APPENDIX K

SLUG TEST RESULTS

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX K SLUG TEST RESULTS

Page Number	Site Number
5	166
9	167
13	168
16	169
20	170
24	171
28	172
32	173
34	174
38	175
42	176
46	177

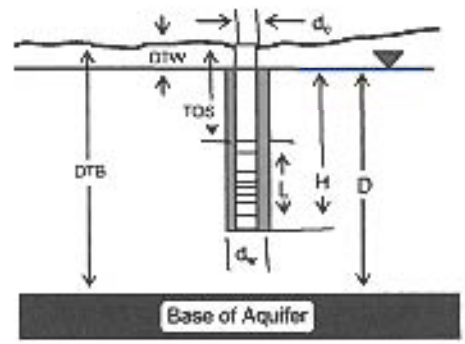
THIS PAGE INTENTIONALLY LEFT BLANK

WELL ID: FBQ-166

Local ID: Slug in
Date: 12/3/2003
Time: 16:54

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)	4.52 Feet
top of screen (TOS)	5.5 Feet
Base of Aquifer (DTB)	25 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Till



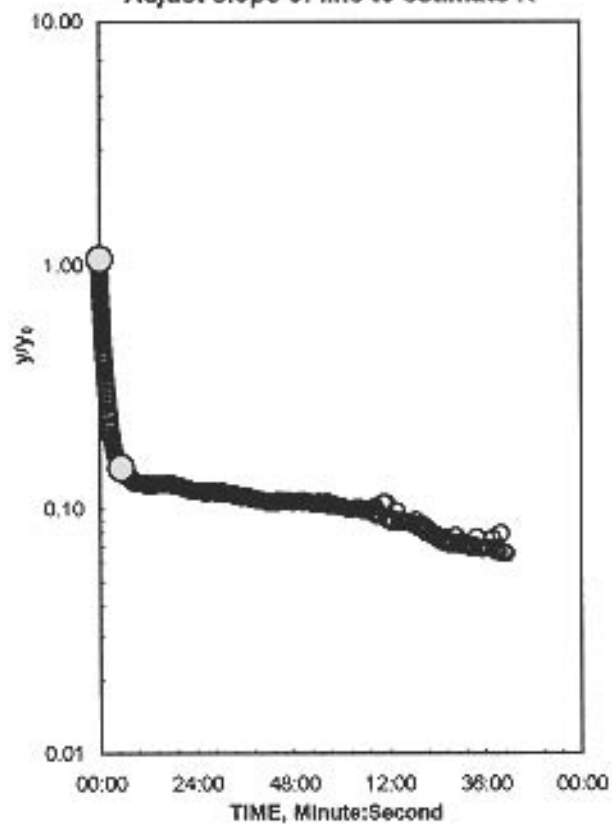
COMPUTED

L_{wetted}	10 Feet
D =	20.48 Feet
H =	10.98 Feet
L/r_w =	29.09
$y_{0\text{-DISPLACEMENT}}$ =	31.55 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.480
B =	0.409
ln(Re/rw) =	2.225
Re =	3.18 cm
Slope =	0.000455 $\log_{10}$/sec
$t_{90\%}$ recovery =	2197 sec

Input is consistent.

K = 0.000025 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, \

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	16:54:13.4	3.56
2	16:54:16.3	3.58
3	16:54:19.8	3.60
4	16:54:24.5	3.62
5	16:54:31.0	3.64
6	16:54:40.0	3.67
7	16:54:51.0	3.70
8	16:55:07.0	3.74
9	16:55:28.0	3.79
10	16:55:56.0	3.85
11	16:56:33.0	3.92
12	16:57:23.0	3.99
13	16:58:30.0	4.07
14	16:59:59.0	4.15
15	17:01:58.0	4.23
16	17:04:37.0	4.30
17	17:08:09.0	4.36
18	17:12:51.0	4.41
19	17:19:08.0	4.43
20	17:27:30.0	4.45
21	17:38:40.0	4.46
22	17:53:34.0	4.47
23	18:12:47.0	4.47
24	18:32:47.0	4.47
25	18:52:47.0	4.47
26	19:12:47.0	4.48
27	19:32:47.0	4.48
28	19:52:47.0	4.48
29	20:12:47.0	4.48
30	20:32:47.0	4.48
31	20:52:47.0	4.49
32	21:12:47.0	4.49
33	21:32:47.0	4.49
34	21:52:47.0	4.49
35	22:12:47.0	4.49
36	22:32:47.0	4.49
37	22:52:47.0	4.49
38	23:12:47.0	4.50
39	23:32:47.0	4.50
40	23:52:47.0	4.50
41	0:12:47.0	4.51
42	0:32:47.0	4.51
43	0:52:47.0	4.51
44	1:12:47.0	4.52
45	1:32:47.0	4.52

WELL ID: FBQ-166

Local ID: Slug out
Date: 12/3/2003
Time: 10:49

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	8.25 Inch
Screen Length (L)	10 Feet

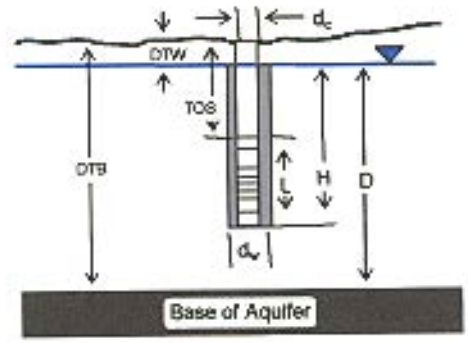
Depths to:

water level (DTW)	4.52 Feet
top of screen (TOS)	5.5 Feet
Base of Aquifer (DTB)	25 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Till



COMPUTED

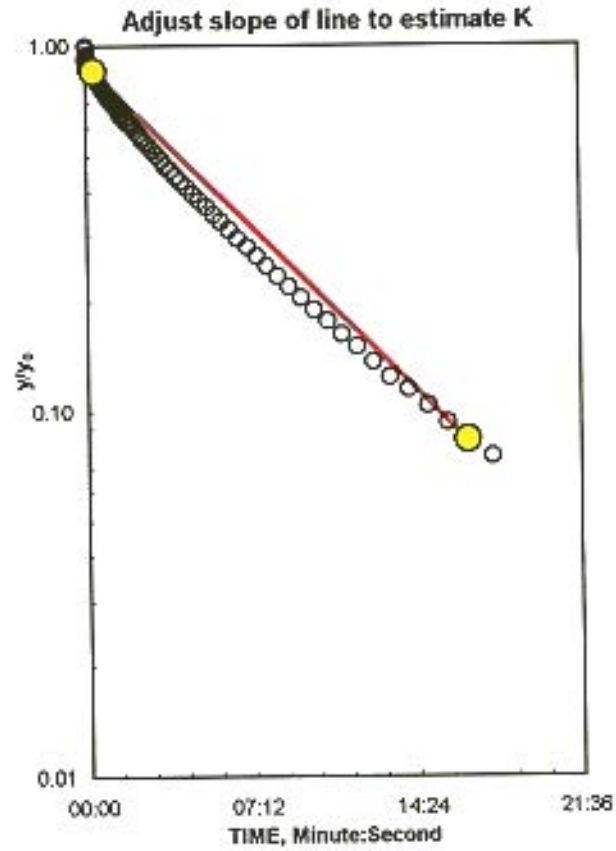
L_{wetted}	10 Feet
D =	20.48 Feet
H =	10.98 Feet
L/r_w =	29.09
$y_{0\text{-DISPLACEMENT}}$ =	30.79 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

From look-up table using L/r_w

Partial penetrate A =	2.480
B =	0.409
ln(Re/rw) =	2.225
Re =	3.18 cm
Slope =	0.001036 $\log_{10}$/sec
$t_{90\%}$ recovery =	965 sec

Input is consistent.

K = 0.000056 cm/Second



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

Reduced Data

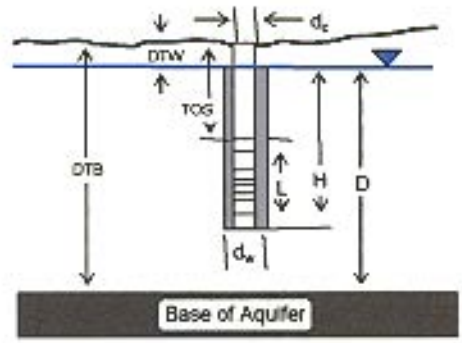
Entry	Time, Hr:Min:Sec	Water Level
1	10:49:31.3	5.21
2	10:49:31.9	5.08
3	10:49:32.5	5.20
4	10:49:33.1	5.08
5	10:49:33.7	5.16
6	10:49:34.4	5.11
7	10:49:35.1	5.12
8	10:49:36.0	5.12
9	10:49:36.9	5.10
10	10:49:38.0	5.10
11	10:49:39.3	5.09
12	10:49:40.6	5.09
13	10:49:42.0	5.08
14	10:49:43.7	5.07
15	10:49:45.0	5.07
16	10:49:48.0	5.06
17	10:49:50.0	5.05
18	10:49:53.0	5.04
19	10:49:56.0	5.03
20	10:49:59.0	5.02
21	10:50:03.0	5.01
22	10:50:07.0	5.00
23	10:50:12.0	4.98
24	10:50:17.0	4.96
25	10:50:23.0	4.95
26	10:50:30.0	4.93
27	10:50:38.0	4.92
28	10:50:46.0	4.90
29	10:50:56.0	4.88
30	10:51:07.0	4.86
31	10:51:19.0	4.83
32	10:51:33.0	4.81
33	10:51:48.0	4.78
34	10:52:05.0	4.75
35	10:52:25.0	4.73
36	10:52:47.0	4.69
37	10:53:11.0	4.66
38	10:53:38.0	4.63
39	10:54:09.0	4.60
40	10:54:44.0	4.57
41	10:55:22.0	4.53
42	10:56:06.0	4.50
43	10:56:55.0	4.47
44	10:57:50.0	4.44
45	10:58:51.0	4.41

WELL ID: FBQ-167

Local ID: Slug in
Date: 12/5/2003
Time: 13:41

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)	15.25 Feet
top of screen (TOS)	8 Feet
Base of Aquifer (DTB)	25 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Till



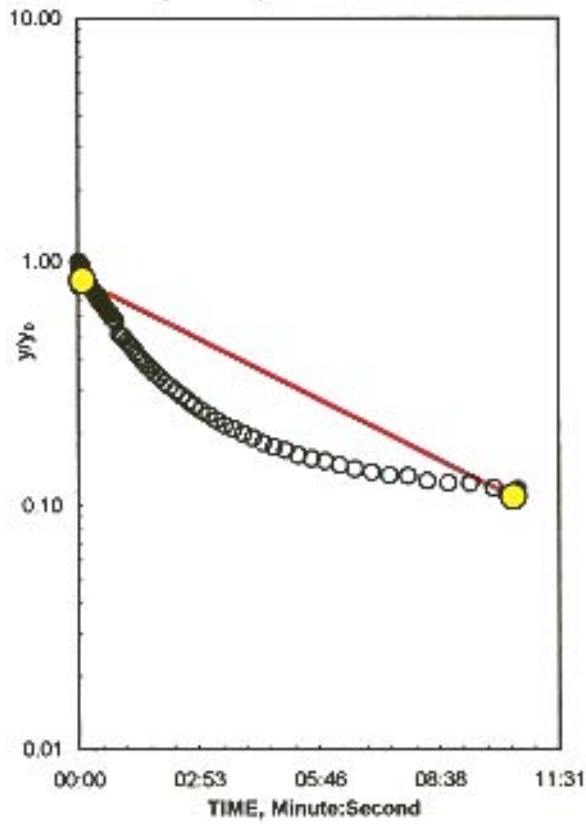
COMPUTED

L_{wetted}	2.75 Feet
D =	9.75 Feet
H =	2.75 Feet
L/r_w =	8.00
$y_{0\text{-DISPLACEMENT}}$ =	32.16 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	1.810
B =	0.269
ln(Re/rw) =	1.168
Re =	1.10 cm
Slope =	0.001432 $\log_{10}$/sec
$t_{00\%}$ recovery =	698 sec

Input is consistent.

K = 0.00015 cm/Second

Adjust slope of line to estimate K



K= 0.00015 is greater than likely maximum of 0.000106 for Till

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

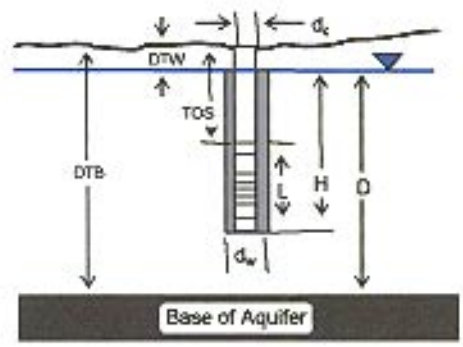
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	13:41:24.9	2.73
2	13:41:25.4	2.87
3	13:41:26.1	2.78
4	13:41:26.6	2.82
5	13:41:27.2	2.82
6	13:41:27.8	2.90
7	13:41:28.6	2.76
8	13:41:29.1	2.80
9	13:41:29.6	2.80
10	13:41:30.3	2.81
11	13:41:30.9	2.82
12	13:41:31.8	2.83
13	13:41:32.8	2.84
14	13:41:33.8	2.86
15	13:41:34.8	2.87
16	13:41:36.3	2.89
17	13:41:37.0	2.90
18	13:41:39.0	2.92
19	13:41:41.0	2.94
20	13:41:43.0	2.96
21	13:41:45.0	2.98
22	13:41:48.0	3.00
23	13:41:50.0	3.02
24	13:41:54.0	3.04
25	13:41:57.0	3.07
26	13:42:01.0	3.09
27	13:42:06.0	3.12
28	13:42:11.0	3.15
29	13:42:16.0	3.18
30	13:42:23.0	3.25
31	13:42:30.0	3.27
32	13:42:38.0	3.31
33	13:42:47.0	3.34
34	13:42:57.0	3.38
35	13:43:09.0	3.41
36	13:43:22.0	3.44
37	13:43:36.0	3.46
38	13:43:53.0	3.49
39	13:44:11.0	3.52
40	13:44:32.0	3.54
41	13:44:55.0	3.56
42	13:45:21.0	3.58
43	13:45:50.0	3.60
44	13:46:22.0	3.61
45	13:46:59.0	3.63

WELL ID: FBQ-167

Local ID: Slug out
Date: 12/3/2003
Time: 16:51

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)	15.25 Feet
top of screen (TOS)	8 Feet
Base of Aquifer (DTB)	25 Feet
Annular Fill:	
across screen – Coarse Sand	
above screen – Bentonite	
Aquifer Material – Till	



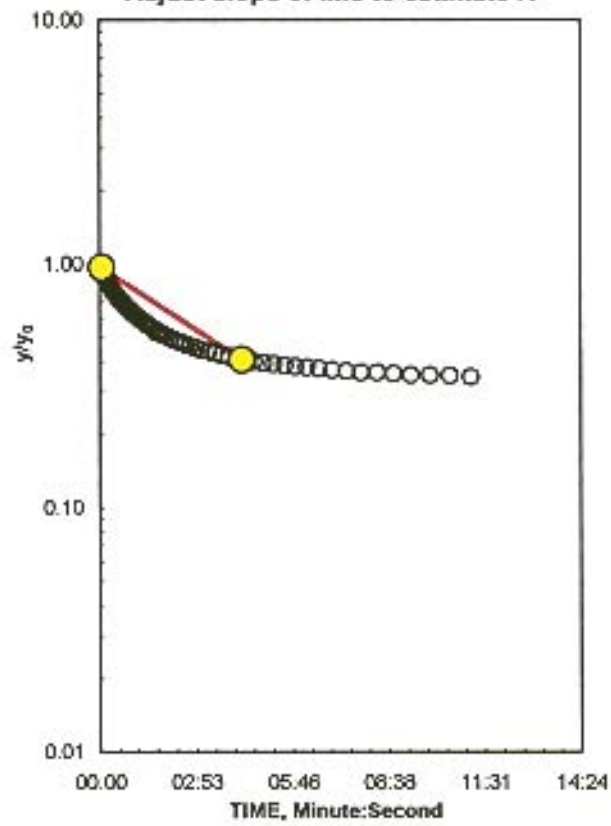
COMPUTED

L_{wetted}	2.75 Feet
D =	9.75 Feet
H =	2.75 Feet
L/r_w =	8.00
$y_{o\text{-}DISPLACEMENT}$ =	43.31 cm
$y_{o\text{-}SLUG}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	1.810
B =	0.269
ln(Re/rw) =	1.168
Re =	1.10 cm
Slope =	0.001505 $\log_{10}$/sec
$t_{90\%}$ recovery =	665 sec

Input is consistent.

K = 0.00016 cm/Second

Adjust slope of line to estimate K



K= 0.00016 is greater than likely maximum of 0.000106 for Till

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

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	16:51:53.9	4.72
2	16:51:54.2	4.70
3	16:51:54.6	4.69
4	16:51:54.9	4.68
5	16:51:55.2	4.67
6	16:51:55.6	4.67
7	16:51:55.9	4.66
8	16:51:56.3	4.65
9	16:51:56.8	4.64
10	16:51:57.3	4.64
11	16:51:57.8	4.64
12	16:51:58.3	4.63
13	16:51:58.8	4.62
14	16:51:59.3	4.61
15	16:51:59.8	4.60
16	16:52:00.0	4.59
17	16:52:01.3	4.58
18	16:52:01.8	4.57
19	16:52:02.0	4.56
20	16:52:03.0	4.55
21	16:52:04.0	4.54
22	16:52:05.0	4.53
23	16:52:06.0	4.52
24	16:52:07.0	4.51
25	16:52:08.0	4.49
26	16:52:09.0	4.49
27	16:52:10.0	4.47
28	16:52:11.0	4.46
29	16:52:12.0	4.45
30	16:52:14.0	4.43
31	16:52:15.0	4.42
32	16:52:17.0	4.41
33	16:52:18.0	4.40
34	16:52:20.0	4.38
35	16:52:22.0	4.37
36	16:52:24.0	4.36
37	16:52:26.0	4.34
38	16:52:28.0	4.33
39	16:52:30.0	4.31
40	16:52:33.0	4.30
41	16:52:36.0	4.28
42	16:52:38.0	4.27
43	16:52:41.0	4.25
44	16:52:44.0	4.23
45	16:52:48.0	4.22

WELL ID: FBQ-168

Local ID: Slug in
Date: 12/2/2003
Time: 18:53

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	8.25 Inch
Screen Length (L)	10 Feet

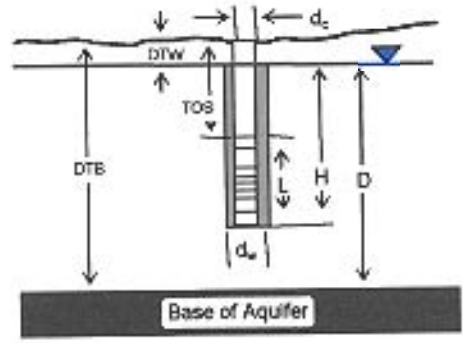
Depths to:

water level (DTW)	10.23 Feet
top of screen (TOS)	9 Feet
Base of Aquifer (DTB)	25 Feet

Annular Fill:

across screen – Coarse Sand
above screen – Bentonite

Aquifer Material – Fine Sand



COMPUTED

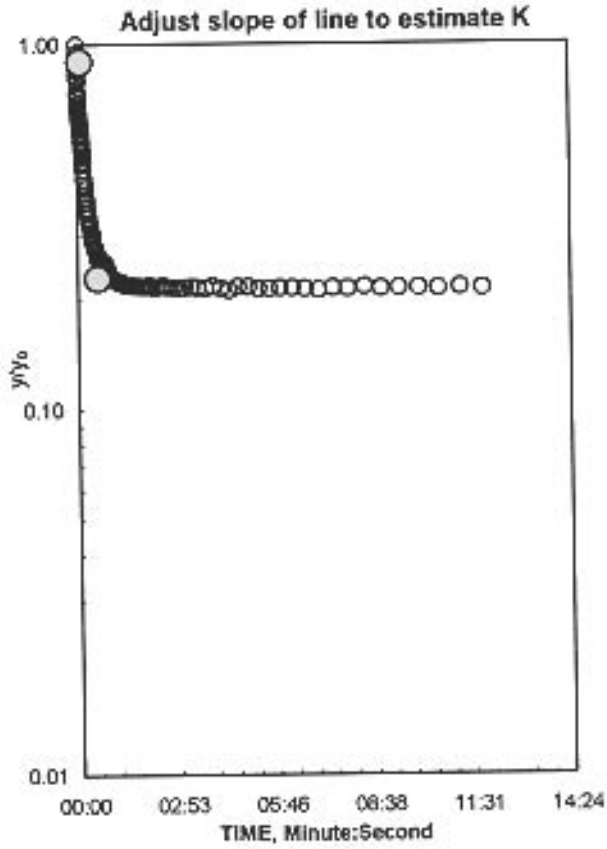
L_{wetted}	8.77 Feet
D =	14.77 Feet
H =	8.77 Feet
L/r_w =	25.51
$y_{0\text{-DISPLACEMENT}}$ =	30.94 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

From look-up table using L/r_w

Partial penetrate A =	2.379
B =	0.387
ln(Re/rw) =	2.100
Re =	2.81 cm
Slope =	0.021412 log_{10}/sec
$t_{90\%}$ recovery =	47 sec

Input is consistent.

K = 0.0012 cm/Second



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

Reduced Data

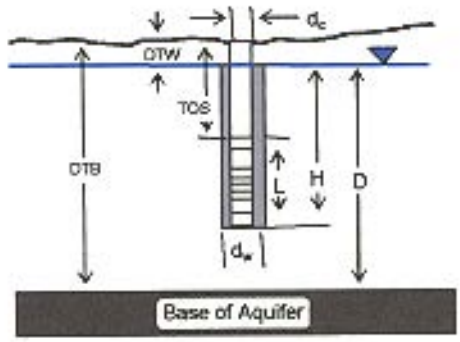
Entry	Time, Hr:Min:Sec	Water Level
1	18:53:28.2	9.28
2	18:53:28.9	9.44
3	18:53:29.6	9.49
4	18:53:30.2	9.55
5	18:53:30.7	9.60
6	18:53:31.2	9.63
7	18:53:31.9	9.65
8	18:53:32.6	9.66
9	18:53:33.2	9.68
10	18:53:33.9	9.70
11	18:53:34.8	9.72
12	18:53:35.8	9.75
13	18:53:36.8	9.77
14	18:53:37.8	9.80
15	18:53:38.8	9.82
16	18:53:40.0	9.86
17	18:53:42.4	9.89
18	18:53:43.0	9.91
19	18:53:45.0	9.94
20	18:53:48.0	9.96
21	18:53:50.0	9.98
22	18:53:53.0	9.99
23	18:53:56.0	10.01
24	18:54:00.0	10.02
25	18:54:04.0	10.04
26	18:54:08.0	10.05
27	18:54:13.0	10.04
28	18:54:19.0	10.05
29	18:54:26.0	10.07
30	18:54:33.0	10.07
31	18:54:41.0	10.07
32	18:54:50.0	10.08
33	18:55:00.0	10.08
34	18:55:12.0	10.08
35	18:55:25.0	10.08
36	18:55:39.0	10.08
37	18:55:55.0	10.08
38	18:56:14.0	10.08
39	18:56:34.0	10.08
40	18:56:57.0	10.08
41	18:57:23.0	10.08
42	18:57:52.0	10.08
43	18:58:25.0	10.08
44	18:59:02.0	10.08
45	18:59:43.0	10.08

WELL ID: FBQ-168

Local ID: Slug out
Date: 12/2/2003
Time: 0:00

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)	10.23 Feet
top of screen (TOS)	9 Feet
Base of Aquifer (DTB)	25 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine Sand



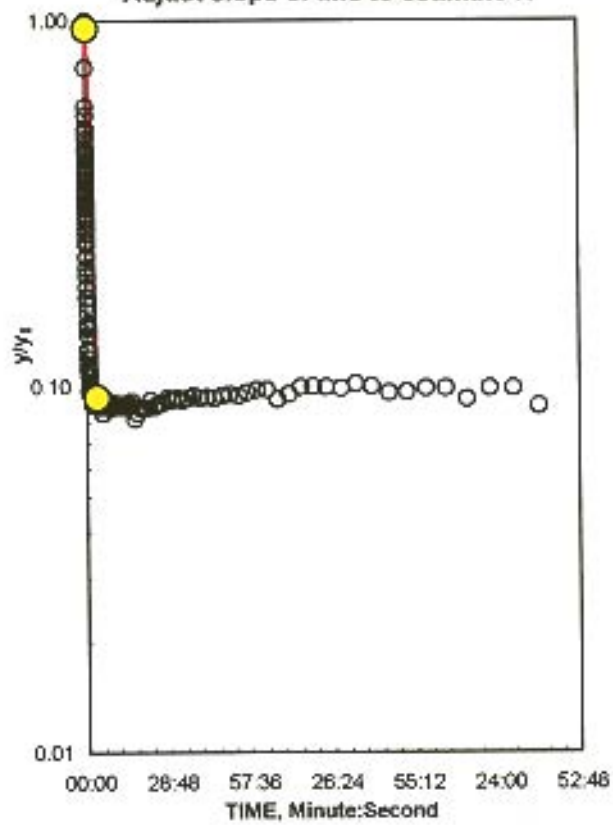
COMPUTED

L_{wetted}	8.77 Feet
D =	14.77 Feet
H =	8.77 Feet
L/r_w =	25.51
$y_{o\text{-}DISPLACEMENT}$ =	43.58 cm
$y_{o\text{-}SLUG}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.379
B =	0.387
ln(Re/rw) =	2.100
Re =	2.81 cm
Slope =	0.00515 log_{10}/sec
$t_{90\%}$ recovery =	194 sec

Input is consistent.

K = 0.0003 cm/Second

Adjust slope of line to estimate K



K= 0.0003 is less than likely minimum of 0.00106 for Fine Sand

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

WELL ID: FBQ-169

Local ID: Slug in
Date: 12/5/2003
Time: 10:46

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	10.25 Inch
Screen Length (L)	10 Feet

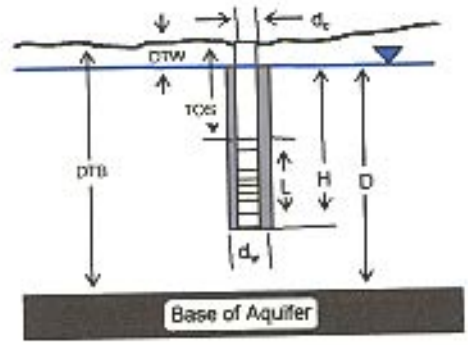
Depths to:

water level (DTW)	4.74 Feet
top of screen (TOS)	5 Feet
Base of Aquifer (DTB)	25 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Till



COMPUTED

L_{wetted}	10 Feet
D =	20.26 Feet
H =	10.26 Feet
L/r_w =	23.41
$y_{0\text{-DISPLACEMENT}}$ =	31.19 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

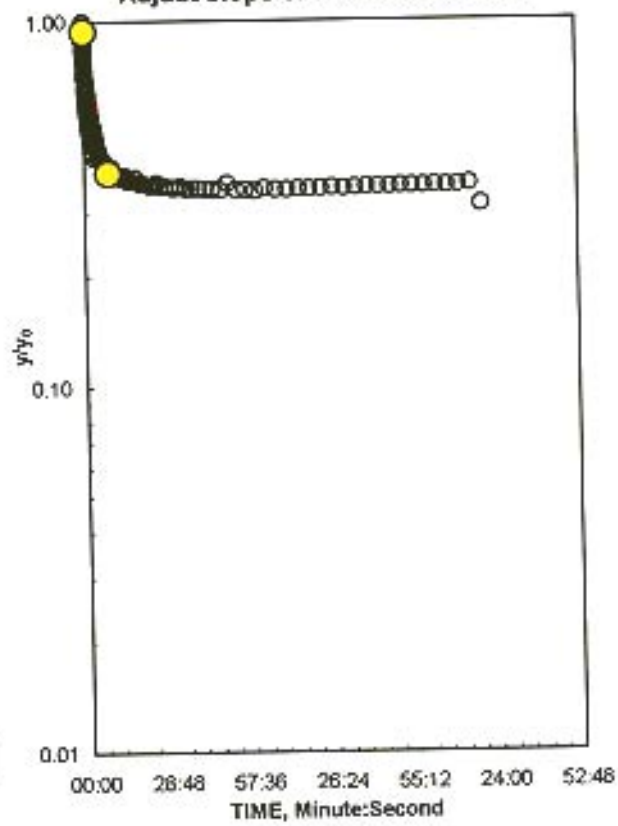
From look-up table using L/r_w

Partial penetrate A =	2.316
B =	0.372
ln(Re/rw) =	2.020
Re =	3.22 cm
Slope =	0.000821 $\log_{10}$/sec
$t_{90\%}$ recovery =	1218 sec

Input is consistent.

K = 0.00004 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Reduced Data

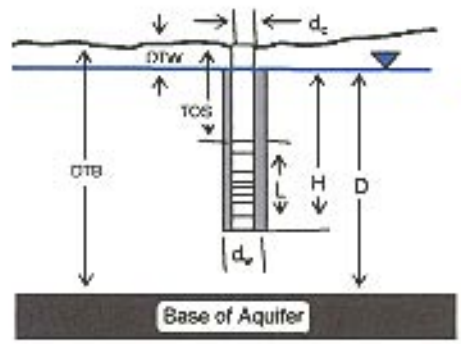
Entry	Time, Hr:Min:Sec	Water Level
1	10:46:43.9	4.58
2	10:46:44.8	4.68
3	10:46:45.6	4.66
4	10:46:46.5	4.66
5	10:46:47.5	4.68
6	10:46:48.8	4.71
7	10:46:45.4	4.71
8	10:46:51.8	4.71
9	10:46:53.8	4.73
10	10:46:56.5	4.75
11	10:46:58.5	4.77
12	10:47:02.0	4.80
13	10:47:06.0	4.82
14	10:47:10.0	4.85
15	10:47:16.0	4.88
16	10:47:22.0	4.91
17	10:47:30.0	4.94
18	10:47:40.0	4.97
19	10:47:51.0	5.00
20	10:48:04.0	5.03
21	10:48:20.0	5.06
22	10:48:39.0	5.09
23	10:49:01.0	5.12
24	10:49:28.0	5.15
25	10:50:00.0	5.09
26	10:50:37.0	5.12
27	10:51:22.0	5.14
28	10:52:16.0	5.16
29	10:53:19.0	5.18
30	10:54:34.0	5.19
31	10:56:04.0	5.19
32	10:57:51.0	5.21
33	10:59:57.0	5.22
34	11:02:28.0	5.23
35	11:05:27.0	5.23
36	11:09:00.0	5.23
37	11:13:13.0	5.24
38	11:18:14.0	5.24
39	11:24:11.0	5.24
40	11:31:16.0	5.24
41	11:39:42.0	5.25
42	11:49:42.0	5.24
43	12:01:24.0	5.25
44	12:13:24.0	5.24
45	12:25:24.0	5.24

WELL ID: FBQ-169

Local ID: Slug out
Date: 12/5/2003
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	10.25	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	4.74	Feet
top of screen (TOS)	5	Feet
Base of Aquifer (DTB)	25	Feet
Annular Fill:		
across screen	Coarse Sand	
above screen	Bentonite	
Aquifer Material	Till	

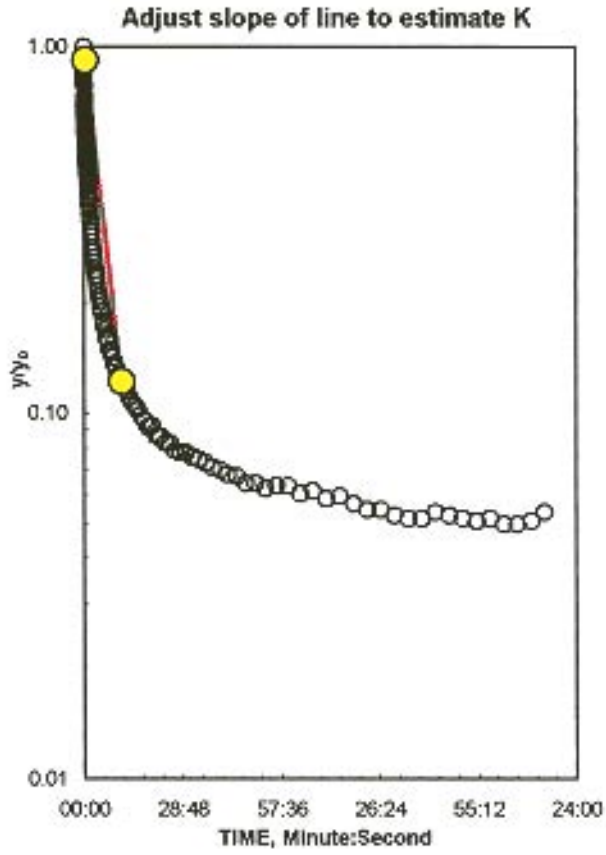


COMPUTED

L_{wetted}	10	Feet
D =	20.26	Feet
H =	10.26	Feet
L/r_w =	23.41	
$y_{0\text{-DISPLACEMENT}}$ =	31.37	cm
$y_{0\text{-SLUG}}$ =	37.48	cm
From look-up table using L/r_w		
Partial penetrate A =	2.316	
B =	0.372	
ln(Re/rw) =	2.020	
Re =	3.22	cm
Slope =	0.00138	$\log_{10}$/sec
$t_{90\%}$ recovery =	724	sec

Input is consistent.

K = 0.000068 cm/Second



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

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:03.0	5.53
2	0:00:03.9	5.41
3	0:00:04.8	5.37
4	0:00:05.7	5.36
5	0:00:06.7	5.33
6	0:00:08.0	5.32
7	0:00:09.5	5.26
8	0:00:11.3	5.23
9	0:00:13.4	5.21
10	0:00:15.9	5.19
11	0:00:18.9	5.17
12	0:00:22.4	5.14
13	0:00:26.7	5.11
14	0:00:31.5	5.09
15	0:00:37.3	5.06
16	0:00:44.3	5.03
17	0:00:52.6	4.99
18	0:01:02.5	4.96
19	0:01:14.3	4.93
20	0:01:28.4	4.90
21	0:01:45.2	4.86
22	0:02:05.1	4.83
23	0:02:28.9	4.80
24	0:02:57.2	4.77
25	0:03:30.9	4.75
26	0:04:10.9	4.72
27	0:04:58.4	4.70
28	0:05:54.9	4.68
29	0:07:02.1	4.66
30	0:08:22.0	4.65
31	0:09:57.0	4.63
32	0:11:49.9	4.62
33	0:14:04.2	4.61
34	0:16:43.8	4.60
35	0:19:53.5	4.60
36	0:23:39.0	4.59
37	0:28:07.1	4.58
38	0:33:25.7	4.58
39	0:39:44.4	4.57
40	0:47:14.6	4.57
41	0:56:09.6	4.57
42	1:06:45.5	4.56
43	1:18:43.1	4.56
44	1:30:43.1	4.55
45	1:42:43.1	4.56

WELL ID: FBQ-170

Local ID: Slug in
Date: 12/3/2003
Time: 0:00

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet

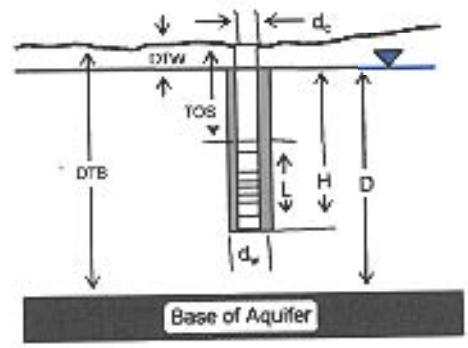
Depths to:

water level (DTW)	17.3 Feet
top of screen (TOS)	20 Feet
Base of Aquifer (DTB)	35 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine-Grained Sandstone



COMPUTED

L_{wetted}	10 Feet
D =	17.7 Feet
H =	12.7 Feet
L/r_w =	40.00
$y_{0\text{-DISPLACEMENT}}$ =	33.65 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

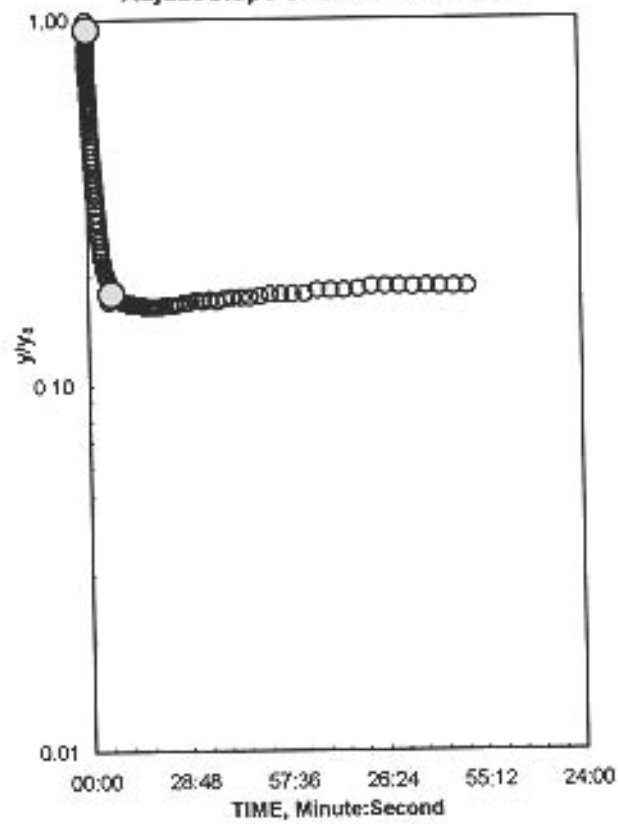
From look-up table using L/r_w

Partial penetrate A =	2.640
B =	0.460
ln(Re/rw) =	2.594
Re =	3.35 cm
Slope =	0.001915 $\log_{10}$/sec
$t_{90\%}$ recovery =	522 sec

Input is consistent.

K = 0.00012 cm/Second

Adjust slope of line to estimate K



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

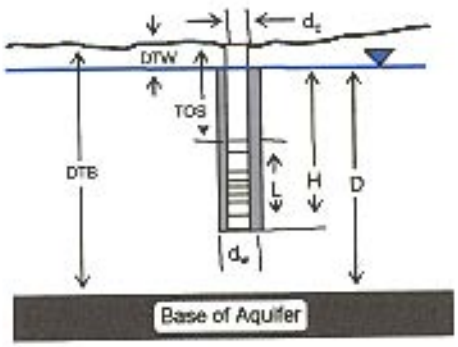
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:02.7	16.20
2	0:00:03.6	16.40
3	0:00:04.5	16.23
4	0:00:05.4	16.47
5	0:00:06.4	16.46
6	0:00:07.5	16.49
7	0:00:08.9	16.51
8	0:00:10.6	16.34
9	0:00:12.6	16.37
10	0:00:15.0	16.40
11	0:00:17.8	16.44
12	0:00:21.2	16.50
13	0:00:25.2	16.51
14	0:00:29.8	16.55
15	0:00:35.2	16.60
16	0:00:41.8	16.64
17	0:00:49.7	16.69
18	0:00:59.0	16.74
19	0:01:10.1	16.78
20	0:01:23.4	16.83
21	0:01:39.3	16.88
22	0:01:58.1	16.92
23	0:02:20.5	16.96
24	0:02:47.2	16.99
25	0:03:19.0	17.03
26	0:03:56.8	17.05
27	0:04:41.6	17.07
28	0:05:35.0	17.08
29	0:06:38.4	17.10
30	0:07:53.8	17.11
31	0:09:23.5	17.11
32	0:11:10.1	17.11
33	0:13:16.8	17.12
34	0:15:47.5	17.12
35	0:18:46.6	17.12
36	0:22:19.5	17.12
37	0:26:32.6	17.12
38	0:31:33.3	17.11
39	0:37:30.8	17.11
40	0:44:35.8	17.11
41	0:53:00.9	17.11
42	1:03:01.2	17.10
43	1:14:43.1	17.10
44	1:26:43.1	17.10
45	1:38:43.1	17.10

WELL ID: FBQ-170

Local ID: Slug out
Date: 12/3/2003
Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	17.3 Feet
top of screen (TOS)	20 Feet
Base of Aquifer (DTB)	35 Feet
Annular Fill:	
across screen -- Coarse Sand	
above screen -- Bentonite	
Aquifer Material -- Fine-Grained Sandstone	

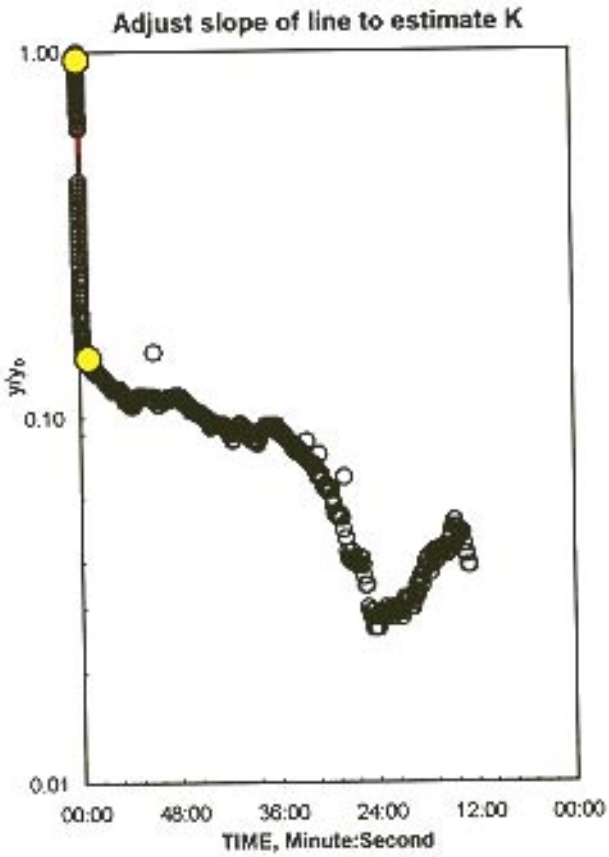


COMPUTED

L_{wetted}	10 Feet
D =	17.7 Feet
H =	12.7 Feet
L/r_w =	40.00
$y_{0\text{-DISPLACEMENT}}$ =	33.47 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.840
B =	0.460
ln(Re/rw) =	2.594
Re =	3.35 cm
Slope =	0.000564 $\log_{10}$/sec
$t_{90\%}$ recovery =	1773 sec

Input is consistent.

K = 0.000036 cm/Second



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:03.0	18.30
2	0:00:05.4	18.28
3	0:00:08.4	18.28
4	0:00:13.4	18.27
5	0:00:21.2	18.23
6	0:00:33.3	18.10
7	0:00:52.6	17.97
8	0:01:23.4	17.66
9	0:02:12.6	17.54
10	0:03:30.9	17.45
11	0:05:35.0	17.40
12	0:08:51.9	17.38
13	0:14:04.2	17.36
14	0:22:19.5	17.36
15	0:35:24.7	17.35
16	0:56:09.6	17.34
17	1:26:43.1	17.33
18	1:58:43.1	17.33
19	2:30:43.1	17.32
20	3:02:43.1	17.33
21	3:34:43.1	17.37
22	4:06:43.1	17.32
23	4:38:43.1	17.33
24	5:10:43.1	17.32
25	5:42:43.1	17.31
26	6:14:43.1	17.31
27	6:46:43.1	17.30
28	7:18:43.1	17.30
29	7:50:43.1	17.30
30	8:22:43.1	17.30
31	8:54:43.1	17.30
32	9:26:43.1	17.30
33	9:58:43.1	17.30
34	10:30:43.1	17.29
35	11:02:43.1	17.28
36	11:34:43.1	17.29
37	12:06:43.1	17.27
38	12:38:43.1	17.26
39	13:10:43.1	17.25
40	13:42:43.1	17.24
41	14:14:43.1	17.23
42	14:46:43.1	17.23
43	15:18:43.1	17.23
44	15:50:43.1	17.24
45	16:22:43.1	17.24

WELL ID: FBQ-171

Local ID: Slug in
Date: 12/1/2003
Time: 15:35

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet

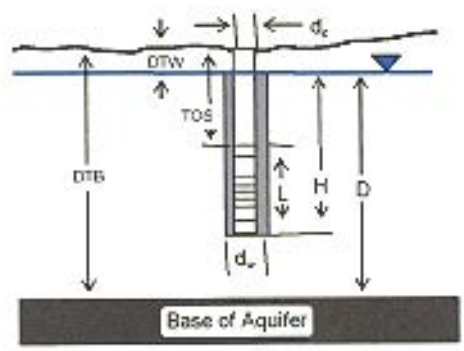
Depths to:

water level (DTW)	17.45 Feet
top of screen (TOS)	18 Feet
Base of Aquifer (DTB)	35 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine-Grained Sandstone



COMPUTED

L_{wetted}	10 Feet
D =	17.55 Feet
H =	10.55 Feet
L/r_w =	40.00
$y_{0\text{-DISPLACEMENT}}$ =	40.90 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

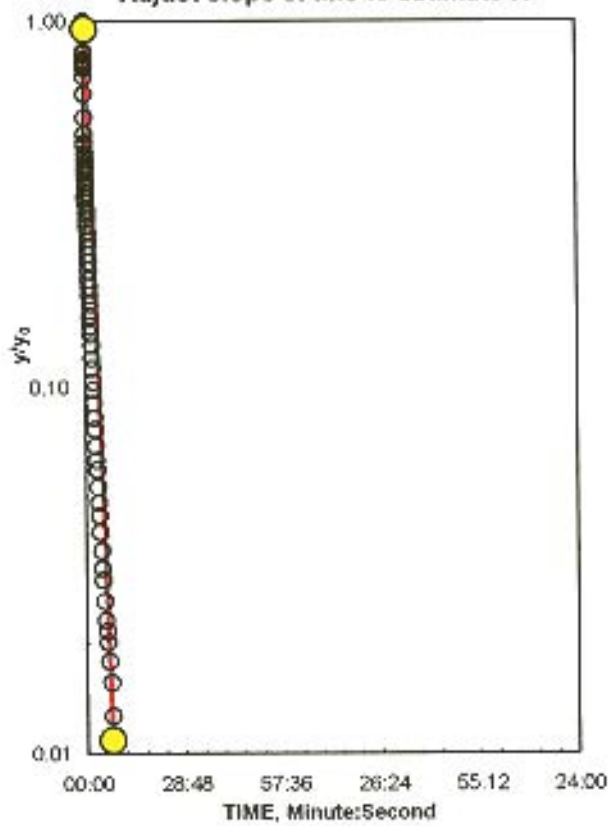
From look-up table using L/r_w

Partial penetrate A =	2.840
B =	0.460
ln(Re/rw) =	2.480
Re =	2.99 cm
Slope =	0.004615 $\log_{10}$/sec
$t_{90\%}$ recovery =	217 sec

Input is consistent.

K = 0.00028 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

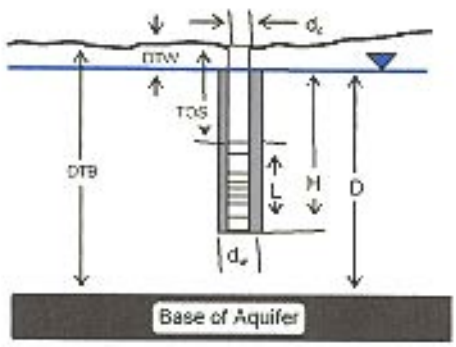
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:02.7	16.11
2	0:00:03.6	16.14
3	0:00:04.5	16.16
4	0:00:05.4	16.17
5	0:00:06.4	16.19
6	0:00:07.5	16.21
7	0:00:08.9	16.36
8	0:00:10.6	16.40
9	0:00:12.6	16.43
10	0:00:15.0	16.60
11	0:00:17.8	16.82
12	0:00:21.2	16.87
13	0:00:25.2	16.91
14	0:00:29.8	16.95
15	0:00:35.2	16.99
16	0:00:41.8	17.04
17	0:00:49.7	17.08
18	0:00:59.0	17.13
19	0:01:10.1	17.17
20	0:01:23.4	17.21
21	0:01:39.3	17.25
22	0:01:58.1	17.29
23	0:02:20.5	17.32
24	0:02:47.2	17.35
25	0:03:19.0	17.37
26	0:03:56.8	17.39
27	0:04:41.6	17.41
28	0:05:35.0	17.42
29	0:06:38.4	17.43
30	0:07:53.8	17.44
31	0:09:23.5	17.44
32	0:11:10.1	17.44
33	0:13:16.8	17.45
34	0:15:47.5	17.45
35	0:18:46.6	17.45
36	0:22:19.5	17.45
37	0:26:32.6	17.46
38	0:31:33.3	17.46
39	0:37:30.8	17.46
40	0:44:35.8	17.46
41	0:53:00.9	17.46
42	1:03:01.2	17.45
43	1:14.43.1	17.45
44	1:26:43.1	17.45
45	1:38:43.1	17.45

WELL ID: FBQ-171

Local ID: Slug out
Date: 12/1/2003
Time: 17:25

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	17.45 Feet
top of screen (TOS)	18 Feet
Base of Aquifer (DTB)	35 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone



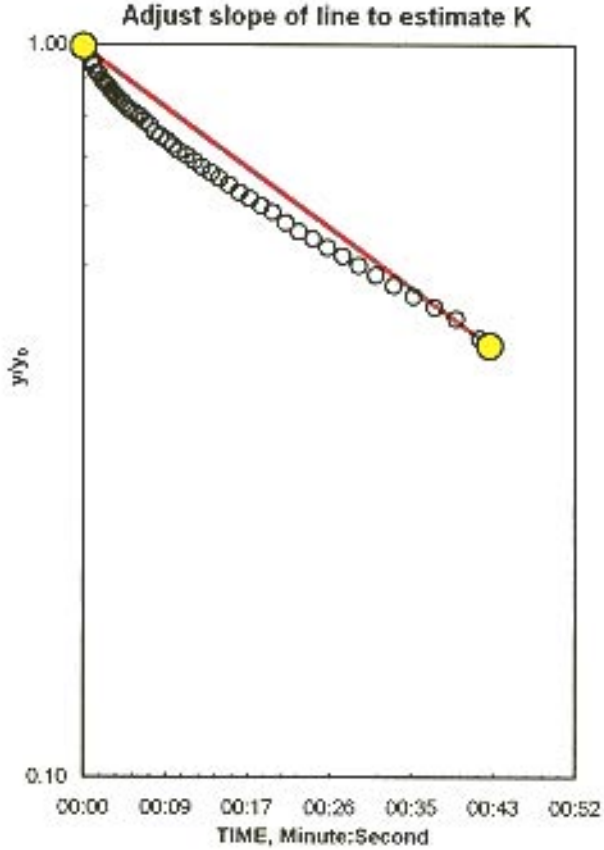
COMPUTED

L_{wetted}	10 Feet
D =	17.55 Feet
H =	10.55 Feet
L/r_w =	40.00
$y_{o\text{-}DISPLACEMENT}$ =	31.46 cm
$y_{o\text{-}SLUG}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.840
B =	0.460
ln(Re/rw) =	2.480
Re =	2.99 cm
Slope =	0.009521 $\log_{10}$/sec
$t_{50\%}$ recovery =	105 sec

Input is consistent.

K = 0.00057 cm/Second

Adjust slope of line to estimate K



K= 0.00057 is greater than likely maximum of 0.000353 for Fine-Grained Sandstone

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

Reduced Data

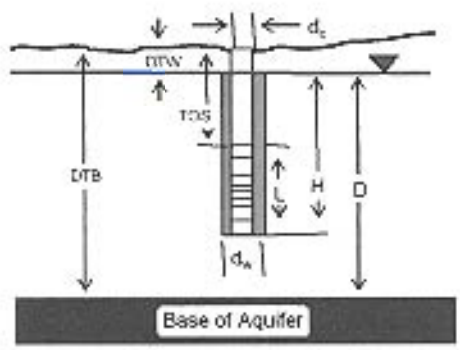
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:03.0	18.43
2	0:00:03.3	18.38
3	0:00:03.6	18.36
4	0:00:03.9	18.35
5	0:00:04.2	18.34
6	0:00:04.5	18.32
7	0:00:04.8	18.31
8	0:00:05.1	18.31
9	0:00:05.4	18.29
10	0:00:05.7	18.29
11	0:00:06.0	18.28
12	0:00:06.4	18.27
13	0:00:06.7	18.26
14	0:00:07.1	18.25
15	0:00:07.5	18.24
16	0:00:08.0	18.23
17	0:00:08.4	18.22
18	0:00:08.9	18.21
19	0:00:09.5	18.20
20	0:00:10.0	18.19
21	0:00:10.6	18.18
22	0:00:11.3	18.16
23	0:00:11.9	18.15
24	0:00:12.6	18.14
25	0:00:13.4	18.13
26	0:00:14.2	18.12
27	0:00:15.0	18.10
28	0:00:15.9	18.09
29	0:00:16.8	18.08
30	0:00:17.8	18.07
31	0:00:18.9	18.05
32	0:00:20.0	18.04
33	0:00:21.2	18.02
34	0:00:22.4	18.01
35	0:00:23.8	17.99
36	0:00:25.2	17.97
37	0:00:26.7	17.96
38	0:00:28.2	17.95
39	0:00:29.8	17.93
40	0:00:31.5	17.92
41	0:00:33.3	17.90
42	0:00:35.2	17.88
43	0:00:37.3	17.87
44	0:00:39.5	17.85
45	0:00:41.8	17.84

WELL ID: FBQ-172

Local ID: Slug in
Date: 12/1/2003
Time: 13:15

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	23.95 Feet
top of screen (TOS)	20 Feet
Base of Aquifer (DTB)	35 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone



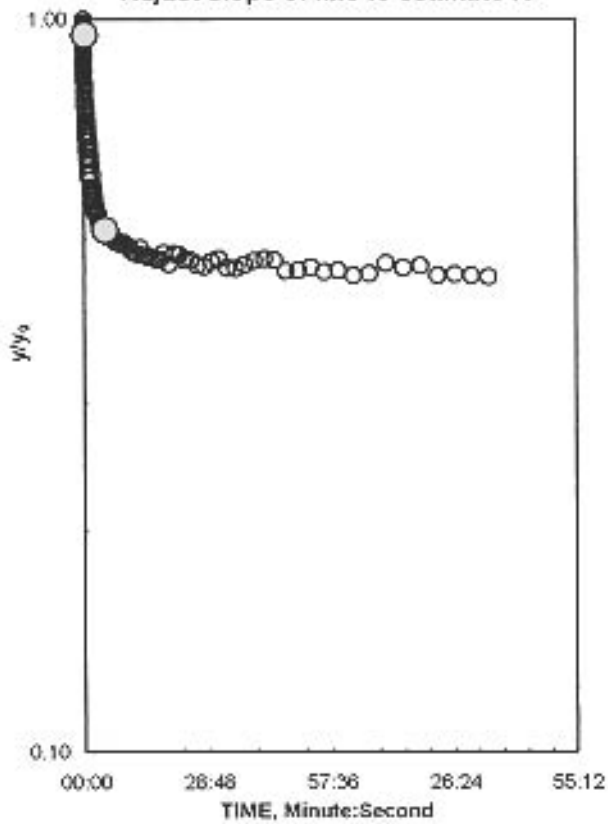
COMPUTED

L_{wetted}	6.05 Feet
D =	11.05 Feet
H =	6.05 Feet
L/r_w =	24.20
$y_{0\text{-DISPLACEMENT}}$ =	31.52 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.340
B =	0.378
ln(Re/rw) =	2.046
Re =	1.93 cm
Slope =	0.000975 $\log_{10}$/sec
$t_{60\%}$ recovery =	1026 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

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:05.1	23.32
2	0:00:05.7	23.33
3	0:00:06.4	23.34
4	0:00:07.1	23.36
5	0:00:08.0	23.37
6	0:00:08.9	23.39
7	0:00:10.0	23.40
8	0:00:11.3	23.42
9	0:00:12.6	23.44
10	0:00:14.2	23.46
11	0:00:15.9	23.48
12	0:00:17.8	23.49
13	0:00:20.0	23.51
14	0:00:22.4	23.53
15	0:00:25.2	23.55
16	0:00:28.2	23.57
17	0:00:31.5	23.59
18	0:00:35.2	23.60
19	0:00:39.5	23.62
20	0:00:44.3	23.64
21	0:00:49.7	23.66
22	0:00:55.7	23.68
23	0:01:02.5	23.68
24	0:01:10.1	23.70
25	0:01:18.7	23.72
26	0:01:28.4	23.73
27	0:01:39.3	23.75
28	0:01:51.5	23.76
29	0:02:05.1	23.77
30	0:02:20.5	23.78
31	0:02:37.8	23.78
32	0:02:57.2	23.78
33	0:03:19.0	23.79
34	0:03:43.5	23.81
35	0:04:10.9	23.81
36	0:04:41.6	23.82
37	0:05:16.2	23.83
38	0:05:54.9	23.83
39	0:06:38.4	23.83
40	0:07:27.2	23.84
41	0:08:22.0	23.84
42	0:09:23.5	23.84
43	0:10:32.5	23.84
44	0:11:49.9	23.85
45	0:13:16.8	23.85

WELL ID: FBQ-172

Local ID: Slug out
Date: 12/1/2003
Time: 15:45

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet

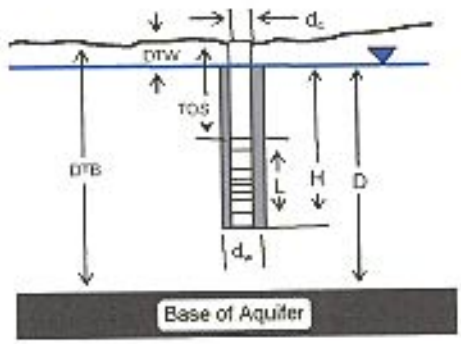
Depths to:

water level (DTW)	23.95 Feet
top of screen (TOS)	20 Feet
Base of Aquifer (DTB)	35 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine-Grained Sandstone



COMPUTED

L_{wetted}	6.05 Feet
D =	11.05 Feet
H =	6.05 Feet
L/r_w =	24.20
$y_{0\text{-DISPLACEMENT}}$ =	31.68 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

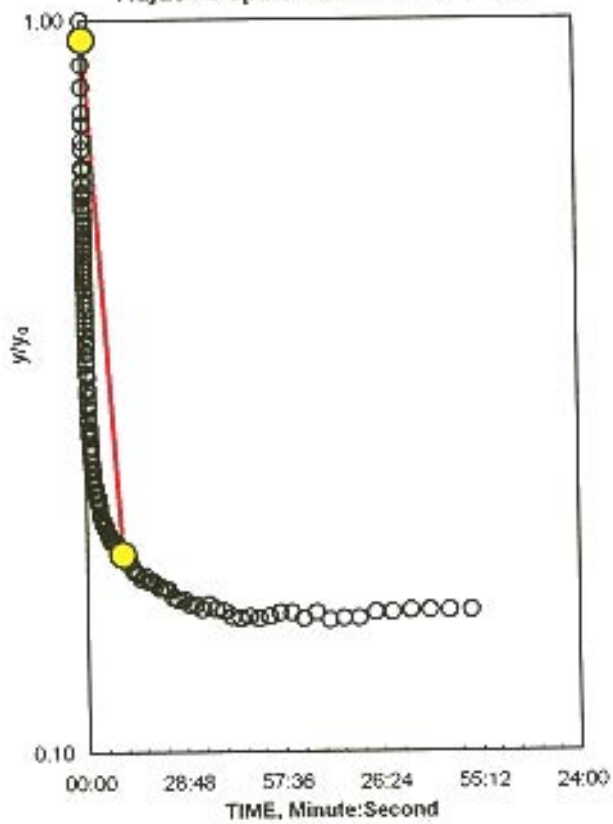
From look-up table using L/r_w

Partial penetrate A =	2.340
B =	0.378
ln(Re/rw) =	2.046
Re =	1.93 cm
Slope =	0.001169 $\log_{10}$/sec
$t_{90\%}$ recovery =	855 sec

Input is consistent.

K = 0.000096 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

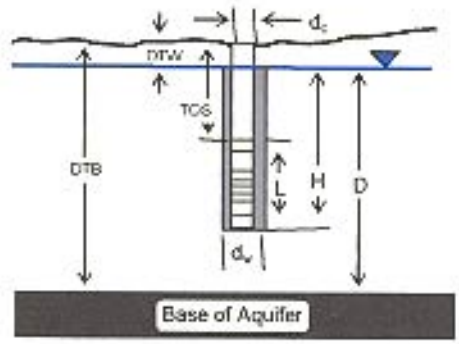
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:01.8	24.79
2	0:00:02.7	24.59
3	0:00:03.6	24.46
4	0:00:04.5	24.40
5	0:00:05.4	24.36
6	0:00:06.4	24.33
7	0:00:07.5	24.31
8	0:00:08.9	24.29
9	0:00:10.6	24.27
10	0:00:12.6	24.25
11	0:00:15.0	24.22
12	0:00:17.8	24.20
13	0:00:21.2	24.18
14	0:00:25.2	24.15
15	0:00:29.8	24.13
16	0:00:35.2	24.11
17	0:00:41.8	24.09
18	0:00:49.7	24.07
19	0:00:59.0	24.05
20	0:01:10.1	24.03
21	0:01:23.4	24.03
22	0:01:39.3	24.02
23	0:01:58.1	24.00
24	0:02:20.5	24.00
25	0:02:47.2	23.99
26	0:03:19.0	23.98
27	0:03:56.8	23.97
28	0:04:41.6	23.97
29	0:05:35.0	23.96
30	0:06:38.4	23.96
31	0:07:53.8	23.95
32	0:09:23.5	23.95
33	0:11:10.1	23.94
34	0:13:16.8	23.94
35	0:15:47.5	23.93
36	0:18:46.6	23.93
37	0:22:19.5	23.92
38	0:26:32.6	23.92
39	0:31:33.3	23.92
40	0:37:30.8	23.91
41	0:44:35.8	23.91
42	0:53:00.9	23.91
43	1:03:01.2	23.91
44	1:14:54.7	23.91
45	1:29:02.8	23.91

WELL ID: FBQ-173

Local ID: Slug out
Date: 12/2/2003
Time: 12:40

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	20 Feet
Depths to:	
water level (DTW)	41.5 Feet
top of screen (TOS)	29.5 Feet
Base of Aquifer (DTB)	60 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone

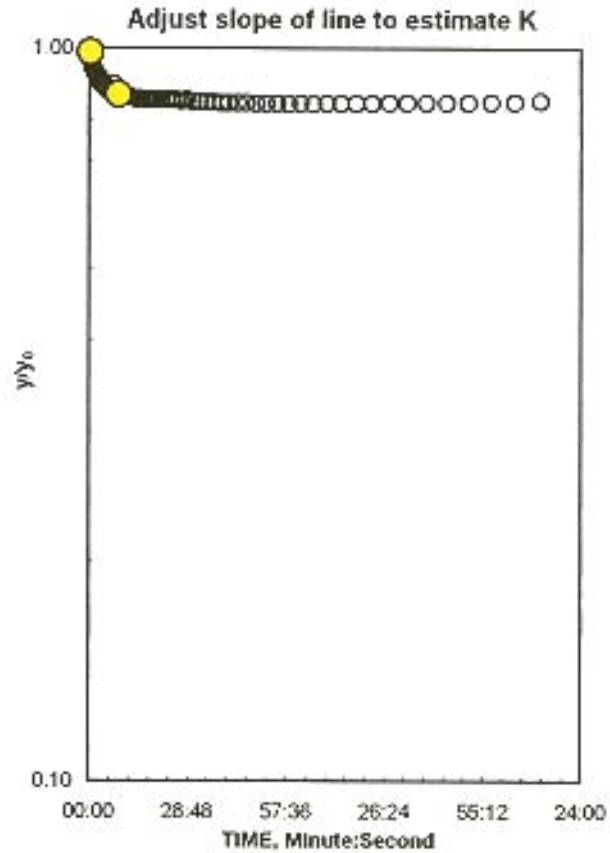


COMPUTED

L_{wetted} =	8 Feet
D =	18.5 Feet
H =	8 Feet
L/r_w =	32.00
$y_{0\text{-DISPLACEMENT}}$ =	34.99 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.587
B =	0.424
ln(Re/rw) =	2.233
Re =	2.33 cm
Slope =	0.000118 $\log_{10}$/sec
$t_{90\%}$ recovery =	8446 sec

Input is consistent.

K = 0.000008 cm/Second



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

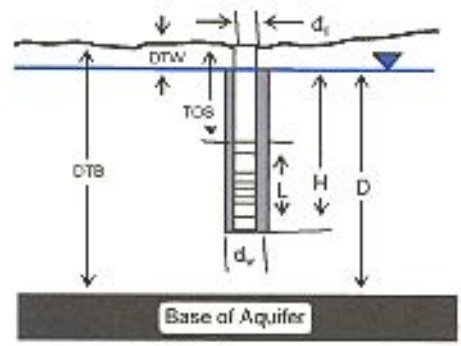
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:01:10.1	41.65
2	0:01:14.3	41.63
3	0:01:18.7	41.63
4	0:01:23.4	41.62
5	0:01:28.4	41.62
6	0:01:33.7	41.61
7	0:01:39.3	41.61
8	0:01:45.2	41.60
9	0:01:51.5	41.60
10	0:01:58.1	41.59
11	0:02:05.1	41.59
12	0:02:12.6	41.58
13	0:02:20.5	41.58
14	0:02:28.9	41.57
15	0:02:37.8	41.57
16	0:02:47.2	41.56
17	0:02:57.2	41.56
18	0:03:07.8	41.56
19	0:03:19.0	41.55
20	0:03:30.9	41.55
21	0:03:43.5	41.54
22	0:03:56.8	41.54
23	0:04:10.9	41.54
24	0:04:25.8	41.53
25	0:04:41.6	41.53
26	0:04:58.4	41.52
27	0:05:16.2	41.52
28	0:05:35.0	41.52
29	0:05:54.9	41.51
30	0:06:16.0	41.51
31	0:06:38.4	41.51
32	0:07:02.1	41.51
33	0:07:27.2	41.50
34	0:07:53.8	41.50
35	0:08:22.0	41.53
36	0:08:51.9	41.50
37	0:09:23.5	41.49
38	0:09:57.0	41.49
39	0:10:32.5	41.49
40	0:11:10.1	41.49
41	0:11:49.9	41.49
42	0:12:32.1	41.49
43	0:13:16.8	41.49
44	0:14:04.2	41.49
45	0:14:54.4	41.48

WELL ID: FBQ-174

Local ID: Slug in
Date: 12/4/2003
Time: 10:40

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	14.74 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone

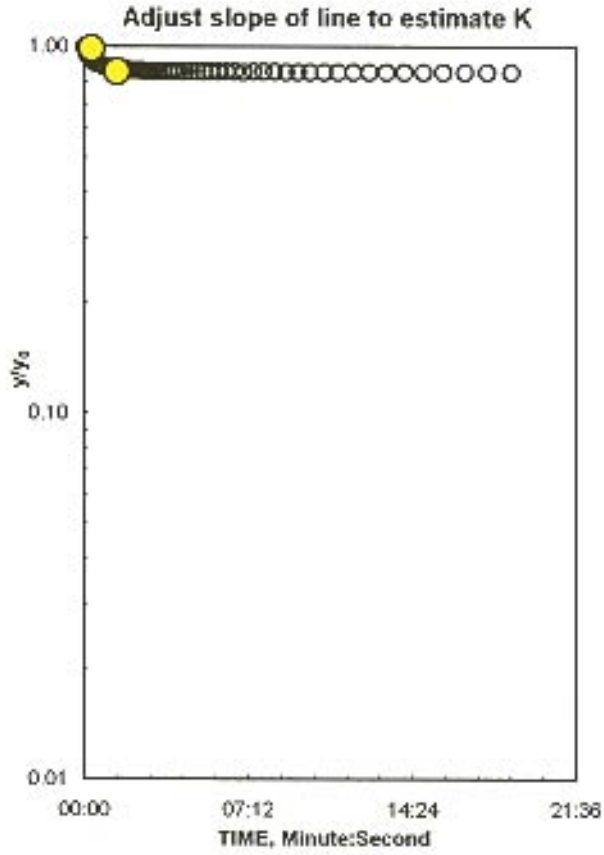


COMPUTED

L_{wetted}	7.26 Feet
D =	15.26 Feet
H =	7.26 Feet
L/r_w =	29.04
$y_{0\text{-DISPLACEMENT}}$ =	31.07 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.478
B =	0.409
ln(Re/rw) =	2.171
Re =	2.19 cm
Slope =	0.000935 $\log_{10}$/sec
$t_{90\%}$ recovery =	1070 sec

Input is consistent.

K = 0.000068 cm/Second



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

Entry	Reduced Data Time, Hr:Min.Sec	Water Level
1	0:00:02.4	14.13
2	0:00:03.0	14.14
3	0:00:03.6	14.14
4	0:00:04.2	14.15
5	0:00:04.8	14.15
6	0:00:05.4	14.16
7	0:00:06.0	14.16
8	0:00:06.7	14.17
9	0:00:07.5	14.17
10	0:00:08.4	14.18
11	0:00:09.5	14.18
12	0:00:10.6	14.18
13	0:00:11.9	14.19
14	0:00:13.4	14.19
15	0:00:15.0	14.19
16	0:00:16.8	14.20
17	0:00:18.9	14.21
18	0:00:21.2	14.21
19	0:00:23.8	14.22
20	0:00:26.7	14.22
21	0:00:29.8	14.23
22	0:00:33.3	14.23
23	0:00:37.3	14.24
24	0:00:41.8	14.24
25	0:00:46.9	14.25
26	0:00:52.6	14.25
27	0:00:59.0	14.25
28	0:01:06.2	14.26
29	0:01:14.3	14.26
30	0:01:23.4	14.26
31	0:01:33.7	14.26
32	0:01:45.2	14.27
33	0:01:58.1	14.27
34	0:02:12.6	14.27
35	0:02:28.9	14.27
36	0:02:47.2	14.27
37	0:03:07.8	14.27
38	0:03:30.9	14.28
39	0:03:56.8	14.28
40	0:04:25.8	14.28
41	0:04:58.4	14.28
42	0:05:35.0	14.28
43	0:06:16.0	14.28
44	0:07:02.1	14.28
45	0:07:53.8	14.28

21:36

WELL ID: FBQ-174

Local ID: Slug out
Date: 12/4/2003
Time: 12:55

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet

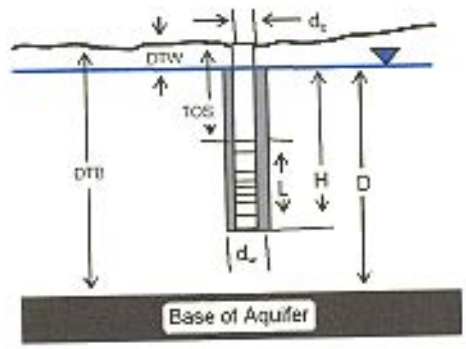
Depths to:

water level (DTW)	14.74 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine-Grained Sandstone



COMPUTED

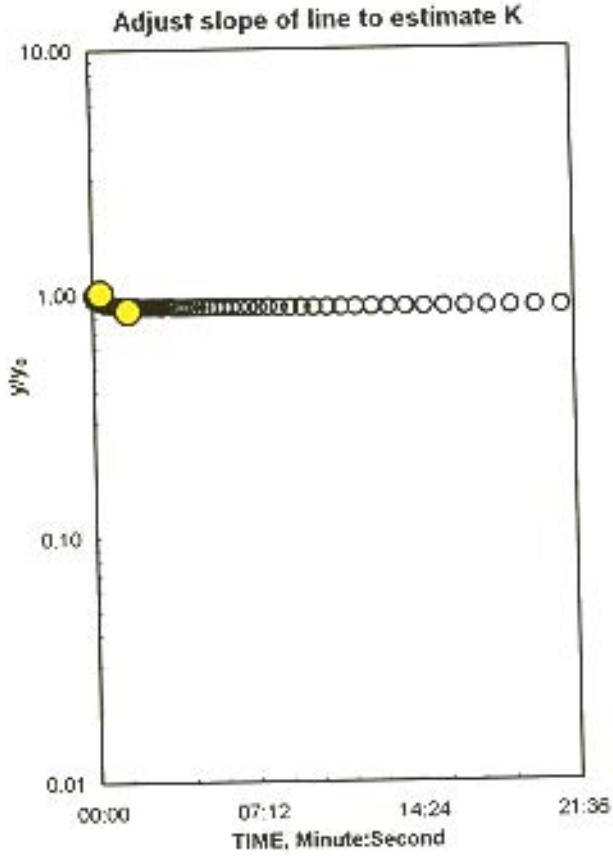
L_{wetted}	7.26 Feet
D =	15.26 Feet
H =	7.26 Feet
L/r_w =	29.04
$y_{0\text{-DISPLACEMENT}}$ =	31.58 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

From look-up table using L/r_w

Partial penetrate A =	2.478
B =	0.409
ln(Re/rw) =	2.171
Re =	2.19 cm
Slope =	0.000971 log_{10}/sec
$t_{60\%}$ recovery =	1030 sec

Input is consistent.

K = 0.000071 cm/Second



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

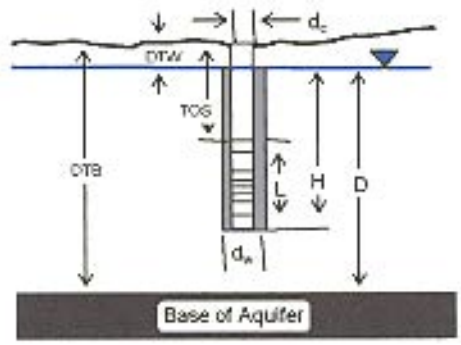
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:02.1	14.94
2	0:00:03.0	14.91
3	0:00:03.9	14.90
4	0:00:04.8	14.90
5	0:00:05.7	14.89
6	0:00:06.7	14.89
7	0:00:08.0	14.89
8	0:00:09.5	14.89
9	0:00:11.3	14.88
10	0:00:13.4	14.88
11	0:00:15.9	14.87
12	0:00:18.9	14.86
13	0:00:22.4	14.86
14	0:00:26.7	14.85
15	0:00:31.5	14.85
16	0:00:37.3	14.84
17	0:00:44.3	14.84
18	0:00:52.6	14.84
19	0:01:02.5	14.83
20	0:01:14.3	14.83
21	0:01:28.4	14.83
22	0:01:45.2	14.82
23	0:02:05.1	14.82
24	0:02:28.9	14.82
25	0:02:57.2	14.82
26	0:03:30.9	14.82
27	0:04:10.9	14.81
28	0:04:58.4	14.81
29	0:05:54.9	14.81
30	0:07:02.1	14.81
31	0:08:22.0	14.81
32	0:09:57.0	14.81
33	0:11:49.9	14.81
34	0:14:04.2	14.81
35	0:16:43.8	14.81
36	0:19:53.5	14.81
37	0:23:39.0	14.80
38	0:28:07.1	14.80
39	0:33:25.7	14.80
40	0:39:44.4	14.80
41	0:47:14.6	14.79
42	0:56:09.6	14.79
43	1:06:45.5	14.79
44	1:18:43.1	14.79
45	1:30:43.1	14.79

WELL ID: FBQ-175

Local ID: Slug in
Date: 12/2/2003
Time: 15:49

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	16.73 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone

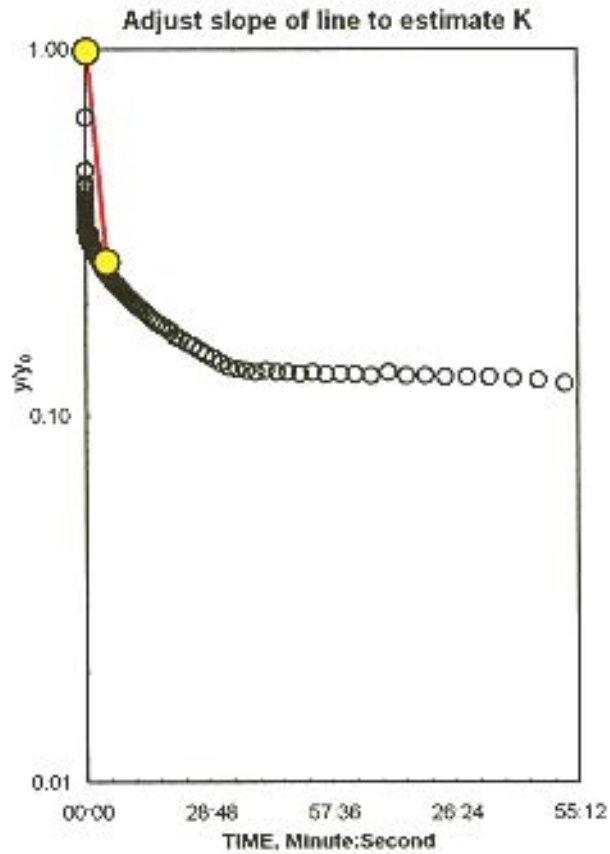


COMPUTED

L_{wetted}	5.27 Feet
D =	13.27 Feet
H =	5.27 Feet
L/r_w =	21.08
$y_{0\text{-DISPLACEMENT}}$ =	34.60 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.240
B =	0.354
ln(Re/rw) =	1.903
Re =	1.68 cm
Slope =	0.002103 $\log_{10}$/sec
$t_{60\%}$ recovery =	476 sec

Input is consistent.

K = 0.00018 cm/Second



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

Reduced Data

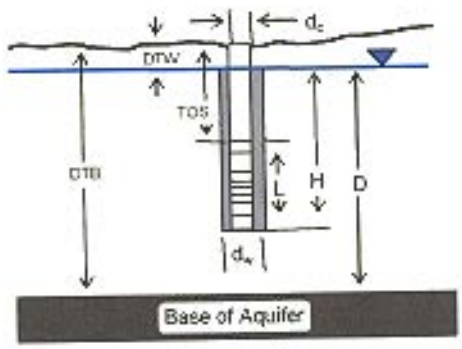
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:01.5	15.76
2	0:00:03.0	16.42
3	0:00:04.5	16.47
4	0:00:06.0	16.49
5	0:00:08.0	16.53
6	0:00:10.6	16.54
7	0:00:14.2	16.54
8	0:00:18.9	16.54
9	0:00:25.2	16.54
10	0:00:33.3	16.56
11	0:00:44.3	16.56
12	0:00:59.0	16.57
13	0:01:18.7	16.56
14	0:01:45.2	16.57
15	0:02:20.5	16.59
16	0:03:07.8	16.60
17	0:04:10.9	16.62
18	0:05:35.0	16.63
19	0:07:27.2	16.64
20	0:09:57.0	16.66
21	0:13:16.8	16.68
22	0:17:43.4	16.70
23	0:23:39.0	16.72
24	0:31:33.3	16.74
25	0:42:05.9	16.75
26	0:56:09.6	16.75
27	1:14:54.7	16.75
28	1:39:55.2	16.76
29	2:13:16.1	16.76
30	2:57:44.3	16.78
31	3:47:44.3	16.79
32	4:37:44.3	16.80
33	5:27:44.3	16.80
34	6:17:44.3	16.80
35	7:07:44.3	16.80
36	7:57:44.3	16.80
37	8:47:44.3	16.80
38	9:37:44.3	16.79
39	10:27:44.3	16.80
40	11:17:44.3	16.80
41	12:07:44.3	16.80
42	12:57:44.3	16.79
43	13:47:44.3	16.80
44	14:37:44.3	16.80
45	15:27:44.3	16.81

WELL ID: FBQ-175

Local ID: Slug out
Date: 12/3/2003
Time: 9:30

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	6 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	16.73 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine-Grained Sandstone



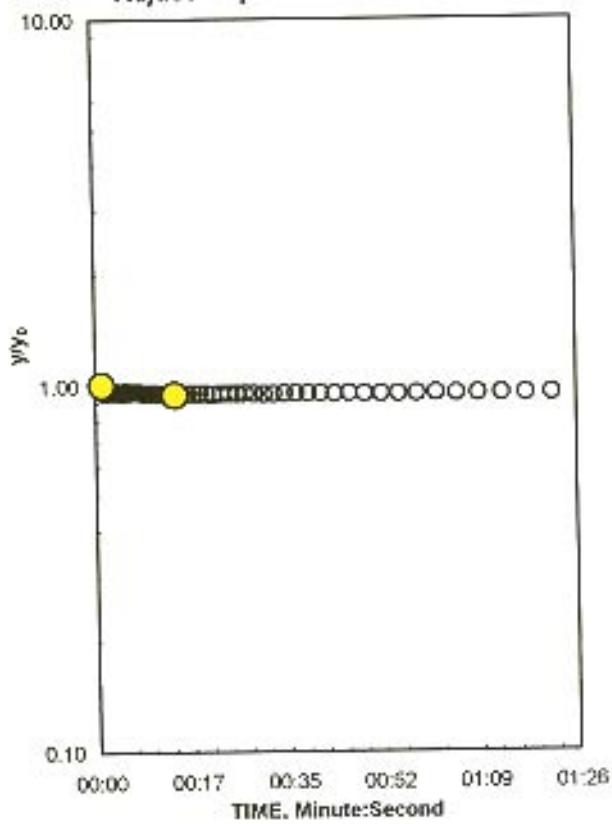
COMPUTED

L_{wetted}	5.27 Feet
D =	13.27 Feet
H =	5.27 Feet
L/r_w =	21.08
$y_{0\text{-DISPLACEMENT}}$ =	30.91 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.240
B =	0.354
ln(Re/rw) =	1.903
Re =	1.68 cm
Slope =	0.002208 $\log_{10}$/sec
$t_{60\%}$ recovery =	453 sec

Input is consistent.

K = 0.00019 cm/Second

Adjust slope of line to estimate K



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

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:01.8	16.77
2	0:00:02.4	16.75
3	0:00:03.0	16.72
4	0:00:03.6	16.72
5	0:00:04.2	16.72
6	0:00:04.8	16.73
7	0:00:05.4	16.72
8	0:00:06.0	16.72
9	0:00:06.7	16.73
10	0:00:07.5	16.72
11	0:00:08.4	16.73
12	0:00:09.5	16.72
13	0:00:10.6	16.72
14	0:00:11.9	16.72
15	0:00:13.4	16.72
16	0:00:15.0	16.72
17	0:00:16.8	16.72
18	0:00:18.9	16.72
19	0:00:21.2	16.71
20	0:00:23.8	16.71
21	0:00:26.7	16.71
22	0:00:29.8	16.71
23	0:00:33.3	16.71
24	0:00:37.3	16.71
25	0:00:41.8	16.71
26	0:00:46.9	16.71
27	0:00:52.6	16.71
28	0:00:59.0	16.71
29	0:01:06.2	16.71
30	0:01:14.3	16.71
31	0:01:23.4	16.71
32	0:01:33.7	16.71
33	0:01:45.2	16.71
34	0:01:58.1	16.71
35	0:02:12.6	16.71
36	0:02:28.9	16.71
37	0:02:47.2	16.71
38	0:03:07.8	16.71
39	0:03:30.9	16.71
40	0:03:56.8	16.71
41	0:04:25.8	16.71
42	0:04:58.4	16.71
43	0:05:35.0	16.71
44	0:06:16.0	16.71
45	0:07:02.1	16.71

WELL ID: FBQ-176

Local ID: Slug in
Date: 12/3/2003
Time: 13:33

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	10.25 Inch
Screen Length (L)	10 Feet

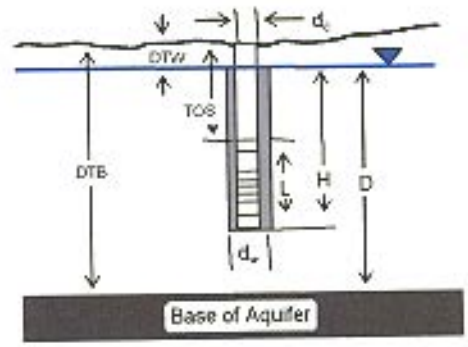
Depths to:

water level (DTW)	7.72 Feet
top of screen (TOS)	11 Feet
Base of Aquifer (DTB)	30 Feet

Annular Fill.

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine Sand



COMPUTED

L_{wetted}	10 Feet
D =	22.28 Feet
H =	13.28 Feet
L/r_w =	23.41
$y_{0\text{-DISPLACEMENT}}$ =	30.85 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

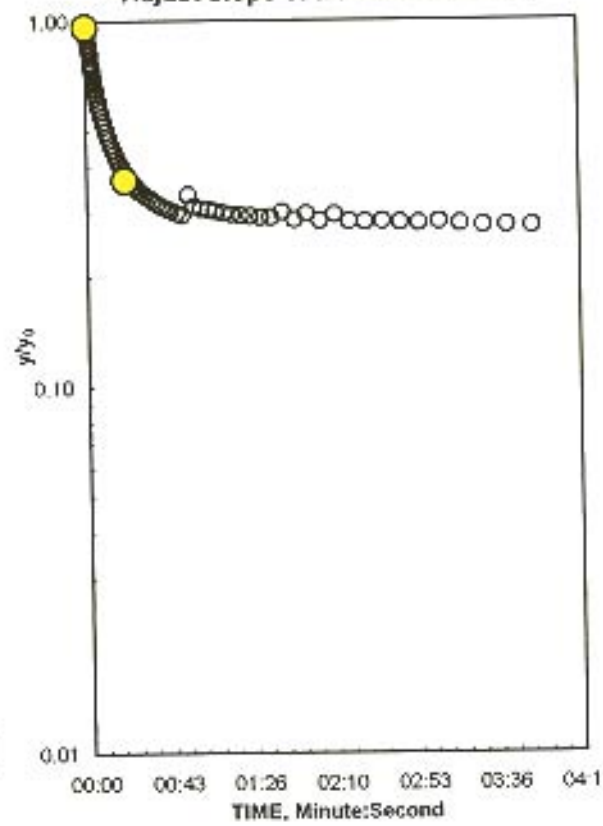
From look-up table using L/r_w

Partial penetrate A =	2.316
B =	0.372
ln(Re/rw) =	2.139
Re =	3.63 cm
Slope =	0.021085 $\log_{10}$/sec
$t_{50\%}$ recovery =	47 sec

Input is consistent.

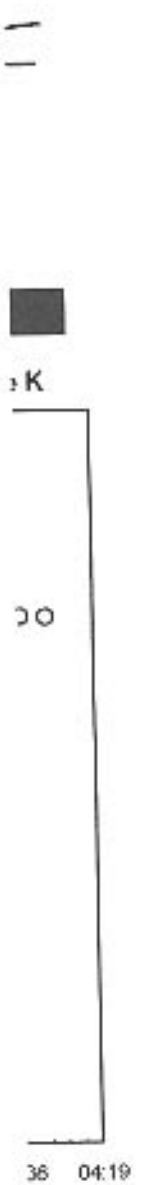
K = 0.0011 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:03 3	6.99
2	0:00.03.6	7.02
3	0:00:03.9	7.07
4	0:00:04.2	7.10
5	0:00:04.5	7.12
6	0:00:04.8	7.14
7	0:00:05.1	7.16
8	0:00:05.4	7.18
9	0:00:05.7	7.23
10	0:00:06.0	7.25
11	0:00:06.4	7.26
12	0:00:06.7	7.28
13	0:00:07.1	7.30
14	0:00:07.5	7.32
15	0:00:08.0	7.34
16	0:00.08.4	7.36
17	0:00:08.9	7.37
18	0:00:09.5	7.39
19	0:00:10.0	7.41
20	0:00:10.6	7.43
21	0:00:11.3	7.44
22	0:00.11.9	7.46
23	0.00:12.6	7.48
24	0:00:13.4	7.49
25	0:00:14.2	7.51
26	0:00:15.0	7.52
27	0:00:15.9	7.54
28	0:00:16.8	7.55
29	0:00:17.8	7.56
30	0:00:18.9	7.57
31	0:00:20.0	7.59
32	0:00:21.2	7.60
33	0:00:22.4	7.61
34	0:00:23.8	7.62
35	0:00:25.2	7.63
36	0:00:26.7	7.63
37	0:00:28.2	7.64
38	0:00:29.8	7.65
39	0:00:31.5	7.66
40	0:00:33.3	7.66
41	0:00:35.2	7.67
42	0:00:37.3	7.67
43	0:00:39.5	7.68
44	0:00:41.8	7.69
45	0:00:44.3	7.69

WELL ID: FBQ-176

Local ID: Slug out
Date: 12/3/2003
Time: 14.24

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	10.25 Inch
Screen Length (L)	10 Feet

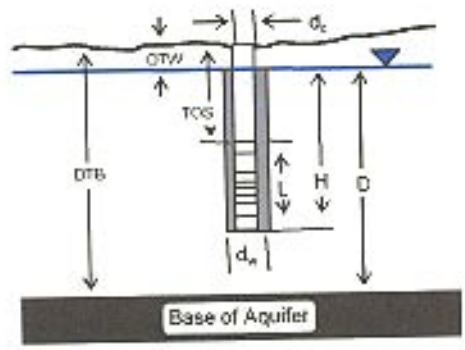
Depths to:

water level (DTW)	7.72 Feet
top of screen (TOS)	11 Feet
Base of Aquifer (DTB)	30 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine Sand



COMPUTED

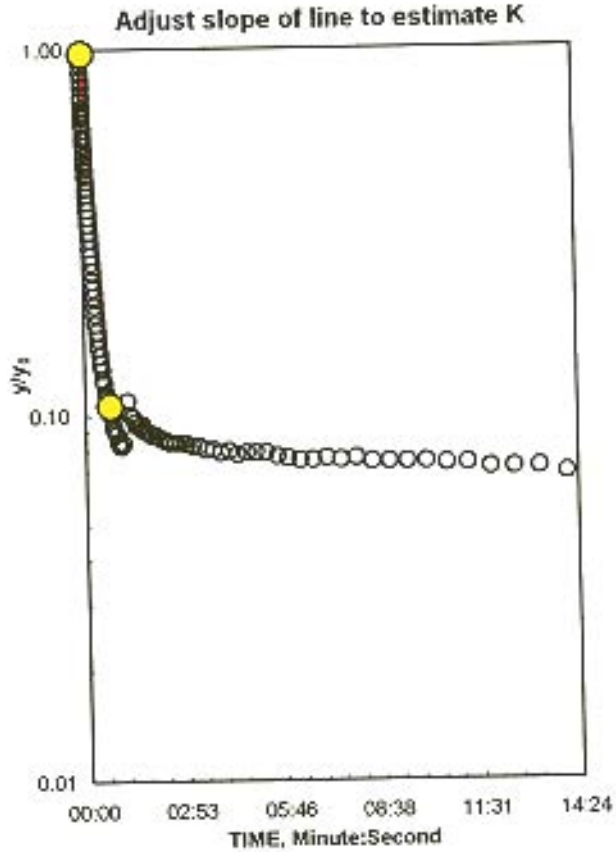
L_{wetted}	10 Feet
D =	22.28 Feet
H =	13.28 Feet
L/r_w =	23.41
$y_{0\text{-DISPLACEMENT}}$ =	33.32 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

From look-up table using L/r_w

Partial penetrate A =	2.316
B =	0.372
ln(Re/rw) =	2.139
Re =	3.63 cm
Slope =	0.023739 $\log_{10}$/sec
$t_{90\%}$ recovery =	42 sec

Input is consistent.

K = 0.0012 cm/Second



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

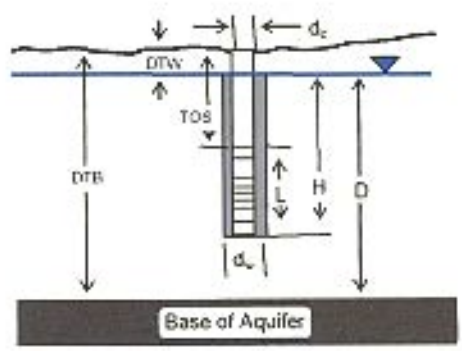
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:01.2	8.39
2	0:00:02.1	8.25
3	0:00:03.0	8.12
4	0:00:03.9	8.04
5	0:00:04.8	7.96
6	0:00:05.7	7.90
7	0:00:06.7	7.84
8	0:00:08.0	7.78
9	0:00:09.5	7.72
10	0:00:11.3	7.67
11	0:00:13.4	7.61
12	0:00:15.9	7.57
13	0:00:18.9	7.53
14	0:00:22.4	7.50
15	0:00:26.7	7.47
16	0:00:31.5	7.45
17	0:00:37.3	7.43
18	0:00:44.3	7.41
19	0:00:52.6	7.40
20	0:01:02.5	7.39
21	0:01:14.3	7.42
22	0:01:28.4	7.41
23	0:01:45.2	7.40
24	0:02:05.1	7.40
25	0:02:28.9	7.39
26	0:02:57.2	7.39
27	0:03:30.9	7.39
28	0:04:10.9	7.39
29	0:04:58.4	7.39
30	0:05:54.9	7.38
31	0:07:02.1	7.38
32	0:08:22.0	7.38
33	0:09:57.0	7.38
34	0:11:49.9	7.38
35	0:14:04.2	7.38
36	0:16:43.8	7.37
37	0:19:53.5	7.37
38	0:23:39.0	7.37
39	0:28:07.1	7.37
40	0:33:25.7	7.37
41	0:39:44.4	7.36
42	0:47:14.6	7.35
43	0:56:09.6	7.36
44	1:06:45.5	7.34
45	1:18:43.1	7.35

WELL ID: FBQ-177

Local ID: Slug in
Date: 12/2/2003
Time: 13:10

INPUT

Construction:	
Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	10.25 Inch
Screen Length (L)	10 Feet
Depths to:	
water level (DTW)	10.72 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet
Annular Fill:	
across screen --	Coarse Sand
above screen --	Bentonite
Aquifer Material --	Fine Sand

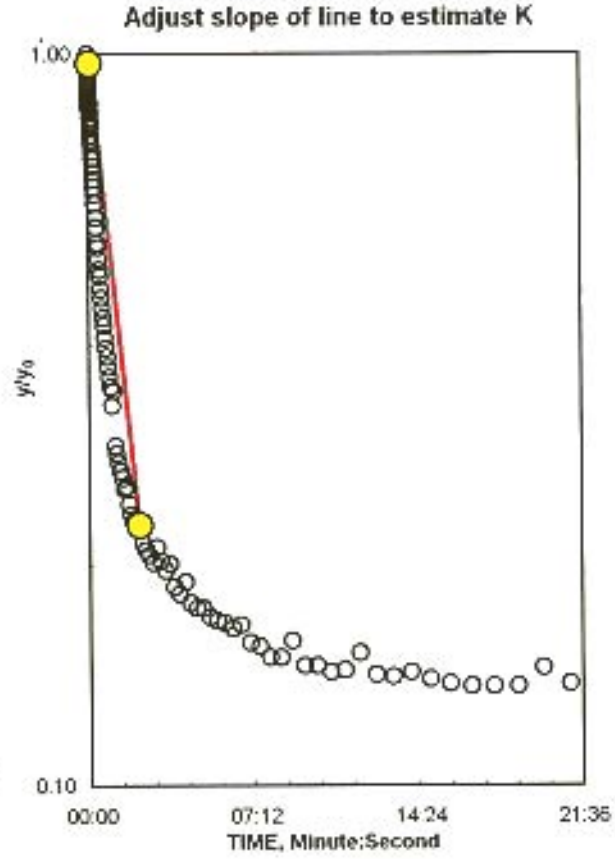


COMPUTED

L_{wetted}	10 Feet
D =	19.28 Feet
H =	11.28 Feet
L/r_w =	23.41
$y_{0\text{-DISPLACEMENT}}$ =	30.52 cm
$y_{0\text{-SLUG}}$ =	37.48 cm
From look-up table using L/r_w	
Partial penetrate A =	2.316
B =	0.372
ln(Re/rw) =	2.077
Re =	3.41 cm
Slope =	0.005002 $\log_{10}$/sec
$t_{50\%}$ recovery =	200 sec

Input is consistent.

K = 0.00025 cm/Second



K= 0.00025 is less than likely minimum of 0.00106 for Fine Sand

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

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:02.1	11.90
2	0:00:03.0	11.95
3	0:00:03.9	11.99
4	0:00:04.8	12.02
5	0:00:05.7	12.05
6	0:00:06.7	12.04
7	0:00:08.0	12.07
8	0:00:09.5	12.09
9	0:00:11.3	12.14
10	0:00:13.4	12.18
11	0:00:15.9	12.22
12	0:00:18.9	12.27
13	0:00:22.4	12.32
14	0:00:26.7	12.36
15	0:00:31.5	12.40
16	0:00:37.3	12.45
17	0:00:44.3	12.49
18	0:00:52.6	12.53
19	0:01:02.5	12.57
20	0:01:14.3	12.62
21	0:01:28.4	12.64
22	0:01:45.2	12.66
23	0:02:05.1	12.67
24	0:02:28.9	12.69
25	0:02:57.2	12.69
26	0:03:30.9	12.70
27	0:04:10.9	12.71
28	0:04:58.4	12.73
29	0:05:54.9	12.73
30	0:07:02.1	12.74
31	0:08:22.0	12.75
32	0:09:57.0	12.75
33	0:11:49.9	12.75
34	0:14:04.2	12.76
35	0:16:43.8	12.76
36	0:19:53.5	12.76
37	0:23:39.0	12.77
38	0:28:07.1	12.77
39	0:33:25.7	12.76
40	0:39:44.4	12.77
41	0:47:14.6	12.76
42	0:56:09.6	12.77
43	1:06:45.5	12.77
44	1:18:43.1	12.77
45	1:30:43.1	12.77

WELL ID: FBQ-177

Local ID: Slug out
Date: 12/3/2003
Time: 9:15

INPUT

Construction:

Casing dia. (d_c)	2 Inch
Annulus dia. (d_w)	10.25 Inch
Screen Length (L)	10 Feet

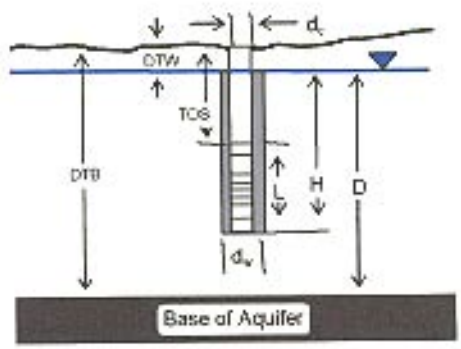
Depths to:

water level (DTW)	10.72 Feet
top of screen (TOS)	12 Feet
Base of Aquifer (DTB)	30 Feet

Annular Fill:

across screen -- Coarse Sand
above screen -- Bentonite

Aquifer Material -- Fine Sand



COMPUTED

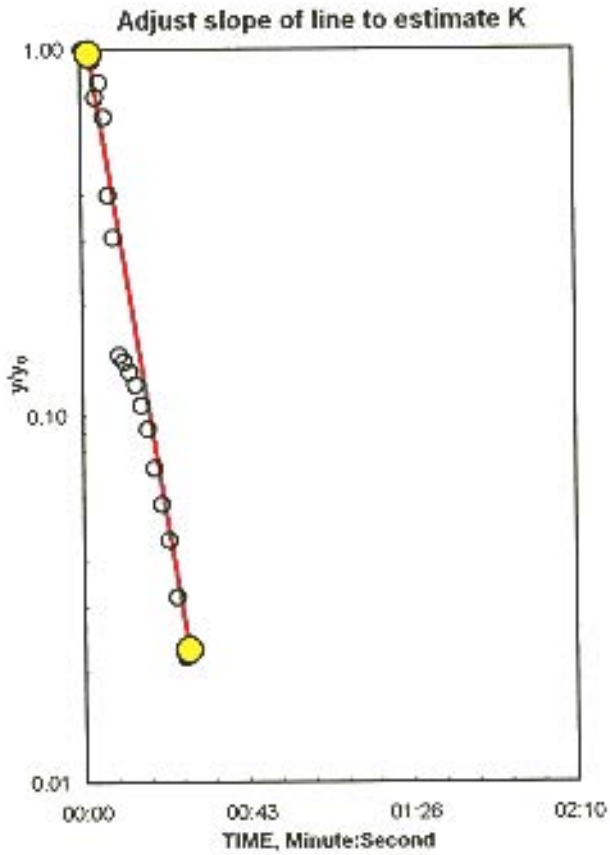
L_{wetted}	10 Feet
D =	19.28 Feet
H =	11.28 Feet
L/r_w =	23.41
$y_{0\text{-DISPLACEMENT}}$ =	33.35 cm
$y_{0\text{-SLUG}}$ =	37.48 cm

From look-up table using L/r_w

Partial penetrate A =	2.316
B =	0.372
ln(Re/rw) =	2.077
Re =	3.41 cm
Slope =	0.064791 $\log_{10}$/sec
$t_{90\%}$ recovery =	15 sec

Input is consistent.

K = 0.0033 cm/Second



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:13.4	11.50
2	0:00:15.0	11.47
3	0:00:16.8	11.21
4	0:00:18.9	11.12
5	0:00:21.2	10.74
6	0:00:23.8	10.55
7	0:00:26.7	10.53
8	0:00:29.8	10.50
9	0:00:33.3	10.46
10	0:00:37.3	10.44
11	0:00:41.8	10.19
12	0:00:46.9	10.16
13	0:00:52.6	10.12
14	0:00:59.0	10.12
15	0:01:06.2	10.10
16	0:01:14.3	10.08
17	0:01:23.4	10.07
18	0:01:33.7	10.05
19	0:01:45.2	10.04
20	0:01:58.1	10.03
21	0:02:12.6	10.02
22	0:02:28.9	10.01
23	0:02:47.2	10.00
24	0:03:07.8	9.82
25	0:03:30.9	9.82
26	0:03:56.8	9.82
27	0:04:25.8	9.81
28	0:04:58.4	9.81
29	0:05:35.0	9.80
30	0:06:16.0	9.80
31	0:07:02.1	9.80
32	0:07:53.8	9.79
33	0:08:51.9	9.79
34	0:09:57.0	9.79
35	0:11:10.1	9.79
36	0:12:32.1	9.78
37	0:14:04.2	9.78
38	0:15:47.5	9.78
39	0:17:43.4	9.78
40	0:19:53.5	9.78
41	0:22:19.5	9.78
42	0:25:03.3	9.77
43	0:28:07.1	9.77
44	0:31:33.3	9.77
45	0:35:24.7	9.77