

APPENDIX D - LABORATORY HYDRAULIC CONDUCTIVITY DATA

Hydraulic Conductivity Test - Altamont - Store-and-Release

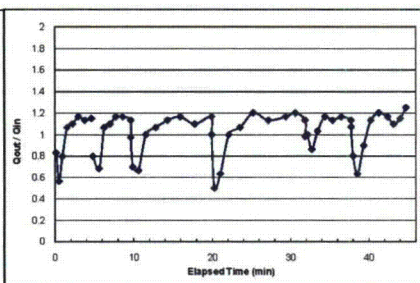
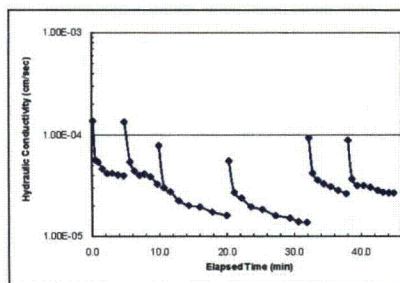
ASTM D 5084 - 00

Sample I.D.	305-mm ALT-DL - 5	Test Date :	1/16/08
Cell Pressure = 42.7 psi	Diameter of Sample, D = 30.5 cm		
Inflow Pressure = 42.4 psi	Length of Sample, L = 17.1 cm		
Outflow Pressure = 40.0 psi	Area of Sample, A = 729.7 cm ²		
Pressure Difference = 2.4 psi	Sample Volume, V = 12510.0 cm ³		
Effective Stress = 1.50 psi	a _{in} = 4 cm ²		
Hydraulic Gradient, i = 9.8	a _{out} = 4 cm ²		
Weight of wet sample = 24580.2 (g)	Sample Water Content = 20.6 (%)		
Wet Density = 2.0 g/cm ³	Dry Density = 1.63 g/cm ³		

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	20.60

Date, Time	Inflow	Outflow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
1/16/2008 12:00	0.0	24.0	0.0	24.0	0.0				
1/16/2008 12:00	3.0	21.5	10.0	18.5	0.2	1.36E-04	0.8	12	10
1/16/2008 12:00	6.0	19.8	21.0	13.8	0.5	5.69E-05	0.6	12	6.8
1/16/2008 12:00	9.0	17.4	26.0	8.4	1.0	5.43E-05	0.8	12	9.6
1/16/2008 12:01	12.0	14.2	36.0	2.2	1.5	4.85E-05	1.1	12	12.8
1/16/2008 12:02	15.0	10.9	42.0	-4.1	2.3	4.20E-05	1.1	12	13.2
1/16/2008 12:03	18.0	7.4	45.0	-10.6	3.0	4.21E-05	1.2	12	14
1/16/2008 12:03	21.0	4.0	48.0	-17.0	3.8	4.04E-05	1.1	12	13.6
1/16/2008 12:04	24.0	0.5	52.0	-23.5	4.7	3.96E-05	1.2	24	27.6
1/16/2008 12:03	0.0	24.0	0.0	24.0	4.7				
1/16/2008 12:03	3.0	21.6	10.0	18.6	4.8	1.34E-04	0.8	12	9.6
1/16/2008 12:00	9.0	17.5	48.0	8.5	5.6	5.42E-05	0.7	24	16.4
1/16/2008 12:01	12.0	14.3	38.0	2.3	6.3	4.40E-05	1.1	12	12.8
1/16/2008 12:02	15.0	11.0	44.0	-4.0	7.0	4.01E-05	1.1	12	13.2
1/16/2008 12:03	18.0	7.5	46.0	-10.5	7.8	4.11E-05	1.2	12	14
1/16/2008 12:03	21.0	4.0	51.0	-17.0	8.6	3.86E-05	1.2	12	14
1/16/2008 12:04	24.0	0.6	62.0	-23.4	9.7	3.27E-05	1.1	12	13.6
1/16/2008 12:00	0.0	24.0	0.0	24.0	9.7				
1/16/2008 12:00	3.0	21.9	16.0	18.9	9.9	7.87E-05	0.7	12	8.4
1/16/2008 12:00	6.0	19.9	42.0	13.9	10.6	3.02E-05	0.7	12	8
1/16/2008 12:01	9.0	16.9	57.0	7.9	11.6	2.75E-05	1.0	12	12
1/16/2008 12:03	12.0	13.7	75.0	1.7	12.8	2.24E-05	1.1	12	12.8
1/16/2008 12:04	15.0	10.3	90.0	-4.7	14.3	2.00E-05	1.1	12	13.6
1/16/2008 12:06	18.0	6.8	98.0	-11.2	15.9	1.94E-05	1.2	12	14
1/16/2008 12:08	21.0	3.5	111.0	-17.5	17.8	1.73E-05	1.1	12	13.2
1/16/2008 12:10	24.0	0.0	129.0	-24.0	20.0	1.60E-05	1.2	12	14
1/16/2008 12:00	0.0	24.0	0.0	24.0	20.0				
1/16/2008 12:00	3.0	22.5	20.0	19.5	20.3	5.55E-05	0.5	12	6
1/16/2008 12:01	6.0	20.6	46.0	14.6	21.0	2.69E-05	0.6	12	7.6
1/16/2008 12:02	9.0	17.6	66.0	8.6	22.2	2.37E-05	1.0	12	12
1/16/2008 12:03	12.0	14.4	86.0	2.4	23.6	1.94E-05	1.1	12	12.8
1/16/2008 12:05	15.0	10.8	101.0	-4.2	25.3	1.83E-05	1.2	12	14.4
1/16/2008 12:07	18.0	7.4	117.0	-10.6	27.2	1.59E-05	1.1	12	13.6
1/16/2008 12:09	21.0	3.9	131.0	-17.1	29.4	1.51E-05	1.2	12	14
1/16/2008 12:10	22.5	2.1	75.0	-20.4	30.6	1.38E-05	1.2	6	7.2
1/16/2008 12:11	24.0	0.4	75.0	-23.6	31.9	1.37E-05	1.1	6	6.8
1/16/2008 12:00	0.0	24.0	0.0	24.0	31.9				
1/16/2008 12:00	3.0	21.0	16.0	18.0	32.2	9.29E-05	1.0	12	12
1/16/2008 12:00	6.0	18.4	34.0	12.4	32.7	4.21E-05	0.9	12	10.4
1/16/2008 12:01	9.0	15.3	45.0	6.3	33.5	3.58E-05	1.0	12	12.4
1/16/2008 12:02	12.0	11.8	54.0	-0.2	34.4	3.29E-05	1.2	12	14
1/16/2008 12:03	15.0	8.4	59.0	-6.6	35.4	3.08E-05	1.1	12	13.6
1/16/2008 12:04	18.0	4.9	68.0	-13.1	36.5	2.83E-05	1.2	12	14
1/16/2008 12:05	21.0	1.5	75.0	-19.5	37.7	2.63E-05	1.1	12	13.6
1/16/2008 12:00	0.0	24.0	0.0	24.0	37.7				
1/16/2008 12:00	3.0	21.6	15.0	18.6	38.0	8.90E-05	0.8	12	9.6
1/16/2008 12:00	6.0	19.7	34.0	13.7	38.6	3.66E-05	0.6	12	7.6
1/16/2008 12:01	9.0	17.0	47.0	8.0	39.3	3.17E-05	0.9	12	10.8
1/16/2008 12:02	12.0	13.6	55.0	1.6	40.3	3.15E-05	1.1	12	13.6
1/16/2008 12:03	15.0	10.0	61.0	-5.0	41.3	3.04E-05	1.2	12	14.4
1/16/2008 12:04	18.0	6.5	67.0	-11.5	42.4	2.94E-05	1.2	12	14
1/16/2008 12:05	20.0	4.3	47.0	-15.7	43.2	2.71E-05	1.1	8	8.8
1/16/2008 12:06	22.0	2.0	50.0	-20.0	44.0	2.68E-05	1.2	8	9.2
1/16/2008 12:08	23.6	0.0	43.0	-23.6	44.7	2.68E-05	1.3	6.4	8



Hydraulic Conductivity Test - Altamont - Store-and-Release

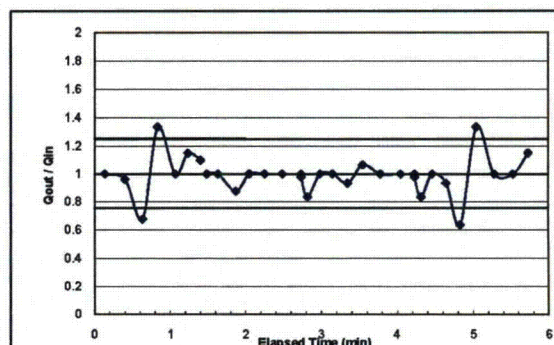
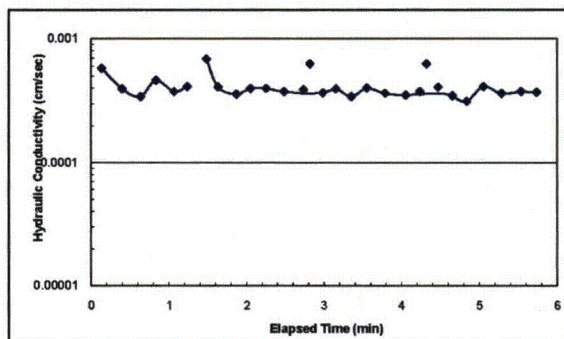
ASTM D 5084 - 00

Sample I.D.	305-mm ALT- ML - 4	Test Date :	12/21/07
Cell Pressure =	42.0 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	15.2 cm
Outflow Pressre =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	4.6	a _{out} =	5 cm ²
Weight of wet sample =	21563.8 (g)	Sample Water Content =	20.9 (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.60 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	20.87

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/21/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/21/2007 12:00	4.0	20.0	8.0	16.0	0.1	5.78E-04	1.0	20	20
12/21/2007 12:00	9.0	15.2	16.0	6.2	0.4	3.93E-04	1.0	25	24
12/21/2007 12:00	13.0	12.5	14.0	-0.5	0.6	3.42E-04	0.7	20	13.5
12/21/2007 12:00	16.0	8.5	12.0	-7.5	0.8	4.60E-04	1.3	15	20
12/21/2007 12:01	19.0	5.5	14.0	-13.5	1.1	3.74E-04	1.0	15	15
12/21/2007 12:01	21.0	3.2	10.0	-17.8	1.2	4.11E-04	1.2	10	11.5
12/21/2007 12:01	23.0	1.0	10.0	-22.0	1.4	4.35E-04	1.1	10	11
12/21/2007 12:00	0.0	24.0	0.0	24.0	1.4				
12/21/2007 12:00	3.0	21.0	5.0	18.0	1.5	6.86E-04	1.0	15	15
12/21/2007 12:00	6.0	18.0	9.0	12.0	1.6	4.08E-04	1.0	15	15
12/21/2007 12:00	10.0	14.5	14.0	4.5	1.9	3.56E-04	0.9	20	17.5
12/21/2007 12:00	13.0	11.5	11.0	-1.5	2.0	3.97E-04	1.0	15	15
12/21/2007 12:00	16.0	8.5	12.0	-7.5	2.3	3.97E-04	1.0	15	15
12/21/2007 12:01	19.0	5.5	14.0	-13.5	2.5	3.74E-04	1.0	15	15
12/21/2007 12:01	22.0	2.5	15.0	-19.5	2.7	3.88E-04	1.0	15	15
12/21/2007 12:00	0.0	24.0	0.0	24.0	2.7				
12/21/2007 12:00	3.0	21.5	5.0	18.5	2.8	6.27E-04	0.8	15	12.5
12/21/2007 12:00	6.0	18.5	10.0	12.5	3.0	3.85E-04	1.0	15	15
12/21/2007 12:00	9.0	15.5	10.0	6.5	3.2	3.93E-04	1.0	15	15
12/21/2007 12:00	12.0	12.7	12.0	0.7	3.3	3.42E-04	0.9	15	14
12/21/2007 12:00	15.0	9.5	12.0	-5.5	3.6	3.97E-04	1.1	15	16
12/21/2007 12:01	18.0	6.5	14.0	-11.5	3.8	3.62E-04	1.0	15	15
12/21/2007 12:01	21.0	3.5	16.0	-17.5	4.1	3.51E-04	1.0	15	15
12/21/2007 12:01	23.0	1.5	11.0	-21.5	4.2	3.74E-04	1.0	10	10
12/21/2007 12:00	0.0	24.0	0.0	24.0	4.2				
12/21/2007 12:00	3.0	21.5	5.0	18.5	4.3	6.27E-04	0.8	15	12.5
12/21/2007 12:00	6.0	18.5	9.0	12.5	4.5	4.06E-04	1.0	15	15
12/21/2007 12:00	9.0	15.7	11.0	6.7	4.7	3.45E-04	0.9	15	14
12/21/2007 12:00	12.0	13.8	11.0	1.8	4.8	3.12E-04	0.6	15	9.5
12/21/2007 12:00	15.0	9.8	13.0	-5.2	5.1	4.10E-04	1.3	15	20
12/21/2007 12:01	18.0	6.8	14.0	-11.2	5.3	3.60E-04	1.0	15	15
12/21/2007 12:01	21.0	3.8	15.0	-17.2	5.5	3.72E-04	1.0	15	15
12/21/2007 12:01	23.0	1.5	12.0	-21.5	5.7	3.67E-04	1.2	10	11.5



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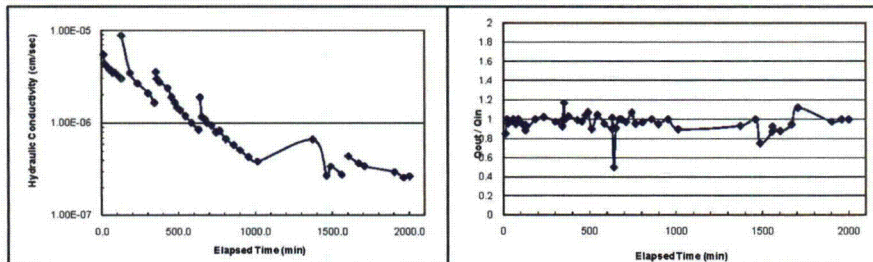
ASTM D 5084 - 00

Sample I.D.	150-mm ALT - ML - 4	Test Date :	2/6/08
Cell Pressure =	42.0 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	40.8 psi	Length of Sample, L =	8.1 cm
Outflow Pressure =	40.3 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	0.5 psi	Sample Volume, V =	1482.7 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.6	a _{out} =	1 cm ²
Weight of wet sample =	3447.3 (g)	Sample Water Content =	19.3 (%)
Wet Density =	2.3 g/cm ³	Dry Density =	1.95 g/cm ³

$$K_s = \frac{a_m * a_{out}}{(a_m + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content (%)
NA	(g)	(g)	(g)	(%)
NA	NA	NA	NA	19.32

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/6/2008 12:00	0.0	24.0	0.0	24.0	0.0				
2/6/2008 12:12	5.5	19.3	747.0	13.8	12.4	5.43E-06	0.9	5.5	4.7
2/6/2008 12:19	7.5	17.3	424.0	9.8	19.5	4.29E-06	1.0	2	2
2/6/2008 12:29	9.9	15.0	572.0	5.1	29.1	4.10E-06	1.0	2.4	2.3
2/6/2008 12:49	13.9	11.1	1223.0	-2.8	49.4	3.76E-06	1.0	4	3.9
2/6/2008 12:59	15.5	9.5	588.0	-6.0	59.2	3.69E-06	1.0	1.6	1.6
2/6/2008 13:13	17.5	7.6	865.0	-9.9	73.7	3.43E-06	1.0	2	1.9
2/6/2008 13:27	19.1	6.0	807.0	-13.1	87.0	3.46E-06	1.0	1.6	1.6
2/6/2008 13:48	21.2	4.0	1302.0	-17.2	108.7	3.18E-06	1.0	2.1	2
2/6/2008 14:06	22.6	2.7	1078.0	-19.3	126.7	2.99E-06	0.9	1.4	1.3
2/6/2008 12:00	0.0	24.0	0.0	24.0	126.7				
2/6/2008 12:02	1.8	22.4	145.0	20.6	129.1	6.77E-06	0.9	1.8	1.6
2/6/2008 12:58	13.5	10.7	3388.0	-2.8	185.5	3.41E-06	1.0	11.7	11.7
2/6/2008 13:46	18.4	5.7	2845.0	-12.7	233.0	2.65E-06	1.0	4.9	5
2/6/2008 14:55	22.4	1.8	4161.0	-20.6	302.3	2.08E-06	1.0	4	3.9
2/6/2008 15:35	23.8	0.5	2400.0	-23.3	342.3	1.64E-06	0.9	1.4	1.3
2/6/2008 12:00	0.0	24.0	0.0	24.0	342.3				
2/6/2008 12:09	2.4	21.2	564.0	18.8	351.7	3.50E-06	1.2	2.4	2.8
2/6/2008 12:15	3.7	19.9	357.0	16.2	357.7	2.96E-06	1.0	1.3	1.3
2/6/2008 12:35	7.3	16.2	1203.0	8.9	377.7	2.72E-06	1.0	3.6	3.7
2/6/2008 13:26	13.7	9.9	3060.0	-3.9	428.7	2.35E-06	1.0	6.4	6.35
2/6/2008 13:52	15.8	7.8	1563.0	-8.0	454.8	1.89E-06	1.0	2.1	2.05
2/6/2008 14:13	17.1	6.5	1288.0	-10.7	476.2	1.64E-06	1.0	1.3	1.35
2/6/2008 14:28	17.8	5.7	657.0	-12.1	490.5	1.46E-06	1.1	0.7	0.75
2/6/2008 14:49	18.8	4.8	1287.0	-14.0	512.0	1.36E-06	0.9	1	0.9
2/6/2008 15:21	19.9	3.7	1912.0	-16.3	543.8	1.18E-06	1.0	1.1	1.15
2/6/2008 16:01	21.0	2.6	2406.0	-18.4	583.9	9.99E-07	1.0	1.1	1.05
2/6/2008 16:48	22.0	1.7	2795.0	-20.3	630.5	8.46E-07	0.9	1	0.9
2/6/2008 12:00	0.0	24.0	0.0	24.0	630.5				
2/6/2008 12:08	1.8	23.1	537.0	21.3	639.5	1.87E-06	0.5	1.8	0.9
2/6/2008 12:20	2.9	22.1	705.0	19.2	651.2	1.15E-06	0.9	1.1	1
2/6/2008 12:39	4.4	20.6	1115.0	16.2	669.8	1.09E-06	1.0	1.5	1.5
2/6/2008 12:53	5.4	19.6	850.0	14.2	684.0	9.99E-07	1.0	1	1
2/6/2008 13:21	7.2	17.9	1688.0	10.7	712.1	9.43E-07	1.0	1.8	1.75
2/6/2008 13:52	8.7	16.3	1875.0	7.6	743.4	7.95E-07	1.1	1.5	1.6
2/6/2008 14:14	9.8	15.2	1324.0	5.4	765.4	8.27E-07	1.0	1.1	1.05
2/6/2008 14:57	11.4	13.7	2531.0	2.3	807.6	6.75E-07	1.0	1.6	1.55
2/6/2008 15:47	12.9	12.2	3038.0	-0.8	858.2	5.79E-07	1.0	1.5	1.5
2/6/2008 16:27	13.9	11.2	2394.0	-2.7	898.1	5.11E-07	1.0	1	0.96
2/6/2008 17:24	15.0	10.1	3407.0	-4.9	954.9	4.30E-07	1.0	1.1	1.1
2/6/2008 18:22	16.0	9.2	3493.0	-6.8	1013.1	3.86E-07	0.9	1	0.9
2/7/2008 0:22	23.5	2.2	21586.0	-21.3	1372.9	6.67E-07	0.9	7.5	7
2/7/2008 1:51	24.0	1.7	5347.0	-22.3	1462.0	2.69E-07	1.0	0.5	0.5
2/7/2008 2:17	24.2	1.6	1545.0	-22.7	1487.8	3.41E-07	0.8	0.2	0.15
2/7/2008 3:27	24.6	1.2	4233.0	-23.4	1558.3	2.77E-07	0.9	0.4	0.35
2/7/2008 0:00	0.0	24.0	0.0	24.0	1558.3				
2/7/2008 0:45	1.7	22.5	2729.0	20.8	1603.8	4.38E-07	0.9	1.7	1.5
2/7/2008 1:51	3.6	20.7	3977.0	17.1	1670.1	3.69E-07	0.9	1.9	1.8
2/7/2008 2:28	4.5	19.8	2193.0	15.3	1706.6	3.42E-07	1.1	0.85	0.96
2/7/2008 5:44	8.3	16.0	11774.0	7.7	1902.9	2.95E-07	1.0	3.85	3.75
2/7/2008 6:43	9.2	15.1	3541.0	5.9	1961.9	2.57E-07	1.0	0.9	0.9
2/7/2008 7:22	9.8	14.5	2361.0	4.7	2001.2	2.66E-07	1.0	0.6	0.6



Hydraulic Conductivity Test - Altamont - Store-and-Release

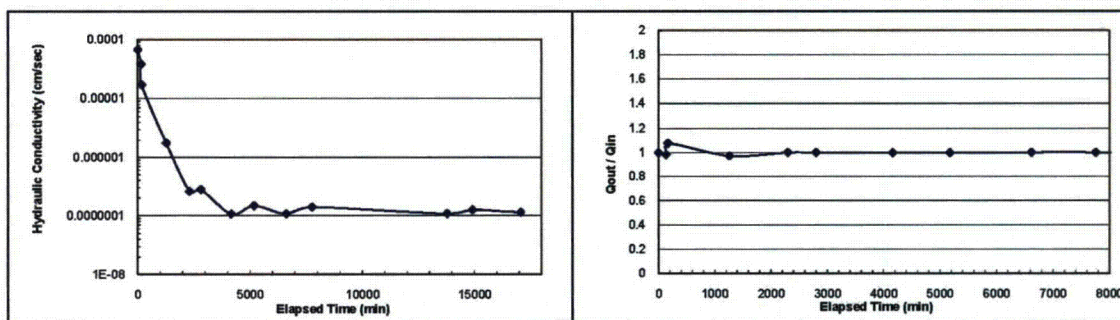
ASTM D 5084 - 00

Sample I.D.	75-mm ALT - ML - 4	Test Date :	3/23/08
Cell Pressure =	42.4 psi	Diameter of Sample, D =	5.6 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	2.8 cm
Outflow Pressure =	40.8 psi	Area of Sample, A =	24.6 cm ²
Pressure Difference =	0.2 psi	Sample Volume, V =	69.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	5.0	a _{out} =	5 cm ²
Weight of wet sample =	298.8 (g)	Sample Water Content =	19.3 (%)
Wet Density =	4.3 g/cm ³	Dry Density =	3.63 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content (%)
NA	(g)	(g)	(g)	
NA	NA	NA	NA	19.29

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
3/23/2008 12:00	0.0	24.0	0.0	24.0	0.0				
3/23/2008 12:03	1.0	23.0	230.0	22.0	3.8	6.67E-05	1.0	5	5
3/23/2008 14:20	13.0	11.2	8204.0	-1.8	140.6	3.74E-05	1.0	60	59
3/23/2008 14:53	13.7	10.5	1966.0	-3.2	173.3	1.69E-05	1.1	3.25	3.5
3/24/2008 9:04	15.5	8.7	65463.0	-6.8	1264.4	1.77E-06	1.0	9.25	9
3/25/2008 2:18	15.7	8.5	62050.0	-7.2	2298.6	2.59E-07	1.0	1	1
3/25/2008 10:42	15.8	8.4	30208.0	-7.4	2802.0	2.78E-07	1.0	0.5	0.5
3/26/2008 9:17	15.9	8.3	81350.0	-7.6	4157.9	1.06E-07	1.0	0.5	0.5
3/27/2008 2:13	16.0	8.2	60926.0	-7.8	5173.3	1.47E-07	1.0	0.5	0.5
3/28/2008 2:14	16.1	8.1	86470.0	-8.0	6614.4	1.07E-07	1.0	0.5	0.5
3/28/2008 21:15	16.2	8.0	68459.0	-8.2	7755.4	1.39E-07	1.0	0.5	0.5
4/2/2008 1:40	16.6	7.7	361478.0	-9.0	13780.1	1.08E-07	0.9	2	1.75
4/2/2008 20:28	16.7	7.6	67717.0	-9.1	14908.7	1.25E-07	0.5	0.5	0.25
4/4/2008 8:26	16.9	7.5	129443.0	-9.4	17066.1	1.13E-07	0.7	0.75	0.5



Hydraulic Conductivity Test - Altamont - Store-and-Release

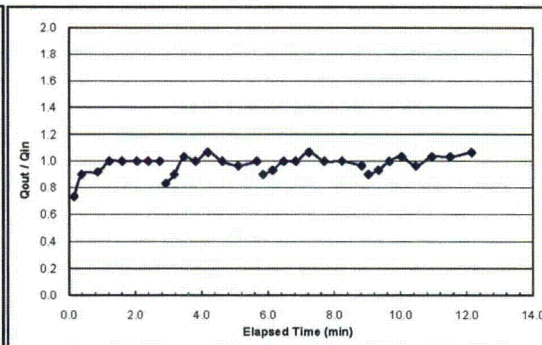
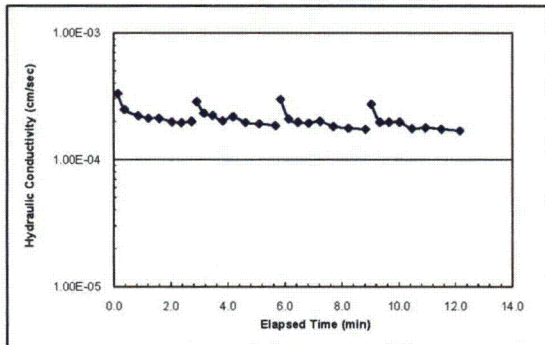
ASTM D 5084 - 00

Sample I.D.	305-mm ALT - ML - 3	Test Date :	12/27/07
Cell Pressure =	42.0 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	4.6	a _{out} =	5 cm ²
Weight of wet sample =	22402.9 (g)	Sample Water Content =	18.9 (%)
Wet Density =	2.0 g/cm ³	Dry Density =	1.69 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content (%)
NA	(g)	(g)	(g)	(%)
NA	NA	NA	NA	18.90

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/27/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/27/2007 12:00	3.0	21.8	9.0	18.8	0.2	3.29E-04	0.7	15	11
12/27/2007 12:00	6.0	19.1	14.0	13.1	0.4	2.46E-04	0.9	15	13.5
12/27/2007 12:00	11.0	14.5	29.0	3.5	0.9	2.20E-04	0.9	25	23
12/27/2007 12:01	14.0	11.5	21.0	-2.5	1.2	2.11E-04	1.0	15	15
12/27/2007 12:01	17.0	8.5	23.0	-8.5	1.6	2.10E-04	1.0	15	15
12/27/2007 12:02	20.0	5.5	27.0	-14.5	2.0	1.97E-04	1.0	15	15
12/27/2007 12:02	22.0	3.5	20.0	-18.5	2.4	1.94E-04	1.0	10	10
12/27/2007 12:02	24.0	1.5	21.0	-22.5	2.7	2.00E-04	1.0	20	20
12/27/2007 12:00	0.0	24.0	0.0	24.0	2.7				
12/27/2007 12:00	3.0	21.5	11.0	18.5	2.9	2.85E-04	0.8	15	12.5
12/27/2007 12:00	6.0	18.8	15.0	12.8	3.2	2.31E-04	0.9	15	13.5
12/27/2007 12:00	9.0	15.7	18.0	6.7	3.5	2.21E-04	1.0	15	15.5
12/27/2007 12:01	12.0	12.7	21.0	0.7	3.8	2.02E-04	1.0	15	15
12/27/2007 12:01	15.0	9.5	22.0	-5.5	4.2	2.17E-04	1.1	15	16
12/27/2007 12:01	18.0	6.5	26.0	-11.5	4.6	1.95E-04	1.0	15	15
12/27/2007 12:02	21.0	3.6	29.0	-17.4	5.1	1.90E-04	1.0	15	14.5
12/27/2007 12:02	24.0	0.6	34.0	-23.4	5.7	1.85E-04	1.0	15	15
12/27/2007 12:00	0.0	24.0	0.0	24.0	5.7				
12/27/2007 12:00	3.0	21.3	11.0	18.3	5.9	2.96E-04	0.9	15	13.5
12/27/2007 12:00	6.0	18.5	17.0	12.5	6.1	2.08E-04	0.9	15	14
12/27/2007 12:00	9.0	15.5	20.0	6.5	6.5	1.96E-04	1.0	15	15
12/27/2007 12:01	12.0	12.5	22.0	0.5	6.8	1.93E-04	1.0	15	15
12/27/2007 12:01	15.0	9.3	24.0	-5.7	7.2	1.99E-04	1.1	15	16
12/27/2007 12:02	18.0	6.3	28.0	-11.7	7.7	1.82E-04	1.0	15	15
12/27/2007 12:02	21.0	3.3	32.0	-17.7	8.2	1.76E-04	1.0	15	15
12/27/2007 12:03	24.0	0.4	36.0	-23.6	8.8	1.72E-04	1.0	15	14.5
12/27/2007 12:00	0.0	24.0	0.0	24.0	8.8				
12/27/2007 12:00	3.0	21.3	12.0	18.3	9.0	2.71E-04	0.9	15	13.5
12/27/2007 12:00	6.0	18.5	18.0	12.5	9.3	1.96E-04	0.9	15	14
12/27/2007 12:00	9.0	15.5	20.0	6.5	9.7	1.96E-04	1.0	15	15
12/27/2007 12:01	12.0	12.4	22.0	0.4	10.0	1.96E-04	1.0	15	15.5
12/27/2007 12:01	15.0	9.5	26.0	-5.5	10.5	1.75E-04	1.0	15	14.5
12/27/2007 12:02	18.0	6.4	29.0	-11.6	11.0	1.78E-04	1.0	15	15.5
12/27/2007 12:02	21.0	3.3	33.0	-17.7	11.5	1.74E-04	1.0	15	15.5
12/27/2007 12:03	24.0	0.1	39.0	-23.9	12.2	1.68E-04	1.1	15	16



Hydraulic Conductivity Test - Altamont - Composite

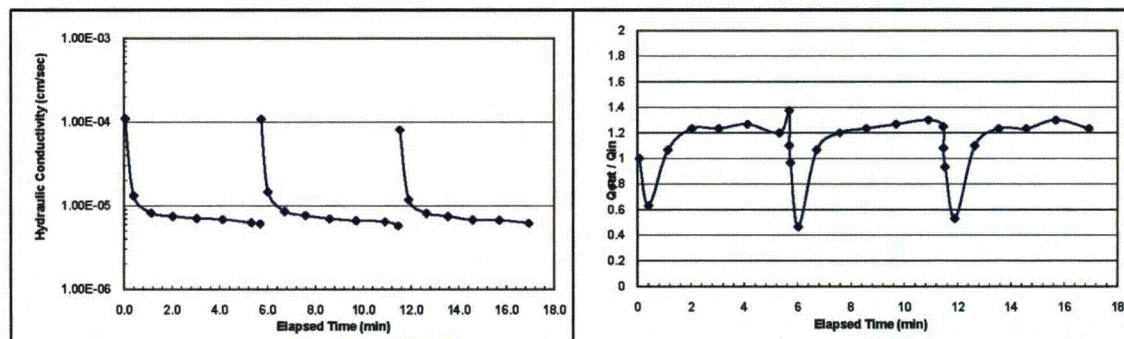
ASTM D 5084 - 00

Sample I.D.	305-mm CMP - SDRI	Test Date :	1/29/07
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	1 cm ²
Weight of wet sample =	24539.3 (g)	Sample Water Content =	16.4 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.90 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	16.40

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
1/31/2007 12:00	0.0	24.0	0.0	24.0	0.0				
1/31/2007 12:00	3.0	21.0	3.0	18.0	0.1	1.10E-04	1.0	3	3
1/31/2007 12:00	6.0	19.1	21.0	13.1	0.4	1.32E-05	0.6	3	1.9
1/31/2007 12:01	9.0	15.9	44.0	6.9	1.1	8.23E-06	1.1	3	3.2
1/31/2007 12:02	12.0	12.2	54.0	0.2	2.0	7.52E-06	1.2	3	3.7
1/31/2007 12:03	15.0	8.5	60.0	-6.5	3.0	7.04E-06	1.2	3	3.7
1/31/2007 12:04	18.0	4.7	65.0	-13.3	4.1	6.88E-06	1.3	3	3.8
1/31/2007 12:05	21.0	1.1	72.0	-19.9	5.3	6.29E-06	1.2	3	3.6
1/31/2007 12:05	21.8	0.0	22.0	-21.8	5.7	6.10E-06	1.4	0.8	1.1
1/31/2007 12:00	0.0	24.0	0.0	24.0	5.7				
1/31/2007 12:00	3.0	21.1	3.0	18.1	5.7	1.08E-04	1.0	3	2.9
1/31/2007 12:00	6.0	19.7	17.0	13.7	6.0	1.46E-05	0.5	3	1.4
1/31/2007 12:01	9.0	16.5	42.0	7.5	6.7	8.59E-06	1.1	3	3.2
1/31/2007 12:01	12.0	12.9	52.0	0.9	7.6	7.66E-06	1.2	3	3.6
1/31/2007 12:02	15.0	9.2	60.0	-5.8	8.6	7.01E-06	1.2	3	3.7
1/31/2007 12:04	18.0	5.4	67.0	-12.6	9.7	6.64E-06	1.3	3	3.8
1/31/2007 12:05	21.0	1.5	73.0	-19.5	10.9	6.46E-06	1.3	3	3.9
1/31/2007 12:05	22.2	0.0	33.0	-22.2	11.5	5.78E-06	1.3	1.2	1.5
1/31/2007 12:00	0.0	24.0	0.0	24.0	11.5				
1/31/2007 12:00	3.0	21.2	4.0	18.2	11.5	7.97E-05	0.9	3	2.8
1/31/2007 12:00	6.0	19.6	22.0	13.6	11.9	1.18E-05	0.5	3	1.6
1/31/2007 12:01	9.0	16.3	45.0	7.3	12.7	8.16E-06	1.1	3	3.3
1/31/2007 12:02	12.0	12.6	54.0	0.6	13.6	7.50E-06	1.2	3	3.7
1/31/2007 12:03	15.0	8.9	62.0	-6.1	14.6	6.80E-06	1.2	3	3.7
1/31/2007 12:04	18.0	5.0	67.0	-13.0	15.7	6.75E-06	1.3	3	3.9
1/31/2007 12:05	21.0	1.3	74.0	-19.7	16.9	6.20E-06	1.2	3	3.7



Hydraulic Conductivity Test - Altamont - Composite

ASTM D 5084 - 00

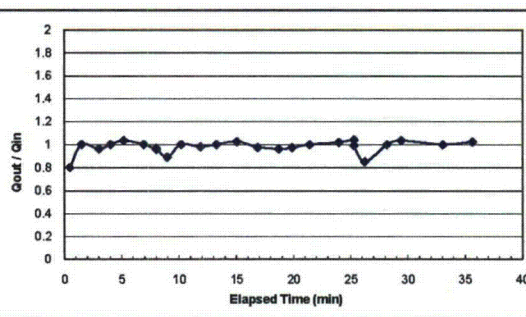
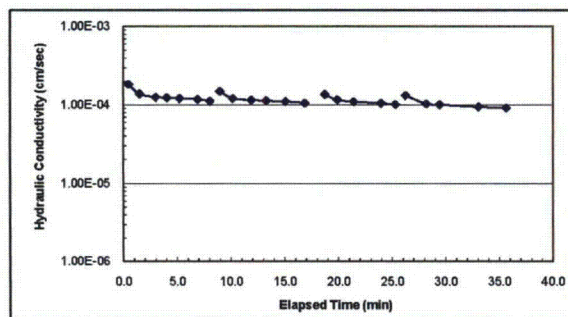
Sample I.D.	150-mm CMP - SDRI	Test Date :	2/20/08
Cell Pressure =	42.1 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.2 psi	Length of Sample, L =	7.6 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.2 psi	Sample Volume, V =	1390.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	3084.4 (g)	Sample Water Content =	17.3 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.89 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
NA	NA	NA	NA	17.33

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/20/2008 12:00	0.0	24.0	0.0	24.0	0.0				
2/20/2008 12:00	3.0	21.6	29.0	18.6	0.5	1.84E-04	0.8	15	12
2/20/2008 12:01	7.0	17.6	61.0	10.6	1.5	1.38E-04	1.0	20	20
2/20/2008 12:03	12.0	12.8	90.0	0.8	3.0	1.26E-04	1.0	25	24
2/20/2008 12:04	15.0	9.8	62.0	-5.2	4.0	1.23E-04	1.0	15	15
2/20/2008 12:05	18.0	6.7	69.0	-11.3	5.2	1.21E-04	1.0	15	15.5
2/20/2008 12:06	22.0	2.7	103.0	-19.3	6.9	1.18E-04	1.0	20	20
2/20/2008 12:08	24.3	0.5	67.0	-23.8	8.0	1.12E-04	1.0	11.5	11
2/20/2008 12:00	0.0	24.0	0.0	24.0	8.0				
2/20/2008 12:00	4.5	20.0	57.0	15.5	9.0	1.50E-04	0.9	22.5	20
2/20/2008 12:02	8.5	16.0	72.0	7.5	10.2	1.21E-04	1.0	20	20
2/20/2008 12:03	13.5	11.1	103.0	-2.4	11.9	1.16E-04	1.0	25	24.5
2/20/2008 12:05	17.0	7.6	83.0	-9.4	13.3	1.12E-04	1.0	17.5	17.5
2/20/2008 12:07	21.0	3.5	108.0	-17.5	15.1	1.11E-04	1.0	20	20.5
2/20/2008 12:08	24.5	0.1	108.0	-24.4	16.9	1.05E-04	1.0	17.5	17
2/20/2008 12:00	0.0	24.0	0.0	24.0	16.9				
2/20/2008 12:01	7.5	16.8	112.0	9.3	18.7	1.36E-04	1.0	37.5	36
2/20/2008 12:03	11.0	13.4	69.0	2.4	19.9	1.16E-04	1.0	17.5	17
2/20/2008 12:04	15.0	9.4	92.0	-5.6	21.4	1.10E-04	1.0	20	20
2/20/2008 12:07	20.5	3.8	152.0	-16.7	24.0	1.04E-04	1.0	27.5	28
2/20/2008 12:08	23.0	1.2	81.0	-21.8	25.3	1.01E-04	1.0	12.5	13
2/20/2008 12:00	0.0	24.0	0.0	24.0	25.3				
2/20/2008 12:00	4.0	20.6	56.0	16.6	26.2	1.32E-04	0.9	20	17
2/20/2008 12:02	9.5	15.1	117.0	5.6	28.2	1.03E-04	1.0	27.5	27.5
2/20/2008 12:04	12.5	12.0	73.0	-0.5	29.4	1.00E-04	1.0	15	15.5
2/20/2008 12:07	20.0	4.5	219.0	-15.5	33.1	9.39E-05	1.0	37.5	37.5
2/20/2008 12:10	24.3	0.1	155.0	-24.2	35.6	9.10E-05	1.0	21.5	22

note: a pre-existing fracture cross cut the diameter of the sample.



Hydraulic Conductivity Test - Altamont - Composite

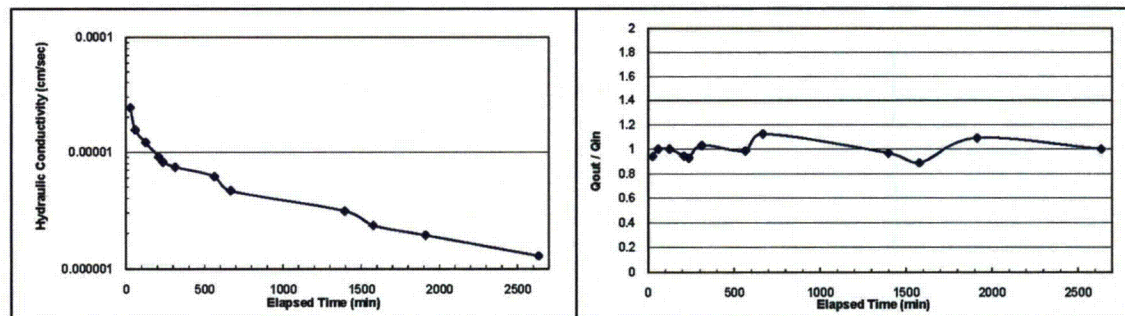
ASTM D 5084 - 00

Sample I.D.	75-mm CMP - SDRI	Test Date :	3/11/08
Cell Pressure = 42.4	psi	Diameter of Sample, D = 5.6	cm
Inflow Pressure = 41.1	psi	Length of Sample, L = 2.8	cm
Outflow Pressure = 40.7	psi	Area of Sample, A = 24.6	cm ²
Pressure Difference = 0.4	psi	Sample Volume, V = 67.7	cm ³
Effective Stress = 1.50	psi	a _{in} = 5	cm ²
Hydraulic Gradient, i = 10.2		a _{out} = 5	cm ²
Weight of wet sample = 314.1	(g)	Sample Water Content = 19.6	(%)
Wet Density = 4.6	g/cm ³	Dry Density = 3.88	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	19.58

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
3/11/2008 12:00	0.0	24.0	0.0	24.0	0.0				
3/11/2008 12:26	3.5	20.7	1612.0	17.2	26.9	2.42E-05	0.9	17.5	16.5
3/11/2008 12:58	5.8	18.4	1916.0	12.6	58.8	1.56E-05	1.0	11.5	11.5
3/11/2008 14:04	9.0	15.2	3938.0	6.2	124.4	1.21E-05	1.0	16	16
3/11/2008 15:28	11.7	12.7	5069.0	1.0	208.9	9.14E-06	0.9	13.5	12.75
3/11/2008 15:55	12.4	12.0	1610.0	-0.4	235.7	8.24E-06	0.9	3.5	3.25
3/11/2008 17:13	14.0	10.4	4659.0	-3.7	313.4	7.47E-06	1.0	8	8.25
3/11/2008 21:24	17.5	6.9	15076.0	-10.6	564.7	6.18E-06	1.0	17.5	17.25
3/11/2008 23:06	18.3	6.0	6121.0	-12.3	666.7	4.65E-06	1.1	4	4.5
3/12/2008 11:16	21.4	3.0	43776.0	-18.4	1396.3	3.10E-06	1.0	15.5	15
3/12/2008 14:18	21.9	2.6	10905.0	-19.3	1578.0	2.34E-06	0.9	2.25	2
3/12/2008 19:52	22.4	2.0	20095.0	-20.4	1913.0	1.93E-06	1.1	2.75	3
3/13/2008 7:55	23.1	1.3	43328.0	-21.8	2635.1	1.29E-06	1.0	3.5	3.5



Hydraulic Conductivity Test - Altamont - Composite

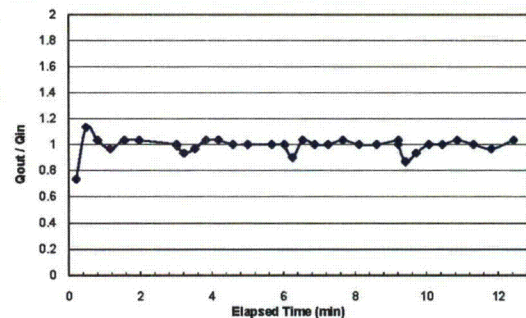
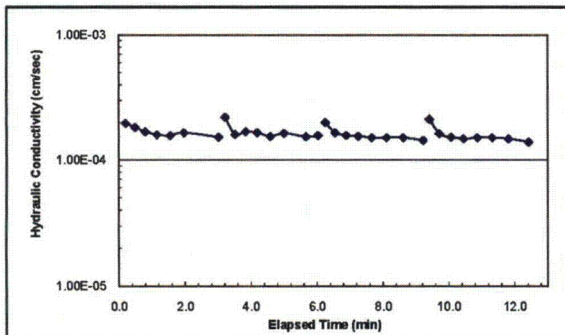
ASTM D 5084 - 00

Sample I.D.	305-mm CMP - CL - 1	Test Date :	12/28/07
Cell Pressure =	42.0 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	4 cm ²
Hydraulic Gradient, i =	4.6	a _{out} =	4 cm ²
Weight of wet sample =	21994.7 (g)	Sample Water Content =	16.9 (%)
Wet Density =	2.0 g/cm ³	Dry Density =	1.69 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
NA	NA	NA	NA	16.90

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
12/28/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/28/2007 12:00	3.0	21.8	12.0	18.8	0.2	1.97E-04	0.7	12	8.8
12/28/2007 12:00	6.0	18.4	17.0	12.4	0.5	1.83E-04	1.1	12	13.6
12/28/2007 12:00	9.0	15.3	19.0	6.3	0.8	1.68E-04	1.0	12	12.4
12/28/2007 12:01	12.0	12.4	21.0	0.4	1.1	1.59E-04	1.0	12	11.6
12/28/2007 12:01	15.0	9.3	24.0	-5.7	1.5	1.57E-04	1.0	12	12.4
12/28/2007 12:01	18.0	6.2	25.0	-11.8	2.0	1.66E-04	1.0	12	12.4
12/28/2007 12:03	24.0	0.2	63.0	-23.8	3.0	1.52E-04	1.0	24	24
12/28/2007 12:00	0.0	24.0	0.0	24.0	3.0				
12/28/2007 12:00	3.0	21.2	12.0	18.2	3.2	2.21E-04	0.9	12	11.2
12/28/2007 12:00	6.0	18.3	18.0	12.3	3.5	1.60E-04	1.0	12	11.6
12/28/2007 12:00	9.0	15.2	19.0	6.2	3.8	1.69E-04	1.0	12	12.4
12/28/2007 12:01	12.0	12.1	21.0	0.1	4.2	1.65E-04	1.0	12	12.4
12/28/2007 12:01	15.0	9.1	24.0	-5.9	4.6	1.55E-04	1.0	12	12
12/28/2007 12:01	18.0	6.1	25.0	-11.9	5.0	1.63E-04	1.0	12	12
12/28/2007 12:02	22.0	2.1	40.0	-19.9	5.7	1.54E-04	1.0	16	16
12/28/2007 12:03	24.0	0.1	22.0	-23.9	6.0	1.57E-04	1.0	8	8
12/28/2007 12:00	0.0	24.0	0.0	24.0	6.0				
12/28/2007 12:00	3.0	21.3	13.0	18.3	6.3	2.00E-04	0.9	12	10.8
12/28/2007 12:00	6.0	18.2	18.0	12.2	6.6	1.65E-04	1.0	12	12.4
12/28/2007 12:00	9.0	15.2	20.0	6.2	6.9	1.58E-04	1.0	12	12
12/28/2007 12:01	12.0	12.2	22.0	0.2	7.3	1.55E-04	1.0	12	12
12/28/2007 12:01	15.0	9.1	25.0	-5.9	7.7	1.51E-04	1.0	12	12.4
12/28/2007 12:02	18.0	6.1	27.0	-11.9	8.1	1.51E-04	1.0	12	12
12/28/2007 12:02	21.0	3.1	30.0	-17.9	8.6	1.51E-04	1.0	12	12
12/28/2007 12:03	24.0	0.0	36.0	-24.0	9.2	1.44E-04	1.0	12	12.4
12/28/2007 12:00	0.0	24.0	0.0	24.0	9.2				
12/28/2007 12:00	3.0	21.4	12.0	18.4	9.4	2.13E-04	0.9	12	10.4
12/28/2007 12:00	6.0	18.4	18.0	12.4	9.7	1.62E-04	0.9	24	22.4
12/28/2007 12:00	9.0	15.3	21.0	6.3	10.1	1.52E-04	1.0	12	12.4
12/28/2007 12:01	12.0	12.3	23.0	0.3	10.5	1.48E-04	1.0	12	12
12/28/2007 12:01	15.0	9.2	25.0	-5.8	10.9	1.51E-04	1.0	12	12.4
12/28/2007 12:02	18.0	6.2	27.0	-11.8	11.3	1.51E-04	1.0	12	12
12/28/2007 12:02	21.0	3.3	30.0	-17.7	11.8	1.48E-04	1.0	12	11.6
12/28/2007 12:03	24.0	0.2	37.0	-23.8	12.4	1.39E-04	1.0	12	12.4



Hydraulic Conductivity Test - Altamont - Composite

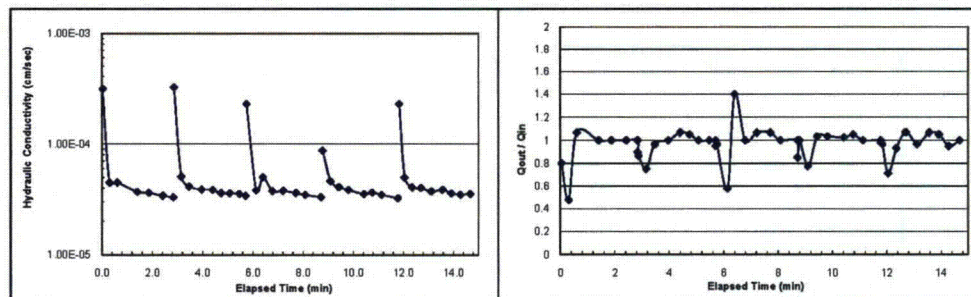
ASTM D 5084 - 00

Sample I.D.	305-mm CMP - CL - 2	Test Date :	12/24/07
Cell Pressure =	42.0 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.6	a _{out} =	1 cm ²
Weight of wet sample =	25192.5 (g)	Sample Water Content =	16.5 (%)
Wet Density =	2.3 g/cm ³	Dry Density =	1.94 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} L_n \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	16.52

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
12/24/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/24/2007 12:00	3.0	21.8	2.0	18.6	0.0	3.08E-04	0.8	3	2.4
12/24/2007 12:00	7.0	19.7	18.0	12.7	0.3	4.48E-05	0.5	4	1.9
12/24/2007 12:00	10.0	18.5	18.0	6.5	0.6	4.50E-05	1.1	3	3.2
12/24/2007 12:01	16.0	10.5	48.0	-5.5	1.4	3.69E-05	1.0	6	6
12/24/2007 12:01	19.0	7.5	28.0	-11.5	1.9	3.62E-05	1.0	3	3
12/24/2007 12:02	22.0	4.5	33.0	-17.5	2.4	3.40E-05	1.0	3	3
12/24/2007 12:02	24.0	2.5	25.0	-21.5	2.8	3.29E-05	1.0	2	2
12/24/2007 12:00	0.0	24.0	0.0	24.0	2.8				
12/24/2007 12:00	3.0	21.4	2.0	18.4	2.9	3.20E-04	0.9	3	2.6
12/24/2007 12:00	7.0	18.4	17.0	11.4	3.2	5.05E-05	0.8	4	3
12/24/2007 12:00	10.0	15.5	19.0	5.5	3.5	4.12E-05	1.0	3	2.9
12/24/2007 12:01	14.0	11.5	30.0	-2.5	4.0	3.88E-05	1.0	4	4
12/24/2007 12:01	17.0	8.3	26.0	-8.7	4.4	3.85E-05	1.1	3	3.2
12/24/2007 12:01	19.0	6.2	20.0	-12.8	4.7	3.59E-05	1.1	2	2.1
12/24/2007 12:02	21.0	4.2	21.0	-16.8	5.1	3.58E-05	1.0	2	2
12/24/2007 12:02	23.0	2.2	23.0	-20.8	5.5	3.53E-05	1.0	2	2
12/24/2007 12:02	24.1	1.1	14.0	-23.0	5.7	3.39E-05	1.0	1.1	1.1
12/24/2007 12:00	0.0	24.0	0.0	24.0	5.7				
12/24/2007 12:00	3.0	21.1	3.0	18.1	5.8	2.25E-04	1.0	3	2.9
12/24/2007 12:00	7.5	18.5	23.0	11.0	6.1	3.80E-05	0.6	4.5	2.6
12/24/2007 12:00	10.0	15.0	16.0	5.0	6.4	5.00E-05	1.4	2.5	3.5
12/24/2007 12:01	13.0	12.0	23.0	-1.0	6.8	3.77E-05	1.0	3	3
12/24/2007 12:01	16.0	8.8	26.0	-7.2	7.2	3.76E-05	1.1	3	3.2
12/24/2007 12:02	19.0	5.6	30.0	-13.4	7.7	3.60E-05	1.1	3	3.2
12/24/2007 12:02	21.0	3.6	22.0	-17.4	8.1	3.46E-05	1.0	2	2
12/24/2007 12:03	24.0	0.6	38.0	-23.4	8.7	3.31E-05	1.0	3	3
12/24/2007 12:00	0.0	21.0	0.0	21.0	8.7				
12/24/2007 12:00	3.0	21.0	4.0	18.0	8.8	8.72E-05	1.0	3	0
12/24/2007 12:00	7.0	17.9	19.0	10.9	9.1	4.61E-05	0.8	4	3.1
12/24/2007 12:00	10.0	14.8	20.0	4.8	9.4	4.08E-05	1.0	3	3.1
12/24/2007 12:01	13.0	11.7	23.0	-1.3	9.8	3.84E-05	1.0	3	3.1
12/24/2007 12:01	17.0	7.6	37.0	-9.4	10.4	3.52E-05	1.0	4	4.1
12/24/2007 12:02	19.0	5.5	20.0	-13.5	10.8	3.64E-05	1.1	2	2.1
12/24/2007 12:02	21.0	3.5	22.0	-17.5	11.1	3.46E-05	1.0	2	2
12/24/2007 12:03	24.0	0.5	39.0	-23.5	11.8	3.23E-05	1.0	3	3
12/24/2007 12:00	0.0	24.0	0.0	24.0	11.8				
12/24/2007 12:00	3.0	21.1	3.0	18.1	11.8	2.25E-04	1.0	3	2.9
12/24/2007 12:00	6.1	18.9	13.0	12.8	12.1	4.97E-05	0.7	3.1	2.2
12/24/2007 12:00	9.0	16.2	18.0	7.2	12.4	4.05E-05	0.9	2.9	2.7
12/24/2007 12:00	11.9	13.1	21.0	1.2	12.7	4.01E-05	1.1	2.9	3.1
12/24/2007 12:01	15.0	10.1	25.0	-4.9	13.1	3.72E-05	1.0	3.1	3
12/24/2007 12:01	18.0	6.9	27.0	-11.1	13.6	3.85E-05	1.1	3	3.2
12/24/2007 12:02	20.0	4.8	21.0	-15.2	13.9	3.57E-05	1.1	2	2.1
12/24/2007 12:02	22.0	2.9	22.0	-19.1	14.3	3.48E-05	1.0	2	1.9
12/24/2007 12:02	24.0	0.9	24.0	-23.1	14.7	3.54E-05	1.0	2	2



Hydraulic Conductivity Test - Altamont - Composite

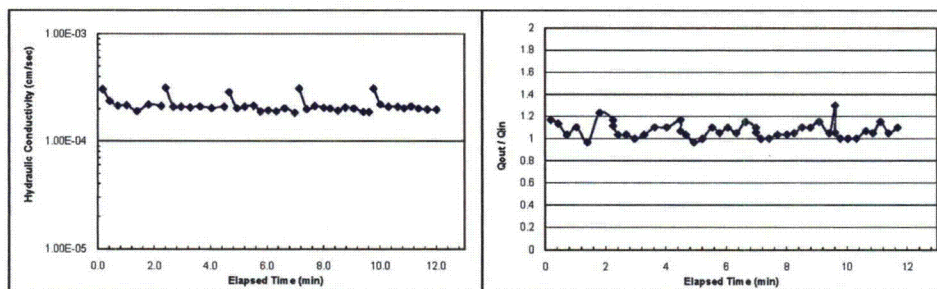
ASTM D 5084 - 00

Sample I.D.	305-mm CMP - CL - 3	Test Date :	12/29/07
Cell Pressure = 42.0 psi		Diameter of Sample, D = 30.5 cm	
Inflow Pressure = 41.0 psi		Length of Sample, L = 17.1 cm	
Outflow Pressure = 40.0 psi		Area of Sample, A = 729.7 cm ²	
Pressure Difference = 1.0 psi		Sample Volume, V = 12510.0 cm ³	
Effective Stress = 1.50 psi		a _{in} = 4 cm ²	
Hydraulic Gradient, i = 4.1		a _{out} = 4 cm ²	
Weight of wet sample = 25442.0 (g)		Sample Water Content = 15.8 (%)	
Wet Density = 2.0 g/cm ³		Dry Density = 1.76 g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{\Delta H_1}{\Delta H_2} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	15.80

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/28/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/28/2007 12:00	3.0	20.5	11.0	17.5	0.2	3.05E-04	1.2	12	14
12/28/2007 12:00	6.0	17.1	15.0	11.1	0.4	2.37E-04	1.1	12	13.6
12/28/2007 12:00	9.0	14.0	17.0	5.0	0.7	2.15E-04	1.0	12	12.4
12/28/2007 12:01	12.0	10.7	19.0	-1.3	1.0	2.16E-04	1.1	12	13.2
12/28/2007 12:01	15.0	7.8	22.0	-7.2	1.4	1.91E-04	1.0	12	11.6
12/28/2007 12:01	18.0	4.1	24.0	-13.9	1.8	2.20E-04	1.2	12	14.8
12/28/2007 12:02	21.0	0.6	27.0	-20.4	2.3	2.13E-04	1.2	12	14
12/28/2007 12:00	0.0	24.0	0.0	24.0	2.3				
12/28/2007 12:00	3.0	20.9	10.0	17.9	2.4	3.14E-04	1.0	12	12.4
12/28/2007 12:00	6.0	17.8	16.0	11.8	2.7	2.10E-04	1.0	12	12.4
12/28/2007 12:00	9.0	14.8	17.0	5.8	3.0	2.10E-04	1.0	12	12
12/28/2007 12:01	12.0	11.7	19.0	-0.3	3.3	2.07E-04	1.0	12	12.4
12/28/2007 12:01	15.0	8.4	21.0	-6.6	3.6	2.11E-04	1.1	12	13.2
12/28/2007 12:01	18.0	5.1	24.0	-12.9	4.0	2.04E-04	1.1	12	13.2
12/28/2007 12:02	21.0	1.6	27.0	-19.4	4.5	2.09E-04	1.2	12	14
12/28/2007 12:00	0.0	24.0	0.0	24.0	4.5				
12/28/2007 12:00	3.0	20.9	11.0	17.9	4.7	2.96E-04	1.0	12	12.4
12/28/2007 12:00	6.0	18.0	16.0	12.0	4.9	2.03E-04	1.0	12	11.6
12/28/2007 12:00	9.0	15.0	17.0	6.0	5.2	2.09E-04	1.0	12	12
12/28/2007 12:01	12.0	11.7	19.0	-0.3	5.5	2.13E-04	1.1	12	13.2
12/28/2007 12:01	14.0	9.6	15.0	-4.4	5.8	1.89E-04	1.1	8	8.4
12/28/2007 12:01	16.0	7.4	16.0	-8.6	6.0	1.93E-04	1.1	8	8.8
12/28/2007 12:01	18.0	5.3	17.0	-12.7	6.3	1.90E-04	1.1	8	8.4
12/28/2007 12:02	20.0	3.0	18.0	-17.0	6.6	2.02E-04	1.2	8	9.2
12/28/2007 12:02	22.0	0.8	21.0	-21.2	7.0	1.84E-04	1.1	8	8.8
12/28/2007 12:00	0.0	24.0	0.0	24.0	7.0				
12/28/2007 12:00	3.0	21.0	10.0	18.0	7.1	3.09E-04	1.0	12	12
12/28/2007 12:00	6.0	18.2	16.0	12.2	7.4	1.99E-04	1.0	12	11.2
12/28/2007 12:00	9.0	15.1	17.0	6.1	7.7	2.12E-04	1.0	12	12.4
12/28/2007 12:01	12.0	12.0	19.0	0.0	8.0	2.06E-04	1.0	12	12.4
12/28/2007 12:01	14.0	9.9	14.0	-4.1	8.3	2.02E-04	1.1	8	8.4
12/28/2007 12:01	16.0	7.7	16.0	-8.3	8.5	1.92E-04	1.1	8	8.8
12/28/2007 12:01	18.0	5.5	16.0	-12.5	8.8	2.06E-04	1.1	8	8.8
12/28/2007 12:02	20.0	3.2	18.0	-16.8	9.1	2.02E-04	1.2	8	9.2
12/28/2007 12:02	22.0	1.1	20.0	-20.9	9.4	1.87E-04	1.1	8	8.4
12/28/2007 12:02	23.0	-0.2	12.0	-23.2	9.6	1.87E-04	1.3	4	5.2
12/28/2007 12:00	0.0	24.0	0.0	24.0	9.6				
12/28/2007 12:00	3.0	21.0	10.0	18.0	9.8	3.09E-04	1.0	12	12
12/28/2007 12:00	6.0	18.0	15.0	12.0	10.0	2.20E-04	1.0	12	12
12/28/2007 12:00	9.0	15.0	17.0	6.0	10.3	2.09E-04	1.0	12	12
12/28/2007 12:01	12.0	11.8	19.0	-0.2	10.6	2.10E-04	1.1	12	12.8
12/28/2007 12:01	14.0	9.7	14.0	-4.3	10.9	2.02E-04	1.1	8	8.4
12/28/2007 12:01	16.0	7.4	15.0	-8.6	11.1	2.11E-04	1.2	8	9.2
12/28/2007 12:01	18.0	5.3	16.0	-12.7	11.4	2.02E-04	1.1	8	8.4
12/28/2007 12:02	20.0	3.1	18.0	-16.9	11.7	1.98E-04	1.1	8	8.8
12/28/2007 12:02	22.0	0.8	20.0	-21.2	12.0	1.97E-04	1.2	8	9.2



Hydraulic Conductivity Test - Altamont - Composite

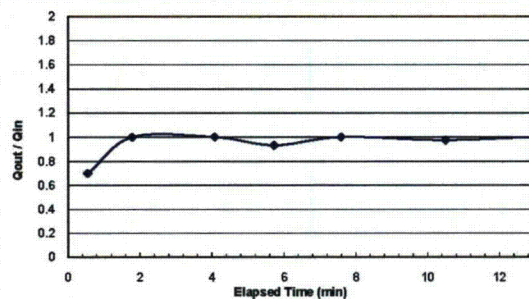
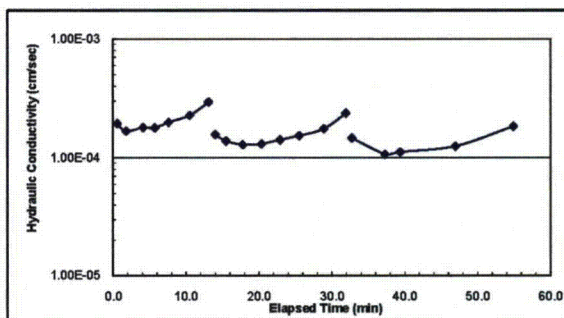
ASTM D 5084 - 00

Sample I.D.	150-mm CMP - CL - 3	Test Date :	2/20/08
Cell Pressure =	42.3 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	7.4 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	0.5 psi	Sample Volume, V =	1343.7 cm ³
Effective Stress =	1.53 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	4.3	a _{out} =	5 cm ²
Weight of wet sample =	2313.3 (g)	Sample Water Content =	19.9 (%)
Wet Density =	1.7 g/cm ³	Dry Density =	1.44 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
NA	NA	NA	NA	19.86

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/20/2008 12:00	0.0	24.0	0.0	24.0	0.0				
2/20/2008 12:00	2.0	22.6	33.0	20.6	0.6	1.93E-04	0.7	10	7
2/20/2008 12:01	5.0	19.6	74.0	14.6	1.8	1.66E-04	1.0	15	15
2/20/2008 12:04	10.0	14.6	138.0	4.6	4.1	1.78E-04	1.0	25	25
2/20/2008 12:05	13.0	11.8	99.0	-1.2	5.7	1.78E-04	0.9	15	14
2/20/2008 12:07	16.0	8.8	112.0	-7.2	7.6	1.98E-04	1.0	15	15
2/20/2008 12:10	20.0	4.9	174.0	-15.1	10.5	2.26E-04	1.0	20	19.5
2/20/2008 12:13	23.0	1.9	155.0	-21.1	13.1	2.93E-04	1.0	15	15
2/20/2008 12:00	0.0	24.0	0.0	24.0	13.1				
2/20/2008 12:00	2.5	21.9	56.0	19.4	14.0	1.56E-04	0.8	12.5	10.5
2/20/2008 12:02	5.3	19.0	87.0	13.7	15.5	1.37E-04	1.0	14	14.5
2/20/2008 12:04	9.0	15.4	138.0	6.4	17.8	1.28E-04	1.0	18.5	18
2/20/2008 12:07	12.5	12.0	155.0	-0.5	20.4	1.30E-04	1.0	17.5	17
2/20/2008 12:09	15.5	9.0	153.0	-6.5	22.9	1.41E-04	1.0	15	15
2/20/2008 12:12	18.2	6.4	157.0	-11.8	25.5	1.52E-04	1.0	13.5	13
2/20/2008 12:15	21.2	3.5	204.0	-17.7	28.9	1.75E-04	1.0	15	14.5
2/20/2008 12:18	23.5	1.0	180.0	-22.5	31.9	2.37E-04	1.1	11.5	12.5
2/20/2008 12:00	0.0	24.0	0.0	24.0	31.9				
2/20/2008 12:00	2.0	22.2	49.0	20.2	32.7	1.46E-04	0.9	10	9
2/20/2008 12:05	8.5	15.7	273.0	7.2	37.3	1.07E-04	1.0	32.5	32.5
2/20/2008 12:07	11.0	13.2	125.0	2.2	39.4	1.11E-04	1.0	12.5	12.5
2/20/2008 12:15	18.3	5.9	458.0	-12.4	47.0	1.24E-04	1.0	36.5	36.5
2/20/2008 12:23	24.0	0.5	476.0	-23.5	54.9	1.82E-04	0.9	28.5	27



Hydraulic Conductivity Test - Altamont - Composite

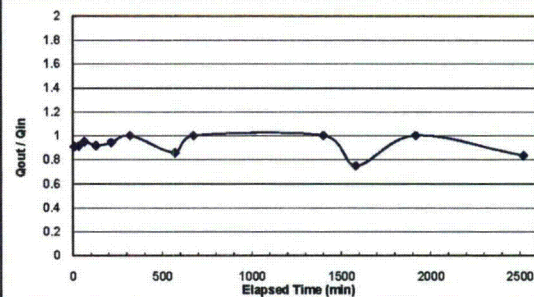
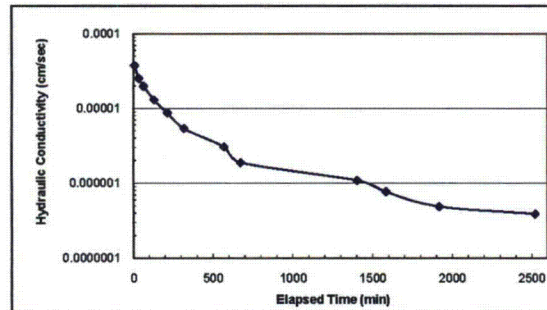
ASTM D 5084 - 00

Sample I.D.	75-mm CMP - CL - 3	Test Date :	3/11/08
Cell Pressure =	42.4 psi	Diameter of Sample, D =	5.6 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	2.8 cm
Outflow Pressure =	40.8 psi	Area of Sample, A =	24.6 cm ²
Pressure Difference =	0.2 psi	Sample Volume, V =	69.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	5.0	a _{out} =	5 cm ²
Weight of wet sample =	318.3 (g)	Sample Water Content =	20.6 (%)
Wet Density =	4.6 g/cm ³	Dry Density =	3.83 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
NA	NA	NA	NA	20.61

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/11/2008 12:00	0.0	24.0	0.0	24.0	0.0				
3/11/2008 12:07	1.1	23.0	432.0	21.9	7.2	3.73E-05	0.9	5.5	5
3/11/2008 12:32	3.4	20.9	1488.0	17.5	32.0	2.49E-05	0.9	11.5	10.5
3/11/2008 13:03	5.4	19.0	1885.0	13.6	63.4	1.99E-05	0.9	10	9.5
3/11/2008 14:09	7.8	16.8	3972.0	9.0	129.6	1.30E-05	0.9	12	11
3/11/2008 15:33	9.5	15.2	5058.0	5.7	213.9	8.68E-06	0.9	8.5	8
3/11/2008 17:18	10.6	14.1	6284.0	3.5	318.7	5.34E-06	1.0	5.5	5.5
3/11/2008 21:29	12.0	12.9	15066.0	0.9	569.7	3.02E-06	0.9	7	6
3/11/2008 23:13	12.3	12.6	6228.0	0.3	673.5	1.87E-06	1.0	1.5	1.5
3/12/2008 11:21	13.4	11.5	43657.0	-1.9	1401.2	1.08E-06	1.0	5.5	5.5
3/12/2008 14:22	13.6	11.4	10873.0	-2.3	1582.4	7.63E-07	0.8	1	0.75
3/12/2008 19:57	13.8	11.2	20135.0	-2.7	1918.0	4.86E-07	1.0	1	1
3/13/2008 6:00	14.1	10.9	36133.0	-3.2	2520.2	3.88E-07	0.8	1.5	1.25



Hydraulic Conductivity Test - Apple Valley - Clay Cover

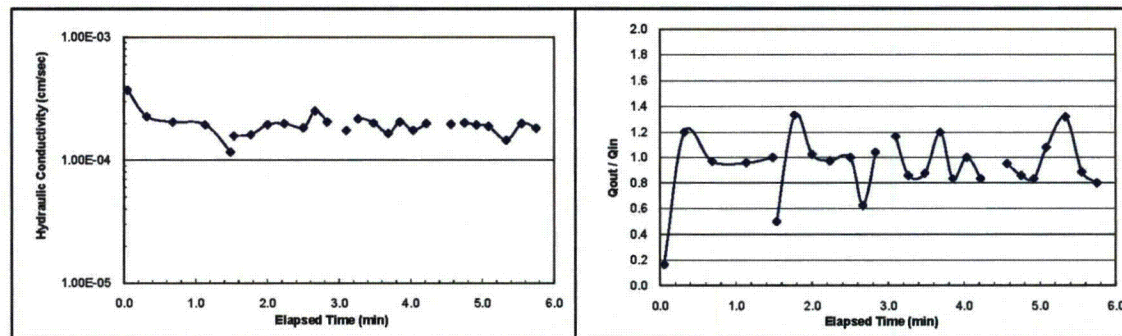
ASTM D 5084 - 00

Sample I.D.	305-mm AV - B - 1 - C	Test Date :	8/21/07
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	17.8 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	12973.3 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	9.5	a _{out} =	5 cm ²
Weight of wet sample =	26172.3 (g)	Sample Water Content =	19.8 (%)
Wet Density =	2.0 g/cm ³	Dry Density =	1.68 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	19.82

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/21/2007 12:00	0.0	24.0	0.0	24.0	0.0				
8/21/2007 12:00	3.0	23.5	3.0	20.5	0.1	3.72E-04	0.2	15	2.5
8/21/2007 12:00	8.0	17.5	16.0	9.5	0.3	2.28E-04	1.2	25	30
8/21/2007 12:00	14.5	11.2	22.0	-3.3	0.7	2.06E-04	1.0	32.5	31.5
8/21/2007 12:01	21.5	4.5	27.0	-17.0	1.1	1.95E-04	1.0	35	33.5
8/21/2007 12:01	24.5	1.5	21.0	-23.0	1.5	1.17E-04	1.0	15	15
8/21/2007 12:00	0.0	24.0	0.0	24.0	1.5				
8/21/2007 12:00	3.0	22.5	3.0	22.5	1.5	1.59E-04	0.5	15	7.5
8/21/2007 12:00	7.0	18.5	14.0	15.5	1.8	1.62E-04	1.3	15	20
8/21/2007 12:00	11.0	14.4	14.0	7.4	2.0	1.96E-04	1.0	20	20.5
8/21/2007 12:00	15.0	10.5	14.0	-0.5	2.2	2.00E-04	1.0	20	19.5
8/21/2007 12:01	19.0	6.5	16.0	-8.5	2.5	1.85E-04	1.0	20	20
8/21/2007 12:01	21.5	4.0	10.0	-15.0	2.7	2.52E-04	0.6	20	12.5
8/21/2007 12:01	23.7	1.4	10.0	-20.1	2.8	2.05E-04	1.0	12.5	13
8/21/2007 12:00	0.0	24.0	0.0	0.3	2.8				
8/21/2007 12:00	3.0	22.5	4.0	22.5	2.9	-1.88E-03			
8/21/2007 12:00	6.5	19.0	12.0	16.0	3.1	1.75E-04	1.2	15	17.5
8/21/2007 12:00	10.5	16.0	10.0	9.5	3.3	2.18E-04	0.9	17.5	15
8/21/2007 12:00	13.0	12.5	13.0	2.0	3.5	2.01E-04	0.9	20	17.5
8/21/2007 12:00	16.0	9.5	12.0	-3.5	3.7	1.66E-04	1.2	12.5	15
8/21/2007 12:01	18.5	7.0	10.0	-9.0	3.8	2.06E-04	0.8	15	12.5
8/21/2007 12:01	21.5	4.5	11.0	-14.0	4.0	1.76E-04	1.0	12.5	12.5
8/21/2007 12:01	23.5	2.0	11.0	-19.5	4.2	2.00E-04	0.8	15	12.5
8/21/2007 12:00	0.0	24.0	0.0	0.5	4.2				
8/21/2007 12:00	4.0	20.8	8.0	20.8	4.4	-8.62E-04			
8/21/2007 12:00	7.5	17.0	13.0	13.0	4.6	1.97E-04	1.0	20	19
8/21/2007 12:00	10.5	14.0	11.0	6.5	4.7	2.02E-04	0.9	17.5	15
8/21/2007 12:00	13.0	11.5	10.0	1.0	4.9	1.94E-04	0.8	15	12.5
8/21/2007 12:00	15.5	8.8	10.0	-4.2	5.1	1.89E-04	1.1	12.5	13.5
8/21/2007 12:01	19.0	5.5	15.0	-10.0	5.3	1.46E-04	1.3	12.5	16.5
8/21/2007 12:01	22.0	2.4	13.0	-16.6	5.5	1.99E-04	0.9	17.5	15.5
8/21/2007 12:01	24.5	0.0	12.0	-22.0	5.8	1.83E-04	0.8	15	12



Hydraulic Conductivity Test - Apple Valley - Clay Cover

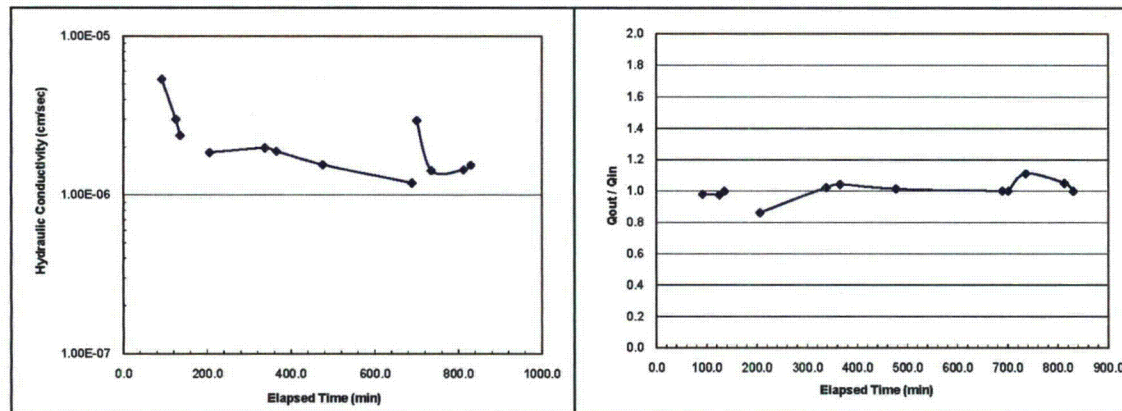
ASTM D 5084 - 00

Sample I.D.	150-mm AV - B - 1 - C	Test Date :	8/21/07
Cell Pressure =	42.7 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.7 psi	Length of Sample, L =	7.0 cm
Outflow Pressure =	40.7 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	1274.2 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	10.1	a _{out} =	5 cm ²
Weight of wet sample =	2550.0 (g)	Sample Water Content =	17.7 (%)
Wet Density =	2.0 g/cm ³	Dry Density =	1.70 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
BB	30.39	216.06	188.09	17.74

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
5/19/2008 12:00	0.0	24.0	0.0	24.0	0.0				
5/19/2008 13:32	12.7	11.6	5530.0	-1.2	92.2	5.37E-06	1.0	63.5	62.25
5/19/2008 14:04	14.8	9.5	1968.0	-5.3	125.0	3.01E-06	1.0	10.5	10.25
5/19/2008 14:15	15.3	9.0	623.0	-6.3	135.3	2.38E-06	1.0	2.5	2.5
5/19/2008 12:00	0.0	24.0	0.0	24.0	135.3				
5/19/2008 13:10	4.0	20.6	4244.0	16.6	206.1	1.86E-06	0.9	20	17.25
5/19/2008 15:22	10.5	13.9	7930.0	3.4	338.2	1.98E-06	1.0	32.5	33.25
5/19/2008 15:50	11.7	12.7	1640.0	1.1	365.6	1.89E-06	1.0	5.75	6
5/19/2008 17:41	15.3	9.0	6699.0	-6.3	477.2	1.55E-06	1.0	18.25	18.5
5/19/2008 21:14	20.0	4.3	12751.0	-15.7	689.8	1.19E-06	1.0	23.5	23.5
5/19/2008 12:00	0.0	24.0	0.0	24.0	689.8				
5/19/2008 12:11	1.0	23.0	694.0	22.0	701.3	2.96E-06	1.0	5	5
5/19/2008 12:46	2.4	21.5	2102.0	19.2	736.3	1.43E-06	1.1	6.75	7.5
5/19/2008 14:03	5.3	18.4	4636.0	13.1	813.6	1.45E-06	1.1	14.75	15.5
5/19/2008 14:21	6.0	17.7	1047.0	11.7	831.1	1.55E-06	1.0	3.5	3.5



Hydraulic Conductivity Test - Apple Valley - Clay Cover

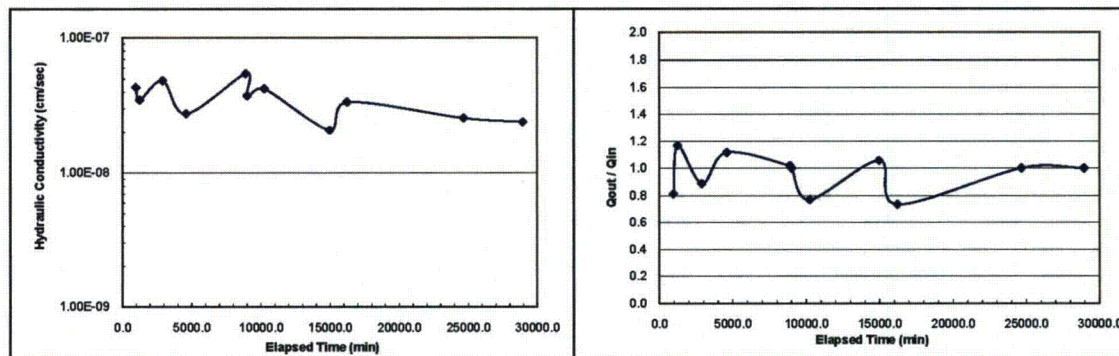
ASTM D 5084 - 00

Sample I.D.	75-mm AV - B - 1 - C	Test Date :	6/2/08
Cell Pressure =	41.8 psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	40.5 psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	38.3 cm ²
Pressure Difference =	0.5 psi	Sample Volume, V =	146.0 cm ³
Effective Stress =	1.53 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	9.5	a _{out} =	1 cm ²
Weight of wet sample =	314.4 (g)	Sample Water Content =	20.1 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.79 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
55	30.8	172	148.32	20.15

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
6/3/2008 12:54	1.0	23.4	0.0	22.4	0.0				
6/4/2008 5:03	2.6	22.1	58128.0	19.5	968.8	4.34E-08	0.8	1.6	1.3
6/4/2008 9:41	2.9	21.8	16647.0	18.9	1246.3	3.51E-08	1.2	0.3	0.35
6/5/2008 13:14	5.6	19.4	99227.0	13.8	2900.0	4.87E-08	0.9	2.7	2.4
6/6/2008 17:33	6.9	17.9	101917.0	11.0	4598.6	2.76E-08	1.1	1.3	1.45
6/9/2008 17:19	12.7	12.0	258332.0	-0.7	8904.2	5.48E-08	1.0	5.8	5.9
6/9/2008 19:23	12.8	11.9	7483.0	-0.9	9028.9	3.75E-08	1.0	0.1	0.1
6/10/2008 15:38	14.0	11.0	72886.0	-3.0	10243.7	4.24E-08	0.8	1.2	0.925
6/13/2008 22:27	15.8	9.1	283708.0	-6.7	14972.1	2.07E-08	1.1	1.8	1.9
6/14/2008 19:28	16.7	8.5	75705.0	-8.2	16233.9	3.37E-08	0.7	0.85	0.625
6/20/2008 15:58	19.9	5.3	505800.0	-14.6	24663.9	2.55E-08	1.0	3.2	3.2
6/23/2008 15:14	21.1	4.0	256548.0	-17.1	28939.7	2.38E-08	1.0	1.25	1.25



Hydraulic Conductivity Test - Apple Valley - Clay Cover

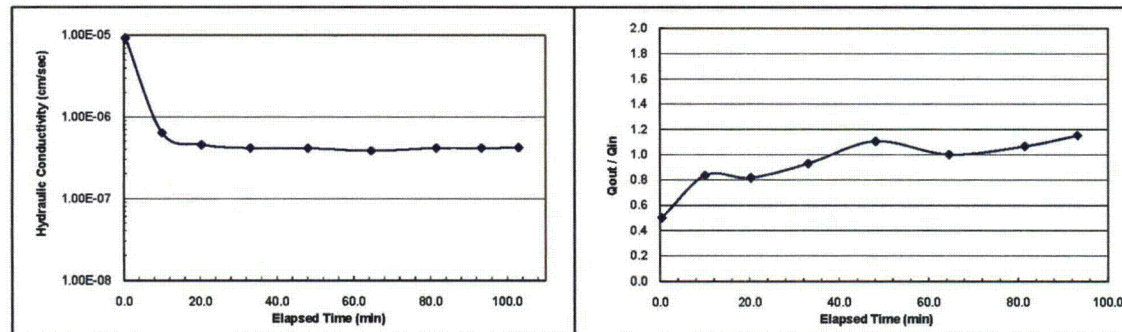
ASTM D 5084 - 00

Sample I.D.	305-mm AV - B - 4 - C	Test Date :	8/20/07
Cell Pressure =	42.7 psi	Diameter of Sample, D =	31.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.9 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	779.1 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	12368.4 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	1 cm ²
Weight of wet sample =	26149.6 (g)	Sample Water Content =	20.5 (%)
Wet Density =	2.1 g/cm ³	Dry Density =	1.75 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	20.52

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/20/2007 12:00	0.0	23.0	0.0	23.0	0.0				
8/20/2007 12:00	3.0	21.5	26.0	18.5	0.4	9.30E-06	0.5	3	1.5
8/20/2007 12:10	6.6	18.5	575.0	11.9	10.0	6.36E-07	0.8	3.6	3
8/20/2007 12:20	9.3	16.3	616.0	7.0	20.3	4.55E-07	0.8	2.7	2.2
8/20/2007 12:33	12.1	13.7	768.0	1.6	33.1	4.14E-07	0.9	2.8	2.6
8/20/2007 12:48	15.0	10.5	901.0	-4.5	48.1	4.12E-07	1.1	2.9	3.2
8/20/2007 13:04	18.0	7.5	986.0	-10.5	64.5	3.84E-07	1.0	3	3
8/20/2007 13:21	21.1	4.2	1016.0	-16.9	81.5	4.14E-07	1.1	3.1	3.3
8/20/2007 13:33	23.1	1.9	707.0	-21.2	93.2	4.14E-07	1.2	2	2.3
8/20/2007 13:42	24.7	0.0	582.0	-24.7	102.9	4.20E-07	1.2	1.6	1.9



Hydraulic Conductivity Test - Apple Valley - Clay Cover

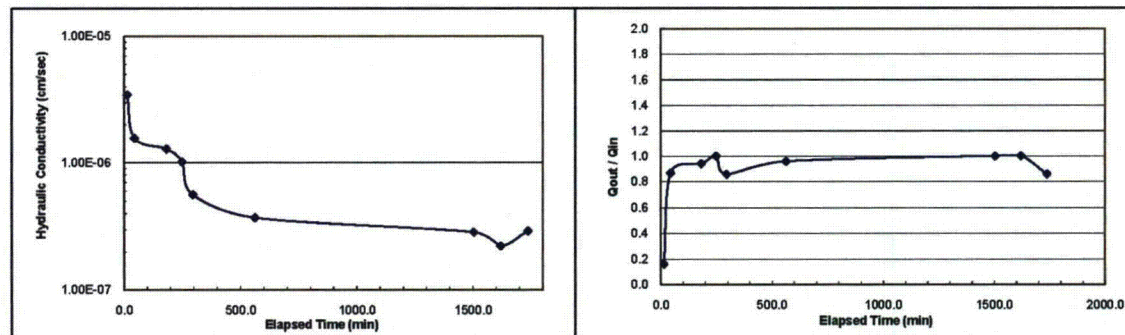
ASTM D 5084 - 00

Sample I.D.	150-mm AV - B - 4 - C	Test Date :	5/27/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.7 psi	Length of Sample, L =	7.1 cm
Outflow Pressure =	40.7 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.1 psi	Sample Volume, V =	1297.3 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	5 cm ²
Weight of wet sample =	2505.7 (g)	Sample Water Content =	22.9 (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.57 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
144	30.44	222.54	186.7	22.94

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
5/27/2008 12:00	0.0	24.0	0.0	24.0	0.0				
5/27/2008 12:13	2.5	23.6	833.0	21.1	13.9	3.47E-06	0.2	12.5	2
5/27/2008 12:44	4.0	22.3	1831.0	18.3	44.4	1.57E-06	0.9	7.5	6.5
5/27/2008 15:01	9.0	17.6	8252.0	8.6	181.9	1.29E-06	0.9	25	23.5
5/27/2008 16:07	10.7	15.9	3963.0	5.2	248.0	1.02E-06	1.0	8.5	8.5
5/27/2008 16:54	11.4	15.3	2817.0	3.9	294.9	5.63E-07	0.9	3.5	3
5/27/2008 21:22	13.8	13.0	16027.0	-0.8	562.0	3.72E-07	1.0	12	11.5
5/28/2008 13:03	19.5	7.3	56479.0	-12.2	1503.4	2.86E-07	1.0	28.5	28.5
5/28/2008 14:59	20.0	6.8	6979.0	-13.2	1619.7	2.23E-07	1.0	2.5	2.5
5/28/2008 16:56	20.7	6.2	7024.0	-14.5	1736.7	2.93E-07	0.9	3.5	3



Hydraulic Conductivity Test - Apple Valley - Clay Cover

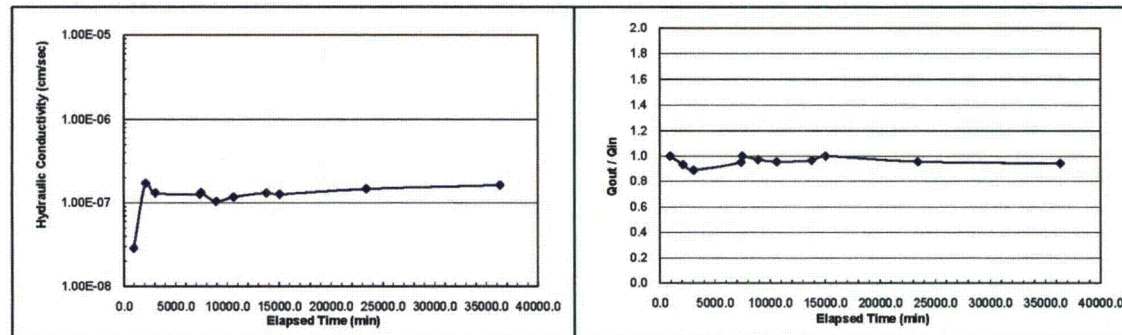
ASTM D 5084 - 00

Sample I.D.	75-mm AV - B - 4 - C	Test Date :	6/4/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	41.5 psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.9 psi	Area of Sample, A =	38.3 cm ²
Pressure Difference =	0.6 psi	Sample Volume, V =	146.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	5 cm ²
Weight of wet sample =	279.8 (g)	Sample Water Content =	22.1 (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.57 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2C	24.64	182.89	154.24	22.11

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
6/4/2008 6:13	1.7	22.9	0.0	21.2	0.0				
6/4/2008 21:50	1.9	22.7	56268.0	20.8	937.8	2.88E-08	1.0	1	1
6/5/2008 17:25	3.4	21.3	70482.0	17.9	2112.5	1.71E-07	0.9	7.5	7
6/6/2008 9:00	4.3	20.5	56065.0	16.2	3046.9	1.31E-07	0.9	4.5	4
6/9/2008 8:44	7.9	17.1	258282.0	9.2	7351.6	1.27E-07	1.0	17.875	17
6/9/2008 10:50	8.0	17.0	7571.0	9.0	7477.8	1.33E-07	1.0	0.5	0.5
6/10/2008 11:01	8.9	16.1	87032.0	7.3	8928.3	1.04E-07	1.0	4.5	4.375
6/11/2008 14:48	10.0	15.1	100040.0	5.1	10595.7	1.17E-07	1.0	5.625	5.375
6/13/2008 19:52	12.2	12.9	191045.0	0.7	13779.8	1.32E-07	1.0	11.125	10.75
6/14/2008 16:53	13.0	12.1	75664.0	-0.9	15040.8	1.26E-07	1.0	3.875	3.875
6/20/2008 12:24	18.2	7.2	502232.0	-11.0	23411.4	1.47E-07	1.0	25.875	24.75
6/29/2008 11:42	24.2	1.5	775086.0	-22.7	36329.5	1.63E-07	0.9	30.125	28.375
7/1/2008 12:40	25.2	0.5	176271.0	-24.8	39267.3	1.74E-07	1.1	5	5.25



Hydraulic Conductivity Test - Apple Valley - Store-and-Release Cover

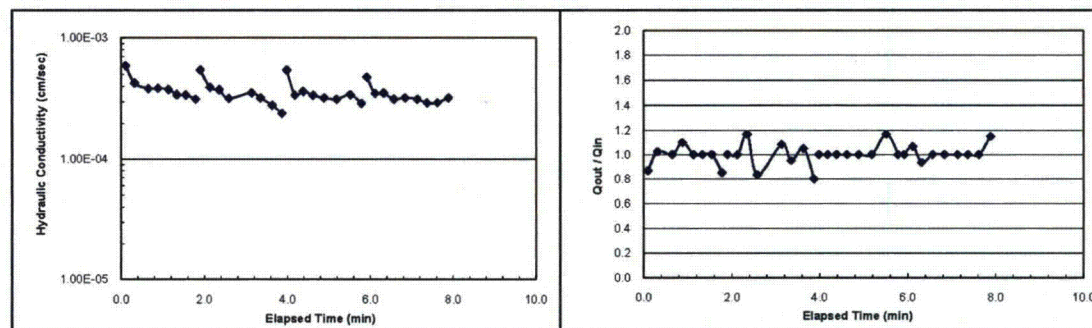
ASTM D 5084 - 00

Sample I.D.	305-mm AV - B - 5 - ALT	Test Date :	8/28/07
Cell Pressure =	42.0 psi	Diameter of Sample, D =	31.9 cm
Inflow Pressure =	41.0 psi	Length of Sample, L =	18.5 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	800.6 cm ²
Pressure Difference =	1.0 psi	Sample Volume, V =	14845.1 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	3.8	a _{out} =	5 cm ²
Weight of wet sample =	26716.6 (g)	Sample Water Content =	8.4 (%)
Wet Density =	1.8 g/cm ³	Dry Density =	1.66 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	8.41

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/28/2007 12:00	0.0	24.0	0.0	24.0	0.0				
8/28/2007 12:00	3.0	21.4	6.0	18.4	0.1	5.91E-04	0.9	15	13
8/28/2007 12:00	7.0	17.3	13.0	10.3	0.3	4.26E-04	1.0	20	20.5
8/28/2007 12:00	12.0	12.3	20.0	0.3	0.6	3.83E-04	1.0	25	25
8/28/2007 12:00	15.0	9.0	14.0	-6.0	0.9	3.86E-04	1.1	15	16.5
8/28/2007 12:01	18.0	6.0	15.0	-12.0	1.1	3.78E-04	1.0	15	15
8/28/2007 12:01	20.0	4.0	12.0	-16.0	1.3	3.43E-04	1.0	10	10
8/28/2007 12:01	22.0	2.0	13.0	-20.0	1.5	3.41E-04	1.0	10	10
8/28/2007 12:01	24.0	0.3	14.0	-23.7	1.8	3.16E-04	0.9	10	8.5
8/28/2007 12:00	0.0	24.0	0.0	24.0	1.8				
8/28/2007 12:00	3.0	21.0	7.0	18.0	1.9	5.44E-04	1.0	15	15
8/28/2007 12:00	7.0	17.0	14.0	10.0	2.1	3.93E-04	1.0	20	20
8/28/2007 12:00	10.0	13.5	13.0	3.5	2.3	3.76E-04	1.2	15	17.5
8/28/2007 12:00	13.0	11.0	14.0	-2.0	2.6	3.20E-04	0.8	15	12.5
8/28/2007 12:01	19.0	4.5	33.0	-14.5	3.1	3.54E-04	1.1	30	32.5
8/28/2007 12:01	21.0	2.6	13.0	-18.4	3.3	3.23E-04	1.0	10	9.5
8/28/2007 12:01	23.0	0.5	17.0	-22.5	3.6	2.80E-04	1.1	10	10.5
8/28/2007 12:02	24.5	-0.7	14.0	-25.2	3.9	2.40E-04	0.8	7.5	6
8/28/2007 12:00	0.0	24.0	0.0	24.0	3.9				
8/28/2007 12:00	3.0	21.0	7.0	18.0	4.0	5.44E-04	1.0	15	15
8/28/2007 12:00	6.0	18.0	12.0	12.0	4.2	3.39E-04	1.0	15	15
8/28/2007 12:00	9.0	15.0	12.0	6.0	4.4	3.65E-04	1.0	15	15
8/28/2007 12:00	12.0	12.0	14.0	0.0	4.6	3.39E-04	1.0	15	15
8/28/2007 12:01	15.0	9.0	16.0	-6.0	4.9	3.23E-04	1.0	15	15
8/28/2007 12:01	18.0	6.0	18.0	-12.0	5.2	3.15E-04	1.0	15	15
8/28/2007 12:01	21.0	2.5	20.0	-18.5	5.5	3.42E-04	1.2	15	17.5
8/28/2007 12:01	23.0	0.5	16.0	-22.5	5.8	2.91E-04	1.0	10	10
8/28/2007 12:00	0.0	24.0	0.0	24.0	5.8				
8/28/2007 12:00	3.0	21.0	8.0	18.0	5.9	4.76E-04	1.0	15	15
8/28/2007 12:00	6.0	17.8	12.0	11.8	6.1	3.51E-04	1.1	15	16
8/28/2007 12:00	9.0	15.0	12.0	6.0	6.3	3.53E-04	0.9	15	14
8/28/2007 12:00	12.0	12.0	15.0	0.0	6.6	3.16E-04	1.0	15	15
8/28/2007 12:01	15.0	9.0	16.0	-6.0	6.8	3.23E-04	1.0	15	15
8/28/2007 12:01	18.0	6.0	18.0	-12.0	7.1	3.15E-04	1.0	15	15
8/28/2007 12:01	20.0	4.0	14.0	-16.0	7.4	2.94E-04	1.0	10	10
8/28/2007 12:01	22.0	2.0	15.0	-20.0	7.6	2.95E-04	1.0	10	10
8/28/2007 12:02	24.0	-0.3	16.0	-24.3	7.9	3.23E-04	1.2	10	11.5



Hydraulic Conductivity Test - Boardman - Thin Store-and-Release

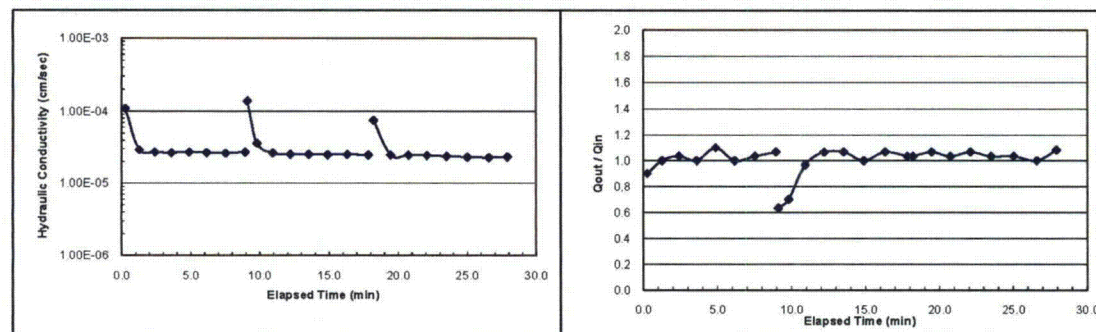
ASTM D 5084 - 00

Sample I.D.	305-mm 4' Cover-Upper Slope-Surface	Test Date :	2/4/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.9 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11583.3 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	5 cm ²
Weight of wet sample =	21241.6 (g)	Sample Water Content =	29.6% (%)
Wet Density =	1.8 g/cm ³	Dry Density =	1.83 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
A3	50.42	418.47	334.31	29.65%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
2/4/08 12:00 AM	0.0	24.4	0.0	24.4	0.0				
2/4/08 12:00 AM	3.0	21.7	14.9	18.7	0.2	1.09E-04	0.9	15	13.5
2/4/08 12:01 AM	6.0	18.7	60.6	12.7	1.3	2.92E-05	1.0	15	15
2/4/08 12:02 AM	9.0	15.6	68.7	6.6	2.4	2.71E-05	1.0	15	15.5
2/4/08 12:03 AM	12.0	12.6	71.8	0.6	3.6	2.64E-05	1.0	15	15
2/4/08 12:04 AM	15.0	9.3	76.4	-5.7	4.9	2.70E-05	1.1	15	16.5
2/4/08 12:06 AM	18.0	6.3	76.7	-11.7	6.2	2.66E-05	1.0	15	15
2/4/08 12:07 AM	21.0	3.2	82.4	-17.8	7.5	2.61E-05	1.0	15	15.5
2/4/08 12:08 AM	24.0	0.0	84.8	-24.0	8.9	2.69E-05	1.1	15	16
2/4/08 12:00 AM	0.0	24.5	0.0	24.5	8.9				
2/4/08 12:00 AM	3.0	22.6	10.1	19.6	9.1	1.39E-04	0.6	15	9.5
2/4/08 12:00 AM	6.0	20.5	41.5	14.5	9.8	3.60E-05	0.7	15	10.5
2/4/08 12:02 AM	9.0	17.6	68.0	8.6	10.9	2.62E-05	1.0	15	14.5
2/4/08 12:03 AM	12.0	14.4	76.6	2.4	12.2	2.53E-05	1.1	15	16
2/4/08 12:04 AM	15.0	11.2	79.5	-3.8	13.5	2.52E-05	1.1	15	16
2/4/08 12:05 AM	18.0	8.2	81.1	-9.8	14.9	2.48E-05	1.0	15	15
2/4/08 12:07 AM	21.0	5.0	86.5	-16.0	16.3	2.50E-05	1.1	15	16
2/4/08 12:08 AM	24.0	1.9	90.5	-22.1	17.8	2.45E-05	1.0	15	15.5
2/4/08 12:00 AM	0.0	24.4	0.0	24.4	17.8				
2/4/08 12:00 AM	3.0	21.3	23.3	18.3	18.2	7.50E-05	1.0	15	15.5
2/4/08 12:01 AM	6.0	18.1	74.6	12.1	19.5	2.46E-05	1.1	15	16
2/4/08 12:02 AM	9.0	15.0	76.3	6.0	20.7	2.45E-05	1.0	15	15.5
2/4/08 12:04 AM	12.0	11.8	80.9	-0.2	22.1	2.43E-05	1.1	15	16
2/4/08 12:05 AM	15.0	8.7	85.1	-6.3	23.5	2.36E-05	1.0	15	15.5
2/4/08 12:07 AM	18.0	5.6	90.4	-12.4	25.0	2.30E-05	1.0	15	15.5
2/4/08 12:08 AM	21.0	2.6	94.3	-18.4	26.6	2.26E-05	1.0	15	15
2/4/08 12:10 AM	23.4	0.0	79.7	-23.4	27.9	2.31E-05	1.1	12	13



Hydraulic Conductivity Test - Boardman - Thin Store-and-Release

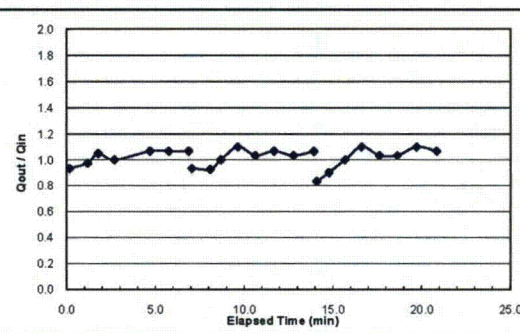
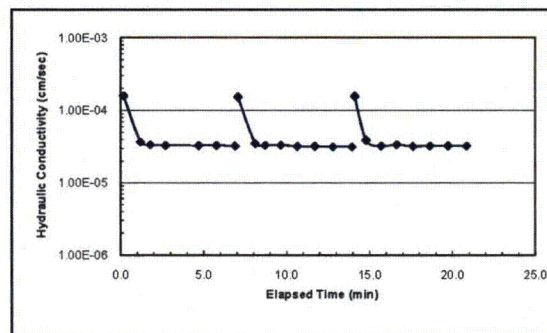
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 4'-Upper Slope- 2'-3'		Test Date :	2/20/08
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2 cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50	psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1		a _{out} =	5 cm ²
Weight of wet sample =	22000.0	(g)	Sample Water Content =	24.1% (%)
Wet Density =	2.0	g/cm ³	Dry Density =	1.97 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
874	35.34	341.48	282.11	24.06%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
2/20/08 12:00 AM	0.0	24.8	0.0	24.8	0.0				
2/20/08 12:00 AM	3.0	22.0	10.0	19.0	0.2	1.59E-04	0.9	15	14
2/20/08 12:01 AM	7.0	18.1	60.8	11.1	1.2	3.69E-05	1.0	20	19.5
2/20/08 12:01 AM	9.0	16.0	35.7	7.0	1.8	3.38E-05	1.1	10	10.5
2/20/08 12:02 AM	12.0	13.0	54.9	1.0	2.7	3.30E-05	1.0	15	15
2/20/08 12:04 AM	18.0	6.6	120.5	-11.4	4.7	3.29E-05	1.1	30	32
2/20/08 12:05 AM	21.0	3.4	63.7	-17.6	5.8	3.29E-05	1.1	15	16
2/20/08 12:06 AM	24.0	0.2	67.5	-23.8	6.9	3.24E-05	1.1	15	16
2/20/08 12:00 AM	0.0	24.8	0.0	24.8	6.9				
2/20/08 12:00 AM	3.0	22.0	10.4	19.0	7.1	1.53E-04	0.9	15	14
2/20/08 12:01 AM	7.0	18.3	62.5	11.3	8.1	3.50E-05	0.9	20	18.5
2/20/08 12:01 AM	9.0	16.3	35.6	7.3	8.7	3.29E-05	1.0	10	10
2/20/08 12:02 AM	12.0	13.0	57.1	1.0	9.6	3.33E-05	1.1	15	16.5
2/20/08 12:03 AM	15.0	9.9	59.7	-5.1	10.6	3.20E-05	1.0	15	15.5
2/20/08 12:04 AM	18.0	6.7	63.0	-11.3	11.7	3.20E-05	1.1	15	16
2/20/08 12:05 AM	21.0	3.6	65.5	-17.4	12.8	3.15E-05	1.0	15	15.5
2/20/08 12:07 AM	24.0	0.4	69.2	-23.6	13.9	3.16E-05	1.1	15	16
2/20/08 12:00 AM	0.0	24.9	0.0	24.9	13.9				
2/20/08 12:00 AM	3.0	22.4	9.6	19.4	14.1	1.56E-04	0.8	15	12.5
2/20/08 12:00 AM	6.0	19.7	41.4	13.7	14.8	3.88E-05	0.9	15	13.5
2/20/08 12:01 AM	9.0	16.7	54.0	7.7	15.7	3.23E-05	1.0	15	15
2/20/08 12:02 AM	12.0	13.4	56.4	1.4	16.6	3.36E-05	1.1	15	16.5
2/20/08 12:03 AM	15.0	10.3	59.4	-4.7	17.6	3.21E-05	1.0	15	15.5
2/20/08 12:04 AM	18.0	7.2	61.2	-10.8	18.6	3.23E-05	1.0	15	15.5
2/20/08 12:05 AM	21.0	3.9	65.6	-17.1	19.7	3.24E-05	1.1	15	16.5
2/20/08 12:06 AM	24.0	0.7	67.7	-23.3	20.9	3.22E-05	1.1	15	16



Hydraulic Conductivity Test - Boardman - Thin Store-and-Release

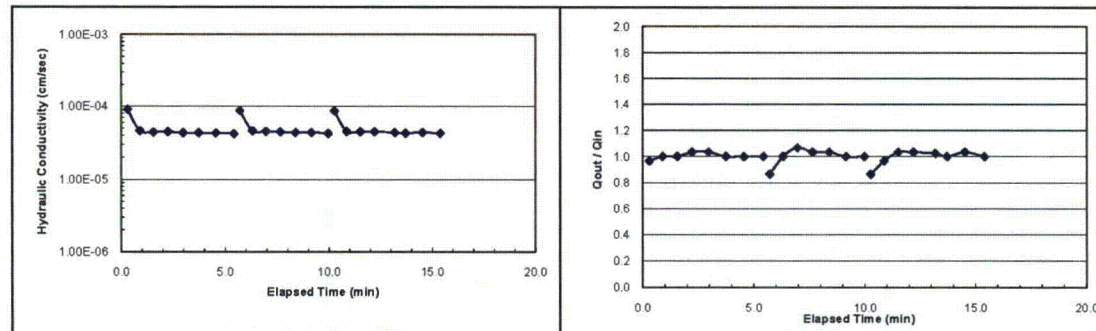
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 4' Cover- Lower Slope-Surface	Test Date :	2/6/08
Cell Pressure =	42.4 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.8 psi	Length of Sample, L =	11.4 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	1.8 psi	Sample Volume, V =	8340.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	16828.2 (g)	Sample Water Content =	26.2% (%)
Wet Density =	2.0 g/cm ³	Dry Density =	2.01 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
874	35.08	330.07	268.89	26.17%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/6/08 12:00 AM	0.0	24.7	0.0	24.7	0.0				
2/6/08 12:00 AM	3.0	21.8	17.2	18.8	0.3	9.05E-05	1.0	15	14.5
2/6/08 12:00 AM	6.0	18.8	35.8	12.8	0.9	4.61E-05	1.0	15	15
2/6/08 12:01 AM	9.0	15.8	39.2	6.8	1.5	4.40E-05	1.0	15	15
2/6/08 12:02 AM	12.0	12.7	41.1	0.7	2.2	4.46E-05	1.0	15	15.5
2/6/08 12:02 AM	15.0	9.6	44.5	-5.4	3.0	4.32E-05	1.0	15	15.5
2/6/08 12:03 AM	18.0	6.6	46.0	-11.4	3.7	4.32E-05	1.0	15	15
2/6/08 12:04 AM	21.0	3.6	48.9	-17.4	4.5	4.28E-05	1.0	15	15
2/6/08 12:05 AM	24.0	0.6	52.8	-23.4	5.4	4.19E-05	1.0	15	15
2/6/08 12:00 AM	0.0	24.6	0.0	24.6	5.4				
2/6/08 12:00 AM	3.0	22.0	17.0	19.0	5.7	8.68E-05	0.9	15	13
2/6/08 12:00 AM	6.0	19.0	35.8	13.0	6.3	4.61E-05	1.0	15	15
2/6/08 12:01 AM	9.0	15.8	39.6	6.8	7.0	4.50E-05	1.1	15	16
2/6/08 12:02 AM	12.0	12.7	41.3	0.7	7.7	4.44E-05	1.0	15	15.5
2/6/08 12:02 AM	15.0	9.6	44.2	-5.4	8.4	4.35E-05	1.0	15	15.5
2/6/08 12:03 AM	18.0	6.6	45.6	-11.4	9.1	4.36E-05	1.0	15	15
2/6/08 12:04 AM	21.0	3.6	49.6	-17.4	10.0	4.23E-05	1.0	15	15
2/6/08 12:00 AM	0.0	24.5	0.0	24.5	10.0				
2/6/08 12:00 AM	3.0	21.9	17.2	18.9	10.3	8.59E-05	0.9	15	13
2/6/08 12:00 AM	6.0	19.0	35.8	13.0	10.9	4.53E-05	1.0	15	14.5
2/6/08 12:01 AM	9.0	15.9	39.2	6.9	11.5	4.47E-05	1.0	15	15.5
2/6/08 12:02 AM	12.0	12.8	41.1	0.8	12.2	4.46E-05	1.0	15	15.5
2/6/08 12:03 AM	16.0	8.7	59.2	-7.3	13.2	4.35E-05	1.0	20	20.5
2/6/08 12:03 AM	18.0	6.7	31.3	-11.3	13.7	4.27E-05	1.0	10	10
2/6/08 12:04 AM	21.0	3.6	48.9	-17.4	14.5	4.35E-05	1.0	15	15.5
2/6/08 12:05 AM	24.0	0.6	52.3	-23.4	15.4	4.23E-05	1.0	15	15



Hydraulic Conductivity Test - Boardman - Composite Cover

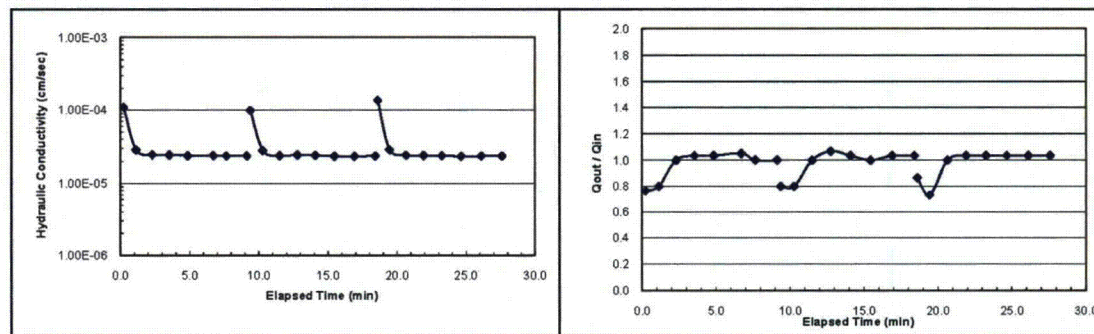
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- Q3-Upper	Test Date :	3/7/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	21550.0 (g)	Sample Water Content =	25.9% (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.93 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
Y	30.96	215.75	177.69	25.94%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
3/7/08 12:00 AM	0.0	24.7	0.0	24.7	0.0				
3/7/08 12:00 AM	3.0	22.4	13.3	19.4	0.2	1.09E-04	0.8	15	11.5
3/7/08 12:01 AM	6.0	20.0	53.1	14.0	1.1	2.86E-05	0.8	15	12
3/7/08 12:02 AM	9.0	17.0	70.7	8.0	2.3	2.47E-05	1.0	15	15
3/7/08 12:03 AM	12.0	13.9	75.0	1.9	3.5	2.44E-05	1.0	15	15.5
3/7/08 12:04 AM	15.0	10.8	79.1	-4.2	4.9	2.40E-05	1.0	15	15.5
3/7/08 12:06 AM	19.0	6.6	111.1	-12.4	6.7	2.40E-05	1.1	20	21
3/7/08 12:07 AM	21.0	4.6	57.0	-16.4	7.7	2.37E-05	1.0	10	10
3/7/08 12:09 AM	24.0	1.6	88.3	-22.4	9.1	2.38E-05	1.0	15	15
3/7/08 12:00 AM	0.0	24.7	0.0	24.7	9.1				
3/7/08 12:00 AM	3.0	22.3	14.9	19.3	9.4	9.94E-05	0.8	15	12
3/7/08 12:01 AM	6.0	19.9	54.4	13.9	10.3	2.80E-05	0.8	15	12
3/7/08 12:02 AM	9.0	16.9	72.7	7.9	11.5	2.40E-05	1.0	15	15
3/7/08 12:03 AM	12.0	13.7	76.6	1.7	12.8	2.43E-05	1.1	15	16
3/7/08 12:04 AM	15.0	10.6	78.6	-4.4	14.1	2.42E-05	1.0	15	15.5
3/7/08 12:06 AM	18.0	7.6	82.4	-10.4	15.5	2.36E-05	1.0	15	15
3/7/08 12:07 AM	21.0	4.5	87.5	-16.5	16.9	2.34E-05	1.0	15	15.5
3/7/08 12:09 AM	24.0	1.4	90.1	-22.6	18.4	2.37E-05	1.0	15	15.5
3/7/08 12:00 AM	0.0	24.6	0.0	24.6	18.4				
3/7/08 12:00 AM	3.0	22.0	11.2	19.0	18.6	1.37E-04	0.9	15	13
3/7/08 12:01 AM	6.0	19.8	51.1	13.8	19.4	2.87E-05	0.7	15	11
3/7/08 12:02 AM	9.0	16.8	71.9	7.8	20.6	2.43E-05	1.0	15	15
3/7/08 12:03 AM	12.0	13.7	76.1	1.7	21.9	2.41E-05	1.0	15	15.5
3/7/08 12:04 AM	15.0	10.6	79.9	-4.4	23.2	2.38E-05	1.0	15	15.5
3/7/08 12:06 AM	18.0	7.5	84.2	-10.5	24.7	2.34E-05	1.0	15	15.5
3/7/08 12:07 AM	21.0	4.4	86.6	-16.6	26.1	2.37E-05	1.0	15	15.5
3/7/08 12:09 AM	24.0	1.3	90.4	-22.7	27.6	2.36E-05	1.0	15	15.5



Hydraulic Conductivity Test - Boardman - Composite Cover

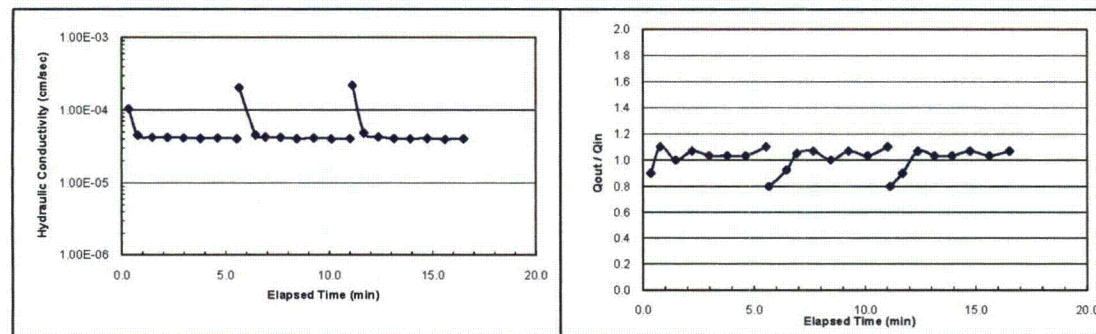
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- Q3-Lower	Test Date :	2/8/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	22044.5 (g)	Sample Water Content =	24.1% (%)
Wet Density =	2.0 g/cm ³	Dry Density =	1.98 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
4	50.16	357.96	298.12	24.13%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/8/08 12:00 AM	0.0	24.6	0.0	24.6	0.0				
2/8/08 12:00 AM	4.0	21.0	20.2	17.0	0.3	1.03E-04	0.9	20	18
2/8/08 12:00 AM	6.0	18.8	26.3	12.8	0.8	4.54E-05	1.1	10	11
2/8/08 12:01 AM	9.0	15.8	41.7	6.8	1.5	4.20E-05	1.0	15	15
2/8/08 12:02 AM	12.0	12.6	44.1	0.6	2.2	4.25E-05	1.1	15	16
2/8/08 12:02 AM	15.0	9.5	46.3	-5.5	3.0	4.13E-05	1.0	15	15.5
2/8/08 12:03 AM	18.0	6.4	48.7	-11.6	3.8	4.09E-05	1.0	15	15.5
2/8/08 12:04 AM	21.0	3.3	49.9	-17.7	4.6	4.14E-05	1.0	15	15.5
2/8/08 12:05 AM	24.0	0.0	55.3	-24.0	5.5	4.02E-05	1.1	15	16.5
2/8/08 12:00 AM	0.0	24.7	0.0	24.7	5.5				
2/8/08 12:00 AM	3.0	22.3	7.2	19.3	5.7	2.04E-04	0.8	15	12
2/8/08 12:00 AM	7.0	18.6	47.9	11.6	6.5	4.55E-05	0.9	20	18.5
2/8/08 12:01 AM	9.0	16.5	28.1	7.5	6.9	4.27E-05	1.1	10	10.5
2/8/08 12:02 AM	12.0	13.3	44.5	1.3	7.7	4.20E-05	1.1	15	16
2/8/08 12:02 AM	15.0	10.3	46.5	-4.7	8.4	4.03E-05	1.0	15	15
2/8/08 12:03 AM	18.0	7.1	48.8	-10.9	9.3	4.12E-05	1.1	15	16
2/8/08 12:04 AM	21.0	4.0	51.1	-17.0	10.1	4.03E-05	1.0	15	15.5
2/8/08 12:05 AM	24.0	0.7	54.6	-23.3	11.0	4.06E-05	1.1	15	16.5
2/8/08 12:00 AM	0.0	24.7	0.0	24.7	11.0				
2/8/08 12:00 AM	3.0	22.3	6.7	19.3	11.1	2.21E-04	0.8	15	12
2/8/08 12:00 AM	6.0	19.6	33.0	13.6	11.7	4.86E-05	0.9	15	13.5
2/8/08 12:01 AM	9.0	16.4	42.0	7.4	12.4	4.30E-05	1.1	15	16
2/8/08 12:02 AM	12.0	13.3	45.2	1.3	13.1	4.07E-05	1.0	15	15.5
2/8/08 12:02 AM	15.0	10.2	47.3	-4.8	13.9	4.03E-05	1.0	15	15.5
2/8/08 12:03 AM	18.0	7.0	49.3	-11.0	14.7	4.08E-05	1.1	15	16
2/8/08 12:04 AM	21.0	3.9	52.0	-17.1	15.6	3.96E-05	1.0	15	15.5
2/8/08 12:05 AM	24.0	0.7	54.0	-23.3	16.5	4.03E-05	1.1	15	16



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

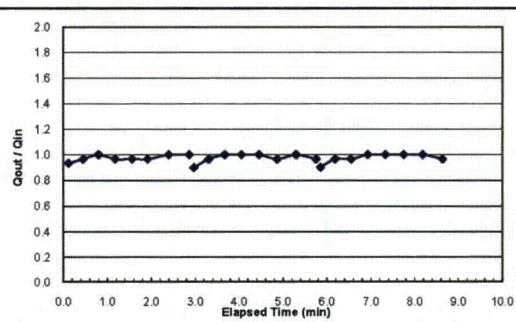
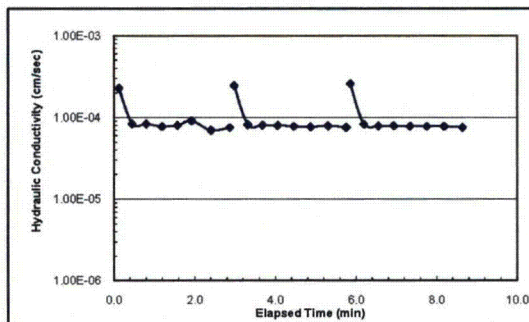
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 6'-Upper		Test Date :	2/13/08
	Slope- Surface			
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50	psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1		a _{out} =	5 cm ²
Weight of wet sample =	21636.2	(g)	Sample Water Content =	25.9% (%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.94 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
874	35.12	393.89	320.05	25.92%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/13/08 12:00 AM	0.0	24.5	0.0	24.5	0.0				
2/13/08 12:00 AM	3.0	21.7	7.0	18.7	0.1	2.27E-04	0.9	15	14
2/13/08 12:00 AM	6.0	18.8	20.0	12.8	0.5	8.35E-05	1.0	15	14.5
2/13/08 12:00 AM	9.0	15.8	21.0	6.8	0.8	8.35E-05	1.0	15	15
2/13/08 12:01 AM	12.0	12.9	23.0	0.9	1.2	7.76E-05	1.0	15	14.5
2/13/08 12:01 AM	15.0	10.0	23.0	-5.0	1.6	8.03E-05	1.0	15	14.5
2/13/08 12:01 AM	18.0	7.1	21.0	-10.9	1.9	9.12E-05	1.0	15	14.5
2/13/08 12:02 AM	21.0	4.1	29.0	-16.9	2.4	6.98E-05	1.0	15	15
2/13/08 12:02 AM	24.0	1.1	28.0	-22.9	2.9	7.52E-05	1.0	15	15
2/13/08 12:00 AM	0.0	24.7	0.0	24.7	2.9				
2/13/08 12:00 AM	3.0	22.0	6.4	19.0	3.0	2.45E-04	0.9	15	13.5
2/13/08 12:00 AM	6.0	19.1	20.4	13.1	3.3	8.18E-05	1.0	15	14.5
2/13/08 12:00 AM	9.0	16.1	21.8	7.1	3.7	8.05E-05	1.0	15	15
2/13/08 12:01 AM	12.0	13.1	22.7	1.1	4.1	8.00E-05	1.0	15	15
2/13/08 12:01 AM	15.0	10.1	24.1	-4.9	4.5	7.80E-05	1.0	15	15
2/13/08 12:02 AM	18.0	7.2	24.9	-10.8	4.9	7.68E-05	1.0	15	14.5
2/13/08 12:02 AM	21.0	4.2	25.6	-16.8	5.3	7.68E-05	1.0	15	15
2/13/08 12:02 AM	24.0	1.3	27.2	-22.7	5.8	7.59E-05	1.0	15	14.5
2/13/08 12:00 AM	0.0	24.8	0.0	24.8	5.8				
2/13/08 12:00 AM	3.0	22.1	6.1	19.1	5.9	2.58E-04	0.9	15	13.5
2/13/08 12:00 AM	6.0	19.2	20.1	13.2	6.2	8.29E-05	1.0	15	14.5
2/13/08 12:00 AM	9.0	16.3	21.9	7.3	6.6	7.87E-05	1.0	15	14.5
2/13/08 12:01 AM	12.0	13.3	22.8	1.3	6.9	7.92E-05	1.0	15	15
2/13/08 12:01 AM	15.0	10.3	24.0	-4.7	7.3	7.80E-05	1.0	15	15
2/13/08 12:02 AM	18.0	7.3	25.0	-10.7	7.7	7.77E-05	1.0	15	15
2/13/08 12:02 AM	21.0	4.3	25.9	-16.7	8.2	7.80E-05	1.0	15	15
2/13/08 12:02 AM	24.0	1.4	27.3	-22.6	8.6	7.57E-05	1.0	15	14.5



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

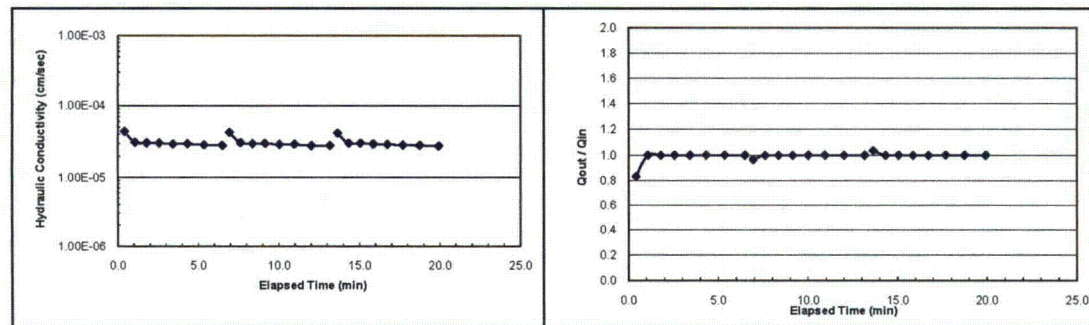
ASTM D 5084 - 00

Sample I.D.	150-mm Oregon Boardman- 6'-Upper	Test Date :	3/14/08
Slope- Surface			
Cell Pressure =	42.7 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.8 psi	Length of Sample, L =	7.6 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.2 psi	Sample Volume, V =	1390.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	1 cm ²
Weight of wet sample =	2593.1 (g)	Sample Water Content =	25.1% (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.86 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2C	24.63	202.94	167.14	25.12%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/14/08 00:00.00	0.0	24.7	0.0	24.7	0.0				
3/14/08 00:24.34	3.0	22.2	24.3	19.2	0.4	4.43E-05	0.8	3	2.5
3/14/08 01:04.11	6.0	19.2	39.8	13.2	1.1	3.13E-05	1.0	3	3
3/14/08 01:47.34	9.0	16.2	43.2	7.2	1.8	3.06E-05	1.0	3	3
3/14/08 02:33.45	12.0	13.2	46.1	1.2	2.6	3.06E-05	1.0	3	3
3/14/08 03:24.61	15.0	10.2	51.2	-4.8	3.4	2.96E-05	1.0	3	3
3/14/08 04:19.42	18.0	7.2	54.8	-10.8	4.3	2.98E-05	1.0	3	3
3/14/08 05:20.68	21.0	4.2	61.3	-16.8	5.3	2.89E-05	1.0	3	3
3/14/08 06:28.84	24.0	1.2	68.2	-22.8	6.5	2.84E-05	1.0	3	3
3/14/08 00:00.00	0.0	24.6	0.0	24.6	6.5				
3/14/08 00:27.11	3.0	21.7	27.1	18.7	6.9	4.28E-05	1.0	3	2.9
3/14/08 01:07.65	6.0	18.7	40.5	12.7	7.6	3.08E-05	1.0	3	3
3/14/08 01:52.06	9.0	15.7	44.4	6.7	8.3	2.99E-05	1.0	3	3
3/14/08 02:39.37	12.0	12.7	47.3	0.7	9.1	3.00E-05	1.0	3	3
3/14/08 03:31.55	15.0	9.7	52.2	-5.3	10.0	2.92E-05	1.0	3	3
3/14/08 04:27.56	18.0	6.7	56.0	-11.3	10.9	2.93E-05	1.0	3	3
3/14/08 05:31.42	21.0	3.7	63.9	-17.3	12.0	2.79E-05	1.0	3	3
3/14/08 06:40.68	24.0	0.7	69.3	-23.3	13.2	2.82E-05	1.0	3	3
3/14/08 00:00.00	0.0	24.6	0.0	24.6	13.2				
3/14/08 00:28.73	3.0	21.7	28.7	18.7	13.6	4.17E-05	1.0	3	3.1
3/14/08 01:10.03	6.0	18.7	41.3	12.7	14.3	3.03E-05	1.0	3	3
3/14/08 01:53.73	9.0	15.7	43.7	6.7	15.1	3.04E-05	1.0	3	3
3/14/08 02:41.95	12.0	12.7	48.2	0.7	15.9	2.95E-05	1.0	3	3
3/14/08 03:34.03	15.0	9.7	52.1	-5.3	16.7	2.93E-05	1.0	3	3
3/14/08 04:31.83	18.0	6.7	57.8	-11.3	17.7	2.84E-05	1.0	3	3
3/14/08 05:35.05	21.0	3.7	63.2	-17.3	18.7	2.82E-05	1.0	3	3
3/14/08 06:45.78	24.0	0.7	70.7	-23.3	19.9	2.76E-05	1.0	3	3



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

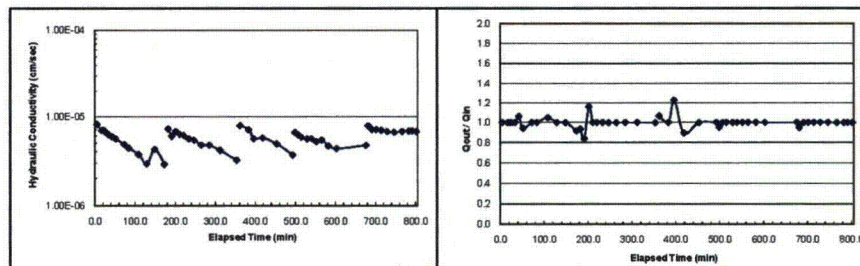
ASTM D 5084 - 00

Sample I.D.		75-mm Oregon Boardman- 6'-Upper Slope- Surface		Test Date : 4/21/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressure =	40.9	psi	Area of Sample, A =	45.6	cm ²
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	cm ³
Effective Stress =	1.50	psi	a _{in} =	1	cm ²
Hydraulic Gradient, i =	11.1		a _{out} =	1	cm ²
Weight of wet sample =	294.8	(g)	Sample Water Content =	15.6%	(%)
Wet Density =	1.7	g/cm ³	Dry Density =	1.69	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2	30.8	163.2	145.34	15.59%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
4/23/08 00:00:00	0.0	24.6	0.0	24.6	0.0				
4/23/08 00:05:15	2.0	22.6	315.3	20.6	5.3	6.17E-06	1.0	2	2
4/23/08 00:16:46	5.4	19.2	690.2	13.8	16.8	6.93E-06	1.0	3.4	3.4
4/23/08 00:22:16	6.9	17.7	330.5	10.8	22.3	6.95E-06	1.0	1.5	1.5
4/23/08 00:28:46	8.0	16.6	269.8	8.6	26.8	6.55E-06	1.0	1.1	1.1
4/23/08 00:33:30	9.5	15.1	404.4	5.6	33.5	6.28E-06	1.0	1.5	1.5
4/23/08 00:41:53	11.1	13.4	504.7	2.3	41.9	5.91E-06	1.1	1.6	1.7
4/23/08 00:51:35	12.8	11.8	579.9	-1.0	51.6	5.54E-06	0.9	1.7	1.6
4/23/08 01:12:41	15.8	9.0	1295.9	-6.6	72.7	4.81E-06	1.0	2.8	2.8
4/23/08 01:23:50	18.8	7.8	869.7	-9.0	83.3	4.34E-06	1.0	1.2	1.2
4/23/08 01:48:35	18.8	5.7	1484.1	-13.1	108.6	3.70E-06	1.1	2	2.1
4/23/08 02:09:11	20.0	4.5	1238.5	-15.5	129.2	2.90E-06	1.0	1.2	1.2
4/23/08 02:28:48	21.5	3.0	1176.9	-18.5	148.8	4.22E-06	1.0	1.5	1.5
4/23/08 02:53:38	22.7	1.9	1487.8	-20.8	173.6	2.85E-06	0.9	1.2	1.1
4/23/08 00:00:00	0.0	24.8	0.0	24.8	173.6				
4/23/08 00:08:43	3.0	22.0	522.6	19.0	182.3	7.23E-06	0.9	3	2.8
4/23/08 00:17:50	5.5	19.9	547.4	14.4	191.4	5.95E-06	0.8	2.5	2.1
4/23/08 00:28:08	8.0	17.0	618.3	9.0	201.7	6.76E-06	1.2	2.5	2.9
4/23/08 00:37:08	10.0	15.0	540.1	5.0	210.7	6.28E-06	1.0	2	2
4/23/08 00:47:14	12.0	13.0	606.0	1.0	220.8	6.09E-06	1.0	2	2
4/23/08 01:00:03	14.1	10.9	768.5	-3.2	233.6	5.55E-06	1.0	2.1	2.1
4/23/08 01:13:18	16.0	9.0	794.9	-7.0	246.9	5.37E-06	1.0	1.9	1.9
4/23/08 01:31:05	18.0	7.0	1067.0	-11.0	264.7	4.71E-06	1.0	2	2
4/23/08 01:51:17	20.0	5.0	1212.6	-15.0	284.9	4.71E-06	1.0	2	2
4/23/08 02:18:16	22.0	3.0	1618.9	-19.0	311.9	4.09E-06	1.0	2	2
4/23/08 02:59:21	24.0	1.0	2485.0	-23.0	353.0	3.19E-06	1.0	2	2
4/23/08 00:00:00	0.0	24.9	0.0	24.9	353.0				
4/23/08 00:08:33	3.0	21.7	513.0	18.7	361.5	7.88E-06	1.1	3	3.2
4/23/08 00:30:08	9.0	15.7	1294.6	6.7	383.1	7.07E-06	1.0	6	6
4/23/08 00:43:15	11.2	13.0	787.6	1.8	396.2	5.59E-06	1.2	2.2	2.7
4/23/08 01:05:02	15.0	9.6	1306.9	-5.4	416.0	5.70E-06	0.9	3.8	3.4
4/23/08 01:40:05	19.0	5.6	2105.8	-13.4	453.1	4.85E-06	1.0	4	4
4/23/08 02:19:38	21.7	2.9	2369.9	-18.8	492.6	3.65E-06	1.0	2.7	2.7
4/23/08 00:00:00	0.0	25.0	0.0	25.0	492.6				
4/23/08 00:06:19	2.0	23.1	379.4	21.1	498.9	6.57E-06	0.9	2	1.9
4/23/08 00:13:40	4.0	21.1	440.2	17.1	506.2	6.19E-06	1.0	2	2
4/23/08 00:21:59	6.0	19.1	499.8	13.1	514.6	5.83E-06	1.0	2	2
4/23/08 00:36:28	9.0	16.1	868.5	7.1	529.0	5.51E-06	1.0	3	3
4/23/08 00:46:58	11.0	14.1	629.8	3.1	539.5	5.60E-06	1.0	2	2
4/23/08 00:59:20	13.0	12.1	742.8	-0.9	551.9	5.19E-06	1.0	2	2
4/23/08 01:12:27	15.0	10.1	786.7	-4.9	565.0	5.40E-06	1.0	2	2
4/23/08 01:29:32	17.0	8.1	1024.6	-9.9	582.1	4.61E-06	1.0	2	2
4/23/08 01:50:13	19.0	6.1	1241.6	-12.9	602.8	4.29E-06	1.0	2	2
4/23/08 03:03:17	24.7	0.4	4383.1	-24.3	675.9	4.68E-06	1.0	5.7	5.7
4/23/08 00:00:00	0.0	24.9	0.0	24.9	675.9				
4/23/08 00:05:18	2.0	23.0	318.1	21.0	681.2	7.85E-06	0.9	2	1.9
4/23/08 00:14:59	5.0	20.0	580.7	15.0	690.8	7.17E-06	1.0	3	3
4/23/08 00:25:47	8.0	17.0	647.9	9.0	701.6	7.13E-06	1.0	3	3
4/23/08 00:38:16	11.0	14.0	749.8	3.0	714.1	6.93E-06	1.0	3	3
4/23/08 00:52:55	14.0	11.0	878.7	-3.0	728.8	6.76E-06	1.0	3	3
4/23/08 01:10:19	17.0	8.0	1044.3	-9.0	746.2	6.63E-06	1.0	3	3
4/23/08 01:30:47	20.0	5.0	1227.8	-15.0	766.6	6.76E-06	1.0	3	3
4/23/08 01:46:56	22.0	3.0	968.4	-19.0	782.8	6.84E-06	1.0	2	2
4/23/08 01:56:00	23.0	2.0	544.1	-21.0	791.8	6.89E-06	1.0	1	1
4/23/08 02:06:09	24.0	1.0	609.0	-23.0	802.0	6.77E-06	1.0	1	1



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

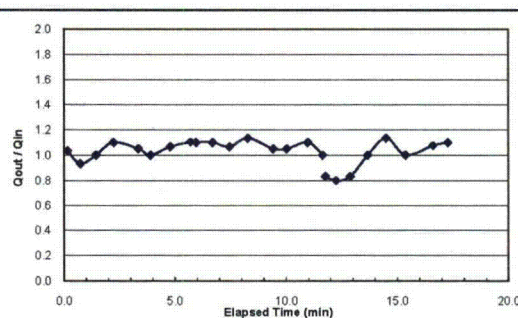
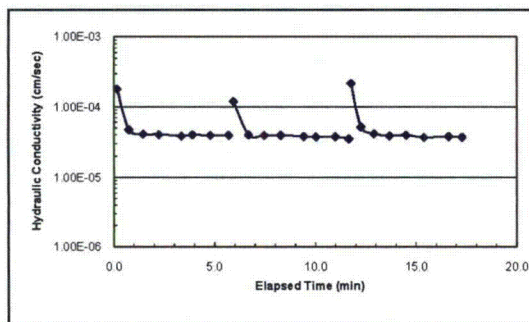
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 6'-Upper	Test Date :	2/11/08
Slope- 3'-4'			
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	21182.7 (g)	Sample Water Content =	24.0% (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.90 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
874	35.13	298.29	247.41	23.97%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
2/11/08 12:00 AM	0.0	24.8	0.0	24.8	0.0				
2/11/08 12:00 AM	3.0	21.7	9.3	18.7	0.2	1.79E-04	1.0	15	15.5
2/11/08 12:00 AM	6.0	18.9	34.7	12.9	0.7	4.73E-05	0.9	15	14
2/11/08 12:01 AM	9.0	15.9	42.7	6.9	1.4	4.11E-05	1.0	15	15
2/11/08 12:02 AM	12.0	12.8	46.9	0.6	2.2	4.07E-05	1.1	15	16.5
2/11/08 12:03 AM	16.0	8.4	67.2	-7.6	3.3	3.85E-05	1.1	20	21
2/11/08 12:03 AM	18.0	6.4	32.7	-11.6	3.9	4.01E-05	1.0	10	10
2/11/08 12:04 AM	21.0	3.2	53.7	-17.8	4.8	3.91E-05	1.1	15	16
2/11/08 12:05 AM	23.9	0.0	54.3	-23.9	5.7	3.96E-05	1.1	14.5	16
2/11/08 12:00 AM	0.0	24.8	0.0	24.8	5.7				
2/11/08 12:00 AM	3.0	21.5	14.6	18.5	5.9	1.19E-04	1.1	15	16.5
2/11/08 12:00 AM	6.0	18.2	44.7	12.2	6.7	4.00E-05	1.1	15	16.5
2/11/08 12:01 AM	9.0	15.0	46.2	6.0	7.4	3.94E-05	1.1	15	16
2/11/08 12:02 AM	12.0	11.6	49.4	-0.4	8.3	3.94E-05	1.1	15	17
2/11/08 12:03 AM	16.0	7.4	68.6	-8.6	9.4	3.80E-05	1.1	20	21
2/11/08 12:04 AM	18.0	5.3	36.1	-12.7	10.0	3.75E-05	1.1	10	10.5
2/11/08 12:05 AM	21.0	2.0	57.3	-19.0	11.0	3.76E-05	1.1	15	16.5
2/11/08 12:05 AM	23.0	0.0	40.2	-23.0	11.6	3.51E-05	1.0	10	10
2/11/08 12:00 AM	0.0	24.8	0.0	24.8	11.6				
2/11/08 12:00 AM	3.0	22.3	6.9	19.3	11.8	2.17E-04	0.8	15	12.5
2/11/08 12:00 AM	6.0	19.9	29.4	13.9	12.2	5.17E-05	0.8	15	12
2/11/08 12:01 AM	9.0	17.4	38.5	8.4	12.9	4.14E-05	0.8	15	12.5
2/11/08 12:02 AM	12.0	14.4	46.4	2.4	13.7	3.88E-05	1.0	15	15
2/11/08 12:02 AM	15.0	11.0	50.1	-4.0	14.5	3.97E-05	1.1	15	17
2/11/08 12:03 AM	18.0	8.0	52.6	-10.0	15.4	3.68E-05	1.0	15	15
2/11/08 12:04 AM	22.0	3.7	73.9	-18.3	16.6	3.79E-05	1.1	20	21.5
2/11/08 12:05 AM	24.0	1.5	40.0	-22.5	17.3	3.70E-05	1.1	10	11



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

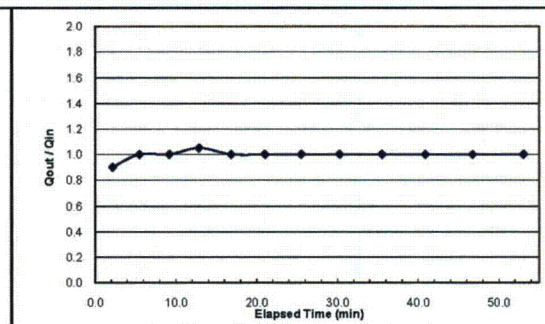
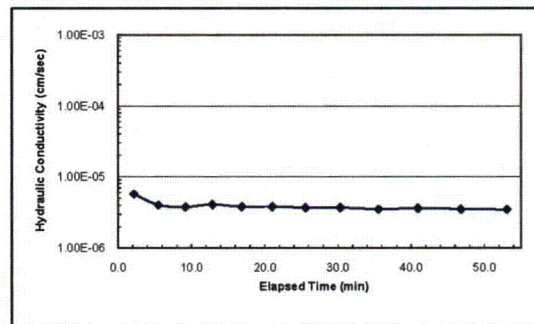
ASTM D 5084 - 00

Sample I.D.		150-mm Oregon Boardman- 6'-Upper Slope- 3'-4'		Test Date :		3/20/08
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm	
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm	
Outflow Pressure =	40.6	psi	Area of Sample, A =	182.4	cm ²	
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm ³	
Effective Stress =	1.50	psi	a _{in} =	1	cm ²	
Hydraulic Gradient, i =	11.1		a _{out} =	1	cm ²	
Weight of wet sample =	2593.1	(g)	Sample Water Content =	26.7%	(%)	
Wet Density =	1.9	g/cm ³	Dry Density =	1.86	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2A	31.08	199	163.63	26.68%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/20/08 00:00.00	0.0	24.7	0.0	24.7	0.0				
3/20/08 02:09.28	2.0	22.9	129.3	20.9	2.2	5.72E-06	0.9	2	1.8
3/20/08 05:29.21	4.0	20.9	199.9	16.9	5.5	4.04E-06	1.0	2	2
3/20/08 09:11.05	6.0	18.9	221.8	12.9	9.2	3.79E-06	1.0	2	2
3/20/08 12:50.84	8.0	16.8	219.8	8.8	12.8	4.08E-06	1.1	2	2.1
3/20/08 16:50.84	10.0	14.8	240.0	4.8	16.8	3.81E-06	1.0	2	2
3/20/08 21:01.05	12.0	12.8	250.2	0.8	21.0	3.82E-06	1.0	2	2
3/20/08 25:32.21	14.0	10.8	271.2	-3.2	25.5	3.70E-06	1.0	2	2
3/20/08 30:16.75	16.0	8.8	284.5	-7.2	30.3	3.70E-06	1.0	2	2
3/20/08 35:32.21	18.0	6.8	315.5	-11.2	35.5	3.51E-06	1.0	2	2
3/20/08 40:54.34	20.0	4.8	322.1	-15.2	40.9	3.63E-06	1.0	2	2
3/20/08 46:45.42	22.0	2.8	351.1	-19.2	46.8	3.53E-06	1.0	2	2
3/20/08 53:03.42	24.0	0.8	378.0	-23.2	53.1	3.49E-06	1.0	2	2



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

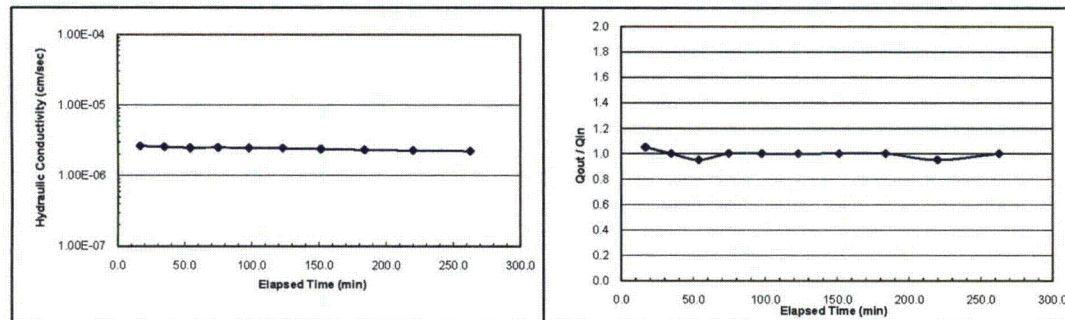
ASTM D 5084 - 00

Sample I.D.		75-mm Oregon Boardman- 6'-Upper Slope- 3'-4'		Test Date :		3/20/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm		
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm		
Outflow Pressure =	40.9	psi	Area of Sample, A =	45.6	cm ²		
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	cm ³		
Effective Stress =	1.50	psi	a _{in} =	1	cm ²		
Hydraulic Gradient, i =	11.1		a _{out} =	1	cm ²		
Weight of wet sample =	333.2	(g)	Sample Water Content =	11.3%	(%)		
Wet Density =	1.9	g/cm ³	Dry Density =	1.92	g/cm ³		

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
H3	24.4	131.79	120.91	11.27%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
5/2/08 00:00:00	0.0	25.0	0.0	25.0	0.0				
5/2/08 00:16:39	2.0	22.9	999.4	20.9	16.7	2.63E-06	1.1	2	2.1
5/2/08 00:34:30	4.0	20.9	1070.9	16.9	34.5	2.55E-06	1.0	2	2
5/2/08 00:53:44	6.0	19.0	1153.3	13.0	53.7	2.47E-06	0.9	2	1.9
5/2/08 01:14:37	8.0	17.0	1253.4	9.0	74.6	2.51E-06	1.0	2	2
5/2/08 01:37:35	10.0	15.0	1377.8	5.0	97.6	2.47E-06	1.0	2	2
5/2/08 02:02:53	12.0	13.0	1518.0	1.0	122.9	2.44E-06	1.0	2	2
5/2/08 02:31:20	14.0	11.0	1707.2	-3.0	151.3	2.38E-06	1.0	2	2
5/2/08 03:03:48	16.0	9.0	1947.8	-7.0	183.8	2.31E-06	1.0	2	2
5/2/08 03:39:57	18.0	7.1	2168.7	-10.9	219.9	2.26E-06	1.0	2	1.9
5/2/08 04:22:47	20.0	5.1	2570.9	-14.9	262.8	2.22E-06	1.0	2	2



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

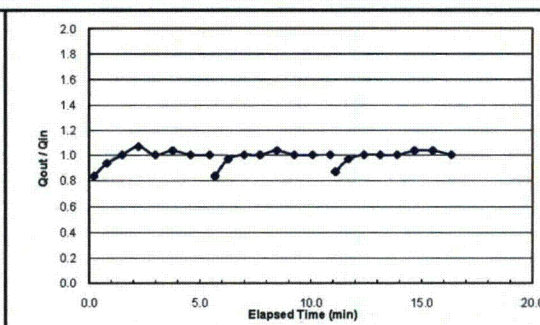
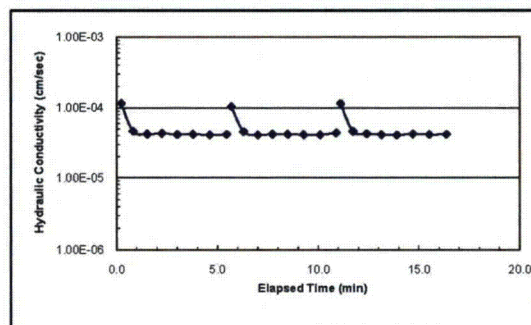
ASTM D 5084 - 00

Sample I.D.		305-mm Oregon Boardman- 6'-Upper Slope- 5'-6'		Test Date :		2/20/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm		
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm		
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7	cm ²		
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm ³		
Effective Stress =	1.50	psi	a _{in} =	5	cm ²		
Hydraulic Gradient, i =	11.1		a _{out} =	5	cm ²		
Weight of wet sample =	21450.0	(g)	Sample Water Content =	26.9%	(%)		
Wet Density =	1.9	g/cm ³	Dry Density =	1.92	g/cm ³		

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
H2	30.84	234.97	191.66	26.93%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/20/08 12:00 AM	0.0	24.5	0.0	24.5	0.0				
2/20/08 12:00 AM	3.0	22.0	13.1	19.0	0.2	1.16E-04	0.8	15	12.5
2/20/08 12:00 AM	6.0	19.2	35.3	13.2	0.8	4.64E-05	0.9	15	14
2/20/08 12:01 AM	9.0	16.2	41.8	7.2	1.5	4.19E-05	1.0	15	15
2/20/08 12:02 AM	12.0	13.0	43.5	1.0	2.2	4.31E-05	1.1	15	16
2/20/08 12:02 AM	15.0	10.0	45.3	-5.0	3.0	4.15E-05	1.0	15	15
2/20/08 12:03 AM	18.0	6.9	47.3	-11.1	3.8	4.19E-05	1.0	15	15.5
2/20/08 12:04 AM	21.0	3.9	49.4	-17.1	4.6	4.10E-05	1.0	15	15
2/20/08 12:05 AM	24.0	0.9	50.6	-23.1	5.4	4.16E-05	1.0	15	15
2/20/08 12:00 AM	0.0	24.7	0.0	24.7	5.4				
2/20/08 12:00 AM	3.0	22.2	14.5	19.2	5.7	1.04E-04	0.8	15	12.5
2/20/08 12:00 AM	6.0	19.3	36.4	13.3	6.3	4.57E-05	1.0	15	14.5
2/20/08 12:01 AM	9.0	16.3	42.4	7.3	7.0	4.13E-05	1.0	15	15
2/20/08 12:02 AM	12.0	13.3	43.3	1.3	7.7	4.18E-05	1.0	15	15
2/20/08 12:03 AM	15.0	10.2	45.6	-4.8	8.5	4.18E-05	1.0	15	15.5
2/20/08 12:03 AM	18.0	7.2	47.3	-10.8	9.3	4.12E-05	1.0	15	15
2/20/08 12:04 AM	21.0	4.2	49.2	-16.8	10.1	4.11E-05	1.0	15	15
2/20/08 12:05 AM	24.0	1.2	48.0	-22.8	10.9	4.38E-05	1.0	15	15
2/20/08 12:00 AM	0.0	24.7	0.0	24.7	10.9				
2/20/08 12:00 AM	3.0	22.1	13.4	19.1	11.1	1.14E-04	0.9	15	13
2/20/08 12:00 AM	6.0	19.2	36.2	13.2	11.7	4.60E-05	1.0	15	14.5
2/20/08 12:01 AM	9.0	16.2	41.2	7.2	12.4	4.25E-05	1.0	15	15
2/20/08 12:02 AM	12.0	13.2	43.9	1.2	13.1	4.12E-05	1.0	15	15
2/20/08 12:03 AM	15.0	10.2	46.1	-4.8	13.9	4.07E-05	1.0	15	15
2/20/08 12:03 AM	18.0	7.1	46.9	-10.9	14.7	4.22E-05	1.0	15	15.5
2/20/08 12:04 AM	21.0	4.0	49.8	-17.0	15.5	4.13E-05	1.0	15	15.5
2/20/08 12:05 AM	24.0	1.0	50.5	-23.0	16.3	4.17E-05	1.0	15	15



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

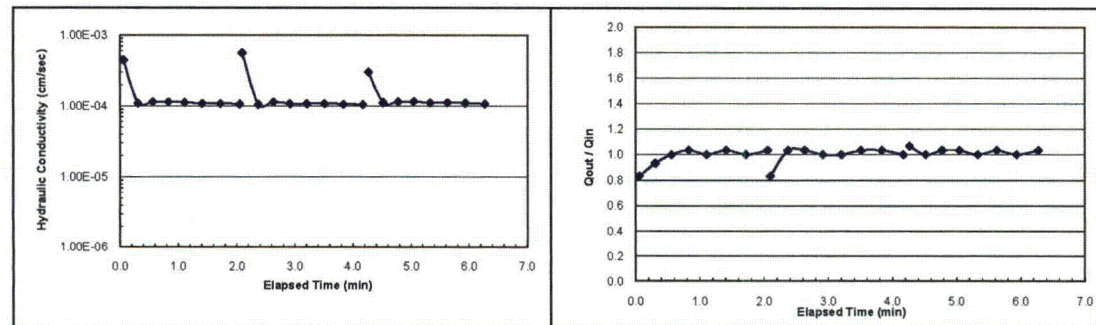
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 6'-Lower Slope- Surface	Test Date :	3/10/08
Cell Pressure = 42.7	psi	Diameter of Sample, D = 30.5	cm
Inflow Pressure = 42.4	psi	Length of Sample, L = 15.2	cm
Outflow Pressure = 40.0	psi	Area of Sample, A = 729.7	cm ²
Pressure Difference = 2.4	psi	Sample Volume, V = 11120.0	cm ³
Effective Stress = 1.50	psi	a _{in} = 5	cm ²
Hydraulic Gradient, i = 11.1		a _{out} = 5	cm ²
Weight of wet sample = 21350.0	(g)	Sample Water Content = 26.5%	(%)
Wet Density = 1.9	g/cm ³	Dry Density = 1.91	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2C	24.62	235.41	191.25	26.50%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/10/08 12:00 AM	0.0	24.8	0.0	24.8	0.0				
3/10/08 12:00 AM	3.0	22.3	3.4	19.3	0.1	4.47E-04	0.8	15	12.5
3/10/08 12:00 AM	6.0	19.5	14.9	13.5	0.3	1.10E-04	0.9	15	14
3/10/08 12:00 AM	9.0	16.5	15.3	7.5	0.6	1.14E-04	1.0	15	15
3/10/08 12:00 AM	12.0	13.4	16.1	1.4	0.8	1.14E-04	1.0	15	15.5
3/10/08 12:01 AM	15.0	10.4	16.7	-4.6	1.1	1.12E-04	1.0	15	15
3/10/08 12:01 AM	18.0	7.3	18.2	-10.7	1.4	1.09E-04	1.0	15	15.5
3/10/08 12:01 AM	21.0	4.3	18.6	-16.7	1.7	1.09E-04	1.0	15	15
3/10/08 12:02 AM	24.0	1.2	20.0	-22.8	2.1	1.07E-04	1.0	15	15.5
3/10/08 12:00 AM	0.0	24.7	0.0	24.7	2.1				
3/10/08 12:00 AM	3.0	22.2	2.7	19.2	2.1	5.62E-04	0.8	15	12.5
3/10/08 12:00 AM	6.0	19.1	16.4	13.1	2.4	1.05E-04	1.0	15	15.5
3/10/08 12:00 AM	9.0	16.0	15.7	7.0	2.6	1.14E-04	1.0	15	15.5
3/10/08 12:00 AM	12.0	13.0	16.9	1.0	2.9	1.08E-04	1.0	15	15
3/10/08 12:01 AM	15.0	10.0	17.5	-5.0	3.2	1.08E-04	1.0	15	15
3/10/08 12:01 AM	18.0	6.9	18.4	-11.1	3.5	1.08E-04	1.0	15	15.5
3/10/08 12:01 AM	21.0	3.8	19.4	-17.2	3.8	1.06E-04	1.0	15	15.5
3/10/08 12:02 AM	24.0	0.8	20.2	-23.2	4.2	1.05E-04	1.0	15	15
3/10/08 12:00 AM	0.0	24.7	0.0	24.7	4.2				
3/10/08 12:00 AM	3.0	21.5	5.6	18.5	4.3	3.02E-04	1.1	15	16
3/10/08 12:00 AM	6.0	18.5	15.2	12.5	4.5	1.12E-04	1.0	15	15
3/10/08 12:00 AM	9.0	15.4	15.6	6.4	4.8	1.15E-04	1.0	15	15.5
3/10/08 12:00 AM	12.0	12.3	16.1	0.3	5.0	1.15E-04	1.0	15	15.5
3/10/08 12:01 AM	15.0	9.3	17.0	-5.7	5.3	1.11E-04	1.0	15	15
3/10/08 12:01 AM	18.0	6.2	17.9	-11.8	5.6	1.11E-04	1.0	15	15.5
3/10/08 12:01 AM	21.0	3.2	18.5	-17.8	5.9	1.10E-04	1.0	15	15
3/10/08 12:02 AM	24.0	0.1	20.2	-23.9	6.3	1.07E-04	1.0	15	15.5



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

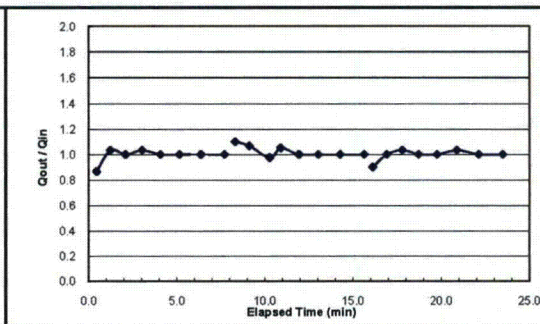
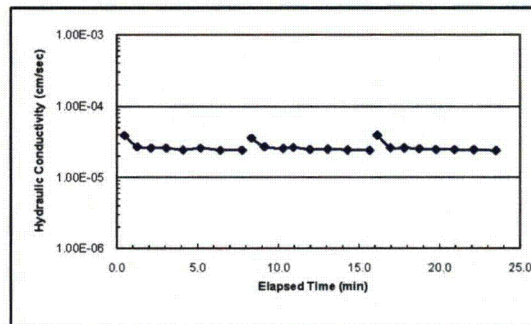
ASTM D 5084 - 00

Sample I.D.	150-mm Oregon Boardman- 6'-Lower Slope- Surface	Test Date :	3/31/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	41.8 psi	Length of Sample, L =	7.6 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.2 psi	Sample Volume, V =	1390.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	1 cm ²
Weight of wet sample =	2305.6 (g)	Sample Water Content =	24.2% (%)
Wet Density =	1.7 g/cm ³	Dry Density =	1.65 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
H1	30.85	191.54	160.26	24.17%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/31/08 00:00.00	0.0	24.8	0.0	24.8	0.0				
3/31/08 00:28.07	3.0	22.2	28.1	19.2	0.5	3.91E-05	0.9	3	2.6
3/31/08 01:15.35	6.0	19.1	47.3	13.1	1.3	2.68E-05	1.0	3	3.1
3/31/08 02:06.86	9.0	16.1	51.5	7.1	2.1	2.57E-05	1.0	3	3
3/31/08 03:02.83	12.0	13.0	56.0	1.0	3.0	2.57E-05	1.0	3	3.1
3/31/08 04:05.67	15.0	10.0	62.8	-5.0	4.1	2.42E-05	1.0	3	3
3/31/08 05:09.78	18.0	7.0	64.1	-11.0	5.2	2.55E-05	1.0	3	3
3/31/08 06:23.73	21.0	4.0	74.0	-17.0	6.4	2.40E-05	1.0	3	3
3/31/08 07:44.76	24.0	1.0	81.0	-23.0	7.7	2.40E-05	1.0	3	3
3/31/08 08:00.00	0.0	25.0	0.0	25.0	7.7				
3/31/08 08:34.71	3.0	21.7	34.7	18.7	8.3	3.56E-05	1.1	3	3.3
3/31/08 01:22.87	6.0	18.5	48.2	12.5	9.1	2.68E-05	1.1	3	3.2
3/31/08 02:32.71	10.0	14.6	69.8	4.6	10.3	2.54E-05	1.0	4	3.9
3/31/08 03:10.30	12.0	12.5	37.6	0.5	10.9	2.62E-05	1.1	2	2.1
3/31/08 04:12.43	15.0	9.5	62.1	-5.5	12.0	2.46E-05	1.0	3	3
3/31/08 05:18.71	18.0	6.5	66.3	-11.5	13.1	2.49E-05	1.0	3	3
3/31/08 06:32.37	21.0	3.5	73.7	-17.5	14.3	2.43E-05	1.0	3	3
3/31/08 07:54.59	24.0	0.5	82.2	-23.5	15.7	2.38E-05	1.0	3	3
3/31/08 08:00.00	0.0	24.9	0.0	24.9	15.7				
3/31/08 08:28.34	3.0	22.2	28.3	19.2	16.1	3.94E-05	0.9	3	2.7
3/31/08 01:16.31	6.0	19.2	48.0	13.2	16.9	2.59E-05	1.0	3	3
3/31/08 02:08.41	9.0	16.1	52.1	7.1	17.8	2.58E-05	1.0	3	3.1
3/31/08 03:04.57	12.0	13.1	56.2	1.1	18.7	2.52E-05	1.0	3	3
3/31/08 04:06.44	15.0	10.1	61.9	-4.9	19.8	2.45E-05	1.0	3	3
3/31/08 05:14.78	18.0	7.0	68.3	-11.0	20.9	2.43E-05	1.0	3	3.1
3/31/08 06:27.91	21.0	4.0	73.1	-17.0	22.1	2.43E-05	1.0	3	3
3/31/08 07:50.16	24.0	1.0	82.3	-23.0	23.5	2.36E-05	1.0	3	3



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

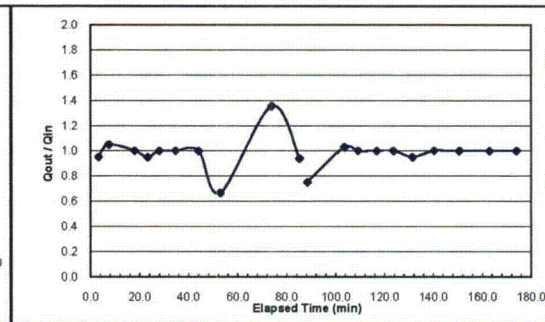
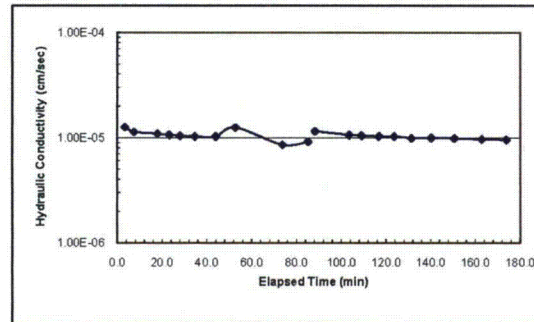
ASTM D 5084 - 00

Sample I.D.	75-mm Oregon Boardman- 6'-Lower Slope- Surface	Test Date :	4/21/08
Cell Pressure =	42.7 psi	Diameter of Sample, D =	7.6 cm
Inflow Pressure =	41.5 psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.9 psi	Area of Sample, A =	45.6 cm ²
Pressure Difference =	0.6 psi	Sample Volume, V =	173.7 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	1 cm ²
Weight of wet sample =	279.4 (g)	Sample Water Content =	9.2% (%)
Wet Density =	1.6 g/cm ³	Dry Density =	1.61 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
2	30.76	162.61	151.48	9.22%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
4/21/08 00:00:00	0.0	24.8	0.0	24.8	0.0				
4/21/08 00:03:18	2.0	22.9	198.1	20.9	3.3	1.26E-05	1.0	2	1.9
4/21/08 00:07:25	4.0	20.8	246.8	16.8	7.4	1.14E-05	1.1	2	2.1
4/21/08 00:17:58	8.5	16.3	632.7	7.8	18.0	1.09E-05	1.0	4.5	4.5
4/21/08 00:23:16	10.5	14.4	318.7	3.9	23.3	1.06E-05	1.0	2	1.9
4/21/08 00:28:04	12.1	12.8	287.8	0.7	28.1	1.04E-05	1.0	1.6	1.6
4/21/08 00:34:40	14.1	10.8	396.3	-3.3	34.7	1.03E-05	1.0	2	2
4/21/08 00:44:00	16.6	8.3	559.5	-8.3	44.0	1.02E-05	1.0	2.5	2.5
4/21/08 00:52:52	19.6	6.3	531.7	-13.3	52.9	1.25E-05	0.7	3	2
4/21/08 01:13:53	22.4	2.5	1261.8	-19.9	73.9	8.55E-06	1.4	2.8	3.8
4/21/08 01:25:13	24.0	1.0	679.2	-23.0	85.2	9.17E-06	0.9	1.6	1.5
4/23/08 00:00:00	0.0	24.8	0.0	24.8	85.2				
4/23/08 00:03:14	2.0	23.3	194.0	21.3	88.4	1.15E-05	0.8	2	1.5
4/23/08 00:18:27	8.5	16.6	912.8	8.1	103.7	1.06E-05	1.0	6.5	6.7
4/23/08 00:23:57	10.5	14.6	329.9	4.1	109.2	1.05E-05	1.0	2	2
4/23/08 00:31:38	13.0	12.1	461.6	-0.9	116.8	1.03E-05	1.0	2.5	2.5
4/23/08 00:38:31	15.0	10.1	412.7	-4.9	123.7	1.03E-05	1.0	2	2
4/23/08 00:46:15	17.0	8.2	463.6	-8.8	131.5	9.93E-06	1.0	2	1.9
4/23/08 00:55:07	19.0	6.2	532.6	-12.8	140.3	9.98E-06	1.0	2	2
4/23/08 01:05:24	21.0	4.2	616.6	-16.8	150.6	9.87E-06	1.0	2	2
4/23/08 01:17:43	23.0	2.2	738.7	-20.8	162.9	9.65E-06	1.0	2	2
4/23/08 01:28:40	24.5	0.7	657.2	-23.8	173.9	9.56E-06	1.0	1.5	1.5



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

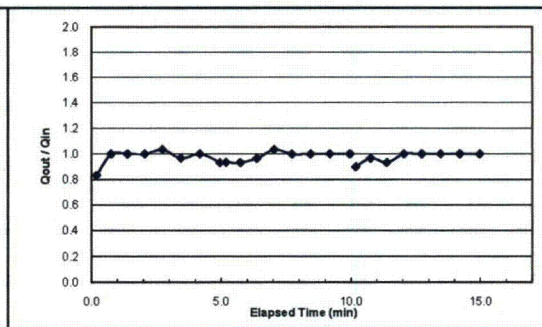
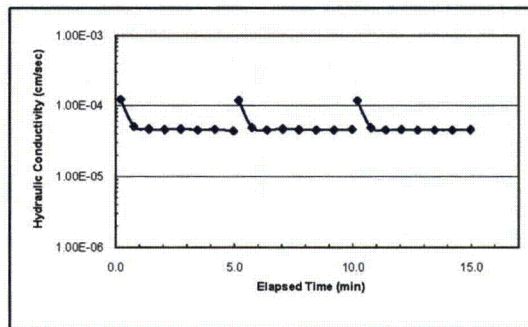
ASTM D 5084 - 00

Sample I.D.	305-mm Oregon Boardman- 6'-Lower	Test Date :	2/29/08
	Slope- 3'-4'		
Cell Pressure =	42.7 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.4 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.50 psi	a _{in} =	5 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	5 cm ²
Weight of wet sample =	21100.0 (g)	Sample Water Content =	23.0% (%)
Wet Density =	1.9 g/cm ³	Dry Density =	1.89 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
MC6	31.13	163.44	138.68	23.02%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
2/29/08 12:00 AM	0.0	24.5	0.0	24.5	0.0				
2/29/08 12:00 AM	3.0	22.0	12.4	19.0	0.2	1.21E-04	0.8	15	12.5
2/29/08 12:00 AM	6.0	19.0	33.6	13.0	0.8	5.05E-05	1.0	15	15
2/29/08 12:01 AM	9.0	16.0	37.7	7.0	1.4	4.65E-05	1.0	15	15
2/29/08 12:02 AM	12.0	13.0	39.7	1.0	2.1	4.57E-05	1.0	15	15
2/29/08 12:02 AM	15.0	9.9	41.1	-5.1	2.7	4.65E-05	1.0	15	15.5
2/29/08 12:03 AM	18.0	7.0	42.3	-11.0	3.4	4.53E-05	1.0	15	14.5
2/29/08 12:04 AM	21.0	4.0	44.1	-17.0	4.2	4.59E-05	1.0	15	15
2/29/08 12:04 AM	24.0	1.2	46.5	-22.8	5.0	4.37E-05	0.9	15	14
2/29/08 12:00 AM	0.0	24.5	0.0	24.5	5.0				
2/29/08 12:00 AM	3.0	21.7	13.6	18.7	5.2	1.17E-04	0.9	15	14
2/29/08 12:00 AM	6.0	18.9	33.6	12.9	5.7	4.88E-05	0.9	15	14
2/29/08 12:01 AM	9.0	16.0	38.1	7.0	6.4	4.53E-05	1.0	15	14.5
2/29/08 12:02 AM	12.0	12.9	39.6	0.9	7.0	4.66E-05	1.0	15	15.5
2/29/08 12:02 AM	15.0	9.9	41.3	-5.1	7.7	4.55E-05	1.0	15	15
2/29/08 12:03 AM	18.0	6.9	43.0	-11.1	8.4	4.53E-05	1.0	15	15
2/29/08 12:04 AM	21.0	3.9	44.9	-17.1	9.2	4.51E-05	1.0	15	15
2/29/08 12:05 AM	24.0	0.9	46.0	-23.1	10.0	4.58E-05	1.0	15	15
2/29/08 12:00 AM	0.0	24.6	0.0	24.6	10.0				
2/29/08 12:00 AM	3.0	21.9	13.4	18.9	10.2	1.16E-04	0.9	15	13.5
2/29/08 12:00 AM	6.0	19.0	34.3	13.0	10.8	4.87E-05	1.0	15	14.5
2/29/08 12:01 AM	9.0	16.2	37.6	7.2	11.4	4.51E-05	0.9	15	14
2/29/08 12:02 AM	12.0	13.2	39.5	1.2	12.0	4.59E-05	1.0	15	15
2/29/08 12:02 AM	15.0	10.2	41.6	-4.8	12.7	4.51E-05	1.0	15	15
2/29/08 12:03 AM	18.0	7.2	43.2	-10.8	13.5	4.51E-05	1.0	15	15
2/29/08 12:04 AM	21.0	4.2	44.9	-16.8	14.2	4.51E-05	1.0	15	15
2/29/08 12:05 AM	24.0	1.2	46.1	-22.8	15.0	4.56E-05	1.0	15	15



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

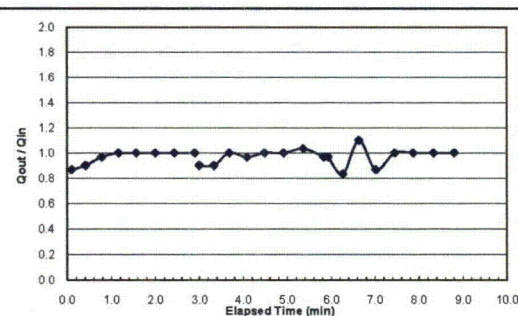
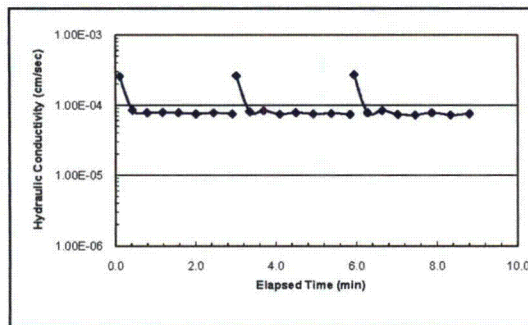
ASTM D 5084 - 00

Sample I.D.		305-mm Oregon Boardman- 6'-Lower		Test Date :	
		Slope- 5'-6'		2/25/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7	cm ²
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm ³
Effective Stress =	1.50	psi	a _{in} =	5	cm ²
Hydraulic Gradient, i =	11.1		a _{out} =	5	cm ²
Weight of wet sample =	21050.0	(g)	Sample Water Content =	25.3%	(%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.89	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
MC6	31.08	197.58	164.01	25.25%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
2/25/08 12:00 AM	0.0	24.6	0.0	24.6	0.0				
2/25/08 12:00 AM	3.0	22.0	6.0	19.0	0.1	2.56E-04	0.9	15	13
2/25/08 12:00 AM	6.0	19.3	19.0	13.3	0.4	8.47E-05	0.9	15	13.5
2/25/08 12:00 AM	9.0	16.4	22.0	7.4	0.8	7.82E-05	1.0	15	14.5
2/25/08 12:01 AM	12.0	13.4	23.0	1.4	1.2	7.87E-05	1.0	15	15
2/25/08 12:01 AM	15.0	10.4	24.0	-4.6	1.6	7.81E-05	1.0	15	15
2/25/08 12:02 AM	18.0	7.4	26.0	-10.6	2.0	7.48E-05	1.0	15	15
2/25/08 12:02 AM	21.0	4.4	26.0	-16.6	2.4	7.77E-05	1.0	15	15
2/25/08 12:02 AM	24.0	1.4	28.0	-22.6	2.9	7.50E-05	1.0	15	15
2/25/08 12:00 AM	0.0	24.7	0.0	24.7	2.9				
2/25/08 12:00 AM	3.0	22.0	6.0	19.0	3.0	2.60E-04	0.9	15	13.5
2/25/08 12:00 AM	6.0	19.3	20.0	13.3	3.3	8.05E-05	0.9	15	13.5
2/25/08 12:00 AM	9.0	16.3	21.0	7.3	3.7	8.33E-05	1.0	15	15
2/25/08 12:01 AM	12.0	13.4	24.0	1.4	4.1	7.41E-05	1.0	15	14.5
2/25/08 12:01 AM	15.0	10.4	24.0	-4.6	4.5	7.81E-05	1.0	15	15
2/25/08 12:02 AM	18.0	7.4	26.0	-10.6	4.9	7.48E-05	1.0	15	15
2/25/08 12:02 AM	21.0	4.3	27.0	-16.7	5.4	7.60E-05	1.0	15	15.5
2/25/08 12:02 AM	24.0	1.4	28.0	-22.6	5.8	7.38E-05	1.0	15	14.5
2/25/08 12:00 AM	0.0	24.6	0.0	24.6	5.8				
2/25/08 12:00 AM	3.0	21.7	6.0	18.7	5.9	2.70E-04	1.0	15	14.5
2/25/08 12:00 AM	6.0	19.2	20.0	13.2	6.3	7.77E-05	0.8	15	12.5
2/25/08 12:00 AM	9.0	15.9	22.0	6.9	6.6	8.36E-05	1.1	15	16.5
2/25/08 12:01 AM	12.0	13.3	23.0	1.3	7.0	7.35E-05	0.9	15	13
2/25/08 12:01 AM	15.0	10.3	26.0	-4.7	7.5	7.21E-05	1.0	15	15
2/25/08 12:02 AM	18.0	7.3	25.0	-10.7	7.9	7.78E-05	1.0	15	15
2/25/08 12:02 AM	21.0	4.3	28.0	-16.7	8.3	7.22E-05	1.0	15	15
2/25/08 12:02 AM	24.0	1.3	28.0	-22.7	8.8	7.51E-05	1.0	15	15



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

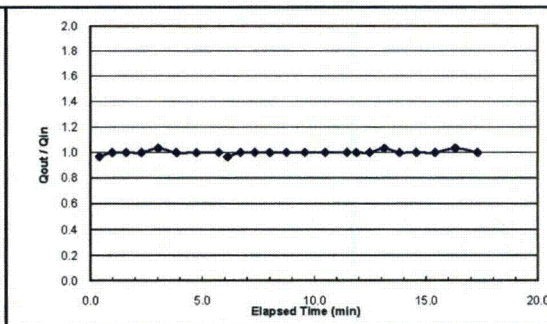
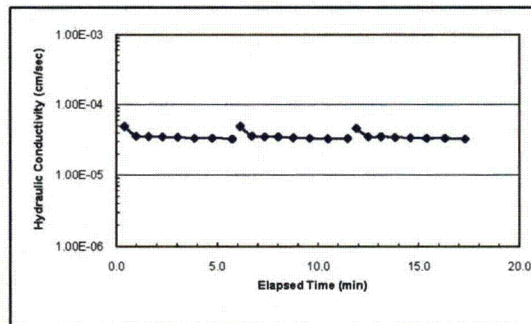
ASTM D 5084 - 00

Sample I.D.			150-mm Oregon Boardman- 6'-Lower		Test Date :	
			Slope- 5'-6'		3/26/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm	
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm	
Outflow Pressure =	40.6	psi	Area of Sample, A =	182.4	cm ²	
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm ³	
Effective Stress =	1.50	psi	a _{in} =	1	cm ²	
Hydraulic Gradient, i =	11.1		a _{out} =	1	cm ²	
Weight of wet sample =	2612.4	(g)	Sample Water Content =	23.8%	(%)	
Wet Density =	1.9	g/cm ³	Dry Density =	1.87	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
55	30.91	211.66	176.96	23.76%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
3/26/08 00:00.00	0.0	24.7	0.0	24.7	0.0				
3/26/08 00:23.66	3.0	21.8	23.7	18.8	0.4	4.90E-05	1.0	3	2.9
3/26/08 00:58.58	6.0	18.8	34.9	12.8	1.0	3.58E-05	1.0	3	3
3/26/08 01:36.12	9.0	15.8	37.5	6.8	1.6	3.54E-05	1.0	3	3
3/26/08 02:16.72	12.0	12.8	40.6	0.8	2.3	3.49E-05	1.0	3	3
3/26/08 03:01.64	15.0	9.7	44.9	-5.3	3.0	3.45E-05	1.0	3	3.1
3/26/08 03:50.80	18.0	6.7	49.2	-11.3	3.8	3.34E-05	1.0	3	3
3/26/08 04:43.99	21.0	3.7	53.2	-17.3	4.7	3.35E-05	1.0	3	3
3/26/08 05:43.74	24.0	0.7	59.8	-23.3	5.7	3.27E-05	1.0	3	3
3/26/08 00:00.00	0.0	24.7	0.0	24.7	5.7				
3/26/08 00:23.66	3.0	21.8	23.7	18.8	6.1	4.90E-05	1.0	3	2.9
3/26/08 00:58.58	6.0	18.8	34.7	12.8	6.7	3.60E-05	1.0	3	3
3/26/08 01:36.12	9.0	15.8	37.8	6.8	7.3	3.52E-05	1.0	3	3
3/26/08 02:16.72	12.0	12.8	40.6	0.8	8.0	3.49E-05	1.0	3	3
3/26/08 03:01.64	15.0	9.8	44.9	-5.2	8.8	3.39E-05	1.0	3	3
3/26/08 03:50.80	18.0	6.8	49.2	-11.2	9.6	3.34E-05	1.0	3	3
3/26/08 04:45.00	21.0	3.8	54.2	-17.2	10.5	3.29E-05	1.0	3	3
3/26/08 05:43.74	24.0	0.8	58.7	-23.2	11.5	3.32E-05	1.0	3	3
3/26/08 00:00.00	0.0	24.7	0.0	24.7	11.5				
3/26/08 00:25.56	3.0	21.7	25.6	18.7	11.9	4.61E-05	1.0	3	3
3/26/08 01:01.16	6.0	18.7	35.6	12.7	12.5	3.51E-05	1.0	3	3
3/26/08 01:39.63	9.0	15.6	38.5	6.6	13.1	3.52E-05	1.0	3	3.1
3/26/08 02:21.06	12.0	12.6	41.4	0.6	13.8	3.43E-05	1.0	3	3
3/26/08 03:06.20	15.0	9.6	45.1	-5.4	14.6	3.38E-05	1.0	3	3
3/26/08 03:55.80	18.0	6.6	49.6	-11.4	15.4	3.32E-05	1.0	3	3
3/26/08 04:50.24	21.0	3.5	54.4	-17.5	16.3	3.34E-05	1.0	3	3.1
3/26/08 05:50.56	24.0	0.5	60.3	-23.5	17.3	3.24E-05	1.0	3	3



Hydraulic Conductivity Test - Boardman - Thick Store-and-Release Cover

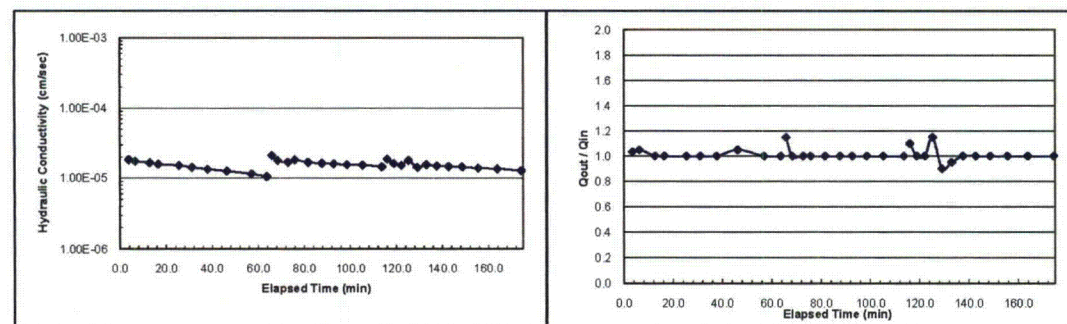
ASTM D 5084 - 00

Sample I.D.	75-mm Oregon Boardman- 6'-Lower	Test Date :	3/26/08
Slope- 5'-6'			
Cell Pressure =	42.7 psi	Diameter of Sample, D =	7.6 cm
Inflow Pressure =	41.5 psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.9 psi	Area of Sample, A =	45.6 cm ²
Pressure Difference =	0.6 psi	Sample Volume, V =	173.7 cm ³
Effective Stress =	1.50 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	11.1	a _{out} =	1 cm ²
Weight of wet sample =	376.2 (g)	Sample Water Content =	14.4% (%)
Wet Density =	2.2 g/cm ³	Dry Density =	2.16 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	50.78	265.61	238.5	14.44%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
5/2/08 00:00:00	0.0	24.9	0.0	24.9	0.0				
5/2/08 00:03:35	3.0	21.8	215.3	18.8	3.6	1.85E-05	1.0	3	3.1
5/2/08 00:06:23	5.0	19.7	167.4	14.7	6.4	1.74E-05	1.1	2	2.1
5/2/08 00:12:43	9.0	15.7	380.7	6.7	12.7	1.66E-05	1.0	4	4
5/2/08 00:16:28	11.0	13.7	224.5	2.7	16.5	1.59E-05	1.0	2	2
5/2/08 00:25:27	15.0	9.7	539.0	-5.3	25.4	1.52E-05	1.0	4	4
5/2/08 00:31:02	17.0	7.7	335.3	-9.3	31.0	1.43E-05	1.0	2	2
5/2/08 00:37:47	19.0	5.7	404.6	-13.3	37.8	1.34E-05	1.0	2	2
5/2/08 00:46:15	21.0	3.6	508.2	-17.4	46.3	1.26E-05	1.1	2	2.1
5/2/08 00:56:58	23.0	1.6	643.2	-21.4	57.0	1.14E-05	1.0	2	2
5/2/08 01:03:39	24.0	0.6	400.5	-23.4	63.6	1.05E-05	1.0	1	1
5/2/08 00:00:00	0.0	25.0	0.0	25.0	63.6				
5/2/08 00:02:11	2.0	22.7	131.4	20.7	65.8	2.10E-05	1.2	2	2.3
5/2/08 00:04:44	4.0	20.7	153.0	16.7	68.4	1.79E-05	1.0	2	2
5/2/08 00:09:11	7.0	17.7	266.3	10.7	72.8	1.69E-05	1.0	3	3
5/2/08 00:12:11	9.0	15.7	180.0	6.7	75.8	1.82E-05	1.0	2	2
5/2/08 00:18:00	12.2	12.5	348.9	0.3	81.6	1.68E-05	1.0	3.2	3.2
5/2/08 00:24:03	15.0	9.7	363.4	-5.3	87.7	1.62E-05	1.0	2.8	2.8
5/2/08 00:29:03	17.0	7.7	300.2	-9.3	92.7	1.60E-05	1.0	2	2
5/2/08 00:34:53	19.0	5.7	349.7	-13.3	98.5	1.55E-05	1.0	2	2
5/2/08 00:41:38	21.0	3.7	404.8	-17.3	105.3	1.54E-05	1.0	2	2
5/2/08 00:50:01	23.0	1.7	503.2	-21.3	113.7	1.45E-05	1.0	2	2
5/2/08 00:00:00	0.0	24.9	0.0	24.9	113.7				
5/2/08 00:02:25	2.0	22.7	145.1	20.7	116.1	1.86E-05	1.1	2	2.2
5/2/08 00:05:15	4.0	20.7	169.5	16.7	118.9	1.62E-05	1.0	2	2
5/2/08 00:08:28	6.0	18.7	193.2	12.7	122.1	1.52E-05	1.0	2	2
5/2/08 00:11:37	8.0	16.4	189.7	8.4	125.3	1.80E-05	1.2	2	2.3
5/2/08 00:15:27	10.0	14.6	229.6	4.6	129.1	1.42E-05	0.9	2	1.8
5/2/08 00:19:21	12.0	12.7	234.0	0.7	133.0	1.55E-05	1.0	2	1.9
5/2/08 00:23:56	14.0	10.7	274.9	-3.3	137.6	1.49E-05	1.0	2	2
5/2/08 00:29:04	16.0	8.7	308.4	-7.3	142.7	1.47E-05	1.0	2	2
5/2/08 00:34:57	18.0	6.7	352.6	-11.3	148.6	1.44E-05	1.0	2	2
5/2/08 00:41:56	20.0	4.7	419.3	-15.3	155.6	1.38E-05	1.0	2	2
5/2/08 00:50:11	22.0	2.7	495.1	-19.3	163.9	1.36E-05	1.0	2	2
5/2/08 01:00:40	24.0	0.7	628.6	-23.3	174.3	1.28E-05	1.0	2	2



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

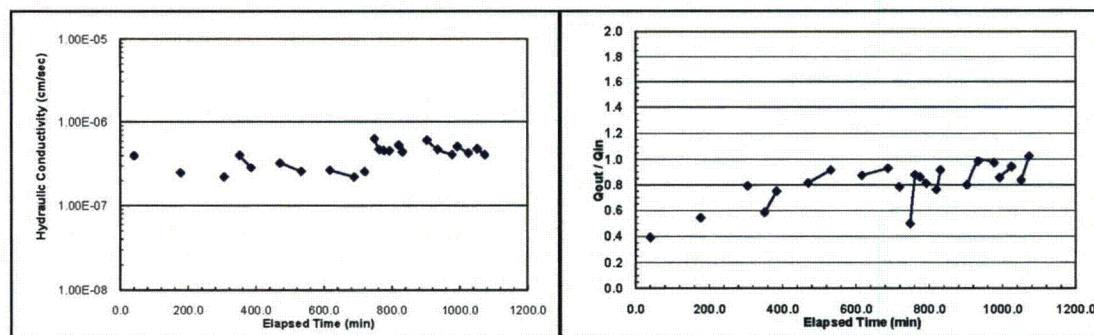
ASTM D 5084 - 00

Sample I.D.	305-mm ICYRU	Test Date :	7/10/06
Cell Pressure =	43.1 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.3 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.3 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	1 cm ²
Weight of wet sample =	24222.2 (g)	Sample Water Content =	13.8 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.91 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
2	50.1	401.9	359.2	13.81

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
7/12/2006 11:51	2.5	23.7	0.0	21.2	0.0				
7/12/2006 12:31	14.0	19.2	2400.0	5.2	40.0	3.98E-07	0.4	11.5	4.5
7/12/2006 12:31	1.8	23.9	0.0	22.1	40.0				
7/12/2006 14:48	23.0	12.4	8220.0	-10.6	177.0	2.49E-07	0.5	21.2	11.5
7/12/2006 14:48	1.0	23.0	0.0	22.0	177.0				
7/12/2006 16:56	16.4	10.8	7680.0	-5.6	305.0	2.21E-07	0.8	15.4	12.2
7/14/2006 9:59	7.9	23.0	0.0	15.1	305.0				
7/14/2006 10:45	19.2	16.4	2760.0	-2.8	351.0	4.04E-07	0.6	11.3	6.6
7/14/2006 11:18	24.0	12.8	1980.0	-11.2	384.0	2.86E-07	0.7	4.8	3.6
7/14/2006 11:20	1.5	23.7	0.0	22.2	384.0				
7/14/2006 12:46	16.6	11.4	5160.0	-5.2	470.0	3.26E-07	0.8	15.1	12.3
7/14/2006 13:48	23.8	4.8	3720.0	-19.0	532.0	2.59E-07	0.9	7.2	6.6
7/14/2006 13:49	1.6	23.8	0.0	22.2	532.0				
7/14/2006 15:14	13.6	13.3	5100.0	-0.3	617.0	2.67E-07	0.9	12	10.5
7/14/2006 16:25	20.8	6.6	4260.0	-14.2	688.0	2.21E-07	0.9	7.2	6.7
7/14/2006 16:25	1.6	24.0	0.0	22.4	688.0				
7/14/2006 16:56	6.2	20.4	1860.0	14.2	719.0	2.56E-07	0.8	4.6	3.6
7/20/2006 9:38	1.3	24.3	0.0	23.0	719.0				
7/20/2006 10:07	13.6	18.2	1740.0	4.6	748.0	6.30E-07	0.5	12.3	6.1
7/20/2006 10:21	16.9	15.3	840.0	-1.6	762.0	4.72E-07	0.9	3.3	2.9
7/20/2006 10:34	19.8	12.8	780.0	-7.0	775.0	4.59E-07	0.9	2.9	2.5
7/20/2006 10:51	23.5	9.8	1020.0	-13.7	792.0	4.53E-07	0.8	3.7	3
7/20/2006 10:52	4.0	24.2	0.0	20.2	792.0				
7/20/2006 11:20	12.4	17.8	1680.0	5.4	820.0	5.27E-07	0.8	8.4	6.4
7/20/2006 11:31	14.8	15.6	660.0	0.8	831.0	4.42E-07	0.9	2.4	2.2
7/20/2006 11:52	19.1	11.6	0.0	-7.5	831.0				
7/20/2006 12:48	3.7	23.5	3360.0	19.8	887.0				
7/20/2006 13:04	9.2	19.1	960.0	9.9	903.0	6.10E-07	0.8	5.5	4.4
7/20/2006 13:35	16.2	12.2	1860.0	-4.0	934.0	4.74E-07	1.0	7	6.9
7/20/2006 14:18	23.9	4.7	2580.0	-19.2	977.0	4.10E-07	1.0	7.7	7.5
7/20/2006 14:19	4.0	23.6	0.0	19.6	977.0				
7/20/2006 14:34	8.2	20.0	900.0	11.8	992.0	5.10E-07	0.9	4.2	3.6
7/20/2006 15:07	15.2	13.4	1980.0	-1.8	1025.0	4.30E-07	0.9	7	6.6
7/20/2006 16:17	25.0	1.5	0.0	-23.5	1025.0				
7/20/2006 16:19	4.0	23.8	0.0	19.8	1025.0				
7/20/2006 16:45	10.8	18.1	1560.0	7.3	1051.0	4.78E-07	0.8	6.8	5.7
7/20/2006 17:07	15.0	13.8	1320.0	-1.2	1073.0	4.08E-07	1.0	4.2	4.3



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

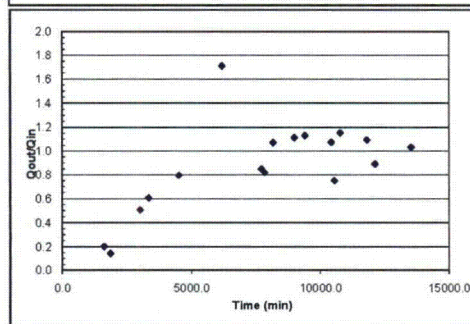
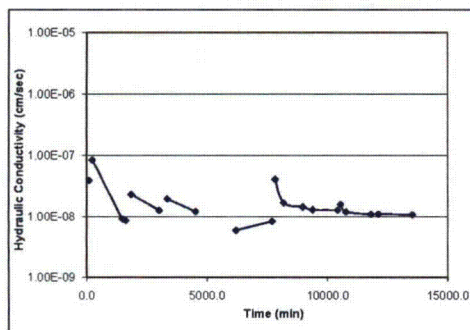
ASTM D 5084 - 00

Sample I.D.	305-mm ICY1L	Test Date :	10/2/06
Cell Pressure =	43.1 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.3 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.3 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	1 cm ²
Weight of wet sample =	24131.5 (g)	Sample Water Content =	13.6 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.91 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Dry Soil (g)	Water Content (%)
CL1	60.36	460.6	411.57	13.57

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
11/2/2006 12:32	0.5	22.5	0.0	22.0	0.0				
11/2/2006 14:22	6.8	24.3	6600.0	17.5	110.0	3.92E-08	-0.3	6.3	-1.8
11/2/2006 14:23	0.8	20.2	0.0	19.4	110.0				
11/2/2006 15:20	3.3	20.9	3420.0	22.9	167.0				
11/2/2006 16:30	4.8	21.5	4200.0	16.7	237.0	8.49E-08	-0.4	1.5	-0.6
11/3/2006 13:12	18.3	23.6	74520.0	5.3	1479.0	9.25E-09	-0.2	13.5	-2.1
11/3/2006 15:36	19.3	23.4	8640.0	4.1	1623.0	8.71E-09	0.2	1	0.2
11/6/2006 12:22	3.4	22.6	0.0	19.2	1623.0				
11/6/2006 16:19	8.3	21.9	14220.0	13.6	1860.0	2.31E-08	0.1	4.9	0.7
11/7/2006 11:33	17.8	17.1	69240.0	-0.7	3014.0	1.28E-08	0.5	9.5	4.8
11/9/2006 11:50	0.8	23.8	0.0	23.0	3014.0				
11/9/2006 17:29	5.1	21.2	20340.0	16.1	3353.0	1.95E-08	0.6	4.3	2.6
11/10/2006 12:57	12.9	15.0	70080.0	2.1	4521.0	1.22E-08	0.8	7.8	6.2
11/13/2006 12:02	1.4	23.3	0.0	21.9	4521.0				
11/14/2006 16:01	5.2	16.8	100740.0	11.6	6200.0	5.98E-09	1.7	3.8	6.5
11/15/2006 17:11	11.8	11.2	90600.0	-0.6	7710.0	8.41E-09	0.8	6.8	5.6
11/28/2006 13:42	1.9	21.6	0.0	19.7	7710.0				
11/28/2006 15:43	4.7	19.3	7260.0	14.6	7831.0	4.10E-08	0.8	2.8	2.3
11/28/2006 21:25	7.5	16.3	20520.0	8.8	8173.0	1.70E-08	1.1	2.8	3
11/29/2006 10:58	12.8	10.4	48780.0	-2.4	8986.0	1.45E-08	1.1	5.3	5.9
11/29/2006 17:53	15.1	7.8	24900.0	-7.3	9401.0	1.31E-08	1.1	2.3	2.6
11/30/2006 10:54	20.5	2.0	61260.0	-18.5	10422.0	1.28E-08	1.1	5.4	5.8
11/30/2006 10:59	2.8	24.2	0.0	21.4	10422.0				
11/30/2006 13:04	4	23.3	7500.0	19.3	10547.0	1.61E-08	0.7	1.2	0.9
11/30/2006 16:47	5.3	21.8	13380.0	16.5	10770.0	1.22E-08	1.2	1.3	1.5
12/1/2006 10:06	10.7	15.9	62340.0	5.2	11809.0	1.10E-08	1.1	5.4	5.9
12/1/2006 15:28	12.5	14.3	19320.0	1.8	12131.0	1.11E-08	0.9	1.8	1.6
12/2/2006 14:48	19.2	7.4	84000.0	-11.8	13531.0	1.08E-08	1.0	6.7	6.9



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

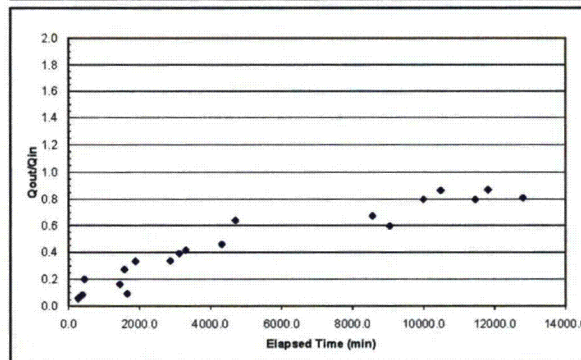
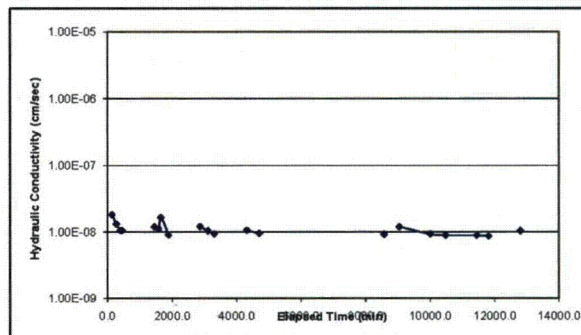
ASTM D 5084 - 00

Sample I.D.	305-mm ICY2L	Test Date :
Cell Pressure = 43.1 psi	Diameter of Sample, D = 30.5 cm	
Inflow Pressure = 42.3 psi	Length of Sample, L = 15.2 cm	
Outflow Pressure = 40.0 psi	Area of Sample, A = 729.7 cm ²	
Pressure Difference = 2.3 psi	Sample Volume, V = 11120.0 cm ³	
Effective Stress = 2.0 psi	a _{in} = 1 cm ²	
Hydraulic Gradient, i = 10.6	a _{out} = 1 cm ²	
Weight of wet sample = 22362.5 (g)	Sample Water Content = 12.0 (%)	
Wet Density = 2.0 g/cm ³	Dry Density = 1.80 g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left(\frac{\Delta H_1}{\Delta H_2} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
44	(g)	(g)	(g)	(%)
	50.92	525.78	468.57	13.70

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/1/2006 9:13	4.3	22.6	0.0	18.3	0.0				
8/1/2006 11:33	7.0	22.7	8400.0	15.7	140.0	1.81E-08	0.0	2.7	-0.1
8/1/2006 13:43	8.7	22.6	8100.0	13.9	275.0	1.31E-08	0.1	1.7	0.1
8/1/2006 15:52	9.9	22.5	7440.0	12.8	399.0	1.04E-08	0.1	1.2	0.1
8/1/2006 16:43	10.4	22.4	3430.0	12.0	458.0	1.05E-08	0.2	0.5	0.1
8/1/2006 16:53	1.5	22.6	0.0	21.1	458.0				
8/2/2006 9:23	11.9	20.9	59760.0	9.0	1452.0	1.20E-08	0.2	10.4	1.7
8/2/2006 11:39	13.0	20.6	7800.0	7.8	1582.0	1.10E-08	0.3	1.1	0.3
8/2/2006 12:55	14.1	20.5	4560.0	8.4	1658.0	1.63E-08	0.1	1.1	0.1
8/2/2006 16:45	15.6	20.0	13800.0	4.4	1888.0	9.05E-09	0.3	1.5	0.5
8/2/2006 16:53	2.0	22.4	0.0	20.4	1888.0				
8/3/2006 9:18	10.9	19.4	59100.0	8.5	2873.0	1.19E-08	0.3	8.9	3
8/3/2006 13:26	12.7	18.7	14880.0	6.0	3121.0	1.04E-08	0.4	1.8	0.7
8/3/2006 16:35	13.9	18.2	11340.0	4.3	3310.0	9.38E-09	0.4	1.2	0.5
8/3/2006 16:41	1.8	22.8	0.0	21.0	3310.0				
8/4/2006 9:27	9.2	19.4	60360.0	10.2	4316.0	1.05E-08	0.5	7.4	3.4
8/4/2006 15:51	11.4	18.0	23040.0	6.6	4700.0	9.56E-09	0.6	2.2	1.4
8/4/2006 16:44	1.4	24.6	0.0	23.2	4700.0				
8/7/2006 9:07	21.8	10.9	231780.0	-10.9	8563.0	9.18E-09	0.7	20.4	13.7
8/7/2006 9:09	2.6	23.8	0.0	21.2	8563.0				
8/7/2006 17:08	6.3	21.6	28740.0	15.3	9042.0	1.19E-08	0.6	3.7	2.2
8/8/2006 9:07	11.2	17.7	57540.0	6.5	10001.0	9.25E-09	0.8	4.9	3.9
8/8/2006 17:10	13.4	15.8	28980.0	2.4	10484.0	8.89E-09	0.9	2.2	1.9
8/9/2006 9:18	17.8	12.3	58080.0	-5.5	11452.0	8.87E-09	0.8	4.4	3.5
8/9/2006 15:23	19.3	11.0	21900.0	-8.3	11817.0	8.62E-09	0.9	1.5	1.3
8/9/2006 17:03	4.1	23.3	0.0	19.2	11817.0				
8/10/2006 9:22	9.8	18.7	58920.0	8.9	12799.0	1.04E-08	0.8	5.7	4.6



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

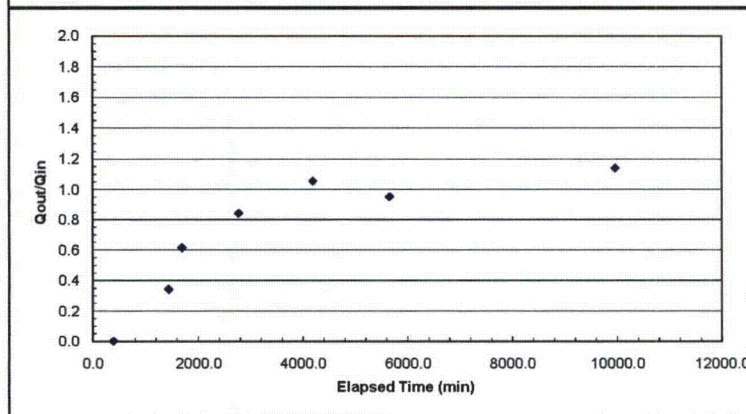
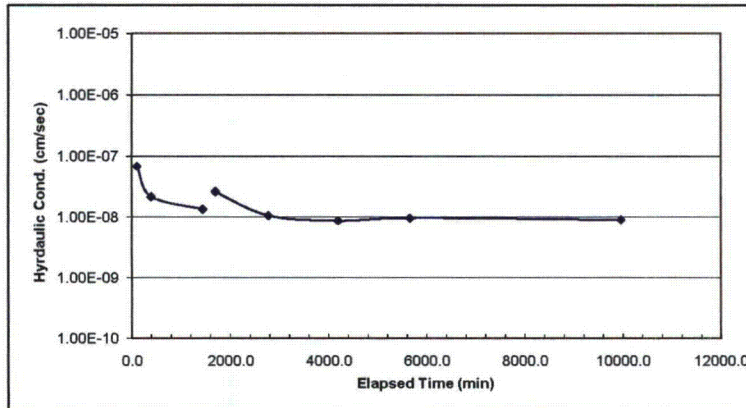
ASTM D 5084 - 00

Sample I.D.	150-mm ICY2L	Test Date :	8/15/06
Cell Pressure =	43.5 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	10.2 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.8 psi	Sample Volume, V =	1853.3 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	12.5	a _{out} =	1 cm ²
Weight of wet sample =	4082.1 (g)	Sample Water Content =	14.4 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.92 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	50.19	508.24	450.46	14.44

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/15/2006 10:01	0.8	21.1	0.0	20.3	0.0				
8/15/2006 11:48	3.6	21.6	6420.0	18.0	107.0	6.85E-08	-0.2	2.8	-0.5
8/15/2006 16:31	5.5	21.6	16980.0	16.1	390.0	2.17E-08	0.0	1.9	0
8/16/2006 10:00	8.7	20.5	62940.0	11.8	1439.0	1.35E-08	0.3	3.2	1.1
8/22/2006 11:27	1.8	22.0	0.0	20.2	1439.0				
8/22/2006 15:43	3.1	21.2	15360.0	18.1	1695.0	2.61E-08	0.6	1.3	0.8
8/23/2006 9:40	5.0	19.6	64620.0	14.6	2772.0	1.06E-08	0.8	1.9	1.6
8/24/2006 9:20	6.8	17.7	85200.0	10.9	4192.0	8.68E-09	1.1	1.8	1.9
8/25/2006 9:42	8.9	15.7	87720.0	6.8	5654.0	9.61E-09	1.0	2.1	2
8/28/2006 9:31	13.9	10.0	258540.0	-3.9	9963.0	9.01E-09	1.1	5	5.7



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

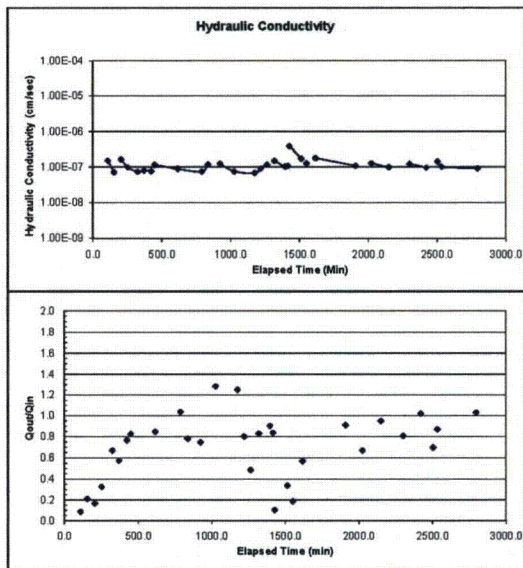
ASTM D 5084 - 00

Sample I.D.	305-mm ICY2U	Test Date :	8/30/06
Cell Pressure =	43.1 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.3 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.3 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	1 cm ²
Weight of wet sample =	24630.5 (g)	Sample Water Content =	15.0 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.93 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{\Delta H_1}{\Delta H_2} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
9	195.1	930.75	834.65	15.03

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/30/2006 12:35	5.4	17.5	0.0	12.1	0.0				
8/30/2006 14:34	19.6	16.3	6540.0	-3.3	109.0	1.48E-07	0.1	14.2	1.2
8/30/2006 15:09	22.0	15.0	2700.0	-6.2	154.0	7.14E-08	0.2	2.4	0.5
9/5/2006 12:45	3.5	21.7	0.0	19.2	154.0				
9/5/2006 13:37	10.8	20.5	3120.0	9.7	206.0	1.62E-07	0.2	7.3	1.2
9/5/2006 14:24	14.2	18.4	2820.0	5.2	253.0	6.85E-08	0.3	3.4	1.1
9/5/2006 15:36	17.2	17.4	4320.0	0.2	325.0	7.35E-08	0.7	3	2
9/5/2006 16:21	18.3	16.2	2700.0	-3.1	370.0	7.86E-08	0.8	2.1	1.2
9/5/2006 17:15	21.4	14.6	3240.0	-6.8	424.0	7.51E-08	0.9	2.1	1.6
9/6/2006 8:41	2.1	21.1	0.0	19.0	424.0				
9/6/2006 10:07	3.8	19.7	1560.0	15.9	450.0	1.16E-07	0.8	1.7	1.4
9/6/2006 12:52	11.5	13.2	9900.0	1.7	615.0	9.79E-08	0.8	7.7	6.5
9/6/2006 15:45	17.2	7.3	10360.0	-9.9	769.0	7.41E-08	1.0	5.7	5.9
9/6/2006 18:22	19.8	5.2	2920.0	-14.7	825.0	1.19E-07	0.9	2.7	2.1
9/7/2006 9:24	1.8	18.9	0.0	17.3	835.0				
9/7/2006 10:52	7.8	14.3	5280.0	6.5	823.0	1.23E-07	0.7	6.2	4.6
9/7/2006 12:35	11.0	10.2	6180.0	-0.8	1026.0	7.50E-08	1.3	3.2	4.1
9/7/2006 15:03	15.0	5.2	8980.0	-9.8	1174.0	6.77E-08	1.3	4	5
9/7/2006 15:49	17.0	3.3	7760.0	-13.4	1220.0	9.01E-08	0.9	2	1.6
9/7/2006 16:33	19.9	2.2	2640.0	-17.7	1264.0	1.16E-07	0.5	2.9	1.4
9/8/2006 10:43	1.8	23.3	0.0	21.7	1264.0				
9/8/2006 11:38	6.2	19.5	3300.0	13.3	1319.0	1.48E-07	0.8	4.6	3.8
9/8/2006 12:54	10.2	15.9	4560.0	5.7	1395.0	1.02E-07	0.9	4	3.6
9/8/2006 13:15	11.4	14.9	1260.0	3.5	1418.0	1.10E-07	0.8	1.2	1
9/12/2006 14:27	4.1	22.2	0.0	18.1	1418.0				
9/12/2006 14:36	8.1	21.8	660.0	13.7	1427.0	3.92E-07	0.1	4	0.4
9/12/2006 16:03	18.5	16.3	5100.0	-0.2	1512.0	1.69E-07	0.3	10.4	3.5
9/12/2006 16:16	1.2	21.9	0.0	20.7	1512.0				
9/12/2006 16:45	5.5	21.1	2340.0	15.8	1551.0				
9/13/2006 10:55	1.4	18.5	0.0	17.1	1551.0	1.27E-07	0.2	4.3	0.8
9/13/2006 12:01	8.9	14.3	3960.0	5.5	1617.0	1.77E-07	0.8	7.4	4.2
9/13/2006 16:53	23.1	1.3	17520.0	-21.8	1609.0	1.06E-07	0.9	14.3	13
9/14/2006 11:31	2.7	19.0	0.0	18.3	1909.0				
9/14/2006 13:26	11.1	13.4	6900.0	2.3	2024.0	1.24E-07	0.7	8.4	5.6
9/14/2006 15:31	18.8	9.0	7500.0	-9.8	2149.0	9.75E-08	0.9	5.7	5.4
9/15/2006 12:44	1.3	23.1	0.0	21.8	2149.0				
9/15/2006 15:16	11.6	14.8	8120.0	3.2	2301.0	1.22E-07	0.8	10.3	8.3
9/15/2006 17:18	16.8	9.5	7200.0	-7.3	2421.0	9.54E-08	1.0	5.2	5.3
9/16/2006 10:33	1.4	19.1	0.0	17.7	2421.0				
9/16/2006 11:58	8.3	14.3	4980.0	6.0	2504.0	1.41E-07	0.7	6.9	4.8
9/16/2006 12:26	9.8	13.0	1740.0	3.2	2533.0	1.01E-07	0.9	1.5	1.3
9/16/2006 16:47	20.2	2.3	15720.0	-17.9	2785.0	9.09E-08	1.0	10.4	10.7
9/16/2006 13:49	4.5	17.7	75720.0	13.2	4057.0	-2.70E-08	1.0	-15.7	-15.4



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

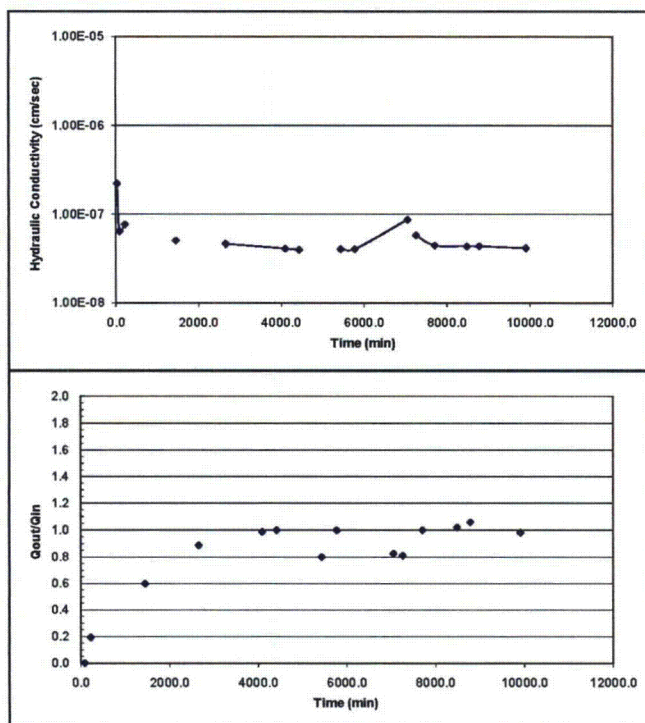
ASTM D 5084 - 00

Sample I.D.	150-mm ICY2U	Test Date : 10/12/06
Cell Pressure = 43.5 psi	Diameter of Sample, D = 15.2 cm	
Inflow Pressure = 42.4 psi	Length of Sample, L = 10.2 cm	
Outflow Pressure = 40.6 psi	Area of Sample, A = 182.4 cm ²	
Pressure Difference = 1.8 psi	Sample Volume, V = 1853.3 cm ³	
Effective Stress = 2.0 psi	a _{in} = 1 cm ²	
Hydraulic Gradient, i = 12.5	a _{out} = 1 cm ²	
Weight of wet sample = 3970.3 (g)	Sample Water Content = 15.0 (%)	
Wet Density = 2.1 g/cm ³	Dry Density = 1.86 g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
90	195.1	930.75	834.65	15.03

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
10/12/2006 12:19	2.7	23.6	0.0	20.9	0.0				
10/12/2006 12:49	4.9	23.7	1800.0	18.8	30.0	2.22E-07	0.0	2.2	-0.1
10/12/2006 13:44	6.0	23.7	3300.0	17.7	85.0	6.41E-08	0.0	1.1	0
10/12/2006 15:55	8.6	23.2	7860.0	14.6	216.0	7.69E-08	0.2	2.6	0.5
10/12/2006 16:58	0.8	23.0	0.0	22.2	216.0				
10/13/2006 12:31	12.5	16.0	73980.0	3.5	1449.0	5.06E-08	0.6	11.7	7
10/16/2006 16:01	1.5	23.5	0.0	22.0	1449.0				
10/17/2006 12:03	10.4	15.6	72120.0	5.2	2651.0	4.63E-08	0.9	8.9	7.9
10/18/2006 12:02	18.3	7.8	86340.0	-10.5	4090.0	4.09E-08	1.0	7.9	7.8
10/18/2006 17:29	19.9	6.2	19620.0	-13.7	4417.0	3.97E-08	1.0	1.6	1.6
10/18/2006 18:05	0.5	23.2	0.0	22.7	4417.0				
10/19/2006 10:58	7.5	17.6	60780.0	10.1	5430.0	4.04E-08	0.8	7	5.6
10/19/2006 16:40	9.5	15.6	20520.0	6.1	5772.0	4.03E-08	1.0	2	2
10/20/2006 13:57	25.0	2.8	76620.0	-22.2	7049.0	8.72E-08	0.8	15.5	12.8
10/23/2006 12:11	0.9	21.4	0.0	20.5	7049.0				
10/23/2006 15:41	3.0	19.7	12600.0	16.7	7259.0	5.78E-08	0.8	2.1	1.7
10/23/2006 23:08	6.0	16.7	26820.0	10.7	7706.0	4.44E-08	1.0	3	3
10/24/2006 12:07	10.8	11.8	46740.0	1.0	8485.0	4.37E-08	1.0	4.8	4.9
10/24/2006 17:04	12.5	10.0	17820.0	-2.5	8782.0	4.35E-08	1.1	1.7	1.8
10/25/2006 11:50	18.5	4.1	67560.0	-14.4	9908.0	4.16E-08	1.0	6	5.9



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

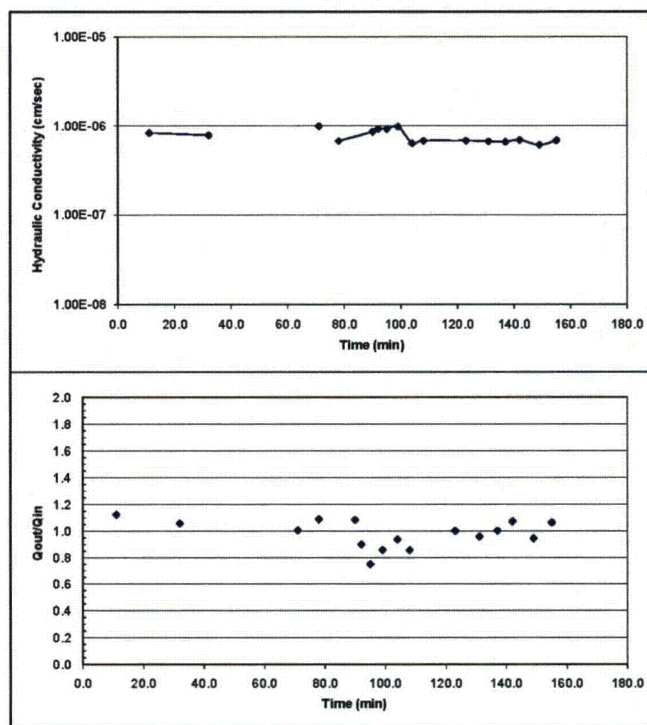
ASTM D 5084 - 00

Sample I.D.	305-mm ICY1U	Test Date :	10/2/06
Cell Pressure =	43.1 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.3 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.3 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6	a _{out} =	1 cm ²
Weight of wet sample =	25265.5 (g)	Sample Water Content =	12.3 (%)
Wet Density =	2.3 g/cm ³	Dry Density =	2.02 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
4	50.09	511.3	460.68	12.33

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
10/2/2006 16:05	11.7	16.3	0.0	4.6	0.0				
10/2/2006 16:16	15.7	11.8	660.0	-3.9	11.0	8.30E-07	1.1	4	4.5
10/2/2006 16:37	22.6	4.5	1260.0	-18.1	32.0	7.81E-07	1.1	6.9	7.3
10/6/2006 14:27	3.3	22.9	0.0	22.9	32.0			-19.3	-18.4
10/6/2006 15:06	19.9	6.2	2340.0	-13.7	71.0	9.86E-07	1.0	16.6	16.7
10/6/2006 15:30	4.3	22.6	0.0	18.3	71.0			-15.6	-16.4
10/6/2006 15:37	6.6	20.1	420.0	13.5	78.0	6.72E-07	1.1	2.3	2.5
10/6/2006 15:49	11.4	14.9	720.0	3.5	90.0	8.52E-07	1.1	4.8	5.2
10/12/2006 12:15	3.0	21.5	0.0	18.5	90.0			-8.4	-6.6
10/12/2006 12:17	4.0	20.6	120.0	16.6	92.0	9.22E-07	0.9	1	0.9
10/12/2006 12:20	5.6	19.4	180.0	13.8	95.0	9.18E-07	0.8	1.6	1.2
10/12/2006 12:24	7.7	17.6	240.0	9.9	99.0	9.78E-07	0.9	2.1	1.8
10/12/2006 12:29	9.3	16.1	300.0	6.8	104.0	6.34E-07	0.9	1.6	1.5
10/12/2006 12:33	10.7	14.9	240.0	4.2	108.0	6.76E-07	0.9	1.4	1.2
10/12/2006 12:48	15.4	10.2	900.0	-5.2	123.0	6.77E-07	1.0	4.7	4.7
10/12/2006 12:56	17.8	7.9	480.0	-9.9	131.0	6.63E-07	1.0	2.4	2.3
10/12/2006 13:02	19.5	6.2	360.0	-13.3	137.0	6.57E-07	1.0	1.7	1.7
10/12/2006 13:07	20.9	4.7	300.0	-16.2	142.0	6.87E-07	1.1	1.4	1.5
10/12/2006 13:14	22.7	3.0	420.0	-19.7	149.0	6.05E-07	0.9	1.8	1.7
10/12/2006 13:20	24.3	1.3	360.0	-23.0	155.0	6.82E-07	1.1	1.6	1.7



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

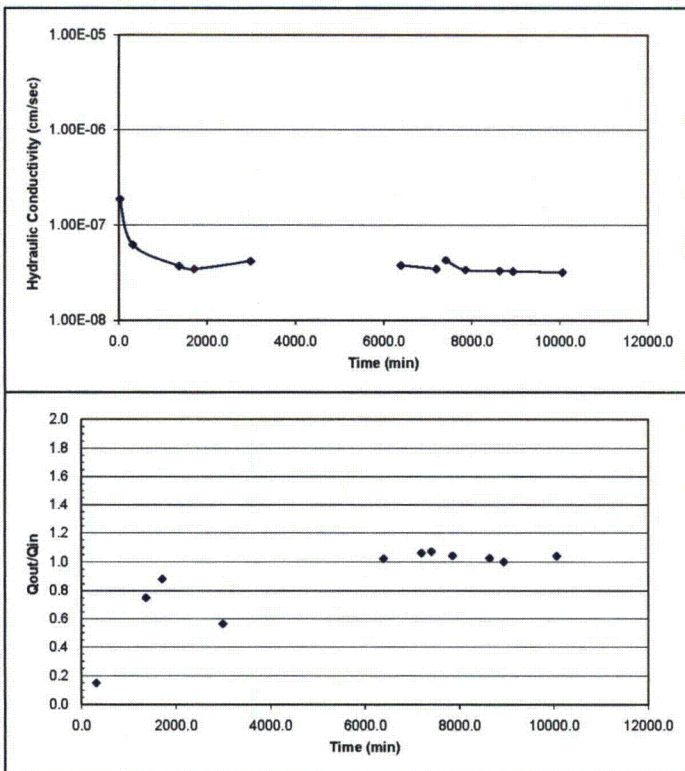
ASTM D 5084 - 00

Sample I.D.			150-mm ICY1U		Test Date :	
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm	
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm	
Outflow Pressure =	40.6	psi	Area of Sample, A =	182.4	cm ²	
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm ³	
Effective Stress =	2.0	psi	a _{in} =	1	cm ²	
Hydraulic Gradient, i =	12.5		a _{out} =	1	cm ²	
Weight of wet sample =	3708.7	(g)	Sample Water Content =	16.4	(%)	
Wet Density =	2.0	g/cm ³	Dry Density =	1.72	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can Wet Soil (g)	WT of Can + Can Wet Soil (g)	WT of Can + Can Dry Soil (g)	WT of + Water Content (%)
7	49.43	454.37	397.26	16.42

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
10/18/2006 12:14	1.1	21.3	0.0	20.2	0.0				
10/18/2006 12:43	3.5	22.0	1740.0	18.5	29.0	1.86E-07	-0.3	2.4	-0.7
10/18/2006 17:28	8.2	21.3	17100.0	13.1	314.0	6.18E-08	0.1	4.7	0.7
10/19/2006 10:57	14.6	16.5	62940.0	1.9	1363.0	3.70E-08	0.8	6.4	4.8
10/19/2006 16:38	16.3	15.0	20460.0	-1.3	1704.0	3.43E-08	0.9	1.7	1.5
10/20/2006 13:59	25.0	10.1	76860.0	-14.9	2985.0	4.16E-08	0.6	8.7	4.9
10/20/2006 14:00	1.1	24.7	0.0	23.6	2985.0				
10/22/2006 22:45	19.0	6.4	204300.0	-12.6	6390.0	3.76E-08	1.0	17.9	18.3
10/23/2006 12:06	22.2	3.0	48060.0	-19.2	7191.0	3.46E-08	1.1	3.2	3.4
10/23/2006 12:08	0.3	24.1	0.0	23.8	7191.0				
10/23/2006 15:40	1.7	22.6	12720.0	20.9	7403.0	4.26E-08	1.1	1.4	1.5
10/23/2006 23:07	4.0	20.2	26820.0	16.2	7850.0	3.36E-08	1.0	2.3	2.4
10/24/2006 12:07	7.8	16.3	46800.0	8.5	8630.0	3.30E-08	1.0	3.8	3.9
10/24/2006 17:05	9.2	14.9	17880.0	5.7	8928.0	3.26E-08	1.0	1.4	1.4
10/25/2006 11:49	14.0	9.9	67440.0	-4.1	10052.0	3.18E-08	1.0	4.8	5



Hydraulic Conductivity Test - Cedar Rapids - Clay Cover

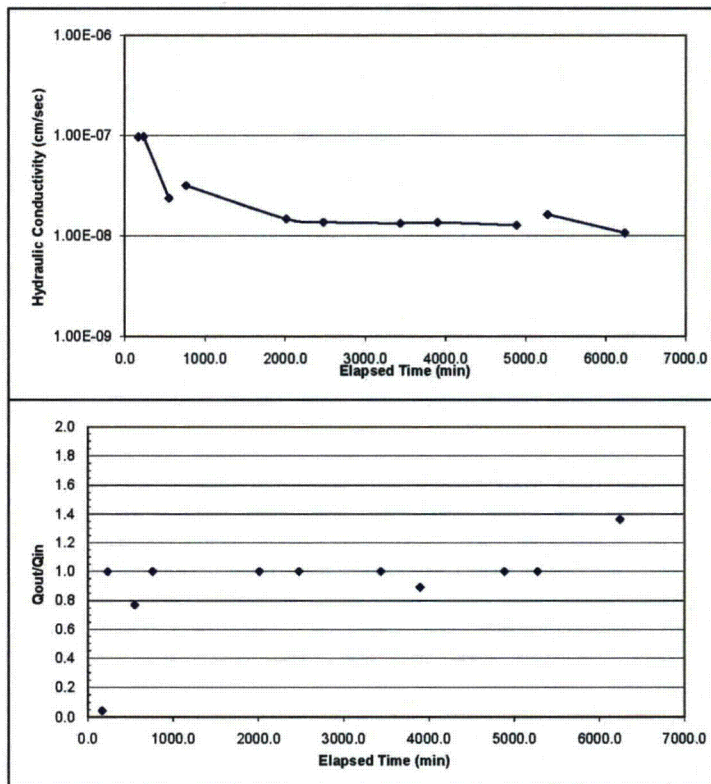
ASTM D 5084 - 00

Sample I.D.			150-mm ICYRL		Test Date :	
Cell Pressure =	43.5	psi			Diameter of Sample, D =	15.2 cm
Inflow Pressure =	42.4	psi			Length of Sample, L =	10.2 cm
Outflow Pressure =	40.6	psi			Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.8	psi			Sample Volume, V =	1853.3 cm ³
Effective Stress =	2.0	psi			a _{in} =	1 cm ²
Hydraulic Gradient, i =	12.5				a _{out} =	1 cm ²
Weight of wet sample =	3883.9	(g)			Sample Water Content =	12.9 (%)
Wet Density =	2.1	g/cm ³			Dry Density =	1.86 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
10	50.98	507	454.72	12.95

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
7/28/2006 9:52	4.0	25.0	0.0	21.0	0.0				
7/28/2006 12:40	8.9	24.8	10080.0	15.9	168.0	9.72E-08	0.0	4.9	0.2
7/31/2006 9:39	1.4	23.6	0.0	22.2	168.0				
7/31/2006 10:43	2.4	22.6	3840.0	20.2	232.0	9.81E-08	1.0	1	1
7/31/2006 16:00	3.7	21.6	19020.0	17.9	549.0	2.31E-08	0.8	1.3	1
8/1/2006 9:08	4.5	20.9	0.0	16.4	549.0				
8/1/2006 12:39	5.5	19.9	12660.0	14.4	760.0	3.10E-08	1.0	1	1
8/2/2006 9:31	8.2	17.2	75120.0	9.0	2012.0	1.45E-08	1.0	2.7	2.7
8/2/2006 17:11	9.1	16.3	27600.0	7.2	2472.0	1.35E-08	1.0	0.9	0.9
8/3/2006 9:16	10.9	14.5	57900.0	3.6	3437.0	1.31E-08	1.0	1.8	1.8
8/3/2006 16:53	11.8	13.7	27420.0	1.9	3894.0	1.33E-08	0.9	0.9	0.8
8/4/2006 9:26	13.5	12.0	59580.0	-1.5	4887.0	1.25E-08	1.0	1.7	1.7
8/8/2006 10:44	15.4	10.0	0.0	-5.4	4887.0				
8/8/2006 17:09	16.2	9.2	23100.0	-7.0	5272.0	1.60E-08	1.0	0.8	0.8
8/9/2006 9:17	17.3	7.7	58080.0	-9.6	6240.0	1.05E-08	1.4	1.1	1.5



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

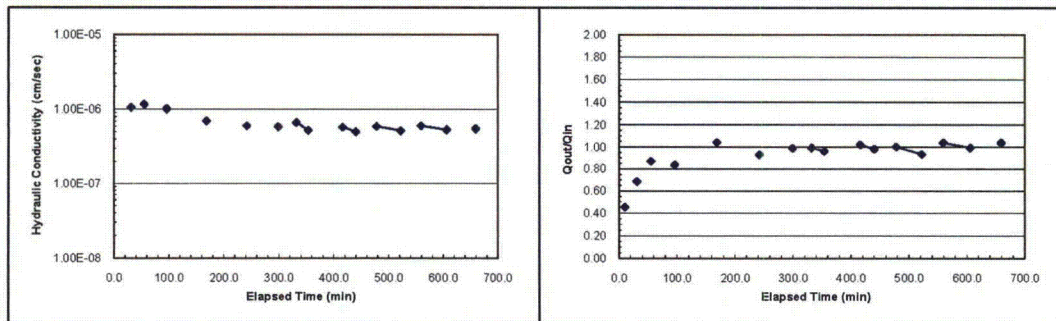
ASTM D 5084 - 00

Sample I.D.		305-mm IOYRL	Test Date :				
Cell Pressure =		43.1	psi	Diameter of Sample, D =	30.5	cm	
Inflow Pressure =		42.3	psi	Length of Sample, L =		15.2	cm
Outflow Pressure =		40.0	psi	Area of Sample, A =		729.7	cm ²
Pressure Difference =		2.3	psi	Sample Volume, V =		11120.0	cm ³
Effective Stress =		2.0	psi	a _{in} =		1	cm ²
Hydraulic Gradient, i =		10.6		a _{out} =		1	cm ²
Weight of wet sample =		23269.7	(g)	Sample Water Content =		15.2	(%)
Wet Density =		2.1	g/cm ³	Dry Density =		1.82	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
6	51.3	491.8	433.6	15.22

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
7/12/06 11:57	1.9	25.0	0.0	23.1	0.0				
7/12/06 12:07	10.9	20.9	800.0	10.0	10.0		0.46	9	4.1
7/12/06 12:07	12.9	20.4	0.0	7.5	10.0			2	0.5
7/12/06 12:28	24.9	12.2	1260.0	-12.7	31.0	1.05E-06	0.68	12	8.2
7/12/06 12:28	3.8	23.0	0.0	19.2	31.0				
7/12/06 12:52	18.1	10.6	1440.0	-7.5	55.0	1.16E-06	0.87	14.3	12.4
7/12/06 12:52	2.9	23.8	0.0	20.9	55.0				
7/12/06 13:33	24.0	6.2	2460.0	-17.8	96.0	1.01E-06	0.83	21.1	17.6
7/12/06 13:33	1.3	28.8	0.0	27.5	96.0				
7/12/06 14:46	24.9	4.3	4380.0	-20.6	169.0	6.99E-07	1.04	23.6	24.5
7/12/06 14:46	3.0	22.7	0.0	19.7	169.0				
7/12/06 15:59	24.0	3.2	4380.0	-20.8	242.0	6.02E-07	0.93	21	19.5
7/12/06 15:59	3.3	23.0	0.0	19.7	242.0			-20.7	-19.8
7/12/06 16:56	19.2	7.3	3420.0	-11.9	299.0	5.84E-07	0.99	15.9	15.7
7/14/06 10:47	8.9	20.7	0.0	11.8	299.0				
7/14/06 11:20	19.3	10.4	1980.0	-8.9	332.0	6.70E-07	0.99	10.4	10.3
7/14/06 11:42	24.3	5.6	1320.0	-18.7	354.0	5.24E-07	0.96	5	4.8
7/14/06 11:44	3.0	23.1	0.0	20.1	354.0			-21.3	-17.5
7/14/06 12:46	19.8	6.0	3720.0	-13.8	416.0	5.79E-07	1.02	16.8	17.1
7/14/2006 13:10	24.8	1.1	1440.0	-23.7	440.0	5.02E-07	0.98	5	4.9
7/14/2006 13:12	2.5	23.6	0.0	21.1	440.0				
7/14/2006 13:50	13.6	12.5	2280.0	-1.1	478.0	5.93E-07	1.00	11.1	11.1
7/14/2006 14:34	23.8	3.0	2640.0	-20.8	522.0	5.17E-07	0.93	10.2	9.5
7/14/2006 14:36	2.4	23.4	0.0	21.0	522.0				
7/14/2006 15:13	13.2	12.2	2220.0	-1.0	559.0	6.03E-07	1.04	10.8	11.2
7/14/2006 16:00	24.0	1.5	2820.0	-22.5	606.0	5.32E-07	0.99	10.8	10.7
7/14/06 16:01	2.5	23.4	0.0	20.9	606.0				
7/14/2006 16:54	16.4	9.0	3180.0	-7.4	659.0	5.53E-07	1.04	13.9	14.4



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

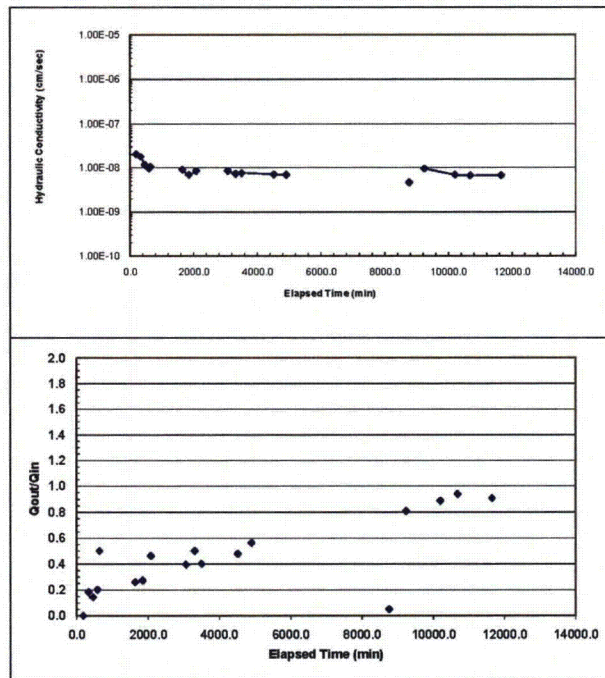
ASTM D 5084 - 00

Sample I.D.		305-mm IOYRU	Test Date :	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7 cm ²
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	2.0	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	10.6		a _{out} =	1 cm ²
Weight of wet sample =	25310.9	(g)	Sample Water Content =	14.6 (%)
Wet Density =	2.3	g/cm ³	Dry Density =	1.99 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
44	50.92	523.47	463.44	14.55

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
7/31/06 9:35	7.5	24.5	0.0	17.0	0.0				
7/31/06 10:40	3.5	19.7	0.0	16.2	0.0				
7/31/06 13:45	7.3	19.7	11100.0	12.4	185.0	2.03E-08	0.0	3.8	0
8/1/06 9:11	3.0	22.5	0.0	19.5	185.0				
8/1/06 11:33	5.2	22.1	8520.0	16.9	327.0	1.77E-08	0.2	2.2	0.4
8/1/06 13:47	6.6	21.9	8040.0	15.3	461.0	1.17E-08	0.1	1.4	0.2
8/1/06 15:51	7.6	21.7	7440.0	14.1	585.0	9.55E-09	0.2	1	0.2
8/1/06 16:48	8.0	21.5	3420.0	13.5	642.0	1.04E-08	0.5	0.4	0.2
8/1/06 16:49	1.6	22.2	0.0	20.6	642.0				
8/2/06 9:30	8.9	20.3	6060.0	11.4	1643.0	9.00E-09	0.3	7.3	1.9
8/2/2006 12:55	10.0	20.0	12300.0	10.0	1848.0	6.89E-09	0.3	1.1	0.3
8/2/2006 16:45	11.3	19.4	13800.0	8.1	2078.0	6.42E-09	0.5	1.3	0.6
8/2/2006 16:50	2.1	23.3	0.0	21.2	2078.0				
8/3/2006 9:17	8.2	20.9	59220.0	12.7	3065.0	8.39E-09	0.4	6.1	2.4
8/3/2006 13:26	9.4	20.3	14940.0	10.9	3314.0	7.25E-09	0.5	1.2	0.6
8/3/2006 16:34	10.4	19.9	11280.0	9.5	3502.0	7.54E-09	0.4	1	0.4
8/4/2006 9:26	15.0	17.7	60720.0	2.7	4514.0	6.97E-09	0.5	4.6	2.2
8/4/2006 15:51	16.6	16.8	23100.0	0.2	4899.0	6.93E-09	0.6	1.6	0.9
8/4/2006 16:43	2.7	14.5	0.0	11.8	4899.0				
8/7/2006 9:06	18.8	13.7	231780.0	-5.1	8762.0	4.62E-09	0.0	16.1	0.8
8/7/2006 9:08	2.1	23.4	0.0	21.3	8762.0				
8/7/2006 17:08	4.7	21.3	28800.0	16.6	9242.0	9.43E-09	0.8	2.6	2.1
8/8/2006 9:06	8.2	18.2	57480.0	10.0	10200.0	6.85E-09	0.9	3.5	3.1
8/8/2006 17:09	9.8	16.7	28980.0	6.9	10683.0	6.56E-09	0.9	1.6	1.5
8/9/2006 9:17	13.0	13.8	58080.0	0.8	11651.0	6.62E-09	0.9	3.2	2.9



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

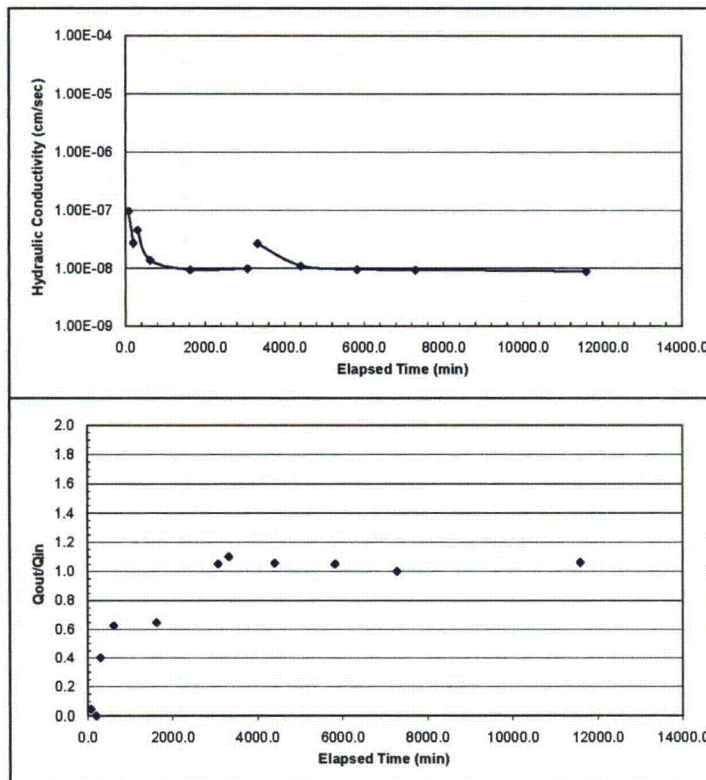
ASTM D 5084 - 00

Sample I.D.	150-mm IOYRU	Test Date :	8/11/06
Cell Pressure =	43.5 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	10.2 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.8 psi	Sample Volume, V =	1853.3 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	12.5	a _{out} =	1 cm ²
Weight of wet sample =	4105.9 (g)	Sample Water Content =	12.7 (%)
Wet Density =	2.2 g/cm ³	Dry Density =	1.97 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	50.82	520	467.29	12.66

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/11/2006 9:42	3.6	23.3	0.0	19.7	0.0				
8/11/2006 10:58	5.8	23.2	4560.0	17.4	76.0	9.68E-08	0.0	2.2	0.1
8/11/2006 12:58	6.8	23.2	7200.0	16.4	196.0	2.70E-08	0.0	1	0
8/14/2006 10:06	8.6	23.0	0.0	14.4	196.0				
8/14/2006 11:50	9.6	22.6	6240.0	13.0	300.0	4.45E-08	0.4	1	0.4
8/14/2006 17:05	10.4	22.1	18900.0	11.7	615.0	1.38E-08	0.6	0.8	0.5
8/15/2006 9:53	12.1	21.0	60480.0	8.9	1623.0	9.42E-09	0.6	1.7	1.1
8/16/2006 9:59	14.1	18.9	86760.0	4.8	3069.0	9.86E-09	1.1	2	2.1
8/22/2006 11:24	1.2	22.6	0.0	21.4	3069.0				
8/22/2006 15:35	2.2	21.5	15060.0	19.3	3320.0	2.64E-08	1.1	1	1.1
8/23/2006 9:38	4.0	19.6	84980.0	15.6	4403.0	1.10E-08	1.1	1.8	1.9
8/24/2006 9:19	6.0	17.5	85260.0	11.5	5824.0	9.56E-09	1.1	2	2.1
8/25/2006 9:41	8.0	15.5	87720.0	7.5	7286.0	9.33E-09	1.0	2	2
8/28/2006 9:30	13.1	10.1	258540.0	-3.0	11595.0	8.78E-09	1.1	5.1	5.4



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

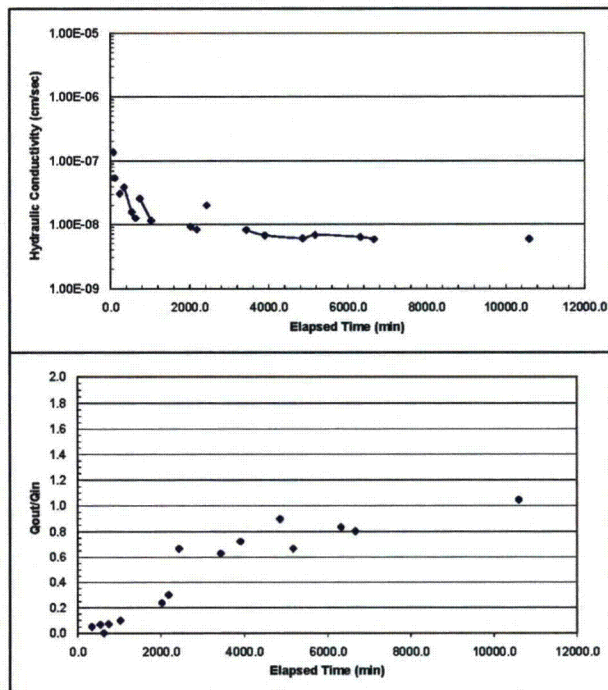
ASTM D 5084 - 00

Sample I.D.		305-mm IOY2U	Test Date : 8/11/06	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0
Effective Stress =	2.0	psi	a_{in} =	1
Hydraulic Gradient, i =	10.6		a_{out} =	1
Weight of wet sample =	25084.1	(g)	Sample Water Content =	13.4
Wet Density =	2.3	g/cm ³	Dry Density =	1.99
				g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
6	51.3	579.36	516.79	13.44

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/11/2006 9:48	5.2	21.1	0.0	15.9	0.0				
8/11/2006 10:58	16.0	22.4	4200.0	6.4	70.0	1.37E-07	-0.1	10.8	-1.3
8/11/2006 12:28	3.8	22.7	0.0	18.9	70.0				
8/11/2006 13:00	7.2	24.3	1920.0	17.1	102.0	5.45E-08	-0.5	3.4	-1.6
8/11/2006 13:01	1.4	18.3	0.0	16.9	102.0			-5.8	6
8/11/2006 15:12	6.6	19.4	7860.0	12.8	233.0	3.08E-08	-0.2	5.2	-1.1
8/14/2006 10:08	1.8	21.3	0.0	19.5	233.0				
8/14/2006 11:50	5.8	21.1	6300.0	15.3	338.0	3.89E-08	0.0	4	0.2
8/14/2006 15:12	8.8	20.9	12120.0	12.1	540.0	1.57E-08	0.1	3	0.2
8/14/2006 16:40	9.9	20.9	5280.0	11.0	628.0	1.26E-08	0.0	1.1	0
8/15/2006 9:58	1.6	22.9	0.0	21.3	628.0				
8/15/2006 11:47	4.4	22.7	6720.0	18.3	740.0	2.57E-08	0.1	2.8	0.2
8/15/2006 16:30	7.4	22.4	16980.0	15.0	1023.0	1.14E-08	0.1	3	0.3
8/15/2006 17:22	1.5	22.3	0.0	20.8	1023.0				
8/16/2006 9:58	9.1	20.5	59760.0	11.4	2019.0	9.24E-09	0.2	7.6	1.8
8/16/2006 12:37	10.1	20.2	9540.0	10.1	2178.0	8.25E-09	0.3	1	0.3
8/22/2006 11:25	5.8	19.4	0.0	13.6	2178.0				
8/22/2006 15:36	8.8	17.4	15060.0	8.6	2429.0	2.01E-08	0.7	3	2
8/22/2006 16:56	2.1	23.1	0.0	21.0	2429.0				
8/23/2006 9:38	7.2	19.9	60120.0	12.7	3431.0	8.07E-09	0.6	5.1	3.2
8/23/2006 17:27	9.0	18.6	28140.0	9.6	3900.0	6.65E-09	0.7	1.8	1.3
8/24/2006 9:19	11.9	16.0	57120.0	4.1	4852.0	5.96E-09	0.9	2.9	2.6
8/24/2006 14:32	13.1	15.2	18780.0	2.1	5165.0	6.75E-09	0.7	1.2	0.8
8/25/2006 9:41	16.7	12.2	68940.0	-4.5	6314.0	6.23E-09	0.8	3.6	3
8/25/2006 15:31	17.7	11.4	21000.0	-6.3	6664.0	5.72E-09	0.8	1	0.8
8/25/2006 16:00	1.1	23.4	0.0	22.3	6664.0				
8/28/2006 9:30	12.1	11.9	235800.0	-0.2	10594.0	5.77E-09	1.0	11	11.5



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

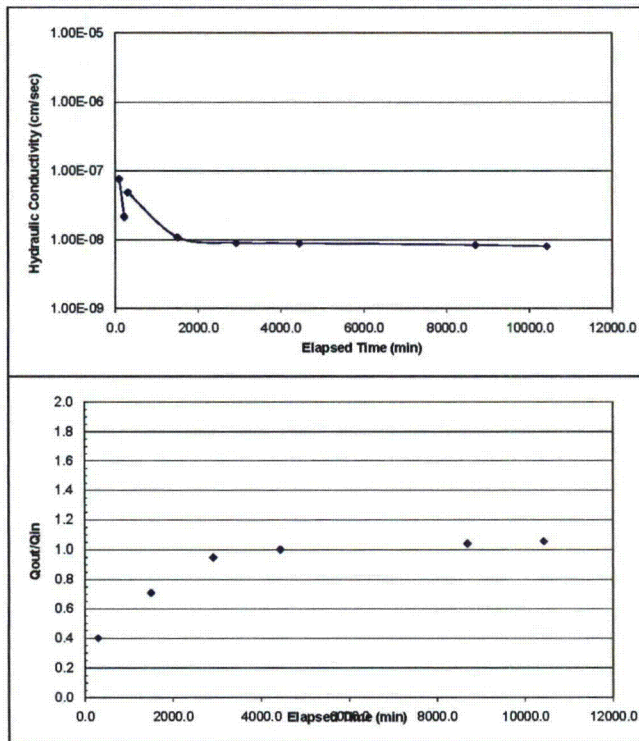
ASTM D 5084 - 00

Sample I.D.			150-mm IOY2U		Test Date :		8/30/06	
Cell Pressure =	43.5	psi			Diameter of Sample, D =	15.2	cm	
Inflow Pressure =	42.4	psi			Length of Sample, L =	10.2	cm	
Outflow Pressure =	40.6	psi			Area of Sample, A =	182.4	cm ²	
Pressure Difference =	1.8	psi			Sample Volume, V =	1853.3	cm ³	
Effective Stress =	2.0	psi			a _{in} =	1	cm ²	
Hydraulic Gradient, i =	12.5				a _{out} =	1	cm ²	
Weight of wet sample =	3997.1	(g)			Sample Water Content =	15.8	(%)	
Wet Density =	2.2	g/cm ³			Dry Density =	1.86	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	50.89	550.47	482.24	15.82

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
8/30/2006 11:05	2.8	22.0	0.0	19.2	0.0				
8/30/2006 12:37	5.9	22.9	5520.0	17.0	92.0	7.67E-08	-0.3	3.1	-0.9
8/30/2006 14:36	7.0	23.2	7140.0	16.2	211.0	2.18E-08	-0.3	1.1	-0.3
9/5/2006 12:09	1.2	23.6	0.0	22.4	211.0				
9/5/2006 13:38	2.2	23.2	5340.0	21.0	300.0	4.92E-08	0.4	1	0.4
9/6/2006 9:37	4.6	21.5	71940.0	16.9	1499.0	1.09E-08	0.7	2.4	1.7
9/7/2006 9:20	6.6	19.6	85380.0	13.0	2922.0	8.99E-09	0.9	2	1.9
9/8/2006 10:40	8.6	17.6	91200.0	9.0	4442.0	8.88E-09	1.0	2	2
9/11/2006 9:31	13.5	12.5	255060.0	-1.0	8693.0	8.36E-09	1.0	4.9	5.1
9/12/2006 14:24	15.3	10.6	103980.0	-4.7	10426.0	8.01E-09	1.1	1.8	1.9



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

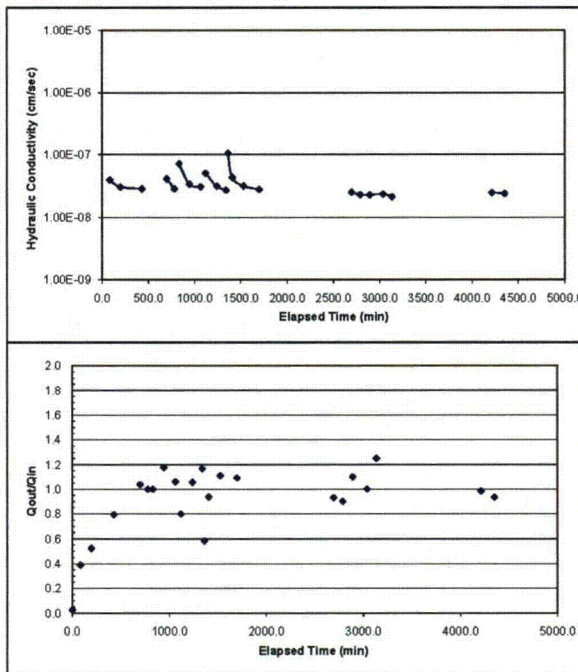
ASTM D 5084 - 00

Sample I.D.			305-mm IOY1U		Test Date : 8/25/06	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm	
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.7	cm ²	
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm ³	
Effective Stress =	2.0	psi	$a_{in} =$	1	cm ²	
Hydraulic Gradient, i =	10.6		$a_{out} =$	1	cm ²	
Weight of wet sample =	24539.8	(g)	Sample Water Content =	13.6	(%)	
Wet Density =	2.2	g/cm ³	Dry Density =	1.94	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
K9	211.15	1028.2	930.1	13.64

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
8/25/2006 12:57	2.9	19.0	0.0	16.2	0.0				
8/28/2006 10:16	10.6	18.6	0.0	8.2	0.0				
8/28/2006 11:40	12.9	17.9	5040.0	5.0	84.0	3.94E-08	0.4	2.3	0.9
8/28/2006 13:31	15.0	16.6	6660.0	1.8	195.0	3.04E-08	0.5	2.1	1.1
8/28/2006 17:25	18.4	14.1	14040.0	-4.3	429.0	2.83E-08	0.6	3.4	2.7
8/29/2006 11:20	6.4	21.0	0.0	14.6	429.0				
8/29/2006 15:49	11.7	15.5	16140.0	3.8	698.0	4.09E-08	1.0	5.3	5.5
8/29/2006 17:11	12.8	14.4	4920.0	1.6	780.0	2.84E-08	1.0	1.1	1.1
8/30/2006 9:52	6.8	21.3	0.0	14.5	780.0				
8/30/2006 10:43	8.6	19.5	3060.0	10.9	831.0	7.04E-08	1.0	1.8	1.8
8/30/2006 12:36	10.3	17.5	6780.0	7.2	944.0	3.34E-08	1.2	1.7	2
8/30/2006 14:36	12.0	15.7	7200.0	3.7	1064.0	3.04E-08	1.1	1.7	1.8
9/5/2006 12:42	5.2	19.5	0.0	14.3	1064.0				
9/5/2006 13:36	6.7	18.3	3240.0	11.6	1118.0	4.98E-08	0.8	1.5	1.2
9/5/2006 15:37	8.5	16.4	7260.0	7.9	1239.0	3.10E-08	1.1	1.8	1.9
9/5/2006 17:16	9.7	15.0	5940.0	5.3	1338.0	2.72E-08	1.2	1.2	1.4
9/6/2006 9:44	4.0	20.7	0.0	16.7	1338.0				
9/6/2006 10:07	5.5	19.8	1380.0	14.3	1381.0	1.04E-07	0.6	1.54	0.9
9/6/2006 10:50	6.5	18.9	2580.0	12.4	1404.0	4.30E-08	0.9	0.96	0.9
9/6/2006 12:52	8.3	16.9	7320.0	8.6	1526.0	3.15E-08	1.1	1.8	2
9/6/2006 15:44	10.5	14.5	10320.0	4.0	1698.0	2.77E-08	1.1	2.2	2.4
9/6/2006 16:42	2.0	24.1	0.0	22.1	1698.0				
9/7/2006 9:21	14.7	12.3	59940.0	-2.4	2697.0	2.49E-08	0.9	12.7	11.8
9/7/2006 10:53	15.7	11.4	5520.0	-4.3	2769.0	2.27E-08	0.9	1	0.9
9/7/2006 12:36	16.7	10.3	6180.0	-8.4	2892.0	2.27E-08	1.1	1	1.1
9/7/2006 15:02	18.2	8.6	8760.0	-9.4	3038.0	2.32E-08	1.0	1.5	1.5
9/7/2006 16:40	19.0	7.6	5880.0	-11.2	3136.0	2.11E-08	1.3	0.8	1
9/7/2006 16:41	0.6	23.7	0.0	23.1	3136.0				
9/8/2006 10:39	13.8	10.7	64680.0	-3.1	4214.0	2.47E-08	1.0	13.2	13
9/8/2006 12:54	15.3	9.3	8100.0	-6.0	4349.0	2.38E-08	0.9	1.5	1.4



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

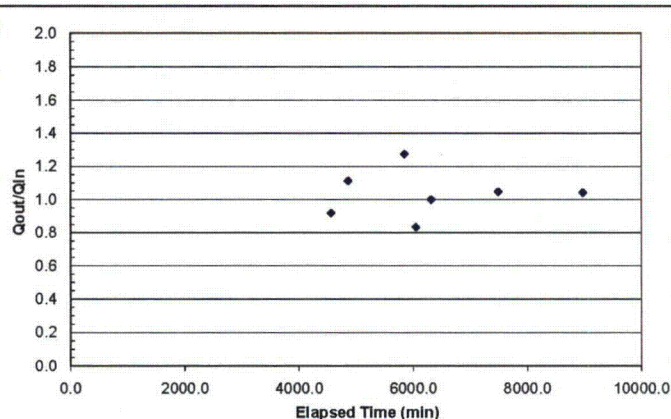
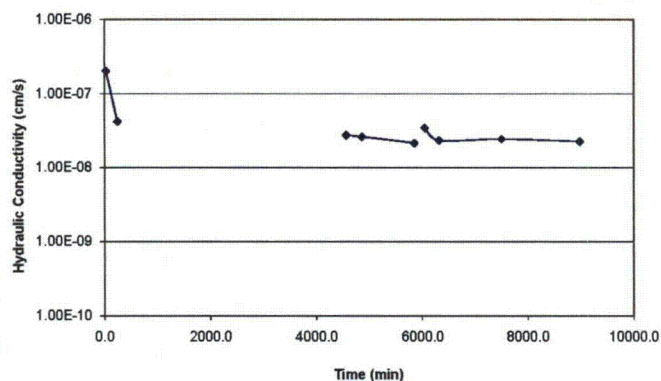
ASTM D 5084 - 00

Sample I.D.	150-mm IOY1U	Test Date :	9/21/06
Cell Pressure =	43.5 psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	42.4 psi	Length of Sample, L =	10.2 cm
Outflow Pressure =	40.6 psi	Area of Sample, A =	182.4 cm ²
Pressure Difference =	1.8 psi	Sample Volume, V =	1853.3 cm ³
Effective Stress =	2.0 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	12.5	a _{out} =	1 cm ²
Weight of wet sample =	3852.0 (g)	Sample Water Content =	14.2 (%)
Wet Density =	2.1 g/cm ³	Dry Density =	1.82 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
27	50.19	563.89	499.92	14.22

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
9/21/2006 13:06	0.5	21.4	0.0	20.9	0.0				
9/21/2006 13:33	2.5	21.7	1620.0	19.2	27.0	1.99E-07	-0.2	2	-0.3
9/21/2006 17:06	5.5	21.9	12780.0	16.4	240.0	4.23E-08	-0.1	3	-0.2
9/22/2006 11:57	1.8	21.5	0.0	19.7	240.0				
9/25/2006 11:57	19.1	5.6	259200.0	-13.5	4560.0	2.77E-08	0.9	17.3	15.9
9/25/2006 16:56	20.0	4.6	17940.0	-15.4	4859.0	2.63E-08	1.1	0.9	1
9/26/2006 9:24	22.2	1.8	59280.0	-20.4	5847.0	2.16E-08	1.3	2.2	2.8
9/26/2006 9:25	0.8	24.3	0.0	23.5	5847.0				
9/26/2006 12:44	2.0	23.3	11940.0	21.3	6046.0	3.44E-08	0.8	1.2	1
9/26/2006 17:14	3.0	22.3	16200.0	19.3	6316.0	2.34E-08	1.0	1	1
9/27/2006 12:54	7.3	17.8	70800.0	10.5	7496.0	2.45E-08	1.0	4.3	4.5
9/28/2006 13:37	12.0	12.9	88980.0	0.9	8979.0	2.27E-08	1.0	4.7	4.9



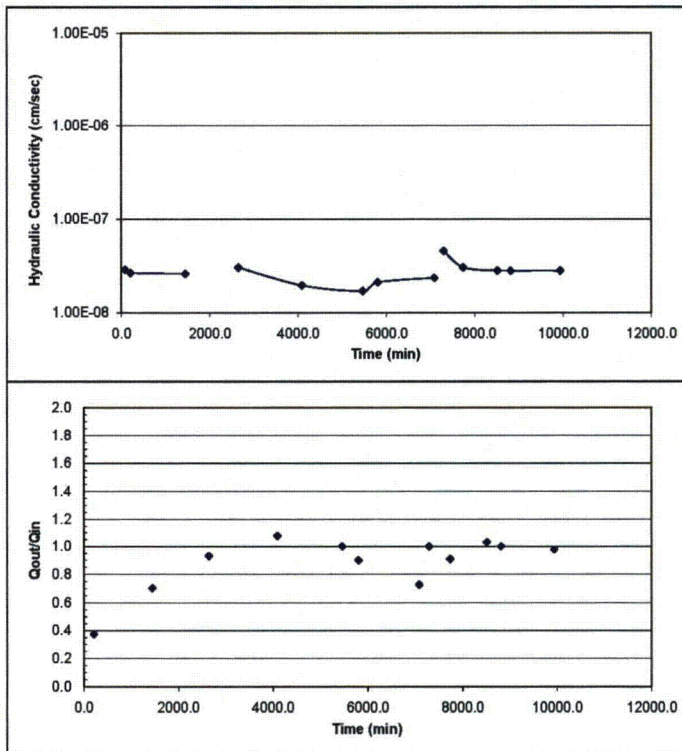
Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

ASTM D 5084 - 00			
Sample I.D.		150-mm IOY2L	
		Test Date :	
Cell Pressure =	43.5	psi	Diameter of Sample, D = 15.2
Inflow Pressure =	42.4	psi	Length of Sample, L = 10.2
Outflow Pressure =	40.6	psi	Area of Sample, A = 182.4
Pressure Difference =	1.8	psi	Sample Volume, V = 1853.3
Effective Stress =	2.0	psi	$a_{in} = 1$
Hydraulic Gradient, i =	12.5		$a_{out} = 1$
Weight of wet sample =	3708.7	(g)	Sample Water Content = 16.4
Wet Density =	2.0	g/cm ³	Dry Density = 1.72
		g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	WT of Water Content
	(g)	(g)	(g)	(%)
7	49.43	454.37	397.26	16.42

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
10/12/2006 12:27	3.2	23.7	0.0	20.5	0.0				
10/12/2006 13:44	4.4	24.2	4620.0	19.8	77.0	2.88E-08	-0.4	1.2	-0.5
10/12/2006 15:56	5.2	23.9	7920.0	18.7	209.0	2.65E-08	0.4	0.8	0.3
10/13/2006 12:32	10.9	19.9	74160.0	9.0	1445.0	2.59E-08	0.7	5.7	4
10/16/2006 16:06	0.8	23.5	0.0	22.7	1445.0			-10.1	-3.6
10/17/2006 12:03	6.6	18.1	71820.0	11.5	2642.0	3.02E-08	0.9	5.8	5.4
10/18/2006 12:02	10.5	13.9	86340.0	3.4	4081.0	1.95E-08	1.1	3.9	4.2
10/19/2006 10:59	13.7	10.7	82620.0	-3.0	5458.0	1.70E-08	1.0	3.2	3.2
10/19/2006 16:40	14.7	9.8	20460.0	-4.9	5799.0	2.11E-08	0.9	1	0.9
10/20/2006 14:01	19.1	6.6	76860.0	-12.5	7080.0	2.34E-08	0.7	4.4	3.2
10/23/2006 12:15	1.3	24.2	0.0	22.9	7080.0			-17.8	-17.6
10/23/2006 15:42	2.8	22.7	12420.0	19.9	7287.0	4.55E-08	1.0	1.5	1.5
10/23/2006 23:09	5.0	20.7	26820.0	15.7	7734.0	3.02E-08	0.9	2.2	2
10/24/2006 12:06	8.2	17.4	46620.0	9.2	8511.0	2.79E-08	1.0	3.2	3.3
10/24/2006 17:03	9.4	16.2	17820.0	6.8	8808.0	2.79E-08	1.0	1.2	1.2
10/25/2006 11:50	13.8	11.9	67620.0	-1.9	9935.0	2.78E-08	1.0	4.4	4.3



Hydraulic Conductivity Test - Cedar Rapids - Composite Cover

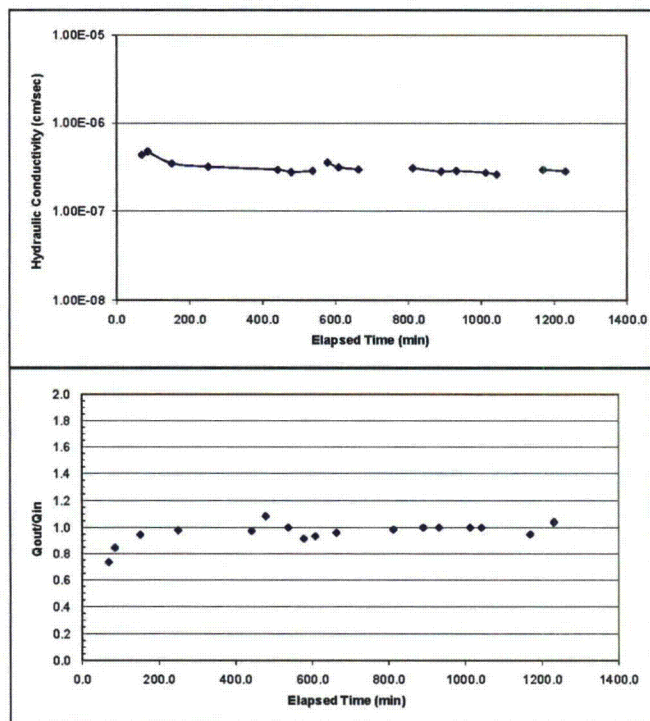
ASTM D 5084 - 00

Sample I.D.	150-mm IOY1L	Test Date :	8/22/06
Cell Pressure = 43.5	psi	Diameter of Sample, D = 15.2	cm
Inflow Pressure = 42.4	psi	Length of Sample, L = 10.2	cm
Outflow Pressure = 40.6	psi	Area of Sample, A = 182.4	cm ²
Pressure Difference = 1.8	psi	Sample Volume, V = 1853.3	cm ³
Effective Stress = 2.0	psi	a _{in} = 1	cm ²
Hydraulic Gradient, i = 12.5		a _{out} = 1	cm ²
Weight of wet sample = 4037.5	(g)	Sample Water Content = 16.5	(%)
Wet Density = 2.2	g/cm ³	Dry Density = 1.87	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
27	50.11	533.5	465	16.51

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/22/2006 15:43	1.1	21.8	0.0	20.7	0.0				
8/22/2006 16:52	6.4	17.9	4140.0	11.5	69.0	4.34E-07	0.7	5.3	3.9
8/23/2006 9:39	1.0	22.8	0.0	21.8	69.0				
8/23/2006 9:55	2.3	21.7	960.0	19.4	85.0	4.73E-07	0.8	1.3	1.1
8/23/2006 11:01	5.9	18.3	3960.0	12.4	151.0	3.46E-07	0.9	3.6	3.4
8/23/2006 12:40	10.5	13.8	5940.0	3.3	250.0	3.17E-07	1.0	4.6	4.5
8/23/2006 15:51	18.0	6.5	11460.0	-11.5	441.0	2.94E-07	1.0	7.5	7.3
8/23/2006 16:28	19.2	5.2	2220.0	-14.0	478.0	2.75E-07	1.1	1.2	1.3
8/23/2006 17:27	21.2	3.2	3540.0	-18.0	537.0	2.85E-07	1.0	2	2
8/24/2006 14:47	0.8	23.5	0.0	22.7	537.0				
8/24/2006 15:28	3.2	21.3	2460.0	18.1	578.0	3.54E-07	0.9	2.4	2.2
8/24/2006 15:58	4.7	19.9	1800.0	15.2	608.0	3.13E-07	0.9	1.5	1.4
8/24/2006 16:53	7.2	17.5	3300.0	10.3	663.0	2.97E-07	1.0	2.5	2.4
8/25/2006 9:43	1.0	23.0	0.0	22.0	663.0				
8/25/2006 12:12	8.0	16.1	8940.0	8.1	812.0	3.06E-07	1.0	7	6.9
8/25/2006 13:30	11.1	13.0	4680.0	1.9	890.0	2.80E-07	1.0	3.1	3.1
8/25/2006 14:11	12.7	11.4	2460.0	-1.3	931.0	2.85E-07	1.0	1.6	1.6
8/25/2006 15:32	15.6	8.5	4860.0	-7.1	1012.0	2.72E-07	1.0	2.9	2.9
8/25/2006 16:02	16.6	7.5	1800.0	-9.1	1042.0	2.61E-07	1.0	1	1
8/28/2006 9:34	0.9	23.2	0.0	22.3	1042.0				
8/28/2006 11:41	6.8	17.6	7620.0	10.8	1169.0	2.94E-07	0.9	5.9	5.6
8/28/2006 12:43	9.3	16.0	3720.0	5.7	1231.0	2.83E-07	1.0	2.5	2.6



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

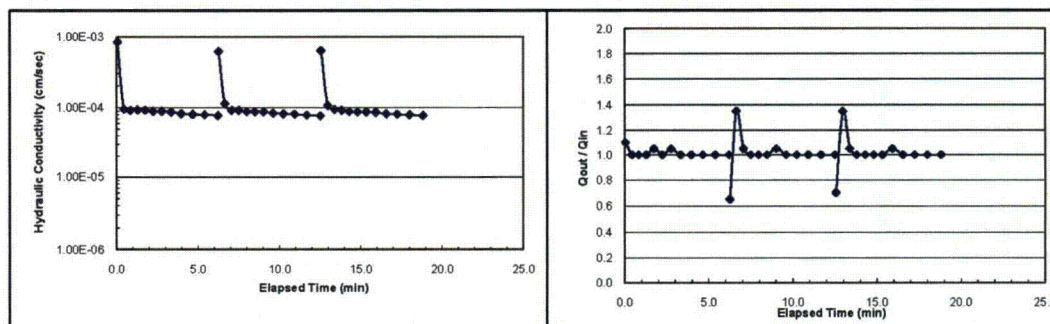
ASTM D 5084 - 00

Sample I.D.			305-mm 3' Top Depth -2		Test Date : 12/19/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =		30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =		15.2	cm
Outflow Pressure =	40.0	psi	Area of Sample, A =		729.66	cm ²
Pressure Difference =	1.1	psi	Sample Volume, V =		11120.0	cm ³
Effective Stress =	1.5	psi	a _{in} =		5	cm ²
Hydraulic Gradient, i =	5.0		a _{out} =		5	cm ²
Weight of wet sample =	20000.0	g	Sample Water Content =		37.5%	(%)
Wet Density =	1.8	g/cm ³	Dry Density =		1.79	g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
9C	24.37	163.33	125.45	37.48%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/19/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
12/19/2008 00:02.84	2.0	22.6	2.6	20.6	0.0	8.40E-04	1.1	10	11
12/19/2008 00:25.55	4.0	20.6	22.9	16.6	0.4	9.62E-05	1.0	10	10
12/19/2008 00:50.40	6.0	18.6	24.9	12.6	0.8	9.26E-05	1.0	10	10
12/19/2008 01:16.25	8.0	16.6	25.8	8.6	1.3	9.31E-05	1.0	10	10
12/19/2008 01:44.11	10.0	14.5	27.9	4.5	1.7	9.29E-05	1.1	10	10.5
12/19/2008 02:13.92	12.0	12.5	29.8	0.5	2.2	8.91E-05	1.0	10	10
12/19/2008 02:45.85	14.0	10.4	31.9	-3.6	2.8	8.98E-05	1.1	10	10.5
12/19/2008 03:19.61	16.0	8.4	33.8	-7.6	3.3	8.77E-05	1.0	10	10
12/19/2008 03:57.55	18.0	6.4	37.9	-11.6	4.0	8.27E-05	1.0	10	10
12/19/2008 04:38.74	20.0	4.4	41.2	-15.6	4.6	8.10E-05	1.0	10	10
12/19/2008 05:23.37	22.0	2.4	44.6	-19.6	5.4	7.99E-05	1.0	10	10
12/19/2008 06:12.60	24.0	0.4	49.2	-23.6	6.2	7.77E-05	1.0	10	10
12/19/2008 00:00.00	0.0	24.8	0.0	24.8	6.2				
12/19/2008 00:02.84	2.0	23.3	2.8	21.3	6.3	6.12E-04	0.7	10	6.5
12/19/2008 00:25.55	4.0	20.6	22.7	16.6	6.6	1.14E-04	1.4	10	13.5
12/19/2008 00:51.14	6.0	18.5	25.6	12.5	7.1	9.22E-05	1.1	10	10.5
12/19/2008 01:17.26	8.0	16.5	26.1	8.5	7.5	9.22E-05	1.0	10	10
12/19/2008 01:45.84	10.0	14.5	28.6	4.5	8.0	8.84E-05	1.0	10	10
12/19/2008 02:16.03	12.0	12.5	30.2	0.5	8.5	8.79E-05	1.0	10	10
12/19/2008 02:48.64	14.0	10.4	32.6	-3.6	9.0	8.80E-05	1.1	10	10.5
12/19/2008 03:23.90	16.0	8.4	35.3	-7.6	9.6	8.39E-05	1.0	10	10
12/19/2008 04:02.08	18.0	6.4	38.2	-11.6	10.2	8.22E-05	1.0	10	10
12/19/2008 04:43.36	20.0	4.4	41.3	-15.6	10.9	8.09E-05	1.0	10	10
12/19/2008 05:28.58	22.0	2.4	45.2	-19.6	11.7	7.89E-05	1.0	10	10
12/19/2008 06:18.34	24.0	0.4	49.8	-23.6	12.5	7.69E-05	1.0	10	10
12/19/2008 00:00.00	0.0	24.7	0.0	24.7	12.5				
12/19/2008 00:02.84	2.0	23.3	2.8	21.3	12.6	6.30E-04	0.7	10	7
12/19/2008 00:26.95	4.0	20.6	24.1	16.6	13.0	1.07E-04	1.4	10	13.5
12/19/2008 00:52.03	6.0	18.5	25.1	12.5	13.4	9.41E-05	1.1	10	10.5
12/19/2008 01:18.20	8.0	16.5	26.2	8.5	13.8	9.21E-05	1.0	10	10
12/19/2008 01:46.76	10.0	14.5	28.6	4.5	14.3	8.85E-05	1.0	10	10
12/19/2008 02:17.27	12.0	12.5	30.5	0.5	14.8	8.70E-05	1.0	10	10
12/19/2008 02:49.30	14.0	10.5	32.0	-3.5	15.3	8.73E-05	1.0	10	10
12/19/2008 03:24.53	16.0	8.4	35.2	-7.6	15.9	8.60E-05	1.1	10	10.5
12/19/2008 04:02.65	18.0	6.4	38.1	-11.6	16.6	8.23E-05	1.0	10	10
12/19/2008 04:43.85	20.0	4.4	41.2	-15.6	17.2	8.10E-05	1.0	10	10
12/19/2008 05:28.84	22.0	2.4	45.0	-19.6	18.0	7.93E-05	1.0	10	10
12/19/2008 06:18.27	24.0	0.4	49.4	-23.6	18.8	7.74E-05	1.0	10	10



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

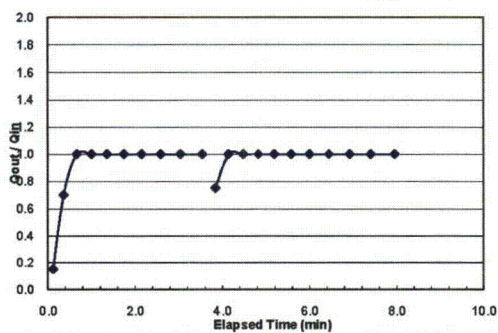
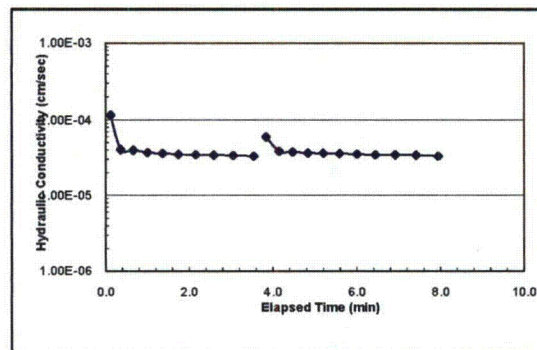
ASTM D 5084 - 00

Sample I.D.	150-mm Helena 3' Top Depth-2	Test Date :	1/14/09
Cell Pressure = 42.0 psi		Diameter of Sample, D = 15.2 cm	
Inflow Pressure = 40.5 psi		Length of Sample, L = 7.0 cm	
Outflow Pressure = 40.0 psi		Area of Sample, A = 182.41 cm ²	
Pressure Difference = 0.5 psi		Sample Volume, V = 1274.2 cm ³	
Effective Stress = 1.8 psi		$a_{in} = 1$ cm ²	
Hydraulic Gradient, i = 5.0		$a_{out} = 1$ cm ²	
Weight of wet sample = 2071.8 g		Sample Water Content = 33.9% (%)	
Wet Density = 1.6 g/cm ³		Dry Density = 1.21 g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
E	24.11	133.77	105.98	33.94%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
0:00:00	0.0	23.0	0.0	23.0	0.0				
0:00:07	2.0	22.7	6.7	20.7	0.1	1.15E-04	0.2	2	0.3
0:00:21	3.0	22.0	14.6	19.0	0.4	4.05E-05	0.7	1	0.7
0:00:39	4.0	21.0	18.1	17.0	0.7	3.98E-05	1.0	1	1
0:01:00	5.0	20.0	20.3	15.0	1.0	3.69E-05	1.0	1	1
0:01:21	6.0	19.0	21.6	13.0	1.4	3.60E-05	1.0	1	1
0:01:45	7.0	18.0	23.3	11.0	1.7	3.49E-05	1.0	1	1
0:02:09	8.0	17.0	24.5	9.0	2.2	3.46E-05	1.0	1	1
0:02:35	9.0	16.0	25.9	7.0	2.6	3.42E-05	1.0	1	1
0:03:03	10.0	15.0	27.6	5.0	3.0	3.37E-05	1.0	1	1
0:03:32	11.0	14.0	29.6	3.0	3.5	3.30E-05	1.0	1	1
0:00:00	0.0	23.0	-212.2	23.0	3.5				
0:00:20	2.0	21.5	20.1	19.5	3.8	5.91E-05	0.8	2	1.5
0:00:39	3.0	20.5	18.6	17.5	4.1	3.84E-05	1.0	1	1
0:00:58	4.0	19.5	19.7	15.5	4.5	3.76E-05	1.0	1	1
0:01:20	5.0	18.5	21.1	13.5	4.8	3.65E-05	1.0	1	1
0:01:42	6.0	17.5	22.2	11.5	5.2	3.62E-05	1.0	1	1
0:02:05	7.0	16.5	23.4	9.5	5.6	3.59E-05	1.0	1	1
0:02:30	8.0	15.5	24.9	7.5	6.0	3.52E-05	1.0	1	1
0:02:57	9.0	14.5	26.7	5.5	6.4	3.45E-05	1.0	1	1
0:03:25	10.0	13.5	28.2	3.5	6.9	3.42E-05	1.0	1	1
0:03:55	11.0	12.5	29.9	1.5	7.4	3.40E-05	1.0	1	1
0:04:27	12.0	11.5	32.5	-0.5	8.0	3.31E-05	1.0	1	1



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

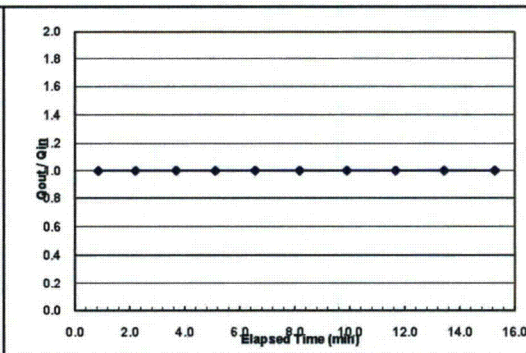
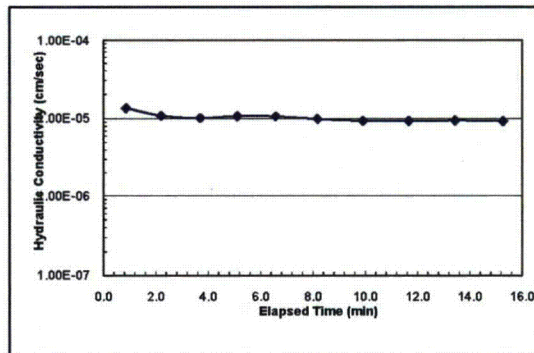
ASTM D 5084 - 00

Sample I.D.	75-mm Helena Top depth-2	Test Date :	1/21/09
Cell Pressure =	42.0 psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	40.5 psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	38.32 cm ²
Pressure Difference =	0.5 psi	Sample Volume, V =	146.0 cm ³
Effective Stress =	1.8 psi	a_{in} =	1 cm ²
Hydraulic Gradient, i =	9.2	a_{out} =	1 cm ²
Weight of wet sample =	218.6 g	Sample Water Content =	38.2% (%)
Wet Density =	1.5 g/cm ³	Dry Density =	1.08 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
15	21.07	93.25	73.3	38.20%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out}/Q_{in}	Q_{in}	Q_{out}
0:00:00	1.1	24.0	0.0	22.9	0.0				
0:00:51	1.5	23.6	51.2	22.1	0.9	1.35E-05	1.0	0.4	0.4
0:02:13	2.0	23.1	81.3	21.1	2.2	1.08E-05	1.0	0.5	0.5
0:03:41	2.5	22.6	88.5	20.1	3.7	1.01E-05	1.0	0.5	0.5
0:05:06	3.0	22.1	85.4	19.1	5.1	1.06E-05	1.0	0.5	0.5
0:06:34	3.5	21.6	87.6	18.1	6.6	1.06E-05	1.0	0.5	0.5
0:08:10	4.0	21.1	96.2	17.1	8.2	9.79E-06	1.0	0.5	0.5
0:09:54	4.5	20.6	103.5	16.1	9.9	9.28E-06	1.0	0.5	0.5
0:11:40	5.0	20.1	106.2	15.1	11.7	9.22E-06	1.0	0.5	0.5
0:13:26	5.5	19.6	106.0	14.1	13.4	9.42E-06	1.0	0.5	0.5
0:15:17	6.0	19.1	110.7	13.1	15.3	9.21E-06	1.0	0.5	0.5



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

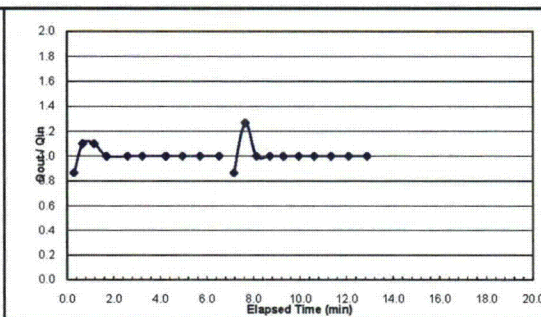
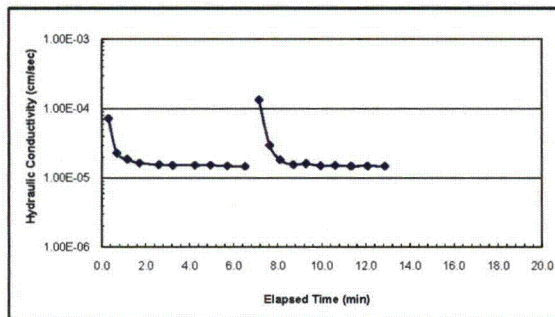
ASTM D 5084 - 00

Sample I.D. 305-mm 3' Top Depth-3			Test Date : 12/30/08	
Cell Pressure =	42.1	psi	Diameter of Sample, D =	30.5
Inflow Pressure =	41.1	psi	Length of Sample, L =	21.6
Outflow Pressure =	40.5	psi	Area of Sample, A =	729.66
Pressure Difference =	0.6	psi	Sample Volume, V =	15753.3
Effective Stress =	1.3	psi	a_{in} =	1
Hydraulic Gradient, i =	2.0		a_{out} =	1
Weight of wet sample =	27350.0	g	Sample Water Content =	-375.8%
Wet Density =	1.7	g/cm ³	Dry Density =	1.80
				g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
94	31.26	117.47		-375.78%

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out}/Q_{in}	Q_{in}	Q_{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:18	3.0	21.4	18.2	18.4	0.3	7.20E-05	0.9	3	2.6
0:00:41	4.0	20.3	22.7	16.3	0.7	2.30E-05	1.1	1	1.1
0:01:10	5.0	19.2	28.9	14.2	1.2	1.87E-05	1.1	1	1.1
0:01:42	6.0	18.2	32.5	12.2	1.7	1.65E-05	1.0	1	1
0:02:36	7.5	16.7	53.4	9.2	2.6	1.57E-05	1.0	1.5	1.5
0:03:14	8.5	15.7	38.2	7.2	3.2	1.54E-05	1.0	1	1
0:04:15	10.0	14.2	60.8	4.2	4.2	1.52E-05	1.0	1.5	1.5
0:04:57	11.0	13.2	42.7	2.2	5.0	1.53E-05	1.0	1	1
0:05:43	12.0	12.2	45.7	0.2	5.7	1.49E-05	1.0	1	1
0:06:32	13.0	11.2	48.5	-1.8	6.5	1.47E-05	1.0	1	1
0:00:00	0.0	24.0	-391.5	24.0	7.0				
0:00:10	3.0	21.4	9.7	18.4	7.2	1.34E-04	0.9	3	2.6
0:00:38	4.5	19.5	28.7	15.0	7.6	2.97E-05	1.3	1.5	1.9
0:01:07	5.5	18.5	28.8	13.0	8.1	1.83E-05	1.0	1	1
0:01:42	6.5	17.5	35.0	11.0	8.7	1.56E-05	1.0	1	1
0:02:17	7.5	16.5	35.1	9.0	9.3	1.62E-05	1.0	1	1
0:02:57	8.5	15.5	39.2	7.0	9.9	1.50E-05	1.0	1	1
0:03:37	9.5	14.5	40.3	5.0	10.6	1.53E-05	1.0	1	1
0:04:20	10.5	13.5	43.2	3.0	11.3	1.48E-05	1.0	1	1
0:05:05	11.5	12.5	44.8	1.0	12.1	1.49E-05	1.0	1	1
0:05:52	12.5	11.5	47.3	-1.0	12.9	1.48E-05	1.0	1	1



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

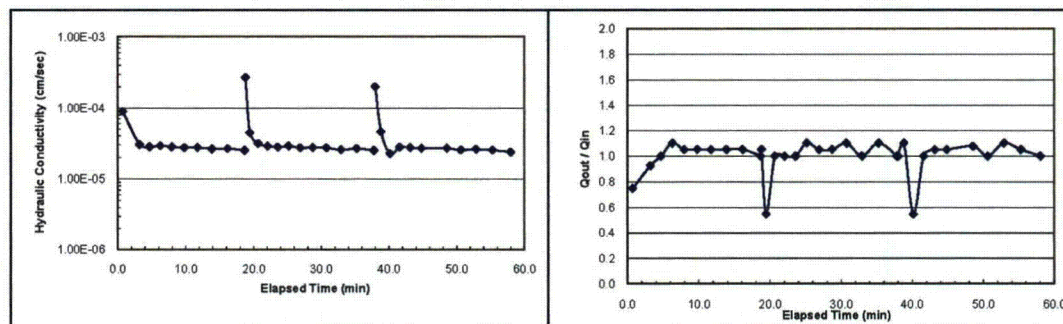
ASTM D 5084 - 00

Sample I.D.		305-mm Mid - 1		Test Date :		1/6/09	
Cell Pressure =	42.0	psi		Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	41.1	psi		Length of Sample, L =	15.2	cm	
Outflow Pressre =	40.0	psi		Area of Sample, A =	729.66	cm ²	
Pressure Difference =	1.1	psi		Sample Volume, V =	11120.0	cm ³	
Effective Stress =	1.5	psi		a _{in} =	5	cm ²	
Hydraulic Gradient, i =	5.0			a _{out} =	5	cm ²	
Weight of wet sample =	20050.0	g		Sample Water Content =	34.4%	(%)	
Wet Density =	1.8	g/cm ³		Dry Density =	1.80	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can Dry Soil (g)	Water Content (%)
2M	23.99	172.44	134.46	34.38%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
1/6/2009 00:00.00	0.0	24.6	0.0	24.6	0.0				
1/6/2009 00:41.99	4.0	21.6	42.0	17.6	0.7	8.95E-05	0.8	20	15
1/6/2009 03:10.90	8.0	17.9	148.9	9.9	3.2	3.00E-05	0.9	20	18.5
1/6/2009 04:39.65	10.0	15.9	88.8	5.9	4.7	2.80E-05	1.0	10	10
1/6/2009 06:14.40	12.0	13.7	94.7	1.7	6.2	2.89E-05	1.1	10	11
1/6/2009 07:55.80	14.0	11.6	101.4	-2.4	7.9	2.78E-05	1.1	10	10.5
1/6/2009 09:45.72	16.0	9.5	109.9	-6.5	9.8	2.72E-05	1.1	10	10.5
1/6/2009 11:42.12	18.0	7.4	116.4	-10.6	11.7	2.72E-05	1.1	10	10.5
1/6/2009 13:50.72	20.0	5.3	128.6	-14.7	13.8	2.62E-05	1.1	10	10.5
1/6/2009 16:07.74	22.0	3.2	137.0	-18.8	16.1	2.63E-05	1.1	10	10.5
1/6/2009 18:38.95	24.0	1.2	151.2	-22.8	18.6	2.49E-05	1.0	10	10
1/6/2009 00:00.00	0.0	24.8	0.0	24.8	18.6				
1/6/2009 00:07.98	2.0	22.7	8.0	20.7	18.8	2.71E-04	1.1	10	10.5
1/6/2009 00:46.32	4.0	21.6	38.3	17.6	19.4	4.43E-05	0.5	10	5.5
1/6/2009 01:59.79	6.0	19.6	73.5	13.6	20.6	3.10E-05	1.0	10	10
1/6/2009 03:22.92	8.0	17.6	83.1	9.6	22.0	2.86E-05	1.0	10	10
1/6/2009 04:53.05	10.0	15.6	90.1	5.6	23.5	2.77E-05	1.0	10	10
1/6/2009 06:29.41	12.0	13.4	96.4	1.4	25.1	2.86E-05	1.1	10	11
1/6/2009 08:14.26	14.0	11.3	104.9	-2.7	26.9	2.70E-05	1.1	10	10.5
1/6/2009 10:03.77	16.0	9.2	109.5	-6.8	28.7	2.74E-05	1.1	10	10.5
1/6/2009 12:04.16	18.0	7.0	120.4	-11.0	30.7	2.71E-05	1.1	10	11
1/6/2009 14:14.30	20.0	5.0	130.1	-15.0	32.9	2.54E-05	1.0	10	10
1/6/2009 16:34.56	22.0	2.8	140.3	-19.2	35.2	2.65E-05	1.1	10	11
1/6/2009 19:07.90	24.0	0.8	153.3	-23.2	37.8	2.48E-05	1.0	10	10
1/6/2009 00:00.00	0.0	24.6	0.0	24.6	37.8				
1/6/2009 00:10.55	2.0	22.6	10.5	20.6	38.0	2.00E-04	1.0	10	10
1/6/2009 01:01.32	4.0	20.4	50.8	16.4	38.8	4.56E-05	1.1	10	11
1/6/2009 02:20.30	6.0	19.3	79.0	13.3	40.1	2.25E-05	0.5	10	5.5
1/6/2009 03:47.15	8.0	17.3	86.8	9.3	41.6	2.75E-05	1.0	10	10
1/6/2009 05:21.29	10.0	15.2	94.1	5.2	43.1	2.73E-05	1.1	10	10.5
1/6/2009 07:02.35	12.0	13.1	101.1	1.1	44.8	2.67E-05	1.1	10	10.5
1/6/2009 10:45.46	16.0	8.8	223.1	-7.2	48.5	2.66E-05	1.1	20	21.5
1/6/2009 12:49.28	18.0	6.8	123.8	-11.2	50.6	2.52E-05	1.0	10	10
1/6/2009 15:04.63	20.0	4.6	135.4	-15.4	52.9	2.58E-05	1.1	10	11
1/6/2009 17:30.15	22.0	2.5	145.5	-19.5	55.3	2.51E-05	1.1	10	10.5
1/6/2009 20:11.88	24.0	0.5	161.7	-23.5	58.0	2.36E-05	1.0	10	10



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

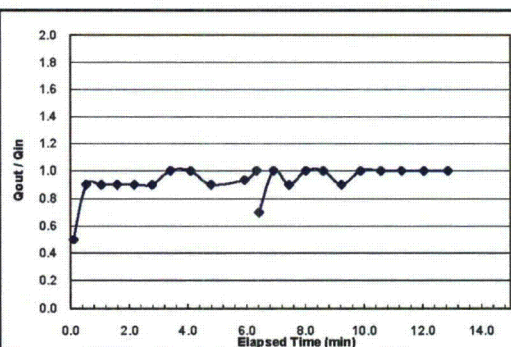
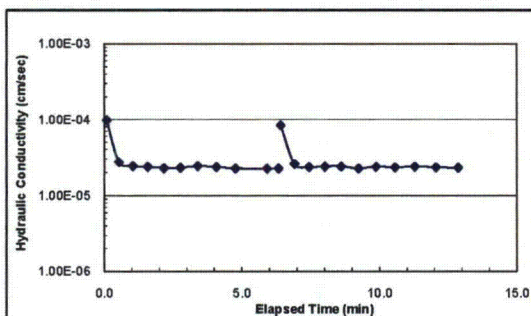
ASTM D 5084 - 00

Sample I.D.	150-mm Helena Mid-1	Test Date :	1/14/09
Cell Pressure = 42.0 psi		Diameter of Sample, D = 15.2 cm	
Inflow Pressure = 40.5 psi		Length of Sample, L = 7.6 cm	
Outflow Pressure = 40.0 psi		Area of Sample, A = 182.41 cm ²	
Pressure Difference = 0.5 psi		Sample Volume, V = 1390.0 cm ³	
Effective Stress = 1.8 psi		a _{in} = 1 cm ²	
Hydraulic Gradient, i = 4.6		a _{out} = 1 cm ²	
Weight of wet sample = 2458.2 g		Sample Water Content = 33.4% (%)	
Wet Density = 1.8 g/cm ³		Dry Density = 1.33 g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
64	30.94	115.31	94.18	33.41%

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	23.0	0.0	23.0	0.0				
0:00:06	1.0	22.5	5.6	21.5	0.1	9.78E-05	0.5	1	0.5
0:00:32	2.0	21.6	26.4	19.6	0.5	2.69E-05	0.9	1	0.9
0:01:03	3.0	20.7	30.7	17.7	1.0	2.40E-05	0.9	1	0.9
0:01:35	4.0	19.8	32.5	15.8	1.6	2.35E-05	0.9	1	0.9
0:02:10	5.0	18.9	35.2	13.9	2.2	2.26E-05	0.9	1	0.9
0:02:47	6.0	18.0	36.2	12.0	2.8	2.28E-05	0.9	1	0.9
0:03:24	7.0	17.0	37.7	10.0	3.4	2.40E-05	1.0	1	1
0:04:05	8.0	16.0	40.7	8.0	4.1	2.32E-05	1.0	1	1
0:04:47	9.0	15.1	42.1	6.1	4.8	2.24E-05	0.9	1	0.9
0:05:56	10.5	13.7	68.7	3.2	5.9	2.21E-05	0.9	1.5	1.4
0:06:20	11.0	13.2	24.6	2.2	6.3	2.24E-05	1.0	0.5	0.5
0:00:00	0.0	23.0	-380.4	23.0	6.3				
0:00:07	1.0	22.3	7.5	21.3	6.4	8.32E-05	0.7	1	0.7
0:00:37	2.0	21.3	29.4	19.3	6.9	2.56E-05	1.0	1	1
0:01:09	3.0	20.4	31.9	17.4	7.4	2.32E-05	0.9	1	0.9
0:01:43	4.0	19.4	34.4	15.4	8.0	2.36E-05	1.0	1	1
0:02:19	5.0	18.4	35.5	13.4	8.6	2.37E-05	1.0	1	1
0:02:56	6.0	17.5	37.4	11.5	9.2	2.23E-05	0.9	1	0.9
0:03:35	7.0	16.5	38.9	9.5	9.9	2.35E-05	1.0	1	1
0:04:17	8.0	15.5	41.6	7.5	10.6	2.30E-05	1.0	1	1
0:04:59	9.0	14.5	42.7	5.5	11.3	2.35E-05	1.0	1	1
0:05:45	10.0	13.5	45.9	3.5	12.1	2.29E-05	1.0	1	1
0:06:34	11.0	12.5	48.7	1.5	12.9	2.28E-05	1.0	1	1



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

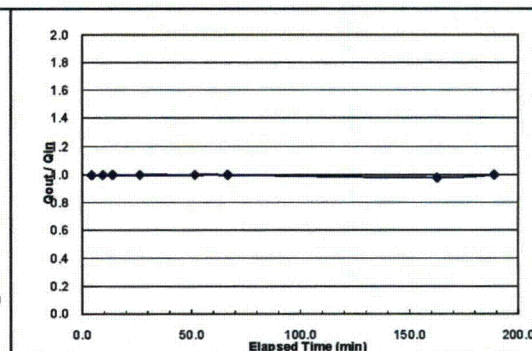
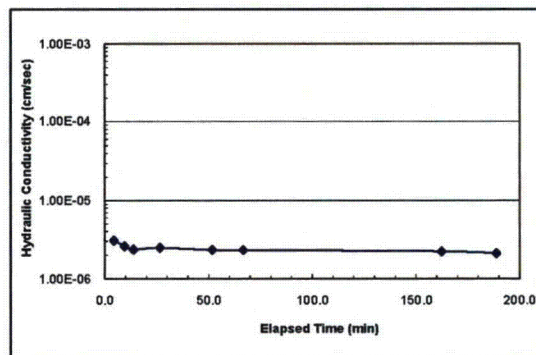
ASTM D 5084 - 00

Sample I.D.	75-mm Helena Mid-1		Test Date :	1/14/09
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	40.4	psi	Length of Sample, L =	3.8 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	38.32 cm ²
Pressure Difference =	0.4	psi	Sample Volume, V =	146.0 cm ³
Effective Stress =	1.8	psi	a_{in} =	1 cm ²
Hydraulic Gradient, i =	7.4		a_{out} =	1 cm ²
Weight of wet sample =	239.7	g	Sample Water Content =	36.6% (%)
Wet Density =	1.6	g/cm ³	Dry Density =	1.20 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
#94	31.97	109.86	89.01	36.55%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	1.1	24.0	0.0	22.9	0.0				
0:04:19	1.5	23.6	258.9	22.1	4.3	3.03E-06	1.0	0.4	0.4
0:09:28	1.9	23.2	309.5	21.3	9.5	2.58E-06	1.0	0.4	0.4
0:13:46	2.2	22.9	258.0	20.7	13.8	2.35E-06	1.0	0.3	0.3
0:26:22	3.1	22.0	755.6	18.9	26.4	2.47E-06	1.0	0.9	0.9
0:51:35	4.7	20.4	1512.9	15.7	51.6	2.32E-06	1.0	1.6	1.6
1:06:34	5.6	19.5	899.0	13.9	66.6	2.32E-06	1.0	0.9	0.9
2:42:29	10.4	14.8	5755.0	4.4	162.5	2.21E-06	1.0	4.8	4.7
3:08:45	11.5	13.8	1575.9	2.3	188.7	2.11E-06	1.0	1.05	1.05



Hydraulic Conductivity Test - Helena - Store-and-Release Cover

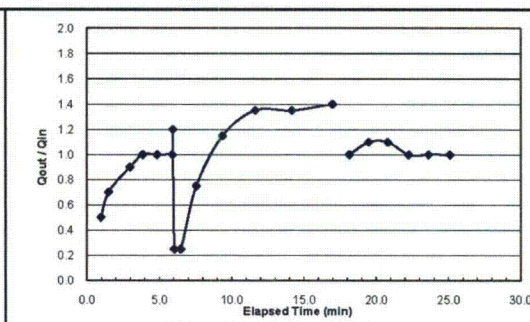
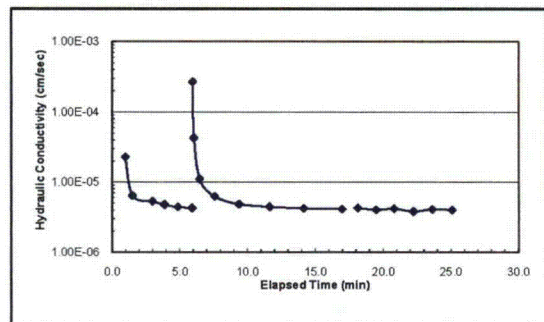
ASTM D 5084 - 00

Sample I.D.	305-mm Mid - 2	Test Date :	12/29/08
Cell Pressure =	42.0 psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.1 psi	Length of Sample, L =	15.2 cm
Outflow Pressure =	40.0 psi	Area of Sample, A =	729.66 cm ²
Pressure Difference =	1.1 psi	Sample Volume, V =	11120.0 cm ³
Effective Stress =	1.5 psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	5.0	a _{out} =	1 cm ²
Weight of wet sample =	20400.0 g	Sample Water Content =	16.7% (%)
Wet Density =	1.8 g/cm ³	Dry Density =	1.83 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
120	31.07	158.32	140.14	16.67%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
1/9/2009 00:00.00	0.0	24.5	0.0	24.5	0.0				
1/9/2009 00:58.51	8.0	20.5	58.5	12.5	1.0	2.26E-06	0.5	8	4
1/9/2009 01:30.27	9.0	19.8	31.8	10.8	1.5	6.36E-06	0.7	1	0.7
1/9/2009 02:58.90	11.0	18.0	88.6	7.0	3.0	5.26E-06	0.9	2	1.8
1/9/2009 03:52.30	12.0	17.0	53.4	5.0	3.9	4.76E-06	1.0	1	1
1/9/2009 04:51.71	13.0	16.0	59.4	3.0	4.9	4.38E-06	1.0	1	1
1/9/2009 05:54.78	14.0	15.0	63.1	1.0	5.9	4.24E-06	1.0	1	1
1/9/2009 00:00.00	0.0	24.9	0.0	24.9	5.9				
1/9/2009 00:01.75	2.0	22.5	1.7	20.5	5.9	2.66E-04	1.2	2	2.4
1/9/2009 00:08.14	4.0	22.0	6.4	18.0	6.0	4.28E-06	0.3	2	0.5
1/9/2009 00:33.84	6.0	21.5	25.7	15.5	6.5	1.09E-06	0.3	2	0.5
1/9/2009 01:39.45	8.0	20.0	65.6	12.0	7.6	6.19E-06	0.8	2	1.5
1/9/2009 03:27.41	10.0	17.7	108.0	7.7	9.4	4.83E-06	1.2	2	2.3
1/9/2009 05:43.09	12.0	15.0	135.7	3.0	11.6	4.44E-06	1.4	2	2.7
1/9/2009 08:15.14	14.0	12.3	152.1	-1.7	14.2	4.20E-06	1.4	2	2.7
1/9/2009 11:03.88	16.0	9.5	168.7	-6.5	17.0	4.12E-06	1.4	2	2.8
1/9/2009 00:00.00	18.0	13.0	0.0	-5.0	17.0				
1/9/2009 01:09.97	19.0	12.0	70.0	-7.0	18.1	4.25E-06	1.0	1	1
1/9/2009 02:30.30	20.0	10.9	80.3	-9.1	19.5	4.01E-06	1.1	1	1.1
1/9/2009 03:50.29	21.0	9.8	80.0	-11.2	20.8	4.15E-06	1.1	1	1.1
1/9/2009 05:16.45	22.0	8.8	86.2	-13.2	22.3	3.79E-06	1.0	1	1
1/9/2009 06:38.97	23.0	7.8	82.5	-15.2	23.6	4.08E-06	1.0	1	1
1/9/2009 08:06.90	24.0	6.8	87.9	-17.2	25.1	3.96E-06	1.0	1	1



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

ASTM D 5084 - 00

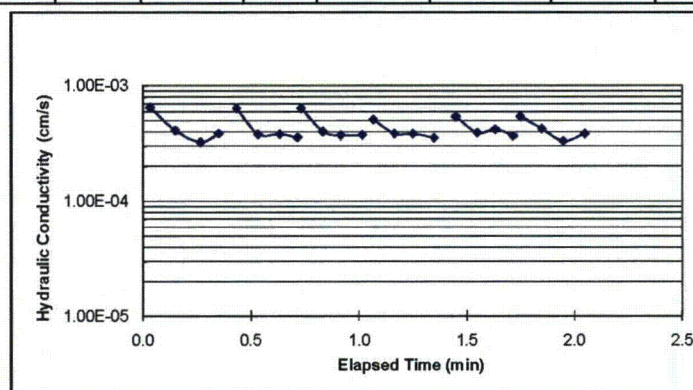
ASTM D 5094 - 05

Sample I.D.	305-mm East Side North Pit 0-30 cm		Test Date :	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	17.5 cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66 cm ²
Pressure Difference =	1.0	psi	Sample Volume, V =	12741.7 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.0		a _{out} =	1 cm ²
Weight of wet sample =	24584.6	g	Sample Water Content =	16.6% (%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.93 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50.94	354.14	310.99	16.59%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.0	23.7	0.0	23.7	0.0				
0:00:02	5.0	19.0	2.0	14.0	0.0	6.51E-04	0.9	5	4.7
0:00:09	14.0	10.0	7.0	-4.0	0.2	4.10E-04	1.0	9	9
0:00:16	20.0	4.5	7.0	-15.5	0.3	3.25E-04	0.9	6	5.5
0:00:21	24.0	0.3	5.0	-23.7	0.4	3.88E-04	1.1	4	4.2
0:00:00	0.0	24.1	-21.0	24.1	0.4				
0:00:02	5.0	19.5	2.0	14.5	0.4	6.41E-04	0.9	5	4.6
0:00:08	12.5	12.2	6.0	-0.3	0.5	3.82E-04	1.0	7.5	7.3
0:00:14	18.5	6.0	6.0	-12.5	0.6	3.82E-04	1.0	6	6.2
0:00:19	22.5	2.0	5.0	-20.5	0.7	3.56E-04	1.0	4	4
0:00:00	0.0	24.1	-19.0	24.1	0.7				
0:00:02	5.0	19.5	2.0	14.5	0.7	6.41E-04	0.9	5	4.6
0:00:08	12.5	11.5	6.0	-1.0	0.8	4.02E-04	1.1	7.5	8
0:00:13	17.5	6.5	5.0	-11.0	0.9	3.73E-04	1.0	5	5
0:00:19	22.5	1.3	6.0	-21.2	1.0	3.76E-04	1.0	5	5.2
0:00:00	0.0	24.4	-19.0	24.4	1.0				
0:00:04	7.5	17.0	4.0	9.5	1.1	5.12E-04	1.0	7.5	7.4
0:00:10	14.5	10.0	6.0	-4.5	1.2	3.85E-04	1.0	7	7
0:00:15	19.5	5.2	5.0	-14.3	1.3	3.86E-04	1.0	5	4.8
0:00:21	24.0	0.6	6.0	-23.4	1.4	3.53E-04	1.0	4.5	4.6
0:00:00	0.0	24.0	-21.0	24.0	1.4				
0:00:03	6.0	18.0	3.0	12.0	1.5	5.43E-04	1.0	6	6
0:00:09	13.5	10.8	6.0	-2.7	1.6	3.92E-04	1.0	7.5	7.2
0:00:14	19.0	5.4	5.0	-13.6	1.6	4.21E-04	1.0	5.5	5.4
0:00:19	23.0	1.3	5.0	-21.7	1.7	3.69E-04	1.0	4	4.1
0:00:00	0.0	24.0	-19.0	24.0	1.7				
0:00:03	6.0	18.0	3.0	12.0	1.8	5.43E-04	1.0	6	6
0:00:09	14.0	10.2	6.0	-3.8	1.9	4.25E-04	1.0	8	7.8
0:00:15	19.0	5.0	6.0	-14.0	2.0	3.32E-04	1.0	5	5.2
0:00:21	24.0	0.1	6.0	-23.9	2.1	3.85E-04	1.0	5	4.9

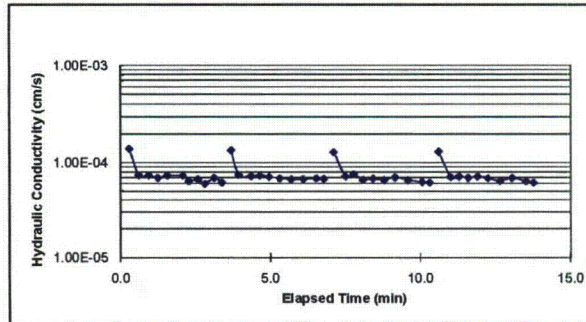


Hydraulic Conductivity Test

ASTM D 5084 - 00

Sample I.D.			East Side North Pit 0-30 cm			Test Date :			
Cell Pressure = 42.0 psi			Diameter of Sample, D = 15.2 cm Length of Sample, L = 8.3 cm Area of Sample, A = 182.41 cm ² Sample Volume, V = 1505.8 cm ³ a _{in} = 1 cm ² a _{out} = 1 cm ²						
Inflow Pressure = 41.0 psi									
Outflow Pressre = 40.0 psi									
Pressure Difference = 1.0 psi									
Effective Stress = 1.5 psi									
Hydraulic Gradient, i = 8.5			Sample Water Content = -3.8 (%) Dry Density = 0.00 g/cm ³						
Weight of wet sample = g									
Wet Density = 0.0 g/cm ³									
$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$									
Can #		WT of Can		WT of Can + Wet Soil		WT of Can + Dry Soil		Water Content	
		(g)		(g)		(g)		(%)	
		30.88		118.21				-3.83	

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:17	5.0	19.6	17.0	14.6	0.3	1.40E-04	0.9	5	4.4
0:00:36	7.5	17.0	19.0	9.5	0.6	7.37E-05	1.0	2.5	2.6
0:00:56	10.0	14.5	20.0	4.5	0.9	7.32E-05	1.0	2.6	2.5
0:01:14	12.0	12.5	18.0	0.5	1.2	6.91E-05	1.0	2	2
0:01:33	14.0	10.3	19.0	-3.7	1.6	7.28E-05	1.1	2	2.2
0:02:04	17.0	7.0	31.0	-10.0	2.1	7.25E-05	1.1	3	3.3
0:02:16	18.0	6.0	12.0	-12.0	2.3	6.36E-05	1.0	1	1
0:02:34	19.5	4.5	18.0	-15.0	2.6	6.64E-05	1.0	1.5	1.5
0:02:48	20.5	3.5	14.0	-17.0	2.8	5.95E-05	1.0	1	1
0:03:07	22.0	2.0	19.0	-20.0	3.1	6.90E-05	1.0	1.5	1.5
0:03:22	23.0	1.0	15.0	-22.0	3.4	6.12E-05	1.0	1	1
0:00:00	0.0	24.0	-202.0	24.0	3.4				
0:00:17	5.0	19.9	17.0	14.9	3.7	1.35E-04	0.8	5	4.1
0:00:32	7.0	17.8	15.0	10.8	3.9	7.44E-05	1.1	2	2.1
0:00:57	10.0	14.6	25.0	4.6	4.4	7.20E-05	1.1	3	3.2
0:01:14	12.0	12.6	17.0	0.6	4.6	7.30E-05	1.0	2	2
0:01:33	14.0	10.5	19.0	-3.5	5.0	7.09E-05	1.1	2	2.1
0:01:54	16.0	8.4	21.0	-7.6	5.3	6.82E-05	1.1	2	2.1
0:02:17	18.0	6.3	23.0	-11.7	5.7	6.65E-05	1.1	2	2.1
0:02:41	20.0	4.3	24.0	-15.7	6.1	6.66E-05	1.0	2	2
0:03:07	22.0	2.2	26.0	-19.8	6.5	6.79E-05	1.1	2	2.1
0:03:22	23.0	1.0	15.0	-22.0	6.8	6.71E-05	1.2	1	1.2
0:00:00	0.0	24.0	-202.0	24.0	6.8				
0:00:18	5.0	19.8	18.0	14.8	7.1	1.29E-04	0.8	5	4.2
0:00:42	8.0	16.6	24.0	8.6	7.5	7.13E-05	1.1	3	3.2
0:00:58	10.0	14.5	16.0	4.5	7.8	7.54E-05	1.1	2	2.1
0:01:17	12.0	12.5	19.0	0.5	8.1	6.54E-05	1.0	2	2
0:01:37	14.0	10.4	20.0	-3.6	8.4	6.75E-05	1.1	2	2.1
0:01:58	16.0	8.3	22.0	-7.7	8.8	6.52E-05	1.1	2	2.1
0:02:21	18.0	6.2	22.0	-11.8	9.2	6.96E-05	1.1	2	2.1
0:02:47	20.0	4.0	26.0	-16.0	9.6	6.48E-05	1.1	2	2.2
0:03:15	22.0	2.0	28.0	-20.0	10.1	6.18E-05	1.0	2	2
0:03:30	23.0	1.0	15.0	-22.0	10.3	6.12E-05	1.0	1	1
0:00:00	0.0	24.0	-210.0	24.0	10.3				
0:00:18	5.0	19.7	18.0	14.7	10.6	1.30E-04	0.9	5	4.3
0:00:42	8.0	16.6	24.0	8.6	11.0	7.02E-05	1.0	3	3.1
0:00:58	10.0	14.5	17.0	4.5	11.3	7.10E-05	1.1	2	2.1
0:01:17	12.0	12.5	18.0	0.5	11.6	6.91E-05	1.0	2	2
0:01:36	14.0	10.4	19.0	-3.6	11.9	7.10E-05	1.1	2	2.1
0:01:57	16	8.3	21.0	-7.7	12.3	6.83E-05	1.1	2	2.1
0:02:21	18.0	6.2	24.0	-11.8	12.7	6.38E-05	1.1	2	2.1
0:02:45	20.0	4.1	24.0	-15.9	13.1	6.85E-05	1.1	2	2.1
0:03:13	22.0	2.0	28.0	-20.0	13.5	6.33E-05	1.1	2	2.1
0:03:28	23.0	1.0	15.0	-22.0	13.8	6.12E-05	1.0	1	1



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

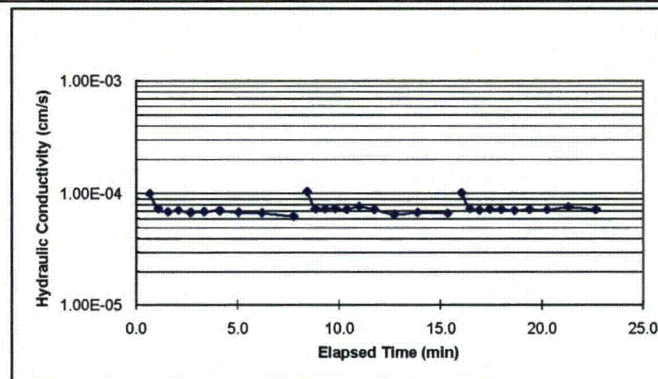
ASTM D 5084 - 00

Sample I.D. 150-mm East Side North Pit 0-30 cm			Test Date :	
Cell Pressure =	41.7	psi	Diameter of Sample, D =	15.6 cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	8.3 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	190.09 cm ²
Pressure Difference =	0.5	psi	Sample Volume, V =	1569.2 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.3		a _{out} =	1 cm ²
Weight of wet sample =		g	Sample Water Content =	#DIV/0! (%)
Wet Density =	0.0	g/cm ³	Dry Density =	#DIV/0! g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
				#DIV/0!

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:39	5.0	19.3	39.0	14.3	0.7	9.97E-05	0.9	5	4.7
0:01:04	7.0	17.3	25.0	10.3	1.1	7.32E-05	1.0	2	2
0:01:33	9.0	15.3	29.0	6.3	1.6	6.90E-05	1.0	2	2
0:02:04	11.0	13.3	31.0	2.3	2.1	7.11E-05	1.0	2	2
0:02:40	13.0	11.3	36.0	-1.7	2.7	6.81E-05	1.0	2	2
0:03:20	15.0	9.3	40.0	-5.7	3.3	6.91E-05	1.0	2	2
0:04:06	17.0	7.2	46.0	-9.8	4.1	7.07E-05	1.1	2	2.1
0:05:02	19.0	5.1	56.0	-13.9	5.0	6.84E-05	1.1	2	2.1
0:06:11	21.0	3.0	69.0	-18.0	6.2	6.74E-05	1.1	2	2.1
0:07:45	23.0	0.9	94.0	-22.1	7.8	6.30E-05	1.1	2	2.1
0:00:00	0.0	24.0	-465.0	24.0	7.8				
0:00:37	5.0	19.4	37.0	14.4	8.4	1.04E-04	0.9	5	4.6
0:01:02	7.0	17.4	25.0	10.4	8.8	7.31E-05	1.0	2	2
0:01:30	9.0	15.3	28.0	6.3	9.3	7.31E-05	1.1	2	2.1
0:02:00	11.0	13.3	30.0	2.3	9.8	7.34E-05	1.0	2	2
0:02:34	13.0	11.3	34.0	-1.7	10.4	7.21E-05	1.0	2	2
0:03:11	15.0	9.2	37.0	-5.8	11.0	7.67E-05	1.1	2	2.1
0:03:55	17.0	7.2	44.0	-9.8	11.7	7.23E-05	1.0	2	2
0:04:55	19.0	5.0	60.0	-14.0	12.7	6.55E-05	1.1	2	2.2
0:06:04	21.0	2.9	69.0	-18.1	13.9	6.78E-05	1.1	2	2.1
0:07:33	23.0	0.8	89.0	-22.2	15.4	6.70E-05	1.1	2	2.1
0:00:00	0.0	24.0	-453.0	24.0	15.4				
0:00:38	5.0	19.4	38.0	14.4	16.0	1.01E-04	0.9	5	4.6
0:01:03	7.0	17.4	25.0	10.4	16.5	7.31E-05	1.0	2	2
0:01:31	9.0	15.4	28.0	6.4	16.9	7.13E-05	1.0	2	2
0:02:02	11.0	13.3	31.0	2.3	17.4	7.27E-05	1.1	2	2.1
0:02:36	13.0	11.3	34.0	-1.7	18.0	7.21E-05	1.0	2	2
0:03:15	15.0	9.3	39.0	-5.7	18.7	7.09E-05	1.0	2	2
0:04:00	17.0	7.2	45.0	-9.8	19.4	7.23E-05	1.1	2	2.1
0:04:52	19.0	5.2	52.0	-13.8	20.3	7.17E-05	1.0	2	2
0:05:55	21.0	3.0	63.0	-18.0	21.3	7.54E-05	1.1	2	2.2
0:07:15	23.0	1.0	80.0	-22.0	22.7	7.20E-05	1.0	2	2



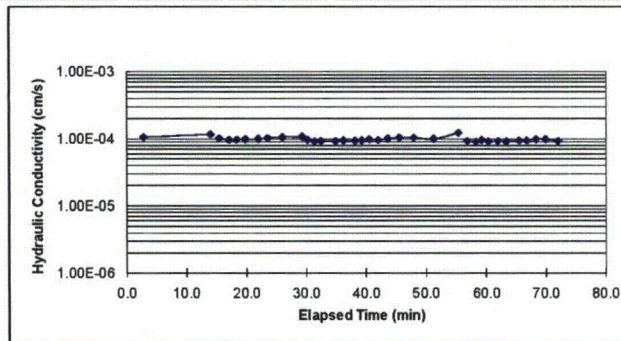
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

ASTM D 5084 - 00

Sample I.D. 75-mm East Side North Pit 0-30 cm					Test Date :				
Cell Pressure = 42.0 psi					Diameter of Sample, D = 7.0 cm				
Inflow Pressure = 40.7 psi					Length of Sample, L = 4.4 cm				
Outflow Pressure = 40.4 psi					Area of Sample, A = 38.32 cm ²				
Pressure Difference = 0.3 psi					Sample Volume, V = 170.3 cm ³				
Effective Stress = 1.5 psi					a _{in} = 1 cm ²				
Hydraulic Gradient, i = 4.7					a _{out} = 1 cm ²				
Weight of wet sample = 361.2 g					Sample Water Content = 21.94% (%)				
Wet Density = 2.1 g/cm ³					Dry Density = 2.12 g/cm ³				

$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$					Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
						(g)	(g)	(g)	(%)
						30.77	143.59	123.29	21.94%

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:02:48	6.0	18.1	168.0	12.1	2.8	1.06E-04	1.0	6	5.9
0:13:58	18.3	5.8	670.0	-12.5	14.0	1.17E-04	1.0	12.3	12.3
0:00:00	0.0	24.0	-838.0	24.0	14.0				
0:01:23	3.0	20.9	83.0	17.9	15.4	1.02E-04	1.0	2.999039352	3.1
0:03:03	6.0	17.9	100.0	11.9	17.1	9.69E-05	1.0	3	3
0:04:20	8.0	15.9	77.0	7.9	18.3	9.73E-05	1.0	2	2
0:05:47	10.0	13.9	87.0	3.9	19.8	9.89E-05	1.0	2	2
0:07:57	12.5	11.4	130.0	-1.1	22.0	9.96E-05	1.0	2.5	2.5
0:09:29	14.0	9.9	92.0	-4.1	23.5	1.02E-04	1.0	1.5	1.5
0:11:56	16.0	7.9	147.0	-8.1	25.9	1.06E-04	1.0	2	2
0:15:14	18.0	5.9	198.0	-12.1	29.2	1.08E-04	1.0	2	2
0:00:00	0.0	23.9	-914.0	23.9	29.2				
0:00:56	2.0	21.9	56.0	19.9	30.1	9.64E-05	1.0	2	2
0:02:08	4.2	19.7	72.0	15.5	31.3	9.15E-05	1.0	2.2	2.2
0:03:13	6.0	17.9	65.0	11.9	32.4	9.24E-05			
0:05:42	9.5	14.4	149.0	4.9	34.9	9.28E-05	1.0	3.5	3.5
0:06:57	11.0	12.9	75.0	1.9	36.2	9.48E-05	1.0	1.5	1.5
0:08:55	13.0	10.9	118.0	-2.1	38.1	9.39E-05	1.0	2	2
0:10:03	14.0	9.9	68.0	-4.1	39.3	9.49E-05	1.0	1	1
0:11:17	15.0	8.9	74.0	-6.1	40.5	9.81E-05	1.0	1	1
0:12:44	16.0	7.9	87.0	-8.1	41.9	9.54E-05	1.0	1	1
0:14:20	17.0	6.9	96.0	-10.1	43.5	1.01E-04	1.0	1	1
0:16:18	18.0	5.8	118.0	-12.2	45.5	1.04E-04	1.1	1	1.1
0:18:40	19.0	4.8	142.0	-14.2	47.9	1.04E-04	1.0	1	1
0:21:59	20.0	3.8	199.0	-16.2	51.2	9.98E-05	1.0	1	1
0:26:07	21.0	2.8	248.0	-18.2	55.3	1.23E-04	1.0	1	1
0:00:00	0.0	24.0	-1567.0	24.0	55.3				
0:01:29	3.0	21.0	89.0	18.0	56.8	9.30E-05	1.0	3	3
0:02:57	5.5	18.5	88.0	13.0	58.3	9.02E-05	1.0	2.5	2.5
0:03:55	7.0	16.9	58.0	9.9	59.2	9.53E-05	1.1	1.5	1.6
0:05:00	8.5	15.4	65.0	8.9	60.3	9.08E-05	1.0	1.5	1.5
0:06:37	10.5	13.4	97.0	2.9	61.9	9.22E-05	1.0	2	2
0:07:59	12.0	12.0	82.0	0.0	63.3	9.11E-05	0.9	1.5	1.4
0:10:09	14.0	10.0	130.0	-4.0	65.5	9.38E-05	1.0	2	2
0:11:26	15.0	9.0	77.0	-6.0	66.7	9.37E-05	1.0	1	1
0:12:58	16.1	7.9	92.0	-8.2	68.3	9.93E-05	1.0	1.1	1.1
0:14:32	17.0	6.9	94.0	-10.1	69.8	9.83E-05	1.1	0.9	1
0:16:37	18.0	5.9	125.0	-12.1	71.9	9.31E-05	1.0	1	1



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

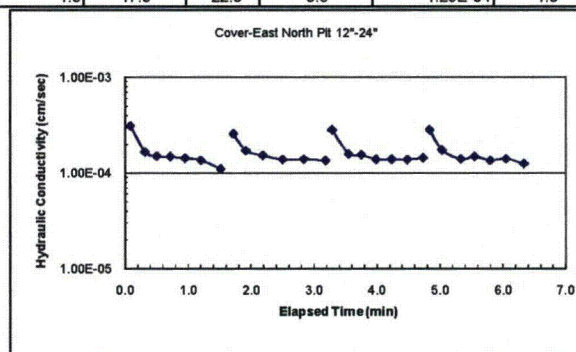
ASTM D 5084 - 00

Sample I.D.	305-mm East Side North Pit 30-60 cm		Test Date :	9/19/07
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.9 cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	20.3 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	750.1 cm ²
Pressure Difference =	2.4	psi	Sample Volume, V =	15241.4 cm ³
Effective Stress =	1.49	psi	a _{in} =	4 cm ²
Hydraulic Gradient, i =	8.4		a _{out} =	4 cm ²
Weight of wet sample =	24720.8	(g)	Sample Water Content =	6.9 (%)
Wet Density =	1.6	g/cm ³	Dry Density =	1.52 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	6.90

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
9/19/2007 12:00	0.0	24.0	0.0	24.0	0.0				
9/19/2007 12:00	3.0	21.5	5.0	18.5	0.1	3.10E-04	0.8	12	10
9/19/2007 12:00	8.0	18.5	14.0	10.5	0.3	1.67E-04	0.6	20	12
9/19/2007 12:00	11.0	16.0	11.0	5.0	0.5	1.52E-04	0.8	12	10
9/19/2007 12:00	14.0	12.8	13.0	-1.2	0.7	1.50E-04	1.1	12	12.8
9/19/2007 12:00	17.0	9.6	14.0	-7.4	1.0	1.44E-04	1.1	12	12.8
9/19/2007 12:01	20.0	6.5	15.0	-13.5	1.2	1.37E-04	1.0	12	12.4
9/19/2007 12:01	23.0	3.5	19.0	-19.5	1.5	1.11E-04	1.0	12	12
9/19/2007 12:01	24.5	1.0	6.0	-23.5	1.6			6	10
9/19/2007 12:00	0.0	24.0	0.0	24.0	1.6				
9/19/2007 12:00	3.0	21.5	6.0	18.5	1.7	2.58E-04	0.8	12	10
9/19/2007 12:00	7.0	18.4	12.0	11.4	1.9	1.73E-04	0.8	16	12.4
9/19/2007 12:00	11.0	14.3	16.0	3.3	2.2	1.54E-04	1.0	16	16.4
9/19/2007 12:00	15.0	10.0	19.0	-5.0	2.5	1.39E-04	1.1	16	17.2
9/19/2007 12:01	19.0	5.6	20.0	-13.4	2.8	1.41E-04	1.1	16	17.6
9/19/2007 12:01	23.0	1.5	21.0	-21.5	3.2	1.36E-04	1.0	16	16.4
9/19/2007 12:00	0.0	24.0	0.0	24.0	3.2				
9/19/2007 12:00	3.0	21.0	6.0	18.0	3.3	2.82E-04	1.0	12	12
9/19/2007 12:00	8.0	17.3	16.0	9.3	3.6	1.60E-04	0.7	20	14.8
9/19/2007 12:00	11.0	14.2	12.0	3.2	3.7	1.55E-04	1.0	12	12.4
9/19/2007 12:00	14.0	11.0	14.0	-3.0	4.0	1.40E-04	1.1	12	12.8
9/19/2007 12:01	17.0	7.6	15.0	-9.4	4.2	1.40E-04	1.1	12	13.6
9/19/2007 12:01	20.0	4.5	15.0	-15.5	4.5	1.39E-04	1.0	12	12.4
9/19/2007 12:01	23.0	1.4	15.0	-21.6	4.7	1.45E-04	1.0	12	12.4
9/19/2007 12:00	0.0	24.0	0.0	24.0	4.7				
9/19/2007 12:00	3.0	21.0	6.0	18.0	4.8	2.82E-04	1.0	12	12
9/19/2007 12:00	7.0	17.8	12.0	10.8	5.0	1.75E-04	0.8	16	12.8
9/19/2007 12:00	11.0	13.5	18.0	2.5	5.3	1.41E-04	1.1	16	17.2
9/19/2007 12:00	14.0	10.4	13.0	-3.6	5.5	1.49E-04	1.0	12	12.4
9/19/2007 12:01	17.0	7.2	15.0	-9.8	5.8	1.36E-04	1.1	12	12.8
9/19/2007 12:01	20.0	4.0	15.0	-16.0	6.0	1.42E-04	1.1	12	12.8
9/19/2007 12:01	23.0	1.0	17.0	-22.0	6.3	1.26E-04	1.0	12	12



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

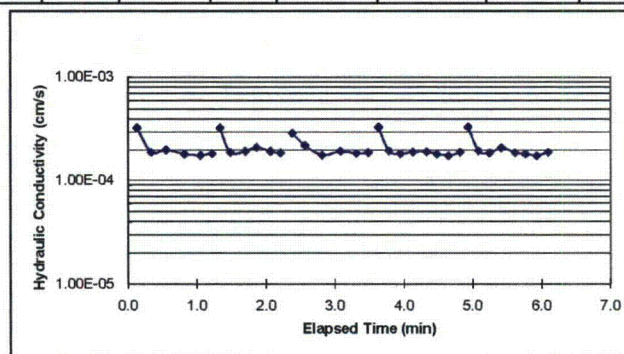
ASTM D 5084 - 00

Sample I.D. 150-mm East Side North Pit 30-60 cm					Test Date :				
Cell Pressure =	42.0	psi	Diameter of Sample, D =		15.6	cm			
Inflow Pressure =	41.0	psi	Length of Sample, L =		9.0	cm			
Outflow Pressure =	40.0	psi	Area of Sample, A =		190.09	cm ²			
Pressure Difference =	1.0	psi	Sample Volume, V =		1714.1	cm ³			
Effective Stress =	1.5	psi	a _{in} =		1	cm ²			
Hydraulic Gradient, i =	7.8		a _{out} =		1	cm ²			
Weight of wet sample =	3150.2	g	Sample Water Content =		21.24%	(%)			
Wet Density =	1.8	g/cm ³	Dry Density =		1.83	g/cm ³			

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.79	203.02	172.85	21.24%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q _{out} / Q _{in}	Q _{in}	Q _{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:08	5.0	19.2	8.0	14.2	0.1	3.25E-04	1.0	5	4.8
0:00:20	9.0	15.5	12.0	6.5	0.3	1.89E-04	0.9	4	3.7
0:00:33	13.0	11.6	13.0	-1.4	0.6	1.98E-04	1.0	4	3.9
0:00:49	17.0	7.7	16.0	-9.3	0.8	1.80E-04	1.0	4	3.9
0:01:03	20.0	4.7	14.0	-15.3	1.1	1.75E-04	1.0	3	3
0:01:13	22.0	2.6	10.0	-19.4	1.2	1.84E-04	1.1	2	2.1
0:00:00	0.0	24.0	-73.0	24.0	1.2				
0:00:08	5.0	19.2	8.0	14.2	1.3	3.25E-04	1.0	5	4.8
0:00:17	8.0	16.4	9.0	8.4	1.5	1.87E-04	0.9	3	2.8
0:00:30	12.0	12.5	13.0	0.5	1.7	1.83E-04	1.0	4	3.9
0:00:40	15.0	9.5	10.0	-5.5	1.9	2.10E-04	1.0	3	3
0:00:52	18.0	6.5	12.0	-11.5	2.1	1.92E-04	1.0	3	3
0:01:01	20.0	4.5	9.0	-15.5	2.2	1.86E-04	1.0	2	2
0:00:00	0.0	24.0	-61.0	24.0	2.2				
0:00:11	6.0	18.2	11.0	12.2	2.4	2.88E-04	1.0	6	5.8
0:00:22	10.0	14.2	11.0	4.2	2.6	2.20E-04	1.0	4	4
0:00:37	14.0	10.3	15.0	-3.7	2.8	1.77E-04	1.0	4	3.9
0:00:53	18.0	6.2	16.0	-11.8	3.1	1.92E-04	1.0	4	4.1
0:01:07	21.0	3.2	14.0	-17.8	3.3	1.83E-04	1.0	3	3
0:01:17	23.0	1.2	10.0	-21.8	3.5	1.88E-04	1.0	2	2
0:00:00	0.0	24.0	-77.0	24.0	3.5				
0:00:08	5.0	19.0	8.0	14.0	3.6	3.32E-04	1.0	5	5
0:00:17	8.0	16.0	9.0	8.0	3.8	1.94E-04	1.0	3	3
0:00:27	11.0	13.2	10.0	2.2	4.0	1.82E-04	0.9	3	2.8
0:00:38	14.0	10.1	11.0	-3.9	4.1	1.89E-04	1.0	3	3.1
0:00:50	17.0	7.0	12.0	-10.0	4.3	1.90E-04	1.0	3	3.1
0:00:59	19.0	5.0	9.0	-14.0	4.5	1.81E-04	1.0	2	2
0:01:09	21.0	3.0	10.0	-18.0	4.7	1.75E-04	1.0	2	2
0:01:19	23.0	1.0	10.0	-22.0	4.8	1.89E-04	1.0	2	2
0:00:00	0.0	24.0	-79.0	24.0	4.8				
0:00:08	5.0	19.0	8.0	14.0	4.9	3.32E-04	1.0	5	5
0:00:17	8.0	16.0	9.0	8.0	5.1	1.94E-04	1.0	3	3
0:00:27	11.0	13.1	10.0	2.1	5.3	1.86E-04	1.0	3	2.9
0:00:37	14.0	10.0	10.0	-4.0	5.4	2.09E-04	1.0	3	3.1
0:00:49	17.0	7.0	12.0	-10.0	5.6	1.87E-04	1.0	3	3
0:00:58	19.0	5.0	9.0	-14.0	5.8	1.81E-04	1.0	2	2
0:01:08	21.0	3.0	10.0	-18.0	5.9	1.75E-04	1.0	2	2
0:01:18	23.0	1.0	10.0	-22.0	6.1	1.89E-04	1.0	2	2



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

ASTM D 5084 - 00

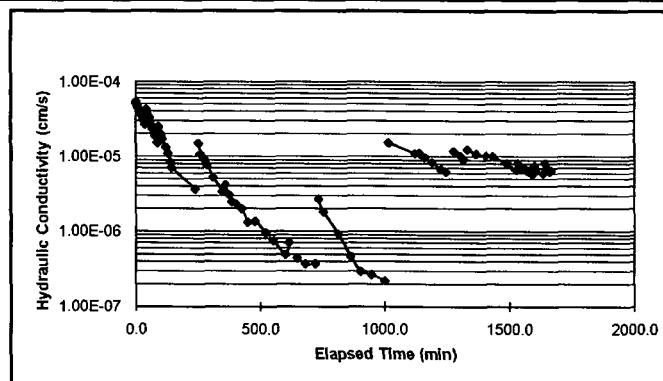
Sample I.D. 75-mm East Side North Pit 30-60 cm			Test Date :	
Cell Pressure =	41.7	psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	4.6 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	38.32 cm ²
Pressure Difference =	0.5	psi	Sample Volume, V =	175.2 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	7.7		a _{out} =	1 cm ²
Weight of wet sample =	319.8	g	Sample Water Content =	23.73% (%)
Wet Density =	1.8	g/cm ³	Dry Density =	1.82 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	30.91	133.8	114.07	23.73%

Date, Time	Inflow	Outflow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:59	1.5	22.4	59.0	20.9	1.0	5.44E-05	1.1	1.5	1.6
0:02:25	3.5	20.4	86.0	16.9	2.4	5.13E-05	1.0	2	2
0:04:01	5.5	18.4	96.0	12.9	4.0	4.97E-05	1.0	2	2
0:06:49	8.5	15.4	168.0	6.9	6.8	4.73E-05	1.0	3	3
0:10:19	11.5	12.4	210.0	0.9	10.3	4.37E-05	1.0	3	3
0:14:48	14.5	9.4	269.0	-5.1	14.8	4.04E-05	1.0	3	3
0:17:35	16.0	7.9	167.0	-8.1	17.6	3.76E-05	1.0	1.5	1.5
0:20:05	17.2	6.7	150.0	-10.5	20.1	3.69E-05	1.0	1.2	1.2
0:26:19	19.6	4.3	374.0	-15.3	26.3	3.45E-05	1.0	2.4	2.4
0:28:11	20.2	3.7	112.0	-16.5	28.2	3.32E-05	1.0	0.6	0.6
0:31:29	21.1	2.8	198.0	-18.3	31.5	3.06E-05	1.0	0.9	0.9
0:35:55	22.2	1.7	266.0	-20.5	35.9	3.13E-05	1.0	1.1	1.1
0:37:28	22.5	1.4	93.0	-21.1	37.5	2.68E-05	1.0	0.3	0.3
0:39:55	23.0	0.9	147.0	-22.1	39.9	2.99E-05	1.0	0.5	0.5
0:00:00	0.0	24.0	-2395.0	24.0	39.9				
0:02:22	3.0	21.3	142.0	18.3	42.3	4.26E-05	0.9	3	2.7
0:05:31	6.0	18.3	189.0	12.3	45.4	3.76E-05	1.0	3	3
0:08:26	8.5	15.8	175.0	7.3	48.3	3.79E-05	1.0	2.5	2.5
0:10:31	10.0	14.3	125.0	4.3	50.4	3.50E-05	1.0	1.5	1.5
0:14:42	12.5	11.7	251.0	-0.8	54.6	3.29E-05	1.0	2.5	2.6
0:18:56	14.5	9.7	254.0	-4.8	58.8	2.91E-05	1.0	2	2
0:22:41	16.0	8.3	225.0	-7.7	62.6	2.66E-05	0.9	1.5	1.4
0:25:43	17.0	7.3	182.0	-9.7	65.6	2.48E-05	1.0	1	1
0:29:16	18.0	6.3	213.0	-11.7	69.2	2.29E-05	1.0	1	1
0:33:29	19.0	5.3	253.0	-13.7	73.4	2.10E-05	1.0	1	1
0:39:47	20.2	4.1	378.0	-16.1	79.7	1.87E-05	1.0	1.2	1.2
0:45:31	21.0	3.3	344.0	-17.7	85.4	1.52E-05	1.0	0.8	0.8
0:00:00	0.0	24.0	-2731.0	24.0	85.4				
0:07:31	5.0	18.8	451.0	13.8	92.9	2.50E-05	1.0	5	5.2
0:11:37	7.0	16.8	246.0	9.8	97.0	2.07E-05	1.0	2	2
0:18:01	9.5	14.3	384.0	4.8	103.4	1.83E-05	1.0	2.5	2.5
0:22:40	11.0	12.7	279.0	1.7	108.1	1.73E-05	1.1	1.5	1.6
0:33:15	13.5	10.3	635.0	-3.2	118.7	1.34E-05	1.0	2.5	2.4
0:43:40	15.2	8.5	625.0	-6.7	129.1	1.11E-05	1.1	1.7	1.8
0:52:43	16.3	7.5	543.0	-8.8	138.1	8.42E-06	0.9	1.1	1
0:57:01	16.7	7.1	258.0	-9.6	142.4	7.12E-06	1.0	0.4	0.4
2:32:41	20.5	3.3	5740.0	-17.2	238.1	3.67E-06	1.0	3.8	3.8
0:00:00	0.0	24.0	-9161.0	24.0	238.1				
0:14:05	5.7	18.3	845.0	12.6	252.2	1.51E-05	1.0	5.7	5.7
0:19:26	7.0	16.9	321.0	9.9	257.5	1.08E-05	1.1	1.3	1.4
0:34:03	9.9	14.0	877.0	4.1	272.2	9.37E-06	1.0	2.9	2.9
0:47:31	11.8	12.0	808.0	0.2	285.6	7.72E-06	1.1	1.9	2
1:12:32	14.0	9.8	1501.0	-4.2	310.6	5.28E-06	1.0	2.2	2.2
1:48:52	15.8	8.0	2180.0	-7.8	347.0	3.38E-06	1.0	1.8	1.8
0:00:00	0.0	24.0	-6532.0	24.0	347.0				
0:11:38	1.3	22.5	698.0	21.2	358.6	4.14E-06	1.2	1.3	1.5
0:26:56	2.6	21.2	918.0	18.6	373.9	3.07E-06	1.0	1.3	1.3
0:39:53	3.5	20.4	777.0	16.9	386.9	2.47E-06	0.9	0.9	0.8
0:54:54	4.4	19.5	901.0	15.1	401.9	2.33E-06	1.0	0.9	0.9
1:19:19	5.6	18.3	1465.0	12.7	426.3	1.99E-06	1.0	1.2	1.2
1:41:57	6.3	17.6	1358.0	11.3	449.0	1.30E-06	1.0	0.7	0.7
2:11:14	7.2	16.7	1757.0	9.5	478.2	1.34E-06	1.0	0.9	0.9

2:54:09	8.1	15.8	2575.0	7.7	521.2	9.53E-07	1.0	0.9	0.9
3:25:16	8.6	15.3	1867.0	6.7	552.3	7.54E-07	1.0	0.5	0.5
4:13:41	9.1	14.8	2905.0	5.7	600.7	4.96E-07	1.0	0.5	0.5
4:27:38	9.3	14.6	837.0	5.3	614.6	7.01E-07	1.0	0.2	0.2
0:00:00	9.0	15.0	-16058.0	6.0	614.6				
0:32:53	9.3	14.7	1973.0	5.4	647.5	4.44E-07	1.0	0.3	0.3
1:06:10	9.6	14.5	1997.0	4.9	680.8	3.70E-07	0.7	0.3	0.2
1:46:24	9.9	14.2	2414.0	4.3	721.0	3.73E-07	1.0	0.3	0.3
0:00:00	0.0	24.0	-6384.0	24.0	721.0				
0:14:02	1.0	22.8	842.0	21.8	735.0	2.68E-06	1.2	1	1.2
0:31:47	1.9	21.9	1065.0	20.0	752.8	1.80E-06	1.0	0.9	0.9
1:32:19	3.4	20.4	3632.0	17.0	813.3	9.18E-07	1.0	1.5	1.5
2:21:36	4.0	19.8	2957.0	15.8	862.6	4.70E-07	1.0	0.6	0.6
3:01:24	4.3	19.5	2388.0	15.2	902.4	2.96E-07	1.0	0.3	0.3
3:45:33	4.6	19.2	2649.0	14.6	946.6	2.70E-07	1.0	0.3	0.3
4:40:05	4.9	18.9	3272.0	14.0	1001.1	2.21E-07	1.0	0.3	0.3
0:00:00	0.0	24.0	-16805.0	24.0	1001.1				
0:12:54	5.3	18.7	774.0	13.4	1014.0	1.52E-05	1.0	5.3	5.3
1:58:50	22.0	1.9	6356.0	-20.1	1119.9	1.10E-05	1.0	16.7	16.8
0:00:00	0.0	24.0	-7130.0	24.0	1119.9				
0:17:20	5.2	18.7	1040.0	13.5	1137.2	1.12E-05	1.0	5.2	5.3
0:38:55	9.8	14.0	1295.0	4.2	1158.8	9.77E-06	1.0	4.6	4.7
1:08:28	14.1	9.7	1773.0	-4.4	1186.4	8.29E-06	1.0	4.3	4.3
1:43:51	17.4	6.4	2123.0	-11.0	1223.8	6.79E-06	1.0	3.3	3.3
2:03:22	17.8	4.0	1171.0	-13.8	1243.3	6.27E-06	6.0	0.4	2.4
0:00:00	0.0	24.0	-7402.0	24.0	1243.3				
0:31:14	9.1	14.8	1874.0	5.7	1274.5	1.18E-05	1.0	9.1	9.2
0:58:02	14.1	9.8	1608.0	-4.3	1301.3	1.04E-05	1.0	5	5
1:11:01	15.8	8.0	779.0	-7.8	1314.3	9.22E-06	1.1	1.7	1.8
0:00:00	0.0	24.0	-4261.0	24.0	1314.3				
0:14:21	4.9	19.1	861.0	14.2	1328.7	1.25E-05	1.0	4.9	4.9
0:50:39	13.0	11.0	2178.0	-2.0	1365.0	1.09E-05	1.0	8.1	8.1
1:29:37	18.5	5.5	2338.0	-13.0	1403.9	1.03E-05	1.0	5.5	5.5
0:00:00	0.0	24.0	-5377.0	24.0	1403.9				
0:27:02	7.0	16.9	1622.0	9.9	1430.9	1.00E-05	1.0	7	7.1
1:24:58	15.4	8.4	3476.0	-7.0	1488.9	8.07E-06	1.0	8.4	8.5
2:02:34	18.5	5.2	2256.0	-13.3	1526.5	6.70E-06	1.0	3.1	3.2
0:00:00	0.0	24.0	-7354.0	24.0	1526.5				
0:06:22	1.5	22.5	382.0	21.0	1532.9	8.13E-06	1.0	1.5	1.5
0:15:25	3.3	20.6	543.0	17.3	1541.9	7.49E-06	1.1	1.8	1.9
0:22:52	4.6	19.3	447.0	14.7	1549.4	6.78E-06	1.0	1.3	1.3
0:30:43	5.9	18.0	471.0	12.1	1557.2	6.78E-06	1.0	1.3	1.3
0:36:20	6.8	17.1	337.0	10.3	1562.8	6.87E-06	1.0	0.9	0.9
0:44:21	8.0	16.0	481.0	8.0	1570.9	6.44E-06	0.9	1.2	1.1
0:54:04	9.3	14.6	583.0	5.3	1580.6	6.61E-06	1.1	1.3	1.4
1:01:46	10.2	13.7	462.0	3.5	1588.3	5.88E-06	1.0	0.9	0.9
1:07:54	10.9	13.0	368.0	2.1	1594.4	5.98E-06	1.0	0.7	0.7
1:12:13	11.5	12.4	259.0	0.9	1598.7	7.54E-06	1.0	0.6	0.6
1:17:17	12.1	11.8	304.0	-0.3	1603.8	6.64E-06	1.0	0.6	0.6
1:48:52	15.1	8.8	1895.0	-6.3	1635.4	5.95E-06	1.0	3	3
0:00:00	0.0	24.0	-6532.0	24.0	1635.4				
0:05:54	1.3	22.5	354.0	21.2	1641.3	8.17E-06	1.2	1.3	1.5
0:16:18	3.3	20.5	624.0	17.2	1651.7	7.04E-06	1.0	2	2
0:24:09	4.6	19.2	471.0	14.6	1659.6	6.45E-06	1.0	1.3	1.3
0:31:01	5.7	18.1	412.0	12.4	1666.4	6.55E-06	1.0	1.1	1.1



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

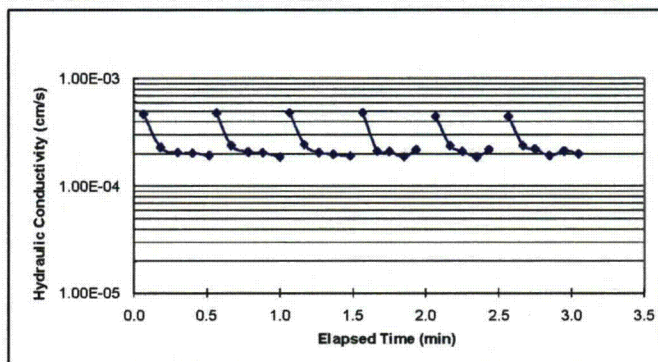
ASTM D 5084 - 00

Sample I.D. 305-mm East Side North Pit 60-90 cm			Test Date :	
Cell Pressure =	42.1	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	17.8 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.66 cm ²
Pressure Difference =	1.0	psi	Sample Volume, V =	12973.3 cm ³
Effective Stress =	1.6	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.0		a _{out} =	1 cm ²
Weight of wet sample =	23949.6	g	Sample Water Content =	0.0 (%)
Wet Density =	1.8	g/cm ³	Dry Density =	1.85 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	50.25	356.52		

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	23.9	0.0	23.9	0.0				
0:00:04	7.0	17.5	4.0	10.5	0.1	4.67E-04	0.9	7	6.4
0:00:11	12.0	12.5	7.0	0.5	0.2	2.30E-04	1.0	5	5
0:00:18	16.0	8.6	7.0	-7.4	0.3	2.06E-04	1.0	4	3.9
0:00:24	19.0	5.6	6.0	-13.4	0.4	2.03E-04	1.0	3	3
0:00:31	22.0	2.6	7.0	-19.4	0.5	1.94E-04	1.0	3	3
0:00:00	0.0	24.1	-31.0	24.1	0.5				
0:00:04	7.0	17.4	4.0	10.4	0.6	4.77E-04	1.0	7	6.7
0:00:10	11.5	12.9	6.0	1.4	0.7	2.40E-04	1.0	4.5	4.5
0:00:17	15.5	8.8	7.0	-6.7	0.8	2.09E-04	1.0	4	4.1
0:00:23	18.5	5.7	6.0	-12.8	0.9	2.05E-04	1.0	3	3.1
0:00:30	21.5	2.8	7.0	-18.7	1.0	1.88E-04	1.0	3	2.9
0:00:00	0.0	24.1	-30.0	24.1	1.0				
0:00:04	7.0	17.3	4.0	10.3	1.1	4.81E-04	1.0	7	6.8
0:00:10	11.5	12.7	6.0	1.2	1.2	2.43E-04	1.0	4.5	4.6
0:00:16	15.0	9.3	6.0	-5.7	1.3	2.06E-04	1.0	3.5	3.4
0:00:22	18.0	6.3	6.0	-11.7	1.4	1.98E-04	1.0	3	3
0:00:29	21.0	3.2	7.0	-17.8	1.5	1.91E-04	1.0	3	3.1
0:00:00	0.0	24.0	-29.0	24.0	1.5				
0:00:04	7.0	17.2	4.0	10.2	1.6	4.82E-04	1.0	7	6.8
0:00:10	11.0	13.2	6.0	2.2	1.7	2.12E-04	1.0	4	4
0:00:15	14.0	10.2	5.0	-3.8	1.8	2.10E-04	1.0	3	3
0:00:21	17.0	7.3	6.0	-9.7	1.9	1.89E-04	1.0	3	2.9
0:00:26	19.5	4.6	5.0	-14.9	1.9	2.19E-04	1.1	2.5	2.7
0:00:00	0.0	24.0	-26.0	24.0	2.0				
0:00:04	6.5	17.7	4.0	11.2	2.1	4.44E-04	1.0	6.5	6.3
0:00:10	11.0	13.2	6.0	2.2	2.2	2.38E-04	1.0	4.5	4.5
0:00:15	14.0	10.2	5.0	-3.8	2.3	2.10E-04	1.0	3	3
0:00:21	17.0	7.3	6.0	-9.7	2.4	1.89E-04	1.0	3	2.9
0:00:26	19.5	4.6	5.0	-14.9	2.4	2.19E-04	1.1	2.5	2.7
0:00:00	0.0	24.1	-26.0	24.1	2.5				
0:00:04	6.5	17.8	4.0	11.3	2.6	4.44E-04	1.0	6.5	6.3
0:00:10	11.0	13.3	6.0	2.3	2.7	2.37E-04	1.0	4.5	4.5
0:00:15	14.0	10.0	5.0	-4.0	2.8	2.21E-04	1.1	3	3.3
0:00:21	17.0	7.0	6.0	-10.0	2.9	1.93E-04	1.0	3	3
0:00:27	20.0	4.0	6.0	-16.0	3.0	2.13E-04	1.0	3	3
0:00:33	22.5	1.4	6.0	-21.1	3.1	2.00E-04	1.0	2.5	2.6



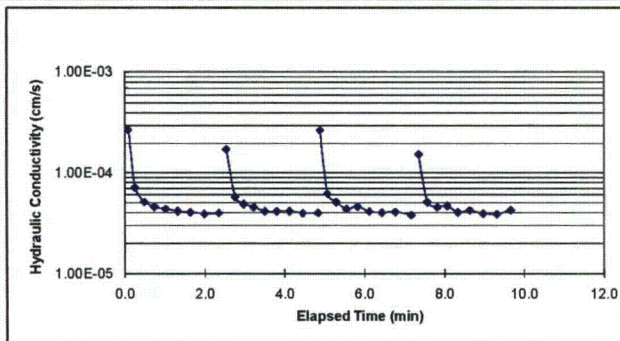
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

Sample I.D. 305-mm East Side South Pit 0-30 cm				Test Date :			
Cell Pressure =	42.0	psi		Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	41.0	psi		Length of Sample, L =	19.1	cm	
Outflow Pressure =	40.0	psi		Area of Sample, A =	729.66	cm ²	
Pressure Difference =	1.0	psi		Sample Volume, V =	13900.0	cm ³	
Effective Stress =	1.5	psi		a _{in} =	1	cm ²	
Hydraulic Gradient, i =	3.7			a _{out} =	1	cm ²	
Weight of wet sample =	23400.1	g		Sample Water Content =	8.41%	(%)	
Wet Density =	1.7	g/cm ³		Dry Density =	1.68	g/cm ³	

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50.36	433.12	403.42	8.41%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:05	5.3	20.0	5.0	14.7	0.1	2.71E-04	0.8	5.3	4
0:00:15	7.8	18.0	10.0	10.2	0.3	7.10E-05	0.8	2.5	2
0:00:29	10.1	16.0	14.0	5.9	0.5	5.12E-05	0.9	2.3	2
0:00:44	12.0	14.0	15.0	2.0	0.7	4.57E-05	1.1	1.9	2
0:01:01	13.8	11.8	17.0	-2.0	1.0	4.37E-05	1.2	1.8	2.2
0:01:19	15.8	10.0	18.0	-5.8	1.3	4.15E-05	0.9	2	1.8
0:01:38	17.5	8.0	19.0	-9.5	1.6	4.06E-05	1.2	1.7	2
0:01:59	19.2	6.0	21.0	-13.2	2.0	3.90E-05	1.2	1.7	2
0:02:21	20.9	4.0	22.0	-16.9	2.4	3.97E-05	1.2	1.7	2
0:00:00	0.0	24.0	-141.0	24.0	2.4				
0:00:08	5.5	20.0	8.0	14.5	2.5	1.73E-04	0.7	5.5	4
0:00:21	8.0	17.8	13.0	9.8	2.8	5.72E-05	0.9	2.5	2.2
0:00:34	10.0	16.0	13.0	6.0	3.0	4.88E-05	0.9	2	1.8
0:00:49	11.9	14.0	15.0	2.1	3.2	4.56E-05	1.1	1.9	2
0:01:06	13.7	12.0	17.0	-1.7	3.5	4.14E-05	1.1	1.8	2
0:01:24	15.5	10.0	18.0	-5.5	3.8	4.13E-05	1.1	1.8	2
0:01:43	17.3	8.0	19.0	-9.3	4.1	4.15E-05	1.1	1.8	2
0:02:03	18.9	6.0	20.0	-12.9	4.5	3.97E-05	1.3	1.6	2
0:02:26	20.8	4.0	23.0	-16.8	4.8	3.99E-05	1.1	1.9	2
0:00:00	0.0	24.0	-146.0	24.0	4.8				
0:00:05	5.2	20.0	5.0	14.8	4.9	2.68E-04	0.8	5.2	4
0:00:16	7.5	18.0	11.0	10.5	5.1	6.15E-05	0.9	2.3	2
0:00:29	9.5	16.0	13.0	6.5	5.3	5.10E-05	1.0	2	2
0:00:45	11.5	14.0	16.0	2.5	5.6	4.36E-05	1.0	2	2
0:01:01	13.5	12.0	16.0	-1.5	5.8	4.61E-05	1.0	2	2
0:01:19	15.3	10.0	18.0	-5.3	6.1	4.12E-05	1.1	1.8	2
0:01:38	17.0	8.0	19.0	-9.0	6.4	4.02E-05	1.2	1.7	2
0:01:58	18.7	6.0	20.0	-12.7	6.8	4.06E-05	1.2	1.7	2
0:02:22	20.6	4.0	24.0	-16.6	7.2	3.81E-05	1.1	1.9	2
0:00:00	0.0	24.0	-142.0	24.0	7.2				
0:00:09	5.5	20.0	9.0	14.5	7.4	1.54E-04	0.7	5.5	4
0:00:22	7.7	18.0	13.0	10.3	7.6	5.10E-05	0.9	2.2	2
0:00:37	9.8	16.0	15.0	6.2	7.8	4.54E-05	1.0	2.1	2
0:00:52	11.8	14.0	15.0	2.2	8.1	4.67E-05	1.0	2	2
0:01:08	13.3	12.0	16.0	-1.3	8.3	4.04E-05	1.3	1.5	2
0:01:26	15.2	10.0	18.0	-5.2	8.6	4.22E-05	1.1	1.9	2
0:01:46	17.0	8.0	20.0	-9.0	9.0	3.92E-05	1.1	1.8	2
0:02:07	18.7	6.0	21.0	-12.7	9.3	3.87E-05	1.2	1.7	2
0:02:28	20.5	4.0	21.0	-16.5	9.7	4.24E-05	1.1	1.8	2



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

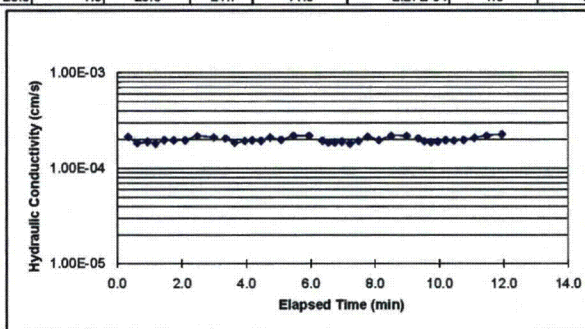
ASTM D 5084 - 00

Sample I.D. 150-mm East Side South Pit 0-30 cm			Test Date :	
Cell Pressure =	41.7	psi	Diameter of Sample, D =	15.6 cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	9.3 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	190.09 cm ²
Pressure Difference =	0.5	psi	Sample Volume, V =	1762.4 cm ³
Effective Stress =	1.5	psi	a_{in} =	1 cm ²
Hydraulic Gradient, i =	3.8		a_{out} =	1 cm ²
Weight of wet sample =	3330.7	g	Sample Water Content =	19.61% (%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.89 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left[\frac{(\Delta H_1)}{(\Delta H_2)} \right]$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	25.02	157.61	135.87	19.61%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:20	5.0	19.5	20.0	14.5	0.3	2.13E-04	0.9	5	4.5
0:00:37	8.0	16.5	17.0	8.5	0.6	1.85E-04	1.0	3	3
0:00:56	11.0	13.5	19.0	2.5	0.9	1.90E-04	1.0	3	3
0:01:11	13.0	11.5	15.0	-1.5	1.2	1.83E-04	1.0	2	2
0:01:27	15.0	9.4	16.0	-5.6	1.5	1.98E-04	1.1	2	2.1
0:01:45	17.0	7.4	18.0	-9.6	1.8	1.97E-04	1.0	2	2
0:02:06	19.0	5.4	21.0	-13.6	2.1	1.98E-04	1.0	2	2
0:02:29	21.0	3.4	23.0	-17.6	2.5	2.18E-04	1.0	2	2
0:02:59	23.0	1.4	30.0	-21.6	3.0	2.10E-04	1.0	2	2
0:00:00	0.0	24.0	-179.0	24.0	3.0				
0:00:21	5.0	19.4	21.0	14.4	3.4	2.06E-04	0.9	5	4.6
0:00:38	8.0	16.4	17.0	8.4	3.6	1.85E-04	1.0	3	3
0:00:57	11.0	13.3	19.0	2.3	4.0	1.94E-04	1.0	3	3.1
0:01:11	13.0	11.3	14.0	-1.7	4.2	1.97E-04	1.0	2	2
0:01:27	15.0	9.3	16.0	-5.7	4.5	1.94E-04	1.0	2	2
0:01:44	17.0	7.3	17.0	-9.7	4.7	2.09E-04	1.0	2	2
0:02:05	19.0	5.3	21.0	-13.7	5.1	1.98E-04	1.0	2	2
0:02:28	21.0	3.3	23.0	-17.7	5.5	2.19E-04	1.0	2	2
0:02:57	23.0	1.3	29.0	-21.7	6.0	2.19E-04	1.0	2	2
0:00:00	0.0	24.0	-177.0	24.0	6.0				
0:00:22	5.0	19.5	22.0	14.5	6.4	1.94E-04	0.9	5	4.5
0:00:33	7.0	17.5	11.0	10.5	6.6	1.86E-04	1.0	2	2
0:00:45	9.0	15.5	12.0	6.5	6.8	1.86E-04	1.0	2	2
0:00:58	11.0	13.5	13.0	2.5	7.0	1.89E-04	1.0	2	2
0:01:13	13.0	11.5	15.0	-1.5	7.2	1.83E-04	1.0	2	2
0:01:29	15.0	9.5	16.0	-5.5	7.5	1.93E-04	1.0	2	2
0:01:46	17.0	7.4	17.0	-9.6	7.8	2.13E-04	1.1	2	2.1
0:02:07	19.0	5.4	21.0	-13.6	8.1	1.98E-04	1.0	2	2
0:02:30	21.0	3.4	23.0	-17.6	8.5	2.18E-04	1.0	2	2
0:02:59	23.0	1.4	29.0	-21.6	9.0	2.17E-04	1.0	2	2
0:00:00	0.0	24.0	-179.0	24.0	9.0				
0:00:21	5.0	19.4	21.0	14.4	9.4	2.06E-04	0.9	5	4.6
0:00:32	7.0	17.3	11.0	10.3	9.5	1.91E-04	1.1	2	2.1
0:00:44	9.0	15.3	12.0	6.3	9.7	1.87E-04	1.0	2	2
0:00:57	11.0	13.3	13.0	2.3	10.0	1.90E-04	1.0	2	2
0:01:11	13.0	11.3	14.0	-1.7	10.2	1.97E-04	1.0	2	2
0:01:27	15.0	9.3	16.0	-5.7	10.5	1.94E-04	1.0	2	2
0:01:45	17.0	7.3	18.0	-9.7	10.8	1.98E-04	1.0	2	2
0:02:05	19.0	5.3	20.0	-13.7	11.1	2.08E-04	1.0	2	2
0:02:28	21.0	3.3	23.0	-17.7	11.5	2.19E-04	1.0	2	2
0:02:56	23.0	1.3	28.0	-21.7	11.9	2.27E-04	1.0	2	2



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

ASTM D 5084 - 00

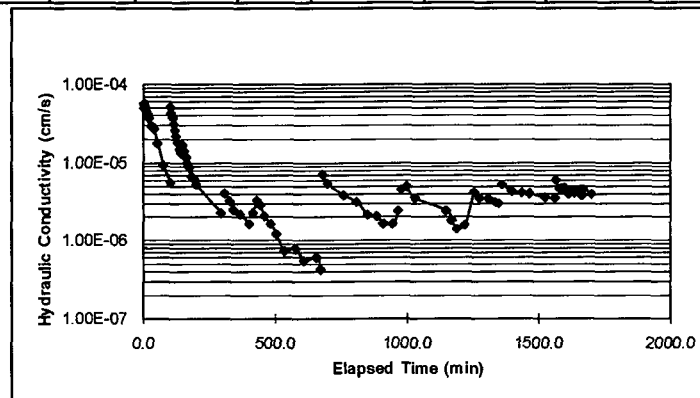
Sample I.D. 75-mm East Side South Pit 0-30 cm			Test Date :	
Cell Pressure =	41.8	psi	Diameter of Sample, D =	7.0 cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	4.4 cm
Outflow Pressure =	40.2	psi	Area of Sample, A =	38.32 cm ²
Pressure Difference =	0.3	psi	Sample Volume, V =	170.3 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.7		a _{out} =	1 cm ²
Weight of wet sample =	323.3	g	Sample Water Content =	23.77% (%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.89 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta L} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	30.81	184.46	154.95	23.77%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:03:36	4.3	19.7	216.0	15.4	3.6	5.68E-05	1.0	4.3	4.3
0:04:55	5.5	18.5	79.0	13.0	4.9	4.99E-05	1.0	1.2	1.2
0:06:34	7.0	17.0	99.0	10.0	6.6	5.40E-05	1.0	1.5	1.5
0:09:13	9.0	15.0	159.0	6.0	9.2	5.02E-05	1.0	2	2
0:12:39	11.0	13.0	206.0	2.0	12.7	4.50E-05	1.0	2	2
0:17:02	13.0	11.0	263.0	-2.0	17.0	4.19E-05	1.0	2	2
0:19:53	14.0	10.0	171.0	-4.0	19.9	3.75E-05	1.0	1	1
0:22:48	14.9	9.1	175.0	-5.8	22.8	3.69E-05	1.0	0.9	0.9
0:30:38	16.5	7.5	470.0	-9.0	30.6	2.90E-05	1.0	1.6	1.6
0:36:07	17.4	6.6	329.0	-10.8	36.1	2.84E-05	1.0	0.9	0.9
0:41:22	18.1	5.9	315.0	-12.2	41.4	2.69E-05	1.0	0.7	0.7
0:53:48	19.0	5.0	746.0	-14.0	53.8	1.76E-05	1.0	0.9	0.9
1:16:41	19.7	4.3	1373.0	-15.4	76.7	9.28E-06	1.0	0.7	0.7
1:42:36	20.1	3.9	1555.0	-16.2	102.6	5.64E-06	1.0	0.4	0.4
0:00:00	0.0	24.0	-6156.0	24.0	102.6				
0:02:15	2.5	21.5	135.0	19.0	104.9	5.05E-05	1.0	2.5	2.5
0:04:39	4.5	19.5	144.0	15.0	107.3	4.23E-05	1.0	2	2
0:10:20	8.0	16.0	341.0	8.0	112.9	3.67E-05	1.0	3.5	3.5
0:14:15	9.7	14.3	235.0	4.6	116.9	3.07E-05	1.0	1.7	1.7
0:18:07	11.0	13.1	232.0	2.1	120.7	2.56E-05	0.9	1.3	1.2
0:22:08	12.0	12.1	241.0	0.1	124.7	2.17E-05	1.0	1	1
0:27:25	13.0	11.1	317.0	-1.9	130.0	1.81E-05	1.0	1	1
0:35:02	14.1	10.1	457.0	-4.0	137.6	1.47E-05	0.9	1.1	1
0:42:10	14.9	9.3	428.0	-5.6	144.8	1.33E-05	1.0	0.8	0.8
0:00:00	0.2	23.8	-2530.0	23.6	144.8				
0:05:00	2.0	21.9	300.0	19.9	149.8	1.67E-05	1.1	1.8	1.9
0:10:31	3.6	20.3	331.0	16.7	155.3	1.42E-05	1.0	1.6	1.6
0:16:51	5.0	18.9	380.0	13.9	161.7	1.17E-05	1.0	1.4	1.4
0:22:34	6.0	17.9	343.0	11.9	167.4	9.95E-06	1.0	1	1
0:32:21	7.4	16.5	587.0	9.1	177.2	8.76E-06	1.0	1.4	1.4
0:38:12	8.0	15.9	351.0	7.9	183.0	6.70E-06	1.0	0.6	0.6
0:50:32	9.1	14.8	740.0	5.7	195.3	6.18E-06	1.0	1.1	1.1
0:56:05	9.5	14.4	333.0	4.9	200.9	5.28E-06	1.0	0.4	0.4
2:29:41	12.1	11.9	5616.0	-0.2	294.5	2.26E-06	1.0	2.6	2.5
0:00:00	0.0	24.0	-8981.0	24.0	294.5				
0:13:38	1.2	22.7	818.0	21.5	308.1	4.04E-06	1.1	1.2	1.3
0:33:13	2.5	21.3	1175.0	18.8	327.7	3.23E-06	1.1	1.3	1.4
0:47:10	3.2	20.6	837.0	17.4	341.7	2.48E-06	1.0	0.7	0.7
1:12:04	4.3	19.6	1494.0	15.3	366.6	2.18E-06	0.9	1.1	1
1:49:06	5.4	18.5	2222.0	13.1	403.6	1.63E-06	1.0	1.1	1.1
0:00:00	0.0	24.0	-6546.0	24.0	403.6				
0:12:32	0.7	23.4	752.0	22.7	416.1	2.26E-06	0.9	0.7	0.6
0:27:49	1.8	22.3	917.0	20.5	431.4	3.26E-06	1.0	1.1	1.1
0:41:00	2.6	21.5	791.0	18.9	444.6	2.88E-06	1.0	0.8	0.8
0:55:21	3.2	20.9	861.0	17.7	459.0	2.05E-06	1.0	0.6	0.6
1:20:21	4.0	20.1	1500.0	16.1	484.0	1.63E-06	1.0	0.8	0.8
1:42:23	4.5	19.6	1322.0	15.1	506.0	1.20E-06	1.0	0.5	0.5
2:11:57	4.9	19.2	1774.0	14.3	535.6	7.31E-07	1.0	0.4	0.4

2:54:38	5.5	18.6	2561.0	13.1	578.2	7.81E-07	1.0	0.6	0.6
3:25:45	5.8	18.3	1867.0	12.5	609.4	5.50E-07	1.0	0.3	0.3
4:14:18	6.3	17.8	2913.0	11.5	657.9	6.02E-07	1.0	0.5	0.5
4:28:09	6.4	17.7	831.0	11.3	671.8	4.30E-07	1.0	0.1	0.1
0:00:00	0.0	24.0	-16089.0	24.0	671.8				
0:10:19	1.6	22.3	619.0	20.7	682.1	7.12E-06	1.1	1.6	1.7
0:27:40	3.5	20.3	1041.0	16.8	699.5	5.46E-06	1.1	1.9	2
1:28:15	7.5	16.2	3635.0	8.7	760.1	3.84E-06	1.0	4	4.1
2:17:22	9.7	14.0	2947.0	4.3	809.2	3.14E-06	1.0	2.2	2.2
2:58:23	10.8	12.9	2461.0	2.1	850.2	2.14E-06	1.0	1.1	1.1
3:32:10	11.6	12.1	2027.0	0.5	884.0	2.04E-06	1.0	0.8	0.8
4:00:12	12.1	11.6	1682.0	-0.5	912.0	1.63E-06	1.0	0.5	0.5
4:35:54	12.7	11.0	2142.0	-1.7	947.7	1.63E-06	1.0	0.6	0.6
4:55:00	13.2	10.6	1146.0	-2.6	966.8	2.40E-06	0.8	0.5	0.4
0:00:00	0.0	24	-17700.0	24.0	966.8				
0:12:43	1.3	22.7	763.0	21.4	979.5	4.51E-06	1.0	1.3	1.3
0:00:00	0.0	24.0	-763.0	24.0	979.5				
0:20:04	2.2	21.8	1204.0	19.6	999.6	4.95E-06	1.0	2.2	2.2
0:52:16	4.4	19.5	1932.0	15.1	1031.8	3.52E-06	1.0	2.2	2.3
2:49:45	9.0	14.9	7049.0	5.9	1149.3	2.41E-06	1.0	4.6	4.6
3:09:56	9.5	14.4	1211.0	4.9	1169.4	1.81E-06	1.0	0.5	0.5
3:31:33	9.9	14.0	1297.0	4.1	1191.1	1.40E-06	1.0	0.4	0.4
4:01:27	10.5	13.4	1794.0	2.9	1221.0	1.58E-06	1.0	0.6	0.6
4:36:32	12.2	11.7	2105.0	-0.5	1256.0	4.21E-06	1.0	1.7	1.7
4:55:57	12.9	11.0	1165.0	-1.9	1275.5	3.50E-06	1.0	0.7	0.7
5:29:51	14.0	9.9	2034.0	-4.1	1309.4	3.47E-06	1.0	1.1	1.1
5:56:38	14.7	9.2	1607.0	-5.5	1336.1	3.10E-06	1.0	0.7	0.7
6:09:22	15.0	8.9	764.0	-6.1	1348.9	2.98E-06	1.0	0.3	0.3
0:00:00	0.0	24.0	-22162.0	24.0	1348.9				
0:13:05	1.5	22.4	785.0	20.9	1362.0	5.26E-06	1.1	1.5	1.6
0:49:23	4.7	19.3	2178.0	14.6	1398.3	4.33E-06	1.0	3.2	3.1
1:28:18	7.4	16.5	2335.0	9.1	1437.2	4.16E-06	1.0	2.7	2.8
1:57:04	9.1	14.8	1726.0	5.7	1466.0	4.01E-06	1.0	1.7	1.7
2:55:02	11.7	12.2	3478.0	0.5	1523.9	3.60E-06	1.0	2.6	2.6
3:32:53	13.1	10.8	2271.0	-2.3	1561.8	3.55E-06	1.0	1.4	1.4
0:00:00	0.0	24.0	-12773.0	24.0	1561.8				
0:05:26	0.8	23.3	326.0	22.5	1567.2	6.02E-06	0.9	0.8	0.7
0:17:15	2.0	22.1	709.0	20.1	1579.1	4.63E-06	1.0	1.2	1.2
0:23:48	2.6	21.4	393.0	18.8	1585.6	4.73E-06	1.2	0.6	0.7
0:30:27	3.2	20.8	399.0	17.6	1592.3	4.44E-06	1.0	0.6	0.6
0:00:00	0.0	24.0	-1827.0	24.0	1592.3				
0:05:53	0.7	23.4	353.0	22.7	1598.2	4.81E-06	0.9	0.7	0.6
0:15:10	1.6	22.5	557.0	20.9	1607.5	4.37E-06	1.0	0.9	0.9
0:22:15	2.2	21.9	425.0	19.7	1614.6	3.96E-06	1.0	0.6	0.6
0:30:30	3.0	21.2	495.0	18.2	1622.8	4.39E-06	0.9	0.8	0.7
0:36:13	3.5	20.7	343.0	17.2	1628.5	4.36E-06	1.0	0.5	0.5
0:43:45	4.1	20.1	452.0	16.0	1636.1	4.08E-06	1.0	0.6	0.6
0:55:02	5.0	19.2	677.0	14.2	1647.3	4.26E-06	1.0	0.9	0.9
1:01:44	5.5	18.7	402.0	13.2	1654.0	4.15E-06	1.0	0.5	0.5
1:07:28	5.9	18.2	344.0	12.3	1659.8	4.48E-06	1.3	0.4	0.5
1:12:06	6.2	17.9	278.0	11.7	1664.4	3.78E-06	1.0	0.3	0.3
1:18:42	6.7	17.4	396.0	10.7	1671.0	4.53E-06	1.0	0.5	0.5
1:48:19	8.5	15.6	1777.0	7.1	1700.6	3.92E-06	1.0	1.8	1.8



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

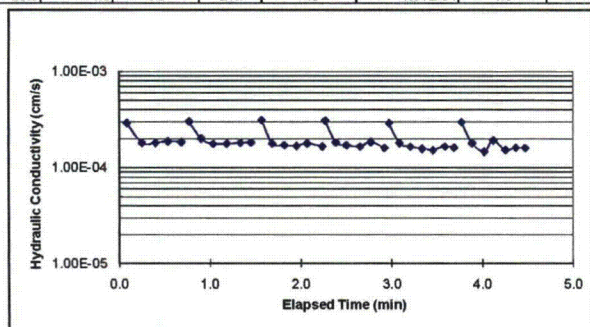
ASTM D 5084 - 00

Sample I.D. 305-mm East Side South Pit 30-60cm			Test Date :	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5 cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	17.8 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	729.66 cm ²
Pressure Difference =	1.0	psi	Sample Volume, V =	12973.3 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.0		a _{out} =	1 cm ²
Weight of wet sample =	22888.2	g	Sample Water Content =	14.73% (%)
Wet Density =	1.8	g/cm ³	Dry Density =	1.76 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left(\frac{(\Delta H_1)}{(\Delta H_2)} \right)$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	35.04	264.2	234.78	14.73%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	23.8	0.0	23.8	0.0				
0:00:05	6.0	19.3	5.0	13.3	0.1	2.88E-04	0.8	6	4.5
0:00:15	11.5	13.3	10.0	1.8	0.3	1.80E-04	1.1	5.5	6
0:00:24	16.0	8.8	9.0	-7.2	0.4	1.80E-04	1.0	4.5	4.5
0:00:32	19.5	5.0	8.0	-14.5	0.5	1.87E-04	1.1	3.5	3.8
0:00:41	23.0	1.4	9.0	-21.6	0.7	1.84E-04	1.0	3.5	3.6
0:00:00	0.0	23.8	-41.0	23.8	0.7				
0:00:04	5.0	20.0	4.0	15.0	0.8	2.99E-04	0.8	5	3.8
0:00:12	10.0	14.5	8.0	4.5	0.9	2.00E-04	1.1	5	5.5
0:00:20	14.0	10.3	8.0	-3.7	1.0	1.77E-04	1.1	4	4.2
0:00:29	18.0	6.1	9.0	-11.9	1.2	1.78E-04	1.1	4	4.2
0:00:38	21.5	2.3	9.0	-19.2	1.3	1.81E-04	1.1	3.5	3.8
0:00:45	24.0	-0.3	7.0	-24.3	1.5	1.83E-04	1.0	2.5	2.6
0:00:00	0.0	24.1	-45.0	24.1	1.5				
0:00:04	5.0	20.0	4.0	15.0	1.6	3.08E-04	0.8	5	4.1
0:00:11	9.0	15.7	7.0	6.7	1.7	1.78E-04	1.1	4	4.3
0:00:19	13.0	11.5	8.0	-1.5	1.8	1.71E-04	1.1	4	4.2
0:00:27	16.5	7.8	8.0	-8.7	2.0	1.68E-04	1.1	3.5	3.7
0:00:34	19.5	4.8	7.0	-14.7	2.1	1.78E-04	1.0	3	3
0:00:44	23.0	1.2	10.0	-21.8	2.2	1.66E-04	1.0	3.5	3.6
0:00:00	0.0	23.9	-44.0	23.9	2.2				
0:00:04	5.0	19.9	4.0	14.9	2.3	3.06E-04	0.8	5	4
0:00:11	9.0	15.4	7.0	6.4	2.4	1.83E-04	1.1	4	4.5
0:00:18	12.5	11.7	7.0	-0.8	2.5	1.72E-04	1.1	3.5	3.7
0:00:27	16.5	7.7	9.0	-8.8	2.7	1.65E-04	1.0	4	4
0:00:34	19.5	4.5	7.0	-15.0	2.8	1.85E-04	1.1	3	3.2
0:00:43	22.5	1.3	9.0	-21.2	2.9	1.61E-04	1.1	3	3.2
0:00:00	0.0	23.9	-43.0	23.9	2.9				
0:00:04	5.0	20.4	4.0	15.4	3.0	2.88E-04	0.7	5	3.5
0:00:11	9.0	16.0	7.0	7.0	3.1	1.79E-04	1.1	4	4.4
0:00:18	12.5	12.5	7.0	0.0	3.2	1.65E-04	1.0	3.5	3.5
0:00:26	16.0	9.1	8.0	-6.9	3.3	1.57E-04	1.0	3.5	3.4
0:00:33	19.5	6.3	7.0	-12.2	3.5	1.52E-04	1.1	2.5	2.8
0:00:41	21.5	3.3	8.0	-18.2	3.6	1.66E-04	1.0	3	3
0:00:47	23.5	1.3	6.0	-22.2	3.7	1.62E-04	1.0	2	2
0:00:00	0.0	24.0	-47.0	24.0	3.7				
0:00:04	5.0	20.3	4.0	15.3	3.8	2.95E-04	0.7	5	3.7
0:00:11	9.0	15.9	7.0	6.9	3.9	1.80E-04	1.1	4	4.4
0:00:19	12.5	12.3	8.0	-0.2	4.0	1.47E-04	1.0	3.5	3.6
0:00:25	15.5	9.0	6.0	-6.5	4.1	1.91E-04	1.1	3	3.3
0:00:33	18.5	5.9	8.0	-12.6	4.3	1.53E-04	1.0	3	3.1
0:00:40	21.0	3.3	7.0	-17.7	4.4	1.61E-04	1.0	2.5	2.6
0:00:46	23.0	1.3	6.0	-21.7	4.5	1.61E-04	1.0	2	2



Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

ASTM D 5084 - 00

Sample I.D. 150-mm East Side South Pit 30-60			Test Date :	
Cell Pressure =	41.7	psi	Diameter of Sample, D =	15.2 cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	8.6 cm
Outflow Pressure =	40.0	psi	Area of Sample, A =	182.41 cm ²
Pressure Difference =	0.5	psi	Sample Volume, V =	1563.7 cm ³
Effective Stress =	1.5	psi	a _{in} =	1 cm ²
Hydraulic Gradient, i =	4.1		a _{out} =	1 cm ²
Weight of wet sample =	2993.3	g	Sample Water Content =	20.66% (%)
Wet Density =	1.9	g/cm ³	Dry Density =	1.91 g/cm ³

$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} \ln \left\{ \frac{(\Delta H_1)}{(\Delta H_2)} \right\}$$

Can #	WT of Can (g)	WT of Can + Wet Soil (g)	WT of Can + Dry Soil (g)	Water Content (%)
	25.06	167.88	143.43	20.66%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q _{out} / Q _{in}	Q _{in}	Q _{out}
0:00:00	0.0	24.0	0.0	24.0	0.0				
0:00:13	5.0	19.2	13.0	14.2	0.2	3.27E-04	1.0	5	4.8
0:00:29	9.0	15.3	16.0	6.3	0.5	2.56E-04	1.0	4	3.9
0:00:43	12.0	12.4	14.0	0.4	0.7	2.58E-04	1.0	3	2.9
0:01:01	15.0	9.5	18.0	-5.5	1.0	2.37E-04	1.0	3	2.9
0:01:16	17.0	7.5	15.0	-9.5	1.3	2.27E-04	1.0	2	2
0:01:33	19.0	5.5	17.0	-13.5	1.6	2.34E-04	1.0	2	2
0:01:56	21.0	3.5	23.0	-17.5	1.9	2.09E-04	1.0	2	2
0:02:27	23.0	1.5	31.0	-21.5	2.5	1.95E-04	1.0	2	2
0:00:00	0.0	24.0	-147.0	24.0	2.5				
0:00:12	5.0	19.1	12.0	14.1	2.7	3.59E-04	1.0	5	4.9
0:00:23	8.0	16.1	11.0	8.1	2.9	2.77E-04	1.0	3	3
0:00:36	11.0	13.1	13.0	2.1	3.1	2.70E-04	1.0	3	3
0:00:51	14.0	10.2	15.0	-3.8	3.4	2.70E-04	1.0	3	2.9
0:01:17	18.0	6.2	26.0	-11.8	3.8	2.66E-04	1.0	4	4
0:01:33	20.0	4.2	16.0	-15.8	4.1	2.76E-04	1.0	2	2
0:01:54	22.0	2.2	21.0	-19.8	4.4	2.59E-04	1.0	2	2
0:00:00	0.0	24.0	-114.0	24.0	4.4				
0:00:12	5.0	19.1	12.0	14.1	4.6	3.59E-04	1.0	5	4.9
0:00:27	9.0	15.2	15.0	6.2	4.9	2.74E-04	1.0	4	3.9
0:00:41	12.0	12.2	14.0	0.2	5.1	2.63E-04	1.0	3	3
0:00:51	14.0	10.2	10.0	-3.8	5.3	2.82E-04	1.0	2	2
0:01:03	16.0	8.2	12.0	-7.8	5.5	2.67E-04	1.0	2	2
0:01:25	19.0	5.2	22.0	-13.8	5.8	2.64E-04	1.0	3	3
0:01:43	21.0	3.2	18.0	-17.8	6.1	2.71E-04	1.0	2	2
0:02:07	23.0	1.2	24.0	-21.8	6.5	2.56E-04	1.0	2	2
0:00:00	0.0	24.0	-127.0	24.0	6.5				
0:00:12	5.0	19.1	12.0	14.1	6.7	3.59E-04	1.0	5	4.9
0:00:23	8.0	16.1	11.0	8.1	6.9	2.77E-04	1.0	3	3
0:00:36	11.0	13.2	13.0	2.2	7.1	2.65E-04	1.0	3	2.9
0:00:51	14.0	10.2	15.0	-3.8	7.4	2.74E-04	1.0	3	3
0:01:03	16.0	8.2	12.0	-7.8	7.6	2.67E-04	1.0	2	2
0:01:17	18.0	6.2	14.0	-11.8	7.8	2.65E-04	1.0	2	2
0:01:33	20.0	4.2	16.0	-15.8	8.1	2.76E-04	1.0	2	2
0:01:53	22.0	2.2	20.0	-19.8	8.4	2.72E-04	1.0	2	2

