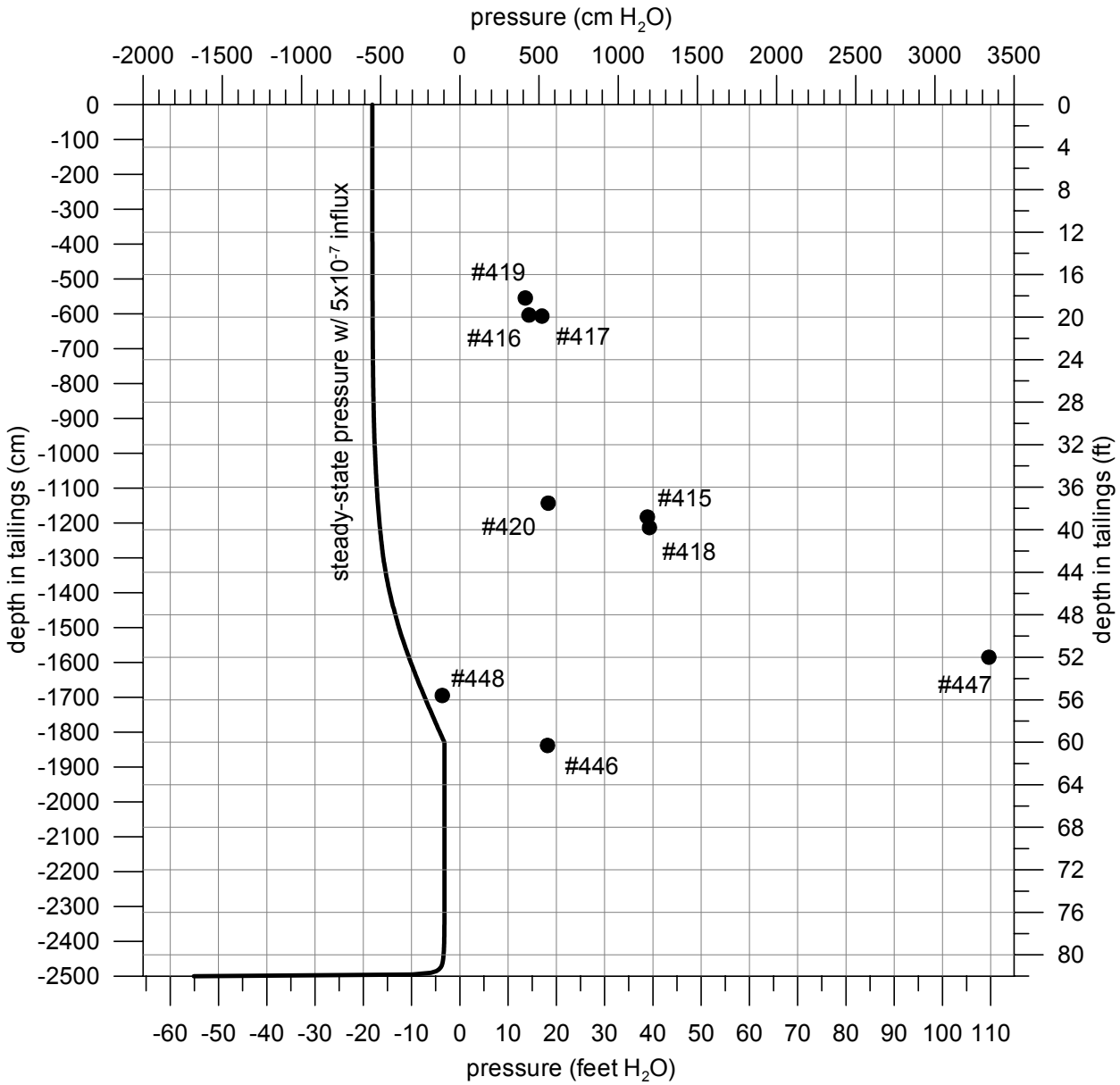


Figure 7. Pore Pressures in Tailings, November 19, 2002

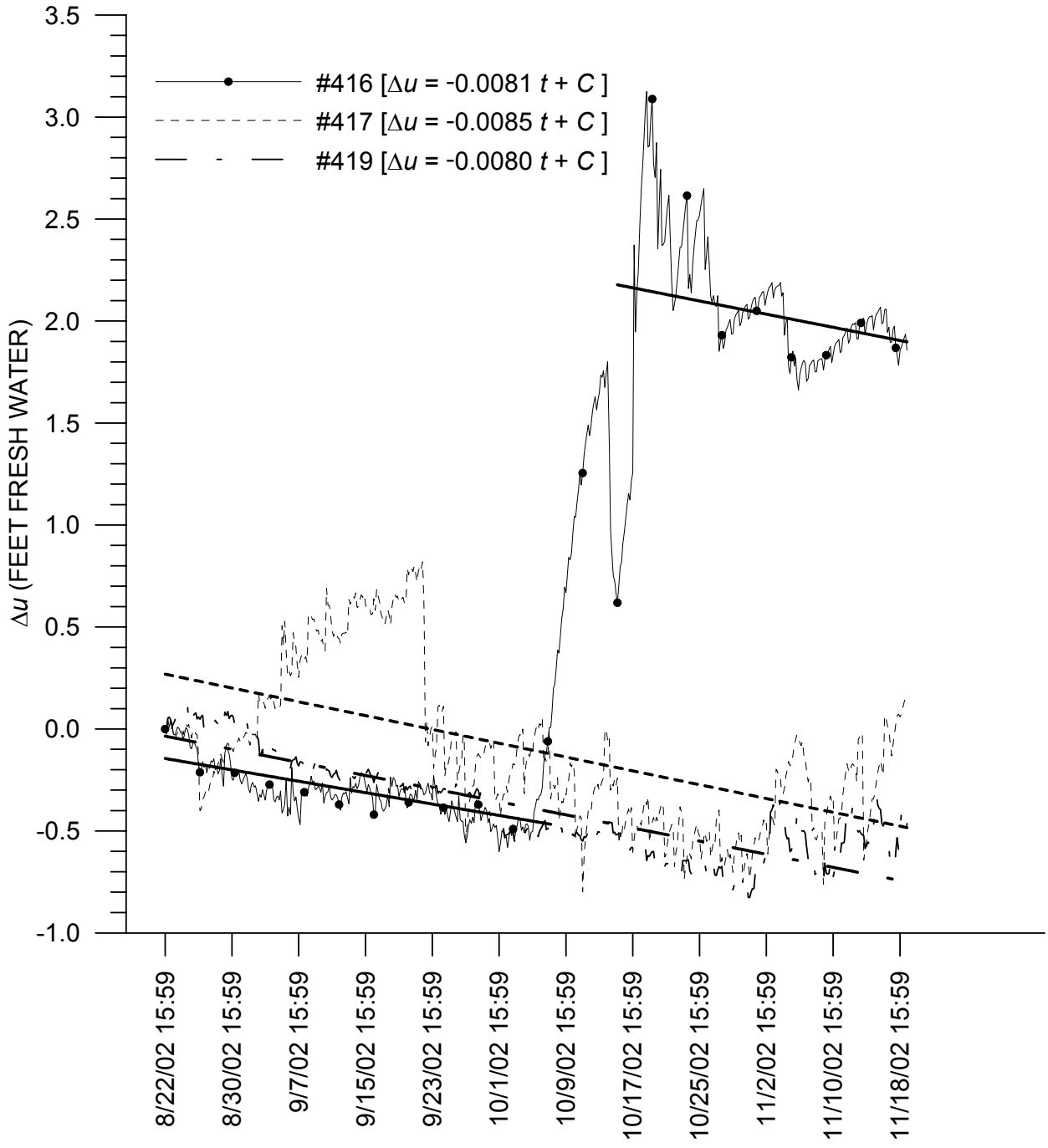


Figure 8. Measured Pore Pressure Changes With Time, 20-Foot Installation Depth

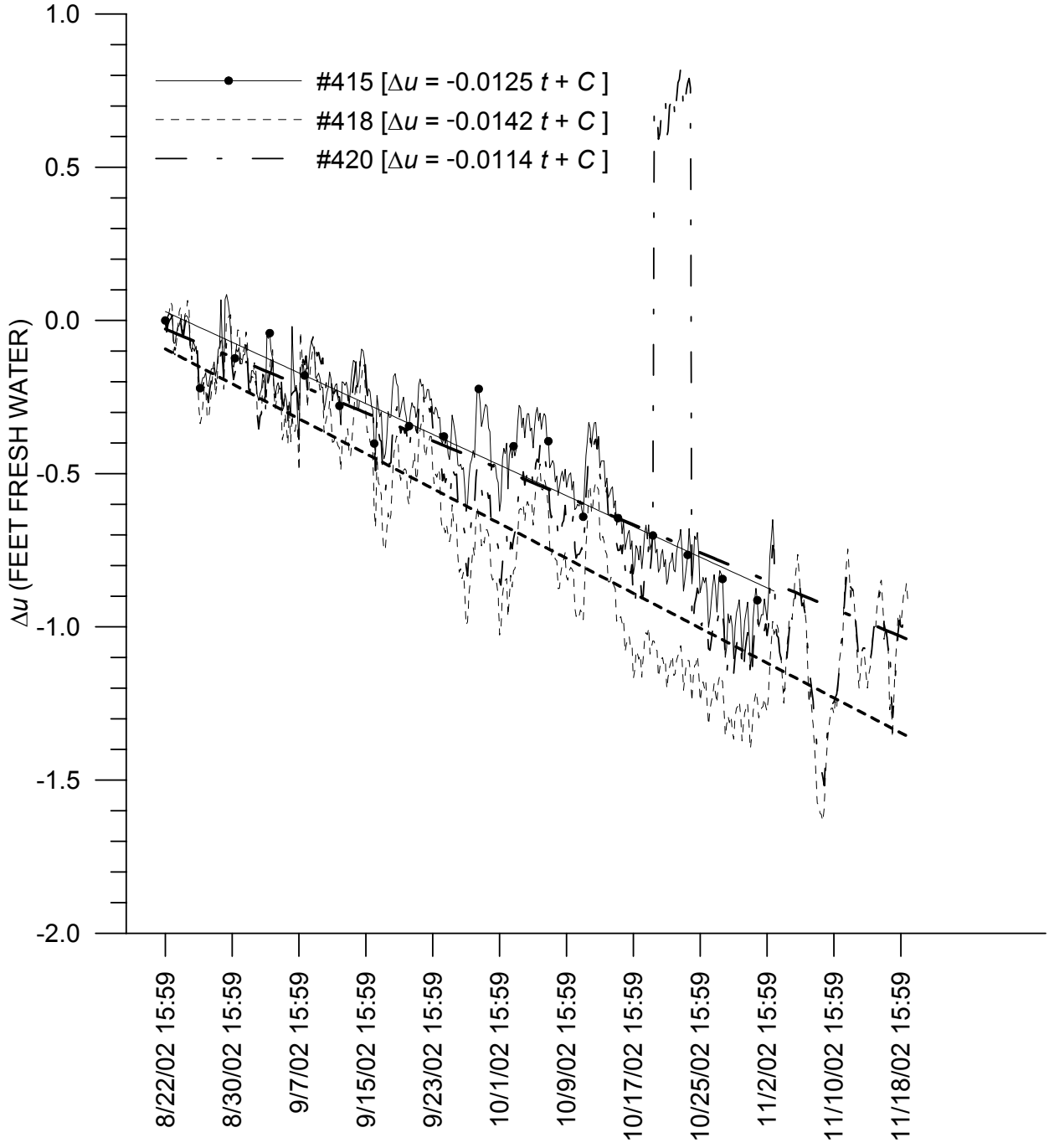


Figure 9. Measured Pore Pressure With Time, 40-Foot Installation Depth

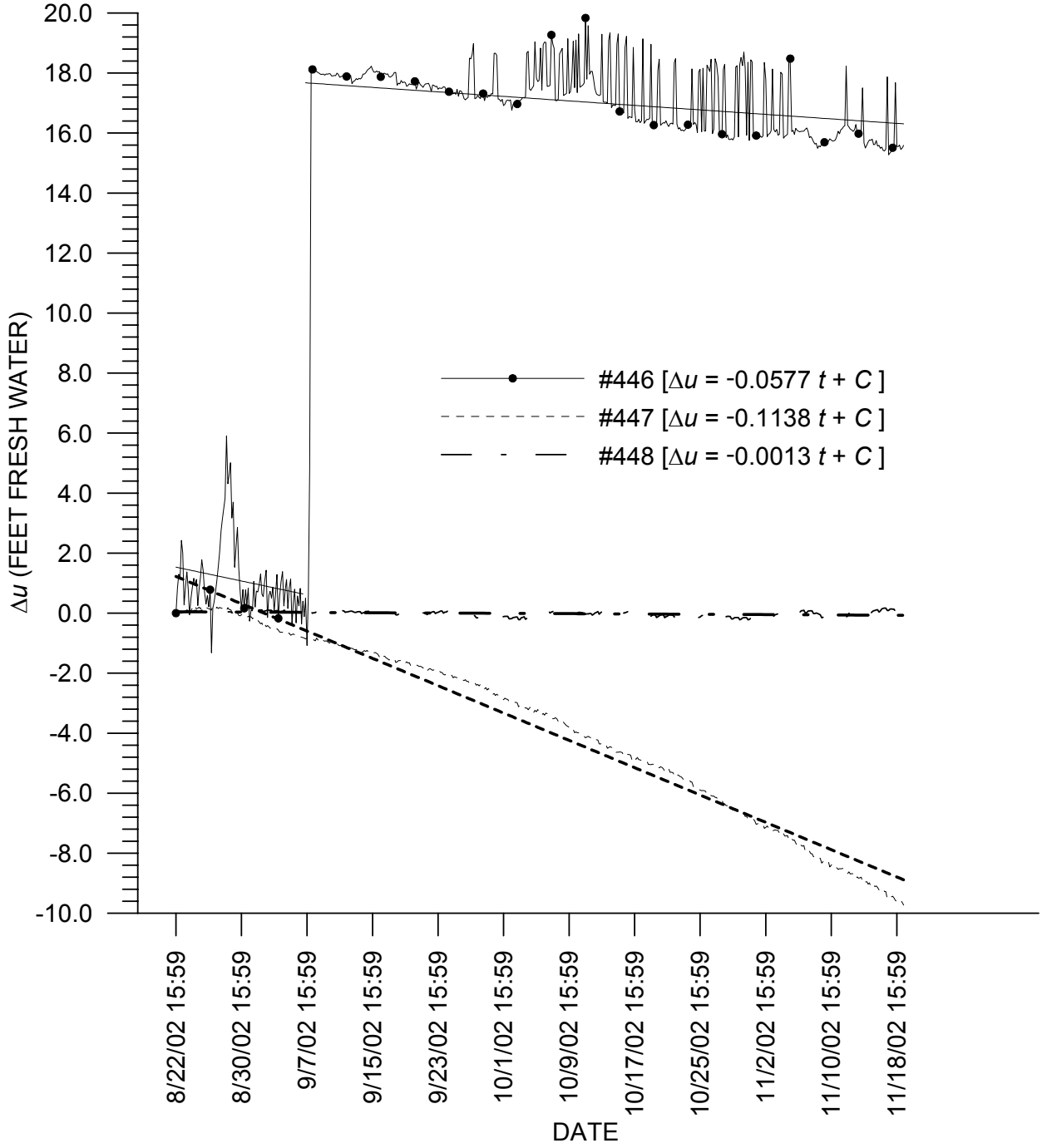


Figure 10. Measured Pore Pressure With Time, 60-Foot Installation Depth

Pore pressure measurements indicate that excess pore pressures still exist after the time the vertical drains should have consolidated the slimes according to initial estimates (see Henderson et al. 2002). One reason may be that the drains may have become plugged or smeared with the fine-grained slimes during installation and are no longer working as effectively (Atkinson and Eldred 1982). Therefore, the time factor for consolidation will be reanalyzed as if the slimes are behaving as a single soil unit with consolidation initially controlled by double drainage out the top and bottom of the unit. As pore pressures dissipate, drainage will flow only out the bottom of the unit. This type of consolidation/drainage of a fine-grained soil resting on a sand bed is discussed by Terzaghi (1943). For comparison, the time factor will also be analyzed assuming radial consolidation is occurring as controlled by the horizontal distance between vertical drains possessing a reduced hydraulic conductivity. Both relationships between T_v and U are presented in Figure 11 and Figure 12.

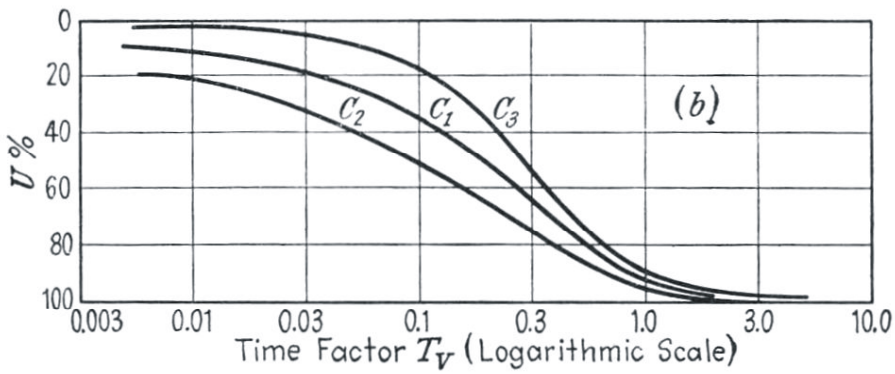


Figure 11. T_v vs U Percent for Fine-Grained Soil (ref. Terzaghi, 1943 p. 283)

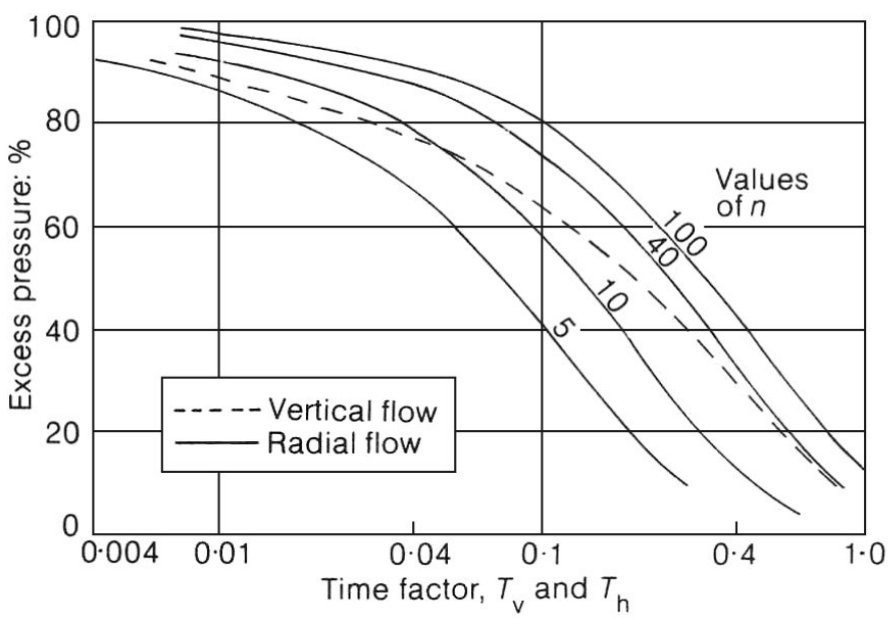


Figure 12. T_v vs U Percent For Soil With Vertical Drains (ref. Atkinson and Eldred, 1982 p. 35)

Using Figure 11 for the drainage condition of a fine-grained soil resting on permeable sand, one can relate T_v to U by selecting a point between the curve C_1 and C_2, depending on how much of the drainage is expected to occur from the base of the fine-grained unit. The greater the degree of drainage is out the base, the closer to C_2 one should select when using the plot. For the impoundment, with the vertical drains installed and working to some degree, drainage is probably out both top and bottom, and the C_1 curve is applicable. Thus, for a U value of 34 percent, T_v value of 0.1 is selected. Alternatively, use of Figure 12 for the relationship between T_v and U for vertical drains depends on the drain geometry expressed by the factor n.

Computation of n follows formulations presented by Atkinson and Eldred (1982) that are provided in Appendix B. A value of 48 is computed for n, using the drain geometry previously mentioned. Applying a value of 34 percent for U and 48 for n produces a value of T_v of 0.14.

The coefficient of consolidation can now be computed for actual field conditions using the values for T_v and equation (2). Coefficient of consolidation values of 0.079 $ft^2\ day^{-1}$ and 3.7 H 10^{-3} $ft^2\ day^{-1}$ are computed respectively for the double draining soil and for vertical drainage conditions. Rearranging Equation (2) to solve for time results in time to achieve 90 percent consolidation, using the computed coefficients of consolidation of approximately 27 years and 15 years respectively for both conditions.

The consolidation-drainage rate can be estimated by selecting a series of T_v values from Figures 11 and 12 and reading the corresponding value of U. Settlement times for each value of U are computed from Equation (2) knowing C_v. This is done for both consolidation conditions in Table 8 and Table 9 and shown in Figure 13.

Table 8. Slimes Vertical Drains

T_h	*U* Percent	ρ (ft)	Time		Volume (gallons)	Drainage Rate		
			Days	Years		gal yr^{-1}	gal/min	@ time (yr)
0.9	90	5.9	5,859	16.1	44.2			
0.8	87	5.7	5,208	14.3	42.7	0.83	2.31	15.2
0.7	83	5.4	4,557	12.5	40.7	1.10	3.09	13.4
0.6	78	5.1	3,906	10.7	38.3	1.38	3.86	11.6
0.5	72	4.7	3,255	8.9	35.3	1.65	4.63	9.8
0.4	64	4.2	2,604	7.1	31.4	2.20	6.17	8.0
0.3	54	3.5	1,953	5.4	26.5	2.75	7.71	6.2
0.2	41	2.7	1,302	3.6	20.1	3.58	10.03	4.5
0.1	25	1.6	651	1.8	12.3	4.40	12.34	2.7

H = length of drainage path (meters) = 1.5
C_v = coefficient of consolidation ($ft^2\ day^{-1}$) = 3.72 H 10^{-3}
ρ_T = total settlement (meters) = 2
ρ = settlement

Table 9. Slimes—Double Drainage

T_h	*U* Percent	ρ (ft)	time		Volume (gallons)	Drainage Rate		
			days	years		gal yr^{-1}	gal/min	@ time (yr)
0.9	96	6.3	10,266	28.1	47.1			
0.8	93	6.1	9,125	25.0	45.6	0.47	1.32	26.6
0.6	86	5.6	6,844	18.8	42.2	0.55	1.54	21.9
0.4	74	4.9	4,563	12.5	36.3	0.94	2.64	15.6
0.3	66.5	4.4	3,422	9.4	32.6	1.18	3.30	10.9
0.2	52.6	3.5	2,281	6.3	25.8	2.18	6.12	7.8
0.08	34	2.2	913	2.5	16.7	2.43	6.82	4.4

H = length of drainage path (meters) = 30
C_v = coefficient of consolidation (ft^2 day^{-1}) = 7.89 H 10^{-3}
ρ_T = total settlement (meters) = 2
ρ = settlement

The approximate volume of water to be expelled during the 2.5 years after installation of the vertical drains is estimated from the settlement volume of 92,974 yd^3, is 18,777,000 gallons. This corresponds to an average consolidation-drainage rate of approximately 14 gal/min. This drainage rate approximates and verifies drainage rates presented in Table 8, suggesting the vertical drains are governing the consolidation process. Current dewatering efforts pump approximately 1.0 gal/min from the upper portion of the vertical drains. These efforts began in January 2002.

Conclusions and Recommendations

Review of Table 6, Table 7, Figure 4 and Figure 5 in this analysis suggests

- Sandier tailings drain water approximately 3 times faster than slimes tailings.
- Sandy tailings behave in a similar hydraulic fashion after approximately 4 years after initial saturation.
- Assuming tailings deposition ceased approximately 15 years ago, flux from sandy tailings has reached a steady-state condition. Influx to the impoundment is a function of the climate. Under the current annual precipitation of approximately 9 inches produces an approximate influx between 1 H 10^{-7} cm sec^{-1} to 5 H 10^{-7} cm sec^{-1}.

Review of Table 5, Table 8, Table 9, Figure 3 and Figure 13 suggests

- Consolidation of slimes will produce greater outflow water compared to gravity drainage for 15 to 20 years after installation of vertical band drains.
- Consolidation flux from the slimes is approximately 12 gal/min currently and will decrease to approximately 2 gal/min in the next 15 to 20 years as shown on Figure 13.
- Consolidation flux from slime materials is predicted to be complete in 15 to 20 years and stead-state drainage will control.
- Total flux from the impoundment can be estimated by computing a weighted mean of fluxes from individual material footprints.

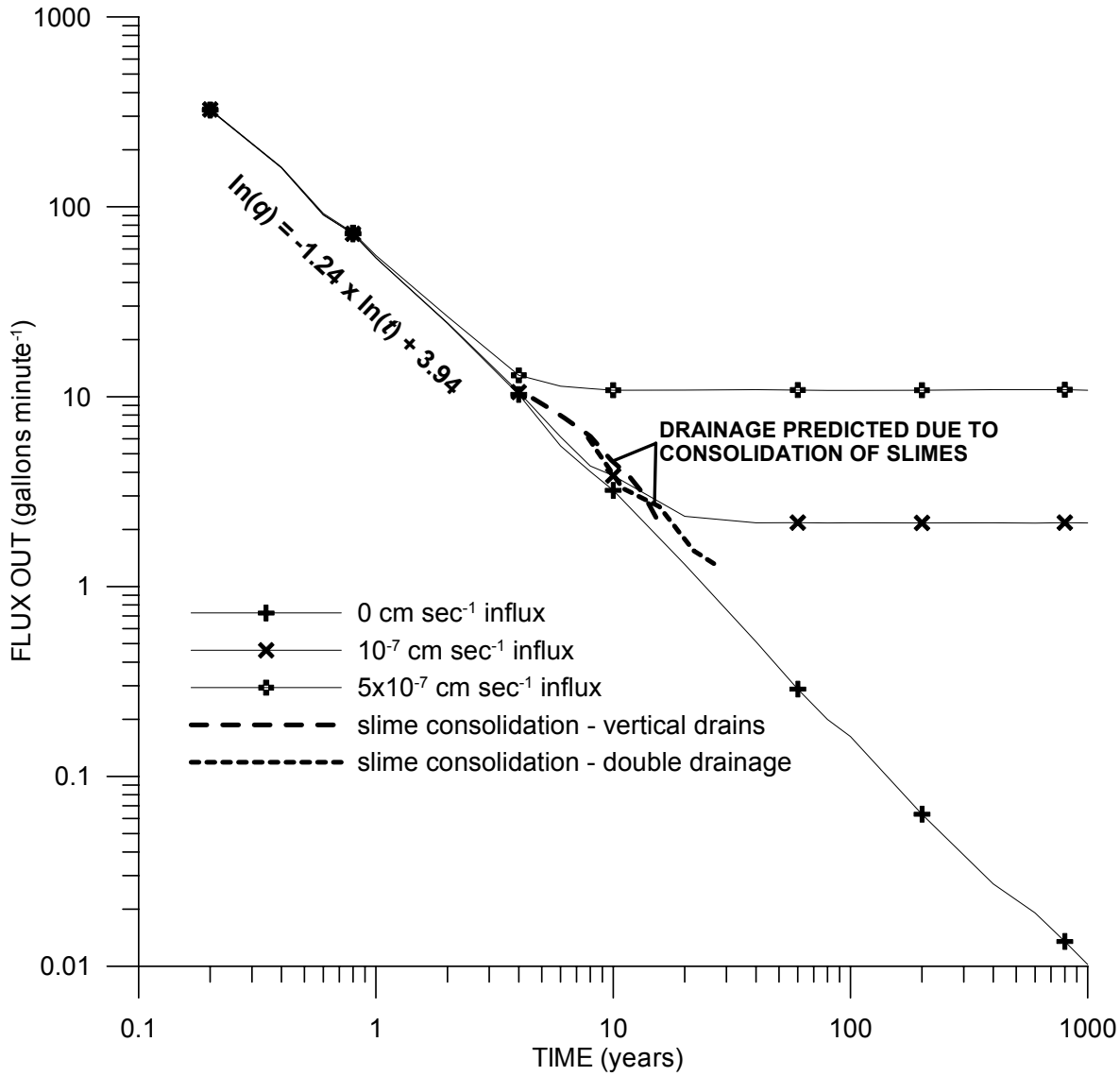


Figure 13. Slime Drainage With Predicted Consolidation Drainage

- Long-term flux from the tailings will be limited to the influx through the cover system. Tables 5 through 7 and Figures 3 through 5 provide design values.

Absolute drainage predictions were made conservatively assuming the tailings were saturated. More accurate predictions could be made based on in situ moisture values of the tailings. In situ moisture values would also provide sufficient input data for use of a more rigorous 2-dimensional finite-element drainage analysis. Installation of a series of neutron monitoring tubes will allow real-time moisture contents to be obtained and a more rigorous drainage evaluation performed.

Time to complete consolidation of slime tailings can be accelerated by increasing the surcharge load or by some method that increases the rate of pore water extraction.

Appendix A

Output Files

Profile 1) 1830 cm Slime, 670 cm native Sand base

boundary conditions	simulation time (yrs)[a]	filename
0 cm/sec influx, constant head @ base	1	Moab 26
	10	Moab 27
	100	Moab 28
	1000	Moab 5
10^{-9} cm/sec influx, constant head @ base	1	Moab 15
	10	Moab 16
	100	Moab 17
	1000	Moab 18
10^{-8} cm/sec influx, constant head @ base	10 day	Moab 9
	100 day	Moab 10
	1	Moab 11
	10	Moab 12
	100	Moab 13
	1000	Moab 14
10^{-7} cm/sec influx, constant head @ base	1	
	10	Moab 6
	100	Moab 7
	1000	Moab 8
5×10^{-7} cm/sec influx, constant head @ base	1	Moab 19
	10	Moab 20
	100	Moab 21
	1000	Moab 22

[a] output at 20%, 40%, 60% and 100% of simulated time

Moab 26

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 0 influx, 365 days

Date: 13.11. Time: 7:44:41
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]	6307200.0000 .2 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.749E+03	.618E+03	.131E+03
In-flow	[L/T]	-.149E-04	-.110E-04	-.399E-05
h Mean	[L]	-.192E+03	-.244E+03	-.513E+02
Top Flux	[L/T]	-.945E-08		
Bot Flux	[L/T]	-.149E-04		
WatBalT	[L]	.226E-02		
WatBalR	[%]	.001		

Time	[T]	********** .4 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.687E+03	.571E+03	.116E+03
In-flow	[L/T]	-.741E-05	-.520E-05	-.221E-05
h Mean	[L]	-.246E+03	-.315E+03	-.609E+02
Top Flux	[L/T]	-.563E-08		
Bot Flux	[L/T]	-.741E-05		
WatBalT	[L]	.232E-02		
WatBalR	[%]	.001		

Time	[T]	********** .6 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.653E+03	.545E+03	.108E+03
In-flow	[L/T]	-.420E-05	-.332E-05	-.882E-06
h Mean	[L]	-.282E+03	-.361E+03	-.673E+02
Top Flux	[L/T]	-.313E-08		
Bot Flux	[L/T]	-.420E-05		
WatBalT	[L]	.214E-02		

WatBalR	[%]	.001

Time	[T]********** .8 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.630E+03	.527E+03	.102E+03
In-flow	[L/T]	-.332E-05	-.239E-05	-.930E-06
h Mean	[L]	-.310E+03	-.398E+03	-.726E+02
Top Flux	[L/T]	-.248E-08		
Bot Flux	[L/T]	-.332E-05		
WatBalT	[L]	.186E-02		
WatBalR	[%]	.000		

Time	[T]********** 1.0 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.611E+03	.514E+03	.973E+02
In-flow	[L/T]	-.248E-05	-.182E-05	-.662E-06
h Mean	[L]	-.333E+03	-.428E+03	-.780E+02
Top Flux	[L/T]	-.203E-08		
Bot Flux	[L/T]	-.248E-05		
WatBalT	[L]	.189E-02		
WatBalR	[%]	.000		

Mab 27

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 3650 days,0 influx

Date: 13.11. Time: 7:46:45
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 2 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.562E+03	.477E+03	.856E+02
In-flow	[L/T]	-.112E-05	-.791E-06	-.326E-06
h Mean	[L]	-.412E+03	-.530E+03	-.939E+02
Top Flux	[L/T]	-.884E-09		
Bot Flux	[L/T]	-.112E-05		
WatBalT	[L]	.226E-02		
WatBalR	[%]	.000		

Time	[T]********** 4 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.521E+03	.445E+03	.754E+02
In-flow	[L/T]	-.474E-06	-.339E-06	-.134E-06
h Mean	[L]	-.502E+03	-.645E+03	-.113E+03
Top Flux	[L/T]	-.376E-09		
Bot Flux	[L/T]	-.474E-06		
WatBalT	[L]	.299E-02		
WatBalR	[%]	.001		

Time	[T]********** 6 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.498E+03	.429E+03	.692E+02
In-flow	[L/T]	-.254E-06	-.191E-06	-.639E-07
h Mean	[L]	-.559E+03	-.718E+03	-.129E+03
Top Flux	[L/T]	-.262E-09		
Bot Flux	[L/T]	-.254E-06		
WatBalT	[L]	.214E-02		

WatBalR	[%]	.000

Time [T]********** 8yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.485E+03	.419E+03	.665E+02
In-flow	[L/T]	-.186E-06	-.142E-06	-.443E-07
h Mean	[L]	-.601E+03	-.772E+03	-.138E+03
Top Flux	[L/T]	-.154E-09		
Bot Flux	[L/T]	-.186E-06		
WatBalT	[L]	.198E-02		
WatBalR	[%]	.000		

Time [T]********** 10yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.475E+03	.411E+03	.635E+02
In-flow	[L/T]	-.148E-06	-.104E-06	-.444E-07
h Mean	[L]	-.635E+03	-.815E+03	-.149E+03
Top Flux	[L/T]	-.127E-09		
Bot Flux	[L/T]	-.148E-06		
WatBalT	[L]	.244E-02		
WatBalR	[%]	.000		

Moab 28

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 36500 days, 0 influx

Date: 13.11. Time: 7:48:24
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 20 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.448E+03	.391E+03	.566E+02
In-flow	[L/T]	-.593E-07	-.421E-07	-.172E-07
h Mean	[L]	-.737E+03	-.942E+03	-.182E+03
Top Flux	[L/T]	-.104E-08		
Bot Flux	[L/T]	-.603E-07		
WatBalT	[L]	.397E-03		
WatBalR	[%]	.000		

Time	[T]********** 40 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.427E+03	.376E+03	.506E+02
In-flow	[L/T]	-.226E-07	-.165E-07	-.605E-08
h Mean	[L]	-.831E+03	-.106E+04	-.224E+03
Top Flux	[L/T]	-.102E-08		
Bot Flux	[L/T]	-.236E-07		
WatBalT	[L]	-.232E-02		
WatBalR	[%]	.000		

Time	[T]********** 60 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.416E+03	.368E+03	.473E+02
In-flow	[L/T]	-.123E-07	-.815E-08	-.413E-08
h Mean	[L]	-.879E+03	-.111E+04	-.255E+03
Top Flux	[L/T]	-.101E-08		
Bot Flux	[L/T]	-.133E-07		
WatBalT	[L]	.366E-03		

WatBalR	[%]	.000

Time [T]********** 80 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.410E+03	.364E+03	.457E+02
In-flow	[L/T]	-.821E-08	-.623E-08	-.198E-08
h Mean	[L]	-.907E+03	-.114E+04	-.276E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.920E-08		
WatBalT	[L]	.336E-02		
WatBalR	[%]	.001		

Time [T]********** 100 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.405E+03	.361E+03	.445E+02
In-flow	[L/T]	-.646E-08	-.464E-08	-.182E-08
h Mean	[L]	-.928E+03	-.116E+04	-.294E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.748E-08		
WatBalT	[L]	.394E-02		
WatBalR	[%]	.001		

Moab5

******* Program HYDRUS
******* Moab, slime + sand column, 0 top flux, const bot, 100yr

Date: 11.11. Time: 22:29:17
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.107E+04	.820E+03	.247E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.171E+02	-.171E+02	-.171E+02
Top Flux	[L/T]	-.104E+02		
Bot Flux	[L/T]	-.577E-02		

Time	[T]	73000.0000	200 yrs	
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.396E+03	.355E+03	.405E+02
In-flow	[L/T]	-.254E-03	-.196E-03	-.575E-04
h Mean	[L]	-.101E+04	-.125E+04	-.362E+03
Top Flux	[L/T]	-.649E-07		
Bot Flux	[L/T]	-.252E-03		
WatBalT	[L]	.397E-03		
WatBalR	[%]	.000		

Time	[T]	146000.0000	400 yrs	
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.384E+03	.346E+03	.377E+02
In-flow	[L/T]	-.109E-03	-.898E-04	-.191E-04
h Mean	[L]	-.108E+04	-.132E+04	-.439E+03
Top Flux	[L/T]	-.313E-07		
Bot Flux	[L/T]	-.108E-03		
WatBalT	[L]	-.467E-02		
WatBalR	[%]	.001		

Time	[T]	219000.0000	600 yrs	
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.377E+03	.341E+03	.365E+02
In-flow	[L/T]	-.762E-04	-.615E-04	-.147E-04
h Mean	[L]	-.112E+04	-.136E+04	-.482E+03
Top Flux	[L/T]	-.292E-07		
Bot Flux	[L/T]	-.760E-04	8.80×10^{-10}	
WatBalT	[L]	.488E-03		

WatBalR	[%]	.000

Time	[T]	292000.0000	800 yrs	
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.372E+03	.337E+03	.355E+02
In-flow	[L/T]	-.523E-04	-.399E-04	-.124E-04
h Mean	[L]	-.116E+04	-.140E+04	-.520E+03
Top Flux	[L/T]	-.371E-08		
Bot Flux	[L/T]	-.538E-04	6.23×10^{-10}	
WatBalT	[L]	.273E-01		
WatBalR	[%]	.004		

Time	[T]	365000.0000	1,000 yrs	
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.369E+03	.334E+03	.348E+02
In-flow	[L/T]	-.406E-04	-.347E-04	-.592E-05
h Mean	[L]	-.119E+04	-.142E+04	-.554E+03
Top Flux	[L/T]	-.356E-08		
Bot Flux	[L/T]	-.407E-04	4.71×10^{-10}	
WatBalT	[L]	-.308E-02		
WatBalR	[%]	.000		

Moab 15

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 10-9 in, 365 days

Date: 12.11. Time: 10:42: 6
Units: L = cm , T = sec , M = mmol

Time [T] .0000

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time [T]6307200.0000 0.2yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.749E+03	.618E+03	.131E+03
In-flow	[L/T]	-.149E-04	-.109E-04	-.398E-05
h Mean	[L]	-.192E+03	-.244E+03	-.513E+02
Top Flux	[L/T]	-.105E-07		
Bot Flux	[L/T]	-.149E-04		
WatBalT	[L]	.287E-02		
WatBalR	[%]	.001		

Time [T]********** 0.4yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.687E+03	.571E+03	.116E+03
In-flow	[L/T]	-.740E-05	-.520E-05	-.221E-05
h Mean	[L]	-.246E+03	-.315E+03	-.609E+02
Top Flux	[L/T]	-.661E-08		
Bot Flux	[L/T]	-.741E-05		
WatBalT	[L]	.308E-02		
WatBalR	[%]	.001		

Time [T]********** 0.6yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.653E+03	.545E+03	.108E+03
In-flow	[L/T]	-.419E-05	-.332E-05	-.874E-06
h Mean	[L]	-.282E+03	-.361E+03	-.673E+02
Top Flux	[L/T]	-.413E-08		
Bot Flux	[L/T]	-.419E-05		
WatBalT	[L]	.272E-02		

WatBalR	[%]	.001

Time [T]********** 0.8 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.630E+03	.527E+03	.102E+03
In-flow	[L/T]	-.333E-05	-.239E-05	-.932E-06
h Mean	[L]	-.310E+03	-.398E+03	-.726E+02
Top Flux	[L/T]	-.347E-08		
Bot Flux	[L/T]	-.333E-05		
WatBalT	[L]	.278E-02		
WatBalR	[%]	.001		

Time [T]********** 1 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.611E+03	.514E+03	.973E+02
In-flow	[L/T]	-.248E-05	-.182E-05	-.660E-06
h Mean	[L]	-.333E+03	-.428E+03	-.780E+02
Top Flux	[L/T]	-.303E-08		
Bot Flux	[L/T]	-.248E-05		
WatBalT	[L]	.269E-02		
WatBalR	[%]	.001		

Moab 16

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 3650 days, 10-9 in

Date: 12.11. Time: 10:46: 0
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 2 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.562E+03	.477E+03	.856E+02
In-flow	[L/T]	-.112E-05	-.791E-06	-.327E-06
h Mean	[L]	-.412E+03	-.529E+03	-.939E+02
Top Flux	[L/T]	-.188E-08		
Bot Flux	[L/T]	-.112E-05		
WatBalT	[L]	.204E-02		
WatBalR	[%]	.000		

Time	[T]********** 4 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.521E+03	.445E+03	.754E+02
In-flow	[L/T]	-.472E-06	-.339E-06	-.133E-06
h Mean	[L]	-.501E+03	-.645E+03	-.113E+03
Top Flux	[L/T]	-.137E-08		
Bot Flux	[L/T]	-.473E-06		
WatBalT	[L]	.269E-02		
WatBalR	[%]	.000		

Time	[T]********** 6 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.499E+03	.429E+03	.692E+02
In-flow	[L/T]	-.254E-06	-.190E-06	-.640E-07
h Mean	[L]	-.558E+03	-.717E+03	-.129E+03
Top Flux	[L/T]	-.126E-08		
Bot Flux	[L/T]	-.255E-06		
WatBalT	[L]	.217E-02		

WatBalR	[%]	.000

Time [T]********** 8yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.486E+03	.419E+03	.665E+02
In-flow	[L/T]	-.185E-06	-.142E-06	-.439E-07
h Mean	[L]	-.600E+03	-.771E+03	-.138E+03
Top Flux	[L/T]	-.115E-08		
Bot Flux	[L/T]	-.186E-06		
WatBalT	[L]	.171E-02		
WatBalR	[%]	.000		

Time [T]********** 10yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.475E+03	.411E+03	.636E+02
In-flow	[L/T]	-.147E-06	-.103E-06	-.444E-07
h Mean	[L]	-.634E+03	-.813E+03	-.149E+03
Top Flux	[L/T]	-.112E-08		
Bot Flux	[L/T]	-.148E-06		
WatBalT	[L]	.180E-02		
WatBalR	[%]	.000		

Moab 17

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 36500 days, 10-9 in

Date: 12.11. Time: 10:54:21
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 20 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.448E+03	.391E+03	.566E+02
In-flow	[L/T]	-.593E-07	-.421E-07	-.172E-07
h Mean	[L]	-.737E+03	-.942E+03	-.182E+03
Top Flux	[L/T]	-.104E-08		
Bot Flux	[L/T]	-.603E-07		
WatBalT	[L]	.397E-03		
WatBalR	[%]	.000		

Time	[T]********** 40 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.427E+03	.376E+03	.506E+02
In-flow	[L/T]	-.226E-07	-.165E-07	-.605E-08
h Mean	[L]	-.831E+03	-.106E+04	-.224E+03
Top Flux	[L/T]	-.102E-08		
Bot Flux	[L/T]	-.236E-07		
WatBalT	[L]	-.232E-02		
WatBalR	[%]	.000		

Time	[T]********** 60 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.416E+03	.368E+03	.473E+02
In-flow	[L/T]	-.123E-07	-.815E-08	-.413E-08
h Mean	[L]	-.879E+03	-.111E+04	-.255E+03
Top Flux	[L/T]	-.101E-08		
Bot Flux	[L/T]	-.133E-07		
WatBalT	[L]	.366E-03		

WatBalR	[%]	.000

Time [T]********** 80 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.410E+03	.364E+03	.457E+02
In-flow	[L/T]	-.821E-08	-.623E-08	-.198E-08
h Mean	[L]	-.907E+03	-.114E+04	-.276E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.920E-08		
WatBalT	[L]	.336E-02		
WatBalR	[%]	.001		

Time [T]********** 100 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.405E+03	.361E+03	.445E+02
In-flow	[L/T]	-.646E-08	-.464E-08	-.182E-08
h Mean	[L]	-.928E+03	-.116E+04	-.294E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.748E-08		
WatBalT	[L]	.394E-02		
WatBalR	[%]	.001		

Moab 18

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 365000 days, 10-9 in

Date: 12.11. Time: 10:57:59
Units: L = cm , T = sec , M = mmol

Time [T] .0000

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time [T]********** 200 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.393E+03	.352E+03	.412E+02
In-flow	[L/T]	-.231E-08	-.181E-08	-.495E-09
h Mean	[L]	-.984E+03	-.122E+04	-.351E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.326E-08		
WatBalT	[L]	.885E-03		
WatBalR	[%]	.000		

Time [T]********** 400 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.384E+03	.345E+03	.390E+02
In-flow	[L/T]	-.833E-09	-.607E-09	-.226E-09
h Mean	[L]	-.103E+04	-.126E+04	-.402E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.181E-08		
WatBalT	[L]	.528E-02		
WatBalR	[%]	.001		

Time [T]********** 600 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.381E+03	.343E+03	.380E+02
In-flow	[L/T]	-.291E-09	-.224E-09	-.661E-10
h Mean	[L]	-.105E+04	-.128E+04	-.431E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.130E-08		
WatBalT	[L]	.491E-02		

WatBalR	[%]	.001

Time [T]********** 800 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.380E+03	.342E+03	.378E+02
In-flow	[L/T]	-.175E-09	-.143E-09	-.325E-10
h Mean	[L]	-.106E+04	-.129E+04	-.440E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.120E-08		
WatBalT	[L]	.970E-02		
WatBalR	[%]	.001		

Time [T]********** 1000 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.379E+03	.341E+03	.376E+02
In-flow	[L/T]	-.126E-09	-.102E-09	-.239E-10
h Mean	[L]	-.107E+04	-.129E+04	-.447E+03
Top Flux	[L/T]	-.100E-08		
Bot Flux	[L/T]	-.114E-08		
WatBalT	[L]	.909E-02		
WatBalR	[%]	.001		

Moab 9

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 10 days 10^{-8}

Date: 12.11. Time: 9:45:27
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]	172800.0000	2 day	5.5×10^{-3} yr
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.997E+03	.800E+03	.197E+03
In-flow	[L/T]	-.186E-03	-.117E-03	-.685E-04
h Mean	[L]	-.393E+02	-.437E+02	-.273E+02
Top Flux	[L/T]	-.416E-06		
Bot Flux	[L/T]	-.186E-03		
WatBalT	[L]	.278E-02		
WatBalR	[%]	.003		

Time	[T]	345600.0000	4 day	1.1×10^{-2}
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.972E+03	.782E+03	.190E+03
In-flow	[L/T]	-.122E-03	-.947E-04	-.276E-04
h Mean	[L]	-.547E+02	-.642E+02	-.292E+02
Top Flux	[L/T]	-.228E-06		
Bot Flux	[L/T]	-.122E-03		
WatBalT	[L]	.241E-02		
WatBalR	[%]	.002		

Time	[T]	518400.0000	6 day	1.6×10^{-2}
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.952E+03	.767E+03	.185E+03
In-flow	[L/T]	-.105E-03	-.788E-04	-.259E-04
h Mean	[L]	-.665E+02	-.798E+02	-.305E+02
Top Flux	[L/T]	-.168E-06		
Bot Flux	[L/T]	-.105E-03		
WatBalT	[L]	.275E-02		

WatBalR	[%]	.002

Time	[T]	691200.0000	8 day	2.2×10^{-2}
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.936E+03	.755E+03	.181E+03
In-flow	[L/T]	-.906E-04	-.674E-04	-.233E-04
h Mean	[L]	-.762E+02	-.926E+02	-.317E+02
Top Flux	[L/T]	-.120E-06		
Bot Flux	[L/T]	-.906E-04		
WatBalT	[L]	.276E-02		
WatBalR	[%]	.002		

Time	[T]	864000.0000	10 day	2.7×10^{-2}
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.920E+03	.744E+03	.176E+03
In-flow	[L/T]	-.854E-04	-.585E-04	-.269E-04
h Mean	[L]	-.845E+02	-.104E+03	-.331E+02
Top Flux	[L/T]	-.103E-06		
Bot Flux	[L/T]	-.854E-04		
WatBalT	[L]	.223E-02		
WatBalR	[%]	.001		

Moab 10

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 100 days 10^{-8}

Date: 12.11. Time: 9:49: 6
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]	1728000.0000	20 days	5.5×10^{-2} yr
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.867E+03	.705E+03	.162E+03
In-flow	[L/T]	-.459E-04	-.358E-04	-.102E-04
h Mean	[L]	-.115E+03	-.143E+03	-.377E+02
Top Flux	[L/T]	-.546E-07		
Bot Flux	[L/T]	-.460E-04		
WatBalT	[L]	.282E-02		
WatBalR	[%]	.001		

Time	[T]	3456000.0000	40 days	0.110 yr
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.805E+03	.659E+03	.145E+03
In-flow	[L/T]	-.254E-04	-.198E-04	-.560E-05
h Mean	[L]	-.153E+03	-.193E+03	-.442E+02
Top Flux	[L/T]	-.305E-07		
Bot Flux	[L/T]	-.255E-04		
WatBalT	[L]	.253E-02		
WatBalR	[%]	.001		

Time	[T]	5184000.0000	60 days	0.164 yr
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.768E+03	.632E+03	.137E+03
In-flow	[L/T]	-.190E-04	-.134E-04	-.553E-05
h Mean	[L]	-.178E+03	-.226E+03	-.485E+02
Top Flux	[L/T]	-.247E-07		
Bot Flux	[L/T]	-.190E-04		
WatBalT	[L]	.262E-02		

WatBalR	[%]	.001

Time	[T]	6912000.0000 80 day 0.219 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.741E+03	.612E+03	.129E+03
In-flow	[L/T]	-.133E-04	-.986E-05	-.340E-05
h Mean	[L]	-.199E+03	-.253E+03	-.524E+02
Top Flux	[L/T]	-.189E-07		
Bot Flux	[L/T]	-.133E-04		
WatBalT	[L]	.284E-02		
WatBalR	[%]	.001		

Time	[T]	8640000.0000 100 days 0.274 ~~day~~ yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.721E+03	.597E+03	.125E+03
In-flow	[L/T]	-.991E-05	-.796E-05	-.194E-05
h Mean	[L]	-.215E+03	-.274E+03	-.549E+02
Top Flux	[L/T]	-.176E-07		
Bot Flux	[L/T]	-.992E-05		
WatBalT	[L]	.320E-02		
WatBalR	[%]	.001		

Moab 11

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 365 days

Date: 12.11. Time: 9:52:20
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]	6307200.0000	0.2 yr	
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.749E+03	.618E+03	.131E+03
In-flow	[L/T]	-.149E-04	-.109E-04	-.400E-05
h Mean	[L]	-.192E+03	-.244E+03	-.513E+02
Top Flux	[L/T]	-.195E-07		
Bot Flux	[L/T]	-.150E-04		
WatBalT	[L]	.262E-02		
WatBalR	[%]	.001		

Time	[T]	**********	0.4 yr	
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.687E+03	.571E+03	.116E+03
In-flow	[L/T]	-.740E-05	-.519E-05	-.221E-05
h Mean	[L]	-.246E+03	-.314E+03	-.609E+02
Top Flux	[L/T]	-.155E-07		
Bot Flux	[L/T]	-.741E-05		
WatBalT	[L]	.247E-02		
WatBalR	[%]	.001		

Time	[T]	**********	0.6 yr	
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.653E+03	.545E+03	.108E+03
In-flow	[L/T]	-.416E-05	-.331E-05	-.854E-06
h Mean	[L]	-.282E+03	-.361E+03	-.673E+02
Top Flux	[L/T]	-.131E-07		
Bot Flux	[L/T]	-.417E-05		
WatBalT	[L]	.226E-02		

WatBalR	[%]	.001

Time	[T]	********** .8 95		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.630E+03	.527E+03	.102E+03
In-flow	[L/T]	-.332E-05	-.239E-05	-.930E-06
h Mean	[L]	-.309E+03	-.397E+03	-.726E+02
Top Flux	[L/T]	-.124E-07		
Bot Flux	[L/T]	-.333E-05		
WatBalT	[L]	.208E-02		
WatBalR	[%]	.000		

Time	[T]	********** 1 95		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.612E+03	.514E+03	.973E+02
In-flow	[L/T]	-.247E-05	-.181E-05	-.656E-06
h Mean	[L]	-.333E+03	-.427E+03	-.780E+02
Top Flux	[L/T]	-.120E-07		
Bot Flux	[L/T]	-.248E-05		
WatBalT	[L]	.266E-02		
WatBalR	[%]	.001		

Moab 12

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 3650 ~~0days~~ 10 yr

Date: 12.11. Time: 9:56:51
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 2 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.563E+03	.477E+03	.856E+02
In-flow	[L/T]	-.111E-05	-.784E-06	-.326E-06
h Mean	[L]	-.410E+03	-.527E+03	-.938E+02
Top Flux	[L/T]	-.108E-07		
Bot Flux	[L/T]	-.112E-05		
WatBalT	[L]	.256E-02		
WatBalR	[%]	.001		

Time	[T]********** 4 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.522E+03	.446E+03	.755E+02
In-flow	[L/T]	-.465E-06	-.332E-06	-.133E-06
h Mean	[L]	-.497E+03	-.639E+03	-.113E+03
Top Flux	[L/T]	-.103E-07		
Bot Flux	[L/T]	-.475E-06		
WatBalT	[L]	.214E-02		
WatBalR	[%]	.000		

Time	[T]********** 6 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.500E+03	.431E+03	.693E+02
In-flow	[L/T]	-.247E-06	-.182E-06	-.652E-07
h Mean	[L]	-.552E+03	-.708E+03	-.129E+03
Top Flux	[L/T]	-.102E-07		
Bot Flux	[L/T]	-.257E-06		
WatBalT	[L]	.345E-02		

WatBalR	[%]	.001

Time	[T]	********** 8 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.487E+03	.421E+03	.666E+02
In-flow	[L/T]	-.179E-06	-.135E-06	-.437E-07
h Mean	[L]	-.590E+03	-.758E+03	-.137E+03
Top Flux	[L/T]	-.102E-07		
Bot Flux	[L/T]	-.189E-06		
WatBalT	[L]	.327E-02		
WatBalR	[%]	.001		

Time	[T]	********** 10 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.477E+03	.414E+03	.638E+02
In-flow	[L/T]	-.141E-06	-.972E-07	-.435E-07
h Mean	[L]	-.621E+03	-.796E+03	-.148E+03
Top Flux	[L/T]	-.101E-07		
Bot Flux	[L/T]	-.151E-06		
WatBalT	[L]	.403E-02		
WatBalR	[%]	.001		

Moab 13

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 36500 days

Date: 12.11. Time: 10: 3: 1
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 20 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.453E+03	.396E+03	.570E+02
In-flow	[L/T]	-.525E-07	-.368E-07	-.157E-07
h Mean	[L]	-.709E+03	-.905E+03	-.179E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.625E-07		
WatBalT	[L]	.583E-02		
WatBalR	[%]	.001		

Time	[T]********** 40 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.435E+03	.383E+03	.515E+02
In-flow	[L/T]	-.155E-07	-.114E-07	-.410E-08
h Mean	[L]	-.775E+03	-.982E+03	-.216E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.255E-07		
WatBalT	[L]	.598E-02		
WatBalR	[%]	.001		

Time	[T]********** 60 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.428E+03	.378E+03	.492E+02
In-flow	[L/T]	-.825E-08	-.520E-08	-.305E-08
h Mean	[L]	-.802E+03	-.101E+04	-.237E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.182E-07		
WatBalT	[L]	.546E-02		

WatBalR	[%]	.001

Time [T]********** 80 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.424E+03	.376E+03	.479E+02
In-flow	[L/T]	-.368E-08	-.224E-08	-.144E-08
h Mean	[L]	-.814E+03	-.102E+04	-.250E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.137E-07		
WatBalT	[L]	.537E-02		
WatBalR	[%]	.001		

Time [T]********** 160 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.422E+03	.375E+03	.472E+02
In-flow	[L/T]	-.157E-08	-.904E-09	-.670E-09
h Mean	[L]	-.820E+03	-.103E+04	-.257E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.116E-07		
WatBalT	[L]	.772E-02		
WatBalR	[%]	.001		

Moab 14

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 365000 days

Date: 12.11. Time: 10:10:15
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 200 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.421E+03	.375E+03	.467E+02
In-flow	[L/T]	-.465E-10	-.310E-10	-.156E-10
h Mean	[L]	-.824E+03	-.103E+04	-.263E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.100E-07		
WatBalT	[L]	-.204E-02		
WatBalR	[%]	.000		

Time	[T]********** 400 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.421E+03	.375E+03	.467E+02
In-flow	[L/T]	.791E-11	.102E-10	-.230E-11
h Mean	[L]	-.825E+03	-.103E+04	-.263E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.100E-07		
WatBalT	[L]	-.607E-02		
WatBalR	[%]	.001		

Time	[T]********** 600 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.421E+03	.375E+03	.467E+02
In-flow	[L/T]	.231E-10	.227E-10	.489E-12
h Mean	[L]	-.825E+03	-.103E+04	-.263E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.100E-07		
WatBalT	[L]	-.467E-02		

WatBalR	[%]	.000

Time	[T]	********** 800 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.421E+03	.375E+03	.467E+02
In-flow	[L/T]	.149E-11	.418E-11	-.269E-11
h Mean	[L]	-.825E+03	-.103E+04	-.263E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.100E-07		
WatBalT	[L]	-.735E-02		
WatBalR	[%]	.001		

Time	[T]	********** 1000 yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.421E+03	.375E+03	.467E+02
In-flow	[L/T]	-.348E-11	-.483E-11	.134E-11
h Mean	[L]	-.825E+03	-.103E+04	-.263E+03
Top Flux	[L/T]	-.100E-07		
Bot Flux	[L/T]	-.100E-07		
WatBalT	[L]	-.473E-02		
WatBalR	[%]	.000		

Moab 6

******* Program HYDRUS
******* Moab, slime + sand column, 10-7 top flux, const bot, 10yr

Date: 12.11. Time: 5:22: 9
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.107E+04	.820E+03	.247E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.171E+02	-.171E+02	-.171E+02
Top Flux	[L/T]	-.120E-03		
Bot Flux	[L/T]	-.667E-07		

Time	[T]********** 2yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.573E+03	.487E+03	.860E+02
In-flow	[L/T]	-.103E-05	-.706E-06	-.324E-06
h Mean	[L]	-.396E+03	-.510E+03	-.911E+02
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.113E-05		
WatBalT	[L]	.854E-03		
WatBalR	[%]	.000		

Time	[T]********** 4yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.537E+03	.461E+03	.763E+02
In-flow	[L/T]	-.387E-06	-.265E-06	-.122E-06
h Mean	[L]	-.465E+03	-.597E+03	-.109E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.487E-06		
WatBalT	[L]	.366E-03		
WatBalR	[%]	.000		

Time	[T]********** 6yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.520E+03	.449E+03	.705E+02
In-flow	[L/T]	-.183E-06	-.125E-06	-.583E-07
h Mean	[L]	-.501E+03	-.641E+03	-.123E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.283E-06		
WatBalT	[L]	.128E-02		

WatBalR	[%]	.000

Time	[T]**********	8 yr	
Sub-region num.		1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.511E+03	.443E+03	.680E+02
In-flow	[L/T]	-.990E-07	-.755E-07	-.235E-07
h Mean	[L]	-.520E+03	-.665E+03	-.130E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.199E-06		
WatBalT	[L]	.763E-03		
WatBalR	[%]	.000		

Time	[T]**********	10 yr	
Sub-region num.		1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.506E+03	.439E+03	.662E+02
In-flow	[L/T]	-.772E-07	-.477E-07	-.296E-07
h Mean	[L]	-.533E+03	-.680E+03	-.137E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.177E-06		
WatBalT	[L]	.427E-03		
WatBalR	[%]	.000		

Moab 7

******* Program HYDRUS
******* Moab, slime + sand column, 10-7 top flux, const h bot, 100yr

Date: 12.11. Time: 6:30:51
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.107E+04	.820E+03	.247E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.171E+02	-.171E+02	-.171E+02
Top Flux	[L/T]	-.120E-03		
Bot Flux	[L/T]	-.667E-07		

Time	[T]********** 20 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.496E+03	.434E+03	.622E+02
In-flow	[L/T]	-.780E-08	-.475E-08	-.304E-08
h Mean	[L]	-.554E+03	-.703E+03	-.152E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.108E-06		
WatBalT	[L]	.290E-02		
WatBalR	[%]	.000		

Time	[T]********** 40 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.104E-09	-.936E-10	.197E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.999E-07		
WatBalT	[L]	.586E-02		
WatBalR	[%]	.001		

Time	[T]********** 60 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	-.328E-09	.145E-10	-.342E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.100E-06		
WatBalT	[L]	.558E-02		

WatBalR	[%]	.001

Time	[T]********** 80 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.267E-09	-.429E-11	.271E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.997E-07		
WatBalT	[L]	.644E-02		
WatBalR	[%]	.001		

Time	[T]********** 100 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.180E-10	-.588E-10	.768E-10
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.999E-07		
WatBalT	[L]	.748E-02		
WatBalR	[%]	.001		

Moab 8

******* Program HYDRUS
******* Moab, slime + sand column, 10-7 top flux, const bot, 1000yr

Date: 12.11. Time: 5:37:22
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.107E+04	.820E+03	.247E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.171E+02	-.171E+02	-.171E+02
Top Flux	[L/T]	-.120E-03		
Bot Flux	[L/T]	-.667E-07		

Time	[T]********** 200 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.278E-09	-.200E-10	.298E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.997E-07		
WatBalT	[L]	.126E-01		
WatBalR	[%]	.001		

Time	[T]********** 400 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.124E-09	-.183E-11	.126E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.999E-07		
WatBalT	[L]	.295E-01		
WatBalR	[%]	.001		

Time	[T]********** 600 yr			
Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.400E-09	.346E-10	.366E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.996E-07		
WatBalT	[L]	.430E-01		

WatBalR	[%]	.001

Time	[T]**********	800 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.187E-10	.217E-10	-.304E-11
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.100E-06		
WatBalT	[L]	.529E-01		
WatBalR	[%]	.001		

Time	[T]**********	1000 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.182E+04	.677E+03
W-volume	[L]	.495E+03	.433E+03	.617E+02
In-flow	[L/T]	.195E-09	.339E-10	.161E-09
h Mean	[L]	-.557E+03	-.706E+03	-.154E+03
Top Flux	[L/T]	-.100E-06		
Bot Flux	[L/T]	-.998E-07		
WatBalT	[L]	.659E-01		
WatBalR	[%]	.001		

Moab 19

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 5x10-7 in, 365 days

Date: 12.11. Time: 11:13:39
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]	6307200.0000 .2yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.752E+03	.621E+03	.131E+03
In-flow	[L/T]	-.145E-04	-.105E-04	-.396E-05
h Mean	[L]	-.188E+03	-.239E+03	-.513E+02
Top Flux	[L/T]	-.508E-06		
Bot Flux	[L/T]	-.150E-04		
WatBalT	[L]	.317E-02		
WatBalR	[%]	.001		

Time	[T]	********** .4yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.693E+03	.577E+03	.116E+03
In-flow	[L/T]	-.696E-05	-.476E-05	-.220E-05
h Mean	[L]	-.237E+03	-.302E+03	-.608E+02
Top Flux	[L/T]	-.503E-06		
Bot Flux	[L/T]	-.746E-05		
WatBalT	[L]	.259E-02		
WatBalR	[%]	.001		

Time	[T]	********** .6yr		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.661E+03	.553E+03	.108E+03
In-flow	[L/T]	-.375E-05	-.288E-05	-.866E-06
h Mean	[L]	-.267E+03	-.341E+03	-.671E+02
Top Flux	[L/T]	-.501E-06		
Bot Flux	[L/T]	-.425E-05		
WatBalT	[L]	.247E-02		

WatBalR	[%]	.001

Time [T]********** .8 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.641E+03	.538E+03	.103E+03
In-flow	[L/T]	-.287E-05	-.198E-05	-.895E-06
h Mean	[L]	-.288E+03	-.368E+03	-.721E+02
Top Flux	[L/T]	-.501E-06		
Bot Flux	[L/T]	-.337E-05		
WatBalT	[L]	.241E-02		
WatBalR	[%]	.001		

Time [T]********** 1 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.626E+03	.528E+03	.979E+02
In-flow	[L/T]	-.206E-05	-.142E-05	-.635E-06
h Mean	[L]	-.305E+03	-.389E+03	-.773E+02
Top Flux	[L/T]	-.501E-06		
Bot Flux	[L/T]	-.256E-05		
WatBalT	[L]	.235E-02		
WatBalR	[%]	.000		

Moab 20

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 3650 days, 5x10-7

Date: 12.11. Time: 11:16:56
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 2yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.590E+03	.503E+03	.875E+02
In-flow	[L/T]	-.719E-06	-.442E-06	-.277E-06
h Mean	[L]	-.348E+03	-.443E+03	-.909E+02
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.122E-05		
WatBalT	[L]	.247E-02		
WatBalR	[%]	.000		

Time	[T]********** 4yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.571E+03	.491E+03	.798E+02
In-flow	[L/T]	-.975E-07	-.655E-07	-.320E-07
h Mean	[L]	-.372E+03	-.472E+03	-.103E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.597E-06		
WatBalT	[L]	.235E-02		
WatBalR	[%]	.000		

Time	[T]********** 6yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.568E+03	.489E+03	.788E+02
In-flow	[L/T]	-.232E-07	-.146E-07	-.860E-08
h Mean	[L]	-.377E+03	-.477E+03	-.105E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.523E-06		
WatBalT	[L]	.238E-02		

WatBalR	[%]	.000

Time	[T]********** 8 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.783E+02
In-flow	[L/T]	-.813E-08	-.301E-08	-.511E-08
h Mean	[L]	-.378E+03	-.479E+03	-.106E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.508E-06		
WatBalT	[L]	.223E-02		
WatBalR	[%]	.000		

Time	[T]********** 10 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.113E-08	-.528E-09	.165E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.499E-06		
WatBalT	[L]	.201E-02		
WatBalR	[%]	.000		

Moab 21

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 36500 days, 5x10-7 influx

Date: 12.11. Time: 11:20:10
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 20 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.238E-09	.106E-09	.132E-09
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.500E-06		
WatBalT	[L]	.290E-02		
WatBalR	[%]	.000		

Time	[T]********** 40 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	-.167E-08	-.827E-10	-.159E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.502E-06		
WatBalT	[L]	-.403E-02		
WatBalR	[%]	.000		

Time	[T]********** 60 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.934E-09	-.460E-10	.980E-09
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.499E-06		
WatBalT	[L]	-.106E-01		

WatBalR	[%]	.000

Time	[T]********** 80 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.166E-08	.105E-09	.156E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.498E-06		
WatBalT	[L]	-.168E-01		
WatBalR	[%]	.001		

Time	[T]********** 100 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.179E-08	.421E-10	.175E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.498E-06		
WatBalT	[L]	-.243E-01		
WatBalR	[%]	.001		

Mod 22

******* Program HYDRUS
******* 1830 SL @ 0.45, 670 S @ 0.39, 365000 days, 5x10-7 in

Date: 12.11. Time: 11:29:40
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.107E+04	.821E+03	.246E+03
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.182E+02	-.181E+02	-.187E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.194E-06		

Time	[T]********** 200 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.882E-09	-.830E-10	.965E-09
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.499E-06		
WatBalT	[L]	-.670E-01		
WatBalR	[%]	.001		

Time	[T]********** 400 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	-.175E-08	-.147E-10	-.173E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.502E-06		
WatBalT	[L]	-.146E+00		
WatBalR	[%]	.001		

Time	[T]********** 600 yr		
Sub-region num.		1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	-.232E-08	-.483E-10	-.227E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.502E-06		
WatBalT	[L]	-.185E+00		

WatBalR	[%]	o.001

Time	[T]	********** 800 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	-.154E-08	.432E-10	-.158E-08
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.502E-06		
WatBalT	[L]	-.241E+00		
WatBalR	[%]	.001		

Time	[T]	********** 1000 yr

Sub-region num.			1	2
Area	[L]	.250E+04	.183E+04	.675E+03
W-volume	[L]	.567E+03	.489E+03	.782E+02
In-flow	[L/T]	.546E-09	.376E-10	.508E-09
h Mean	[L]	-.378E+03	-.479E+03	-.107E+03
Top Flux	[L/T]	-.500E-06		
Bot Flux	[L/T]	-.499E-06		
WatBalT	[L]	-.321E+00		
WatBalR	[%]	.001		

Profile 2) 978 cm Sand, 1920 cm Sandy Slime, 182 cm native Sand base

boundary conditions	simulation time (yrs)[a]	filename
0 cm/sec influx, constant head @ base	1	M6-1
	10	M6-2
	100	M6-3b
	1000	M6-5
10^{-9} cm/sec influx, constant head @ base	1	M6_9-1
	10	M6_9-2
	100	M6_9-3
10^{-8} cm/sec influx, constant head @ base	1	M6_8-1
	10	M6_8-2
	100	M6_8-3
10^{-7} cm/sec influx, constant head @ base	1	M6_7-1
	10	M6_7-2
	100	M6_7-3
$5x10^{-7}$ cm/sec influx, constant head @ base	1	M6_75-1
	10	M6_75-2

[a] output at 20%, 40%, 60% and 100% of simulated time

M6-1

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 0 influx, 1 yr

Date: 18.11. Time: 12:47:54
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.244E-03			

Time	[T]	73.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.764E+03	.135E+03	.590E+03	.395E+02
In-flow	[L/T]	-.150E+01	-.324E+00	-.107E+01	-.108E+00
h Mean	[L]	-.168E+03	-.792E+02	-.225E+03	-.481E+02
Top Flux	[L/T]	-.677E-04			
Bot Flux	[L/T]	-.150E+01			
WatBalT	[L]	.916E-04			
WatBalR	[%]	.000			

Time	[T]	146.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.691E+03	.117E+03	.539E+03	.351E+02
In-flow	[L/T]	-.702E+00	-.137E+00	-.513E+00	-.515E-01
h Mean	[L]	-.221E+03	-.974E+02	-.300E+03	-.579E+02
Top Flux	[L/T]	-.393E-04			
Bot Flux	[L/T]	-.702E+00			
WatBalT	[L]	.577E-02			
WatBalR	[%]	.001			

Time	[T]	219.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.652E+03	.109E+03	.511E+03	.323E+02
In-flow	[L/T]	-.415E+00	-.101E+00	-.293E+00	-.214E-01
h Mean	[L]	-.256E+03	-.110E+03	-.351E+03	-.659E+02
Top Flux	[L/T]	-.194E-04			
Bot Flux	[L/T]	-.416E+00			
WatBalT	[L]	.114E-01			

WatBalR	[%]	.002

Time	[T]	292.0000 .8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.626E+03	.103E+03	.493E+03	.308E+02
In-flow	[L/T]	-.300E+00	-.609E-01	-.218E+00	-.208E-01
h Mean	[L]	-.284E+03	-.119E+03	-.389E+03	-.709E+02
Top Flux	[L/T]	-.153E-04			
Bot Flux	[L/T]	-.301E+00			
WatBalT	[L]	.220E-01			
WatBalR	[%]	.004			

Time	[T]	365.0000 1.0 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.607E+03	.993E+02	.479E+03	.293E+02
In-flow	[L/T]	-.227E+00	-.455E-01	-.166E+00	-.155E-01
h Mean	[L]	-.307E+03	-.127E+03	-.422E+03	-.769E+02
Top Flux	[L/T]	-.125E-04			
Bot Flux	[L/T]	-.227E+00			
WatBalT	[L]	.318E-01			
WatBalR	[%]	.005			

M6-2

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 0 influx, 10 yr

Date: 18.11. Time: 13:19:32
Units: L = cm , T = sec , M = mmol

Time [T] .0000

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.282E-08			

Time [T]********** 2 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.555E+03	.879E+02	.441E+03	.259E+02
In-flow	[L/T]	-.113E-05	-.213E-06	-.840E-06	-.796E-07
h Mean	[L]	-.384E+03	-.155E+03	-.531E+03	-.939E+02
Top Flux	[L/T]	-.557E-10			
Bot Flux	[L/T]	-.113E-05			
WatBalT	[L]	.989E-02			
WatBalR	[%]	.002			

Time [T]********** 4 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.510E+03	.785E+02	.409E+03	.228E+02
In-flow	[L/T]	-.469E-06	-.912E-07	-.346E-06	-.317E-07
h Mean	[L]	-.473E+03	-.190E+03	-.654E+03	-.116E+03
Top Flux	[L/T]	-.200E-10			
Bot Flux	[L/T]	-.470E-06			
WatBalT	[L]	.287E-01			
WatBalR	[%]	.004			

Time [T]********** 6 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.488E+03	.740E+02	.393E+03	.211E+02
In-flow	[L/T]	-.268E-06	-.604E-07	-.188E-06	-.204E-07
h Mean	[L]	-.531E+03	-.213E+03	-.734E+03	-.132E+03
Top Flux	[L/T]	-.153E-10			
Bot Flux	[L/T]	-.268E-06			
WatBalT	[L]	.463E-01			

WatBalR	[%]	.007

Time [T]********** 8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.474E+03	.708E+02	.383E+03	.202E+02
In-flow	[L/T]	-.186E-06	-.403E-07	-.135E-06	-.110E-07
h Mean	[L]	-.572E+03	-.231E+03	-.790E+03	-.144E+03
Top Flux	[L/T]	-.119E-10			
Bot Flux	[L/T]	-.186E-06			
WatBalT	[L]	.482E-01			
WatBalR	[%]	.007			

Time [T]********** 10 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.464E+03	.687E+02	.376E+03	.194E+02
In-flow	[L/T]	-.144E-06	-.288E-07	-.104E-06	-.113E-07
h Mean	[L]	-.606E+03	-.246E+03	-.835E+03	-.155E+03
Top Flux	[L/T]	-.951E-11			
Bot Flux	[L/T]	-.144E-06			
WatBalT	[L]	.118E+00			
WatBalR	[%]	.016			

m 6-3 b

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 0 influx, 100 yr

Date: 21.11. Time: 13:30:31
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.244E-03			

Time	[T]	7300.0000	20 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.437E+03	.627E+02	.357E+03	.173E+02
In-flow	[L/T]	-.494E-02	-.103E-02	-.354E-02	-.379E-03
h Mean	[L]	-.709E+03	-.300E+03	-.969E+03	-.194E+03
Top Flux	[L/T]	-.322E-06			
Bot Flux	[L/T]	-.497E-02			
WatBalT	[L]	.756E-01			
WatBalR	[%]	.010			

Time	[T]	14600.0000	40 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.415E+03	.577E+02	.342E+03	.155E+02
In-flow	[L/T]	-.193E-02	-.441E-03	-.134E-02	-.146E-03
h Mean	[L]	-.807E+03	-.365E+03	-.109E+04	-.245E+03
Top Flux	[L/T]	-.126E-06			
Bot Flux	[L/T]	-.196E-02			
WatBalT	[L]	.187E+00			
WatBalR	[%]	.024			

Time	[T]	21900.0000	60 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.404E+03	.552E+02	.334E+03	.146E+02
In-flow	[L/T]	-.109E-02	-.267E-03	-.711E-03	-.111E-03
h Mean	[L]	-.859E+03	-.409E+03	-.115E+04	-.282E+03
Top Flux	[L/T]	-.898E-07			
Bot Flux	[L/T]	-.111E-02			
WatBalT	[L]	.697E+00			

WatBalR	[%]	.089

Time	[T]	29200.0000	80 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.398E+03	.536E+02	.330E+03	.141E+02
In-flow	[L/T]	-.786E-03	-.180E-03	-.554E-03	-.521E-04
h Mean	[L]	-.892E+03	-.443E+03	-.118E+04	-.307E+03
Top Flux	[L/T]	-.623E-07			
Bot Flux	[L/T]	-.800E-03			
WatBalT	[L]	-.398E+00			
WatBalR	[%]	.050			

Time	[T]	36500.0000	100 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.392E+03	.524E+02	.326E+03	.137E+02
In-flow	[L/T]	-.634E-03	-.131E-03	-.453E-03	-.494E-04
h Mean	[L]	-.920E+03	-.473E+03	-.121E+04	-.327E+03
Top Flux	[L/T]	-.359E-07			
Bot Flux	[L/T]	-.625E-03			
WatBalT	[L]	-.242E+00			
WatBalR	[%]	.030			

MG-5

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 0 influx, 1000 yr

Date: 12.12. Time: 11:11:14
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.282E-08			

Time	[T]**********				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.378E+03	.492E+02	.316E+03	.126E+02
In-flow	[L/T]	-.288E-08	-.695E-09	-.194E-08	-.240E-09
h Mean	[L]	-.100E+04	-.576E+03	-.128E+04	-.406E+03
Top Flux	[L/T]	-.230E-12			
Bot Flux	[L/T]	-.316E-08			
WatBalT	[L]	.632E+00			
WatBalR	[%]	.078			

Time	[T]**********				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.366E+03	.465E+02	.307E+03	.117E+02
In-flow	[L/T]	-.103E-08	-.288E-09	-.664E-09	-.811E-10
h Mean	[L]	-.109E+04	-.697E+03	-.135E+04	-.492E+03
Top Flux	[L/T]	-.658E-13			
Bot Flux	[L/T]	-.151E-08			
WatBalT	[L]	-.104E+01			
WatBalR	[%]	.127			

Time	[T]**********				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.359E+03	.450E+02	.303E+03	.114E+02
In-flow	[L/T]	-.380E-09	-.491E-10	-.306E-09	-.255E-10
h Mean	[L]	-.115E+04	-.795E+03	-.139E+04	-.535E+03
Top Flux	[L/T]	-.707E-13			
Bot Flux	[L/T]	-.109E-08			
WatBalT	[L]	-.732E+01			

WatBalR	[%]	.881

Time	[T]**********			
Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.357E+03	.447E+02	.301E+03	.113E+02
In-flow	[L/T]	-.349E-10	.000E+00	-.349E-10	.000E+00
h Mean	[L]	-.117E+04	-.824E+03	-.140E+04	-.553E+03
Top Flux	[L/T]	-.625E-13			
Bot Flux	[L/T]	-.955E-09			
WatBalT	[L]	-.946E+01			
WatBalR	[%]	1.137			

Time	[T]**********			
Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.357E+03	.446E+02	.301E+03	.113E+02
In-flow	[L/T]	-.327E-11	-.291E-11	.000E+00	-.364E-12
h Mean	[L]	-.117E+04	-.824E+03	-.140E+04	-.553E+03
Top Flux	[L/T]	-.584E-13			
Bot Flux	[L/T]	-.953E-09			
WatBalT	[L]	-.950E+01			
WatBalR	[%]	1.142			

M6 9-1

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-9 influx, 1 yr

Date: 21.11. Time: 15:56:27
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.244E-03			

Time	[T]	73.0000 .2 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.764E+03	.135E+03	.590E+03	.395E+02
In-flow	[L/T]	-.150E+01	-.324E+00	-.107E+01	-.108E+00
h Mean	[L]	-.168E+03	-.792E+02	-.225E+03	-.481E+02
Top Flux	[L/T]	-.675E-04			
Bot Flux	[L/T]	-.150E+01			
WatBalT	[L]	.476E-02			
WatBalR	[%]	.001			

Time	[T]	146.0000 .4 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.691E+03	.117E+03	.539E+03	.351E+02
In-flow	[L/T]	-.702E+00	-.137E+00	-.513E+00	-.515E-01
h Mean	[L]	-.221E+03	-.974E+02	-.300E+03	-.579E+02
Top Flux	[L/T]	-.394E-04			
Bot Flux	[L/T]	-.702E+00			
WatBalT	[L]	.760E-02			
WatBalR	[%]	.002			

Time	[T]	219.0000 .6 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.652E+03	.109E+03	.511E+03	.323E+02
In-flow	[L/T]	-.415E+00	-.101E+00	-.293E+00	-.214E-01
h Mean	[L]	-.256E+03	-.110E+03	-.351E+03	-.659E+02
Top Flux	[L/T]	-.193E-04			
Bot Flux	[L/T]	-.415E+00			
WatBalT	[L]	.922E-02			

WatBalR	[%]	.002

Time	[T]	292.0000 .8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.626E+03	.103E+03	.493E+03	.308E+02
In-flow	[L/T]	-.301E+00	-.609E-01	-.219E+00	-.208E-01
h Mean	[L]	-.284E+03	-.119E+03	-.389E+03	-.709E+02
Top Flux	[L/T]	-.154E-04			
Bot Flux	[L/T]	-.301E+00			
WatBalT	[L]	.139E-01			
WatBalR	[%]	.002			

Time	[T]	365.0000 1 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.607E+03	.993E+02	.479E+03	.293E+02
In-flow	[L/T]	-.227E+00	-.456E-01	-.166E+00	-.155E-01
h Mean	[L]	-.307E+03	-.127E+03	-.422E+03	-.769E+02
Top Flux	[L/T]	-.126E-04			
Bot Flux	[L/T]	-.227E+00			
WatBalT	[L]	.173E-01			
WatBalR	[%]	.003			

mb 9-2

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-9 influx, 10 yr

Date: 21.11. Time: 16: 8: 8
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.282E-08			

Time	[T]********** 2yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.555E+03	.880E+02	.441E+03	.259E+02
In-flow	[L/T]	-.113E-05	-.211E-06	-.843E-06	-.793E-07
h Mean	[L]	-.384E+03	-.155E+03	-.531E+03	-.939E+02
Top Flux	[L/T]	-.105E-08			
Bot Flux	[L/T]	-.113E-05			
WatBalT	[L]	.677E-01			
WatBalR	[%]	.011			

Time	[T]********** 4yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.511E+03	.787E+02	.409E+03	.228E+02
In-flow	[L/T]	-.465E-06	-.888E-07	-.345E-06	-.314E-07
h Mean	[L]	-.473E+03	-.189E+03	-.654E+03	-.116E+03
Top Flux	[L/T]	-.102E-08			
Bot Flux	[L/T]	-.470E-06			
WatBalT	[L]	.110E+00			
WatBalR	[%]	.016			

Time	[T]********** 6yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.488E+03	.742E+02	.393E+03	.211E+02
In-flow	[L/T]	-.267E-06	-.590E-07	-.188E-06	-.206E-07
h Mean	[L]	-.530E+03	-.211E+03	-.733E+03	-.132E+03
Top Flux	[L/T]	-.101E-08			
Bot Flux	[L/T]	-.268E-06			
WatBalT	[L]	.204E+00			

WatBalR	[%]	.029

Time [T]********** 8 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.474E+03	.711E+02	.383E+03	.202E+02
In-flow	[L/T]	-.180E-06	-.392E-07	-.130E-06	-.111E-07
h Mean	[L]	-.571E+03	-.228E+03	-.789E+03	-.144E+03
Top Flux	[L/T]	-.101E-08			
Bot Flux	[L/T]	-.186E-06			
WatBalT	[L]	.479E+00			
WatBalR	[%]	.067			

Time [T]********** 10 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.464E+03	.690E+02	.376E+03	.194E+02
In-flow	[L/T]	-.140E-06	-.268E-07	-.103E-06	-.106E-07
h Mean	[L]	-.605E+03	-.243E+03	-.835E+03	-.155E+03
Top Flux	[L/T]	-.101E-08			
Bot Flux	[L/T]	-.144E-06			
WatBalT	[L]	.378E+00			
WatBalR	[%]	.052			

m69-3

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-9 influx, 100 yr

Date: 21.11. Time: 16:25: 2
Units: L = cm , T = days , M = mmol

Time [T] .0000

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.244E-03			

Time [T] 7300.0000 20 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.437E+03	.633E+02	.357E+03	.173E+02
In-flow	[L/T]	-.445E-02	-.926E-03	-.318E-02	-.353E-03
h Mean	[L]	-.706E+03	-.291E+03	-.969E+03	-.194E+03
Top Flux	[L/T]	-.865E-04			
Bot Flux	[L/T]	-.501E-02			
WatBalT	[L]	.831E+00			
WatBalR	[%]	.110			

Time [T] 14600.0000 40 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.418E+03	.592E+02	.343E+03	.156E+02
In-flow	[L/T]	-.114E-02	-.326E-03	-.732E-03	-.774E-04
h Mean	[L]	-.790E+03	-.338E+03	-.108E+04	-.240E+03
Top Flux	[L/T]	-.865E-04			
Bot Flux	[L/T]	-.208E-02			
WatBalT	[L]	-.152E+01			
WatBalR	[%]	.197			

Time [T] 21900.0000 60 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.414E+03	.575E+02	.341E+03	.154E+02
In-flow	[L/T]	-.226E-03	-.839E-04	-.137E-03	-.477E-05
h Mean	[L]	-.813E+03	-.363E+03	-.110E+04	-.249E+03
Top Flux	[L/T]	-.865E-04			
Bot Flux	[L/T]	-.182E-02			
WatBalT	[L]	-.604E+01			

WatBalR	[%]	.779

Time [T] 29200.0000 80 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.414E+03	.575E+02	.341E+03	.154E+02
In-flow	[L/T]	-.244E-04	.000E+00	-.244E-04	.000E+00
h Mean	[L]	-.813E+03	-.364E+03	-.110E+04	-.249E+03
Top Flux	[L/T]	-.865E-04			
Bot Flux	[L/T]	-.182E-02			
WatBalT	[L]	-.609E+01			
WatBalR	[%]	.785			

Time [T] 36500.0000 100 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.414E+03	.575E+02	.341E+03	.154E+02
In-flow	[L/T]	.477E-06	.477E-06	.000E+00	.000E+00
h Mean	[L]	-.813E+03	-.364E+03	-.110E+04	-.249E+03
Top Flux	[L/T]	-.865E-04			
Bot Flux	[L/T]	-.182E-02			
WatBalT	[L]	-.610E+01			
WatBalR	[%]	.786			

M6-8_1

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-8 influx, 1 yr

Date: 18.11. Time: 9:15:38
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.244E-03			

Time	[T]	73.0000	0.2 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.764E+03	.135E+03	.590E+03	.395E+02
In-flow	[L/T]	-.150E+01	-.323E+00	-.107E+01	-.108E+00
h Mean	[L]	-.168E+03	-.792E+02	-.225E+03	-.481E+02
Top Flux	[L/T]	-.676E-04			
Bot Flux	[L/T]	-.150E+01			
WatBalT	[L]	.430E-02			
WatBalR	[%]	.001			

Time	[T]	146.0000	0.4 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.691E+03	.117E+03	.539E+03	.351E+02
In-flow	[L/T]	-.702E+00	-.137E+00	-.513E+00	-.515E-01
h Mean	[L]	-.221E+03	-.974E+02	-.300E+03	-.579E+02
Top Flux	[L/T]	-.394E-04			
Bot Flux	[L/T]	-.702E+00			
WatBalT	[L]	.702E-02			
WatBalR	[%]	.001			

Time	[T]	219.0000	0.6 yr		
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.652E+03	.109E+03	.511E+03	.323E+02
In-flow	[L/T]	-.415E+00	-.101E+00	-.293E+00	-.214E-01
h Mean	[L]	-.256E+03	-.110E+03	-.351E+03	-.659E+02
Top Flux	[L/T]	-.192E-04			
Bot Flux	[L/T]	-.416E+00			
WatBalT	[L]	.928E-02			

WatBalR	[%]	.002

Time	[T]	292.0000	0.8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.626E+03	.103E+03	.493E+03	.308E+02
In-flow	[L/T]	-.301E+00	-.610E-01	-.219E+00	-.208E-01
h Mean	[L]	-.284E+03	-.119E+03	-.389E+03	-.709E+02
Top Flux	[L/T]	-.153E-04			
Bot Flux	[L/T]	-.301E+00			
WatBalT	[L]	.142E-01			
WatBalR	[%]	.002			

Time	[T]	365.0000	1 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.607E+03	.993E+02	.479E+03	.293E+02
In-flow	[L/T]	-.227E+00	-.456E-01	-.166E+00	-.155E-01
h Mean	[L]	-.307E+03	-.127E+03	-.422E+03	-.769E+02
Top Flux	[L/T]	-.126E-04			
Bot Flux	[L/T]	-.227E+00			
WatBalT	[L]	.175E-01			
WatBalR	[%]	.003			

M6-8-2

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-8 influx, 10 yr

Date: 18.11. Time: 11:38:19
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.282E-08			

Time	[T]********** 2yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.555E+03	.885E+02	.441E+03	.259E+02
In-flow	[L/T]	-.112E-05	-.202E-06	-.837E-06	-.795E-07
h Mean	[L]	-.383E+03	-.152E+03	-.530E+03	-.939E+02
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.113E-05			
WatBalT	[L]	.795E-01			
WatBalR	[%]	.012			

Time	[T]********** 4yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.512E+03	.797E+02	.409E+03	.229E+02
In-flow	[L/T]	-.452E-06	-.812E-07	-.339E-06	-.312E-07
h Mean	[L]	-.471E+03	-.182E+03	-.654E+03	-.116E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.470E-06			
WatBalT	[L]	.117E+00			
WatBalR	[%]	.017			

Time	[T]********** 6yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.490E+03	.757E+02	.393E+03	.211E+02
In-flow	[L/T]	-.255E-06	-.503E-07	-.185E-06	-.204E-07
h Mean	[L]	-.526E+03	-.200E+03	-.733E+03	-.132E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.269E-06			
WatBalT	[L]	.213E+00			

WatBalR	[%]	.030

Time [T]********** 8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.477E+03	.732E+02	.383E+03	.202E+02
In-flow	[L/T]	-.174E-06	-.308E-07	-.132E-06	-.109E-07
h Mean	[L]	-.565E+03	-.212E+03	-.788E+03	-.144E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.187E-06			
WatBalT	[L]	.712E+00			
WatBalR	[%]	.099			

Time [T]********** 10 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.467E+03	.716E+02	.376E+03	.195E+02
In-flow	[L/T]	-.129E-06	-.177E-07	-.101E-06	-.108E-07
h Mean	[L]	-.597E+03	-.221E+03	-.833E+03	-.155E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.145E-06			
WatBalT	[L]	.306E+00			
WatBalR	[%]	.042			

M6-8_3

******* Program HYDRUS
******* 978 S, 1920 SL-S, 182 S; initial sat. 10x-8 influx, 100 yr

Date: 18.11. Time: 9:39:22
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.119E+04	.382E+03	.764E+03	.431E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.284E+02	-.282E+01	-.356E+02	-.885E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.282E-08			

Time	[T]********** 20 yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.444E+03	.686E+02	.358E+03	.174E+02
In-flow	[L/T]	-.437E-07	-.301E-08	-.365E-07	-.417E-08
h Mean	[L]	-.685E+03	-.241E+03	-.961E+03	-.193E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.586E-07			
WatBalT	[L]	.266E+01			
WatBalR	[%]	.350			

Time	[T]********** 40 yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.434E+03	.684E+02	.350E+03	.162E+02
In-flow	[L/T]	-.970E-11	.000E+00	.000E+00	-.970E-11
h Mean	[L]	-.724E+03	-.243E+03	-.102E+04	-.223E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.319E-07			
WatBalT	[L]	.319E+01			
WatBalR	[%]	.398			

Time	[T]********** 60 yr				
Sub-region num.			1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.434E+03	.684E+02	.349E+03	.162E+02
In-flow	[L/T]	-.310E-09	.000E+00	-.310E-09	.000E+00
h Mean	[L]	-.724E+03	-.243E+03	-.102E+04	-.223E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.318E-07			
WatBalT	[L]	.314E+01			

WatBalR	[%]	.371

Time [T]********** 80 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.434E+03	.684E+02	.349E+03	.162E+02
In-flow	[L/T]	-.728E-11	.000E+00	.000E+00	-.728E-11
h Mean	[L]	-.724E+03	-.243E+03	-.102E+04	-.223E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.317E-07			
WatBalT	[L]	.310E+01			
WatBalR	[%]	.350			

Time [T]********** 100 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.980E+03	.191E+04	.189E+03
W-volume	[L]	.434E+03	.684E+02	.349E+03	.162E+02
In-flow	[L/T]	-.582E-10	-.364E-10	.000E+00	-.218E-10
h Mean	[L]	-.724E+03	-.243E+03	-.102E+04	-.223E+03
Top Flux	[L/T]	-.100E-07			
Bot Flux	[L/T]	-.317E-07			
WatBalT	[L]	.308E+01			
WatBalR	[%]	.334			

M6-7-1

******* Program HYDRUS
******* S, SL-S, S, int. sat, 10-7 top, const. h base, 1 yr

Date: 18.11. Time: 12: 8: 4
Units: L = cm , T = sec , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.119E+04	.380E+03	.768E+03	.421E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.290E+02	-.282E+01	-.356E+02	-.976E+02
Top Flux	[L/T]	-.130E-02			
Bot Flux	[L/T]	-.431E-07			

Time	[T]	6307200.0000 .2 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.763E+03	.134E+03	.591E+03	.381E+02
In-flow	[L/T]	-.173E-04	-.361E-05	-.125E-04	-.122E-05
h Mean	[L]	-.170E+03	-.789E+02	-.226E+03	-.726E+02
Top Flux	[L/T]	-.103E-06			
Bot Flux	[L/T]	-.174E-04			
WatBalT	[L]	.134E-02			
WatBalR	[%]	.000			

Time	[T]	********** .4 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.692E+03	.117E+03	.540E+03	.339E+02
In-flow	[L/T]	-.803E-05	-.147E-05	-.598E-05	-.591E-06
h Mean	[L]	-.223E+03	-.957E+02	-.301E+03	-.824E+02
Top Flux	[L/T]	-.101E-06			
Bot Flux	[L/T]	-.813E-05			
WatBalT	[L]	.504E-02			
WatBalR	[%]	.001			

Time [T]********** .6 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.653E+03	.110E+03	.513E+03	.312E+02
In-flow	[L/T]	-.470E-05	-.106E-05	-.342E-05	-.225E-06
h Mean	[L]	-.258E+03	-.106E+03	-.351E+03	-.907E+02
Top Flux	[L/T]	-.100E-06			
Bot Flux	[L/T]	-.480E-05			
WatBalT	[L]	.812E-02			
WatBalR	[%]	.002			

Time [T]********** .8 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.628E+03	.104E+03	.494E+03	.298E+02
In-flow	[L/T]	-.338E-05	-.601E-06	-.254E-05	-.231E-06
h Mean	[L]	-.285E+03	-.114E+03	-.390E+03	-.956E+02
Top Flux	[L/T]	-.100E-06			
Bot Flux	[L/T]	-.348E-05			
WatBalT	[L]	.126E-01			
WatBalR	[%]	.002			

Time [T]********** 1.0 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.610E+03	.101E+03	.480E+03	.284E+02
In-flow	[L/T]	-.252E-05	-.427E-06	-.193E-05	-.171E-06
h Mean	[L]	-.307E+03	-.120E+03	-.423E+03	-.102E+03
Top Flux	[L/T]	-.100E-06			
Bot Flux	[L/T]	-.262E-05			
WatBalT	[L]	.174E-01			
WatBalR	[%]	.003			

m6-7-2

******* Program HYDRUS
******* S, SL-S, S, int. sat, 10-7 top, const. h base, 10 yr

Date: 18.11. Time: 12:11:59
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.119E+04	.380E+03	.768E+03	.421E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.290E+02	-.282E+01	-.356E+02	-.976E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.372E-02			

Time	[T]	730.0000 2 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.560E+03	.929E+02	.442E+03	.251E+02
In-flow	[L/T]	-.889E-01	-.103E-01	-.723E-01	-.634E-02
h Mean	[L]	-.381E+03	-.137E+03	-.531E+03	-.119E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.976E-01			
WatBalT	[L]	.386E-01			
WatBalR	[%]	.006			

Time	[T]	1460.0000 4 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.522E+03	.887E+02	.411E+03	.223E+02
In-flow	[L/T]	-.318E-01	-.223E-02	-.271E-01	-.245E-02
h Mean	[L]	-.460E+03	-.149E+03	-.649E+03	-.141E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.407E-01			
WatBalT	[L]	.101E+00			
WatBalR	[%]	.015			

Time [T] 2190.0000 6 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.506E+03	.883E+02	.397E+03	.207E+02
In-flow	[L/T]	-.151E-01	-.131E-04	-.134E-01	-.163E-02
h Mean	[L]	-.503E+03	-.151E+03	-.715E+03	-.157E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.240E-01			
WatBalT	[L]	.229E+00			
WatBalR	[%]	.032			

Time [T] 2920.0000 8 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.498E+03	.882E+02	.390E+03	.199E+02
In-flow	[L/T]	-.791E-02	-.203E-05	-.726E-02	-.649E-03
h Mean	[L]	-.526E+03	-.151E+03	-.751E+03	-.168E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.169E-01			
WatBalT	[L]	.380E+00			
WatBalR	[%]	.051			

Time [T] 3650.0000 10 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.493E+03	.882E+02	.385E+03	.194E+02
In-flow	[L/T]	-.517E-02	-.203E-05	-.455E-02	-.625E-03
h Mean	[L]	-.540E+03	-.151E+03	-.772E+03	-.175E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.140E-01			
WatBalT	[L]	.565E+00			
WatBalR	[%]	.074			

M6-7_3

******* Program HYDRUS
******* S, SL-S, S, int. sat, 10-7 top, const. h base, 100 yr

Date: 19.11. Time: 18:24:52
Units: L = cm , T = days , M = mmol

Time [T] .0000 20 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.119E+04	.380E+03	.768E+03	.421E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.290E+02	-.282E+01	-.356E+02	-.976E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.372E-02			

Time [T] 7300.0000 240 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.489E+03	.884E+02	.382E+03	.187E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.549E+03	-.150E+03	-.786E+03	-.185E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.104E-01			
WatBalT	[L]	.181E+01			
WatBalR	[%]	.218			

Time [T] 14600.0000 480 yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.489E+03	.884E+02	.382E+03	.187E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.549E+03	-.150E+03	-.786E+03	-.185E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.104E-01			
WatBalT	[L]	.179E+01			
WatBalR	[%]	.188			

Time [T] 21900.0000 680 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.489E+03	.884E+02	.382E+03	.187E+02
In-flow	[L/T]	-.153E-04	.000E+00	-.153E-04	.000E+00
h Mean	[L]	-.549E+03	-.150E+03	-.786E+03	-.185E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.104E-01			
WatBalT	[L]	.179E+01			
WatBalR	[%]	.161			

Time [T] 29200.0000 80 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.489E+03	.884E+02	.382E+03	.187E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.549E+03	-.150E+03	-.786E+03	-.185E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.104E-01			
WatBalT	[L]	.179E+01			
WatBalR	[%]	.139			

Time [T] 36500.0000 100 yr

Sub-region num.		1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.489E+03	.884E+02	.382E+03	.187E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.549E+03	-.150E+03	-.786E+03	-.185E+03
Top Flux	[L/T]	-.864E-02			
Bot Flux	[L/T]	-.104E-01			
WatBalT	[L]	.179E+01			
WatBalR	[%]	.123			

Balance

ML-75-1

******* Program HYDRUS
******* S, SL-S, S, int. sat, 5x10-7 top, const. h base, 1 yr

Date: 22.11. Time: 20:44:11
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.119E+04	.380E+03	.768E+03	.421E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.290E+02	-.282E+01	-.356E+02	-.976E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.372E-02			

Time	[T]	73.0000 .2 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.766E+03	.136E+03	.591E+03	.381E+02
In-flow	[L/T]	-.146E+01	-.278E+00	-.108E+01	-.105E+00
h Mean	[L]	-.169E+03	-.755E+02	-.226E+03	-.726E+02
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.150E+01			
WatBalT	[L]	.616E-02			
WatBalR	[%]	.001			

Time	[T]	146.0000 .4 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.697E+03	.122E+03	.541E+03	.339E+02
In-flow	[L/T]	-.660E+00	-.935E-01	-.515E+00	-.510E-01
h Mean	[L]	-.220E+03	-.881E+02	-.300E+03	-.824E+02
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.703E+00			
WatBalT	[L]	.970E-02			
WatBalR	[%]	.002			

Time	[T]	219.0000 .6 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.661E+03	.117E+03	.513E+03	.312E+02
In-flow	[L/T]	-.372E+00	-.605E-01	-.292E+00	-.194E-01
h Mean	[L]	-.254E+03	-.942E+02	-.351E+03	-.907E+02
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.415E+00			
WatBalT	[L]	.126E-01			
WatBalR	[%]	.002			

Time	[T]	292.0000 .8 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.638E+03	.114E+03	.495E+03	.298E+02
In-flow	[L/T]	-.258E+00	-.242E-01	-.214E+00	-.198E-01
h Mean	[L]	-.279E+03	-.980E+02	-.388E+03	-.955E+02
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.301E+00			
WatBalT	[L]	.176E-01			
WatBalR	[%]	.003			

Time	[T]	365.0000 1.0 yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.622E+03	.113E+03	.481E+03	.284E+02
In-flow	[L/T]	-.184E+00	-.495E-02	-.165E+00	-.148E-01
h Mean	[L]	-.299E+03	-.995E+02	-.420E+03	-.102E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.227E+00			
WatBalT	[L]	.237E-01			
WatBalR	[%]	.004			

MG 75.2

******* Program HYDRUS
******* S, SL-S, S, int. sat, 5x10-7 top, const. h base, 10 yr

Date: 22.11. Time: 18:55:21
Units: L = cm , T = days , M = mmol

Time	[T]	.0000			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.119E+04	.380E+03	.768E+03	.421E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.290E+02	-.282E+01	-.356E+02	-.976E+02
Top Flux	[L/T]	-.112E+03			
Bot Flux	[L/T]	-.372E-02			

Time	[T]	730.0000 2yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.585E+03	.112E+03	.447E+03	.252E+02
In-flow	[L/T]	-.558E-01	-.209E-03	-.495E-01	-.611E-02
h Mean	[L]	-.357E+03	-.101E+03	-.511E+03	-.118E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.993E-01			
WatBalT	[L]	.655E-01			
WatBalR	[%]	.010			

Time	[T]	1460.0000 4yr			
Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.568E+03	.112E+03	.433E+03	.230E+02
In-flow	[L/T]	-.565E-02	-.144E-05	-.477E-02	-.886E-03
h Mean	[L]	-.385E+03	-.101E+03	-.554E+03	-.134E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.493E-01			
WatBalT	[L]	.192E+00			
WatBalR	[%]	.026			

Time [T] 2190.0000 6yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.566E+03	.112E+03	.431E+03	.227E+02
In-flow	[L/T]	-.102E-02	.000E+00	-.849E-03	-.170E-03
h Mean	[L]	-.389E+03	-.101E+03	-.560E+03	-.137E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.446E-01			
WatBalT	[L]	.694E+00			
WatBalR	[%]	.085			

Time [T] 2920.0000 8yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.566E+03	.112E+03	.431E+03	.226E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.389E+03	-.101E+03	-.560E+03	-.137E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.441E-01			
WatBalT	[L]	.514E+00			
WatBalR	[%]	.059			

Time [T] 3650.0000 10yr

Sub-region num.			1	2	3
Area	[L]	.308E+04	.974E+03	.192E+04	.186E+03
W-volume	[L]	.566E+03	.112E+03	.431E+03	.226E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.389E+03	-.101E+03	-.560E+03	-.137E+03
Top Flux	[L/T]	-.432E-01			
Bot Flux	[L/T]	-.441E-01			
WatBalT	[L]	.514E+00			
WatBalR	[%]	.055			

Profile 3) 2135 cm Silty Sand, native Sand base

boundary conditions	simulation time (yrs)[a]	filename
0 cm/sec influx, constant head @ base	1	L4-1
	10	L4-2
	100	L4-3
	1000	L4-4
10^{-9} cm/sec influx, constant head @ base	1	L4-5
	10	L4-6
	100	L4-7
	1000	L4-8
10^{-8} cm/sec influx, constant head @ base	1	L4-9
	10	L4-10
	100	L4-11
	1000	L4-17
10^{-7} cm/sec influx, constant head @ base	1	L4-12
	10	L4-13
	100	L4-14
$5x10^{-7}$ cm/sec influx, constant head @ base	1	L4-15
	10	L4-16

[a] output at 20%, 40%, 60% and 100% of simulated time

L4-1

******* Program HYDRUS
******* 2135 cm sl-s, 0 influx, 1yr

Date: 22.11. Time: 11: 0:22
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	73.0000 .2 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.602E+03	.570E+03	.317E+02
In-flow	[L/T]	-.102E+01	-.987E+00	-.333E-01
h Mean	[L]	-.630E+02	-.636E+02	-.556E+02
Top Flux	[L/T]	-.605E-03		
Bot Flux	[L/T]	-.102E+01		
WatBalT	[L]	-.290E-02		
WatBalR	[%]	.001		

Time	[T]	146.0000 .4 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.551E+03	.523E+03	.279E+02
In-flow	[L/T]	-.507E+00	-.453E+00	-.540E-01
h Mean	[L]	-.829E+02	-.842E+02	-.662E+02
Top Flux	[L/T]	-.271E-03		
Bot Flux	[L/T]	-.507E+00		
WatBalT	[L]	-.192E-02		
WatBalR	[%]	.001		

Time	[T]	219.0000 .6 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.524E+03	.498E+03	.262E+02
In-flow	[L/T]	-.319E+00	-.305E+00	-.139E-01
h Mean	[L]	-.965E+02	-.985E+02	-.719E+02
Top Flux	[L/T]	-.149E-03		
Bot Flux	[L/T]	-.319E+00		

WatBalT	[L]	-.275E-03
WatBalR	[%]	.000

Time	[T]	292.0000 .8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.504E+03	.479E+03	.242E+02
In-flow	[L/T]	-.218E+00	-.193E+00	-.242E-01
h Mean	[L]	-.108E+03	-.110E+03	-.806E+02
Top Flux	[L/T]	-.121E-03		
Bot Flux	[L/T]	-.218E+00		
WatBalT	[L]	-.336E-03		
WatBalR	[%]	.000		

Time	[T]	365.0000 1.0 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.490E+03	.466E+03	.235E+02
In-flow	[L/T]	-.176E+00	-.170E+00	-.581E-02
h Mean	[L]	-.117E+03	-.120E+03	-.837E+02
Top Flux	[L/T]	-.101E-03		
Bot Flux	[L/T]	-.176E+00		
WatBalT	[L]	.671E-03		
WatBalR	[%]	.000		

L4-2

```
******* Program HYDRUS
******* 2135 cm sl-s, 0 influx, 10 yr

Date:  25.11.    Time:  10:23:13
Units: L = cm   , T = days , M = mmol

-------------------------------------------------------
Time        [T]        .0000
-------------------------------------------------------
Sub-region num.                    1          2
-------------------------------------------------------
Area      [L]          .230E+04   .213E+04   .170E+03
W-volume  [L]          .869E+03   .831E+03   .383E+02
In-flow   [L/T]        .000E+00   .000E+00   .000E+00
h Mean    [L]         -.794E+01  -.319E+01  -.675E+02
Top Flux  [L/T]       -.246E+02
Bot Flux  [L/T]       -.564E-02
-------------------------------------------------------

-------------------------------------------------------
Time        [T]     730.0000  2yr
-------------------------------------------------------
Sub-region num.                    1          2
-------------------------------------------------------
Area      [L]          .230E+04   .213E+04   .170E+03
W-volume  [L]          .447E+03   .427E+03   .208E+02
In-flow   [L/T]       -.837E-01  -.782E-01  -.546E-02
h Mean    [L]         -.151E+03  -.156E+03  -.997E+02
Top Flux  [L/T]       -.448E-04
Bot Flux  [L/T]       -.837E-01
WatBalT   [L]         -.305E-04
WatBalR   [%]              .000
-------------------------------------------------------

-------------------------------------------------------
Time        [T]    1460.0000  4yr
-------------------------------------------------------
Sub-region num.                    1          2
-------------------------------------------------------
Area      [L]          .230E+04   .213E+04   .170E+03
W-volume  [L]          .409E+03   .391E+03   .184E+02
In-flow   [L/T]       -.373E-01  -.342E-01  -.308E-02
h Mean    [L]         -.195E+03  -.201E+03  -.120E+03
Top Flux  [L/T]       -.198E-04
Bot Flux  [L/T]       -.373E-01
WatBalT   [L]          .290E-02
WatBalR   [%]              .001
-------------------------------------------------------

-------------------------------------------------------
Time        [T]    2190.0000  6yr
-------------------------------------------------------
Sub-region num.                    1          2
-------------------------------------------------------
Area      [L]          .230E+04   .213E+04   .170E+03
W-volume  [L]          .389E+03   .372E+03   .171E+02
In-flow   [L/T]       -.227E-01  -.217E-01  -.102E-02
```

h Mean	[L]	-.225E+03	-.232E+03	-.134E+03
Top Flux	[L/T]	-.141E-04		
Bot Flux	[L/T]	-.227E-01		
WatBalT	[L]	.604E-02		
WatBalR	[%]	.001		

Time [T] 2920.0000 8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.375E+03	.359E+03	.163E+02
In-flow	[L/T]	-.160E-01	-.148E-01	-.117E-02
h Mean	[L]	-.249E+03	-.258E+03	-.146E+03
Top Flux	[L/T]	-.872E-05		
Bot Flux	[L/T]	-.160E-01		
WatBalT	[L]	.955E-02		
WatBalR	[%]	.002		

Time [T] 3650.0000 10 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.365E+03	.349E+03	.157E+02
In-flow	[L/T]	-.123E-01	-.117E-01	-.541E-03
h Mean	[L]	-.270E+03	-.279E+03	-.156E+03
Top Flux	[L/T]	-.732E-05		
Bot Flux	[L/T]	-.123E-01		
WatBalT	[L]	.113E-01		
WatBalR	[%]	.002		

L4-3

******* Program HYDRUS
******* 2135 cm sl-s, 0 influx, 100 yr

Date: 22.11. Time: 11:17:38
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	7300.0000 20 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.335E+03	.321E+03	.141E+02
In-flow	[L/T]	-.558E-02	-.531E-02	-.274E-03
h Mean	[L]	-.343E+03	-.356E+03	-.187E+03
Top Flux	[L/T]	-.319E-05		
Bot Flux	[L/T]	-.560E-02		
WatBalT	[L]	.366E-01		
WatBalR	[%]	.007		

Time	[T]	14600.0000 40 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.309E+03	.297E+03	.127E+02
In-flow	[L/T]	-.241E-02	-.231E-02	-.102E-03
h Mean	[L]	-.434E+03	-.451E+03	-.227E+03
Top Flux	[L/T]	-.140E-05		
Bot Flux	[L/T]	-.243E-02		
WatBalT	[L]	.105E+00		
WatBalR	[%]	.019		

Time	[T]	21900.0000 60 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.295E+03	.284E+03	.119E+02
In-flow	[L/T]	-.146E-02	-.138E-02	-.721E-04
h Mean	[L]	-.498E+03	-.517E+03	-.256E+03
Top Flux	[L/T]	-.102E-05		
Bot Flux	[L/T]	-.148E-02		
WatBalT	[L]	.790E-01		

WatBalR	[%]	.014

Time	[T]	29200.0000 80 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.286E+03	.275E+03	.115E+02
In-flow	[L/T]	-.102E-02	-.964E-03	-.560E-04
h Mean	[L]	-.548E+03	-.569E+03	-.277E+03
Top Flux	[L/T]	-.785E-06		
Bot Flux	[L/T]	-.105E-02		
WatBalT	[L]	.108E+00		
WatBalR	[%]	.018		

Time	[T]	36500.0000 100 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.280E+03	.269E+03	.112E+02
In-flow	[L/T]	-.784E-03	-.750E-03	-.344E-04
h Mean	[L]	-.589E+03	-.612E+03	-.295E+03
Top Flux	[L/T]	-.543E-06		
Bot Flux	[L/T]	-.815E-03		
WatBalT	[L]	.114E+00		
WatBalR	[%]	.019		

L4-4

******* Program HYDRUS
******* 2135 cm sl-s, 0 influx, 1000 yr

Date: 22.11. Time: 11:58:25
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	73000.0000 200 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.261E+03	.250E+03	.103E+02
In-flow	[L/T]	-.344E-03	-.334E-03	-.107E-04
h Mean	[L]	-.734E+03	-.764E+03	-.357E+03
Top Flux	[L/T]	-.297E-06		
Bot Flux	[L/T]	-.350E-03		
WatBalT	[L]	.654E+00		
WatBalR	[%]	.107		

Time	[T]	146000.0000 400 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.244E+03	.235E+03	.960E+01
In-flow	[L/T]	-.149E-03	-.144E-03	-.590E-05
h Mean	[L]	-.905E+03	-.943E+03	-.425E+03
Top Flux	[L/T]	-.136E-06		
Bot Flux	[L/T]	-.149E-03		
WatBalT	[L]	.221E+01		
WatBalR	[%]	.353		

Time	[T]	219000.0000 600 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.236E+03	.227E+03	.929E+01
In-flow	[L/T]	-.795E-04	-.763E-04	-.322E-05
h Mean	[L]	-.102E+04	-.106E+04	-.465E+03
Top Flux	[L/T]	-.870E-07		
Bot Flux	[L/T]	-.926E-04		
WatBalT	[L]	.118E+01		

WatBalR	[%]	.186

Time [T] 292000.0000 800 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.231E+03	.222E+03	.909E+01
In-flow	[L/T]	-.606E-04	-.584E-04	-.221E-05
h Mean	[L]	-.110E+04	-.114E+04	-.494E+03
Top Flux	[L/T]	-.400E-07		
Bot Flux	[L/T]	-.630E-04		
WatBalT	[L]	-.409E+01		
WatBalR	[%]	.641		

Time [T] 365000.0000 1,000 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.227E+03	.218E+03	.895E+01
In-flow	[L/T]	-.556E-04	-.547E-04	-.834E-06
h Mean	[L]	-.117E+04	-.122E+04	-.518E+03
Top Flux	[L/T]	-.360E-07		
Bot Flux	[L/T]	-.465E-04		
WatBalT	[L]	-.836E+01		
WatBalR	[%]	1.301		

L4-5

******* Program HYDRUS
******* 2135 cm sl-s, 10-9 influx, 1yr

Date: 22.11. Time: 12:59: 2
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	73.0000 .2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.602E+03	.570E+03	.317E+02
In-flow	[L/T]	-.102E+01	-.987E+00	-.333E-01
h Mean	[L]	-.630E+02	-.636E+02	-.556E+02
Top Flux	[L/T]	-.688E-03		
Bot Flux	[L/T]	-.102E+01		
WatBalT	[L]	-.256E-02		
WatBalR	[%]	.001		

Time	[T]	146.0000 .4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.551E+03	.523E+03	.279E+02
In-flow	[L/T]	-.507E+00	-.453E+00	-.541E-01
h Mean	[L]	-.829E+02	-.842E+02	-.662E+02
Top Flux	[L/T]	-.356E-03		
Bot Flux	[L/T]	-.507E+00		
WatBalT	[L]	-.232E-02		
WatBalR	[%]	.001		

Time	[T]	219.0000 .6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.524E+03	.498E+03	.262E+02
In-flow	[L/T]	-.319E+00	-.305E+00	-.139E-01
h Mean	[L]	-.965E+02	-.985E+02	-.719E+02
Top Flux	[L/T]	-.235E-03		
Bot Flux	[L/T]	-.319E+00		
WatBalT	[L]	-.671E-03		

WatBalR	[%]	.000

Time	[T]	292.0000 .8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.504E+03	.480E+03	.242E+02
In-flow	[L/T]	-.218E+00	-.193E+00	-.242E-01
h Mean	[L]	-.108E+03	-.110E+03	-.806E+02
Top Flux	[L/T]	-.206E-03		
Bot Flux	[L/T]	-.218E+00		
WatBalT	[L]	-.580E-03		
WatBalR	[%]	.000		

Time	[T]	365.0000 1.0 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.490E+03	.466E+03	.235E+02
In-flow	[L/T]	-.175E+00	-.170E+00	-.582E-02
h Mean	[L]	-.117E+03	-.120E+03	-.837E+02
Top Flux	[L/T]	-.186E-03		
Bot Flux	[L/T]	-.176E+00		
WatBalT	[L]	-.305E-03		
WatBalR	[%]	.000		

L4-6

******* Program HYDRUS
******* 2135 cm sl-s, 10-9 influx, 10 yr

Date: 22.11. Time: 13: 2:47
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	730.0000 2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.447E+03	.427E+03	.208E+02
In-flow	[L/T]	-.836E-01	-.781E-01	-.546E-02
h Mean	[L]	-.151E+03	-.155E+03	-.997E+02
Top Flux	[L/T]	-.130E-03		
Bot Flux	[L/T]	-.837E-01		
WatBalT	[L]	.378E-02		
WatBalR	[%]	.001		

Time	[T]	1460.0000 4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.409E+03	.391E+03	.184E+02
In-flow	[L/T]	-.372E-01	-.341E-01	-.308E-02
h Mean	[L]	-.194E+03	-.200E+03	-.120E+03
Top Flux	[L/T]	-.105E-03		
Bot Flux	[L/T]	-.373E-01		
WatBalT	[L]	.114E-01		
WatBalR	[%]	.002		

Time	[T]	2190.0000 6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.389E+03	.372E+03	.172E+02
In-flow	[L/T]	-.226E-01	-.216E-01	-.101E-02
h Mean	[L]	-.224E+03	-.232E+03	-.134E+03
Top Flux	[L/T]	-.995E-04		
Bot Flux	[L/T]	-.227E-01		
WatBalT	[L]	.192E-01		

WatBalR	[%]	.004

Time	[T]	2920.0000 8yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.375E+03	.359E+03	.163E+02
In-flow	[L/T]	-.159E-01	-.147E-01	-.117E-02
h Mean	[L]	-.249E+03	-.257E+03	-.146E+03
Top Flux	[L/T]	-.940E-04		
Bot Flux	[L/T]	-.160E-01		
WatBalT	[L]	.270E-01		
WatBalR	[%]	.005		

Time	[T]	3650.0000 10yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.365E+03	.349E+03	.157E+02
In-flow	[L/T]	-.121E-01	-.116E-01	-.540E-03
h Mean	[L]	-.269E+03	-.278E+03	-.156E+03
Top Flux	[L/T]	-.928E-04		
Bot Flux	[L/T]	-.123E-01		
WatBalT	[L]	.340E-01		
WatBalR	[%]	.007		

L4-7

******* Program HYDRUS
******* 2135 cm sl-s, 10-9 influx, 100 yr

Date: 22.11. Time: 13:29:13
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	7300.0000 20 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.336E+03	.322E+03	.141E+02
In-flow	[L/T]	-.552E-02	-.524E-02	-.273E-03
h Mean	[L]	-.340E+03	-.353E+03	-.187E+03
Top Flux	[L/T]	-.889E-04		
Bot Flux	[L/T]	-.560E-02		
WatBalT	[L]	.258E-01		
WatBalR	[%]	.005		

Time	[T]	14600.0000 40 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.310E+03	.298E+03	.127E+02
In-flow	[L/T]	-.234E-02	-.223E-02	-.102E-03
h Mean	[L]	-.427E+03	-.443E+03	-.226E+03
Top Flux	[L/T]	-.877E-04		
Bot Flux	[L/T]	-.244E-02		
WatBalT	[L]	.122E+00		
WatBalR	[%]	.022		

Time	[T]	21900.0000 60 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.297E+03	.285E+03	.120E+02
In-flow	[L/T]	-.137E-02	-.130E-02	-.701E-04
h Mean	[L]	-.486E+03	-.504E+03	-.256E+03
Top Flux	[L/T]	-.870E-04		
Bot Flux	[L/T]	-.149E-02		
WatBalT	[L]	.895E-01		

WatBalR	[%]	.016

Time	[T]	29200.0000 80 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.289E+03	.277E+03	.115E+02
In-flow	[L/T]	-.953E-03	-.898E-03	-.549E-04
h Mean	[L]	-.529E+03	-.550E+03	-.276E+03
Top Flux	[L/T]	-.869E-04		
Bot Flux	[L/T]	-.106E-02		
WatBalT	[L]	.239E+00		
WatBalR	[%]	.041		

Time	[T]	36500.0000 100 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.283E+03	.271E+03	.112E+02
In-flow	[L/T]	-.722E-03	-.687E-03	-.350E-04
h Mean	[L]	-.564E+03	-.586E+03	-.293E+03
Top Flux	[L/T]	-.868E-04		
Bot Flux	[L/T]	-.830E-03		
WatBalT	[L]	-.280E-01		
WatBalR	[%]	.005		

******* Program HYDRUS
******* 2135 cm sl-s, 10-9 influx, 1000 yr

Date: 22.11. Time: 14: 5:36
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	73000.0000 200 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.266E+03	.256E+03	.103E+02
In-flow	[L/T]	-.277E-03	-.266E-03	-.114E-04
h Mean	[L]	-.675E+03	-.701E+03	-.353E+03
Top Flux	[L/T]	-.865E-04		
Bot Flux	[L/T]	-.365E-03		
WatBalT	[L]	.453E+00		
WatBalR	[%]	.074		

Time	[T]	146000.0000 400 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.255E+03	.245E+03	.973E+01
In-flow	[L/T]	-.760E-04	-.717E-04	-.429E-05
h Mean	[L]	-.770E+03	-.798E+03	-.410E+03
Top Flux	[L/T]	-.864E-04		
Bot Flux	[L/T]	-.177E-03		
WatBalT	[L]	-.912E+00		
WatBalR	[%]	.142		

Time	[T]	219000.0000 600 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.251E+03	.242E+03	.954E+01
In-flow	[L/T]	-.572E-06	-.572E-06	.000E+00
h Mean	[L]	-.801E+03	-.830E+03	-.432E+03
Top Flux	[L/T]	-.864E-04		
Bot Flux	[L/T]	-.137E-03		

WatBalT	[L]	-.431E+01
WatBalR	[%]	.645

Time [T] 292000.0000 800 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.251E+03	.242E+03	.954E+01
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.801E+03	-.830E+03	-.432E+03
Top Flux	[L/T]	-.864E-04		
Bot Flux	[L/T]	-.137E-03		
WatBalT	[L]	-.433E+01		
WatBalR	[%]	.623		

Time [T] 365000.0000 1,000 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.251E+03	.242E+03	.954E+01
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.801E+03	-.830E+03	-.432E+03
Top Flux	[L/T]	-.864E-04		
Bot Flux	[L/T]	-.137E-03		
WatBalT	[L]	-.433E+01		
WatBalR	[%]	.598		

L4-9

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-8, 1 yr

Date: 23.11. Time: 9: 9: 0
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.123E+02	-.822E+01	-.632E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.674E-02		

Time	[T]	73.0000 .2 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.624E+03	.592E+03	.316E+02
In-flow	[L/T]	-.103E+01	-.101E+01	-.234E-01
h Mean	[L]	-.619E+02	-.626E+02	-.538E+02
Top Flux	[L/T]	-.147E-02		
Bot Flux	[L/T]	-.103E+01		
WatBalT	[L]	-.549E-03		
WatBalR	[%]	.000		

Time	[T]	146.0000 .4 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.571E+03	.543E+03	.280E+02
In-flow	[L/T]	-.533E+00	-.484E+00	-.488E-01
h Mean	[L]	-.814E+02	-.828E+02	-.636E+02
Top Flux	[L/T]	-.113E-02		
Bot Flux	[L/T]	-.534E+00		
WatBalT	[L]	-.671E-03		
WatBalR	[%]	.000		

Time	[T]	219.0000 .6 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.543E+03	.517E+03	.260E+02
In-flow	[L/T]	-.324E+00	-.314E+00	-.101E-01

h Mean	[L]	-.948E+02	-.968E+02	-.699E+02
Top Flux	[L/T]	-.104E-02		
Bot Flux	[L/T]	-.325E+00		
WatBalT	[L]	.427E-03		
WatBalR	[%]	.000		

Time [T] 292.0000 .8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.522E+03	.498E+03	.242E+02
In-flow	[L/T]	-.232E+00	-.204E+00	-.282E-01
h Mean	[L]	-.106E+03	-.108E+03	-.774E+02
Top Flux	[L/T]	-.974E-03		
Bot Flux	[L/T]	-.233E+00		
WatBalT	[L]	.150E-02		
WatBalR	[%]	.000		

Time [T] 365.0000 1.0 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.508E+03	.484E+03	.233E+02
In-flow	[L/T]	-.177E+00	-.173E+00	-.442E-02
h Mean	[L]	-.115E+03	-.118E+03	-.815E+02
Top Flux	[L/T]	-.954E-03		
Bot Flux	[L/T]	-.178E+00		
WatBalT	[L]	.177E-02		
WatBalR	[%]	.000		

L4-10

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-8, 10 yr

Date: 23.11. Time: 9:22:51
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.126E+02	-.822E+01	-.680E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.556E-02		

Time	[T]	730.0000 2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.464E+03	.443E+03	.211E+02
In-flow	[L/T]	-.858E-01	-.811E-01	-.470E-02
h Mean	[L]	-.148E+03	-.152E+03	-.988E+02
Top Flux	[L/T]	-.898E-03		
Bot Flux	[L/T]	-.867E-01		
WatBalT	[L]	.513E-02		
WatBalR	[%]	.001		

Time	[T]	1460.0000 4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.425E+03	.406E+03	.186E+02
In-flow	[L/T]	-.384E-01	-.354E-01	-.297E-02
h Mean	[L]	-.189E+03	-.195E+03	-.119E+03
Top Flux	[L/T]	-.880E-03		
Bot Flux	[L/T]	-.393E-01		
WatBalT	[L]	.116E-01		
WatBalR	[%]	.003		

Time	[T]	2190.0000 6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.404E+03	.387E+03	.173E+02
In-flow	[L/T]	-.225E-01	-.216E-01	-.852E-03

h Mean	[L]	-.217E+03	-.224E+03	-.133E+03
Top Flux	[L/T]	-.871E-03		
Bot Flux	[L/T]	-.234E-01		
WatBalT	[L]	.216E-01		
WatBalR	[%]	.005		

Time [T] 2920.0000 8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.390E+03	.374E+03	.165E+02
In-flow	[L/T]	-.159E-01	-.148E-01	-.112E-02
h Mean	[L]	-.239E+03	-.246E+03	-.144E+03
Top Flux	[L/T]	-.869E-03		
Bot Flux	[L/T]	-.168E-01		
WatBalT	[L]	.278E-01		
WatBalR	[%]	.006		

Time [T] 3650.0000 10 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.380E+03	.364E+03	.158E+02
In-flow	[L/T]	-.119E-01	-.113E-01	-.577E-03
h Mean	[L]	-.257E+03	-.265E+03	-.154E+03
Top Flux	[L/T]	-.868E-03		
Bot Flux	[L/T]	-.127E-01		
WatBalT	[L]	.367E-01		
WatBalR	[%]	.007		

L4-11

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-8, 100 yr

Date: 23.11. Time: 10: 7: 2
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.126E+02	-.822E+01	-.680E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.556E-02		

Time	[T]	7300.0000 20 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.353E+03	.338E+03	.142E+02
In-flow	[L/T]	-.497E-02	-.474E-02	-.235E-03
h Mean	[L]	-.315E+03	-.326E+03	-.185E+03
Top Flux	[L/T]	-.865E-03		
Bot Flux	[L/T]	-.585E-02		
WatBalT	[L]	.408E-01		
WatBalR	[%]	.008		

Time	[T]	14600.0000 40 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.331E+03	.318E+03	.129E+02
In-flow	[L/T]	-.172E-02	-.161E-02	-.108E-03
h Mean	[L]	-.375E+03	-.387E+03	-.222E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.264E-02		
WatBalT	[L]	.323E+00		
WatBalR	[%]	.057		

Time	[T]	21900.0000 60 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.322E+03	.310E+03	.122E+02
In-flow	[L/T]	-.793E-03	-.727E-03	-.661E-04

h Mean	[L]	-.404E+03	-.417E+03	-.247E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.173E-02		
WatBalT	[L]	.215E+00		
WatBalR	[%]	.037		

Time [T] 29200.0000 80 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.318E+03	.306E+03	.119E+02
In-flow	[L/T]	-.389E-03	-.360E-03	-.282E-04
h Mean	[L]	-.419E+03	-.432E+03	-.262E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.134E-02		
WatBalT	[L]	.134E+01		
WatBalR	[%]	.222		

Time [T] 36500.0000 100~~0~~ yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.316E+03	.304E+03	.117E+02
In-flow	[L/T]	-.171E-03	-.150E-03	-.204E-04
h Mean	[L]	-.427E+03	-.439E+03	-.271E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.115E-02		
WatBalT	[L]	.207E+01		
WatBalR	[%]	.335		

L4-17

******* Program HYDRUS
******* 2135 cm sl-s, 10-8 influx, 1000 yr

Date: 25.11. Time: 8: 8:13
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.794E+01	-.319E+01	-.675E+02
Top Flux	[L/T]	-.246E+02		
Bot Flux	[L/T]	-.564E-02		

Time	[T]	73000.0000 200yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.305E+03	.293E+03	.114E+02
In-flow	[L/T]	-.109E-05	-.109E-05	.000E+00
h Mean	[L]	-.435E+03	-.447E+03	-.283E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.946E-03		
WatBalT	[L]	.583E+00		
WatBalR	[%]	.084		

Time	[T]	146000.0000 400yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.305E+03	.293E+03	.114E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.435E+03	-.447E+03	-.283E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.946E-03		
WatBalT	[L]	.580E+00		
WatBalR	[%]	.070		

Time	[T]	219000.0000 600yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.305E+03	.293E+03	.114E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.435E+03	-.447E+03	-.283E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.946E-03		
WatBalT	[L]	.579E+00		

WatBalR	[%]	.060

Time	[T]	292000.0000 800 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.305E+03	.293E+03	.114E+02
In-flow	[L/T]	-.114E-05	-.114E-05	.000E+00
h Mean	[L]	-.435E+03	-.447E+03	-.283E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.946E-03		
WatBalT	[L]	.578E+00		
WatBalR	[%]	.054		

Time	[T]	365000.0000 1000 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.305E+03	.293E+03	.114E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.435E+03	-.447E+03	-.283E+03
Top Flux	[L/T]	-.864E-03		
Bot Flux	[L/T]	-.946E-03		
WatBalT	[L]	.578E+00		
WatBalR	[%]	.048		

L4-12

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-7, 1 yr

Date: 23.11. Time: 14:23:21
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.123E+02	-.822E+01	-.632E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.674E-02		

Time	[T]	73.0000 .2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.624E+03	.593E+03	.316E+02
In-flow	[L/T]	-.102E+01	-.100E+01	-.234E-01
h Mean	[L]	-.615E+02	-.621E+02	-.538E+02
Top Flux	[L/T]	-.907E-02		
Bot Flux	[L/T]	-.103E+01		
WatBalT	[L]	-.534E-03		
WatBalR	[%]	.000		

Time	[T]	146.0000 .4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.572E+03	.544E+03	.280E+02
In-flow	[L/T]	-.525E+00	-.477E+00	-.487E-01
h Mean	[L]	-.803E+02	-.817E+02	-.636E+02
Top Flux	[L/T]	-.882E-02		
Bot Flux	[L/T]	-.534E+00		
WatBalT	[L]	-.116E-02		
WatBalR	[%]	.000		

Time	[T]	219.0000 .6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.544E+03	.518E+03	.260E+02
In-flow	[L/T]	-.316E+00	-.306E+00	-.999E-02

h Mean	[L]	-.930E+02	-.948E+02	-.699E+02
Top Flux	[L/T]	-.872E-02		
Bot Flux	[L/T]	-.325E+00		
WatBalT	[L]	.183E-03		
WatBalR	[%]	.000		

Time [T] 292.0000 .8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.524E+03	.500E+03	.242E+02
In-flow	[L/T]	-.225E+00	-.196E+00	-.283E-01
h Mean	[L]	-.103E+03	-.105E+03	-.773E+02
Top Flux	[L/T]	-.869E-02		
Bot Flux	[L/T]	-.233E+00		
WatBalT	[L]	.946E-03		
WatBalR	[%]	.000		

Time [T] 365.0000 10 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.510E+03	.487E+03	.233E+02
In-flow	[L/T]	-.170E+00	-.165E+00	-.436E-02
h Mean	[L]	-.111E+03	-.114E+03	-.815E+02
Top Flux	[L/T]	-.868E-02		
Bot Flux	[L/T]	-.178E+00		
WatBalT	[L]	.131E-02		
WatBalR	[%]	.000		

L4-13

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-~~8~~ 7, 10 yr

Date: 23.11. Time: 14:25:29
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.126E+02	-.822E+01	-.680E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.556E-02		

Time	[T]	730.0000 2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.470E+03	.449E+03	.211E+02
In-flow	[L/T]	-.783E-01	-.737E-01	-.461E-02
h Mean	[L]	-.140E+03	-.143E+03	-.987E+02
Top Flux	[L/T]	-.865E-02		
Bot Flux	[L/T]	-.870E-01		
WatBalT	[L]	.510E-02		
WatBalR	[%]	.001		

Time	[T]	1460.0000 4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.436E+03	.417E+03	.187E+02
In-flow	[L/T]	-.313E-01	-.284E-01	-.288E-02
h Mean	[L]	-.171E+03	-.175E+03	-.118E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.400E-01		
WatBalT	[L]	.123E-01		
WatBalR	[%]	.003		

Time	[T]	2190.0000 6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.420E+03	.403E+03	.173E+02
In-flow	[L/T]	-.152E-01	-.145E-01	-.728E-03

h Mean	[L]	-.188E+03	-.192E+03	-.132E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.239E-01		
WatBalT	[L]	.206E-01		
WatBalR	[%]	.004		

Time [T] 2920.0000 8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.411E+03	.395E+03	.166E+02
In-flow	[L/T]	-.915E-02	-.802E-02	-.113E-02
h Mean	[L]	-.198E+03	-.203E+03	-.142E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.178E-01		
WatBalT	[L]	.266E-01		
WatBalR	[%]	.005		

Time [T] 3650.0000 10 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.406E+03	.391E+03	.160E+02
In-flow	[L/T]	-.493E-02	-.434E-02	-.589E-03
h Mean	[L]	-.205E+03	-.209E+03	-.152E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.136E-01		
WatBalT	[L]	.406E-01		
WatBalR	[%]	.008		

L4-14

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 10-7 100 yr

Date: 23.11. Time: 14:57:24
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.126E+02	-.822E+01	-.680E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.556E-02		

Time	[T]	7300.0000 20 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.399E+03	.384E+03	.151E+02
In-flow	[L/T]	-.305E-03	-.222E-03	-.833E-04
h Mean	[L]	-.216E+03	-.220E+03	-.165E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.904E-02		
WatBalT	[L]	.253E+00		
WatBalR	[%]	.043		

Time	[T]	14600.0000 40 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.399E+03	.384E+03	.151E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.216E+03	-.220E+03	-.166E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.879E-02		
WatBalT	[L]	.422E+00		
WatBalR	[%]	.058		

Time	[T]	21900.0000 60 yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.399E+03	.384E+03	.151E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00

h Mean	[L]	-.216E+03	-.220E+03	-.166E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.879E-02		
WatBalT	[L]	.422E+00		
WatBalR	[%]	.050		

Time [T] 29200.0000 80 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.399E+03	.384E+03	.151E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.216E+03	-.220E+03	-.166E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.879E-02		
WatBalT	[L]	.422E+00		
WatBalR	[%]	.043		

Time [T] 36500.0000 100 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.399E+03	.384E+03	.151E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.216E+03	-.220E+03	-.166E+03
Top Flux	[L/T]	-.864E-02		
Bot Flux	[L/T]	-.879E-02		
WatBalT	[L]	.422E+00		
WatBalR	[%]	.038		

L4-15

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 5x10-7, 1 yr

Date: 23.11. Time: 19:29:31
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.123E+02	-.822E+01	-.632E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.674E-02		

Time	[T]	73.0000 .2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.627E+03	.595E+03	.316E+02
In-flow	[L/T]	-.990E+00	-.966E+00	-.232E-01
h Mean	[L]	-.599E+02	-.604E+02	-.538E+02
Top Flux	[L/T]	-.433E-01		
Bot Flux	[L/T]	-.103E+01		
WatBalT	[L]	-.793E-03		
WatBalR	[%]	.000		

Time	[T]	146.0000 .4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.577E+03	.549E+03	.280E+02
In-flow	[L/T]	-.492E+00	-.443E+00	-.483E-01
h Mean	[L]	-.766E+02	-.776E+02	-.635E+02
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.535E+00		
WatBalT	[L]	-.131E-02		
WatBalR	[%]	.000		

Time	[T]	219.0000 .6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.552E+03	.526E+03	.260E+02
In-flow	[L/T]	-.282E+00	-.273E+00	-.962E-02

h Mean	[L]	-.870E+02	-.884E+02	-.699E+02
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.326E+00		
WatBalT	[L]	-.397E-03		
WatBalR	[%]	.000		

Time [T] 292.0000 .8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.534E+03	.510E+03	.243E+02
In-flow	[L/T]	-.192E+00	-.164E+00	-.286E-01
h Mean	[L]	-.950E+02	-.965E+02	-.772E+02
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.235E+00		
WatBalT	[L]	.854E-03		
WatBalR	[%]	.000		

Time [T] 365.0000 1.0 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.523E+03	.499E+03	.233E+02
In-flow	[L/T]	-.136E+00	-.132E+00	-.405E-02
h Mean	[L]	-.101E+03	-.102E+03	-.814E+02
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.179E+00		
WatBalT	[L]	.140E-02		
WatBalR	[%]	.000		

L4-16

******* Program HYDRUS
******* 2135 cm SL-S, 165 cm S, 5x10-7, 10 yr

Date: 23.11. Time: 19:31:58
Units: L = cm , T = days , M = mmol

Time	[T]	.0000		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.869E+03	.831E+03	.383E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.123E+02	-.822E+01	-.632E+02
Top Flux	[L/T]	-.122E+02		
Bot Flux	[L/T]	-.674E-02		

Time	[T]	730.0000 2yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.494E+03	.473E+03	.208E+02
In-flow	[L/T]	-.462E-01	-.425E-01	-.372E-02
h Mean	[L]	-.117E+03	-.119E+03	-.961E+02
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.894E-01		
WatBalT	[L]	.552E-02		
WatBalR	[%]	.001		

Time	[T]	1460.0000 4yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.482E+03	.463E+03	.189E+02
In-flow	[L/T]	-.443E-02	-.390E-02	-.530E-03
h Mean	[L]	-.125E+03	-.127E+03	-.110E+03
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.477E-01		
WatBalT	[L]	.326E-01		
WatBalR	[%]	.006		

Time	[T]	2190.0000 6yr		
Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.480E+03	.462E+03	.186E+02
In-flow	[L/T]	-.363E-03	-.226E-03	-.137E-03

h Mean	[L]	-.126E+03	-.128E+03	-.112E+03
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.437E-01		
WatBalT	[L]	.112E+00		
WatBalR	[%]	.019		

Time [T] 2920.0000 8 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.480E+03	.462E+03	.186E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.127E+03	-.128E+03	-.112E+03
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.434E-01		
WatBalT	[L]	.331E+00		
WatBalR	[%]	.052		

Time [T] 3650.0000 10 yr

Sub-region num.			1	2
Area	[L]	.230E+04	.213E+04	.170E+03
W-volume	[L]	.480E+03	.462E+03	.186E+02
In-flow	[L/T]	.000E+00	.000E+00	.000E+00
h Mean	[L]	-.127E+03	-.128E+03	-.112E+03
Top Flux	[L/T]	-.432E-01		
Bot Flux	[L/T]	-.434E-01		
WatBalT	[L]	.598E+00		
WatBalR	[%]	.085		

Appendix B

Hand Calculations

- Vertical Drains, *n* Computation
- ACAD Volume and Area, Settlement, May 2002
- Time Factors, Radial Consolidation, Double Drainage

Stoller

JOB NO.: 110402121 DATE: 12-04-02

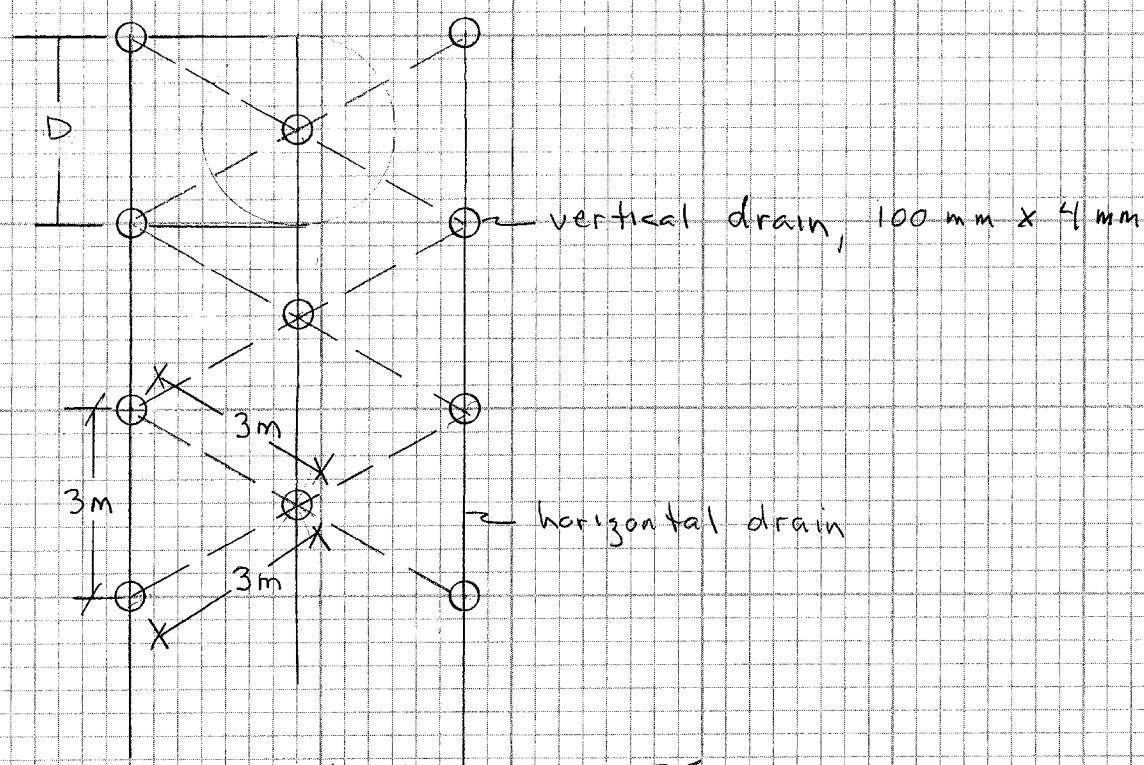
JOB NAME: Moab Project

PREPARED: G. Smith REVIEWED:

SHEET NO.: 1 OF 2

MOAB TAILINGS IMPOUNDMENT DEWATERING SYSTEM

LAYOUT (ref. As-Built Wick System, SRK Consulting, drawing no. 128702-01A, Project 128702, dated 02/01)



from Atkinson and Eldred (1982), pg 35

$$n = D_E / D_w$$

$$D_E = \left(\frac{2\sqrt{3}}{\pi} D^2\right)^{1/2}$$

$$= \left(\frac{2\sqrt{3}}{\pi} (3m)^2\right)^{1/2} = 3.15 \text{ m}$$

Stoller

JOB NO.: 110402121 DATE: 12-04-02

JOB NAME: Moab Project

PREPARED: G. Smith REVIEWED:

SHEET NO.: 2 OF 2

D_w = equivalent cylindrical drain for flat drain

$= 2(\text{length} + \text{width})/\pi$

$= 2(0.100\,m + 0.004\,m)/\pi$

$= 0.066\,m$

$n = \frac{3.15\,m}{0.066\,m} = 47.6 \sim \underline{\underline{48}}$ ← ANS.

Stoller

JOB NO.: 110404312 DATE: 12-6-02

JOB NAME: Moab - settlement

PREPARED: GMS REVIEWED:

SHEET NO.: 1 OF 1

From LDD Autocad,

Slime Area cut / fill:

cut 92,974 cy

fill 30,729 cy

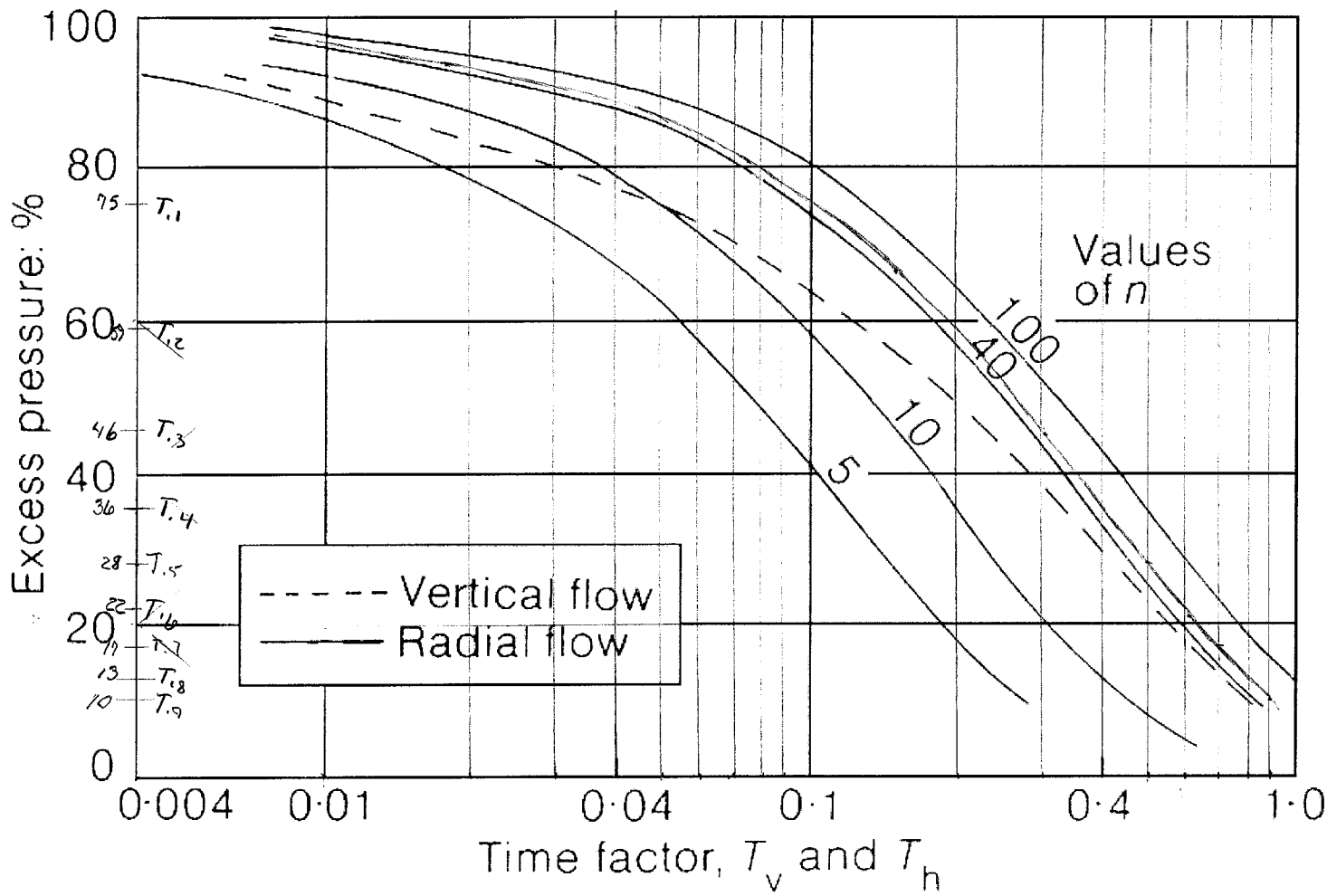
net 62,624 cy

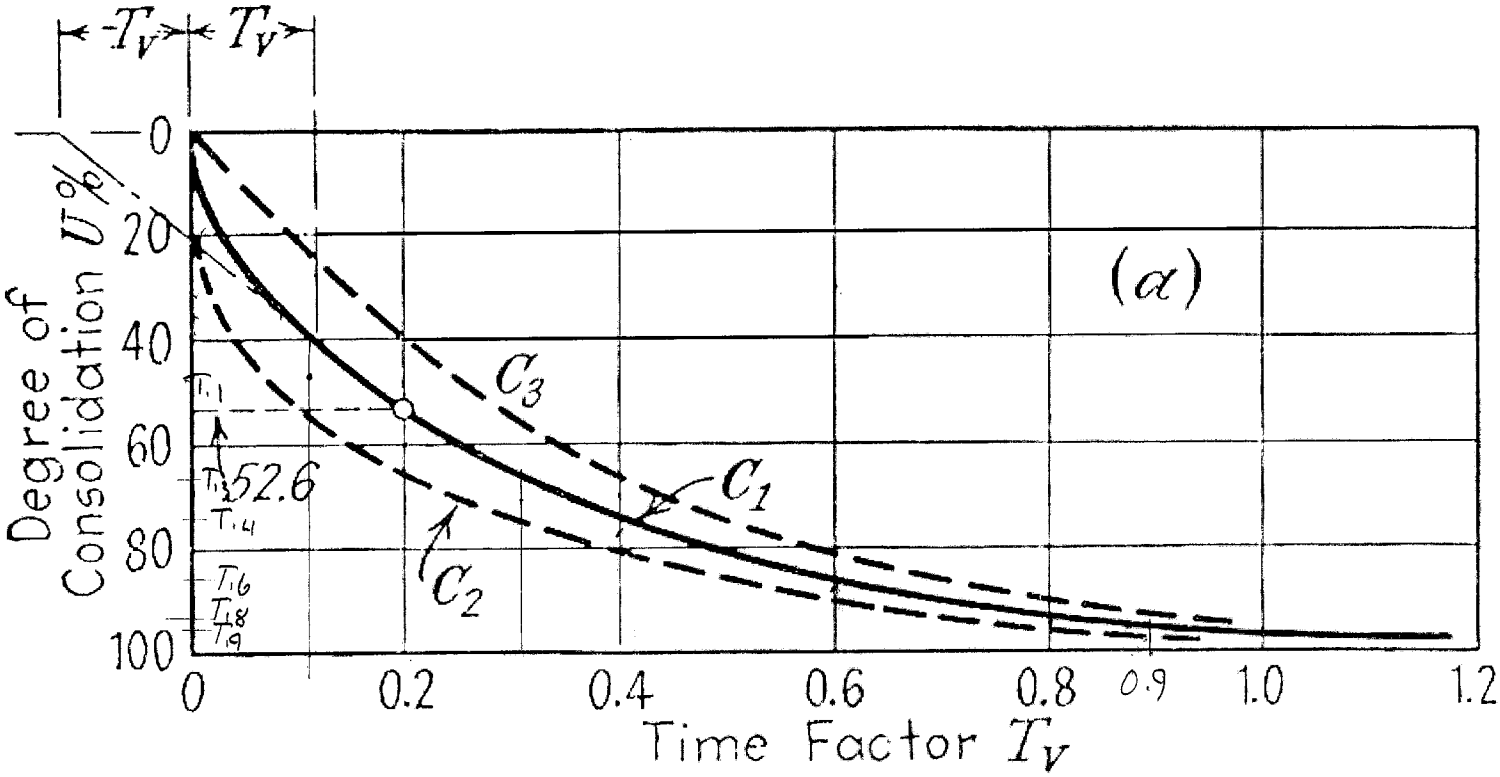
Area inside Ø contour line:

910,853.4 ft^2

$$\text{avg. settlement } (\rho) = \frac{92{,}974\ yd^3 \left(\frac{27\ ft^3}{yd^3}\right)}{910{,}853.4\ ft^2}$$

$$= 2.76\ ft \sim \underline{\underline{2.8\ ft}}$$


100
80
60
40
20
0
Excess pressure: %
0·004
0·01
0·04
0·1
0·4
1·0
Time factor, T_v and T_h
Values of n
100
40
10
5
Vertical flow
Radial flow
75 — $T_{.1}$
59 — $T_{.2}$
46 — $T_{.3}$
36 — $T_{.4}$
28 — $T_{.5}$
22 — $T_{.6}$
17 — $T_{.7}$
13 — $T_{.8}$
10 — $T_{.9}$


$-T_V$
T_V
Degree of Consolidation $U\%$
0
20
40
60
80
100
$T_{.1}$
$T_{.2}$
52.6
$T_{.4}$
$T_{.6}$
$T_{.8}$
$T_{.9}$
C_3
C_1
C_2
(α)
0
0.2
0.4
0.6
0.8
0.9
1.0
1.2
Time Factor T_V