APPENDIX I

SLUG TEST LOGS

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Appendix I Slug Test Logs

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SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: MMW-04	DATE STARTED: 12-12-02	DATE COMPLETED: 12-13-02
LOCATION:	RECORDED BY: SMcCarl	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	In Situ MiniTroll		7606		
TRANSDUCER					
WATER LEVEL	Heron	Dipper-T	05767		

PRETEST DATA

REFERENCE POINT TOC/BGS	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2
SCREEN OR OPEN HOLE I.D. (IN) 2	DIAMETER OF BOREHOLE (IF SCREENED) 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	29.49		TOP OF FILTER PACK	13.0	
DEPTH TO WATER	23.44		TOP OF SCREEN OR OPEN HOLE	16.3	
HEIGHT OF WATER COLUMN	6.05		SCREEN LENGTH	10'	
TEST INTERVAL TYPE					

TEST METHODS SUMMARY

TEST METHOD SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.5' x 1.25"	~~0.1429~~ 0.185 gal	24.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE END	TIME (HH:MM:SS) BEGIN	TIME END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN END
da2mmw-04 slugin 2		12/12/02	12/13/02	1643	944	24.5'	23.44	~~23.54~~ 22.02	6.05	7.47
da2mmw-04 slugout		12/13/02	12/13/02	0946	1223	24.5'	22.02	23.19	7.47	6.30

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL LOG SCALE	ARITH. SCALE	COMMENTS
COLUMN B	TIME	CL	HH:MM:SS	✓		
COLUMN C	TIME	ET	MIN	✓		
COLUMN E	WATER LEVEL	FT BRP	FT			

(1) CK – 24 HR CLOCK TIME H – HEIGHT OF WATER ABOVE TRANSDUCER E – WATER LEVEL ELEVATION 0 – OTHER
ET – ELAPSED TIME FT BRP – DEPTH TO WATER P – PRESSURE (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

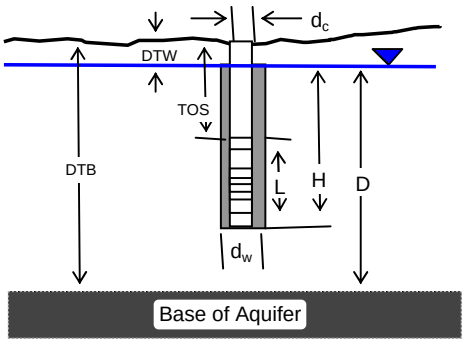
DATA RECORDED BY	DATE	QA CHECK BY	DATE
SMcCarl	12-13-02		

WELL ID: DA2-MW104

Local ID: Slug-In
Date: 12/12/2002
Time: 13:46

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	19	Feet
top of screen (TOS)	19.37	Feet
Base of Aquifer (DTB)	30	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



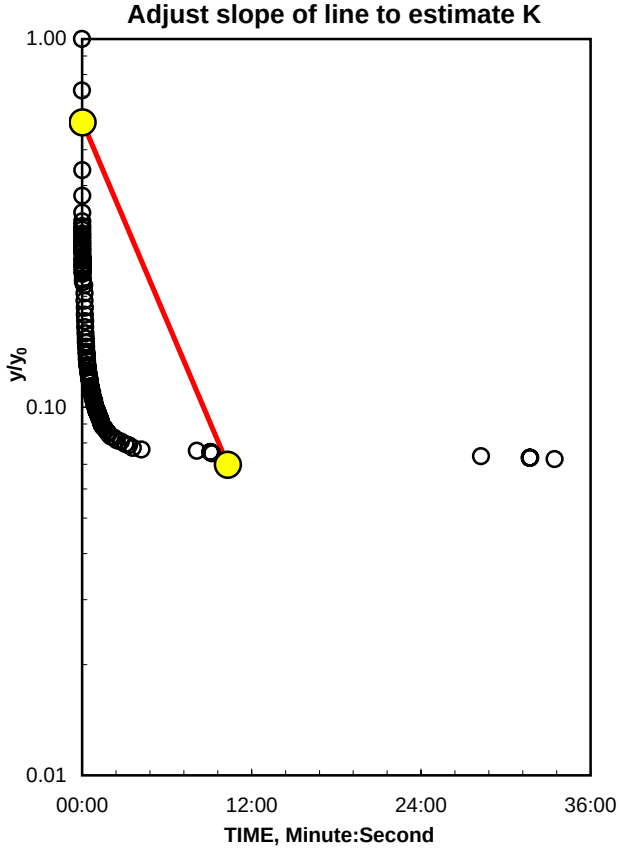
COMPUTED

L_{wetted}	10	Feet
D =	11	Feet
H =	10.37	Feet
L/r_w =	29.09	
$y_{0\text{-DISPLACEMENT}}$ =	46.81	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.480	
B =	0.409	
ln(Re/rw) =	2.400	
Re =	3.79	cm
Slope =	0.000252	$\log_{10}$/sec
$t_{90\%}$ recovery =	3973	sec

Input is consistent.

K = 0.00001 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

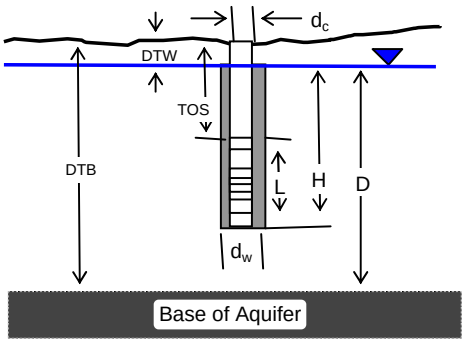
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	13:46:36.0	4.02	51	13:50:13.4	2.66
2	13:46:37.3	3.59	52	13:50:23.4	2.65
3	13:46:39.5	3.37	53	13:50:33.4	2.65
4	13:46:39.8	3.16	54	13:50:43.4	2.65
5	13:46:41.1	3.06	55	13:50:53.4	2.65
6	13:46:41.4	3.00	56	13:51:03.4	2.64
7	13:46:41.7	2.97	57	13:51:13.4	2.64
8	13:46:42.0	2.96	58	13:51:23.4	2.64
9	13:46:43.3	2.95	59	13:51:33.4	2.64
10	13:46:43.6	2.94	60	13:51:43.4	2.64
11	13:46:43.9	2.93	61	13:51:53.4	2.64
12	13:46:45.2	2.92	62	13:52:03.4	2.64
13	13:46:45.5	2.91	63	13:52:13.4	2.64
14	13:46:45.8	2.90	64	13:52:23.4	2.63
15	13:46:47.1	2.90	65	13:52:33.4	2.63
16	13:46:47.4	2.89	66	13:52:43.4	2.63
17	13:46:47.7	2.89	67	13:52:53.4	2.63
18	13:46:49.3	2.88	68	13:53:03.4	2.63
19	13:46:49.7	2.87	69	13:53:13.4	2.63
20	13:46:51.1	2.86	70	13:53:23.4	2.63
21	13:46:51.5	2.86	71	13:53:33.4	2.63
22	13:46:52.0	2.85	72	13:53:43.4	2.63
23	13:46:53.4	2.85	73	13:53:53.4	2.62
24	13:46:53.9	2.84	74	13:54:03.4	2.62
25	13:46:55.5	2.83	75	13:54:13.4	2.62
26	13:46:56.0	2.82	76	13:54:23.4	2.62
27	13:46:57.6	2.82	77	13:54:33.4	2.62
28	13:47:35.8	2.81	78	13:54:43.4	2.62
29	13:47:39.5	2.79	79	13:54:53.4	2.62
30	13:47:43.3	2.78	80	13:55:23.4	2.62
31	13:47:47.2	2.77	81	13:56:03.4	2.62
32	13:47:51.3	2.75	82	13:56:43.4	2.61
33	13:47:55.5	2.74	83	13:57:33.4	2.61
34	13:47:59.8	2.73	84	13:57:53.4	2.61
35	13:48:05.3	2.72	85	13:58:53.4	2.61
36	13:48:09.9	2.72	86	14:00:13.4	2.61
37	13:48:15.7	2.71	87	14:01:23.4	2.61
38	13:48:21.6	2.70	88	14:03:13.4	2.60
39	13:48:27.7	2.70	89	14:05:03.4	2.60
40	13:48:34.0	2.69	90	14:06:33.4	2.60
41	13:48:41.5	2.69	91	14:08:13.4	2.60
42	13:48:49.2	2.69	92	14:11:53.4	2.60
43	13:48:56.1	2.68	93	14:35:23.4	2.60
44	13:49:05.3	2.68	94	14:41:03.4	2.60
45	13:49:13.7	2.67	95	14:41:13.4	2.60
46	13:49:23.4	2.67	96	14:41:53.4	2.60
47	13:49:33.4	2.67	97	16:36:03.4	2.59
48	13:49:43.4	2.66	98	16:56:43.4	2.59
49	13:49:53.4	2.66	99	16:56:53.4	2.59
50	13:50:03.4	2.66	100	16:57:03.4	2.59

WELL ID: DA2-MW104

Local ID: Slug-out
Date:
Time: 9:46

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	19	Feet
top of screen (TOS)	19.37	Feet
Base of Aquifer (DTB)	30	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

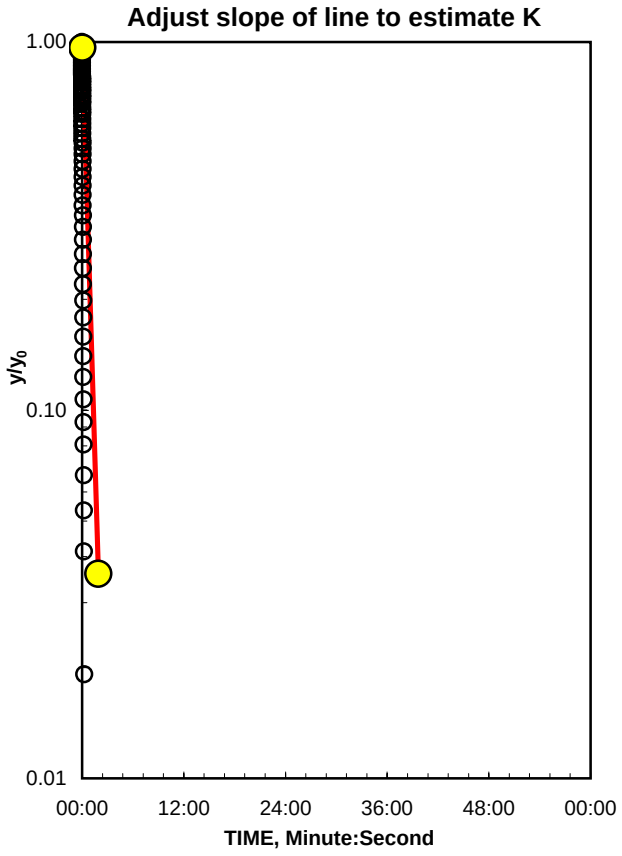


COMPUTED

L_{wetted}	10	Feet
D =	11	Feet
H =	10.37	Feet
L/r_w =	29.09	
$y_{0\text{-DISPLACEMENT}}$ =	30.21	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.480	
B =	0.409	
ln(Re/rw) =	2.400	
Re =	3.79	cm
Slope =	0.002129	$\log_{10}$/sec
$t_{90\%}$ recovery =	470	sec

Input is consistent.

K = 0.0001 cm/Second



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	9:46:01.0	1.51	51	9:47:08.3	2.41
2	9:46:02.3	1.54	52	9:47:12.2	2.42
3	9:46:02.6	1.56	53	9:47:16.3	2.43
4	9:46:02.9	1.58	54	9:47:20.5	2.45
5	9:46:04.2	1.60	55	9:47:24.8	2.46
6	9:46:04.5	1.61	56	9:47:34.9	2.48
7	9:46:04.8	1.63	57	9:47:40.7	2.49
8	9:46:05.1	1.65	58	9:47:46.6	2.50
9	9:46:06.4	1.66	59	9:47:52.7	2.51
10	9:46:06.7	1.68	60	9:47:59.0	2.52
11	9:46:07.0	1.69	61	9:48:06.5	2.53
12	9:46:08.3	1.71	62	9:48:14.2	2.54
13	9:46:08.6	1.72	63	9:48:21.1	2.54
14	9:46:08.9	1.73	64	9:48:30.3	2.55
15	9:46:10.2	1.75	65	9:48:38.7	2.56
16	9:46:10.5	1.76	66	9:48:48.4	2.57
17	9:46:10.8	1.77	67	9:48:58.4	2.57
18	9:46:11.1	1.79	68	9:49:08.4	2.58
19	9:46:12.4	1.80	69	9:49:18.4	2.58
20	9:46:12.7	1.81	70	9:49:28.4	2.59
21	9:46:13.0	1.82	71	9:49:48.4	2.59
22	9:46:14.3	1.84	72	9:50:08.4	2.60
23	9:46:14.7	1.86	73	9:50:28.4	2.60
24	9:46:16.1	1.87	74	9:50:48.4	2.61
25	9:46:16.5	1.89	75	9:51:18.4	2.61
26	9:46:17.0	1.90	76	9:51:28.4	2.61
27	9:46:18.4	1.92	77	9:51:58.4	2.62
28	9:46:18.9	1.94	78	9:52:28.4	2.62
29	9:46:20.5	1.96	79	9:52:48.4	2.62
30	9:46:21.0	1.97	80	9:53:38.4	2.63
31	9:46:22.6	1.99	81	9:54:28.4	2.63
32	9:46:24.2	2.01	82	9:55:08.4	2.63
33	9:46:24.9	2.03	83	9:57:18.4	2.64
34	9:46:26.6	2.05	84	10:00:28.4	2.64
35	9:46:28.3	2.07	85	10:05:48.4	2.65
36	9:46:30.1	2.10	86	10:10:08.4	2.65
37	9:46:31.0	2.12	87	10:11:18.4	2.65
38	9:46:32.9	2.14	88	10:21:58.4	2.66
39	9:46:34.8	2.17	89	10:40:48.4	2.66
40	9:46:36.8	2.19	90	10:42:28.4	2.66
41	9:46:38.9	2.21	91	10:54:28.4	2.67
42	9:46:41.0	2.24	92	12:36:48.4	2.67
43	9:46:44.2	2.26	93	12:59:38.4	2.68
44	9:46:46.4	2.28	94	13:07:28.4	2.68
45	9:46:48.8	2.30	95	13:11:18.4	2.68
46	9:46:52.2	2.32	96	13:13:08.4	2.69
47	9:46:54.7	2.34	97	13:14:18.4	2.69
48	9:46:58.2	2.36	98	13:19:18.4	2.69
49	9:47:00.8	2.38	99	14:20:38.4	2.69
50	9:47:04.5	2.39	100	14:20:48.4	2.69

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DA2105	DATE STARTED: 12-12-02	DATE COMPLETED: 12-12-02
LOCATION:	RECORDED BY:	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO	RANGE (PSI)	LAST CALIB.
DATA LOGGER	SOLINST MINI	TROLL	2978		
TRANSDUCER					
WATER LEVEL	HERON	DIPPER T	05707		

PRETEST DATA

REFERENCE POINT TOC / BGS	REFERENCE POINT ELEVATION X	RISER CASING I.D. (IN) 2

SCREEN OR OPEN HOLE I.D. (IN) 2			DIAMETER OF BOREHOLE (IF SCREENED) BGS 8		
	FT BRP TOC	MSL		FT BRP	MSL
TOTAL WELL DEPTH	16.20		TOP OF FILTER PACK	6.2	
DEPTH TO WATER	3.57		TOP OF SCREEN OR OPEN HOLE	8.3	
HEIGHT OF WATER COLUMN	12.63		SCREEN LENGTH	5.0	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD	SLUG IN (FALLING HEAD) LT	SLUG OUT (RISING HEAD) LT	
SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.1' x 1.25"	0.1497 0.1851	5.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE (MM/DD/YY) END	TIME (HH:MM:SS) BEGIN	TIME (HH:MM:SS) END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER (FT BRP) END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN (FT) END
da2mw	105 slug in	12/12/02	12/12/02	10914	13140	14.10'	3.57	3.55	12.63	12.65
da2mw	105 slug out	12/12/02	12/12/02	13148	16031	14.0'	3.55	4.14	12.65	12.06

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL: LOG SCALE	TEST TIME INTERVAL: ARITH. SCALE	COMMENTS
COLUMN B	TIME	CC	HH:MM:SS	✓		
COLUMN C	TIME	ET	MIN	✓		
COLUMN E	WATER LEVEL	FT BRP	FT			

(1) CK – 24 HR CLOCK TIME; ET – ELAPSED TIME; H – HEIGHT OF WATER ABOVE TRANSDUCER; FT BRP – DEPTH TO WATER; E – WATER LEVEL ELEVATION; P – PRESSURE; O – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

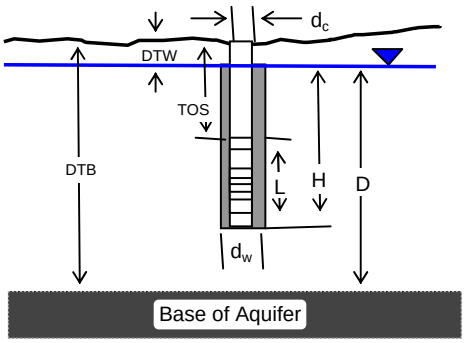
DATA RECORDED BY	DATE	QA CHECK BY	DATE
	12-12-02		

WELL ID: DA2-MW105

Local ID: Slug-in
Date:
Time: 9:16

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	0.87	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	14	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

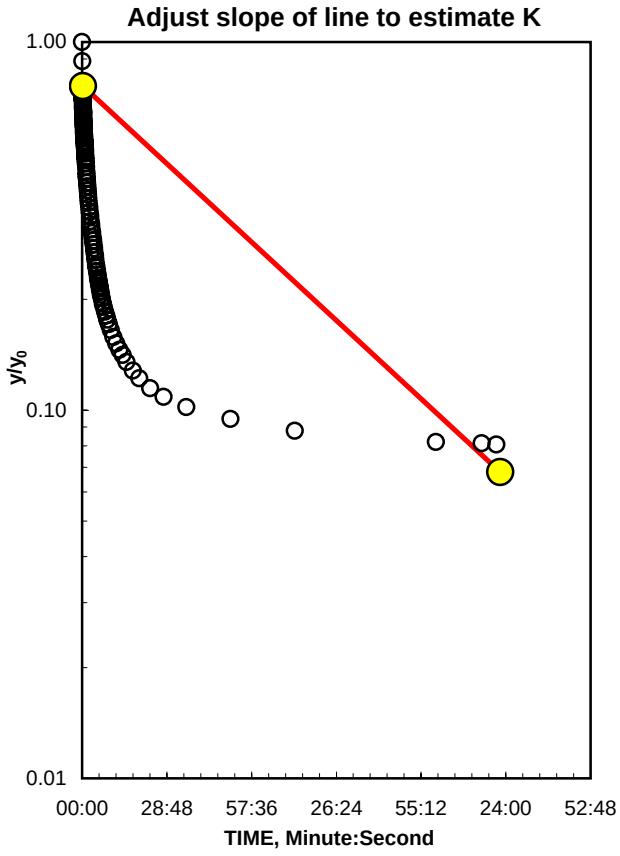


COMPUTED

L_{wetted}	5	Feet
D =	13.13	Feet
H =	12.43	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	45.72	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.162	
Re =	2.99	cm
Slope =	0.000123	$\log_{10}$/sec
$t_{90\%}$ recovery =	8118	sec

Input is consistent.

K = 0.00001 cm/Second



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

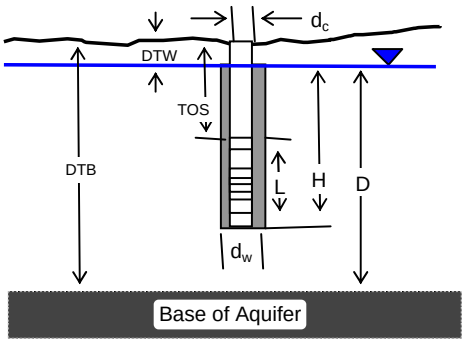
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	9:16:14.3	11.85	51	9:18:42.3	10.88
2	9:16:18.4	11.68	52	9:18:50.7	10.87
3	9:16:20.3	11.53	53	9:19:00.4	10.85
4	9:16:20.9	11.47	54	9:19:10.4	10.84
5	9:16:21.2	11.45	55	9:19:20.4	10.83
6	9:16:22.5	11.45	56	9:19:30.4	10.82
7	9:16:22.8	11.44	57	9:19:40.4	10.80
8	9:16:24.4	11.43	58	9:19:50.4	10.79
9	9:16:26.7	11.42	59	9:20:00.4	10.78
10	9:16:27.1	11.41	60	9:20:10.4	10.77
11	9:16:28.5	11.40	61	9:20:20.4	10.76
12	9:16:29.0	11.40	62	9:20:30.4	10.75
13	9:16:30.4	11.39	63	9:20:40.4	10.74
14	9:16:30.9	11.38	64	9:20:50.4	10.73
15	9:16:32.5	11.37	65	9:21:00.4	10.72
16	9:16:33.0	11.36	66	9:21:10.4	10.72
17	9:16:34.6	11.35	67	9:21:20.4	10.71
18	9:16:36.2	11.34	68	9:21:30.4	10.70
19	9:16:36.9	11.33	69	9:21:40.4	10.69
20	9:16:38.6	11.32	70	9:21:50.4	10.69
21	9:16:40.3	11.31	71	9:22:00.4	10.68
22	9:16:41.1	11.29	72	9:22:10.4	10.68
23	9:16:43.0	11.28	73	9:22:20.4	10.67
24	9:16:44.9	11.27	74	9:22:30.4	10.67
25	9:16:46.8	11.25	75	9:22:40.4	10.66
26	9:16:48.8	11.24	76	9:23:00.4	10.65
27	9:16:50.9	11.23	77	9:23:20.4	10.64
28	9:16:53.0	11.21	78	9:23:40.4	10.64
29	9:16:55.2	11.20	79	9:24:00.4	10.63
30	9:16:58.4	11.19	80	9:24:30.4	10.62
31	9:17:00.8	11.17	81	9:24:50.4	10.61
32	9:17:03.2	11.16	82	9:25:20.4	10.61
33	9:17:06.7	11.15	83	9:26:00.4	10.60
34	9:17:09.2	11.14	84	9:26:50.4	10.59
35	9:17:12.8	11.13	85	9:27:50.4	10.58
36	9:17:16.5	11.11	86	9:29:00.4	10.57
37	9:17:20.3	11.10	87	9:30:00.4	10.56
38	9:17:23.2	11.08	88	9:31:20.4	10.55
39	9:17:28.3	11.07	89	9:33:30.4	10.54
40	9:17:32.5	11.05	90	9:35:40.4	10.53
41	9:17:36.8	11.04	91	9:39:20.4	10.52
42	9:17:42.3	11.02	92	9:44:00.4	10.51
43	9:17:46.9	11.00	93	9:51:40.4	10.50
44	9:17:52.7	10.99	94	10:06:40.4	10.49
45	9:17:58.6	10.97	95	10:28:30.4	10.48
46	9:18:04.7	10.96	96	11:16:30.4	10.47
47	9:18:11.0	10.94	97	11:32:00.4	10.47
48	9:18:18.5	10.93	98	11:37:00.4	10.47
49	9:18:25.2	10.91			
50	9:18:33.1	10.90			

WELL ID: DA2-MW105

Local ID: Slug out
Date:
Time: 13:18

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	0.87	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	14	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

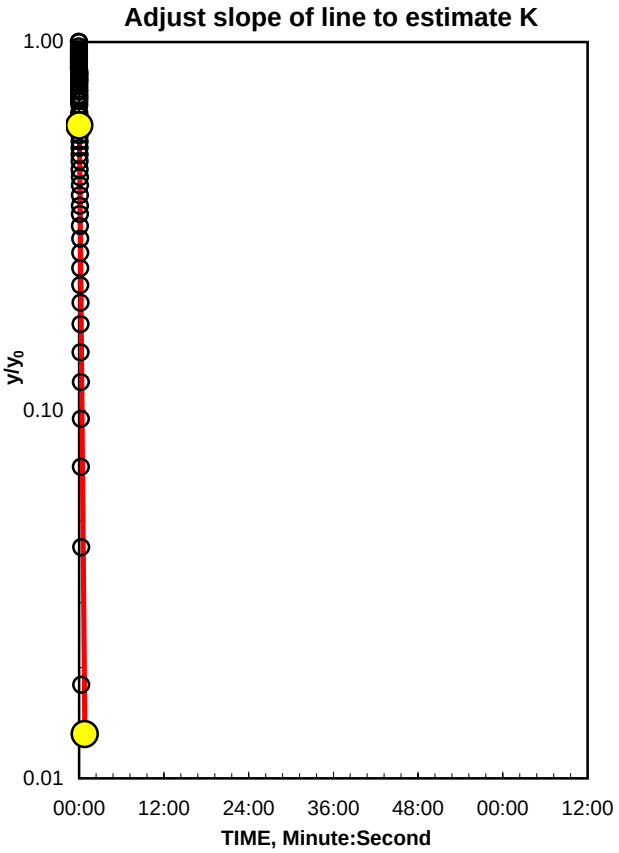


COMPUTED

L_{wetted}	5	Feet
D =	13.13	Feet
H =	12.43	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	18.67	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.162	
Re =	2.99	cm
Slope =	0.006212	$\log_{10}$/sec
$t_{90\%}$ recovery =	161	sec

K= 0.0007 is greater than extreme maximum of 0.000352509870276368 for Clay soils (surface)

K = Error cm/Second



K= 0.0007 is greater than likely maximum of 0.00035 for Clay soils (surface)

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	13:18:07.8	9.45	51	13:19:37.9	9.99
2	13:18:09.1	9.45	52	13:19:43.7	10.00
3	13:18:09.4	9.46	53	13:19:49.6	10.02
4	13:18:09.7	9.48	54	13:19:55.7	10.03
5	13:18:10.0	9.48	55	13:20:02.0	10.05
6	13:18:11.3	9.49	56	13:20:09.5	10.06
7	13:18:11.6	9.50	57	13:20:17.2	10.08
8	13:18:11.9	9.51	58	13:20:25.1	10.10
9	13:18:13.2	9.52	59	13:20:33.3	10.11
10	13:18:13.5	9.52	60	13:20:41.7	10.12
11	13:18:13.8	9.53	61	13:20:51.4	10.14
12	13:18:15.1	9.54	62	13:21:01.4	10.15
13	13:18:15.4	9.54	63	13:21:11.4	10.17
14	13:18:15.7	9.55	64	13:21:21.4	10.18
15	13:18:16.0	9.56	65	13:21:31.4	10.19
16	13:18:17.3	9.56	66	13:21:41.4	10.20
17	13:18:17.7	9.57	67	13:21:51.4	10.21
18	13:18:19.1	9.58	68	13:22:01.4	10.22
19	13:18:19.5	9.59	69	13:22:11.4	10.23
20	13:18:20.0	9.59	70	13:22:21.4	10.24
21	13:18:21.4	9.60	71	13:22:31.4	10.25
22	13:18:21.9	9.61	72	13:22:41.4	10.25
23	13:18:23.5	9.62	73	13:22:51.4	10.26
24	13:18:25.0	9.63	74	13:23:01.4	10.27
25	13:18:25.6	9.64	75	13:23:11.4	10.27
26	13:18:27.2	9.65	76	13:23:21.4	10.28
27	13:18:27.9	9.67	77	13:23:31.4	10.29
28	13:18:29.6	9.67	78	13:23:41.4	10.29
29	13:18:31.3	9.68	79	13:23:51.4	10.30
30	13:18:33.1	9.70	80	13:24:01.4	10.30
31	13:18:34.0	9.71	81	13:24:11.4	10.31
32	13:18:35.9	9.72	82	13:24:21.4	10.31
33	13:18:37.8	9.73	83	13:24:31.4	10.32
34	13:18:39.8	9.74	84	13:24:41.4	10.32
35	13:18:41.9	9.76	85	13:24:51.4	10.33
36	13:18:44.0	9.77	86	13:25:01.4	10.33
37	13:18:47.2	9.78	87	13:25:11.4	10.33
38	13:18:49.4	9.80	88	13:25:21.4	10.34
39	13:18:51.8	9.81	89	13:25:31.4	10.34
40	13:18:55.2	9.83	90	13:25:41.4	10.34
41	13:18:57.7	9.84	91	13:25:51.4	10.35
42	13:19:01.2	9.85	92	13:26:01.4	10.35
43	13:19:03.8	9.87	93	13:26:11.4	10.35
44	13:19:07.5	9.88	94	13:26:21.4	10.36
45	13:19:11.3	9.90	95	13:26:31.4	10.36
46	13:19:15.2	9.91	96	13:26:41.4	10.36
47	13:19:19.3	9.93	97	13:27:01.4	10.37
48	13:19:23.5	9.94	98	13:29:01.4	10.39
49	13:19:27.8	9.96	99	13:35:41.4	10.44
50	13:19:33.3	9.97	100	16:28:01.4	10.53

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DA2MW106	DATE STARTED: 12-10-02	DATE COMPLETED: 12-11-02
LOCATION:	RECORDED BY: [signature]	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB
DATA LOGGER	IN SITU	MINI TROLL	~~7238~~ 3		
TRANSDUCER					
WATER LEVEL	HERON	DIPPER T	05747		

PRETEST DATA

REFERENCE POINT: ~~TOC~~ BGS	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN): 2
SCREEN OR OPEN HOLE I.D. (IN): 2	DIAMETER OF BOREHOLE (IF SCREENED): 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	16.77		TOP OF FILTER PACK	6.2	
DEPTH TO WATER	4.91		TOP OF SCREEN OR OPEN HOLE	8.3	
HEIGHT OF WATER COLUMN	11.86		SCREEN LENGTH	7.0	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD: SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS	SLUG VOL(GAL)	SLUG DEPTH(FT)
3.1' X 1.25"	~~0.117~~ 0.185 gal	6.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE END	TIME (HH:MM:SS) BEGIN	TIME END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN END
da2mw	106 slugin	12/10/02	12/11/02	1212	1020	14.5'	4.91	4.61	11.86	12.16
da2mw	106 slugout	12/11/02	12/11/02	1021	1411	14.5'	4.61	6.51	12.16	10.26

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL LOG SCALE	ARITH. SCALE	COMMENTS
COLUMN B	TIME	CK	HH:MM:SS	✓		
COLUMN C	TIME	ET	MIN	✓		
COLUMN E	WATER LEVEL	FT BRP	FT	✓		

(1) CK – 24 HR CLOCK TIME ET – ELAPSED TIME H – HEIGHT OF WATER ABOVE TRANSDUCER FT BRP – DEPTH TO WATER E – WATER LEVEL ELEVATION P – PRESSURE 0 – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

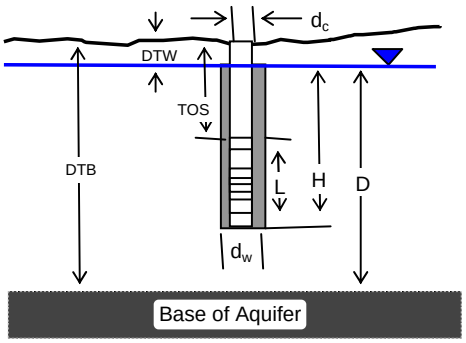
DATA RECORDED BY: [signature]	DATE: 12/02	QA CHECK BY	DATE

WELL ID: DA2 MW106

Local ID: Slug in
Date:
Time: 12:19

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	7	Feet
Depths to:		
water level (DTW)	2.6	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	16	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay	



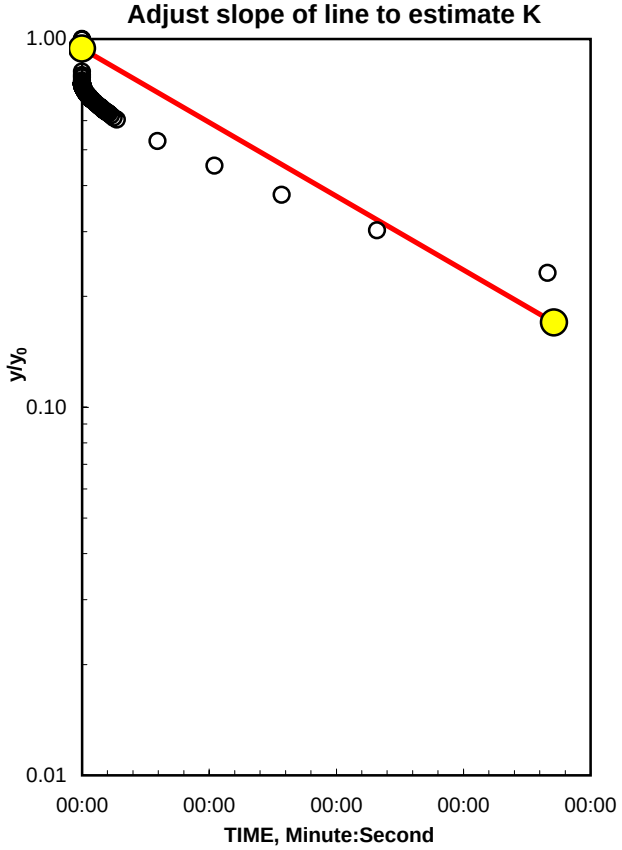
COMPUTED

L_{wetted}	7	Feet
D =	13.4	Feet
H =	12.7	Feet
L/r_w =	20.36	
$y_{0\text{-DISPLACEMENT}}$ =	40.39	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.215	
B =	0.348	
ln(Re/rw) =	2.349	
Re =	3.60	cm
Slope =	4.64E-06	$\log_{10}$/sec
$t_{90\%}$ recovery =	215625	sec

K= 0.0000004 is greater than extreme maximum of 3.52509870276368E-07 for Clay

K = Error cm/Second

Adjust slope of line to estimate K



K= 0.0000004 is greater than likely maximum of 0.000000035 for Clay

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

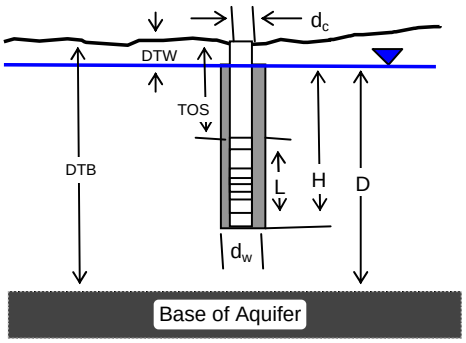
Entry	Time, Hr:Min:Sec	Water Level
1	12:19:25.8	11.35
2	12:19:31.8	11.34
3	12:19:34.0	11.24
4	12:19:36.1	11.10
5	12:19:37.5	11.08
6	12:19:39.4	11.06
7	12:19:42.0	11.04
8	12:19:45.2	11.03
9	12:19:47.6	11.03
10	12:19:52.0	11.02
11	12:19:53.9	11.02
12	12:19:55.8	11.02
13	12:19:57.8	11.02
14	12:19:59.9	11.02
15	12:20:02.0	11.02
16	12:20:04.2	11.02
17	12:20:07.4	11.02
18	12:20:09.8	11.02
19	12:20:12.2	11.02
20	12:20:15.7	11.02
21	12:20:18.2	11.02
22	12:20:21.8	11.02
23	12:20:25.5	11.01
24	12:20:29.3	11.02
25	12:20:32.2	11.01
26	12:20:37.3	11.01
27	12:20:51.3	11.01
28	12:21:07.6	11.01
29	12:21:13.7	11.01
30	12:21:20.0	11.01
31	12:21:27.5	11.01
32	12:21:51.3	11.01
33	12:22:29.4	11.01
34	12:22:39.4	11.00
35	12:23:09.4	11.00
36	12:23:39.4	11.00
37	12:23:49.4	11.00
38	12:24:09.4	11.00
39	12:24:19.4	11.00
40	12:25:09.4	11.00
41	12:29:39.4	10.99
42	12:30:59.4	10.99
43	12:32:59.4	10.98
44	12:34:29.4	10.98
45	12:37:19.4	10.97
46	12:41:19.4	10.97
47	12:43:59.4	10.96
48	12:47:49.4	10.96
49	12:51:39.4	10.95
50	12:58:39.4	10.95
51	13:01:59.4	10.94
52	13:06:19.4	10.94
53	13:10:29.4	10.93
54	13:13:49.4	10.93
55	13:25:49.4	10.92
56	13:36:39.4	10.91
57	13:52:09.4	10.90
58	13:59:39.4	10.89
59	14:09:09.4	10.88
60	14:16:19.4	10.88
61	14:22:29.4	10.87
62	14:30:29.4	10.87
63	14:37:09.4	10.86
64	14:45:19.4	10.86
65	14:51:49.4	10.85
66	15:04:39.4	10.84
67	15:19:19.4	10.83
68	15:37:19.4	10.82
69	19:27:49.4	10.72
70	0:49:19.4	10.62
71	7:10:39.4	10.52
72	16:10:19.4	10.42
73	8:15:39.4	10.33

WELL ID: DA2-MW106

Local ID: Slug-out
Date:
Time: 10:22

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	7	Feet
Depths to:		
water level (DTW)	2.31	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	16	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Sand and Gravel Mixe	

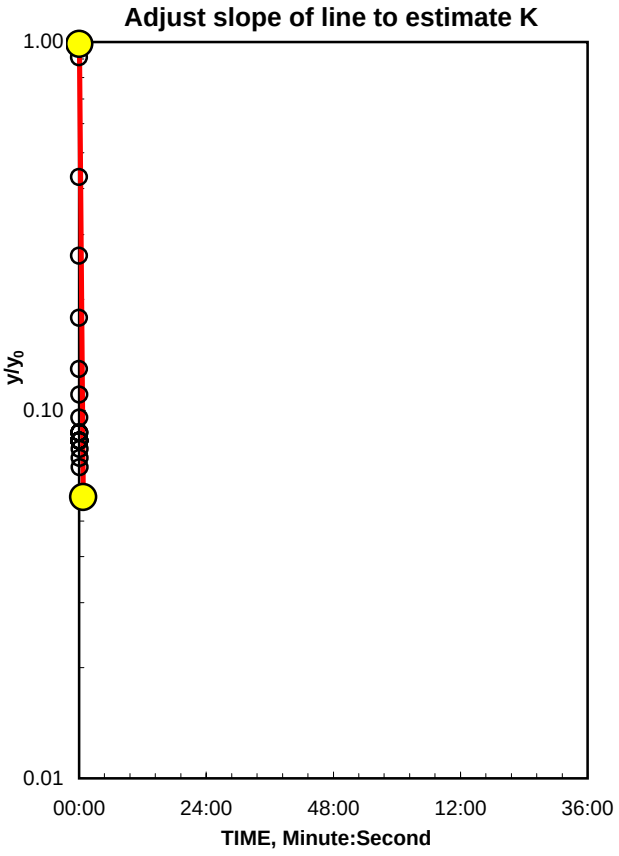


COMPUTED

L_{wetted}	7	Feet
D =	13.69	Feet
H =	12.99	Feet
L/r_w =	20.36	
$y_{0\text{-DISPLACEMENT}}$ =	14.38	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.215	
B =	0.348	
ln(Re/rw) =	2.360	
Re =	3.64	cm
Slope =	0.004626	$\log_{10}$/sec
$t_{90\%}$ recovery =	216	sec

Input is consistent.

K = 0.0004 cm/Second



K= 0.0004 is less than likely minimum of 0.011 for Sand and Gravel Mixes

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	10:22:35.2	9.12	51	10:30:09.4	9.61
2	10:22:37.1	9.16	52	10:30:19.4	9.61
3	10:22:39.3	9.39	53	10:30:29.4	9.61
4	10:22:41.2	9.47	54	10:30:39.4	9.61
5	10:22:41.5	9.51	55	10:30:49.4	9.61
6	10:22:45.3	9.53	56	10:30:59.4	9.61
7	10:22:47.5	9.54	57	10:31:09.4	9.61
8	10:22:49.4	9.55	58	10:31:19.4	9.61
9	10:22:51.5	9.55	59	10:31:29.4	9.61
10	10:22:53.0	9.55	60	10:31:39.4	9.62
11	10:22:56.9	9.55	61	10:31:49.4	9.62
12	10:22:57.6	9.55	62	10:31:59.4	9.62
13	10:23:03.0	9.55	63	10:32:09.4	9.62
14	10:23:04.9	9.55	64	10:32:19.4	9.62
15	10:23:10.9	9.55	65	10:32:29.4	9.62
16	10:23:13.0	9.56	66	10:32:39.4	9.62
17	10:23:17.4	9.56	67	10:32:49.4	9.62
18	10:23:23.2	9.59	68	10:32:59.4	9.62
19	10:23:25.7	9.59	69	10:33:09.4	9.62
20	10:23:29.2	9.59	70	10:33:19.4	9.62
21	10:23:32.8	9.59	71	10:33:29.4	9.62
22	10:23:43.2	9.59	72	10:33:39.4	9.62
23	10:23:47.3	9.59	73	10:33:49.4	9.62
24	10:23:51.5	9.59	74	10:33:59.4	9.62
25	10:25:49.4	9.59	75	10:34:09.4	9.62
26	10:25:59.4	9.59	76	10:34:19.4	9.62
27	10:26:09.4	9.59	77	10:34:29.4	9.62
28	10:26:19.4	9.59	78	10:34:39.4	9.63
29	10:26:29.4	9.60	79	10:34:49.4	9.63
30	10:26:39.4	9.60	80	10:34:59.4	9.63
31	10:26:49.4	9.60	81	10:35:09.4	9.63
32	10:26:59.4	9.60	82	10:35:19.4	9.63
33	10:27:09.4	9.60	83	10:35:29.4	9.63
34	10:27:19.4	9.60	84	10:35:39.4	9.63
35	10:27:29.4	9.60	85	10:35:59.4	9.63
36	10:27:39.4	9.60	86	10:36:19.4	9.63
37	10:27:49.4	9.60	87	10:36:29.4	9.63
38	10:27:59.4	9.60	88	10:37:19.4	9.63
39	10:28:09.4	9.60	89	10:37:29.4	9.63
40	10:28:19.4	9.60	90	10:37:49.4	9.63
41	10:28:29.4	9.61	91	10:37:59.4	9.63
42	10:28:39.4	9.61	92	10:39:09.4	9.64
43	10:28:49.4	9.61	93	10:40:19.4	9.64
44	10:28:59.4	9.61	94	10:42:09.4	9.64
45	10:29:09.4	9.61	95	10:45:39.4	9.65
46	10:29:19.4	9.61	96	11:29:39.4	9.70
47	10:29:29.4	9.61	97	13:55:29.4	9.80
48	10:29:39.4	9.61	98	17:32:29.4	9.90
49	10:29:49.4	9.61	99	17:44:39.4	9.90
50	10:29:59.4	9.61	100	17:45:39.4	10.11

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DA2 107	DATE STARTED: 12-11-02	DATE COMPLETED: 12-11-02
LOCATION:	RECORDED BY:	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB
DATA LOGGER	IN-SITU	MINI TROLL	7606		
TRANSDUCER					
WATER LEVEL	HERON DIPPER-T		05767		

PRETEST DATA

REFERENCE POINT ~~TOC~~ BGS	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2
SCREEN OR OPEN HOLE I.D. (IN) 2	DIAMETER OF BOREHOLE (IF SCREENED) 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	16.83		TOP OF FILTER PACK	7.0	
DEPTH TO WATER	8.71		TOP OF SCREEN OR OPEN HOLE	8.8	
HEIGHT OF WATER COLUMN	8.12		SCREEN LENGTH	5.0	
TEST INTERVAL TYPE					

TEST METHODS SUMMARY

TEST METHOD SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.1' x 1.25"	~~0.047~~ 0.145 gal	10.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE END	TIME (HH:MM:SS) BEGIN	TIME END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN END
da2mw107slugin		121102	121102	1141	1256	14.8'	8.71	8.76	8.12	8.07
da2mw107slugout		121102	121102	1257	1605	14.8'	[illegible]	[illegible]	8.07	8.09

STORAGE LOCATION OF DATA:	1)	2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL LOG SCALE	ARITH. SCALE	COMMENTS
COLUMN B	Time	CK	HH:MM:SS	✓		
COLUMN C	Time	ET	Min	✓		
COLUMN E	Depth	H	FT			

(1) CK – 24 HR CLOCK TIME ET – ELAPSED TIME H – HEIGHT OF WATER ABOVE TRANSDUCER FT BRP – DEPTH TO WATER E – WATER LEVEL ELEVATION P – PRESSURE 0 – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

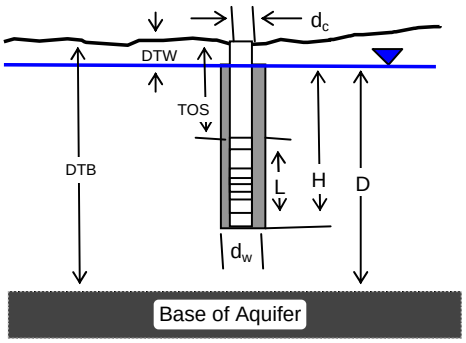
DATA RECORDED BY [signature]	DATE 12-11-02	QA CHECK BY	DATE

WELL ID: DA2-MW107

Local ID: Slug-In
Date:
Time: 9:41

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	6.26	Feet
top of screen (TOS)	8.8	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

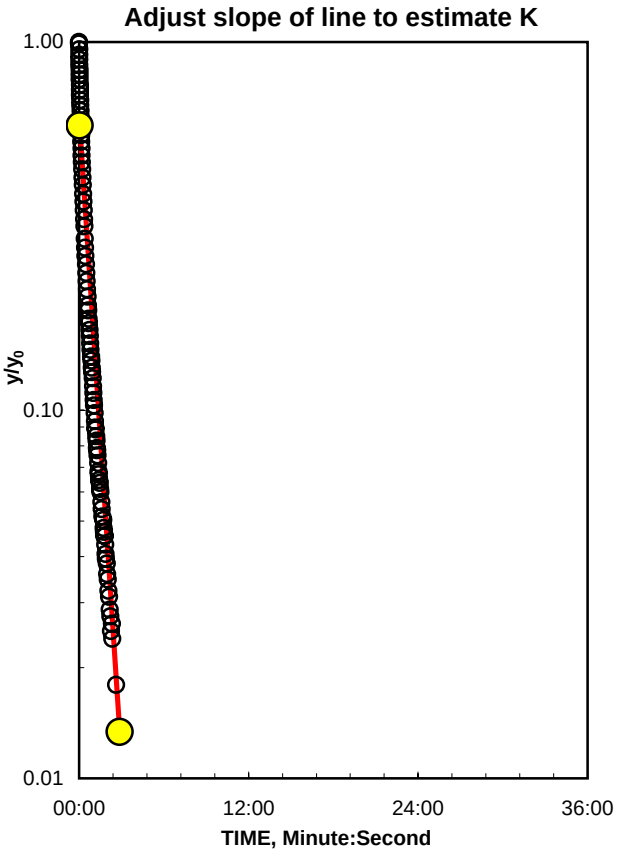


COMPUTED

L_{wetted}	5	Feet
D =	8.74	Feet
H =	7.54	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	25.46	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	1.910	
Re =	2.32	cm
Slope =	0.00162	$\log_{10}$/sec
$t_{90\%}$ recovery =	617	sec

Input is consistent.

K = 0.0002 cm/Second



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

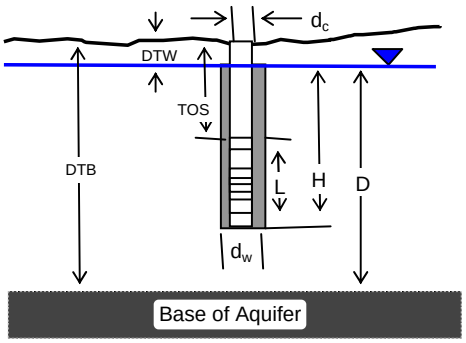
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	9:41:55.0	6.85	51	9:47:31.4	6.12
2	9:41:56.9	6.84	52	9:47:41.4	6.11
3	9:41:58.8	6.81	53	9:47:51.4	6.11
4	9:42:00.8	6.78	54	9:48:01.4	6.10
5	9:42:02.9	6.76	55	9:48:11.4	6.10
6	9:42:05.0	6.73	56	9:48:21.4	6.10
7	9:42:07.2	6.71	57	9:48:31.4	6.09
8	9:42:09.4	6.69	58	9:48:41.4	6.09
9	9:42:12.8	6.67	59	9:48:51.4	6.09
10	9:42:15.2	6.65	60	9:49:01.4	6.08
11	9:42:17.7	6.63	61	9:49:11.4	6.08
12	9:42:21.2	6.61	62	9:49:21.4	6.08
13	9:42:24.8	6.59	63	9:49:31.4	6.08
14	9:42:27.5	6.57	64	9:49:41.4	6.08
15	9:42:31.3	6.55	65	9:49:51.4	6.07
16	9:42:35.2	6.54	66	9:50:01.4	6.07
17	9:42:39.3	6.52	67	9:50:11.4	6.07
18	9:42:43.5	6.50	68	9:50:21.4	6.07
19	9:42:48.8	6.48	69	9:50:31.4	6.06
20	9:42:53.3	6.46	70	9:50:41.4	6.06
21	9:42:58.9	6.44	71	9:50:51.4	6.06
22	9:43:03.7	6.42	72	9:51:01.4	6.06
23	9:43:09.6	6.40	73	9:51:21.4	6.06
24	9:43:15.7	6.39	74	9:51:31.4	6.06
25	9:43:23.0	6.37	75	9:51:51.4	6.05
26	9:43:29.5	6.35	76	9:52:11.4	6.05
27	9:43:37.2	6.33	77	9:52:21.4	6.05
28	9:43:45.1	6.32	78	9:52:31.4	6.05
29	9:43:53.3	6.30	79	9:52:41.4	6.05
30	9:44:01.7	6.29	80	9:52:51.4	6.05
31	9:44:11.4	6.27	81	9:53:01.4	6.05
32	9:44:21.4	6.25	82	9:53:11.4	6.04
33	9:44:31.4	6.24	83	9:53:21.4	6.04
34	9:44:41.4	6.23	84	9:53:41.4	6.04
35	9:44:51.4	6.22	85	9:53:51.4	6.04
36	9:45:01.4	6.21	86	9:54:11.4	6.04
37	9:45:11.4	6.20	87	9:54:21.4	6.04
38	9:45:21.4	6.19	88	9:54:41.4	6.04
39	9:45:31.4	6.18	89	9:55:01.4	6.03
40	9:45:41.4	6.17	90	9:55:11.4	6.03
41	9:45:51.4	6.17	91	9:55:31.4	6.03
42	9:46:01.4	6.16	92	9:55:51.4	6.03
43	9:46:11.4	6.15	93	9:56:01.4	6.03
44	9:46:21.4	6.15	94	9:57:41.4	6.03
45	9:46:31.4	6.14	95	9:58:31.4	6.02
46	9:46:41.4	6.14	96	10:02:21.4	6.01
47	9:46:51.4	6.13	97	10:06:01.4	6.00
48	9:47:01.4	6.13	98	10:18:41.4	5.99
49	9:47:11.4	6.12	99	10:36:11.4	5.98
50	9:47:21.4	6.12	100	11:04:51.4	5.97

WELL ID: DA2-MW107

Local ID: Slug-out
Date:
Time: 12:57

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	6.26	Feet
top of screen (TOS)	8.8	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



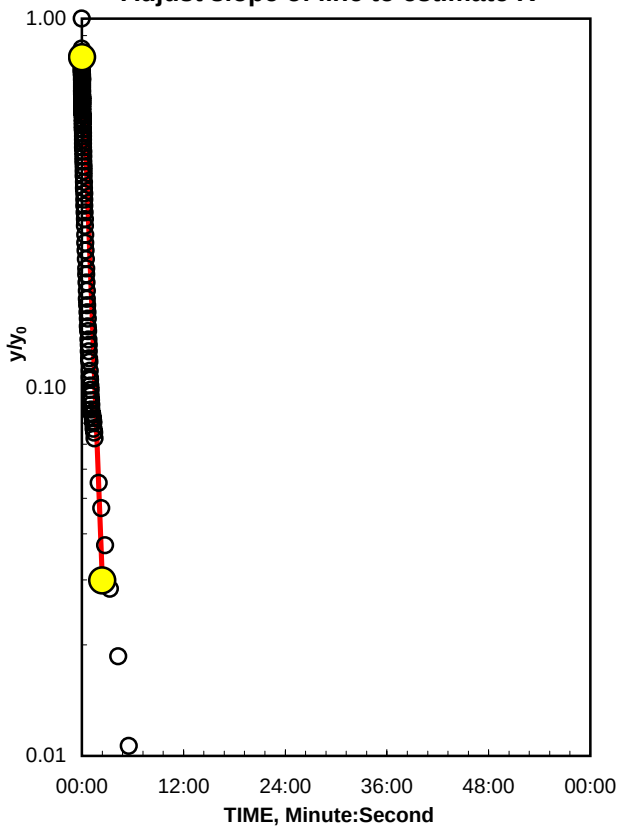
COMPUTED

L_{wetted}	5	Feet
D =	8.74	Feet
H =	7.54	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	34.36	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	1.910	
Re =	2.32	cm
Slope =	0.001681	$\log_{10}$/sec
$t_{90\%}$ recovery =	595	sec

Input is consistent.

K = 0.0002 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	12:57:58.8	4.83	51	12:59:34.7	5.57
2	12:58:00.4	5.03	52	12:59:40.6	5.58
3	12:58:00.7	5.09	53	12:59:46.7	5.60
4	12:58:01.0	5.09	54	12:59:53.0	5.61
5	12:58:02.3	5.11	55	13:00:00.5	5.62
6	12:58:02.6	5.12	56	13:00:08.2	5.64
7	12:58:02.9	5.13	57	13:00:16.1	5.65
8	12:58:04.2	5.15	58	13:00:24.3	5.67
9	12:58:04.5	5.14	59	13:00:32.7	5.68
10	12:58:04.8	5.16	60	13:00:42.4	5.70
11	12:58:06.1	5.17	61	13:00:52.4	5.71
12	12:58:06.4	5.18	62	13:01:02.4	5.72
13	12:58:06.7	5.18	63	13:01:12.4	5.73
14	12:58:07.0	5.19	64	13:01:22.4	5.74
15	12:58:08.3	5.19	65	13:01:32.4	5.75
16	12:58:08.7	5.18	66	13:01:42.4	5.76
17	12:58:10.1	5.19	67	13:01:52.4	5.77
18	12:58:10.5	5.20	68	13:02:02.4	5.78
19	12:58:11.0	5.21	69	13:02:12.4	5.79
20	12:58:12.4	5.22	70	13:02:22.4	5.80
21	12:58:12.9	5.23	71	13:02:32.4	5.80
22	12:58:14.5	5.24	72	13:02:42.4	5.81
23	12:58:16.0	5.24	73	13:02:52.4	5.81
24	12:58:16.6	5.25	74	13:03:02.4	5.82
25	12:58:18.2	5.26	75	13:03:12.4	5.83
26	12:58:18.9	5.27	76	13:03:22.4	5.83
27	12:58:20.6	5.28	77	13:03:32.4	5.84
28	12:58:22.3	5.29	78	13:03:42.4	5.84
29	12:58:24.1	5.29	79	13:03:52.4	5.84
30	12:58:25.0	5.30	80	13:04:02.4	5.85
31	12:58:26.9	5.32	81	13:04:12.4	5.85
32	12:58:28.8	5.33	82	13:04:22.4	5.85
33	12:58:30.8	5.34	83	13:04:32.4	5.86
34	12:58:32.9	5.35	84	13:04:42.4	5.86
35	12:58:35.0	5.36	85	13:04:52.4	5.86
36	12:58:38.2	5.37	86	13:05:02.4	5.86
37	12:58:40.4	5.38	87	13:05:32.4	5.87
38	12:58:42.8	5.40	88	13:05:52.4	5.87
39	12:58:46.2	5.41	89	13:06:02.4	5.87
40	12:58:48.7	5.42	90	13:06:12.4	5.87
41	12:58:52.2	5.43	91	13:06:22.4	5.87
42	12:58:54.8	5.44	92	13:06:42.4	5.88
43	12:58:58.5	5.46	93	13:07:02.4	5.88
44	12:59:02.3	5.47	94	13:10:02.4	5.90
45	12:59:06.2	5.48	95	13:11:42.4	5.91
46	12:59:10.3	5.50	96	13:14:32.4	5.92
47	12:59:14.5	5.51	97	13:17:52.4	5.93
48	12:59:18.8	5.53	98	13:23:42.4	5.94
49	12:59:24.3	5.54	99	13:31:22.4	5.95
50	12:59:28.9	5.55	100	14:07:52.4	5.96

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DA2-108	DATE STARTED: 12-16-02	DATE COMPLETED: 12-16-02
LOCATION:	RECORDED BY: [signature]	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	IN SITU	MINI TROLL	076060		
TRANSDUCER					
WATER LEVEL	HERON	DIPPER T	05767		

PRETEST DATA

REFERENCE POINT BGS(?)	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2"
SCREEN OR OPEN HOLE I.D. (IN) 2"	DIAMETER OF BOREHOLE (IF SCREENED) 8"	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	17.13		TOP OF FILTER PACK	7.5	
DEPTH TO WATER	6.19		TOP OF SCREEN OR OPEN HOLE	9.3	
HEIGHT OF WATER COLUMN	10.94		SCREEN LENGTH	5.0	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	31" X 1.25"	SW 849.7 0.185 gal	7'

DATA LOGGER RECORDS

DATA LOGGER TEST NO	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE END	TIME (HH:MM:SS) BEGIN	TIME END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN END
da2 MW	108 slug in	12/16/02	12/16/02	1100	1345	15.0'	6.19	6.20	10.94	10.93
da2 MW	108 slugout	12/16/02	12/16/02	1345	1530	15.0'	6.20	6.71	10.93	10.42

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES		DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL LOG SCALE	ARITH. SCALE	COMMENTS
COLUMN	B	TIME	CL	hh:mm:ss	✓		
COLUMN	C	TIME	ET	Min	✓		
COLUMN	E	DEPTH	H	FT H2O			

(1) CK – 24 HR CLOCK TIME ET – ELAPSED TIME H – HEIGHT OF WATER ABOVE TRANSDUCER FT BRP – DEPTH TO WATER E – WATER LEVEL ELEVATION P – PRESSURE 0 – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

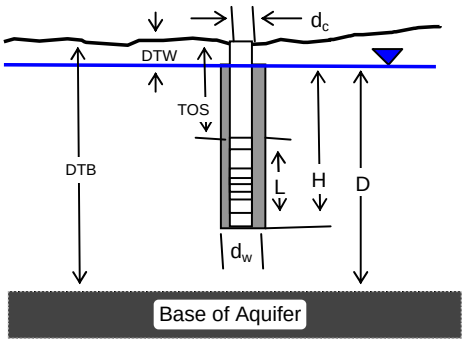
DATA RECORDED BY [signature]	DATE 12/16/02	QA CHECK BY	DATE

WELL ID: KEETH ELEMENTARY

Local ID: Slug in
Date:
Time: 11:02

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	3.75	Feet
top of screen (TOS)	9.3	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Shale	



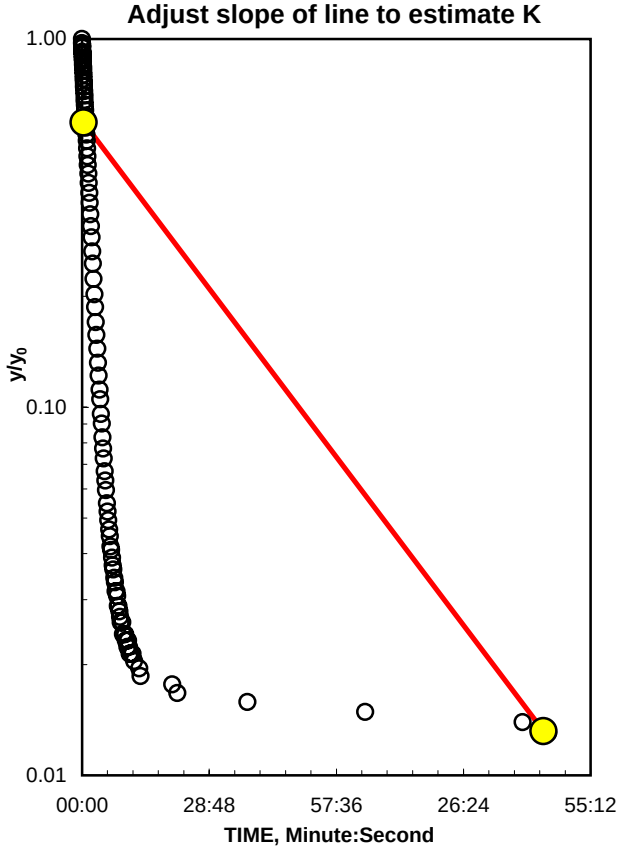
COMPUTED

L_{wetted}	5	Feet
D =	11.25	Feet
H =	10.55	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	32.77	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.096	
Re =	2.79	cm
Slope =	0.000264	$\log_{10}$/sec
$t_{90\%}$ recovery =	3783	sec

Input is consistent.

K = 0.00003 cm/Second

Adjust slope of line to estimate K



K= 0.00003 is greater than likely maximum of 0.000000035 for Shale

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

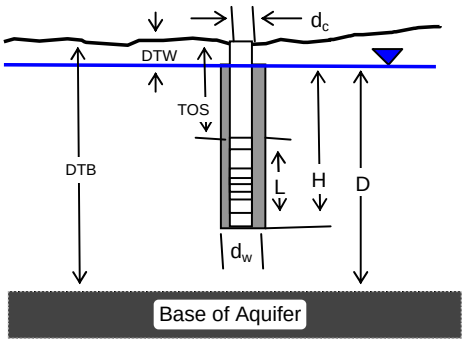
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	11:02:40.0	9.74	51	11:07:17.4	8.75
2	11:02:41.6	9.71	52	11:07:27.4	8.74
3	11:02:42.2	9.69	53	11:07:37.4	8.74
4	11:02:43.9	9.68	54	11:07:47.4	8.73
5	11:02:45.6	9.65	55	11:07:57.4	8.73
6	11:02:47.3	9.65	56	11:08:07.4	8.72
7	11:02:48.1	9.63	57	11:08:17.4	8.72
8	11:02:50.0	9.61	58	11:08:27.4	8.72
9	11:02:51.9	9.60	59	11:08:37.4	8.71
10	11:02:53.8	9.58	60	11:08:47.4	8.71
11	11:02:55.8	9.56	61	11:08:57.4	8.71
12	11:02:57.9	9.54	62	11:09:07.4	8.71
13	11:03:00.0	9.52	63	11:09:17.4	8.70
14	11:03:02.2	9.50	64	11:09:27.4	8.70
15	11:03:05.4	9.48	65	11:09:37.4	8.70
16	11:03:07.8	9.46	66	11:09:47.4	8.70
17	11:03:10.2	9.44	67	11:09:57.4	8.70
18	11:03:13.7	9.42	68	11:10:07.4	8.70
19	11:03:16.2	9.39	69	11:10:17.4	8.69
20	11:03:19.8	9.37	70	11:10:27.4	8.69
21	11:03:23.5	9.35	71	11:10:37.4	8.69
22	11:03:26.3	9.33	72	11:10:47.4	8.69
23	11:03:30.2	9.30	73	11:10:57.4	8.69
24	11:03:34.3	9.28	74	11:11:07.4	8.69
25	11:03:39.5	9.25	75	11:11:17.4	8.69
26	11:03:43.8	9.23	76	11:11:27.4	8.69
27	11:03:48.3	9.20	77	11:11:37.4	8.69
28	11:03:53.9	9.18	78	11:11:47.4	8.69
29	11:03:59.7	9.15	79	11:11:57.4	8.69
30	11:04:05.6	9.12	80	11:12:07.4	8.69
31	11:04:11.7	9.10	81	11:12:17.4	8.69
32	11:04:18.0	9.07	82	11:12:27.4	8.69
33	11:04:25.5	9.05	83	11:12:37.4	8.69
34	11:04:32.2	9.02	84	11:12:47.4	8.69
35	11:04:40.1	8.99	85	11:12:57.4	8.68
36	11:04:48.3	8.97	86	11:13:07.4	8.69
37	11:04:57.7	8.95	87	11:13:17.4	8.68
38	11:05:07.4	8.92	88	11:13:27.4	8.68
39	11:05:17.4	8.90	89	11:13:37.4	8.68
40	11:05:27.4	8.88	90	11:13:47.4	8.68
41	11:05:37.4	8.86	91	11:13:57.4	8.68
42	11:05:47.4	8.84	92	11:14:07.4	8.68
43	11:05:57.4	8.83	93	11:14:27.4	8.68
44	11:06:07.4	8.82	94	11:15:37.4	8.68
45	11:06:17.4	8.80	95	11:15:57.4	8.68
46	11:06:27.4	8.79	96	11:23:07.4	8.68
47	11:06:37.4	8.78	97	11:24:17.4	8.68
48	11:06:47.4	8.77	98	11:40:07.4	8.68
49	11:06:57.4	8.76	99	12:06:47.4	8.68
50	11:07:07.4	8.76	100	12:42:27.4	8.68

WELL ID: DA2-MW108

Local ID: Slugout
Date:
Time: 13:46

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	6.26	Feet
top of screen (TOS)	8.8	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Shale	

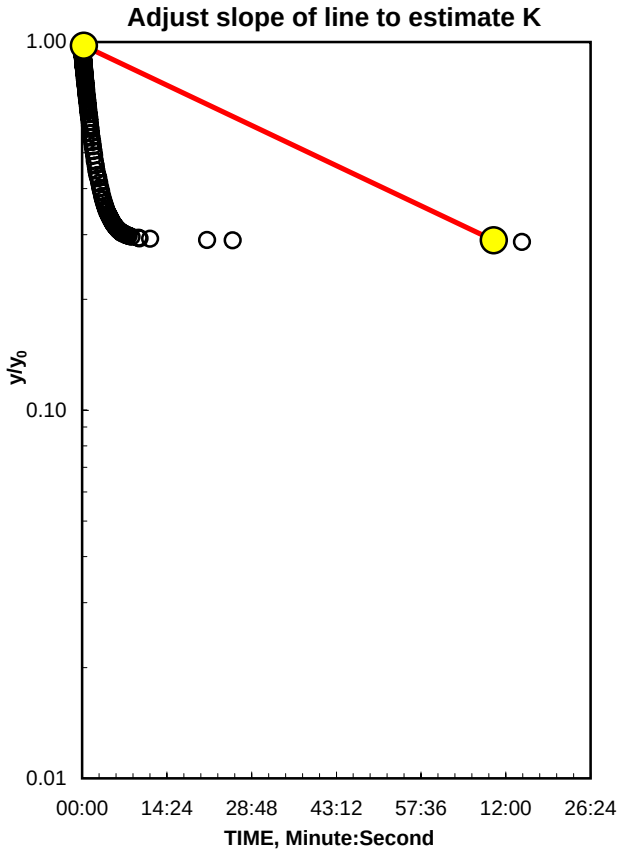


COMPUTED

L_{wetted}	5	Feet
D =	8.74	Feet
H =	7.54	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	53.97	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	1.910	
Re =	2.32	cm
Slope =	0.000127	$\log_{10}$/sec
$t_{90\%}$ recovery =	7900	sec

Input is consistent.

K = 0.00001 cm/Second



K= 0.00001 is greater than likely maximum of 0.000000035 for Shale

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	13:46:29.9	7.42	51	13:47:47.5	8.11
2	13:46:31.2	7.44	52	13:47:51.8	8.14
3	13:46:31.5	7.47	53	13:47:57.3	8.16
4	13:46:31.8	7.48	54	13:48:01.9	8.19
5	13:46:33.1	7.49	55	13:48:07.7	8.22
6	13:46:33.4	7.50	56	13:48:13.6	8.24
7	13:46:33.7	7.51	57	13:48:19.7	8.27
8	13:46:35.0	7.52	58	13:48:26.0	8.30
9	13:46:35.3	7.53	59	13:48:33.5	8.32
10	13:46:35.6	7.54	60	13:48:41.2	8.35
11	13:46:35.9	7.55	61	13:48:49.1	8.37
12	13:46:37.2	7.56	62	13:48:57.3	8.40
13	13:46:37.5	7.56	63	13:49:05.7	8.42
14	13:46:37.8	7.57	64	13:49:15.4	8.43
15	13:46:39.1	7.58	65	13:49:25.4	8.46
16	13:46:39.4	7.59	66	13:49:35.4	8.48
17	13:46:39.7	7.59	67	13:49:45.4	8.50
18	13:46:41.0	7.60	68	13:49:55.4	8.51
19	13:46:41.3	7.61	69	13:50:05.4	8.53
20	13:46:41.7	7.62	70	13:50:15.4	8.54
21	13:46:43.1	7.63	71	13:50:25.4	8.55
22	13:46:43.5	7.64	72	13:50:35.4	8.57
23	13:46:44.0	7.65	73	13:50:45.4	8.58
24	13:46:45.4	7.66	74	13:50:55.4	8.59
25	13:46:45.9	7.67	75	13:51:05.4	8.59
26	13:46:47.5	7.68	76	13:51:15.4	8.60
27	13:46:49.0	7.68	77	13:51:25.4	8.61
28	13:46:49.6	7.69	78	13:51:35.4	8.61
29	13:46:51.2	7.70	79	13:51:45.4	8.62
30	13:46:51.9	7.71	80	13:51:55.4	8.63
31	13:46:53.6	7.73	81	13:52:05.4	8.63
32	13:46:55.3	7.74	82	13:52:15.4	8.63
33	13:46:57.1	7.76	83	13:52:25.4	8.64
34	13:46:58.0	7.77	84	13:52:35.4	8.64
35	13:46:59.9	7.78	85	13:52:45.4	8.65
36	13:47:01.8	7.80	86	13:52:55.4	8.65
37	13:47:03.8	7.82	87	13:53:05.4	8.65
38	13:47:05.9	7.84	88	13:53:15.4	8.65
39	13:47:09.0	7.85	89	13:53:25.4	8.65
40	13:47:11.2	7.87	90	13:53:35.4	8.66
41	13:47:13.4	7.89	91	13:53:45.4	8.66
42	13:47:15.8	7.91	92	13:54:05.4	8.66
43	13:47:19.2	7.93	93	13:54:15.4	8.66
44	13:47:21.7	7.95	94	13:54:25.4	8.66
45	13:47:25.2	7.97	95	13:54:55.4	8.67
46	13:47:27.8	8.00	96	13:56:05.4	8.67
47	13:47:31.5	8.02	97	13:56:15.4	8.67
48	13:47:35.3	8.04	98	13:58:05.4	8.67
49	13:47:39.2	8.06	99	14:07:45.4	8.68
50	13:47:43.3	8.09	100	14:12:05.4	8.68

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DAZMW109	DATE STARTED: 12-11-02	DATE COMPLETED: 12-12-02
LOCATION:	RECORDED BY: SMcCann	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO	RANGE (PSI)	LAST CALIB.
DATA LOGGER	In-Situ	Mini Troll	076060		
TRANSDUCER					
WATER LEVEL	Heron	Dipper T	05787		

PRETEST DATA

REFERENCE POINT TOC	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2
SCREEN OR OPEN HOLE I.D. (IN) 2	DIAMETER OF BOREHOLE (IF SCREENED) 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	24.37		TOP OF FILTER PACK	8.5	
DEPTH TO WATER	17.86/62nd		TOP OF SCREEN OR OPEN HOLE	11.3	
HEIGHT OF WATER COLUMN	6.51		SCREEN LENGTH	10'	
TEST INTERVAL TYPE					

TEST METHODS SUMMARY

TEST METHOD	SLUG IN (FALLING HEAD) [✓]	SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
		@ 0.1470.85	19.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE (MM/DD/YY) END	TIME (HH:MM:SS) BEGIN	TIME (HH:MM:SS) END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER (FT BRP) END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN (FT) END
daz mw09 Slugin		12/02	12/2/02	1720	0850	22.0'	17.82	17.72	6.51	6.65
daz mw09 Slugout		12/2/02	12/2/02	0852	1305	22.0'	17.72	17.76	6.65	6.61

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL: LOG SCALE	TEST TIME INTERVAL: ARITH. SCALE	COMMENTS
COLUMN B	TIME	HHMMSS	CK			
COLUMN C	TIME	MIN	ET			
COLUMN E	DEPTH	H	FT H2O			

(1) CK – 24 HR CLOCK TIME; ET – ELAPSED TIME; H – HEIGHT OF WATER ABOVE TRANSDUCER; FT BRP – DEPTH TO WATER; E – WATER LEVEL ELEVATION; P – PRESSURE; 0 – OTHER (EXPLAIN)

DATA CHECK RESULTS.

REMARKS:

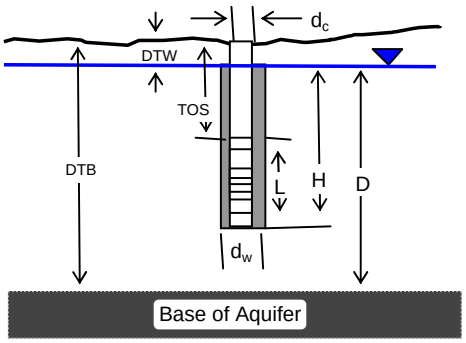
DATA RECORDED BY	DATE	QA CHECK BY	DATE
SMcCann	12-16-02		

WELL ID: KEETH ELEMENTARY

Local ID: Slug in
Date:
Time: 17:21

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	15.19	Feet
top of screen (TOS)	11.3	Feet
Base of Aquifer (DTB)	24	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Till	



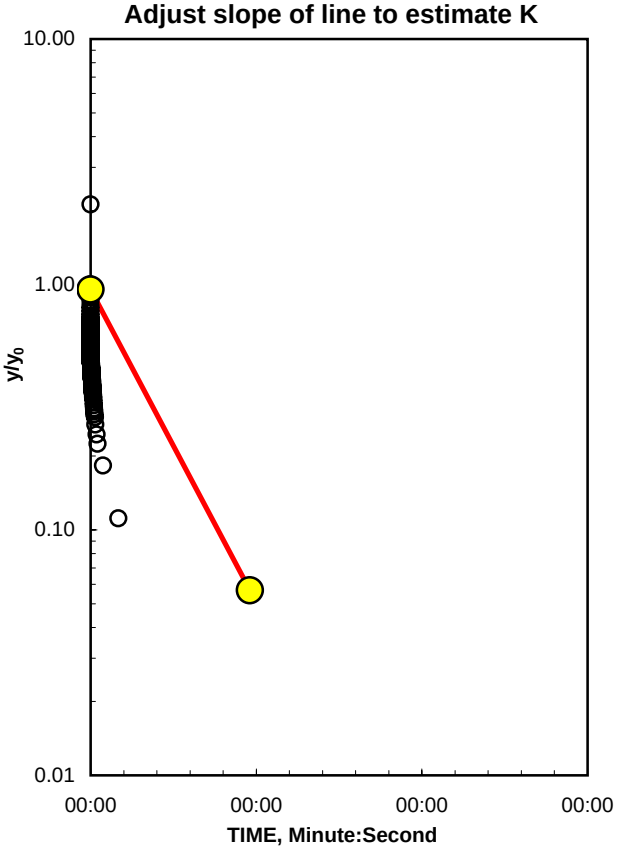
COMPUTED

L_{wetted}	6.11	Feet
D =	8.81	Feet
H =	6.11	Feet
L/r_w =	17.77	
$y_{0\text{-DISPLACEMENT}}$ =	22.14	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.139	
B =	0.330	
ln(Re/rw) =	1.849	
Re =	2.18	cm
Slope =	2.95E-05	log_{10}/sec
$t_{90\%}$ recovery =	33909	sec

Input is consistent.

K = 0.000002 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

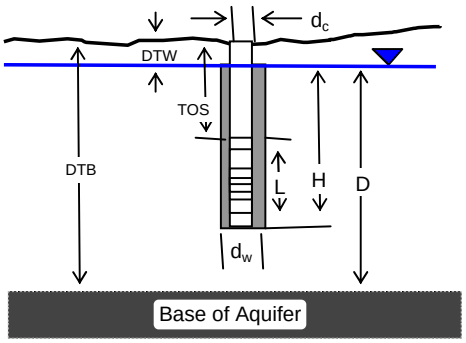
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	17:21:35.9	4.70	51	17:23:13.7	4.32
2	17:21:36.2	4.69	52	17:23:25.7	4.32
3	17:21:37.5	4.62	53	17:23:32.0	4.32
4	17:21:37.8	4.59	54	17:23:39.5	4.32
5	17:21:38.1	4.57	55	17:23:54.1	4.31
6	17:21:38.4	4.55	56	17:24:11.7	4.31
7	17:21:39.7	4.53	57	17:24:20.4	4.31
8	17:21:40.0	4.51	58	17:24:40.4	4.30
9	17:21:40.3	4.50	59	17:24:50.4	4.30
10	17:21:41.6	4.49	60	17:25:10.4	4.30
11	17:21:41.9	4.48	61	17:25:30.4	4.29
12	17:21:42.2	4.47	62	17:25:40.4	4.29
13	17:21:43.5	4.46	63	17:25:50.4	4.29
14	17:21:43.8	4.46	64	17:26:20.4	4.29
15	17:21:44.1	4.45	65	17:26:30.4	4.28
16	17:21:44.4	4.45	66	17:26:40.4	4.28
17	17:21:45.7	4.44	67	17:26:50.4	4.28
18	17:21:46.0	4.44	68	17:27:20.4	4.27
19	17:21:46.3	4.43	69	17:27:30.4	4.27
20	17:21:47.7	4.43	70	17:27:40.4	4.27
21	17:21:48.1	4.42	71	17:28:00.4	4.27
22	17:21:49.5	4.42	72	17:28:20.4	4.26
23	17:21:50.0	5.51	73	17:28:30.4	4.26
24	17:21:50.4	4.33	74	17:29:00.4	4.26
25	17:21:51.9	4.41	75	17:29:10.4	4.25
26	17:21:53.5	4.41	76	17:29:40.4	4.25
27	17:21:54.0	4.39	77	17:30:10.4	4.25
28	17:21:55.6	4.39	78	17:30:20.4	4.25
29	17:21:56.2	4.38	79	17:30:30.4	4.24
30	17:21:57.9	4.38	80	17:31:00.4	4.24
31	17:21:59.6	4.37	81	17:31:10.4	4.24
32	17:22:00.3	4.37	82	17:31:40.4	4.23
33	17:22:02.1	4.37	83	17:31:50.4	4.23
34	17:22:04.0	4.36	84	17:32:20.4	4.23
35	17:22:05.9	4.36	85	17:32:50.4	4.23
36	17:22:09.8	4.35	86	17:33:20.4	4.22
37	17:22:11.9	4.35	87	17:33:30.4	4.22
38	17:22:14.0	4.35	88	17:34:50.4	4.21
39	17:22:16.2	4.34	89	17:35:50.4	4.20
40	17:22:21.8	4.34	90	17:36:50.4	4.20
41	17:22:24.2	4.34	91	17:37:50.4	4.19
42	17:22:27.7	4.34	92	17:38:50.4	4.19
43	17:22:30.2	4.33	93	17:40:25.4	4.18
44	17:22:37.5	4.33	94	17:42:55.4	4.17
45	17:22:40.3	4.33	95	17:47:45.4	4.15
46	17:22:44.2	4.33	96	17:51:50.4	4.13
47	17:22:48.3	4.33	97	18:15:20.4	4.10
48	17:22:57.8	4.33	98	19:22:45.4	4.05
49	17:23:02.3	4.32	99	5:13:55.4	4.01
50	17:23:07.9	4.32	100	23:55:05.4	3.87

WELL ID: KEETH ELEMENTARY

Local ID: Slug out
Date:
Time: 8:52

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	15.19	Feet
top of screen (TOS)	11.3	Feet
Base of Aquifer (DTB)	24	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Till	



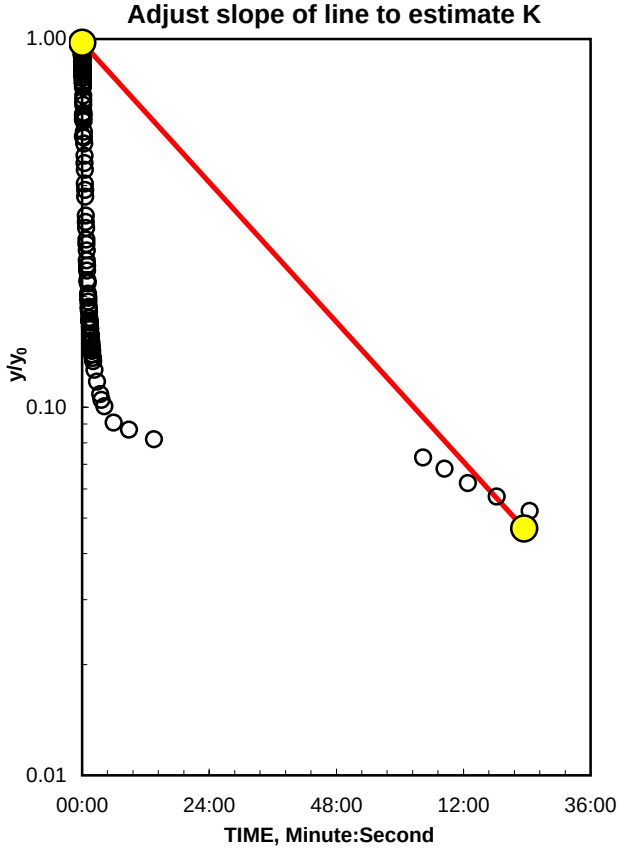
COMPUTED

L_{wetted}	6.11	Feet
D =	8.81	Feet
H =	6.11	Feet
L/r_w =	17.77	
$y_{0\text{-DISPLACEMENT}}$ =	30.88	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.139	
B =	0.330	
ln(Re/rw) =	1.849	
Re =	2.18	cm
Slope =	4.39E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	22763	sec

Input is consistent.

K = 0.000003 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	8:52:05.3	2.95	51	8:55:31.4	3.55
2	8:52:06.6	2.98	52	8:55:41.4	3.57
3	8:52:07.2	2.99	53	8:55:51.4	3.58
4	8:52:08.5	3.01	54	8:56:21.4	3.62
5	8:52:09.1	3.02	55	8:56:31.4	3.64
6	8:52:11.0	3.03	56	8:56:41.4	3.65
7	8:52:11.3	3.04	57	8:57:01.4	3.67
8	8:52:12.6	3.04	58	8:57:11.4	3.68
9	8:52:12.9	3.04	59	8:57:21.4	3.69
10	8:52:13.2	3.04	60	8:57:41.4	3.71
11	8:52:14.8	3.05	61	8:57:51.4	3.71
12	8:52:15.1	3.05	62	8:58:01.4	3.72
13	8:52:15.4	3.05	63	8:58:21.4	3.74
14	8:52:16.7	3.06	64	8:58:31.4	3.74
15	8:52:17.0	3.06	65	8:59:01.4	3.75
16	8:52:18.7	3.06	66	8:59:11.4	3.76
17	8:52:19.1	3.07	67	8:59:21.4	3.76
18	8:52:21.0	3.07	68	8:59:41.4	3.77
19	8:52:22.4	3.08	69	8:59:51.4	3.77
20	8:52:24.5	3.08	70	9:00:01.4	3.78
21	8:52:26.6	3.08	71	9:00:21.4	3.78
22	8:52:27.2	3.09	72	9:00:31.4	3.79
23	8:52:28.9	3.09	73	9:00:41.4	3.79
24	8:52:31.3	3.10	74	9:01:01.4	3.79
25	8:52:33.1	3.10	75	9:01:11.4	3.79
26	8:52:35.0	3.11	76	9:01:21.4	3.80
27	8:52:38.8	3.12	77	9:01:41.4	3.80
28	8:52:40.8	3.13	78	9:01:51.4	3.80
29	8:52:42.9	3.14	79	9:02:01.4	3.80
30	8:52:47.2	3.15	80	9:02:21.4	3.81
31	8:52:50.4	3.16	81	9:02:31.4	3.81
32	8:52:52.8	3.17	82	9:02:41.4	3.81
33	8:52:58.7	3.19	83	9:03:01.4	3.81
34	8:53:01.2	3.20	84	9:03:11.4	3.81
35	8:53:04.8	3.21	85	9:03:31.4	3.82
36	8:53:11.3	3.35	86	9:03:51.4	3.82
37	8:53:15.2	3.41	87	9:04:21.4	3.82
38	8:53:19.3	3.33	88	9:04:51.4	3.83
39	8:53:28.8	3.27	89	9:06:21.4	3.83
40	8:53:33.3	3.25	90	9:09:01.4	3.84
41	8:53:38.9	3.29	91	9:12:41.4	3.85
42	8:53:50.6	3.32	92	9:14:21.4	3.85
43	8:53:56.7	3.34	93	9:17:21.4	3.86
44	8:54:03.0	3.35	94	9:28:01.4	3.87
45	8:54:17.2	3.39	95	9:45:31.4	3.87
46	8:54:25.1	3.41	96	10:13:31.4	3.88
47	8:54:33.3	3.43	97	15:18:31.4	3.89
48	8:54:51.4	3.47	98	15:42:51.4	3.89
49	8:55:01.4	3.49	99	16:09:11.4	3.90
50	8:55:11.4	3.51	100	16:42:01.4	3.90

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: DA2MW110	DATE STARTED: 12-10-02	DATE COMPLETED: 12-10-02
LOCATION: DA2 - See Page 151	RECORDED BY: [signature]	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	IN-SITU	MiniTroll Pro	764760706 SN		
TRANSDUCER					
WATER LEVEL	HAZCO	Dipmeter	05767		

PRETEST DATA

REFERENCE POINT PVC TOC	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2"
SCREEN OR OPEN HOLE I.D. (IN) 2"	DIAMETER OF BOREHOLE (IF SCREENED) 8"	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	22.32		TOP OF FILTER PACK	6.9	
DEPTH TO WATER	13.50		TOP OF SCREEN OR OPEN HOLE	9.3	
HEIGHT OF WATER COLUMN	8.82		SCREEN LENGTH	10.0	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD	SLUG IN (FALLING HEAD) [✓]	SLUG OUT (RISING HEAD) [✓]	
SLUG DIMENSIONS	3.1' x 1.25"	SLUG VOL(GAL) SA 0.1470.185	SLUG DEPTH(FT) 15.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE (MM/DD/YY) END	TIME (HH:MM:SS) BEGIN	TIME (HH:MM:SS) END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER (FT BRP) END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN (FT) END
da2mw	110 Slug in	12/10/02	12/10/02	1030	1404	29.32'	13.50	13.28	8.82	9.04
da2mw	110 Slug out	12/10/02	12/10/02	1408	1613	20.32'	13.30	13.53	9.02	8.79

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL: LOG SCALE	TEST TIME INTERVAL: ARITH. SCALE	COMMENTS
COLUMN B	TIME	CK	HH:MM:SS	✓		
COLUMN C	TIME	ET	min	✓		
COLUMN E	DEPTH	FT H_2O	FT H_2O			~~DEPTH~~ HEIGHT OF WATER COLUMN

(1) CK – 24 HR CLOCK TIME ET – ELAPSED TIME H – HEIGHT OF WATER ABOVE TRANSDUCER FT BRP – DEPTH TO WATER E – WATER LEVEL ELEVATION P – PRESSURE O – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS: _____

DATA RECORDED BY	DATE	QA CHECK BY	DATE
[signature]	12-10-02		

WELL ID: DA2MW110 SLUGIN

Local ID: Slug in
Date: 12/10/2002
Time: 10:30

INPUT

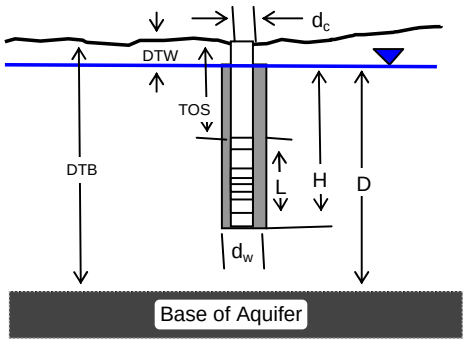
Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	11.11	Feet
top of screen (TOS)	9.3	Feet
Base of Aquifer (DTB)	20	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

COMPUTED

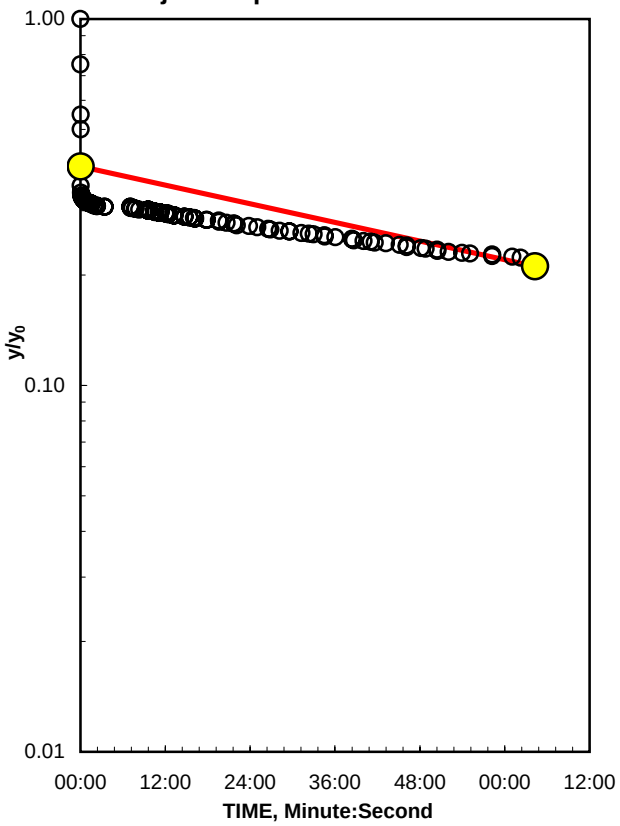
L_{wetted}	8.19	Feet
D =	8.89	Feet
H =	8.19	Feet
L/r_w =	23.83	
$y_{0\text{-DISPLACEMENT}}$ =	26.07	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.329	
B =	0.375	
ln(Re/rw) =	2.194	
Re =	3.08	cm
Slope =	1.18E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	85056	sec

K= 0.0000008 is less than extreme minimum of 3.52509870276368E-06 for Clay soils (surface)

K = Error cm/Second



Adjust slope of line to estimate K



K= 0.0000008 is less than likely minimum of 0.0000035 for Clay soils (surface)

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	10:30:56.3	9.21	51	11:33:46.4	8.61
2	10:31:02.0	8.99	52	11:34:26.4	8.61
3	10:31:04.1	8.82	53	11:34:36.4	8.60
4	10:31:10.6	8.78	54	11:37:26.4	8.60
5	10:31:13.9	8.69	55	11:37:36.4	8.60
6	10:31:16.3	8.69	56	11:37:46.4	8.60
7	10:31:20.0	8.65	57	11:37:56.4	8.60
8	10:31:21.9	8.64	58	11:38:06.4	8.60
9	10:32:00.2	8.63	59	11:38:16.4	8.60
10	10:32:04.3	8.63	60	11:38:26.4	8.60
11	10:32:08.5	8.63	61	11:38:36.4	8.60
12	10:32:13.8	8.63	62	11:38:46.4	8.60
13	10:32:28.7	8.63	63	11:38:56.4	8.60
14	10:32:34.6	8.63	64	11:43:16.4	8.60
15	10:32:40.7	8.63	65	11:43:26.4	8.60
16	10:33:10.1	8.63	66	11:44:16.4	8.60
17	10:33:46.4	8.63	67	11:45:16.4	8.60
18	10:33:56.4	8.62	68	11:45:26.4	8.60
19	10:34:36.4	8.62	69	11:45:36.4	8.60
20	10:35:46.4	8.62	70	11:45:46.4	8.60
21	10:35:56.4	8.62	71	11:50:16.4	8.60
22	10:36:56.4	8.62	72	11:50:26.4	8.60
23	10:37:06.4	8.62	73	11:50:56.4	8.60
24	10:38:16.4	8.62	74	11:59:16.4	8.60
25	10:38:26.4	8.62	75	11:59:26.4	8.60
26	10:39:46.4	8.62	76	12:03:26.4	8.60
27	10:39:56.4	8.62	77	12:03:36.4	8.60
28	10:40:06.4	8.62	78	12:07:16.4	8.60
29	10:40:26.4	8.62	79	12:08:06.4	8.59
30	10:42:36.4	8.62	80	12:08:16.4	8.59
31	10:44:46.4	8.62	81	12:18:06.4	8.59
32	10:44:56.4	8.61	82	12:18:16.4	8.59
33	10:45:06.4	8.61	83	12:28:36.4	8.59
34	10:51:26.4	8.61	84	12:28:46.4	8.59
35	10:51:36.4	8.61	85	12:34:56.4	8.59
0 36	11:13:16.4	8.61	86	12:41:16.4	8.59
37	11:13:26.4	8.61	87	12:41:26.4	8.59
38	11:13:36.4	8.61	88	12:43:36.4	8.58
39	11:13:56.4	8.61	89	12:54:06.4	8.58
40	11:14:36.4	8.61	90	13:01:06.4	8.58
41	11:17:26.4	8.61	91	13:10:26.4	8.58
42	11:17:56.4	8.61	92	13:12:16.4	8.58
43	11:20:56.4	8.61	93	13:20:06.4	8.58
44	11:28:26.4	8.61	94	13:28:16.4	8.58
45	11:28:36.4	8.61	95	13:28:26.4	8.58
46	11:28:46.4	8.61	96	13:38:26.4	8.57
47	11:28:56.4	8.61	97	13:44:46.4	8.57
48	11:29:06.4	8.61	98	13:48:46.4	8.57
49	11:29:16.4	8.61	99	13:58:06.4	8.57
50	11:33:36.4	8.61	100	13:58:16.4	8.57

WELL ID: KEETH ELEMENTARY

Local ID: 0SLUGOUT
Date: 12/10/2002
Time: 14:02

INPUT

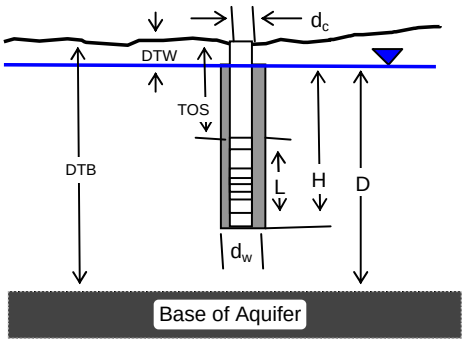
Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	11.11	Feet
top of screen (TOS)	9.3	Feet
Base of Aquifer (DTB)	20	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	

COMPUTED

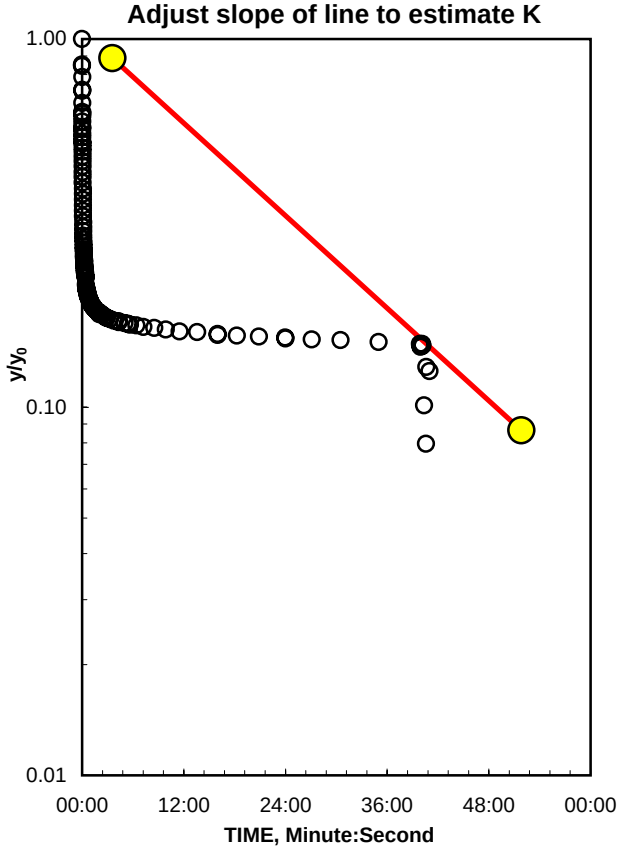
L_{wetted}	8.19	Feet
D =	8.89	Feet
H =	8.19	Feet
L/r_w =	23.83	
$y_{0\text{-DISPLACEMENT}}$ =	35.27	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.329	
B =	0.375	
ln(Re/rw) =	2.194	
Re =	3.08	cm
Slope =	5.82E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	17177	sec

Input is consistent.

K = 0.000004 cm/Second



Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	14:02:45.0	7.37	51	14:05:05.1	8.27
2	14:02:48.8	7.54	52	14:05:13.3	8.27
3	14:02:50.7	7.55	53	14:05:22.7	8.27
4	14:02:52.6	7.62	54	14:05:31.4	8.28
5	14:02:52.9	7.69	55	14:05:41.4	8.29
6	14:02:54.5	7.69	56	14:05:51.4	8.29
7	14:02:54.8	7.75	57	14:06:01.4	8.29
8	14:02:56.7	7.80	58	14:06:11.4	8.29
9	14:02:57.0	7.82	59	14:06:21.4	8.29
10	14:02:57.3	7.80	60	14:06:31.4	8.29
11	14:02:58.7	7.84	61	14:06:41.4	8.30
12	14:03:00.5	7.86	62	14:06:51.4	8.30
13	14:03:01.0	7.87	63	14:07:01.4	8.30
14	14:03:02.4	7.89	64	14:07:21.4	8.30
15	14:03:02.9	7.90	65	14:07:41.4	8.30
16	14:03:04.5	7.92	66	14:08:01.4	8.30
17	14:03:05.0	7.93	67	14:08:11.4	8.30
18	14:03:06.6	7.94	68	14:08:41.4	8.31
19	14:03:07.2	7.96	69	14:08:51.4	8.31
20	14:03:08.9	7.98	70	14:09:11.4	8.31
21	14:03:10.6	7.99	71	14:09:51.4	8.31
22	14:03:11.3	8.01	72	14:10:21.4	8.31
23	14:03:13.1	8.03	73	14:10:41.4	8.31
24	14:03:15.0	8.04	74	14:11:21.4	8.32
25	14:03:16.9	8.06	75	14:12:11.4	8.32
26	14:03:18.8	8.08	76	14:13:01.4	8.32
27	14:03:20.8	8.09	77	14:13:51.4	8.32
28	14:03:22.9	8.11	78	14:14:51.4	8.32
29	14:03:25.0	8.12	79	14:15:01.4	8.32
30	14:03:27.2	8.14	80	14:15:11.4	8.32
31	14:03:30.4	8.15	81	14:16:21.4	8.32
32	14:03:32.8	8.16	82	14:17:21.4	8.32
33	14:03:35.2	8.17	83	14:19:01.4	8.33
34	14:03:38.7	8.18	84	14:20:21.4	8.33
35	14:03:41.2	8.19	85	14:22:31.4	8.33
36	14:03:44.8	8.20	86	14:25:11.4	8.33
37	14:03:48.5	8.21	87	14:28:31.4	8.33
38	14:03:51.3	8.21	88	14:28:41.4	8.33
39	14:03:55.2	8.22	89	14:32:51.4	8.33
40	14:03:59.3	8.23	90	14:35:11.4	8.34
41	14:04:04.5	8.23	91	14:36:41.4	8.34
42	14:04:08.8	8.24	92	14:41:21.4	8.34
43	14:04:13.3	8.24	93	14:46:11.4	8.34
44	14:04:18.9	8.24	94	14:54:01.4	8.34
45	14:04:24.7	8.25	95	15:02:01.4	8.34
46	14:04:30.6	8.25	96	15:11:51.4	8.34
47	14:04:36.7	8.26	97	15:24:21.4	8.35
48	14:04:43.0	8.26	98	15:38:41.4	8.35
49	14:04:50.5	8.26	99	15:38:51.4	8.35
50	14:04:57.2	8.26	100	15:52:21.4	8.35

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

WELL NO.: DA2 111	DATE STARTED: 12-12-02	DATE COMPLETED: 12-13-02
LOCATION:	RECORDED BY: [signature]	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	IN SITU	Mini TROLL	02978		
TRANSDUCER					
WATER LEVEL	Heron	Dipmeter T	05767		

PRETEST DATA

REFERENCE POINT TOC / BGS	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2
SCREEN OR OPEN HOLE I.D. (IN) 2	DIAMETER OF BOREHOLE (IF SCREENED) 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	14.78		TOP OF FILTER PACK	6.0	
DEPTH TO WATER	6.50		TOP OF SCREEN OR OPEN HOLE	7.1	
HEIGHT OF WATER COLUMN	8.28		SCREEN LENGTH	5.0	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.1' x 1.25"	~~0.1970185~~	8.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE (MM/DD/YY) END	TIME (HH:MM:SS) BEGIN	TIME (HH:MM:SS) END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER (FT BRP) END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN (FT) END
da2mw111	slugin	12/12/02	12/13/02	1700	1000	13.0'	~~7.50~~ 6.50	6.23	~~7.50~~ 8.28	8.55
da2mw111	slugout	12/13/02	12/13/02	1000	1430	13.0'	6.23	6.25	8.55	8.53

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL: LOG SCALE	TEST TIME INTERVAL: ARITH. SCALE	COMMENTS
COLUMN B	Time	CL	Hr:mm:ss	✓		
COLUMN C	Time	ET	Min	✓		
COLUMN E	Depth	H	Ft H2O			

(1) CK – 24 HR CLOCK TIME ET – ELAPSED TIME H – HEIGHT OF WATER ABOVE TRANSDUCER FT BRP – DEPTH TO WATER E – WATER LEVEL ELEVATION P – PRESSURE O – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

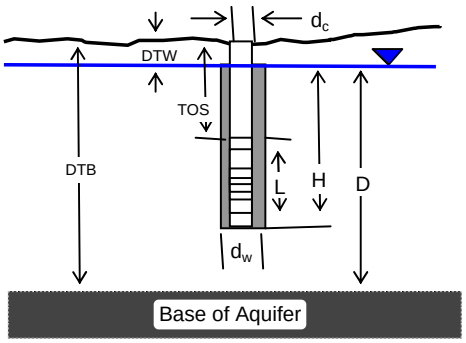
DATA RECORDED BY [signature]	DATE 12/13/02	QA CHECK BY	DATE

WELL ID: DA2MW111

Local ID: Slugin
Date:
Time: 17:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	4.01	Feet
top of screen (TOS)	7.1	Feet
Base of Aquifer (DTB)	12.6	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



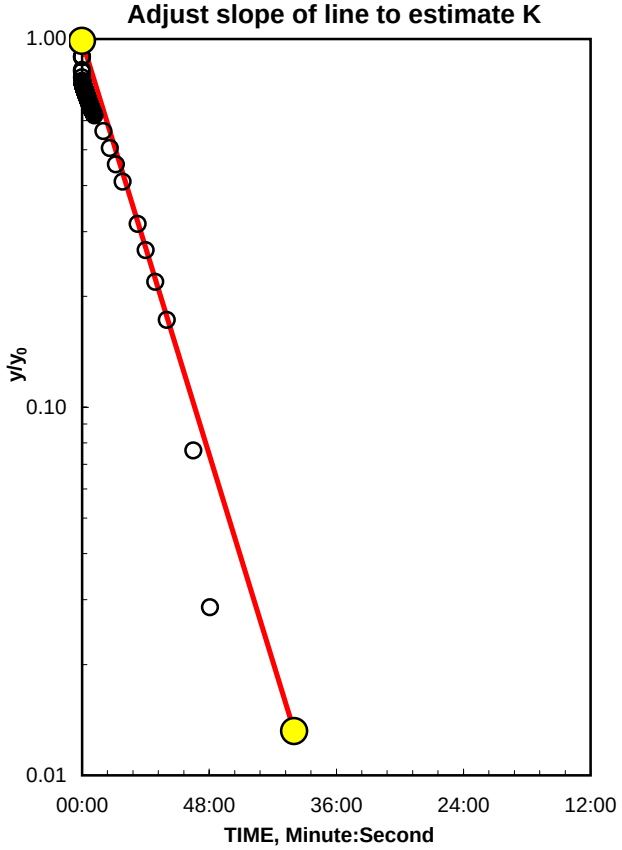
COMPUTED

L_{wetted}	5	Feet
D =	8.59	Feet
H =	8.09	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	31.98	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.012	
Re =	2.57	cm
Slope =	6.5E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	15380	sec

Input is consistent.

K = 0.000006 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

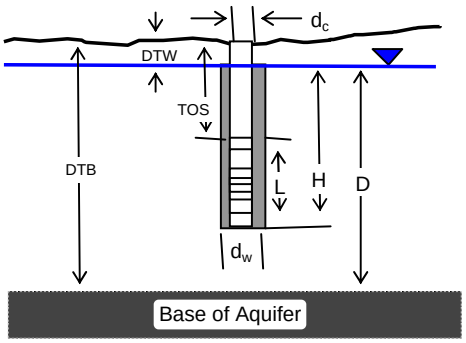
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	17:00:30.5	7.37	51	17:10:24.4	7.06
2	17:00:36.2	7.26	52	17:10:34.4	7.06
3	17:00:38.1	7.26	53	17:10:54.4	7.06
4	17:00:40.0	7.18	54	17:11:04.4	7.06
5	17:00:42.1	7.18	55	17:11:14.4	7.05
6	17:00:48.6	7.15	56	17:11:24.4	7.05
7	17:00:52.6	7.13	57	17:11:44.4	7.05
8	17:00:54.3	7.12	58	17:11:54.4	7.05
9	17:00:56.1	7.12	59	17:12:04.4	7.05
10	17:00:58.0	7.12	60	17:12:14.4	7.05
11	17:00:59.9	7.12	61	17:12:34.4	7.05
12	17:01:03.8	7.12	62	17:13:04.4	7.04
13	17:01:18.2	7.12	63	17:13:34.4	7.04
14	17:01:24.2	7.12	64	17:13:44.4	7.04
15	17:01:26.8	7.12	65	17:14:04.4	7.04
16	17:02:56.3	7.11	66	17:14:34.4	7.04
17	17:03:04.7	7.11	67	17:14:44.4	7.04
18	17:03:24.4	7.10	68	17:15:14.4	7.03
19	17:03:34.4	7.10	69	17:15:54.4	7.03
20	17:03:44.4	7.10	70	17:16:04.4	7.03
21	17:03:54.4	7.10	71	17:16:59.4	7.02
22	17:04:14.4	7.10	72	17:17:09.4	7.02
23	17:04:24.4	7.10	73	17:18:39.4	7.02
24	17:04:34.4	7.10	74	17:19:19.4	7.01
25	17:04:44.4	7.09	75	17:19:29.4	7.01
26	17:05:04.4	7.09	76	17:20:39.4	7.01
27	17:05:14.4	7.09	77	17:21:29.4	7.00
28	17:05:24.4	7.09	78	17:21:39.4	7.00
29	17:05:34.4	7.09	79	17:22:09.4	7.00
30	17:05:54.4	7.09	80	17:22:39.4	7.00
31	17:06:04.4	7.08	81	17:24:14.4	6.99
32	17:06:14.4	7.08	82	17:26:09.4	6.98
33	17:06:24.4	7.08	83	17:27:19.4	6.98
34	17:06:44.4	7.08	84	17:29:04.4	6.97
35	17:06:54.4	7.08	85	17:49:24.4	6.91
36	17:07:04.4	7.08	86	18:03:34.4	6.85
37	17:07:14.4	7.08	87	18:17:34.4	6.80
38	17:07:34.4	7.08	88	18:32:24.4	6.75
39	17:07:44.4	7.08	89	19:06:19.4	6.65
40	17:07:54.4	7.08	90	19:25:04.4	6.60
41	17:08:04.4	7.07	91	19:46:44.4	6.55
42	17:08:24.4	7.07	92	20:12:44.4	6.50
43	17:08:34.4	7.07	93	21:12:49.4	6.40
44	17:08:44.4	7.07	94	21:50:34.4	6.35
45	17:08:54.4	7.07	95	22:33:54.4	6.30
46	17:09:14.4	7.07	96	23:29:59.4	6.25
47	17:09:34.4	7.07	97	3:05:09.4	6.15
48	17:09:44.4	7.06	98	5:05:14.4	6.10
49	17:10:04.4	7.06	99	6:01:34.4	6.10
50	17:10:14.4	7.06	100	8:00:29.4	6.09

WELL ID: DA2-MW111

Local ID: Slug-out
Date:
Time: 9:57

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	4.01	Feet
top of screen (TOS)	7.1	Feet
Base of Aquifer (DTB)	12.6	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



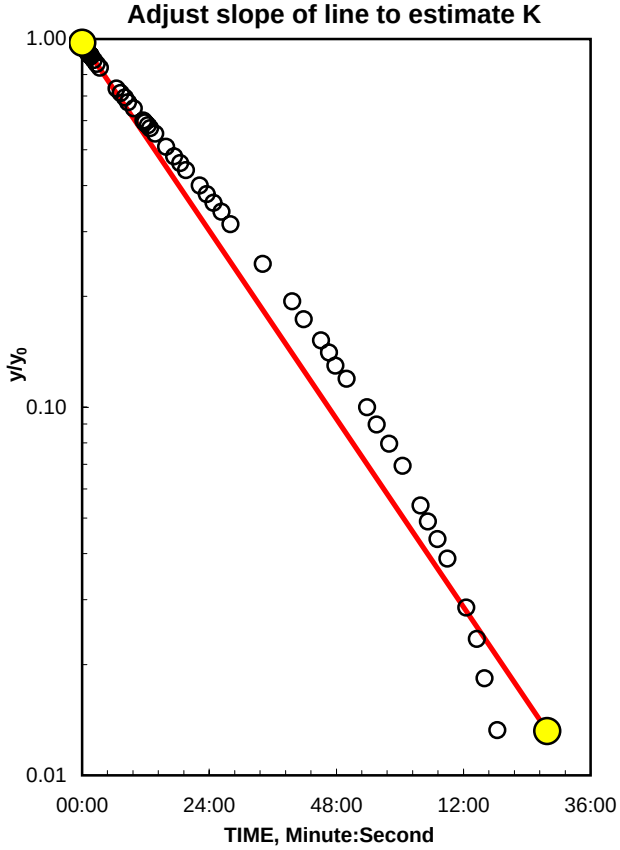
COMPUTED

L_{wetted}	5	Feet
D =	8.59	Feet
H =	8.09	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	29.88	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.012	
Re =	2.57	cm
Slope =	5.92E-05	$\log_{10}$/sec
$t_{90\%}$ recovery =	16900	sec

Input is consistent.

K = 0.000006 cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	9:57:00.3	5.11	51	10:05:50.4	5.20
2	9:57:00.6	5.12	52	10:06:00.4	5.20
3	9:57:00.9	5.12	53	10:06:40.4	5.21
4	9:57:02.5	5.13	54	10:06:50.4	5.21
5	9:57:03.1	5.13	55	10:07:00.4	5.21
6	9:57:04.4	5.13	56	10:10:30.4	5.23
7	9:57:05.0	5.13	57	10:13:40.4	5.25
8	9:57:06.3	5.13	58	10:17:10.4	5.27
9	9:57:08.5	5.14	59	10:36:10.4	5.37
10	9:57:10.4	5.14	60	10:41:00.4	5.39
11	9:57:12.5	5.14	61	10:45:30.4	5.41
12	9:57:16.2	5.14	62	10:49:20.4	5.43
13	9:57:30.9	5.14	63	10:55:40.4	5.46
14	9:57:33.0	5.14	64	11:06:40.4	5.50
15	9:57:46.7	5.15	65	11:08:30.4	5.51
16	9:57:49.2	5.15	66	11:11:30.4	5.52
17	9:58:00.3	5.15	67	11:14:10.4	5.53
18	9:58:03.2	5.15	68	11:20:10.4	5.55
19	9:58:22.3	5.15	69	11:32:20.4	5.59
20	9:58:26.9	5.15	70	11:41:30.4	5.62
21	9:58:32.7	5.15	71	11:48:20.4	5.64
22	9:58:38.6	5.15	72	11:54:50.4	5.66
23	9:58:44.7	5.15	73	12:10:30.4	5.70
24	9:58:51.0	5.16	74	12:18:20.4	5.72
25	9:59:05.2	5.16	75	12:25:50.4	5.74
26	9:59:40.4	5.16	76	12:35:10.4	5.76
27	9:59:50.4	5.16	77	12:45:20.4	5.78
28	10:00:20.4	5.16	78	13:21:50.4	5.85
29	10:00:30.4	5.17	79	13:55:10.4	5.90
30	10:00:40.4	5.17	80	14:08:10.4	5.92
31	10:00:50.4	5.17	81	14:27:40.4	5.94
32	10:01:00.4	5.17	82	14:36:40.4	5.95
33	10:01:10.4	5.17	83	14:44:00.4	5.96
34	10:01:40.4	5.17	84	14:56:40.4	5.97
35	10:01:50.4	5.18	85	15:20:00.4	5.99
36	10:02:10.4	5.18	86	15:30:50.4	6.00
37	10:02:20.4	5.18	87	15:44:50.4	6.01
38	10:02:40.4	5.18	88	16:00:20.4	6.02
39	10:02:50.4	5.18	89	16:20:20.4	6.04
40	10:03:00.4	5.18	90	16:28:40.4	6.04
41	10:03:10.4	5.18	91	16:39:50.4	6.05
42	10:03:20.4	5.19	92	16:51:00.4	6.05
43	10:03:40.4	5.19	93	17:12:20.4	6.06
44	10:04:00.4	5.19	94	17:24:10.4	6.07
45	10:04:20.4	5.19	95	17:33:00.4	6.07
46	10:04:30.4	5.19	96	17:47:20.4	6.08
47	10:04:50.4	5.20	97	18:15:30.4	6.09
48	10:05:00.4	5.20	98	18:26:30.4	6.09
49	10:05:30.4	5.20	99	18:40:20.4	6.10
50	10:05:40.4	5.20	100	18:53:10.4	6.10

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

WELL NO.: DA2 112	DATE STARTED: 12-13-02	DATE COMPLETED: 12-13-02
LOCATION:	RECORDED BY: S McCauley	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	In Situ	Mini Troll	07606		
TRANSDUCER					
WATER LEVEL	Hatco	Dipper-T	05767		

PRETEST DATA

REFERENCE POINT TOC	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN)

SCREEN OR OPEN HOLE I.D. (IN): | DIAMETER OF BOREHOLE (IF SCREENED):

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	6.86		TOP OF FILTER PACK	6.8	
DEPTH TO WATER	17.02		TOP OF SCREEN OR OPEN HOLE	8.8	
HEIGHT OF WATER COLUMN	10.16		SCREEN LENGTH	5.0'	
TEST INTERVAL TYPE					

TEST METHODS SUMMARY

TEST METHOD: SLUG IN (FALLING HEAD) ✓ SLUG OUT (RISING HEAD) ✓

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.1' x 1.25'	3" 0.0970.185	8.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE (MM/DD/YY) END	TIME (HH:MM:SS) BEGIN	TIME (HH:MM:SS) END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER (FT BRP) END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN (FT) END
da2mw	112 slug in	12/13/02	12/13/02	1220	1420	15.0'	6.86	6.84	10.16	10.18
da2mw	112 slugout	12/13/02	12-13-02	1420	1615	15.0'	6.84	6.85	10.18	10.17

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES	DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL: LOG SCALE	TEST TIME INTERVAL: ARITH. SCALE	COMMENTS
COLUMN B	TIME	CK	HH:MM:SS	✓		
COLUMN C	TIME	ET	MIN	✓		
COLUMN E	DEPTH	FT BTH2O	FT H2O			

(1) CK – 24 HR CLOCK TIME; ET – ELAPSED TIME; H – HEIGHT OF WATER ABOVE TRANSDUCER; FT BRP – DEPTH TO WATER; E – WATER LEVEL ELEVATION; P – PRESSURE; O – OTHER (EXPLAIN)

DATA CHECK RESULTS:

REMARKS:

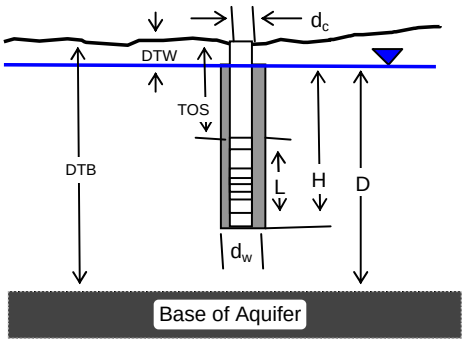
DATA RECORDED BY	DATE	QA CHECK BY	DATE
SMcCauley	12-13-02		

WELL ID: DA2 MW112

Local ID: Slug in
Date:
Time: 12:39

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	4.29	Feet
top of screen (TOS)	8.8	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



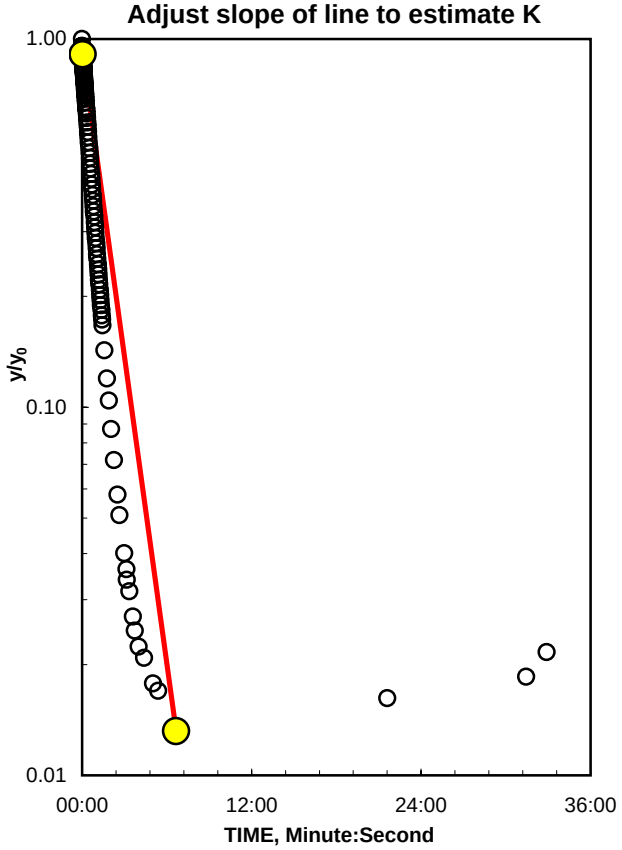
COMPUTED

L_{wetted}	5	Feet
D =	10.71	Feet
H =	9.51	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	39.47	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.005	
Re =	2.55	cm
Slope =	0.000772	$\log_{10}$/sec
$t_{90\%}$ recovery =	1296	sec

Input is consistent.

K =	0.00008	cm/Second

Adjust slope of line to estimate K



REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

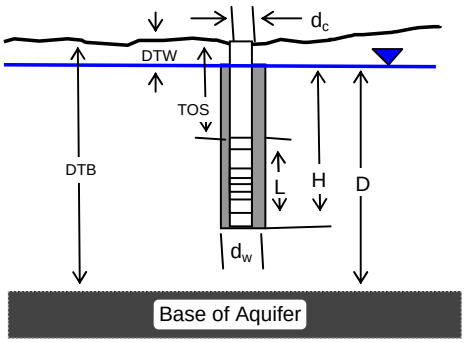
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	12:39:47.7	8.18	51	12:43:31.4	7.46
2	12:39:49.5	8.12	52	12:43:41.4	7.44
3	12:39:50.0	8.12	53	12:43:51.4	7.42
4	12:39:51.4	8.11	54	12:44:01.4	7.40
5	12:39:51.9	8.11	55	12:44:11.4	7.39
6	12:39:53.5	8.11	56	12:44:21.4	7.37
7	12:39:55.0	8.09	57	12:44:31.4	7.35
8	12:39:55.6	8.08	58	12:44:41.4	7.34
9	12:39:57.2	8.08	59	12:44:51.4	7.32
10	12:39:57.9	8.07	60	12:45:01.4	7.31
11	12:39:59.6	8.06	61	12:45:11.4	7.29
12	12:40:01.3	8.06	62	12:45:21.4	7.28
13	12:40:03.1	8.05	63	12:45:31.4	7.27
14	12:40:04.0	8.04	64	12:45:41.4	7.25
15	12:40:05.9	8.03	65	12:45:51.4	7.24
16	12:40:07.8	8.03	66	12:46:01.4	7.23
17	12:40:09.8	8.02	67	12:46:11.4	7.22
18	12:40:11.9	8.01	68	12:46:21.4	7.21
19	12:40:14.0	8.00	69	12:46:31.4	7.20
20	12:40:17.2	7.99	70	12:46:41.4	7.19
21	12:40:19.4	7.98	71	12:46:51.4	7.18
22	12:40:21.8	7.97	72	12:47:01.4	7.17
23	12:40:25.2	7.96	73	12:47:11.4	7.16
24	12:40:27.7	7.95	74	12:47:21.4	7.15
25	12:40:31.2	7.93	75	12:47:31.4	7.14
26	12:40:33.8	7.92	76	12:47:41.4	7.13
27	12:40:37.5	7.91	77	12:47:51.4	7.13
28	12:40:41.3	7.90	78	12:48:01.4	7.12
29	12:40:45.2	7.88	79	12:48:11.4	7.11
30	12:40:49.3	7.87	80	12:48:21.4	7.10
31	12:40:53.5	7.86	81	12:48:31.4	7.10
32	12:40:57.8	7.84	82	12:49:21.4	7.07
33	12:41:03.3	7.83	83	12:50:21.4	7.04
34	12:41:07.9	7.81	84	12:51:11.4	7.02
35	12:41:13.7	7.79	85	12:52:11.4	6.99
36	12:41:19.6	7.77	86	12:53:21.4	6.97
37	12:41:25.7	7.75	87	12:54:51.4	6.96
38	12:41:32.0	7.72	88	12:55:41.4	6.95
39	12:41:39.5	7.71	89	12:57:41.4	6.93
40	12:41:47.2	7.69	90	12:58:41.4	6.93
41	12:41:55.1	7.67	91	12:58:51.4	6.92
42	12:42:03.3	7.65	92	12:59:51.4	6.92
43	12:42:11.7	7.63	93	13:01:21.4	6.92
44	12:42:21.4	7.60	94	13:02:11.4	6.91
45	12:42:31.4	7.58	95	13:03:51.4	6.91
46	12:42:41.4	7.56	96	13:06:11.4	6.91
47	12:42:51.4	7.54	97	13:10:01.4	6.90
48	12:43:01.4	7.52	98	13:12:11.4	6.90
49	12:43:11.4	7.50	99	14:49:31.4	6.90
50	12:43:21.4	7.47	100	15:48:31.4	6.90

WELL ID: DA2 MW 112

Local ID: Slug-out
Date:
Time: 14:19

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	4.29	Feet
top of screen (TOS)	8.8	Feet
Base of Aquifer (DTB)	15	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Sand and Gravel Mixe	



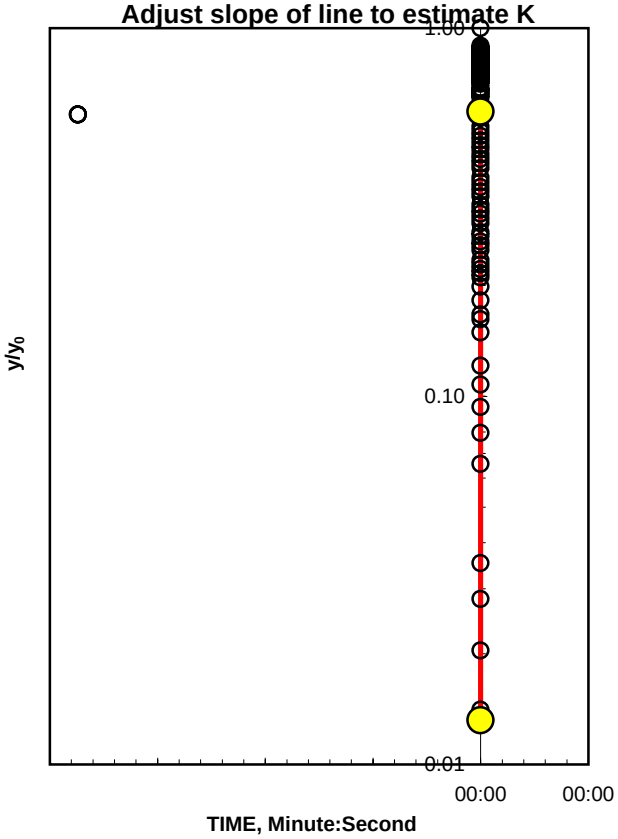
COMPUTED

L_{wetted}	5	Feet
D =	10.71	Feet
H =	9.51	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	43.28	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	2.005	
Re =	2.55	cm
Slope =	0.006212	$\log_{10}$/sec
$t_{90\%}$ recovery =	161	sec

Input is consistent.

K = 0.0006 cm/Second

Adjust slope of line to estimate K



K= 0.0006 is less than likely minimum of 0.011 for Sand and Gravel Mixes

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	14:19:27.6	5.46	51	14:22:13.4	6.11
2	14:19:30.1	5.61	52	14:22:23.4	6.14
3	14:19:31.4	5.62	53	14:22:33.4	6.16
4	14:19:31.7	5.63	54	14:22:43.4	6.18
5	14:19:32.0	5.63	55	14:22:53.4	6.20
6	14:19:33.6	5.64	56	14:23:03.4	6.22
7	14:19:33.9	5.65	57	14:23:13.4	6.24
8	14:19:35.2	5.65	58	14:23:23.4	6.25
9	14:19:35.5	5.65	59	14:23:33.4	6.27
10	14:19:35.8	5.66	60	14:23:43.4	6.29
11	14:19:37.4	5.67	61	14:24:03.4	6.32
12	14:19:37.7	5.67	62	14:24:13.4	6.34
13	14:19:38.0	5.67	63	14:24:23.4	6.35
14	14:19:39.3	5.67	64	14:24:33.4	6.37
15	14:19:39.7	5.68	65	14:24:43.4	6.38
16	14:19:41.5	5.69	66	14:25:03.4	6.41
17	14:19:42.0	5.69	67	14:25:13.4	6.42
18	14:19:43.4	5.70	68	14:25:23.4	6.44
19	14:19:43.9	5.70	69	14:25:33.4	6.45
20	14:19:45.5	5.70	70	14:25:43.4	6.46
21	14:19:47.6	5.71	71	14:26:03.4	6.48
22	14:19:49.2	5.71	72	14:26:13.4	6.49
23	14:19:49.9	5.71	73	14:26:23.4	6.51
24	14:19:51.6	5.72	74	14:26:33.4	6.52
25	14:19:53.3	5.72	75	14:26:43.4	6.53
26	14:19:56.0	5.73	76	14:27:03.4	6.55
27	14:19:57.9	5.74	77	14:27:13.4	6.56
28	14:19:59.8	5.75	78	14:27:23.4	6.57
29	14:20:01.8	5.75	79	14:27:33.4	6.57
30	14:20:03.9	5.76	80	14:27:43.4	6.58
31	14:20:09.2	5.77	81	14:28:03.4	6.60
32	14:20:11.4	5.78	82	14:28:33.4	6.62
33	14:20:13.8	5.79	83	14:29:03.4	6.64
34	14:20:17.2	5.80	84	14:29:13.4	6.65
35	14:20:19.7	5.81	85	14:29:43.4	6.67
36	14:20:25.8	5.83	86	14:30:53.4	6.71
37	14:20:29.5	5.84	87	14:31:33.4	6.73
38	14:20:33.3	5.85	88	14:32:23.4	6.75
39	14:20:37.2	5.86	89	14:33:23.4	6.77
40	14:20:41.3	5.88	90	14:34:33.4	6.79
41	14:20:49.8	5.90	91	14:38:13.4	6.83
42	14:20:55.3	5.92	92	14:39:43.4	6.84
43	14:20:59.9	5.93	93	14:41:23.4	6.85
44	14:21:05.7	5.95	94	14:44:03.4	6.86
45	14:21:11.6	5.96	95	14:46:53.4	6.87
46	14:21:24.0	6.00	96	16:43:13.4	6.88
47	14:21:31.5	6.01	97	17:56:53.4	6.88
48	14:21:39.2	6.03	98	18:02:53.4	6.89
49	14:21:46.1	6.05	99	23:32:00.0	6.05
50	14:21:55.3	6.07	100	23:32:00.0	6.05

SLUG TEST RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NO.: MW113	DATE STARTED: 12-11-02	DATE COMPLETED: 12-12-02
LOCATION:	RECORDED BY: SMcCrastin	

EQUIPMENT INFORMATION SUMMARY

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NO.	RANGE (PSI)	LAST CALIB.
DATA LOGGER	IN-SITU	Mini TROLL	02978		
TRANSDUCER					
WATER LEVEL	Heron	Dipper-T	05767		

PRETEST DATA

REFERENCE POINT TOC 1BGS	REFERENCE POINT ELEVATION	RISER CASING I.D. (IN) 2
SCREEN OR OPEN HOLE I.D. (IN) 2	DIAMETER OF BOREHOLE (IF SCREENED) 8	

	FT BRP TOC	MSL		FT BRP BGS	MSL
TOTAL WELL DEPTH	16.29		TOP OF FILTER PACK	6.9'	
DEPTH TO WATER	7.70		TOP OF SCREEN OR OPEN HOLE	8.3'	
HEIGHT OF WATER COLUMN	8.59		SCREEN LENGTH	5.0'	
TEST INTERVAL TYPE	LOG				

TEST METHODS SUMMARY

TEST METHOD SLUG IN (FALLING HEAD) [✓] SLUG OUT (RISING HEAD) [✓]

SLUG DIMENSIONS		SLUG VOL(GAL)	SLUG DEPTH(FT)
	3.1' x 1.25'	~~0.1977~~ .85	9.0'

DATA LOGGER RECORDS

DATA LOGGER TEST NO.	FILE NAME	DATE (MM/DD/YY) BEGIN	DATE END	TIME (HH:MM:SS) BEGIN	TIME END	DEPTH TO TRANSDUCER (FT BRP)	DEPTH TO WATER (FT BRP) BEGIN	DEPTH TO WATER END	HEIGHT OF WATER COLUMN (FT) BEGIN	HEIGHT OF WATER COLUMN END
da2mw	113 slugin	121102	121102	1425	1715	14.0'	7.70	7.57	8.59	8.72
da2mw	113 slugout	121102	121202	1715	1000	14.0'	7.57	7.58	8.72	8.71

STORAGE LOCATION OF DATA: 1) 2)

FILE STRUCTURES		DATA TYPE	FORMAT (1)	UNITS	TEST TIME INTERVAL LOG SCALE	ARITH. SCALE	COMMENTS
COLUMN	B	TIME	CK	HH:MM:SS	✓		
COLUMN	C	TIME	ET	MIN	✓		
COLUMN	E	DEPTH	H	FT H2O			

(1) CK – 24 HR CLOCK TIME H – HEIGHT OF WATER ABOVE TRANSDUCER E – WATER LEVEL ELEVATION 0 – OTHER (EXPLAIN)
ET – ELAPSED TIME FT BRP – DEPTH TO WATER P – PRESSURE

DATA CHECK RESULTS:

REMARKS:

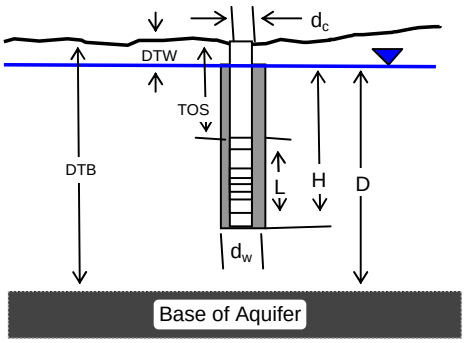
DATA RECORDED BY	DATE	QA CHECK BY	DATE
SMcCrastin	121202		

WELL ID: DA2 MW113

Local ID: Slug-In
Date:
Time: 14:24

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	5.1	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	14	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Till	



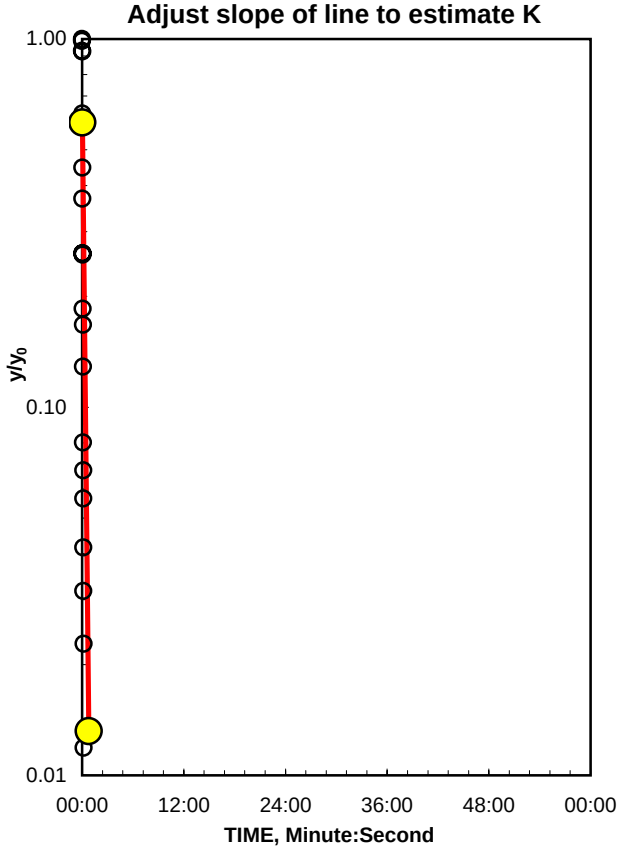
COMPUTED

L_{wetted}	5	Feet
D =	8.9	Feet
H =	8.2	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	30.76	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	1.989	
Re =	2.51	cm
Slope =	0.006212	$\log_{10}$/sec
$t_{90\%}$ recovery =	161	sec

K= 0.0006 is greater than extreme maximum of 0.000211505922165821 for Till

K = Error cm/Second

Adjust slope of line to estimate K



K= 0.0006 is greater than likely maximum of 0.00011 for Till

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

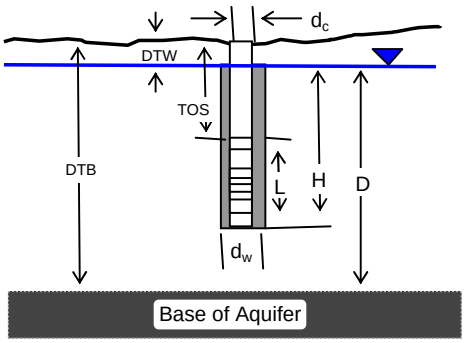
Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	14:24:10.5	7.55	51	14:30:24.4	6.44
2	14:24:13.0	7.54	52	14:30:34.4	6.44
3	14:24:14.9	7.48	53	14:30:44.4	6.44
4	14:24:19.0	7.47	54	14:30:54.4	6.44
5	14:24:20.7	7.17	55	14:31:14.4	6.44
6	14:24:24.4	7.15	56	14:31:24.4	6.44
7	14:24:26.5	6.99	57	14:31:34.4	6.44
8	14:24:27.0	6.91	58	14:31:44.4	6.44
9	14:24:28.6	6.80	59	14:31:54.4	6.43
10	14:24:34.3	6.80	60	14:32:04.4	6.43
11	14:24:37.0	6.80	61	14:32:14.4	6.43
12	14:24:42.8	6.73	62	14:32:34.4	6.43
13	14:24:44.9	6.71	63	14:32:44.4	6.42
14	14:24:49.2	6.67	64	14:32:54.4	6.42
15	14:24:57.2	6.62	65	14:33:04.4	6.42
16	14:25:00.7	6.61	66	14:33:14.4	6.42
17	14:25:03.2	6.60	67	14:33:24.4	6.42
18	14:25:06.8	6.58	68	14:33:34.4	6.42
19	14:25:10.5	6.57	69	14:33:54.4	6.42
20	14:25:14.3	6.56	70	14:34:04.4	6.42
21	14:25:17.2	6.55	71	14:34:24.4	6.42
22	14:25:22.3	6.54	72	14:34:34.4	6.42
23	14:25:26.5	6.54	73	14:34:44.4	6.42
24	14:25:30.8	6.53	74	14:34:54.4	6.42
25	14:25:36.3	6.52	75	14:35:04.4	6.42
26	14:25:40.9	6.51	76	14:35:14.4	6.42
27	14:25:46.7	6.51	77	14:35:24.4	6.42
28	14:25:52.6	6.50	78	14:35:44.4	6.42
29	14:25:58.7	6.50	79	14:35:54.4	6.42
30	14:26:05.0	6.49	80	14:37:54.4	6.42
31	14:26:12.5	6.48	81	14:42:14.4	6.42
32	14:26:36.3	6.48	82	14:42:24.4	6.42
33	14:27:04.4	6.47	83	14:42:34.4	6.42
34	14:27:14.4	6.47	84	14:42:44.4	6.42
35	14:27:24.4	6.46	85	14:46:44.4	6.42
36	14:27:34.4	6.46	86	14:46:54.4	6.42
37	14:27:44.4	6.46	87	14:47:04.4	6.42
38	14:27:54.4	6.46	88	14:47:14.4	6.42
39	14:28:04.4	6.46	89	14:47:24.4	6.42
40	14:28:34.4	6.45	90	14:47:34.4	6.42
41	14:28:44.4	6.45	91	14:47:44.4	6.42
42	14:28:54.4	6.45	92	14:47:54.4	6.42
43	14:29:04.4	6.45	93	14:58:44.4	6.42
44	14:29:14.4	6.45	94	14:58:54.4	6.42
45	14:29:24.4	6.45	95	14:59:04.4	6.42
46	14:29:34.4	6.45	96	14:59:14.4	6.42
47	14:29:44.4	6.44	97	14:59:24.4	6.42
48	14:29:54.4	6.44	98	15:18:44.4	6.42
49	14:30:04.4	6.44	99	15:18:54.4	6.42
50	14:30:14.4	6.44	100	19:09:54.4	6.42

WELL ID: DA2-MW113

Local ID: Slug-out
Date:
Time: 17:15

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	8.25	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	5.1	Feet
top of screen (TOS)	8.3	Feet
Base of Aquifer (DTB)	14	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Sand and Gravel Mixe	



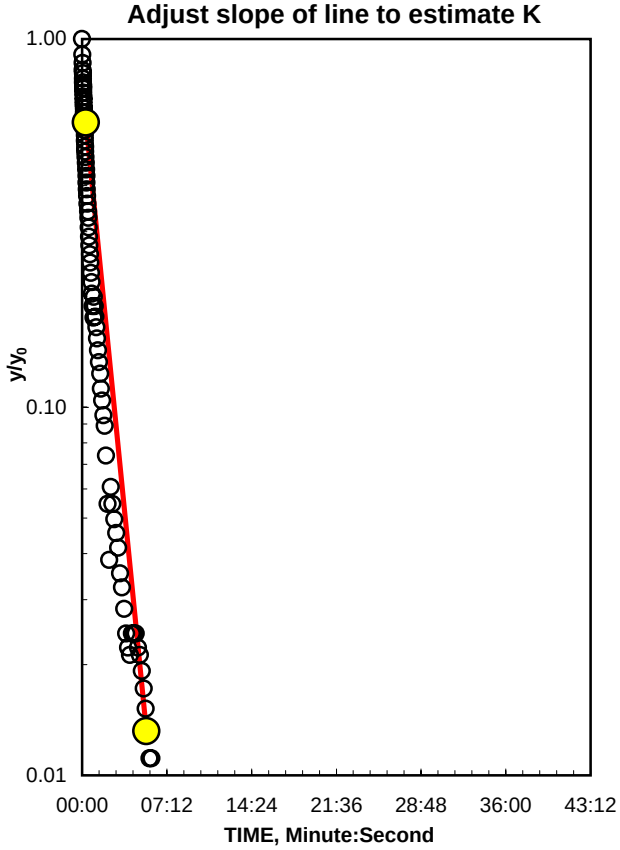
COMPUTED

L_{wetted}	5	Feet
D =	8.9	Feet
H =	8.2	Feet
L/r_w =	14.55	
$y_{0\text{-DISPLACEMENT}}$ =	30.12	cm
$y_{0\text{-SLUG}}$ =	36.88	cm
From look-up table using L/r_w		
Partial penetrate A =	2.049	
B =	0.308	
ln(Re/rw) =	1.989	
Re =	2.51	cm
Slope =	0.005359	$\log_{10}$/sec
$t_{90\%}$ recovery =	187	sec

Input is consistent.

K =	0.0005	cm/Second

Adjust slope of line to estimate K



K= 0.0005 is less than likely minimum of 0.011 for Sand and Gravel Mixes

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

Initial test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level	Entry	Time, Hr:Min:Sec	Water Level
1	17:15:15.2	5.39	51	17:16:46.9	6.26
2	17:15:16.8	5.48	52	17:16:51.7	6.27
3	17:15:17.4	5.53	53	17:16:57.6	6.28
4	17:15:17.7	5.57	54	17:17:03.7	6.29
5	17:15:19.0	5.58	55	17:17:11.0	6.29
6	17:15:19.3	5.61	56	17:17:17.5	6.31
7	17:15:19.6	5.63	57	17:17:25.2	6.33
8	17:15:20.9	5.64	58	17:17:33.1	6.34
9	17:15:21.2	5.66	59	17:17:41.3	6.32
10	17:15:21.5	5.67	60	17:17:49.7	6.33
11	17:15:22.8	5.69	61	17:17:59.4	6.33
12	17:15:23.1	5.71	62	17:18:09.4	6.34
13	17:15:23.4	5.72	63	17:18:19.4	6.34
14	17:15:23.7	5.74	64	17:18:29.4	6.35
15	17:15:25.0	5.76	65	17:18:39.4	6.35
16	17:15:25.3	5.77	66	17:18:49.4	6.35
17	17:15:25.7	5.79	67	17:18:59.4	6.36
18	17:15:27.1	5.80	68	17:19:09.4	6.36
19	17:15:27.5	5.82	69	17:19:19.4	6.36
20	17:15:29.0	5.84	70	17:19:29.4	6.36
21	17:15:29.4	5.86	71	17:19:39.4	6.36
22	17:15:30.9	5.88	72	17:19:49.4	6.36
23	17:15:31.5	5.89	73	17:19:59.4	6.36
24	17:15:33.0	5.91	74	17:20:09.4	6.36
25	17:15:33.6	5.92	75	17:20:19.4	6.36
26	17:15:35.2	5.94	76	17:20:29.4	6.36
27	17:15:36.9	5.96	77	17:20:39.4	6.37
28	17:15:37.6	5.98	78	17:20:49.4	6.37
29	17:15:39.3	5.99	79	17:20:59.4	6.37
30	17:15:41.1	6.01	80	17:21:09.4	6.37
31	17:15:43.0	6.03	81	17:21:19.4	6.37
32	17:15:44.9	6.04	82	17:21:29.4	6.37
33	17:15:46.8	6.06	83	17:21:49.4	6.38
34	17:15:48.8	6.08	84	17:22:09.4	6.38
35	17:15:50.9	6.09	85	17:22:19.4	6.38
36	17:15:53.0	6.11	86	17:22:39.4	6.38
37	17:15:55.2	6.12	87	17:22:49.4	6.38
38	17:15:57.4	6.14	88	17:22:59.4	6.38
39	17:16:00.8	6.15	89	17:23:19.4	6.38
40	17:16:03.2	6.16	90	17:23:29.4	6.39
41	17:16:05.7	6.18	91	17:23:59.4	6.39
42	17:16:09.2	6.19	92	17:25:09.4	6.39
43	17:16:12.8	6.21	93	17:25:19.4	6.39
44	17:16:15.5	6.18	94	17:25:59.4	6.39
45	17:16:19.3	6.19	95	17:26:59.4	6.39
46	17:16:23.2	6.21	96	17:28:49.4	6.39
47	17:16:27.3	6.22	97	17:30:59.4	6.40
48	17:16:31.5	6.23	98	17:32:59.4	6.40
49	17:16:36.8	6.24	99	17:33:09.4	6.40
50	17:16:41.3	6.25	100	17:36:49.4	6.40