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Engineered Covers for Waste Containment: Changes in Engineering Properties and Implications for Long-Term Performance Assessment – Appendices

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Volume 2

Engineered Covers for Waste Containment: Changes in Engineering Properties and Implications for Long-Term Performance Assessment – Appendices

Prepared by:

C.H.Benson[1], W.H. Albright[2], D.O. Fratta[1], J.M. Tinjum[1],
E. Kucukkirca[1], S.H. Lee[1], J. Scalia[1], P.D. Schlicht[1], and X. Wang[1],

[1]Geological Engineering
University of Wisconsin-Madison
1415 Engineering Drive
Madison, WI 53706

[2]Desert Research Institute
2215 Raggio Parkway
Reno, NV 89512

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Jacob Philip, NRC Project Manager

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ABSTRACT

This peer-reviewed study demonstrates that engineering properties of cover soils change while in service and that long-term engineering properties should be used as input to models employed for performance assessments. Recommendations for appropriate input are made based on the data that were collected. Increases in the saturated hydraulic conductivity, saturated volumetric water content, and the air entry suction (as characterized by van Genuchten's α parameter) occurred due to formation of soil structure, regardless of climate, cover design, or service life. Substantial changes in hydraulic conductivity were observed in some geosynthetic clay liners (GCLs) that did not hydrate completely and underwent cation exchange. Changes in geomembranes and geosynthetic drainage layers were modest or small, and computations based on antioxidant depletion rates suggest that the minimum service life of geomembranes is on the order of 50-125 yrs (the actual service life will be longer). The findings indicate that covers should be monitored to ensure that they are functioning as intended. Monitoring using pan lysimeters combined with secondary measurements collected for interpretive purposes is recommended. Future research investments should include an evaluation of remote sensing technologies for cover monitoring and analog studies to estimate properties of earthen and geosynthetic cover materials corresponding to service lives of 100s to 1000s of years.

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EXECUTIVE SUMMARY

In this peer-reviewed study, final covers at test facilities and operating waste containment facilities were exhumed to evaluate how the properties of the cover materials changed 4.0-8.9 yr after installation (6.3 yr on average). Field tests were conducted, samples were collected, laboratory testing was performed, and data analyses were conducted. The findings demonstrate that engineering properties of cover soils change while in service and that long-term engineering properties should be used as input to models employed for performance assessments. Recommendations for appropriate input are made based on the data that were collected.

Changes in hydraulic properties occurred in all cover soils evaluated due to the formation of soil structure, regardless of climate, cover design, or service life. The saturated hydraulic conductivity and the α parameter for the soil water characteristic curve (SWCC) increased, which reflects formation of larger pores due to pedogenic processes such as wet-dry and freeze-thaw cycling. Larger changes were observed for soils with lower as-built saturated hydraulic conductivity and soils with a greater proportion of clay particles in the fines fraction. Hydraulic properties of the cover soils were similar when exhumed, regardless of the as-built condition. Test scale had a significant effect on the hydraulic properties, with conditions near field-scale obtained using 0.3-m test specimens.

Substantial changes were also observed in some geosynthetic clay liners (GCLs). Analysis showed that GCLs have very low saturated hydraulic conductivity ($< 5\times10^{-11}$ m/s) when placed on a moist subgrade (water content > 10%) and covered with a geomembrane and cover soil soon after installation. GCLs installed under other conditions can be much more permeable. GCLs that underwent and maintained complete hydration with osmotic swell retained low hydraulic conductivity even when Na was replaced by Ca and Mg provided they did not dehydrate. GCLs that undergo osmotic swell and are covered with a geomembrane surcharged with cover soils are expected to retain low hydraulic conductivity provided the geomembrane remains intact.

Changes in geomembranes and geosynthetic drainage layers were modest or small. Analysis of antioxidants in geomembranes showed that antioxidant depletion was reasonably consistent with expectations based on first-order kinetics and laboratory-measured depletion rates. Based on antioxidant depletion, the minimum service life of geomembranes is on the order of 50-125 yrs. Actual service lives may be longer but are difficult to predict based on the limited information available today.

Because changes in the engineering properties of cover materials are commonplace, and significant in some cases, monitoring of covers should be conducted to ensure they are functioning as intended. Monitoring using pan lysimeters combined with secondary measurements collected for interpretive purposes (water content, temperature, vegetation surveys, etc.) is recommended. Future research investments should explore how remote sensing technologies can be used for cover monitoring.

This study represents a snap shot in the evolution of final covers approximately 5 to 10 yr after construction. Additional research investments are needed to more accurately and completely define very long-term properties of earthen and geosynthetic cover materials corresponding to 100s or 1000s of years. These research investments should include analog studies of natural environments where earthen and natural polymeric materials exist as well as accelerated laboratory experiments that can be used to develop predictive degradation models.

ACKNOWLEDGEMENT

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The research report was peer reviewed by an expert panel consisting of Charles D. Shackelford, John D. McCartney, and George R. Koerner. The authors of the research report considered and incorporated their comments and suggestions when finalizing the report.

ABBREVIATIONS

Acronyms

ACAP	Alternative Cover Assessment Program
BC	bound cations
CEC	cation exchange capacity
CMH	chilled mirror hygrometer
CMP	common midpoint
D	diameter
DW	deionized water
ET	evapotranspiration
GCL	geosynthetic clay liner
GDL	geosynthetic drainage layer
GM	geomembrane
GPR	ground penetrating radar
H	depth of water in outer ring of SDRI
HDPE	high density polyethylene
H_b	height of water in bubbling tube in BH relative to base of borehole
I	infiltration rate
ICP-OES	inductively coupled plasma – optical emissions spectrometry
I_s	ionic strength
K	hydraulic conductivity
L_f	depth of the wetting front
LLDPE	linear low density polyethylene
MARV	minimum average role value
MDR	charge ratio of monovalent to divalent soluble cations
MFI	melt flow index

MSW municipal solid waste

OIT oxidation induction time

PET potential evapotranspiration

Q volumetric flow rate

RMD ratio of monovalent to divalent cations in a solution

SC soluble cations

SDRI sealed double-ring infiltrometer

SI swell index

SW standard water (0.01 M $CaCl_2$)

SWCC soil water characteristic curve

TDR time domain reflectometry

BH borehole permeameter

TCM total soluble cations charge per mass

USCS Unified Soil Classification System

USEPA US Environmental Protection Agency

Western Symbols

Ca calcium

Cl chlorine

K potassium

K_F field-measured saturated hydraulic conductivity

K_s saturated hydraulic conductivity

K_{sa} as-built saturated hydraulic conductivity

K_{SDRI} field-measured hydraulic conductivity with SDRI

K_{si} in-service saturated hydraulic conductivity

K_{BH} field-measured hydraulic conductivity with BH permeameter

n shape parameter in van Genuchten's equation

n_{LS} shape parameter in van Genuchten's equation from large-scale tests

n_{SS} shape parameter in van Genuchten's equation from small-scale tests

n_a shape parameter in van Genuchten's equation from as-built test section

Na sodium

Mg magnesium

p p statistic from t-test

t t statistic from t-test

X_m mole fraction of monovalent cations

Greek Symbols

α shape parameter in van Genuchten's equation

α_a shape parameter in van Genuchten's equation from as-built test section

α_{LS} shape parameter in van Genuchten's equation from large-scale tests

α_{SS} shape parameter in van Genuchten's equation from small-scale tests

γ_{dmax} maximum dry unit weight on compaction curve

θ volumetric water content

θ_r residual volumetric water content

θ_s saturated volumetric water content

Θ effective saturation

σ standard deviation

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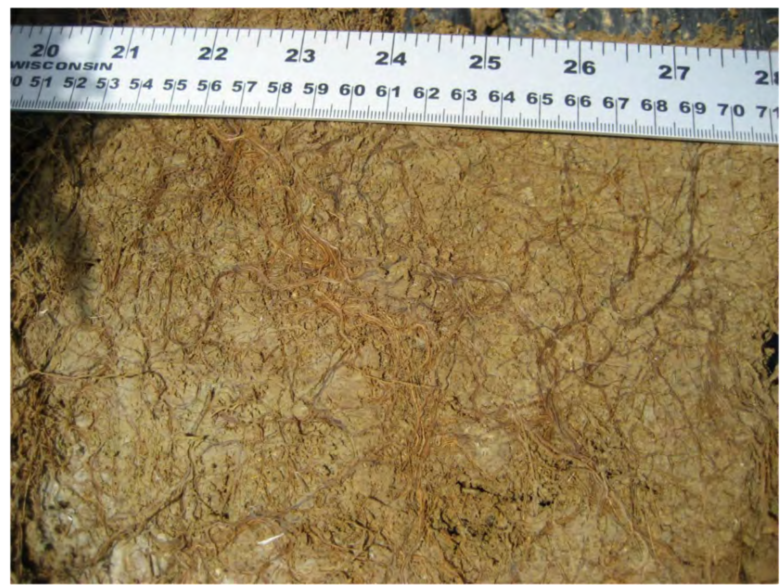

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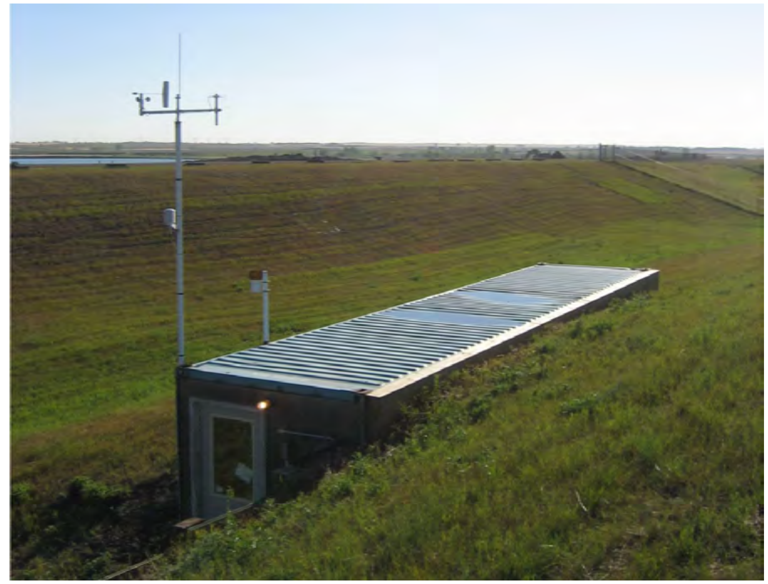
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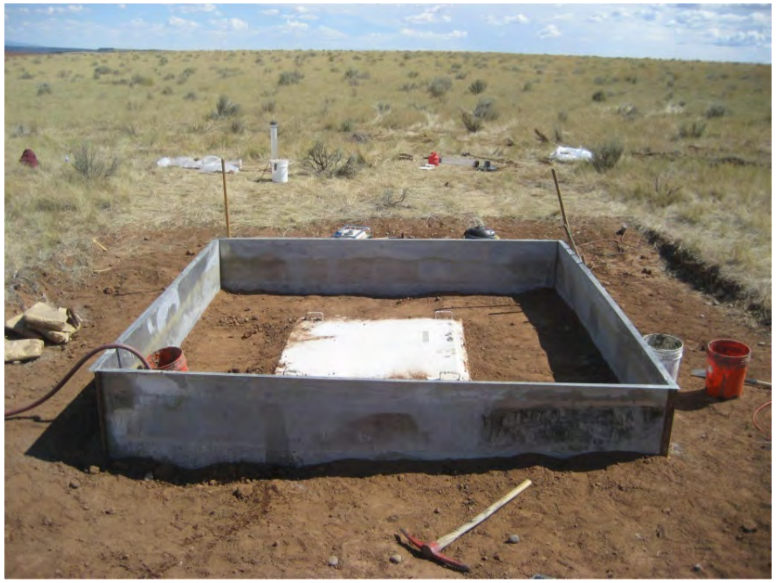
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SDRI Test - Altamont - Composite Cover

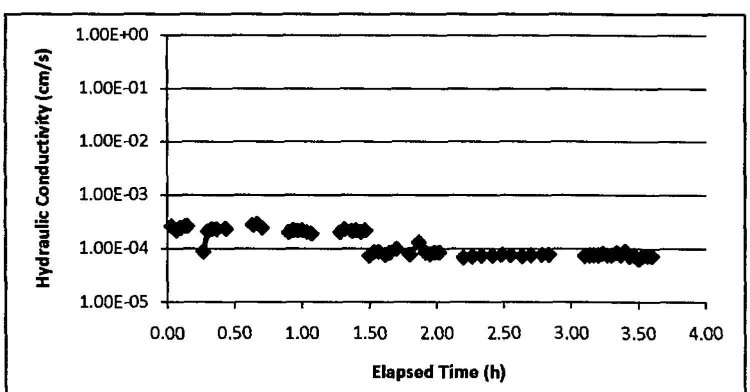
Date:	4/2/2007		**Installer:**	XW
Project:	Altamont		**Analyst:**	CHB

Fixed variables:

L =	150	cm	Assume Unit Gradient in Analysis
A =	22500	cm^2	
a =	77.69	cm^2	
Dp =	30.48	cm	

Temporal Variables:

Time	Reading (cm)	Δ Time (s)	Time (h)	i	I (cm/s)	
4/3/07 16:16	56.5					
4/3/07 16:33	54.0	1020	0.28	1.94	4.35E-06	
4/3/07 16:52	50.8	1140	0.60	1.94	4.98E-06	
4/3/07 17:13	47.3	1260	0.95	1.94	4.93E-06	
4/3/07 17:37	43.4	1440	1.35	1.94	4.81E-06	
4/3/07 17:57	40.1	1200	1.68	1.94	4.88E-06	
4/3/07 18:30	35.4	1980	2.23	1.94	4.21E-06	
4/3/07 18:45	33.7	900	2.48	1.94	3.35E-06	
4/3/07 19:00	31.6	900	2.73	1.94	4.14E-06	
4/3/07 19:15	29.9	900	2.98	1.94	3.35E-06	
4/3/07 19:30	28.0	900	3.23	1.94	3.75E-06	
4/3/07 19:32	56.5	120	3.27	1.94		
4/4/07 9:50	3.0	51480	17.57	1.94	1.85E-06	
4/4/07 9:58	58.0	480	17.70	1.94		
4/4/07 10:32	55.7	2040	18.27	1.94	2.00E-06	
4/4/07 11:34	51.0	3720	19.30	1.94	2.24E-06	
4/4/07 12:19	46.5	2700	20.05	1.94	2.96E-06	
4/4/07 12:37	57.5	1080	20.35	1.94		
4/4/07 13:34	50.7	3420	21.30	1.94	3.53E-06	
4/4/07 14:50	42.0	4560	22.57	1.94	3.39E-06	
4/4/07 15:50	33.0	3600	23.57	1.94	4.44E-06	
4/4/07 16:50	25.0	3600	24.57	1.94	3.95E-06	**K (cm/s)**
4/4/07 17:50	18.0	3600	25.57	1.94	3.45E-06	4.1E-06
4/4/07 18:50	9.4	3600	26.57	1.94	4.24E-06	
4/4/07 19:30	3.0	2400	27.23	1.94	4.73E-06	



SDRI Test - Altamont - Store-and-Release Cover

Date:	4/2/2007	**Installer:**	XW
Project:	Altamont	**Analyst:**	CHB

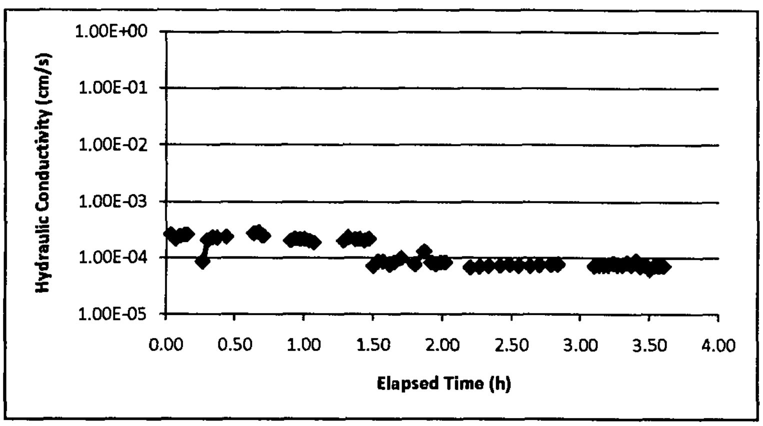
Fixed variables:

L =	150	cm	Assume Unit Gradient in Analysis
A =	22500	cm^2	
a =	77.69	cm^2	
Dp =	22.86	cm	

Temporal Variables:

Time	Reading (cm)	Δ Time (s)	Time (h)	K (cm/s)
15:48	49.0			
15:50	40.0	120	0.03	2.59E-04
15:52	32.5	120	0.07	2.16E-04
15:54	24.0	120	0.10	2.45E-04
15:56	15.0	120	0.13	2.59E-04
15:57	10.5	60	0.15	2.59E-04
16:02	52.0	300	0.23	
16:04	49.0	120	0.27	8.63E-05
16:06	41.8	120	0.30	2.07E-04
16:08	33.8	120	0.33	2.30E-04
16:10	25.8	120	0.37	2.30E-04
16:14	9.5	240	0.43	2.35E-04
16:24	50.0	600	0.60	
16:26	40.5	120	0.63	2.73E-04
16:28	30.5	120	0.67	2.88E-04
16:30	22.0	120	0.70	2.45E-04
16:40	55.0	600	0.87	
16:42	48.0	120	0.90	2.01E-04
16:44	40.4	120	0.93	2.19E-04
16:46	33.0	120	0.97	2.13E-04
16:48	25.5	120	1.00	2.16E-04
16:50	18.5	120	1.03	2.01E-04
16:52	12.0	120	1.07	1.87E-04
17:03	57.0	660	1.25	
17:05	50.0	120	1.28	2.01E-04
17:07	42.0	120	1.32	2.30E-04
17:10	31.0	180	1.37	2.11E-04
17:12	23.5	120	1.40	2.16E-04
17:14	16.5	120	1.43	2.01E-04
17:16	9.0	120	1.47	2.16E-04
9:27	58.5		1.47	
9:29	56.0	120	1.50	7.19E-05
9:31	53.0	120	1.53	8.63E-05
9:33	50.0	120	1.57	8.63E-05
9:36	46.0	180	1.62	7.67E-05
9:38	43.1	120	1.65	8.34E-05
9:41	38.0	180	1.70	9.78E-05
9:47	30.0	360	1.80	7.67E-05
9:51	21.0	240	1.87	1.29E-04
9:54	16.7	180	1.92	8.25E-05
9:56	14.0	120	1.95	7.77E-05
9:58	11.1	120	1.98	8.34E-05
10:00	8.2	120	2.02	8.34E-05
10:08	58.2	480	2.15	
10:11	54.7	180	2.20	6.71E-05
10:15	49.8	240	2.27	7.05E-05
10:19	44.8	240	2.33	7.19E-05
10:24	38.4	300	2.42	7.37E-05
10:28	33.1	240	2.48	7.63E-05

10:32	28.0	240	2.55	7.34E-05	
10:37	21.8	300	2.63	7.14E-05	
10:41	16.6	240	2.70	7.48E-05	
10:46	10.0	300	2.78	7.60E-05	
10:49	6.0	180	2.83	7.67E-05	
11:03	57.2	840	3.07		
11:05	54.7	120	3.10	7.19E-05	
11:07	52.1	120	3.13	7.48E-05	
11:09	49.5	120	3.17	7.48E-05	
11:11	46.9	120	3.20	7.48E-05	
11:13	44.1	120	3.23	8.06E-05	
11:15	41.5	120	3.27	7.48E-05	
11:17	38.9	120	3.30	7.48E-05	
11:19	36.0	120	3.33	8.34E-05	
11:21	33.4	120	3.37	7.48E-05	
11:23	30.3	120	3.40	8.92E-05	
11:25	27.8	120	3.43	7.19E-05	
11:27	25.2	120	3.47	7.48E-05	
11:29	23.0	120	3.50	6.33E-05	**K (cm/s)**
11:31	20.5	120	3.53	7.19E-05	**7.0E-05**
11:33	18.0	120	3.57	7.19E-05	
11:35	15.5	120	3.60	7.19E-05	



SDRI Test - Apple Valley - Clay Cover

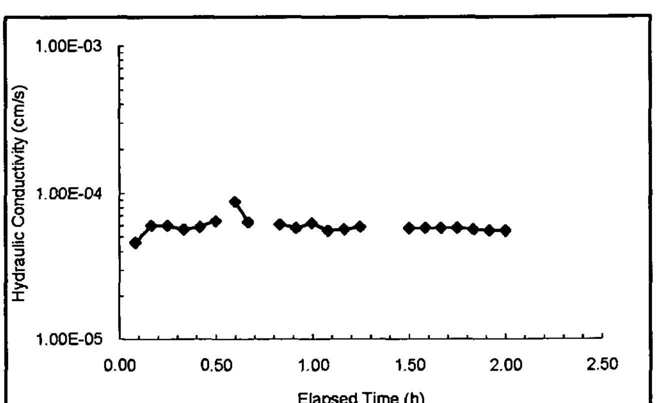
Date: 3/30/2007 **Installer:** XW
Project: Apple Valley **Analyst:** CHB

Fixed variables:

L =	150	cm
A =	22500	cm^2
a =	77.69	cm^2
Dp =	33.02	cm

Temporal Variables:

Time	Reading (cm)	Δ Time (s)	Time (h)	K (cm/s)	
10:40	41.0				
10:45	37.0	300	0.08	4.60E-05	
10:50	31.8	300	0.17	5.99E-05	
10:55	26.6	300	0.25	5.99E-05	
11:00	21.7	300	0.33	5.64E-05	
11:05	16.6	300	0.42	5.87E-05	
11:10	11.0	300	0.50	6.45E-05	
11:13	55.0	180	0.55	-8.44E-04	
11:16	50.4	180	0.60	8.82E-05	
11:20	46.0	240	0.67	6.33E-05	
11:25	40.3	300			
11:30	35.0	300	0.83	6.10E-05	
11:35	30.0	300	0.91	5.75E-05	
11:40	24.6	300	1.00	6.22E-05	
11:45	19.8	300	1.08	5.52E-05	
11:50	14.9	300	1.16	5.64E-05	
11:55	9.8	300	1.25	5.87E-05	
12:05	49.5	600			
12:10	44.5	300	1.50	5.75E-05	
12:15	39.5	300	1.58	5.75E-05	
12:20	34.5	300	1.67	5.75E-05	
12:25	29.5	300	1.75	5.75E-05	
12:30	24.6	300	1.83	5.64E-05	
12:35	19.8	300	1.92	5.52E-05	**5.56E-05**
12:40	15.0	300	2.00	5.52E-05	

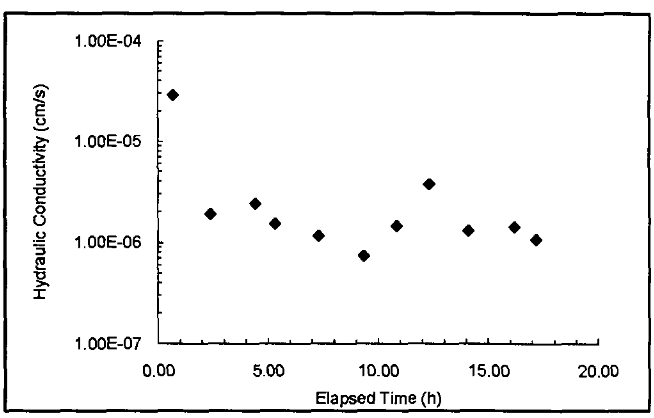


SDRI Test - Cedar Rapids - Clay Cover

L =	610 cm	i =	1.04
A =	372100 cm^2		
a =	77.69 cm^2		
Dp =	25.4 cm		

Date	Time	Bag On	Bag Off	Δ Time (s)	Time (h)	I (cm/s)	K (cm/s)
6-Jun-06	15:10	2503.6					
	15:51		828.1	2460	0.68	3.03E-05	2.91E-05
	16:24	2724.4					
	18:07		2450.1	6180	2.40	1.97E-06	1.89E-06
7-Jun-06	8:35	2449.3					
	10:36		2042.2	7260	4.42	2.49E-06	2.39E-06
	10:42	2042.2					
	11:35		1928.3	3180	5.30	1.59E-06	1.53E-06
	11:39	1928.3					
	13:39		1731.3	7200	7.30	1.22E-06	1.17E-06
	13:42	1731.3					
	15:45		1604.3	7380	9.35	7.65E-07	7.34E-07
	15:51	1604.3					
	17:20		1421.9	5340	10.83	1.52E-06	1.46E-06
8-Jun-06	8:29	2448.3					
	9:58		1980.9	5340	12.32	3.89E-06	3.73E-06
	10:04	1980.9					
	11:50		1787.0	6360	14.08	1.35E-06	1.30E-06
	11:52	1787.0					
	13:58		1535.0	7560	16.18	1.48E-06	1.42E-06
	14:05	1535.0					
	15:04		1446.0	3540	17.17	1.12E-06	1.07E-06

Avg K
1.27E-06

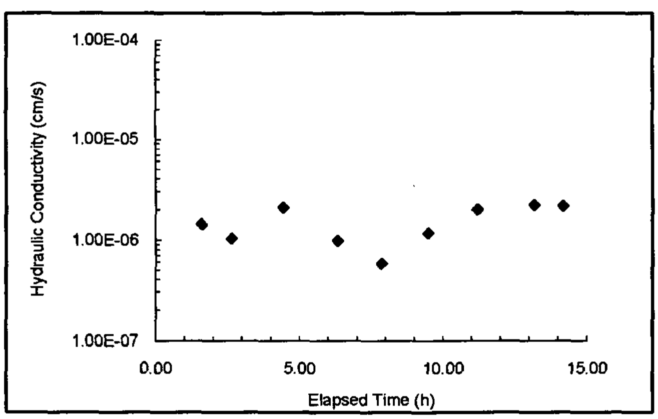


SDRI Test - Cedar Rapids - Composite Cover

L = 610 cm　　i = 1.04
A = 372100 cm^2
a = 77.69 cm^2
Dp = 25.4 cm

Date	Time	Bag On	Bag Off	Δ Time (s)	Time (h)	I (cm/s)	K (cm/s)
7-Jun-06	8:40	2508.6					
	10:16		2315.0	5760	1.60	1.49E-06	1.43E-06
	10:33	2315.0					
	11:35		2224.5	3720	2.63	1.08E-06	1.04E-06
	11:39	2224.5					
	13:27		1906.4	6480	4.43	2.18E-06	2.09E-06
	13:37	1906.4					
	15:31		1746.8	6840	6.33	1.04E-06	9.96E-07
	15:46	1746.8					
	17:17		1671.9	5460	7.85	6.10E-07	5.85E-07
8-Jun-06	8:28	2636.7					
	10:06		2474.0	5880	9.48	1.23E-06	1.18E-06
	10:11	2474.0					
	11:53		2187.0	6120	11.18	2.08E-06	2.00E-06
	11:55	2187.0					
	13:54		1815.0	7140	13.17	2.32E-06	2.22E-06
	14:03	1815.0					
	15:03		1631.0	3600	14.17	2.27E-06	2.18E-06

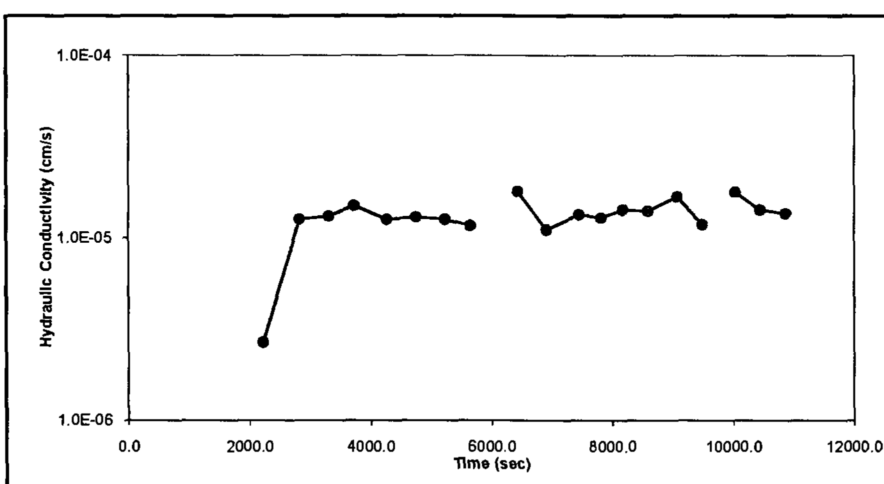
Avg K
2.13E-06



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

Inner Ring Side Length (ft)	5.00
Inner Ring Side Lengh (cm)	152.40
Inner Ring Area (cm^2)	**23225.76**
Average Head (in)	14.00
Average Head (cm)	**35.56**
Standpipe Diameter (cm)	5.00
Standpipe Area (cm^2)	**19.63**

Date, Time	Inflow Reading (cm)	Inflow (mL)	Δt (sec)	t (sec)	Q (mL/s)	K (cm/s)
9:15	34		0.0			
9:52	41	137.44468	2220.0	2220.0	0.0619	2.7E-06
10:02	50	176.71459	600.0	2820.0	0.2945	1.3E-05
10:10	57.5	147.26216	480.0	3300.0	0.3068	1.3E-05
10:17	65	147.26216	420.0	3720.0	0.3506	1.5E-05
10:26	73.1	159.04313	540.0	4260.0	0.2945	1.3E-05
10:34	80.5	145.29866	480.0	4740.0	0.3027	1.3E-05
10:42	87.7	141.37167	480.0	5220.0	0.2945	1.3E-05
10:49	93.5	113.88273	420.0	5640.0	0.2711	1.2E-05
10:55	40.5	-1040.6526	360.0	6000.0	-2.8907	-1.2E-04
11:02	49.5	176.71459	420.0	6420.0	0.4207	1.8E-05
11:10	55.8	123.70021	480.0	6900.0	0.2577	1.1E-05
11:19	64.4	168.86061	540.0	7440.0	0.3127	1.3E-05
11:25	69.9	107.99225	360.0	7800.0	0.3000	1.3E-05
11:31	76	119.77322	360.0	8160.0	0.3327	1.4E-05
11:38	83.0	137.44468	420.0	8580.0	0.3272	1.4E-05
11:46	92.6	188.49556	480.0	9060.0	0.3927	1.7E-05
11:53	98.5	115.84623	420.0	9480.0	0.2758	1.2E-05
11:58	29.0	-1364.6293	300.0	9780.0	-4.5488	-2.0E-04
12:02	34.1	100.13827	240.0	10020.0	0.4172	1.8E-05
12:09	41.2	139.40817	420.0	10440.0	0.3319	1.4E-05
12:16	48.0	133.51769	420.0	10860.0	0.3179	1.4E-05
					Average	**1.4E-05**



SDRI Test - Monticello - Store-and-Release Cover

Date:	7/24/2007	**Installer:**	XW
Project:	Monticello	**Analyst:**	CHB

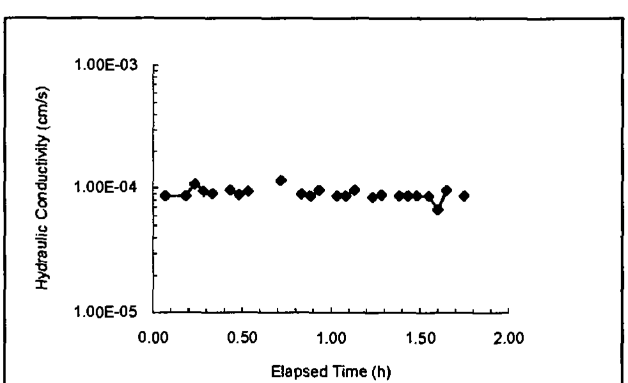
Fixed variables:

L =	150	cm
A =	22500	cm^2
a =	77.69	cm^2
Dp =	35.56	cm

Temporal Variables:

Time	Reading (cm)	Δ Time (s)	Time (h)	K (cm/s)
10:45	57.0			
10:49	51.0	240	0.07	8.63E-05
10:56	40.5	420	0.18	8.63E-05
10:59	34.9	180	0.23	1.07E-04
11:02	30.0	180	0.28	9.40E-05
11:05	25.3	180	0.33	9.02E-05
11:08	20.8	180	0.38	
11:11	15.8	180	0.43	9.59E-05
11:14	11.2	180	0.48	8.82E-05
11:17	6.3	180	0.53	9.40E-05
11:25	53.5	480	0.67	
11:28	47.5	180	0.72	1.15E-04
11:33	39.6	300	0.80	
11:35	36.5	120	0.83	8.92E-05
11:38	32.0	180	0.88	8.63E-05
11:41	27.0	180	0.93	9.59E-05
11:44	22.5	180	0.98	
11:47	18.0	180	1.03	8.63E-05
11:50	13.5	180	1.08	8.63E-05
11:53	8.5	180	1.13	9.59E-05
11:56	56.2	180	1.18	
11:59	51.8	180	1.23	8.44E-05
12:02	47.2	180	1.28	8.82E-05
12:05	43.0	180	1.33	
12:08	38.5	180	1.38	8.63E-05
12:11	34.0	180	1.43	8.63E-05
12:14	29.5	180	1.48	8.63E-05
12:18	23.5	240	1.55	8.63E-05
12:21	20.0	180	1.60	6.71E-05
12:24	15.0	180	1.65	9.59E-05
12:27	10.5	180	1.70	
12:30	6.0	180	1.75	8.63E-05

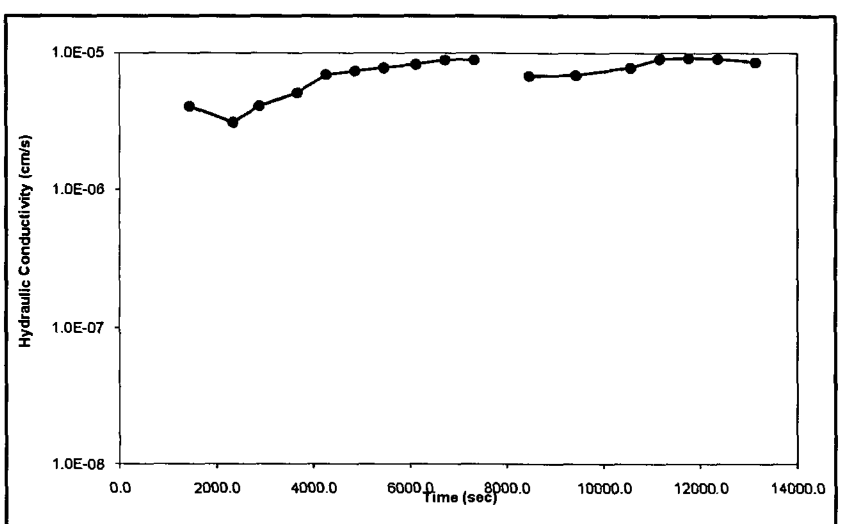
Avg K
8.50E-05



Alt. SDRI Hydraulic Conductivity - Polson - Store-and-Release Cover

Inner Ring Side Length (ft)	5.00
Inner Ring Side Lengh (cm)	152.40
Inner Ring Area (cm^2)	**23225.76**
Average Head (in)	14.00
Average Head (cm)	**35.56**
Standpipe Diameter (cm)	5.00
Standpipe Area (cm^2)	**19.63**

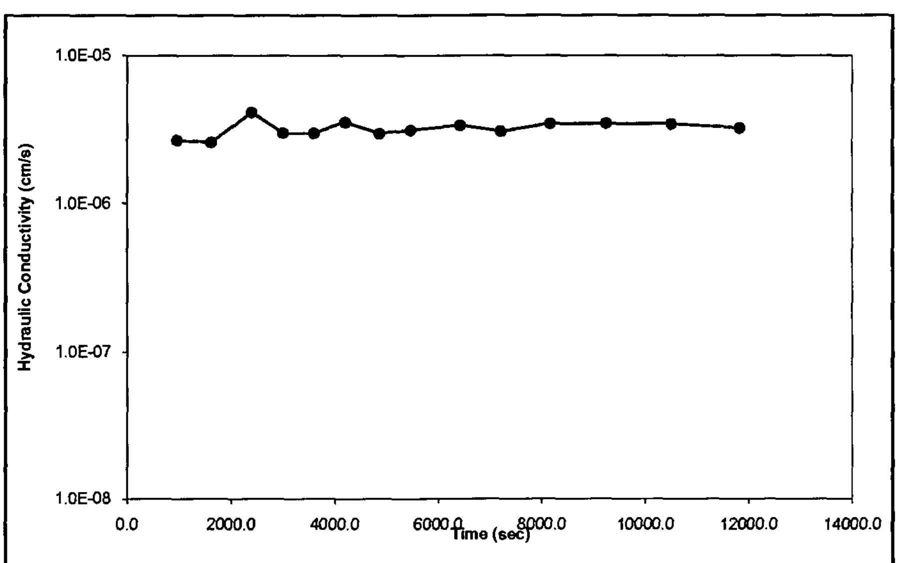
Date, Time	Inflow Reading (cm)	Inflow (mL)	Dt (sec)	t (sec)	Q (mL/s)	K (cm/s)
9:12	59		0.0			
9:36	52.1	135.48118	1440.0	1440.0	0.0941	4.1E-06
9:51	48.8	64.795348	900.0	2340.0	0.0720	3.1E-06
10:00	46.2	51.050881	540.0	2880.0	0.0945	4.1E-06
10:13	41.5	92.284284	780.0	3660.0	0.1183	5.1E-06
10:23	36.6	96.211275	600.0	4260.0	0.1604	6.9E-06
10:33	31.4	102.10176	600.0	4860.0	0.1702	7.3E-06
10:43	25.9	107.99225	600.0	5460.0	0.1800	7.7E-06
10:54	19.5	125.66371	660.0	6120.0	0.1904	8.2E-06
11:04	13.2	123.70021	600.0	6720.0	0.2062	8.9E-06
11:14	6.9	123.70021	600.0	7320.0	0.2062	8.9E-06
11:23	58.5	-1013.1636	540.0	7860.0	-1.8762	-8.1E-05
11:33	53.7	94.24778	600.0	8460.0	0.1571	6.8E-06
11:49	45.9	153.15264	960.0	9420.0	0.1595	6.9E-06
12:08	35.4	206.16702	1140.0	10560.0	0.1808	7.8E-06
12:18	29.0	125.66371	600.0	11160.0	0.2094	9.0E-06
12:28	22.5	127.6272	600.0	11760.0	0.2127	9.2E-06
12:38	16.1	125.66371	600.0	12360.0	0.2094	9.0E-06
12:51	8.2	155.11614	780.0	13140.0	0.1989	8.6E-06
					Average	**8.9E-06**



Conv. SDRI Hydraulic Conductivity - Polson - Composite Cover

Inner Ring Side Length (ft)	5.00
Inner Ring Side Lengh (cm)	152.40
Inner Ring Area (cm^2)	**23225.76**
Average Head (in)	14.00
Average Head (cm)	**35.56**
Standpipe Diameter (cm)	5.00
Standpipe Area (cm^2)	**19.63**

Date, Time	Inflow Reading (cm)	Inflow (mL)	Dt (sec)	t (sec)	Q (mL/s)	K (cm/s)
9:34	55.5		0.0			
9:50	52.5	58.904862	960.0	960.0	0.0614	2.6E-06
10:01	50.5	39.269908	660.0	1620.0	0.0595	2.6E-06
10:14	46.7	74.612826	780.0	2400.0	0.0957	4.1E-06
10:24	44.6	41.233404	600.0	3000.0	0.0687	3.0E-06
10:34	42.5	41.233404	600.0	3600.0	0.0687	3.0E-06
10:44	40	49.087385	600.0	4200.0	0.0818	3.5E-06
10:55	37.7	45.160394	660.0	4860.0	0.0684	2.9E-06
11:05	35.5	43.196899	600.0	5460.0	0.0720	3.1E-06
11:21	31.7	74.612826	960.0	6420.0	0.0777	3.3E-06
11:34	28.9	54.977871	780.0	7200.0	0.0705	3.0E-06
11:50	25	76.576321	960.0	8160.0	0.0798	3.4E-06
12:08	20.6	86.393798	1080.0	9240.0	0.0800	3.4E-06
12:29	15.5	100.13827	1260.0	10500.0	0.0795	3.4E-06
12:51	10.5	98.17477	1320.0	11820.0	0.0744	3.2E-06
					Average	**3.4E-06**



SDRI Test - Sacramento - Thin Store-and-Release Cover

Date:
Project: Sacramento
Installer: XW
Analyst: CHB

Fixed variables:

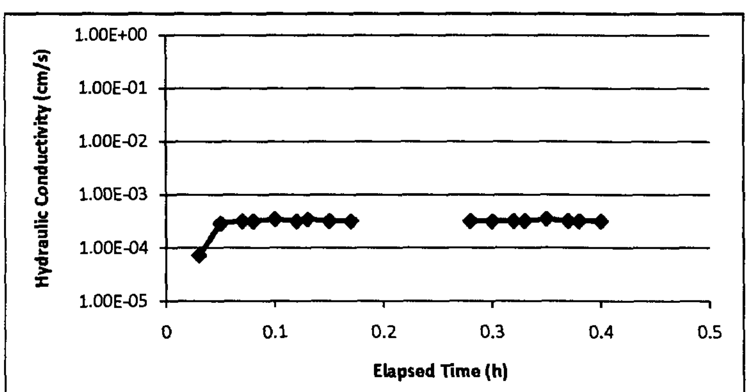
L =	150	cm
A =	22500	cm^2
a =	77.69	cm^2
Dp =		cm

Assume Unit Gradient in Analysis

Temporal Variables:

Time	Reading (cm)	⊿ Time (s)	Time (h)	K (cm/s)
3:50	59			
3:52	56.5	120	0.03	7.19E-05
3:53	51.5	60	0.05	2.88E-04
3:54	46	60	0.07	3.17E-04
3:55	40.5	60	0.08	3.17E-04
3:56	34.5	60	0.1	3.45E-04
3:57	29	60	0.12	3.17E-04
3:58	23	60	0.13	3.45E-04
3:59	17.5	60	0.15	3.17E-04
4:00	12	60	0.17	3.17E-04
4:06	55.5	360	0.27	
4:07	50	60	0.28	3.17E-04
4:08	44.5	60	0.3	3.17E-04
4:09	39	60	0.32	3.17E-04
4:10	33.5	60	0.33	3.17E-04
4:11	27.5	60	0.35	3.45E-04
4:12	22	60	0.37	3.17E-04
4:13	16.5	60	0.38	3.17E-04
4:14	11	60	0.4	3.17E-04

Avg K
3.2E-04



SDRI Test - Sacramento - Thick Store-and-Release Cover

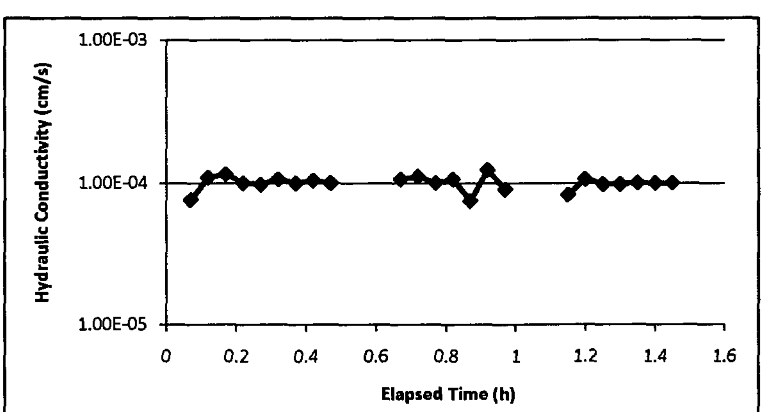
Date:		**Installer:**	XW
Project:	Sacramento	**Analyst:**	CHB

Fixed variables:

L =	150	cm	Assume Unit Gradient in Analysis
A =	22500	cm^2	
a =	77.69	cm^2	
Dp =		cm	

Temporal Variables:

Time	Reading (cm)	Δ Time (s)	Time (h)	K (cm/s)
11:03	56			
11:07	50.7	240	0.07	7.63E-05
11:10	45	180	0.12	1.09E-04
11:13	39	180	0.17	1.15E-04
11:16	33.8	180	0.22	9.98E-05
11:19	28.7	180	0.27	9.78E-05
11:22	23.2	180	0.32	1.06E-04
11:25	18	180	0.37	9.98E-05
11:28	12.6	180	0.42	1.04E-04
11:31	7.4	180	0.47	9.98E-05
11:40	51.5	540	0.62	
11:43	46	180	0.67	1.06E-04
11:46	40.2	180	0.72	1.11E-04
11:49	35	180	0.77	9.98E-05
11:52	29.5	180	0.82	1.06E-04
11:55	25.6	180	0.87	7.48E-05
11:58	19.2	180	0.92	1.23E-04
12:01	14.5	180	0.97	9.02E-05
12:06	53.8	480	1.1	
12:09	49.5	180	1.15	8.25E-05
12:12	44	180	1.2	1.06E-04
12:15	38.9	180	1.25	9.78E-05
12:18	33.8	180	1.3	9.78E-05
12:21	28.6	180	1.35	9.98E-05
12:24	23.4	180	1.4	9.98E-05
12:27	18.2	180	1.45	9.98E-05
				Avg K
				9.85E-05



APPENDIX C - TSB DATA

Single-Stage Constant Head Borehole Test - Altamont - Composite Cover

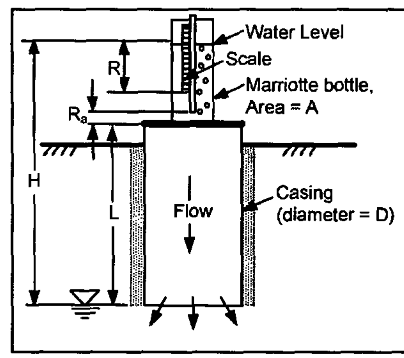
Project:	Altamont Decomissioning	**Installer:**	XW
Date:	04/03/07	**Analyst:**	CHB
Test ID:	TSB-C1		

Fixed Variables:

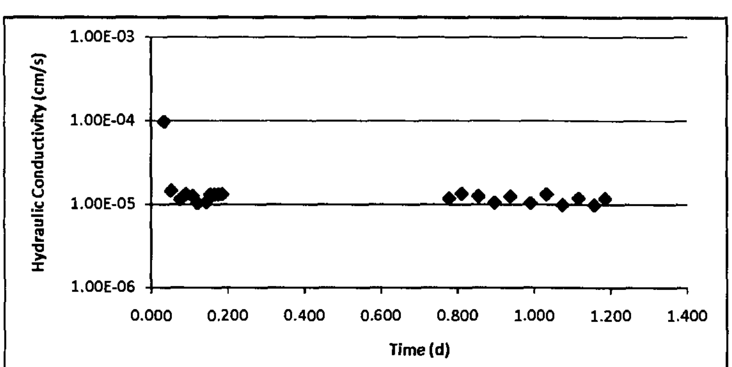
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Analysis using Horslev's isotropic constant head solution

Temporal Variables:		Computations:		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4/3/07 15:03	29.2			
4/3/07 15:51	41.1	3.30E-01	0.033	9.72E-05
4/3/07 16:18	42.1	4.93E-02	0.052	1.45E-05
4/3/07 16:52	43.1	3.91E-02	0.076	1.15E-05
4/3/07 17:13	43.8	4.43E-02	0.090	1.31E-05
4/3/07 17:38	44.6	4.26E-02	0.108	1.25E-05
4/3/07 17:57	45.1	3.50E-02	0.121	1.03E-05
4/3/07 18:30	46.0	3.63E-02	0.144	1.07E-05
4/3/07 18:45	46.5	4.43E-02	0.154	1.31E-05
4/3/07 19:00	47.0	4.43E-02	0.165	1.31E-05
4/3/07 19:15	47.5	4.43E-02	0.175	1.31E-05
4/3/07 19:30	48.0	4.43E-02	0.185	1.31E-05
4/4/07 9:44	73.4	3.96E-02	0.778	1.17E-05
4/4/07 10:31	75.0	4.53E-02	0.811	1.33E-05
4/4/07 11:34	77.0	4.22E-02	0.855	1.24E-05
4/4/07 12:34	78.6	3.55E-02	0.897	1.05E-05
4/4/07 13:34	80.5	4.21E-02	0.938	1.24E-05
4/4/07 14:50	82.5	3.50E-02	0.991	1.03E-05
4/4/07 15:50	84.5	4.43E-02	1.033	1.31E-05
4/4/07 16:50	86.0	3.32E-02	1.074	9.80E-06
4/4/07 17:50	87.8	3.99E-02	1.116	1.18E-05
4/4/07 18:50	89.3	3.33E-02	1.158	9.80E-06
4/4/07 19:30	90.5	3.99E-02	1.185	1.18E-05



K (cm/s)
1.1E-05



Single-Stage Constant Head Borehole Test - Altamont - Composite Cover

Project:	Altamont Decomissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	TSB-C2		

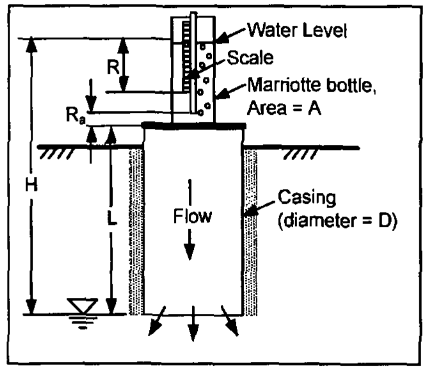
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

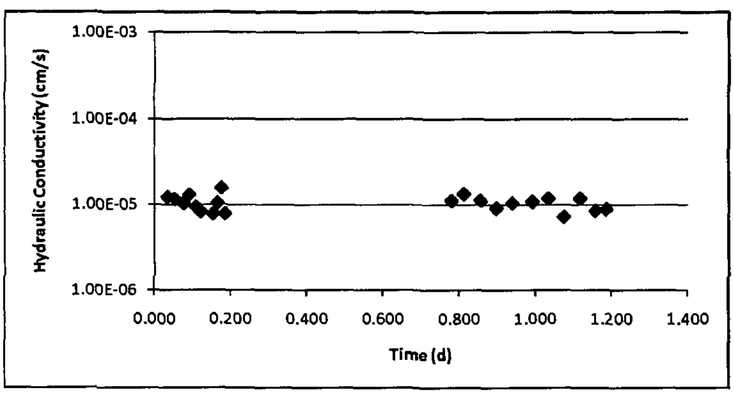
Analysis using Horslev's isotropic constant head solution

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4/3/07 15:03	29.5			
4/3/07 15:51	31.0	4.16E-02	0.033	1.22E-05
4/3/07 16:18	31.8	3.94E-02	0.052	1.16E-05
4/3/07 16:52	32.7	3.52E-02	0.076	1.04E-05
4/3/07 17:13	33.4	4.43E-02	0.090	1.31E-05
4/3/07 17:38	34.0	3.19E-02	0.108	9.41E-06
4/3/07 17:57	34.4	2.80E-02	0.121	8.25E-06
4/3/07 18:30	35.4		0.144	
4/3/07 18:45	35.7	2.66E-02	0.154	7.84E-06
4/3/07 19:00	36.1	3.55E-02	0.165	1.05E-05
4/3/07 19:15	36.7	5.32E-02	0.175	1.57E-05
4/3/07 19:30	37.0	2.66E-02	0.185	7.84E-06
4/4/07 9:44	61.2	3.77E-02	0.778	1.11E-05
4/4/07 10:31	62.8	4.53E-02	0.811	1.33E-05
4/4/07 11:34	64.6	3.80E-02	0.855	1.12E-05
4/4/07 12:34	66.0	3.10E-02	0.897	9.15E-06
4/4/07 13:34	67.6	3.55E-02	0.938	1.05E-05
4/4/07 14:50	69.7	3.68E-02	0.991	1.08E-05
4/4/07 15:50	71.5	3.99E-02	1.033	1.18E-05
4/4/07 16:50	72.6	2.44E-02	1.074	7.19E-06
4/4/07 17:50	74.4	3.99E-02	1.116	1.18E-05
4/4/07 18:50	75.7	2.88E-02	1.158	8.49E-06
4/4/07 19:30	76.6	2.99E-02	1.185	8.82E-06



K (cm/s)
9.1E-06



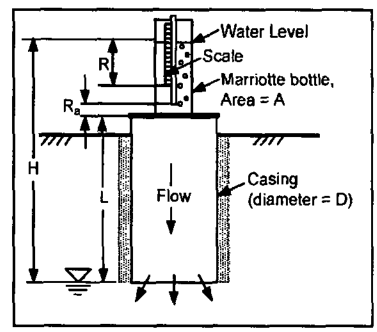
Single-Stage Constant Head Borehole Test - Altamont - Composite Cover

Project:	Altamont Decomissioning	**Installer:**	XW
Date:	04/03/07	**Analyst:**	CHB
Test ID:	TSB-C3		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

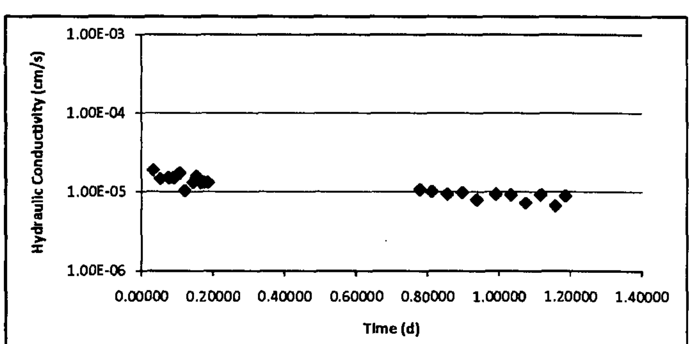
Analysis using Horslev's isotropic constant head solution



Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4/3/07 15:03	46.7			
4/3/07 15:51	49.0	6.37E-02	0.03333	1.88E-05
4/3/07 16:18	50.0	4.93E-02	0.05208	1.45E-05
4/3/07 16:52	51.3	5.09E-02	0.07569	1.50E-05
4/3/07 17:13	52.1	5.07E-02	0.09028	1.49E-05
4/3/07 17:38	53.2	5.85E-02	0.10764	1.72E-05
4/3/07 17:57	53.7	3.50E-02	0.12083	1.03E-05
4/3/07 18:30	54.8	4.43E-02	0.14375	1.31E-05
4/3/07 18:45	55.4	5.32E-02	0.15417	1.57E-05
4/3/07 19:00	55.9	4.43E-02	0.16458	1.31E-05
4/3/07 19:15	56.4	4.43E-02	0.17500	1.31E-05
4/3/07 19:30	56.9	4.43E-02	0.18542	1.31E-05
4/4/07 9:44	80.0	3.60E-02	0.77847	1.06E-05
4/4/07 10:31	81.2	3.40E-02	0.81111	1.00E-05
4/4/07 11:34	82.7	3.17E-02	0.85486	9.33E-06
4/4/07 12:34	84.2	3.33E-02	0.89653	9.80E-06
4/4/07 13:34	85.4	2.66E-02	0.93819	7.84E-06
4/4/07 14:50	87.2	3.15E-02	0.99097	9.28E-06
4/4/07 15:50	88.6	3.10E-02	1.03264	9.15E-06
4/4/07 16:50	89.7	2.44E-02	1.07431	7.19E-06
4/4/07 17:50	91.1	3.10E-02	1.11597	9.15E-06
4/4/07 18:50	92.1	2.22E-02	1.15764	6.53E-06
4/4/07 19:30	93.0	2.99E-02	1.18542	8.82E-06

K (cm/s)
7.9E-06



Single-Stage Constant Head Borehole Test - Altamont - Composite Cover

Project:	Altamont Decomissioning	**Installer:**	XW
Date:	04/03/07	**Analyst:**	CHB
Test ID:	TSB-C4		

Fixed Variables:

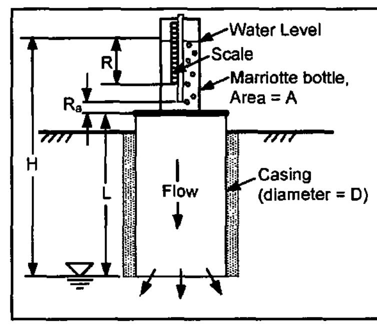
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

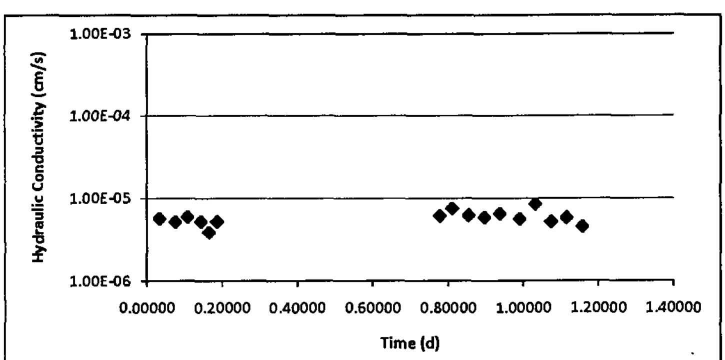
Analysis using Horslev's isotropic constant head solution

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4/3/07 15:03	30.0			
4/3/07 15:51	30.7	1.94E-02	0.03333	5.72E-06
4/3/07 16:52	31.5	1.74E-02	0.07569	5.14E-06
4/3/07 17:38	32.2	2.02E-02	0.10764	5.96E-06
4/3/07 18:30	32.9	1.79E-02	0.14375	5.28E-06
4/3/07 19:00	33.2	1.33E-02	0.16458	3.92E-06
4/3/07 19:30	33.6	1.77E-02	0.18542	5.23E-06
4/4/07 9:44	47.0	2.09E-02	0.77847	6.15E-06
4/4/07 10:31	47.9	2.55E-02	0.81111	7.51E-06
4/4/07 11:34	48.9	2.11E-02	0.85486	6.22E-06
4/4/07 12:34	49.8	2.00E-02	0.89653	5.88E-06
4/4/07 13:34	50.8	2.22E-02	0.93819	6.53E-06
4/4/07 14:50	51.9	1.93E-02	0.99097	5.67E-06
4/4/07 15:50	53.2	2.88E-02	1.03264	8.49E-06
4/4/07 16:50	54.0	1.77E-02	1.07431	5.23E-06
4/4/07 17:50	54.9	2.00E-02	1.11597	5.88E-06
4/4/07 18:50	55.6	1.55E-02	1.15764	4.57E-06

K (cm/s)
5.2E-06





Single-Stage Constant Head Borehole Test - Altamont - Store-and-Release Cover

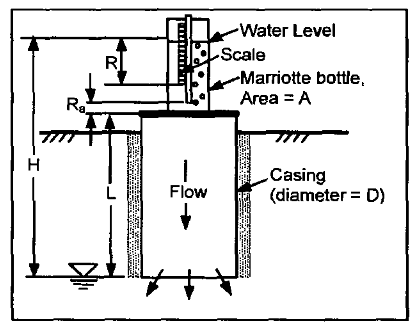
Project:	Altamont Decomissioning	**Installer:**	XW
Date:	04/02/07	**Analyst:**	CHB
Test ID:	TSB-A1		

Fixed Variables:

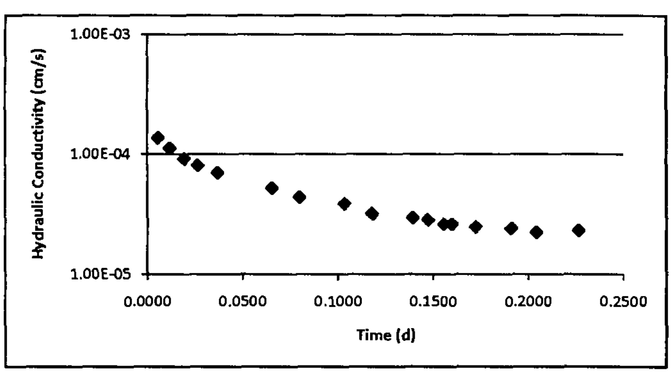
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Analysis using Horslev's isotropic constant head solution

Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:03:00	33.3			
14:11:00	38.2	8.15E-01	0.0056	1.37E-04
14:20:00	42.7	6.65E-01	0.0118	1.12E-04
14:31:00	47.2	5.44E-01	0.0194	9.15E-05
14:41:00	50.8	4.79E-01	0.0264	8.05E-05
14:56:00	55.5	4.17E-01	0.0368	7.01E-05
15:37:00	65.1	3.11E-01	0.0653	5.24E-05
15:58:00	69.2	2.60E-01	0.0799	4.37E-05
16:32:00	75.1	2.31E-01	0.1035	3.88E-05
16:53:00	78.1	1.90E-01	0.1181	3.19E-05
17:24:00	82.2	1.76E-01	0.1396	2.96E-05
17:35:00	83.6	1.69E-01	0.1472	2.85E-05
17:47:00	85.0	1.55E-01	0.1556	2.61E-05
17:53:00	85.7	1.55E-01	0.1597	2.61E-05
18:11:00	87.7	1.48E-01	0.1722	2.48E-05
9:34:00	31.0			
10:01:00	33.9	1.43E-01	0.1910	2.40E-05
10:20:00	35.8	1.33E-01	0.2042	2.24E-05
10:52:00	39.1	1.37E-01	0.2264	2.31E-05



K (cm/s)
2.4E-05



Single-Stage Constant Head Borehole Test - Altamont - Store-and-Release Cover

Project: Altamont Decomissioning
Date: 04/02/07
Test ID: TSB-A2

Installer: XW
Analyst: CHB

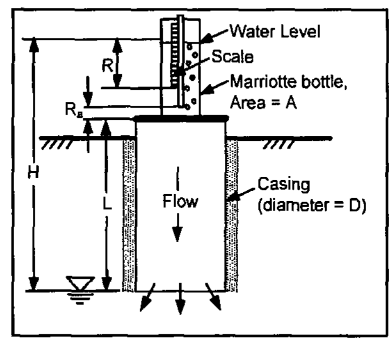
Fixed Variables:

Casing Diameter (cm): 30.48
Standpipe Area (cm^2): 79.8
R_s (cm): 10
L (cm): 60.96

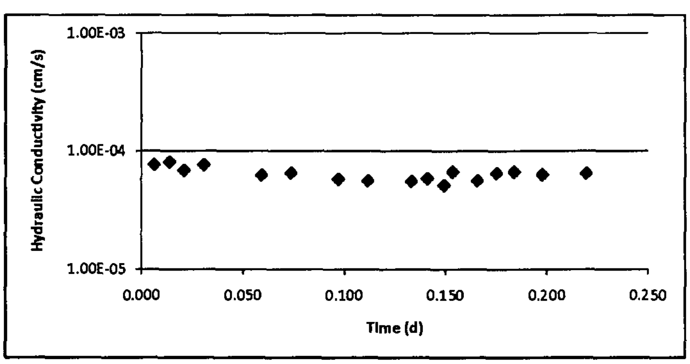
Analysis using Horslev's isotropic constant head solution

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:12:00	31.0			
14:21:00	34.1	4.58E-01	0.006	7.70E-05
14:32:00	38.1	4.84E-01	0.014	8.13E-05
14:42:00	41.2	4.12E-01	0.021	6.93E-05
14:56:00	46.0	4.56E-01	0.031	7.67E-05
15:37:00	57.5	3.73E-01	0.059	6.27E-05
15:58:00	63.7	3.93E-01	0.074	6.60E-05
16:32:00	72.6	3.48E-01	0.097	5.85E-05
16:53:00	77.9	3.36E-01	0.112	5.64E-05
17:24:00	85.7	3.35E-01	0.133	5.63E-05
17:35:00	88.6	3.51E-01	0.141	5.90E-05
17:47:00	91.4	3.10E-01	0.149	5.22E-05
17:53:00	93.2	3.99E-01	0.153	6.71E-05
18:11:00	97.8	3.40E-01	0.166	5.71E-05
9:35:00	34.0	1.64E-01		2.76E-05
9:48:00	37.8	3.89E-01	0.175	6.54E-05
10:01:00	41.7	3.99E-01	0.184	6.71E-05
10:21:00	47.4	3.79E-01	0.198	6.37E-05
10:52:00	56.4	3.86E-01	0.219	6.49E-05



K (cm/s)
6.5E-05



Single-Stage Constant Head Borehole Test - Altamont - Store-and-Release Cover

Project: Altamont Decomissioning **Installer:** XW
Date: 04/02/07 **Analyst:** CHB
Test ID: TSB-A3

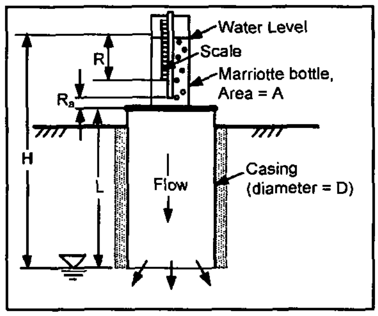
Fixed Variables:

Casing Diameter (cm): 30.48
Standpipe Area (cm^2): 79.8
R_a (cm): 10
L (cm): 60.96

Analysis using Horslev's isotropic constant head solution

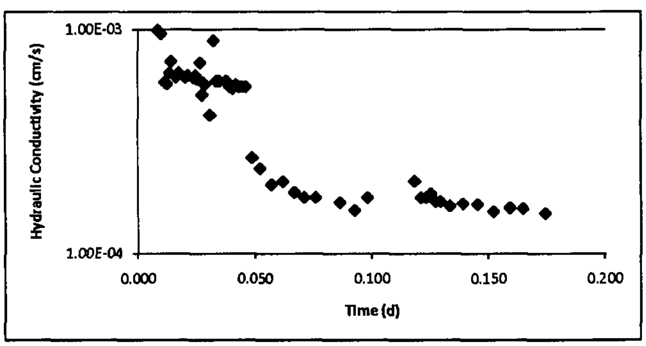
Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:25:00	31.5			
14:27:00	41.2	6.45E+00	0.001	1.08E-03
14:30:00	56.1	6.61E+00	0.003	1.11E-03
14:33:00	70.1	6.21E+00	0.006	1.04E-03
14:35:00	79.2	6.05E+00	0.007	1.02E-03
14:37:00	88.1	5.92E+00	0.008	9.95E-04
14:39:00	96.7	5.72E+00	0.010	9.62E-04
15:30:55	30.0		0.011	
15:31:50	32.4	3.48E+00	0.012	5.85E-04
15:33:00	35.4	3.42E+00	0.012	5.75E-04
15:34:40	40.2	3.83E+00	0.014	6.44E-04
15:35:30	42.9	4.31E+00	0.014	7.24E-04
15:38:35	51.4	3.67E+00	0.016	6.16E-04
15:40:15	56.2	3.83E+00	0.017	6.44E-04
15:44:15	67.2	3.66E+00	0.020	6.15E-04
15:46:00	72.1	3.72E+00	0.021	6.26E-04
15:49:15	81.0	3.64E+00	0.024	6.12E-04
15:50:30	84.5	3.72E+00	0.025	6.26E-04
15:51:30	87.2	3.59E+00	0.025	6.04E-04
15:52:30	89.9	3.59E+00	0.026	6.04E-04
15:53:30	93.1	4.26E+00	0.027	7.16E-04
15:54:30	95.4	3.06E+00	0.027	5.14E-04
15:55:30	98.0	3.46E+00	0.028	5.81E-04
15:56:17	100.0	3.40E+00	0.029	5.71E-04
15:27:00	32.0			
15:30:00	37.6	2.48E+00	0.031	4.17E-04
15:32:00	45.6	5.32E+00	0.032	8.94E-04
15:34:00	50.9	3.52E+00	0.033	5.93E-04
15:36:00	56.2	3.52E+00	0.035	5.93E-04
15:40:00	66.8	3.52E+00	0.038	5.93E-04
15:42:00	71.8	3.33E+00	0.039	5.59E-04
15:44:00	76.7	3.26E+00	0.040	5.48E-04
15:46:00	81.8	3.39E+00	0.042	5.70E-04
15:48:00	86.8	3.33E+00	0.043	5.59E-04
15:50:00	91.8	3.33E+00	0.045	5.59E-04
15:52:00	96.8	3.33E+00	0.046	5.59E-04



9:46:00	30.3			
9:50	35.1	1.60E+00	0.049	2.68E-04
9:55	40.5	1.44E+00	0.052	2.41E-04
10:02	46.9	1.22E+00	0.057	2.04E-04
10:09	53.5	1.25E+00	0.062	2.11E-04
10:16	59.4	1.12E+00	0.067	1.88E-04
10:22	64.2	1.06E+00	0.071	1.79E-04
10:29	69.8	1.06E+00	0.076	1.79E-04
10:44	81.2	1.01E+00	0.086	1.70E-04
10:53	87.5	9.31E-01	0.093	1.57E-04
11:01	93.9	1.06E+00	0.098	1.79E-04
11:28	30.0		0.117	
11:30	31.9	1.26E+00	0.118	2.12E-04
11:34	35.1	1.06E+00	0.121	1.79E-04
11:37	37.5	1.06E+00	0.123	1.79E-04
11:40	40.0	1.11E+00	0.125	1.86E-04
11:43	42.3	1.02E+00	0.127	1.71E-04
11:46	44.6	1.02E+00	0.129	1.71E-04
11:52	49.0	9.75E-01	0.133	1.64E-04
12:00	55.0	9.98E-01	0.139	1.68E-04
12:09	61.7	9.90E-01	0.145	1.66E-04
12:19	68.6	9.18E-01	0.152	1.54E-04
12:29	75.8	9.58E-01	0.159	1.61E-04
12:37	81.5	9.48E-01	0.165	1.59E-04
12:51	91.0	9.03E-01	0.174	1.52E-04

K (cm/s)
1.6E-04



Single-Stage Constant Head Borehole Test - Altamont - Store-and-Release Cover

Project: Altamont Decomissioning
Date: 04/02/07
Test ID: TSB-A4
Installer: XW
Analyst: CHB

Fixed Variables:

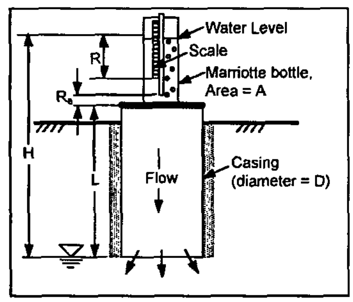
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_e (cm):	10
L (cm):	60.96

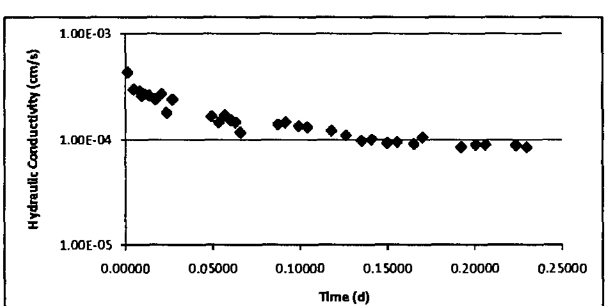
Analysis using Horslev's isotropic constant head solution

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:22:00	32.7			
14:24:00	36.5	2.53E+00	0.00139	4.25E-04
14:29:00	43.1	1.76E+00	0.00486	2.95E-04
14:34:00	49.4	1.68E+00	0.00833	2.82E-04
14:36:00	51.7	1.53E+00	0.00972	2.57E-04
14:38:00	54.1	1.60E+00	0.01111	2.68E-04
14:42:00	58.7	1.53E+00	0.01389	2.57E-04
14:47:00	64.0	1.41E+00	0.01736	2.37E-04
14:52:00	70.0	1.60E+00	0.02083	2.68E-04
14:56:00	73.2	1.06E+00	0.02361	1.79E-04
15:01:00	78.5	1.41E+00	0.02708	2.37E-04
15:28:00	35.4			
15:33:00	39.1	9.84E-01	0.049305556	1.65E-04
15:39:00	43.0	8.65E-01	0.05347	1.45E-04
15:44:00	46.8	1.01E+00	0.05694	1.70E-04
15:49:00	50.2	9.04E-01	0.06042	1.52E-04
15:53:00	52.8	8.65E-01	0.06319	1.45E-04
15:57:00	54.9	6.98E-01	0.06597	1.17E-04
16:28:00	74.2	8.28E-01	0.08750	1.39E-04
16:34:00	78.1	8.64E-01	0.09167	1.45E-04
16:45:00	84.7	7.98E-01	0.09931	1.34E-04
16:52:00	88.8	7.79E-01	0.10417	1.31E-04
17:12:00	99.6	7.18E-01	0.11806	1.21E-04
9:37:00	31.0			
9:49:00	36.9	6.54E-01	0.12639	1.10E-04
10:02:00	42.6	5.83E-01	0.13542	9.80E-05
10:10:00	46.2	5.99E-01	0.14097	1.01E-04
10:23:00	51.6	5.52E-01	0.15000	9.29E-05
10:31:00	55.0	5.65E-01	0.15556	9.50E-05
10:45:00	60.7	5.42E-01	0.16528	9.10E-05
10:52:00	64.0	6.27E-01	0.17014	1.05E-04
11:24:00	76.2	5.07E-01	0.19236	8.53E-05
11:36:00	81.0	5.32E-01	0.20069	8.94E-05
11:44:00	84.2	5.32E-01	0.20625	8.94E-05
12:09:00	94.1	5.27E-01	0.22361	8.85E-05
12:18:00	97.5	5.02E-01	0.22986	8.45E-05

K (cm/s)
8.7E-05





Single-Stage Constant Head Borehole Test - Apple Valley - Clay Cover

Project:	Apple Valley Decomissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	C-2		

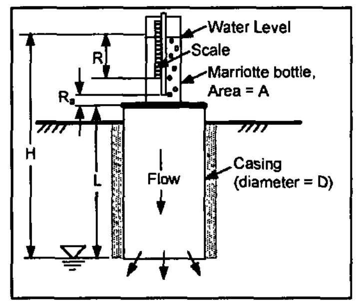
Fixed Variables:

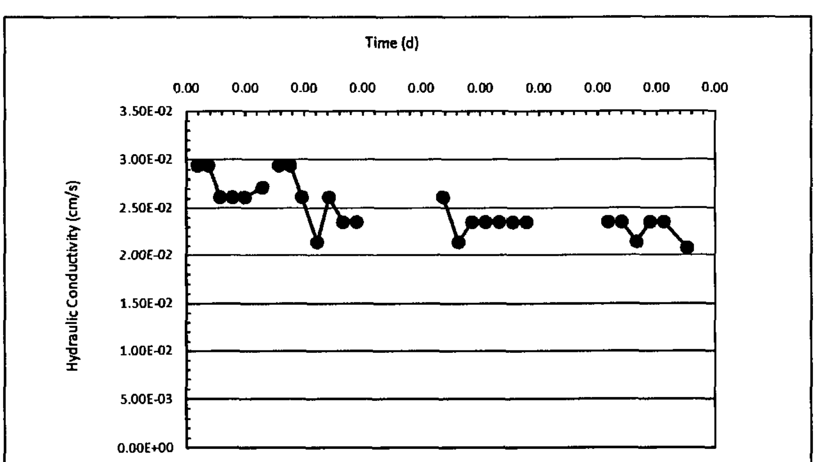
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
10:00:00	35.0			
10:00:08	45.0	9.98E+01	0.00009	2.94E-02
10:00:16	55.0	9.98E+01	0.00019	2.94E-02
10:00:25	65.0	8.87E+01	0.00029	2.61E-02
10:00:34	75.0	8.87E+01	0.00039	2.61E-02
10:00:43	85.0	8.87E+01	0.00050	2.61E-02
10:00:56	100.0	9.21E+01	0.00065	2.71E-02
10:01:00	30.0		0.00069	
10:01:08	40.0	9.98E+01	0.00079	2.94E-02
10:01:16	50.0	9.97E+01	0.00088	2.94E-02
10:01:25	60.0	8.87E+01	0.00098	2.61E-02
10:01:36	70.0	7.25E+01	0.00111	2.14E-02
10:01:45	80.0	8.87E+01	0.00122	2.61E-02
10:01:55	90.0	7.98E+01	0.00133	2.35E-02
10:02:05	100.0	7.98E+01	0.00145	2.35E-02
10:03:00	30.0		0.00208	
10:03:09	40.0	8.87E+01	0.00219	2.61E-02
10:03:20	50.0	7.25E+01	0.00231	2.14E-02
10:03:30	60.0	7.98E+01	0.00243	2.35E-02
10:03:40	70.0	7.98E+01	0.00255	2.35E-02
10:03:50	80.0	7.98E+01	0.00266	2.35E-02
10:04:00	90.0	7.98E+01	0.00278	2.35E-02
10:04:10	100.0	7.98E+01	0.00289	2.35E-02
10:05:00	35.0		0.00347	
10:05:10	45.0	7.98E+01	0.00359	2.35E-02
10:05:20	55.0	7.98E+01	0.00370	2.35E-02
10:05:31	65.0	7.25E+01	0.00383	2.14E-02
10:05:41	75.0	7.98E+01	0.00395	2.35E-02
10:05:51	85.0	7.98E+01	0.00406	2.35E-02
10:06:08	100.0	7.04E+01	0.00426	2.08E-02

AVG
2.28E-02





Single-Stage Constant Head Borehole Test - Apple Valley - Clay Cover

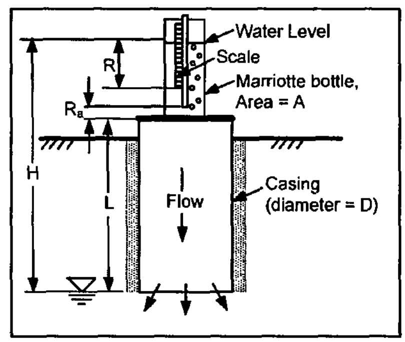
Project:	Apple Valley Decomissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	C-3		

Fixed Variables:

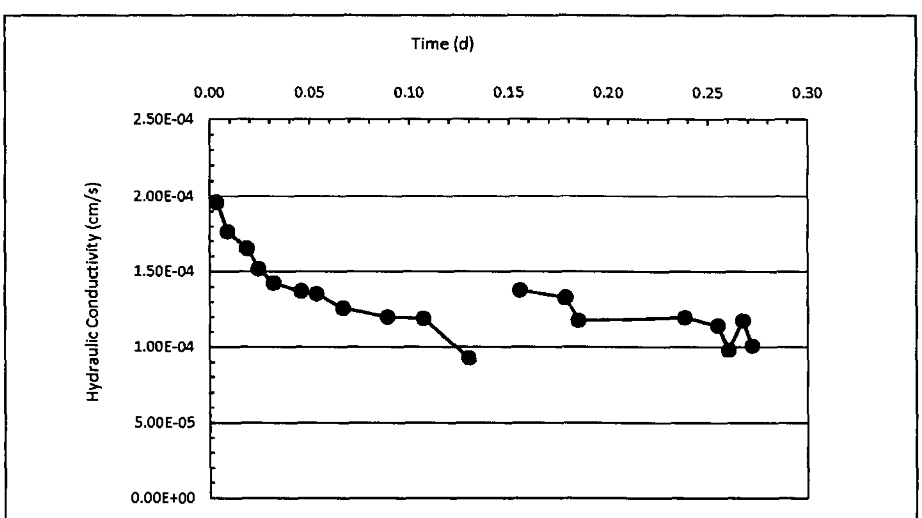
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
11:00:00	39.5			
11:05:00	42.0	6.65E-01	0.003	1.96E-04
11:13:00	45.6	5.99E-01	0.009	1.76E-04
11:27:00	51.5	5.61E-01	0.019	1.65E-04
11:35:00	54.6	5.15E-01	0.024	1.52E-04
11:46:00	58.6	4.84E-01	0.032	1.43E-04
12:06:00	65.6	4.66E-01	0.046	1.37E-04
12:17:00	69.4	4.59E-01	0.053	1.35E-04
12:36:00	75.5	4.27E-01	0.067	1.26E-04
13:08:00	85.3	4.07E-01	0.089	1.20E-04
13:34:00	93.2	4.04E-01	0.107	1.19E-04
14:07:00	101.0	3.14E-01	0.130	9.26E-05
14:11:00	32.0		0.133	
14:44:00	43.6	4.68E-01	0.156	1.38E-04
15:17:00	54.8	4.51E-01	0.178	1.33E-04
15:26:00	57.5	3.99E-01	0.185	1.18E-04
16:43:00	81.0	4.06E-01	0.238	1.20E-04
17:07:00	88.0	3.88E-01	0.255	1.14E-04
17:15:00	90.0	3.33E-01	0.260	9.80E-05
17:25:00	93.0	3.99E-01	0.267	1.18E-04
17:32:00	94.8	3.42E-01	0.272	1.01E-04



Average
1.22E-04



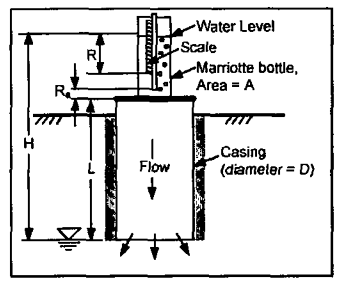
Single-Stage Constant Head Borehole Test - Apple Valley - Clay Cover

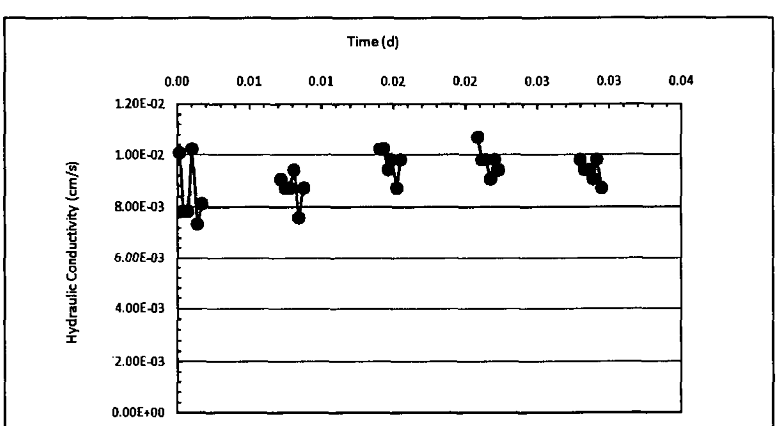
Project:	Apple Valley Decomissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	C-4		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
10:00:07	37.0			
10:00:21	43.0	3.42E+01	0.000	1.01E-02
10:00:42	50.0	2.66E+01	0.000	7.84E-03
10:01:12	60.0	2.66E+01	0.001	7.84E-03
10:01:35	70.0	3.47E+01	0.001	1.02E-02
10:02:07	80.0	2.49E+01	0.001	7.35E-03
10:02:36	90.0	2.75E+01	0.002	8.11E-03
10:10:00	30.0		0.007	
10:10:26	40.0	3.07E+01	0.007	9.05E-03
10:10:53	50.0	2.96E+01	0.007	8.71E-03
10:11:20	60.0	2.96E+01	0.008	8.71E-03
10:11:45	70.0	3.19E+01	0.008	9.41E-03
10:12:16	80.0	2.57E+01	0.008	7.59E-03
10:12:43	90.0	2.96E+01	0.009	8.71E-03
10:20:00	30.0		0.014	
10:20:23	40.0	3.47E+01	0.014	1.02E-02
10:20:46	50.0	3.47E+01	0.014	1.02E-02
10:21:11	60.0	3.19E+01	0.015	9.41E-03
10:21:35	70.0	3.32E+01	0.015	9.80E-03
10:22:02	80.0	2.96E+01	0.015	8.71E-03
10:22:26	90.0	3.33E+01	0.015	9.80E-03
10:30:00	35.0		0.021	
10:30:11	40.0	3.63E+01	0.021	1.07E-02
10:30:35	50.0	3.32E+01	0.021	9.80E-03
10:30:59	60.0	3.33E+01	0.021	9.80E-03
10:31:25	70.0	3.07E+01	0.022	9.05E-03
10:31:49	80.0	3.32E+01	0.022	9.80E-03
10:32:14	90.0	3.19E+01	0.022	9.41E-03
10:40:00	30.0		0.028	
10:40:24	40.0	3.32E+01	0.028	9.80E-03
10:40:49	50.0	3.19E+01	0.028	9.41E-03
10:41:14	60.0	3.19E+01	0.029	9.41E-03
10:41:40	70.0	3.07E+01	0.029	9.05E-03
10:42:04	80.0	3.33E+01	0.029	9.80E-03
10:42:31	90.0	2.96E+01	0.029	8.71E-03
			AVG	9.60E-03





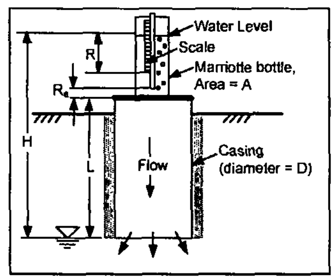
Single-Stage Constant Head Borehole Test - Apple Valley - Clay Cover

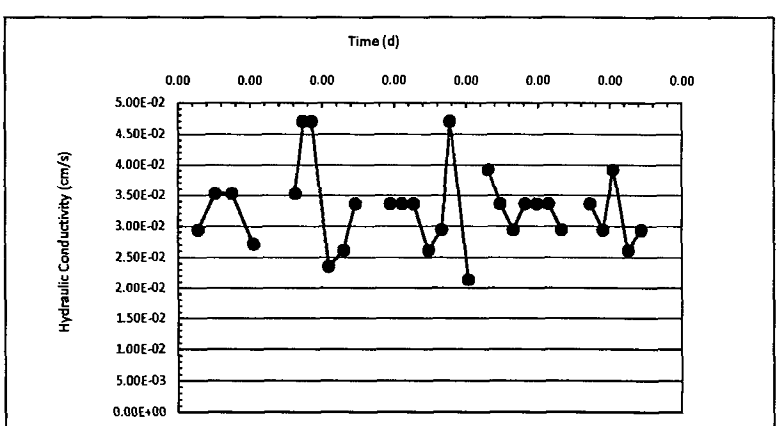
Project:	Apple Valley Decommissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	C-5		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_e (cm):	10
L (cm):	30.48

Temporal Variables: Time	R (cm)	Computations: Q (cm^3/s)	Time (d)	K (cm/s)
10:00:00	40.0			
10:00:12	55.0	9.97E+01	0.00014	2.94E-02
10:00:22	70.0	1.20E+02	0.00025	3.53E-02
10:00:32	85.0	1.20E+02	0.00037	3.53E-02
10:00:45	100.0	9.21E+01	0.00052	2.71E-02
10:01:00	35.0		0.00069	
10:01:10	50.0	1.20E+02	0.00081	3.53E-02
10:01:15	60.0	1.60E+02	0.00087	4.70E-02
10:01:20	70.0	1.60E+02	0.00093	4.70E-02
10:01:30	80.0	7.98E+01	0.00104	2.35E-02
10:01:39	90.0	8.87E+01	0.00115	2.61E-02
10:01:46	100.0	1.14E+02	0.00123	3.36E-02
10:02:00	30.0		0.00139	
10:02:07	40.0	1.14E+02	0.00147	3.36E-02
10:02:14	50.0	1.14E+02	0.00155	3.36E-02
10:02:21	60.0	1.14E+02	0.00163	3.36E-02
10:02:30	70.0	8.87E+01	0.00174	2.61E-02
10:02:38	80.0	9.97E+01	0.00183	2.94E-02
10:02:43	90.0	1.60E+02	0.00189	4.70E-02
10:02:54	100.0	7.25E+01	0.00201	2.14E-02
10:03:00	30.0		0.00208	
10:03:06	40.0	1.33E+02	0.00215	3.92E-02
10:03:13	50.0	1.14E+02	0.00223	3.36E-02
10:03:21	60.0	9.97E+01	0.00233	2.94E-02
10:03:28	70.0	1.14E+02	0.00241	3.36E-02
10:03:35	80.0	1.14E+02	0.00249	3.36E-02
10:03:42	90.0	1.14E+02	0.00257	3.36E-02
10:03:50	100.0	9.98E+01	0.00266	2.94E-02
10:04:00	30.0		0.00278	
10:04:07	40.0	1.14E+02	0.00286	3.36E-02
10:04:15	50.0	9.98E+01	0.00295	2.94E-02
10:04:21	60.0	1.33E+02	0.00302	3.92E-02
10:04:30	70.0	8.87E+01	0.00312	2.61E-02
10:04:38	80.0	9.97E+01	0.00322	2.94E-02
			AVG	3.15E-02





Single-Stage Constant Head Borehole Test - Apple Valley - Clay Cover

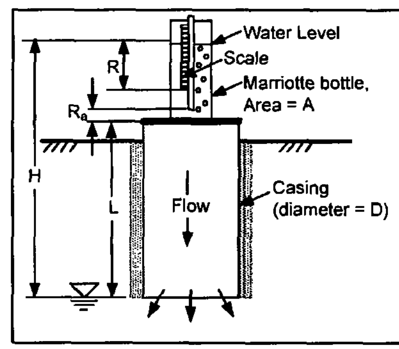
Project: Apple Valley Decomissioning **Installer:** XW
Date: 03/30/07 **Analyst:** CHB
Test ID: C-7

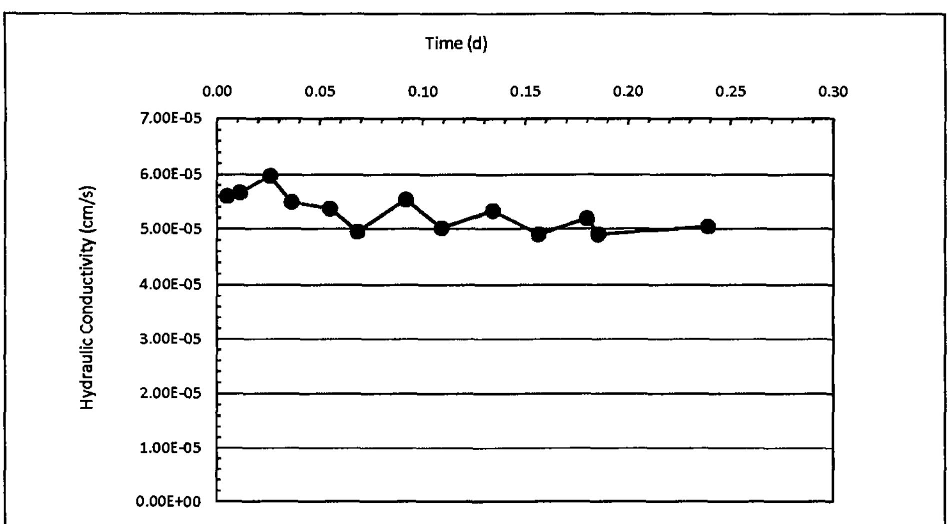
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
10:58:00	35.9			
11:05:00	36.9	1.90E-01	0.005	5.60E-05
11:14:00	38.2	1.92E-01	0.011	5.66E-05
11:35:00	41.4	2.03E-01	0.026	5.97E-05
11:50:00	43.5	1.86E-01	0.036	5.49E-05
12:17:00	47.2	1.82E-01	0.055	5.37E-05
12:36:00	49.6	1.68E-01	0.068	4.95E-05
13:10:00	54.4	1.88E-01	0.092	5.53E-05
13:35:00	57.6	1.70E-01	0.109	5.02E-05
14:11:00	62.5	1.81E-01	0.134	5.34E-05
14:43:00	66.5	1.66E-01	0.156	4.90E-05
15:17:00	71.0	1.76E-01	0.180	5.19E-05
15:25:00	72.0	1.66E-01	0.185	4.90E-05
16:42:00	81.9	1.71E-01	0.239	5.04E-05
			AVG	5.17E-05





Single-Stage Constant Head Borehole Test - Apple Valley - Store-and-Release Cover

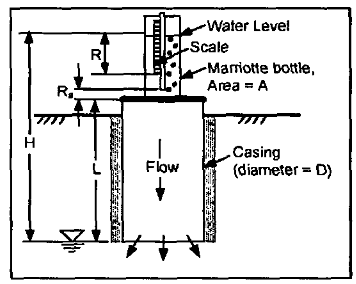
Project:	Apple Valley Decomissioning	**Installer:**	XW
Date:	03/30/07	**Analyst:**	CHB
Test ID:	ALT-1		

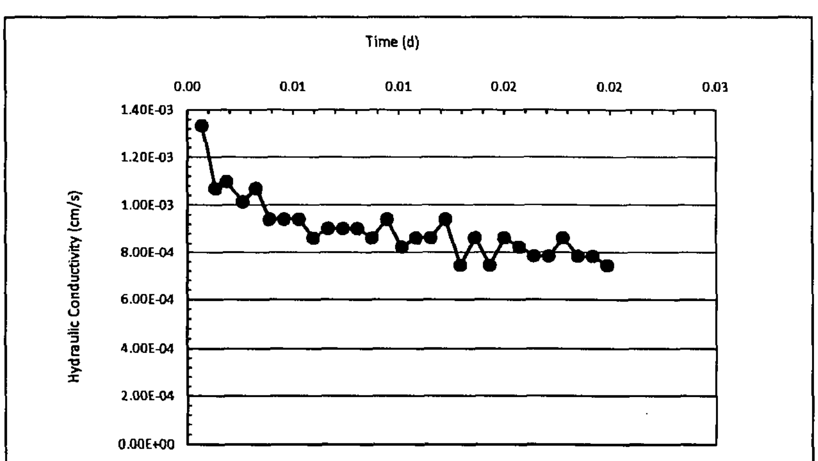
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_s (cm):	10
L (cm):	30.48

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
9:29:00	34.0			
9:30:00	37.4	4.52E+00	0.0007	1.33E-03
9:30:55	39.9	3.63E+00	0.0013	1.07E-03
9:31:40	42.0	3.72E+00	0.0019	1.10E-03
9:32:45	44.8	3.44E+00	0.0026	1.01E-03
9:33:40	47.3	3.63E+00	0.0032	1.07E-03
9:34:35	49.5	3.19E+00	0.0039	9.41E-04
9:35:35	51.9	3.19E+00	0.0046	9.41E-04
9:36:35	54.3	3.19E+00	0.0053	9.41E-04
9:37:35	56.5	2.93E+00	0.0060	8.62E-04
9:38:35	58.8	3.06E+00	0.0067	9.02E-04
9:39:35	61.1	3.06E+00	0.0073	9.02E-04
9:40:35	63.4	3.06E+00	0.0080	9.02E-04
9:41:35	65.6	2.93E+00	0.0087	8.62E-04
9:42:35	68.0	3.19E+00	0.0094	9.41E-04
9:43:35	70.1	2.79E+00	0.0101	8.23E-04
9:44:35	72.3	2.93E+00	0.0108	8.62E-04
9:45:35	74.5	2.93E+00	0.0115	8.62E-04
9:46:35	76.9	3.19E+00	0.0122	9.41E-04
9:47:35	78.8	2.53E+00	0.0129	7.45E-04
9:48:35	81.0	2.93E+00	0.0136	8.62E-04
9:49:35	82.9	2.53E+00	0.0143	7.45E-04
9:50:35	85.1	2.93E+00	0.0150	8.62E-04
9:51:35	87.2	2.79E+00	0.0157	8.23E-04
9:52:35	89.2	2.66E+00	0.0164	7.84E-04
9:53:35	91.2	2.66E+00	0.0171	7.84E-04
9:54:35	93.4	2.93E+00	0.0178	8.62E-04
9:55:35	95.4	2.66E+00	0.0185	7.84E-04
9:56:35	97.4	2.66E+00	0.0192	7.84E-04
9:57:35	99.3	2.53E+00	0.0198	7.45E-04
				AVG 8.10E-04





Single-Stage Constant Head Borehole Test - Apple Valley - Store-and-Release Cover

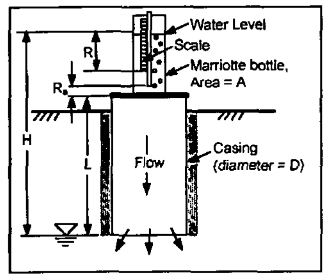
Project: Apple Valley Decomissioning **Installer:** XW
Date: 03/30/07 **Analyst:** CHB
Test ID: ALT-2

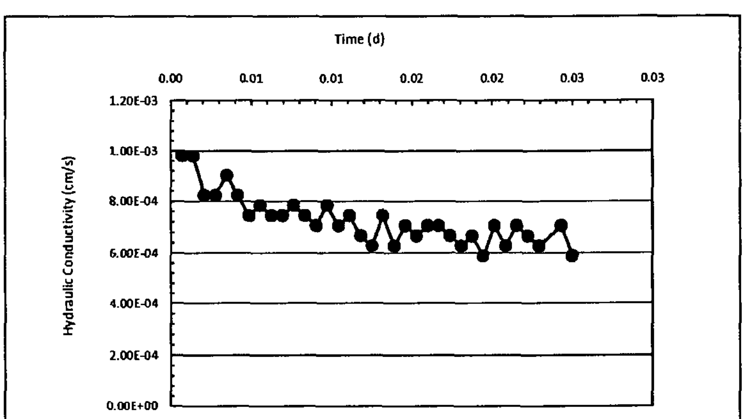
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
10:06:00	32.5			
10:07:00	35.0	3.33E+00	0.001	9.80E-04
10:08:00	37.5	3.33E+00	0.001	9.80E-04
10:09:00	39.6	2.79E+00	0.002	8.23E-04
10:10:00	41.7	2.79E+00	0.003	8.23E-04
10:11:00	44.0	3.06E+00	0.003	9.02E-04
10:12:00	46.1	2.79E+00	0.004	8.23E-04
10:13:00	48.0	2.53E+00	0.005	7.45E-04
10:14:00	50.0	2.66E+00	0.006	7.84E-04
10:15:00	51.9	2.53E+00	0.006	7.45E-04
10:16:00	53.8	2.53E+00	0.007	7.45E-04
10:17:00	55.8	2.66E+00	0.008	7.84E-04
10:18:00	57.7	2.53E+00	0.008	7.45E-04
10:19:00	59.5	2.39E+00	0.009	7.06E-04
10:20:00	61.5	2.66E+00	0.010	7.84E-04
10:21:00	63.3	2.39E+00	0.010	7.06E-04
10:22:00	65.2	2.53E+00	0.011	7.45E-04
10:23:00	66.9	2.26E+00	0.012	6.66E-04
10:24:00	68.5	2.13E+00	0.013	6.27E-04
10:25:00	70.4	2.53E+00	0.013	7.45E-04
10:26:00	72.0	2.13E+00	0.014	6.27E-04
10:27:00	73.8	2.39E+00	0.015	7.06E-04
10:28:00	75.5	2.26E+00	0.015	6.66E-04
10:29:00	77.3	2.39E+00	0.016	7.06E-04
10:30:00	79.1	2.39E+00	0.017	7.06E-04
10:31:00	80.8	2.26E+00	0.017	6.66E-04
10:32:00	82.4	2.13E+00	0.018	6.27E-04
10:33:00	84.1	2.26E+00	0.019	6.66E-04
10:34:00	85.6	2.00E+00	0.019	5.88E-04
10:35:00	87.4	2.39E+00	0.020	7.06E-04
10:36:00	89.0	2.13E+00	0.021	6.27E-04
10:37:00	90.8	2.39E+00	0.022	7.06E-04
10:38:00	92.5	2.26E+00	0.022	6.66E-04
10:39:00	94.1	2.13E+00	0.023	6.27E-04
10:41:00	97.7	2.39E+00	0.024	7.06E-04
10:42:00	99.2	2.00E+00	0.025	5.88E-04
				AVG
				6.27E-04





Single-Stage Constant Head Borehole Test - Boardman - Thin Store-and-Release Cover

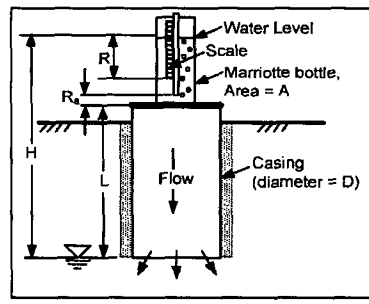
Project: Boardman **Installer:** XW
Date: 08/20/07 **Analyst:** CHB
Test ID: TH-1

Fixed Variables:

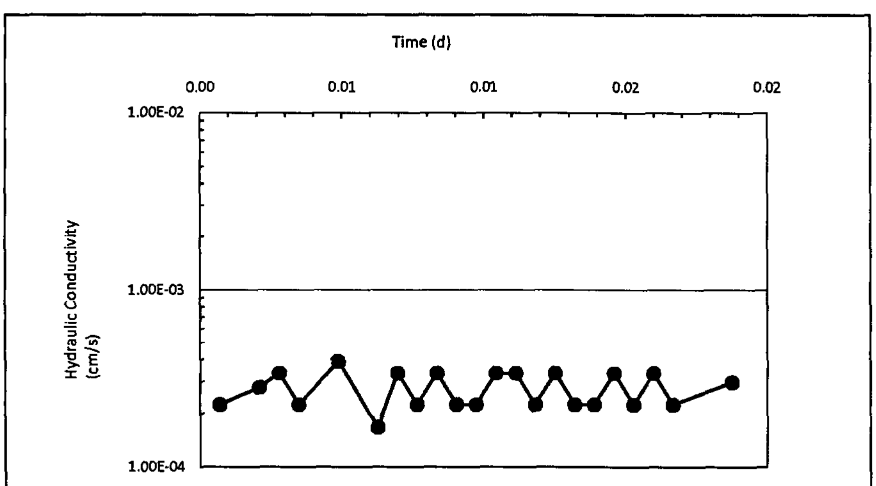
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
2:49:00	32.0			
2:50:00	33.0	1.33E+00	0.0007	2.24E-04
2:52:00	35.5	1.66E+00	0.0021	2.80E-04
2:53:00	37.0	2.00E+00	0.0028	3.35E-04
2:54:00	38.0	1.33E+00	0.0035	2.24E-04
2:56:00	41.5	2.33E+00	0.0049	3.91E-04
2:58:00	43.0	9.98E-01	0.0063	1.68E-04
2:59:00	44.5	2.00E+00	0.0069	3.35E-04
3:00:00	45.5	1.33E+00	0.0076	2.24E-04
3:01:00	47.0	2.00E+00	0.0083	3.35E-04
3:02:00	48.0	1.33E+00	0.0090	2.24E-04
3:03:00	49.0	1.33E+00	0.0097	2.24E-04
3:04:00	50.5	1.99E+00	0.0104	3.35E-04
3:05:00	52.0	2.00E+00	0.0111	3.35E-04
3:06:00	53.0	1.33E+00	0.0118	2.24E-04
3:07:00	54.5	2.00E+00	0.0125	3.35E-04
3:08:00	55.5	1.33E+00	0.0132	2.24E-04
3:09:00	56.5	1.33E+00	0.0139	2.24E-04
3:10:00	58.0	2.00E+00	0.0146	3.35E-04
3:11:00	59.0	1.33E+00	0.0153	2.24E-04
3:12:00	60.5	2.00E+00	0.0160	3.35E-04
3:13:00	61.5	1.33E+00	0.0167	2.24E-04
3:16:00	65.5	1.77E+00	0.0188	2.98E-04



AVG
2.98E-04



Single-Stage Constant Head Borehole Test - Boardman - Thin Store-and-Release Cover

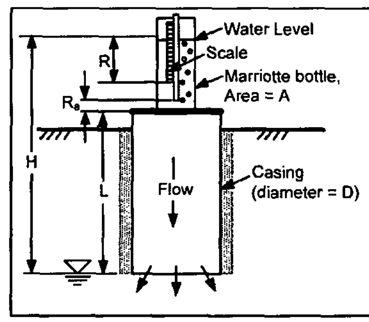
Project:	Boardman	**Installer:**	XW
Date:	08/20/07	**Analyst:**	CHB
Test ID:	TH-2		

Fixed Variables:

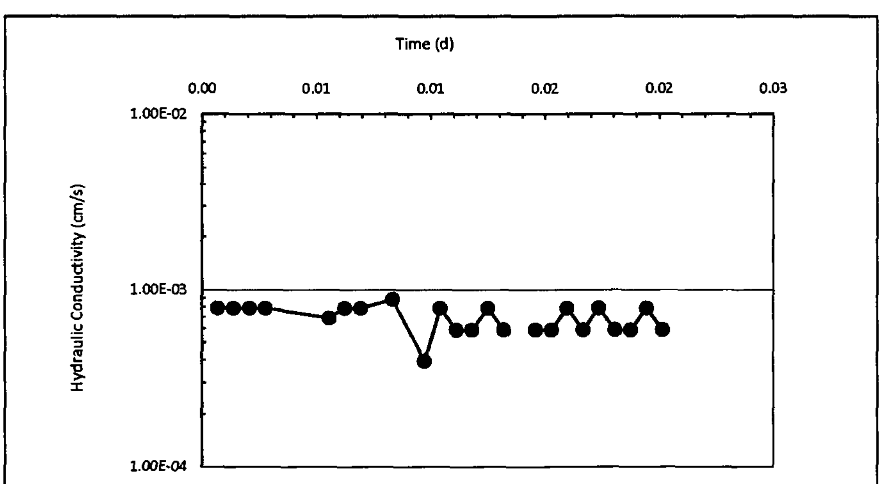
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
2:44:00	33.0			
2:45:00	35.0	2.66E+00	0.001	7.84E-04
2:46:00	37.0	2.66E+00	0.001	7.84E-04
2:47:00	39.0	2.66E+00	0.002	7.84E-04
2:48:00	41.0	2.66E+00	0.003	7.84E-04
2:52:00	48.0	2.33E+00	0.006	6.86E-04
2:53:00	50.0	2.66E+00	0.006	7.84E-04
2:54:00	52.0	2.66E+00	0.007	7.84E-04
2:56:00	56.5	2.99E+00	0.008	8.82E-04
2:58:00	58.5	1.33E+00	0.010	3.92E-04
2:59:00	60.5	2.66E+00	0.010	7.84E-04
3:00:00	62.0	2.00E+00	0.011	5.88E-04
3:01:00	63.5	2.00E+00	0.012	5.88E-04
3:02:00	65.5	2.66E+00	0.013	7.84E-04
3:03:00	67.0	2.00E+00	0.013	5.88E-04
3:04:00	69.0	2.66E+00	0.014	
3:05:00	70.5	2.00E+00	0.015	5.88E-04
3:06:00	72.0	2.00E+00	0.015	5.88E-04
3:07:00	74.0	2.66E+00	0.016	7.84E-04
3:08:00	75.5	2.00E+00	0.017	5.88E-04
3:09:00	77.5	2.66E+00	0.017	7.84E-04
3:10:00	79.0	2.00E+00	0.018	5.88E-04
3:11:00	80.5	2.00E+00	0.019	5.88E-04
3:12:00	82.5	2.66E+00	0.019	7.84E-04
3:13:00	84.0	2.00E+00	0.020	5.88E-04



AVG
6.53E-04



Single-Stage Constant Head Borehole Test - Boardman - Thin Store-and-Release Cover

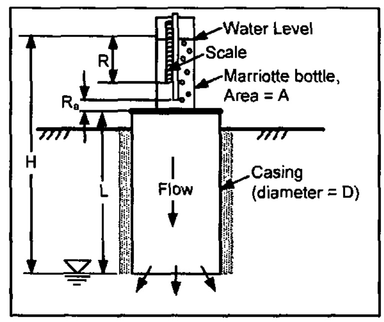
Project: Boardman **Installer:** XW
Date: 08/20/07 **Analyst:** CHB
Test ID: TH-3

Fixed Variables:

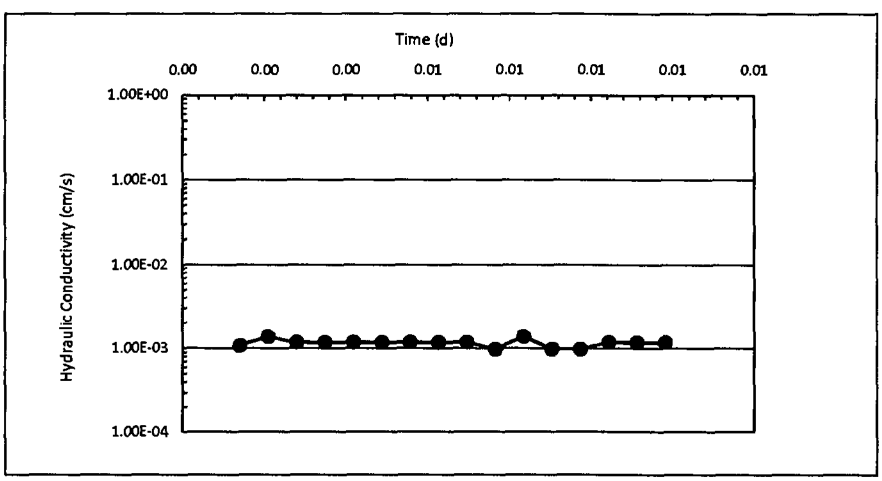
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
2:56:00	34.0			
2:58:00	39.5	3.66E+00	0.001	1.08E-03
2:59:00	43.0	4.66E+00	0.002	1.37E-03
3:00:00	46.0	3.99E+00	0.003	1.18E-03
3:01:00	49.0	3.99E+00	0.003	1.18E-03
3:02:00	52.0	3.99E+00	0.004	1.18E-03
3:03:00	55.0	3.99E+00	0.005	1.18E-03
3:04:00	58.0	3.99E+00	0.006	1.18E-03
3:05:00	61.0	3.99E+00	0.006	1.18E-03
3:06:00	64.0	3.99E+00	0.007	1.18E-03
3:07:00	66.5	3.33E+00	0.008	9.80E-04
3:08:00	70.0	4.66E+00	0.008	1.37E-03
3:09:00	72.5	3.33E+00	0.009	9.80E-04
3:10:00	75.0	3.33E+00	0.010	9.80E-04
3:11:00	78.0	3.99E+00	0.010	1.18E-03
3:12:00	81.0	3.99E+00	0.011	1.18E-03
3:13:00	84.0	3.99E+00	0.012	1.18E-03



AVG
1.18E-03

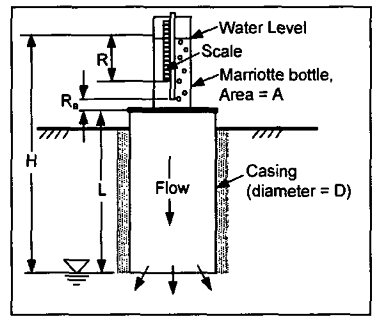


Single-Stage Constant Head Borehole Test - Boardman - Thin Store-and-Release Cover

Project: Boardman **Installer:** XW
Date: 08/20/07 **Analyst:** CHB
Test ID: TH-4

Fixed Variables:

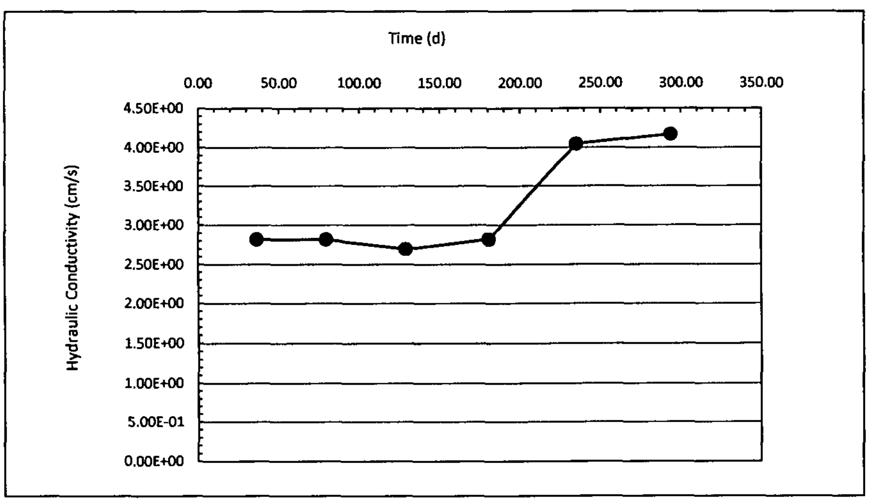
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96



Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:22:00	32.7			
14:24:00	36.5	1.68E+04	36.5	2.82E+00
14:29:00	43.1	1.68E+04	79.6	2.82E+00
14:34:00	49.4	1.60E+04	129	2.70E+00
14:36:00	51.7	1.68E+04	180.7	2.82E+00
14:38:00	54.1	2.41E+04	234.8	4.05E+00
14:42:00	58.7	2.48E+04	293.5	4.17E+00

AVG
2.79E+00



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 1

Test ID:	TK-1	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = 8.12E-07 8.12E-05

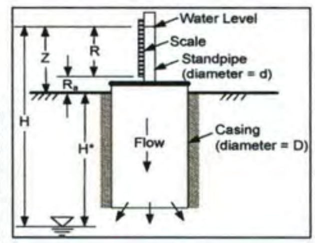
Total Time (d) = 0.07 1.7 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	1/1/00 10:58:30

FITTED VARIABLES

a (s^{-1}) =	0.0000839
H* (m) =	0.49
H_o (m) =	0.82
MSE (m^2) =	1.33E-06
Bias (m) =	-3.34E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/1/1900 9:17:17	33
1/1/1900 9:22:30	30.9
1/1/1900 9:27:30	28.9
1/1/1900 9:32:30	26.9
1/1/1900 9:37:30	25
1/1/1900 9:42:30	23.1
1/1/1900 9:47:30	21.2
1/1/1900 9:52:30	19.6
1/1/1900 9:57:30	17.8
1/1/1900 10:02:30	16.2
1/1/1900 10:07:30	14.6
1/1/1900 10:12:30	13.1
1/1/1900 10:18:30	11.2
1/1/1900 10:28:30	8.5
1/1/1900 10:38:30	5.6
1/1/1900 10:48:30	2.7
1/1/1900 10:58:30	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.33	0.00	0.329	-9.01E-04	8.11E-07
0.31	313	0.308	-1.11E-03	1.23E-06
0.29	613	0.288	-9.24E-04	8.53E-07
0.27	913	0.269	-2.44E-04	5.94E-08
0.25	1213	0.250	-8.34E-05	6.96E-09
0.23	1513	0.232	5.45E-04	2.98E-07
0.21	1813	0.214	1.63E-03	2.66E-06
0.20	2113	0.196	1.62E-04	2.64E-08
0.18	2413	0.179	1.13E-03	1.27E-06
0.16	2713	0.163	5.17E-04	2.68E-07
0.15	3013	0.146	3.20E-04	1.02E-07
0.13	3313	0.131	-4.75E-04	2.26E-07
0.11	3673	0.112	8.86E-05	7.86E-09
0.09	4273	0.083	-2.43E-03	5.89E-06
0.06	4873	0.055	-1.49E-03	2.23E-06
0.03	5473	0.028	8.20E-04	6.73E-07
0.00	6073	0.002	2.44E-03	5.97E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

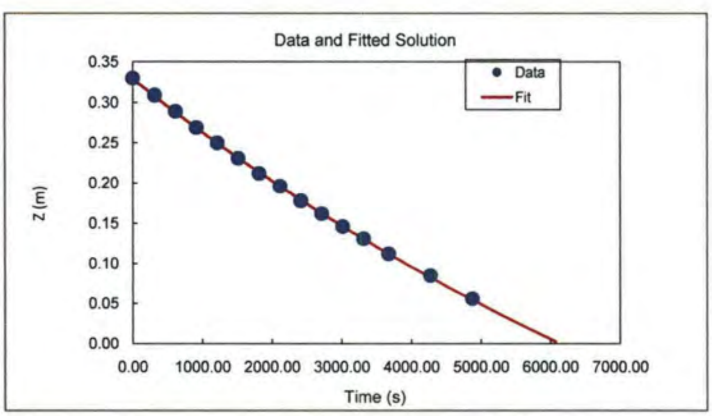
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.329
304	0.309
607	0.288
911	0.269
1215	0.250
1518	0.231
1822	0.213
2126	0.195
2429	0.178
2733	0.161
3037	0.145
3340	0.129
3644	0.114
3947	0.098
4251	0.084
4555	0.069
4858	0.055
5162	0.041
5466	0.028
5769	0.015
6073	0.002

Δt (s) = 304



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

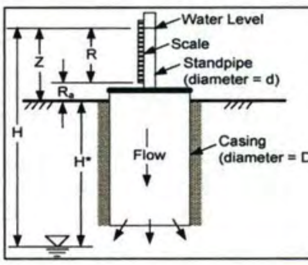
TRIAL 1

Test ID: TK-2 **Installer:** XW
Project: Boardman **Analyst:** CHB

SOLUTION -TRIAL 1

K (m/s) = 4.58E-05

Total Time (d) = 0.00 0.0 hrs



FIXED VARIABLES

d (cm) = 10.16
D (cm) = 30.48
R_a (cm) = 0
Final Time: 1/0/00 9:14:37

FITTED VARIABLES

a (s^{-1}) = 0.0047384
H* (m) = 0.92
H_o (m) = 1.50
MSE (m^2) = 7.78E-06
Bias (m) = -6.04E-08

TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/00 9:12:54	58
1/0/00 9:13:02	53
1/0/00 9:13:07	49
1/0/00 9:13:13	45
1/0/00 9:13:21	40
1/0/00 9:13:30	35
1/0/00 9:13:38	30
1/0/00 9:13:47	25
1/0/00 9:13:55	20
1/0/00 9:14:05	15
1/0/00 9:14:15	10
1/0/00 9:14:27	5
1/0/00 9:14:37	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε^2 (m)
0.58	0.00	0.582	1.76E-03	3.10E-06
0.53	8	0.526	-4.19E-03	1.76E-05
0.49	13	0.492	1.90E-03	3.59E-06
0.45	19	0.452	2.25E-03	5.06E-06
0.40	27	0.401	1.11E-03	1.24E-06
0.35	36	0.346	-4.15E-03	1.72E-05
0.30	44	0.299	-1.33E-03	1.76E-06
0.25	53	0.248	-2.31E-03	5.34E-06
0.20	61	0.204	4.16E-03	1.73E-05
0.15	71	0.152	2.02E-03	4.08E-06
0.10	81	0.102	2.29E-03	5.25E-06
0.05	93	0.046	-4.35E-03	1.89E-05
0.00	103	0.001	8.42E-04	7.10E-07

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

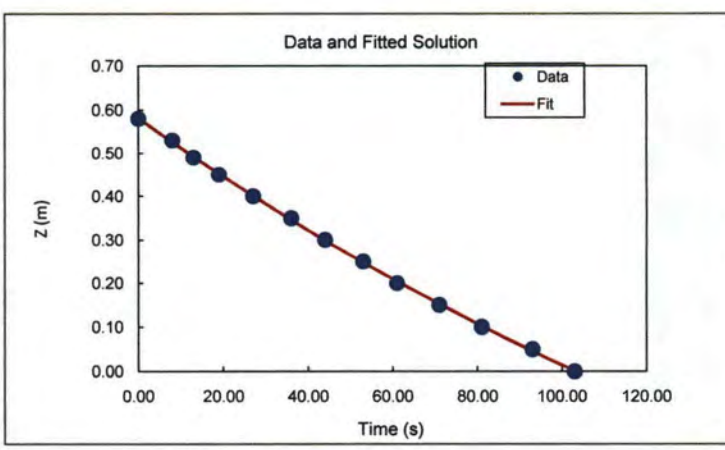
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.582
5	0.545
10	0.510
15	0.476
21	0.442
26	0.409
31	0.377
36	0.346
41	0.315
46	0.285
51	0.256
57	0.228
62	0.200
67	0.173
72	0.146
77	0.121
82	0.096
88	0.071
93	0.047
98	0.024
103	0.001

Δt (s) = 5



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 2

Test ID:	TK-2	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = 1.48E-03

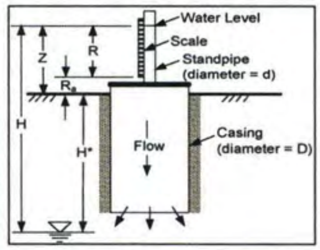
Total Time (d) = 0.00 0.0 hrs

FIXED VARIABLES

d (cm) =	30.48
D (cm) =	10.16
R_a (cm) =	0
Final Time:	1/0/1900 9:16:23

FITTED VARIABLES

a (s^{-1}) =	0.0056544
H* (m) =	0.93
H_o (m) =	1.53
MSE (m^2) =	4.41E-06
Bias (m) =	2.30E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/1900 9:15:08	60
1/0/1900 9:15:14	55
1/0/1900 9:15:20	50
1/0/1900 9:15:26	45
1/0/1900 9:15:33	40
1/0/1900 9:15:40	35
1/0/1900 9:15:46	30
1/0/1900 9:15:54	25
1/0/1900 9:15:59	20
1/0/1900 9:16:08	15
1/0/1900 9:16:16	10
1/0/1900 9:16:23	5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.60	0	0.600	4.65E-04	2.16E-07
0.55	6	0.549	-6.84E-04	4.68E-07
0.50	12	0.500	-1.27E-04	1.62E-08
0.45	18	0.452	2.08E-03	4.32E-06
0.40	25	0.398	-1.67E-03	2.78E-06
0.35	32	0.347	-3.33E-03	1.11E-05
0.30	38	0.304	3.99E-03	1.59E-05
0.25	46	0.249	-7.18E-04	5.16E-07
0.20	51	0.216	1.63E-02	2.67E-04
0.15	60	0.159	9.31E-03	8.66E-05
0.10	68	0.111	1.10E-02	1.21E-04
0.05	75	0.070	2.05E-02	4.20E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

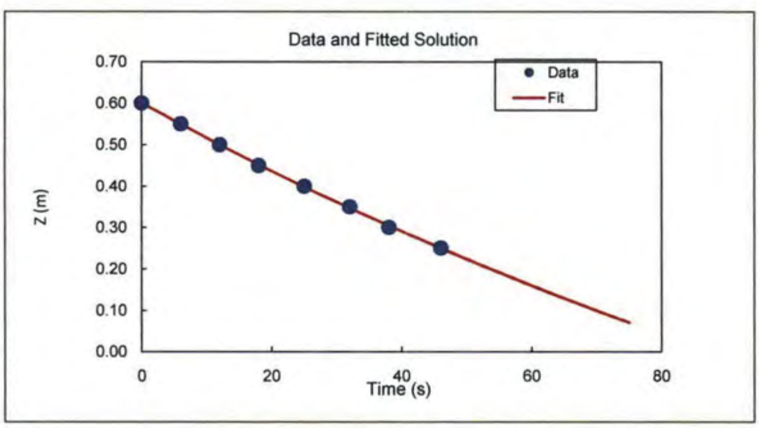
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.600
4	0.568
7	0.537
11	0.506
15	0.476
19	0.446
22	0.417
26	0.389
30	0.361
34	0.334
37	0.307
41	0.281
45	0.256
49	0.231
52	0.207
56	0.183
60	0.159
64	0.136
67	0.114
71	0.092
75	0.070

Δt (s) = 4



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 3

Test ID: TK-2 **Installer:** XW
Project: Boardman **Analyst:** CHB

SOLUTION -TRIAL 1

K (m/s) = 1.13E-04

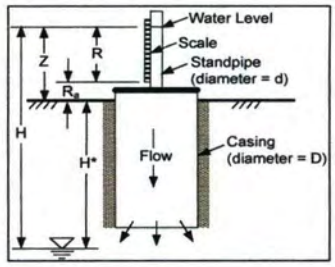
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) =	30.48
D (cm) =	30.48
R_a (cm) =	0
Final Time:	1/0/00 2:56

FITTED VARIABLES

a (s^{-1}) =	0.0012964
H* (m) =	0.05
H_o (m) =	0.35
MSE (m^2) =	6.46E-06
Bias (m) =	-1.33E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/00 2:32	30
1/0/00 2:34	25
1/0/00 2:36	20
1/0/00 2:39	15
1/0/00 2:43	10
1/0/00 2:48	5
1/0/00 2:56	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε^2 (m)
0.30	0	0.299	-1.16E-03	1.35E-06
0.25	120	0.248	-1.81E-03	3.28E-06
0.20	240	0.205	4.84E-03	2.34E-05
0.15	420	0.151	1.23E-03	1.52E-06
0.10	660	0.097	-3.30E-03	1.09E-05
0.05	960	0.049	-1.44E-03	2.08E-06
0.00	1440	0.002	1.64E-03	2.69E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

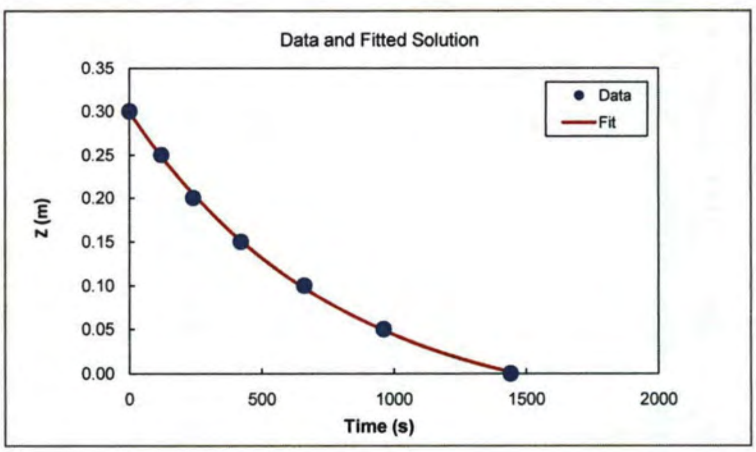
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.299
72	0.268
144	0.239
216	0.213
288	0.189
360	0.168
432	0.148
504	0.130
576	0.114
648	0.099
720	0.086
792	0.073
864	0.062
936	0.052
1008	0.042
1080	0.034
1152	0.026
1224	0.019
1296	0.013
1368	0.007
1440	0.002

Δt (s) = 72



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

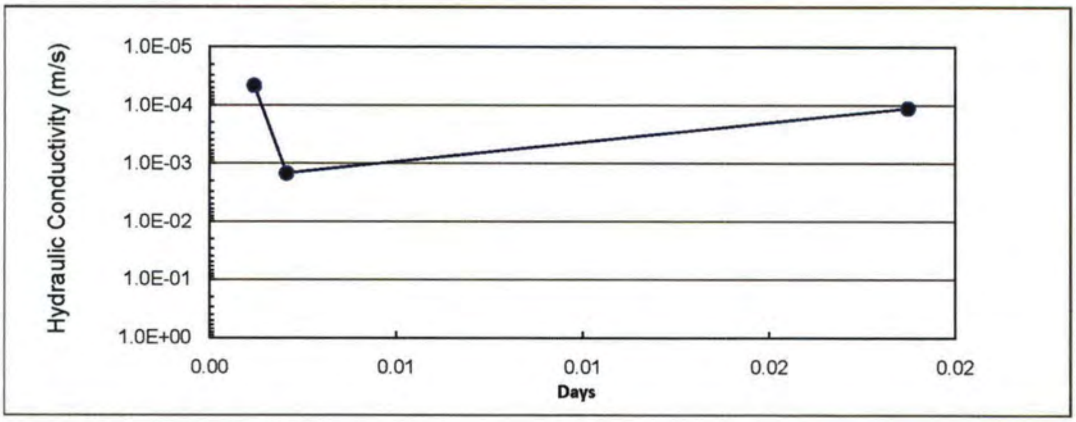
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.001	0.001	4.58E-05
2	0.001	0.002	1.48E-03
3	0.017	0.019	1.13E-04

TK-2

Field Hydraulic Conductivity

5.45E-04 m/s

5.45E-02 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 1

Test ID: TK-3 **Installer:** XW
Project: Boardman **Analyst:** CHB

SOLUTION -TRIAL 1

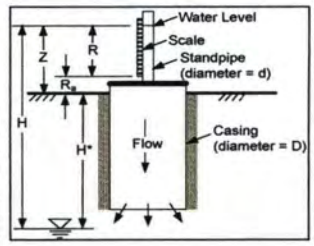
K (m/s) = 2.01E-07 2.01E-05
Total Time (d) = 0.08 2.0 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	1:58:05

FITTED VARIABLES

a (s^{-1}) =	0.0000208
H* (m) =	3.50
H_o (m) =	4.00
MSE (m^2) =	1.24E-04
Bias (m) =	-1.89E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
0:00:00	48.5
0:04:18	46.3
0:16:57	40.5
0:22:05	38.1
0:27:05	35.8
0:32:05	33.7
0:37:05	31.6
0:42:05	29.4
0:47:05	27.2
0:52:05	25.2
0:57:05	23.2
1:02:05	21.2
1:07:05	19.2
1:12:05	17.2
1:18:05	14.9
1:28:05	11.1
1:38:05	7.5
1:48:05	3.6
1:58:05	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.49	0.00	0.500	1.50E-02	2.25E-04
0.46	258	0.479	1.56E-02	2.43E-04
0.41	1017	0.416	1.13E-02	1.27E-04
0.38	1325	0.391	1.02E-02	1.05E-04
0.36	1625	0.367	9.03E-03	8.16E-05
0.34	1925	0.343	5.97E-03	3.57E-05
0.32	2225	0.319	3.06E-03	9.37E-06
0.29	2525	0.295	1.30E-03	1.69E-06
0.27	2825	0.272	-3.14E-04	9.84E-08
0.25	3125	0.248	-3.78E-03	1.43E-05
0.23	3425	0.225	-7.10E-03	5.04E-05
0.21	3725	0.202	-1.03E-02	1.06E-04
0.19	4025	0.179	-1.33E-02	1.77E-04
0.17	4325	0.156	-1.62E-02	2.62E-04
0.15	4685	0.129	-2.05E-02	4.19E-04
0.11	5285	0.084	-2.75E-02	7.56E-04
0.08	5885	0.039	-3.59E-02	1.29E-03
0.04	6485	-0.005	-4.08E-02	1.67E-03
0.00	7085	-0.048	-4.82E-02	2.32E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

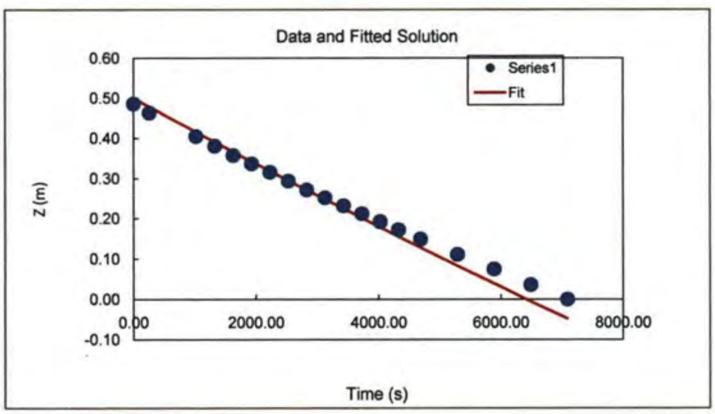
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.500
354	0.471
709	0.441
1063	0.413
1417	0.384
1771	0.355
2126	0.327
2480	0.299
2834	0.271
3188	0.243
3543	0.216
3897	0.189
4251	0.161
4605	0.135
4960	0.108
5314	0.081
5668	0.055
6022	0.029
6377	0.003
6731	-0.023
7085	-0.048

Δt (s) = 354



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 2

Test ID:	TK-3	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

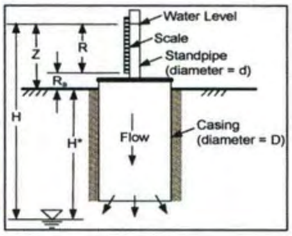
K (m/s) =	**4.61E-07**	4.61E-05
Total Time (d) =	0.04	1.0 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	3:12:30

FITTED VARIABLES

a (s^{-1}) =	0.0000477
H* (m) =	1.12
H_o (m) =	1.34
MSE (m^2) =	2.38E-06
Bias (m) =	6.37E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
2:11:00	21.7
2:45:45	9.3
3:12:30	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.22	0.00	0.218	8.45E-04	7.14E-07
0.09	2085	0.091	-2.16E-03	4.68E-06
0.00	3690	0.001	1.32E-03	1.74E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

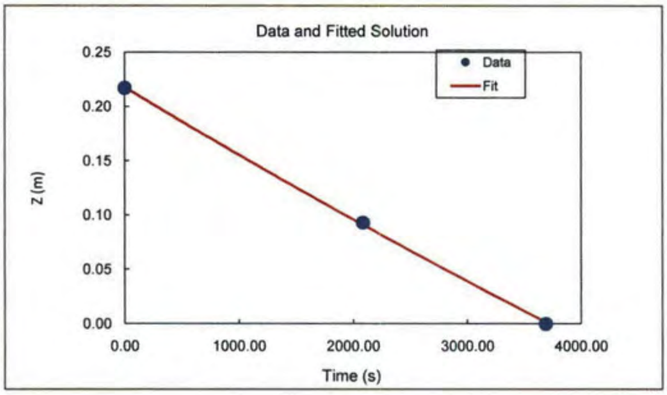
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.218
185	0.206
369	0.194
554	0.183
738	0.171
923	0.160
1107	0.149
1292	0.138
1476	0.127
1661	0.116
1845	0.105
2030	0.094
2214	0.083
2399	0.073
2583	0.062
2768	0.052
2952	0.042
3137	0.031
3321	0.021
3506	0.011
3690	0.001

Δt (s) = 185



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

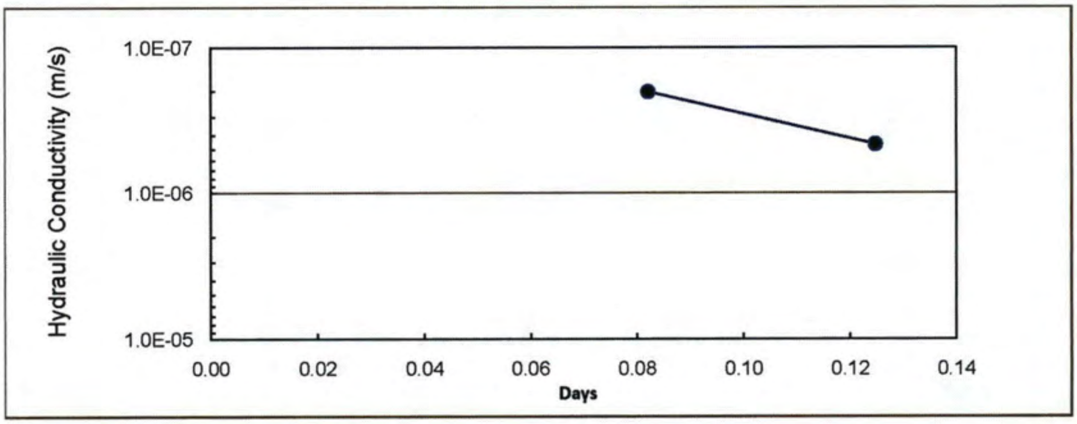
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.082	0.082	2.01E-07
2	0.043	0.125	4.61E-07

TK-3

Field Hydraulic Conductivity

3.31E-07 m/s

3.31E-05 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 1

Test ID:	TK-4	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = **1.23E-06** 1.23E-04

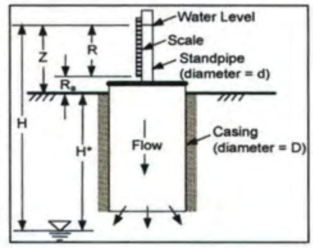
Total Time (d) = 0.01 0.3 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	1:03:00

FITTED VARIABLES

a (s^{-1}) =	0.0001269
H* (m) =	4.08
H_o (m) =	4.57
MSE (m^2) =	8.45E-07
Bias (m) =	3.08E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
0:48:00	49.5
0:49:00	46.1
0:50:30	40.7
0:51:30	37.4
0:53:30	30.7
0:55:30	24.1
0:56:30	20.8
0:58:00	15.9
0:59:30	11.3
1:01:00	6.5
1:03:00	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.50	0.00	0.495	-3.87E-04	1.50E-07
0.46	60	0.460	-1.05E-03	1.11E-06
0.41	150	0.408	1.44E-03	2.07E-06
0.37	210	0.374	4.28E-04	1.83E-07
0.31	330	0.307	1.75E-04	3.07E-08
0.24	450	0.241	-6.08E-05	3.69E-09
0.21	510	0.208	1.98E-04	3.90E-08
0.16	600	0.160	5.50E-04	3.03E-07
0.11	690	0.111	-1.54E-03	2.39E-06
0.07	780	0.064	-1.09E-03	1.20E-06
0.00	900	0.001	1.35E-03	1.82E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

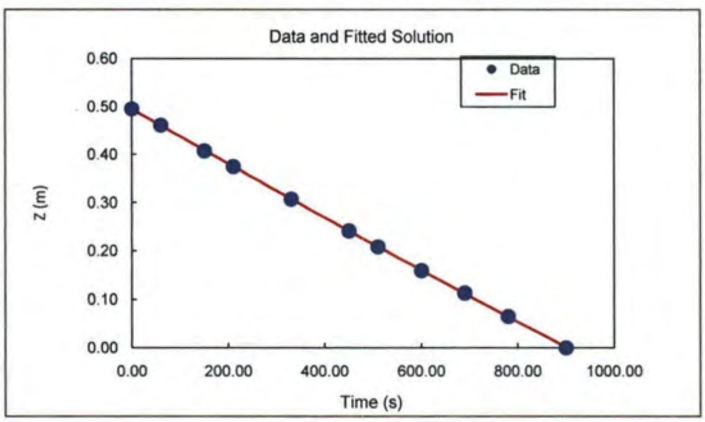
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.495
45	0.469
90	0.443
135	0.417
180	0.391
225	0.366
270	0.341
315	0.316
360	0.291
405	0.266
450	0.241
495	0.216
540	0.192
585	0.168
630	0.143
675	0.119
720	0.096
765	0.072
810	0.048
855	0.025
900	0.001

Δt (s) = 45



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 2

Test ID:	TK-4	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

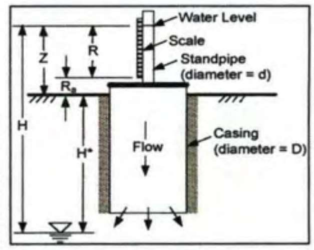
K (m/s) =	**1.71E-06**	1.71E-04
Total Time (d) =	0.02	0.5 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	1:36:00

FITTED VARIABLES

a (s^{-1}) =	0.0001768
H* (m) =	1.56
H_o (m) =	2.14
MSE (m^2) =	6.77E-06
Bias (m) =	2.50E-10



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1:06:15	58.1
1:08:00	54
1:10:00	49.2
1:13:00	42.7
1:19:30	29.7
1:21:30	25.9
1:25:30	18.6
1:29:00	12.2
1:32:00	6.2
1:36:00	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.58	0.00	0.578	-2.78E-03	7.75E-06
0.54	105	0.539	-1.15E-03	1.32E-06
0.49	225	0.495	2.75E-03	7.55E-06
0.43	405	0.430	3.32E-03	1.10E-05
0.30	795	0.298	5.69E-04	3.24E-07
0.26	915	0.259	-4.70E-04	2.21E-07
0.19	1155	0.183	-3.11E-03	9.66E-06
0.12	1365	0.119	-2.71E-03	7.34E-06
0.06	1545	0.067	4.62E-03	2.14E-05
0.00	1785	-0.001	-1.04E-03	1.09E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

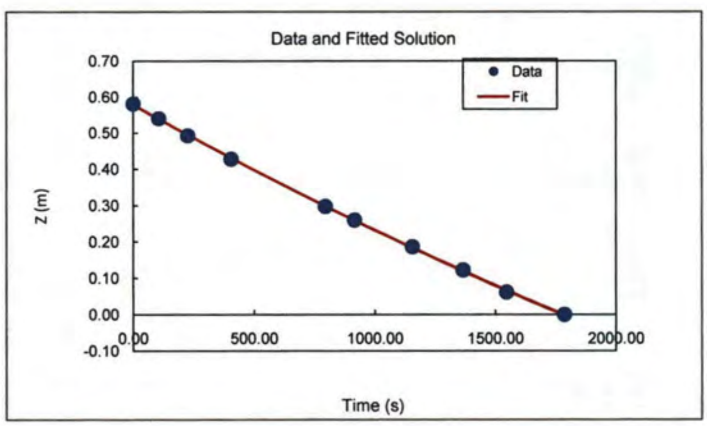
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.578
89	0.545
179	0.512
268	0.479
357	0.447
446	0.416
536	0.385
625	0.354
714	0.324
803	0.295
893	0.266
982	0.237
1071	0.209
1160	0.181
1250	0.154
1339	0.127
1428	0.101
1517	0.075
1607	0.049
1696	0.024
1785	-0.001

Δt (s) = 89



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

TRIAL 3

Test ID:	TK-4	**Installer:**	XW
Project:	Boardman	**Analyst:**	CHB

SOLUTION -TRIAL 1

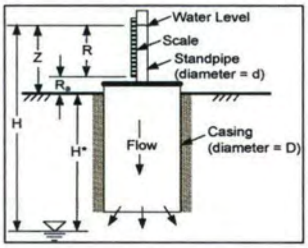
K (m/s) =	5.75E-07	5.75E-05	
Total Time (d) =	0.03		0.6 hrs

FIXED VARIABLES

d (cm) =	10.16
D (cm) =	30.48
R_a (cm) =	0
Final Time:	2:17:30

FITTED VARIABLES

a (s^{-1}) =	0.0000595
H* (m) =	4.49
H_o (m) =	5.13
MSE (m^2) =	2.02E-06
Bias (m) =	2.40E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1:40:30	63.8
1:46:00	53.6
1:51:00	44.8
1:56:00	36
2:02:30	25
2:10:00	12.1
2:17:30	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.64	0.00	0.636	-2.00E-03	4.01E-06
0.54	330	0.536	2.87E-04	8.25E-08
0.45	630	0.447	-6.75E-04	4.56E-07
0.36	930	0.360	-6.39E-05	4.08E-09
0.25	1320	0.249	-1.36E-03	1.86E-06
0.12	1770	0.123	2.38E-03	5.68E-06
0.00	2220	0.001	1.44E-03	2.06E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

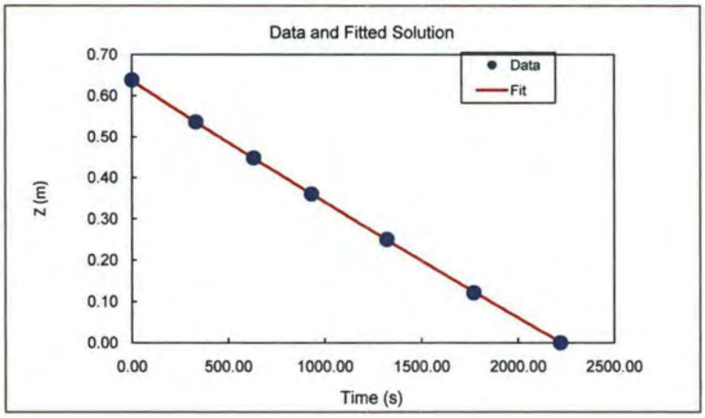
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.636
111	0.602
222	0.569
333	0.535
444	0.502
555	0.469
666	0.437
777	0.404
888	0.372
999	0.340
1110	0.308
1221	0.277
1332	0.245
1443	0.214
1554	0.183
1665	0.152
1776	0.122
1887	0.091
1998	0.061
2109	0.031
2220	0.001

Δt (s) = 111



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Boardman - Thick Store-and-Release Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

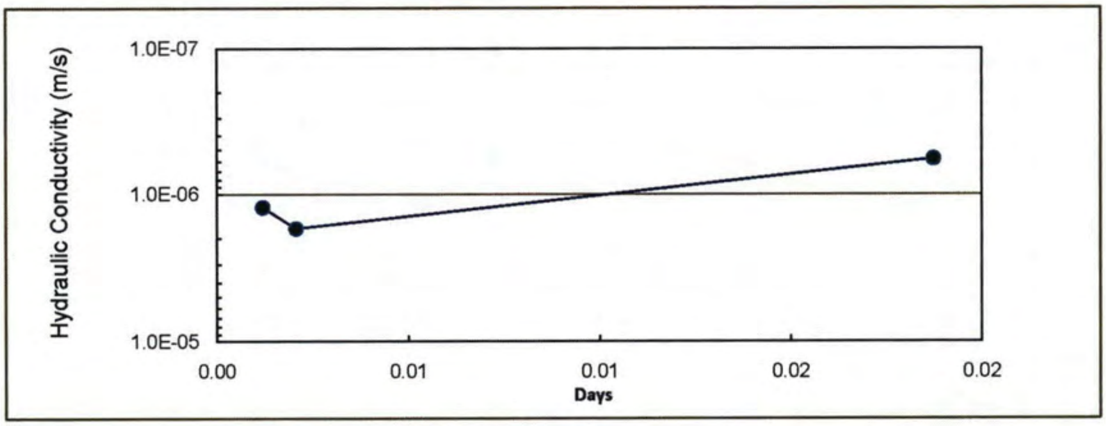
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.001	0.001	1.23E-06
2	0.001	0.002	1.71E-06
3	0.017	0.019	5.75E-07

TK-4

Field Hydraulic Conductivity

1.17E-06 m/s

1.17E-04 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 1

Test ID: TSB CR Clay1-NW **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

SOLUTION -TRIAL 1

K (m/s) = 1.86E-09

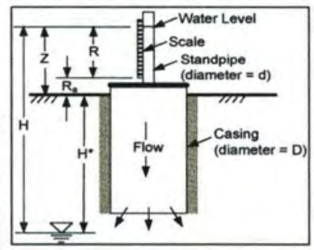
Total Time (d) = 0.25 6.0 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_e (cm) = 44.45
Final Time: 16:42:00

FITTED VARIABLES

a (s^{-1}) = 0.0000053
H* (m) = 0.60
H_o (m) = 1.48
MSE (m^2) = 3.73E-04
Bias (m) = 1.29E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:41:26	46.8
10:55:11	44.7
11:05:00	41.8
11:48:21	39.4
12:58:00	34.7
13:41:45	32.3
14:03:00	36
15:11:00	32.3
15:27:00	31
16:42:00	29.4

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.91	0.00	0.883	-2.94E-02	8.64E-04
0.89	825	0.877	-1.49E-02	2.22E-04
0.86	1414	0.872	9.46E-03	8.94E-05
0.84	4015	0.852	1.32E-02	1.74E-04
0.79	8194	0.820	2.82E-02	7.94E-04
0.77	10819	0.800	3.24E-02	1.05E-03
0.80	12094	0.790	-1.40E-02	1.97E-04
0.77	16174	0.761	-6.97E-03	4.86E-05
0.75	17134	0.754	-9.17E-04	8.41E-07
0.74	21634	0.721	-1.70E-02	2.89E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

$$Z_t = H_o e^{-at} - H^*$$

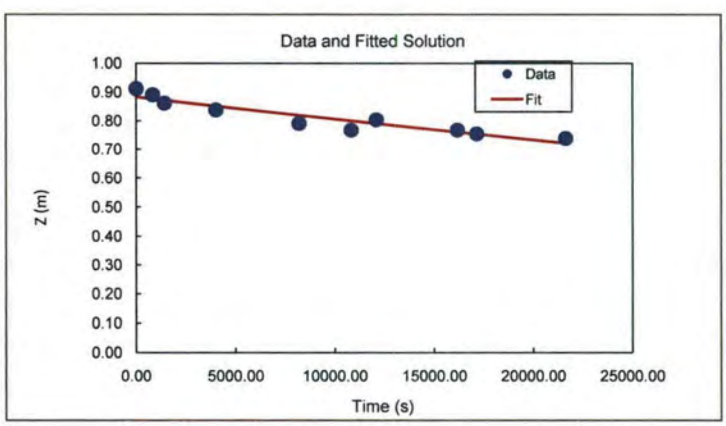
$$K = \frac{a \pi d^2}{11 D}$$

9:16:16

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.883
1082	0.875
2163	0.866
3245	0.858
4327	0.849
5409	0.841
6490	0.833
7572	0.824
8654	0.816
9735	0.808
10817	0.800
11899	0.792
12980	0.784
14062	0.776
15144	0.768
16226	0.760
17307	0.752
18389	0.745
19471	0.737
20552	0.729
21634	0.721

Δt (s) = 1082



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 2

Test ID: Clay1-NW **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

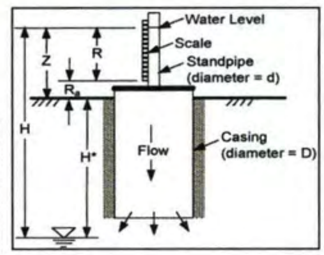
SOLUTION -TRIAL 1
K (m/s) = 4.08E-09
Total Time (d) = 0.19 4.5 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_a (cm) =	44.45
Final Time:	13:46:20

FITTED VARIABLES

a (s^{-1}) =	0.0000117
H* (m) =	0.00
H_o (m) =	1.31
MSE (m^2) =	3.30E-04
Bias (m) =	-9.28E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
9:18:45	90.5
9:26:45	87.1
9:43:00	84.1
9:52:30	82.3
10:23:30	78.6
11:04:20	75.8
11:50:26	72.8
12:53:33	68.5
13:46:20	66.3

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.35	0	1.313	-3.66E-02	1.34E-03
1.32	480	1.306	-9.96E-03	9.92E-05
1.29	1455	1.291	5.19E-03	2.69E-05
1.27	2025	1.282	1.46E-02	2.13E-04
1.23	3885	1.254	2.39E-02	5.71E-04
1.20	6335	1.219	1.64E-02	2.67E-04
1.17	9101	1.180	7.42E-03	5.51E-05
1.13	12888	1.129	-8.63E-04	7.45E-07
1.11	16055	1.087	-2.00E-02	4.02E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

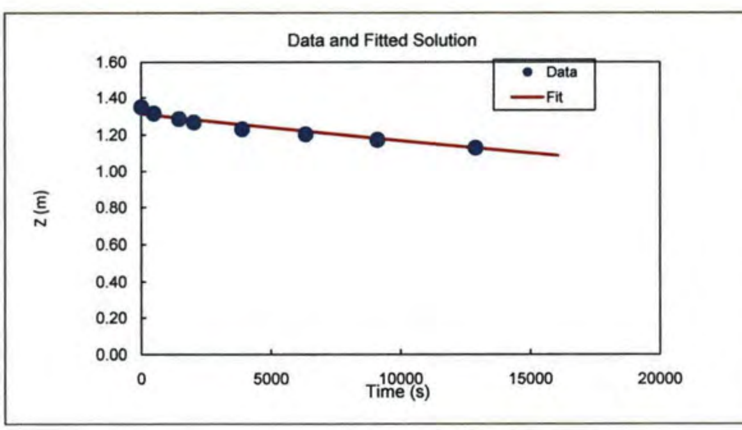
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.313
803	1.301
1606	1.288
2408	1.276
3211	1.264
4014	1.253
4817	1.241
5619	1.229
6422	1.218
7225	1.206
8028	1.195
8830	1.184
9633	1.173
10436	1.162
11239	1.151
12041	1.140
12844	1.129
13647	1.119
14450	1.108
15252	1.098
16055	1.087

Δt (s) = 803



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

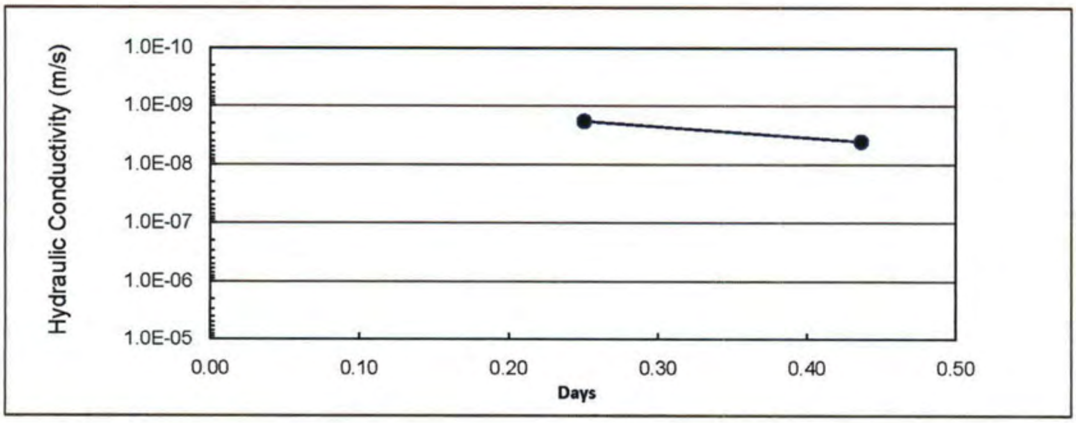
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.250	0.250	1.86E-09
2	0.186	0.436	4.08E-09

Clay1 - NW

Field Hydraulic Conductivity

2.97E-09 m/s

2.97E-07 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 1

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

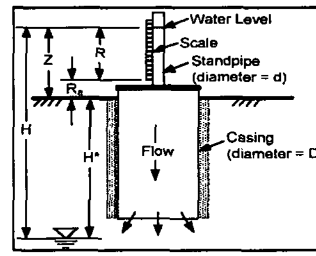
SOLUTION -TRIAL 1
K (m/s) = 1.23E-08
Total Time (d) = 0.14 3.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	44.45
Final Time:	14:03:00

FITTED VARIABLES

a (s^{-1}) =	0.0000355
H* (m) =	0.00
H_o (m) =	1.06
MSE (m^2) =	1.62E-03
Bias (m) =	-1.26E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:44:20	69.0
10:44:47	67.0
10:47:00	64.0
10:50:00	61.9
10:53:30	59.7
10:57:00	57.5
11:00:02	55.5
11:04:12	53.0
11:09:45	51.0
11:19:20	48.8
11:33:47	46.2
11:48:50	43.5
12:11:50	40.0
12:33:00	37.8
12:58:30	35.0
13:30:00	31.2
14:03:00	31.6

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.13	0	1.055	-7.90E-02	6.25E-03
1.11	27	1.054	-6.01E-02	3.61E-03
1.08	160	1.049	-3.50E-02	1.23E-03
1.06	340	1.043	-2.07E-02	4.30E-04
1.04	550	1.035	-6.48E-03	4.20E-05
1.02	760	1.027	7.82E-03	6.11E-05
1.00	942	1.021	2.12E-02	4.49E-04
0.97	1192	1.012	3.72E-02	1.38E-03
0.95	1525	1.000	4.53E-02	2.05E-03
0.93	2100	0.980	4.70E-02	2.21E-03
0.91	2967	0.950	4.33E-02	1.87E-03
0.88	3870	0.920	4.03E-02	1.62E-03
0.84	5250	0.876	3.13E-02	9.77E-04
0.82	6520	0.837	1.46E-02	2.13E-04
0.79	8050	0.793	-1.72E-03	2.94E-06
0.76	9940	0.741	-1.52E-02	2.32E-04
0.76	11920	0.691	-6.96E-02	4.85E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

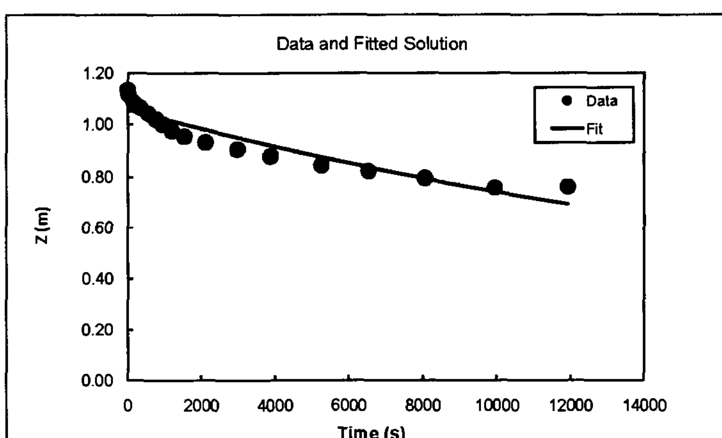
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.055
596	1.033
1192	1.012
1788	0.990
2384	0.970
2980	0.949
3576	0.929
4172	0.910
4768	0.891
5364	0.872
5960	0.854
6556	0.836
7152	0.819
7748	0.801
8344	0.785
8940	0.768
9536	0.752
10132	0.736
10728	0.721
11324	0.706
11920	0.691

Δt (s) = 596



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 2

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

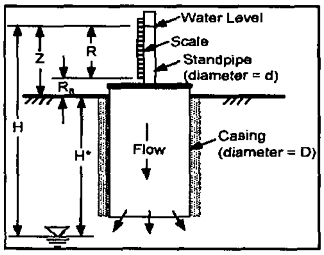
SOLUTION -TRIAL 1
K (m/s) = 8.96E-08
Total Time (d) = 0.04 1.0 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 44.45
Final Time: 9:37:50

FITTED VARIABLES

a (s^{-1}) = 0.0002579
H* (m) = 0.00
H_0 (m) = 1.01
MSE (m^2) = 9.78E-04
Bias (m) = 2.80E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
8:39:40	61.6
8:40:40	59.0
8:41:41	56.0
8:43:06	52.5
8:44:35	49.0
8:45:30	47.0
8:47:52	42.5
8:50:00	39.0
8:53:55	33.0
8:56:30	29.6
8:59:59	25.6
9:02:40	23.0
9:06:20	19.5
9:09:53	16.7
9:15:00	13.6
9:20:36	10.5
9:24:28	8.5
9:30:30	5.4
9:37:50	2.7

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.06	0	1.011	-4.97E-02	2.47E-03
1.03	60	0.995	-3.92E-02	1.54E-03
1.00	121	0.980	-2.48E-02	6.14E-04
0.97	206	0.958	-1.10E-02	1.21E-04
0.93	295	0.937	2.23E-03	4.98E-06
0.91	350	0.924	9.04E-03	8.17E-05
0.87	492	0.890	2.08E-02	4.34E-04
0.83	620	0.861	2.69E-02	7.24E-04
0.77	855	0.811	3.63E-02	1.31E-03
0.74	1010	0.779	3.85E-02	1.48E-03
0.70	1219	0.738	3.76E-02	1.41E-03
0.67	1380	0.708	3.36E-02	1.13E-03
0.64	1600	0.669	2.95E-02	8.71E-04
0.61	1813	0.633	2.18E-02	4.73E-04
0.58	2120	0.585	4.55E-03	2.07E-05
0.55	2456	0.536	-1.30E-02	1.69E-04
0.53	2688	0.505	-2.42E-02	5.84E-04
0.50	3050	0.460	-3.82E-02	1.46E-03
0.47	3490	0.411	-6.06E-02	3.67E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

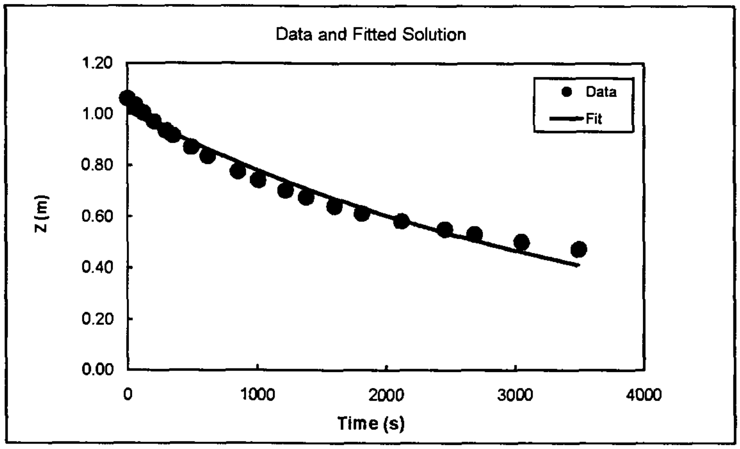
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.011
175	0.966
349	0.924
524	0.883
698	0.844
873	0.807
1047	0.772
1222	0.738
1396	0.705
1571	0.674
1745	0.644
1920	0.616
2094	0.589
2269	0.563
2443	0.538
2618	0.515
2792	0.492
2967	0.470
3141	0.450
3316	0.430
3490	0.411

Δt (s) = 175



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 3

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids ***Analyst:*** CHB

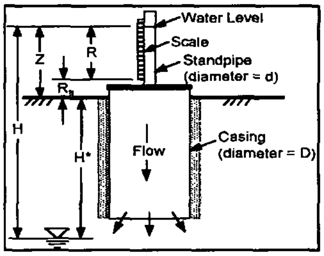
SOLUTION -TRIAL 1
K (m/s) = 9.76E-08
Total Time (d) = 0.02 0.5 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 44.45
Final Time: 10:18:14

FITTED VARIABLES

a (s^{-1}) = 0.0002809
H* (m) = 0.00
H_o (m) = 0.87
MSE (m^2) = 1.47E-04
Bias (m) = 2.70E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
9:45:20	44.4
9:47:43	39.6
9:49:30	36.0
9:51:40	32.5
9:56:50	25.0
10:09:41	13.0
10:16:40	7.5
10:18:14	6.4

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.89	0	0.869	-1.93E-02	3.73E-04
0.84	143	0.835	-5.54E-03	3.07E-05
0.80	250	0.810	5.74E-03	3.29E-05
0.77	380	0.781	1.17E-02	1.36E-04
0.69	690	0.716	2.15E-02	4.64E-04
0.57	1461	0.577	2.10E-03	4.42E-06
0.52	1880	0.513	-6.92E-03	4.79E-05
0.51	1974	0.499	-9.28E-03	8.61E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

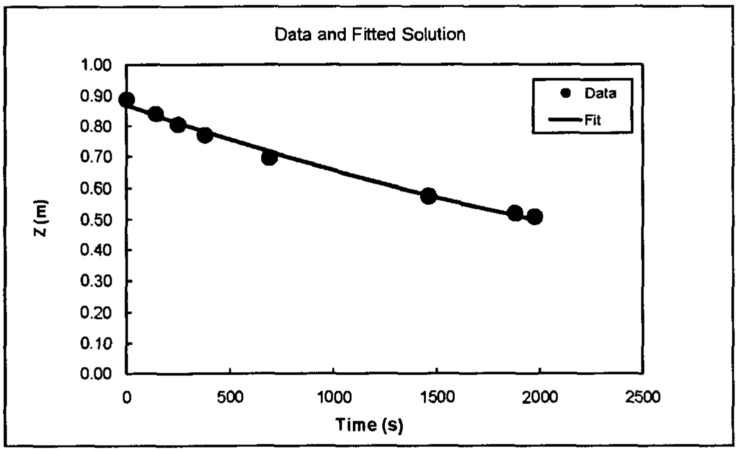
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.869
99	0.845
197	0.822
296	0.800
395	0.778
493	0.757
592	0.736
691	0.716
790	0.696
888	0.677
987	0.659
1086	0.641
1184	0.623
1283	0.606
1382	0.590
1481	0.573
1579	0.558
1678	0.543
1777	0.528
1875	0.513
1974	0.499

Δt (s) = 99



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 4

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

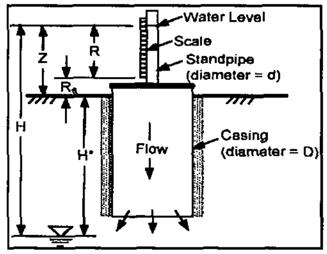
SOLUTION -TRIAL 1
K (m/s) = 1.34E-07
Total Time (d) = 0.03 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 44.45
Final Time: 10:55:55

FITTED VARIABLES

a (s^{-1}) = 0.0003852
H* (m) = 0.00
H_o (m) = 0.98
MSE (m^2) = 2.92E-04
Bias (m) = -8.62E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:19:55	56.0
10:21:42	50.0
10:24:00	43.5
10:26:30	37.5
10:29:20	32.0
10:33:19	26.0
10:42:15	14.5
10:49:50	6.5
10:55:55	2.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.00	0	0.977	-2.78E-02	7.72E-04
0.94	107	0.937	-7.23E-03	5.23E-05
0.88	245	0.889	9.25E-03	8.56E-05
0.82	395	0.839	1.94E-02	3.75E-04
0.76	565	0.786	2.12E-02	4.49E-04
0.70	804	0.717	1.21E-02	1.46E-04
0.59	1340	0.583	-6.58E-03	4.33E-05
0.51	1795	0.489	-2.03E-02	4.12E-04
0.46	2160	0.425	-3.95E-02	1.56E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

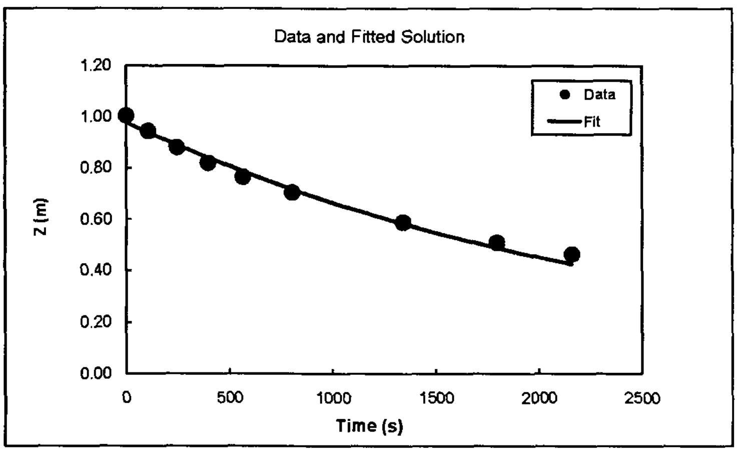
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.977
108	0.937
216	0.899
324	0.862
432	0.827
540	0.793
648	0.761
756	0.730
864	0.700
972	0.672
1080	0.644
1188	0.618
1296	0.593
1404	0.569
1512	0.546
1620	0.523
1728	0.502
1836	0.482
1944	0.462
2052	0.443
2160	0.425

Δt (s) = 108



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 5

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

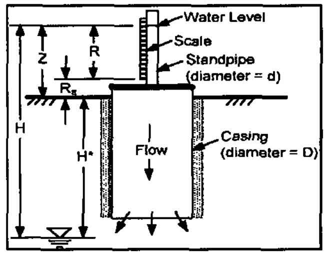
SOLUTION -TRIAL 1
K (m/s) = 1.13E-07
Total Time (d) = 0.03 0.8 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	44.45
Final Time:	11:41:50

FITTED VARIABLES

a (s^{-1}) =	0.0003250
H* (m) =	0.00
H_o (m) =	1.03
MSE (m^2) =	7.45E-04
Bias (m) =	8.53E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:56:23	63.0
10:57:20	59.0
10:59:00	54.0
11:01:55	46.5
11:06:30	37.0
11:10:23	31.0
11:14:45	24.3
11:21:40	17.0
11:29:46	10.0
11:36:46	5.0
11:41:50	2.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.07	0	1.033	-4.15E-02	1.72E-03
1.03	57	1.014	-2.05E-02	4.20E-04
0.98	157	0.982	-2.92E-03	8.50E-06
0.91	332	0.927	1.78E-02	3.17E-04
0.81	607	0.848	3.35E-02	1.12E-03
0.75	840	0.786	3.17E-02	1.00E-03
0.69	1102	0.722	3.45E-02	1.19E-03
0.61	1517	0.631	1.64E-02	2.69E-04
0.54	2003	0.539	-5.77E-03	3.33E-05
0.49	2423	0.470	-2.45E-02	6.01E-04
0.46	2727	0.426	-3.87E-02	1.50E-03

Chiasson Solution:

Chiasson, P. (2005), Method of *interpretation of borehole falling-head* tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

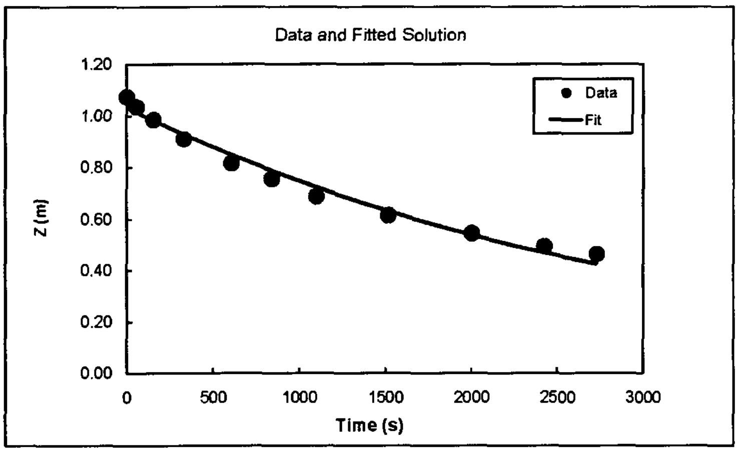
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.033
136	0.988
273	0.945
409	0.904
545	0.865
682	0.828
818	0.792
954	0.757
1091	0.725
1227	0.693
1364	0.663
1500	0.634
1636	0.607
1773	0.581
1909	0.555
2045	0.531
2182	0.508
2318	0.486
2454	0.465
2591	0.445
2727	0.426

Δt (s) = 136



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 6

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

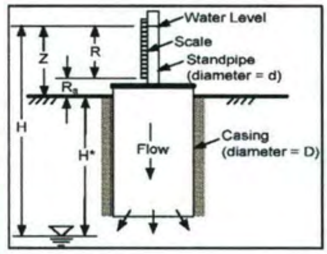
SOLUTION -TRIAL 1
K (m/s) = 6.95E-08
Total Time (d) = 0.02 0.5 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	44.45
Final Time:	12:14:24

FITTED VARIABLES

a (s^{-1}) =	0.0002001
H* (m) =	0.00
H_o (m) =	0.66
MSE (m^2) =	1.45E-05
Bias (m) =	8.88E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
11:42:48	22.3
11:45:10	20.0
11:48:32	17.0
11:52:15	14.0
11:57:56	10.3
12:03:06	7.6
12:08:21	4.5
12:14:24	1.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.67	0	0.662	-5.86E-03	3.43E-05
0.64	142	0.643	-1.39E-03	1.94E-06
0.61	344	0.618	3.13E-03	9.83E-06
0.58	567	0.591	6.18E-03	3.83E-05
0.55	908	0.552	4.23E-03	1.79E-05
0.52	1218	0.519	-1.95E-03	3.80E-06
0.49	1533	0.487	-2.62E-03	6.87E-06
0.45	1896	0.453	-1.73E-03	2.98E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

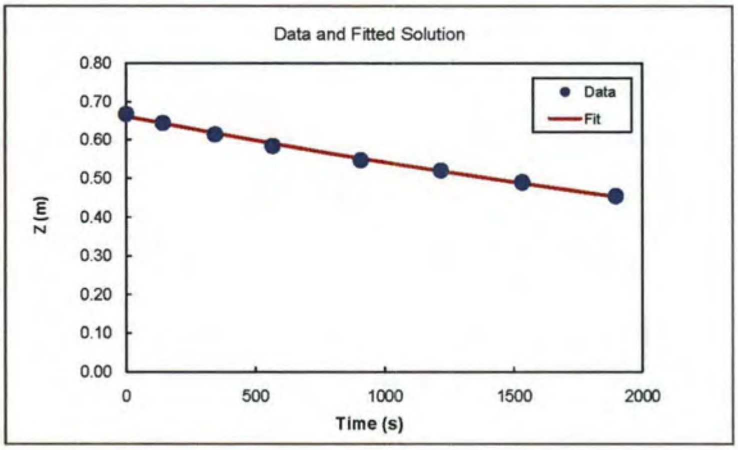
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.662
95	0.649
190	0.637
284	0.625
379	0.613
474	0.602
569	0.590
664	0.579
758	0.568
853	0.558
948	0.547
1043	0.537
1138	0.527
1232	0.517
1327	0.507
1422	0.498
1517	0.488
1612	0.479
1706	0.470
1801	0.461
1896	0.453

Δt (s) = 95



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 7

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

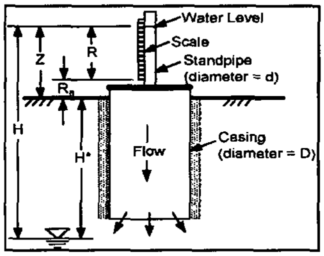
SOLUTION -TRIAL 1
K (m/s) = 6.25E-08
Total Time (d) = 0.02 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 44.45
Final Time: 12:50:15

FITTED VARIABLES

a (s^{-1}) = 0.0001799
H* (m) = 0.00
H_o (m) = 0.67
MSE (m^2) = 2.75E-05
Bias (m) = -9.49E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
12:14:58	23.2
12:19:53	19.5
12:24:58	15.5
12:29:32	12.3
12:35:58	8.5
12:42:24	5.4
12:50:15	2.3

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.68	0	0.672	-5.00E-03	2.50E-05
0.64	295	0.637	-2.70E-03	7.29E-06
0.60	600	0.603	3.30E-03	1.09E-05
0.57	874	0.574	6.31E-03	3.99E-05
0.53	1260	0.535	5.82E-03	3.39E-05
0.50	1646	0.499	9.14E-04	8.35E-07
0.47	2117	0.459	-8.66E-03	7.49E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

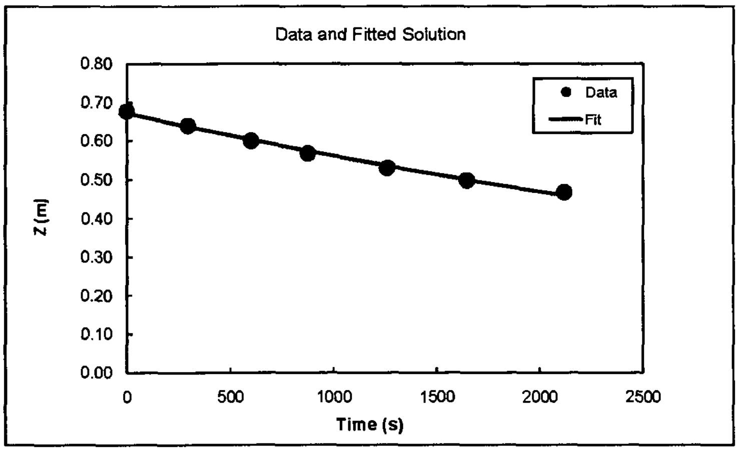
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.672
106	0.659
212	0.646
318	0.634
423	0.622
529	0.611
635	0.599
741	0.588
847	0.577
953	0.566
1059	0.555
1164	0.545
1270	0.534
1376	0.524
1482	0.514
1588	0.505
1694	0.495
1799	0.486
1905	0.477
2011	0.468
2117	0.459

Δt (s) = 106



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

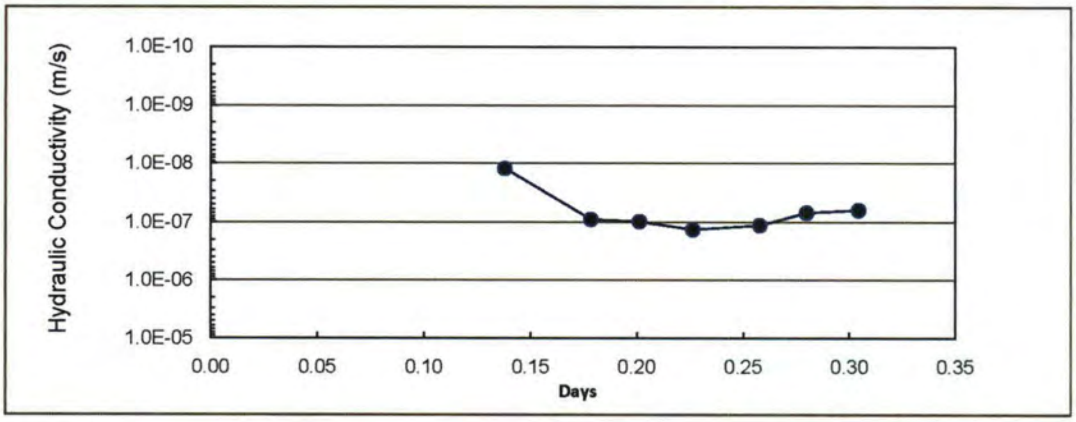
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.138	0.138	1.23E-08
2	0.040	0.178	8.96E-08
3	0.023	0.201	9.76E-08
4	0.025	0.226	1.34E-07
5	0.032	0.258	1.13E-07
6	0.022	0.280	6.95E-08
7	0.025	0.304	6.25E-08

Clay2-NE

Field Hydraulic Conductivity

9.46E-08 m/s

9.46E-06 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 1

Test ID: Clay3-SW **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

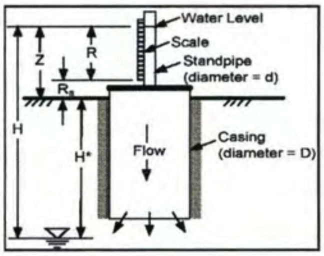
SOLUTION -TRIAL 1
K (m/s) = 5.01E-07
Total Time (d) = 0.00 0.1 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 44.45
Final Time: 16:52:00

FITTED VARIABLES

a (s^{-1}) = 0.0014435
H* (m) = 0.00
H_o (m) = 1.29
MSE (m^2) = 2.62E-05
Bias (m) = -2.30E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
16:47:20	84.0
16:48:06	77.0
16:48:46	70.0
16:49:15	65.0
16:50:08	57.0
16:51:23	47.0
16:52:00	41.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.28	0	1.292	7.33E-03	5.37E-05
1.21	46	1.209	-5.67E-03	3.21E-05
1.14	86	1.141	-3.49E-03	1.22E-05
1.09	115	1.094	-2.67E-04	7.12E-08
1.01	168	1.014	-8.61E-04	7.41E-07
0.91	243	0.910	-4.87E-03	2.37E-05
0.85	280	0.862	7.82E-03	6.12E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

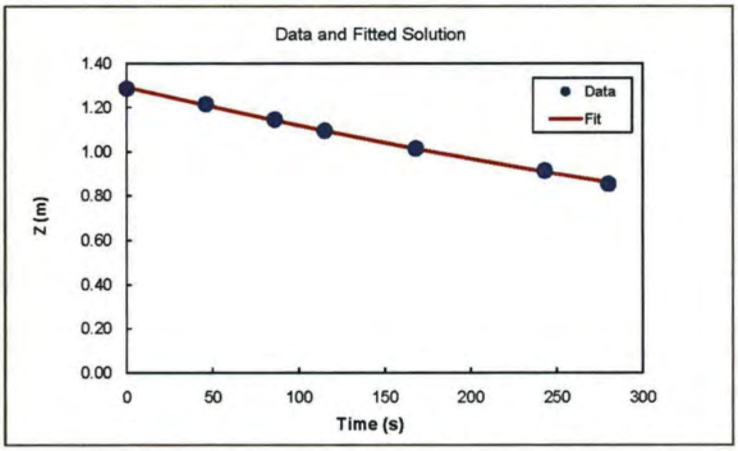
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.292
14	1.266
28	1.241
42	1.216
56	1.192
70	1.168
84	1.144
98	1.121
112	1.099
126	1.077
140	1.055
154	1.034
168	1.014
182	0.993
196	0.973
210	0.954
224	0.935
238	0.916
252	0.898
266	0.880
280	0.862

Δt (s) = 14



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 2

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

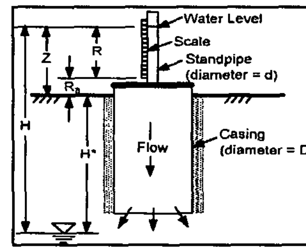
SOLUTION -TRIAL 1
K (m/s) = 5.01E-07
Total Time (d) = 0.00 0.1 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_3 (cm) = 44.45
Final Time: 16:52:00

FITTED VARIABLES

a (s^{-1}) = 0.0014435
H* (m) = 0.00
H_0 (m) = 1.29
MSE (m^2) = 2.62E-05
Bias (m) = -2.30E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
16:47:20	84.0
16:48:06	77.0
16:48:46	70.0
16:49:15	65.0
16:50:08	57.0
16:51:23	47.0
16:52:00	41.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.28	0	1.292	7.33E-03	5.37E-05
1.21	46	1.209	-5.67E-03	3.21E-05
1.14	86	1.141	-3.49E-03	1.22E-05
1.09	115	1.094	-2.67E-04	7.12E-08
1.01	168	1.014	-8.61E-04	7.41E-07
0.91	243	0.910	-4.87E-03	2.37E-05
0.85	280	0.862	7.82E-03	6.12E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

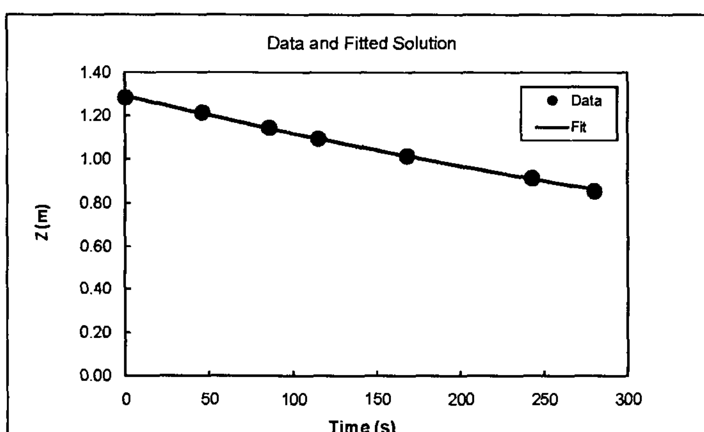
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.292
14	1.266
28	1.241
42	1.216
56	1.192
70	1.168
84	1.144
98	1.121
112	1.099
126	1.077
140	1.055
154	1.034
168	1.014
182	0.993
196	0.973
210	0.954
224	0.935
238	0.916
252	0.898
266	0.880
280	0.862

Δt (s) = 14



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 3

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

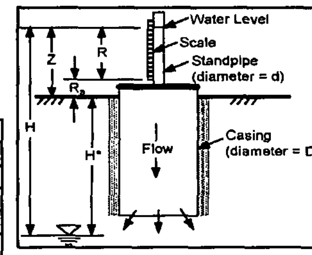
SOLUTION -TRIAL 1
K (m/s) = 2.06E-08
Total Time (d) = 0.03 0.8 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_3 (cm) =	44.45
Final Time:	18:01:10

FITTED VARIABLES

a (s^{-1}) =	0.0000593
H* (m) =	0.00
H_o (m) =	1.36
MSE (m^2) =	2.03E-04
Bias (m) =	-5.85E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
17:13:25	94.0
17:15:15	90.5
17:17:00	89.0
17:20:15	87.0
17:28:40	82.5
17:35:50	79.8
17:45:10	76.6
17:50:45	73.3
18:01:10	72.2

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.38	0	1.357	-2.79E-02	7.80E-04
1.35	110	1.348	-1.74E-03	3.02E-06
1.33	215	1.339	4.90E-03	2.40E-05
1.31	410	1.324	9.50E-03	9.03E-05
1.27	915	1.285	1.54E-02	2.39E-04
1.24	1345	1.253	1.01E-02	1.02E-04
1.21	1905	1.212	1.19E-03	1.43E-06
1.18	2240	1.188	1.04E-02	1.07E-04
1.17	2865	1.145	-2.18E-02	4.77E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

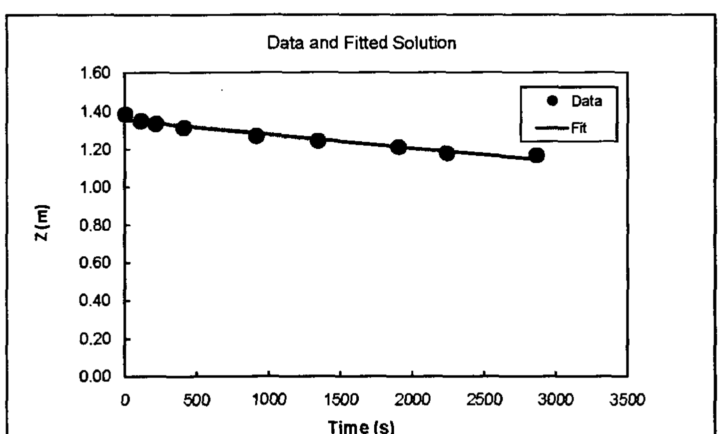
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.357
143	1.345
287	1.334
430	1.322
573	1.311
716	1.300
860	1.289
1003	1.278
1146	1.267
1289	1.257
1433	1.246
1576	1.236
1719	1.225
1862	1.215
2006	1.204
2149	1.194
2292	1.184
2435	1.174
2579	1.164
2722	1.154
2865	1.145

Δt (s) = 143



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 4

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

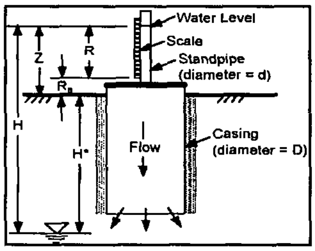
SOLUTION -TRIAL 1
K (m/s) = 6.59E-09
Total Time (d) = 0.29 7.1 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	44.45
Final Time:	16:00:45

FITTED VARIABLES

a (s^{-1}) =	0.0000190
H* (m) =	0.00
H_o (m) =	1.33
MSE (m^2) =	1.43E-03
Bias (m) =	1.21E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
8:57:44	97.0
8:58:40	95.0
9:01:14	92.0
9:04:10	90.0
9:08:46	88.0
9:16:30	85.5
9:26:05	83.0
9:33:10	81.2
9:42:25	79.3
9:55:30	76.8
10:22:41	72.3
10:44:08	69.3
11:06:00	66.3
11:31:50	63.2
11:59:27	60.4
12:17:33	58.7
12:54:16	55.2
13:28:46	52.6
14:15:11	49.4
14:51:10	47.2
15:29:10	45.2
16:00:45	43.7

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.41	0	1.331	-8.33E-02	6.93E-03
1.39	56	1.330	-6.47E-02	4.18E-03
1.36	210	1.326	-3.86E-02	1.49E-03
1.34	386	1.322	-2.30E-02	5.28E-04
1.32	662	1.315	-9.87E-03	9.74E-05
1.30	1126	1.303	3.61E-03	1.30E-05
1.27	1701	1.289	1.45E-02	2.09E-04
1.26	2126	1.279	2.21E-02	4.89E-04
1.24	2681	1.265	2.77E-02	7.69E-04
1.21	3466	1.247	3.40E-02	1.16E-03
1.17	5097	1.209	4.11E-02	1.69E-03
1.14	6384	1.179	4.19E-02	1.76E-03
1.11	7696	1.150	4.29E-02	1.84E-03
1.08	9246	1.117	4.06E-02	1.65E-03
1.05	10903	1.083	3.40E-02	1.16E-03
1.03	11989	1.060	2.89E-02	8.37E-04
1.00	14192	1.017	2.05E-02	4.22E-04
0.97	16262	0.978	7.37E-03	5.44E-05
0.94	19047	0.928	-1.09E-02	1.20E-04
0.92	21206	0.890	-2.62E-02	6.85E-04
0.90	23486	0.853	-4.39E-02	1.92E-03
0.88	25381	0.823	-5.90E-02	3.48E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

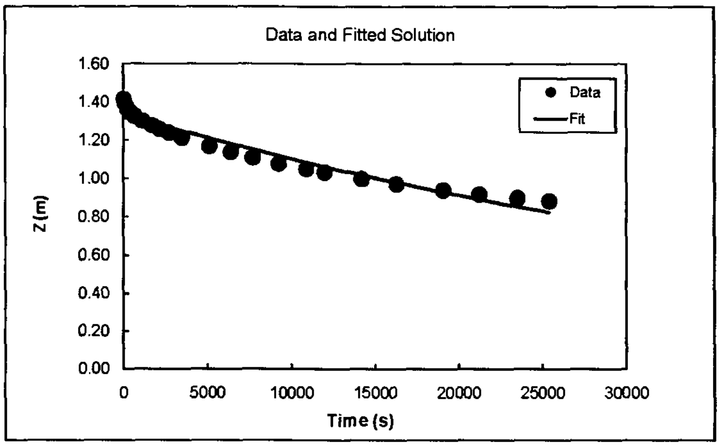
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.331
1269	1.300
2538	1.269
3807	1.238
5076	1.209
6345	1.180
7614	1.152
8883	1.125
10152	1.098
11421	1.072
12691	1.046
13960	1.022
15229	0.997
16498	0.974
17767	0.950
19036	0.928
20305	0.906
21574	0.884
22843	0.863
24112	0.843
25381	0.823

Δt (s) = 1269



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis

Cedar Rapids - Clay Cover

TRIAL 5

Test ID:	Clay2-NE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = 3.89E-09

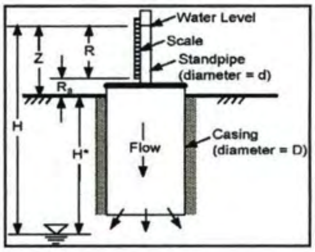
Total Time (d) = 0.03 0.6 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_o (cm) =	44.45
Final Time:	1/1/2005 17:12

FITTED VARIABLES

a (s^{-1}) =	0.0000112
H* (m) =	0.00
H_o (m) =	1.09
MSE (m^2) =	1.39E-03
Bias (m) =	-8.74E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/1/2005 16:36	70.0
1/1/2005 16:41	67.0
1/1/2005 16:49	64.0
1/1/2005 17:01	60.0
1/1/2005 17:12	57.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.14	0	1.092	-5.23E-02	2.73E-03
1.11	345	1.088	-2.65E-02	7.01E-04
1.08	799	1.083	-2.00E-03	3.99E-06
1.04	1534	1.074	2.91E-02	8.48E-04
1.01	2160	1.066	5.16E-02	2.66E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

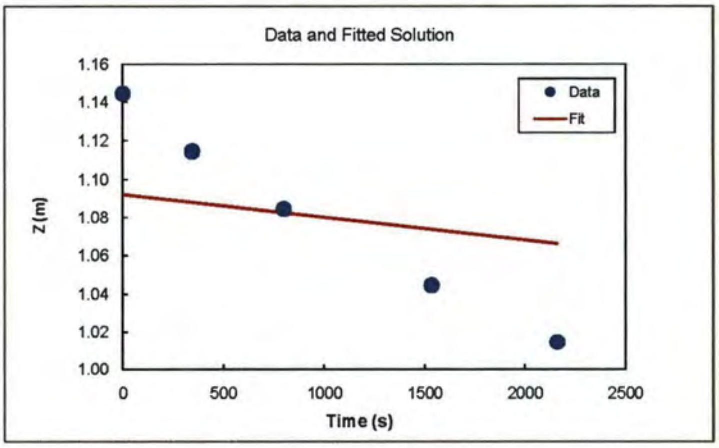
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.092
108	1.091
216	1.090
324	1.088
432	1.087
540	1.086
648	1.084
756	1.083
864	1.082
972	1.080
1080	1.079
1188	1.078
1296	1.076
1404	1.075
1512	1.074
1620	1.073
1728	1.071
1836	1.070
1944	1.069
2052	1.067
2160	1.066

Δt (s) = 108



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 5

Test ID:	Clay2-NE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = **8.45E-08**

Total Time (d) = 0.01 0.4 hrs

FIXED VARIABLES

d (cm) = 1.905

D (cm) = 29.845

R_3 (cm) = 44.45

Final Time: 1/2/2005 10:18

FITTED VARIABLES

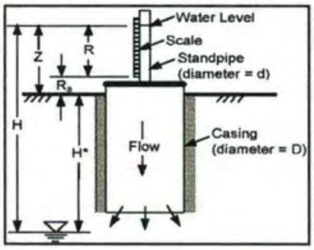
a (s^{-1}) = 0.0002434

H* (m) = 0.00

H_o (m) = 0.69

MSE (m^2) = 3.35E-07

Bias (m) = -9.80E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/2/2005 9:56	25.0
1/2/2005 10:09	13.0
1/2/2005 10:16	7.5
1/2/2005 10:18	6.4

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.69	0	0.694	-2.92E-04	8.55E-08
0.57	771	0.575	8.89E-04	7.90E-07
0.52	1190	0.520	8.02E-05	6.43E-09
0.51	1284	0.508	-6.78E-04	4.59E-07

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

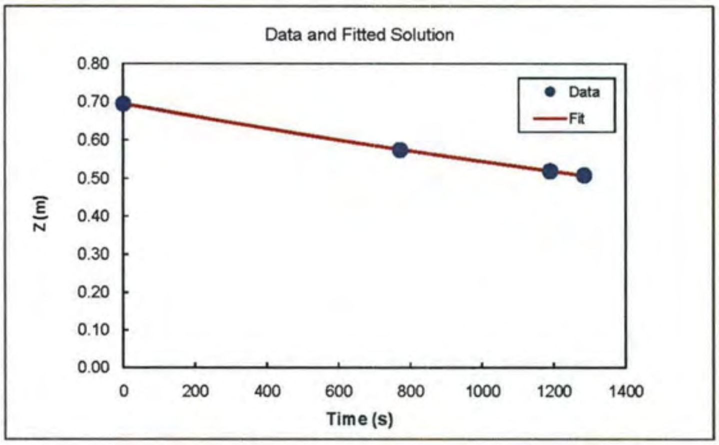
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.694
64	0.683
128	0.673
193	0.662
257	0.652
321	0.642
385	0.632
449	0.622
514	0.613
578	0.603
642	0.594
706	0.585
770	0.575
835	0.567
899	0.558
963	0.549
1027	0.541
1091	0.532
1156	0.524
1220	0.516
1284	0.508

Δt (s) = 64



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 6

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

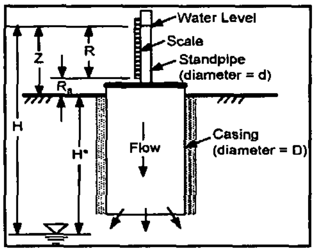
SOLUTION -TRIAL 1
K (m/s) = 1.28E-07
Total Time (d) = 0.03 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_3 (cm) = 44.45
Final Time: 10:55:55

FITTED VARIABLES

a (s^{-1}) = 0.0003675
H* (m) = 0.00
H_o (m) = 0.97
MSE (m^2) = 3.74E-04
Bias (m) = -1.87E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:19:55	56.0
10:21:42	50.0
10:24:00	43.5
10:26:30	37.5
10:29:20	32.0
10:33:19	26.0
10:42:15	14.5
10:49:50	6.5
10:55:55	2.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.00	0	0.971	-3.31E-02	1.10E-03
0.94	107	0.934	-1.06E-02	1.11E-04
0.88	245	0.888	8.26E-03	6.82E-05
0.82	395	0.840	2.06E-02	4.26E-04
0.76	565	0.789	2.48E-02	6.13E-04
0.70	804	0.723	1.84E-02	3.39E-04
0.59	1340	0.594	4.15E-03	1.72E-05
0.51	1795	0.502	-7.26E-03	5.27E-05
0.46	2160	0.439	-2.53E-02	6.40E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

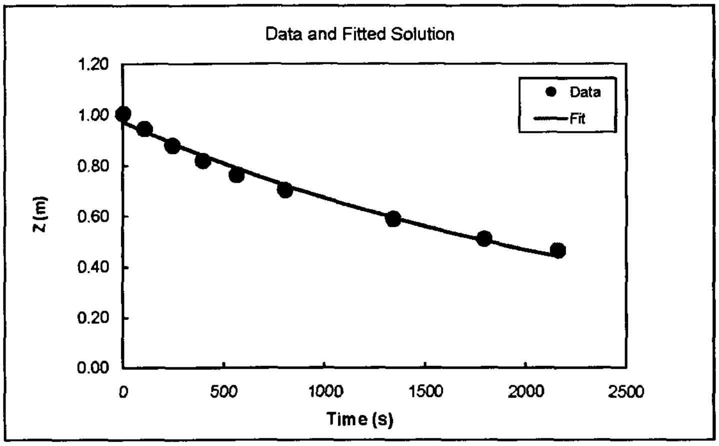
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.971
108	0.934
216	0.897
324	0.862
432	0.829
540	0.797
648	0.766
756	0.736
864	0.707
972	0.680
1080	0.653
1188	0.628
1296	0.603
1404	0.580
1512	0.557
1620	0.536
1728	0.515
1836	0.495
1944	0.475
2052	0.457
2160	0.439

Δt (s) = 108



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 7

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

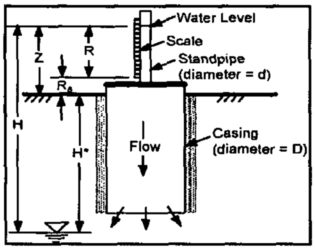
SOLUTION -TRIAL 1
K (m/s) = 1.13E-07
Total Time (d) = 0.03 0.8 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 44.45
Final Time: 11:41:50

FITTED VARIABLES

a (s^{-1}) = 0.0003250
H* (m) = 0.00
H_o (m) = 1.03
MSE (m^2) = 7.45E-04
Bias (m) = -7.34E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
10:56:23	63.0
10:57:20	59.0
10:59:00	54.0
11:01:55	46.5
11:06:30	37.0
11:10:23	31.0
11:14:45	24.3
11:21:40	17.0
11:29:46	10.0
11:36:46	5.0
11:41:50	2.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε^2 (m)
1.07	0	1.033	-4.15E-02	1.72E-03
1.03	57	1.014	-2.05E-02	4.20E-04
0.98	157	0.982	-2.92E-03	8.50E-06
0.91	332	0.927	1.78E-02	3.17E-04
0.81	607	0.848	3.35E-02	1.12E-03
0.75	840	0.786	3.17E-02	1.00E-03
0.69	1102	0.722	3.45E-02	1.19E-03
0.61	1517	0.631	1.64E-02	2.69E-04
0.54	2003	0.539	-5.77E-03	3.33E-05
0.49	2423	0.470	-2.45E-02	6.01E-04
0.46	2727	0.426	-3.87E-02	1.50E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

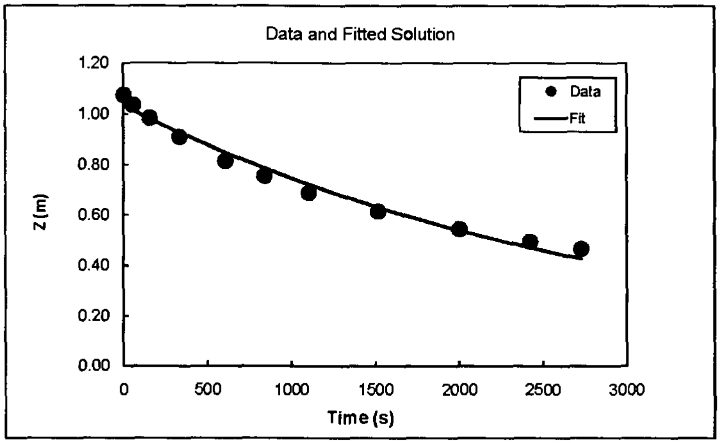
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.033
136	0.988
273	0.945
409	0.904
545	0.865
682	0.828
818	0.792
954	0.757
1091	0.725
1227	0.693
1364	0.663
1500	0.634
1636	0.607
1773	0.581
1909	0.555
2045	0.531
2182	0.508
2318	0.486
2454	0.465
2591	0.445
2727	0.426

Δt (s) = 136



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 8

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

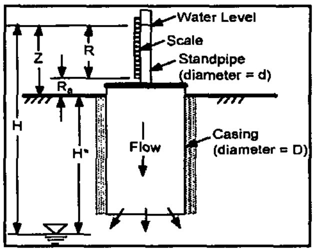
SOLUTION -TRIAL 1
K (m/s) = 6.95E-08
Total Time (d) = 0.02 0.5 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 44.45
Final Time: 12:14:24

FITTED VARIABLES

a (s^{-1}) = 0.0002001
H* (m) = 0.00
H_o (m) = 0.66
MSE (m^2) = 1.45E-05
Bias (m) = 9.02E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
11:42:48	22.3
11:45:10	20.0
11:48:32	17.0
11:52:15	14.0
11:57:56	10.3
12:03:06	7.6
12:08:21	4.5
12:14:24	1.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.67	0	0.662	-5.86E-03	3.43E-05
0.64	142	0.643	-1.39E-03	1.94E-06
0.61	344	0.618	3.13E-03	9.83E-06
0.58	567	0.591	6.18E-03	3.83E-05
0.55	908	0.552	4.23E-03	1.79E-05
0.52	1218	0.519	-1.95E-03	3.80E-06
0.49	1533	0.487	-2.62E-03	6.87E-06
0.45	1896	0.453	-1.73E-03	2.98E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

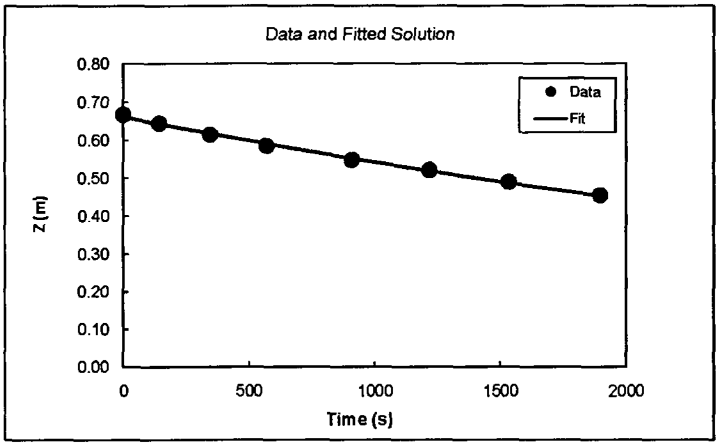
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.662
95	0.649
190	0.637
284	0.625
379	0.613
474	0.602
569	0.590
664	0.579
758	0.568
853	0.558
948	0.547
1043	0.537
1138	0.527
1232	0.517
1327	0.507
1422	0.498
1517	0.488
1612	0.479
1706	0.470
1801	0.461
1896	0.453

Δt (s) = 95



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 9

Test ID: Clay2-NE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

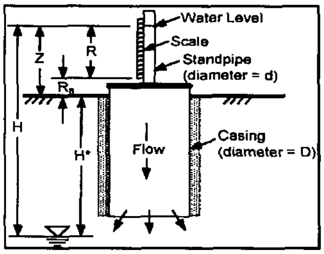
SOLUTION -TRIAL 1
K (m/s) = 6.25E-08
Total Time (d) = 0.02 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 44.45
Final Time: 12:50:15

FITTED VARIABLES

a (s^{-1}) = 0.0001799
H* (m) = 0.00
H_0 (m) = 0.67
MSE (m^2) = 2.75E-05
Bias (m) = -9.49E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
12:14:58	23.2
12:19:53	19.5
12:24:58	15.5
12:29:32	12.3
12:35:58	8.5
12:42:24	5.4
12:50:15	2.3

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.68	0	0.672	-5.00E-03	2.50E-05
0.64	295	0.637	-2.70E-03	7.29E-06
0.60	600	0.603	3.30E-03	1.09E-05
0.57	874	0.574	6.31E-03	3.99E-05
0.53	1260	0.535	5.82E-03	3.39E-05
0.50	1646	0.499	9.14E-04	8.35E-07
0.47	2117	0.459	-8.66E-03	7.49E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

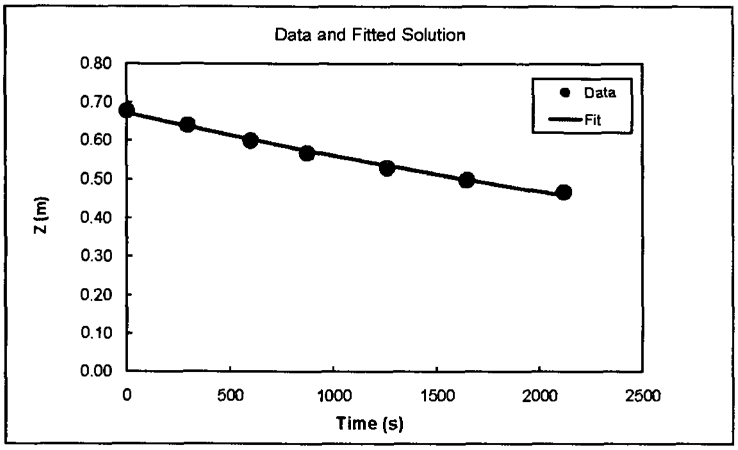
$$Z_t = H_0 e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.672
106	0.659
212	0.646
318	0.634
423	0.622
529	0.611
635	0.599
741	0.588
847	0.577
953	0.566
1059	0.555
1164	0.545
1270	0.534
1376	0.524
1482	0.514
1588	0.505
1694	0.495
1799	0.486
1905	0.477
2011	0.468
2117	0.459

Δt (s) = 106



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

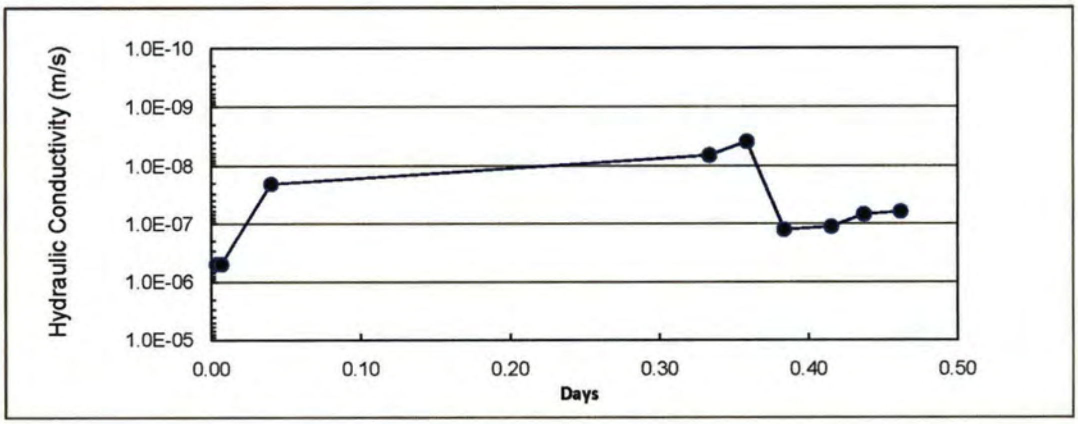
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.003	0.003	5.01E-07
2	0.003	0.006	5.01E-07
3	0.033	0.040	2.06E-08
4	0.294	0.333	6.59E-09
5	0.025	0.358	3.89E-09
6	0.025	0.383	1.28E-07
7	0.032	0.415	1.13E-07
8	0.022	0.437	6.95E-08
9	0.025	0.461	6.25E-08

Clay3-SW

Field Hydraulic Conductivity

9.31E-08 m/s

9.31E-06 cm/s

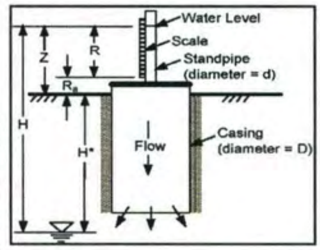


Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

TRIAL 1

Test ID: Clay4-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

SOLUTION -TRIAL 1
K (m/s) = **7.93E-08**
Total Time (d) = 0.03 0.7 hrs



FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 44.45
Final Time: 18:00:26

FITTED VARIABLES

a (s^{-1}) = 0.0002284
H* (m) = 0.00
H_o (m) = 1.29
MSE (m^2) = 1.22E-02
Bias (m) = 6.16E-07

TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
17:21:25	66.3
17:28:00	62.0
17:36:15	57.0
17:44:20	52.5
17:50:10	49.4
17:55:30	46.8
18:00:26	45.6

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.11	0	1.292	1.84E-01	3.40E-02
1.06	395	1.180	1.16E-01	1.34E-02
1.01	890	1.054	3.97E-02	1.57E-03
0.97	1375	0.944	-2.59E-02	6.71E-04
0.94	1725	0.871	-6.74E-02	4.54E-03
0.91	2045	0.810	-1.03E-01	1.06E-02
0.90	2341	0.757	-1.44E-01	2.07E-02

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

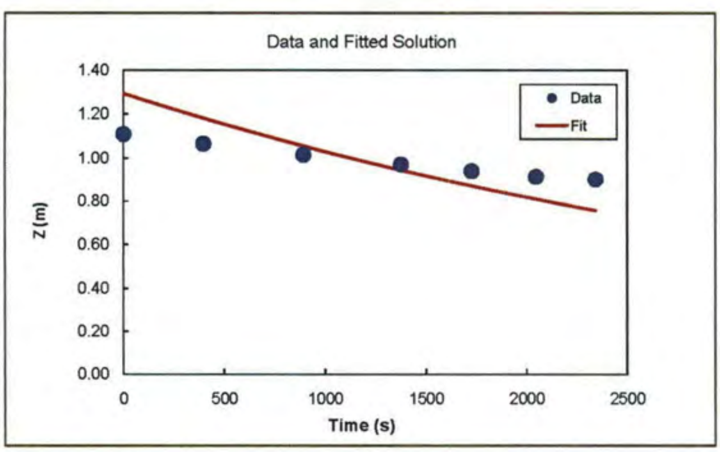
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.292
117	1.258
234	1.225
351	1.192
468	1.161
585	1.130
702	1.100
819	1.071
936	1.043
1053	1.016
1171	0.989
1288	0.963
1405	0.937
1522	0.913
1639	0.888
1756	0.865
1873	0.842
1990	0.820
2107	0.798
2224	0.777
2341	0.757

Δt (s) = 117



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

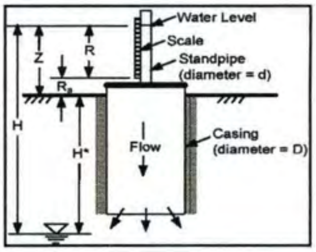
TRIAL 2

Test ID: Clay4-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

SOLUTION -TRIAL 1
K (m/s) = 3.21E-08
Total Time (d) = 0.15 3.6 hrs

FIXED VARIABLES
d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 44.45
Final Time: 12:30:45

FITTED VARIABLES
a (s^{-1}) = 0.0000925
H* (m) = 0.00
H_o (m) = 1.29
MSE (m^2) = 3.63E-02
Bias (m) = 1.35E-07



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
8:52:00	67.0
8:52:52	65.0
8:54:35	60.7
8:59:15	58.3
9:07:30	55.3
9:15:50	52.9
9:25:30	50.5
9:32:20	48.7
9:41:50	46.7
9:56:00	44.0
10:22:17	39.7
10:44:40	36.5
11:05:35	33.7
11:32:16	31.4
12:01:21	28.5
12:16:50	27.0
12:30:45	25.5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.11	0	1.292	1.77E-01	3.14E-02
1.09	52	1.286	1.91E-01	3.65E-02
1.05	155	1.273	2.22E-01	4.93E-02
1.03	435	1.241	2.13E-01	4.55E-02
1.00	930	1.185	1.88E-01	3.53E-02
0.97	1430	1.132	1.58E-01	2.51E-02
0.95	2010	1.073	1.23E-01	1.52E-02
0.93	2420	1.033	1.01E-01	1.03E-02
0.91	2990	0.980	6.82E-02	4.66E-03
0.88	3840	0.906	2.12E-02	4.49E-04
0.84	5417	0.783	-5.87E-02	3.45E-03
0.81	6760	0.691	-1.18E-01	1.40E-02
0.78	8015	0.616	-1.66E-01	2.75E-02
0.76	9616	0.531	-2.28E-01	5.18E-02
0.73	11361	0.452	-2.78E-01	7.71E-02
0.71	12290	0.415	-3.00E-01	9.00E-02
0.70	13125	0.384	-3.16E-01	9.97E-02

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

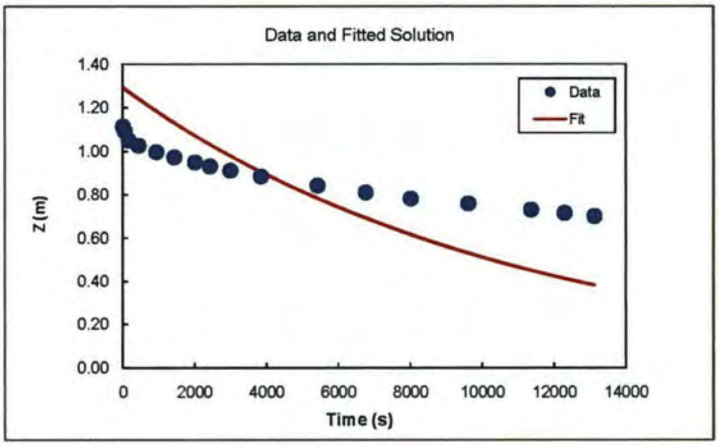
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.292
656	1.216
1313	1.144
1969	1.077
2625	1.013
3281	0.954
3938	0.898
4594	0.845
5250	0.795
5906	0.748
6563	0.704
7219	0.663
7875	0.624
8531	0.587
9188	0.552
9844	0.520
10500	0.489
11156	0.460
11813	0.433
12469	0.408
13125	0.384

Δt (s) = 656



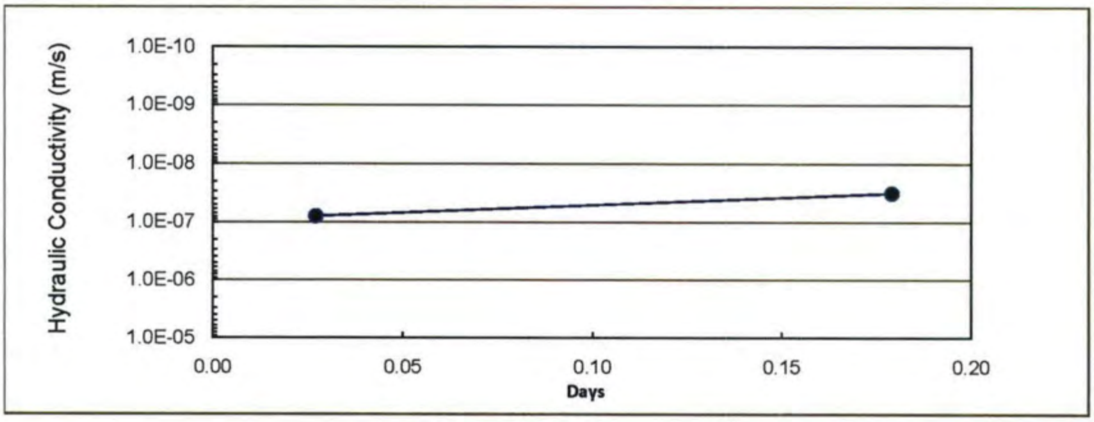
Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Clay Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

Trial	Time (d)	Total Time (d)	K (m/s)
1	0.027	0.027	7.93E-08
2	0.152	0.179	3.21E-08

Clay4-SE

Field Hydraulic Conductivity
5.57E-08 m/s
5.57E-06 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 1

Test ID: CP2-NE **Installer:** XW
Project: *Cedar Rapids* **Analyst:** *CHB*

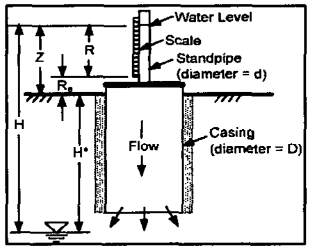
SOLUTION -TRIAL 1
K (m/s) = 1.77E-07
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	13:48:00

FITTED VARIABLES

a (s^{-1}) =	0.0005108
H* (m) =	0.00
H_o (m) =	1.39
MSE (m^2) =	7.33E-04
Bias (m) =	-4.43E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:26:12	92.7
13:27:45	82.7
13:28:30	79.0
13:28:50	77.0
13:29:30	73.5
13:30:30	69.0
13:31:15	65.5
13:32:00	62.0
13:33:30	56.5
13:34:47	52.0
13:35:50	48.5
13:37:06	45.0
13:38:14	42.0
13:39:10	39.5
13:41:00	35.5
13:42:40	32.0
13:45:00	28.5
13:47:10	25.5
13:48:00	24.4

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	e (m)	e^2 (m)
1.45	0.00	1.392	-5.59E-02	3.12E-03
1.35	93	1.327	-2.04E-02	4.18E-04
1.31	138	1.297	-1.36E-02	1.85E-04
1.29	158	1.284	-6.79E-03	4.61E-05
1.26	198	1.258	2.25E-03	5.05E-06
1.21	258	1.220	9.28E-03	8.62E-05
1.18	303	1.192	1.66E-02	2.74E-04
1.14	348	1.165	2.45E-02	5.99E-04
1.09	438	1.113	2.71E-02	7.36E-04
1.04	515	1.070	2.92E-02	8.53E-04
1.01	578	1.036	3.03E-02	9.20E-04
0.97	654	0.997	2.59E-02	6.70E-04
0.94	722	0.963	2.19E-02	4.78E-04
0.92	778	0.935	1.97E-02	3.89E-04
0.88	888	0.884	8.62E-03	7.43E-05
0.84	988	0.840	-4.14E-04	1.72E-07
0.81	1128	0.782	-2.34E-02	5.48E-04
0.78	1258	0.732	-4.37E-02	1.91E-03
0.76	1308	0.714	-5.11E-02	2.61E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

$$Z_t = H_o e^{-at} - H^*$$

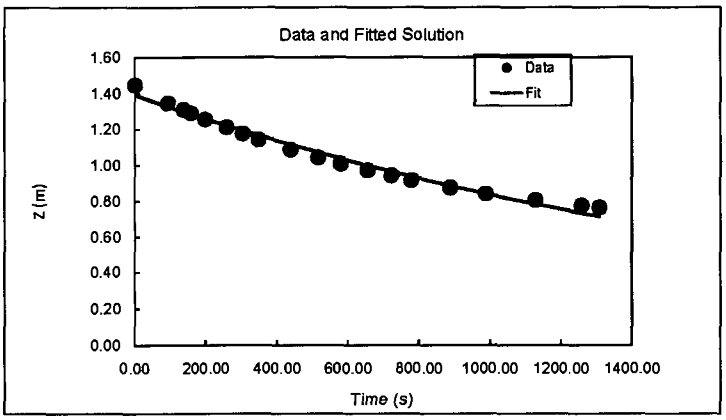
$$K = \frac{a \pi d^2}{11 D}$$

9:16:16

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.392
65	1.346
131	1.302
196	1.259
262	1.218
327	1.178
392	1.139
458	1.102
523	1.065
589	1.030
654	0.997
719	0.964
785	0.932
850	0.902
916	0.872
981	0.843
1046	0.816
1112	0.789
1177	0.763
1243	0.738
1308	0.714

Δt (s) = 65



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 2

Test ID:	CP2-NE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = 1.80E-07

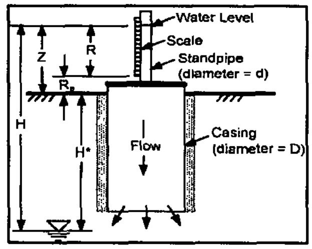
Total Time (d) = 0.01 0.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	14:04:19

FITTED VARIABLES

a (s^{-1}) =	0.0005177
H* (m) =	0.00
H_o (m) =	1.43
MSE (m^2) =	1.65E-04
Bias (m) =	8.37E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:48:30	93.0
13:49:05	89.0
13:49:35	86.0
13:51:00	79.0
13:53:00	70.5
13:55:24	62.0
13:57:24	55.5
13:59:23	49.5
14:01:04	45.0
14:04:19	37.5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.45	0.00	1.429	-2.17E-02	4.69E-04
1.41	35	1.403	-7.31E-03	5.35E-05
1.38	65	1.382	1.06E-03	1.12E-06
1.31	150	1.322	1.16E-02	1.34E-04
1.23	270	1.243	1.69E-02	2.86E-04
1.14	414	1.153	1.27E-02	1.60E-04
1.08	534	1.084	8.19E-03	6.70E-05
1.02	653	1.019	3.43E-03	1.17E-05
0.97	754	0.967	-3.49E-03	1.22E-05
0.90	949	0.874	-2.14E-02	4.57E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

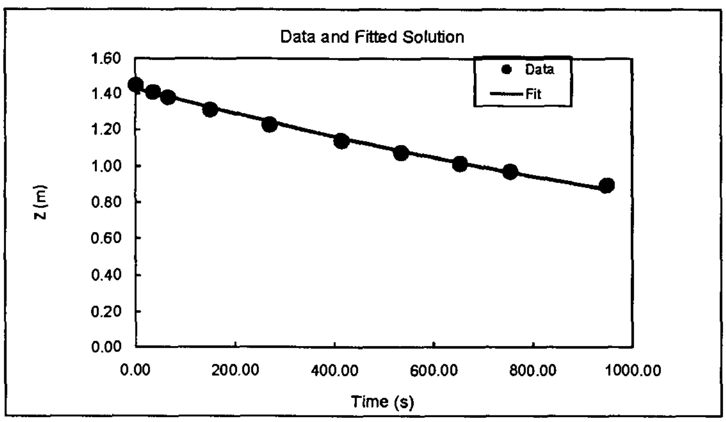
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.429
47	1.394
95	1.361
142	1.328
190	1.295
237	1.264
285	1.233
332	1.203
380	1.174
427	1.146
475	1.118
522	1.091
569	1.064
617	1.038
664	1.013
712	0.989
759	0.965
807	0.941
854	0.918
902	0.896
949	0.874

Δt (s) = 47



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

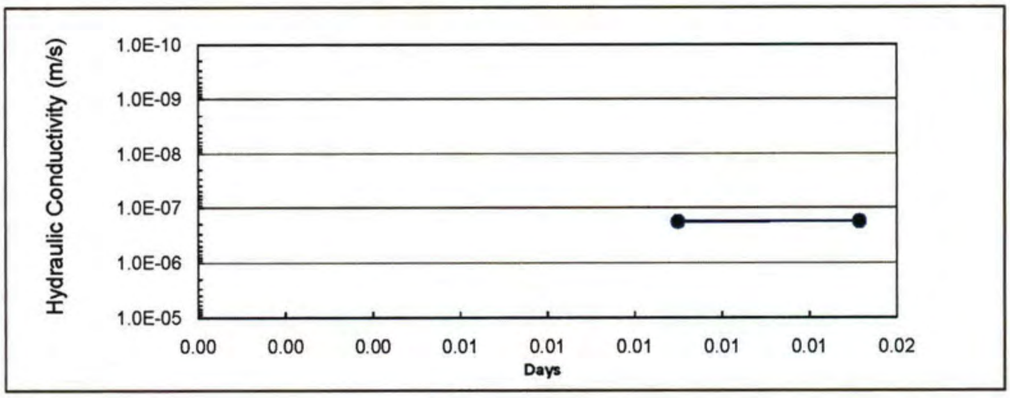
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.015	0.015	1.77E-07
2	0.011	0.011	1.80E-07

CP2-NE

Field Hydraulic Conductivity

1.79E-07 m/s

1.79E-05 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 1

Test ID:	CP3-SW	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

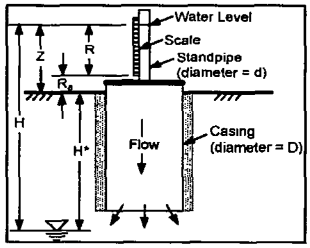
K (m/s) =	**6.16E-08**	
Total Time (d) =	0.05	1.2 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_3 (cm) =	52.07
Final Time:	15:09:00

FITTED VARIABLES

a (s^{-1}) =	0.0001774
H* (m) =	0.00
H_o (m) =	1.41
MSE (m^2) =	1.44E-03
Bias (m) =	-1.06E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:54:10	95.0
13:55:00	91.5
13:56:00	88.0
13:57:47	83.0
13:59:40	78.5
14:01:30	74.5
14:04:35	68.5
15:09:00	14.3

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε² (m)
1.47	0.00	1.413	-5.79E-02	3.35E-03
1.44	50	1.400	-3.54E-02	1.25E-03
1.40	110	1.385	-1.52E-02	2.31E-04
1.35	217	1.359	8.73E-03	7.62E-05
1.31	330	1.332	2.67E-02	7.15E-04
1.27	440	1.307	4.10E-02	1.68E-03
1.21	625	1.264	5.88E-02	3.46E-03
0.66	4490	0.637	-2.68E-02	7.16E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

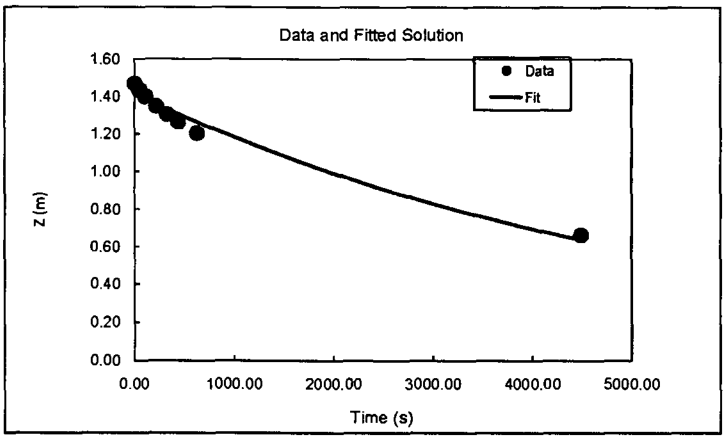
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.413
225	1.358
449	1.305
673	1.254
898	1.205
1123	1.158
1347	1.112
1572	1.069
1796	1.027
2021	0.987
2245	0.949
2470	0.912
2694	0.876
2919	0.842
3143	0.809
3368	0.777
3592	0.747
3817	0.718
4041	0.690
4266	0.663
4490	0.637

Δt (s) = 225



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 2

Test ID:	CP3-SW	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = 5.53E-08

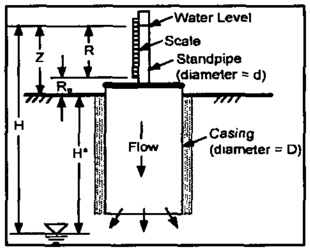
Total Time (d) = 0.05 1.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	16:30:00

FITTED VARIABLES

a (s^{-1}) =	0.0001593
H* (m) =	0.00
H_o (m) =	1.28
MSE (m^2) =	3.01E-03
Bias (m) =	1.14E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
15:13:40	89.0
15:15:06	85.5
15:16:14	80.5
15:17:25	74.0
15:18:32	68.0
15:19:56	63.5
15:21:00	62.0
15:23:50	58.5
15:25:07	57.0
15:30:11	51.5
15:36:13	46.0
15:40:20	42.5
15:44:16	39.5
15:49:40	35.7
15:53:10	33.5
15:56:15	31.5
16:00:30	29.0
16:04:10	27.0
16:09:36	24.2
16:17:14	21.6
16:24:25	17.5
16:29:40	15.4
16:30:00	14.9

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.41	0.00	1.283	-1.28E-01	1.64E-02
1.38	86	1.265	-1.11E-01	1.22E-02
1.33	154	1.252	-7.42E-02	5.50E-03
1.26	225	1.237	-2.32E-02	5.40E-04
1.20	292	1.224	2.36E-02	5.58E-04
1.16	376	1.208	5.24E-02	2.74E-03
1.14	440	1.196	5.51E-02	3.04E-03
1.11	610	1.164	5.82E-02	3.38E-03
1.09	687	1.150	5.90E-02	3.48E-03
1.04	991	1.095	5.96E-02	3.55E-03
0.98	1353	1.034	5.33E-02	2.84E-03
0.95	1600	0.994	4.84E-02	2.34E-03
0.92	1836	0.957	4.17E-02	1.74E-03
0.88	2160	0.909	3.15E-02	9.94E-04
0.86	2370	0.879	2.36E-02	5.58E-04
0.84	2555	0.854	1.81E-02	3.27E-04
0.81	2810	0.820	9.10E-03	8.28E-05
0.79	3030	0.792	8.71E-04	7.58E-07
0.76	3356	0.752	-1.12E-02	1.25E-04
0.74	3814	0.699	-3.81E-02	1.45E-03
0.70	4245	0.652	-4.34E-02	1.88E-03
0.67	4560	0.620	-5.43E-02	2.95E-03
0.67	4580	0.618	-5.13E-02	2.63E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

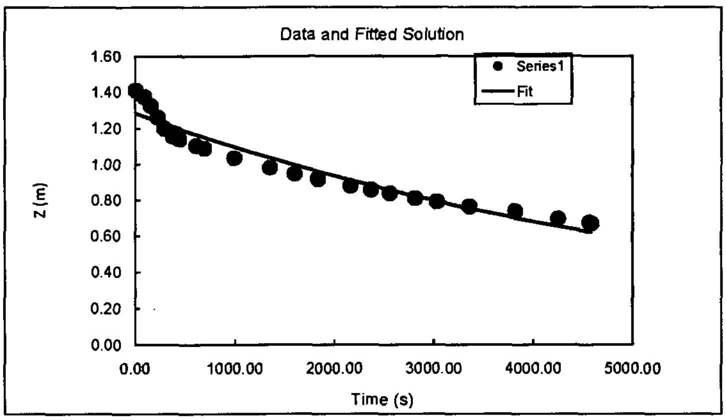
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.283
229	1.237
458	1.192
687	1.150
916	1.108
1145	1.069
1374	1.030
1603	0.994
1832	0.958
2061	0.924
2290	0.891
2519	0.859
2748	0.828
2977	0.798
3206	0.770
3435	0.742
3664	0.716
3893	0.690
4122	0.665
4351	0.641
4580	0.618

Δt (s) = 229



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

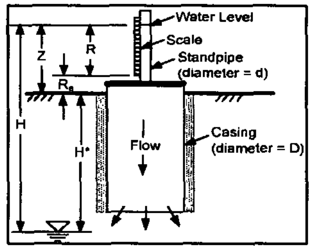
TRIAL 3

Test ID: CP3-SW **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

SOLUTION -TRIAL 1
K (m/s) = 4.87E-08
Total Time (d) = 0.06 1.5 hrs

FIXED VARIABLES
d (cm) = 1.905
D (cm) = 29.845
R_o (cm) = 52.07
Final Time: 17:58:55

FITTED VARIABLES
a (s^{-1}) = 0.0001403
H* (m) = 0.00
H_o (m) = 1.42
MSE (m^2) = 1.20E-03
Bias (m) = 7.30E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
16:31:48	96.0
16:32:30	94.0
16:34:30	89.0
16:37:00	84.5
16:39:45	79.5
16:44:30	72.5
16:50:25	69.5
16:53:30	61.8
16:58:10	57.2
17:00:35	55.0
17:04:50	51.3
17:11:14	46.5
17:16:00	43.2
17:26:00	37.0
17:30:20	34.6
17:39:40	29.8
17:47:05	26.4
17:53:30	23.2
17:58:55	21.5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.48	0.00	1.420	-6.11E-02	3.73E-03
1.46	42	1.411	-4.94E-02	2.44E-03
1.41	162	1.388	-2.30E-02	5.27E-04
1.37	312	1.359	-6.87E-03	4.71E-05
1.32	477	1.328	1.20E-02	1.45E-04
1.25	762	1.276	3.00E-02	9.00E-04
1.22	1117	1.214	-1.98E-03	3.92E-06
1.14	1302	1.183	4.39E-02	1.93E-03
1.09	1582	1.137	4.44E-02	1.97E-03
1.07	1727	1.114	4.35E-02	1.89E-03
1.03	1982	1.075	4.13E-02	1.71E-03
0.99	2366	1.019	3.29E-02	1.08E-03
0.95	2652	0.979	2.59E-02	6.69E-04
0.89	3252	0.900	8.87E-03	7.87E-05
0.87	3512	0.867	6.48E-04	4.19E-07
0.82	4072	0.802	-1.69E-02	2.85E-04
0.78	4517	0.753	-3.14E-02	9.87E-04
0.75	4902	0.714	-3.90E-02	1.52E-03
0.74	5227	0.682	-5.38E-02	2.90E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

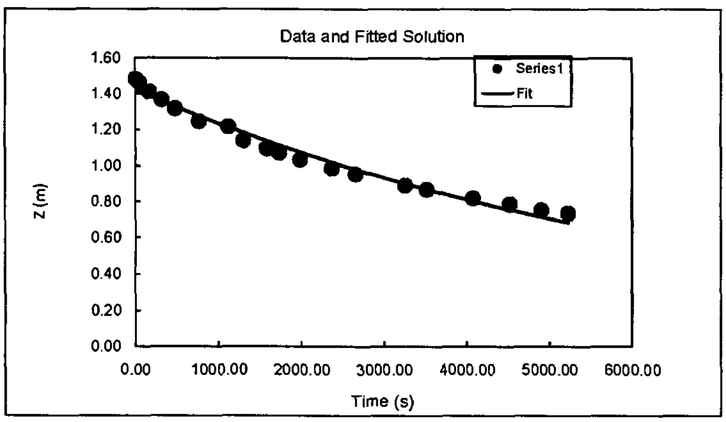
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.420
261	1.369
523	1.319
784	1.272
1045	1.226
1307	1.182
1568	1.139
1829	1.098
2091	1.059
2352	1.021
2614	0.984
2875	0.948
3136	0.914
3398	0.881
3659	0.850
3920	0.819
4182	0.790
4443	0.761
4704	0.734
4966	0.707
5227	0.682

Δt (s) = 261



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 4

Test ID: CP3-SW **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

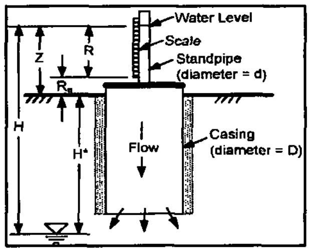
SOLUTION -TRIAL 1
K (m/s) = **4.71E-08**
Total Time (d) = 0.05 1.1 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_3 (cm) =	52.07
Final Time:	10:30:23

FITTED VARIABLES

a (s^{-1}) =	0.0001356
H* (m) =	0.00
H_o (m) =	1.45
MSE (m^2) =	7.84E-04
Bias (m) =	-2.08E-11



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
9:25:00	100.0
9:26:00	95.5
9:27:00	92.7
9:30:36	86.7
9:32:50	83.2
9:35:10	80.0
9:37:15	77.3
9:39:13	75.0
9:41:13	72.8
9:44	69.6
9:46:35	67.0
9:52:07	62.0
9:54:27	60.0
9:57:43	57.4
10:02:25	53.7
10:10:18	48.5
10:17:24	44.7
10:21:46	42.4
10:30:23	38.1

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	e (m)	e^2 (m)
1.52	0.00	1.452	-6.87E-02	4.72E-03
1.48	60	1.440	-3.55E-02	1.26E-03
1.45	120	1.429	-1.91E-02	3.66E-04
1.39	336	1.387	-3.90E-04	1.52E-07
1.35	470	1.362	9.62E-03	9.26E-05
1.32	610	1.337	1.60E-02	2.56E-04
1.29	735	1.314	2.05E-02	4.21E-04
1.27	853	1.293	2.27E-02	5.13E-04
1.25	973	1.272	2.38E-02	5.65E-04
1.22	1140	1.244	2.73E-02	7.43E-04
1.19	1295	1.218	2.74E-02	7.50E-04
1.14	1627	1.164	2.37E-02	5.64E-04
1.12	1767	1.143	2.18E-02	4.77E-04
1.09	1963	1.113	1.79E-02	3.19E-04
1.06	2245	1.071	1.31E-02	1.72E-04
1.01	2718	1.004	-1.44E-03	2.07E-06
0.97	3144	0.948	-1.98E-02	3.93E-04
0.94	3406	0.915	-2.99E-02	8.95E-04
0.90	3923	0.853	-4.89E-02	2.39E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

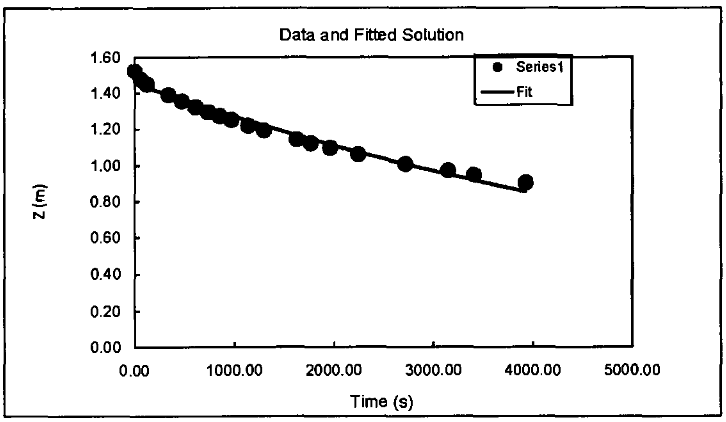
$$Z_t = H_o e^{-at} - H*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.452
196	1.414
392	1.377
588	1.341
785	1.305
981	1.271
1177	1.238
1373	1.205
1569	1.174
1765	1.143
1962	1.113
2158	1.084
2354	1.055
2550	1.027
2746	1.000
2942	0.974
3138	0.949
3335	0.924
3531	0.899
3727	0.876
3923	0.853

Δt (s) = 196



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

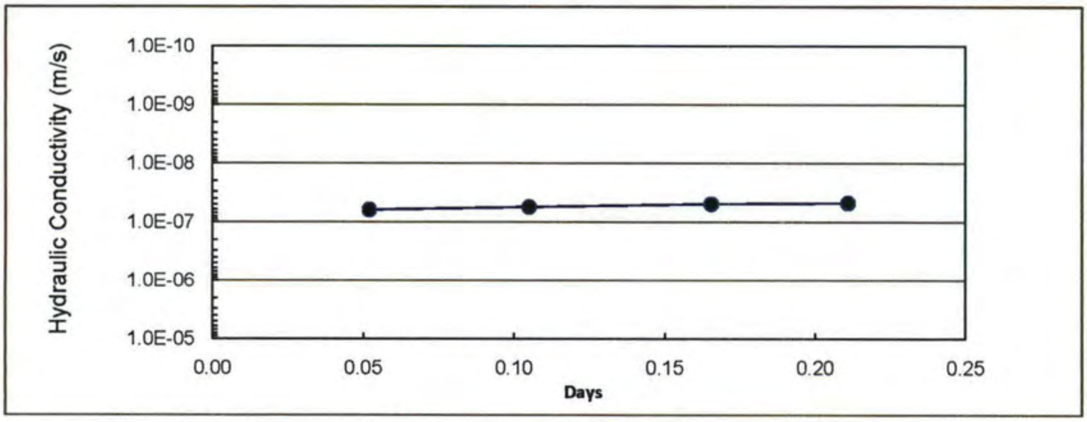
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.052	0.052	6.16E-08
2	0.053	0.105	5.53E-08
3	0.060	0.165	4.87E-08
4	0.045	0.211	4.71E-08

CP3-SW

Field Hydraulic Conductivity

5.32E-08 m/s

5.32E-06 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 1

Test ID: CP4-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

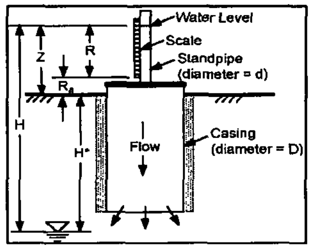
SOLUTION -TRIAL 1
K (m/s) = **1.77E-07**
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 52.07
Final Time: 13:48:00

FITTED VARIABLES

a (s^{-1}) = 0.0005108
H* (m) = 0.00
H_o (m) = 1.39
MSE (m^2) = 7.33E-04
Bias (m) = -1.24E-11



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:26:12	92.7
13:27:45	82.7
13:28:30	79.0
13:28:50	77.0
13:29:30	73.5
13:30:30	69.0
13:31:15	65.5
13:32:00	62.0
13:33:30	56.5
13:34:47	52.0
13:35:50	48.5
13:37:06	45.0
13:38:14	42.0
13:39:10	39.5
13:41:00	35.5
13:42:40	32.0
13:45:00	28.5
13:47:10	25.5
13:48:00	24.4

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.45	0.00	1.392	-5.59E-02	3.12E-03
1.35	93	1.327	-2.04E-02	4.18E-04
1.31	138	1.297	-1.36E-02	1.85E-04
1.29	158	1.284	-6.79E-03	4.61E-05
1.26	198	1.258	2.25E-03	5.05E-06
1.21	258	1.220	9.28E-03	8.62E-05
1.18	303	1.192	1.66E-02	2.74E-04
1.14	348	1.165	2.45E-02	5.99E-04
1.09	438	1.113	2.71E-02	7.36E-04
1.04	515	1.070	2.92E-02	8.53E-04
1.01	578	1.036	3.03E-02	9.20E-04
0.97	654	0.997	2.59E-02	6.70E-04
0.94	722	0.963	2.19E-02	4.78E-04
0.92	778	0.935	1.97E-02	3.89E-04
0.88	888	0.884	8.62E-03	7.43E-05
0.84	988	0.840	-4.14E-04	1.72E-07
0.81	1128	0.782	-2.34E-02	5.48E-04
0.78	1258	0.732	-4.37E-02	1.91E-03
0.76	1308	0.714	-5.11E-02	2.61E-03

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

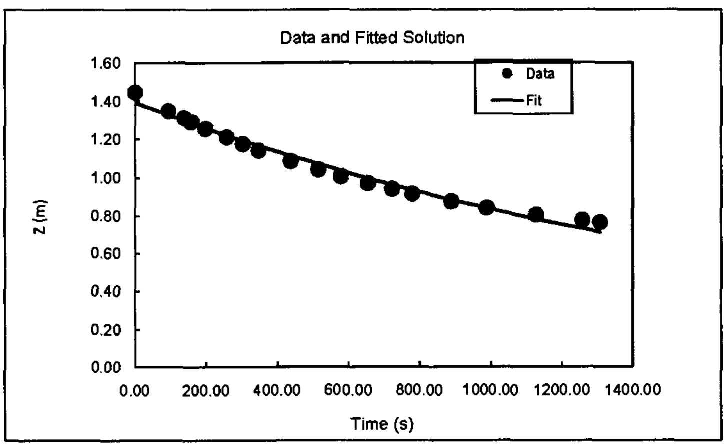
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.392
65	1.346
131	1.302
196	1.259
262	1.218
327	1.178
392	1.139
458	1.102
523	1.065
589	1.030
654	0.997
719	0.964
785	0.932
850	0.902
916	0.872
981	0.843
1046	0.816
1112	0.789
1177	0.763
1243	0.738
1308	0.714

Δt (s) = 65



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 2

Test ID: CP4-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

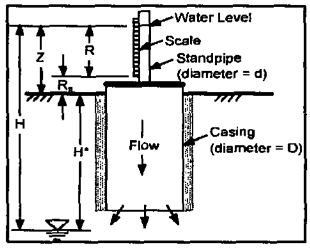
SOLUTION -TRIAL 1
K (m/s) = **1.80E-07**
Total Time (d) = 0.01 0.3 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 52.07
Final Time: 14:04:19

FITTED VARIABLES

a (s^{-1}) = 0.0005177
H^* (m) = 0.00
H_o (m) = 1.43
MSE (m^2) = 1.65E-04
Bias (m) = -8.32E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:48:30	93.0
13:49:05	89.0
13:49:35	86.0
13:51:00	79.0
13:53:00	70.5
13:55:24	62.0
13:57:24	55.5
13:59:23	49.5
14:01:04	45.0
14:04:19	37.5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε^2 (m)
1.45	0.00	1.429	-2.17E-02	4.69E-04
1.41	35	1.403	-7.31E-03	5.35E-05
1.38	65	1.382	1.06E-03	1.12E-06
1.31	150	1.322	1.16E-02	1.34E-04
1.23	270	1.243	1.69E-02	2.86E-04
1.14	414	1.153	1.27E-02	1.60E-04
1.08	534	1.084	8.19E-03	6.70E-05
1.02	653	1.019	3.43E-03	1.17E-05
0.97	754	0.967	-3.49E-03	1.22E-05
0.90	949	0.874	-2.14E-02	4.57E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

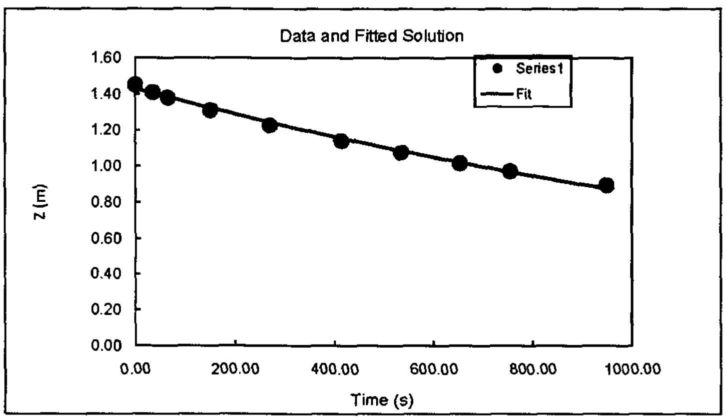
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.429
47	1.394
95	1.361
142	1.328
190	1.295
237	1.264
285	1.233
332	1.203
380	1.174
427	1.146
475	1.118
522	1.091
569	1.064
617	1.038
664	1.013
712	0.989
759	0.965
807	0.941
854	0.918
902	0.896
949	0.874

Δt (s) = 47



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 3

Test ID: CP4-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

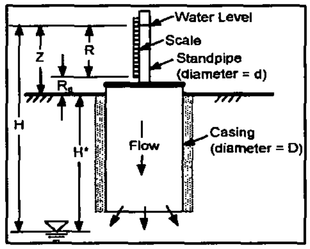
SOLUTION -TRIAL 1
K (m/s) = 1.66E-07
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 52.07
Final Time: 15:35:40

FITTED VARIABLES

a (s^{-1}) = 0.0004771
H* (m) = 0.00
H_o (m) = 1.37
MSE (m^2) = 1.74E-04
Bias (m) = 4.66E-09



Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
15:12:10	88.0
15:13:15	82.0
15:14:15	77.5
15:15:35	72.0
15:16:40	68.0
15:18:00	63.0
15:19:10	59.0
15:20:28	55.0
15:21:48	51.0
15:24:20	44.0
15:25:51	40.0
15:29:30	31.5
15:33:40	23.5
15:35:40	20.5

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.40	0.00	1.373	-2.74E-02	7.48E-04
1.34	65	1.331	-9.29E-03	8.63E-05
1.30	125	1.294	-1.86E-03	3.46E-06
1.24	205	1.245	4.69E-03	2.20E-05
1.20	270	1.207	6.67E-03	4.44E-05
1.15	350	1.162	1.15E-02	1.31E-04
1.11	420	1.124	1.33E-02	1.77E-04
1.07	498	1.083	1.22E-02	1.50E-04
1.03	578	1.042	1.17E-02	1.36E-04
0.96	730	0.969	8.77E-03	7.69E-05
0.92	821	0.928	7.58E-03	5.75E-05
0.84	1040	0.836	4.91E-04	2.41E-07
0.76	1290	0.742	-1.35E-02	1.83E-04
0.73	1410	0.701	-2.48E-02	6.16E-04

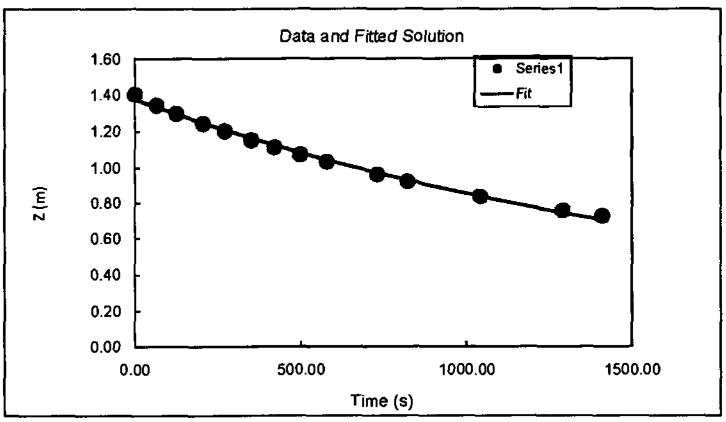
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.373
71	1.328
141	1.284
212	1.242
282	1.200
353	1.161
423	1.122
494	1.085
564	1.049
635	1.015
705	0.981
776	0.949
846	0.917
917	0.887
987	0.858
1058	0.829
1128	0.802
1199	0.775
1269	0.750
1340	0.725
1410	0.701

Δt (s) = 71



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 4

Test ID:	CP4-SE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = **1.62E-07**

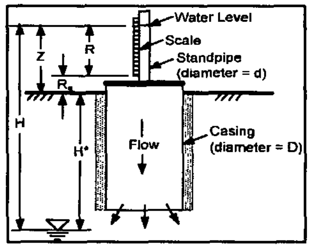
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_a (cm) =	52.07
Final Time:	15:57:50

FITTED VARIABLES

a (s^{-1}) =	0.0004660
H* (m) =	0.00
H_o (m) =	1.36
MSE (m^2) =	7.70E-05
Bias (m) =	-1.16E-09



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
15:35:54	86.0
15:36:34	82.5
15:37:05	80.0
15:39:32	70.5
15:40:50	66.0
15:42:00	62.0
15:43:52	56.0
15:45:14	52.0
15:47:00	47.0
15:48:54	42.0
15:52:00	34.5
15:53:59	30.5
15:55:12	28.0
15:56:45	25.0
15:57:50	23.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.38	0.00	1.363	-1.77E-02	3.12E-04
1.35	40	1.338	-7.84E-03	6.14E-05
1.32	71	1.319	-2.02E-03	4.10E-06
1.23	218	1.231	5.67E-03	3.22E-05
1.18	296	1.187	6.72E-03	4.52E-05
1.14	366	1.149	8.62E-03	7.42E-05
1.08	478	1.091	1.02E-02	1.04E-04
1.04	560	1.050	9.28E-03	8.61E-05
0.99	666	0.999	8.68E-03	7.53E-05
0.94	780	0.948	6.98E-03	4.87E-05
0.87	966	0.869	3.30E-03	1.09E-05
0.83	1085	0.822	-3.58E-03	1.28E-05
0.80	1158	0.795	-6.07E-03	3.68E-05
0.77	1251	0.761	-9.77E-03	9.54E-05
0.75	1316	0.738	-1.25E-02	1.56E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

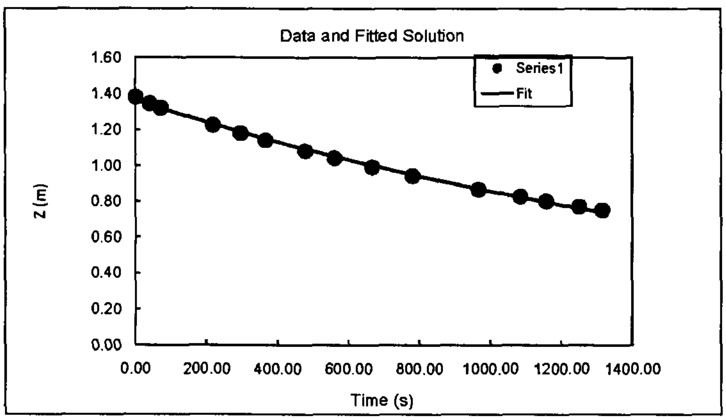
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.363
66	1.322
132	1.282
197	1.243
263	1.206
329	1.169
395	1.134
461	1.100
526	1.067
592	1.034
658	1.003
724	0.973
790	0.943
855	0.915
921	0.887
987	0.861
1053	0.835
1119	0.809
1184	0.785
1250	0.761
1316	0.738

Δt (s) = 66



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 5

Test ID:	CP4-SE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

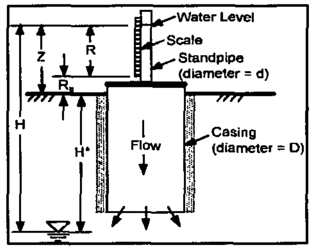
K (m/s) =	**1.78E-07**	
Total Time (d) =	0.01	0.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	9:44:42

FITTED VARIABLES

a (s^{-1}) =	0.0005118
H* (m) =	0.00
H_o (m) =	1.48
MSE (m^2) =	2.21E-04
Bias (m) =	9.04E-09



Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
9:24:00	100.0
9:25:00	90.5
9:27:00	83.5
9:28:00	76.5
9:29:30	71.7
9:31:23	64.7
9:32:00	62.5
9:34:15	55.0
9:35:40	50.6
9:36:30	48.3
9:38:23	43.5
9:39:47	40.0
9:40:30	37.8
9:41:34	35.3
9:43:42	29.8
9:44:42	27.7

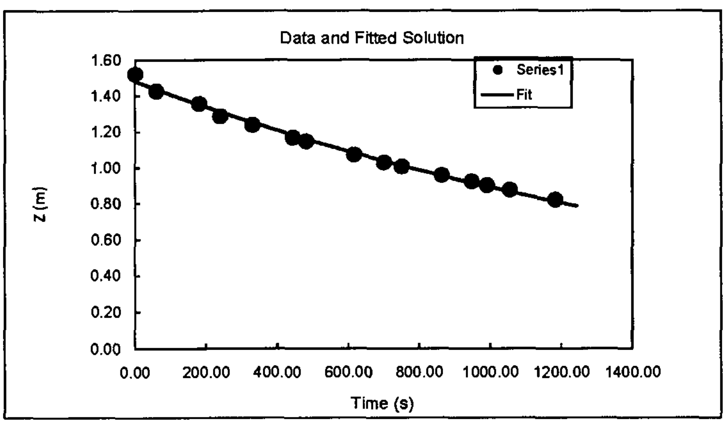
Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.52	0.00	1.480	-4.10E-02	1.68E-03
1.43	60	1.435	9.29E-03	8.63E-05
1.36	180	1.350	-6.19E-03	3.83E-05
1.29	240	1.309	2.30E-02	5.29E-04
1.24	330	1.250	1.21E-02	1.46E-04
1.17	443	1.180	1.19E-02	1.41E-04
1.15	480	1.157	1.17E-02	1.38E-04
1.07	615	1.080	9.48E-03	8.98E-05
1.03	700	1.034	7.50E-03	5.62E-05
1.00	750	1.008	4.37E-03	1.91E-05
0.96	863	0.951	-4.27E-03	1.83E-05
0.92	947	0.911	-9.31E-03	8.66E-05
0.90	990	0.892	-7.15E-03	5.11E-05
0.87	1054	0.863	-1.09E-02	1.18E-04
0.82	1182	0.808	-1.06E-02	1.12E-04

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.480
62	1.433
124	1.389
186	1.345
248	1.303
310	1.262
373	1.223
435	1.185
497	1.148
559	1.112
621	1.077
683	1.043
745	1.011
807	0.979
869	0.946
931	0.919
994	0.890
1056	0.862
1118	0.835
1180	0.809
1242	0.784

Δt (s) = 62



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

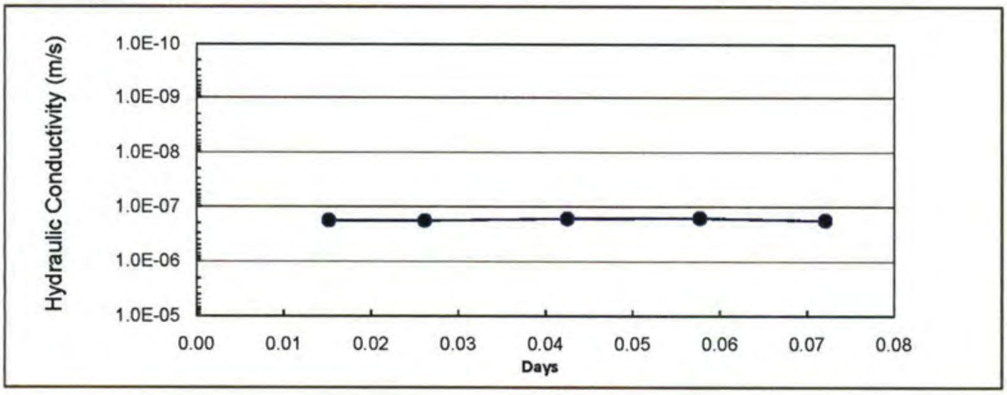
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.015	0.015	1.77E-07
2	0.011	0.026	1.80E-07
3	0.016	0.042	1.66E-07
4	0.015	0.058	1.62E-07
5	0.014	0.072	1.78E-07

CP4-SE

Field Hydraulic Conductivity

1.71E-07 m/s

1.71E-05 cm/s



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 1

Test ID: CP5-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

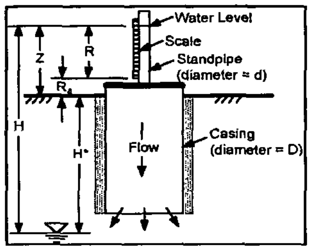
SOLUTION -TRIAL 1
K (m/s) = **1.41E-07**
Total Time (d) = 0.03 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_s (cm) = 52.07
Final Time: 11:45:10

FITTED VARIABLES

a (s^{-1}) = 0.0004064
H* (m) = 0.00
H_o (m) = 1.48
MSE (m^2) = 3.40E-04
Bias (m) = 5.38E-08



Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
11:06:57	100.0
11:09:02	90.0
11:11:28	80.0
11:14:16	70.0
11:17:30	60.0
11:21:48	49.0
11:25:50	40.0
11:29:21	33.0
11:31:08	30.0
11:32:46	27.0
11:35:00	23.0
11:36:48	20.0
11:40:32	15.0
11:45:10	9.5

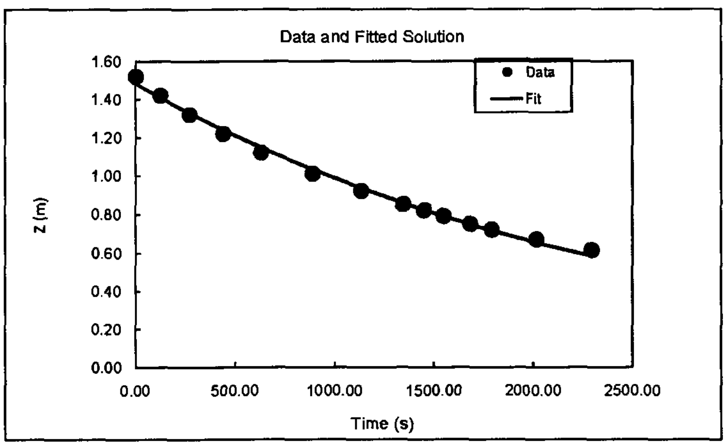
Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.52	0.00	1.484	-3.72E-02	1.38E-03
1.42	125	1.410	-1.07E-02	1.14E-04
1.32	271	1.329	8.11E-03	6.57E-05
1.22	439	1.241	2.04E-02	4.16E-04
1.12	633	1.147	2.63E-02	6.92E-04
1.01	891	1.033	2.21E-02	4.89E-04
0.92	1133	0.936	1.54E-02	2.36E-04
0.85	1344	0.859	8.44E-03	7.13E-05
0.82	1451	0.823	1.88E-03	3.53E-06
0.79	1549	0.790	-2.40E-04	5.76E-08
0.75	1683	0.749	-2.14E-03	4.57E-06
0.72	1791	0.716	-4.29E-03	1.84E-05
0.67	2015	0.654	-1.66E-02	2.76E-04
0.62	2293	0.584	-3.15E-02	9.93E-04

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.484
115	1.416
229	1.352
344	1.290
459	1.231
573	1.175
688	1.122
803	1.071
917	1.022
1032	0.975
1147	0.931
1261	0.889
1376	0.848
1490	0.809
1605	0.773
1720	0.737
1834	0.704
1949	0.672
2064	0.641
2178	0.612
2293	0.584

Δt (s) = 115



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 2

Test ID: CP5-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

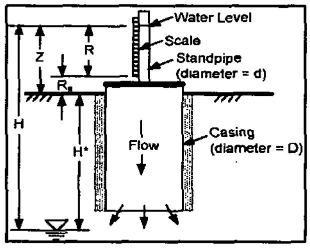
SOLUTION -TRIAL 1
K (m/s) = **1.36E-07**
Total Time (d) = 0.03 0.6 hrs

FIXED VARIABLES

d (cm) = 1.905
D (cm) = 29.845
R_a (cm) = 52.07
Final Time: 12:24:33

FITTED VARIABLES

a (s^{-1}) = 0.0003927
H* (m) = 0.00
H_o (m) = 1.49
MSE (m^2) = 3.92E-04
Bias (m) = -4.07E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
11:46:49	100.0
11:49:12	89.0
11:51:37	80.0
11:56:13	65.0
12:01:26	51.0
12:09:14	35.0
12:18:04	20.0
12:24:33	12.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	ε² (m)
1.52	0.00	1.490	-3.03E-02	9.21E-04
1.41	143	1.409	-1.74E-03	3.02E-06
1.32	288	1.331	1.03E-02	1.05E-04
1.17	564	1.194	2.35E-02	5.54E-04
1.03	877	1.056	2.54E-02	6.45E-04
0.87	1345	0.879	8.08E-03	6.54E-05
0.72	1875	0.714	-7.05E-03	4.97E-05
0.64	2264	0.613	-2.82E-02	7.93E-04

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

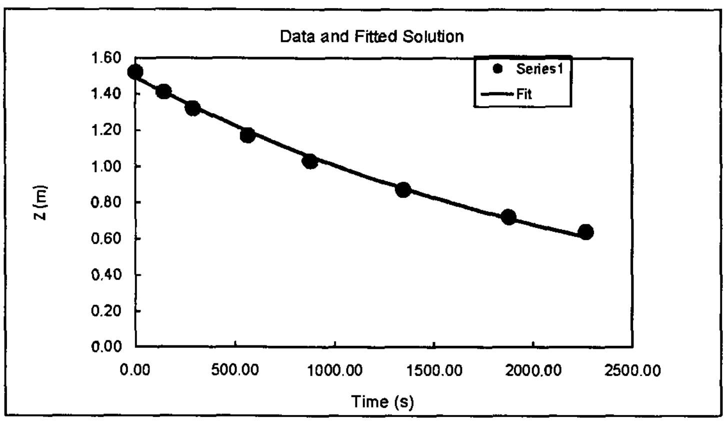
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.490
113	1.426
226	1.364
340	1.304
453	1.248
566	1.193
679	1.141
792	1.092
906	1.044
1019	0.999
1132	0.955
1245	0.914
1358	0.874
1472	0.836
1585	0.800
1698	0.765
1811	0.732
1924	0.700
2038	0.669
2151	0.640
2264	0.613

Δt (s) = 113



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

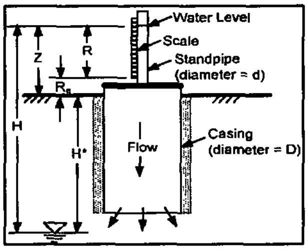
TRIAL 3

Test ID: CP5-SE | **Installer:** XW
Project: Cedar Rapids | **Analyst:** CHB

SOLUTION -TRIAL 1
K (m/s) = 1.30E-07
Total Time (d) = 0.02 | 0.4 hrs

FIXED VARIABLES
- d (cm) = 1.905
- D (cm) = 29.845
- R_s (cm) = 52.07
- Final Time: 12:46:47

FITTED VARIABLES
- a (s^{-1}) = 0.0003752
- H* (m) = 0.00
- H_0 (m) = 1.16
- MSE (m^2) = 4.31E-05
- Bias (m) = 7.91E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
12:24:55	65.0
12:29:45	52.0
12:35:26	39.0
12:40:15	30.0
12:46:47	20.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
1.17	0.00	1.164	-6.42E-03	4.12E-05
1.04	290	1.044	3.55E-03	1.26E-05
0.91	631	0.919	8.15E-03	6.64E-05
0.82	920	0.824	3.73E-03	1.39E-05
0.72	1312	0.712	-9.02E-03	8.13E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

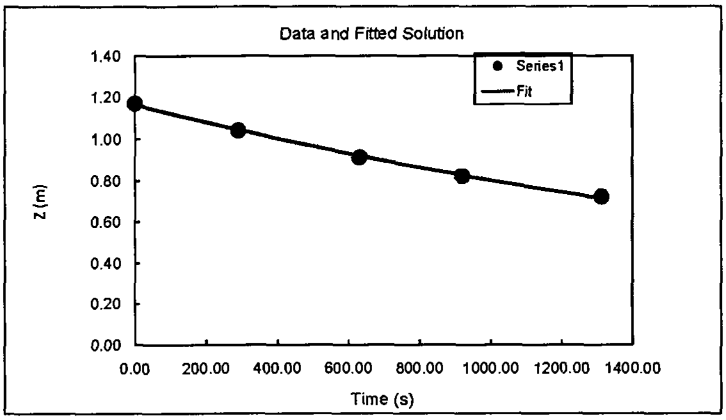
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	1.164
66	1.136
131	1.108
197	1.081
262	1.055
328	1.029
394	1.004
459	0.980
525	0.956
590	0.933
656	0.910
722	0.888
787	0.867
853	0.845
918	0.825
984	0.805
1050	0.785
1115	0.766
1181	0.748
1246	0.729
1312	0.712

Δt (s) = 66



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 4

Test ID:	CP5-SE	**Installer:**	XW
Project:	Cedar Rapids	**Analyst:**	CHB

SOLUTION -TRIAL 1

K (m/s) = **9.99E-08**

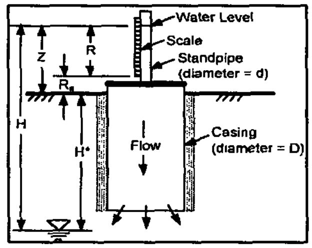
Total Time (d) = 0.01 — 0.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	14:09:05

FITTED VARIABLES

a (s^{-1}) =	0.0002877
H* (m) =	0.00
H_o (m) =	0.72
MSE (m^2) =	6.34E-06
Bias (m) =	-1.02E-11



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
13:50:10	20.0
13:52:15	17.0
13:54:45	14.0
13:57:18	11.0
14:00:12	8.0
14:03:08	5.0
14:06:35	2.0
14:09:05	0.0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.72	0.00	0.717	-4.15E-03	1.72E-05
0.69	125	0.691	5.46E-04	2.98E-07
0.66	275	0.662	1.35E-03	1.83E-06
0.63	428	0.634	2.85E-03	8.11E-06
0.60	602	0.603	1.92E-03	3.68E-06
0.57	778	0.573	2.17E-03	4.70E-06
0.54	985	0.540	-9.47E-04	8.97E-07
0.52	1135	0.517	-3.74E-03	1.40E-05

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

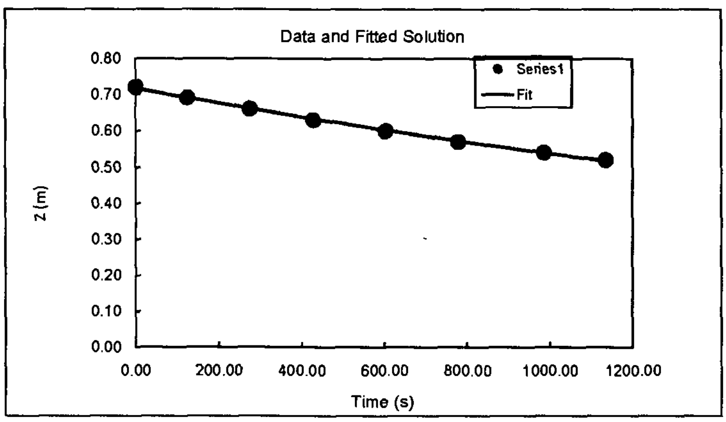
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.717
57	0.705
114	0.694
170	0.682
227	0.671
284	0.660
341	0.650
397	0.639
454	0.629
511	0.619
568	0.609
624	0.599
681	0.589
738	0.580
795	0.570
851	0.561
908	0.552
965	0.543
1022	0.534
1078	0.525
1135	0.517

Δt (s) = 57



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

TRIAL 5

Test ID: CP5-SE **Installer:** XW
Project: Cedar Rapids **Analyst:** CHB

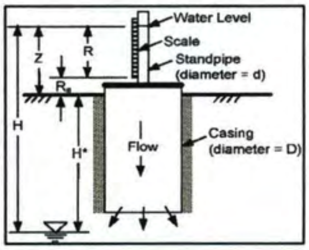
SOLUTION -TRIAL 1
K (m/s) = **1.06E-07**
Total Time (d) = 0.01 0.3 hrs

FIXED VARIABLES

d (cm) =	1.905
D (cm) =	29.845
R_s (cm) =	52.07
Final Time:	14:28:48

FITTED VARIABLES

a (s^{-1}) =	0.0003046
H* (m) =	0.00
H_o (m) =	0.80
MSE (m^2) =	2.84E-06
Bias (m) =	6.95E-11



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
14:10:13	28.0
14:12:09	25.0
14:14:22	22.0
14:15:51	20.0
14:20:54	13.5
14:25:53	8.3
14:28:48	4.7

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.80	0.00	0.799	-1.40E-03	1.96E-06
0.77	116	0.772	8.55E-04	7.31E-07
0.74	249	0.741	2.26E-04	5.11E-08
0.72	338	0.721	4.12E-04	1.70E-07
0.66	641	0.658	1.84E-03	3.40E-06
0.60	940	0.600	-3.39E-03	1.15E-05
0.57	1115	0.569	1.45E-03	2.11E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

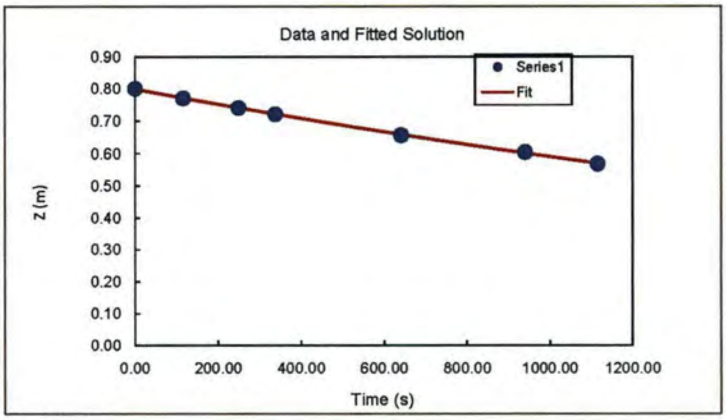
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.799
56	0.786
112	0.773
167	0.760
223	0.747
279	0.734
335	0.722
390	0.710
446	0.698
502	0.686
558	0.674
613	0.663
669	0.652
725	0.641
781	0.630
836	0.620
892	0.609
948	0.599
1004	0.589
1059	0.579
1115	0.569

Δt (s) = 56



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Cedar Rapids - Composite Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

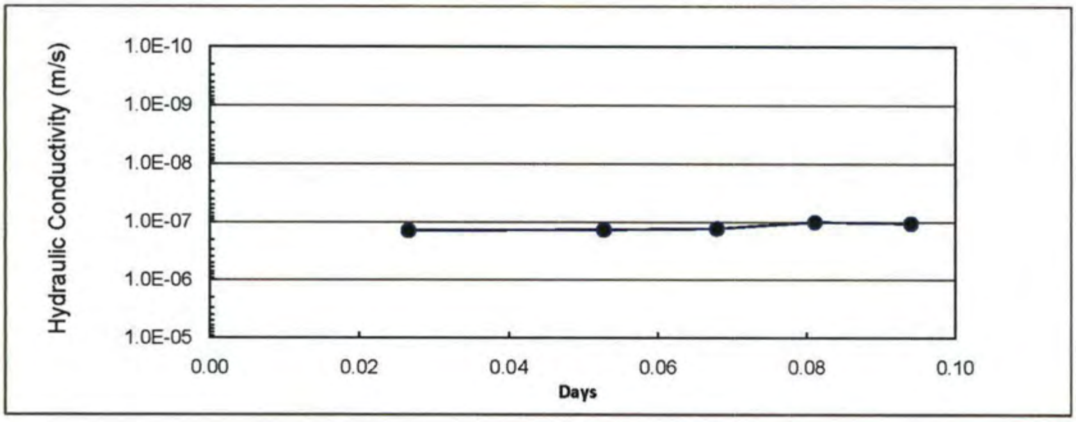
Trial	Time (d)	Total Time (d)	K (m/s)
1	0.027	0.027	1.41E-07
2	0.026	0.053	1.36E-07
3	0.015	0.068	1.30E-07
4	0.013	0.081	9.99E-08
5	0.013	0.094	1.06E-07

CP5-SE

Field Hydraulic Conductivity

1.23E-07 m/s

1.23E-05 cm/s



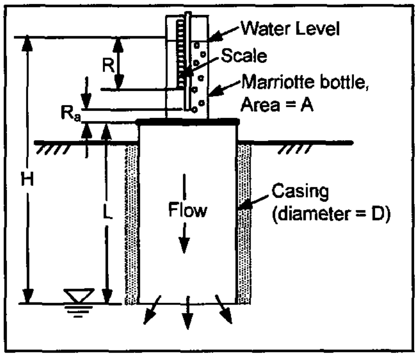
Single-Stage Constant Head Borehole Test
Helena - Store-and-Release Cover

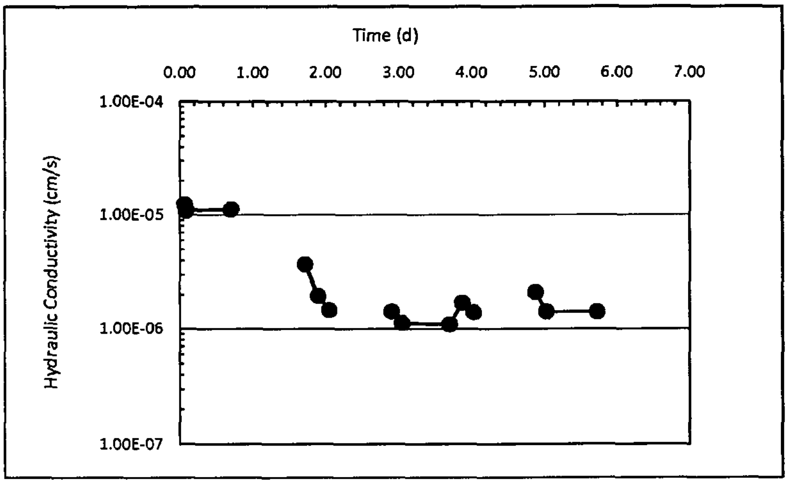
Project:	Helena	**Installer:**	XW
Date:	08/19/08	**Analyst:**	JS
Test ID:	1		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
8/19/08 15:00	38.5			
8/19/08 16:27	43.3	7.34E-02	0.060	1.23E-05
8/19/08 17:02	45	6.46E-02	0.085	1.09E-05
8/20/08 7:50	89.3	6.64E-02	0.701	1.12E-05
8/20/08 15:00	38.1	-1.58E-01	1.000	
8/21/08 8:05	55	2.19E-02	1.712	3.69E-06
8/21/08 12:30	57.3	1.15E-02	1.896	1.94E-06
8/21/08 16:05	58.7	8.66E-03	2.045	1.46E-06
8/22/08 8:27	40	-2.53E-02	2.727	
8/22/08 12:40	41.6	8.41E-03	2.903	1.41E-06
8/22/08 16:00	42.6	6.65E-03	3.042	1.12E-06
8/23/08 7:46	47.2	6.46E-03	3.699	1.09E-06
8/23/08 11:57	49.1	1.01E-02	3.873	1.69E-06
8/23/08 15:42	50.5	8.29E-03	4.029	1.39E-06
8/24/08 7:55	49	-2.05E-03	4.705	
8/24/08 12:11	51.4	1.25E-02	4.883	2.10E-06
8/24/08 15:37	52.7	8.39E-03	5.026	1.41E-06
8/25/08 8:22	59.0	8.34E-03	5.724	1.40E-06
			Average	1.58E-06





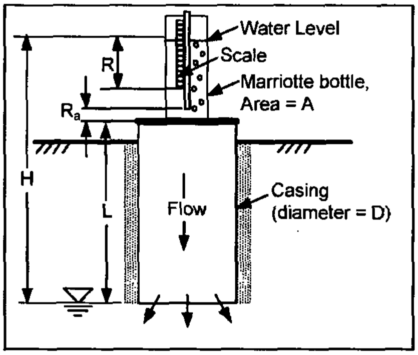
Single-Stage Constant Head Borehole Test
Helena - Store-and-Release Cover

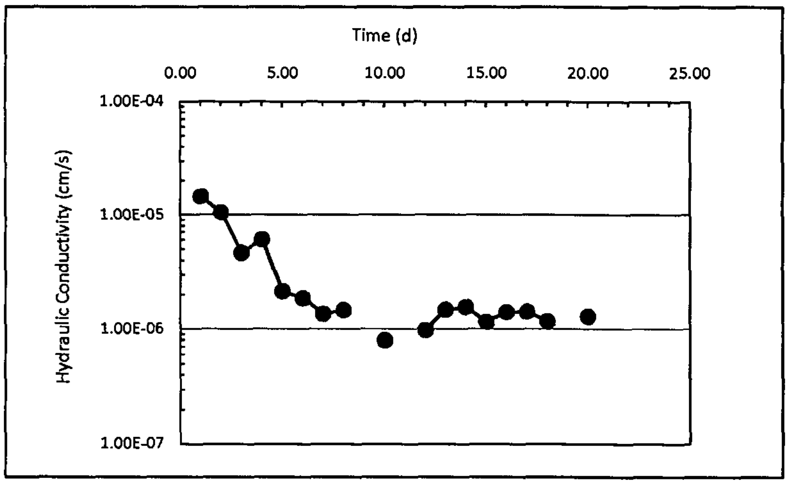
Project:	Helena	**Installer:**	XW
Date:	08/19/08	**Analyst:**	JS
Test ID:	1		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: Time	R (cm)	**Computations:** Q (cm^3/s)	Time (d)	K (cm/s)
8/19/08 14:07	30.5			
8/19/08 15:47	37	8.64E-02	0.069	1.45E-05
8/19/08 17:02	40.5	6.21E-02	0.122	1.04E-05
8/20/08 8:43	60	2.76E-02	0.775	4.63E-06
8/20/08 9:35	61.4	3.58E-02	0.811	6.02E-06
8/20/08 15:00	64.5	1.27E-02	1.037	2.13E-06
8/21/08 8:05	73	1.10E-02	1.749	1.85E-06
8/21/08 12:30	74.6	8.03E-03	1.933	1.35E-06
8/21/08 16:05	76	8.66E-03	2.082	1.46E-06
8/22/08 8:27	40.5	-4.81E-02	2.764	
8/22/08 16:00	42.1	4.70E-03	3.078	7.90E-07
8/22/08 16:00	43	#DIV/0!	3.078	
8/23/08 7:46	47.1	5.76E-03	3.736	9.69E-07
8/23/08 11:57	48.75	8.73E-03	3.910	1.47E-06
8/23/08 15:42	50.3	9.18E-03	4.066	1.54E-06
8/24/08 7:55	55.3	6.83E-03	4.742	1.15E-06
8/24/08 12:11	56.9	8.31E-03	4.920	1.40E-06
8/24/08 15:37	58.2	8.39E-03	5.063	1.41E-06
8/25/08 8:22	63.4	6.88E-03	5.760	1.16E-06
			Average	1.28E-06





Single-Stage Constant Head Borehole Test
Helena - Store-and-Release Cover

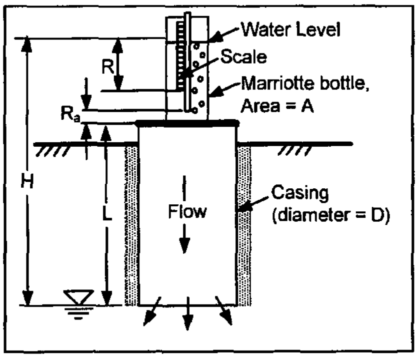
Project:	Helena	**Installer:**	XW
Date:	08/19/08	**Analyst:**	JS
Test ID:	1		

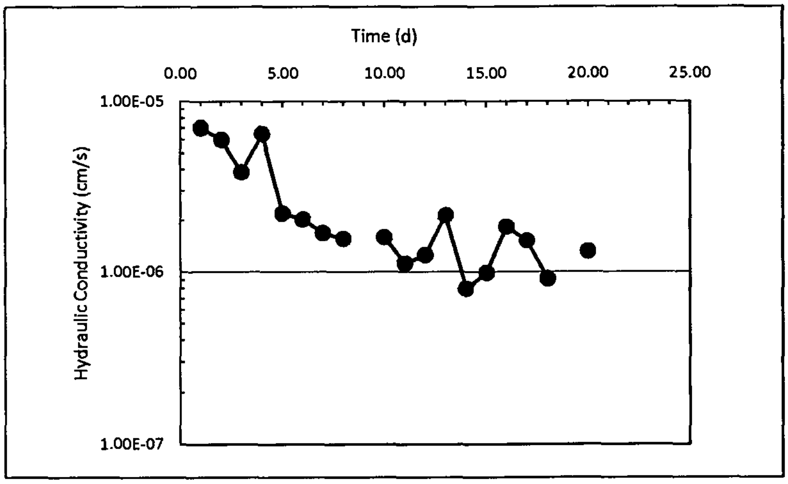
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
8/19/08 14:08	45.7			
8/19/08 15:47	48.8	4.16E-02	0.069	7.00E-06
8/19/08 17:02	50.8	3.55E-02	0.121	5.96E-06
8/20/08 8:43	67	2.29E-02	0.774	3.85E-06
8/20/08 9:35	68.5	3.84E-02	0.810	6.45E-06
8/20/08 15:00	71.7	1.31E-02	1.036	2.20E-06
8/21/08 8:05	81	1.21E-02	1.748	2.03E-06
8/21/08 12:30	83	1.00E-02	1.932	1.69E-06
8/21/08 16:05	84.5	9.28E-03	2.081	1.56E-06
8/22/08 8:27	38.9	-6.18E-02	2.763	
8/22/08 12:40	40.7	9.46E-03	2.939	1.59E-06
8/22/08 16:00	41.7	6.65E-03	3.078	1.12E-06
8/23/08 7:46	47	7.45E-03	3.735	1.25E-06
8/23/08 11:57	49.4	1.27E-02	3.909	2.14E-06
8/23/08 15:42	50.2	4.74E-03	4.065	7.97E-07
8/24/08 7:55	54.5	5.88E-03	4.741	9.88E-07
8/24/08 12:11	56.6	1.09E-02	4.919	1.83E-06
8/24/08 15:37	58.0	9.03E-03	5.062	1.52E-06
8/25/08 8:22	62.1	5.43E-03	5.760	9.13E-07
			Average	1.31E-06



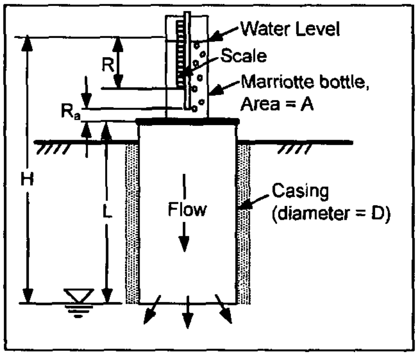


Single-Stage Constant Head Borehole Test
Helena - Store-and-Release Cover

Project:	Helena		**Installer:**	XW
Date:	08/19/08		**Analyst:**	JS
Test ID:	1			

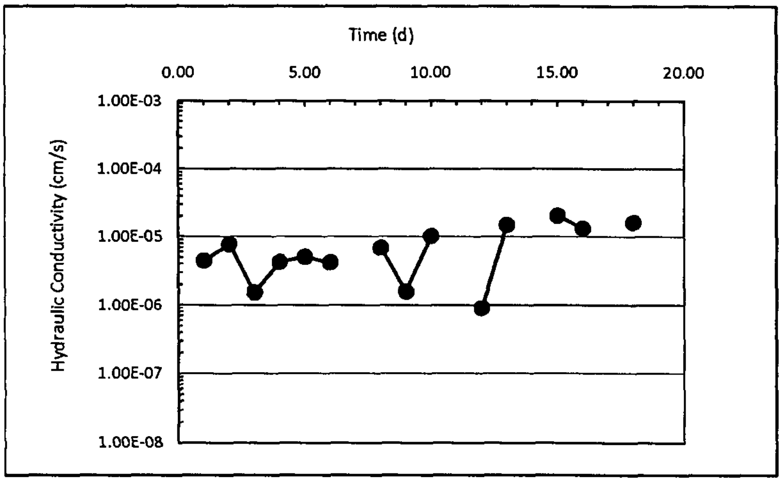
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96



Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
8/19/08 17:50	36.5				
8/20/08 8:43	54.2	2.64E-02	0.620	4.43E-06	
8/20/08 9:35	56	4.60E-02	0.656	7.74E-06	
8/20/08 15:00	58.2	9.00E-03	0.882	1.51E-06	
8/21/08 8:05	77.5	2.50E-02	1.594	4.21E-06	
8/21/08 12:30	83.5	3.01E-02	1.778	5.06E-06	
8/21/08 16:05	87.5	2.47E-02	1.927	4.16E-06	
8/22/08 8:35	36.4	-6.86E-02	2.615		
8/22/08 12:40	43.9	4.07E-02	2.785	6.85E-06	
8/22/08 16:00	45.3	9.31E-03	2.924	1.57E-06	
8/23/08 7:46	88.5	6.07E-02	3.581	1.02E-05	Bottle leaking from coupler
8/23/08 7:47	48.5	-8.63E+01	3.581		
8/23/08 11:57	49.5	5.31E-03	3.755	8.92E-07	
8/23/08 15:42	64.5	8.88E-02	3.911	1.49E-05	Still leaking from coupler
8/24/08 7:55	51	-1.85E-02	4.587		
8/24/08 12:11	74.5	1.22E-01	4.765	2.05E-05	
8/24/08 15:37	86.7	7.87E-02	4.908	1.32E-05	
			Average	1.62E-05	



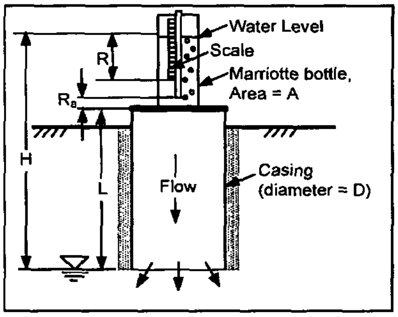
Single-Stage Constant Head Borehole Test
Monticello - Store-an-Release Cover

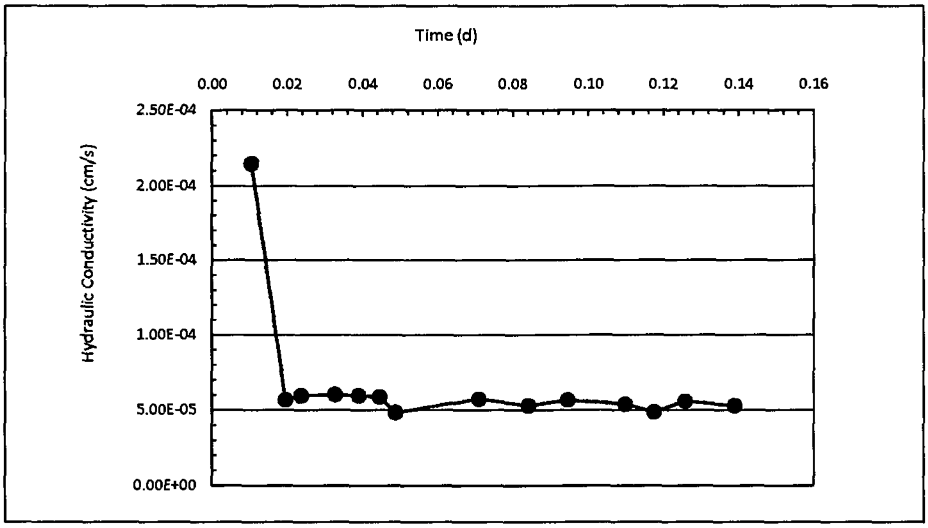
Project:	Monticello	**Installer:**	XW
Date:	07/23/07	**Analyst:**	CHB
Test ID:	MC-1		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
8:57:00	22.7			
9:12:00	37.1	1.28E+00	0.0104	2.15E-04
9:25:00	40.4	3.38E-01	0.0194	5.68E-05
9:31:00	42.0	3.55E-01	0.0236	5.96E-05
9:44:00	45.5	3.58E-01	0.0326	6.02E-05
9:53:00	47.9	3.55E-01	0.0389	5.96E-05
10:01:00	50.0	3.49E-01	0.0444	5.87E-05
10:07:00	51.3	2.88E-01	0.0486	4.84E-05
10:39:00	59.5	3.41E-01	0.0708	5.73E-05
10:58:00	64.0	3.15E-01	0.0840	5.30E-05
11:13:00	67.8	3.37E-01	0.0944	5.66E-05
11:35:00	73.1	3.20E-01	0.1097	5.39E-05
11:46:00	75.5	2.90E-01	0.1174	4.88E-05
11:58:00	78.5	3.33E-01	0.1257	5.59E-05
12:17:00	83.0	3.15E-01	0.1389	5.30E-05
12:37:00	87.5			
				AVG
				5.26E-05





Single-Stage Constant Head Borehole Test
Monitcello - Store-and-Release Cover

Project: Monticello
Date: 07/23/07
Test ID: MC-2

Installer: XW
Analyst: CHB

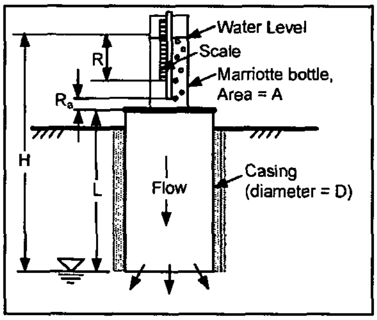
Fixed Variables:

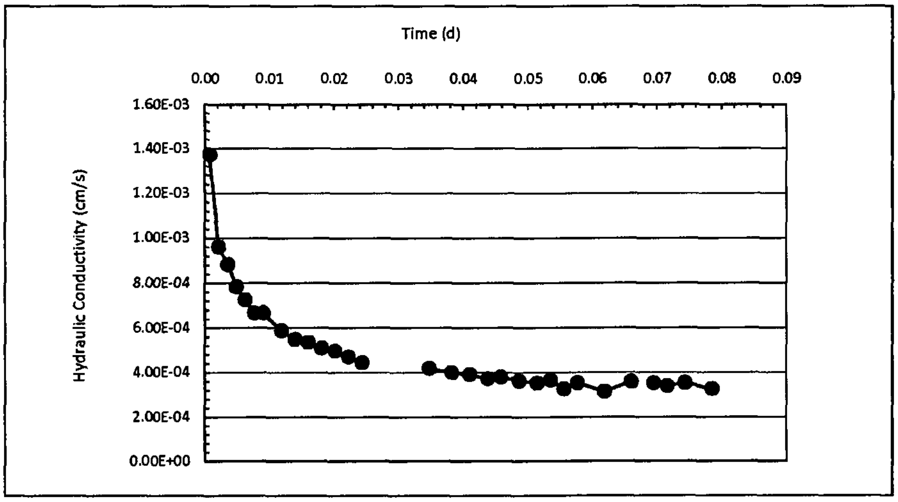
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
12:59:00	38.0			
13:00:00	41.5	4.66E+00	0.001	1.37E-03
13:02:00	46.4	3.26E+00	0.002	9.60E-04
13:04:00	50.9	2.99E+00	0.003	8.82E-04
13:06:00	54.9	2.66E+00	0.005	7.84E-04
13:08:00	58.6	2.46E+00	0.006	7.25E-04
13:10:00	62.0	2.26E+00	0.008	6.66E-04
13:12:00	65.4	2.26E+00	0.009	6.66E-04
13:16:00	71.4	1.99E+00	0.012	5.88E-04
13:19:00	75.6	1.86E+00	0.014	5.49E-04
13:22:00	79.7	1.82E+00	0.016	5.36E-04
13:25:00	83.6	1.73E+00	0.018	5.10E-04
13:28:00	87.4	1.68E+00	0.020	4.97E-04
13:31:00	91.0	1.60E+00	0.022	4.70E-04
13:34:00	94.4	1.51E+00	0.024	4.44E-04
13:38:00	39.3	-1.83E+01	0.027	
13:40:00	41.6	1.53E+00	0.028	
13:43:00	45.1	1.55E+00	0.031	
13:46:00	48.4	1.46E+00	0.033	
13:49:00	51.6	1.42E+00	0.035	4.18E-04
13:54:00	56.7	1.36E+00	0.038	4.00E-04
13:58:00	60.7	1.33E+00	0.041	3.92E-04
14:02:00	64.5	1.26E+00	0.044	3.72E-04
14:05:00	67.4	1.29E+00	0.046	3.79E-04
14:09:00	71.1	1.23E+00	0.049	3.63E-04
14:13:00	74.7	1.20E+00	0.051	3.53E-04
14:16:00	77.5	1.24E+00	0.053	3.66E-04
14:19:00	80.0	1.11E+00	0.056	3.27E-04
14:22:00	82.7	1.20E+00	0.058	3.53E-04
14:28:00	87.5	1.06E+00	0.062	3.14E-04
14:34:00	93.0	1.22E+00	0.066	3.59E-04
14:37:00	36.0		0.068	
14:39:00	37.8	1.20E+00	0.069	3.53E-04
14:42:00	40.4	1.15E+00	0.072	3.40E-04
14:46:00	44.0	1.20E+00	0.074	3.53E-04
14:52:00	49.0	1.11E+00	0.078	3.27E-04
14:58:00	53.9	1.09E+00	0.083	3.20E-04
15:07:00	61.1	1.06E+00	0.089	3.14E-04
15:21:00	72.3	1.06E+00	0.099	3.14E-04
15:31:00	80.0	1.02E+00	0.106	3.02E-04
15:52:00	95.7	9.94E-01	0.120	2.93E-04

AVG
3.08E-04




Time (d)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
1.60E-03
1.40E-03
1.20E-03
1.00E-03
8.00E-04
6.00E-04
4.00E-04
2.00E-04
0.00E+00
Hydraulic Conductivity (cm/s)

Single-Stage Constant Head Borehole Test
Monitcello - Store-and-Release Cover

Project:	Monticello	**Installer:**	XW
Date:	07/24/07	**Analyst:**	CHB
Test ID:	MC-3		

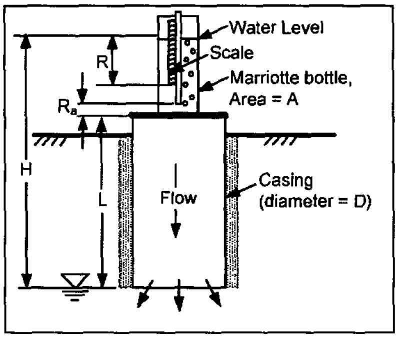
Fixed Variables:

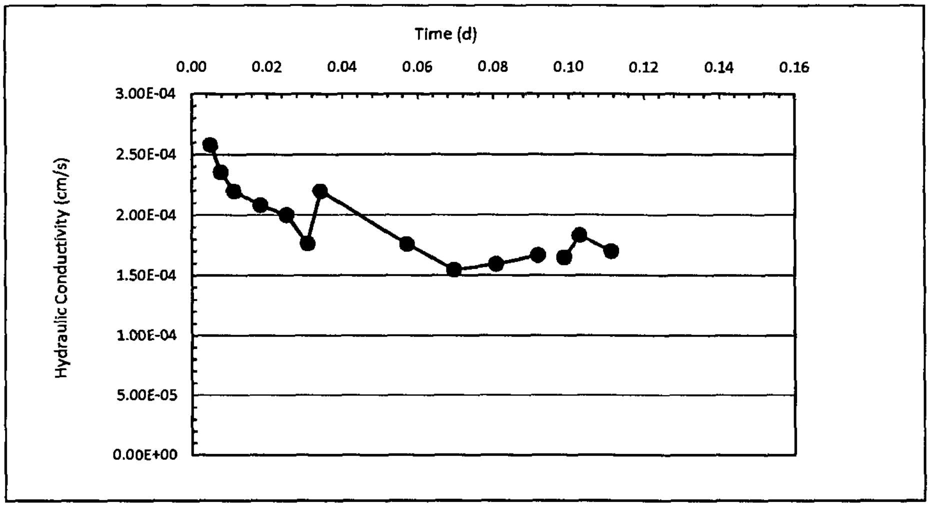
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
9:17:00	30.0			
9:24:00	34.6	8.74E-01	0.005	2.58E-04
9:28:00	37.0	7.98E-01	0.008	2.35E-04
9:33:00	39.8	7.45E-01	0.011	2.20E-04
9:43:00	45.1	7.05E-01	0.018	2.08E-04
9:53:00	50.2	6.78E-01	0.025	2.00E-04
10:01:00	53.8	5.98E-01	0.031	1.76E-04
10:06:00	56.6	7.45E-01	0.034	2.20E-04
10:39:00	71.4	5.96E-01	0.057	1.76E-04
10:57:00	78.5	5.25E-01	0.069	1.55E-04
11:13:00	85.0	5.40E-01	0.081	1.59E-04
11:29:00	91.8	5.65E-01	0.092	1.67E-04
11:34:00	36.0	-1.48E+01	0.095	
11:39:00	38.1	5.59E-01	0.099	1.65E-04
11:45:00	40.9	6.21E-01	0.103	1.83E-04
11:57:00	46.1	5.76E-01	0.111	1.70E-04
12:03:00	48.7	5.76E-01	0.115	
12:16:00	54.2	5.63E-01	0.124	
12:36:00	62.5	5.52E-01	0.138	

AVG
1.70E-04



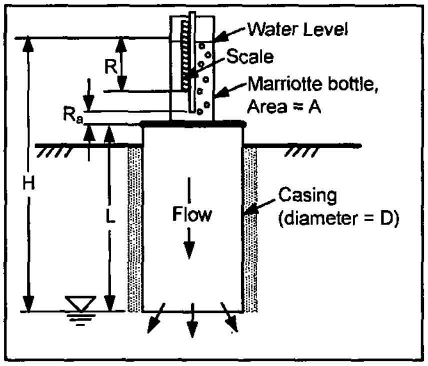


Single-Stage Constant Head Borehole Test
Monitcello - Store-and-Release Cover

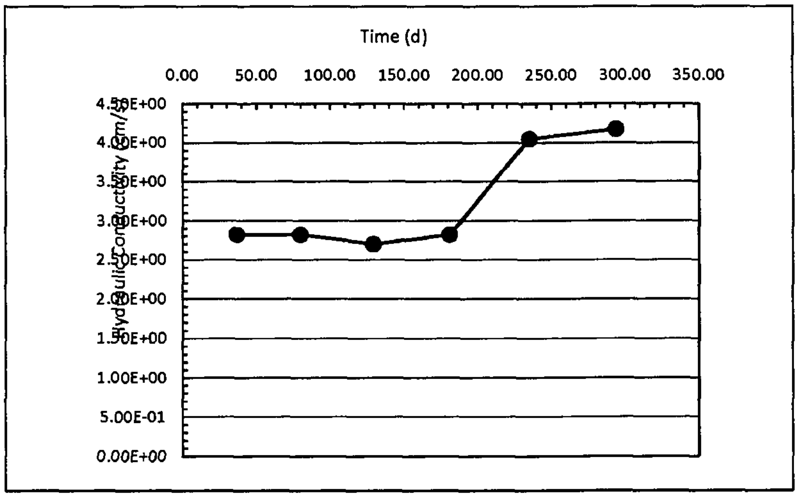
Project:	Monticello	**Installer:**	XW
Date:	07/25/07	**Analyst:**	CHB
Test ID:	MC-5		

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96



Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
14:22:00	32.7			
14:24:00	36.5	1.68E+04	36.5	2.82E+00
14:29:00	43.1	1.68E+04	79.6	2.82E+00
14:34:00	49.4	1.60E+04	129	2.70E+00
14:36:00	51.7	1.68E+04	180.7	2.82E+00
14:38:00	54.1	2.41E+04	234.8	4.05E+00
14:42:00	58.7	2.48E+04	293.5	4.17E+00
				AVG
				2.79E+00

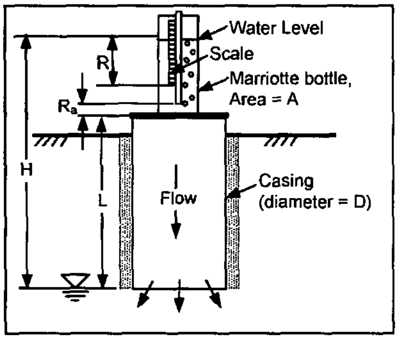


Single-Stage Constant Head Borehole Test
Monitcello - Store-and-Release Cover

Project:	Monticello		**Installer:**	XW
Date:	03/30/07		**Analyst:**	CHB
Test ID:	MC-6			

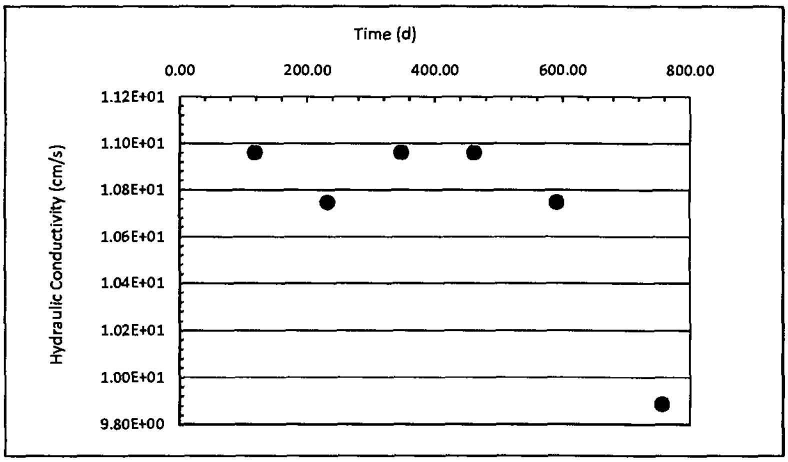
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48



Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4/3/07 15:03	29.5			
4/3/07 15:51	31.0	3.72E+04	118.000	1.10E+01
4/3/07 16:18	31.8	3.65E+04	232.000	1.07E+01
4/3/07 16:52	32.7	3.72E+04	347.000	1.10E+01
4/3/07 17:13	33.4	3.72E+04	461.000	1.10E+01
4/3/07 17:38	34.0	3.65E+04	591.000	1.07E+01
4/3/07 17:57	34.4	3.35E+04	756.000	9.89E+00
			AVG	
				10.9



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Monticello - Store-and-Release Cover

TRIAL 1

Test ID: TSB-4 **Installer:** XW
Project: Monticello **Analyst:** CHB

FIXED VARIABLES

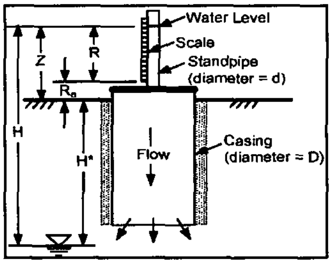
d (cm) = 30.48
D (cm) = 30.48
R_a (cm) = 0
Final Time: 1/0/00 2:17

FITTED VARIABLES

a (s^{-1}) = 0.0009182
H* (m) = 0.31
H_o (m) = 0.60
MSE (m^2) = 1.87E-05
Bias (m) = -2.89E-08

SOLUTION -TRIAL 1

K (m/s) = **7.99E-05**
Total Time (d) = 0.01 0.2 hrs



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/00 2:05	29
1/0/00 2:07	23
1/0/00 2:08	19
1/0/00 2:10	15
1/0/00 2:12	10
1/0/00 2:14	5
1/0/00 2:17	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.29	0	0.290	-3.69E-04	1.36E-07
0.23	120	0.227	-3.10E-03	9.61E-06
0.19	180	0.198	8.03E-03	6.45E-05
0.15	300	0.145	-5.14E-03	2.64E-05
0.10	420	0.097	-2.77E-03	7.68E-06
0.05	540	0.055	4.57E-03	2.09E-05
0.00	720	-0.001	-1.22E-03	1.49E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

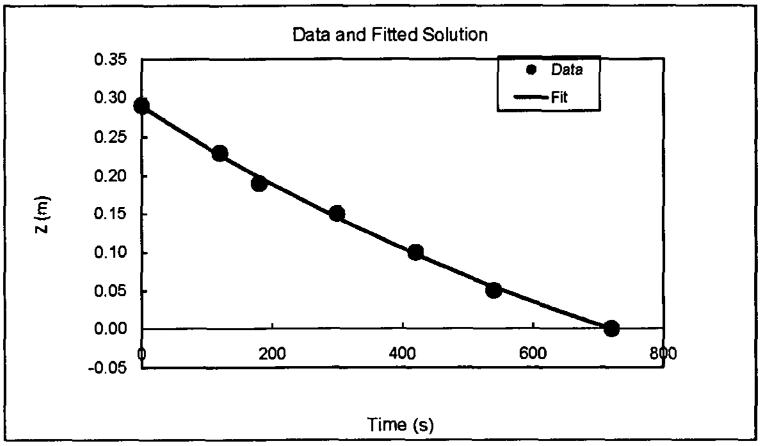
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.290
36	0.270
72	0.251
108	0.233
144	0.215
180	0.198
216	0.181
252	0.165
288	0.150
324	0.135
360	0.120
396	0.106
432	0.093
468	0.080
504	0.067
540	0.055
576	0.043
612	0.031
648	0.020
684	0.009
720	-0.001

Δt (s) = 36



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Monticello - Store-and-Release Cover

TRIAL 2

Test ID: TSB-4 **Installer:** XW
Project: Monticello **Analyst:** CHB

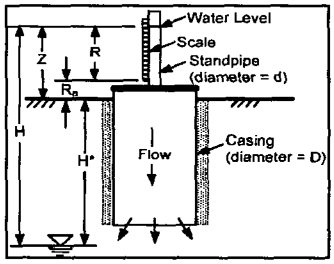
SOLUTION -TRIAL 1
K (m/s) = 1.10E-04
Total Time (d) = 0.01 0.2 hrs

FIXED VARIABLES

d (cm) = 30.48
D (cm) = 30.48
R_0 (cm) = 0
Final Time: 1/0/00 2:31

FITTED VARIABLES

a (s^{-1}) = 0.0012648
H* (m) = 0.18
H_o (m) = 0.49
MSE (m^2) = 3.98E-05
Bias (m) = 6.33E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/00 2:18	30
1/0/00 2:20	25
1/0/00 2:21	20
1/0/00 2:23	15
1/0/00 2:25	10
1/0/00 2:28	5
1/0/00 2:31	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.30	0	0.305	4.74E-03	2.24E-05
0.25	120	0.236	-1.36E-02	1.86E-04
0.20	180	0.206	5.89E-03	3.47E-05
0.15	300	0.151	1.45E-03	2.11E-06
0.10	420	0.105	4.68E-03	2.19E-05
0.05	600	0.047	-3.43E-03	1.18E-05
0.00	780	0.000	2.94E-04	8.66E-08

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90.

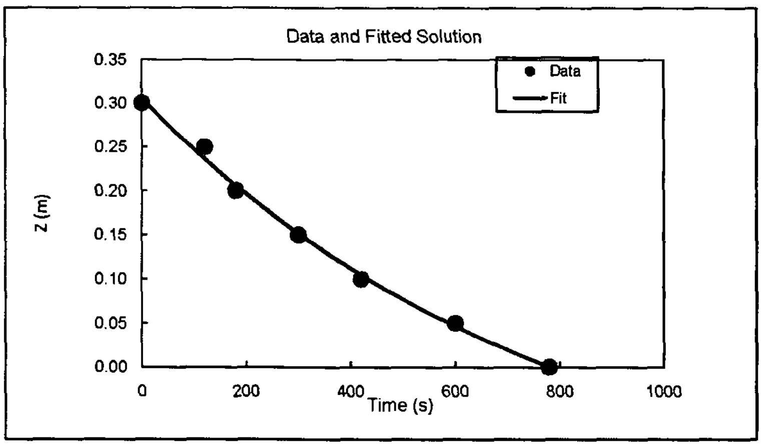
$$\boxed{Z_t = H_o e^{-at} - H^*}$$

$$\boxed{K = \frac{a \pi d^2}{11 D}}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.305
39	0.281
78	0.259
117	0.238
156	0.218
195	0.199
234	0.180
273	0.163
312	0.146
351	0.131
390	0.116
429	0.101
468	0.088
507	0.075
546	0.063
585	0.051
624	0.040
663	0.029
702	0.019
741	0.009
780	0.000

Δt (s) = 39



Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Monticello - Store-and-Release Cover

TRIAL 3

Test ID: TSB-4 **Installer:** XW
Project: Monticello **Analyst:** CHB

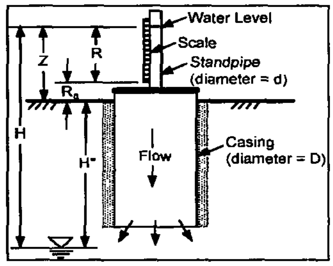
SOLUTION -TRIAL 1
K (m/s) = **1.13E-04**
Total Time (d) = 0.02 0.4 hrs

FIXED VARIABLES

d (cm) = 30.48
D (cm) = 30.48
R_a (cm) = 0
Final Time: 1/0/00 2:56

FITTED VARIABLES

a (s^{-1}) = 0.0012964
H* (m) = 0.05
H_o (m) = 0.35
MSE (m^2) = 6.46E-06
Bias (m) = -1.33E-08



TEMPORAL VARIABLES

Time (m/d/yr h:m)	R (cm)
1/0/00 2:32	30
1/0/00 2:34	25
1/0/00 2:36	20
1/0/00 2:39	15
1/0/00 2:43	10
1/0/00 2:48	5
1/0/00 2:56	0

Z-t COMPUTATIONS

Z (m)	t (s)	Fit Z (m)	ε (m)	$ε^2$ (m)
0.30	0	0.299	-1.16E-03	1.35E-06
0.25	120	0.248	-1.81E-03	3.28E-06
0.20	240	0.205	4.84E-03	2.34E-05
0.15	420	0.151	1.23E-03	1.52E-06
0.10	660	0.097	-3.30E-03	1.09E-05
0.05	960	0.049	-1.44E-03	2.08E-06
0.00	1440	0.002	1.64E-03	2.69E-06

Chiasson Solution:

Chiasson, P. (2005), Method of interpretation of borehole falling-head tests performed in compacted clay liners, *Canadian Geotechnical J.*, 42, 79-90

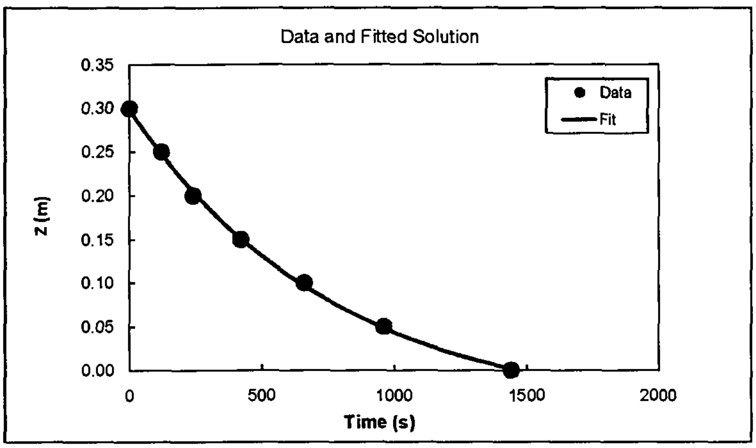
$$Z_t = H_o e^{-at} - H^*$$

$$K = \frac{a \pi d^2}{11 D}$$

SOLUTION FOR GRAPHING

t (s)	Z (m)
0	0.299
72	0.268
144	0.239
216	0.213
288	0.189
360	0.168
432	0.148
504	0.130
576	0.114
648	0.099
720	0.086
792	0.073
864	0.062
936	0.052
1008	0.042
1080	0.034
1152	0.026
1224	0.019
1296	0.013
1368	0.007
1440	0.002

Δt (s) = 72



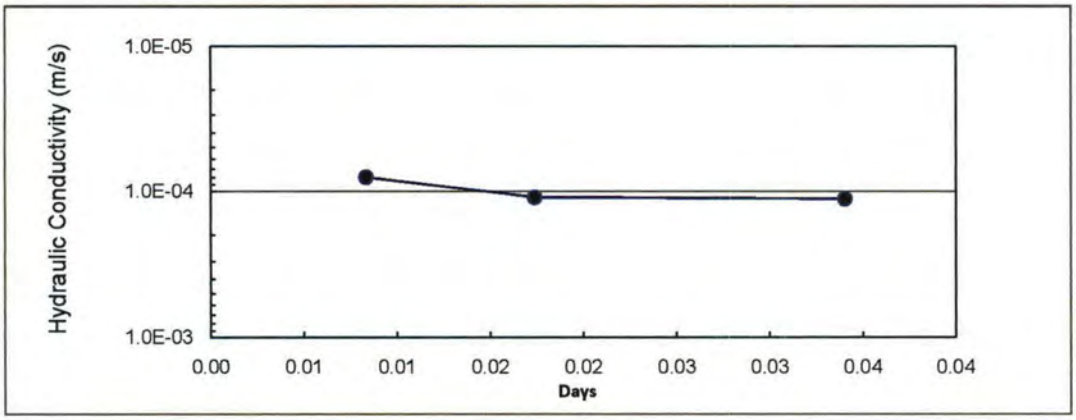
Borehole Hydraulic Conductivity Test Calculator - Isotropic Analysis
Monticello - Store-and-Release Cover

Equilbirum Evaluation & Steady Hydraulic Conductivity Determination

Trial	Time (d)	Total Time (d)	K (m/s)
1	0.008	0.008	7.99E-05
2	0.009	0.017	1.10E-04
3	0.017	0.034	1.13E-04

TSB-4

Field Hydraulic Conductivity
1.13E-04 m/s
1.13E-02 cm/s



Single-Stage Constant Head Borehole Test
Omaha - Composite Cover

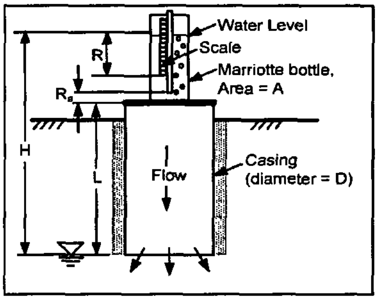
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB1-composite		

Fixed Variables:

Casing Diameter (cm):	30.48	
Standpipe Area (cm^2):	19.44	(50 mm standpipe)
R_a (cm):	10	
L (cm):	60.96	

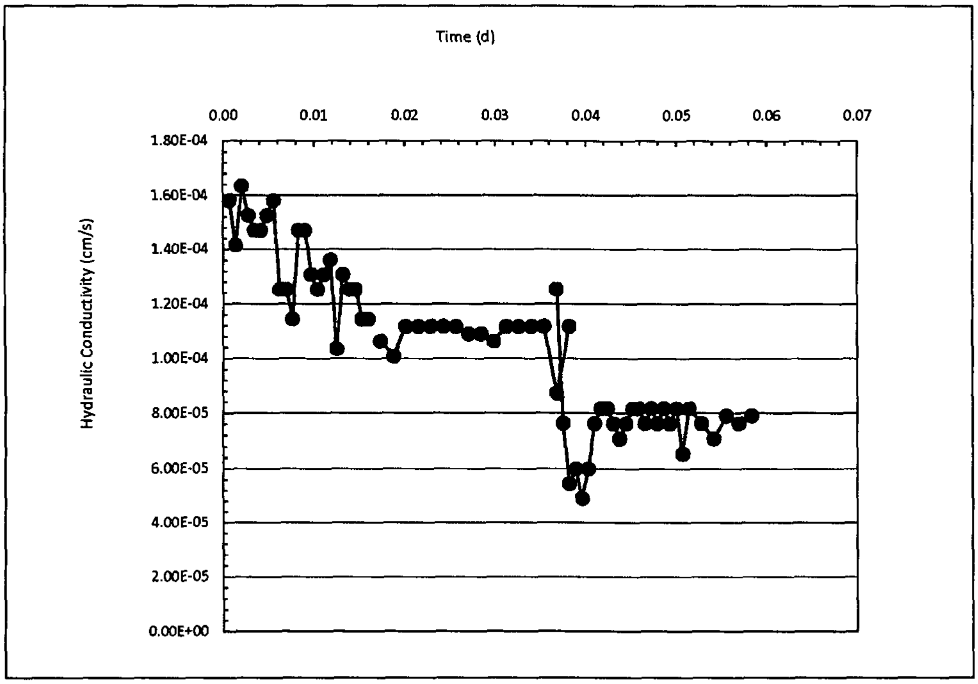
Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
4:05:00	35.5			
4:06:00	38.4	9.40E-01	0.0007	1.58E-04
4:07:00	41.0	8.42E-01	0.0014	1.42E-04
4:08:00	44.0	9.72E-01	0.0021	1.63E-04
4:09:00	46.8	9.07E-01	0.0028	1.53E-04
4:10:00	49.5	8.75E-01	0.0035	1.47E-04
4:11:00	52.2	8.75E-01	0.0042	1.47E-04
4:12:00	55.0	9.07E-01	0.0049	1.53E-04
4:13:00	57.9	9.40E-01	0.0056	1.58E-04
4:14:00	60.2	7.45E-01	0.0063	1.25E-04
4:15:00	62.5	7.45E-01	0.0069	1.25E-04
4:16:00	64.6	6.80E-01	0.0076	1.14E-04
4:17:00	67.3	8.75E-01	0.0083	1.47E-04
4:18:00	70.0	8.75E-01	0.0090	1.47E-04
4:19:00	72.4	7.78E-01	0.0097	1.31E-04
4:20:00	74.7	7.45E-01	0.0104	1.25E-04
4:21:00	77.1	7.78E-01	0.0111	1.31E-04
4:22:00	79.6	8.10E-01	0.0118	1.36E-04
4:23:00	81.5	6.16E-01	0.0125	1.03E-04
4:24:00	83.9	7.78E-01	0.0132	1.31E-04
4:25:00	86.2	7.45E-01	0.0139	1.25E-04
4:26:00	88.5	7.45E-01	0.0146	1.25E-04
4:27:00	90.6	6.80E-01	0.0153	1.14E-04
4:28:00	92.7	6.80E-01	0.0160	1.14E-04
9:16:00	31.5			
9:18:00	35.4	6.32E-01	0.0174	1.06E-04
9:20:00	39.1	5.99E-01	0.0188	1.01E-04
9:22:00	43.2	6.64E-01	0.0201	1.12E-04
9:24:00	47.3	6.64E-01	0.0215	1.12E-04
9:26:00	51.4	6.64E-01	0.0229	1.12E-04
9:28:00	55.5	6.64E-01	0.0243	1.12E-04
9:30:00	59.6	6.64E-01	0.0257	1.12E-04
9:32:00	63.6	6.48E-01	0.0271	1.09E-04
9:34:00	67.6	6.48E-01	0.0285	1.09E-04
9:36:00	71.5	6.32E-01	0.0299	1.06E-04
9:38:00	75.6	6.64E-01	0.0313	1.12E-04
9:40:00	79.7	6.64E-01	0.0326	1.12E-04
9:42:00	83.8	6.64E-01	0.0340	1.12E-04
9:44:00	87.9	6.64E-01	0.0354	1.12E-04
9:46:00	91.1	5.18E-01	0.0368	8.72E-05
9:48:00	95.2	6.64E-01	0.0382	1.12E-04



10:06:00	30.0			
10:08:00	34.6	7.45E-01	0.0368	1.25E-04
10:09:00	36.0	4.54E-01	0.0375	7.63E-05
10:10:00	37.0	3.24E-01	0.0382	5.45E-05
10:11:00	38.1	3.56E-01	0.0389	5.99E-05
10:12:00	39.0	2.92E-01	0.0396	4.90E-05
10:13:00	40.1	3.56E-01	0.0403	5.99E-05
10:14:00	41.5	4.54E-01	0.0410	7.63E-05
10:15:00	43.0	4.86E-01	0.0417	8.17E-05
10:16:00	44.5	4.86E-01	0.0424	8.17E-05
10:17:00	45.9	4.54E-01	0.0431	7.63E-05
10:18:00	47.2	4.21E-01	0.0438	7.08E-05
10:19:00	48.6	4.54E-01	0.0444	7.63E-05
10:20:00	50.1	4.86E-01	0.0451	8.17E-05
10:21:00	51.6	4.86E-01	0.0458	8.17E-05
10:22:00	53.0	4.54E-01	0.0465	7.63E-05
10:23:00	54.5	4.86E-01	0.0472	8.17E-05
10:24:00	55.9	4.54E-01	0.0479	7.63E-05
10:25:00	57.4	4.86E-01	0.0486	8.17E-05
10:26:00	58.8	4.54E-01	0.0493	7.63E-05
10:27:00	60.3	4.86E-01	0.0500	8.17E-05
10:28:00	61.5	3.89E-01	0.0507	6.54E-05
10:29:00	63.0	4.86E-01	0.0514	8.17E-05
10:31:00	65.8	4.54E-01	0.0528	7.63E-05
10:33:00	68.4	4.21E-01	0.0542	7.08E-05
10:35:00	71.3	4.70E-01	0.0556	7.90E-05
10:37:00	74.1	4.54E-01	0.0569	7.63E-05
10:39:00	77.0	4.70E-01	0.0583	7.90E-05

AVG
7.81E-05



Single-Stage Constant Head Borehole Test
Omaha - Composite Cover

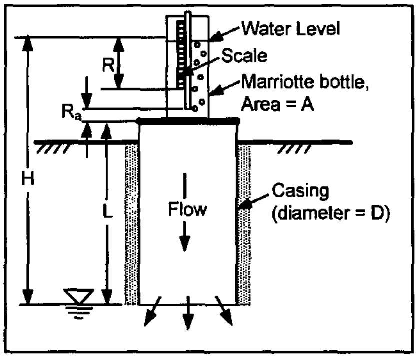
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB2-composite		

Fixed Variables:

Casing Diameter (cm):	30.48	
Standpipe Area (cm^2):	19.44	(50 mm standpipe)
R_a (cm):	10	
L (cm):	60.96	

Temporal Variables: **Computations:**

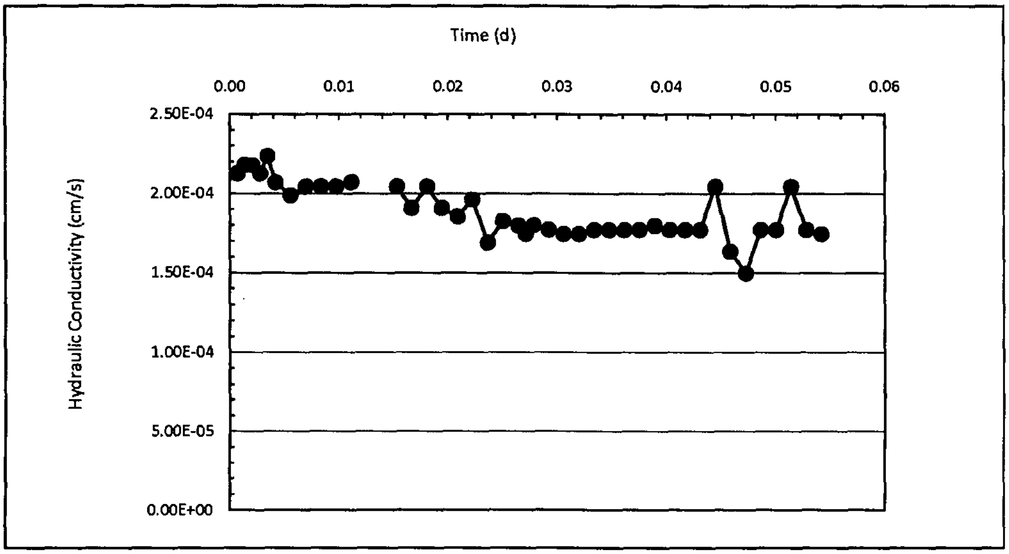
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
3:17:00	32.5			
3:18:00	36.4	1.26E+00	0.001	2.12E-04
3:19:00	40.4	1.30E+00	0.001	2.18E-04
3:20:00	44.4	1.30E+00	0.002	2.18E-04
3:21:00	48.3	1.26E+00	0.003	2.12E-04
3:22:00	52.4	1.33E+00	0.003	2.23E-04
3:23:00	56.2	1.23E+00	0.004	2.07E-04
3:25:00	63.5	1.18E+00	0.006	1.99E-04
3:27:00	71.0	1.21E+00	0.007	2.04E-04
3:29:00	78.5	1.22E+00	0.008	2.04E-04
3:31:00	86.0	1.22E+00	0.010	2.04E-04
3:33:00	93.6	1.23E+00	0.011	2.07E-04
3:37:00	34.5			
3:39:00	42.0	1.22E+00	0.015	2.04E-04
3:41:00	49.0	1.13E+00	0.017	1.91E-04
3:43:00	56.5	1.22E+00	0.018	2.04E-04
3:45:00	63.5	1.13E+00	0.019	1.91E-04
3:47:00	70.3	1.10E+00	0.021	1.85E-04
3:49:00	77.5	1.17E+00	0.022	1.96E-04
3:51:00	83.7	1.00E+00	0.024	1.69E-04
3:53:00	90.4	1.09E+00	0.025	1.82E-04
3:55:00	97.0	1.07E+00	0.026	1.80E-04
9:13:00	31.2			
9:14:00	34.4	1.04E+00	0.027	1.74E-04
9:15:00	37.7	1.07E+00	0.028	1.80E-04
9:17:00	44.2	1.05E+00	0.029	1.77E-04
9:19:00	50.6	1.04E+00	0.031	1.74E-04
9:21:00	57.0	1.04E+00	0.032	1.74E-04
9:23:00	63.5	1.05E+00	0.033	1.77E-04
9:25:00	70.0	1.05E+00	0.035	1.77E-04
9:27:00	76.5	1.05E+00	0.036	1.77E-04
9:29:00	83.0	1.05E+00	0.038	1.77E-04
9:31:00	89.6	1.07E+00	0.039	1.80E-04
9:33:00	96.1	1.05E+00	0.040	1.77E-04



9:37:00	31.0			
9:39:00	37.5	1.05E+00	0.042	1.77E-04
9:41:00	44.0	1.05E+00	0.043	1.77E-04
9:43:00	51.5	1.22E+00	0.044	2.04E-04
9:45:00	57.5	9.72E-01	0.046	1.63E-04
9:47:00	63.0	8.91E-01	0.047	1.50E-04
9:49:00	69.5	1.05E+00	0.049	1.77E-04
9:51:00	76.0	1.05E+00	0.050	1.77E-04
9:53:00	83.5	1.22E+00	0.051	2.04E-04
9:55:00	90.0	1.05E+00	0.053	1.77E-04
9:57:00	96.4	1.04E+00	0.054	1.74E-04

AVG

1.77E-04

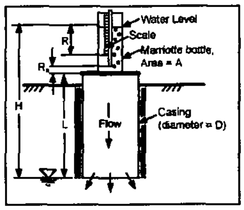


Single-Stage Constant Head Borehole Test
Omaha - Composite Cover

Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB3-composite		

Fixed Variables:

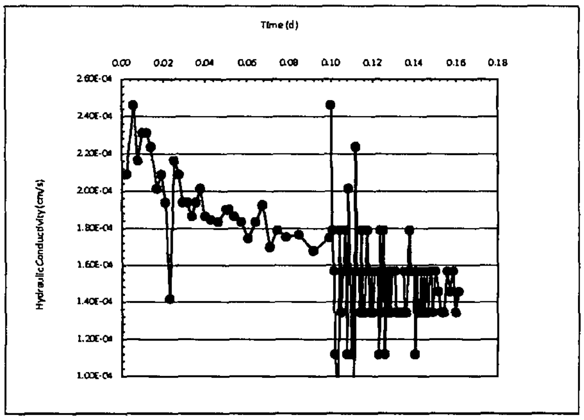
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_o (cm):	10
L (cm):	60.96



Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
1:54	34.0			
1:57	36.8	1.24E+00	0.002	2.09E-04
2:02	42.3	1.46E+00	0.006	2.46E-04
2:05	45.2	1.29E+00	0.008	2.16E-04
2:08	48.3	1.37E+00	0.010	2.31E-04
2:11	51.4	1.37E+00	0.012	2.31E-04
2:14	54.4	1.33E+00	0.014	2.24E-04
2:18	58.0	1.20E+00	0.017	2.01E-04
2:21	60.8	1.24E+00	0.019	2.09E-04
2:24	63.4	1.15E+00	0.021	1.94E-04
2:27	65.3	8.42E-01	0.023	1.42E-04
2:30	68.2	1.29E+00	0.025	2.16E-04
2:33	71.0	1.24E+00	0.027	2.09E-04
2:36	73.6	1.15E+00	0.029	1.94E-04
2:39	76.2	1.15E+00	0.031	1.94E-04
2:42	78.7	1.11E+00	0.033	1.86E-04
2:45	81.3	1.15E+00	0.035	1.94E-04
2:48	84.0	1.20E+00	0.038	2.01E-04
2:51	86.5	1.11E+00	0.040	1.86E-04
2:55	89.8	1.10E+00	0.042	1.84E-04
3:00	93.9	1.09E+00	0.046	1.83E-04
3:06	99.0	1.13E+00	0.050	1.90E-04
3:10:00	33.3			
3:12:00	35.0	1.13E+00	0.051	1.90E-04
3:15:00	37.5	1.11E+00	0.053	1.86E-04
3:20:00	41.6	1.09E+00	0.057	1.83E-04
3:25:00	45.5	1.04E+00	0.060	1.74E-04
3:30:00	49.6	1.09E+00	0.064	1.83E-04
3:35:00	53.9	1.14E+00	0.067	1.92E-04
3:40:00	57.7	1.01E+00	0.071	1.70E-04
3:45:00	61.7	1.06E+00	0.074	1.79E-04
3:51:00	66.4	1.04E+00	0.078	1.75E-04
4:00:00	73.5	1.05E+00	0.085	1.76E-04
4:10:00	81.0	9.97E-01	0.092	1.68E-04
4:21:00	89.6	1.04E+00	0.099	1.75E-04
9:04:00	30.3			
9:05:00	31.4	1.46E+00	0.100	2.46E-04
9:06:00	32.2	1.06E+00	0.101	1.79E-04
9:07:00	32.9	9.31E-01	0.101	1.57E-04
9:08:00	33.4	6.65E-01	0.102	1.12E-04
9:10:00	34.2	5.32E-01	0.103	8.94E-05
9:11:00	35.0	1.06E+00	0.104	1.79E-04
9:12:00	35.6	7.98E-01	0.105	1.34E-04
9:13:00	36.3	9.31E-01	0.106	1.57E-04
9:14:00	37.0	9.31E-01	0.106	1.57E-04
9:15:00	37.8	1.06E+00	0.107	1.79E-04
9:16:00	38.3	6.65E-01	0.108	1.12E-04
9:17:00	39.2	1.20E+00	0.108	2.01E-04
9:18:00	39.9	9.31E-01	0.109	1.57E-04
9:19:00	40.4	6.65E-01	0.110	1.12E-04
9:20:00	41.1	9.31E-01	0.110	1.57E-04
9:21:00	41.5	5.32E-01	0.111	8.94E-05
9:22:00	42.5	1.33E+00	0.112	2.24E-04
9:23:00	43.2	9.31E-01	0.113	1.57E-04
9:24:00	43.9	9.31E-01	0.113	1.57E-04
9:25:00	44.5	7.98E-01	0.114	1.34E-04
9:26:00	45.3	1.06E+00	0.115	1.79E-04
9:27:00	45.9	7.98E-01	0.115	1.34E-04
9:28:00	46.5	7.98E-01	0.116	1.34E-04
9:29:00	47.2	9.31E-01	0.117	1.57E-04
9:30:00	48.0	1.06E+00	0.117	1.79E-04
9:31:00	48.7	9.31E-01	0.118	1.57E-04
9:32:00	49.3	7.98E-01	0.119	1.34E-04
9:33:00	50.0	9.31E-01	0.119	1.57E-04
9:34:00	50.6	7.98E-01	0.120	1.34E-04
9:35:00	51.3	9.31E-01	0.121	1.57E-04
9:36:00	52.0	9.31E-01	0.122	1.57E-04
9:37:00	52.7	9.31E-01	0.122	1.57E-04
9:38:00	53.2	6.65E-01	0.123	1.12E-04
9:39:00	54.0	1.06E+00	0.124	1.79E-04
9:40:00	54.6	7.98E-01	0.124	1.34E-04
9:41:00	55.4	1.06E+00	0.125	1.79E-04
9:42:00	55.9	6.65E-01	0.126	1.12E-04
9:43:00	56.6	9.31E-01	0.126	1.57E-04
9:44:00	57.2	7.98E-01	0.127	1.34E-04
9:45:00	57.9	9.31E-01	0.128	1.57E-04
9:46:00	58.5	7.98E-01	0.128	1.34E-04
9:47:00	59.2	9.31E-01	0.129	1.57E-04
9:48:00	59.9	9.31E-01	0.130	1.57E-04
9:49:00	60.6	9.31E-01	0.131	1.57E-04
9:50:00	61.2	7.98E-01	0.131	1.34E-04
9:51:00	61.8	7.98E-01	0.132	1.34E-04
9:52:00	62.4	7.98E-01	0.133	1.34E-04
9:53:00	63.0	7.98E-01	0.133	1.34E-04
9:54:00	63.6	7.98E-01	0.134	1.34E-04

10:05:00	40.8			
10:06:00	41.5	9.31E-01	0.135	1.57E-04
10:07:00	42.1	7.98E-01	0.135	1.34E-04
10:08:00	42.7	7.98E-01	0.136	1.34E-04
10:09:00	43.4	9.31E-01	0.137	1.57E-04
10:10:00	44.2	1.06E+00	0.138	1.79E-04
10:11:00	44.9	9.31E-01	0.138	1.57E-04
10:12:00	45.6	9.31E-01	0.139	1.57E-04
10:13:00	46.3	9.31E-01	0.140	1.57E-04
10:14:00	46.8	6.65E-01	0.140	1.12E-04
10:15:00	47.5	9.31E-01	0.141	1.57E-04
10:16:00	48.1	7.98E-01	0.142	1.34E-04
10:17:00	48.7	7.98E-01	0.142	1.34E-04
10:18:00	49.4	9.31E-01	0.143	1.57E-04
10:19:00	50.0	7.98E-01	0.144	1.34E-04
10:20:00	50.7	9.31E-01	0.144	1.57E-04
10:21:00	51.3	7.98E-01	0.145	1.34E-04
10:22:00	52.0	9.31E-01	0.146	1.57E-04
10:23:00	52.6	7.98E-01	0.147	1.34E-04
10:24:00	53.3	9.31E-01	0.147	1.57E-04
10:25:00	54.0	9.31E-01	0.148	1.57E-04
10:26:00	54.6	7.98E-01	0.149	1.34E-04
10:28:00	56.0	9.31E-01	0.150	1.57E-04
10:30:00	57.3	8.65E-01	0.151	1.45E-04
10:32:00	58.5	7.98E-01	0.153	1.34E-04
10:34:00	59.7	7.98E-01	0.154	1.34E-04
10:36:00	61.1	9.31E-01	0.156	1.57E-04
10:38:00	62.4	8.65E-01	0.157	1.45E-04
10:40:00	63.8	9.31E-01	0.158	1.57E-04
10:42:00	65.0	7.98E-01	0.160	1.34E-04
10:44:00	66.3	8.65E-01	0.161	1.45E-04

AVG
1.73E-04

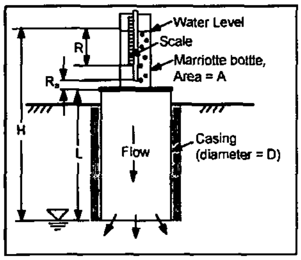


Single-Stage Constant Head Borehole Test
Omaha - Composite Cover

Project: Omaha **Installer:** XW
Date: 05/19/08 **Analyst:** CHB
Test ID: TSB4-composite

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_s (cm):	10
L (cm):	60.96

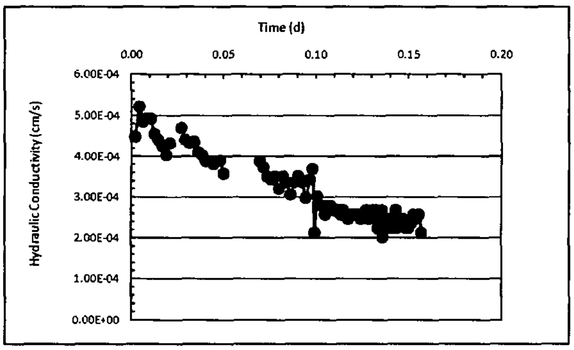


Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
1:57:00	30.0			
2:00:00	36.0	2.66E+00	0.002	4.47E-04
2:03:00	43.0	3.10E+00	0.004	5.22E-04
2:06:00	49.5	2.88E+00	0.006	4.84E-04
2:09:00	56.1	2.93E+00	0.008	4.92E-04
2:12:00	62.7	2.93E+00	0.010	4.92E-04
2:15:00	68.8	2.70E+00	0.013	4.55E-04
2:19:00	76.5			
2:22:00	82.4	2.62E+00	0.015	4.40E-04
2:25:00	88.1	2.53E+00	0.017	4.25E-04
2:28:00	93.5	2.39E+00	0.019	4.02E-04
2:31:00	99.3	2.57E+00	0.021	4.32E-04
2:37:00	33.3			
2:40:00	39.6	2.79E+00	0.027	4.70E-04
2:43:00	45.5	2.62E+00	0.029	4.40E-04
2:46:00	51.3	2.57E+00	0.031	4.32E-04
2:50:00	59.1	2.59E+00	0.034	4.36E-04
2:53:00	64.6	2.44E+00	0.036	4.10E-04
2:56:00	70.0	2.39E+00	0.038	4.02E-04
2:59:00	75.2	2.31E+00	0.040	3.88E-04
3:02:00	80.4	2.31E+00	0.042	3.88E-04
3:05:00	85.5	2.26E+00	0.044	3.80E-04
3:10:00	94.2	2.31E+00	0.048	3.89E-04
3:13:00	99.0	2.13E+00	0.050	3.58E-04
3:38:00	32.0			
3:41:00	37.2	2.31E+00	0.069	3.88E-04
3:44:00	42.2	2.22E+00	0.072	3.73E-04
3:47:00	46.9	2.08E+00	0.074	3.50E-04
3:50:00	51.5	2.04E+00	0.076	3.43E-04
3:53:00	56.2	2.08E+00	0.078	3.50E-04
3:56:00	60.5	1.91E+00	0.080	3.21E-04
3:59:00	65.2	2.08E+00	0.082	3.50E-04
4:02:00	69.7	2.00E+00	0.084	3.35E-04
4:05:00	73.8	1.82E+00	0.086	3.06E-04
4:08:00	78.3	1.99E+00	0.088	3.35E-04
4:11:00	83.0	2.08E+00	0.090	3.50E-04
04:14:00	87.5	2.00E+00	0.092	3.35E-04
04:17:00	91.5	1.77E+00	0.094	2.98E-04
04:20:00	96.1	2.04E+00	0.097	3.43E-04
08:57:00	30.3			
08:59:00	33.6	2.19E+00	0.098	3.69E-04
09:01:00	35.5	1.26E+00	0.099	2.12E-04
09:03:00	38.2	1.80E+00	0.101	3.02E-04
09:05:00	40.7	1.66E+00	0.102	2.80E-04
09:07:00	43.2	1.66E+00	0.103	2.80E-04
09:09:00	45.5	1.53E+00	0.105	2.57E-04
09:11:00	48.0	1.66E+00	0.106	2.80E-04
09:13:00	50.5	1.66E+00	0.108	2.80E-04
09:15:00	52.9	1.60E+00	0.109	2.68E-04
09:17:00	55.3	1.60E+00	0.110	2.68E-04
09:19:00	57.7	1.60E+00	0.112	2.68E-04
09:21:00	60.0	1.53E+00	0.113	2.57E-04
09:23:00	62.4	1.60E+00	0.115	2.68E-04
09:25:00	64.7	1.53E+00	0.116	2.57E-04
09:27:00	66.9	1.46E+00	0.117	2.46E-04
09:29:00	69.2	1.53E+00	0.119	2.57E-04
09:31:00	71.5	1.53E+00	0.120	2.57E-04
09:33:00	73.8	1.53E+00	0.122	2.57E-04
09:35:00	76.1	1.53E+00	0.123	2.57E-04
09:37:00	78.3	1.46E+00	0.124	2.46E-04
09:39:00	80.6	1.53E+00	0.126	2.57E-04
09:41:00	83.0	1.60E+00	0.127	2.68E-04
09:43:00	85.2	1.46E+00	0.128	2.46E-04
09:45:00	87.5	1.53E+00	0.130	2.57E-04

10:05:00	42.9			
10:06:00	44.1	1.60E+00	0.131	2.68E-04
10:07:00	45.2	1.46E+00	0.131	2.46E-04
10:08:00	46.3	1.46E+00	0.132	2.46E-04
10:09:00	47.5	1.60E+00	0.133	2.68E-04
10:10:00	48.5	1.33E+00	0.133	2.24E-04
10:11:00	49.6	1.46E+00	0.134	2.46E-04
10:12:00	50.7	1.46E+00	0.135	2.46E-04
10:13:00	51.9	1.60E+00	0.135	2.68E-04
10:14:00	52.8	1.20E+00	0.136	2.01E-04
10:15:00	53.9	1.46E+00	0.137	2.46E-04
10:16:00	54.9	1.33E+00	0.138	2.24E-04
10:17:00	56.0	1.46E+00	0.138	2.46E-04
10:18:00	57.0	1.33E+00	0.139	2.24E-04
10:19:00	58.1	1.46E+00	0.140	2.46E-04
10:20:00	59.1	1.33E+00	0.140	2.24E-04
10:21:00	60.2	1.46E+00	0.141	2.46E-04
10:22:00	61.3	1.46E+00	0.142	2.46E-04
10:23:00	62.3	1.33E+00	0.142	2.24E-04
10:24:00	63.5	1.60E+00	0.143	2.68E-04
10:25:00	64.5	1.33E+00	0.144	2.24E-04
10:26:00	65.6	1.46E+00	0.144	2.46E-04
10:28:00	67.8	1.46E+00	0.146	2.46E-04
10:30:00	70.0	1.46E+00	0.147	2.46E-04
10:32:00	72.0	1.33E+00	0.149	2.24E-04
10:34:00	74.0	1.33E+00	0.150	2.24E-04
10:36:00	76.1	1.40E+00	0.151	2.35E-04
10:38:00	78.4	1.53E+00	0.153	2.57E-04
10:40:00	80.6	1.46E+00	0.154	2.46E-04
10:42:00	82.9	1.53E+00	0.156	2.57E-04
10:44:00	84.8	1.26E+00	0.157	2.12E-04

AVG
3.25E-04



Single-Stage Constant Head Borehole Test - Omaha - Thick Store-and-Release Cover

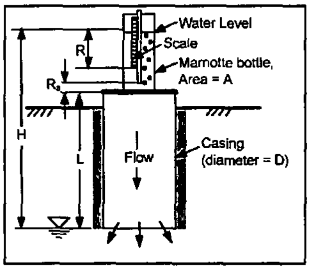
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB1-thick-deep		

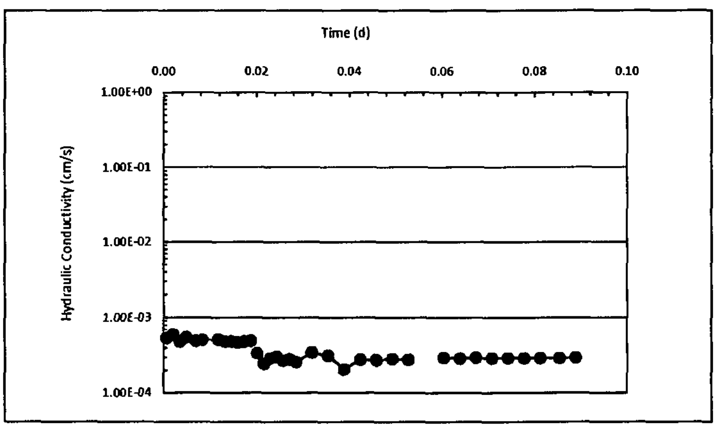
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_s (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
5:22:00	30.0			
5:23:00	32.4	3.19E+00	0.001	5.37E-04
5:25:00	37.7	3.52E+00	0.002	5.93E-04
5:27:00	42.0	2.86E+00	0.003	4.81E-04
5:29:00	46.9	3.26E+00	0.005	5.48E-04
5:32:00	53.5	2.93E+00	0.007	4.92E-04
5:34:00	58.0	2.99E+00	0.008	5.03E-04
5:39:00	69.5	3.06E+00	0.012	5.14E-04
5:41:00	73.8	2.86E+00	0.013	4.81E-04
5:43:00	78.1	2.86E+00	0.015	4.81E-04
5:45:00	82.3	2.79E+00	0.016	4.70E-04
5:47:00	86.6	2.86E+00	0.017	4.81E-04
5:49:00	91.0	2.93E+00	0.019	4.92E-04
9:06:00	30.5			
9:08:00	33.5	2.00E+00	0.020	3.35E-04
9:10:00	35.7	1.46E+00	0.022	2.46E-04
9:12:00	38.3	1.73E+00	0.023	2.91E-04
9:14	41.0	1.80E+00	0.024	3.02E-04
9:16:00	43.4	1.60E+00	0.026	2.68E-04
9:18:00	45.9	1.66E+00	0.027	2.80E-04
9:20:00	48.2	1.53E+00	0.028	2.57E-04
9:25:00	55.9	2.05E+00	0.032	3.44E-04
9:30:00	62.9	1.86E+00	0.035	3.13E-04
9:35:00	67.5	1.22E+00	0.039	2.06E-04
9:40:00	73.7	1.65E+00	0.042	2.77E-04
9:45:00	79.8	1.62E+00	0.046	2.73E-04
9:50:00	86.1	1.68E+00	0.049	2.82E-04
9:55:00	92.3	1.65E+00	0.053	2.77E-04
10:00:00	31.0		0.056	
10:06:00	38.9	1.75E+00	0.060	2.94E-04
10:11:00	45.3	1.70E+00	0.064	2.86E-04
10:16:00	51.9	1.76E+00	0.067	2.95E-04
10:21:00	58.4	1.73E+00	0.071	2.91E-04
10:26:00	64.9	1.73E+00	0.074	2.91E-04
10:31:00	71.4	1.73E+00	0.078	2.91E-04
10:36:00	77.9	1.73E+00	0.081	2.91E-04
10:42:00	85.7	1.73E+00	0.085	2.91E-04
10:47:00	92.3	1.76E+00	0.089	2.95E-04
			AVG	2.92E-04





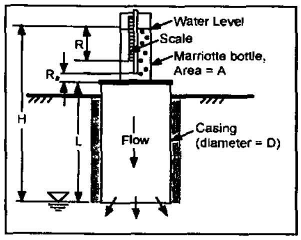
Single-Stage Constant Head Borehole Test - Omaha - Thick Store-and-Release Cover

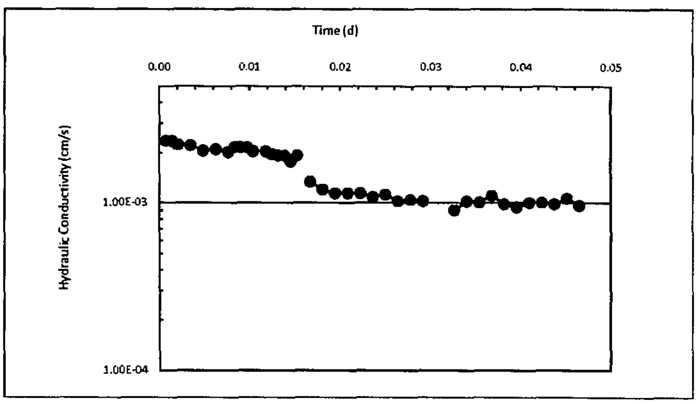
Project: Omaha **Installer:** XW
Date: 05/19/08 **Analyst:** CHB
Test ID: TSB2-Thick (Shallow Test)

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_e (cm):	10
L (cm):	30.48

Temporal Variables: Time	R (cm)	**Computations:** Q (cm^3/s)	Time (d)	K (cm/s)
1:00:00	35.5			
1:01:00	41.5	7.98E+00	0.0007	2.35E-03
1:02:00	47.5	7.98E+00	0.0014	2.35E-03
1:03:00	53.2	7.58E+00	0.0021	2.23E-03
1:05:00	64.5	7.51E+00	0.0035	2.21E-03
1:07:00	75.0	6.98E+00	0.0049	2.06E-03
1:09:00	85.7	7.12E+00	0.0063	2.10E-03
1:11:00	96.0	6.85E+00	0.0076	2.02E-03
2:00:00	31.5	-1.75E+00	0.0076	
2:01:00	37.0	7.32E+00	0.0083	2.16E-03
2:02:00	42.5	7.32E+00	0.0090	2.16E-03
2:03:00	48.0	7.32E+00	0.0097	2.16E-03
2:04:00	53.2	6.92E+00	0.0104	2.04E-03
2:05:00	58.0	6.38E+00	0.0111	
2:06:00	63.2	6.92E+00	0.0118	2.04E-03
2:07:00	68.2	6.65E+00	0.0125	1.96E-03
2:08:00	73.1	6.52E+00	0.0132	1.92E-03
2:09:00	78.0	6.52E+00	0.0139	1.92E-03
2:10:00	82.5	5.99E+00	0.0146	1.76E-03
2:11:00	87.4	6.52E+00	0.0152	1.92E-03
8:58:00	31.0			
9:00:00	37.8	4.52E+00	0.0166	1.33E-03
9:02:00	43.9	4.06E+00	0.0180	1.20E-03
9:04:00	49.7	3.86E+00	0.0194	1.14E-03
9:06:00	55.5	3.86E+00	0.0208	1.14E-03
9:08:00	61.3	3.86E+00	0.0222	1.14E-03
9:10:00	66.8	3.66E+00	0.0236	1.08E-03
9:12:00	72.5	3.79E+00	0.0250	1.12E-03
9:14:00	77.7	3.46E+00	0.0264	1.02E-03
9:16:00	83.0	3.52E+00	0.0277	1.04E-03
9:18:00	88.2	3.46E+00	0.0291	1.02E-03
9:21:00	34.3		0.0312	
9:23:00	38.9	3.06E+00	0.0326	9.02E-04
9:25:00	44.1	3.46E+00	0.0340	1.02E-03
9:27	49.2	3.39E+00	0.0354	1.00E-03
9:29	54.8	3.72E+00	0.0368	1.10E-03
9:31	59.8	3.32E+00	0.0382	9.80E-04
9:33	64.6	3.19E+00	0.0396	9.41E-04
9:35	69.7	3.39E+00	0.0409	1.00E-03
9:37	74.8	3.39E+00	0.0423	1.00E-03
9:39	79.8	3.33E+00	0.0437	9.80E-04
9:41	85.2	3.59E+00	0.0451	1.06E-03
9:43	90.1	3.26E+00	0.0465	9.60E-04
			AVG	**1.00E-03**





Single-Stage Constant Head Borehole Test - Omaha - Thick Store-and-Release Cover

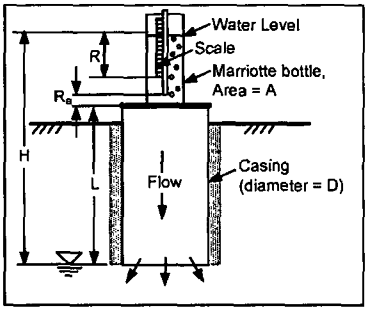
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB3-thin-shallow		

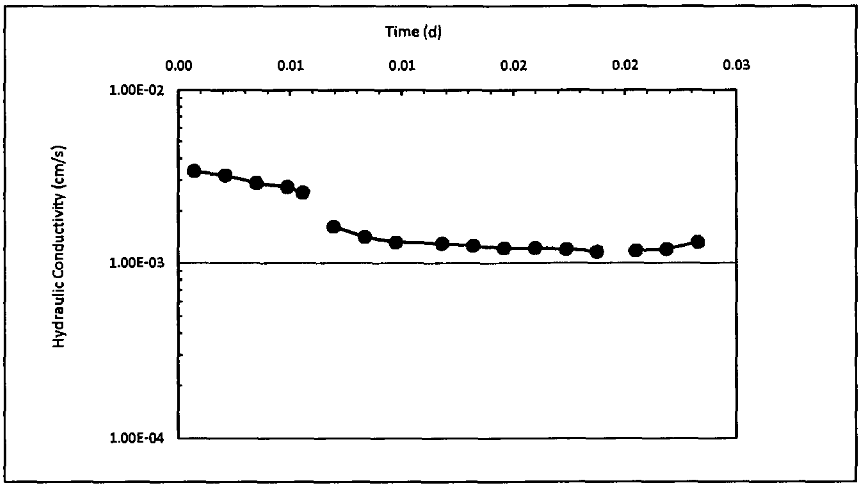
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
5:30:00	35.4			
5:31:00	44.0	1.14E+01	0.001	3.37E-03
5:33:00	60.3	1.08E+01	0.002	3.19E-03
5:35:00	75.0	9.78E+00	0.003	2.88E-03
5:37:00	89.0	9.31E+00	0.005	2.74E-03
5:38:00	95.5	8.65E+00	0.006	2.55E-03
8:02:00	30.6			
8:04:00	38.9	5.52E+00	0.007	1.63E-03
8:06:00	46.1	4.79E+00	0.008	1.41E-03
8:08:00	52.8	4.46E+00	0.010	1.31E-03
8:11:00	62.7	4.39E+00	0.012	1.29E-03
8:13:00	69.1	4.26E+00	0.013	1.25E-03
8:15:00	75.3	4.12E+00	0.015	1.22E-03
8:17:00	81.5	4.12E+00	0.016	1.22E-03
8:19:00	87.6	4.06E+00	0.017	1.20E-03
8:21:00	93.5	3.92E+00	0.019	1.16E-03
8:59:30	30.5			
9:02:00	38.0	3.99E+00	0.020	1.18E-03
9:04:00	44.1	4.06E+00	0.022	1.20E-03
9:06:00	50.8	4.46E+00	0.023	1.31E-03
9:08:00	57.0	4.12E+00	0.025	1.22E-03
9:10:00	62.7	3.79E+00	0.026	1.12E-03
9:12:00	68.5	3.86E+00	0.027	1.14E-03
9:14:00	74.8	4.19E+00	0.029	1.23E-03
9:16:00	80.5	3.79E+00	0.030	1.12E-03
9:18:00	86.5	3.99E+00	0.032	1.18E-03
9:20:00	92.2	3.79E+00	0.033	1.12E-03
9:22:00	98.3	4.06E+00	0.034	1.20E-03
			average	**1.16E-03**





Single-Stage Constant Head Borehole Test - Omaha - Thick Store-and-Release Cover

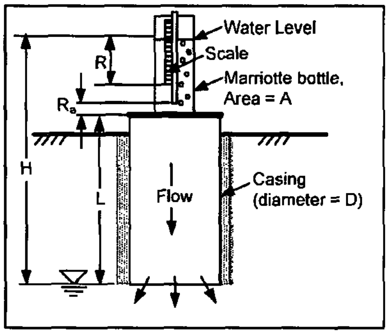
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB4-thin		

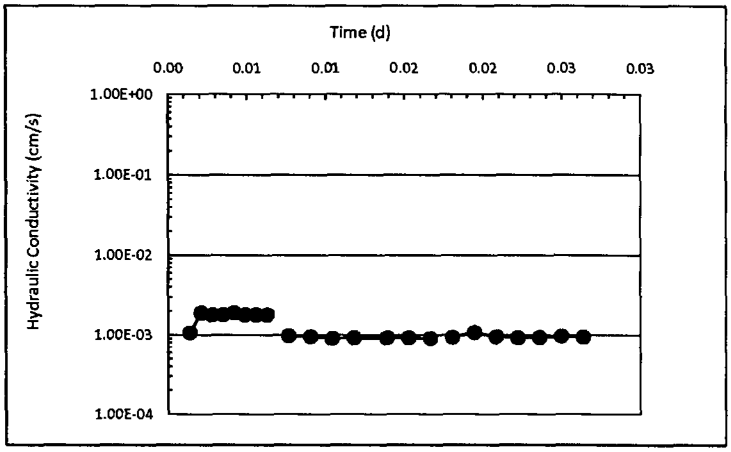
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
5:10:00	32.0			
5:12:00	41.5	6.32E+00	0.001	1.06E-03
5:13:00	50.0	1.13E+01	0.002	1.90E-03
5:14:00	58.0	1.06E+01	0.003	1.79E-03
5:15:00	66.0	1.06E+01	0.003	1.79E-03
5:16:00	74.5	1.13E+01	0.004	1.90E-03
5:17:00	82.5	1.06E+01	0.005	1.79E-03
5:18:00	90.5	1.06E+01	0.006	1.79E-03
5:19:00	98.5	1.06E+01	0.006	1.79E-03
8:00	36.0			
8:02:00	44.7	5.79E+00	0.008	9.73E-04
8:04:00	53.2	5.65E+00	0.009	9.50E-04
8:06:00	61.3	5.39E+00	0.010	9.06E-04
8:08:00	69.5	5.45E+00	0.012	9.17E-04
8:11:00	81.8	5.45E+00	0.014	9.17E-04
8:13:00	90.0	5.45E+00	0.015	9.17E-04
8:15:00	98.1	5.39E+00	0.017	9.06E-04
9:03:00	35.1			
9:05:00	43.4	5.52E+00	0.018	9.28E-04
9:07:00	53.0	6.38E+00	0.019	1.07E-03
9:09:00	61.5	5.65E+00	0.021	9.50E-04
9:11:00	69.7	5.45E+00	0.022	9.17E-04
9:13:00	78.0	5.52E+00	0.024	9.28E-04
9:15:00	86.6	5.72E+00	0.025	9.62E-04
9:17:00	95.0	5.59E+00	0.026	9.39E-04
				avg
				9.43E-04



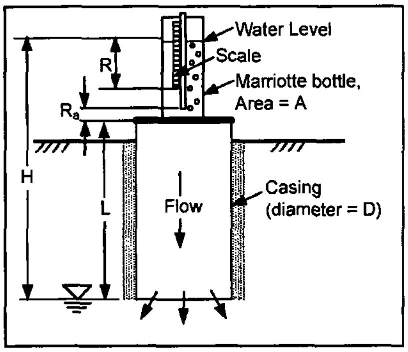


Single-Stage Constant Head Borehole Test
Omaha - Thin Store-and-Release Cover

Project: Omaha **Installer:** XW
Date: 05/19/08 **Analyst:** CHB
Test ID: TSB1-thin

Fixed Variables:

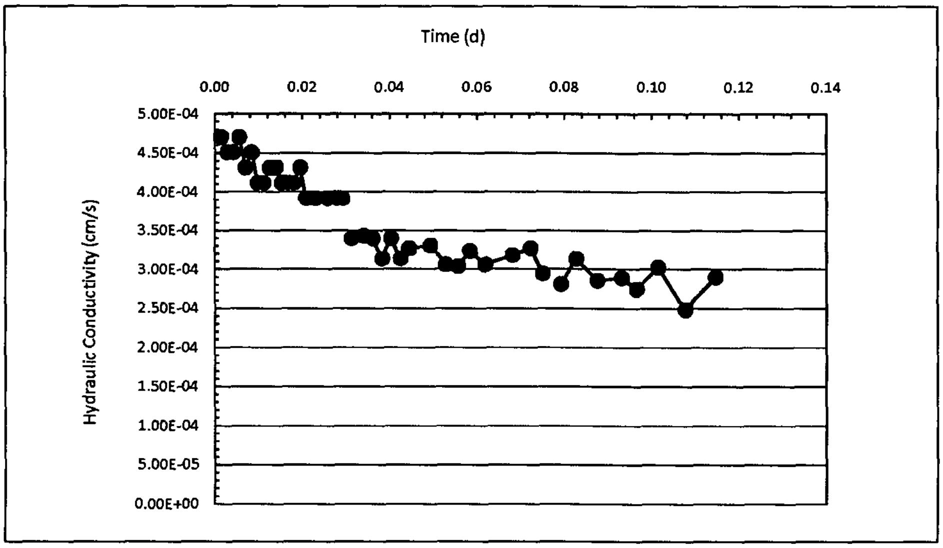
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48



Temporal Variables:		*Computations:*		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
3:29:00	34.0			
3:31:00	36.4	1.60E+00	0.001	4.70E-04
3:33:00	38.7	1.53E+00	0.003	4.51E-04
3:35:00	41.0	1.53E+00	0.004	4.51E-04
3:37:00	43.4	1.60E+00	0.006	4.70E-04
3:39:00	45.6	1.46E+00	0.007	4.31E-04
3:41:00	47.9	1.53E+00	0.008	4.51E-04
3:43:00	50.0	1.40E+00	0.010	4.12E-04
3:45:00	52.1	1.40E+00	0.011	4.12E-04
3:47:00	54.3	1.46E+00	0.013	4.31E-04
3:49:00	56.5	1.46E+00	0.014	4.31E-04
3:51:00	58.6	1.40E+00	0.015	4.12E-04
3:53:00	60.7	1.40E+00	0.017	4.12E-04
3:55:00	62.8	1.40E+00	0.018	4.12E-04
3:57:00	65.0	1.46E+00	0.019	4.31E-04
3:59:00	67.0	1.33E+00	0.021	3.92E-04
4:02:00	70.0	1.33E+00	0.023	3.92E-04
4:06:00	74.0	1.33E+00	0.026	3.92E-04
4:09:00	77.0	1.33E+00	0.028	3.92E-04
4:11:00	79.0	1.33E+00	0.029	3.92E-04
8:50:00	30.0			
8:53:00	32.6	1.15E+00	0.031	3.40E-04
8:57:00	36.1	1.16E+00	0.034	3.43E-04
9:00:00	38.7	1.15E+00	0.036	3.40E-04
9:03	41.1	1.06E+00	0.038	3.14E-04
9:06:00	43.7	1.15E+00	0.040	3.40E-04
9:09:00	46.1	1.06E+00	0.042	3.14E-04
9:12:00	48.6	1.11E+00	0.044	3.27E-04
9:19:00	54.5	1.12E+00	0.049	3.30E-04
9:24:00	58.4	1.04E+00	0.053	3.06E-04
9:28:00	61.5	1.03E+00	0.056	3.04E-04
9:32:00	64.8	1.10E+00	0.058	3.23E-04
9:37:00	68.7	1.04E+00	0.062	3.06E-04
9:46:00	76.0	1.08E+00	0.068	3.18E-04
9:52:00	81.0	1.11E+00	0.072	3.27E-04
9:56:00	84.0	9.98E-01	0.075	2.94E-04

10:30	50.7			
10:36	55.0	9.53E-01	0.079	2.81E-04
10:41	59.0	1.06E+00	0.083	3.14E-04
10:48	64.1	9.69E-01	0.088	2.86E-04
10:56	70.0	9.81E-01	0.093	2.89E-04
11:01	73.5	9.31E-01	0.097	2.74E-04
11:08	78.9	1.03E+00	0.101	3.02E-04
11:17	84.6	8.42E-01	0.108	2.48E-04
11:27	92.0	9.84E-01	0.115	2.90E-04

AVG
3.13E-04



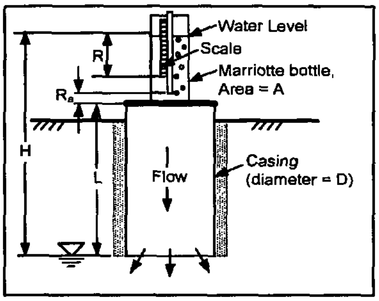
Single-Stage Constant Head Borehole Test
Omaha - Thin Store-and-Release Cover

Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB2-Thin		

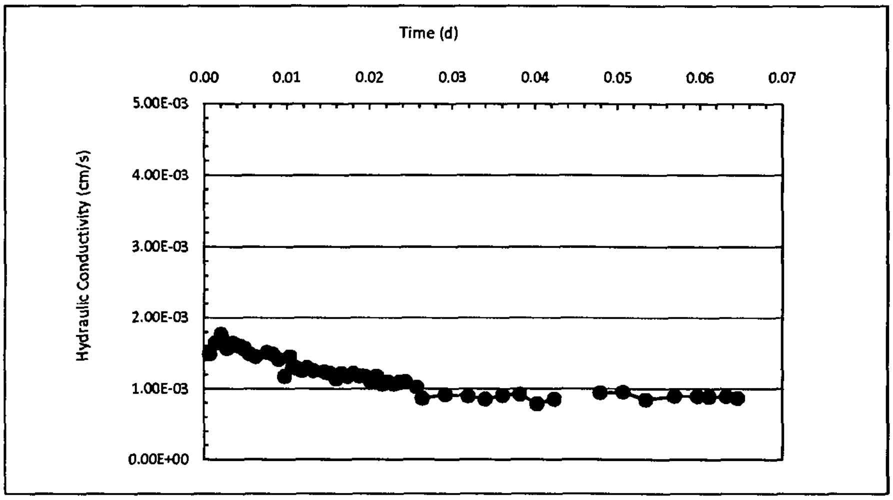
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables:		**Computations:**		
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
2:34:00	45.0			
2:35:00	48.8	5.05E+00	0.0007	1.49E-03
2:36:00	53.0	5.59E+00	0.0014	1.65E-03
2:37:00	57.5	5.99E+00	0.0021	1.76E-03
2:38:00	61.5	5.32E+00	0.0028	1.57E-03
2:39:00	65.7	5.59E+00	0.0035	1.65E-03
2:40:00	69.8	5.45E+00	0.0042	1.61E-03
2:41:00	73.8	5.32E+00	0.0049	1.57E-03
2:42:00	77.6	5.05E+00	0.0056	1.49E-03
2:43:00	81.3	4.92E+00	0.0063	1.45E-03
2:45:00	89.0	5.12E+00	0.0076	1.51E-03
2:46:00	92.8	5.05E+00	0.0083	1.49E-03
2:47:00	96.4	4.79E+00	0.0090	1.41E-03
3:07:00	32.0			
3:08:00	35.0	3.99E+00	0.0097	1.18E-03
3:09:00	38.7	4.92E+00	0.0104	1.45E-03
3:10:00	42.0	4.39E+00	0.0111	1.29E-03
3:11:00	45.2	4.26E+00	0.0118	1.25E-03
3:12:00	48.5	4.39E+00	0.0125	1.29E-03
3:13:00	51.7	4.26E+00	0.0132	1.25E-03
3:15:00	58.0	4.19E+00	0.0146	1.23E-03
3:16:00	61.1	4.12E+00	0.0153	1.22E-03
3:17:00	64.0	3.86E+00	0.0160	1.14E-03
3:18:00	67.1	4.12E+00	0.0167	1.22E-03
3:19:00	70.1	3.99E+00	0.0174	1.18E-03
3:20:00	73.2	4.12E+00	0.0181	1.22E-03
3:21:00	76.2	3.99E+00	0.0188	1.18E-03
3:22:00	79.2	3.99E+00	0.0194	1.18E-03
3:23:00	82.0	3.72E+00	0.0201	1.10E-03
3:24:00	85.0	3.99E+00	0.0208	1.18E-03
3:25:00	87.7	3.59E+00	0.0215	1.06E-03
3:26:00	90.5	3.72E+00	0.0222	1.10E-03
3:27:00	93.2	3.59E+00	0.0229	1.06E-03
3:28:00	96.0	3.72E+00	0.0236	1.10E-03



8:46:00	34.0			
8:47:00	36.8	3.72E+00	0.0243	1.10E-03
8:49:00	42.0	3.46E+00	0.0257	1.02E-03
8:50:00	44.2	2.93E+00	0.0264	8.62E-04
8:54:00	53.5	3.09E+00	0.0292	9.11E-04
8:58:00	62.6	3.03E+00	0.0319	8.92E-04
9:01:00	69.1	2.88E+00	0.0340	8.49E-04
9:04:00	76.0	3.06E+00	0.0361	9.02E-04
9:07:00	83.0	3.10E+00	0.0382	9.15E-04
9:10:00	89.0	2.66E+00	0.0403	7.84E-04
9:13:00	95.5	2.88E+00	0.0424	8.49E-04
9:19:00	31.5	-1.42E+01	0.0465	
9:21:00	36.3	3.19E+00	0.0479	9.41E-04
9:25	46.0	3.23E+00	0.0507	9.51E-04
9:29	54.6	2.86E+00	0.0535	8.43E-04
9:34	66.0	3.03E+00	0.0569	8.94E-04
9:38	75.1	3.03E+00	0.0597	8.92E-04
9:40	79.6	2.99E+00	0.0611	8.82E-04
9:43	86.4	3.01E+00	0.0632	8.88E-04
9:45	90.8	2.93E+00	0.0646	8.62E-04
				AVG
				1.08E-03



Single-Stage Constant Head Borehole Test
Omaha - Thin Store-and-Release Cover

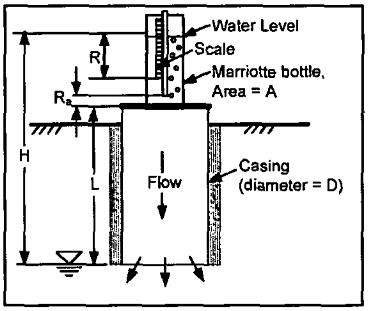
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	TSB3-thin		

Fixed Variables:

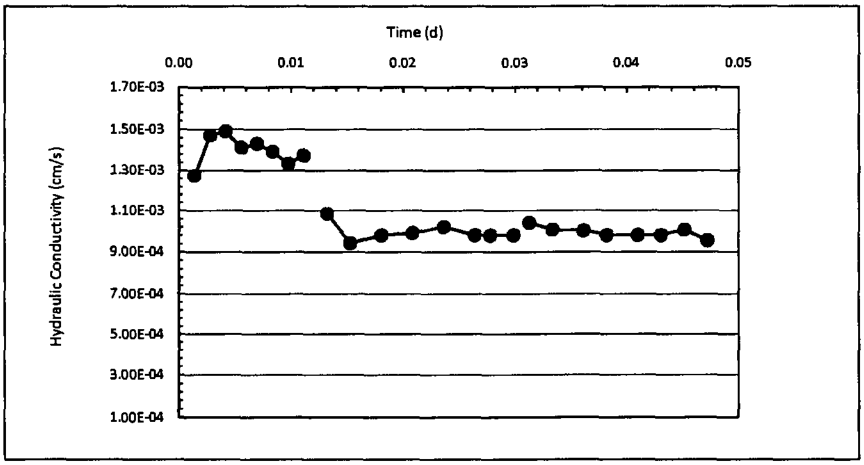
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / *Computations:*

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
5:32:00	37.0			
5:34:00	43.5	4.32E+00	0.001	1.27E-03
5:36:00	51.0	4.99E+00	0.003	1.47E-03
5:38:00	58.6	5.05E+00	0.004	1.49E-03
5:40:00	65.8	4.79E+00	0.006	1.41E-03
5:42:00	73.1	4.85E+00	0.007	1.43E-03
5:44:00	80.2	4.72E+00	0.008	1.39E-03
5:46:00	87.0	4.52E+00	0.010	1.33E-03
5:48:00	94.0	4.66E+00	0.011	1.37E-03
10:17:00	30.5			
10:20:00	38.8	3.68E+00	0.013	1.08E-03
10:23:00	46.0	3.19E+00	0.015	9.41E-04
10:27:00	56.0	3.33E+00	0.018	9.80E-04
10:31:00	66.1	3.36E+00	0.021	9.90E-04
10:35	76.5	3.46E+00	0.024	1.02E-03
10:39	86.5	3.33E+00	0.026	9.80E-04
10:41	91.5	3.33E+00	0.028	9.80E-04
10:44	99.0	3.33E+00	0.030	9.80E-04
11:35	35.8			
11:37	41.1	3.52E+00	0.031	1.04E-03
11:40	48.8	3.41E+00	0.033	1.01E-03
11:44	59.0	3.39E+00	0.036	1.00E-03
11:47	66.5	3.33E+00	0.038	9.80E-04
11:51	76.5	3.33E+00	0.041	9.80E-04
11:54	84.0	3.32E+00	0.043	9.80E-04
11:57	91.7	3.41E+00	0.045	1.01E-03
12:00	99.0	3.24E+00	0.047	9.54E-04



AVG
9.80E-04



Single-Stage Constant Head Borehole Test
Omaha - Thin Store-and-Release Cover

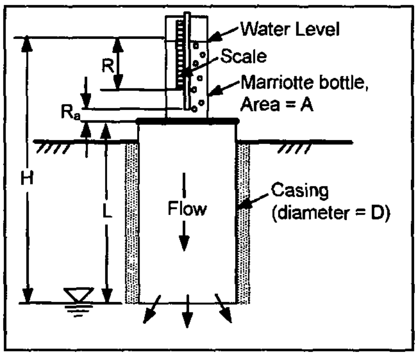
Project:	Omaha	**Installer:**	XW
Date:	05/19/08	**Analyst:**	CHB
Test ID:	T5B4-thin		

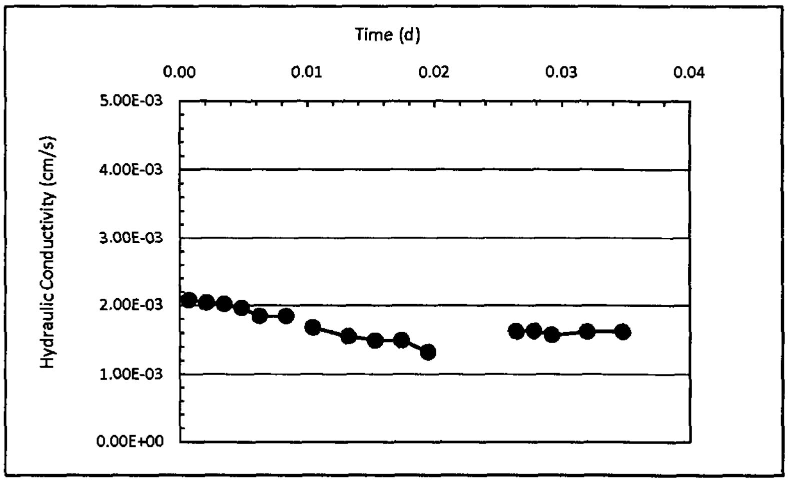
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	30.48

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)
3:53:00	37.0			
3:54:00	42.3	7.05E+00	0.001	2.08E-03
3:56:00	52.7	6.92E+00	0.002	2.04E-03
3:58:00	63.0	6.85E+00	0.003	2.02E-03
4:00:00	73.0	6.65E+00	0.005	1.96E-03
4:02:00	82.4	6.25E+00	0.006	1.84E-03
4:05:00	96.5	6.25E+00	0.008	1.84E-03
8:52:00	30.0			
8:55:00	42.8	5.67E+00	0.010	1.67E-03
8:59:00	58.6	5.25E+00	0.013	1.55E-03
9:02:00	70.0	5.05E+00	0.015	1.49E-03
9:05:00	81.4	5.05E+00	0.017	1.49E-03
9:08:00	91.5	4.48E+00	0.019	1.32E-03
9:15:00	32.8	-1.12E+01	0.024	
9:18:00	45.2	5.50E+00	0.026	1.62E-03
9:20:00	53.5	5.52E+00	0.028	1.63E-03
9:22:00	61.5	5.32E+00	0.029	1.57E-03
9:26:00	78.0	5.49E+00	0.032	1.62E-03
9:30:00	94.5	5.49E+00	0.035	1.62E-03
			AVG	**1.60E-03**

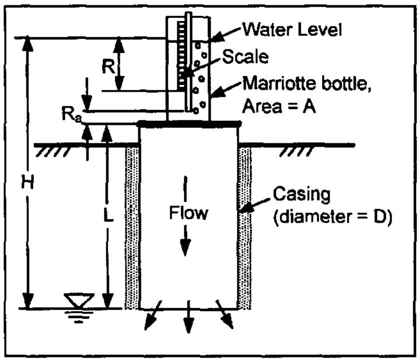




Single-Stage Constant Head Borehole Test - Polson - Composite Cover

Project: Polson
Date: *08/21/08*
Test ID: Coventional 1

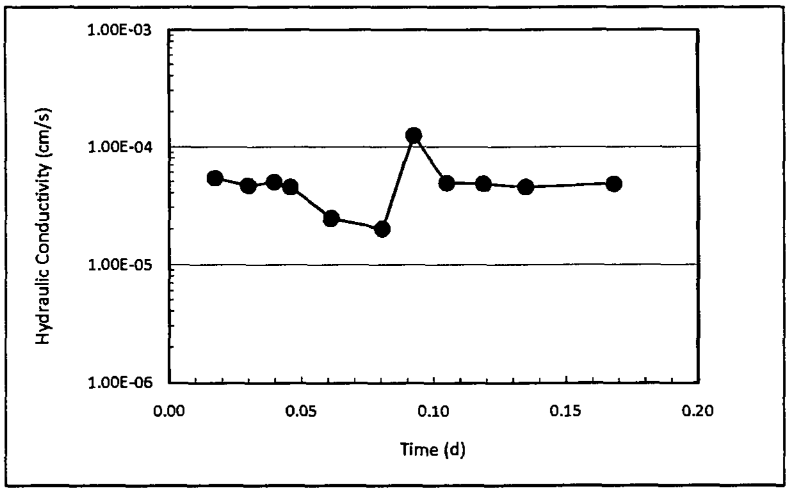
Installer: XW
Analyst: JS



Fixed Variables:

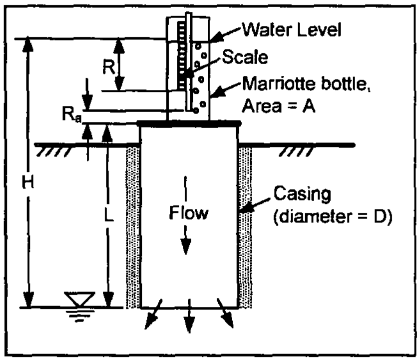
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables:		Computations:			
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
9:38	37				
10:03	43	3.19E-01	0.017	5.37E-05	Allowed to flow without measurments for > 24 hrs
10:21	46.7	2.73E-01	0.030	4.60E-05	
10:35	49.8	2.94E-01	0.040	4.95E-05	
10:44	51.6	2.66E-01	0.046	4.47E-05	
11:06	54	1.45E-01	0.061	2.44E-05	
11:34	56.5	1.19E-01	0.081	2.00E-05	
11:51	66	7.43E-01	0.092	1.25E-04	
12:09	69.9	2.88E-01	0.105	4.84E-05	
12:29	74.2	2.86E-01	0.119	4.81E-05	
12:52	78.8	2.66E-01	0.135	4.47E-05	
13:40	89	2.83E-01	0.168	4.75E-05	
			Average	4.72E-05	



Single-Stage Constant Head Borehole Test - Polson - Composite Cover

Project:	Polson	**Installer:**	XW
Date:	08/21/08	**Analyst:**	JS
Test ID:	Coventional 2		

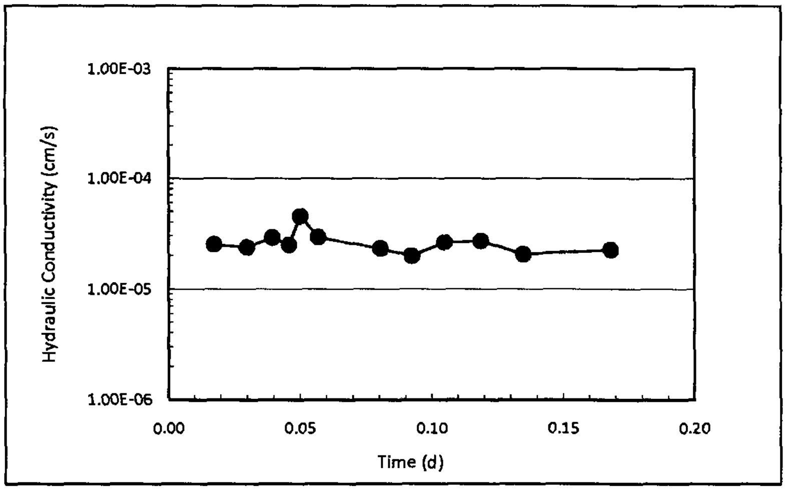


Fixed Variables:

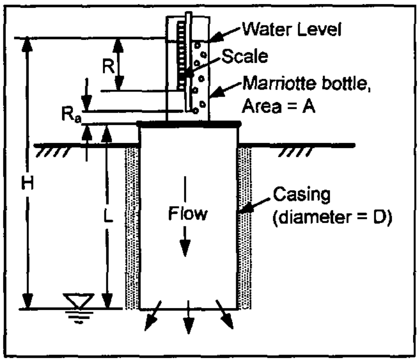
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
9:38	39				
10:03	41.8	1.49E-01	0.017	2.50E-05	Allowed to flow without measurments for > 24 hrs
10:21	43.7	1.40E-01	0.030	2.36E-05	
10:35	45.5	1.71E-01	0.040	2.87E-05	
10:44	46.5	1.48E-01	0.046	2.48E-05	
10:50	47.7	2.66E-01	0.050	4.47E-05	
11:00	49	1.73E-01	0.057	2.91E-05	
11:34	52.5	1.37E-01	0.081	2.30E-05	
11:51	54	1.17E-01	0.092	1.97E-05	
12:09	56.1	1.55E-01	0.105	2.61E-05	
12:29	58.5	1.60E-01	0.119	2.68E-05	
12:52	60.6	1.21E-01	0.135	2.04E-05	
13:40	65.4	1.33E-01	0.168	2.24E-05	
			Average	2.39E-05	



Single-Stage Constant Head Borehole Test - Polson - Composite Cover



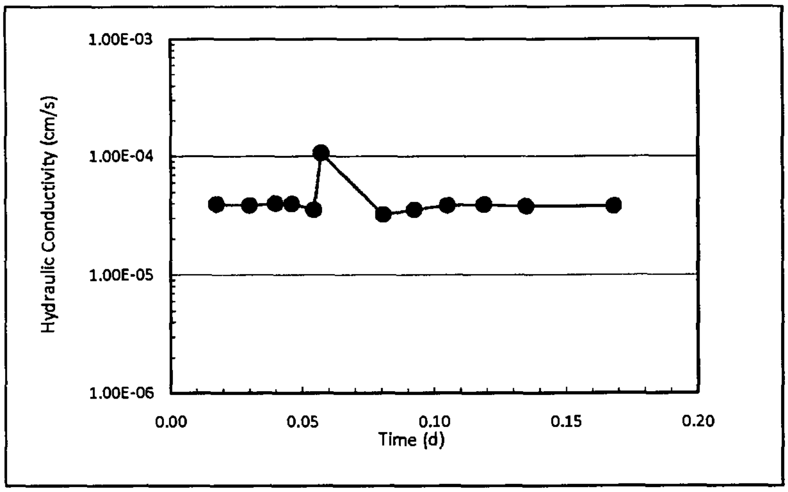
Project: Polson
Date: 08/21/08
Test ID: Conventional 3
Installer: XW
Analyst: JS

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

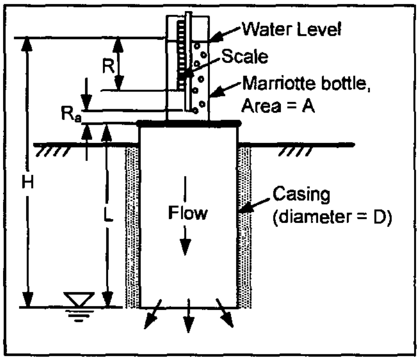
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
9:38	37.5				
10:03	41.9	2.34E-01	0.017	3.94E-05	Allowed to flow without measurments for > 24 hrs
10:21	45	2.29E-01	0.030	3.85E-05	
10:35	47.5	2.37E-01	0.040	3.99E-05	
10:44	49.1	2.36E-01	0.046	3.98E-05	
10:56	51	2.11E-01	0.054	3.54E-05	
11:00	52.9	6.32E-01	0.057	1.06E-04	
11:34	57.8	1.92E-01	0.081	3.22E-05	
11:51	60.5	2.11E-01	0.092	3.55E-05	
12:09	63.6	2.29E-01	0.105	3.85E-05	
12:29	67.1	2.33E-01	0.119	3.91E-05	
12:52	71	2.26E-01	0.135	3.79E-05	
13:40	79.2	2.27E-01	0.168	3.82E-05	
			Average	3.84E-05	



Single-Stage Constant Head Borehole Test - Polson - Composite Cover

Project: Polson
Date: 08/21/08
Test ID: Conventional 4

Installer: XW
Analyst: JS

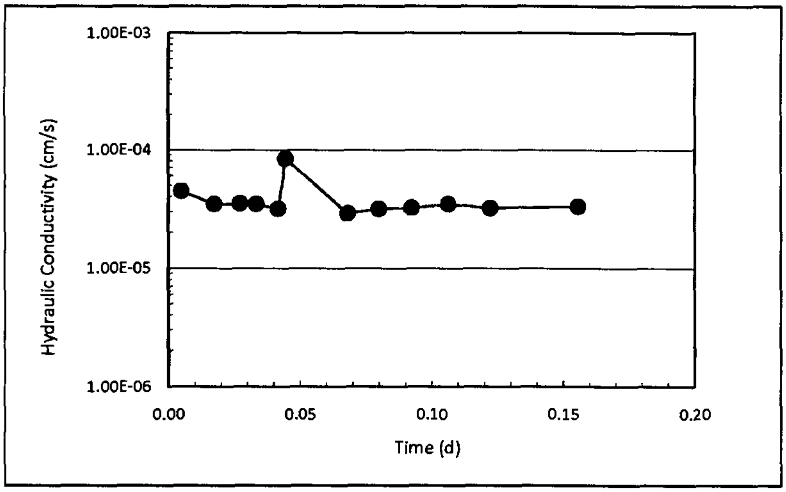


Fixed Variables:

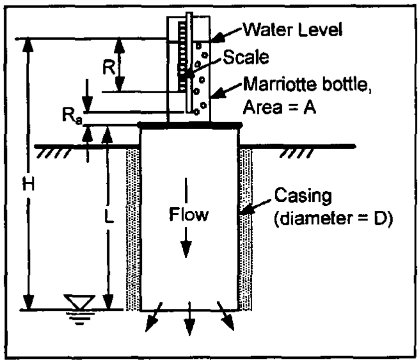
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
9:56	36.1				
10:03	37.5	2.66E-01	0.005	4.47E-05	Allowed to flow without measurments for > 24 hrs
10:21	40.3	2.07E-01	0.017	3.48E-05	
10:35	42.5	2.09E-01	0.027	3.51E-05	
10:44	43.9	2.07E-01	0.033	3.48E-05	
10:56	45.6	1.88E-01	0.042	3.17E-05	
11:00	47.1	4.99E-01	0.044	8.39E-05	
11:34	51.5	1.72E-01	0.068	2.89E-05	
11:51	53.9	1.88E-01	0.080	3.16E-05	
12:09	56.5	1.92E-01	0.092	3.23E-05	
12:29	59.6	2.06E-01	0.106	3.47E-05	
12:52	62.9	1.91E-01	0.122	3.21E-05	
13:40	70	1.97E-01	0.156	3.31E-05	
			Average	3.30E-05	



Single-Stage Constant Head Borehole Test - Polson - Composite Cover



Project: Polson
Date: 08/21/08
Test ID: Conventional 5

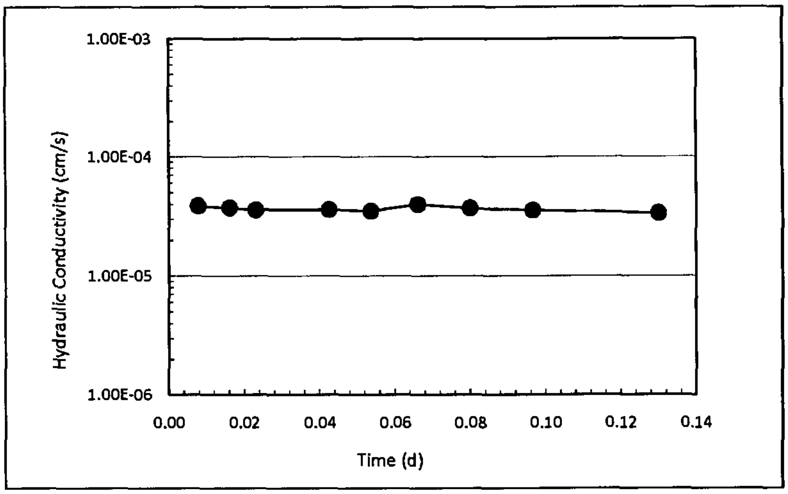
Installer: XW
Analyst: JS

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

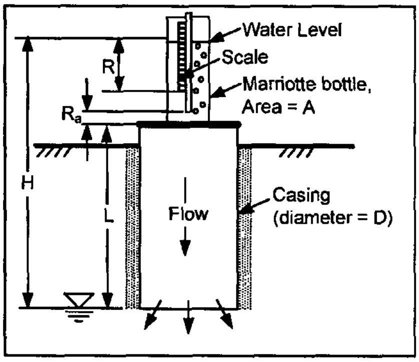
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
10:34	38				
10:45	39.9	2.30E-01	0.008	3.86E-05	Allowed to flow without measurments for > 24 hrs
10:57	41.9	2.22E-01	0.016	3.73E-05	
11:07	43.5	2.13E-01	0.023	3.58E-05	
11:35	48	2.14E-01	0.042	3.59E-05	
11:51	50.5	2.08E-01	0.053	3.49E-05	
12:09	53.7	2.36E-01	0.066	3.98E-05	
12:29	57	2.19E-01	0.080	3.69E-05	
12:53	60.8	2.11E-01	0.097	3.54E-05	
13:41	68	2.00E-01	0.130	3.35E-05	
			Average	3.64E-05	



Single-Stage Constant Head Borehole Test - Polson - Store-and-Release Cover

Project: Polson
Date: 08/21/08
Test ID: Alternative 1

Installer: XW
Analyst: JS

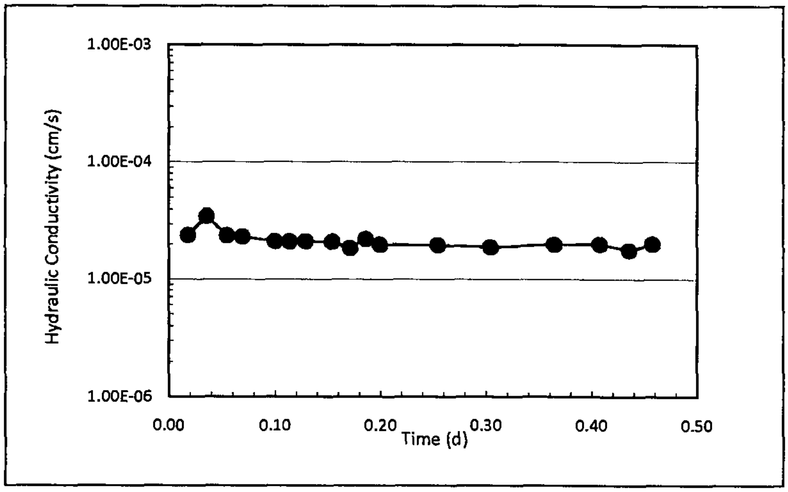


Fixed Variables:

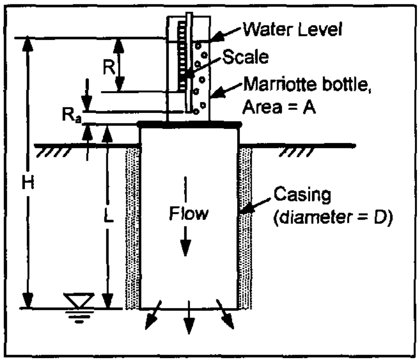
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
16:30	38.3				
16:56	41.1	1.43E-01	0.018	2.41E-05	Allowed to flow without measurments for > 24 hrs
17:21	45	2.07E-01	0.035	3.49E-05	
17:49	48	1.43E-01	0.055	2.40E-05	
9:13	31.2	4.33E-02			
9:34	33.4	1.39E-01	0.069	2.34E-05	
10:18	37.6	1.27E-01	0.100	2.13E-05	
10:38	39.5	1.26E-01	0.114	2.12E-05	
11:00	41.6	1.27E-01	0.129	2.13E-05	
11:36	45	1.26E-01	0.154	2.11E-05	
12:00	47	1.11E-01	0.171	1.86E-05	
12:22	49.2	1.33E-01	0.186	2.24E-05	
12:41	50.9	1.19E-01	0.199	2.00E-05	
14:00	57.9	1.18E-01	0.254	1.98E-05	
15:12	64	1.13E-01	0.304	1.89E-05	
16:39	71.8	1.19E-01	0.365	2.00E-05	
17:41	77.4	1.20E-01	0.408	2.02E-05	
18:21	80.6	1.06E-01	0.435	1.79E-05	
18:53	83.5	1.21E-01	0.458	2.03E-05	
			Average	1.96E-05	



Single-Stage Constant Head Borehole Test - Polson - Store-and-Release Cover

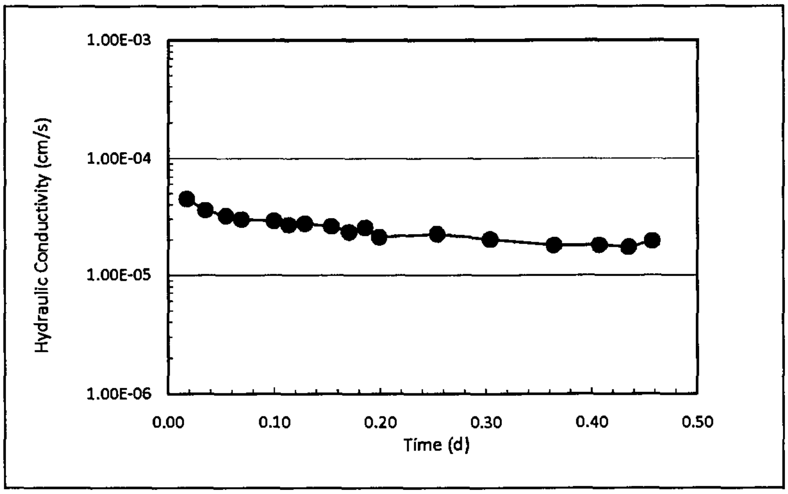


Project: Polson
Date: 08/21/08
Test ID: Alternative 2
Installer: XW
Analyst: JS

Fixed Variables:

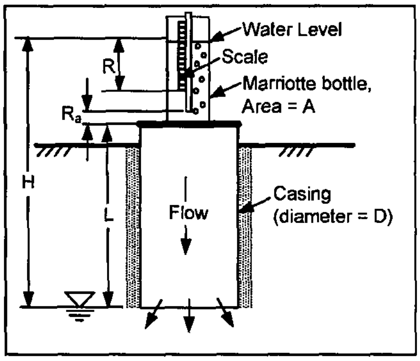
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables:		**Computations:**			
Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
16:31	34.5				
16:56	39.5	2.66E-01	0.017	4.47E-05	Allowed to flow without measurments for > 24 hrs
17:21	43.5	2.13E-01	0.035	3.58E-05	
17:49	47.5	1.90E-01	0.054	3.19E-05	
9:13	33.5	3.61E-02			
9:34	36.3	1.77E-01	0.069	2.98E-05	
10:18	42	1.72E-01	0.099	2.90E-05	
10:38	44.4	1.60E-01	0.113	2.68E-05	
11:00	47.1	1.63E-01	0.128	2.74E-05	
11:36	51.3	1.55E-01	0.153	2.61E-05	
12:00	53.8	1.39E-01	0.170	2.33E-05	
12:22	56.3	1.51E-01	0.185	2.54E-05	
12:41	58.1	1.26E-01	0.199	2.12E-05	
14:00	66	1.33E-01	0.253	2.24E-05	
15:12	72.5	1.20E-01	0.303	2.02E-05	
16:39	79.5	1.07E-01	0.364	1.80E-05	
17:41	84.5	1.07E-01	0.407	1.80E-05	
18:21	87.6	1.03E-01	0.435	1.73E-05	
18:53	90.4	1.16E-01	0.457	1.96E-05	
			Average	1.82E-05	



Single-Stage Constant Head Borehole Test - Polson - Store-and-Release Cover

Project: Polson
Date: 08/21/08
Test ID: Alternative 3
Installer: XW
Analyst: JS

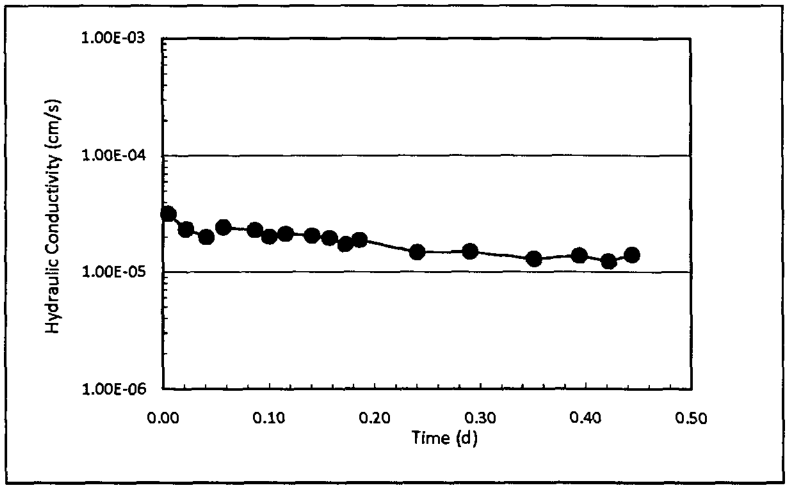


Fixed Variables:

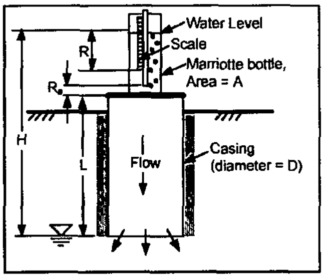
Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_a (cm):	10
L (cm):	60.96

Temporal Variables: / **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
16:50	46				
16:57	47	1.90E-01	0.005	3.19E-05	Allowed to flow without measurments for > 24 hrs
17:21	49.5	1.39E-01	0.022	2.33E-05	
17:49	52	1.19E-01	0.041	2.00E-05	
9:12	41.5	2.70E-02			
9:35	44	1.45E-01	0.057	2.43E-05	
10:18	48.4	1.36E-01	0.087	2.29E-05	
10:38	50.2	1.20E-01	0.101	2.01E-05	
11:00	52.3	1.27E-01	0.116	2.13E-05	
11:36	55.6	1.22E-01	0.141	2.05E-05	
12:00	57.7	1.16E-01	0.158	1.96E-05	
12:22	59.4	1.03E-01	0.173	1.73E-05	
12:41	61	1.12E-01	0.186	1.88E-05	
14:00	66.2	8.75E-02	0.241	1.47E-05	
15:12	71	8.87E-02	0.291	1.49E-05	
16:39	76.0	7.64E-02	0.351	1.29E-05	
17:41	79.8	8.15E-02	0.394	1.37E-05	
18:21	82.0	7.32E-02	0.422	1.23E-05	
18:53	84.0	8.31E-02	0.444	1.40E-05	
			Average	1.34E-05	



Single-Stage Constant Head Borehole Test - Polson - Store-and-Release Cover



Project: Polson
Date: 08/21/08
Test ID: 1

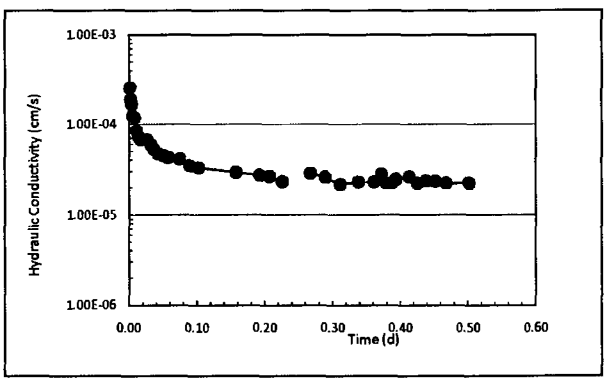
Installer: XW
Analyst: JS

Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R$_e$ (cm):	10
L (cm):	60.96

Temporal Variables: **Computations:**

Time	R (cm)	Q (cm^3/s)	Time (d)	K (cm/s)	
10:13	36.5				
10:15	38.8	1.53E+00	0.001	2.57E-04	Allowed to flow without measurments for > 24 hrs
10:17	40.5	1.13E+00	0.003	1.90E-04	
10:19	42	9.98E-01	0.004	1.68E-04	
10:21	43.1	7.32E-01	0.006	1.23E-04	
10:25	45.2	6.98E-01	0.008	1.17E-04	
10:29	46.7	4.99E-01	0.011	8.39E-05	
10:33	48	4.32E-01	0.014	7.27E-05	
10:37	49.2	3.99E-01	0.017	6.71E-05	
10:51	53.4	3.99E-01	0.026	6.71E-05	
10:59	55.5	3.49E-01	0.032	5.87E-05	
11:05	56.9	3.10E-01	0.036	5.22E-05	
11:15	59	2.79E-01	0.043	4.70E-05	
11:26	61.2	2.66E-01	0.051	4.47E-05	
11:36	63.1	2.53E-01	0.058	4.25E-05	
12:00	67.5	2.44E-01	0.074	4.10E-05	
12:22	70.9	2.06E-01	0.090	3.46E-05	
12:41	73.7	1.96E-01	0.103	3.30E-05	
14:00	84.1	1.75E-01	0.158	2.94E-05	
14:50	90.2	1.62E-01	0.192	2.73E-05	
15:11	92.7	1.58E-01	0.207	2.66E-05	
15:38	95.5	1.38E-01	0.226	2.32E-05	
15:45	32.0	-1.21E+01			
16:38	38.8	1.71E-01	0.267	2.87E-05	
17:09	42.4	1.54E-01	0.289	2.60E-05	
17:41	45.5	1.29E-01	0.311	2.17E-05	
18:20	49.5	1.36E-01	0.338	2.29E-05	
18:53	52.9	1.37E-01	0.361	2.30E-05	
10:20	32.5	5.29E-02			
10:36	34.5	1.66E-01	0.372	2.80E-05	
10:46	35.5	1.33E-01	0.379	2.24E-05	
10:57	36.6	1.33E-01	0.387	2.24E-05	
11:07	37.7	1.46E-01	0.394	2.46E-05	
11:35	41.0	1.57E-01	0.413	2.64E-05	
11:52	42.7	1.33E-01	0.425	2.24E-05	
12:10	44.6	1.40E-01	0.438	2.36E-05	
12:30	46.7	1.40E-01	0.451	2.35E-05	
12:53	49.0	1.33E-01	0.467	2.24E-05	
13:42	53.9	1.33E-01	0.501	2.24E-05	
			Average	2.30E-05	



Single-Stage Constant Head Borehole Test - Sacramento - Thin Store-and-Release Cover

Project:	Sacramento	**Installer:**	XW
Date:		**Analyst:**	CB
Test ID:	Thin 1		

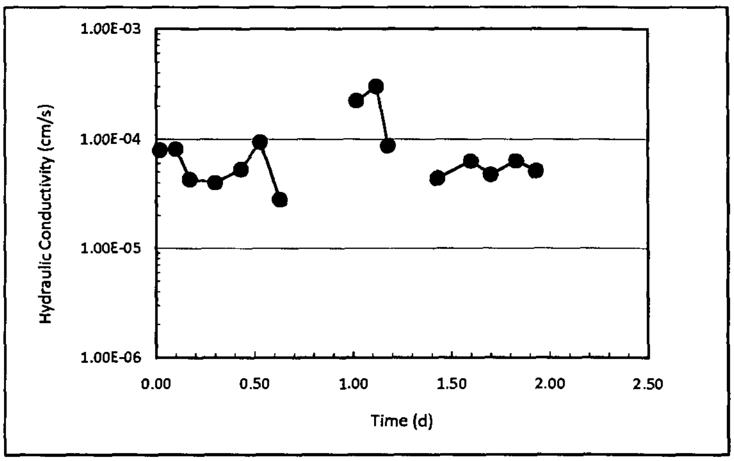
Fixed Variables:

d =	10.16
D =	35.56
Z =	27.94
R =	45.72

Temporal Variables: / **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
12:32	72	145.7			
12:33	68	141.7	60	0.02	3.85E-04
12:38	64	137.7	300	0.1	7.92E-05
12:42	60.8	134.5	240	0.17	8.12E-05
12:50	57.5	131.2	480	0.3	4.29E-05
12:58	54.5	128.2	480	0.43	4.00E-05
13:04	51.6	125.3	360	0.53	5.27E-05
13:10	46.6	120.3	360	0.63	9.38E-05
13:36	40.4	114.1	1560	1.07	2.81E-05
13:33	31.2	104.9	-180	1.02	
13:39	21.5	95.2	360	1.12	2.24E-04
13:43	13.5	87.2	240	1.18	3.03E-04
13:52	8.7	82.4	540	1.33	8.70E-05
13:58	83.5	157.2	360	1.43	
14:08	78.6	152.3	600	1.6	4.38E-05
14:14	74.5	148.2	360	1.7	6.29E-05
14:22	70.5	144.2	480	1.83	4.73E-05
14:28	66.6	140.3	360	1.93	6.32E-05
14:35	63	136.7	420	2.05	5.13E-05

AVG
5.62E-05



Single-Stage Constant Head Borehole Test - Sacramento - Thin Store-and-Release Cover

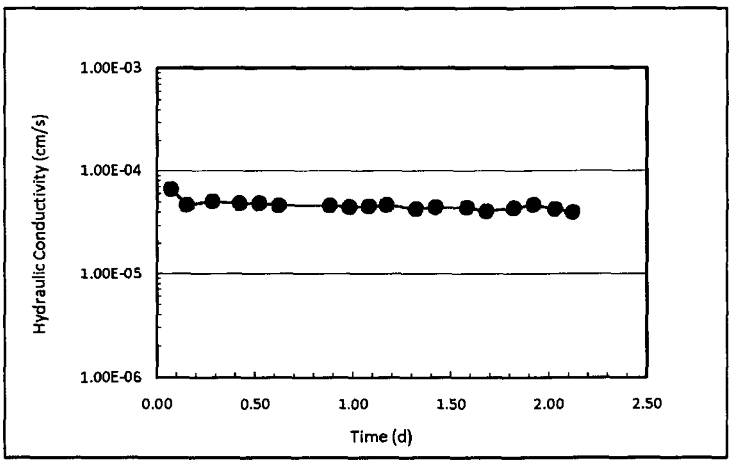
Project:	Sacramento	**Installer:**	XW
Date:		**Analyst:**	CB
Test ID:	Thin 2		

Fixed Variables:

d	=	10.16	cm
D	=	35.56	cm
Z	=	33.02	cm
R	=	43.18	cm

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
12:33	81.6	157.8			
12:37	78.6	154.8	2.40E+02	0.070	6.63E-05
12:42	76	152.2	3.00E+02	0.150	4.68E-05
12:50	71.6	147.8	4.80E+02	0.280	5.07E-05
12:58	67.5	143.7	4.80E+02	0.420	4.86E-05
13:04	64.5	140.7	3.60E+02	0.520	4.86E-05
13:10	61.7	137.9	3.60E+02	0.620	4.63E-05
13:26	54.5	130.7	9.60E+02	0.880	4.63E-05
13:32	52	128.2	3.60E+02	0.980	4.45E-05
13:38	49.5	125.7	3.60E+02	1.080	4.54E-05
13:43	47.4	123.6	3.00E+02	1.170	4.66E-05
13:52	44	120.2	5.40E+02	1.320	4.28E-05
13:58	41.7	117.9	3.60E+02	1.420	4.45E-05
1/0/00 14:08	38	114.2	6.00E+02	1.580	4.41E-05
1/0/00 14:14	36	112.2	3.60E+02	1.680	4.07E-05
1/0/00 14:22	33.2	109.4	4.80E+02	1.820	4.36E-05
1/0/00 14:28	31	107.2	3.60E+02	1.920	4.68E-05
1/0/00 14:35	28.7	104.9	4.20E+02	2.030	4.28E-05
14:40:00	27.2	103.4	3.00E+02	2.120	3.98E-05
					AVG
					4.33E-05



Single-Stage Constant Head Borehole Test - Sacramento - Thin Store-and-Release Cover

Project: Sacramento
Date:
Test ID: Thin 3

Installer: XW
Analyst: CB

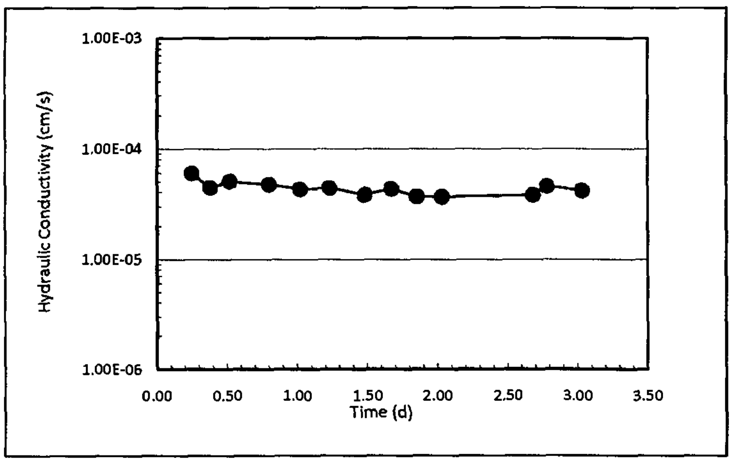
Fixed Variables:

d	=	10.16	cm
D	=	35.56	cm
Z	=	55.88	cm
R	=	22.86	cm

Temporal Variables: / **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
10:08	81.5	160.2			
10:23	71.5	150.2	9.00E+02	0.250	5.94E-05
10:31	67.7	146.4	4.80E+02	0.380	4.42E-05
10:39	63.5	142.2	4.80E+02	0.520	5.03E-05
10:56	55.5	134.2	1.02E+03	0.800	4.71E-05
11:09	50.2	128.9	7.80E+02	1.020	4.28E-05
11:22	45	123.7	7.80E+02	1.230	4.38E-05
11:37	40	118.7	9.00E+02	1.480	3.80E-05
11:48	36	114.7	6.60E+02	1.670	4.30E-05
11:59	32.7	111.4	6.60E+02	1.850	3.67E-05
12:10	29.5	108.2	6.60E+02	2.030	3.66E-05
12:49	18.5	97.2	2.34E+03	2.680	3.80E-05
12:55	16.6	95.3	3.60E+02	2.780	4.54E-05
1/0/00 13:10	12.4	91.1	9.00E+02	3.03	4.15E-05

AVG
4.04E-05



Single-Stage Constant Head Borehole Test - Sacramento - Thin Store-and-Release Cover

Project: Sacramento
Date:
Test ID: Thin 4

Installer: XW
Analyst: CB

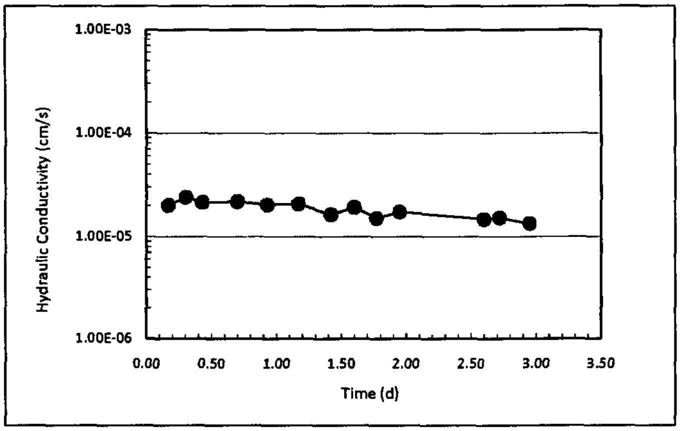
Fixed Variables:

Casing Diameter (cm):	30.48
Standpipe Area (cm^2):	79.8
R_3 (cm):	10
L (cm):	60.96

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
10:13	69	145.2			
10:23	67.2	143.4	6.00E+02	0.170	2.01E-05
10:31	65.5	141.7	4.80E+02	0.300	2.40E-05
10:39	64	140.2	4.80E+02	0.430	2.14E-05
10:55	61	137.2	9.60E+02	0.700	2.18E-05
11:09	58.6	134.8	8.40E+02	0.930	2.03E-05
11:23	56.2	132.4	8.40E+02	1.170	2.07E-05
11:38	54.2	130.4	9.00E+02	1.420	1.64E-05
11:49	52.5	128.7	6.60E+02	1.600	1.92E-05
11:59	51.3	127.5	6.00E+02	1.770	1.51E-05
12:10	49.8	126	6.60E+02	1.950	1.73E-05
12:49	45.4	121.6	2.34E+03	2.600	1.47E-05
12:56	44.6	120.8	4.20E+02	2.720	1.52E-05
1/0/00 13:10	43.2	119.4	8.40E+02	2.950	1.34E-05

AVG
1.52E-05



Single-Stage Constant Head Borehole Test - Sacramento - Thick Store-and-Release Cover

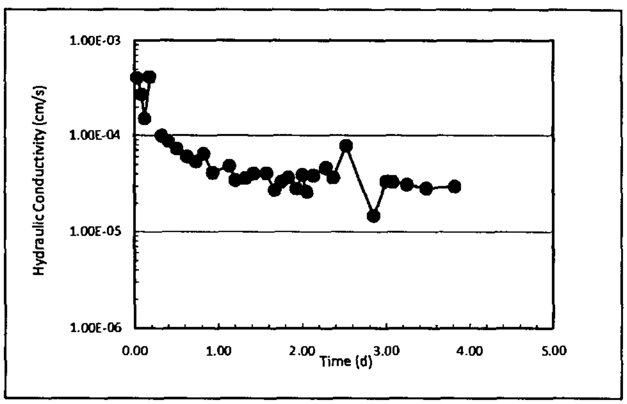
Project:	Sacramento	**Installer:**	XW
Date:		**Analyst:**	CB
Test ID:	Thick 1		

Fixed Variables:

d =	10.16 cm
D =	35.56 cm
Z =	60.96 cm
R =	14.605 cm

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
12:16	81	156.6			
12:18	72	147.6	1.20E+02	0.030	4.09E-04
12:21	63.5	139.1	1.80E+02	0.080	2.73E-04
12:23	60.5	136.1	1.20E+02	0.120	1.51E-04
12:27	45	120.6	2.40E+02	0.180	4.18E-04
12:30	52	127.6	1.80E+02	0.230	
12:35	47.5	123.1	3.00E+02	0.320	9.92E-05
12:40	43.7	119.3	3.00E+02	0.400	8.67E-05
12:46	40	115.6	3.60E+02	0.500	7.26E-05
12:53	36.5	112.1	4.20E+02	0.620	6.07E-05
13:00	33.5	109.1	4.20E+02	0.730	5.36E-05
13:05	31	106.6	3.00E+02	0.820	6.41E-05
13:12	28.8	104.4	4.20E+02	0.930	4.12E-05
13:24	24.5	100.1	7.20E+02	1.130	4.84E-05
13:28	23.5	99.1	2.40E+02	1.200	3.47E-05
13:35	21.7	97.3	4.20E+02	1.320	3.62E-05
13:41	20.0	95.6	3.60E+02	1.420	4.06E-05
13:50	17.5	93.1	5.40E+02	1.570	4.07E-05
13:56	16.4	92	3.60E+02	1.670	2.74E-05
14:01:00	15.3	90.9	3.00E+02	1.75	3.33E-05
14:06:00	14.1	89.7	3.00E+02	1.830	3.67E-05
14:12:00	13.0	88.6	3.60E+02	1.930	2.84E-05
14:16:00	12.0	87.6	2.40E+02	2.000	3.92E-05
14:19:00	11.5	87.1	1.80E+02	2.050	2.64E-05
14:20:00	50.4	126	6.00E+01	2.070	
14:24:00	49.0	124.6	2.40E+02	2.130	3.86E-05
14:33:00	45.3	120.9	5.40E+02	2.280	4.63E-05
14:38:00	43.7	119.3	3.00E+02	2.370	3.68E-05
14:47:00	37.8	113.4	5.40E+02	2.520	7.79E-05
15:07:00	35.4	111	1.20E+03	2.850	1.48E-05
15:16:00	33.0	108.6	5.40E+02	3.000	3.36E-05
15:21:00	31.7	107.3	3.00E+02	3.080	3.33E-05
15:31:00	29.3	104.9	6.00E+02	3.250	3.13E-05
15:45:00	26.3	101.9	8.40E+02	3.480	2.86E-05
16:05:00	22.0	97.6	1.20E+03	3.820	2.98E-05
					AVG
					3.13E-05



Single-Stage Constant Head Borehole Test - Sacramento - Thick Store-and-Release Cover

Project: Sacramento **Installer:** XW
Date: **Analyst:** CB
Test ID: Thick 2

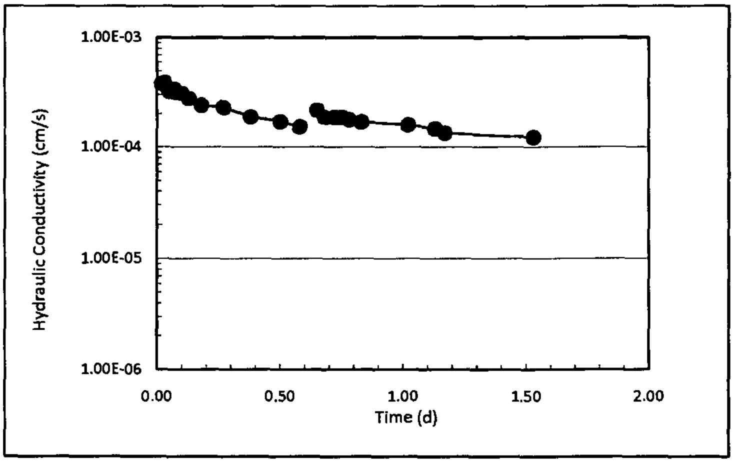
Fixed Variables:

d =	10.16 cm
D =	35.56 cm
Z =	43.18 cm
R =	33.02 cm

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
1:03	72	148.2			
1:04	68	144.2	6.00E+01	0.020	3.78E-04
1:05	64	140.2	6.00E+01	0.030	3.89E-04
1:06	60.8	137	6.00E+01	0.050	3.19E-04
1:07	57.5	133.7	6.00E+01	0.070	3.37E-04
1:08	54.5	130.7	6.00E+01	0.080	3.14E-04
1:09	51.6	127.8	6.00E+01	0.100	3.10E-04
1:11	46.6	122.8	1.20E+02	0.130	2.76E-04
1:14	40.4	116.6	1.80E+02	0.180	2.39E-04
1:19	31.2	107.4	3.00E+02	0.270	2.27E-04
1:26	21.5	97.7	4.20E+02	0.380	1.87E-04
1:33	13.5	89.7	4.20E+02	0.500	1.69E-04
1:38	8.7	84.9	3.00E+02	0.580	1.52E-04
1:40	83.5	159.7	1.20E+02	0.620	
1:42	78.6	154.8	1.20E+02	0.650	2.15E-04
1:44	74.5	150.7	1.20E+02	0.680	1.85E-04
1:46	70.5	146.7	1.20E+02	0.720	1.86E-04
1:48	66.6	142.8	1.20E+02	0.750	1.86E-04
1:50	63.0	139.2	1.20E+02	0.780	1.76E-04
1:53:00	58.0	134.2	1.80E+02	0.83	1.68E-04
2:04:00	42.0	118.2	6.60E+02	1.020	1.59E-04
2:11:00	33.6	109.8	4.20E+02	1.130	1.46E-04
2:13:00	31.5	107.7	1.20E+02	1.170	1.33E-04
2:35:00	12.5	88.7	1.32E+03	1.530	1.22E-04

AVG
1.34E-04



Single-Stage Constant Head Borehole Test - Sacramento - Thick Store-and-Release Cover

Project:	Sacramento	**Installer:**	XW
Date:		**Analyst:**	CB
Test ID:	Thick 3		

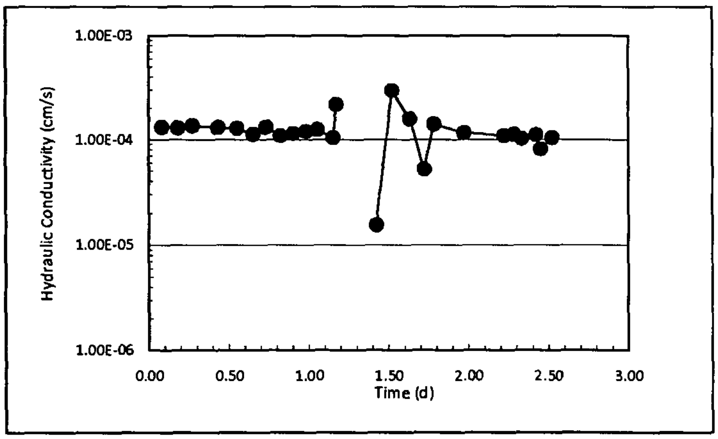
Fixed Variables:

d =	10.16 cm
D =	35.56 cm
Z =	27.94 cm
R =	44.45 cm

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
10:09	82	154.4			
10:14	74.8	147.2	3.00E+02	0.080	1.32E-04
10:20	66.7	139.1	3.60E+02	0.180	1.30E-04
10:25	60	132.4	3.00E+02	0.270	1.36E-04
10:35	48	120.4	6.00E+02	0.430	1.31E-04
10:42	40.4	112.8	4.20E+02	0.550	1.29E-04
10:48	35	107.4	3.60E+02	0.650	1.13E-04
10:53	30	102.4	3.00E+02	0.730	1.32E-04
10:58	26	98.4	3.00E+02	0.820	1.10E-04
11:03	22	94.4	3.00E+02	0.900	1.15E-04
11:08	18	90.4	3.00E+02	0.980	1.20E-04
11:12	14.8	87.2	2.40E+02	1.050	1.25E-04
11:18	10.9	83.3	3.60E+02	1.150	1.05E-04
11:19	9.6	82	6.00E+01	1.170	2.17E-04
11:24	80.4	152.8	3.00E+02	1.250	
11:34	78.7	151.1	6.00E+02	1.420	1.55E-05
11:40	60.5	132.9	3.60E+02	1.520	2.96E-04
11:47	50.3	122.7	4.20E+02	1.630	1.58E-04
11:52	48.0	120.4	3.00E+02	1.720	5.23E-05
11:56:00	43.2	115.6	2.40E+02	1.78	1.41E-04
12:07:00	32.9	105.3	6.60E+02	1.970	1.17E-04
12:22:00	21.0	93.4	9.00E+02	2.220	1.10E-04
12:26:00	18.0	90.4	2.40E+02	2.280	1.13E-04
12:29:00	16.0	88.4	1.80E+02	2.330	1.03E-04
12:34:00	12.5	84.9	3.00E+02	2.420	1.12E-04
12:36:00	11.5	83.9	1.20E+02	2.450	8.19E-05
12:40:00	9.0	81.4	2.40E+02	2.520	1.05E-04

AVG
1.00E-04



Single-Stage Constant Head Borehole Test - Sacramento - Thick Store-and-Release Cover

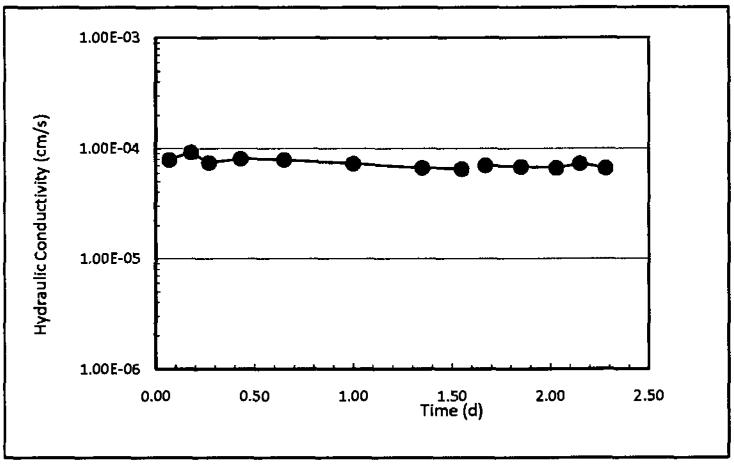
Project:	Sacramento	**Installer:**	XW
Date:		**Analyst:**	CB
Test ID:	Thick 4		

Fixed Variables:

d =	10.16 cm
D =	35.56 cm
Z =	60.96 cm
R =	11.43 cm

Temporal Variables: **Computations:**

Time	R (cm)		Q (cm^3/s)	Time (d)	K (cm/s)
3:05	69	141.4			
3:09	65.8	138.2	2.40E+02	0.070	7.91E-05
3:16	59.5	131.9	4.20E+02	0.180	9.21E-05
3:21	56	128.4	3.00E+02	0.270	7.43E-05
3:31	48.7	121.1	6.00E+02	0.430	8.09E-05
3:44	40	112.4	7.80E+02	0.650	7.92E-05
4:05	28.2	100.6	1.26E+03	1.000	7.30E-05
4:26	18.5	90.9	1.26E+03	1.350	6.67E-05
4:38	13.5	85.9	7.20E+02	1.550	6.52E-05
4:39	54.3	126.7	6.00E+01	1.570	
4:45	50.5	122.9	3.60E+02	1.670	7.01E-05
4:56	44	116.4	6.60E+02	1.850	6.83E-05
5:07	38	110.4	6.60E+02	2.030	6.65E-05
5:14	34	106.4	4.20E+02	2.150	7.29E-05
5:22	30	102.4	4.80E+02	2.280	6.62E-05
					AVG
					6.84E-05



APPENDIX D - LABORATORY HYDRAULIC CONDUCTIVITY DATA

Hydraulic Conductivity Test - Altamont - Store-and-Release

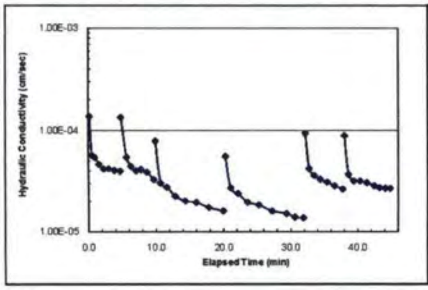
ASTM D 5084 - 00

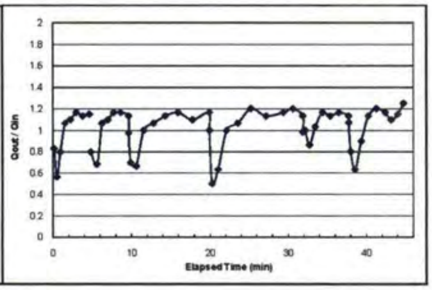
Sample I.D.	305-mm ALT- DL - 5		Test Date :	1/16/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	17.1	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	12510.0	cm^3
Effective Stress =	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	4.65E-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 12:00	0.0	24.0	0.0	24.0	4.7				
1/16/2008 12:00	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	2.84E-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 12:06	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

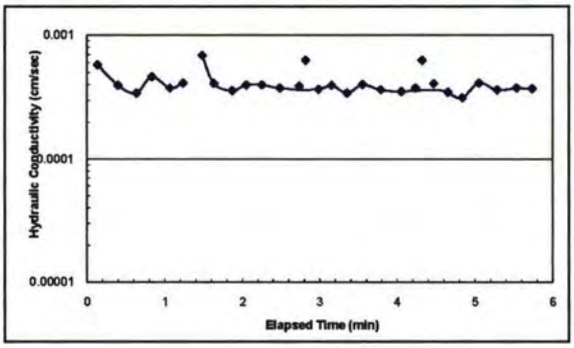
ASTM D 5084 - 00

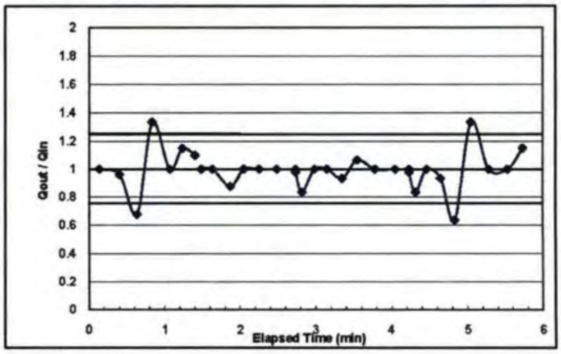
Sample I.D.	305-mm ALT- ML - 4		Test Date :	12/21/07	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	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	3.65E-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





Hydraulic Conductivity Test - Altamont - Store-and-Release

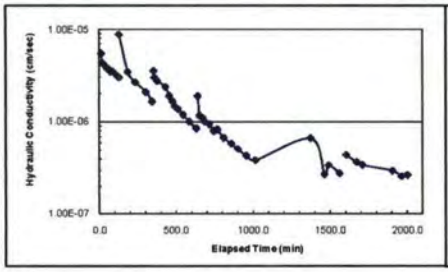
ASTM D 5084 - 00

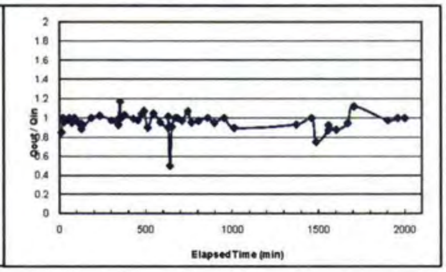
Sample I.D.	150-mm ALT - ML - 4		Test Date :	2/6/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.8	psi	Length of Sample, L =	8.1	cm
Outflow Pressre =	40.3	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1482.7	cm^3
Effective Stress =	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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	801.0	-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	-19.9	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	8.77E-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	857.0	-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	0.95
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	0.95
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

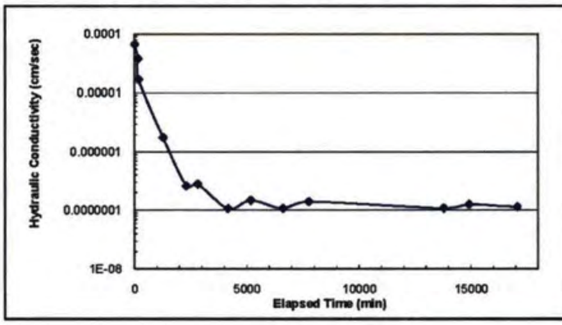
ASTM D 5084 - 00

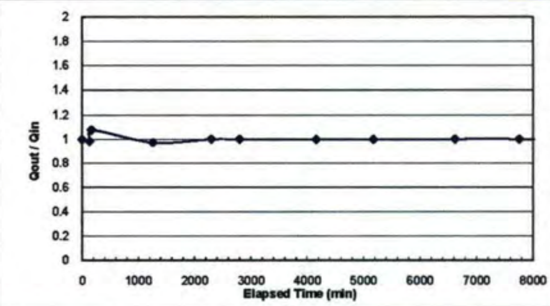
Sample I.D.	75-mm ALT - ML - 4		Test Date :	3/23/08	
Cell Pressure =	42.4	psi	Diameter of Sample, D =	5.6	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	2.8	cm
Outflow Pressre =	40.8	psi	Area of Sample, A =	24.6	cm^2
Pressure Difference =	0.2	psi	Sample Volume, V =	69.0	cm^3
Effective Stress =	1.50	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
	(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

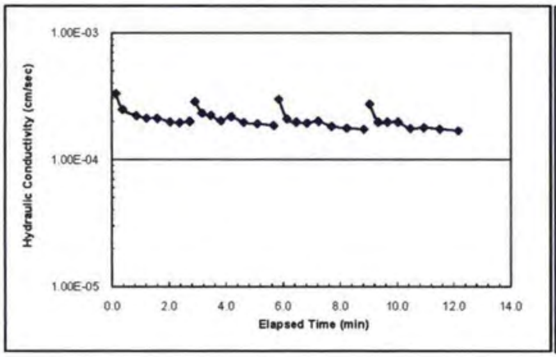
ASTM D 5084 - 00

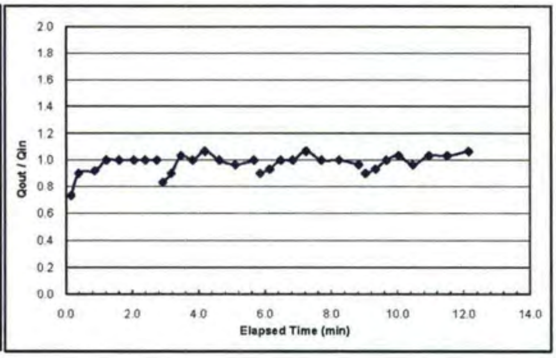
Sample I.D.	305-mm ALT - ML - 3		Test Date :	12/27/07	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	4.6		a_{out} =	5	cm^2
Weight of wet sample =	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
	(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

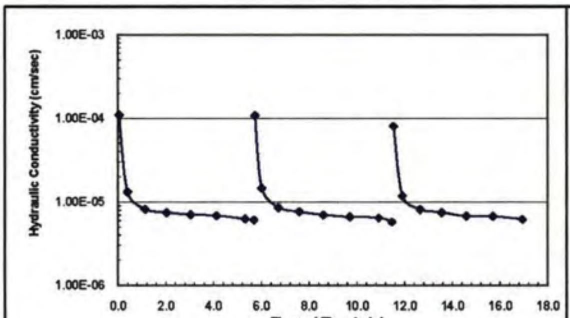
ASTM D 5084 - 00

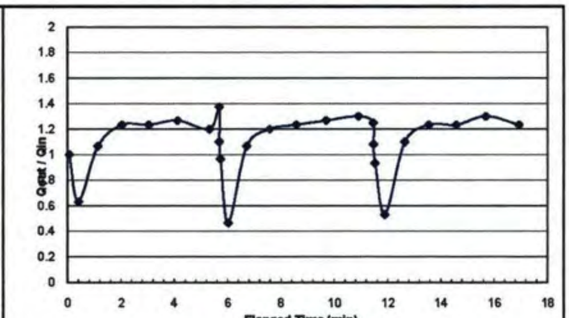
Sample I.D.	305-mm CMP - SDRI		Test Date :	1/29/07	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	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 (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
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

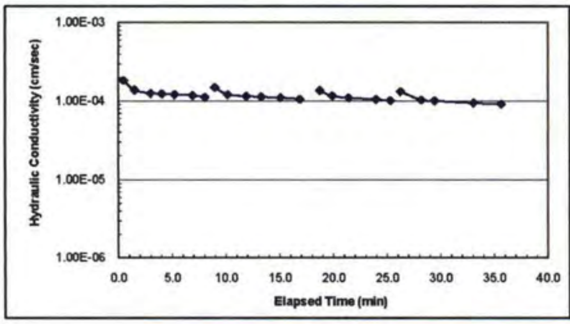
Sample I.D.	150-mm CMP - SDRI		Test Date :	2/20/08	
Cell Pressure =	42.1	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.2	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	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

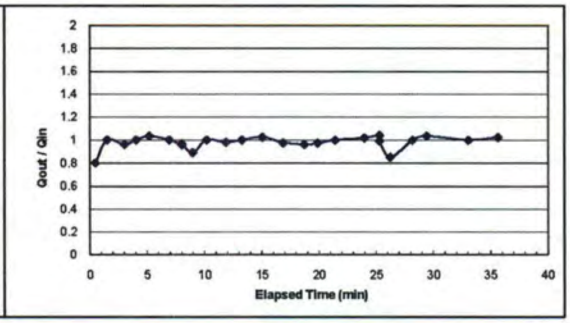
$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} Ln\left\{\frac{(\Delta H_1)}{(\Delta H_2)}\right\}$$

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

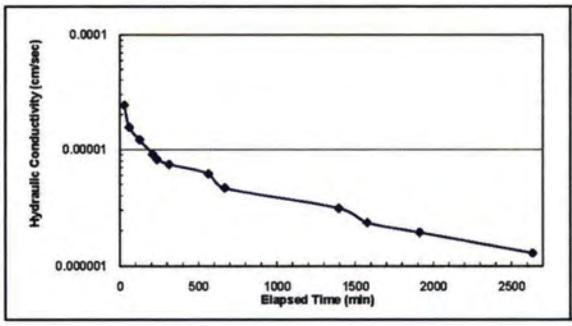
ASTM D 5084 - 00

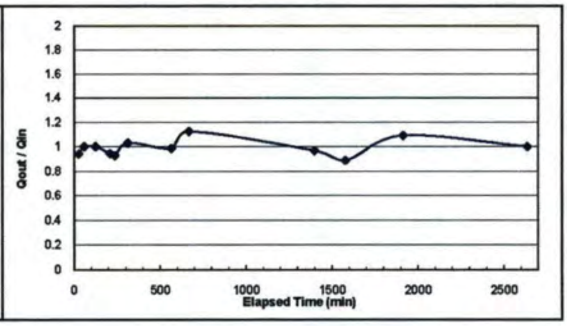
Sample I.D.	75-mm CMP - SDRI		Test Date :	3/11/08	
Cell Pressure =	42.4	psi	Diameter of Sample, D =	5.6	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	2.8	cm
Outflow Pressre =	40.7	psi	Area of Sample, A =	24.6	cm^2
Pressure Difference =	0.4	psi	Sample Volume, V =	67.7	cm^3
Effective Stress =	1.50	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

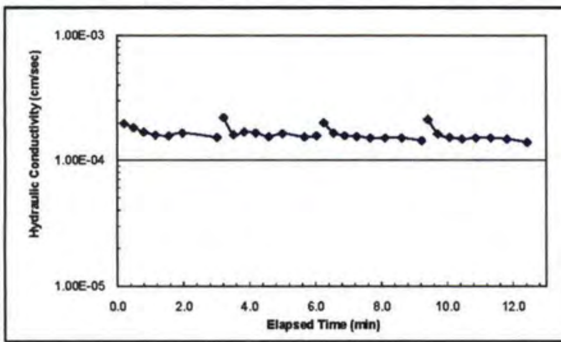
ASTM D 5084 - 00

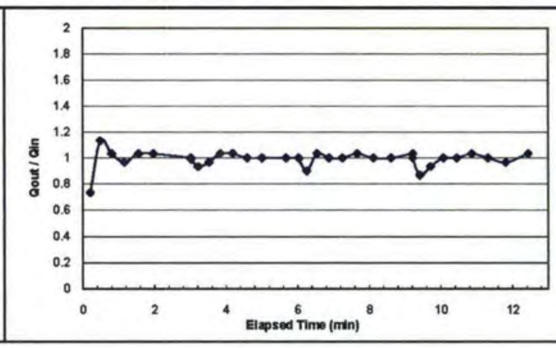
Sample I.D.		305-mm CMP - CL - 1		Test Date :		12/28/07	
Cell Pressure =	42.0	psi		Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	41.0	psi		Length of Sample, L =	15.2	cm	
Outflow Pressre =	40.0	psi		Area of Sample, A =	729.7	cm^2	
Pressure Difference =	1.0	psi		Sample Volume, V =	11120.0	cm^3	
Effective Stress =	1.50	psi		a_{in} =	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	

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

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

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	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

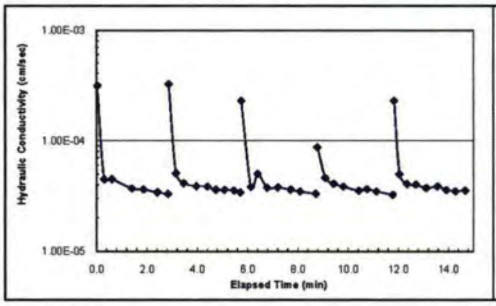
ASTM D 5084 - 00

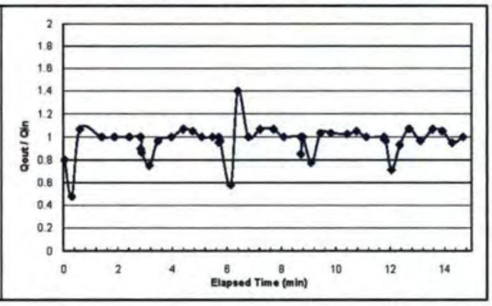
Sample I.D.	305-mm CMP - CL - 2		Test Date :	12/24/07	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/24/2007 12:00	0.0	24.0	0.0	24.0	0.0				
12/24/2007 12:00	3.0	21.6	2.0	18.6	0.0	3.08E-04	0.8	3	2.4
12/24/2007 12:00	7.0	19.7	16.0	12.7	0.3	4.48E-05	0.5	4	1.9
12/24/2007 12:00	10.0	16.5	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

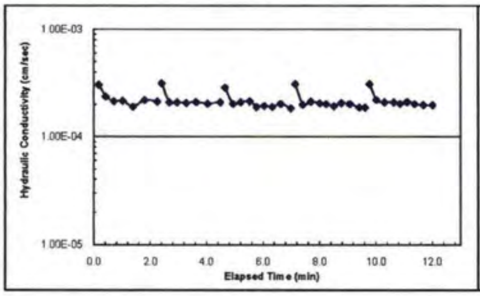
Sample I.D.	305-mm CMP - CL - 3	Test Date :	12/29/07

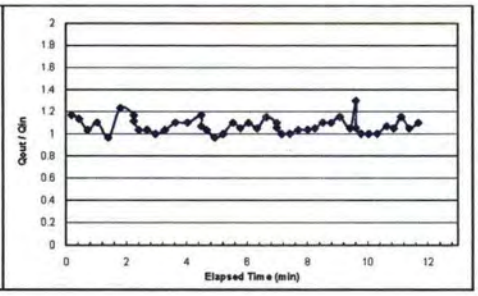
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	17.1	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	12510.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	4	cm^2
Hydraulic Gradient, i =	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	2.86E-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

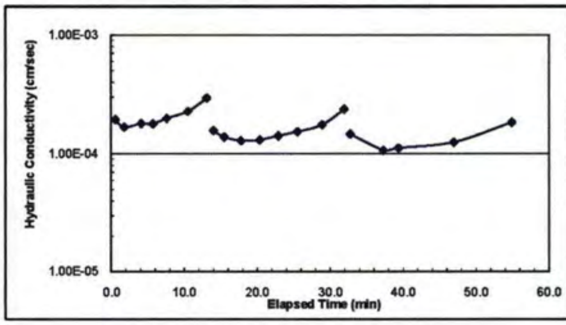
ASTM D 5084 - 00

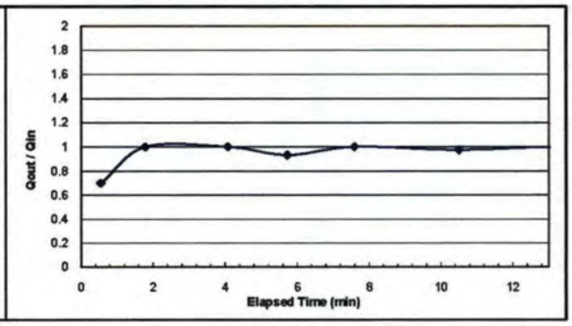
Sample I.D.	150-mm CMP - CL - 3		Test Date :	2/20/08	
Cell Pressure =	42.3	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	7.4	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1343.7	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	19.86

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

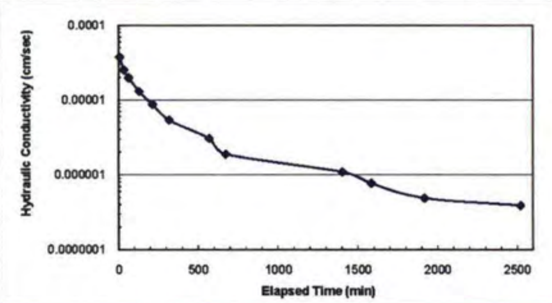
ASTM D 5084 - 00

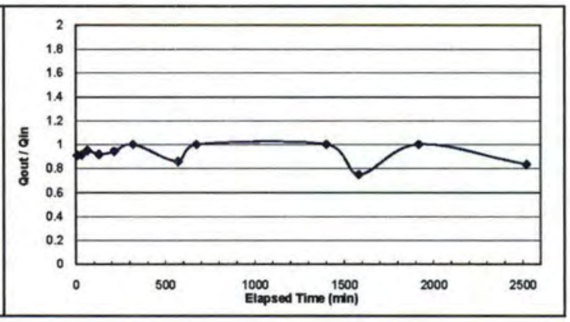
Sample I.D.	75-mm CMP - CL - 3		Test Date :	3/11/08	
Cell Pressure =	42.4	psi	Diameter of Sample, D =	5.6	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	2.8	cm
Outflow Pressre =	40.8	psi	Area of Sample, A =	24.6	cm^2
Pressure Difference =	0.2	psi	Sample Volume, V =	69.0	cm^3
Effective Stress =	1.50	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NA	NA	NA	NA	20.61

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 12:07	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

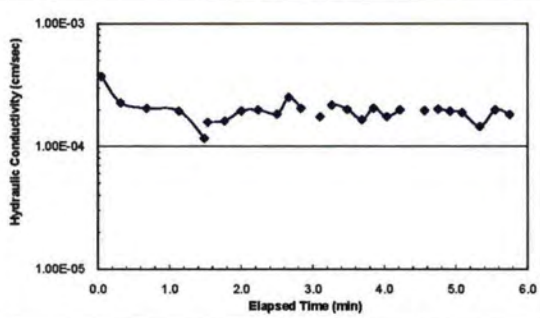
ASTM D 5084 - 00

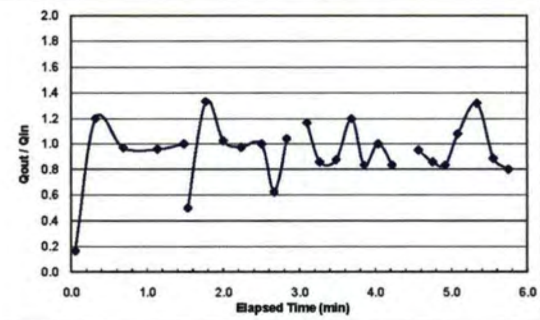
Sample I.D.	305-mm AV - B - 1 - C		Test Date :	8/21/07	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	17.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	12973.3	cm^3
Effective Stress =	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

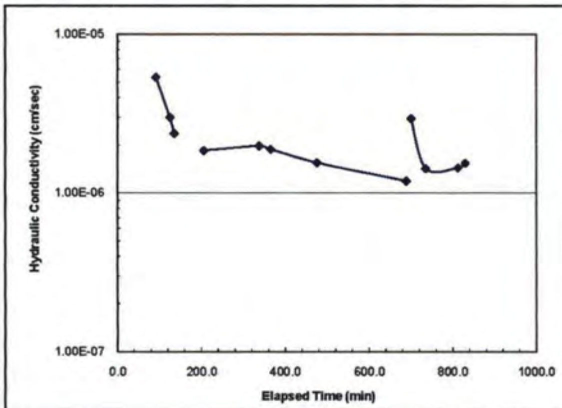
Sample I.D.	150-mm AV - B - 1 - C	Test Date :	8/21/07

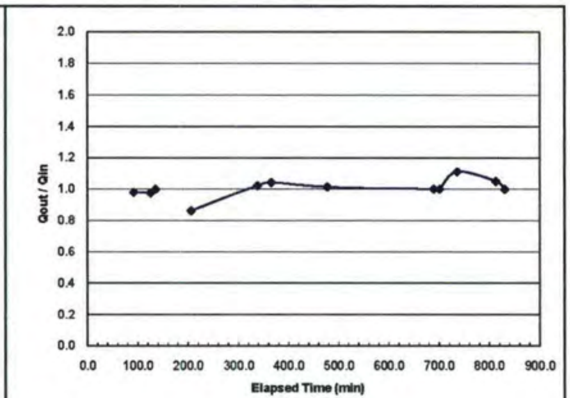
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.7	psi	Length of Sample, L =	7.0	cm
Outflow Pressre =	40.7	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	1274.2	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	10.1		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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
BB	30.39	216.06	188.09	17.74

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

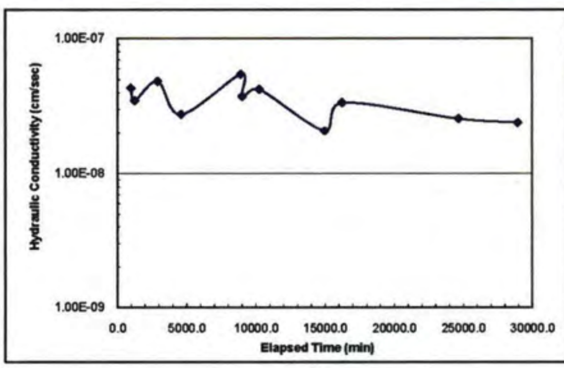
ASTM D 5084 - 00

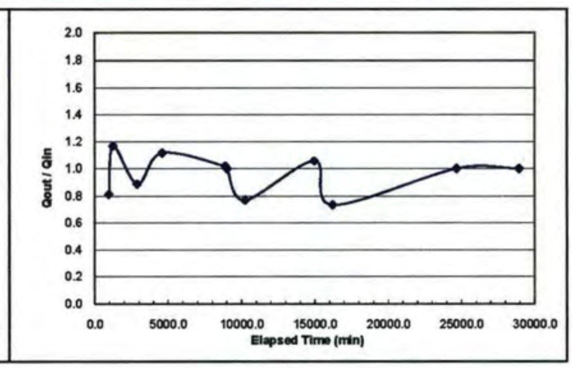
Sample I.D.	75-mm AV - B - 1 - C		Test Date :	6/2/08	
Cell Pressure =	41.8	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.3	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
55	30.8	172	148.32	20.15

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

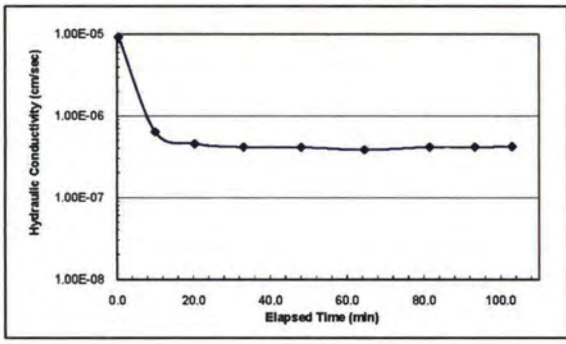
ASTM D 5084 - 00

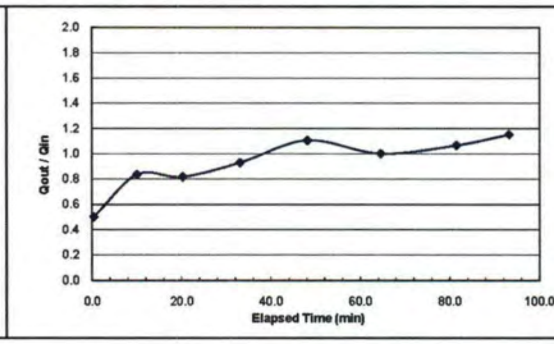
Sample I.D.	305-mm AV - B - 4 - C		Test Date :	8/20/07	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	31.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.9	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	779.1	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	12368.4	cm^3
Effective Stress =	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

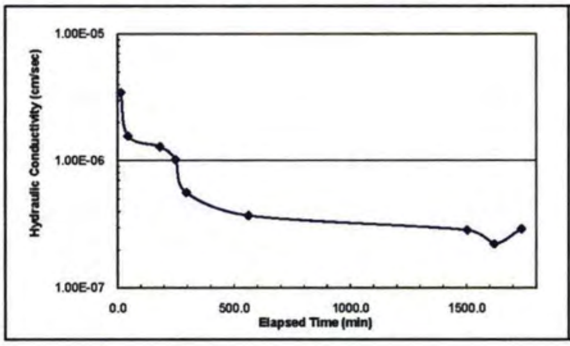
ASTM D 5084 - 00

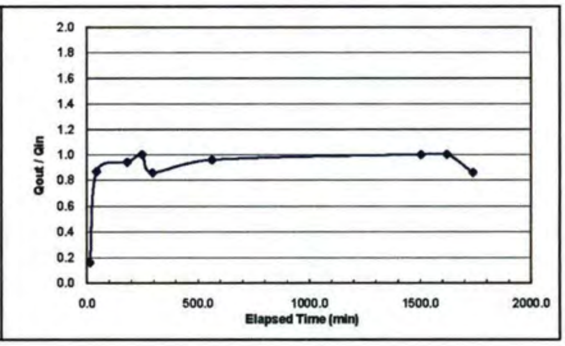
Sample I.D.	150-mm AV - B - 4 - C		Test Date :	5/27/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.7	psi	Length of Sample, L =	7.1	cm
Outflow Pressre =	40.7	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	1297.3	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
144	30.44	222.54	186.7	22.94

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

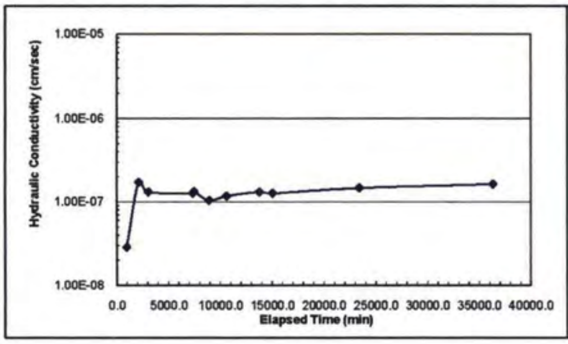
ASTM D 5084 - 00

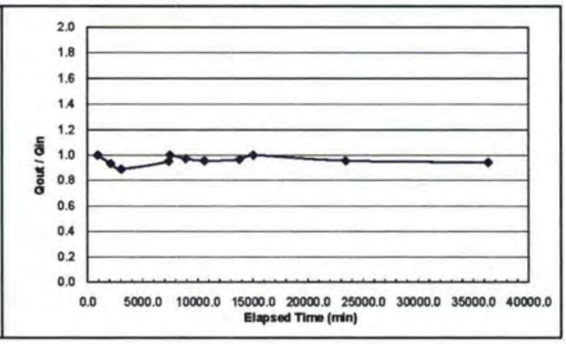
Sample I.D.	75-mm AV - B - 4 - C		Test Date :	6/4/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.9	psi	Area of Sample, A =	38.3	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
2C	24.64	182.89	154.24	22.11

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

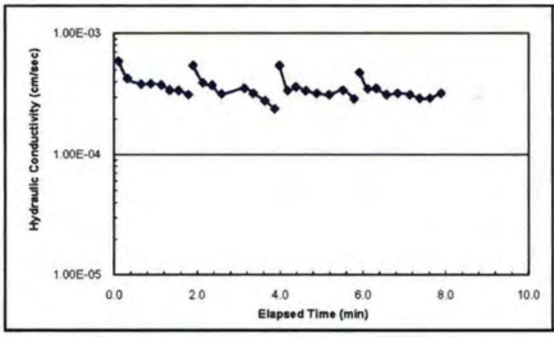
ASTM D 5084 - 00

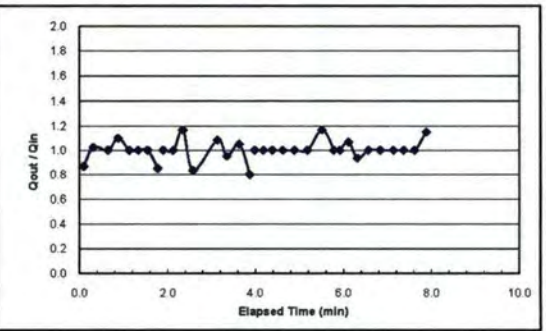
Sample I.D.	305-mm AV - B - 5 - ALT		Test Date :	8/28/07	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	31.9	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	18.5	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	800.6	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	14845.1	cm^3
Effective 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

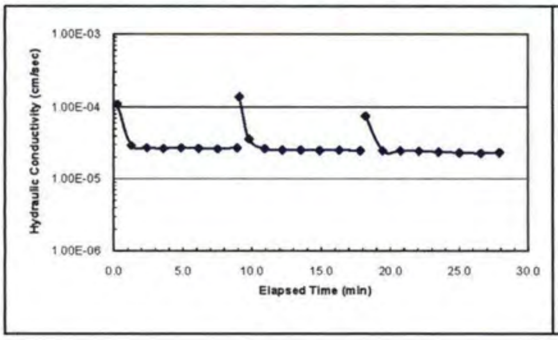
Sample I.D.	305-mm 4' Cover-Upper Slope-Surface	Test Date :	2/4/08

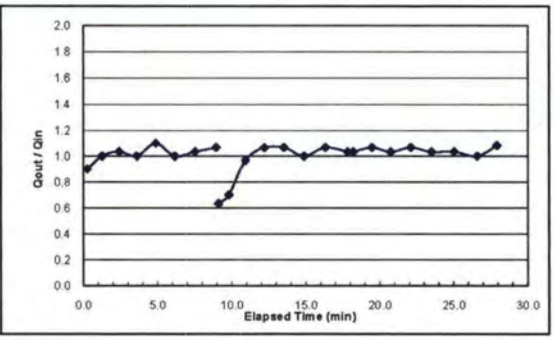
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.9	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11583.3	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	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

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

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

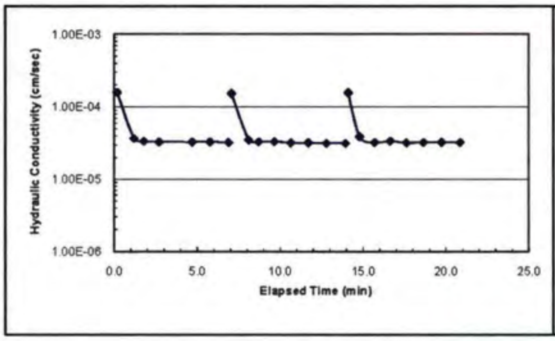
Sample I.D.	305-mm Oregon Boardman- 4'-Upper Slope- 2'-3'	Test Date :	2/20/08

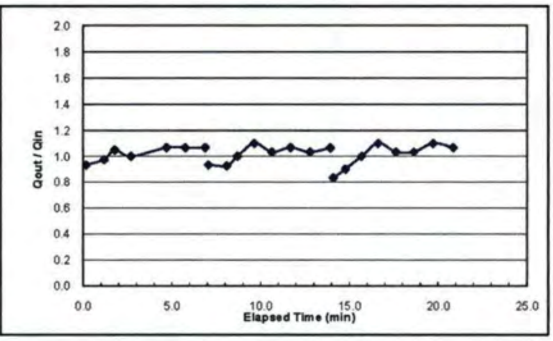
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
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

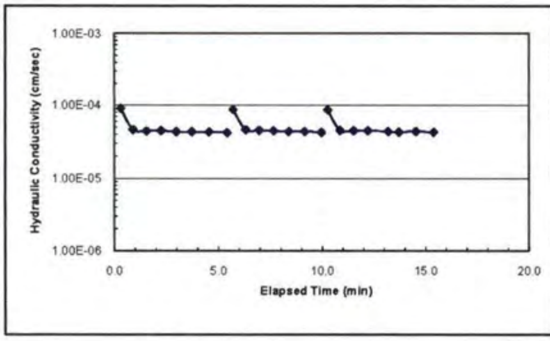
Sample I.D.	305-mm Oregon Boardman- 4' Cover- Lower Slope-Surface	Test Date :	2/6/08

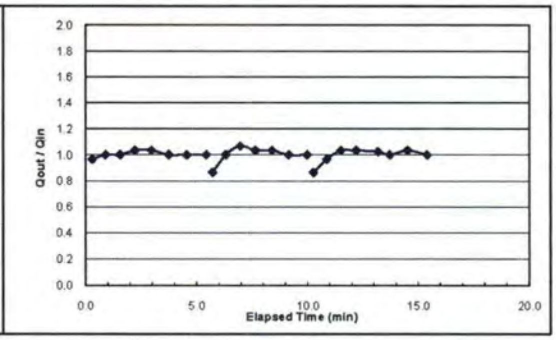
Cell Pressure =	42.4	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	11.4	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	8340.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

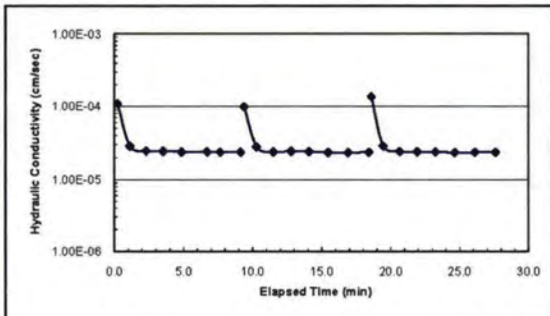
Sample I.D. **305-mm Oregon Boardman- Q3-Upper** **Test Date :** **3/7/08**

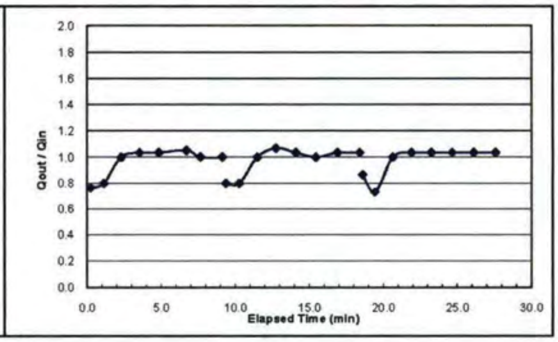
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	21550.0	(g)	Sample Water Content =	25.9%	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.93	g/cm^3

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

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

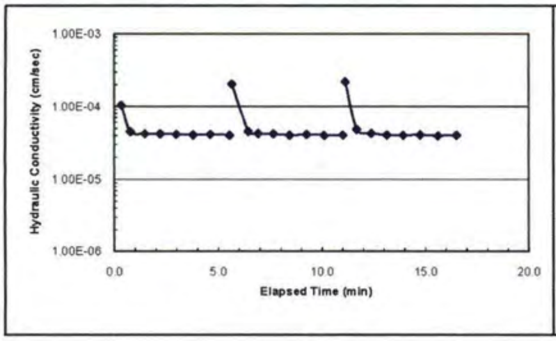
Sample I.D. **305-mm Oregon Boardman- Q3-Lower** **Test Date :** **2/8/08**

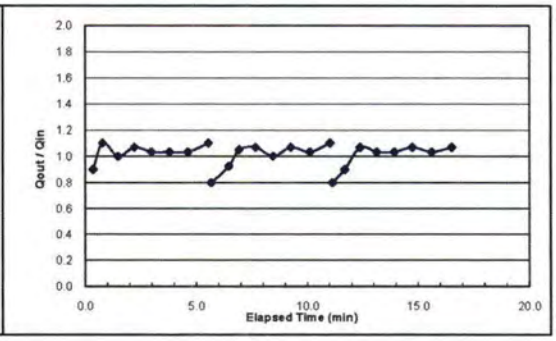
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	22044.5	(g)	Sample Water Content =	24.1%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	1.98	g/cm^3

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

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

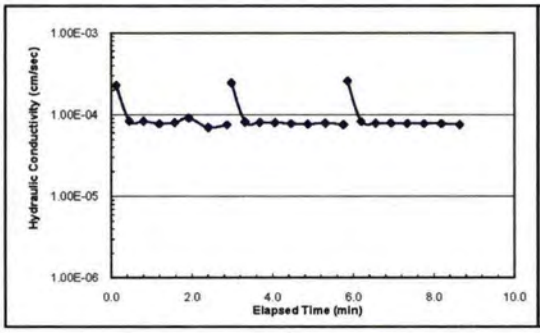
Sample I.D.	**305-mm Oregon Boardman- 6'-Upper Slope- Surface**	**Test Date :**	**2/13/08**

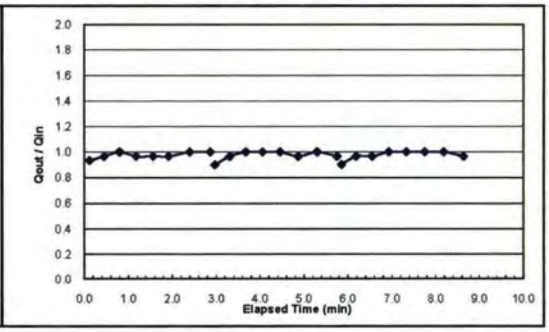
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
874	35.12	393.89	320.05	25.92%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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	7.88E-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

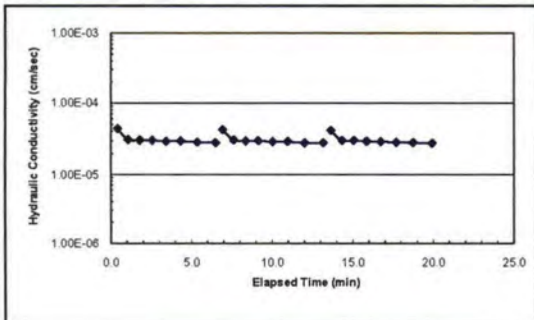
Sample I.D.	150-mm Oregon Boardman- 6'-Upper Slope- Surface	Test Date :	3/14/08

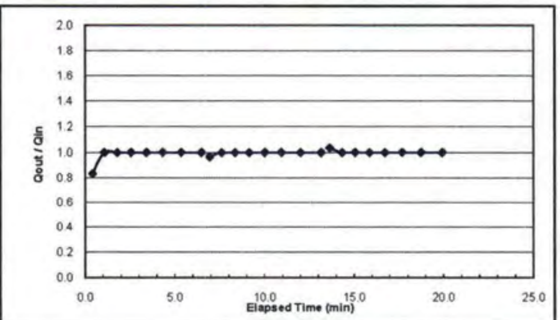
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
2C	24.63	202.94	167.14	25.12%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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	24.8	0.0	24.8	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

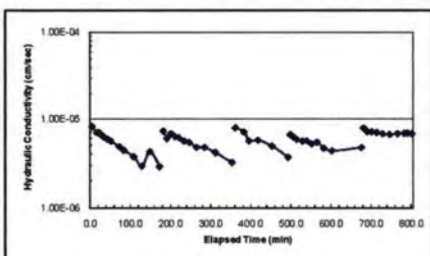
Sample I.D.	75-mm Oregon Boardman- 6'-Upper Slope- Surface	Test Date :	4/21/08

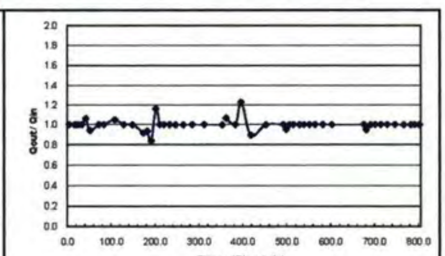
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.9	psi	Area of Sample, A =	45.6	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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	8.17E-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 00:26:46	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 00:41:55	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	15.6	9.0	1265.9	-6.6	72.7	4.81E-06	1.0	2.8	2.8
4/23/08 01:23:50	16.8	7.8	669.7	-9.0	83.8	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	1236.5	-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 02:53:36	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	2465.0	-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	418.0	5.70E-06	0.9	3.8	3.4
4/23/08 01:40:08	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	-8.9	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		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

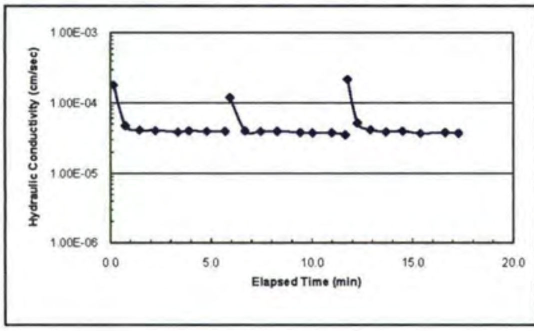
Sample I.D.	305-mm Oregon Boardman- 6'-Upper Slope- 3'-4'	Test Date :	2/11/08

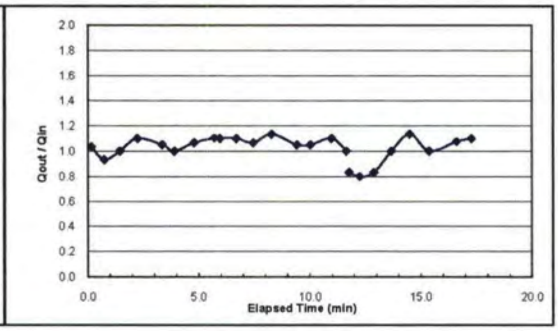
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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	12.6	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

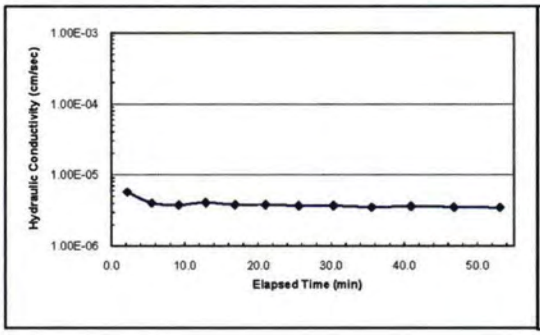
Sample I.D.	150-mm Oregon Boardman- 6'-Upper Slope- 3'-4'	Test Date :	3/20/08

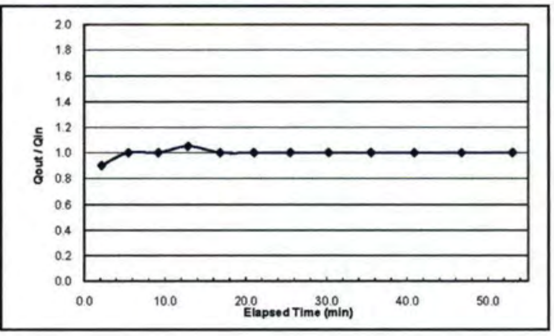
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
2A	31.08	199	163.63	26.68%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

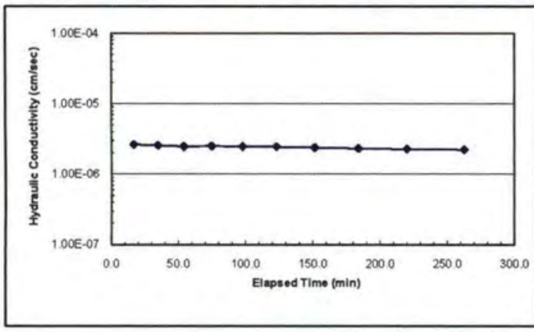
ASTM D 5084 - 00

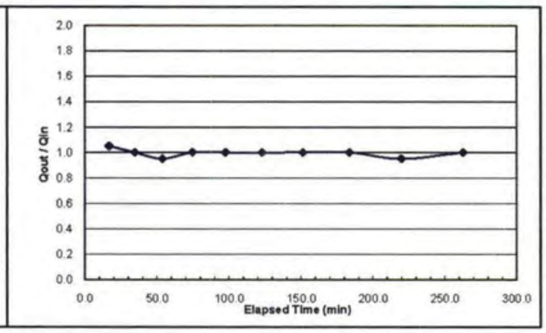
Sample I.D.	75-mm Oregon Boardman- 6'-Upper Slope- 3'-4'		Test Date :	3/20/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.9	psi	Area of Sample, A =	45.6	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

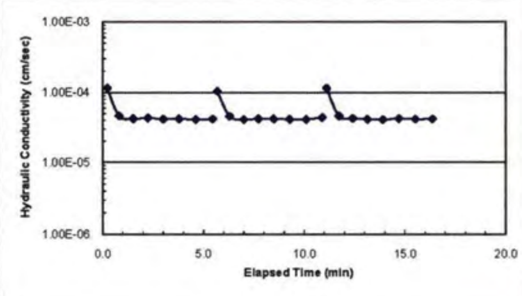
Sample I.D.	305-mm Oregon Boardman- 6'-Upper Slope- 5'-6'	Test Date :	2/20/08

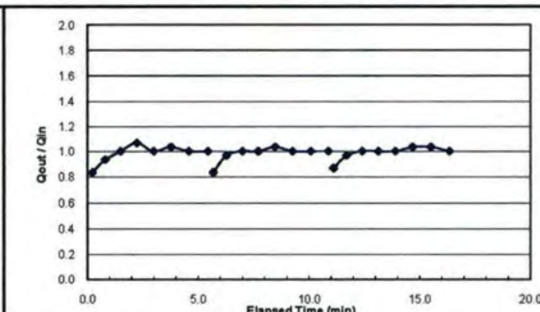
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
H2	30.84	234.97	191.66	26.93%

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	24.5	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

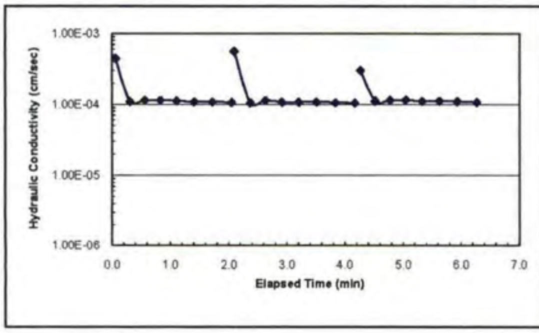
Sample I.D.	305-mm Oregon Boardman- 6'-Lower Slope- Surface	Test Date :	3/10/08

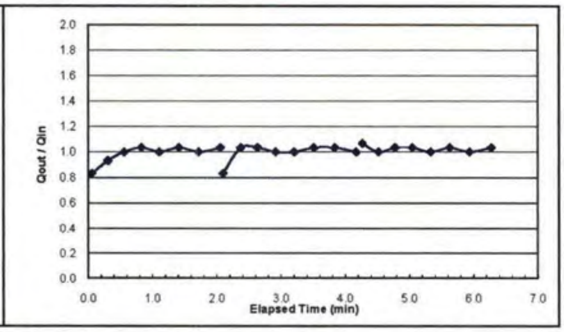
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
2C	24.62	235.41	191.25	26.50%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

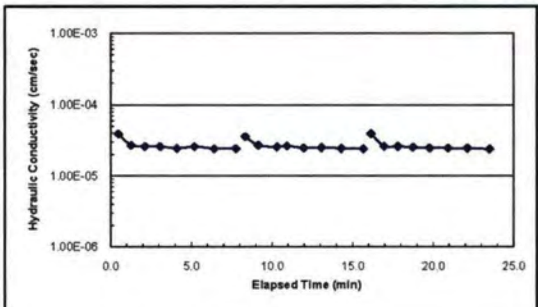
Sample I.D.	**150-mm Oregon Boardman- 6'-Lower Slope- Surface**	**Test Date :**	**3/31/08**

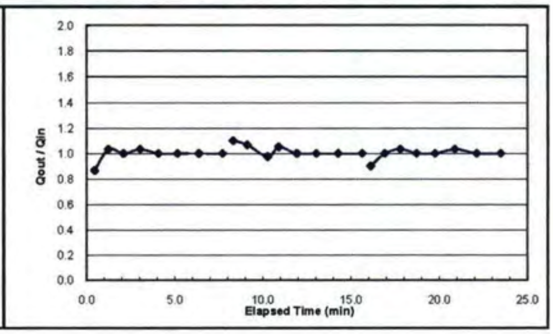
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
H1	30.85	191.54	160.26	24.17%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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 05:09.76	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 00:00.00	0.0	25.0	0.0	25.0	7.7				
3/31/08 00:34.71	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 00:00.00	0.0	24.9	0.0	24.9	15.7				
3/31/08 00:28.34	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

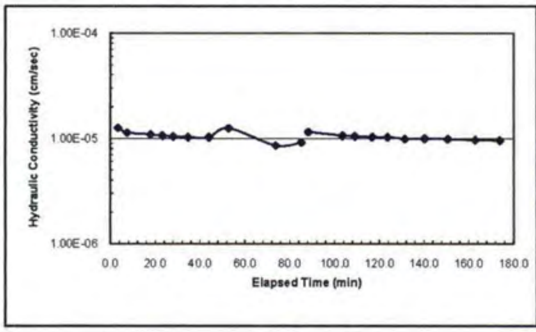
Sample I.D.	75-mm Oregon Boardman- 6'-Lower Slope- Surface	Test Date :	4/21/08

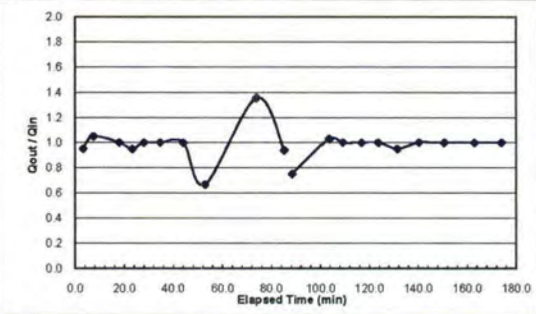
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.9	psi	Area of Sample, A =	45.6	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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

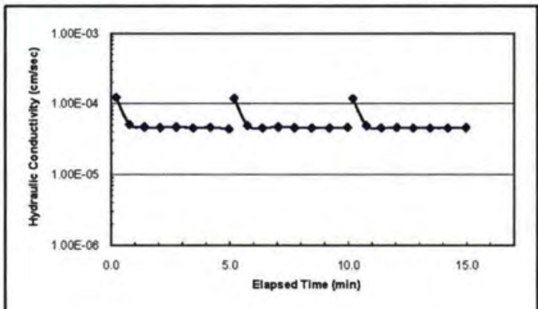
Sample I.D.	305-mm Oregon Boardman- 6'-Lower Slope- 3'-4'	Test Date :	2/29/08

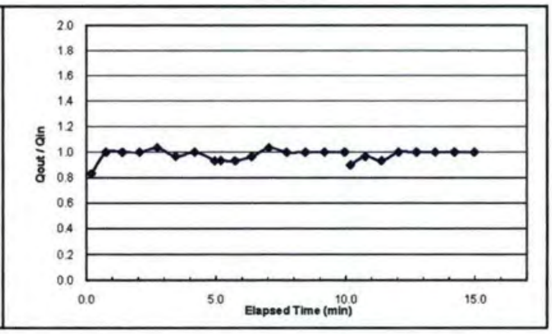
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
MC6	31.13	163.44	138.68	23.02%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

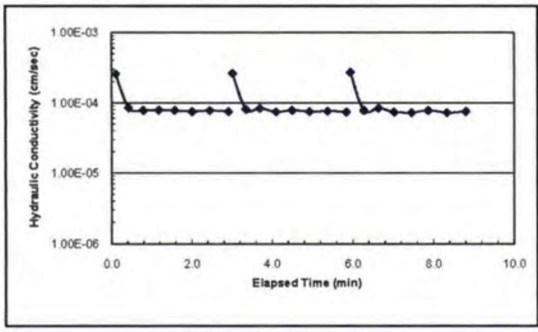
Sample I.D.	305-mm Oregon Boardman- 6'-Lower Slope- 5'-6'	Test Date :	2/25/08

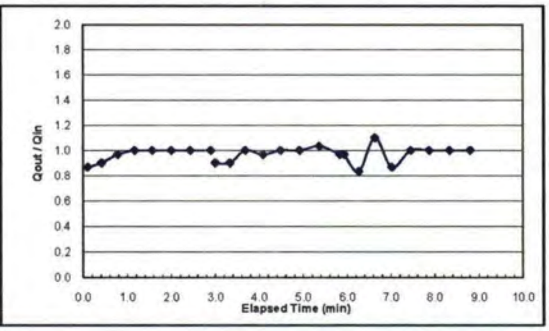
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	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

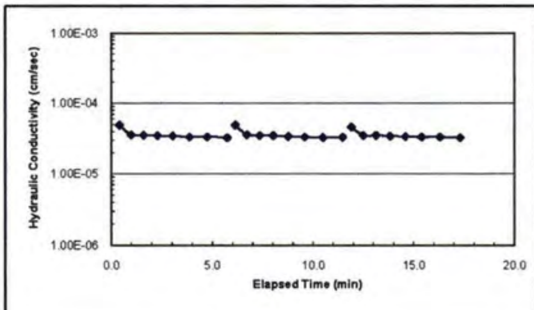
Sample I.D.	150-mm Oregon Boardman- 6'-Lower Slope- 5'-6'	Test Date :	3/26/08

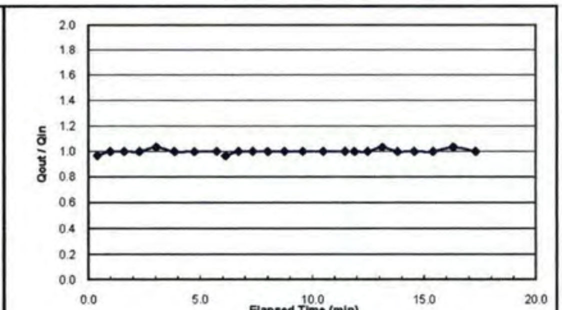
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
55	30.91	211.66	176.96	23.76%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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 00:58.36	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

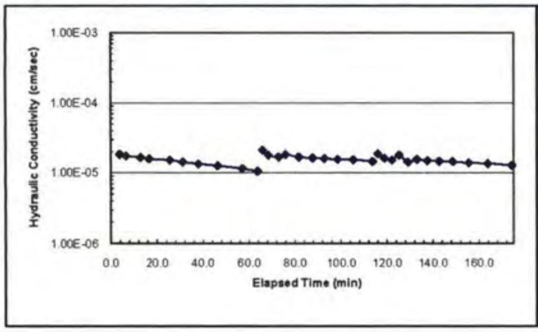
Sample I.D.	75-mm Oregon Boardman- 6'-Lower Slope- 5'-6'	Test Date :	3/26/08

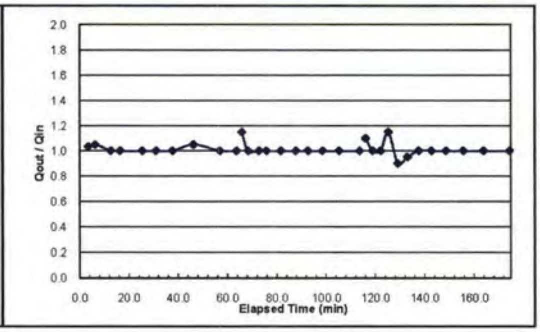
Cell Pressure =	42.7	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.9	psi	Area of Sample, A =	45.6	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	173.7	cm^3
Effective Stress =	1.50	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		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

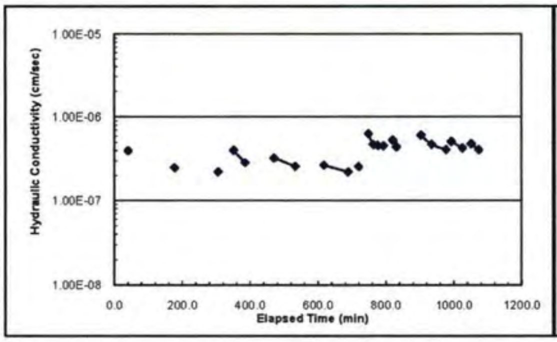
ASTM D 5084 - 00

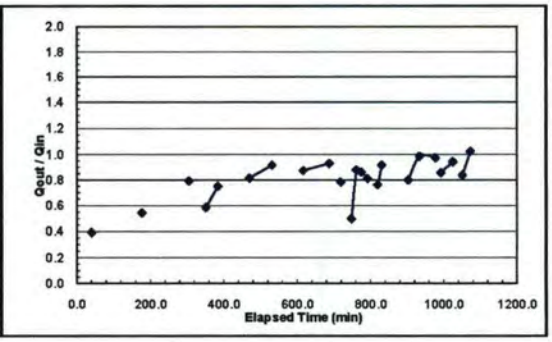
Sample I.D.	305-mm ICYRU		Test Date :	7/10/06	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

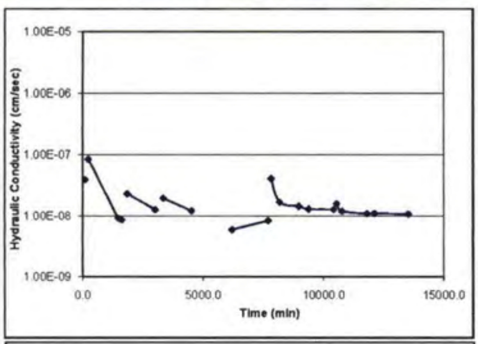
ASTM D 5084 - 00

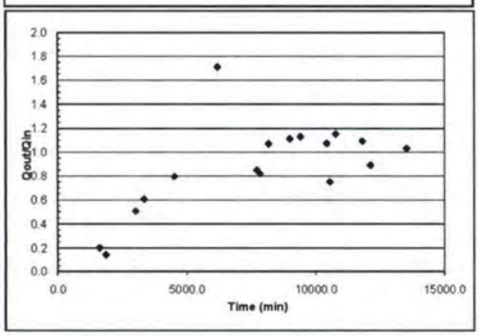
Sample I.D.		305-mm ICY1L			Test Date :	10/2/06	
Cell Pressure =	43.1	psi		Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	42.3	psi		Length of Sample, L =	15.2	cm	
Outflow Pressre =	40.0	psi		Area of Sample, A =	729.7	cm^2	
Pressure Difference =	2.3	psi		Sample Volume, V =	11120.0	cm^3	
Effective 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	

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

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
CL1	50.36	460.6	411.57	13.57

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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			-17	-6.7
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	6.6	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

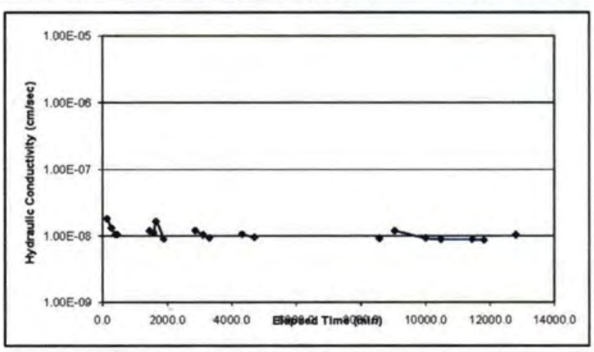
ASTM D 5084 - 00

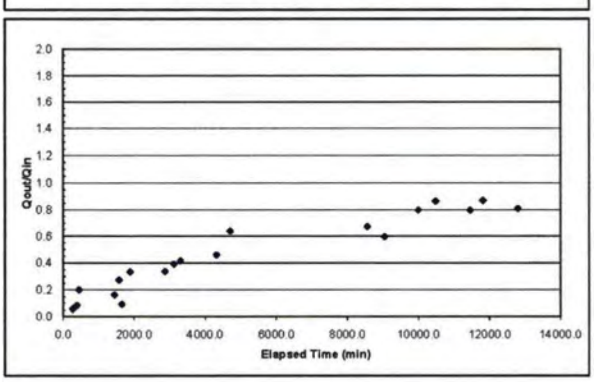
Sample I.D.	305-mm ICY2L		Test Date :		
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	psi	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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 13:48	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	12.6	399.0	1.04E-08	0.1	1.2	0.1
8/1/2006 16:49	10.4	22.4	3420.0	12.0	456.0	1.05E-08	0.2	0.5	0.1
8/1/2006 16:53	1.5	22.6	0.0	21.1	456.0				
8/2/2006 9:29	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	7.6	1582.0	1.10E-08	0.3	1.1	0.3
8/2/2006 12:55	14.1	20.5	4560.0	6.4	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	9.59E-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 17:00	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

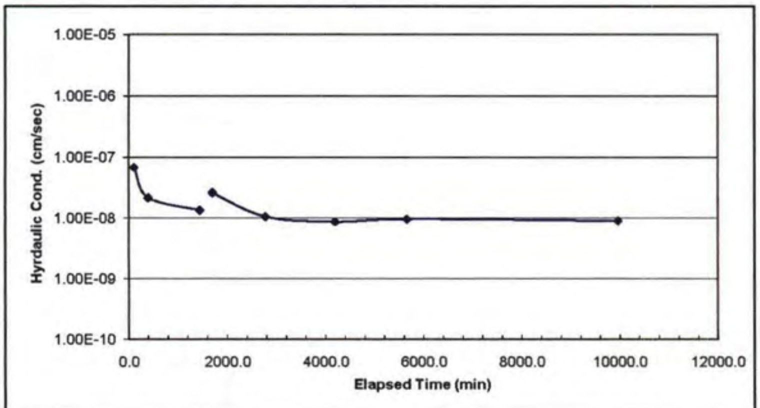
ASTM D 5084 - 00

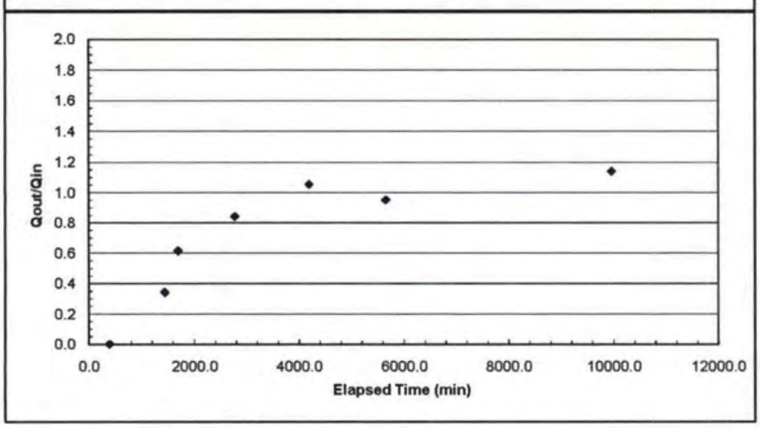
Sample I.D.		150-mm ICY2L	Test Date :	8/15/06	
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

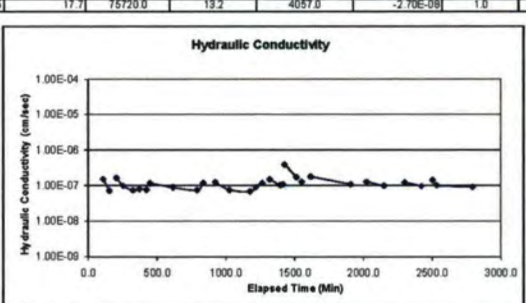
ASTM D 5084 - 00

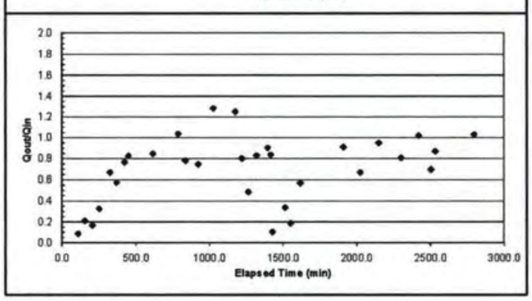
Sample I.D.	305-mm ICY2U		Test Date :	8/30/06	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
9	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)			
8/30/2006 12:35	5.4	17.5	0.0	12.1	0.0				
8/30/2006 14:24	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	15.8	2700.0	-8.2	154.0	7.14E-08	0.2	2.4	0.5
9/5/2006 12:45	3.5	21.7	0.0	18.2	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	19.4	2820.0	5.2	253.0	9.85E-08	0.3	3.4	1.1
9/5/2006 15:38	17.2	17.4	4320.0	0.2	325.0	7.35E-08	0.7	3	2
9/5/2006 16:21	19.3	16.2	2700.0	-3.1	370.0	7.96E-08	0.6	2.1	1.2
9/5/2006 17:15	21.4	14.8	3240.0	-6.8	424.0	7.61E-08	0.8	2.1	1.6
9/6/2006 9:41	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	8.79E-08	0.8	7.7	6.5
9/6/2006 15:45	17.2	7.3	10380.0	-9.9	788.0	7.41E-08	1.0	5.7	5.9
9/6/2006 16:32	19.9	5.2	2820.0	-14.7	835.0	1.19E-07	0.8	2.7	2.1
9/7/2006 9:24	1.6	18.9	0.0	17.3	835.0				
9/7/2006 10:52	7.8	14.3	5280.0	6.5	923.0	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	8880.0	-9.8	1174.0	6.77E-08	1.3	4	5
9/7/2006 15:49	17.0	3.6	2760.0	-13.4	1220.0	9.07E-08	0.8	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	1.6	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	1416.0	1.10E-07	0.8	1.2	1
9/12/2006 14:27	4.1	22.2	0.0	18.1	1416.0				
9/12/2006 14:38	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	18.3	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 16:55	5.5	21.1	2340.0	15.6	1551.0	1.27E-07	0.2	4.3	0.8
9/13/2006 10:55	1.4	18.5	0.0	17.1	1551.0				
9/13/2006 12:01	8.8	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	1909.0	1.06E-07	0.9	14.3	13
9/14/2006 11:31	2.7	19.0	0.0	16.3	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	16.8	8.0	7500.0	-8.8	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	9120.0	3.2	2301.0	1.22E-07	0.8	10.3	8.3
9/15/2006 17:16	16.8	9.5	7200.0	-7.3	2421.0	9.54E-08	1.0	5.2	5.3
9/18/2006 10:33	1.4	19.1	0.0	17.7	2421.0				
9/18/2006 11:56	8.3	14.3	4980.0	6.0	2504.0	1.41E-07	0.7	6.9	4.8
9/18/2006 12:25	9.8	13.0	1740.0	3.2	2533.0	1.01E-07	0.9	1.5	1.3
9/18/2006 16:47	20.2	2.3	15720.0	-17.9	2795.0	9.09E-08	1.0	10.4	10.7
9/19/2006 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

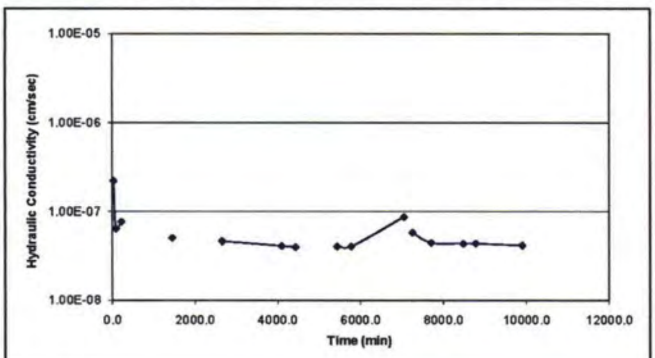
ASTM D 5084 - 00

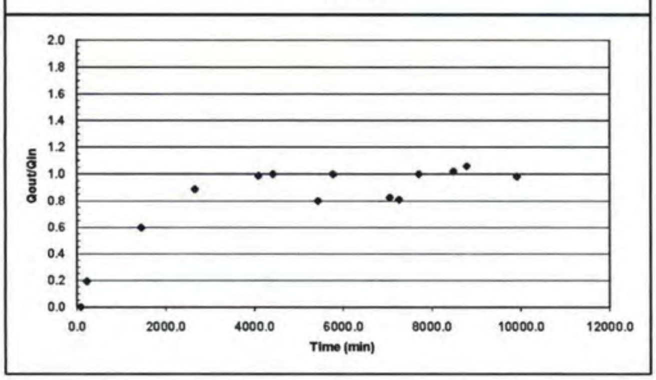
Sample I.D.		150-mm ICY2U		Test Date :	10/12/06
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	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 15:58	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

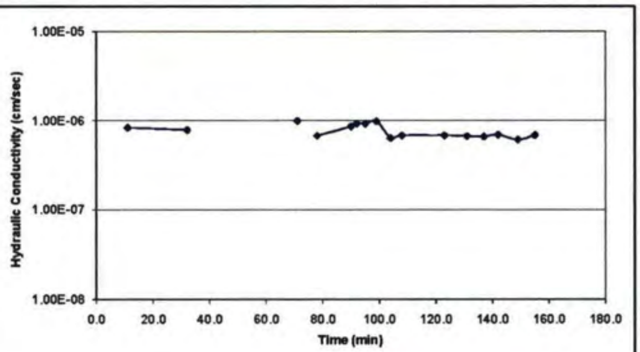
ASTM D 5084 - 00

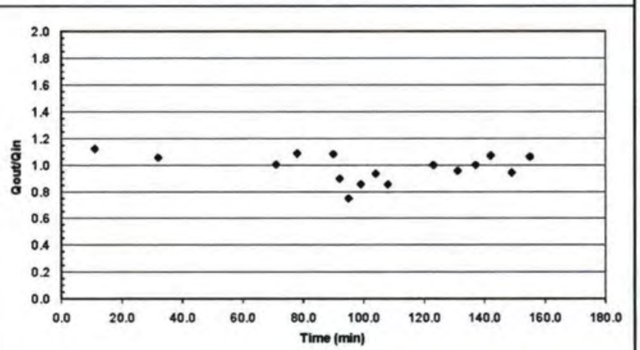
Sample I.D.		**305-mm ICY1U**		**Test Date :**	**10/2/06**	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm	
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2	
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3	
Effective 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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
4	50.09	511.3	460.68	12.33

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

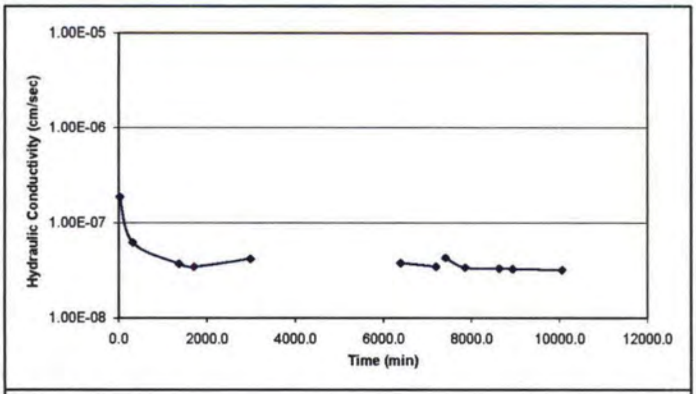
ASTM D 5084 - 00

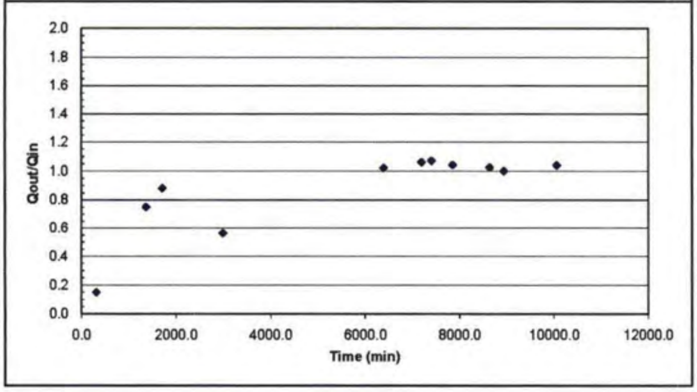
Sample I.D.	150-mm ICY1U		Test Date :		
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	psi	a_{in} =	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

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

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

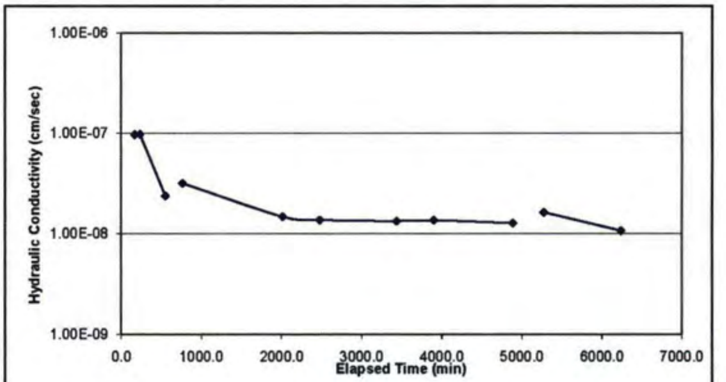
ASTM D 5084 - 00

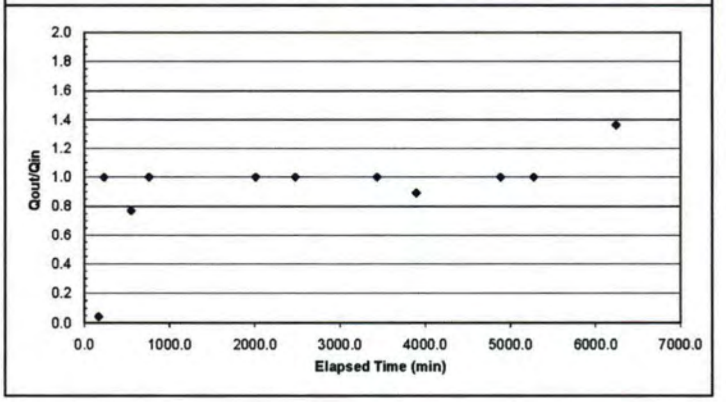
Sample I.D.	150-mm ICYRL		Test Date :		
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	psi	a_{in} =	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

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

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

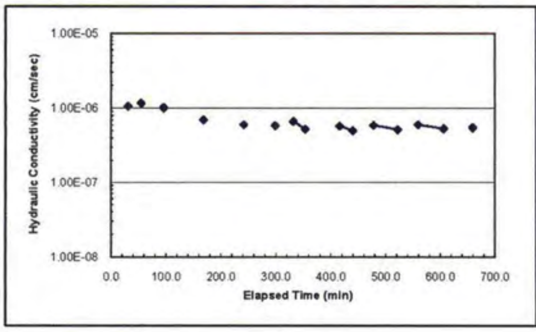
ASTM D 5084 - 00

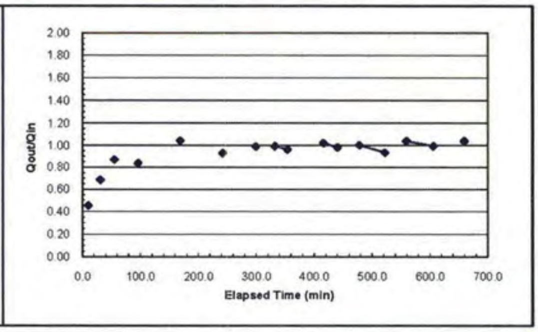
Sample I.D.	305-mm IOYRL		Test Date :		
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	psi	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
6	51.3	491.8	433.6	15.22

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/12/06 11:57	1.9	25.0	0.0	23.1	0.0				
7/12/06 12:07	10.9	20.9	600.0	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

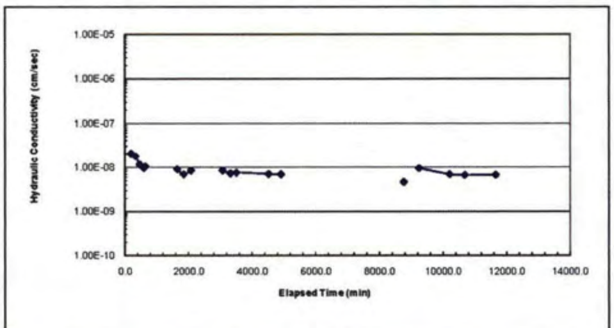
ASTM D 5084 - 00

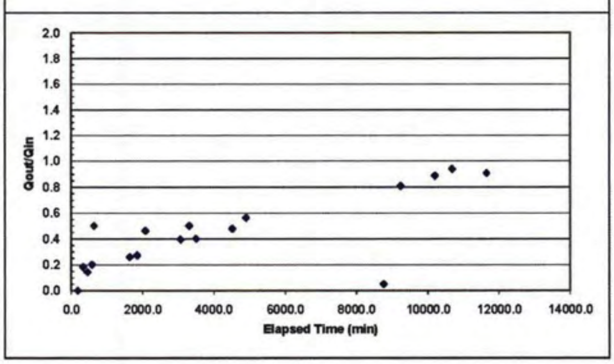
Sample I.D.		305-mm IOYRU	Test Date :		
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	psi	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
44	50.92	523.47	463.44	14.55

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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	60060.0	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	8.42E-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

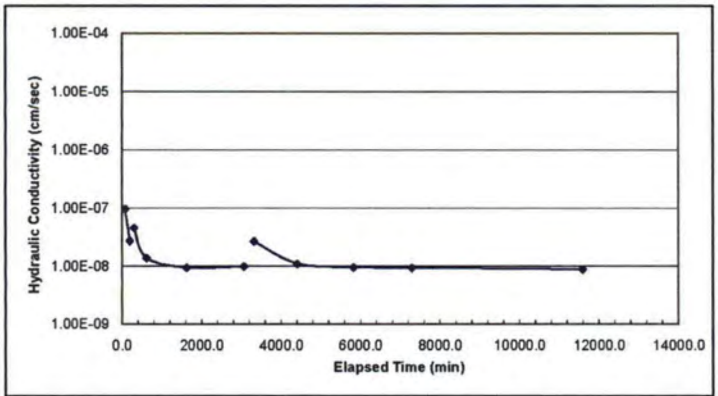
ASTM D 5084 - 00

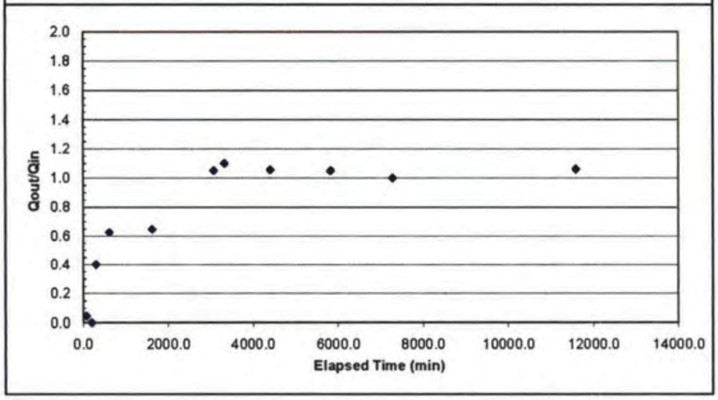
Sample I.D.	150-mm IOYRU			Test Date :	8/11/06
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	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	64980.0	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

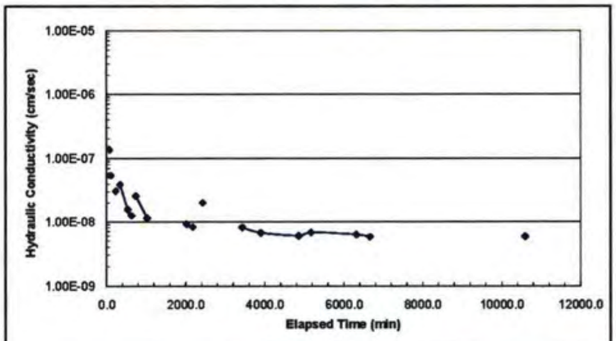
Sample I.D.	305-mm IOY2U	Test Date :	8/11/06

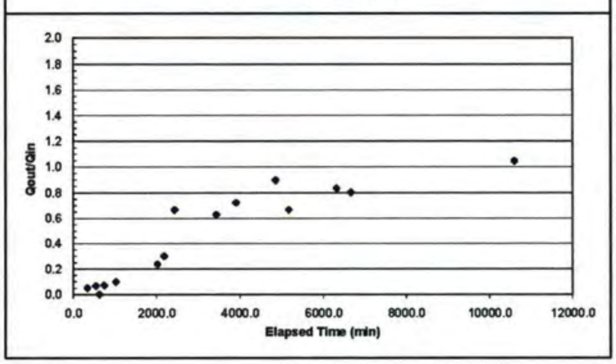
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	10.6		a_{out} =	1	cm^2
Weight of wet sample =	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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 10:05	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 9:55	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

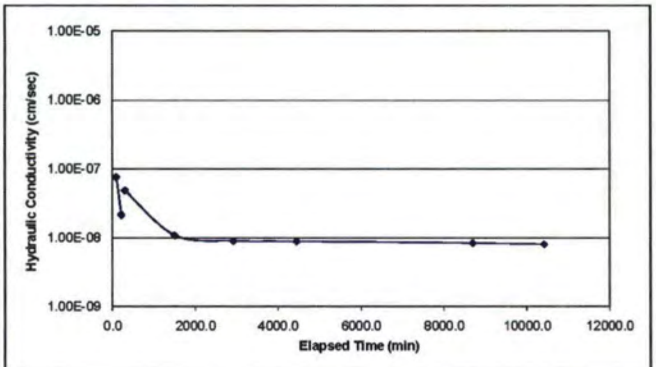
ASTM D 5084 - 00

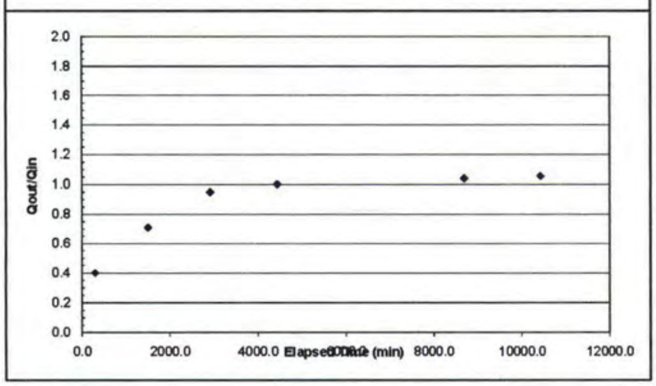
Sample I.D.	150-mm IOY2U		Test Date :	8/30/06	
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	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	H	Time	K	Q_{out}/Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

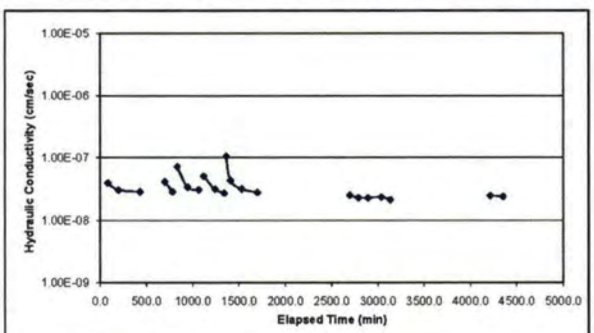
ASTM D 5084 - 00

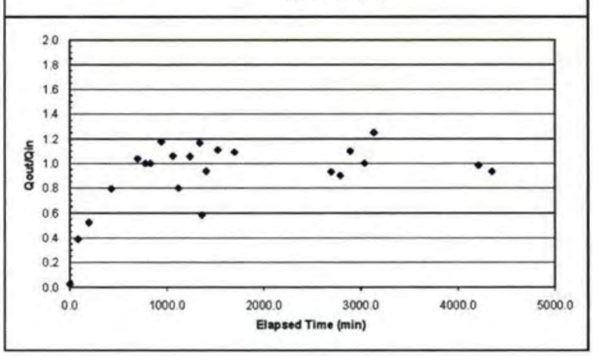
Sample I.D.	305-mm IOY1U		Test Date :	8/25/06	
Cell Pressure =	43.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.3	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.7	cm^2
Pressure Difference =	2.3	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	2.0	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

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/25/2006 12:57	2.8	19.0	0.0	16.2	0.0				
8/28/2006 10:16	10.6	18.8	0.0	8.2	0.0		0.0	7.8	0.2
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	16.8	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	0.8	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	1361.0	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	2789.0	2.27E-08	0.9	1	0.9
9/7/2006 12:36	16.7	10.3	6180.0	-6.4	2892.0	2.27E-08	1.1	1	1.1
9/7/2006 15:02	18.2	8.8	8760.0	-9.4	3038.0	2.32E-08	1.0	1.5	1.5
9/7/2006 16:40	19.0	7.8	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

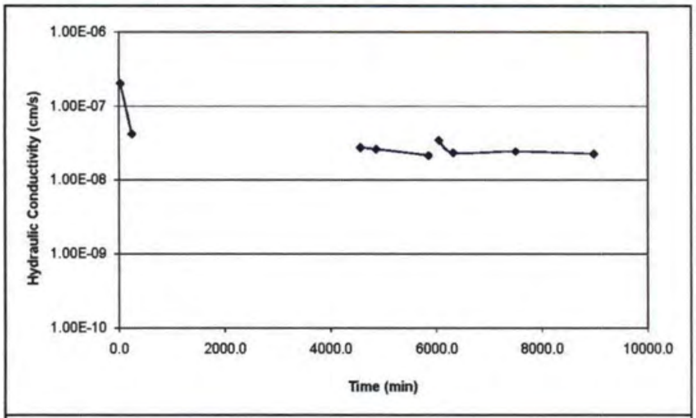
ASTM D 5084 - 00

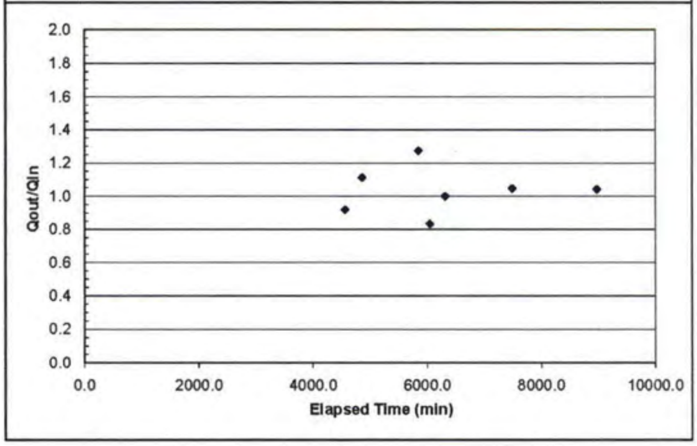
Sample I.D.	150-mm IOY1U		Test Date :	9/21/06	
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	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	H	Time	K	Q_{out}/Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

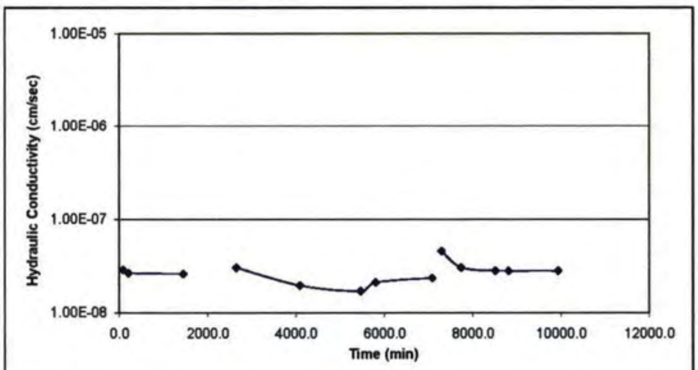
ASTM D 5084 - 00

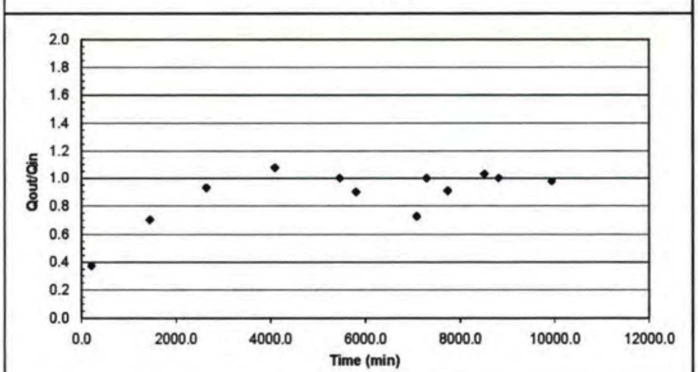
Sample I.D.		150-mm IOY2L	Test Date :		
Cell Pressure =	43.5	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	2.0	psi	a_{in} =	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

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

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

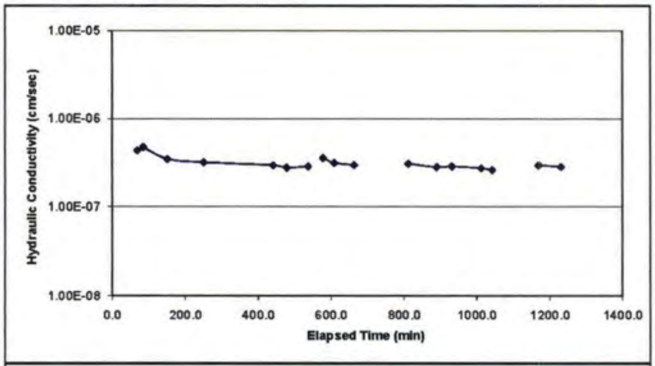
ASTM D 5084 - 00

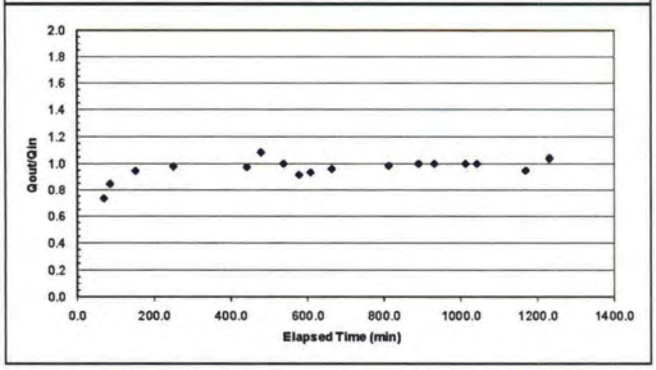
Sample I.D.	150-mm IOY1L			Test Date :	8/22/06	
Cell Pressure =	43.5	psi		Diameter of Sample, D =	15.2	cm
Inflow Pressure =	42.4	psi		Length of Sample, L =	10.2	cm
Outflow Pressre =	40.6	psi		Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.8	psi		Sample Volume, V =	1853.3	cm^3
Effective Stress =	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

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

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
27	50.11	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	15.0	3720.0	5.7	1231.0	2.83E-07	1.0	2.5	2.6





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

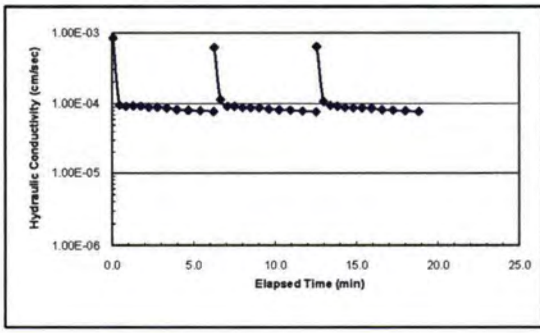
ASTM D 5084 - 00

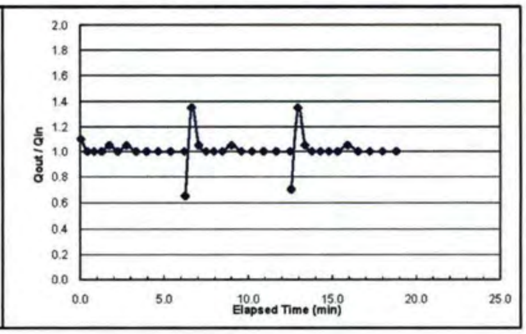
Sample I.D.	305-mm 3' Top Depth -2		Test Date :	12/19/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	5	cm^2
Weight of wet sample =	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 00:02.64	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	24.6	0.0	24.6	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

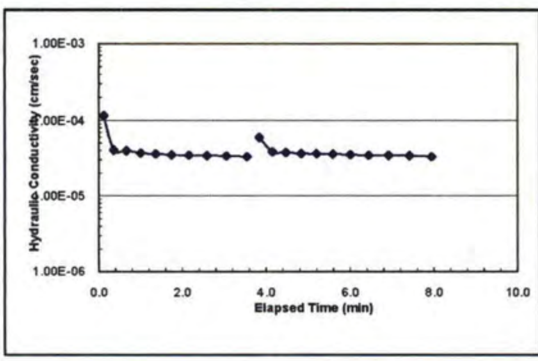
ASTM D 5084 - 00

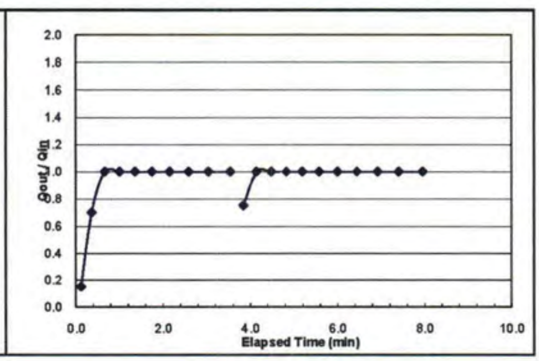
Sample I.D.	150-mm Helena 3' Top Depth-2		Test Date :	1/14/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	7.0	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1274.2	cm^3
Effective 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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

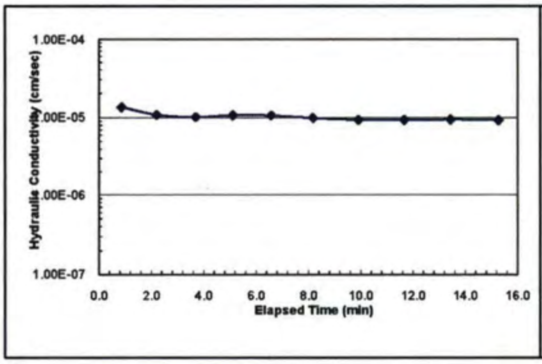
ASTM D 5084 - 00

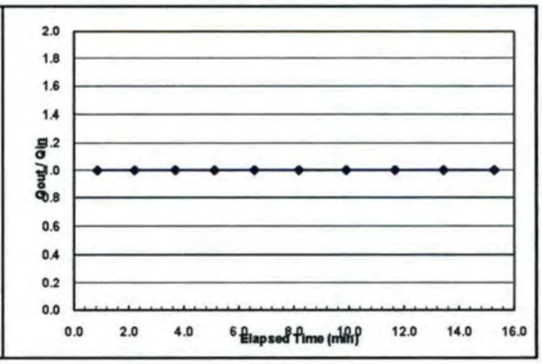
Sample I.D.	75-mm Helena Top depth-2		Test Date :	1/21/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	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	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				
0:00:51	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

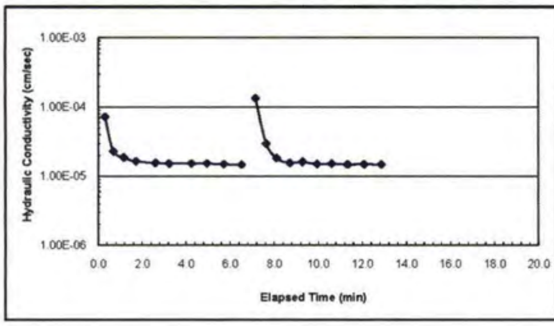
ASTM D 5084 - 00

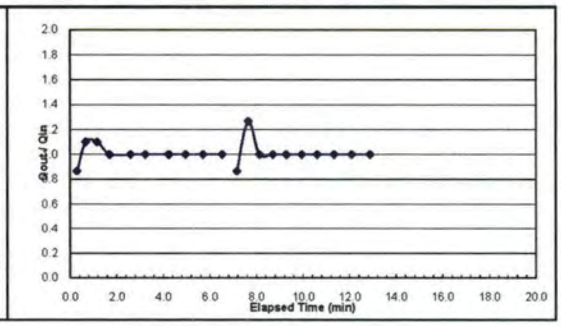
Sample I.D.	305-mm 3' Top Depth-3		Test Date :	12/30/08	
Cell Pressure =	42.1	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	21.6	cm
Outflow Pressre =	40.5	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	15753.3	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	2.0		a_{out} =	1	cm^2
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

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

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

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				
0:00:18	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

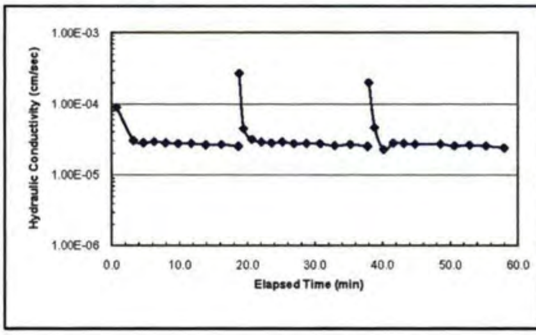
ASTM D 5084 - 00

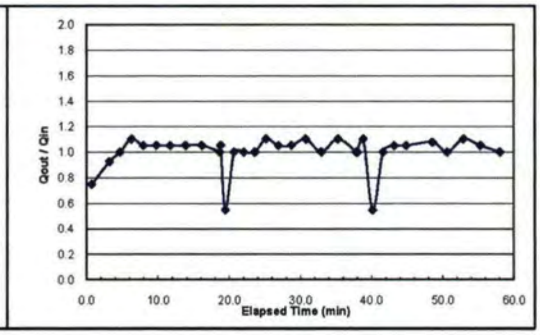
Sample I.D.	305-mm Mid - 1		Test Date :	1/6/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
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

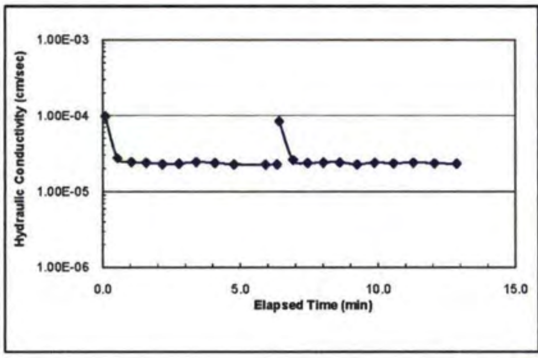
ASTM D 5084 - 00

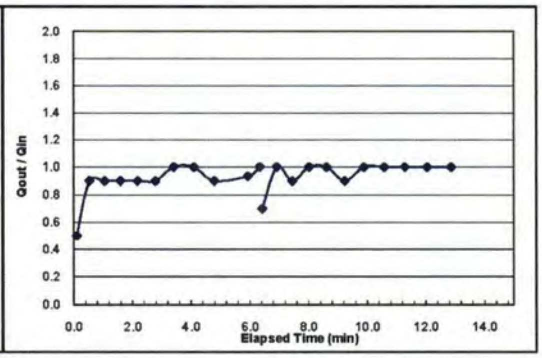
Sample I.D.	150-mm Helena Mid-1		Test Date :	1/14/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
64	30.94	115.31	94.18	33.41%

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	23.0	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

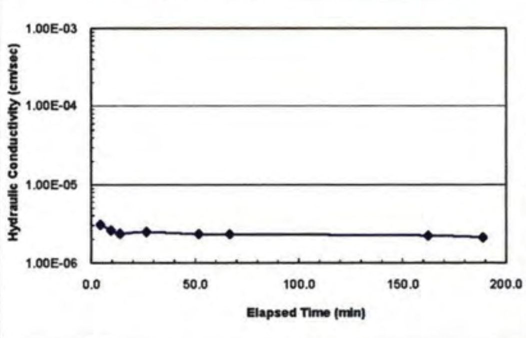
ASTM D 5084 - 00

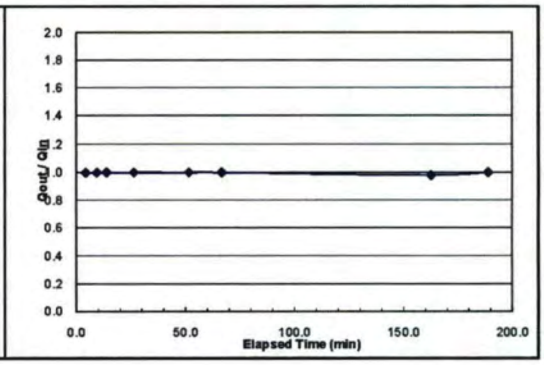
Sample I.D.	75-mm Helena Mid-1		Test Date :	1/14/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.4	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.4	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	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

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

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

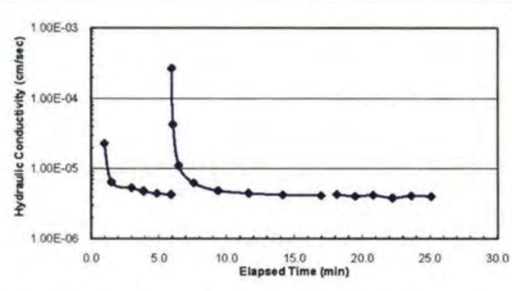
ASTM D 5084 - 00

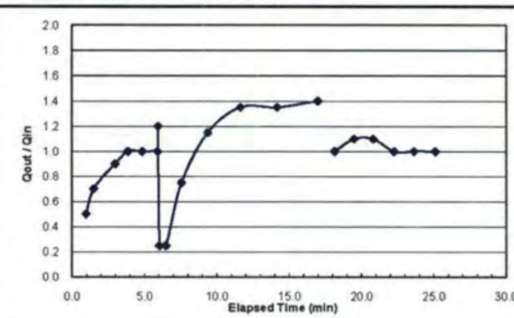
Sample I.D.	305-mm Mid - 2		Test Date :	12/29/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
120	31.07	158.32	140.14	16.67%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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-05	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-05	0.3	2	0.5
1/9/2009 00:33.84	6.0	21.5	25.7	15.5	6.5	1.09E-05	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

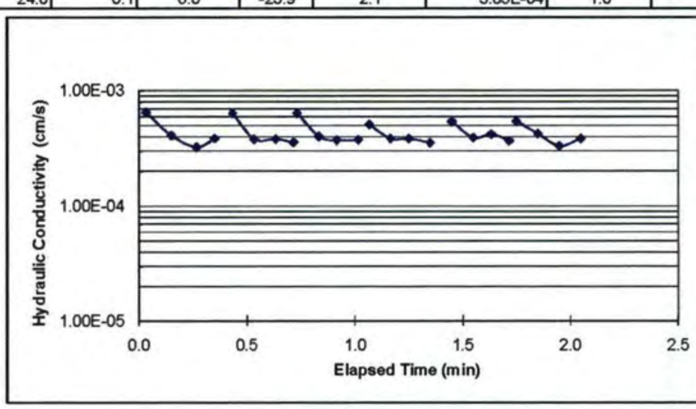
ASTM D 5084 - 00

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

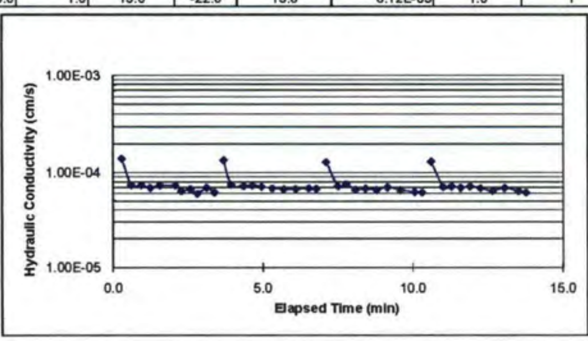
ASTM D 5084 - 00

Sample I.D.	East Side North Pit 0-30 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	8.3	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	1505.8	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	8.5		a_{out} =	1	cm^2
Weight of wet sample =		g	Sample Water Content =	-3.8	(%)
Wet Density =	0.0	g/cm^3	Dry Density =	0.00	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	2.5	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
0:01:59	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
0:00:59	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

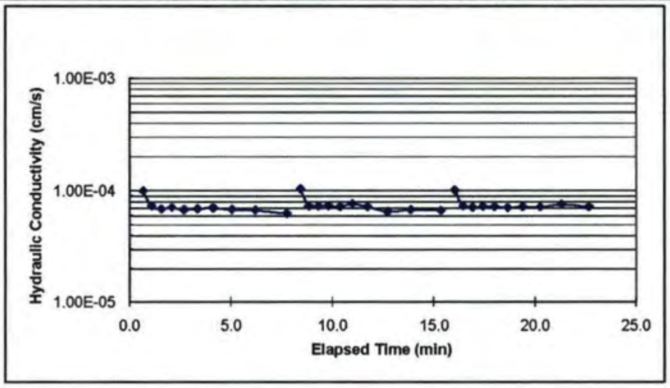
ASTM D 5084 - 00

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 Pressre =	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

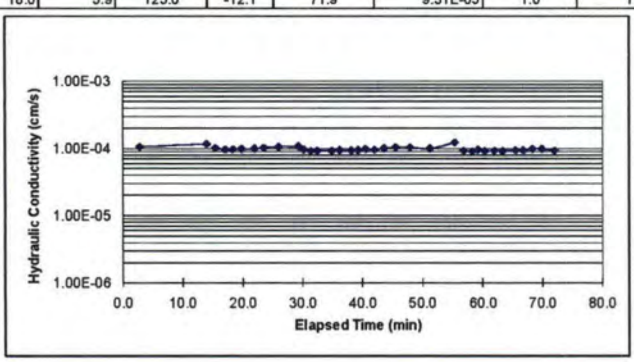
ASTM D 5084 - 00

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 Pressre =	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	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				
0:02:48	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	6.9	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

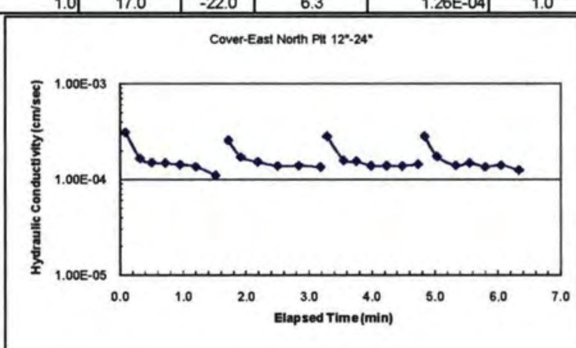
ASTM D 5084 - 00

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 Pressre =	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	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
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

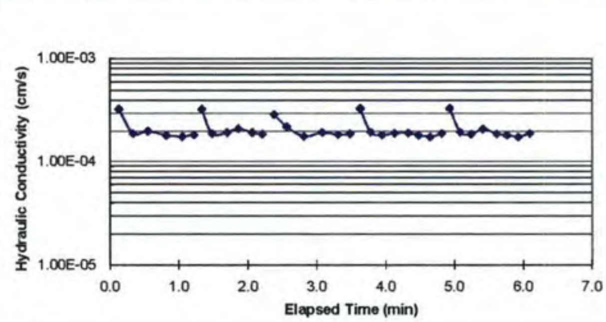
ASTM D 5084 - 00

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 Pressre =	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	1.93E-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

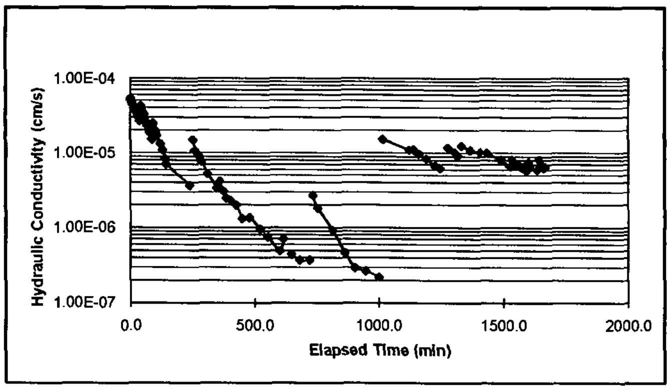
Sample I.D.	75-mm East Side North Pit 30-60 cm		Test Date :		
Cell Pressure =	41.7	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	4.6	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	175.2	cm^3
Effective 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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.91	133.8	114.07	23.73%

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				
0:00:59	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	1188.4	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

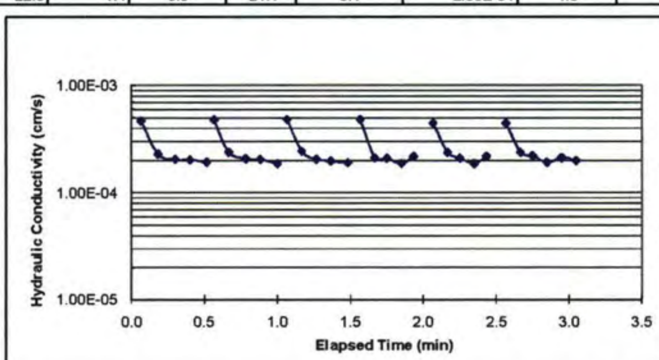
ASTM D 5084 - 00

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

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	23.9	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



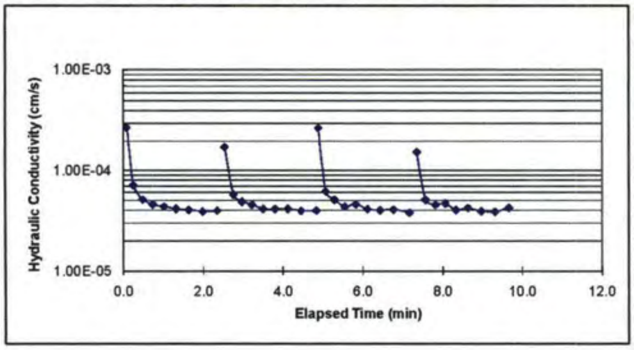
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

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 Pressre =	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	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				
0:00:05	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

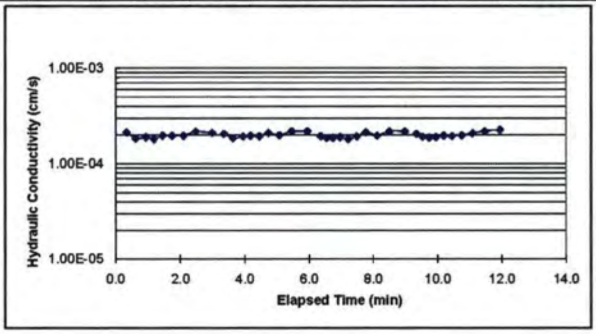
ASTM D 5084 - 00

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

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				
0:00:20	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

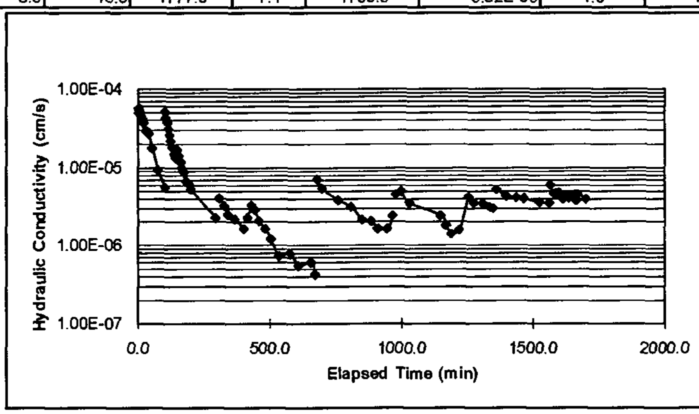
Sample I.D.	75-mm East Side South Pit 0-30 cm		Test Date :		
Cell Pressure =	41.8	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	4.4	cm
Outflow Pressre =	40.2	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.3	psi	Sample Volume, V =	170.3	cm^3
Effective 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

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

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

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				
0:03:36	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

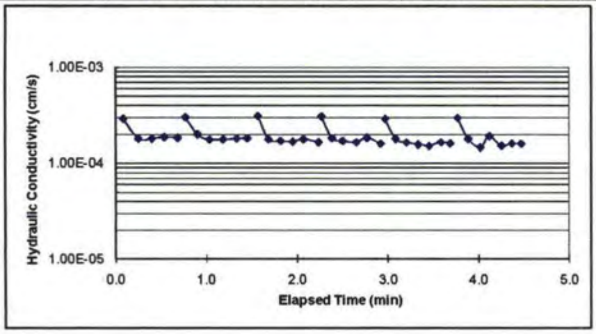
ASTM D 5084 - 00

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

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	23.8	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	3.09E-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	18.5	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

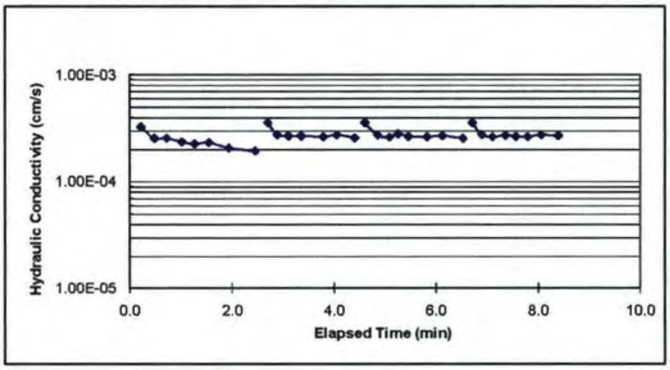
ASTM D 5084 - 00

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

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				
0:00:13	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



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

ASTM D 5084 - 00

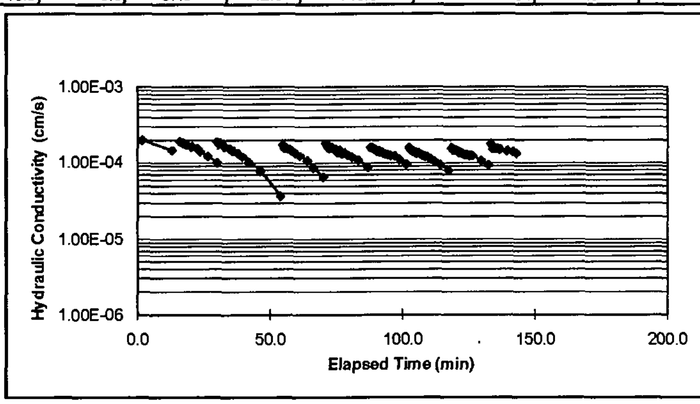
Sample I.D.	**75-mm East Side South Pit 30-60 cm**		**Test Date :**		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.7	psi	Length of Sample, L =	4.4	cm
Outflow Pressre =	40.4	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.3	psi	Sample Volume, V =	170.3	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	4.7		a_{out} =	1	cm^2
Weight of wet sample =	335.3	g	Sample Water Content =	#DIV/0!	(%)
Wet Density =	2.0	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				
0:01:44	6.5	17.0	104.0	10.5	1.7	1.98E-04	1.1	6.5	7
0:13:10	19.5	4.0	686.0	-15.5	13.2	1.46E-04	1.0	13	13
0:00:00	0.0	24.0	-790.0	24.0	14.0				
0:01:55	7.0	16.8	115.0	9.8	15.9	1.91E-04	1.0	6.999039352	7.2
0:03:05	10.0	13.7	70.0	3.7	17.1	1.82E-04	1.0	3	3.1
0:04:38	13.0	10.7	93.0	-2.3	18.6	1.73E-04	1.0	3	3
0:06:28	15.5	8.2	110.0	-7.3	20.5	1.63E-04	1.0	2.5	2.5
0:08:37	17.5	6.2	129.0	-11.3	22.6	1.54E-04	1.0	2	2
0:09:40	18.2	5.5	63.0	-12.7	23.7	1.42E-04	1.0	0.7	0.7
0:12:38	19.5	4.2	178.0	-15.3	26.6	1.21E-04	1.0	1.3	1.3
0:16:13	20.4	3.3	215.0	-17.1	30.2	1.00E-04	1.0	0.9	0.9
0:00:00	0.0	23.9	-973.0	23.9	29.2				
0:00:45	3.0	20.8	45.0	17.8	30.0	1.88E-04	1.0	3	3.1
0:01:21	5.0	18.8	36.0	13.8	30.6	1.75E-04	1.0	2	2
0:02:01	7.0	16.7	40.0	9.7	31.2	1.81E-04			
0:03:02	9.5	14.2	61.0	4.7	32.2	1.68E-04	1.0	2.5	2.5
0:03:46	11.0	12.7	44.0	1.7	33.0	1.63E-04	1.0	1.5	1.5
0:05:41	14.0	9.7	115.0	-4.3	34.9	1.54E-04	1.0	3	3
0:07:01	15.5	8.2	80.0	-7.3	36.2	1.43E-04	1.0	1.5	1.5
0:08:47	17.0	6.7	106.0	-10.3	38.0	1.34E-04	1.0	1.5	1.5
0:10:26	18.0	5.7	99.0	-12.3	39.6	1.20E-04	1.0	1	1
0:12:53	19.0	4.7	147.0	-14.3	42.1	1.02E-04	1.0	1	1
0:17:11	20.0	3.7	258.0	-16.3	46.4	7.83E-05	1.0	1	1
0:24:42	20.6	3.1	451.0	-17.5	53.9	3.70E-05	1.0	0.6	0.6
0:00:00	0.0	24.0	-1482.0	24.0	53.9				
0:00:49	3.0	20.9	49.0	17.9	54.7	1.72E-04	1.0	3	3.1
0:01:29	5.0	18.9	40.0	13.9	55.4	1.57E-04	1.0	2	2
0:02:14	7.0	16.9	45.0	9.9	56.1	1.56E-04	1.0	2	2
0:03:07	9.0	14.9	53.0	5.9	57.0	1.51E-04	1.0	2	2
0:04:12	11.0	12.9	65.0	1.9	58.1	1.43E-04	1.0	2	2
0:05:34	13.0	10.9	82.0	-2.1	59.5	1.35E-04	1.0	2	2
0:07:25	15.0	8.9	111.0	-6.1	61.3	1.24E-04	1.0	2	2
0:10:13	17.0	6.9	168.0	-10.1	64.1	1.07E-04	1.0	2	2
0:12:27	18.0	5.9	134.0	-12.1	66.4	8.69E-05	1.0	1	1
0:16:09	19.0	4.9	222.0	-14.1	70.1	6.57E-05	1.0	1	1
0:00:00	0.0	23.9	-969.0	23.9	70.1				
0:00:55	3.5	20.4	55.0	16.9	71.0	1.78E-04	1.0	3.5	3.5
0:01:24	5.0	18.9	29.0	13.9	71.5	1.64E-04	1.0	1.5	1.5
0:02:09	7.0	16.9	45.0	9.9	72.3	1.56E-04	1.0	2	2
0:02:59	9.0	14.9	50.0	5.9	73.1	1.60E-04	1.0	2	2
0:04:00	11.0	12.9	61.0	1.9	74.1	1.52E-04	1.0	2	2
0:04:35	12.0	11.9	35.0	-0.1	74.7	1.51E-04	1.0	1	1
0:05:17	13.0	10.9	42.0	-2.1	75.4	1.38E-04	1.0	1	1
0:06:01	14.0	9.9	44.0	-4.1	76.1	1.47E-04	1.0	1	1
0:06:56	15.0	8.9	55.0	-6.1	77.0	1.32E-04	1.0	1	1
0:07:57	16.0	7.9	61.0	-8.1	78.1	1.36E-04	1.0	1	1
0:09:14	17.0	6.9	77.0	-10.1	79.3	1.26E-04	1.0	1	1
0:10:52	18.0	5.9	98.0	-12.1	81.0	1.19E-04	1.0	1	1
0:13:06	19.0	4.9	134.0	-14.1	83.2	1.09E-04	1.0	1	1
0:16:51	20.0	3.9	225.0	-16.1	87.0	8.67E-05	1.0	1	1

0:00:00	0.0	24.0	-1011.0	24.0	87.0					
0:00:53	3.0	20.9	53.0	17.9	87.9	1.59E-04	1.0	3	3.1	
0:01:33	5.0	18.9	40.0	13.9	88.6	1.57E-04	1.0	2	2	
0:02:21	7.0	16.8	48.0	9.8	89.4	1.51E-04	1.1	2	2.1	
0:03:16	9.0	14.9	55.0	5.9	90.3	1.42E-04	1.0	2	1.9	
0:03:47	10.0	13.9	31.0	3.9	90.8	1.44E-04	1.0	1	1	
0:04:22	11.0	12.9	35.0	1.9	91.4	1.38E-04	1.0	1	1	
0:05:00	12.0	11.9	38.0	-0.1	92.0	1.39E-04	1.0	1	1	
0:05:43	13.0	10.9	43.0	-2.1	92.7	1.35E-04	1.0	1	1	
0:06:33	14.0	9.9	50.0	-4.1	93.6	1.29E-04	1.0	1	1	
0:07:30	15.0	8.9	57.0	-6.1	94.5	1.27E-04	1.0	1	1	
0:08:37	16.0	7.9	67.0	-8.1	95.6	1.24E-04	1.0	1	1	
0:10:00	17.0	6.8	83.0	-10.2	97.0	1.23E-04	1.1	1	1.1	
0:11:47	18.0	5.8	107.0	-12.2	98.8	1.10E-04	1.0	1	1	
0:14:22	19.0	4.8	155.0	-14.2	101.4	9.53E-05	1.0	1	1	
0:00:00	0.0	24.0	-862.0	24.0	101.4					
0:00:54	3.0	20.8	54.0	17.8	102.3	1.59E-04	1.1	3	3.2	
0:01:37	5.0	18.8	43.0	13.8	103.0	1.46E-04	1.0	2	2	
0:02:27	7.0	16.8	50.0	9.8	103.9	1.41E-04	1.0	2	2	
0:03:26	9.0	14.8	59.0	5.8	104.8	1.36E-04	1.0	2	2	
0:04:00	10.0	13.8	34.0	3.8	105.4	1.32E-04	1.0	1	1	
0:04:36	11.0	12.8	36.0	1.8	106.0	1.35E-04	1.0	1	1	
0:05:17	12.0	11.8	41.0	-0.2	106.7	1.29E-04	1.0	1	1	
0:06:04	13.0	10.8	47.0	-2.2	107.5	1.24E-04	1.0	1	1	
0:06:58	14.0	9.8	54.0	-4.2	108.4	1.20E-04	1.0	1	1	
0:07:59	15.0	8.8	61.0	-6.2	109.4	1.20E-04	1.0	1	1	
0:09:14	16.0	7.8	75.0	-8.2	110.6	1.11E-04	1.0	1	1	
0:10:49	17.0	6.8	95.0	-10.2	112.2	1.03E-04	1.0	1	1	
0:12:55	18.0	5.8	126.0	-12.2	114.3	9.33E-05	1.0	1	1	
0:16:01	19.0	4.8	186.0	-14.2	117.4	7.94E-05	1.0	1	1	
0:00:00	0.0	24.0	-961.0	24.0	117.4					
0:00:55	3.0	20.8	55.0	17.8	118.3	1.56E-04	1.1	3	3.2	
0:01:38	5.0	18.8	43.0	13.8	119.0	1.46E-04	1.0	2	2	
0:02:26	7.0	16.8	48.0	9.8	119.8	1.47E-04	1.0	2	2	
0:03:23	9.0	14.8	57.0	5.8	120.8	1.41E-04	1.0	2	2	
0:03:56	10.0	13.8	33.0	3.8	121.3	1.36E-04	1.0	1	1	
0:04:32	11.0	12.8	36.0	1.8	121.9	1.35E-04	1.0	1	1	
0:05:12	12.0	11.8	40.0	-0.2	122.6	1.33E-04	1.0	1	1	
0:05:58	13.0	10.8	46.0	-2.2	123.4	1.27E-04	1.0	1	1	
0:06:49	14.0	9.8	51.0	-4.2	124.2	1.27E-04	1.0	1	1	
0:07:48	15.0	8.8	59.0	-6.2	125.2	1.24E-04	1.0	1	1	
0:08:55	16.0	7.8	67.0	-8.2	126.3	1.25E-04	1.0	1	1	
0:12:18	18.0	5.8	203.0	-12.2	129.7	1.06E-04	1.0	2	2	
0:14:57	19.0	4.8	159.0	-14.2	132.4	9.29E-05	1.0	1	1	
0:00:00	0.0	24.0	-897.0	24.0	132.4					
0:00:47	3.0	21.0	47.0	18.0	133.2	1.76E-04	1.0	3	3	
0:01:28	5.0	19.0	41.0	14.0	133.9	1.53E-04	1.0	2	2	
0:02:14	7.0	17.0	46.0	10.0	134.6	1.53E-04	1.0	2	2	
0:03:06	9.0	15.0	52.0	6.0	135.5	1.54E-04	1.0	2	2	
0:04:08	11.0	13.0	62.0	2.0	136.5	1.49E-04	1.0	2	2	
0:07:01	15.0	9.0	173.0	-6.0	139.4	1.43E-04	1.0	4	4	
0:09:10	17.0	7.0	129.0	-10.0	141.6	1.38E-04	1.0	2	2	
0:10:37	18.0	6.0	87.0	-12.0	143.0	1.32E-04	1.0	1	1	



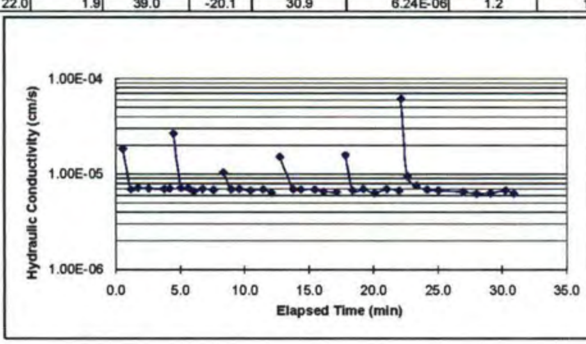
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

Sample I.D.	**305-mm East Side South Pit 60-90 cm**		**Test Date :**		
Cell Pressure =	42.4	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	14.0	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.5	psi	Sample Volume, V =	10193.3	cm^3
Effective Stress =	1.7	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	7.6		a_{out} =	1	cm^2
Weight of wet sample =	20597.5	g	Sample Water Content =	22.51%	(%)
Wet Density =	2.0	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50	554.13	461.51	22.51%

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				
0:00:32	4.0	20.3	32.0	16.3	0.5	1.83E-05	0.9	4	3.7
0:01:10	5.5	18.5	38.0	13.0	1.2	6.92E-06	1.2	1.5	1.8
0:01:43	7.0	17.1	33.0	10.1	1.7	7.19E-06	0.9	1.5	1.4
0:02:33	9.0	14.9	50.0	5.9	2.6	7.09E-06	1.1	2	2.2
0:03:45	12.0	12.2	72.0	0.2	3.8	6.98E-06	0.9	3	2.7
0:04:11	13.0	11.2	26.0	-1.8	4.2	7.03E-06	1.0	1	1
0:00:00	0.0	24.0	-251.0	24.0	4.2				
0:00:16	3.0	21.4	16.0	18.4	4.5	2.65E-05	0.9	3	2.6
0:00:50	4.5	19.8	34.0	15.3	5.0	7.13E-06	1.1	1.5	1.6
0:01:25	6.0	18.2	35.0	12.2	5.6	7.11E-06	1.1	1.5	1.6
0:01:50	7.0	17.2	25.0	10.2	6.0	6.56E-06	1.0	1	1
0:02:31	8.6	15.4	41.0	6.8	6.7	6.96E-06	1.1	1.6	1.8
0:03:22	10.5	13.3	51.0	2.8	7.6	6.81E-06	1.1	1.9	2.1
0:00:00	0.0	24.0	-202.0	24.0	7.6				
0:00:44	3.0	21.0	44.0	18.0	8.3	1.03E-05	1.0	3	3
0:01:20	4.5	19.3	36.0	14.8	8.9	6.98E-06	1.1	1.5	1.7
0:01:57	6.0	17.6	37.0	11.6	9.6	6.98E-06	1.1	1.5	1.7
0:02:49	8.0	15.4	52.0	7.4	10.4	6.72E-06	1.1	2	2.2
0:03:48	10.5	13.2	59.0	2.7	11.4	6.90E-06	0.9	2.5	2.2
0:04:29	12.0	11.8	41.0	-0.2	12.1	6.34E-06	0.9	1.5	1.4
0:00:00	0.0	24.0	-269.0	24.0	12.1				
0:00:37	4.0	20.7	37.0	16.7	12.7	1.50E-05	0.8	4	3.3
0:01:39	6.5	17.8	62.0	11.3	13.8	6.98E-06	1.2	2.5	2.9
0:02:15	8.0	16.3	36.0	8.3	14.4	6.92E-06	1.0	1.5	1.5
0:03:19	10.5	13.7	64.0	3.2	15.4	6.86E-06	1.0	2.5	2.6
0:04:00	12.0	12.2	41.0	0.2	16.1	6.53E-06	1.0	1.5	1.5
0:05:00	14.0	10.0	60.0	-4.0	17.1	6.47E-06	1.1	2	2.2
0:00:00	0.0	24.0	-300.0	24.0	17.1				
0:00:43	4.6	19.8	43.0	15.2	17.8	1.57E-05	0.9	4.6	4.2
0:01:15	6.0	18.5	32.0	12.5	18.4	6.77E-06	0.9	1.4	1.3
0:02:05	8.0	16.3	50.0	8.3	19.2	6.94E-06	1.1	2	2.2
0:02:58	10.0	14.4	53.0	4.4	20.1	6.30E-06	1.0	2	1.9
0:03:54	12.0	12.0	56.0	0.0	21.0	6.99E-06	1.2	2	2.4
0:04:52	14.0	9.8	58.0	-4.2	22.0	6.71E-06	1.1	2	2.2
0:00:00	0.0	24.0	-292.0	24.0	22.0				
0:00:07	3.0	21.3	7.0	18.3	22.1	6.16E-05	0.9	3	2.7
0:00:36	5.0	19.8	29.0	14.8	22.6	9.47E-06	0.8	2	1.5
0:01:18	7.0	17.9	42.0	10.9	23.3	7.51E-06	1.0	2	1.9
0:02:08	9.0	15.8	50.0	6.8	24.1	6.87E-06	1.1	2	2.1
0:03:01	11.0	13.7	53.0	2.7	25.0	6.72E-06	1.1	2	2.1
0:04:57	15.0	9.5	116.0	-5.5	27.0	6.50E-06	1.1	4	4.2
0:05:58	17.0	7.6	61.0	-9.4	28.0	6.24E-06	1.0	2	1.9
0:07:04	19.0	5.5	66.0	-13.5	29.1	6.32E-06	1.1	2	2.1
0:08:14	21.0	3.1	70.0	-17.9	30.2	6.70E-06	1.2	2	2.4
0:08:53	22.0	1.9	39.0	-20.1	30.9	6.24E-06	1.2	1	1.2



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

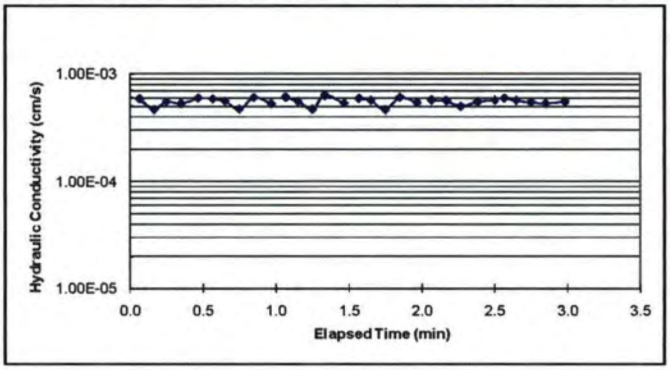
ASTM D 5084 - 00

Sample I.D.	305-mm West Side North Pit 0-30 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	17.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	12973.3	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	2.0		a_{out} =	1	cm^2
Weight of wet sample =	24448.5	g	Sample Water Content =	8.10%	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.88	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)	(%)
	51.12	354.17	331.46	8.10%

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	23.8	0.0	23.8	0.0				
0:00:04	5.0	18.5	4.0	13.5	0.1	5.85E-04	1.1	5	5.3
0:00:10	10.0	13.5	6.0	3.5	0.2	4.67E-04	1.0	5	5
0:00:15	14.0	9.7	5.0	-4.3	0.3	5.49E-04	1.0	4	3.8
0:00:21	17.5	6.1	6.0	-11.4	0.4	5.31E-04	1.0	3.5	3.6
0:00:28	21.0	2.7	7.0	-18.3	0.5	5.97E-04	1.0	3.5	3.4
0:00:00	0.0	23.9	-28.0	23.9	0.5				
0:00:04	5.0	18.6	4.0	13.6	0.6	5.84E-04	1.1	5	5.3
0:00:09	10.0	13.6	5.0	3.6	0.7	5.59E-04	1.0	5	5
0:00:15	14.0	9.6	6.0	-4.4	0.8	4.69E-04	1.0	4	4
0:00:21	18.0	5.7	6.0	-12.3	0.9	6.03E-04	1.0	4	3.9
0:00:28	21.0	2.7	7.0	-18.3	1.0	5.30E-04	1.0	3	3
0:00:00	0.0	24.1	-28.0	24.1	1.0				
0:00:04	5.0	18.4	4.0	13.4	1.1	6.06E-04	1.1	5	5.7
0:00:09	10.0	13.5	5.0	3.5	1.2	5.56E-04	1.0	5	4.9
0:00:15	14.0	9.5	6.0	-4.5	1.3	4.71E-04	1.0	4	4
0:00:20	17.5	6.0	5.0	-11.5	1.3	6.31E-04	1.0	3.5	3.5
0:00:28	21.0	2.5	8.0	-18.5	1.5	5.34E-04	1.0	3.5	3.5
0:00:00	0.0	23.9	-28.0	23.9	1.5				
0:00:04	5.0	18.5	4.0	13.5	1.6	5.90E-04	1.1	5	5.4
0:00:09	10.0	13.4	5.0	3.4	1.7	5.67E-04	1.0	5	5.1
0:00:15	14.0	9.5	6.0	-4.5	1.8	4.65E-04	1.0	4	3.9
0:00:21	18.0	5.6	6.0	-12.4	1.9	6.05E-04	1.0	4	3.9
0:00:28	21.0	2.5	7.0	-18.5	2.0	5.43E-04	1.0	3	3.1
0:00:00	0.0	24.0	-28.0	24.0	2.0				
0:00:04	5.0	18.9	4.0	13.9	2.1	5.70E-04	1.0	5	5.1
0:00:10	11.0	13.0	6.0	2.0	2.2	5.64E-04	1.0	6	5.9
0:00:16	15.0	8.9	6.0	-6.1	2.3	4.99E-04	1.0	4	4.1
0:00:23	19.0	5.0	7.0	-14.0	2.4	5.52E-04	1.0	4	3.9
0:00:30	22.0	2.1	7.0	-19.9	2.5	5.69E-04	1.0	3	2.9
0:00:00	0.0	24.0	-30.0	24.0	2.5				
0:00:04	5.0	18.5	4.0	13.5	2.6	5.95E-04	1.1	5	5.5
0:00:09	10.0	13.4	5.0	3.4	2.7	5.67E-04	1.0	5	5.1
0:00:15	14.5	8.8	6.0	-5.7	2.8	5.47E-04	1.0	4.5	4.6
0:00:21	18.0	5.5	6.0	-12.5	2.9	5.33E-04	0.9	3.5	3.3
0:00:29	21.5	2.1	8.0	-19.4	3.0	5.53E-04	1.0	3.5	3.4



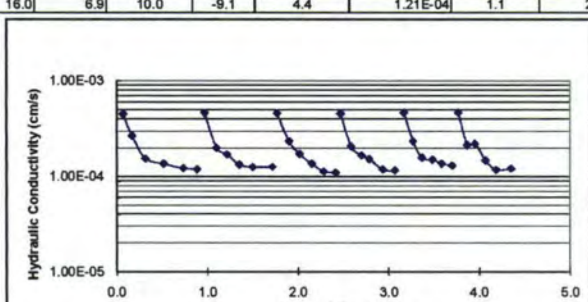
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

Sample I.D.	305-mm West Side South Pit 0-30 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.7	psi	Length of Sample, L =	17.8	cm
Outflow Pressre =	41.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	0.7	psi	Sample Volume, V =	12973.3	cm^3
Effective Stress =	0.6	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	2.8		a_{out} =	1	cm^2
Weight of wet sample =	21912.9	g	Sample Water Content =	6.73%	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.69	g/cm^3

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

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50.93	365.08	345.27	6.73%

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	24.1	0.0	24.1	0.0				
0:00:04	5.0	19.0	4.0	14.0	0.1	4.51E-04	1.0	5	5.1
0:00:10	9.0	15.2	6.0	6.2	0.2	2.67E-04	1.0	4	3.8
0:00:19	12.0	12.2	9.0	0.2	0.3	1.55E-04	1.0	3	3
0:00:31	15.0	9.0	12.0	-6.0	0.5	1.36E-04	1.1	3	3.2
0:00:44	17.5	6.2	13.0	-11.3	0.7	1.23E-04	1.1	2.5	2.8
0:00:53	19.0	4.5	9.0	-14.5	0.9	1.19E-04	1.1	1.5	1.7
0:00:00	0.0	24.4	-53.0	24.4	0.9				
0:00:04	5.0	19.0	4.0	14.0	1.0	4.64E-04	1.1	5	5.4
0:00:12	9.0	15.2	8.0	6.2	1.1	2.01E-04	1.0	4	3.8
0:00:19	11.5	12.5	7.0	1.0	1.2	1.71E-04	1.1	2.5	2.7
0:00:27	13.5	10.3	8.0	-3.2	1.4	1.33E-04	1.1	2	2.2
0:00:36	15.5	8.2	9.0	-7.3	1.5	1.26E-04	1.1	2	2.1
0:00:49	18.0	5.4	13.0	-12.6	1.7	1.27E-04	1.1	2.5	2.8
0:00:00	0.0	24.1	-49.0	24.1	1.7				
0:00:04	5.0	18.8	4.0	13.8	1.8	4.61E-04	1.1	5	5.3
0:00:12	9.5	14.3	8.0	4.8	1.9	2.35E-04	1.0	4.5	4.5
0:00:19	12.0	11.7	7.0	-0.3	2.0	1.73E-04	1.0	2.5	2.6
0:00:27	14.0	9.5	8.0	-4.5	2.2	1.37E-04	1.1	2	2.2
0:00:35	15.5	7.8	8.0	-7.7	2.3	1.13E-04	1.1	1.5	1.7
0:00:43	17.0	6.4	8.0	-10.6	2.4	1.10E-04	0.9	1.5	1.4
0:00:00	0.0	24.0	-43.0	24.0	2.4				
0:00:04	5.0	18.8	4.0	13.8	2.5	4.57E-04	1.0	5	5.2
0:00:11	8.5	15.2	7.0	6.7	2.6	2.08E-04	1.0	3.5	3.6
0:00:18	11.0	12.6	7.0	1.6	2.7	1.66E-04	1.0	2.5	2.6
0:00:23	12.5	11.0	5.0	-1.5	2.8	1.53E-04	1.1	1.5	1.6
0:00:32	14.5	9.0	9.0	-5.5	2.9	1.18E-04	1.0	2	2
0:00:40	16.0	7.3	8.0	-8.7	3.1	1.16E-04	1.1	1.5	1.7
0:00:00	0.0	24.1	-40.0	24.1	3.1				
0:00:04	5.0	18.7	4.0	13.7	3.2	4.66E-04	1.1	5	5.4
0:00:10	8.5	15.3	6.0	6.8	3.3	2.36E-04	1.0	3.5	3.4
0:00:16	10.5	13.1	6.0	2.6	3.4	1.58E-04	1.1	2	2.2
0:00:23	12.5	10.8	7.0	-1.7	3.5	1.51E-04	1.2	2	2.3
0:00:29	14.0	9.2	6.0	-4.8	3.6	1.37E-04	1.1	1.5	1.6
0:00:36	15.5	7.5	7.0	-8.0	3.7	1.30E-04	1.1	1.5	1.7
0:00:00	0.0	24.0	-36.0	24.0	3.7				
0:00:04	5.0	18.6	4.0	13.6	3.8	4.67E-04	1.1	5	5.4
0:00:10	8.0	15.3	6.0	7.3	3.9	2.15E-04	1.1	3	3.3
0:00:15	10.5	12.9	5.0	2.4	4.0	2.21E-04	1.0	2.5	2.4
0:00:22	12.5	10.7	7.0	-1.8	4.1	1.48E-04	1.1	2	2.2
0:00:29	14.0	9.1	7.0	-4.9	4.2	1.18E-04	1.1	1.5	1.6
0:00:39	16.0	6.9	10.0	-9.1	4.4	1.21E-04	1.1	2	2.2



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

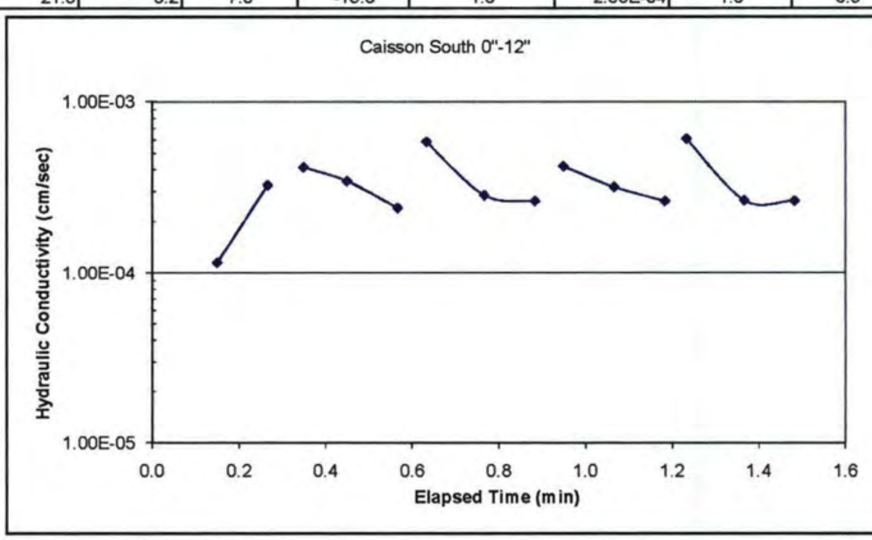
ASTM D 5084 - 00

Sample I.D.	305-mm Cassion South 0-30 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	19.3	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.5	psi	Sample Volume, V =	14085.3	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.5		a_{out} =	1	cm^2
Weight of wet sample =	25809.3	g	Sample Water Content =	25.55%	(%)
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)	(%)
	50.93	353.86	292.22	25.55%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.0	24.3	0.0	24.3	0.0				
0:00:09	5.0	19.5	9.0	14.5	0.2	1.15E-04	1.0	5	4.8
0:00:16	15.0	10.5	7.0	-4.5	0.3	3.26E-04	0.9	10	9
0:00:00	0.0	23.6	-16.0	23.6	0.3				
0:00:03	6.0	18.0	3.0	12.0	0.4	4.15E-04	0.9	6	5.6
0:00:09	15.0	10.0	6.0	-5.0	0.5	3.45E-04	0.9	9	8
0:00:16	21.0	4.0	7.0	-17.0	0.6	2.40E-04	1.0	6	6
0:00:00	0.0	24.0	-16.0	24.0	0.6				
0:00:02	5.5	18.5	2.0	13.0	0.6	5.87E-04	1.0	5.5	5.5
0:00:10	15.5	9.7	8.0	-5.8	0.8	2.86E-04	0.9	10	8.8
0:00:17	22.0	3.2	7.0	-18.8	0.9	2.64E-04	1.0	6.5	6.5
0:00:00	0.0	24.4	-17.0	24.4	0.9				
0:00:03	6.0	18.6	3.0	12.6	1.0	4.20E-04	1.0	6	5.8
0:00:10	15.5	9.8	7.0	-5.7	1.1	3.18E-04	0.9	9.5	8.8
0:00:17	22.0	3.3	7.0	-18.7	1.2	2.64E-04	1.0	6.5	6.5
0:00:00	0.0	23.7	-17.0	23.7	1.2				
0:00:02	6.0	18.3	2.0	12.3	1.2	6.11E-04	0.9	6	5.4
0:00:10	15.0	9.8	8.0	-5.2	1.4	2.66E-04	0.9	9	8.5
0:00:17	21.5	3.2	7.0	-18.3	1.5	2.65E-04	1.0	6.5	6.6



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

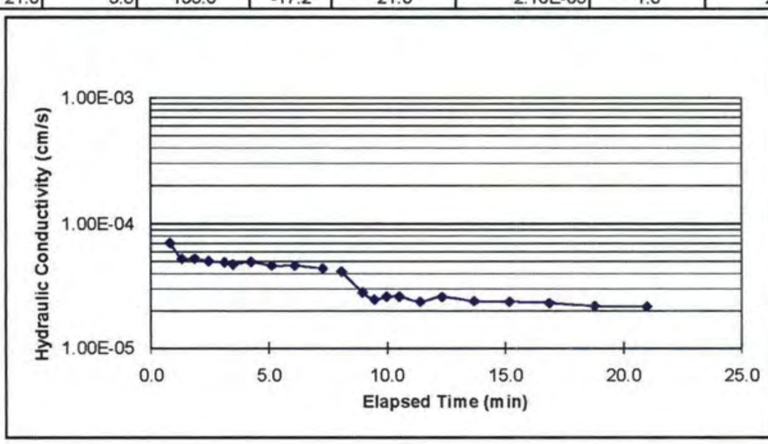
ASTM D 5084 - 00

Sample I.D.	150-mm Caisson South 0-30 cm		Test Date :		
Cell Pressure =	41.6	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.7	psi	Length of Sample, L =	8.9	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.7	psi	Sample Volume, V =	1621.7	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.5		a_{out} =	1	cm^2
Weight of wet sample =	3012.1	g	Sample Water Content =	24.70%	(%)
Wet Density =	1.9	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.81	161.79	135.85	24.70%

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				
0:00:48	5.0	19.5	48.0	14.5	0.8	7.05E-05	0.9	5	4.5
0:01:18	7.0	17.5	30.0	10.5	1.3	5.27E-05	1.0	2	2
0:01:50	9.0	15.5	32.0	6.5	1.8	5.28E-05	1.0	2	2
0:02:26	11.0	13.5	36.0	2.5	2.4	5.04E-05	1.0	2	2
0:03:06	13.0	11.5	40.0	-1.5	3.1	4.90E-05	1.0	2	2
0:03:28	14.0	10.5	22.0	-3.5	3.5	4.74E-05	1.0	1	1
0:04:13	16.0	8.5	45.0	-7.5	4.2	4.96E-05	1.0	2	2
0:05:06	18.0	6.5	53.0	-11.5	5.1	4.63E-05	1.0	2	2
0:06:05	20.0	4.5	59.0	-15.5	6.1	4.63E-05	1.0	2	2
0:07:15	22.0	2.5	70.0	-19.5	7.3	4.39E-05	1.0	2	2
0:00:00	0.0	24.0	-435.0	24.0	7.3				
0:00:45	3.0	21.6	45.0	18.6	8.1	4.15E-05	0.8	3	2.4
0:01:38	5.0	19.6	53.0	14.6	8.9	2.79E-05	1.0	2	2
0:02:08	6.0	18.7	30.0	12.7	9.4	2.45E-05	0.9	1	0.9
0:02:39	7.0	17.7	31.0	10.7	10.0	2.58E-05	1.0	1	1
0:03:11	8.0	16.7	32.0	8.7	10.5	2.58E-05	1.0	1	1
0:04:04	9.5	15.3	53.0	5.8	11.4	2.36E-05	0.9	1.5	1.4
0:04:59	11.0	13.7	55.0	2.7	12.3	2.57E-05	1.1	1.5	1.6
0:06:21	13.0	11.7	82.0	-1.3	13.7	2.38E-05	1.0	2	2
0:07:51	15.0	9.7	90.0	-5.3	15.2	2.36E-05	1.0	2	2
0:09:32	17.0	7.7	101.0	-9.3	16.8	2.30E-05	1.0	2	2
0:11:27	19.0	5.8	115.0	-13.2	18.8	2.18E-05	1.0	2	1.9
0:13:40	21.0	3.8	133.0	-17.2	21.0	2.16E-05	1.0	2	2



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

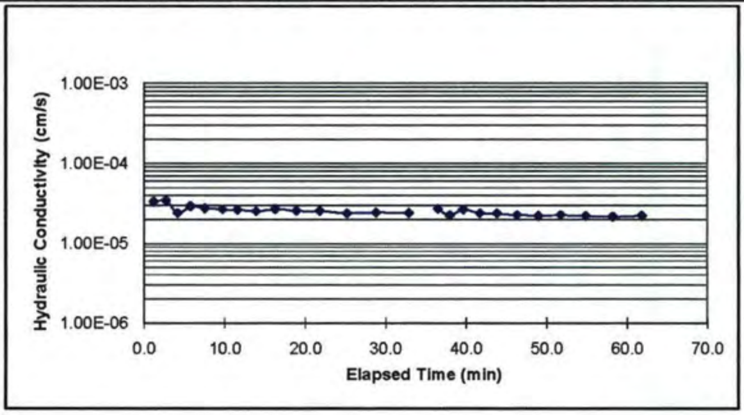
ASTM D 5084 - 00

Sample I.D.	**75-mm Caisson South 0 - 30 cm**			**Test Date :**	
Cell Pressure =	41.8	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.7	psi	Length of Sample, L =	4.1	cm
Outflow Pressre =	40.4	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.3	psi	Sample Volume, V =	158.2	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.1		a_{out} =	1	cm^2
Weight of wet sample =	322.2	g	Sample Water Content =	25.79%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.03	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)	(%)
	25.36	130.36	108.83	25.79%

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				
0:01:13	1.0	23.0	73.0	22.0	1.2	3.35E-05	1.0	1	1
0:02:42	2.2	21.8	89.0	19.6	2.7	3.47E-05	1.0	1.2	1.2
0:04:11	3.0	21.0	89.0	18.0	4.2	2.43E-05	1.0	0.8	0.8
0:05:47	4.0	20.0	96.0	16.0	5.8	2.95E-05	1.0	1	1
0:07:34	5.0	19.0	107.0	14.0	7.6	2.79E-05	1.0	1	1
0:09:43	6.1	17.9	129.0	11.8	9.7	2.70E-05	1.0	1.1	1.1
0:11:36	7.0	17.0	113.0	10.0	11.6	2.68E-05	1.0	0.9	0.9
0:13:56	8.0	16.0	140.0	8.0	13.9	2.56E-05	1.0	1	1
0:16:17	9.0	15.0	141.0	6.0	16.3	2.72E-05	1.0	1	1
0:18:56	10.0	14.0	159.0	4.0	18.9	2.60E-05	1.0	1	1
0:21:50	11.0	13.0	174.0	2.0	21.8	2.57E-05	1.0	1	1
0:25:11	12.0	12.0	201.0	0.0	25.2	2.43E-05	1.0	1	1
0:28:49	13.0	11.0	218.0	-2.0	28.8	2.46E-05	1.0	1	1
0:32:53	14.0	10.0	244.0	-4.0	32.9	2.44E-05	1.0	1	1
0:00:00	0.0	24.0	-1973.0	24.0	32.9				
0:03:32	2.3	21.7	212.0	19.4	36.4	2.73E-05	1.0	2.3	2.3
0:05:01	3.0	20.9	89.0	17.9	37.9	2.28E-05	1.1	0.7	0.8
0:06:41	4.0	20.0	100.0	16.0	39.6	2.69E-05	0.9	1	0.9
0:08:44	5.0	19.0	123.0	14.0	41.6	2.43E-05	1.0	1	1
0:10:55	6.0	18.0	131.0	12.0	43.8	2.41E-05	1.0	1	1
0:13:21	7.0	17.0	146.0	10.0	46.3	2.30E-05	1.0	1	1
0:16:00	8.0	16.0	159.0	8.0	48.9	2.25E-05	1.0	1	1
0:18:47	9.0	15.0	167.0	6.0	51.7	2.30E-05	1.0	1	1
0:21:52	10.0	14.0	185.0	4.0	54.8	2.23E-05	1.0	1	1
0:25:16	11.0	13.0	204.0	2.0	58.2	2.19E-05	1.0	1	1
0:28:53	12.0	12.0	217.0	0.0	61.8	2.25E-05	1.0	1	1



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

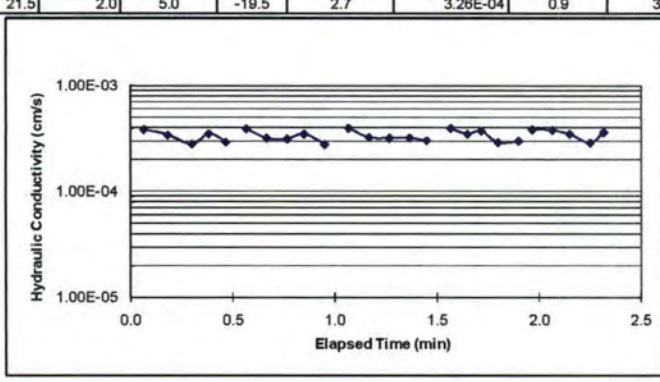
ASTM D 5084 - 00

Sample I.D.	305-mm Caisson South 20-60 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	18.9	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	13807.3	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 =	19976.1	lb	Sample Water Content =	13.17%	(%)
Wet Density =	1.4	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.96	161.96	146.71	13.17%

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	24.1	0.0	24.1	0.0				
0:00:04	5.0	18.5	4.0	13.5	0.1	3.86E-04	1.1	5	5.6
0:00:11	12.0	11.4	7.0	-0.6	0.2	3.41E-04	1.0	7	7.1
0:00:18	17.0	6.6	7.0	-10.4	0.3	2.81E-04	1.0	5	4.8
0:00:23	21.0	3.0	5.0	-18.0	0.4	3.52E-04	0.9	4	3.6
0:00:28	24.0	0.4	5.0	-23.6	0.5	2.94E-04	0.9	3	2.6
0:00:00	0.0	24.2	-28.0	24.2	0.5				
0:00:04	5.0	18.5	4.0	13.5	0.6	3.89E-04	1.1	5	5.7
0:00:10	10.5	12.5	6.0	2.0	0.7	3.19E-04	1.1	5.5	6
0:00:16	15.5	7.7	6.0	-7.8	0.8	3.15E-04	1.0	5	4.8
0:00:21	19.5	3.8	5.0	-15.7	0.9	3.50E-04	1.0	4	3.9
0:00:27	23.0	0.7	6.0	-22.3	1.0	2.78E-04	0.9	3.5	3.1
0:00:00	0.0	24.3	-27.0	24.3	1.0				
0:00:04	5.0	18.4	4.0	13.4	1.1	3.97E-04	1.2	5	5.9
0:00:10	10.5	12.2	6.0	1.7	1.2	3.25E-04	1.1	5.5	6.2
0:00:16	15.5	7.3	6.0	-8.2	1.3	3.20E-04	1.0	5	4.9
0:00:22	20.0	3.2	6.0	-16.8	1.4	3.22E-04	0.9	4.5	4.1
0:00:27	23.0	0.3	5.0	-22.7	1.5	3.03E-04	1.0	3	2.9
0:00:00	0.0	24.5	-27.0	24.5	1.5				
0:00:04	5.0	18.6	4.0	13.6	1.6	3.96E-04	1.2	5	5.9
0:00:09	10.0	13.0	5.0	3.0	1.7	3.50E-04	1.1	5	5.6
0:00:13	14.0	9.0	4.0	-5.0	1.7	3.74E-04	1.0	4	4
0:00:18	17.5	5.6	5.0	-11.9	1.8	2.89E-04	1.0	3.5	3.4
0:00:24	21.5	2.0	6.0	-19.5	1.9	3.01E-04	0.9	4	3.6
0:00:00	0.0	24.4	-24.0	24.4	1.9				
0:00:04	5.0	18.8	4.0	13.8	2.0	3.85E-04	1.1	5	5.6
0:00:10	11.5	11.8	6.0	0.3	2.1	3.78E-04	1.1	6.5	7
0:00:15	16.0	7.4	5.0	-8.6	2.2	3.49E-04	1.0	4.5	4.4
0:00:21	20.0	3.7	6.0	-16.3	2.3	2.88E-04	0.9	4	3.7
0:00:25	23.0	1.0	4.0	-22.0	2.3	3.61E-04	0.9	3	2.7
0:00:00	0.0	24.2	-25.0	24.2	2.3				
0:00:04	5.0	18.5	4.0	13.5	2.4	3.89E-04	1.1	5	5.7
0:00:09	10.0	13.0	5.0	3.0	2.5	3.47E-04	1.1	5	5.5
0:00:13	14.0	9.0	4.0	-5.0	2.5	3.74E-04	1.0	4	4
0:00:18	18.0	5.3	5.0	-12.7	2.6	3.25E-04	0.9	4	3.7
0:00:23	21.5	2.0	5.0	-19.5	2.7	3.26E-04	0.9	3.5	3.3



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

ASTM D 5084 - 00

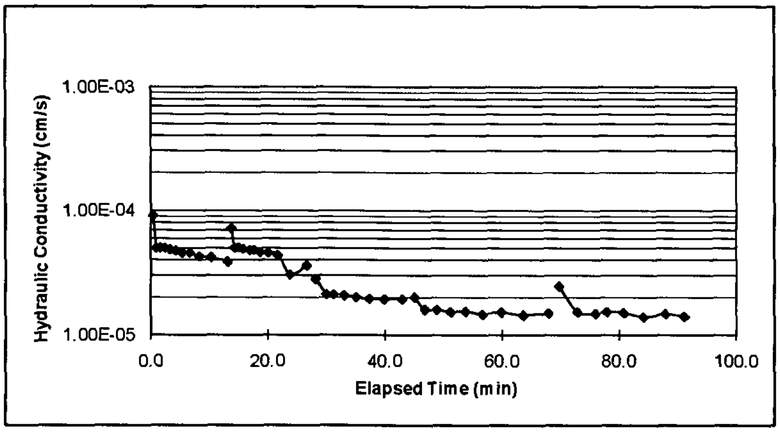
Sample I.D.	150-mm Caisson South 30-60 cm		Test Date :		
Cell Pressure =	41.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	8.9	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1621.7	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	4.0		a_{out} =	1	cm^2
Weight of wet sample =	2821.0	g	Sample Water Content =	27.11%	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.73	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)	(%)
	25.09	203.07	165.11	27.11%

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				
0:00:27	3.0	21.3	27.0	18.3	0.5	9.14E-05	0.9	3	2.7
0:01:05	5.0	19.3	38.0	14.3	1.1	4.99E-05	1.0	2	2
0:01:46	7.0	17.3	41.0	10.3	1.8	5.01E-05	1.0	2	2
0:02:32	9.0	15.2	46.0	6.2	2.5	5.01E-05	1.1	2	2.1
0:03:23	11.0	13.2	51.0	2.2	3.4	4.86E-05	1.0	2	2
0:04:21	13.0	11.2	58.0	-1.8	4.4	4.76E-05	1.0	2	2
0:05:29	15.0	9.2	68.0	-5.8	5.5	4.58E-05	1.0	2	2
0:06:47	17.0	7.2	78.0	-9.8	6.8	4.57E-05	1.0	2	2
0:08:25	19.0	5.2	98.0	-13.8	8.4	4.27E-05	1.0	2	2
0:10:26	21.0	3.2	121.0	-17.8	10.4	4.17E-05	1.0	2	2
0:13:11	23.0	1.2	165.0	-21.8	13.2	3.87E-05	1.0	2	2
0:00:00	0.0	24.0	-791.0	24.0	13.2				
0:00:36	3.0	21.0	36.0	18.0	13.8	7.24E-05	1.0	3	3
0:01:14	5.0	19.0	38.0	14.0	14.4	5.02E-05	1.0	2	2
0:01:55	7.0	17.0	41.0	10.0	15.1	5.04E-05	1.0	2	2
0:02:41	9.0	15.0	46.0	6.0	15.9	4.91E-05	1.0	2	2
0:03:48	11.5	12.4	67.0	0.9	17.0	4.81E-05	1.0	2.5	2.6
0:04:32	13.0	10.9	44.0	-2.1	17.7	4.81E-05	1.0	1.5	1.5
0:05:40	15.0	8.9	68.0	-6.1	18.9	4.62E-05	1.0	2	2
0:06:59	17.0	6.9	79.0	-10.1	20.2	4.57E-05	1.0	2	2
0:08:36	19.0	4.9	97.0	-14.1	21.8	4.37E-05	1.0	2	2
0:10:39	21.0	3.9	123.0	-17.1	23.9	3.04E-05	0.5	2	1
0:13:28	23.0	1.9	169.0	-21.1	26.7	3.61E-05	1.0	2	2
0:00:00	0.0	24.0	-808.0	24.0	26.7				
0:01:31	3.0	21.1	91.0	18.1	28.2	2.81E-05	1.0	3	2.9
0:03:22	5.5	18.7	111.0	13.2	30.1	2.12E-05	1.0	2.5	2.4
0:04:36	7.0	17.2	74.0	10.2	31.3	2.11E-05	1.0	1.5	1.5
0:06:24	9.0	15.2	108.0	6.2	33.1	2.08E-05	1.0	2	2
0:08:24	11.0	13.3	120.0	2.3	35.1	2.01E-05	0.9	2	1.9
0:10:41	13.0	11.4	137.0	-1.6	37.4	1.96E-05	1.0	2	1.9
0:13:16	15.0	9.5	155.0	-5.5	40.0	1.94E-05	1.0	2	1.9
0:16:18	17.0	7.5	182.0	-9.5	43.0	1.94E-05	1.0	2	2
0:00:00	0.0	24.0	-978.0	24.0	43.0				
0:02:07	3.1	21.2	127.0	18.1	45.1	2.02E-05	0.9	3.1	2.8
0:03:53	5.0	19.5	106.0	14.5	46.9	1.61E-05	0.9	1.9	1.7
0:05:57	7.0	17.6	124.0	10.6	49.0	1.61E-05	0.9	2	1.9
0:08:15	9.0	15.8	138.0	6.8	51.3	1.53E-05	0.9	2	1.8
0:10:48	11.0	13.9	153.0	2.9	53.8	1.55E-05	1.0	2	1.9
0:13:42	13.0	12.1	174.0	-0.9	56.7	1.47E-05	0.9	2	1.8
0:16:55	15.0	10.2	193.0	-4.8	59.9	1.53E-05	1.0	2	1.9
0:20:40	17.0	8.4	225.0	-8.6	63.7	1.45E-05	0.9	2	1.8
0:24:58	19.0	6.5	258.0	-12.5	68.0	1.50E-05	1.0	2	1.9
0:00:00	0.0	24.0	-1498.0	24.0	68.0				
0:01:46	3.0	21.0	106.0	18.0	69.8	2.46E-05	1.0	3	3

0:04:56	6.0	18.0	190.0	12.0	72.9	1.54E-05	1.0	3	3
0:07:59	8.5	15.5	183.0	7.0	76.0	1.49E-05	1.0	2.5	2.5
0:09:56	10.0	14.0	117.0	4.0	77.9	1.54E-05	1.0	1.5	1.5
0:12:50	12.0	12.0	174.0	0.0	80.8	1.51E-05	1.0	2	2
0:16:09	14.0	10.2	199.0	-3.8	84.2	1.40E-05	0.9	2	1.8
0:19:54	16.0	8.2	225.0	-7.8	87.9	1.48E-05	1.0	2	2
0:23:08	17.5	6.8	194.0	-10.7	91.1	1.41E-05	0.9	1.5	1.4



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

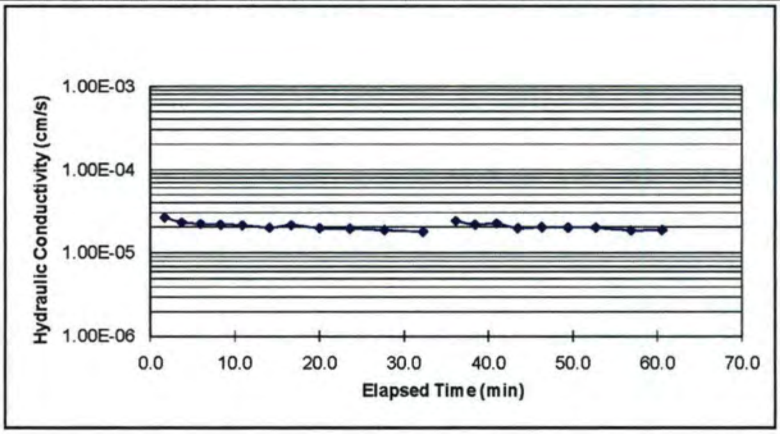
ASTM D 5084 - 00

Sample I.D.	75-mm Caisson South 30-60 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 Pressre =	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 =	325.9	g	Sample Water Content =	25.81%	(%)
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.78	142.8	119.82	25.81%

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				
0:01:41	1.0	23.0	101.0	22.0	1.7	2.60E-05	1.0	1	1
0:03:42	2.0	22.0	121.0	20.0	3.7	2.28E-05	1.0	1	1
0:05:55	3.0	21.0	133.0	18.0	5.9	2.18E-05	1.0	1	1
0:08:18	4.0	20.0	143.0	16.0	8.3	2.13E-05	1.0	1	1
0:10:51	5.0	19.0	153.0	14.0	10.9	2.10E-05	1.0	1	1
0:14:03	6.1	17.9	192.0	11.8	14.1	1.96E-05	1.0	1.1	1.1
0:16:38	7.0	17.0	155.0	10.0	16.6	2.11E-05	1.0	0.9	0.9
0:19:58	8.0	16.0	200.0	8.0	20.0	1.93E-05	1.0	1	1
0:23:35	9.0	15.0	217.0	6.0	23.6	1.90E-05	1.0	1	1
0:27:38	10.0	14.0	243.0	4.0	27.6	1.83E-05	1.0	1	1
0:32:13	11.0	13.0	275.0	2.0	32.2	1.75E-05	1.0	1	1
0:00:00	0.0	24.0		24.0	32.2				
0:03:54	2.0	21.9	234.0	19.9	36.1	2.36E-05	1.1	2	2.1
0:06:10	3.0	20.9	136.0	17.9	38.4	2.13E-05	1.0	1	1
0:08:43	4.1	19.8	153.0	15.7	40.9	2.20E-05	1.0	1.1	1.1
0:11:14	5.0	18.9	151.0	13.9	43.4	1.93E-05	1.0	0.9	0.9
0:14:05	6.0	17.9	171.0	11.9	46.3	2.00E-05	1.0	1	1
0:17:10	7.0	16.9	185.0	9.9	49.4	1.96E-05	1.0	1	1
0:20:27	8.0	15.9	197.0	7.9	52.7	1.96E-05	1.0	1	1
0:24:40	9.1	14.8	253.0	5.7	56.9	1.81E-05	1.0	1.1	1.1
0:28:19	10.0	13.9	219.0	3.9	60.5	1.84E-05	1.0	0.9	0.9



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

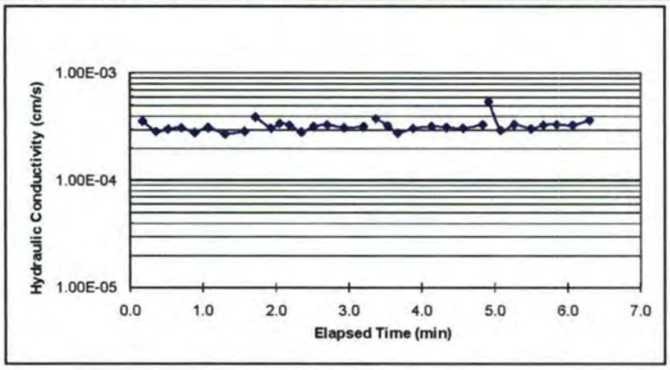
ASTM D 5084 - 00

Sample I.D.	150-mm Caisson South Radon		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	9.5	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1737.5	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	3.7		a_{out} =	1	cm^2
Weight of wet sample =	3277.3	g	Sample Water Content =	12.19%	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.88	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)	(%)
	30.79	142.94	130.75	12.19%

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				
0:00:10	4.0	20.4	10.0	16.4	0.2	3.59E-04	0.9	4	3.6
0:00:21	7.0	17.5	11.0	10.5	0.4	2.88E-04	1.0	3	2.9
0:00:31	9.5	15.0	10.0	5.5	0.5	3.03E-04	1.0	2.5	2.5
0:00:42	12.0	12.5	11.0	0.5	0.7	3.11E-04	1.0	2.5	2.5
0:00:53	14.0	10.5	11.0	-3.5	0.9	2.82E-04	1.0	2	2
0:01:04	16.0	8.6	11.0	-7.4	1.1	3.12E-04	1.0	2	1.9
0:01:18	18.0	6.8	14.0	-11.2	1.3	2.74E-04	0.9	2	1.8
0:01:34	20.0	4.9	16.0	-15.1	1.6	2.90E-04	1.0	2	1.9
0:00:00	0.0	24.0	-94.0	24.0	1.6				
0:00:07	3.0	21.1	7.0	18.1	1.7	3.92E-04	1.0	3	2.9
0:00:20	7.0	17.5	13.0	10.5	1.9	3.09E-04	0.9	4	3.6
0:00:27	9.0	15.5	7.0	6.5	2.1	3.42E-04	1.0	2	2
0:00:35	11.0	13.5	8.0	2.5	2.2	3.29E-04	1.0	2	2
0:00:45	13.0	11.6	10.0	-1.4	2.4	2.85E-04	1.0	2	1.9
0:00:55	15.0	9.7	10.0	-5.3	2.5	3.20E-04	1.0	2	1.9
0:01:06	17.0	7.8	11.0	-9.2	2.7	3.32E-04	1.0	2	1.9
0:01:20	19.0	5.8	14.0	-13.2	2.9	3.12E-04	1.0	2	2
0:01:36	21.0	3.9	16.0	-17.1	3.2	3.19E-04	1.0	2	1.9
0:00:00	0.0	24.0	-96.0	24.0	3.2				
0:00:10	4.0	20.0	10.0	16.0	3.4	3.79E-04	1.0	4	4
0:00:20	7.0	17.0	10.0	10.0	3.5	3.26E-04	1.0	3	3
0:00:28	9.0	15.3	8.0	6.3	3.7	2.79E-04	0.9	2	1.7
0:00:41	12.0	12.4	13.0	0.4	3.9	3.08E-04	1.0	3	2.9
0:00:56	15.0	9.4	15.0	-5.6	4.1	3.22E-04	1.0	3	3
0:01:08	17.0	7.4	12.0	-9.6	4.3	3.16E-04	1.0	2	2
0:01:22	19.0	5.5	14.0	-13.5	4.6	3.09E-04	1.0	2	1.9
0:01:38	21.0	3.5	16.0	-17.5	4.8	3.33E-04	1.0	2	2
0:00:00	0.0	24.0	-98.0	24.0	4.8				
0:00:07	4.0	20.0	7.0	16.0	4.9	5.42E-04	1.0	4	4
0:00:17	7.0	17.5	10.0	10.5	5.1	2.97E-04	0.8	3	2.5
0:00:28	10.0	14.5	11.0	4.5	5.3	3.34E-04	1.0	3	3
0:00:42	13.0	11.5	14.0	-1.5	5.5	3.06E-04	1.0	3	3
0:00:52	15.0	9.5	10.0	-5.5	5.7	3.30E-04	1.0	2	2
0:01:03	17.0	7.6	11.0	-9.4	5.9	3.35E-04	1.0	2	1.9
0:01:16	19.0	5.7	13.0	-13.3	6.1	3.30E-04	1.0	2	1.9
0:01:30	21.0	3.8	14.0	-17.2	6.3	3.66E-04	1.0	2	1.9



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

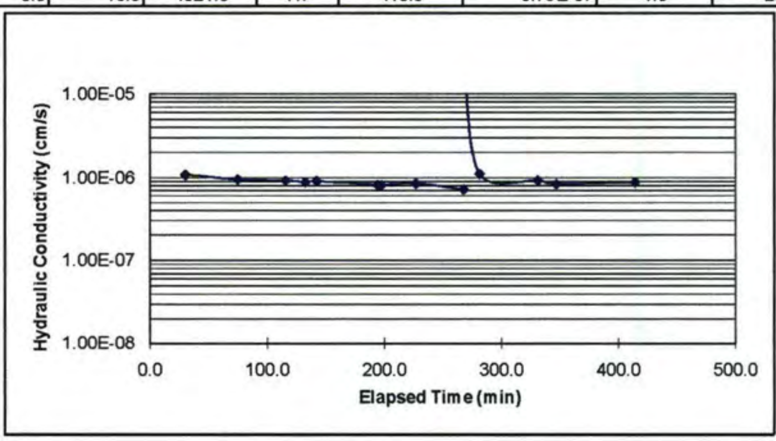
ASTM D 5084 - 00

Sample I.D.	150-mm Caisson South Radon		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	10.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1853.3	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	3.5		a_{out} =	1	cm^2
Weight of wet sample =	4023.4	g	Sample Water Content =	12.87%	(%)
Wet Density =	2.2	g/cm^3	Dry Density =	2.17	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)	(%)
	25.03	114.9	104.65	12.87%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	2.0	23.3	0.0	21.3	0.0				
0:29:59	3.9	21.4	1799.0	17.5	30.0	1.08E-06	1.0	1.9	1.9
1:14:39	6.2	19.1	2680.0	12.9	74.7	9.50E-07	1.0	2.3	2.3
1:55:15	8.1	17.3	2436.0	9.2	115.3	9.16E-07	0.9	1.9	1.8
2:12:10	8.8	16.6	1015.0	7.8	132.2	8.80E-07	1.0	0.7	0.7
2:21:51	9.2	16.2	581.0	7.0	141.9	9.01E-07	1.0	0.4	0.4
3:14:13	11.1	14.4	3142.0	3.3	194.2	8.14E-07	0.9	1.9	1.8
3:17:13	11.2	14.3	180.0	3.1	197.2	8.07E-07	1.0	0.1	0.1
3:46:43	12.2	13.3	1770.0	1.1	226.7	8.45E-07	1.0	1	1
4:27:22	13.3	12.2	2439.0	-1.1	267.4	7.15E-07	1.0	1.1	1.1
0:00:00	0.0	24.0	-16042.0	24.0	267.4				
0:00:55	1.6	23.4	55.0	21.8	268.3	1.92E-05	0.4	1.6	0.6
0:13:39	2.5	22.6	764.0	20.1	281.1	1.10E-06	0.9	0.9	0.8
1:03:36	5.2	20.1	2997.0	14.9	331.0	9.18E-07	0.9	2.7	2.5
1:19:27	5.9	19.4	951.0	13.5	346.9	8.31E-07	1.0	0.7	0.7
2:26:28	8.8	16.5	4021.0	7.7	413.9	8.79E-07	1.0	2.9	2.9



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

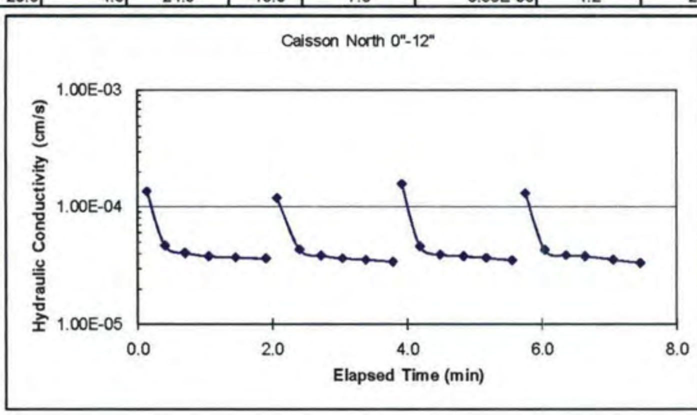
ASTM D 5084 - 00

Sample I.D.	**305-mm Caisson North 0-30 cm**			**Test Date :**			
Cell Pressure =	42.0	psi		Diameter of Sample, D =	30.5	cm	
Inflow Pressure =	41.5	psi		Length of Sample, L =	19.7	cm	
Outflow Pressre =	40.0	psi		Area of Sample, A =	729.66	cm^2	
Pressure Difference =	1.5	psi		Sample Volume, V =	14363.3	cm^3	
Effective Stress =	1.3	psi		a_{in} =	1	cm^2	
Hydraulic Gradient, i =	5.4			a_{out} =	1	cm^2	
Weight of wet sample =	23056.0	g		Sample Water Content =	12.88%	(%)	
Wet Density =	1.6	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)	(%)
	50.34	336.2	303.59	12.88%

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	24.5	0.0	24.5	0.0				
0:00:08	5.5	20.0	8.0	14.5	0.1	1.35E-04	0.8	5.5	4.5
0:00:24	9.0	17.0	16.0	8.0	0.4	4.70E-05	0.9	3.5	3
0:00:42	12.0	14.0	18.0	2.0	0.7	4.07E-05	1.0	3	3
0:01:03	15.0	10.8	21.0	-4.2	1.1	3.82E-05	1.1	3	3.2
0:01:27	18.0	7.3	24.0	-10.7	1.5	3.73E-05	1.2	3	3.5
0:01:54	21.0	3.6	27.0	-17.4	1.9	3.66E-05	1.2	3	3.7
0:00:00	0.0	23.9	-114.0	23.9	1.9				
0:00:10	6.0	19.0	10.0	13.0	2.1	1.19E-04	0.8	6	4.9
0:00:30	10.0	15.6	20.0	5.6	2.4	4.35E-05	0.9	4	3.4
0:00:49	13.0	12.7	19.0	-0.3	2.7	3.87E-05	1.0	3	2.9
0:01:08	15.5	9.9	19.0	-5.6	3.0	3.67E-05	1.1	2.5	2.8
0:01:29	18.0	7.0	21.0	-11.0	3.4	3.57E-05	1.2	2.5	2.9
0:01:53	20.5	3.9	24.0	-16.6	3.8	3.43E-05	1.2	2.5	3.1
0:00:00	0.0	24.2	-113.0	24.2	3.8				
0:00:07	5.5	19.6	7.0	14.1	3.9	1.56E-04	0.8	5.5	4.6
0:00:23	9.0	16.7	16.0	7.7	4.2	4.64E-05	0.8	3.5	2.9
0:00:41	12.0	13.9	18.0	1.9	4.5	3.94E-05	0.9	3	2.8
0:01:02	15.0	10.7	21.0	-4.3	4.8	3.82E-05	1.1	3	3.2
0:01:22	17.5	7.8	20.0	-9.7	5.2	3.70E-05	1.2	2.5	2.9
0:01:45	20.0	4.7	23.0	-15.3	5.6	3.53E-05	1.2	2.5	3.1
0:00:00	0.0	24.1	-105.0	24.1	5.6				
0:00:09	6.0	19.3	9.0	13.3	5.8	1.30E-04	0.8	6	4.8
0:00:26	9.5	16.5	17.0	7.0	6.0	4.32E-05	0.8	3.5	2.8
0:00:45	12.5	13.5	19.0	1.0	6.4	3.89E-05	1.0	3	3
0:01:02	15.0	11.0	17.0	-4.0	6.6	3.82E-05	1.0	2.5	2.5
0:01:27	18.0	7.5	25.0	-10.5	7.1	3.57E-05	1.2	3	3.5
0:01:51	20.5	4.5	24.0	-16.0	7.5	3.35E-05	1.2	2.5	3



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

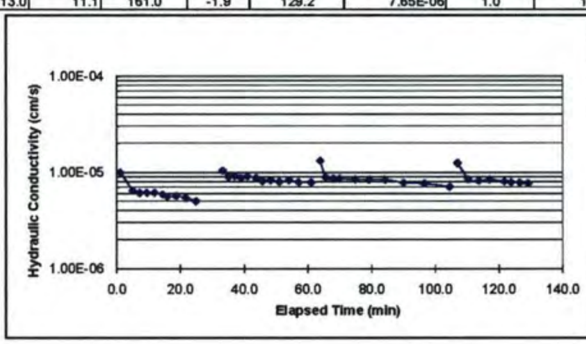
ASTM D 5084 - 00

Sample I.D.	**150-mm Caisson North 0-30 cm**			**Test Date :**			
Cell Pressure =	41.7	psi		Diameter of Sample, D =	15.2	cm	
Inflow Pressure =	40.7	psi		Length of Sample, L =	9.3	cm	
Outflow Pressre =	40.1	psi		Area of Sample, A =	182.41	cm^2	
Pressure Difference =	0.6	psi		Sample Volume, V =	1691.2	cm^3	
Effective Stress =	1.3	psi		a_{in} =	1	cm^2	
Hydraulic Gradient, i =	4.6			a_{out} =	1	cm^2	
Weight of wet sample =	3157.4	g		Sample Water Content =	25.95%	(%)	
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	30.89	200.1	165.24	25.95%

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				
0:01:06	1.0	23.3	66.0	22.3	1.1	1.00E-05	0.7	1	0.7
0:05:06	3.0	21.5	239.0	18.5	5.1	6.46E-06	0.9	2	1.8
0:07:17	4.0	20.6	132.0	16.6	7.3	6.12E-06	0.9	1	0.9
0:09:33	5.0	19.7	136.0	14.7	9.6	6.14E-06	0.9	1	0.9
0:11:54	6.0	18.8	141.0	12.8	11.9	6.12E-06	0.9	1	0.9
0:14:26	7.0	17.9	152.0	10.9	14.4	5.88E-06	0.9	1	0.9
0:15:53	7.5	17.4	87.0	9.9	15.9	5.55E-06	1.0	0.5	0.5
0:18:40	8.5	16.5	167.0	8.0	18.7	5.65E-06	0.9	1	0.9
0:21:41	9.5	15.6	181.0	6.1	21.7	5.42E-06	0.9	1	0.9
0:24:54	10.5	14.8	193.0	4.3	24.9	5.00E-06	0.8	1	0.8
					24.9				
0:00:00	0.0	24.0	0.0	24.0	24.9				
0:08:27	6.5	18.0	507.0	11.5	33.4	1.05E-05	0.9	6.5	6
0:10:14	7.5	17.0	107.0	9.5	35.1	9.01E-06	1.0	1	1
0:12:08	8.5	15.9	114.0	7.4	37.0	9.24E-06	1.1	1	1.1
0:14:07	9.5	14.9	119.0	5.4	39.0	8.79E-06	1.0	1	1
0:16:13	10.5	13.8	126.0	3.3	41.1	9.10E-06	1.1	1	1.1
0:18:58	11.7	12.5	165.0	0.8	43.9	8.70E-06	1.1	1.2	1.3
0:20:56	12.5	11.7	118.0	-0.8	45.8	8.17E-06	1.0	0.8	0.8
0:23:27	13.5	10.7	151.0	-2.8	48.4	8.33E-06	1.0	1	1
0:26:12	14.5	9.7	165.0	-4.8	51.1	8.02E-06	1.0	1	1
0:29:09	15.5	8.6	177.0	-6.9	54.1	8.30E-06	1.1	1	1.1
0:32:17	16.5	7.6	188.0	-8.9	57.2	7.88E-06	1.0	1	1
0:36:09	17.6	6.4	232.0	-11.2	61.1	7.84E-06	1.1	1.1	1.2
0:00:00	0.0	24.0	-2169.0	24.0	61.1				
0:02:50	3.0	21.4	170.0	18.4	63.9	1.32E-05	0.9	3	2.6
0:04:26	4.0	20.4	96.0	16.4	65.5	8.88E-06	1.0	1	1
0:07:01	5.5	18.9	155.0	13.4	68.1	8.62E-06	1.0	1.5	1.5
0:08:49	6.5	17.9	108.0	11.4	69.9	8.62E-06	1.0	1	1
0:13:44	9.0	15.4	295.0	6.4	74.8	8.44E-06	1.0	2.5	2.5
0:18:11	11.0	13.3	267.0	2.3	79.3	8.39E-06	1.1	2	2.1
0:23:12	13.0	11.1	301.0	-1.9	84.3	8.37E-06	1.1	2	2.2
0:29:01	15.0	9.0	349.0	-6.0	90.1	7.81E-06	1.1	2	2.1
0:35:30	17.0	7.0	389.0	-10.0	96.6	7.65E-06	1.0	2	2
0:43:28	19.0	5.0	478.0	-14.0	104.6	7.05E-06	1.0	2	2
0:00:00	0.0	24.0	-2608.0	24.0	104.6				
0:02:26	2.5	21.9	146.0	19.4	107.0	1.25E-05	0.8	2.5	2.1
0:05:46	4.5	19.9	200.0	15.4	110.4	8.53E-06	1.0	2	2
0:09:06	6.3	18.1	200.0	11.8	113.7	8.20E-06	1.0	1.8	1.8
0:12:28	8.0	16.3	202.0	8.3	117.1	8.43E-06	1.1	1.7	1.8
0:17:09	10.1	14.1	281.0	4.0	121.8	8.05E-06	1.0	2.1	2.2
0:19:17	11.0	13.2	128.0	2.2	123.9	7.89E-06	1.0	0.9	0.9
0:21:55	12.0	12.1	158.0	0.1	126.5	7.79E-06	1.1	1	1.1
0:24:36	13.0	11.1	161.0	-1.9	129.2	7.65E-06	1.0	1	1



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

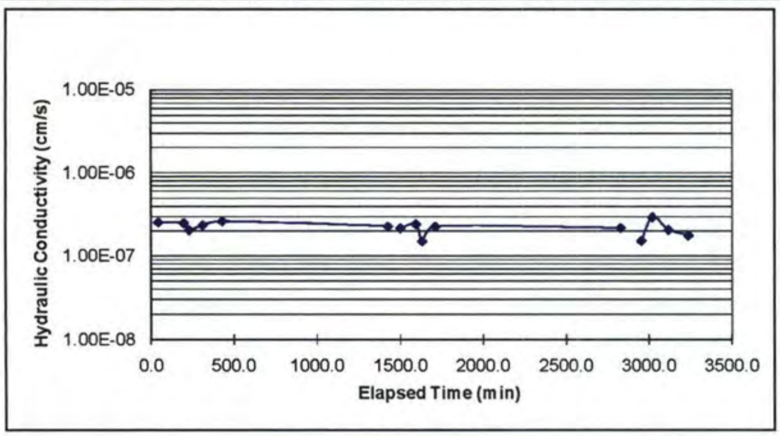
ASTM D 5084 - 00

Sample I.D.	75-mm Caisson North 0-30 cm		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.8	psi	Length of Sample, L =	2.5	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.2	psi	Sample Volume, V =	97.3	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.5		a_{out} =	1	cm^2
Weight of wet sample =	210.1	g	Sample Water Content =	26.20%	(%)
Wet Density =	2.2	g/cm^3	Dry Density =	2.15	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)	(%)
	30.81	157.22	130.98	26.20%

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				
0:46:02	0.5	23.7	2762.0	23.2	46.0	2.55E-07	0.6	0.5	0.3
3:19:47	1.8	22.5	9225.0	20.7	199.8	2.49E-07	0.9	1.3	1.2
3:50:47	2.0	22.3	1860.0	20.3	230.8	2.06E-07	1.0	0.2	0.2
5:13:57	2.6	21.7	4990.0	19.1	314.0	2.36E-07	1.0	0.6	0.6
7:11:06	3.5	20.8	7029.0	17.3	431.1	2.63E-07	1.0	0.9	0.9
23:47:34	8.8	15.5	59788.0	6.7	1427.6	2.29E-07	1.0	5.3	5.3
0:00:00	8.9	15.5	-85654.0	6.6	1427.6				
1:15:08	9.2	15.2	4508.0	6.0	1502.7	2.17E-07	1.0	0.3	0.3
2:47:59	9.6	14.8	5571.0	5.2	1595.6	2.42E-07	1.0	0.4	0.4
3:26:13	9.7	14.7	2294.0	5.0	1633.8	1.51E-07	1.0	0.1	0.1
4:44:09	10.0	14.4	4676.0	4.4	1711.8	2.27E-07	1.0	0.3	0.3
23:22:14	13.3	11.1	67085.0	-2.2	2829.8	2.18E-07	1.0	3.3	3.3
0:00:00	13.3	11.1	-84134.0	-2.2	2829.8				
2:04:45	13.5	10.9	7485.0	-2.6	2954.6	1.52E-07	1.0	0.2	0.2
3:11:32	13.7	10.7	4007.0	-3.0	3021.3	2.94E-07	1.0	0.2	0.2
4:49:46	13.9	10.5	5894.0	-3.4	3119.6	2.07E-07	1.0	0.2	0.2
6:48:34	14.1	10.3	7128.0	-3.8	3238.4	1.78E-07	1.0	0.2	0.2



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

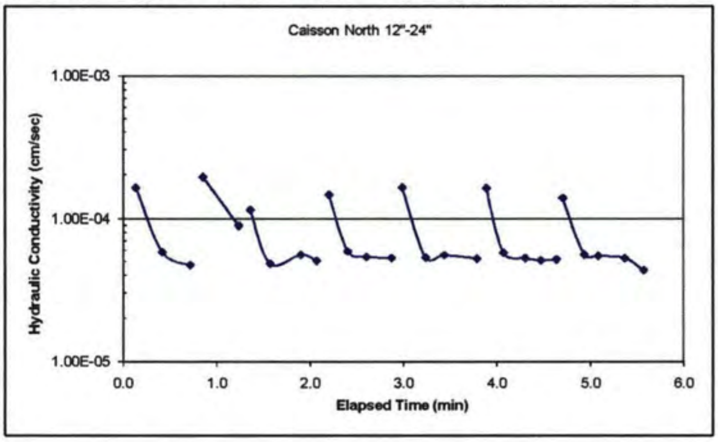
ASTM D 5084 - 00

Sample I.D.	305-mm Cassion North 30-60 cm			Test Date :	
Cell Pressure =	35.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	32.5	psi	Length of Sample, L =	20.3	cm
Outflow Pressre =	30.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.5	psi	Sample Volume, V =	14826.7	cm^3
Effective Stress =	3.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	8.7		a_{out} =	1	cm^2
Weight of wet sample =	21835.8	g	Sample Water Content =	17.92%	(%)
Wet Density =	1.5	g/cm^3	Dry Density =	1.47	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)	(%)
	50.78	337.5	293.92	17.92%

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	24.5	0.0	24.5	0.0				
0:00:08	10.0	16.5	8.0	6.5	0.1	1.64E-04	0.8	10	8
0:00:25	19.0	13.0	17.0	-6.0	0.4	5.82E-05	0.4	9	3.5
0:00:43	25.0	9.0	18.0	-16.0	0.7	4.69E-05	0.7	6	4
0:00:00	0.0	24.0	0.0	24.0	0.7				
0:00:08	10.0	13.0	8.0	3.0	0.9	1.93E-04	1.1	10	11
0:00:31	22.4	0.8	23.0	-21.6	1.2	8.96E-05	1.0	12.4	12.2
0:00:00	0.0	24.1	-31.0	24.1	1.2				
0:00:10	8.0	17.0	9.5	9.0	1.4	1.15E-04	0.9	8	7.1
0:00:22	12.0	13.2	12.5	1.2	1.6	4.80E-05	1.0	4	3.8
0:00:42	19.0	6.6	20.0	-12.4	1.9	5.57E-05	0.9	7	6.6
0:00:52	22.0	3.8	10.0	-18.2	2.1	5.03E-05	0.9	3	2.8
0:00:00	0.0	24.1	-52.0	24.1	2.1				
0:00:06	6.5	18.4	6.0	11.9	2.2	1.46E-04	0.9	6.5	5.7
0:00:18	11.0	13.6	12.0	2.6	2.4	5.90E-05	1.1	4.5	4.8
0:00:30	15.0	9.5	12.0	-5.5	2.6	5.39E-05	1.0	4	4.1
0:00:46	20.0	4.5	16.0	-15.5	2.9	5.27E-05	1.0	5	5
0:00:00	0.0	24.1	-46.0	24.1	2.9				
0:00:05	6.0	18.7	5.0	12.7	3.0	1.64E-04	0.9	6	5.4
0:00:20	11.0	13.2	15.0	2.2	3.2	5.32E-05	1.1	5	5.5
0:00:32	15.0	8.9	12.0	-6.1	3.4	5.54E-05	1.1	4	4.3
0:00:53	21.5	2.5	21.0	-19.0	3.8	5.24E-05	1.0	6.5	6.4
0:00:00	0.0	24.0	-53.0	24.0	3.8				
0:00:05	6.0	18.7	5.0	12.7	3.9	1.62E-04	0.9	6	5.3
0:00:16	10.0	14.3	11.0	4.3	4.1	5.77E-05	1.1	4	4.4
0:00:30	14.5	9.5	14.0	-5.0	4.3	5.27E-05	1.1	4.5	4.8
0:00:40	17.5	6.4	10.0	-11.1	4.5	5.06E-05	1.0	3	3.1
0:00:50	20.5	3.4	10.0	-17.1	4.6	5.17E-05	1.0	3	3
0:00:00	0.0	24.1	-50.0	24.1	4.6				
0:00:06	6.0	18.5	6.0	12.5	4.7	1.39E-04	0.9	6	5.6
0:00:20	11.0	13.2	14.0	2.2	4.9	5.59E-05	1.1	5	5.3
0:00:29	14.0	10.0	9.0	-4.0	5.1	5.48E-05	1.1	3	3.2
0:00:46	19.5	4.8	17.0	-14.7	5.4	5.27E-05	0.9	5.5	5.2
0:00:58	22.5	1.9	12.0	-20.6	5.6	4.33E-05	1.0	3	2.9



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

ASTM D 5084 - 00

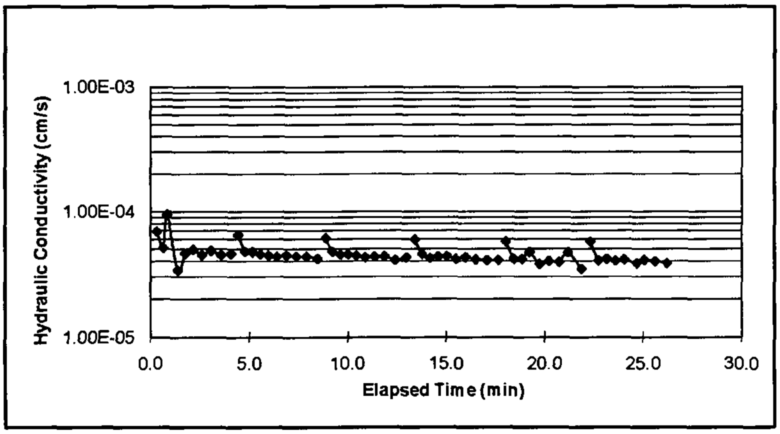
Sample I.D.	150-mm Caisson North 30-60 cm				Test Date :
Cell Pressure =	43.9	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.7	psi	Length of Sample, L =	9.2	cm
Outflow Pressre =	39.5	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1681.9	cm^3
Effective Stress =	3.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	3134.5	g	Sample Water Content =	21.53%	(%)
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	25.87	176.58	149.88	21.53%

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				
0:00:20	3.0	21.2	20.0	18.2	0.3	6.95E-05	0.9	3	2.8
0:00:39	5.0	19.3	19.0	14.3	0.7	5.15E-05	0.9	2	1.9
0:00:50	7.0	17.3	11.0	10.3	0.8	9.51E-05	1.0	2	2
0:01:22	9.0	15.3	32.0	6.3	1.4	3.41E-05	1.0	2	2
0:01:46	11.0	13.4	24.0	2.4	1.8	4.63E-05	1.0	2	1.9
0:02:10	13.0	11.4	24.0	-1.6	2.2	4.97E-05	1.0	2	2
0:02:37	15.0	9.5	27.0	-5.5	2.6	4.52E-05	1.0	2	1.9
0:03:04	17.0	7.5	27.0	-9.5	3.1	4.87E-05	1.0	2	2
0:03:34	19.0	5.6	30.0	-13.4	3.6	4.51E-05	1.0	2	1.9
0:04:05	21.0	3.7	31.0	-17.3	4.1	4.61E-05	1.0	2	1.9
					4.1				
0:00:00	0.0	24.0	0.0	24.0	4.1				
0:00:22	3.0	21.0	22.0	18.0	4.5	6.54E-05	1.0	3	3
0:00:43	5.0	19.0	21.0	14.0	4.8	4.80E-05	1.0	2	2
0:01:05	7.0	17.0	22.0	10.0	5.2	4.77E-05	1.0	2	2
0:01:29	9.0	15.0	24.0	6.0	5.6	4.56E-05	1.0	2	2
0:01:54	11.0	13.1	25.0	2.1	6.0	4.46E-05	1.0	2	1.9
0:02:20	13.0	11.3	26.0	-1.7	6.4	4.37E-05	0.9	2	1.8
0:02:48	15.0	9.3	28.0	-5.7	6.9	4.47E-05	1.0	2	2
0:03:18	17.0	7.3	30.0	-9.7	7.4	4.39E-05	1.0	2	2
0:03:49	19.0	5.4	31.0	-13.6	7.9	4.37E-05	1.0	2	1.9
0:04:23	21.0	3.5	34.0	-17.5	8.5	4.21E-05	1.0	2	1.9
0:00:00	0.0	24.0	-263.0	24.0	8.5				
0:00:23	3.0	21.1	23.0	18.1	8.9	6.15E-05	1.0	3	2.9
0:00:44	5.0	19.1	21.0	14.1	9.2	4.79E-05	1.0	2	2
0:01:07	7.0	17.1	23.0	10.1	9.6	4.56E-05	1.0	2	2
0:01:31	9.0	15.1	24.0	6.1	10.0	4.55E-05	1.0	2	2
0:01:56	11.0	13.2	25.0	2.2	10.4	4.45E-05	1.0	2	1.9
0:02:23	13.0	11.3	27.0	-1.7	10.9	4.31E-05	0.9	2	1.9
0:02:51	15.0	9.4	28.0	-5.6	11.4	4.36E-05	1.0	2	1.9
0:03:21	17.0	7.4	30.0	-9.6	11.9	4.39E-05	1.0	2	2
0:03:54	19.0	5.5	33.0	-13.5	12.4	4.10E-05	1.0	2	1.9
0:04:28	21.0	3.5	34.0	-17.5	13.0	4.32E-05	1.0	2	2
0:00:00	0.0	24.0	-268.0	24.0	13.0				
0:00:24	3.0	21.0	24.0	18.0	13.4	6.00E-05	1.0	3	3
0:00:46	5.0	19.0	22.0	14.0	13.8	4.58E-05	1.0	2	2
0:01:10	7.0	17.1	24.0	10.1	14.2	4.26E-05	0.9	2	1.9
0:01:35	9.0	15.1	25.0	6.1	14.6	4.37E-05	1.0	2	2
0:02:01	11.0	13.1	26.0	2.1	15.0	4.39E-05	1.0	2	2
0:02:29	13.0	11.2	28.0	-1.8	15.5	4.16E-05	1.0	2	1.9
0:02:58	15.0	9.2	29.0	-5.8	16.0	4.33E-05	1.0	2	2
0:03:29	17.0	7.3	31.0	-9.7	16.5	4.15E-05	1.0	2	1.9
0:04:03	19.0	5.3	34.0	-13.7	17.1	4.09E-05	1.0	2	2
0:04:38	21.0	3.4	35.0	-17.6	17.6	4.10E-05	1.0	2	1.9

0:00:00	0.0	24.0	-278.0	24.0	17.6				
0:00:25	3.0	21.0	25.0	18.0	18.0	5.76E-05	1.0	3	3
0:00:49	5.0	19.0	24.0	14.0	18.4	4.20E-05	1.0	2	2
0:01:14	7.0	17.0	25.0	10.0	18.8	4.20E-05	1.0	2	2
0:01:37	9.0	15.0	23.0	6.0	19.2	4.76E-05	1.0	2	2
0:02:07	11.0	13.0	30.0	2.0	19.7	3.81E-05	1.0	2	2
0:02:36	13.0	11.1	29.0	-1.9	20.2	4.03E-05	1.0	2	1.9
0:03:07	15.0	9.2	31.0	-5.8	20.7	3.95E-05	1.0	2	1.9
0:03:35	17.0	7.2	28.0	-9.8	21.2	4.71E-05	1.0	2	2
0:04:15	19.0	5.2	40.0	-13.8	21.9	3.48E-05	1.0	2	2
0:00:00	0.0	24.0	-255.0	24.0	21.9				
0:00:25	3.0	21.0	25.0	18.0	22.3	5.76E-05	1.0	3	3
0:00:49	5.0	19.1	24.0	14.1	22.7	4.09E-05	0.9	2	1.9
0:01:14	7.0	17.1	25.0	10.1	23.1	4.19E-05	1.0	2	2
0:01:41	9.0	15.1	27.0	6.1	23.6	4.05E-05	1.0	2	2
0:02:08	11.0	13.2	27.0	2.2	24.0	4.12E-05	1.0	2	1.9
0:02:46	13.5	10.8	38.0	-2.7	24.7	3.87E-05	1.0	2.5	2.4
0:03:09	15.0	9.3	23.0	-5.7	25.1	4.11E-05	1.0	1.5	1.5
0:03:42	17.0	7.3	33.0	-9.7	25.6	4.00E-05	1.0	2	2
0:04:17	19.0	5.4	35.0	-13.6	26.2	3.87E-05	1.0	2	1.9



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

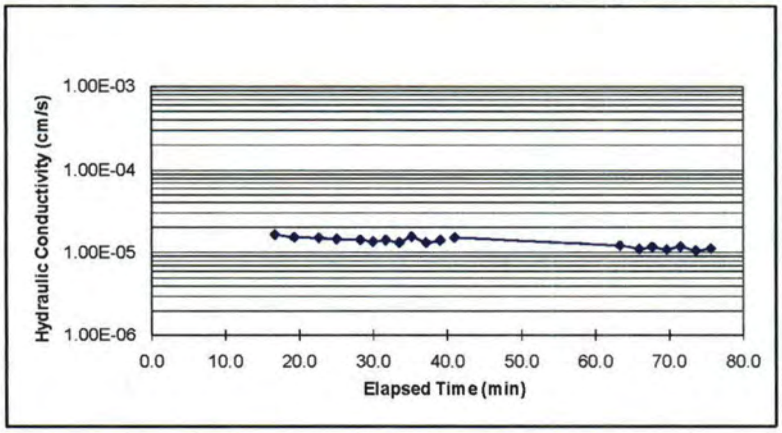
ASTM D 5084 - 00

Sample I.D.	75-mm Caisson North 30-60 cm		Test Date :		
Cell Pressure =	44.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	4.4	cm
Outflow Pressre =	39.9	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	170.3	cm^3
Effective Stress =	3.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.5		a_{out} =	1	cm^2
Weight of wet sample =	333.8	g	Sample Water Content =	23.89%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	1.96	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)	(%)
	31.28	148.12	125.59	23.89%

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				
0:16:40	8.0	15.9	1000.0	7.9	16.7	1.62E-05	1.0	8	8.1
0:19:17	9.0	14.9	157.0	5.9	19.3	1.51E-05	1.0	1	1
0:22:38	10.2	13.7	201.0	3.5	22.6	1.48E-05	1.0	1.2	1.2
0:25:02	11.0	12.9	144.0	1.9	25.0	1.44E-05	1.0	0.8	0.8
0:28:13	12.0	11.9	191.0	-0.1	28.2	1.41E-05	1.0	1	1
0:29:57	12.5	11.4	104.0	-1.1	30.0	1.34E-05	1.0	0.5	0.5
0:31:39	13.0	10.9	102.0	-2.1	31.7	1.40E-05	1.0	0.5	0.5
0:33:31	13.5	10.4	112.0	-3.1	33.5	1.31E-05	1.0	0.5	0.5
0:35:09	14.0	9.9	98.0	-4.1	35.2	1.53E-05	1.0	0.5	0.5
0:37:07	14.5	9.4	118.0	-5.1	37.1	1.31E-05	1.0	0.5	0.5
0:39:01	15.0	8.9	114.0	-6.1	39.0	1.39E-05	1.0	0.5	0.5
0:00:00	0.0	24.0		24.0	39.0				
0:01:59	1.0	23.0	119.0	22.0	41.0	1.50E-05	1.0	1	1
0:24:20	8.8	15.2	1341.0	6.4	63.3	1.20E-05	1.0	7.8	7.8
0:26:55	9.5	14.5	155.0	5.0	65.9	1.09E-05	1.0	0.7	0.7
0:28:42	10.0	14.0	107.0	4.0	67.7	1.16E-05	1.0	0.5	0.5
0:30:39	10.5	13.5	117.0	3.0	69.7	1.08E-05	1.0	0.5	0.5
0:32:30	11.0	13.0	111.0	2.0	71.5	1.17E-05	1.0	0.5	0.5
0:34:36	11.5	12.5	126.0	1.0	73.6	1.05E-05	1.0	0.5	0.5
0:36:38	12.0	12.0	122.0	0.0	75.6	1.11E-05	1.0	0.5	0.5



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

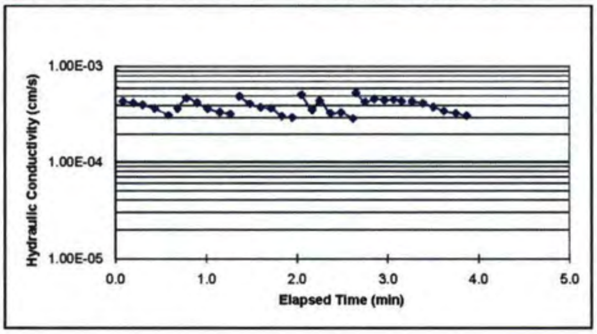
ASTM D 5084 - 00

Sample I.D.	**305-mm Caisson North Radon**			**Test Date :**	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	40.6	psi	Length of Sample, L =	17.5	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	0.6	psi	Sample Volume, V =	12741.7	cm^3
Effective Stress =	1.7	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	2.4		a_{out} =	1	cm^2
Weight of wet sample =	22997.0	g	Sample Water Content =	16.28%	(%)
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50.35	328.01	289.14	16.28%

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	23.8	0.0	23.8	0.0				
0:00:05	5.0	17.8	5.0	12.8	0.1	4.36E-04	1.2	5	6
0:00:12	11.0	11.8	7.0	0.8	0.2	4.21E-04	1.0	6	6
0:00:18	15.0	7.9	6.0	-7.1	0.3	4.05E-04	1.0	4	3.9
0:00:26	19.0	4.2	8.0	-14.8	0.4	3.70E-04	0.9	4	3.7
0:00:35	22.0	1.4	9.0	-20.6	0.6	3.16E-04	0.9	3	2.8
0:00:00	0.0	24.0	-35.0	24.0	0.6				
0:00:05	4.5	19.0	5.0	14.5	0.7	3.71E-04	1.1	4.5	5
0:00:11	10.5	13.0	6.0	2.5	0.8	4.74E-04	1.0	6	6
0:00:18	15.5	8.2	7.0	-7.3	0.9	4.23E-04	1.0	5	4.8
0:00:25	19.0	4.9	7.0	-14.1	1.0	3.70E-04	0.9	3.5	3.3
0:00:33	22.0	2.2	8.0	-19.8	1.2	3.39E-04	0.9	3	2.7
0:00:40	24.0	0.3	7.0	-23.7	1.3	3.27E-04	1.0	2	1.9
0:00:00	0.0	24.1	-40.0	24.1	1.3				
0:00:04	4.5	18.5	4.0	14.0	1.4	4.94E-04	1.2	4.5	5.6
0:00:11	10.5	12.4	7.0	1.9	1.5	4.14E-04	1.0	6	6.1
0:00:18	15.0	8.1	7.0	-6.9	1.6	3.81E-04	1.0	4.5	4.3
0:00:25	18.5	4.7	7.0	-13.8	1.7	3.72E-04	1.0	3.5	3.4
0:00:32	21.0	2.5	7.0	-18.5	1.8	3.09E-04	0.9	2.5	2.2
0:00:39	23.0	0.7	7.0	-22.3	2.0	2.99E-04	0.9	2	1.8
0:00:00	0.0	24.0	-39.0	24.0	2.0				
0:00:03	3.5	19.5	3.0	16.0	2.1	5.14E-04	1.3	3.5	4.5
0:00:10	9.0	14.0	7.0	5.0	2.2	3.58E-04	1.0	5.5	5.5
0:00:15	13.0	10.0	5.0	-3.0	2.3	4.44E-04	1.0	4	4
0:00:22	16.5	6.6	7.0	-9.9	2.4	3.31E-04	1.0	3.5	3.4
0:00:29	19.5	3.8	7.0	-15.7	2.5	3.38E-04	0.9	3	2.8
0:00:37	22.0	1.6	8.0	-20.4	2.6	2.92E-04	0.9	2.5	2.2
0:00:00	0.0	24.1	-37.0	24.1	2.6				
0:00:03	4.0	19.8	3.0	15.8	2.7	5.33E-04	1.1	4	4.3
0:00:09	9.5	14.0	6.0	4.5	2.8	4.32E-04	1.1	5.5	5.8
0:00:15	14.5	9.3	6.0	-5.2	2.9	4.64E-04	0.9	5	4.7
0:00:22	19.0	5.2	7.0	-13.8	3.0	4.52E-04	0.9	4.5	4.1
0:00:28	22.0	2.4	6.0	-19.6	3.1	4.56E-04	0.9	3	2.8
0:00:33	24.0	0.6	5.0	-23.4	3.2	4.41E-04	0.9	2	1.8
0:00:00	0.0	24.0	-33.0	24.0	3.2				
0:00:04	4.0	19.0	4.0	15.0	3.3	4.37E-04	1.3	4	5
0:00:11	10.0	12.6	7.0	2.6	3.4	4.18E-04	1.1	6	6.4
0:00:18	14.5	8.1	7.0	-6.4	3.5	3.83E-04	1.0	4.5	4.5
0:00:25	18.0	5.0	7.0	-13.0	3.6	3.48E-04	0.9	3.5	3.1
0:00:33	21.0	2.2	8.0	-18.8	3.8	3.31E-04	0.9	3	2.8
0:00:40	23.0	0.3	7.0	-22.7	3.9	3.12E-04	1.0	2	1.9



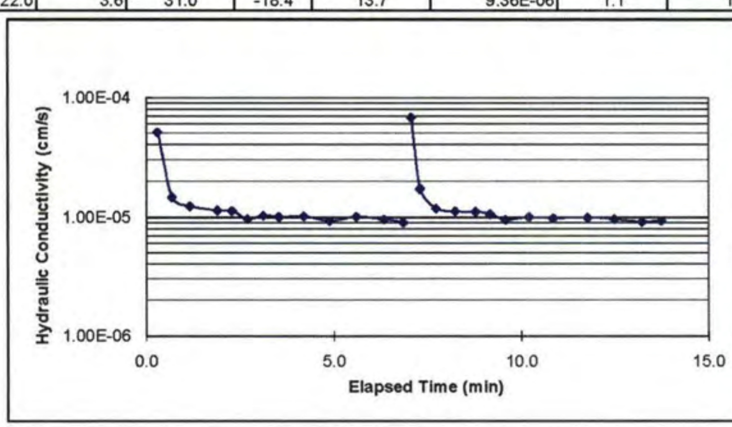
Hydraulic Conductivity Test - Monticello - Store-and-Release Cover

Sample I.D.	305-mm Caisson North Radon		Test Date :		
Cell Pressure =	42.5	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.5	psi	Length of Sample, L =	17.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.5	psi	Sample Volume, V =	12973.3	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.9		a_{out} =	1	cm^2
Weight of wet sample =	26126.8	lb	Sample Water Content =	15.75%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.01	g/cm^3

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

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
	50.37	360.26	318.09	15.75%

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				
0:00:18	6.0	20.7	18.0	14.7	0.3	5.04E-05	0.6	6	3.3
0:00:41	7.5	18.9	23.0	11.4	0.7	1.47E-05	1.2	1.5	1.8
0:01:10	9.0	17.0	29.0	8.0	1.2	1.24E-05	1.3	1.5	1.9
0:01:54	11.0	14.4	44.0	3.4	1.9	1.15E-05	1.3	2	2.6
0:02:17	12.0	13.1	23.0	1.1	2.3	1.13E-05	1.3	1	1.3
0:02:42	13.0	12.0	25.0	-1.0	2.7	9.70E-06	1.1	1	1.1
0:03:07	14.0	10.8	25.0	-3.2	3.1	1.04E-05	1.2	1	1.2
0:03:32	15.0	9.7	25.0	-5.3	3.5	1.01E-05	1.1	1	1.1
0:04:12	16.5	7.9	40.0	-8.6	4.2	1.02E-05	1.2	1.5	1.8
0:04:53	18.0	6.4	41.0	-11.6	4.9	9.35E-06	1.0	1.5	1.5
0:05:36	19.5	4.6	43.0	-14.9	5.6	1.01E-05	1.2	1.5	1.8
0:06:20	21.0	3.0	44.0	-18.0	6.3	9.64E-06	1.1	1.5	1.6
0:06:51	22.0	2.0	31.0	-20.0	6.9	9.09E-06	1.0	1	1
0:00:00	0.0	24.0	-411.0	24.0	6.9				
0:00:10	5.0	22.0	10.0	17.0	7.1	6.77E-05	0.4	5	2
0:00:24	6.5	21.1	14.0	14.6	7.3	1.72E-05	0.6	1.5	0.9
0:00:50	8.0	19.6	26.0	11.6	7.7	1.19E-05	1.0	1.5	1.5
0:01:20	9.5	17.9	30.0	8.4	8.2	1.13E-05	1.1	1.5	1.7
0:01:53	11.0	16.0	33.0	5.0	8.8	1.12E-05	1.3	1.5	1.9
0:02:16	12.0	14.8	23.0	2.8	9.2	1.07E-05	1.2	1	1.2
0:02:41	13.0	13.7	25.0	0.7	9.6	9.54E-06	1.1	1	1.1
0:03:18	14.5	12.0	37.0	-2.5	10.2	1.01E-05	1.1	1.5	1.7
0:03:57	16.0	10.3	39.0	-5.7	10.9	9.86E-06	1.1	1.5	1.7
0:04:52	18.0	7.9	55.0	-10.1	11.8	9.99E-06	1.2	2	2.4
0:05:35	19.5	6.2	43.0	-13.3	12.5	9.67E-06	1.1	1.5	1.7
0:06:19	21.0	4.7	44.0	-16.3	13.2	9.16E-06	1.0	1.5	1.5
0:06:50	22.0	3.6	31.0	-18.4	13.7	9.36E-06	1.1	1	1.1



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

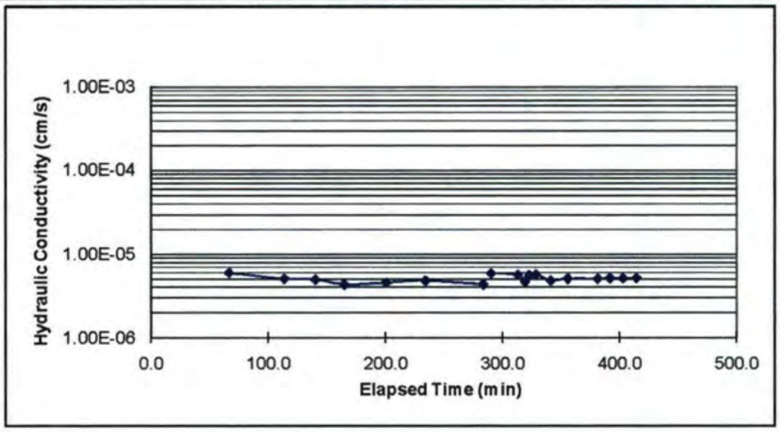
ASTM D 5084 - 00

Sample I.D.	75-mm Caisson North Radon		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.3	psi	Length of Sample, L =	4.4	cm
Outflow Pressre =	40.1	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.2	psi	Sample Volume, V =	170.3	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	3.2		a_{out} =	1	cm^2
Weight of wet sample =	340.8	g	Sample Water Content =	21.94%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.00	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)	(%)
	30.76	128.57	110.97	21.94%

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				
1:06:39	6.4	17.7	3999.0	11.3	66.7	5.89E-06	1.0	6.4	6.3
1:53:47	9.1	14.9	2828.0	5.8	113.8	5.01E-06	1.0	2.7	2.8
2:20:21	10.4	13.7	1594.0	3.3	140.4	4.89E-06	0.9	1.3	1.2
2:44:56	11.3	12.8	1475.0	1.5	164.9	4.30E-06	1.0	0.9	0.9
3:20:49	12.5	11.6	2153.0	-0.9	200.8	4.51E-06	1.0	1.2	1.2
3:54:21	13.5	10.6	2012.0	-2.9	234.4	4.75E-06	1.0	1	1
4:43:38	14.6	9.5	2957.0	-5.1	283.6	4.30E-06	1.0	1.1	1.1
0:00:00	0.0	24.0	-17018.0	24.0	283.6				
0:06:41	0.8	23.3	401.0	22.5	290.3	5.81E-06	0.9	0.8	0.7
0:29:48	3.1	21.0	1387.0	17.9	313.4	5.62E-06	1.0	2.3	2.3
0:35:48	3.6	20.6	360.0	17.0	319.4	4.60E-06	0.8	0.5	0.4
0:39:13	3.9	20.3	205.0	16.4	322.8	5.52E-06	1.0	0.3	0.3
0:44:58	4.4	19.8	345.0	15.4	328.6	5.61E-06	1.0	0.5	0.5
0:57:45	5.3	18.9	767.0	13.6	341.4	4.77E-06	1.0	0.9	0.9
1:12:09	6.3	17.9	864.0	11.6	355.8	5.04E-06	1.0	1	1
1:37:57	7.9	16.3	1548.0	8.4	381.6	4.99E-06	1.0	1.6	1.6
1:48:22	8.5	15.7	625.0	7.2	392.0	5.09E-06	1.0	0.6	0.6
1:59:26	9.1	15.1	664.0	6.0	403.0	5.07E-06	1.0	0.6	0.6
2:11:09	9.7	14.5	703.0	4.8	414.8	5.09E-06	1.0	0.6	0.6



Hydraulic Conductivity Test - Omaha - Composite Cover

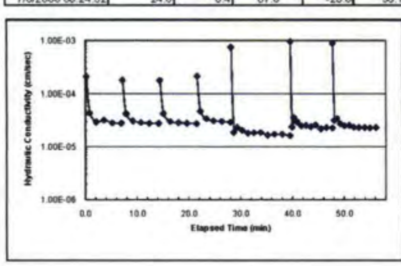
ASTM D 5084 - 00

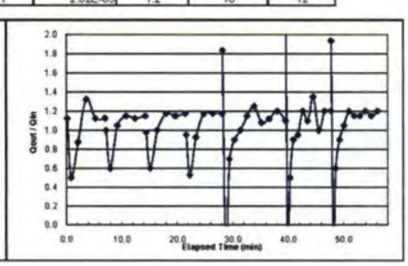
Sample I.D.	305-mm DCRDF C1 Below Membrane		Test Date :	7/3/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	22150.0	g	Sample Water Content =	24.3%	(%)
Wet Density =	2.0	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)	(%)
GC-2	30.79	119.7	102.32	24.30%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/3/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
7/3/2008 00:11.00	4.0	20.3	11.0	16.3	0.2	2.13E-04	1.1	20	22.5
7/3/2008 00:50.00	8.0	18.3	39.0	10.3	0.8	4.40E-05	0.5	20	10
7/3/2008 02:05.00	12.0	14.8	75.0	2.8	2.1	2.97E-05	0.9	20	17.5
7/3/2008 03:35.00	16.0	9.5	90.0	-6.5	3.6	3.23E-05	1.3	20	26.5
7/3/2008 05:13.00	20.0	5.0	98.0	-15.0	5.2	2.86E-05	1.1	20	22.5
7/3/2008 06:58.00	24.0	0.5	105.0	-23.5	7.0	2.82E-05	1.1	20	22.5
7/3/2008 00:00.00	0.0	24.8	0.0	24.8	7.0				
7/3/2008 00:12.00	4.0	20.8	12.0	16.8	7.2	1.83E-04	1.0	20	20
7/3/2008 00:55.00	8.0	18.4	43.0	10.4	7.9	4.25E-05	0.6	20	12
7/3/2008 02:14.00	12.0	14.2	79.0	2.2	9.2	3.09E-05	1.1	20	21
7/3/2008 03:46.00	16.0	9.6	92.0	-6.4	10.7	2.92E-05	1.2	20	23
7/3/2008 05:26.00	20.0	5.1	100.0	-14.9	12.4	2.80E-05	1.1	20	22.5
7/3/2008 07:13.00	24.0	0.5	107.0	-23.5	14.2	2.80E-05	1.2	20	23
7/3/2008 00:00.00	0.0	24.8	0.0	24.8	14.2				
7/3/2008 00:12.00	4.0	20.9	12.0	16.9	14.4	1.81E-04	1.0	20	19.5
7/3/2008 00:55.00	8.0	18.5	43.0	10.5	15.1	4.25E-05	0.6	20	12
7/3/2008 02:13.00	12.0	14.5	78.0	2.5	16.4	3.05E-05	1.0	20	20
7/3/2008 03:47.00	16.0	9.8	94.0	-6.2	18.0	2.89E-05	1.2	20	23.5
7/3/2008 05:27.00	20.0	5.2	100.0	-14.8	19.6	2.83E-05	1.2	20	23
7/3/2008 07:16.00	24.0	0.5	109.0	-23.5	21.5	2.78E-05	1.2	20	23.5
7/3/2008 00:00.00	0.0	24.8	0.0	24.8	21.5				
7/3/2008 00:10.00	4.0	21.0	10.0	17.0	21.6	2.14E-04	1.0	20	19
7/3/2008 00:47.00	8.0	18.9	37.0	10.9	22.2	4.70E-05	0.5	20	10.5
7/3/2008 01:54.00	12.0	15.2	67.0	3.2	23.4	3.41E-05	0.9	20	18.5
7/3/2008 03:21.00	16.0	10.5	87.0	-5.5	24.8	3.11E-05	1.2	20	23.5
7/3/2008 04:55.00	20.0	5.8	94.0	-14.2	26.4	3.03E-05	1.2	20	23.5
7/3/2008 06:38.00	24.0	1.1	103.0	-22.9	28.1	2.93E-05	1.2	20	23.5
7/6/2008 00:00.00	0.0	24.4	0.0	24.4	28.1				
7/6/2008 00:03.14	3.0	18.9	3.1	15.9	28.1	7.47E-04	1.8	15	27.5
7/6/2008 00:36.55	6.0	19.7	33.4	13.7	28.7	1.87E-05	-0.3	15	-4
7/6/2008 01:18.68	8.0	18.3	42.1	10.3	29.4	2.33E-05	0.7	10	7
7/6/2008 02:12.78	10.0	16.5	54.1	6.5	30.3	2.07E-05	0.9	10	9
7/6/2008 03:18.56	12.0	14.5	65.8	2.5	31.4	1.83E-05	1.0	10	10
7/6/2008 04:30.23	14.0	12.2	71.7	-1.8	32.6	1.85E-05	1.2	10	11.5
7/6/2008 05:46.25	16.0	9.7	76.0	-6.3	33.9	1.87E-05	1.3	10	12.5
7/6/2008 07:07.06	18.0	7.5	80.8	-10.5	35.2	1.67E-05	1.1	10	10.8
7/6/2008 08:28.33	20.0	5.3	81.3	-14.7	36.6	1.74E-05	1.1	10	11.2
7/6/2008 09:56.02	22.0	2.9	87.7	-19.1	38.0	1.72E-05	1.2	10	12
7/6/2008 11:26.06	24.0	0.7	90.0	-23.3	39.5	1.65E-05	1.1	10	11
7/8/2008 00:00.00	0.0	24.9	0.0	24.9	39.5				
7/8/2008 00:02.78	3.0	18.3	2.8	15.3	39.6	9.53E-04	2.2	15	33
7/8/2008 00:23.05	6.0	19.6	20.3	13.6	39.9	2.39E-05	-0.4	15	-6.5
7/8/2008 00:47.14	8.0	18.6	24.1	10.6	40.3	3.59E-05	0.5	10	5
7/8/2008 01:24.95	10.0	16.8	37.8	6.8	40.9	2.95E-05	0.9	10	9
7/8/2008 02:11.92	12.0	14.9	47.0	2.9	41.7	2.49E-05	1.0	10	9.5
7/8/2008 03:04.61	14.0	12.5	52.7	-1.5	42.6	2.57E-05	1.2	10	12
7/8/2008 03:59.87	16.0	10.3	55.3	-5.7	43.5	2.40E-05	1.1	10	11
7/8/2008 04:58.56	18.0	7.6	58.7	-10.4	44.5	2.60E-05	1.4	10	13.5
7/8/2008 05:59.11	20.0	5.6	60.6	-14.4	45.5	2.20E-05	1.0	10	10
7/8/2008 07:03.65	22.0	3.2	64.5	-18.8	46.6	2.33E-05	1.2	10	12
7/8/2008 08:11.25	24.0	0.8	67.6	-23.2	47.7	2.29E-05	1.2	10	12
7/8/2008 00:00.00	0.0	24.8	0.0	24.8	47.7				
7/8/2008 00:02.73	3.0	19	2.7	16	47.8	8.88E-04	1.9	15	29
7/8/2008 00:24.21	6.0	19.6	21.5	13.6	48.1	3.17E-05	-0.2	15	-3
7/8/2008 00:50.95	8.0	18.4	26.7	10.4	48.6	3.45E-05	0.6	10	6
7/8/2008 01:31.75	10.0	16.6	40.8	6.6	49.2	2.74E-05	0.9	10	9
7/8/2008 02:20.25	12.0	14.5	48.5	2.5	50.0	2.54E-05	1.1	10	10.5
7/8/2008 03:13.33	14.0	12.1	53.1	-1.9	50.9	2.55E-05	1.2	10	12
7/8/2008 04:11.02	16.0	9.8	57.7	-6.2	51.9	2.36E-05	1.2	10	11.5
7/8/2008 05:10.87	18.0	7.5	59.9	-10.5	52.9	2.33E-05	1.2	10	11.5
7/8/2008 06:13.61	20.0	5.1	62.7	-14.9	53.9	2.34E-05	1.2	10	12
7/8/2008 07:17.56	22.0	2.8	64.0	-19.2	55.0	2.31E-05	1.2	10	11.5
7/8/2008 08:24.52	24.0	0.4	67.0	-23.6	56.1	2.32E-05	1.2	10	12





Hydraulic Conductivity Test - Omaha - Thin Store-and-Release Cover

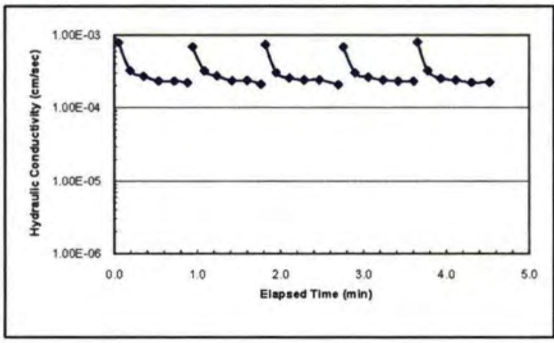
ASTM D 5084 - 00

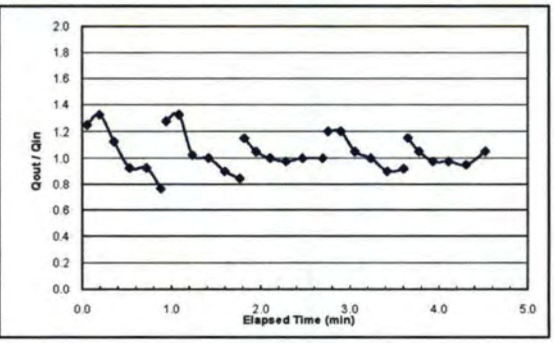
Sample I.D.	305-mm DCRDF A-1 Shallow		Test Date :	7/9/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	21150.0	g	Sample Water Content =	24.7%	(%)
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)	(%)
k7	30.8	141.98	119.95	24.71%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/9/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
7/9/2008 00:03.15	4.0	19.8	3.1	15.8	0.1	7.88E-04	1.3	20	25
7/9/2008 00:11.56	8.0	14.5	8.4	6.5	0.2	3.20E-04	1.3	20	26.5
7/9/2008 00:21.25	12.0	10.0	9.7	-2.0	0.4	2.67E-04	1.1	20	22.5
7/9/2008 00:31.92	16.0	6.3	10.7	-9.7	0.5	2.31E-04	0.9	20	18.5
7/9/2008 00:43.15	20.0	2.6	11.2	-17.4	0.7	2.30E-04	0.9	20	18.5
7/9/2008 00:52.75	23.4	0.0	9.6	-23.4	0.9	2.19E-04	0.8	17	13
7/9/2008 00:00.00	0.0	24.8	0.0	24.8	0.9				
7/9/2008 00:03.65	4.0	19.7	3.6	15.7	0.9	6.87E-04	1.3	20	25.5
7/9/2008 00:12.14	8.0	14.4	8.5	6.4	1.1	3.17E-04	1.3	20	26.5
7/9/2008 00:21.25	12.0	10.3	9.1	-1.7	1.2	2.71E-04	1.0	20	20.5
7/9/2008 00:32.28	16.0	6.3	11.0	-9.7	1.4	2.32E-04	1.0	20	20
7/9/2008 00:43.15	20.0	2.7	10.9	-17.3	1.6	2.35E-04	0.9	20	18
7/9/2008 00:53.06	23.2	0.0	9.9	-23.2	1.8	2.09E-04	0.8	16	13.5
7/9/2008 00:00.00	0.0	24.8	0.0	24.8	1.8				
7/9/2008 00:03.21	4.0	20.2	3.2	16.2	1.8	7.38E-04	1.2	20	23
7/9/2008 00:11.05	8.0	16.0	7.8	8.0	1.9	3.01E-04	1.1	20	21
7/9/2008 00:20.55	12.0	12.0	9.5	0.0	2.1	2.54E-04	1.0	20	20
7/9/2008 00:31.09	16.0	8.1	10.5	-7.9	2.3	2.37E-04	1.0	20	19.5
7/9/2008 00:42.18	20.0	4.1	11.1	-15.9	2.5	2.40E-04	1.0	20	20
7/9/2008 00:55.90	24.0	0.1	13.7	-23.9	2.7	2.04E-04	1.0	20	20
7/9/2008 00:00.00	0.0	24.8	0.0	24.8	2.7				
7/9/2008 00:03.56	4.0	20.0	3.6	16.0	2.8	6.81E-04	1.2	20	24
7/9/2008 00:12.05	8.0	15.2	8.5	7.2	2.9	2.99E-04	1.2	20	24
7/9/2008 00:21.64	12.0	11.0	9.6	-1.0	3.1	2.59E-04	1.1	20	21
7/9/2008 00:32.33	16.0	7.0	10.7	-9.0	3.2	2.38E-04	1.0	20	20
7/9/2008 00:43.46	20.0	3.4	11.1	-16.6	3.4	2.28E-04	0.9	20	18
7/9/2008 00:54.37	23.7	0.0	10.9	-23.7	3.6	2.28E-04	0.9	18.5	17
7/9/2008 00:00.00	0.0	24.8	0.0	24.8	3.6				
7/9/2008 00:02.96	4.0	20.2	3.0	16.2	3.7	8.00E-04	1.2	20	23
7/9/2008 00:10.36	8.0	16.0	7.4	8.0	3.8	3.19E-04	1.1	20	21
7/9/2008 00:19.87	12.0	12.1	9.5	0.1	3.9	2.50E-04	1.0	20	19.5
7/9/2008 00:30.42	16.0	8.2	10.5	-7.8	4.1	2.37E-04	1.0	20	19.5
7/9/2008 00:42.15	20.0	4.4	11.7	-15.6	4.3	2.21E-04	1.0	20	19
7/9/2008 00:55.06	24.0	0.2	12.9	-23.8	4.5	2.22E-04	1.1	20	21





Hydraulic Conductivity Test - Omaha - Thin Store-and-Release Cover

ASTM D 5084 - 00

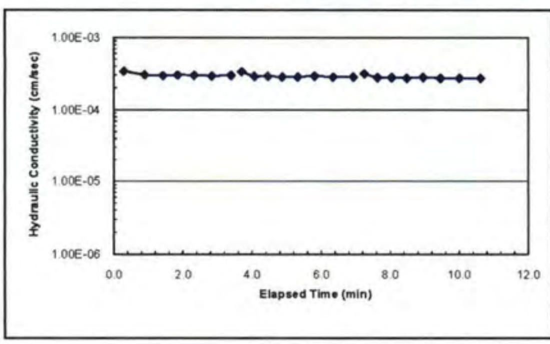
Sample I.D.	150-mm Omaha DCRDF A1 Shallow 1	Test Date :	7/14/08

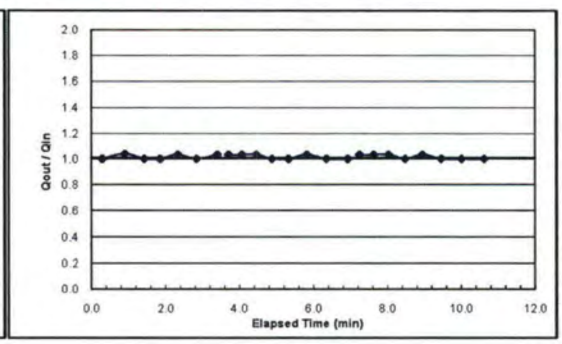
Cell Pressure =	42.7	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	41.8	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.6	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.2	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.50	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	2366.8	(g)	Sample Water Content =	28.3%	(%)
Wet Density =	1.7	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
B3	30.94	124.91	104.18	28.30%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/14/08 00:00.00	0.0	24.8	0.0	24.8	0.0				
7/14/08 00:17.42	3.0	21.8	17.4	18.8	0.3	3.39E-04	1.0	15	15
7/14/08 00:53.57	8.0	16.6	36.2	8.6	0.9	3.01E-04	1.0	25	26
7/14/08 01:25.55	12.0	12.6	32.0	0.6	1.4	2.94E-04	1.0	20	20
7/14/08 01:51.17	15.0	9.6	25.6	-5.4	1.9	2.98E-04	1.0	15	15
7/14/08 02:19.44	18.0	6.5	28.3	-11.5	2.3	2.97E-04	1.0	15	15.5
7/14/08 02:50.30	21.0	3.5	30.9	-17.5	2.8	2.91E-04	1.0	15	15
7/14/08 03:23.83	24.0	0.4	33.5	-23.6	3.4	2.98E-04	1.0	15	15.5
7/14/08 00:00.00	0.0	24.8	0.0	24.8	3.4				
7/14/08 00:17.99	3.0	21.7	18.0	18.7	3.7	3.34E-04	1.0	15	15.5
7/14/08 00:40.06	6.0	18.6	22.1	12.6	4.1	2.89E-04	1.0	15	15.5
7/14/08 01:03.54	9.0	15.5	23.5	6.5	4.5	2.89E-04	1.0	15	15.5
7/14/08 01:28.84	12.0	12.5	25.3	0.5	4.9	2.82E-04	1.0	15	15
7/14/08 01:55.94	15.0	9.5	27.1	-5.5	5.3	2.82E-04	1.0	15	15
7/14/08 02:25.08	18.0	6.4	29.1	-11.6	5.8	2.88E-04	1.0	15	15.5
7/14/08 02:57.10	21.0	3.4	32.0	-17.6	6.3	2.81E-04	1.0	15	15
7/14/08 03:31.99	24.0	0.4	34.9	-23.6	6.9	2.82E-04	1.0	15	15
7/14/08 00:00.00	0.0	24.8	0.0	24.8	6.9				
7/14/08 00:19.24	3.0	21.7	19.2	18.7	7.3	3.12E-04	1.0	15	15.5
7/14/08 00:42.34	6.0	18.6	23.1	12.6	7.6	2.76E-04	1.0	15	15.5
7/14/08 01:06.82	9.0	15.5	24.5	6.5	8.0	2.77E-04	1.0	15	15.5
7/14/08 01:33.00	12.0	12.5	26.2	0.5	8.5	2.72E-04	1.0	15	15
7/14/08 02:01.10	15.0	9.4	28.1	-5.6	8.9	2.77E-04	1.0	15	15.5
7/14/08 02:31.64	18.0	6.4	30.5	-11.6	9.5	2.71E-04	1.0	15	15
7/14/08 03:04.69	21.0	3.4	33.0	-17.6	10.0	2.72E-04	1.0	15	15
7/14/08 03:41.27	24.0	0.4	36.6	-23.6	10.6	2.69E-04	1.0	15	15





Hydraulic Conductivity Test - Omaha - Thin Store-and-Release Cover

ASTM D 5084 - 00

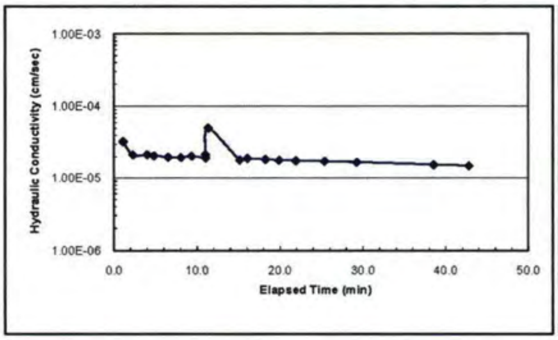
Sample I.D. **75-mm Omaha DCRDF A1-Shallow 1** **Test Date :** **7/31/08**

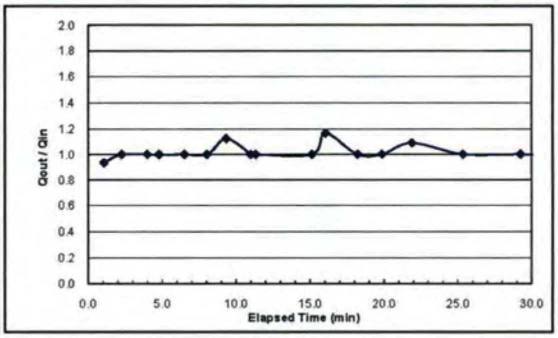
Cell Pressure =	38.1	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	37.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	37.0	psi	Area of Sample, A =	45.6	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	173.7	cm^3
Effective Stress =	0.85	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	279.9	(g)	Sample Water Content =	-405.5%	(%)
Wet Density =	1.6	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)	(%)
k7	30.78	124.8		-405.46%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/31/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
7/31/08 01:04.56	1.5	22.6	64.6	21.1	1.1	3.25E-05	0.9	1.5	1.4
7/31/08 02:15.84	2.5	21.6	71.3	19.1	2.3	2.12E-05	1.0	1	1
7/31/08 03:59.87	3.9	20.2	104.0	16.3	4.0	2.13E-05	1.0	1.4	1.4
7/31/08 04:47.68	4.5	19.6	47.8	15.1	4.8	2.06E-05	1.0	0.6	0.6
7/31/08 06:31.33	5.7	18.4	103.6	12.7	6.5	1.97E-05	1.0	1.2	1.2
7/31/08 08:02.78	6.7	17.4	91.4	10.7	8.0	1.95E-05	1.0	1	1
7/31/08 09:20.50	7.5	16.5	77.7	9.0	9.3	2.03E-05	1.1	0.8	0.9
7/31/08 11:00.96	8.5	15.5	100.5	7.0	11.0	1.93E-05	1.0	1	1
7/31/08 00:00.00	0.0	24.0	-661.0	24.0	11.0	2.14E-05	1.0	-8.5	-8.5
7/31/08 00:19.95	0.7	23.3	19.9	22.6	11.3	5.01E-05	1.0	0.7	0.7
7/31/08 04:08.15	3.4	20.6	228.2	17.2	15.1	1.80E-05	1.0	2.7	2.7
7/31/08 05:03.65	4.0	19.9	55.5	15.9	16.1	1.89E-05	1.2	0.6	0.7
7/31/08 07:13.46	5.4	18.5	129.8	13.1	18.2	1.81E-05	1.0	1.4	1.4
7/31/08 08:52.55	6.4	17.5	99.1	11.1	19.9	1.78E-05	1.0	1	1
7/31/08 10:53.75	7.5	16.3	121.2	8.8	21.9	1.76E-05	1.1	1.1	1.2
7/31/08 14:21.73	9.3	14.5	208.0	5.2	25.4	1.72E-05	1.0	1.8	1.8
7/31/08 18:15.84	11.1	12.7	234.1	1.6	29.3	1.67E-05	1.0	1.8	1.8
7/31/08 27:31.15	14.5	9.3	555.3	-5.2	38.5	1.54E-05	1.0	3.4	3.4
7/31/08 31:47.83	15.8	8.0	256.7	-7.8	42.8	1.48E-05	1.0	1.3	1.3





Hydraulic Conductivity Test - Omaha - Thin Store-and-Release Cover

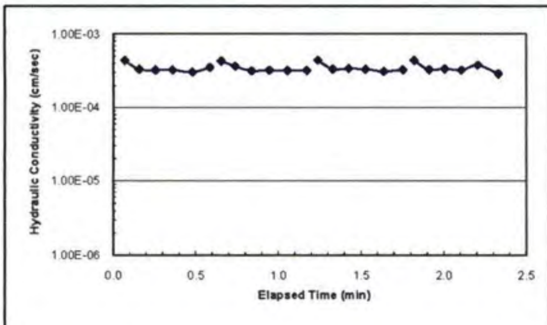
ASTM D 5084 - 00

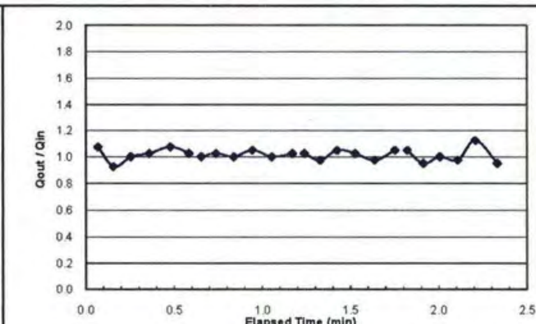
Sample I.D.	305-mm DCRDF A01-BT2 (Top)		Test Date :	7/9/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	4	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	4	cm^2
Weight of wet sample =	20900.0	g	Sample Water Content =	24.8%	(%)
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
B-3	30.87	165.59	138.85	24.76%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/14/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
7/14/2008 00:04.14	4.0	20.5	4.1	16.5	0.1	4.41E-04	1.1	16	17.2
7/14/2008 00:09.44	8.0	16.8	5.3	8.8	0.2	3.34E-04	0.9	16	14.8
7/14/2008 00:15.33	12.0	12.8	5.9	0.8	0.3	3.26E-04	1.0	16	16
7/14/2008 00:21.58	16.0	8.7	6.3	-7.3	0.4	3.26E-04	1.0	16	16.4
7/14/2008 00:28.76	20.0	4.4	7.2	-15.6	0.5	3.06E-04	1.1	16	17.2
7/14/2008 00:35.14	24.0	0.3	6.4	-23.7	0.6	3.55E-04	1.0	16	16.4
7/14/2008 00:00.00	0.0	24.8	0.0	24.8	0.6				
7/14/2008 00:04.08	4.0	20.8	4.1	16.8	0.7	4.31E-04	1.0	16	16
7/14/2008 00:09.14	8.0	16.7	5.1	8.7	0.7	3.68E-04	1.0	16	16.4
7/14/2008 00:15.19	12.0	12.7	6.0	0.7	0.8	3.18E-04	1.0	16	16
7/14/2008 00:21.53	16.0	8.5	6.3	-7.5	0.9	3.26E-04	1.1	16	16.8
7/14/2008 00:28.16	20.0	4.5	6.6	-15.5	1.1	3.20E-04	1.0	16	16
7/14/2008 00:35.15	24.0	0.4	7.0	-23.6	1.2	3.24E-04	1.0	16	16.4
7/14/2008 00:00.00	0.0	24.8	0.0	24.8	1.2				
7/14/2008 00:04.02	4.0	20.7	4.0	16.7	1.2	4.43E-04	1.0	16	16.4
7/14/2008 00:09.42	8.0	16.8	5.4	8.8	1.3	3.36E-04	1.0	16	15.6
7/14/2008 00:15.18	12.0	12.6	5.8	0.6	1.4	3.42E-04	1.1	16	16.8
7/14/2008 00:21.29	16.0	8.5	6.1	-7.5	1.5	3.34E-04	1.0	16	16.4
7/14/2008 00:27.98	20.0	4.6	6.7	-15.4	1.6	3.13E-04	1.0	16	15.6
7/14/2008 00:34.92	24.0	0.4	6.9	-23.6	1.8	3.30E-04	1.1	16	16.8
7/14/2008 00:00.00	0.0	24.8	0.0	24.8	1.8				
7/14/2008 00:04.12	4.0	20.6	4.1	16.6	1.8	4.38E-04	1.1	16	16.8
7/14/2008 00:09.54	8.0	16.8	5.4	8.8	1.9	3.31E-04	1.0	16	15.2
7/14/2008 00:15.21	12.0	12.8	5.7	0.8	2.0	3.39E-04	1.0	16	16
7/14/2008 00:21.31	16.0	8.9	6.1	-7.1	2.1	3.26E-04	1.0	16	15.6
7/14/2008 00:27.25	20.0	4.4	5.9	-15.6	2.2	3.79E-04	1.1	16	18
7/14/2008 00:34.79	24.0	0.6	7.5	-23.4	2.3	2.89E-04	1.0	16	15.2





Hydraulic Conductivity Test - Omaha - Thin Store-and-Release Cover

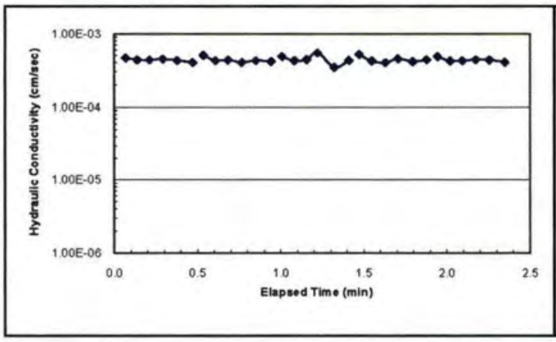
ASTM D 5084 - 00

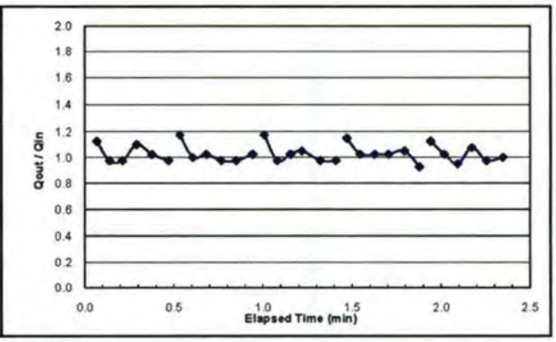
Sample I.D.	**305-mm DCRDF A01- (Top)**		**Test Date :**	**7/21/08**	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	4	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	4	cm^2
Weight of wet sample =	19900.0	g	Sample Water Content =	24.2%	(%)
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)	(%)
k7	30.85	153	129.17	24.24%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out}/Q_{in}	Q_{in}	Q_{out}
7/21/2008 00:00.00	0.0	24.7	0.0	24.7	0.0				
7/21/2008 00:04.08	4.0	20.2	4.1	16.2	0.1	4.59E-04	1.1	16	18
7/21/2008 00:08.29	8.0	16.3	4.2	8.3	0.1	4.32E-04	1.0	16	15.6
7/21/2008 00:12.70	12.0	12.4	4.4	0.4	0.2	4.31E-04	1.0	16	15.6
7/21/2008 00:17.50	16.0	8.0	4.8	-8.0	0.3	4.42E-04	1.1	16	17.6
7/21/2008 00:22.60	20.0	3.9	5.1	-16.1	0.4	4.22E-04	1.0	16	16.4
7/21/2008 00:28.18	24.0	0.0	5.6	-24.0	0.5	3.97E-04	1.0	16	15.6
7/21/2008 00:00.00	0.0	24.8	0.0	24.8	0.5				
7/21/2008 00:03.85	4.0	20.1	3.8	16.1	0.5	4.98E-04	1.2	16	18.8
7/21/2008 00:08.21	8.0	16.1	4.4	8.1	0.6	4.23E-04	1.0	16	16
7/21/2008 00:12.77	12.0	12.0	4.6	0.0	0.7	4.28E-04	1.0	16	16.4
7/21/2008 00:17.79	16.0	8.1	5.0	-7.9	0.8	3.98E-04	1.0	16	15.6
7/21/2008 00:22.76	20.0	4.2	5.0	-15.8	0.8	4.22E-04	1.0	16	15.6
7/21/2008 00:28.31	24.0	0.1	5.5	-23.9	0.9	4.08E-04	1.0	16	16.4
7/21/2008 00:00.00	0.0	24.8	0.0	24.8	0.9				
7/21/2008 00:04.01	4.0	20.1	4.0	16.1	1.0	4.78E-04	1.2	16	18.8
7/21/2008 00:08.36	8.0	16.2	4.3	8.2	1.1	4.18E-04	1.0	16	15.6
7/21/2008 00:12.84	12.0	12.1	4.5	0.1	1.2	4.36E-04	1.0	16	16.4
7/21/2008 00:16.67	16.0	7.9	3.8	-8.1	1.2	5.42E-04	1.1	16	16.8
7/21/2008 00:22.86	20.0	4.0	6.2	-16.0	1.3	3.39E-04	1.0	16	15.6
7/21/2008 00:28.08	24.0	0.1	5.2	-23.9	1.4	4.24E-04	1.0	16	15.6
7/21/2008 00:00.00	0.0	24.8	0.0	24.8	1.4				
7/21/2008 00:03.69	4.0	20.2	3.7	16.2	1.5	5.13E-04	1.2	16	18.4
7/21/2008 00:08.19	8.0	16.1	4.5	8.1	1.5	4.15E-04	1.0	16	16.4
7/21/2008 00:13.15	12.0	12.0	5.0	0.0	1.6	3.94E-04	1.0	16	16.4
7/21/2008 00:17.74	16.0	7.9	4.6	-8.1	1.7	4.47E-04	1.0	16	16.4
7/21/2008 00:23.09	20.0	3.7	5.3	-16.3	1.8	4.08E-04	1.1	16	16.8
7/21/2008 00:28.10	24.0	0.0	5.0	-24.0	1.9	4.31E-04	0.9	16	14.8
7/21/2008 00:00.00	0.0	24.8	0.0	24.8	1.9				
7/21/2008 00:03.91	4.0	20.3	3.9	16.3	1.9	4.79E-04	1.1	16	18
7/21/2008 00:08.41	8.0	16.2	4.5	8.2	2.0	4.15E-04	1.0	16	16.4
7/21/2008 00:12.88	12.0	12.4	4.5	0.4	2.1	4.20E-04	1.0	16	15.2
7/21/2008 00:17.72	16.0	8.1	4.8	-7.9	2.2	4.33E-04	1.1	16	17.2
7/21/2008 00:22.62	20.0	4.2	4.9	-15.8	2.3	4.28E-04	1.0	16	15.6
7/21/2008 00:28.19	24.0	0.2	5.6	-23.8	2.3	4.02E-04	1.0	16	16





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

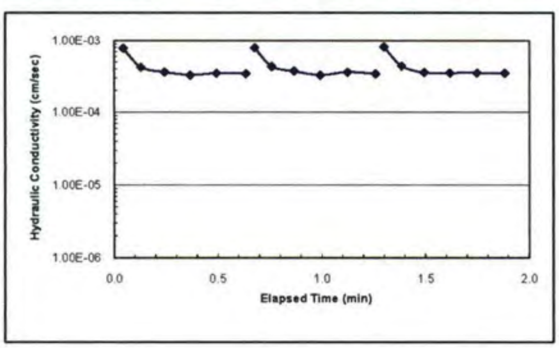
ASTM D 5084 - 00

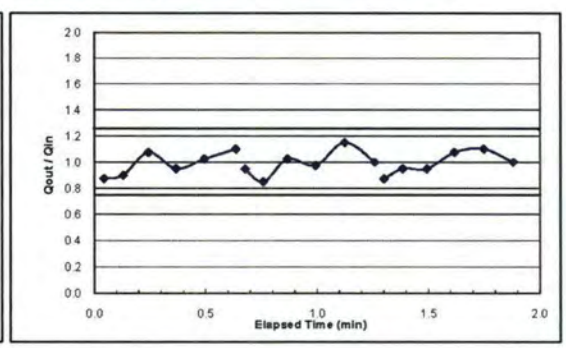
Sample I.D.	305-mm DCRDF AO2-S1 Deep			Test Date :	5/30/08
Cell Pressure =	42.7 psi		Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4 psi		Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0 psi		Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4 psi		Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5 psi		a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	19800.0 g		Sample Water Content =	24.9%	(%)
Wet Density =	1.8 g/cm^3		Dry Density =	1.78	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)	(%)
X3	30.4	107.1	91.8	24.92%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
5/30/2008 00:00.00	0.0	24.5	0.0	24.5	0.0				
5/30/2008 00:02.64	4.0	21.0	2.6	17.0	0.0	7.81E-04	0.9	20	17.5
5/30/2008 00:07.78	8.0	17.4	5.1	9.4	0.1	4.23E-04	0.9	20	18
5/30/2008 00:14.64	12.0	13.1	6.9	1.1	0.2	3.62E-04	1.1	20	21.5
5/30/2008 00:22.05	16.0	9.3	7.4	-6.7	0.4	3.30E-04	1.0	20	19
5/30/2008 00:29.68	20.0	5.2	7.6	-14.8	0.5	3.50E-04	1.0	20	20.5
5/30/2008 00:38.14	24.0	0.8	8.5	-23.2	0.6	3.45E-04	1.1	20	22
5/30/2008 00:00.00	0.2	24.6	0.0	24.4	0.6				
5/30/2008 00:02.55	4.0	21.0	2.5	17.0	0.7	7.98E-04	0.9	19	18
5/30/2008 00:07.43	8.0	17.6	4.9	9.6	0.8	4.34E-04	0.9	20	17
5/30/2008 00:13.93	12.0	13.5	6.5	1.5	0.9	3.73E-04	1.0	20	20.5
5/30/2008 00:21.45	16.0	9.6	7.5	-6.4	1.0	3.29E-04	1.0	20	19.5
5/30/2008 00:29.28	20.0	5.0	7.8	-15.0	1.1	3.62E-04	1.2	20	23
5/30/2008 00:37.43	24.0	1.0	8.2	-23.0	1.3	3.41E-04	1.0	20	20
5/30/2008 00:00.00	0.1	24.4	0.0	24.3	1.3				
5/30/2008 00:02.46	4.0	21.0	2.5	17.0	1.3	8.16E-04	0.9	19.5	17
5/30/2008 00:07.52	8.0	17.2	5.1	9.2	1.4	4.42E-04	1.0	20	19
5/30/2008 00:14.06	12.0	13.4	6.5	1.4	1.5	3.57E-04	1.0	20	19
5/30/2008 00:21.46	16.0	9.1	7.4	-6.9	1.6	3.52E-04	1.1	20	21.5
5/30/2008 00:29.33	20.0	4.7	7.9	-15.3	1.7	3.53E-04	1.1	20	22
5/30/2008 00:37.34	24.0	0.7	8.0	-23.3	1.9	3.48E-04	1.0	20	20





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

ASTM D 5084 - 00

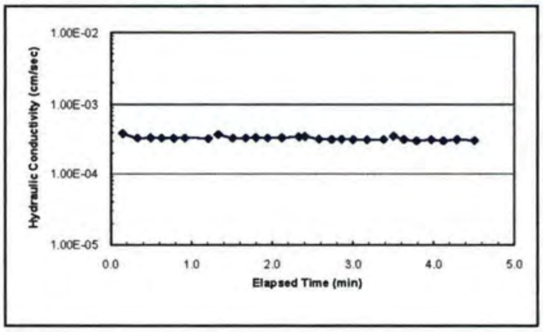
Sample I.D. 150-mm Omaha DCRDF AO2-S1-Deep **Test Date :** 7/15/08

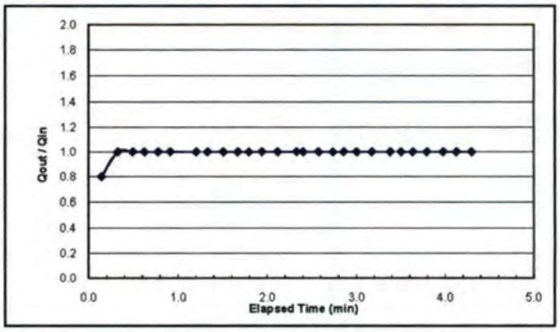
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	6.4	cm
Outflow Pressre =	40.1	psi	Area of Sample, A =	181.5	cm^2
Pressure Difference =	0.4	psi	Sample Volume, V =	1161.3	cm^3
Effective Stress =	1.70	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	4.4		a_{out} =	1	cm^2
Weight of wet sample =	2126.1	(g)	Sample Water Content =	30.0%	(%)
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)	(%)
H1	30.9	139.39	114.35	30.01%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/22/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
7/22/08 00:08.68	5.0	20.0	8.7	15.0	0.1	3.85E-04	0.8	5	4
7/22/08 00:19.65	9.0	16.0	11.0	7.0	0.3	3.30E-04	1.0	4	4
7/22/08 00:29.56	12.0	13.0	9.9	1.0	0.5	3.33E-04	1.0	3	3
7/22/08 00:37.46	14.0	11.0	7.9	-3.0	0.6	3.30E-04	1.0	2	2
7/22/08 00:46.75	16.0	9.0	9.3	-7.0	0.8	3.29E-04	1.0	2	2
7/22/08 00:54.87	17.5	7.5	8.1	-10.0	0.9	3.33E-04	1.0	1.5	1.5
7/22/08 01:12.37	20.0	5.0	17.5	-15.0	1.2	3.25E-04	1.0	2.5	2.5
7/22/08 00:00.00	0.0	24.0	0.0	24.0	1.2				
7/22/08 00:07.87	4.0	20.0	7.9	16.0	1.3	3.73E-04	1.0	4	4
7/22/08 00:18.56	8.0	16.0	10.7	8.0	1.5	3.30E-04	1.0	4	4
7/22/08 00:28.25	11.0	13.0	9.7	2.0	1.7	3.30E-04	1.0	3	3
7/22/08 00:35.73	13.0	11.0	7.5	-2.0	1.8	3.36E-04	1.0	2	2
7/22/08 00:44.56	15.0	9.0	8.8	-6.0	1.9	3.32E-04	1.0	2	2
7/22/08 00:55.06	17.0	7.0	10.5	-10.0	2.1	3.35E-04	1.0	2	2
7/22/08 01:07.83	19.0	5.0	12.8	-14.0	2.3	3.44E-04	1.0	2	2
7/22/08 00:00.00	0.0	24.0	-67.8	24.0	2.3				
7/22/08 00:06.18	3.0	21.0	6.2	18.0	2.4	3.49E-04	1.0	3	3
7/22/08 00:16.65	7.0	17.0	10.5	10.0	2.6	3.21E-04	1.0	4	4
7/22/08 00:26.21	10.0	14.0	9.6	4.0	2.7	3.16E-04	1.0	3	3
7/22/08 00:33.59	12.0	12.0	7.4	0.0	2.9	3.18E-04	1.0	2	2
7/22/08 00:42.21	14.0	10.0	8.6	-4.0	3.0	3.14E-04	1.0	2	2
7/22/08 00:52.43	16.0	8.0	10.2	-8.0	3.2	3.13E-04	1.0	2	2
7/22/08 01:04.84	18.0	6.0	12.4	-12.0	3.4	3.15E-04	1.0	2	2
7/22/08 00:00.00	0.0	24.0	-64.8	24.0	3.4				
7/22/08 00:06.15	3.0	21.0	6.1	18.0	3.5	3.51E-04	1.0	3	3
7/22/08 00:13.93	6.0	18.0	7.8	12.0	3.6	3.16E-04	1.0	3	3
00:23.4	9.0	15.0	9.5	6.0	3.8	3.02E-04	1.0	3	3
00:34.3	12.0	12.0	10.9	0.0	4.0	3.12E-04	1.0	3	3
00:43.3	14.0	10.0	9.0	-4.0	4.1	3.01E-04	1.0	2	2
00:53.5	16.0	8.0	10.2	-8.0	4.3	3.13E-04	1.0	2	2
01:06.4	18.0	6.0	12.9	-12.0	4.5	3.03E-04	1.0	2	2





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

ASTM D 5084 - 00

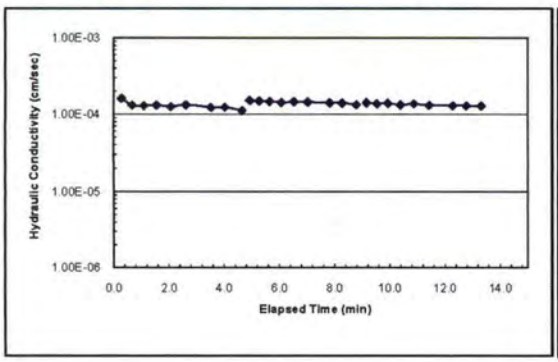
Sample I.D.	75-mm Omaha DCRDF AO2 S1 Deep	Test Date :	7/15/08

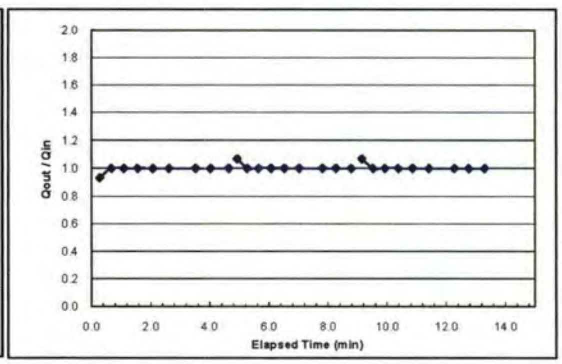
Cell Pressure =	42.1	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.3	psi	Length of Sample, L =	3.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.3	cm^2
Pressure Difference =	0.3	psi	Sample Volume, V =	121.7	cm^3
Effective Stress =	1.95	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	6.6		a_{out} =	1	cm^2
Weight of wet sample =	198.1	(g)	Sample Water Content =	-466.6%	(%)
Wet Density =	1.6	g/cm^3	Dry Density =	1.71	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	24.42	113.94		-466.58%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/1/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
8/1/08 00:17.05	1.5	22.6	17.0	21.1	0.3	1.61E-04	0.9	1.5	1.4
8/1/08 00:40.45	3.0	21.1	23.4	18.1	0.7	1.31E-04	1.0	1.5	1.5
8/1/08 01:05.95	4.5	19.6	25.5	15.1	1.1	1.29E-04	1.0	1.5	1.5
8/1/08 01:33.37	6.0	18.1	27.4	12.1	1.6	1.31E-04	1.0	1.5	1.5
8/1/08 02:04.65	7.5	16.6	31.3	9.1	2.1	1.25E-04	1.0	1.5	1.5
8/1/08 02:37.46	9.0	15.1	32.8	6.1	2.6	1.32E-04	1.0	1.5	1.5
8/1/08 03:31.15	11.0	13.1	53.7	2.1	3.5	1.23E-04	1.0	2	2
8/1/08 04:01.65	12.0	12.1	30.5	0.1	4.0	1.22E-04	1.0	1	1
8/1/08 04:38.65	13.0	11.1	37.0	-1.9	4.6	1.11E-04	1.0	1	1
8/1/08 00:00.00	0.0	24.0	-278.6	24.0	4.6				
8/1/08 00:19.46	1.5	22.4	19.5	20.9	4.9	1.52E-04	1.1	1.5	1.6
8/1/08 00:40.27	3.0	20.9	20.8	17.9	5.3	1.48E-04	1.0	1.5	1.5
8/1/08 01:02.90	4.5	19.4	22.6	14.9	5.6	1.47E-04	1.0	1.5	1.5
8/1/08 01:28.28	6.0	17.9	25.4	11.9	6.1	1.42E-04	1.0	1.5	1.5
8/1/08 01:55.46	7.5	16.4	27.2	8.9	6.5	1.45E-04	1.0	1.5	1.5
8/1/08 02:25.73	9.0	14.9	30.3	5.9	7.0	1.44E-04	1.0	1.5	1.5
8/1/08 03:12.95	11.0	12.9	47.2	1.9	7.8	1.41E-04	1.0	2	2
8/1/08 03:39.92	12.0	11.9	27.0	-0.1	8.3	1.40E-04	1.0	1	1
8/1/08 04:11.11	13.0	10.9	31.2	-2.1	8.8	1.33E-04	1.0	1	1
8/1/08 00:00.00	0.0	24.0	-251.1	24.0	8.8				
8/1/08 00:20.95	1.5	22.4	21.0	20.9	9.1	1.41E-04	1.1	1.5	1.6
8/1/08 00:43.42	3.0	20.9	22.5	17.9	9.5	1.37E-04	1.0	1.5	1.5
8/1/08 01:07.40	4.5	19.4	24.0	14.9	9.9	1.38E-04	1.0	1.5	1.5
8/1/08 01:34.65	6.0	17.9	27.2	11.9	10.4	1.32E-04	1.0	1.5	1.5
8/1/08 02:03.65	7.5	16.4	29.0	8.9	10.9	1.36E-04	1.0	1.5	1.5
8/1/08 02:37.18	9.0	14.9	33.5	5.9	11.4	1.30E-04	1.0	1.5	1.5
8/1/08 03:28.68	11.0	12.9	51.5	1.9	12.3	1.29E-04	1.0	2	2
03:57.9	12.0	11.9	29.2	-0.1	12.8	1.29E-04	1.0	1	1
04:30.4	13.0	10.9	32.5	-2.1	13.3	1.27E-04	1.0	1	1





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

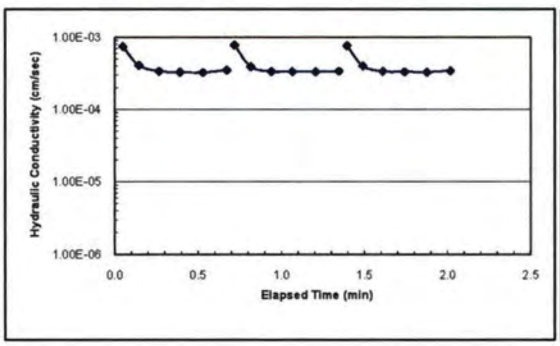
ASTM D 5084 - 00

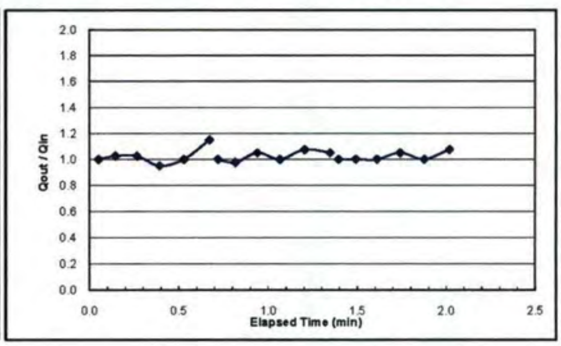
Sample I.D.	305-mm DCRDF AO2-T2		Test Date :	6/3/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	19000.0	g	Sample Water Content =	25.4%	(%)
Wet Density =	1.7	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
A3	25.14	146.93	122.29	25.36%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
6/3/2008 00:00.00	0.0	24.7	0.0	24.7	0.0				
6/3/2008 00:02.96	4.0	20.7	3.0	16.7	0.0	7.43E-04	1.0	20	20
6/3/2008 00:08.71	8.0	16.6	5.7	8.6	0.1	4.05E-04	1.0	20	20.5
6/3/2008 00:15.95	12.0	12.5	7.2	0.5	0.3	3.36E-04	1.0	20	20.5
6/3/2008 00:23.52	16.0	8.7	7.6	-7.3	0.4	3.25E-04	1.0	20	19
6/3/2008 00:31.73	20.0	4.7	8.2	-15.3	0.5	3.22E-04	1.0	20	20
6/3/2008 00:40.34	24.0	0.1	8.6	-23.9	0.7	3.49E-04	1.2	20	23
6/3/2008 00:00.00	0.0	24.6	0.0	24.6	0.7				
6/3/2008 00:02.83	4.0	20.6	2.8	16.6	0.7	7.78E-04	1.0	20	20
6/3/2008 00:08.65	8.0	16.7	5.8	8.7	0.8	3.90E-04	1.0	20	19.5
6/3/2008 00:16.05	12.0	12.5	7.4	0.5	0.9	3.33E-04	1.1	20	21
6/3/2008 00:23.64	16.0	8.5	7.6	-7.5	1.1	3.32E-04	1.0	20	20
6/3/2008 00:31.95	20.0	4.2	8.3	-15.8	1.2	3.31E-04	1.1	20	21.5
6/3/2008 00:40.45	24.0	0.0	8.5	-24.0	1.3	3.38E-04	1.1	20	21
6/3/2008 00:00.00	0.0	24.7	0.0	24.7	1.3				
6/3/2008 00:02.87	4.0	20.7	2.9	16.7	1.4	7.67E-04	1.0	20	20
6/3/2008 00:08.65	8.0	16.7	5.8	8.7	1.5	3.97E-04	1.0	20	20
6/3/2008 00:15.83	12.0	12.7	7.2	0.7	1.6	3.35E-04	1.0	20	20
6/3/2008 00:23.65	16.0	8.5	7.8	-7.5	1.7	3.30E-04	1.1	20	21
6/3/2008 00:31.75	20.0	4.5	8.1	-15.5	1.9	3.27E-04	1.0	20	20
6/3/2008 00:40.27	24.0	0.2	8.5	-23.8	2.0	3.40E-04	1.1	20	21.5





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

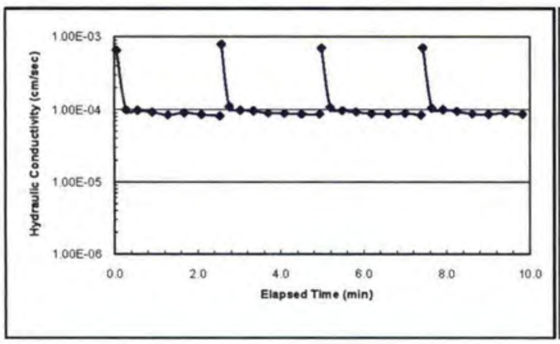
ASTM D 5084 - 00

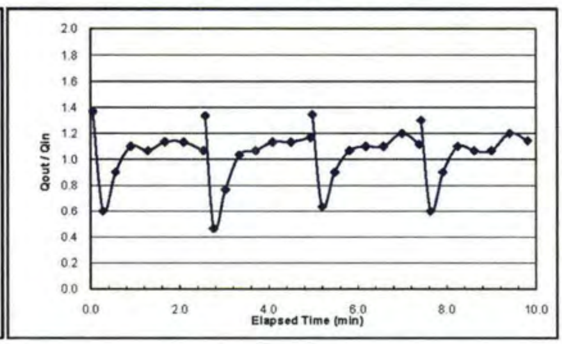
Sample I.D.	305-mm DCRDF AO2-S2 Shallow		Test Date :	6/12/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	20000.0	g	Sample Water Content =	26.0%	(%)
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)	(%)
RC4-2	24.47	132.74	110.4	26.00%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
6/12/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
6/12/2008 00:02.96	3.0	20.8	3.0	17.8	0.0	6.58E-04	1.4	15	20.5
6/12/2008 00:16.64	6.0	19.0	13.7	13.0	0.3	9.93E-05	0.6	15	9
6/12/2008 00:33.56	9.0	16.3	16.9	7.3	0.6	9.81E-05	0.9	15	13.5
6/12/2008 00:54.06	12.0	13.0	20.5	1.0	0.9	9.26E-05	1.1	15	16.5
6/12/2008 01:17.02	15.0	9.8	23.0	-5.2	1.3	8.44E-05	1.1	15	16
6/12/2008 01:39.96	18.0	6.4	22.9	-11.6	1.7	9.06E-05	1.1	15	17
6/12/2008 02:05.28	21.0	3.0	25.3	-18.0	2.1	8.55E-05	1.1	15	17
6/12/2008 02:31.84	24.0	-0.2	26.6	-24.2	2.5	8.23E-05	1.1	15	16
6/12/2008 00:00.00	0.0	24.8	0.0	24.8	2.5				
6/12/2008 00:02.42	3.0	20.8	2.4	17.8	2.6	7.93E-04	1.3	15	20
6/12/2008 00:13.75	6.0	19.4	11.3	13.4	2.8	1.10E-04	0.5	15	7
6/12/2008 00:29.40	9.0	17.1	15.6	8.1	3.0	9.83E-05	0.8	15	11.5
6/12/2008 00:48.42	12.0	14.0	19.0	2.0	3.3	9.61E-05	1.0	15	15.5
6/12/2008 01:09.92	15.0	10.8	21.5	-4.2	3.7	8.96E-05	1.1	15	16
6/12/2008 01:33.15	18.0	7.4	23.2	-10.6	4.1	8.89E-05	1.1	15	17
6/12/2008 01:57.90	21.0	4.0	24.7	-17.0	4.5	8.69E-05	1.1	15	17
6/12/2008 02:24.14	24.0	0.5	26.2	-23.5	4.9	8.69E-05	1.2	15	17.5
6/12/2008 00:00.00	0.1	24.8	0.0	24.7	4.9				
6/12/2008 00:02.65	3.0	20.9	2.7	17.9	5.0	7.04E-04	1.3	14.5	19.5
6/12/2008 00:15.55	6.0	19.0	12.9	13.0	5.2	1.07E-04	0.6	15	9.5
6/12/2008 00:32.61	9.0	16.3	17.1	7.3	5.5	9.73E-05	0.9	15	13.5
6/12/2008 00:52.75	12.0	13.1	20.1	1.1	5.8	9.27E-05	1.1	15	16
6/12/2008 01:15.05	15.0	9.8	22.3	-5.2	6.2	8.83E-05	1.1	15	16.5
6/12/2008 01:38.61	18.0	6.5	23.6	-11.5	6.6	8.68E-05	1.1	15	16.5
6/12/2008 02:03.65	21.0	2.9	25.0	-18.1	7.0	8.92E-05	1.2	15	18
6/12/2008 02:26.64	23.6	0.0	23.0	-23.6	7.4	8.42E-05	1.1	13	14.5
6/12/2008 00:00.00	0.0	24.9	0.0	24.9	7.4				
6/12/2008 00:02.67	3.0	21.0	2.7	18.0	7.4	7.08E-04	1.3	15	19.5
6/12/2008 00:15.56	6.0	19.2	12.9	13.2	7.6	1.05E-04	0.6	15	9
6/12/2008 00:32.17	9.0	16.5	16.6	7.5	7.9	9.98E-05	0.9	15	13.5
6/12/2008 00:52.17	12.0	13.2	20.0	1.2	8.2	9.48E-05	1.1	15	16.5
6/12/2008 01:14.25	15.0	10.0	22.1	-5.0	8.6	8.77E-05	1.1	15	16
6/12/2008 01:37.46	18.0	6.8	23.2	-11.2	9.0	8.66E-05	1.1	15	16
6/12/2008 02:02.18	21.0	3.2	24.7	-17.8	9.4	9.02E-05	1.2	15	18
6/12/2008 02:26.55	23.8	0.0	24.4	-23.8	9.8	8.67E-05	1.1	14	16





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

ASTM D 5084 - 00

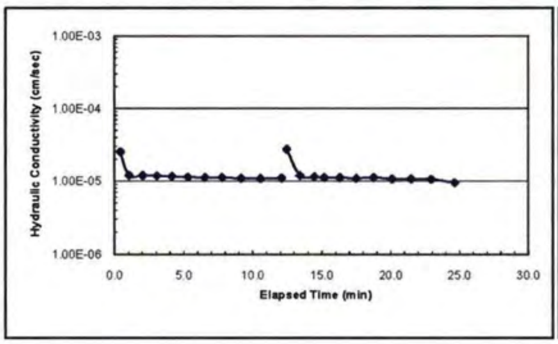
Sample I.D.	150-mm Omaha DCRDF AO2-S2-Shallow	Test Date :	7/15/08

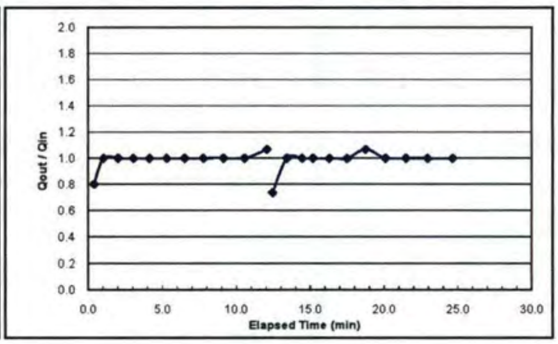
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	39.5	psi	Area of Sample, A =	182.4	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	2.00	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	2463.2	(g)	Sample Water Content =	29.2%	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.77	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)	(%)
K7	30.78	130.37	107.85	29.22%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/18/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
7/18/08 00:23.78	1.5	22.8	23.8	21.3	0.4	2.55E-05	0.8	1.5	1.2
7/18/08 01:02.06	2.5	21.8	38.3	19.3	1.0	1.20E-05	1.0	1	1
7/18/08 02:01.11	4.0	20.3	59.0	16.3	2.0	1.20E-05	1.0	1.5	1.5
7/18/08 03:02.84	5.5	18.8	61.7	13.3	3.0	1.19E-05	1.0	1.5	1.5
7/18/08 04:08.02	7.0	17.3	65.2	10.3	4.1	1.17E-05	1.0	1.5	1.5
7/18/08 05:17.46	8.5	15.8	69.4	7.3	5.3	1.14E-05	1.0	1.5	1.5
7/18/08 06:30.52	10.0	14.3	73.1	4.3	6.5	1.13E-05	1.0	1.5	1.5
7/18/08 07:46.33	11.5	12.8	75.8	1.3	7.8	1.13E-05	1.0	1.5	1.5
7/18/08 09:07.92	13.0	11.3	81.6	-1.7	9.1	1.10E-05	1.0	1.5	1.5
7/18/08 10:33.45	14.5	9.8	85.5	-4.7	10.6	1.09E-05	1.0	1.5	1.5
7/18/08 12:04.55	16.0	8.2	91.1	-7.8	12.1	1.11E-05	1.1	1.5	1.6
7/18/08 00:00.00	0.0	24.0	0.0	24.0	12.1				
7/18/08 00:21.05	1.5	22.9	21.1	21.4	12.5	2.77E-05	0.7	1.5	1.1
7/18/08 01:18.87	3.0	21.4	57.8	18.4	13.4	1.20E-05	1.0	1.5	1.5
7/18/08 02:21.14	4.5	19.9	62.3	15.4	14.5	1.15E-05	1.0	1.5	1.5
7/18/08 03:04.87	5.5	18.9	43.7	13.4	15.2	1.13E-05	1.0	1	1
7/18/08 04:12.18	7.0	17.4	67.3	10.4	16.3	1.13E-05	1.0	1.5	1.5
7/18/08 05:24.15	8.5	15.9	72.0	7.4	17.5	1.10E-05	1.0	1.5	1.5
7/18/08 06:39.37	10.0	14.3	75.2	4.3	18.8	1.13E-05	1.1	1.5	1.6
7/18/08 07:59.25	11.5	12.8	79.9	1.3	20.1	1.07E-05	1.0	1.5	1.5
7/18/08 09:22.96	13.0	11.3	83.7	-1.7	21.5	1.07E-05	1.0	1.5	1.5
7/18/08 10:50.56	14.5	9.8	87.6	-4.7	22.9	1.07E-05	1.0	1.5	1.5
7/18/08 12:33.45	16.0	8.3	102.9	-7.7	24.7	9.50E-06	1.0	1.5	1.5





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

ASTM D 5084 - 00

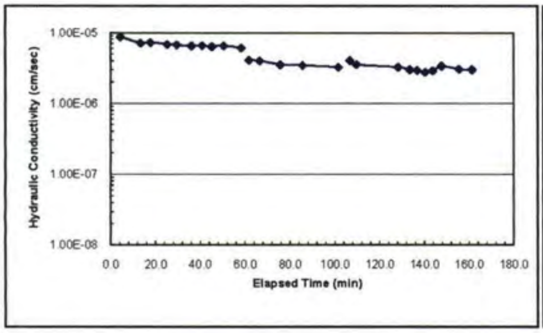
Sample I.D. **75-mm Omaha DCRDF AO2-S2-Shallow** **Test Date :** **7/14/08**

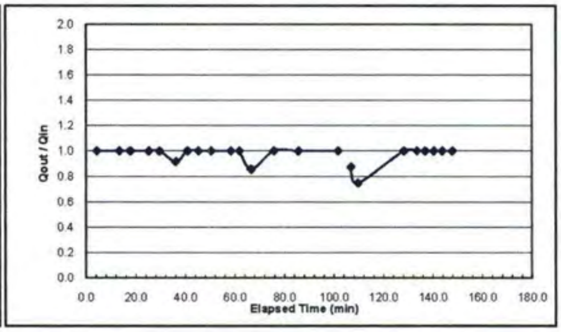
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.3	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	1.75	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	242.3	(g)	Sample Water Content =	-506.3%	(%)
Wet Density =	1.7	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)	(%)
h1	30.84	156.13		-506.26%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/31/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
7/31/08 04:17.50	1.3	22.7	257.5	21.4	4.3	8.68E-06	1.0	1.3	1.3
7/31/08 13:18.42	3.4	20.6	540.9	17.2	13.3	7.09E-06	1.0	2.1	2.1
7/31/08 17:45.60	4.4	19.6	267.2	15.2	17.8	7.25E-06	1.0	1	1
7/31/08 25:13.02	5.9	18.1	447.4	12.2	25.2	6.82E-06	1.0	1.5	1.5
7/31/08 29:28.64	6.7	17.3	255.6	10.6	29.5	6.68E-06	1.0	0.8	0.8
7/31/08 36:03.65	7.9	16.2	395.0	8.3	36.1	6.49E-06	0.9	1.2	1.1
7/31/08 40:50.11	8.7	15.4	286.5	6.7	40.8	6.51E-06	1.0	0.8	0.8
7/31/08 45:16.25	9.4	14.7	266.1	5.3	45.3	6.35E-06	1.0	0.7	0.7
7/31/08 50:24.65	10.2	13.9	308.4	3.7	50.4	6.50E-06	1.0	0.8	0.8
7/31/08 58:21.33	11.3	12.8	476.7	1.5	58.4	6.08E-06	1.0	1.1	1.1
7/31/08 00:00.00	0.0	24.0	-3501.3	24.0	58.4				
7/31/08 03:27.73	0.5	23.5	207.7	23.0	61.9	4.08E-06	1.0	0.5	0.5
7/31/08 08:07.61	1.2	22.9	279.9	21.7	66.5	4.01E-06	0.9	0.7	0.6
7/31/08 17:20.83	2.3	21.8	553.2	19.5	75.7	3.55E-06	1.0	1.1	1.1
7/31/08 27:13.03	3.4	20.7	592.2	17.3	85.6	3.45E-06	1.0	1.1	1.1
7/31/08 43:13.53	5.0	19.1	960.5	14.1	101.6	3.26E-06	1.0	1.6	1.6
7/31/08 00:00.00	0.0	24.0	0.0	24.0	101.6				
7/31/08 05:15.37	0.8	23.3	315.4	22.5	106.9	4.05E-06	0.9	0.8	0.7
7/31/08 08:06.45	1.2	23.0	171.1	21.8	109.7	3.55E-06	0.8	0.4	0.3
7/31/08 26:41.15	3.2	21.0	1114.7	17.8	128.3	3.25E-06	1.0	2	2
7/31/08 31:57.55	3.7	20.5	316.4	16.8	133.6	2.99E-06	1.0	0.5	0.5
7/31/08 35:13.84	4.0	20.2	196.3	16.2	136.8	2.94E-06	1.0	0.3	0.3
7/31/08 38:45.73	4.3	19.9	211.9	15.6	140.4	2.76E-06	1.0	0.3	0.3
7/31/08 42:09.31	4.6	19.6	203.6	15.0	143.8	2.90E-06	1.0	0.3	0.3
7/31/08 46:07.37	5.0	19.2	238.1	14.2	147.7	3.36E-06	1.0	0.4	0.4
53:57.2	5.7	18.5	469.8	12.8	155.6	3.04E-06	1.0	0.7	0.7
59:47.2	6.2	18.0	350.0	11.8	161.4	2.99E-06	1.0	0.5	0.5





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

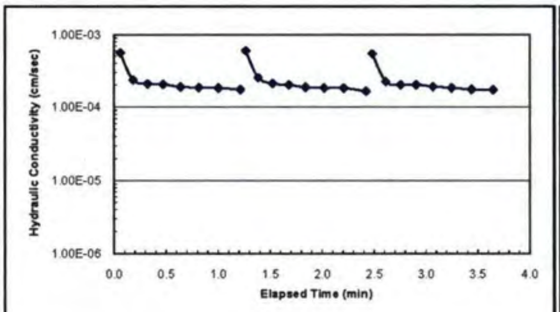
ASTM D 5084 - 00

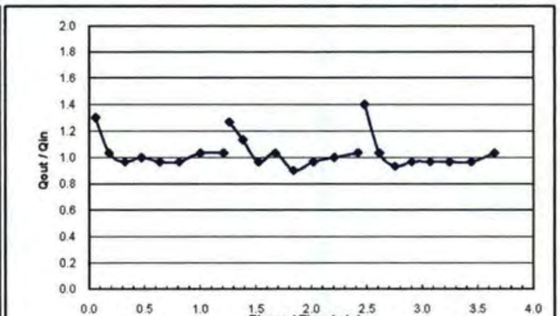
Sample I.D.	305-mm DCRDF A-2 Top		Test Date :	6/17/08	
Cell Pressure =	42.7	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	42.4	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	2.4	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	5	cm^2
Weight of wet sample =	19700.0	g	Sample Water Content =	22.5%	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.77	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)	(%)
RC4-2	24.47	130.64	111.16	22.47%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
6/17/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
6/17/2008 00:03.42	3.0	21.0	3.4	18.0	0.1	5.53E-04	1.3	15	19.5
6/17/2008 00:10.84	6.0	17.9	7.4	11.9	0.2	2.33E-04	1.0	15	15.5
6/17/2008 00:19.25	9.0	15.0	8.4	6.0	0.3	2.06E-04	1.0	15	14.5
6/17/2008 00:28.25	12.0	12.0	9.0	0.0	0.5	2.02E-04	1.0	15	15
6/17/2008 00:38.15	15.0	9.1	9.9	-5.9	0.6	1.87E-04	1.0	15	14.5
6/17/2008 00:48.65	18.0	6.2	10.5	-11.8	0.8	1.83E-04	1.0	15	14.5
6/17/2008 01:00.11	21.0	3.1	11.5	-17.9	1.0	1.80E-04	1.0	15	15.5
6/17/2008 01:12.61	24.0	0.0	12.5	-24.0	1.2	1.72E-04	1.0	15	15.5
6/17/2008 00:00.00	0.0	24.8	0.0	24.8	1.2				
6/17/2008 00:03.14	3.0	21.0	3.1	18.0	1.3	5.93E-04	1.3	15	19
6/17/2008 00:10.37	6.0	17.6	7.2	11.6	1.4	2.51E-04	1.1	15	17
6/17/2008 00:18.71	9.0	14.7	8.3	5.7	1.5	2.08E-04	1.0	15	14.5
6/17/2008 00:28.06	12.0	11.6	9.3	-0.4	1.7	1.98E-04	1.0	15	15.5
6/17/2008 00:37.78	15.0	8.9	9.7	-6.1	1.8	1.85E-04	0.9	15	13.5
6/17/2008 00:48.45	18.0	6.0	10.7	-12.0	2.0	1.80E-04	1.0	15	14.5
6/17/2008 00:59.75	21.0	3.0	11.3	-18.0	2.2	1.80E-04	1.0	15	15
6/17/2008 01:12.55	23.9	0.0	12.8	-23.9	2.4	1.62E-04	1.0	14.5	15
6/17/2008 00:00.00	0.0	24.8	0.0	24.8	2.4				
6/17/2008 00:03.68	3.0	20.6	3.7	17.6	2.5	5.37E-04	1.4	15	21
6/17/2008 00:11.55	6.0	17.5	7.9	11.5	2.6	2.20E-04	1.0	15	15.5
6/17/2008 00:20.08	9.0	14.7	8.5	5.7	2.8	2.00E-04	0.9	15	14
6/17/2008 00:29.06	12.0	11.8	9.0	-0.2	2.9	2.00E-04	1.0	15	14.5
6/17/2008 00:38.92	15.0	8.9	9.9	-6.1	3.1	1.88E-04	1.0	15	14.5
6/17/2008 00:49.56	18.0	6.0	10.6	-12.0	3.2	1.81E-04	1.0	15	14.5
6/17/2008 01:01.15	21.0	3.1	11.6	-17.9	3.4	1.72E-04	1.0	15	14.5
6/17/2008 01:13.78	24.0	0.0	12.6	-24.0	3.6	1.70E-04	1.0	15	15.5





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

ASTM D 5084 - 00

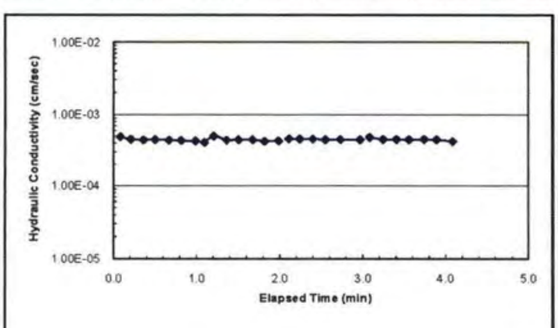
Sample I.D.	150-mm Omaha DCRDF A2 Top	Test Date :	7/15/08

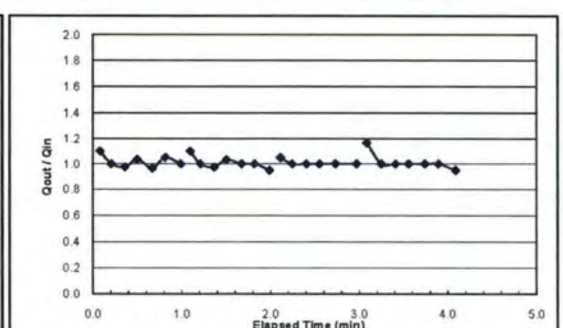
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.0	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	39.5	psi	Area of Sample, A =	181.5	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1379.1	cm^3
Effective Stress =	2.25	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	4.6		a_{out} =	1	cm^2
Weight of wet sample =	2403.2	(g)	Sample Water Content =	28.5%	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.74	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)	(%)
A3	25.2	135.8	111.3	28.46%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
7/15/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
7/15/08 00:04.82	3.0	20.7	4.8	17.7	0.1	4.89E-04	1.1	3	3.3
7/15/08 00:12.46	7.0	16.7	7.6	9.7	0.2	4.50E-04	1.0	4	4
7/15/08 00:21.61	11.0	12.8	9.2	1.8	0.4	4.43E-04	1.0	4	3.9
7/15/08 00:30.12	14.0	9.7	8.5	-4.3	0.5	4.44E-04	1.0	3	3.1
7/15/08 00:40.22	17.0	6.8	10.1	-10.2	0.7	4.40E-04	1.0	3	2.9
7/15/08 00:48.87	19.0	4.7	8.7	-14.3	0.8	4.34E-04	1.1	2	2.1
7/15/08 00:59.35	21.0	2.7	10.5	-18.3	1.0	4.25E-04	1.0	2	2
7/15/08 00:00.00	0.0	24.0	0.0	24.0	1.0				
7/15/08 00:05.80	3.0	20.7	5.8	17.7	1.1	4.07E-04	1.1	3	3.3
7/15/08 00:12.68	7.0	16.7	6.9	9.7	1.2	4.99E-04	1.0	4	4
7/15/08 00:21.88	11.0	12.8	9.2	1.8	1.4	4.41E-04	1.0	4	3.9
7/15/08 00:30.38	14.0	9.7	8.5	-4.3	1.5	4.44E-04	1.0	3	3.1
7/15/08 00:40.58	17.0	6.7	10.2	-10.3	1.7	4.44E-04	1.0	3	3
7/15/08 00:49.26	19.0	4.7	8.7	-14.3	1.8	4.23E-04	1.0	2	2
7/15/08 00:59.40	21.0	2.8	10.1	-18.2	2.0	4.27E-04	1.0	2	1.9
7/15/08 00:00.00	0.0	24.0	-59.4	24.0	2.0				
7/15/08 00:06.82	4.0	19.8	6.8	15.8	2.1	4.58E-04	1.1	4	4.2
7/15/08 00:14.68	8.0	15.8	7.9	7.8	2.2	4.55E-04	1.0	4	4
7/15/08 00:24.17	12.0	11.8	9.5	-0.2	2.4	4.55E-04	1.0	4	4
7/15/08 00:33.04	15.0	8.8	8.9	-6.2	2.6	4.44E-04	1.0	3	3
7/15/08 00:43.91	18.0	5.8	10.9	-12.2	2.7	4.47E-04	1.0	3	3
7/15/08 00:58.14	21.0	2.8	14.2	-18.2	3.0	4.46E-04	1.0	3	3
7/15/08 00:00.00	0.0	24.0	-58.1	24.0	3.0				
7/15/08 00:05.08	3.0	20.5	5.1	17.5	3.1	4.80E-04	1.2	3	3.5
7/15/08 00:14.86	8.0	15.5	9.8	7.5	3.2	4.51E-04	1.0	5	5
7/15/08 00:24.57	12.0	11.5	9.7	-0.5	3.4	4.48E-04	1.0	4	4
00:33.5	15.0	8.5	8.9	-6.5	3.6	4.46E-04	1.0	3	3
00:44.5	18.0	5.5	11.0	-12.5	3.7	4.48E-04	1.0	3	3
00:53.6	20.0	3.5	9.1	-16.5	3.9	4.46E-04	1.0	2	2
01:05.3	22.0	1.6	11.7	-20.4	4.1	4.21E-04	1.0	2	1.9





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

ASTM D 5084 - 00

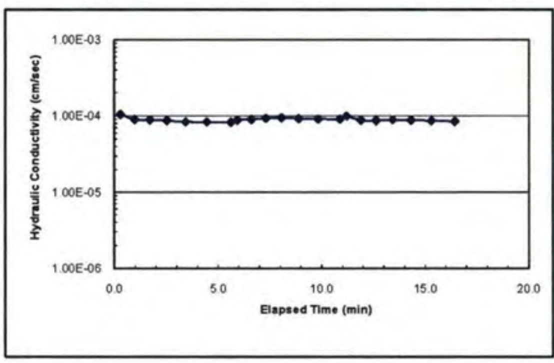
Sample I.D. **75-mm Omaha DCRDF A2 Top** **Test Date :** **7/15/08**

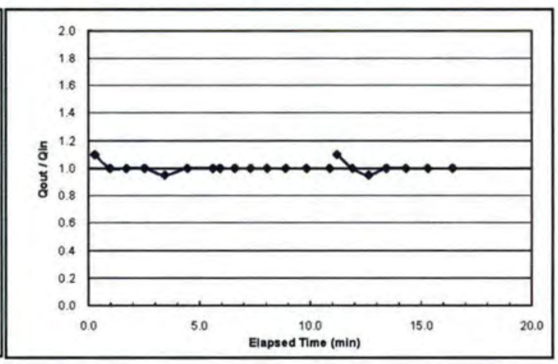
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.3	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	1.75	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	252.4	(g)	Sample Water Content =	-404.9%	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.80	g/cm^3

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

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
6	30.9	125.1		-404.85%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out}/Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/1/08 00:00.00	0.0	24.0	0.0	24.0	0.0				
8/1/08 00:17.23	1.0	22.9	17.2	21.9	0.3	1.04E-04	1.1	1	1.1
00:57.9	3	20.9	40.7	17.9	1.0	8.88E-05	1.0	2	2
8/1/08 01:42.28	5.0	18.9	44.4	13.9	1.7	8.78E-05	1.0	2	2
8/1/08 02:31.55	7.0	16.9	49.3	9.9	2.5	8.58E-05	1.0	2	2
8/1/08 03:25.87	9.0	15.0	54.3	6.0	3.4	8.28E-05	0.9	2	1.9
8/1/08 04:27.25	11.0	13.0	61.4	2.0	4.5	8.28E-05	1.0	2	2
8/1/08 05:36.65	13.0	11.0	69.4	-2.0	5.6	8.16E-05	1.0	2	2
8/1/08 00:00.00	0.0	24.0	-336.7	24.0	5.6				
8/1/08 00:19.45	1.0	23.0	19.5	22.0	5.9	8.79E-05	1.0	1	1
8/1/08 00:59.92	3.0	21.0	40.5	18.0	6.6	8.91E-05	1.0	2	2
8/1/08 01:42.02	5.0	19.0	42.1	14.0	7.3	9.24E-05	1.0	2	2
8/1/08 02:26.95	7.0	17.0	44.9	10.0	8.0	9.39E-05	1.0	2	2
8/1/08 03:17.45	9.0	15.0	50.5	6.0	8.9	9.13E-05	1.0	2	2
8/1/08 04:13.75	11.0	13.0	56.3	2.0	9.8	9.03E-05	1.0	2	2
8/1/08 05:16.56	13.0	11.0	62.8	-2.0	10.9	9.01E-05	1.0	2	2
8/1/08 00:00.00	0.0	24.0	-316.6	24.0	10.9				
8/1/08 00:18.23	1.0	22.9	18.2	21.9	11.2	9.86E-05	1.1	1	1.1
8/1/08 00:59.73	3.0	20.9	41.5	17.9	11.9	8.71E-05	1.0	2	2
8/1/08 01:43.75	5.0	19.0	44.0	14.0	12.6	8.62E-05	0.9	2	1.9
8/1/08 02:31.56	7.0	17.0	47.8	10.0	13.4	8.82E-05	1.0	2	2
8/1/08 03:24.65	9.0	15.0	53.1	6.0	14.3	8.68E-05	1.0	2	2
8/1/08 04:23.73	11.0	13.0	59.1	2.0	15.3	8.60E-05	1.0	2	2
8/1/08 05:31.18	13.0	11.0	67.5	-2.0	16.4	8.39E-05	1.0	2	2





Hydraulic Conductivity Test - Polson - Composite Cover

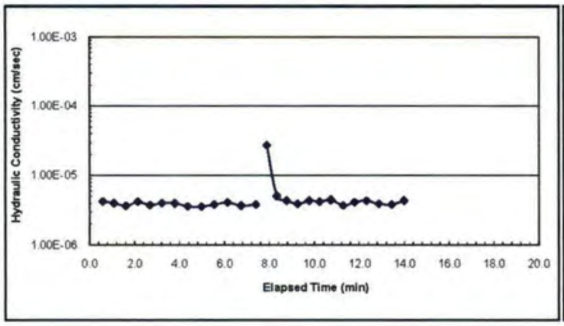
ASTM D 5084 - 00

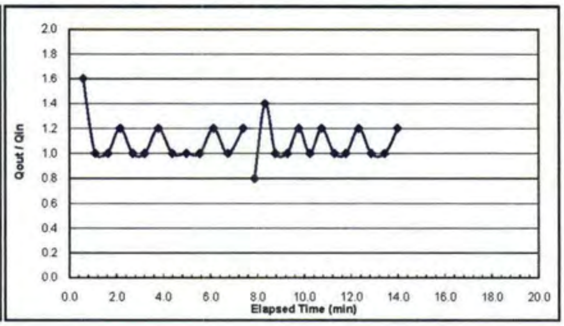
Sample I.D.	305-mm Polson Conv Below Memebrane-1			Test Date :	11/12/08
Cell Pressure =	41.8	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	14.0	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	10193.3	cm^3
Effective Stress =	1.3	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	15850.0	g	Sample Water Content =	11.5%	(%)
Wet Density =	1.6	g/cm^3	Dry Density =	1.55	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)	(%)
k11	30.58	94.89	88.27	11.48%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	4.0	17.5	0.0	13.5	0.0				
0:00:36	4.5	16.7	35.6	12.2	0.6	4.21E-06	1.6	0.5	0.8
0:01:05	5.0	16.2	29.4	11.2	1.1	3.97E-06	1.0	0.5	0.5
0:01:37	5.5	15.7	32.4	10.2	1.6	3.65E-06	1.0	0.5	0.5
0:02:09	6.0	15.1	31.6	9.1	2.1	4.16E-06	1.2	0.5	0.6
0:02:42	6.5	14.6	32.6	8.1	2.7	3.73E-06	1.0	0.5	0.5
0:03:12	7.0	14.1	30.8	7.1	3.2	3.99E-06	1.0	0.5	0.5
0:03:47	7.5	13.5	34.6	6.0	3.8	3.96E-06	1.2	0.5	0.6
0:04:22	8.0	13.0	35.2	5.0	4.4	3.59E-06	1.0	0.5	0.5
0:04:58	8.5	12.5	36.0	4.0	5.0	3.56E-06	1.0	0.5	0.5
0:05:32	9.0	12.0	34.2	3.0	5.5	3.79E-06	1.0	0.5	0.5
0:06:08	9.5	11.4	35.4	1.9	6.1	4.08E-06	1.2	0.5	0.6
0:06:44	10.0	10.9	36.3	0.9	6.7	3.68E-06	1.0	0.5	0.5
0:07:23	10.5	10.3	39.1	-0.2	7.4	3.81E-06	1.2	0.5	0.6
0:00:00	2.0	24.0	-443.1	22.0	7.4				
0:00:29	6.0	20.8	28.6	14.8	7.9	2.72E-05	0.8	4	3.2
0:00:56	6.5	20.1	27.0	13.6	8.3	5.03E-06	1.4	0.5	0.7
0:01:22	7.0	19.6	26.4	12.6	8.8	4.35E-06	1.0	0.5	0.5
0:01:52	7.5	19.1	29.8	11.6	9.3	3.90E-06	1.0	0.5	0.5
0:02:22	8.0	18.5	29.8	10.5	9.8	4.34E-06	1.2	0.5	0.6
0:02:50	8.5	18.0	28.4	9.5	10.2	4.19E-06	1.0	0.5	0.5
0:03:20	9.0	17.4	29.9	8.4	10.7	4.44E-06	1.2	0.5	0.6
0:03:53	9.5	16.9	33.1	7.4	11.3	3.70E-06	1.0	0.5	0.5
0:04:23	10.0	16.4	30.0	6.4	11.8	4.13E-06	1.0	0.5	0.5
0:04:55	10.5	15.8	32.0	5.3	12.3	4.32E-06	1.2	0.5	0.6
0:05:28	11.0	15.3	32.6	4.3	12.9	3.91E-06	1.0	0.5	0.5
0:06:02	11.5	14.8	34.0	3.3	13.4	3.80E-06	1.0	0.5	0.5
0:06:35	12.0	14.2	33.2	2.2	14.0	4.35E-06	1.2	0.5	0.6





Hydraulic Conductivity Test - Polson - Composite Cover

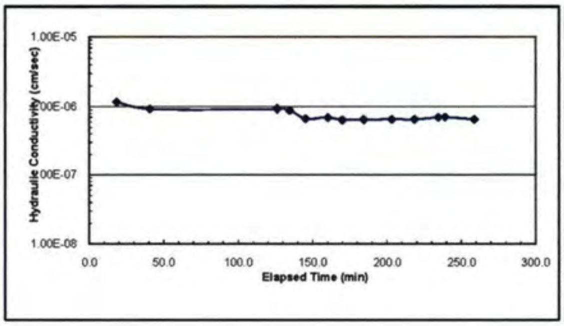
ASTM D 5084 - 00

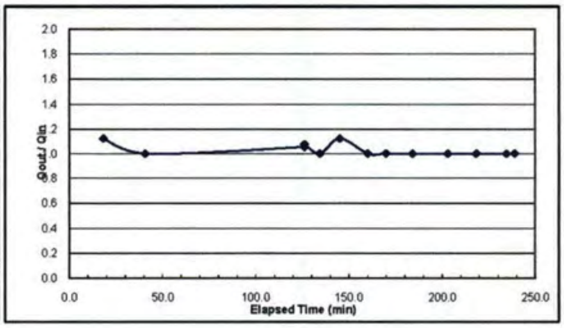
Sample I.D.	150-mm Polson Conv Below Memebrane-1		Test Date :	12/31/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.7	psi	Length of Sample, L =	6.4	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.7	psi	Sample Volume, V =	1158.3	cm^3
Effective Stress =	1.7	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	7.8		a_{out} =	1	cm^2
Weight of wet sample =	2207.7	g	Sample Water Content =	26.1%	(%)
Wet Density =	1.91	g/cm^3	Dry Density =	1.51	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)	(%)
A	31	126.36	106.63	26.09%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out}/Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	1.0	24.0	0.0	23.0	0.0				
0:18:09	3.4	21.3	1088.7	17.9	18.1	1.17E-06	1.1	2.4	2.7
0:40:34	5.7	19.0	1345.7	13.3	40.6	9.18E-07	1.0	2.3	2.3
2:06:08	12.9	11.4	5133.3	-1.5	126.1	9.16E-07	1.1	7.2	7.6
0:00:00	1.3	23.9	-7567.7	22.6	126.1	9.40E-07	1.1	-11.6	-12.5
0:08:22	2.2	23.0	501.8	20.8	134.5	8.80E-07	1.0	0.9	0.9
0:19:03	3.0	22.1	641.2	19.1	145.1	6.67E-07	1.1	0.8	0.9
0:34:06	4.2	20.9	902.6	16.7	160.2	6.89E-07	1.0	1.2	1.2
0:43:54	4.9	20.2	588.1	15.3	170.0	6.35E-07	1.0	0.7	0.7
0:58:05	5.9	19.2	851.4	13.3	184.2	6.44E-07	1.0	1	1
1:17:01	7.2	17.9	1136.0	10.7	203.1	6.51E-07	1.0	1.3	1.3
1:32:12	8.2	16.9	910.9	8.7	218.3	6.49E-07	1.0	1	1
1:48:24	9.3	15.8	972.0	6.5	234.5	6.93E-07	1.0	1.1	1.1
1:52:53	9.6	15.5	268.8	5.9	239.0	7.01E-07	1.0	0.3	0.3
2:12:45	10.8	14.3	1192.2	3.5	258.9	6.50E-07			





Hydraulic Conductivity Test - Polson - Composite Cover

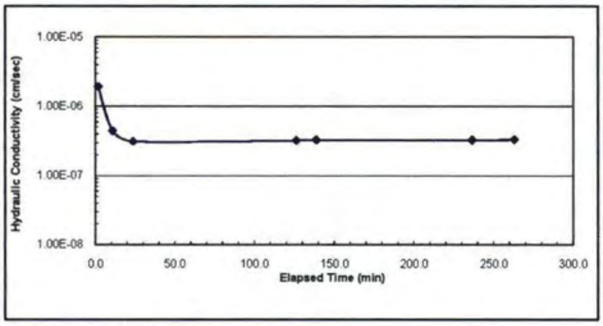
ASTM D 5084 - 00

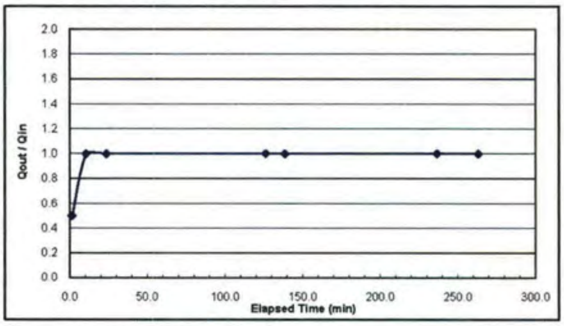
Sample I.D.	75-mm Polson Conv Below Memebrane-1			Test Date :	12/31/08
Cell Pressure =	41.8	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	45.60	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	144.8	cm^3
Effective Stress =	1.6	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	1	cm^2
Weight of wet sample =	249.5	g	Sample Water Content =	24.1%	(%)
Wet Density =	1.72	g/cm^3	Dry Density =	1.39	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)	(%)
A	31	134.66	114.55	24.07%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	1.0	24.0	0.0	23.0	0.0				
0:01:33	1.2	23.9	93.0	22.7	1.6	1.93E-06	0.5	0.2	0.1
0:10:38	1.4	23.7	544.8	22.3	10.6	4.43E-07	1.0	0.2	0.2
0:23:34	1.6	23.5	776.5	21.9	23.6	3.13E-07	1.0	0.2	0.2
0:48:59	2.0	23.1	1524.8	21.1	126.1	3.22E-07	1.0	0.4	0.4
1:01:36	2.2	22.9	757.0	20.7	138.7	3.28E-07	1.0	0.2	0.2
2:39:26	3.7	21.4	5870.0	17.7	236.6	3.27E-07	1.0	1.5	1.5
3:05:58	4.1	21.0	1592.0	16.9	263.1	3.33E-07	1.0	0.4	0.4





Hydraulic Conductivity Test - Polson - Composite Cover

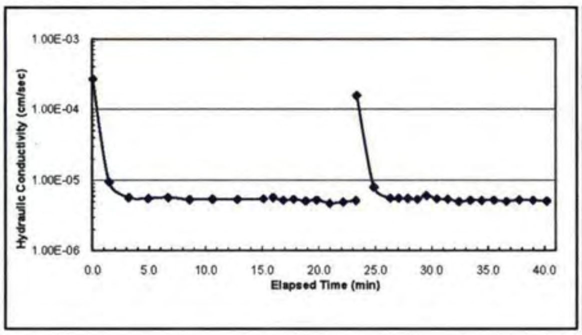
ASTM D 5084 - 00

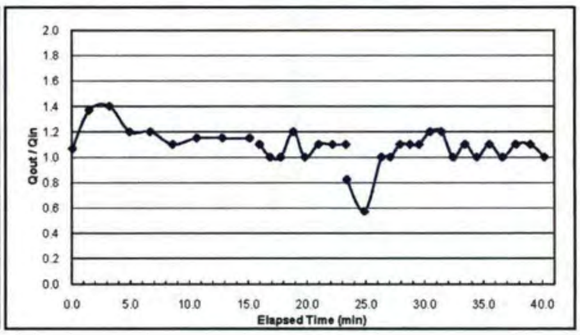
Sample I.D.	305-mm Conv Below Membrane-4			Test Date :	11/17/08
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.1		a_{out} =	1	cm^2
Weight of wet sample =	21800.0	g	Sample Water Content =	21.8%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	1.96	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)	(%)
BB	30.36	178.34	151.84	21.81%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/17/2008 00:00.00	0.0	24.0	0.0	24.0	0.0				
12/17/2008 00:02.46	3.0	20.8	2.5	17.8	0.0	2.68E-04	1.1	3	3.2
12/17/2008 01:28.52	6.0	16.7	86.1	10.7	1.5	9.41E-06	1.4	3	4.1
12/17/2008 03:11.61	8.0	13.9	103.1	5.9	3.2	5.68E-06	1.4	2	2.8
12/17/2008 04:54.56	10.0	11.5	103.0	1.5	4.9	5.51E-06	1.2	2	2.4
12/17/2008 06:39.96	12.0	9.1	105.4	-2.9	6.7	5.69E-06	1.2	2	2.4
12/17/2008 08:34.46	14.0	6.9	114.5	-7.1	8.6	5.30E-06	1.1	2	2.2
12/17/2008 10:37.15	16.0	4.6	122.7	-11.4	10.6	5.38E-06	1.2	2	2.3
12/17/2008 12:48.46	18.0	2.3	131.3	-15.7	12.8	5.36E-06	1.2	2	2.3
12/17/2008 15:07.06	20.0	0.0	138.6	-20.0	15.1	5.45E-06	1.2	2	2.3
12/17/2008 00:00.00	16.0	16.1	0.0	0.1	15.1				
12/17/2008 00:50.56	17.0	15.0	50.6	-2.0	16.0	5.68E-06	1.1	1	1.1
12/17/2008 01:44.61	18.0	14.0	54.1	-4.0	16.9	5.20E-06	1.0	1	1
12/17/2008 02:38.45	19.0	13.0	53.8	-6.0	17.8	5.36E-06	1.0	1	1
12/17/2008 03:42.61	20.0	11.8	64.2	-8.2	18.8	5.10E-06	1.2	1	1.2
12/17/2008 04:41.02	21.0	10.8	58.4	-10.2	19.8	5.25E-06	1.0	1	1
12/17/2008 05:51.52	22.0	9.7	70.5	-12.3	21.0	4.71E-06	1.1	1	1.1
12/17/2008 07:01.37	23.0	8.6	69.9	-14.4	22.1	4.91E-06	1.1	1	1.1
12/17/2008 08:10.05	24.0	7.5	68.7	-16.5	23.3	5.16E-06	1.1	1	1.1
12/17/2008 00:00.00	0.0	24.9	0.0	24.9	23.3				
12/17/2008 00:04.95	4.0	21.6	5.0	17.6	23.4	1.56E-04	0.8	4	3.3
12/17/2008 01:34.95	8.0	19.3	90.0	11.3	24.9	7.97E-06	0.6	4	2.3
12/17/2008 03:01.84	10.0	17.3	86.9	7.3	26.3	5.55E-06	1.0	2	2
12/17/2008 03:46.95	11.0	16.3	45.1	5.3	27.1	5.53E-06	1.0	1	1
12/17/2008 04:35.75	12.0	15.2	48.8	3.2	27.9	5.51E-06	1.1	1	1.1
12/17/2008 05:27.14	13.0	14.1	51.4	1.1	28.7	5.37E-06	1.1	1	1.1
12/17/2008 06:13.64	14.0	13.0	46.5	-1.0	29.5	6.09E-06	1.1	1	1.1
12/17/2008 07:09.78	15.0	11.8	56.1	-3.2	30.4	5.44E-06	1.2	1	1.2
12/17/2008 08:08.05	16.0	10.6	58.3	-5.4	31.4	5.40E-06	1.2	1	1.2
12/17/2008 09:07.15	17.0	9.6	59.1	-7.4	32.4	4.98E-06	1.0	1	1
12/17/2008 10:08.14	18.0	8.5	61.0	-9.5	33.4	5.22E-06	1.1	1	1.1
12/17/2008 11:08.62	19.0	7.5	60.5	-11.5	34.4	5.17E-06	1.0	1	1
12/17/2008 12:13.14	20.0	6.4	64.5	-13.6	35.5	5.24E-06	1.1	1	1.1
12/17/2008 13:19.64	21.0	5.4	66.5	-15.6	36.6	5.00E-06	1.0	1	1
12/17/2008 14:28.18	22.0	4.3	68.5	-17.7	37.8	5.27E-06	1.1	1	1.1
12/17/2008 15:40.62	23.0	3.2	72.4	-19.8	39.0	5.17E-06	1.1	1	1.1
12/17/2008 16:53.52	24.0	2.2	72.9	-21.8	40.2	5.07E-06	1.0	1	1





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

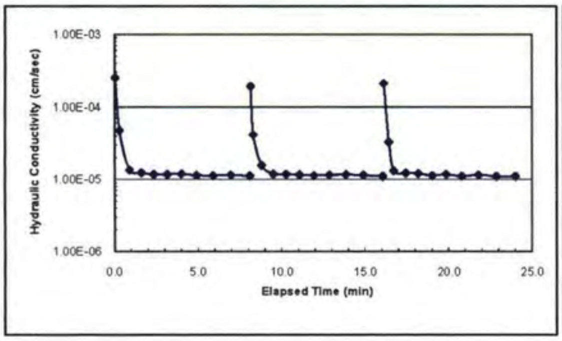
ASTM D 5084 - 00

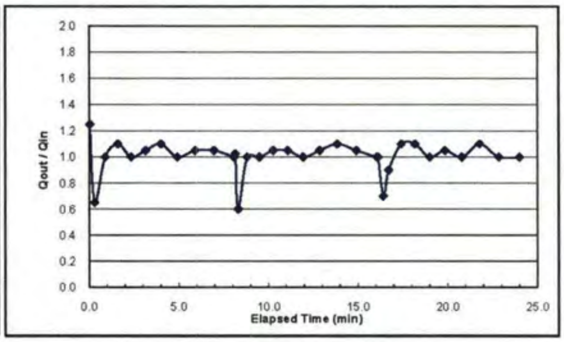
Sample I.D.	305-mm Alt Upper Silt-2		Test Date :	11/12/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	18000.0	g	Sample Water Content =	4.4%	(%)
Wet Density =	1.6	g/cm^3	Dry Density =	1.62	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)	(%)
CC	30.84	171.15	165.22	4.41%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
11/12/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
11/12/2008 00:01.90	2.0	22.4	1.9	20.4	0.0	2.50E-04	1.3	2	2.5
11/12/2008 00:17.62	6.0	19.8	15.7	13.8	0.3	4.70E-05	0.6	4	2.6
11/12/2008 00:53.03	8.0	17.8	35.4	9.8	0.9	1.34E-05	1.0	2	2
11/12/2008 01:35.48	10.0	15.6	42.4	5.6	1.6	1.23E-05	1.1	2	2.2
11/12/2008 02:20.40	12.0	13.6	44.9	1.6	2.3	1.17E-05	1.0	2	2
11/12/2008 03:08.34	14.0	11.5	47.9	-2.5	3.1	1.18E-05	1.1	2	2.1
11/12/2008 03:59.60	16.0	9.3	51.3	-6.7	4.0	1.20E-05	1.1	2	2.2
11/12/2008 04:54.09	18.0	7.3	54.5	-10.7	4.9	1.14E-05	1.0	2	2
11/12/2008 05:53.98	20.0	5.2	59.9	-14.8	5.9	1.13E-05	1.1	2	2.1
11/12/2008 06:56.88	22.0	3.1	62.9	-18.9	6.9	1.15E-05	1.1	2	2.1
11/12/2008 08:04.49	24.0	1.1	67.6	-22.9	8.1	1.12E-05	1.0	2	2
11/12/2008 00:00.00	0.0	24.9	0.0	24.9	8.1				
11/12/2008 00:04.57	4.0	20.8	4.6	16.8	8.2	1.91E-04	1.0	4	4.1
11/12/2008 00:13.40	6.0	19.6	8.8	13.6	8.3	4.14E-05	0.6	2	1.2
11/12/2008 00:43.60	8.0	17.6	30.2	9.6	8.8	1.58E-05	1.0	2	2
11/12/2008 01:25.56	10.0	15.6	42.0	5.6	9.5	1.19E-05	1.0	2	2
11/12/2008 02:11.16	12.0	13.5	45.6	1.5	10.3	1.18E-05	1.1	2	2.1
11/12/2008 02:59.88	14.0	11.4	48.7	-2.6	11.1	1.16E-05	1.1	2	2.1
11/12/2008 03:51.59	16.0	9.4	51.7	-6.6	11.9	1.13E-05	1.0	2	2
11/12/2008 04:46.80	18.0	7.3	55.2	-10.7	12.9	1.15E-05	1.1	2	2.1
11/12/2008 05:46.35	20.0	5.1	59.5	-14.9	13.8	1.16E-05	1.1	2	2.2
11/12/2008 06:49.88	22.0	3.0	63.5	-19.0	14.9	1.14E-05	1.1	2	2.1
11/12/2008 07:58.50	24.0	1.0	68.6	-23.0	16.0	1.10E-05	1.0	2	2
11/12/2008 00:00.00	0.0	24.7	0.0	24.7	16.0				
11/12/2008 00:04.15	4.0	20.7	4.2	16.7	16.1	2.08E-04	1.0	4	4
11/12/2008 00:22.16	7.0	18.6	18.0	11.6	16.4	3.27E-05	0.7	3	2.1
11/12/2008 00:39.48	8.0	17.7	17.3	9.7	16.7	1.32E-05	0.9	1	0.9
11/12/2008 01:22.21	10.0	15.5	42.7	5.5	17.4	1.23E-05	1.1	2	2.2
11/12/2008 02:07.94	12.0	13.3	45.7	1.3	18.2	1.21E-05	1.1	2	2.2
11/12/2008 02:57.01	14.0	11.3	49.1	-2.7	19.0	1.13E-05	1.0	2	2
11/12/2008 03:48.18	16.0	9.2	51.2	-6.8	19.9	1.17E-05	1.1	2	2.1
11/12/2008 04:44.22	18.0	7.2	56.0	-10.8	20.8	1.11E-05	1.0	2	2
11/12/2008 05:44.42	20.0	5.0	60.2	-15.0	21.8	1.15E-05	1.1	2	2.2
11/12/2008 06:48.74	22.0	3.0	64.3	-19.0	22.9	1.10E-05	1.0	2	2
11/12/2008 07:57.56	24.0	1.0	68.8	-23.0	24.0	1.10E-05	1.0	2	2





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

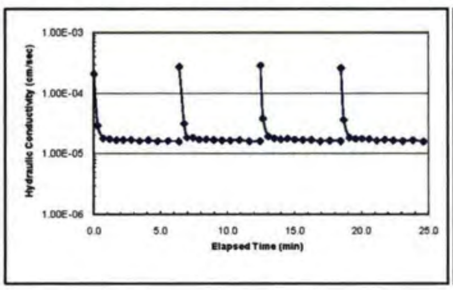
ASTM D 5084 - 00

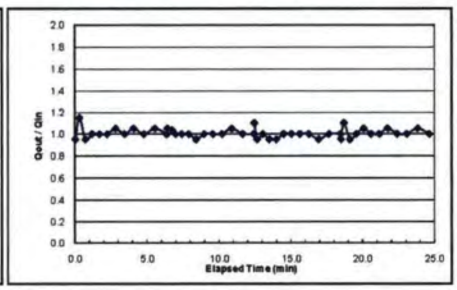
Sample I.D.	305-mm Alt Upper Silt-3		Test Date :	11/12/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	18000.0	g	Sample Water Content =	5.8%	(%)
Wet Density =	1.6	g/cm^3	Dry Density =	1.62	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)	(%)
#1	30.92	142.34	136.26	5.77%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
11/12/2008 00:00.00	0.0	24.5	0.0	24.5	0.0				
11/12/2008 00:01.96	2.0	22.6	2.0	20.6	0.0	2.10E-04	0.9	2	1.9
11/12/2008 00:18.37	4.0	20.3	16.4	16.3	0.3	2.89E-05	1.2	2	2.3
11/12/2008 00:43.86	6.0	18.4	25.5	12.4	0.7	1.76E-05	1.0	2	1.9
11/12/2008 01:11.74	8.0	16.4	27.9	8.4	1.2	1.73E-05	1.0	2	2
11/12/2008 01:42.35	10.0	14.4	30.6	4.4	1.7	1.65E-05	1.0	2	2
11/12/2008 02:14.29	12.0	12.4	31.9	0.4	2.2	1.66E-05	1.0	2	2
11/12/2008 02:48.77	14.0	10.3	34.5	-3.7	2.8	1.67E-05	1.1	2	2.1
11/12/2008 03:25.75	16.0	8.3	37.0	-7.7	3.4	1.60E-05	1.0	2	2
11/12/2008 04:04.81	18.0	6.2	39.1	-11.8	4.1	1.65E-05	1.1	2	2.1
11/12/2008 04:47.16	20.0	4.2	42.4	-15.8	4.8	1.58E-05	1.0	2	2
11/12/2008 05:33.05	22.0	2.1	45.9	-19.9	5.6	1.60E-05	1.1	2	2.1
11/12/2008 06:22.12	24.0	0.1	49.1	-23.9	6.4	1.57E-05	1.0	2	2
11/12/2008 00:00.00	0.0	24.9	0.0	24.9	6.4				
11/12/2008 00:01.58	2.0	22.8	1.6	20.8	6.4	2.74E-04	1.1	2	2.1
11/12/2008 00:23.25	5.0	19.7	21.7	14.7	6.8	3.13E-05	1.0	3	3.1
11/12/2008 00:35.95	6.0	18.7	12.7	12.7	7.0	1.83E-05	1.0	1	1
11/12/2008 01:02.30	8.0	16.7	26.4	8.7	7.4	1.82E-05	1.0	2	2
11/12/2008 01:32.10	10.0	14.7	29.8	4.7	7.9	1.69E-05	1.0	2	2
11/12/2008 02:02.55	12.0	12.8	30.4	0.8	8.4	1.69E-05	0.9	2	1.9
11/12/2008 02:35.96	14.0	10.8	33.4	-3.2	9.0	1.67E-05	1.0	2	2
11/12/2008 03:11.85	16.0	8.8	35.9	-7.2	9.6	1.64E-05	1.0	2	2
11/12/2008 03:50.10	18.0	6.8	38.2	-11.2	10.2	1.63E-05	1.0	2	2
11/12/2008 04:31.27	20.0	4.7	41.2	-15.3	10.9	1.65E-05	1.1	2	2.1
11/12/2008 05:16.20	22.0	2.7	44.9	-19.3	11.6	1.58E-05	1.0	2	2
11/12/2008 06:04.08	24.0	0.7	47.9	-23.3	12.4	1.59E-05	1.0	2	2
11/12/2008 00:00.00	0.0	24.9	0.0	24.9	12.4				
11/12/2008 00:01.54	2.0	22.7	1.5	20.7	12.5	2.88E-04	1.1	2	2.2
11/12/2008 00:12.94	4.0	20.8	11.4	16.8	12.7	3.76E-05	0.9	2	1.9
11/12/2008 00:37.11	6.0	18.8	24.2	12.8	13.1	1.90E-05	1.0	2	2
11/12/2008 01:03.64	8.0	16.9	26.5	8.9	13.5	1.76E-05	1.0	2	1.9
11/12/2008 01:32.50	10.0	15.0	28.9	5.0	14.0	1.70E-05	0.9	2	1.9
11/12/2008 02:02.76	12.0	13.0	30.3	1.0	14.5	1.74E-05	1.0	2	2
11/12/2008 02:35.62	14.0	11.0	32.9	-3.0	15.0	1.69E-05	1.0	2	2
11/12/2008 03:11.08	16.0	9.0	35.5	-7.0	15.6	1.66E-05	1.0	2	2
11/12/2008 03:48.59	18.0	7.0	37.5	-11.0	16.2	1.66E-05	1.0	2	2
11/12/2008 04:29.35	20.0	5.1	40.8	-14.9	16.9	1.58E-05	1.0	2	1.9
11/12/2008 05:12.95	22.0	3.1	43.6	-18.9	17.7	1.62E-05	1.0	2	2
11/12/2008 06:00.70	24.0	1.1	47.8	-22.9	18.4	1.58E-05	1.0	2	2
11/12/2008 00:00.00	0.0	24.9	0.0	24.9	18.4				
11/12/2008 00:01.58	2.0	23.0	1.6	21.0	18.5	2.60E-04	0.9	2	1.9
11/12/2008 00:14.49	4.0	20.8	12.9	16.8	18.7	3.57E-05	1.1	2	2.2
11/12/2008 00:39.17	6.0	18.9	24.7	12.9	19.1	1.81E-05	1.0	2	1.9
11/12/2008 01:06.82	8.0	16.9	27.7	8.9	19.6	1.73E-05	1.0	2	2
11/12/2008 01:36.56	10.0	14.8	29.7	4.8	20.1	1.73E-05	1.1	2	2.1
11/12/2008 02:07.43	12.0	12.8	30.9	0.8	20.6	1.71E-05	1.0	2	2
11/12/2008 02:41.86	14.0	10.8	34.4	-3.2	21.1	1.62E-05	1.0	2	2
11/12/2008 03:17.85	16.0	8.7	36.0	-7.3	21.7	1.68E-05	1.1	2	2.1
11/12/2008 03:56.20	18.0	6.7	38.4	-11.3	22.4	1.63E-05	1.0	2	2
11/12/2008 04:37.79	20.0	4.7	41.6	-15.3	23.1	1.60E-05	1.0	2	2
11/12/2008 05:22.22	22.0	2.6	44.4	-19.4	23.8	1.64E-05	1.1	2	2.1
11/12/2008 06:11.20	24.0	0.6	49.0	-23.4	24.6	1.56E-05	1.0	2	2





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

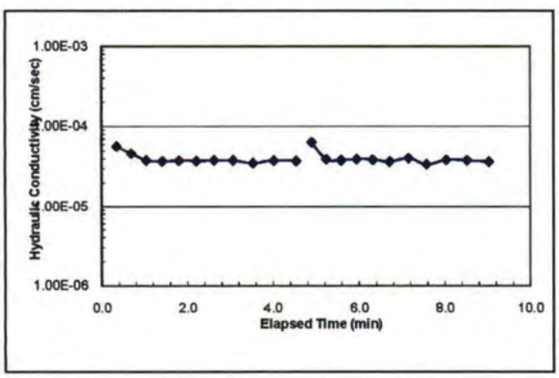
ASTM D 5084 - 00

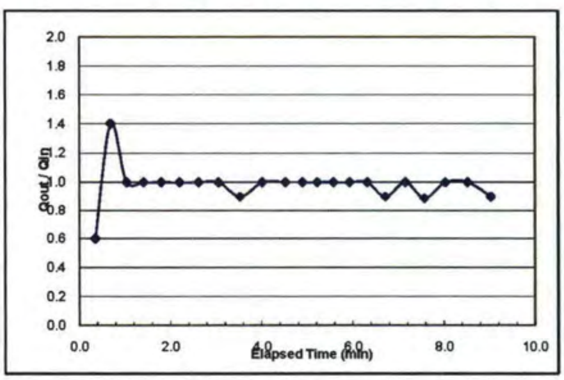
Sample I.D.	150-mm Polson Alt Upper Silt-3		Test Date :	1/13/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	7.6	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1390.0	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	4.6		a_{out} =	1	cm^2
Weight of wet sample =	2504.8	g	Sample Water Content =	28.9%	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.40	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)	(%)
A	31.07	122.39	101.93	28.87%

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	23.0	0.0	23.0	0.0				
0:00:21	2.0	21.8	20.9	19.8	0.3	5.65E-05	0.6	2	1.2
0:00:41	3.0	20.4	20.1	17.4	0.7	4.63E-05	1.4	1	1.4
0:01:02	4.0	19.4	21.1	15.4	1.0	3.85E-05	1.0	1	1
0:01:25	5.0	18.4	22.6	13.4	1.4	3.73E-05	1.0	1	1
0:01:48	6.0	17.4	23.1	11.4	1.8	3.80E-05	1.0	1	1
0:02:12	7.0	16.4	24.3	9.4	2.2	3.77E-05	1.0	1	1
0:02:37	8.0	15.4	24.9	7.4	2.6	3.85E-05	1.0	1	1
0:03:03	9.0	14.4	26.3	5.4	3.1	3.82E-05	1.0	1	1
0:03:32	10.0	13.5	28.2	3.5	3.5	3.55E-05	0.9	1	0.9
0:04:01	11.0	12.5	29.0	1.5	4.0	3.83E-05	1.0	1	1
0:04:32	12.0	11.5	31.1	-0.5	4.5	3.77E-05	1.0	1	1
0:00:00	0.0	23.0	-271.7	23.0	4.5				
0:00:24	2.0	21.0	23.6	19.0	4.9	6.31E-05	1.0	2	2
0:00:43	3.0	20.0	19.9	17.0	5.2	3.95E-05	1.0	1	1
0:01:05	4.0	19.0	21.3	15.0	5.6	3.83E-05	1.0	1	1
0:01:26	5.0	18.0	21.5	13.0	5.9	3.96E-05	1.0	1	1
0:01:49	6.0	17.0	22.8	11.0	6.3	3.89E-05	1.0	1	1
0:02:13	7.0	16.1	23.8	9.1	6.7	3.69E-05	0.9	1	0.9
0:02:39	8.1	15.0	26.3	6.9	7.2	4.04E-05	1.0	1.1	1.1
0:03:04	9.0	14.2	25.3	5.2	7.6	3.40E-05	0.9	0.9	0.8
0:03:32	10.0	13.2	27.4	3.2	8.0	3.87E-05	1.0	1	1
0:04:01	11.0	12.2	29.4	1.2	8.5	3.80E-05	1.0	1	1
0:04:32	12.0	11.3	30.5	-0.7	9.0	3.68E-05	0.9	1	0.9





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

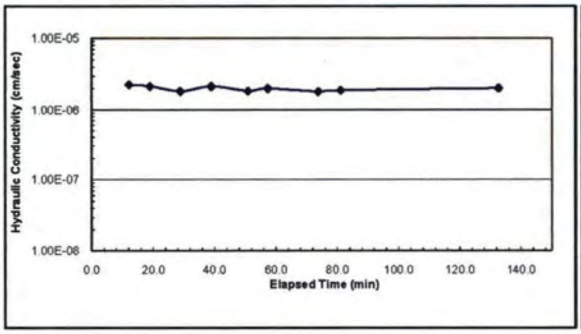
ASTM D 5084 - 00

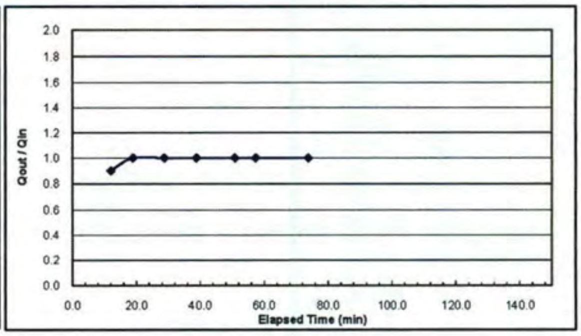
Sample I.D.	75-mm Polson Alt Upper Silt-3		Test Date :	1/26/09	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.0	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	38.32	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	146.0	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.2		a_{out} =	1	cm^2
Weight of wet sample =	275.2	g	Sample Water Content =	30.5%	(%)
Wet Density =	1.88	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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
64	30.95	124.12	102.33	30.53%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	1.0	24.0	0.0	23.0	0.0				
0:12:03	2.0	23.1	723.2	21.1	12.1	2.28E-06	0.9	1	0.9
0:18:55	2.5	22.6	412.3	20.1	18.9	2.16E-06	1.0	0.5	0.5
0:28:46	3.1	22.0	590.6	18.9	28.8	1.85E-06	1.0	0.6	0.6
0:38:51	3.8	21.3	605.0	17.5	38.9	2.16E-06	1.0	0.7	0.7
0:50:50	4.5	20.6	719.0	16.1	50.8	1.86E-06	1.0	0.7	0.7
0:57:19	4.9	20.2	389.0	15.3	57.3	2.01E-06	1.0	0.4	0.4
1:13:48	5.8	19.3	989.0	13.5	73.8	1.83E-06	1.0	0.9	0.9
1:21:02	6.2	18.9	434.0	12.7	81.0	1.90E-06	1.0	0.4	0.4
2:12:39	9.1	16.1	3097.0	7.0	132.7	2.04E-06	1.0	2.9	2.8





Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

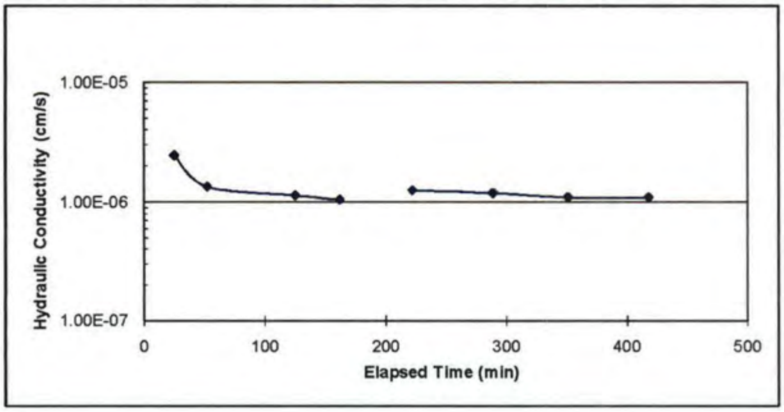
ASTM D 5084 - 00

Sample I.D.			305-mm K#1	Test Date :		
Cell Pressure =	20.0	psi		Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi		Length of Sample, L =	17.8	cm
Outflow Pressre =	15.0	psi		Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi		Sample Volume, V =	13005.0	cm^3
Effective Stress =	4.0	psi		a_{in} =	5	cm^2
Hydraulic Gradient, i =	7.9			a_{out} =	5	cm^2
Weight of wet sample =	26308.8	g		Sample Water Content =	27.1	(%)
Wet Density =	2.0	g/cm^3		Dry Density =	1.59	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)	(%)
7	49.4	383.2	311.96	27.13

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
9:00:00	0.5	22.1	0	21.6	0				
9:25:00	8.1	20.2	1500	12.1	25	2.45E-06	0.3	38	9.5
9:52:00	11.5	18.2	1620	6.7	52	1.35E-06	0.6	17	10
11:05:00	17.9	13	4380	-4.9	125	1.14E-06	0.8	32	26
11:42:00	20.6	10.6	2220	-10	162	1.05E-06	0.9	13.5	12
11:42:00	0.4	23.2	0	22.8	162				
12:42:00	6.8	17.9	3600	11.1	222	1.26E-06	0.8	32	26.5
13:49:00	12.6	12.2	4020	-0.4	289	1.19E-06	1	29	28.5
14:51:00	17.2	7.7	3720	-9.5	351	1.10E-06	1	23	22.5
15:58:00	21.9	3.2	4020	-18.7	418	1.10E-06	1	23.5	22.5



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

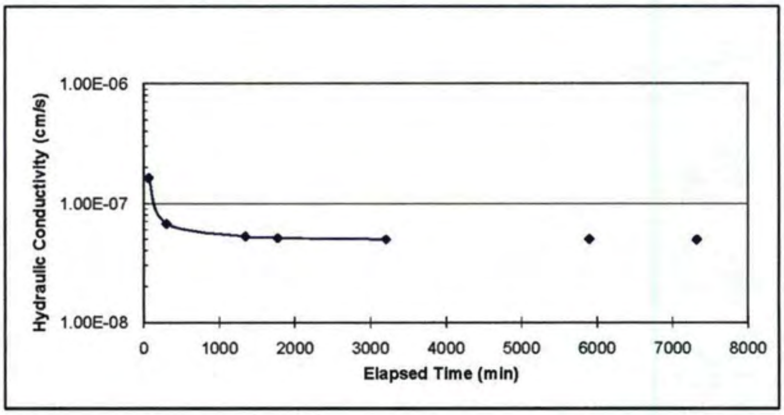
ASTM D 5084 - 00

Sample I.D.	150-mm K#1		Test Date :	12/21/05	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	12.5	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	181.46	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	2268.2	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.3		a_{out} =	1	cm^2
Weight of wet sample =	4776.8	g	Sample Water Content =	17.8	(%)
Wet Density =	2.1	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)	(%)
4	49.4	441.8	382.64	17.75

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/21/2005 11:39	0	24	0	24	0				
12/21/2005 12:45	2.9	23.8	3960	20.9	66	1.64E-07	0.1	14.5	1
12/21/2005 16:40	5.6	22.1	14100	16.5	301	6.71E-08	0.6	13.5	8.5
12/22/2005 10:03	13.4	15.6	62580	2.2	1344	5.22E-08	0.8	39	32.5
12/22/2005 17:09	16.1	13	25560	-3.1	1770	5.07E-08	1	13.5	13
12/23/2005 17:03	24.4	5.3	86040	-19.1	3204	4.92E-08	0.9	41.5	38.5
12/23/2005 17:03	6	23.3	0	17.3	3204				
12/25/2005 13:53	23.2	7.6	161400	-15.6	5894	4.96E-08	0.9	86	78.5
12/25/2005 13:53	9	23.9	0	14.9	5894				
12/26/2005 13:35	18.2	15.2	85320	-3	7316	4.91E-08	0.9	46	43.5
12/27/2005 9:12	24.7	9	70620	-15.7	8493	4.70E-08	1	32.5	31



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

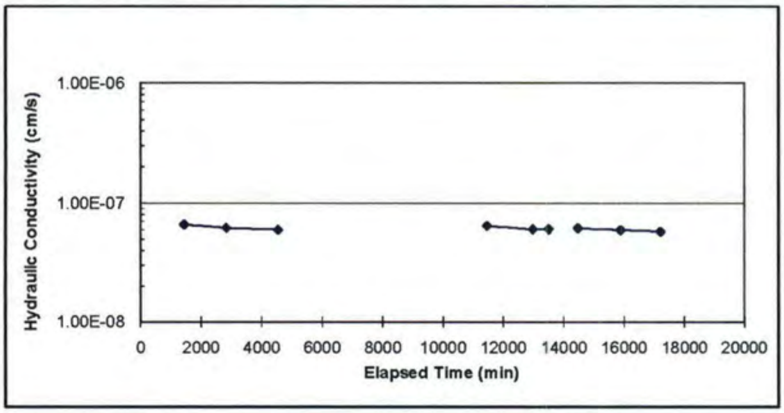
ASTM D 5084 - 00

Sample I.D.		100-mm K#1	Test Date :		
Cell Pressure =	20.0	psi	Diameter of Sample, D =	10.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	10.0	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	81.71	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	817.1	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	14.1		a_{out} =	1	cm^2
Weight of wet sample =	1645.5	g	Sample Water Content =		(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.01	g/cm^3

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

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

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/28/2005 9:22	0.5	24.1	0	23.6	0.0				
12/29/2005 9:19	8.4	17.5	86220	9.1	1437.0	6.61E-08	0.8	39.5	33
12/30/2005 8:29	14.7	11.8	83400	-2.9	2827.0	6.18E-08	0.9	31.5	28.5
12/31/2005 13:05	21.5	5.5	102960	-16	4543.0	5.99E-08	0.9	34	31.5
1/4/2006 8:45	7	22.4	330000	15.4	10043.0				
1/5/2006 8:17	13.3	15.5	84720	2.2	11455.0	6.43E-08	1.1	31.5	34.5
1/6/2006 9:36	19.5	9.5	91140	-10	12974.0	6.04E-08	1	31	30
1/6/2006 18:23	21.5	7.5	31620	-14	13501.0	6.06E-08	1	10	10
1/6/2006 18:23	7.8	23.8	0	16	13501.0				
1/7/2006 10:27	12.2	19.4	57840	7.2	14465.0	6.16E-08	1	22	22
1/8/2006 10:01	18.1	13.7	84840	-4.4	15879.0	5.94E-08	1	29.5	28.5
1/9/2006 8:05	23.1	8.9	79440	-14.2	17203.0	5.79E-08	1	25	24



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

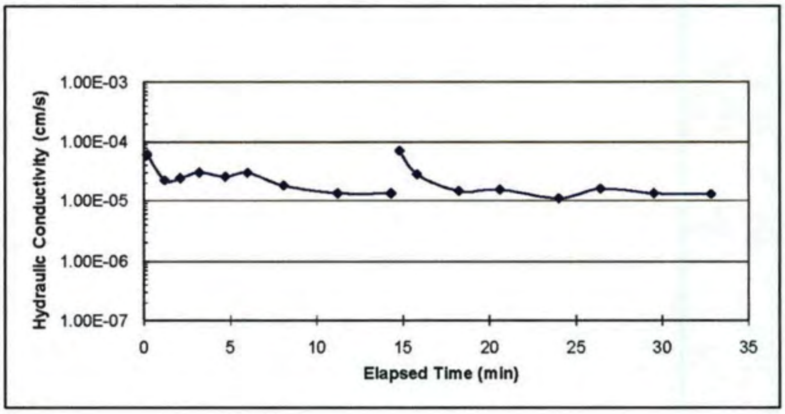
ASTM D 5084 - 00

Sample I.D.	305-mm K#2-L		Test Date :	12/7/05	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	11105.4	cm^3
Effective Stress =	4.0	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	9.3		a_{out} =	5	cm^2
Weight of wet sample =	23768.6	g	Sample Water Content =	24.1	(%)
Wet Density =	2.1	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	Water Content
	(g)	(g)	(g)	(%)
1	50.1	381.1	316.77	24.12

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	24	0				
0:00:10	1.0	23.1	10	22.1	0.2	6.06E-05	0.9	5	4.5
0:01:10	3.0	21	60	18	1.2	2.22E-05	1.05	10	10.5
0:02:04	5.0	19.1	54	14.1	2.1	2.41E-05	0.95	10	9.5
0:03:14	8.0	16	70	8	3.2	3.00E-05	1.03	15	15.5
0:04:40	11.0	12.9	86	1.9	4.7	2.54E-05	1.03	15	15.5
0:05:57	14.0	9.8	77	-4.2	6	2.97E-05	1.03	15	15.5
0:08:05	17.0	6.9	128	-10.1	8.1	1.80E-05	0.97	15	14.5
0:11:10	20.0	3.9	185	-16.1	11.2	1.33E-05	1	15	15
0:14:20	23.0	1	190	-22	14.3	1.33E-05	0.97	15	14.5
0:00:00	0.0	24.5	0	24.5	14.3				
0:00:30	3.0	21	30	18	14.8	6.99E-05	1.17	15	17.5
0:01:30	6.0	19	60	13	15.8	2.79E-05	0.67	15	10
0:03:51	9.0	16.1	141	7.1	18.2	1.45E-05	0.97	15	14.5
0:06:15	12.0	13	144	1	20.6	1.53E-05	1	15	15.5
0:09:38	15.0	10.1	203	-4.9	24	1.09E-05	1	15	14.5
0:12:04	18.0	7.2	146	-10.8	26.4	1.59E-05	1	15	14.5
0:15:07	21.0	4.3	183	-16.7	29.5	1.33E-05	1	15	14.5
0:18:25	24.0	1.4	198	-22.6	32.8	1.29E-05	1	15	14.5



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

ASTM D 5084 - 00

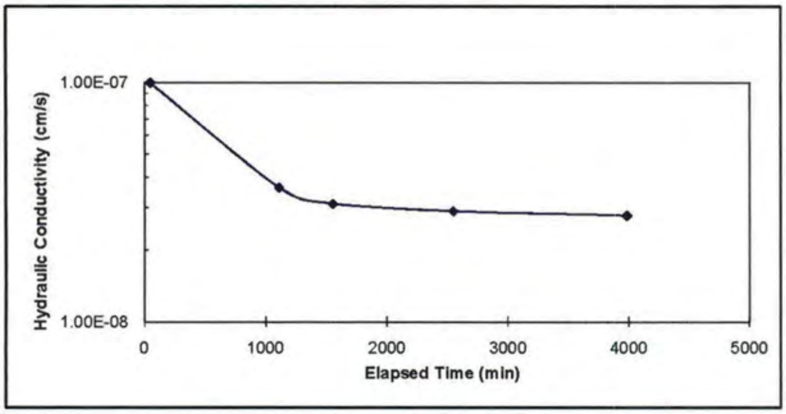
Sample I.D.	150-mm K#2-L	Test Date :	12/12/05

Cell Pressure =	20.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	10.0	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	181.46	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	1814.6	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	14.1		a_{out} =	1	cm^2
Weight of wet sample =	3800.1	g	Sample Water Content =	13.6	(%)
Wet Density =	2.1	g/cm^3	Dry Density =	1.84	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	35.1	379.6	338.47	13.56

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/12/2005 14:42	0.2	22.7	0	22.5	0				
12/12/2005 15:30	1	21.8	2880	20.8	48	9.97E-08	1.13	4	4.5
12/13/2005 9:13	7.8	15.6	63780	7.8	1111	3.61E-08	0.91	34	31
12/13/2005 16:37	10.2	13.6	26640	3.4	1555	3.10E-08	0.83	12	10
12/14/2005 9:13	15	9.6	59760	-5.4	2551	2.89E-08	0.83	24	20
12/15/2005 9:10	21	4.3	86220	-16.7	3988	2.77E-08	0.88	30	26.5



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

ASTM D 5084 - 00

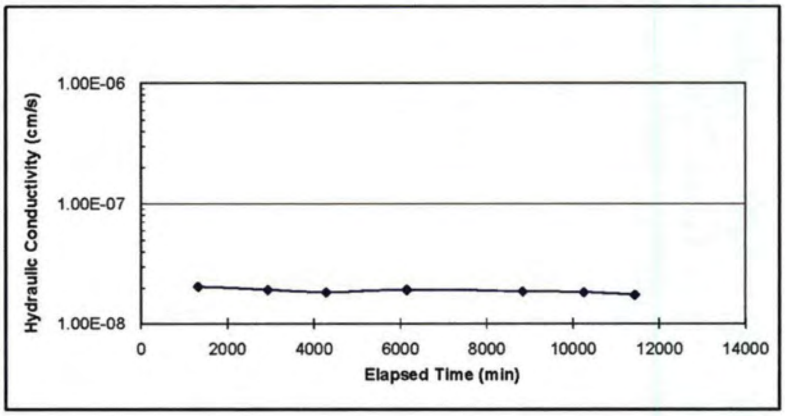
Sample I.D.	100-mm K#2-L	Test Date :	12/15/05

Cell Pressure =	20.0	psi	Diameter of Sample, D =	10.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	10.0	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	81.71	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	817.1	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	14.1		a_{out} =	1	cm^2
Weight of wet sample =	1661.6	g	Sample Water Content =	18.8	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	1.71	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	50.2	292.2	253.89	18.81

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
12/19/2005 10:33	1.1	24.2	0	23.1	0.0				
12/20/2005 8:37	3.6	22.4	79440	18.8	1324.0	2.07E-08	0.72	12.5	9
12/21/2005 11:35	6	20	97080	14	2942.0	1.94E-08	1	12	12
12/22/2005 10:03	7.9	18.2	80880	10.3	4290.0	1.85E-08	0.95	9.5	9
12/23/2005 17:04	10.4	15.5	111660	5.1	6151.0	1.94E-08	1.08	12.5	13.5
12/25/2005 13:53	14	12.1	161340	-1.9	8840.0	1.88E-08	0.94	18	17
12/26/2005 13:35	15.7	10.3	85320	-5.4	10262.0	1.85E-08	1.06	8.5	9
12/27/2005 9:11	17	8.9	70560	-8.1	11438.0	1.76E-08	1.08	6.5	7



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

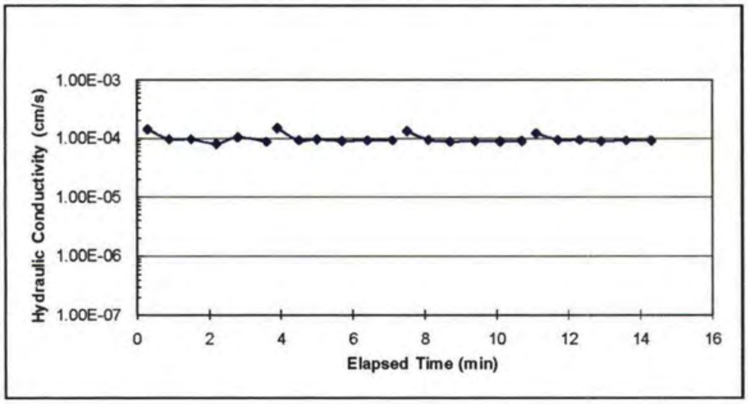
ASTM D 5084 - 00

Sample I.D.		305-mm K#3-L		Test Date :	12/19/05	
Cell Pressure =	20.0	psi		Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi		Length of Sample, L =	17.8	cm
Outflow Pressre =	15.0	psi		Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi		Sample Volume, V =	13005.0	cm^3
Effective Stress =	4.0	psi		a_{in} =	5	cm^2
Hydraulic Gradient, i =	7.9			a_{out} =	5	cm^2
Weight of wet sample =	24040.8	g		Sample Water Content =	21.4	(%)
Wet Density =	1.8	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)	(%)
874	34.8	316	266.48	21.37

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	24	0				
0:00:20	4.0	20.5	20	16.5	0.3	1.42E-04	0.9	20	17.5
0:00:53	8.0	16.5	33	8.5	0.9	9.64E-05	1	20	20
0:01:28	12.0	12.5	35	0.5	1.5	9.59E-05	1	20	20
0:02:11	16.0	8.7	43	-7.3	2.2	8.05E-05	1	20	19
0:02:48	20.0	4.5	37	-15.5	2.8	1.04E-04	1.1	20	21
0:03:34	24.0	0.5	46	-23.5	3.6	8.75E-05	1	20	20
0:00:00	0.0	24.3	0	24.3	3.6				
0:00:20	4.0	20.5	20	16.5	3.9	1.48E-04	1	20	19
0:00:53	8.0	16.8	33	8.8	4.5	9.27E-05	0.9	20	18.5
0:01:28	12.0	12.8	35	0.8	5	9.58E-05	1	20	20
0:02:07	16.0	8.9	39	-7.1	5.7	8.98E-05	1	20	19.5
0:02:49	20.0	4.7	42	-15.3	6.4	9.19E-05	1.1	20	21
0:03:33	24.0	0.6	44	-23.4	7.1	9.25E-05	1	20	20.5
0:00:00	0.0	24.2	0	24.2	7.1				
0:00:25	4.0	19.5	25	15.5	7.5	1.32E-04	1.2	20	23.5
0:00:59	8.0	15.5	34	7.5	8.1	9.42E-05	1	20	20
0:01:35	12.0	12	36	0	8.7	8.79E-05	0.9	20	17.5
0:02:16	16.0	7.8	41	-8.2	9.4	8.92E-05	1.1	20	21
0:02:59	20.0	3.8	43.0	-16.2	10.1	8.83E-05	1.0	20	20
0:03:33	23.0	0.7	34.0	-22.3	10.7	9.00E-05	1.0	15	15.5
0:00:00	0.0	24.0	0.0	24.0	10.7				
0:00:25	4.0	20.0	25.0	16.0	11.1	1.21E-04	1.0	20	20
0:00:59	8.0	16.0	34.0	8.0	11.7	9.39E-05	1.0	20	20
0:01:35	12.0	12.0	36.0	0.0	12.3	9.36E-05	1.0	20	20
0:02:15	16.0	8.0	40.0	-8.0	12.9	8.92E-05	1.0	20	20
0:02:57	20.0	3.8	42.0	-16.2	13.6	9.25E-05	1.1	20	21
0:03:40	24.0	0.0	43.0	-24.0	14.3	9.17E-05	1.0	20	19



Hydraulic Conductivity Test - Sacramento - Thin Store-and-Release Cover

ASTM D 5084 - 00

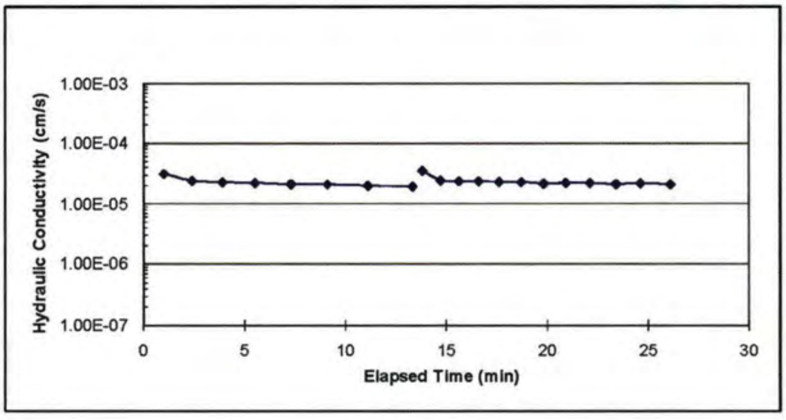
Sample I.D.	305-mm K#5-L	Test Date :	12/7/05

Cell Pressure =	20.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	11105.4	cm^3
Effective Stress =	4.0	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	9.3		a_{out} =	5	cm^2
Weight of wet sample =	22770.7	g	Sample Water Content =	15.7	(%)
Wet Density =	2.1	g/cm^3	Dry Density =	1.77	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	34.9	314.4	276.57	15.65

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	24	0				
0:00:58	3.0	21.4	58	18.4	1	3.12E-05	0.9	15	13
0:02:21	6.0	18.4	83	12.4	2.4	2.42E-05	1	15	15
0:03:51	9.0	15.5	90	6.5	3.9	2.28E-05	1	15	14.5
0:05:29	12.0	12.5	98	0.5	5.5	2.22E-05	1	15	15
0:07:16	15.0	9.5	107	-5.5	7.3	2.12E-05	1	15	15
0:09:07	18.0	6.6	111	-11.4	9.1	2.10E-05	1	15	14.5
0:11:06	21.0	3.8	119	-17.2	11.1	2.01E-05	0.9	15	14
0:13:20	24.0	0.8	134	-23.2	13.3	1.94E-05	1	15	15
0:00:00	0.0	24.5	0	24.5	13.3				
0:00:30	2.0	23.2	30	21.2	13.8	3.51E-05	0.7	10	6.5
0:01:22	4.0	21.3	52	17.3	14.7	2.45E-05	0.9	10	9.5
0:02:18	6.0	19.3	56	13.3	15.6	2.39E-05	1	10	10
0:03:16	8.0	17.3	58	9.3	16.6	2.37E-05	1	10	10
0:04:17	10.0	15.3	61	5.3	17.6	2.31E-05	1	10	10
0:05:20	12.0	13.3	63	1.3	18.7	2.30E-05	1	10	10
0:06:29	14.0	11.3	69	-2.7	19.8	2.16E-05	1	10	10
0:07:36	16.0	9.4	67	-6.6	20.9	2.23E-05	1	10	9.5
0:08:46	18.0	7.5	70	-10.5	22.1	2.20E-05	1	10	9.5
0:10:03	20.0	5.5	77.0	-14.5	23.4	2.12E-05	1.0	10	10
0:11:18	22.0	3.6	75.0	-18.4	24.6	2.19E-05	1.0	10	9.5
0:12:43	24.0	1.5	85.0	-22.5	26.1	2.10E-05	1.1	10	10.5



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

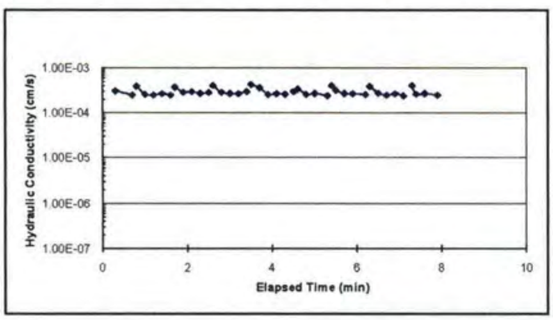
ASTM D 5084 - 00

Sample I.D.	**305-mm K#4-L**		**Test Date :**	**11/29/05**	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	16.5	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	12055.2	cm^3
Effective Stress =	4.0	psi	a_{in} =	4	cm^2
Hydraulic Gradient, i =	8.5		a_{out} =	4	cm^2
Weight of wet sample =	20185.2	g	Sample Water Content =	24.2	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.35	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	34.9	262.3	218.04	24.17

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	24	0				
0:00:15	10.0	18	15	8	0.3	3.08E-04	0.6	40	24
0:00:40	20.0	9	25	-11	0.7	2.48E-04	0.9	40	36
0:00:00	0.0	24.5	0	24.5	0.7				
0:00:08	5.0	18.5	8	13.5	0.8	3.90E-04	1.2	20	24
0:00:18	10.0	15	10	5	1	2.57E-04	0.7	20	14
0:00:31	15.0	10	13	-5	1.2	2.48E-04	1	20	20
0:00:44	20.0	5	13	-15	1.4	2.67E-04	1	20	20
0:00:56	24.0	1	12	-23	1.6	2.48E-04	1	16	16
0:00:00	0.0	24.5	0	24.5	1.6				
0:00:08	5.0	19	8	14	1.7	3.72E-04	1.1	20	22
0:00:18	10.0	14.5	10	4.5	1.9	2.87E-04	0.9	20	18
0:00:29	15.0	9.5	11	-5.5	2.1	2.94E-04	1	20	20
0:00:42	20.0	4.5	13	-15.5	2.3	2.68E-04	1	20	20
0:00:54	24.5	0	12	-24.5	2.5	2.81E-04	1	18	18
0:00:00	0.0	24.5	0	24.5	2.5				
0:00:07	5.0	19.5	7	14.5	2.6	4.04E-04	1	20	20
0:00:17	10.0	15	10	5	2.8	2.86E-04	0.9	20	18
0:00:29	15.0	10	12	-5	3	2.68E-04	1	20	20
0:00:42	20.0	5.0	13.0	-15.0	3.2	2.67E-04	1.0	20	20
0:00:54	24.5	0.0	12.0	-24.5	3.4	2.96E-04	1.1	18	20
0:00:00	0.0	24.5	0.0	24.5	3.4				
0:00:07	5.0	19.0	7.0	14.0	3.5	4.25E-04	1.1	20	22
0:00:15	10.0	14.5	8.0	4.5	3.7	3.59E-04	0.9	20	18
0:00:27	15.0	10.0	12.0	-5.0	3.9	2.55E-04	0.9	20	18
0:00:40	20.0	5.0	13.0	-15.0	4.1	2.67E-04	1.0	20	20
0:00:53	24.5	0.5	13.0	-24.0	4.3	2.59E-04	1.0	18	18
0:00:00	0.0	24.5	0.0	24.5	4.3				
0:00:10	5.0	19.0	10.0	14.0	4.5	2.97E-04	1.1	20	22
0:00:19	10.0	14.0	9.0	4.0	4.6	3.36E-04	1.0	20	20
0:00:31	15.0	9.5	12.0	-5.5	4.8	2.56E-04	0.9	20	18
0:00:44	20.0	4.5	13.0	-15.5	5.0	2.68E-04	1.0	20	20
0:00:58	24.5	0.0	14.0	-24.5	5.3	2.41E-04	1.0	18	18
0:00:00	0.0	24.5	0.0	24.5	5.3				
0:00:07	5.0	19.5	7.0	14.5	5.4	4.04E-04	1.0	20	20
0:00:16	10.0	15.0	9.0	5.0	5.5	3.18E-04	0.9	20	18
0:00:28	15.0	10.0	12.0	-5.0	5.7	2.68E-04	1.0	20	20
0:00:41	20.0	5.0	13.0	-15.0	5.9	2.67E-04	1.0	20	20
0:00:55	24.5	0.0	14.0	-24.5	6.2	2.54E-04	1.1	18	20
0:00:00	0.0	24.5	0.0	24.5	6.2				
0:00:07	5.0	20.0	7.0	15.0	6.3	3.83E-04	0.9	20	18
0:00:18	10.0	15.0	11.0	5.0	6.5	2.73E-04	1.0	20	20
0:00:31	15.0	10.0	13.0	-5.0	6.7	2.48E-04	1.0	20	20
0:00:44	20.0	5.0	13.0	-15.0	6.9	2.67E-04	1.0	20	20
0:00:58	24.5	0.5	14.0	-24.0	7.1	2.40E-04	1.0	18	18
0:00:00	0.0	24.5	0.0	24.5	7.1				
0:00:07	5.0	19.5	7.0	14.5	7.3	4.04E-04	1.0	20	20
0:00:18	10.0	15.0	11.0	5.0	7.4	2.60E-04	0.9	20	18
0:00:30	15.0	10.0	12.0	-5.0	7.6	2.68E-04	1.0	20	20
0:00:44	20.0	5.0	14.0	-15.0	7.9	2.48E-04	1.0	20	20



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

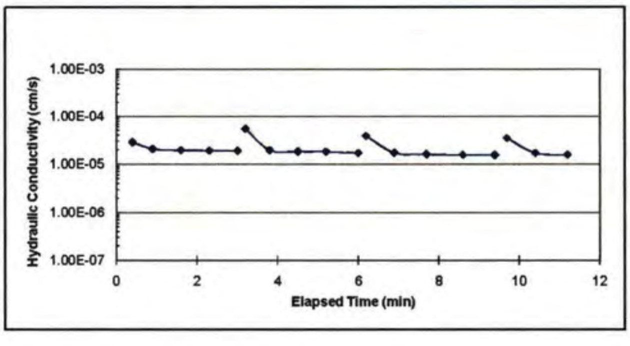
ASTM D 5084 - 00

Sample I.D.	**305-mm K#6-L**			**Test Date :**	**12/7/05**	
Cell Pressure =	20.0	psi		Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi		Length of Sample, L =	15.2	cm
Outflow Pressre =	15.0	psi		Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi		Sample Volume, V =	11105.4	cm^3
Effective Stress =	4.0	psi		a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.3			a_{out} =	1	cm^2
Weight of wet sample =	20729.5	g		Sample Water Content =	32.2	(%)
Wet Density =	1.9	g/cm^3		Dry Density =	1.41	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	342.7	267.68	32.24

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	24	0				
0:00:22	5.0	19.5	22	14.5	0.4	2.82E-05	0.9	5	4.5
0:00:56	10.0	14.5	34	4.5	0.9	2.05E-05	1	5	5
0:01:35	15.0	9.4	39	-5.6	1.6	1.93E-05	1	5	5.1
0:02:18	20.0	4.3	43	-15.7	2.3	1.89E-05	1	5	5.1
0:02:58	24.3	0	40	-24.3	3	1.86E-05	1	4.3	4.3
0:00:00	0.0	24.5	0	24.5	3				
0:00:12	5.0	19.5	12	14.5	3.2	5.44E-05	1	5	5
0:00:48	10.0	14.5	36	4.5	3.8	1.93E-05	1	5	5
0:01:29	15.0	9.5	41	-5.5	4.5	1.82E-05	1	5	5
0:02:14	20.0	4.5	45	-15.5	5.2	1.78E-05	1	5	5
0:02:59	24.3	0	45	-24.3	6	1.69E-05	1	4.3	4.5
0:00:00	0.0	24.5	0	24.5	6				
0:00:17	5.0	19.5	17	14.5	6.2	3.84E-05	1	5	5
0:00:58	10.0	14.5	41	4.5	6.9	1.70E-05	1	5	5
0:01:45	15.0	9.5	47	-5.5	7.7	1.59E-05	1	5	5
0:02:37	20.0	4.5	52	-15.5	8.6	1.54E-05	1	5	5
0:03:28	24.5	0	51	-24.5	9.4	1.53E-05	1	4.5	4.5
0:00:00	0.0	24.5	0	24.5	9.4				
0:00:19	5.0	19.5	19.0	14.5	9.7	3.43E-05	1.0	5	5
0:01:00	10.0	14.6	41.0	4.6	10.4	1.68E-05	1.0	5	4.9
0:01:48	15.0	9.7	48.0	-5.3	11.2	1.54E-05	1.0	5	4.9
0:02:41	20.0	4.5	53.0	-15.5	12.1	1.54E-05	1.0	5	5.2
0:03:36	24.5	0.0	55.0	-24.5	13.0	1.42E-05	1.0	4.5	4.5
0:00:00	0.0	24.5	0.0	24.5	13.0				
0:00:16	5.0	19.2	16.0	14.2	13.3	4.20E-05	1.1	5	5.3
0:00:58	10.0	14.2	42.0	4.2	14.0	1.66E-05	1.0	5	5
0:01:46	15.0	9.2	48.0	-5.8	14.8	1.56E-05	1.0	5	5
0:02:41	20.0	4.0	55.0	-16.0	15.7	1.49E-05	1.0	5	5.2
0:03:28	24.0	0.0	47.0	-24.0	16.5	1.47E-05	1.0	4	4
0:00:00	0.0	24.5	0.0	24.5	16.5				
0:00:18	5.0	19.7	18.0	14.7	16.8	3.55E-05	1.0	5	4.8
0:01:02	10.0	14.8	44.0	4.8	17.5	1.56E-05	1.0	5	4.9
0:01:53	15.0	9.8	51.0	-5.2	18.4	1.46E-05	1.0	5	5
0:02:49	20.0	4.5	56.0	-15.5	19.3	1.47E-05	1.1	5	5.3
0:03:45	24.5	0.0	56.0	-24.5	20.2	1.39E-05	1.0	4.5	4.5
0:00:00	0.0	24.5	0.0	24.5	20.2				
0:00:17	5	20	17	15	20.5	3.64E-05	0.9	5	4.5
0:01:03	10	15	46	5	21.3	1.51E-05	1	5	5
0:01:56	15	10	52	-5	22.2	1.43E-05	1	5	5
0:02:52	20	5	57	-15	23.1	1.40E-05	1	5	5
0:03:52	25	0	60	-25	24.1	1.44E-05	1	5	5



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

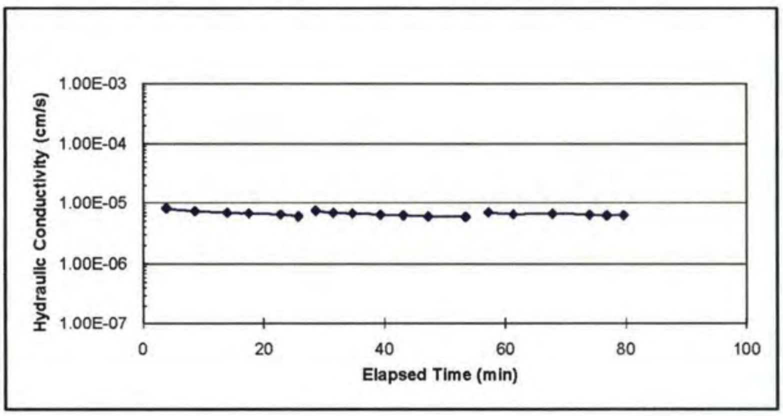
ASTM D 5084 - 00

Sample I.D.		150-mm K#6-L	Test Date :	12/7/05	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	11.5	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	181.46	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	2086.8	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	12.2		a_{out} =	1	cm^2
Weight of wet sample =	4042.5	g	Sample Water Content =	31.1	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.48	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)	(%)
10	51	399.95	317.17	31.10

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	24	0				
0:03:47	5.0	19.7	227	14.7	3.8	8.07E-06	0.9	5	4.3
0:08:29	10.0	14.9	282	4.9	8.5	7.28E-06	1	5	4.8
0:13:53	15.0	10	324	-5	13.9	6.85E-06	1	5	4.9
0:17:30	18.0	6.9	217	-11.1	17.5	6.68E-06	1	3	3.1
0:22:49	22.0	2.8	319	-19.2	22.8	6.38E-06	1	4	4.1
0:25:41	24.0	0.9	172	-23.1	25.7	5.98E-06	1	2	1.9
0:00:00	0.8	24.5	0	23.7	25.7				
0:02:52	4.0	21.2	172	17.2	28.6	7.39E-06	1	3.2	3.3
0:05:48	7.0	18.3	176	11.3	31.5	6.82E-06	1	3	2.9
0:08:58	10.0	15.3	190	5.3	34.7	6.68E-06	1	3	3
0:13:37	14.0	11.3	279	-2.7	39.3	6.37E-06	1	4	4
0:17:23	17.0	8.3	226	-8.7	43.1	6.20E-06	1	3	3
0:21:29	20.0	5.3	246	-14.7	47.2	5.96E-06	1	3	3
0:27:45	24.2	1	376	-23.2	53.4	5.86E-06	1	4.2	4.3
0:00:00	0.0	24.5	0	24.5	53.4				
0:03:43	4.0	20.6	223	16.6	57.2	6.93E-06	1	4	3.9
0:07:51	8.0	16.8	248	8.8	61.3	6.47E-06	1	4	3.8
0:14:24	14.0	10.9	393	-3.1	67.8	6.65E-06	1	6	5.9
0:20:36	19.0	6.0	372.0	-13.0	74.0	6.33E-06	1.0	5	4.9
0:23:23	21.0	3.9	167.0	-17.1	76.8	6.16E-06	1.1	2	2.1
0:26:10	23.0	1.9	167.0	-21.1	79.6	6.21E-06	1.0	2	2



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

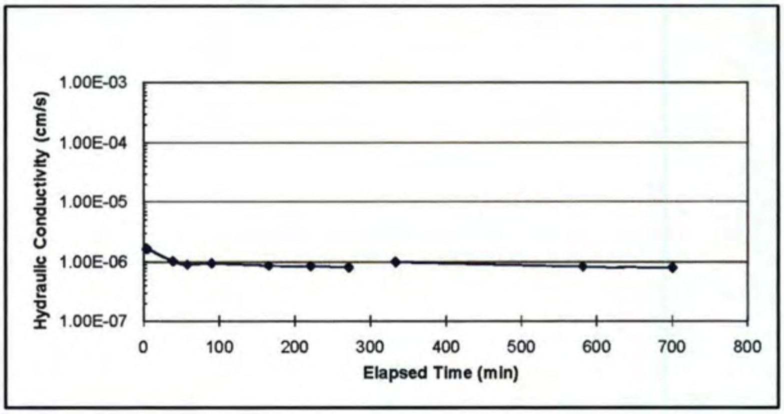
ASTM D 5084 - 00

Sample I.D.	100-mm K#6-L		Test Date :		
Cell Pressure =	20.0	psi	Diameter of Sample, D =	10.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	11.5	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	81.71	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	939.7	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	12.2		a_{out} =	1	cm^2
Weight of wet sample =	1812.6	g	Sample Water Content =		(%)
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)	(%)
10	51.1	292.9		

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.2	24.3	0	24.1	0				
0:04:22	1.0	24.1	262	23.1	4.4	1.65E-06	0.2	0.8	0.2
0:38:35	3.8	22.1	2053	18.3	38.6	1.03E-06	0.7	2.8	2
0:57:44	5.0	21	1149	16	57.7	9.00E-07	0.9	1.2	1.1
1:29:59	7.0	19	1935	12	90	9.48E-07	1	2	2
2:45:30	11.2	15	4531	3.8	165.5	8.64E-07	1	4.2	4
3:41:07	14.1	12.2	3337	-1.9	221.1	8.56E-07	1	2.9	2.8
4:31:33	16.5	9.9	3026	-6.6	271.6	8.08E-07	1	2.4	2.3
0:00:00	0.0	24.1	0	24.1	271.6				
1:02:12	4.8	20.5	3732	15.7	333.8	9.94E-07	0.8	4.8	3.6
5:10:22	17.4	8.1	14890	-9.3	581.9	8.30E-07	1	12.6	12.4
7:09:10	22.4	3	7128	-19.4	700.7	7.96E-07	1	5	5.1



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

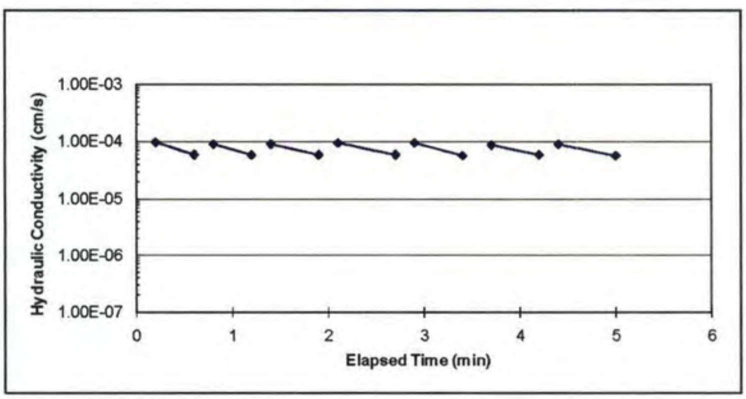
ASTM D 5084 - 00

Sample I.D.	305-mm K#7-L		Test Date :	11/22/05	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	12.7	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	9278.8	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	1	cm^2
Weight of wet sample =	17690.4	g	Sample Water Content =	27.1	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.50	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)	(%)
10	51.12	480.74	389.15	27.10

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	24.7	0	24.7	0				
0:00:11	10.0	15.8	11	5.8	0.2	9.60E-05	0.9	10	8.9
0:00:33	20.0	5.5	22	-14.5	0.6	5.90E-05	1	10	10.3
0:00:00	0.0	24.5	0	24.5	0.6				
0:00:14	10.0	12.5	14	2.5	0.8	8.89E-05	1.2	10	12
0:00:37	20.0	2	23	-18	1.2	5.85E-05	1.1	10	10.5
0:00:00	0.0	24.5	0	24.5	1.2				
0:00:13	10.0	14	13	4	1.4	8.87E-05	1.1	10	10.5
0:00:45	24.0	0	32	-24	1.9	5.85E-05	1	14	14
0:00:00	0.0	24.5	0	24.5	1.9				
0:00:12	10.0	14.5	12	4.5	2.1	9.36E-05	1	10	10
0:00:45	24.5	0	33	-24.5	2.7	5.88E-05	1	14.5	14.5
0:00:00	0.0	24.5	0	24.5	2.7				
0:00:12	10.0	14.5	12	4.5	2.9	9.36E-05	1	10	10
0:00:46	24.5	0	34	-24.5	3.4	5.70E-05	1	14.5	14.5
0:00:00	0.0	24.5	0	24.5	3.4				
0:00:13	10.0	14.5	13	4.5	3.7	8.64E-05	1	10	10
0:00:46	24.5	0	33	-24.5	4.2	5.88E-05	1	14.5	14.5
0:00:00	0.0	24.5	0	24.5	4.2				
0:00:13	10.0	14.0	13.0	4.0	4.4	8.87E-05	1.1	10	10.5
0:00:46	24.0	0.0	33.0	-24.0	5.0	5.67E-05	1.0	14	14
0:00:00	0.0	24.5	0.0	24.5	5.0				
0:00:13	10.0	14.5	13.0	4.5	5.2	8.64E-05	1.0	10	10
0:00:47	24.5	0.0	34.0	-24.5	5.8	5.70E-05	1.0	14.5	14.5
0:00:00	0.0	24.5	0.0	24.5	5.8				
0:00:13	10.0	14.0	13.0	4.0	6.0	8.87E-05	1.1	10	10.5
0:00:43	24.0	0.0	30.0	-24.0	6.5	6.24E-05	1.0	14	14
0:00:00	0.0	24.5	0.0	24.5	6.5				
0:00:12	10.0	14.5	12.0	4.5	6.7	9.36E-05	1.0	10	10
0:00:45	24.5	0.0	33.0	-24.5	7.2	5.88E-05	1.0	14.5	14.5



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

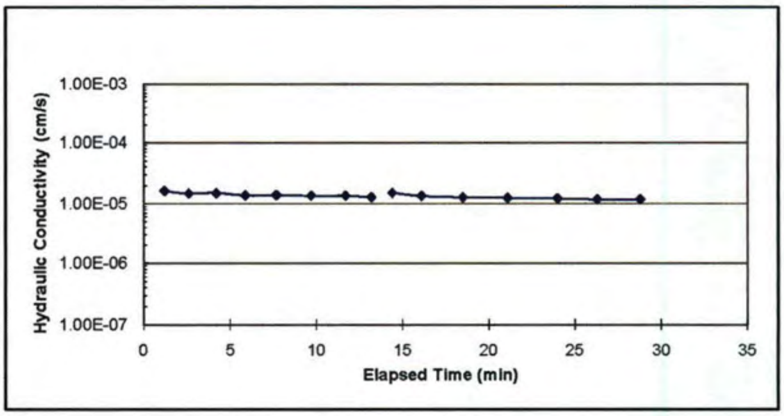
ASTM D 5084 - 00

Sample I.D.	150-mm K#7-L		Test Date :		
Cell Pressure =	20.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	12.7	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	181.46	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	2304.5	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	1	cm^2
Weight of wet sample =	4478.6	g	Sample Water Content =	26.9	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.53	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)	(%)
4	50	412.3	335.61	26.85

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
0:00:00	1.0	23.5	0	22.5	0				
0:01:11	4.0	21.2	71	17.2	1.2	1.62E-05	0.8	3	2.3
0:02:38	7.0	18.5	87	11.5	2.6	1.47E-05	0.9	3	2.7
0:04:10	10.0	15.6	92	5.6	4.2	1.50E-05	1	3	2.9
0:05:55	13.0	12.7	105	-0.3	5.9	1.37E-05	1	3	2.9
0:07:43	16.0	9.8	108	-6.2	7.7	1.38E-05	1	3	2.9
0:09:39	19.0	6.9	116	-12.1	9.7	1.35E-05	1	3	2.9
0:11:40	22.0	4	121	-18	11.7	1.35E-05	1	3	2.9
0:13:10	24.0	2	90	-22	13.2	1.28E-05	1	2	2
0:00:00	0.5	24	0	23.5	13.2				
0:01:16	3.0	21.2	76	18.2	14.4	1.50E-05	1.1	2.5	2.8
0:02:56	6.0	18.2	100	12.2	16.1	1.34E-05	1	3	3
0:05:19	10.0	14.4	143	4.4	18.5	1.27E-05	1	4	3.8
0:07:57	14.0	10.4	158	-3.6	21.1	1.25E-05	1	4	4
0:10:48	18.0	6.4	171	-11.6	24	1.22E-05	1	4	4
0:13:08	21.0	3.4	140	-17.6	26.3	1.18E-05	1	3	3
0:15:36	24.0	0.4	148	-23.6	28.8	1.18E-05	1	3	3



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

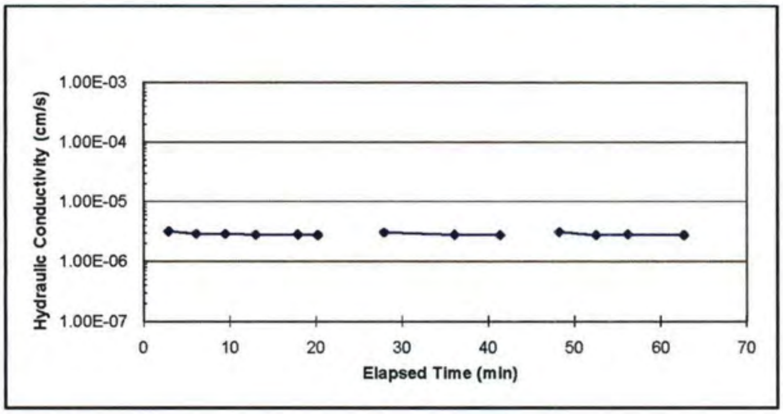
ASTM D 5084 - 00

Sample I.D.	305-mm K#8-L		Test Date :	11/22/05	
Cell Pressure =	20.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	17.0	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	15.0	psi	Area of Sample, A =	730.62	cm^2
Pressure Difference =	2.0	psi	Sample Volume, V =	11105.4	cm^3
Effective Stress =	4.0	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	9.3		a_{out} =	1	cm^2
Weight of wet sample =	21319.2	g	Sample Water Content =	30.6	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.47	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)	(%)
10	51.12	404.58	321.77	30.60

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	0	23	0				
0:02:53	4.0	18.6	173	14.6	2.9	3.18E-06	1.1	4	4.4
0:06:04	8.0	14.6	191	6.6	6.1	2.89E-06	1	4	4
0:09:27	12.0	10.6	203	-1.4	9.5	2.87E-06	1	4	4
0:13:01	16.0	6.9	214	-9.1	13	2.78E-06	0.9	4	3.7
0:17:54	21.0	2	293	-19	17.9	2.79E-06	1	5	4.9
0:20:11	23.3	0	137	-23.3	20.2	2.74E-06	0.9	2.3	2
0:00:00	0.0	24.5	0	24.5	20.2				
0:07:44	10.0	13.6	464	3.6	27.9	3.05E-06	1.1	10	10.9
0:15:53	19.0	4.9	489	-14.1	36.1	2.80E-06	1	9	8.7
0:21:15	24.4	0	322	-24.4	41.4	2.75E-06	0.9	5.4	4.9
0:00:00	0.0	25	0	25	41.4				
0:06:46	9.0	15.2	406	6.2	48.2	3.10E-06	1.1	9	9.8
0:11:05	14.0	10.5	259	-3.5	52.5	2.76E-06	0.9	5	4.7
0:14:45	18.0	6.6	220	-11.4	56.2	2.82E-06	1	4	3.9
0:21:14	24.5	0.5	389	-24	62.7	2.75E-06	0.9	6.5	6.1



Hydraulic Conductivity Test - Underwood - Thick Clay Cover

ASTM D 5084 - 00

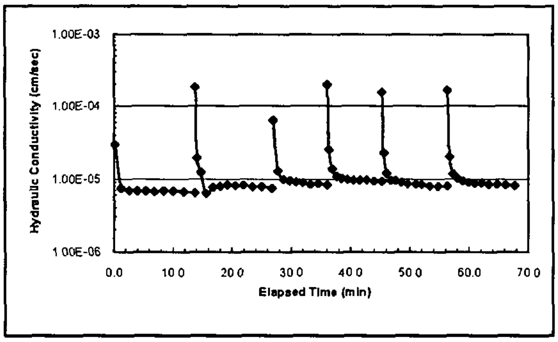
Sample I.D.	305-mm CC5 - Clay Top 1		Test Date :	9/2/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	24750.0	g	Sample Water Content =	11.6%	(%)
Wet Density =	2.2	g/cm^3	Dry Density =	2.22	g/cm^3

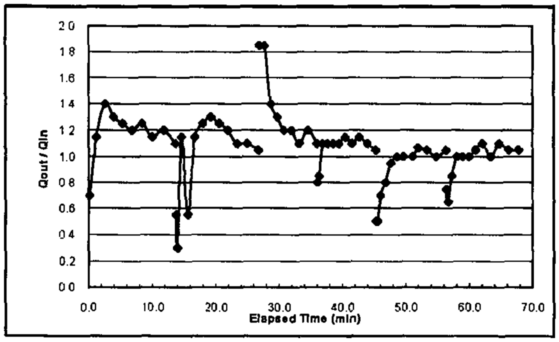
$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} Ln\left\{\frac{(\Delta H_1)}{(\Delta H_2)}\right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
NS-2	24.88	162.34	148	11.65%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
9/2/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
9/2/2008 00:11.88	2.0	23.5	11.9	21.5	0.2	3.01E-05	0.7	2	1.4
9/2/2008 01:15.02	4.0	21.2	63.1	17.2	1.3	7.44E-06	1.2	2	2.3
9/2/2008 02:34.58	6.0	18.4	79.6	12.4	2.6	6.93E-06	1.4	2	2.8
9/2/2008 03:56.41	8.0	15.8	81.8	7.8	3.9	6.80E-06	1.3	2	2.6
9/2/2008 05:21.48	10.0	13.3	85.1	3.3	5.4	6.76E-06	1.3	2	2.5
9/2/2008 06:50.30	12.0	10.9	88.8	-1.1	6.8	6.69E-06	1.2	2	2.4
9/2/2008 08:24.52	14.0	8.4	94.2	-5.6	8.4	6.85E-06	1.3	2	2.5
9/2/2008 10:01.48	16.0	6.1	97.0	-9.9	10.0	6.77E-06	1.2	2	2.3
9/2/2008 11:49.42	18.0	3.7	107.9	-14.3	11.8	6.64E-06	1.2	2	2.4
9/2/2008 13:43.77	20.0	1.5	114.4	-18.5	13.7	6.42E-06	1.1	2	2.2
9/2/2008 00:00.00	0.0	24.7	0.0	24.7	13.7				
9/2/2008 00:01.79	2.0	23.6	1.8	21.6	13.8	1.82E-04	0.5	2	1.1
9/2/2008 00:16.03	4.0	23.0	14.2	19.0	14.0	1.98E-05	0.3	2	0.6
9/2/2008 00:55.03	6.0	20.7	39.0	14.7	14.6	1.24E-05	1.2	2	2.3
9/2/2008 01:52.64	8.0	19.6	57.6	11.6	15.6	6.29E-06	0.5	2	1.1
9/2/2008 03:00.55	10.0	17.3	67.9	7.3	16.7	7.72E-06	1.2	2	2.3
9/2/2008 04:13.75	12.0	14.8	73.2	2.8	18.0	7.90E-06	1.3	2	2.5
9/2/2008 05:29.30	14.0	12.2	75.6	-1.8	19.2	8.29E-06	1.3	2	2.6
9/2/2008 06:48.81	16.0	9.7	79.5	-6.3	20.5	8.19E-06	1.3	2	2.5
9/2/2008 08:11.06	18.0	7.3	82.3	-10.7	21.9	8.26E-06	1.2	2	2.4
9/2/2008 09:39.67	20.0	5.1	88.6	-14.9	23.4	7.81E-06	1.1	2	2.2
9/2/2008 11:14.74	22.0	2.9	95.1	-19.1	25.0	7.80E-06	1.1	2	2.2
9/2/2008 12:58.77	24.0	0.8	104.0	-23.2	26.7	7.48E-06	1.1	2	2.1
9/2/2008 00:00.00	0.0	24.9	0.0	24.9	26.7				
9/2/2008 00:09.46	2.0	21.2	9.5	19.2	26.9	6.41E-05	1.9	2	3.7
9/2/2008 00:59.08	4.0	17.5	49.6	13.5	27.7	1.30E-05	1.9	2	3.7
9/2/2008 01:57.00	6.0	14.7	57.9	8.7	28.7	9.92E-06	1.4	2	2.8
9/2/2008 02:58.00	8.0	12.1	61.0	4.1	29.7	9.54E-06	1.3	2	2.6
9/2/2008 04:03.00	10.0	9.7	65.0	-0.3	30.8	9.05E-06	1.2	2	2.4
9/2/2008 05:13.00	12.0	7.3	70.0	-4.7	31.9	8.91E-06	1.2	2	2.4
9/2/2008 06:28.00	14.0	5.1	75.0	-8.9	33.2	8.43E-06	1.1	2	2.2
9/2/2008 07:50.00	16.0	2.7	82.0	-13.3	34.5	8.61E-06	1.2	2	2.4
9/2/2008 09:17.00	18.0	0.5	87.0	-17.5	36.0	8.30E-06	1.1	2	2.2
9/2/2008 00:00.00	0.0	24.9	0.0	24.9	36.0				
9/2/2008 00:01.91	2.0	23.3	1.9	21.3	36.0	1.98E-04	0.8	2	1.6
9/2/2008 00:17.65	4.0	21.6	15.7	17.6	36.3	2.57E-05	0.9	2	1.7
9/2/2008 00:52.24	6.0	19.4	34.6	13.4	36.9	1.38E-05	1.1	2	2.2
9/2/2008 01:37.89	8.0	17.2	45.6	9.2	37.6	1.10E-05	1.1	2	2.2
9/2/2008 02:29.27	10.0	15.0	51.4	5.0	38.5	1.03E-05	1.1	2	2.2
9/2/2008 03:25.39	12.0	12.8	56.1	0.8	39.4	9.88E-06	1.1	2	2.2
9/2/2008 04:27.42	14.0	10.5	62.0	-3.5	40.4	9.67E-06	1.2	2	2.3
9/2/2008 05:31.72	16.0	8.3	64.3	-7.7	41.5	9.67E-06	1.1	2	2.2
9/2/2008 06:40.72	18.0	6.0	69.0	-12.0	42.7	9.81E-06	1.2	2	2.3
9/2/2008 07:55.90	20.0	3.8	75.2	-16.2	43.9	9.40E-06	1.1	2	2.2
9/2/2008 09:15.20	22.0	1.7	79.3	-20.3	45.2	9.32E-06	1.1	2	2.1
9/2/2008 00:00.00	0.0	24.0	0.0	24.0	45.2				
9/2/2008 00:02.03	2.0	23.0	2.0	21.0	45.3	1.56E-04	0.5	2	1
9/2/2008 00:16.16	4.0	22.0	14.1	18.0	45.5	2.32E-05	0.5	2	1
9/2/2008 00:47.75	6.0	20.6	31.6	14.6	46.0	1.22E-05	0.7	2	1.4
9/2/2008 01:31.24	8.0	19.0	43.5	11.0	46.8	9.71E-06	0.8	2	1.6
9/2/2008 02:21.45	10.0	17.1	50.2	7.1	47.6	9.52E-06	0.9	2	1.9
9/2/2008 03:18.31	12.0	15.1	56.9	3.1	48.6	9.04E-06	1.0	2	2
9/2/2008 04:21.31	14.0	13.1	63.0	-0.9	49.6	8.58E-06	1.0	2	2
9/2/2008 05:46.26	16.5	10.6	85.0	-5.9	51.0	8.45E-06	1.0	2.5	2.5
9/2/2008 06:41.95	18.0	9.0	55.7	-9.0	51.9	8.46E-06	1.1	1.5	1.6

9/2/2008 08:04.00	20.0	6.9	82.1	-13.1	53.3	8.01E-06	1.1	2	2.1
9/2/2008 09:30.06	22.0	4.9	86.1	-17.1	54.7	7.95E-06	1.0	2	2
9/2/2008 11:04.16	24.0	2.8	94.1	-21.2	56.3	7.98E-06	1.1	2	2.1
9/3/2008 00:00.00	0.0	24.0	0.0	24.0	56.3				
9/3/2008 00:02.24	2.0	22.5	2.2	20.5	56.4	1.66E-04	0.8	2	1.5
9/3/2008 00:20.03	4.0	21.2	17.8	17.2	56.6	2.04E-05	0.7	2	1.3
9/3/2008 00:55.98	6.0	19.5	36.0	13.5	57.2	1.17E-05	0.9	2	1.7
9/3/2008 01:42.60	8.0	17.5	46.6	9.5	58.0	1.02E-05	1.0	2	2
9/3/2008 02:35.52	10.0	15.5	52.9	5.5	58.9	9.43E-06	1.0	2	2
9/3/2008 03:33.60	12.0	13.5	58.1	1.5	59.9	9.03E-06	1.0	2	2
9/3/2008 04:38.04	14.0	11.4	64.4	-2.6	60.9	8.79E-06	1.1	2	2.1
9/3/2008 05:47.25	16.0	9.2	69.2	-6.8	62.1	8.87E-06	1.1	2	2.2
9/3/2008 07:00.25	18.0	7.2	73.0	-10.8	63.3	8.49E-06	1.0	2	2
9/3/2008 08:21.71	20.0	5.0	81.5	-15.0	64.7	8.51E-06	1.1	2	2.2
9/3/2008 09:49.14	22.0	2.9	87.4	-19.1	66.1	8.28E-06	1.1	2	2.1
9/3/2008 11:24.21	24.0	0.8	95.1	-23.2	67.7	8.19E-06	1.1	2	2.1





Hydraulic Conductivity Test - Underwood - Thick Clay Cover

ASTM D 5084 - 00

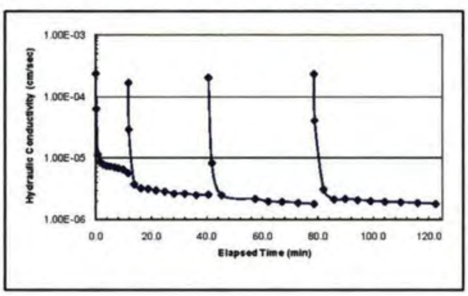
Sample I.D.	305-mm CC5- Clay Top 2		Test Date :	8/21/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	23900.0	g	Sample Water Content =	12.1%	(%)
Wet Density =	2.1	g/cm^3	Dry Density =	2.15	g/cm^3

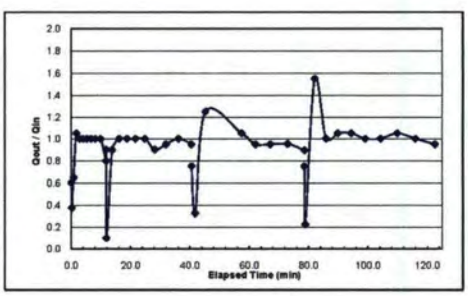
$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} Ln\left\{\frac{(\Delta H_1)}{(\Delta H_2)}\right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
MV-3	50.54	431.49	390.23	12.15%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
8/20/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
8/20/2008 00:01.40	2.0	23.7	1.4	21.7	0.0	2.40E-04	0.6	2	1.2
8/20/2008 00:10.88	6.0	22.2	9.5	16.2	0.2	6.37E-05	0.4	4	1.5
8/20/2008 00:44.72	8.0	20.9	33.8	12.9	0.7	1.12E-05	0.7	2	1.3
8/20/2008 01:42.92	10.0	18.8	58.2	8.8	1.7	8.45E-06	1.1	2	2.1
8/20/2008 02:47.60	12.0	16.8	64.7	4.8	2.8	7.78E-06	1.0	2	2
8/20/2008 03:58.50	14.0	14.8	70.9	0.8	4.0	7.46E-06	1.0	2	2
8/20/2008 05:14.82	16.0	12.8	76.3	-3.2	5.2	7.30E-06	1.0	2	2
8/20/2008 06:38.04	18.0	10.8	83.2	-7.2	6.6	7.07E-06	1.0	2	2
8/20/2008 08:10.10	20.0	8.8	92.1	-11.2	8.2	6.77E-06	1.0	2	2
8/20/2008 09:51.81	22.0	6.8	101.7	-15.2	9.9	6.52E-06	1.0	2	2
8/20/2008 11:43.92	24.0	5.2	112.1	-18.8	11.7	5.67E-06	0.8	2	1.6
8/21/2008 00:00.00	0.0	24.8	0.0	24.8	11.7				
8/21/2008 00:02.36	2.0	23.0	2.4	21.0	11.8	1.70E-04	0.9	2	1.8
8/21/2008 00:10.60	4.0	22.8	8.2	18.8	11.9	2.90E-05	0.1	2	0.2
8/21/2008 02:04.35	6.0	21.0	113.8	15.0	13.8	3.75E-06	0.9	2	1.8
8/21/2008 04:28.42	8.0	19.0	144.1	11.0	16.2	3.25E-06	1.0	2	2
8/21/2008 07:04.45	10.0	17.0	156.0	7.0	18.8	3.14E-06	1.0	2	2
8/21/2008 09:56.32	12.0	15.0	171.9	3.0	21.7	2.99E-06	1.0	2	2
8/21/2008 13:06.60	14.0	13.0	190.3	-1.0	24.8	2.84E-06	1.0	2	2
8/21/2008 16:31.14	16.0	11.2	204.5	-4.8	28.3	2.65E-06	0.9	2	1.8
8/21/2008 20:14.22	18.0	9.3	223.1	-8.7	32.0	2.63E-06	0.9	2	1.9
8/21/2008 24:28.10	20.0	7.3	253.9	-12.7	36.2	2.51E-06	1.0	2	2
8/21/2008 28:49.32	22.0	5.4	261.2	-16.6	40.6	2.53E-06	1.0	2	1.9
8/21/2008 00:00.00	0.0	24.9	0.0	24.9	40.6				
8/21/2008 00:01.80	2.0	23.4	1.8	21.4	40.6	2.04E-04	0.8	2	1.5
8/21/2008 01:13.18	6.0	22.1	71.4	16.1	41.8	8.17E-06	0.3	4	1.3
8/21/2008 04:41.60	8.0	19.6	208.4	11.6	45.2	2.50E-06	1.3	2	2.5
8/21/2008 16:52.29	14.0	13.3	730.7	-0.7	57.4	2.16E-06	1.1	6	6.3
8/21/2008 21:32.84	16.0	11.4	280.6	-4.6	62.1	1.97E-06	1.0	2	1.9
8/21/2008 26:33.99	18.0	9.5	301.1	-8.5	67.1	1.94E-06	1.0	2	1.9
8/21/2008 32:21.94	20.1	7.5	347.9	-12.6	72.9	1.88E-06	1.0	2.1	2
8/21/2008 38:03.06	22.0	5.8	341.1	-16.2	78.6	1.78E-06	0.9	1.9	1.7
8/21/2008 00:00.00	0.0	24.8	0.0	24.8	78.6				
8/21/2008 00:01.57	2.0	23.3	1.6	21.3	78.6	2.35E-04	0.8	2	1.5
8/21/2008 00:14.75	6.0	22.4	13.2	16.4	78.9	4.09E-05	0.2	4	0.9
8/21/2008 03:26.44	8.0	19.3	191.7	11.3	82.0	3.09E-06	1.6	2	3.1
8/21/2008 07:17.22	10.0	17.3	230.8	7.3	85.9	2.12E-06	1.0	2	2
8/21/2008 11:20.02	12.0	15.2	242.8	3.2	89.9	2.17E-06	1.1	2	2.1
8/21/2008 15:45.36	14.0	13.1	265.3	-0.9	94.4	2.09E-06	1.1	2	2.1
8/21/2008 20:28.18	16.0	11.1	282.8	-4.9	99.1	2.02E-06	1.0	2	2
8/21/2008 25:36.95	18.0	9.1	308.8	-8.9	104.2	1.95E-06	1.0	2	2
8/21/2008 31:18.50	20.0	7.0	341.6	-13.0	109.9	1.92E-06	1.1	2	2.1
8/21/2008 37:23.46	22.0	5.0	365.0	-17.0	116.0	1.87E-06	1.0	2	2
8/21/2008 43:59.60	24.0	3.1	396.1	-20.9	122.6	1.80E-06	1.0	2	1.9

Note:
The highlighted data was recorded prior to a membrane leak.
All other data was recorded following membrane replacement.





Hydraulic Conductivity Test - Underwood - Thick Clay Cover

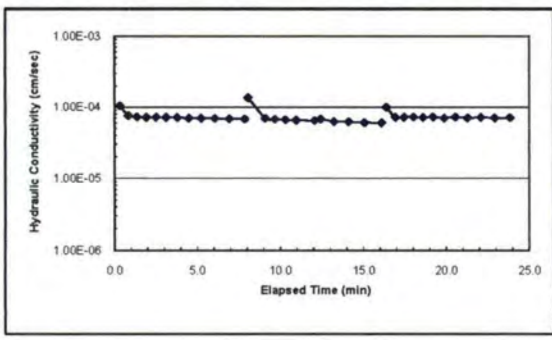
ASTM D 5084 - 00

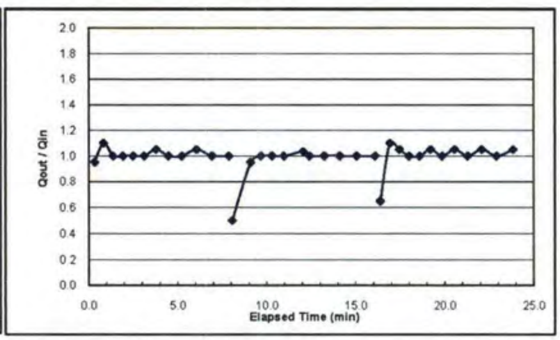
Sample I.D.	305-mm CC5 - Clay Bottom		Test Date :	10/2/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	5	cm^2
Weight of wet sample =	22600.0	g	Sample Water Content =	15.3%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.03	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)	(%)
G	30.8	157.28	140.54	15.25%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
10/2/2008 00:00.00	0.0	24.7	0.0	24.7	0.0				
10/2/2008 00:19.73	2.0	22.8	19.7	20.8	0.3	1.04E-04	0.9	10	9.5
10/2/2008 00:50.11	4.0	20.6	30.4	16.6	0.8	7.61E-05	1.1	10	11
10/2/2008 01:21.65	6.0	18.6	31.5	12.6	1.4	7.29E-05	1.0	10	10
10/2/2008 01:55.14	8.0	16.6	33.5	8.6	1.9	7.19E-05	1.0	10	10
10/2/2008 02:30.14	10.0	14.6	35.0	4.6	2.5	7.21E-05	1.0	10	10
10/2/2008 03:06.96	12.0	12.6	36.8	0.6	3.1	7.20E-05	1.0	10	10
10/2/2008 03:47.02	14.0	10.5	40.1	-3.5	3.8	7.15E-05	1.1	10	10.5
10/2/2008 04:29.28	16.0	8.5	42.3	-7.5	4.5	6.99E-05	1.0	10	10
10/2/2008 05:14.18	18.0	6.5	44.9	-11.5	5.2	6.98E-05	1.0	10	10
10/2/2008 06:03.28	20.0	4.4	49.1	-15.6	6.1	6.96E-05	1.1	10	10.5
10/2/2008 06:55.52	22.0	2.4	52.2	-19.6	6.9	6.83E-05	1.0	10	10
10/2/2008 07:51.73	24.0	0.4	56.2	-23.6	7.9	6.81E-05	1.0	10	10
10/2/2008 00:00.00	0.0	24.8	0.0	24.8	7.9				
10/2/2008 00:11.62	2.0	23.8	11.6	21.8	8.1	1.36E-04	0.5	10	5
10/2/2008 01:13.84	6.0	20.0	62.2	14.0	9.1	6.96E-05	1.0	20	19
10/2/2008 01:48.84	8.0	18.0	35.0	10.0	9.7	6.77E-05	1.0	10	10
10/2/2008 02:26.23	10.0	16.0	37.4	6.0	10.3	6.64E-05	1.0	10	10
10/2/2008 03:05.95	12.0	14.0	39.7	2.0	11.0	6.56E-05	1.0	10	10
10/2/2008 04:11.52	15.0	10.9	65.6	-4.1	12.1	6.47E-05	1.0	15	15.5
10/2/2008 04:33.12	16.0	9.9	21.6	-6.1	12.4	6.80E-05	1.0	5	5
10/2/2008 05:22.02	18.0	7.9	48.9	-10.1	13.2	6.27E-05	1.0	10	10
10/2/2008 06:14.42	20.0	5.9	52.4	-14.1	14.1	6.22E-05	1.0	10	10
10/2/2008 07:11.62	22.0	3.9	57.2	-18.1	15.1	6.08E-05	1.0	10	10
10/2/2008 08:13.73	24.0	1.9	62.1	-22.1	16.1	6.00E-05	1.0	10	10
10/2/2008 00:00.00	0.0	24.8	0.0	24.8	16.1				
10/2/2008 00:17.34	2.0	23.5	17.3	21.5	16.4	1.00E-04	0.7	10	6.5
10/2/2008 00:49.25	4.0	21.3	31.9	17.3	16.9	7.19E-05	1.1	10	11
10/2/2008 01:21.61	6.0	19.2	32.4	13.2	17.5	7.24E-05	1.1	10	10.5
10/2/2008 01:54.61	8.0	17.2	33.0	9.2	18.0	7.24E-05	1.0	10	10
10/2/2008 02:29.61	10.0	15.2	35.0	5.2	18.6	7.16E-05	1.0	10	10
10/2/2008 03:06.73	12.0	13.1	37.1	1.1	19.2	7.27E-05	1.1	10	10.5
10/2/2008 03:46.25	14.0	11.1	39.5	-2.9	19.9	7.02E-05	1.0	10	10
10/2/2008 04:27.56	16.0	9.0	41.3	-7.0	20.6	7.28E-05	1.1	10	10.5
10/2/2008 05:11.73	18.0	7.0	44.2	-11.0	21.3	7.04E-05	1.0	10	10
10/2/2008 05:59.05	20.0	4.9	47.3	-15.1	22.1	7.17E-05	1.1	10	10.5
10/2/2008 06:49.34	22.0	2.9	50.3	-19.1	22.9	7.03E-05	1.0	10	10
10/2/2008 07:44.25	24.0	0.8	54.9	-23.2	23.8	7.09E-05	1.1	10	10.5





Hydraulic Conductivity Test - Underwood - Thick Clay Cover

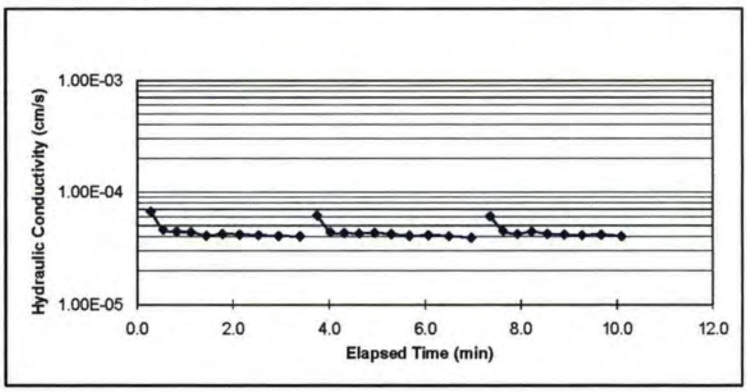
ASTM D 5084 - 00

Sample I.D.	150-mm CC5-Clay-Bottom		Test Date :		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	6.1	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1112.0	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.8		a_{out} =	1	cm^2
Weight of wet sample =	2041.3	g	Sample Water Content =	18.1	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.55	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)	(%)
62	30.97	125.63	111.1	18.13

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	8.0	24.0	0.0	16.0	0.0				
0:00:17	10.0	22.7	16.8	12.7	0.3	6.64E-05	0.7	2	1.3
0:00:32	11.0	21.7	15.6	10.7	0.5	4.58E-05	1.0	1	1
0:00:49	12.0	20.7	16.9	8.7	0.8	4.40E-05	1.0	1	1
0:01:07	13.0	19.7	17.9	6.7	1.1	4.36E-05	1.0	1	1
0:01:26	14.0	18.8	19.1	4.8	1.4	4.06E-05	0.9	1	0.9
0:01:47	15.0	17.8	20.3	2.8	1.8	4.22E-05	1.0	1	1
0:02:08	16.0	16.8	21.7	0.8	2.1	4.17E-05	1.0	1	1
0:02:32	17.0	15.8	23.3	-1.2	2.5	4.11E-05	1.0	1	1
0:02:57	18.0	14.8	25.1	-3.2	2.9	4.04E-05	1.0	1	1
0:03:24	19.0	13.8	27.0	-5.2	3.4	4.00E-05	1.0	1	1
0:00:00	8.0	24.0	-203.7	16.0	3.4				
0:00:21	10.0	22.2	21.1	12.2	3.8	6.13E-05	0.9	2	1.8
0:00:38	11.0	21.2	16.5	10.2	4.0	4.36E-05	1.0	1	1
0:00:55	12.0	20.2	17.6	8.2	4.3	4.29E-05	1.0	1	1
0:01:14	13.0	19.2	18.6	6.2	4.6	4.25E-05	1.0	1	1
0:01:33	14.0	18.2	19.2	4.2	4.9	4.30E-05	1.0	1	1
0:01:54	15.0	17.2	20.8	2.2	5.3	4.19E-05	1.0	1	1
0:02:16	16.0	16.2	22.6	0.2	5.7	4.06E-05	1.0	1	1
0:02:40	17.0	15.2	23.7	-1.8	6.1	4.10E-05	1.0	1	1
0:03:06	18.0	14.2	25.6	-3.8	6.5	4.03E-05	1.0	1	1
0:03:34	19.0	13.2	28.2	-5.8	7.0	3.90E-05	1.0	1	1
0:00:00	8.0	24.0	-214.0	16.0	7.0				
0:00:21	10.0	22.2	21.4	12.2	7.4	6.03E-05	0.9	2	1.8
0:00:38	11.0	21.2	16.1	10.2	7.6	4.47E-05	1.0	1	1
0:00:55	12.0	20.2	17.9	8.2	7.9	4.21E-05	1.0	1	1
0:01:13	13.0	19.2	18.0	6.2	8.2	4.39E-05	1.0	1	1
0:01:33	14.0	18.2	19.7	4.2	8.6	4.20E-05	1.0	1	1
0:01:54	15.0	17.2	21.0	2.2	8.9	4.15E-05	1.0	1	1
0:02:16	16.0	16.2	22.4	0.2	9.3	4.11E-05	1.0	1	1
0:02:40	17.0	15.2	23.5	-1.8	9.7	4.15E-05	1.0	1	1
0:03:06	18.0	14.2	25.8	-3.8	10.1	4.01E-05	1.0	1	1



Hydraulic Conductivity Test - Underwood - Thick Clay Cover

ASTM D 5084 - 00

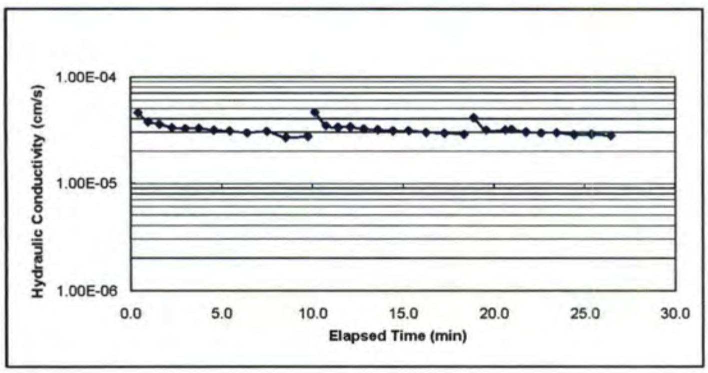
Sample I.D.	75-mm CC5-Clay Bottom	Test Date :	11.03.08

Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	3.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	45.60	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	144.8	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	11.1		a_{out} =	1	cm^2
Weight of wet sample =	233.3	g	Sample Water Content =	21.6	(%)
Wet Density =	1.6	g/cm^3	Dry Density =	1.32	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)	(%)
14	30.73	100.58	88.15	21.65

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	1.0	23.8	0.0	22.8	0.0				
0:00:24	2.0	23.0	24.2	21.0	0.4	4.54E-05	0.8	1	0.8
0:00:58	3.0	22.0	33.8	19.0	1.0	3.73E-05	1.0	1	1
0:01:35	4.0	21.0	36.9	17.0	1.6	3.55E-05	1.0	1	1
0:02:16	5.0	20.0	41.2	15.0	2.3	3.30E-05	1.0	1	1
0:03:00	6.0	19.0	43.7	13.0	3.0	3.24E-05	1.0	1	1
0:03:45	7.0	18.0	45.4	11.0	3.8	3.25E-05	1.0	1	1
0:04:35	8.0	17.0	49.6	9.0	4.6	3.11E-05	1.0	1	1
0:05:27	9.0	16.0	52.5	7.0	5.5	3.07E-05	1.0	1	1
0:06:25	10.0	15.0	57.4	5.0	6.4	2.95E-05	1.0	1	1
0:07:29	11.1	13.9	64.7	2.8	7.5	3.03E-05	1.0	1.1	1.1
0:08:33	12.0	13.0	63.3	1.0	8.5	2.67E-05	1.0	0.9	0.9
0:09:45	13.0	12.0	72.3	-1.0	9.7	2.74E-05	1.0	1	1
0:00:00	1.0	24.0	-585.0	23.0	9.7				
0:00:26	2.0	23.0	26.5	21.0	10.1	4.60E-05	1.0	1	1
0:01:03	3.0	22.0	36.7	19.0	10.8	3.44E-05	1.0	1	1
0:01:43	4.0	21.0	39.4	17.0	11.4	3.33E-05	1.0	1	1
0:02:23	5.0	20.0	40.7	15.0	12.1	3.35E-05	1.0	1	1
0:03:07	6.0	19.0	44.2	13.0	12.8	3.20E-05	1.0	1	1
0:03:54	7.0	18.0	46.8	11.0	13.6	3.16E-05	1.0	1	1
0:04:44	8.0	17.0	50.2	9.0	14.4	3.07E-05	1.0	1	1
0:05:37	9.0	16.0	52.3	7.0	15.3	3.09E-05	1.0	1	1
0:06:34	10.0	15.0	56.9	5.0	16.3	2.98E-05	1.0	1	1
0:07:34	11.0	14.0	60.5	3.0	17.3	2.94E-05	1.0	1	1
0:08:39	12.0	13.0	65.4	1.0	18.4	2.86E-05	1.0	1	1
0:00:00	1.0	24.0	-519.5	23.0	18.4				
0:00:30	2.0	23.0	29.8	21.0	18.9	4.09E-05	1.0	1	1
0:01:10	3.0	22.0	40.2	19.0	19.6	3.14E-05	1.0	1	1
0:02:13	4.5	20.5	63.1	16.0	20.6	3.15E-05	1.0	1.5	1.5
0:02:35	5.0	20.0	21.6	15.0	21.0	3.18E-05	1.0	0.5	0.5
0:03:22	6.0	19.0	47.1	13.0	21.8	3.01E-05	1.0	1	1
0:04:12	7.0	18.0	50.2	11.0	22.6	2.94E-05	1.0	1	1
0:05:04	8.0	17.0	51.9	9.0	23.5	2.97E-05	1.0	1	1
0:06:01	9.0	16.0	56.8	7.0	24.4	2.84E-05	1.0	1	1
0:07:00	10.0	15.0	58.9	5.0	25.4	2.87E-05	1.0	1	1
0:08:03	11.0	14.0	63.8	3.0	26.5	2.79E-05	1.0	1	1



Hydraulic Conductivity Test - Underwood - Thin Clay Cover

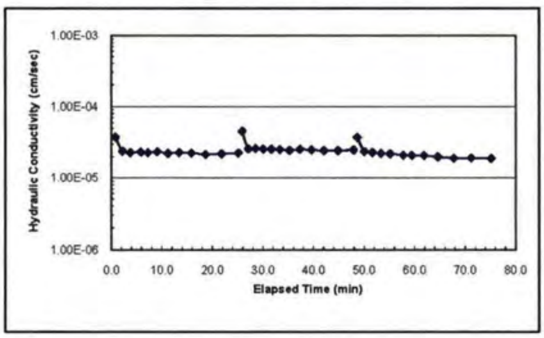
ASTM D 5084 - 00

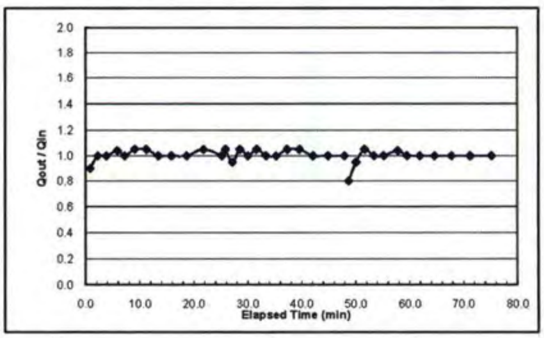
Sample I.D.	305-mm CC3 - Clay Middle		Test Date :	9/29/08	
Cell Pressure =	41.9	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	40.8	psi	Length of Sample, L =	10.8	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	0.8	psi	Sample Volume, V =	7876.7	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	5	cm^2
Weight of wet sample =	15750.0	g	Sample Water Content =	14.0%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.00	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)	(%)
44	30.35	125.33	113.7	13.95%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
9/29/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
9/29/2008 00:48.53	2.0	23.0	48.5	21.0	0.8	3.77E-05	0.9	10	9
9/29/2008 02:12.61	4.0	21.0	84.1	17.0	2.2	2.41E-05	1.0	10	10
9/29/2008 03:46.15	6.0	19.0	93.5	13.0	3.8	2.29E-05	1.0	10	10
9/29/2008 05:51.53	8.5	16.4	125.4	7.9	5.9	2.34E-05	1.0	12.5	13
9/29/2008 07:11.78	10.0	14.9	80.2	4.9	7.2	2.29E-05	1.0	7.5	7.5
9/29/2008 09:04.84	12.0	12.8	113.1	0.8	9.1	2.36E-05	1.1	10	10.5
9/29/2008 11:12.55	14.0	10.7	127.7	-3.3	11.2	2.25E-05	1.1	10	10.5
9/29/2008 13:25.03	16.0	8.7	132.5	-7.3	13.4	2.30E-05	1.0	10	10
9/29/2008 15:51.53	18.0	6.7	146.5	-11.3	15.9	2.26E-05	1.0	10	10
9/29/2008 18:40.30	20.0	4.7	168.8	-15.3	18.7	2.16E-05	1.0	10	10
9/29/2008 21:47.78	22.0	2.6	187.5	-19.4	21.8	2.21E-05	1.1	10	10.5
9/29/2008 25:08.56	24.0	0.6	200.8	-23.4	25.1	2.27E-05	1.0	10	10
9/29/2008 00:00.00	0.0	24.8	0.0	24.8	25.1				
9/29/2008 00:43.45	2.0	22.7	43.5	20.7	25.9	4.55E-05	1.1	10	10.5
9/29/2008 01:59.75	4.0	20.8	76.3	16.8	27.1	2.60E-05	0.9	10	9.5
9/29/2008 03:23.95	6.0	18.7	84.2	12.7	28.5	2.62E-05	1.1	10	10.5
9/29/2008 04:52.78	8.0	16.7	88.8	8.7	30.0	2.58E-05	1.0	10	10
9/29/2008 06:30.61	10.0	14.6	97.8	4.6	31.7	2.56E-05	1.1	10	10.5
9/29/2008 08:13.87	12.0	12.6	103.3	0.6	33.4	2.53E-05	1.0	10	10
9/29/2008 10:07.61	14.0	10.6	113.7	-3.4	35.3	2.48E-05	1.0	10	10
9/29/2008 12:10.36	16.0	8.5	122.7	-7.5	37.3	2.55E-05	1.1	10	10.5
9/29/2008 14:26.28	18.0	6.4	135.9	-11.6	39.6	2.51E-05	1.1	10	10.5
9/29/2008 16:56.46	20.0	4.4	150.2	-15.6	42.1	2.44E-05	1.0	10	10
9/29/2008 19:42.87	22.0	2.4	166.4	-19.6	44.9	2.45E-05	1.0	10	10
9/29/2008 22:45.95	24.0	0.4	183.1	-23.6	47.9	2.50E-05	1.0	10	10
9/29/2008 00:00.00	0.0	24.9	0.0	24.9	47.9				
9/29/2008 00:46.34	2.0	23.3	46.3	21.3	48.7	3.73E-05	0.8	10	8
9/29/2008 02:09.33	4.0	21.4	83.0	17.4	50.1	2.37E-05	1.0	10	9.5
9/29/2008 03:44.28	6.0	19.3	95.0	13.3	51.6	2.30E-05	1.1	10	10.5
9/29/2008 05:26.23	8.0	17.3	101.9	9.3	53.3	2.22E-05	1.0	10	10
9/29/2008 07:15.34	10.0	15.3	109.1	5.3	55.2	2.21E-05	1.0	10	10
9/29/2008 09:53.11	12.5	12.7	157.8	0.2	57.8	2.11E-05	1.0	12.5	13
9/29/2008 11:33.34	14.0	11.2	100.2	-2.8	59.5	2.10E-05	1.0	7.5	7.5
9/29/2008 13:57.84	16.0	9.2	144.5	-6.8	61.9	2.08E-05	1.0	10	10
9/29/2008 16:42.68	18.0	7.2	164.8	-10.8	64.6	1.99E-05	1.0	10	10
9/29/2008 19:51.56	20.0	5.2	188.9	-14.8	67.8	1.90E-05	1.0	10	10
9/29/2008 23:18.15	22.0	3.2	206.6	-18.8	71.2	1.93E-05	1.0	10	10
9/29/2008 27:13.75	24.0	1.2	235.6	-22.8	75.1	1.90E-05	1.0	10	10





Hydraulic Conductivity Test - Underwood - Thin Clay Cover

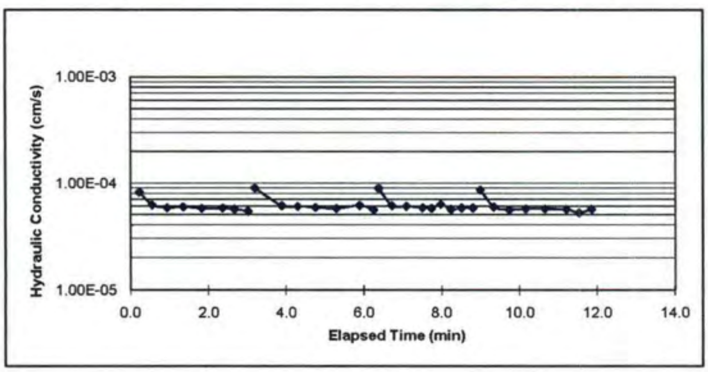
ASTM D 5084 - 00

Sample I.D.	**150-mm CC3-Clay-Middle**		**Test Date :**		
Cell Pressure =	42.0	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.4	psi	Length of Sample, L =	5.1	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.4	psi	Sample Volume, V =	926.7	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.5		a_{out} =	1	cm^2
Weight of wet sample =	1656.2	g	Sample Water Content =	18.7	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.51	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)	(%)
MB	30.74	121.2	106.96	18.68

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				
0:00:14	2.0	22.0	13.6	20.0	0.2	8.15E-05	1.0	2	2
0:00:33	4.0	20.0	19.6	16.0	0.6	6.17E-05	1.0	2	2
0:00:56	6.0	18.0	22.9	12.0	0.9	5.78E-05	1.0	2	2
0:01:21	8.0	16.0	24.9	8.0	1.3	5.88E-05	1.0	2	2
0:01:50	10.0	14.0	28.8	4.0	1.8	5.67E-05	1.0	2	2
0:02:22	12.0	12.0	32.3	0.0	2.4	5.73E-05	1.0	2	2
0:02:40	13.0	11.0	18.3	-2.0	2.7	5.61E-05	1.0	1	1
0:03:01	14.0	10.0	20.6	-4.0	3.0	5.37E-05	1.0	1	1
0:00:00	0.0	24.0	-181.0	24.0	3.0				
0:00:11	2.0	22.3	11.5	20.3	3.2	8.95E-05	0.9	2	1.7
0:00:53	6.0	18.3	41.7	12.3	3.9	6.03E-05	1.0	4	4
0:01:18	8.0	16.3	24.4	8.3	4.3	5.95E-05	1.0	2	2
0:01:45	10.0	14.3	27.8	4.3	4.8	5.82E-05	1.0	2	2
0:02:18	12.0	12.3	32.2	0.3	5.3	5.70E-05	1.0	2	2
0:02:53	14.0	10.2	35.8	-3.8	5.9	6.06E-05	1.1	2	2.1
0:03:15	15.0	9.2	21.6	-5.8	6.2	5.54E-05	1.0	1	1
0:00:00	0.0	24.0	-194.8	24.0	6.2				
0:00:11	2.0	22.5	10.8	20.5	6.4	8.93E-05	0.8	2	1.5
0:00:31	4.0	20.4	20.2	16.4	6.7	6.07E-05	1.1	2	2.1
0:00:54	6.0	18.3	22.5	12.3	7.1	5.97E-05	1.1	2	2.1
0:01:19	8.0	16.3	25.1	8.3	7.5	5.79E-05	1.0	2	2
0:01:32	9.0	15.3	13.7	6.3	7.7	5.73E-05	1.0	1	1
0:01:46	10.0	14.2	14.0	4.2	8.0	6.24E-05	1.1	1	1.1
0:02:02	11.0	13.2	15.9	2.2	8.2	5.60E-05	1.0	1	1
0:02:19	12.0	12.2	16.4	0.2	8.5	5.78E-05	1.0	1	1
0:02:36	13.0	11.2	17.6	-1.8	8.8	5.78E-05	1.0	1	1
0:00:00	0.0	24.0	-156.3	24.0	8.8				
0:00:12	2.0	22.4	11.6	20.4	9.0	8.58E-05	0.8	2	1.6
0:00:32	4.0	20.3	20.9	16.3	9.3	5.89E-05	1.1	2	2.1
0:00:56	6.0	18.3	23.7	12.3	9.7	5.55E-05	1.0	2	2
0:01:22	8.0	16.3	25.6	8.3	10.2	5.66E-05	1.0	2	2
0:01:51	10.0	14.2	29.4	4.2	10.7	5.65E-05	1.1	2	2.1
0:02:24	12.0	12.2	32.9	0.2	11.2	5.59E-05	1.0	2	2
0:02:44	13.0	11.2	19.6	-1.8	11.5	5.20E-05	1.0	1	1
0:03:03	14.0	10.2	19.6	-3.8	11.9	5.62E-05	1.0	1	1



Hydraulic Conductivity Test - Underwood - Thin Clay Cover

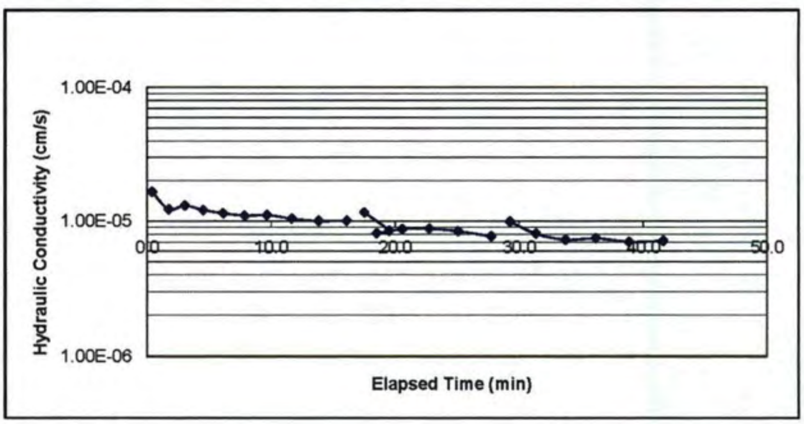
ASTM D 5084 - 00

Sample I.D.	75-mm CC3 Clay-Middle		Test Date :	10.13.08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	2.5	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	45.60	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	115.8	cm^3
Effective Stress =	1.8	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	13.8		a_{out} =	1	cm^2
Weight of wet sample =	191.4	g	Sample Water Content =	25.4	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.32	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)	(%)
7	30.38	103.03	88.32	25.39

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
0:00:00	0.5	23.8	0.0	23.3	0.0				
0:00:23	1.0	23.5	23.3	22.5	0.4	1.65E-05	0.6	0.5	0.3
0:01:44	2.0	22.5	80.8	20.5	1.7	1.22E-05	1.0	1	1
0:03:03	3.0	21.5	78.5	18.5	3.0	1.30E-05	1.0	1	1
0:04:31	4.0	20.5	88.0	16.5	4.5	1.20E-05	1.0	1	1
0:06:07	5.0	19.5	96.3	14.5	6.1	1.14E-05	1.0	1	1
0:07:51	6.0	18.5	104.6	12.5	7.9	1.09E-05	1.0	1	1
0:09:39	7.0	17.5	107.9	10.5	9.7	1.11E-05	1.0	1	1
0:11:39	8.0	16.5	119.7	8.5	11.7	1.04E-05	1.0	1	1
0:13:50	9.0	15.5	130.4	6.5	13.8	1.00E-05	1.0	1	1
0:16:06	10.0	14.5	136.3	4.5	16.1	1.01E-05	1.0	1	1
0:00:00	1.0	24.0	-965.8	23.0	16.1				
0:01:24	2.0	23.0	84.4	21.0	17.5	1.15E-05	1.0	1	1
0:03:24	3.0	22.0	119.3	19.0	19.5	8.46E-06	1.0	1	1
0:05:33	4.0	21.0	129.1	17.0	18.5	8.11E-06	1.0	1	1
0:07:38	5.0	20.0	125.1	15.0	20.6	8.70E-06	1.0	1	1
0:09:47	6.0	19.0	129.1	13.0	22.7	8.78E-06	1.0	1	1
0:12:07	7.0	18.0	140.4	11.0	25.1	8.41E-06	1.0	1	1
0:14:48	8.0	17.0	160.4	9.0	27.7	7.69E-06	1.0	1	1
0:00:00	1.0	24.0	-887.8	23.0	27.7				
0:01:33	2.0	23.1	93.2	21.1	29.3	9.92E-06	0.9	1	0.9
0:03:38	3.0	22.1	125.0	19.1	31.3	8.07E-06	1.0	1	1
0:06:02	4.0	21.1	143.7	17.1	33.7	7.28E-06	1.0	1	1
0:08:28	5.0	20.1	145.9	15.1	36.2	7.45E-06	1.0	1	1
0:11:09	6.0	19.1	160.8	13.1	38.8	7.03E-06	1.0	1	1
0:13:54	7.0	18.1	165.2	11.1	41.6	7.14E-06	1.0	1	1



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

ASTM D 5084 - 00

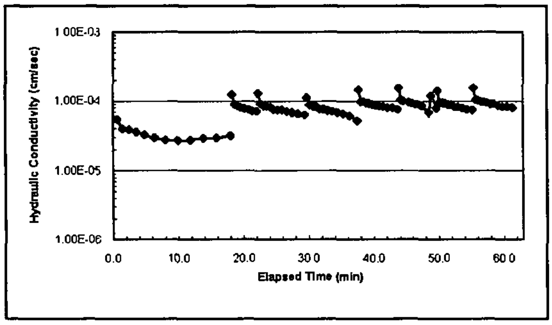
Sample I.D.	305-mm ET-Soil Top 1		Test Date :	10/27/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	5	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	5	cm^2
Weight of wet sample =	21650.0	g	Sample Water Content =	12.4%	(%)
Wet Density =	1.9	g/cm^3	Dry Density =	1.94	g/cm^3

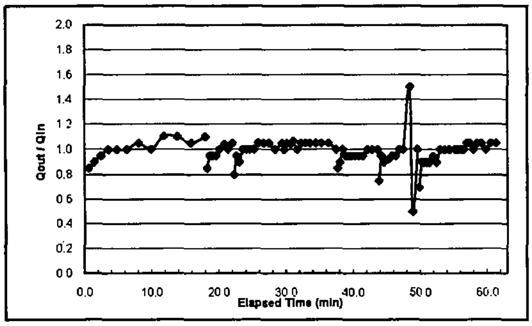
$$K_s = \frac{a_{in} * a_{out}}{(a_{in} + a_{out})} \frac{L}{A * \Delta t} Ln\left\{\frac{(\Delta H_1)}{(\Delta H_2)}\right\}$$

Can #	WT of Can	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
X2	30.92	168.15	153.02	12.39%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
10/27/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
10/27/2008 00:36.09	2.0	23.1	36.1	21.1	0.6	5.40E-05	0.9	10	8.5
10/27/2008 01:28.70	4.0	21.3	52.6	17.3	1.5	3.95E-05	0.9	10	9
10/27/2008 02:26.14	6.0	19.4	57.4	13.4	2.4	3.87E-05	1.0	10	9.5
10/27/2008 03:33.04	8.0	17.4	66.9	9.4	3.6	3.56E-05	1.0	10	10
10/27/2008 04:50.02	10.0	15.4	77.0	5.4	4.8	3.25E-05	1.0	10	10
10/27/2008 06:19.12	12.0	13.4	89.1	1.4	6.3	2.95E-05	1.0	10	10
10/27/2008 08:03.10	14.0	11.3	104.0	-2.7	8.1	2.73E-05	1.1	10	10.5
10/27/2008 09:57.40	16.1	9.2	114.3	-6.9	10.0	2.69E-05	1.0	10.5	10.5
10/27/2008 11:50.19	18.0	7.1	112.8	-10.9	11.8	2.75E-05	1.1	9.5	10.5
10/27/2008 13:50.05	20.0	4.9	119.9	-15.1	13.8	2.90E-05	1.1	10	11
10/27/2008 15:54.20	22.0	2.8	124.1	-19.2	15.9	2.92E-05	1.1	10	10.5
10/27/2008 18:00.36	24.0	0.6	126.2	-23.4	18.0	3.17E-05	1.1	10	11
10/27/2008 00:00.00	0.0	24.9	0.0	24.9	18.0				
10/27/2008 00:15.71	2.0	23.2	15.7	21.2	18.3	1.24E-04	0.9	10	8.5
10/27/2008 00:39.67	4.0	21.3	24.0	17.3	18.7	8.91E-05	0.9	10	9.5
10/27/2008 01:05.91	6.0	19.4	26.2	13.4	19.1	8.48E-05	1.0	10	9.5
10/27/2008 01:34.80	8.0	17.5	28.9	9.5	19.6	8.04E-05	0.9	10	9.5
10/27/2008 02:06.67	10.0	15.5	31.9	5.5	20.1	7.83E-05	1.0	10	10
10/27/2008 02:51.27	12.5	12.9	44.6	0.4	20.9	7.55E-05	1.0	12.5	13
10/27/2008 03:20.47	14.0	11.4	29.2	-2.6	21.3	7.14E-05	1.0	7.5	7.5
10/27/2008 04:02.17	16.0	9.3	41.7	-6.7	22.0	7.18E-05	1.1	10	10.5
10/27/2008 00:00.00	0.0	24.9	0.0	24.9	22.0				
10/27/2008 00:14.61	2.0	23.3	14.6	21.3	22.3	1.30E-04	0.8	10	8
10/27/2008 00:37.92	4.0	21.4	23.3	17.4	22.7	9.14E-05	1.0	10	9.5
10/27/2008 01:03.21	6.0	19.6	25.3	13.6	23.1	8.56E-05	0.9	10	9
10/27/2008 01:31.07	8.0	17.6	27.9	9.6	23.6	8.54E-05	1.0	10	10
10/27/2008 02:02.65	10.1	15.5	31.6	5.4	24.1	8.30E-05	1.0	10.5	10.5
10/27/2008 02:35.38	12.0	13.6	32.7	1.6	24.6	7.61E-05	1.0	9.5	9.5
10/27/2008 03:12.28	14.0	11.6	36.9	-2.4	25.2	7.47E-05	1.0	10	10
10/27/2008 03:52.26	16.0	9.5	40.0	-6.5	25.9	7.47E-05	1.1	10	10.5
10/27/2008 04:37.05	18.0	7.4	44.8	-10.6	26.7	7.07E-05	1.1	10	10.5
10/27/2008 05:26.78	20.0	5.3	49.7	-14.7	27.5	6.78E-05	1.1	10	10.5
10/27/2008 06:20.75	22.0	3.3	54.0	-18.7	28.4	6.51E-05	1.0	10	10
10/27/2008 07:22.05	24.0	1.2	61.3	-22.8	29.4	6.30E-05	1.1	10	10.5
10/27/2008 00:00.00	0.0	24.8	0.0	24.8	29.4				
10/27/2008 00:18.84	2.0	22.8	18.8	20.8	29.7	1.12E-04	1.0	10	10
10/27/2008 00:44.46	4.0	20.7	25.6	16.7	30.2	8.80E-05	1.1	10	10.5
10/27/2008 01:20.10	6.5	18.1	35.6	11.6	30.7	8.27E-05	1.0	12.5	13
10/27/2008 01:42.54	8.0	16.5	22.4	8.5	31.1	8.36E-05	1.1	7.5	8
10/27/2008 02:15.55	10.0	14.5	33.0	4.5	31.7	7.65E-05	1.0	10	10
10/27/2008 02:51.16	12.0	12.4	35.6	0.4	32.3	7.65E-05	1.1	10	10.5
10/27/2008 03:30.60	14.0	10.3	39.4	-3.7	32.9	7.28E-05	1.1	10	10.5
10/27/2008 04:13.66	16.0	8.2	43.1	-7.8	33.6	7.06E-05	1.1	10	10.5
10/27/2008 05:00.94	18.0	6.1	47.3	-11.9	34.4	6.83E-05	1.1	10	10.5
10/27/2008 05:53.45	20.0	4.0	52.5	-16.0	35.3	6.55E-05	1.1	10	10.5
10/27/2008 06:54.08	22.0	1.9	60.6	-20.1	36.3	6.08E-05	1.1	10	10.5
10/27/2008 08:05.35	23.9	0.0	71.3	-23.9	37.5	5.14E-05	1.0	9.5	9.5
10/27/2008 00:00.00	0.0	24.9	0.0	24.9	37.5				
10/27/2008 00:13.30	2.0	23.2	13.3	21.2	37.7	1.46E-04	0.9	10	8.5
10/27/2008 00:34.57	4.0	21.4	21.3	17.4	38.1	9.77E-05	0.9	10	9
10/27/2008 00:57.90	6.0	19.4	23.3	13.4	38.5	9.78E-05	1.0	10	10
10/27/2008 01:22.61	8.0	17.5	24.7	9.5	38.9	9.40E-05	0.9	10	9.5
10/27/2008 01:48.93	10.0	15.6	26.3	5.6	39.3	9.24E-05	1.0	10	9.5
10/27/2008 02:17.60	12.0	13.7	28.7	1.7	39.8	8.90E-05	1.0	10	9.5
10/27/2008 02:48.48	14.0	11.8	30.9	-2.2	40.3	8.69E-05	0.9	10	9.5
10/27/2008 03:21.61	16.0	9.9	33.1	-6.1	40.9	8.53E-05	1.0	10	9.5
10/27/2008 03:57.31	18.0	8.0	35.7	-10.0	41.5	8.37E-05	1.0	10	9.5
10/27/2008 04:37.88	20.0	6.0	40.6	-14.0	42.1	8.02E-05	1.0	10	10
10/27/2008 05:21.25	22.0	4.0	43.4	-18.0	42.9	8.00E-05	1.0	10	10

10/27/2008 06:10.18	24.0	2.0	48.9	-22.0	43.7	7.60E-05	1.0	10	10
10/27/2008 00:00.00	0.0	24.7	0.0	24.7	43.7				
10/27/2008 00:11.91	2.0	23.2	11.9	21.2	43.9	1.55E-04	0.8	10	7.5
10/27/2008 00:32.41	4.0	21.3	20.5	17.3	44.2	1.04E-04	0.9	10	9.5
10/27/2008 00:54.10	6.0	19.5	21.7	13.5	44.6	9.99E-05	0.9	10	9
10/27/2008 01:42.48	10.0	15.8	48.4	5.8	45.4	9.69E-05	0.9	20	18.5
10/27/2008 02:09.79	12.0	13.9	27.3	1.9	45.8	9.32E-05	1.0	10	9.5
10/27/2008 02:39.57	14.0	12.0	29.8	-2.0	46.3	8.98E-05	1.0	10	9.5
10/27/2008 03:12.30	16.0	10.0	32.7	-6.0	46.9	8.84E-05	1.0	10	10
10/27/2008 03:47.87	18.0	8.0	35.6	-10.0	47.5	8.61E-05	1.0	10	10
10/27/2008 04:48.30	20.0	5.0	60.4	-15.0	48.5	6.79E-05	1.5	10	15
10/27/2008 05:10.28	22.0	4.0	22.0	-18.0	48.8	1.19E-04	0.5	10	5
10/27/2008 05:57.54	24.0	2.0	47.3	-22.0	49.6	7.87E-05	1.0	10	10
10/27/2008 00:00.00	0.0	24.6	0.0	24.6	49.6				
10/27/2008 00:12.72	2.0	23.2	12.7	21.2	49.8	1.41E-04	0.7	10	7
10/27/2008 00:34.19	4.0	21.4	21.5	17.4	50.2	9.68E-05	0.9	10	9
10/27/2008 00:57.10	6.0	19.6	22.9	13.6	50.6	9.45E-05	0.9	10	9
10/27/2008 01:21.42	8.0	17.8	24.3	9.8	51.0	9.28E-05	0.9	10	9
10/27/2008 01:47.74	10.0	16.0	26.3	6.0	51.4	8.97E-05	0.9	10	9
10/27/2008 02:16.40	12.0	14.1	28.7	2.1	51.9	8.86E-05	1.0	10	9.5
10/27/2008 02:47.82	14.0	12.3	31.4	-1.7	52.4	8.27E-05	0.9	10	9
10/27/2008 03:22.80	16.0	10.3	35.0	-5.7	53.0	8.24E-05	1.0	10	10
10/27/2008 04:01.52	18.0	8.3	38.7	-9.7	53.7	7.88E-05	1.0	10	10
10/27/2008 04:44.59	20.0	6.3	43.1	-13.7	54.4	7.52E-05	1.0	10	10
10/27/2008 05:31.09	22.0	4.3	46.5	-17.7	55.1	7.43E-05	1.0	10	10
10/27/2008 00:00.00	0.0	24.7	0.0	24.7	55.1				
10/27/2008 00:13.72	2.0	22.7	13.7	20.7	55.4	1.54E-04	1.0	10	10
10/27/2008 00:34.77	4.0	20.7	21.0	16.7	55.7	1.05E-04	1.0	10	10
10/27/2008 00:57.15	6.0	18.7	22.4	12.7	56.1	1.03E-04	1.0	10	10
10/27/2008 01:21.66	8.0	16.7	24.5	8.7	56.5	9.81E-05	1.0	10	10
10/27/2008 01:48.26	10.0	14.6	26.6	4.6	57.0	9.72E-05	1.1	10	10.5
10/27/2008 02:16.88	12.0	12.5	28.6	0.5	57.4	9.50E-05	1.1	10	10.5
10/27/2008 02:47.92	14.0	10.5	31.0	-3.5	57.9	9.01E-05	1.0	10	10
10/27/2008 03:21.25	16.0	8.4	33.3	-7.6	58.5	9.09E-05	1.1	10	10.5
10/27/2008 03:58.34	18.0	6.3	37.1	-11.7	59.1	8.68E-05	1.1	10	10.5
10/27/2008 04:38.62	20.0	4.3	40.3	-15.7	59.8	8.30E-05	1.0	10	10
10/27/2008 05:23.12	22.0	2.2	44.5	-19.8	60.5	8.23E-05	1.1	10	10.5
10/27/2008 06:11.99	24.0	0.1	48.9	-23.9	61.3	8.06E-05	1.1	10	10.5





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

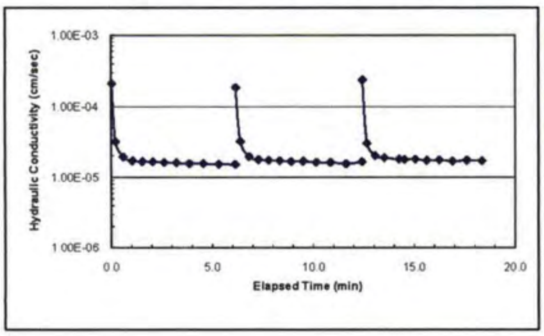
ASTM D 5084 - 00

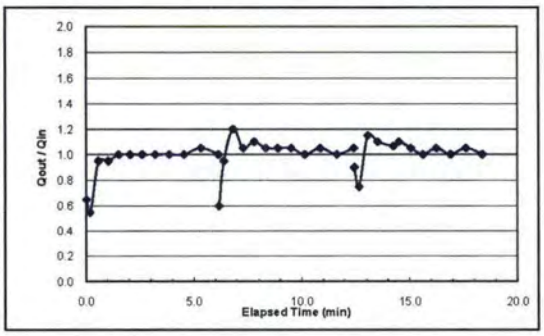
Sample I.D.	305-mm ET - Soil Top 2		Test Date :	8/18/08	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	30.5	cm
Inflow Pressure =	41.1	psi	Length of Sample, L =	15.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	729.66	cm^2
Pressure Difference =	1.1	psi	Sample Volume, V =	11120.0	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.0		a_{out} =	1	cm^2
Weight of wet sample =	21550.0	g	Sample Water Content =	11.3%	(%)
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	WT of Can + Wet Soil	WT of Can + Dry Soil	Water Content
	(g)	(g)	(g)	(%)
MV-3	30.84	182.71	167.28	11.31%

Date, Time	Inflow	OutFlow	Δt	H	Time	K	Q_{out} / Q_{in}	Q_{in}	Q_{out}
			(sec)	(cm)	(min)	(cm/sec)			
8/20/2008 00:00.00	0.0	24.9	0.0	24.9	0.0				
8/20/2008 00:01.62	2.0	23.6	1.6	21.6	0.0	2.14E-04	0.6	2	1.3
8/20/2008 00:12.22	4.0	22.5	10.6	18.5	0.2	3.17E-05	0.6	2	1.1
8/20/2008 00:35.02	6.0	20.6	22.8	14.6	0.6	1.93E-05	0.9	2	1.9
8/20/2008 01:01.99	8.0	18.7	27.0	10.7	1.0	1.70E-05	1.0	2	1.9
8/20/2008 01:31.54	10.0	16.7	29.6	6.7	1.5	1.67E-05	1.0	2	2
8/20/2008 02:02.81	12.0	14.7	31.3	2.7	2.0	1.65E-05	1.0	2	2
8/20/2008 02:36.62	14.0	12.7	33.8	-1.3	2.6	1.61E-05	1.0	2	2
8/20/2008 03:12.57	16.0	10.7	35.9	-5.3	3.2	1.59E-05	1.0	2	2
8/20/2008 03:51.72	18.0	8.7	39.2	-9.3	3.9	1.55E-05	1.0	2	2
8/20/2008 04:33.20	20.0	6.7	41.5	-13.3	4.6	1.55E-05	1.0	2	2
8/20/2008 05:19.45	22.0	4.6	46.2	-17.4	5.3	1.52E-05	1.1	2	2.1
8/20/2008 06:08.20	24.0	2.6	48.8	-21.4	6.1	1.51E-05	1.0	2	2
8/20/2008 00:00.00	0.0	24.9	0.0	24.9	6.1				
8/20/2008 00:01.78	2.0	23.7	1.8	21.7	6.2	1.89E-04	0.6	2	1.2
8/20/2008 00:15.18	4.0	21.8	13.4	17.8	6.4	3.17E-05	0.9	2	1.9
8/20/2008 00:41.01	6.0	19.4	25.8	13.4	6.8	1.94E-05	1.2	2	2.4
8/20/2008 01:08.89	8.0	17.3	27.9	9.3	7.3	1.75E-05	1.1	2	2.1
8/20/2008 01:39.46	10.0	15.1	30.6	5.1	7.8	1.72E-05	1.1	2	2.2
8/20/2008 02:11.35	12.0	13.0	31.9	1.0	8.3	1.69E-05	1.1	2	2.1
8/20/2008 02:45.80	14.0	10.9	34.5	-3.1	8.9	1.65E-05	1.1	2	2.1
8/20/2008 03:21.85	16.0	8.8	36.0	-7.2	9.5	1.67E-05	1.1	2	2.1
8/20/2008 04:00.52	18.0	6.8	38.7	-11.2	10.1	1.61E-05	1.0	2	2
8/20/2008 04:42.95	20.0	4.7	42.4	-15.3	10.9	1.60E-05	1.1	2	2.1
8/20/2008 05:29.01	22.0	2.7	46.1	-19.3	11.6	1.54E-05	1.0	2	2
8/20/2008 06:16.61	24.0	0.6	47.6	-23.4	12.4	1.64E-05	1.1	2	2.1
8/20/2008 00:00.00	0.0	24.9	0.0	24.9	12.4				
8/20/2008 00:01.67	2.0	23.1	1.7	21.1	12.4	2.40E-04	0.9	2	1.8
8/20/2008 00:14.48	4.0	21.6	12.8	17.6	12.7	2.99E-05	0.8	2	1.5
8/20/2008 00:38.98	6.0	19.3	24.5	13.3	13.1	2.00E-05	1.2	2	2.3
8/20/2008 01:05.88	8.0	17.1	26.9	9.1	13.5	1.87E-05	1.1	2	2.2
8/20/2008 01:50.10	11.0	13.9	44.2	2.9	14.2	1.78E-05	1.1	3	3.2
8/20/2008 02:05.96	12.0	12.8	15.9	0.8	14.5	1.77E-05	1.1	1	1.1
8/20/2008 02:38.16	14.0	10.7	32.2	-3.3	15.0	1.77E-05	1.1	2	2.1
8/20/2008 03:12.59	16.0	8.7	34.4	-7.3	15.6	1.71E-05	1.0	2	2
8/20/2008 03:49.60	18.0	6.6	37.0	-11.4	16.2	1.73E-05	1.1	2	2.1
8/20/2008 04:29.29	20.0	4.6	39.7	-15.4	16.9	1.68E-05	1.0	2	2
8/20/2008 05:11.74	22.0	2.5	42.5	-19.5	17.6	1.72E-05	1.1	2	2.1
8/20/2008 05:57.09	24.0	0.5	45.3	-23.5	18.4	1.68E-05	1.0	2	2





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

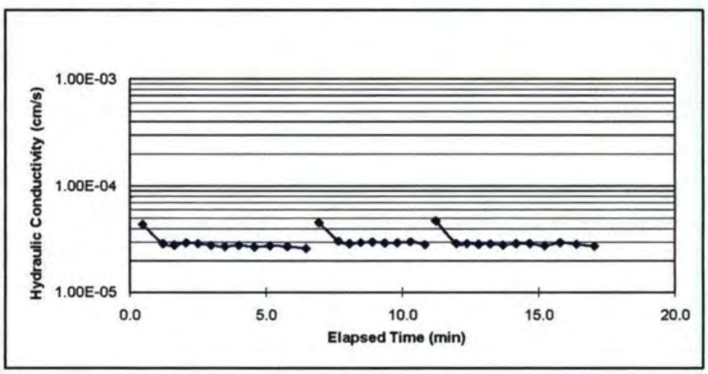
ASTM D 5084 - 00

Sample I.D.	150-mm ET-Soil-Top-2		Test Date :		
Cell Pressure =	42.1	psi	Diameter of Sample, D =	15.2	cm
Inflow Pressure =	40.5	psi	Length of Sample, L =	6.4	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	182.41	cm^2
Pressure Difference =	0.5	psi	Sample Volume, V =	1158.3	cm^3
Effective Stress =	1.9	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	5.5		a_{out} =	1	cm^2
Weight of wet sample =	2066.6	g	Sample Water Content =	25.5	(%)
Wet Density =	1.8	g/cm^3	Dry Density =	1.42	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)	(%)
62	30.71	139.36	117.3	25.48

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				
0:00:28	2.0	22.0	27.8	20.0	0.5	4.38E-05	1.0	2	2
0:01:13	4.0	20.0	45.4	16.0	1.2	2.89E-05	1.0	2	2
0:01:38	5.0	19.0	24.7	14.0	1.6	2.81E-05	1.0	1	1
0:02:04	6.0	17.9	25.7	11.9	2.1	2.96E-05	1.1	1	1.1
0:02:30	7.0	16.9	26.1	9.9	2.5	2.89E-05	1.0	1	1
0:02:58	8.0	15.9	28.4	7.9	3.0	2.79E-05	1.0	1	1
0:03:29	9.0	14.9	30.5	5.9	3.5	2.72E-05	1.0	1	1
0:04:00	10.0	13.9	31.1	3.9	4.0	2.80E-05	1.0	1	1
0:04:34	11.0	12.9	34.0	1.9	4.6	2.69E-05	1.0	1	1
0:05:09	12.0	11.9	35.0	-0.1	5.1	2.76E-05	1.0	1	1
0:05:46	13.0	10.9	37.6	-2.1	5.8	2.72E-05	1.0	1	1
0:06:28	14.0	9.9	41.7	-4.1	6.5	2.61E-05	1.0	1	1
0:00:00	0.0	24.0	-387.9	24.0	6.5				
0:00:26	2.0	22.1	26.2	20.1	6.9	4.54E-05	0.9	2	1.9
0:01:09	4.0	20.1	42.9	16.1	7.7	3.05E-05	1.0	2	2
0:01:33	5.0	19.1	23.9	14.1	8.0	2.90E-05	1.0	1	1
0:01:59	6.0	18.0	25.6	12.0	8.5	2.96E-05	1.1	1	1.1
0:02:24	7.0	17.0	25.2	10.0	8.9	3.00E-05	1.0	1	1
0:02:51	8.0	16.0	26.8	8.0	9.3	2.94E-05	1.0	1	1
0:03:19	9.0	15.0	28.0	6.0	9.8	2.95E-05	1.0	1	1
0:03:47	10.0	14.0	28.8	4.0	10.3	3.01E-05	1.0	1	1
0:04:19	11.0	13.0	32.1	2.0	10.8	2.84E-05	1.0	1	1
0:00:00	0.0	24.0	-259.5	24.0	10.8				
0:00:25	2.0	22.1	25.1	20.1	11.2	4.72E-05	0.9	2	1.9
0:01:10	4.0	20.1	45.0	16.1	12.0	2.90E-05	1.0	2	2
0:01:34	5.0	19.1	24.0	14.1	12.4	2.89E-05	1.0	1	1
0:01:59	6.0	18.1	25.3	12.1	12.8	2.85E-05	1.0	1	1
0:02:26	7.0	17.1	26.1	10.1	13.2	2.88E-05	1.0	1	1
0:02:54	8.0	16.1	28.1	8.1	13.7	2.80E-05	1.0	1	1
0:03:22	9.0	15.1	28.5	6.1	14.2	2.89E-05	1.0	1	1
0:03:52	10.0	14.1	29.8	4.1	14.7	2.90E-05	1.0	1	1
0:04:25	11.0	13.1	33.0	2.1	15.2	2.76E-05	1.0	1	1
0:04:59	12.0	12.0	34.2	0.0	15.8	2.95E-05	1.1	1	1.1
0:05:35	13.0	11.0	35.8	-2.0	16.4	2.85E-05	1.0	1	1
0:06:15	14.0	10.0	39.7	-4.0	17.0	2.73E-05	1.0	1	1



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

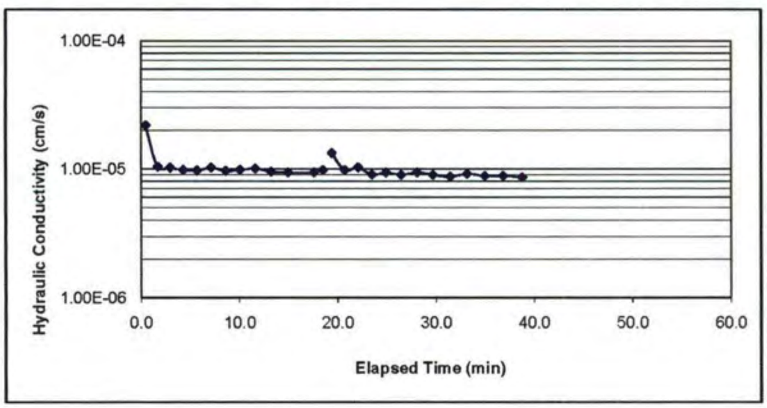
ASTM D 5084 - 00

Sample I.D.	75-mm ET-Soil-Top-2			Test Date :	
Cell Pressure =	42.0	psi	Diameter of Sample, D =	7.6	cm
Inflow Pressure =	41.0	psi	Length of Sample, L =	3.2	cm
Outflow Pressre =	40.0	psi	Area of Sample, A =	45.60	cm^2
Pressure Difference =	1.0	psi	Sample Volume, V =	144.8	cm^3
Effective Stress =	1.5	psi	a_{in} =	1	cm^2
Hydraulic Gradient, i =	22.2		a_{out} =	1	cm^2
Weight of wet sample =	244.2	g	Sample Water Content =	25.1	(%)
Wet Density =	1.7	g/cm^3	Dry Density =	1.35	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)	(%)
Y	30.96	145.11	122.22	25.08

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				
0:00:27	1.0	23.4	27.3	22.4	0.5	2.18E-05	0.6	1	0.6
0:01:40	2.0	22.4	72.8	20.4	1.7	1.04E-05	1.0	1	1
0:02:56	3.0	21.4	75.9	18.4	2.9	1.02E-05	1.0	1	1
0:04:17	4.0	20.4	80.9	16.4	4.3	9.81E-06	1.0	1	1
0:05:41	5.0	19.4	83.6	14.4	5.7	9.72E-06	1.0	1	1
0:07:06	6.0	18.3	85.4	12.3	7.1	1.02E-05	1.1	1	1.1
0:08:34	7.0	17.3	88.4	10.3	8.6	9.65E-06	1.0	1	1
0:10:03	8.0	16.3	89.0	8.3	10.1	9.82E-06	1.0	1	1
0:11:37	9.0	15.2	93.5	6.2	11.6	1.01E-05	1.1	1	1.1
0:13:14	10.0	14.2	97.1	4.2	13.2	9.50E-06	1.0	1	1
0:14:55	11.0	13.2	100.9	2.2	14.9	9.38E-06	1.0	1	1
0:17:37	12.5	11.6	162.0	-0.9	17.6	9.39E-06	1.1	1.5	1.6
0:18:28	13.0	11.1	51.6	-1.9	18.5	9.79E-06	1.0	0.5	0.5
0:00:00	0.0	24.0	-1108.3	24.0	18.5				
0:00:53	1.0	23.1	53.2	22.1	19.4	1.33E-05	0.9	1	0.9
0:02:11	2.0	22.1	77.7	20.1	20.7	9.80E-06	1.0	1	1
0:03:34	3.1	21.0	83.5	17.9	22.1	1.03E-05	1.0	1.1	1.1
0:04:58	4.0	20.0	84.0	16.0	23.5	9.02E-06	1.1	0.9	1
0:06:26	5.0	19.0	87.2	14.0	24.9	9.36E-06	1.0	1	1
0:07:58	6.0	18.0	92.8	12.0	26.5	9.00E-06	1.0	1	1
0:09:34	7.0	16.9	95.9	9.9	28.1	9.38E-06	1.1	1	1.1
0:11:12	8.0	15.9	97.7	7.9	29.7	8.99E-06	1.0	1	1
0:12:56	9.0	14.9	103.8	5.9	31.4	8.69E-06	1.0	1	1
0:14:42	10.0	13.8	106.3	3.8	33.2	9.15E-06	1.1	1	1.1
0:16:30	11.0	12.8	108.0	1.8	35.0	8.82E-06	1.0	1	1
0:18:21	12.0	11.8	110.9	-0.2	36.8	8.83E-06	1.0	1	1
0:20:18	13.0	10.8	117.1	-2.2	38.8	8.60E-06	1.0	1	1



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

ASTM D 5084 - 00

Sample I.D.	305-mm ET-Soil Bottom		Test Date :	10/13/08	
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 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 =	22600.0	g	Sample Water Content =	15.3%	(%)
Wet Density =	2.0	g/cm^3	Dry Density =	2.03	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)	(%)
G	30.8	157.28	140.54	15.25%

Date, Time	Inflow	OutFlow	Δt (sec)	H (cm)	Time (min)	K (cm/sec)	Q_{out} / Q_{in}	Q_{in}	Q_{out}
10/13/2008 00:00.00	0.0	24.8	0.0	24.8	0.0				
10/13/2008 00:21.19	2.0	24.1	21.2	22.1	0.4	6.68E-05	0.4	10	3.5
10/13/2008 01:35.12	4.0	22.2	73.9	18.2	1.6	2.86E-05	1.0	10	9.5
10/13/2008 02:57.11	6.0	20.2	82.0	14.2	3.0	2.76E-05	1.0	10	10
10/13/2008 04:20.61	8.0	18.1	83.5	10.1	4.3	2.90E-05	1.1	10	10.5
10/13/2008 05:45.00	10.0	16.1	84.4	6.1	5.8	2.94E-05	1.0	10	10
10/13/2008 07:16.31	12.0	14.0	91.3	2.0	7.3	2.92E-05	1.1	10	10.5
10/13/2008 08:50.68	14.0	12.0	94.4	-2.0	8.8	2.91E-05	1.0	10	10
10/13/2008 10:32.91	16.0	10.0	102.2	-6.0	10.5	2.83E-05	1.0	10	10
10/13/2008 12:19.77	18.0	8.0	106.9	-10.0	12.3	2.87E-05	1.0	10	10
10/13/2008 14:15.60	20.0	5.9	115.8	-14.1	14.3	2.88E-05	1.1	10	10.5
10/13/2008 16:22.87	22.0	3.8	127.3	-18.2	16.4	2.80E-05	1.1	10	10.5
10/13/2008 18:36.03	24.0	1.8	133.2	-22.2	18.6	2.80E-05	1.0	10	10
10/13/2008 00:00.00	0.0	24.7	0.0	24.7	18.6				
10/13/2008 00:16.50	2.0	24.2	16.5	22.2	18.9	7.94E-05	0.3	10	2.5
10/13/2008 01:34.75	4.0	22.7	78.3	18.7	20.2	2.42E-05	0.8	10	7.5
10/13/2008 03:14.24	6.0	20.8	99.5	14.8	21.8	2.20E-05	0.9	10	9.5
10/13/2008 05:00.10	8.0	18.7	105.9	10.7	23.6	2.27E-05	1.1	10	10.5
10/13/2008 06:47.16	10.0	16.7	107.1	6.7	25.4	2.30E-05	1.0	10	10
10/13/2008 08:35.21	12.0	14.4	108.1	2.4	27.2	2.57E-05	1.2	10	11.5
10/13/2008 10:14.20	14.0	12.1	99.0	-1.9	28.8	2.97E-05	1.2	10	11.5
10/13/2008 11:53.16	16.0	10.0	99.0	-6.0	30.5	3.00E-05	1.1	10	10.5
10/13/2008 13:37.21	18.0	8.0	104.1	-10.0	32.2	2.94E-05	1.0	10	10
10/13/2008 15:32.02	20.0	6.0	114.8	-14.0	34.1	2.83E-05	1.0	10	10
10/13/2008 17:32.92	22.0	3.9	120.9	-18.1	36.1	2.95E-05	1.1	10	10.5
10/13/2008 19:48.36	24.0	1.9	135.4	-22.1	38.4	2.75E-05	1.0	10	10
10/13/2008 00:00.00	0.0	24.8	0.0	24.8	38.4				
10/13/2008 00:19.20	2.0	24.2	19.2	22.2	38.7	7.09E-05	0.3	10	3
10/13/2008 01:45.52	4.0	22.5	86.3	18.5	40.2	2.32E-05	0.9	10	8.5
10/13/2008 03:30.29	6.0	20.4	104.8	14.4	41.9	2.21E-05	1.1	10	10.5
10/13/2008 05:15.32	8.0	18.3	105.0	10.3	43.7	2.30E-05	1.1	10	10.5
10/13/2008 07:04.80	10.0	16.3	109.5	6.3	45.5	2.26E-05	1.0	10	10
10/13/2008 08:57.59	12.0	14.2	112.8	2.2	47.4	2.36E-05	1.1	10	10.5
10/13/2008 10:53.45	14.0	12.1	115.9	-1.9	49.3	2.42E-05	1.1	10	10.5
10/13/2008 12:55.82	16.0	10.0	122.4	-6.0	51.3	2.42E-05	1.1	10	10.5
10/13/2008 15:31.21	18.5	7.3	155.4	-11.2	53.9	2.59E-05	1.1	12.5	13.5
10/13/2008 17:08.64	20.0	5.8	97.4	-14.2	55.6	2.53E-05	1.0	7.5	7.5
10/13/2008 19:26.66	22.0	3.7	138.0	-18.3	57.9	2.59E-05	1.1	10	10.5
10/13/2008 21:53.00	24.0	1.6	146.3	-22.4	60.3	2.62E-05	1.1	10	10.5
10/13/2008 00:00.00	0.0	24.8	0.0	24.8	60.3				
10/13/2008 00:29.54	2.0	23.7	29.5	21.7	60.8	5.51E-05	0.6	10	5.5
10/13/2008 01:52.30	4.0	21.6	82.8	17.6	62.2	2.70E-05	1.1	10	10.5
10/13/2008 03:14.51	6.0	19.3	82.2	13.3	63.5	2.98E-05	1.2	10	11.5
10/13/2008 04:34.11	8.0	17.1	79.6	9.1	64.9	3.15E-05	1.1	10	11
10/13/2008 05:56.68	10.0	15.0	82.6	5.0	66.2	3.12E-05	1.1	10	10.5
10/13/2008 07:24.82	12.0	13.0	88.1	1.0	67.7	2.99E-05	1.0	10	10
10/13/2008 08:58.86	14.0	10.9	94.0	-3.1	69.3	3.03E-05	1.1	10	10.5
10/13/2008 10:37.86	16.0	8.8	99.0	-7.2	70.9	3.04E-05	1.1	10	10.5
10/13/2008 12:19.05	18.0	6.8	101.2	-11.2	72.6	3.08E-05	1.0	10	10
10/13/2008 14:10.55	20.0	4.7	111.5	-15.3	74.5	3.05E-05	1.1	10	10.5
10/13/2008 16:10.10	22.0	2.7	119.5	-19.3	76.5	2.97E-05	1.0	10	10
10/13/2008 18:17.55	24.0	0.6	127.5	-23.4	78.6	3.06E-05	1.1	10	10.5