N61165.AR.003196
CNC CHARLESTON
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DRAFT ZONE E RESOURCE CONSERVATION AND RECOVERY FACILITY INVESTIGATION REPORT VOLUME VIII OF XV APPENDICES C TO G CNC CHARLESTON SC
11/1/1997
ENSAFE

DRAFT ZONE E
RCRA FACILITY INVESTIGATION REPORT
NAVBASE CHARLESTON

VOLUME VIII OF XV
APPENDICES C – G

CTO-029
CONTRACT NO: N62467-89-D-0318

Prepared for:

Department of the Navy
Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina

Prepared by:

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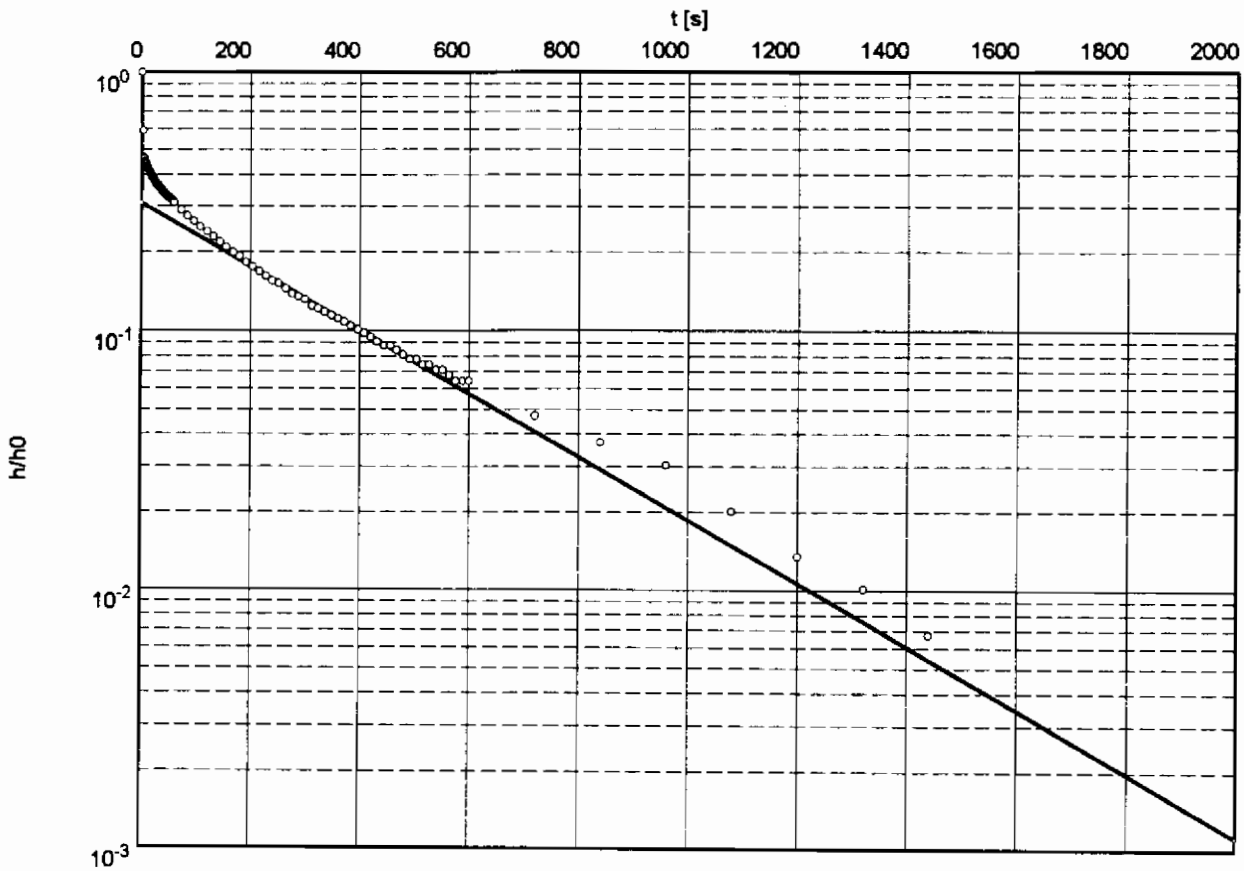
November 1997

Appendix C

Slug Test Results

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	



○ FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 1.60×10^{-5}

Hydraulic conductivity [ft/day]: 1.38

L = 10.1 ft
b = 10.1 ft
D = 10.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.9700	-2.9700	
2	2.0000	-1.7500	-1.7500	
3	3.0000	-1.3800	-1.3800	
4	4.0000	-1.3700	-1.3700	
5	5.0000	-1.3600	-1.3600	
6	6.0000	-1.3300	-1.3300	
7	7.0000	-1.3100	-1.3100	
8	8.0000	-1.3000	-1.3000	
9	9.0000	-1.2800	-1.2800	
10	10.0000	-1.2600	-1.2600	
11	11.0000	-1.2600	-1.2600	
12	12.0000	-1.2400	-1.2400	
13	13.0000	-1.2300	-1.2300	
14	14.0000	-1.2200	-1.2200	
15	15.0000	-1.2000	-1.2000	
16	16.0000	-1.1900	-1.1900	
17	17.0000	-1.1800	-1.1800	
18	18.0000	-1.1700	-1.1700	
19	19.0000	-1.1600	-1.1600	
20	20.0000	-1.1600	-1.1600	
21	21.0000	-1.1400	-1.1400	
22	22.0000	-1.1300	-1.1300	
23	23.0000	-1.1300	-1.1300	
24	24.0000	-1.1200	-1.1200	
25	25.0000	-1.1100	-1.1100	
26	26.0000	-1.1000	-1.1000	
27	27.0000	-1.0900	-1.0900	
28	28.0000	-1.0900	-1.0900	
29	29.0000	-1.0800	-1.0800	
30	30.0000	-1.0700	-1.0700	
31	31.0000	-1.0700	-1.0700	
32	32.0000	-1.0600	-1.0600	
33	33.0000	-1.0600	-1.0600	
34	34.0000	-1.0500	-1.0500	
35	35.0000	-1.0400	-1.0400	
36	36.0000	-1.0400	-1.0400	
37	37.0000	-1.0300	-1.0300	
38	38.0000	-1.0300	-1.0300	
39	39.0000	-1.0200	-1.0200	
40	40.0000	-1.0100	-1.0100	
41	41.0000	-1.0100	-1.0100	
42	42.0000	-1.0000	-1.0000	
43	43.0000	-1.0000	-1.0000	
44	44.0000	-0.9900	-0.9900	
45	45.0000	-0.9900	-0.9900	
46	46.0000	-0.9800	-0.9800	
47	47.0000	-0.9800	-0.9800	
48	48.0000	-0.9700	-0.9700	
49	49.0000	-0.9700	-0.9700	
50	50.0000	-0.9700	-0.9700	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	51.0000	-0.9600	-0.9600
52	52.0000	-0.9600	-0.9600
53	53.0000	-0.9500	-0.9500
54	54.0000	-0.9500	-0.9500
55	55.0000	-0.9400	-0.9400
56	56.0000	-0.9400	-0.9400
57	57.0000	-0.9400	-0.9400
58	58.0000	-0.9300	-0.9300
59	59.0000	-0.9300	-0.9300
60	60.0000	-0.9200	-0.9200
61	72.0000	-0.8600	-0.8600
62	84.0000	-0.8200	-0.8200
63	96.0000	-0.7800	-0.7800
64	108.0000	-0.7400	-0.7400
65	120.0000	-0.7100	-0.7100
66	132.0000	-0.6800	-0.6800
67	144.0000	-0.6500	-0.6500
68	156.0000	-0.6200	-0.6200
69	168.0000	-0.5900	-0.5900
70	180.0000	-0.5700	-0.5700
71	192.0000	-0.5400	-0.5400
72	204.0000	-0.5200	-0.5200
73	216.0000	-0.5000	-0.5000
74	228.0000	-0.4800	-0.4800
75	240.0000	-0.4600	-0.4600
76	252.0000	-0.4500	-0.4500
77	264.0000	-0.4300	-0.4300
78	276.0000	-0.4100	-0.4100
79	288.0000	-0.4000	-0.4000
80	300.0000	-0.3900	-0.3900
81	312.0000	-0.3700	-0.3700
82	324.0000	-0.3600	-0.3600
83	336.0000	-0.3500	-0.3500
84	348.0000	-0.3400	-0.3400
85	360.0000	-0.3300	-0.3300
86	372.0000	-0.3200	-0.3200
87	384.0000	-0.3100	-0.3100
88	396.0000	-0.3000	-0.3000
89	408.0000	-0.2900	-0.2900
90	420.0000	-0.2800	-0.2800
91	432.0000	-0.2700	-0.2700
92	444.0000	-0.2600	-0.2600
93	456.0000	-0.2600	-0.2600
94	468.0000	-0.2500	-0.2500
95	480.0000	-0.2400	-0.2400
96	492.0000	-0.2300	-0.2300
97	504.0000	-0.2300	-0.2300
98	516.0000	-0.2200	-0.2200
99	528.0000	-0.2200	-0.2200
100	540.0000	-0.2100	-0.2100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

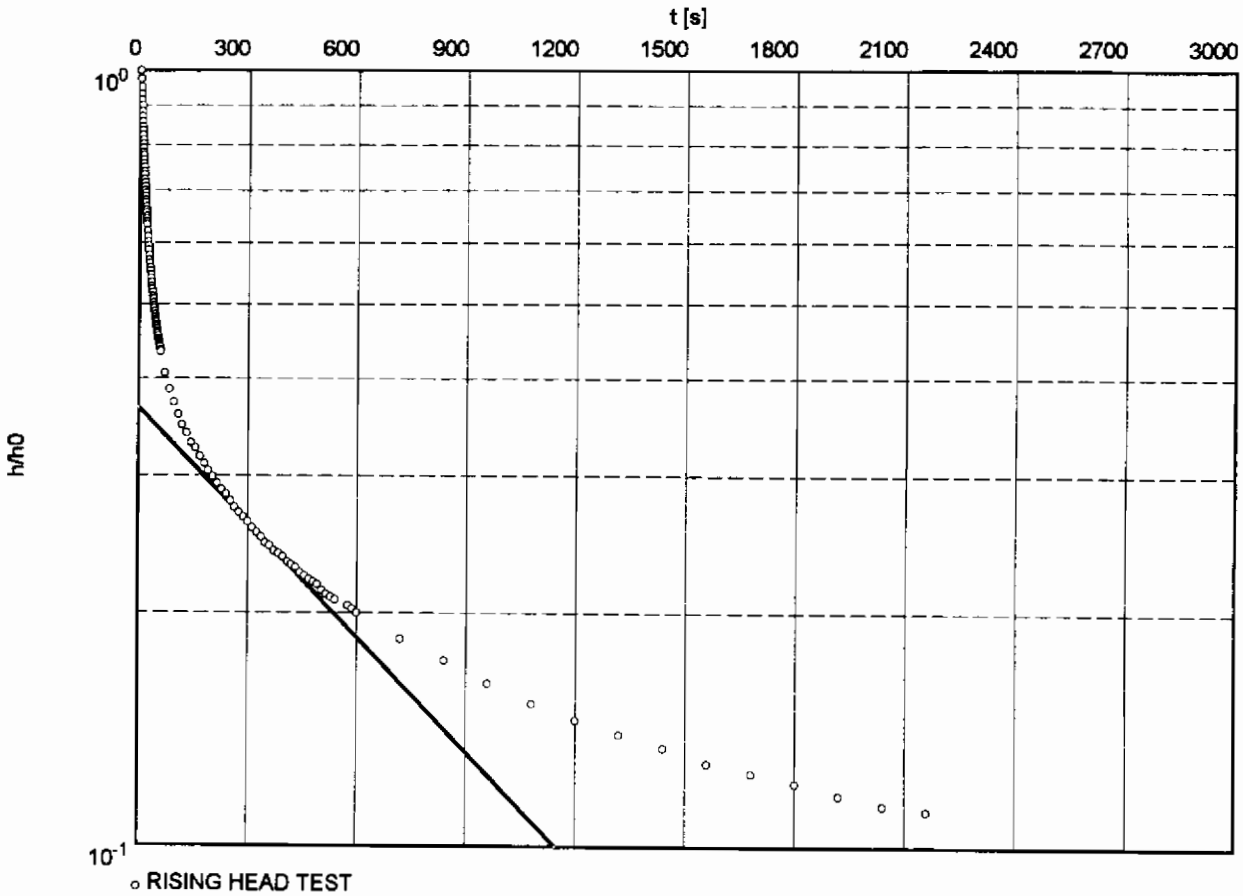
Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	552.0000	-0.2100	-0.2100	
102	564.0000	-0.2000	-0.2000	
103	576.0000	-0.1900	-0.1900	
104	588.0000	-0.1900	-0.1900	
105	600.0000	-0.1900	-0.1900	
106	720.0000	-0.1400	-0.1400	
107	840.0000	-0.1100	-0.1100	
108	960.0000	-0.0900	-0.0900	
109	1080.0000	-0.0600	-0.0600	
110	1200.0000	-0.0400	-0.0400	
111	1320.0000	-0.0300	-0.0300	
112	1440.0000	-0.0200	-0.0200	
113	1560.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	



Hydraulic conductivity [ft/s]: 6.45×10^{-6}

Hydraulic conductivity [ft/day]: 0.557

L = 10.1 ft
b = 10.1 ft
D = 10.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	2.4960	1.6300	1.6300	
3	3.0000	1.5890	1.5890	
4	3.4980	1.5540	1.5540	
5	3.9960	1.5290	1.5290	
6	4.5000	1.5030	1.5030	
7	4.9980	1.4780	1.4780	
8	5.4960	1.4560	1.4560	
9	6.0000	1.4340	1.4340	
10	6.4980	1.4120	1.4120	
11	6.9960	1.3960	1.3960	
12	7.5000	1.3770	1.3770	
13	7.9980	1.3580	1.3580	
14	8.4960	1.3420	1.3420	
15	9.0000	1.3230	1.3230	
16	9.4980	1.3070	1.3070	
17	9.9960	1.2950	1.2950	
18	10.5000	1.2790	1.2790	
19	10.9980	1.2630	1.2630	
20	11.4960	1.2510	1.2510	
21	12.0000	1.2350	1.2350	
22	12.4980	1.2220	1.2220	
23	12.9960	1.2060	1.2060	
24	13.5000	1.1940	1.1940	
25	13.9980	1.1810	1.1810	
26	14.4960	1.1680	1.1680	
27	15.0000	1.1590	1.1590	
28	15.4980	1.1460	1.1460	
29	15.9960	1.1340	1.1340	
30	16.5000	1.1240	1.1240	
31	16.9980	1.1120	1.1120	
32	17.4960	1.1020	1.1020	
33	18.0000	1.0930	1.0930	
34	18.4980	1.0830	1.0830	
35	18.9960	1.0740	1.0740	
36	19.5000	1.0640	1.0640	
37	19.9980	1.0550	1.0550	
38	21.0000	1.0360	1.0360	
39	21.9960	1.0200	1.0200	
40	22.9980	1.0040	1.0040	
41	24.0000	0.9920	0.9920	
42	24.9960	0.9790	0.9790	
43	25.9980	0.9630	0.9630	
44	27.0000	0.9500	0.9500	
45	27.9960	0.9410	0.9410	
46	28.9980	0.9280	0.9280	
47	30.0000	0.9190	0.9190	
48	30.9960	0.9090	0.9090	
49	31.9980	0.9000	0.9000	
50	33.0000	0.8900	0.8900	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 12.11.96

Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.9960	0.8780	0.8780
52	34.9980	0.8720	0.8720
53	36.0000	0.8620	0.8620
54	36.9960	0.8530	0.8530
55	37.9980	0.8460	0.8460
56	39.0000	0.8370	0.8370
57	39.9960	0.8300	0.8300
58	40.9980	0.8240	0.8240
59	42.0000	0.8150	0.8150
60	42.9960	0.8080	0.8080
61	43.9980	0.8020	0.8020
62	45.0000	0.7960	0.7960
63	45.9960	0.7890	0.7890
64	46.9980	0.7830	0.7830
65	48.0000	0.7800	0.7800
66	48.9960	0.7740	0.7740
67	49.9980	0.7670	0.7670
68	51.0000	0.7640	0.7640
69	51.9960	0.7580	0.7580
70	52.9980	0.7510	0.7510
71	54.0000	0.7480	0.7480
72	54.9960	0.7450	0.7450
73	55.9980	0.7390	0.7390
74	57.0000	0.7360	0.7360
75	57.9960	0.7330	0.7330
76	58.9980	0.7260	0.7260
77	60.0000	0.7230	0.7230
78	72.0000	0.6790	0.6790
79	84.0000	0.6470	0.6470
80	96.0000	0.6220	0.6220
81	108.0000	0.6000	0.6000
82	120.0000	0.5810	0.5810
83	132.0000	0.5680	0.5680
84	144.0000	0.5520	0.5520
85	156.0000	0.5430	0.5430
86	168.0000	0.5300	0.5300
87	180.0000	0.5180	0.5180
88	192.0000	0.5080	0.5080
89	204.0000	0.4990	0.4990
90	216.0000	0.4890	0.4890
91	228.0000	0.4800	0.4800
92	240.0000	0.4730	0.4730
93	252.0000	0.4640	0.4640
94	264.0000	0.4550	0.4550
95	276.0000	0.4480	0.4480
96	288.0000	0.4420	0.4420
97	300.0000	0.4360	0.4360
98	312.0000	0.4290	0.4290
99	324.0000	0.4230	0.4230
100	336.0000	0.4170	0.4170

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

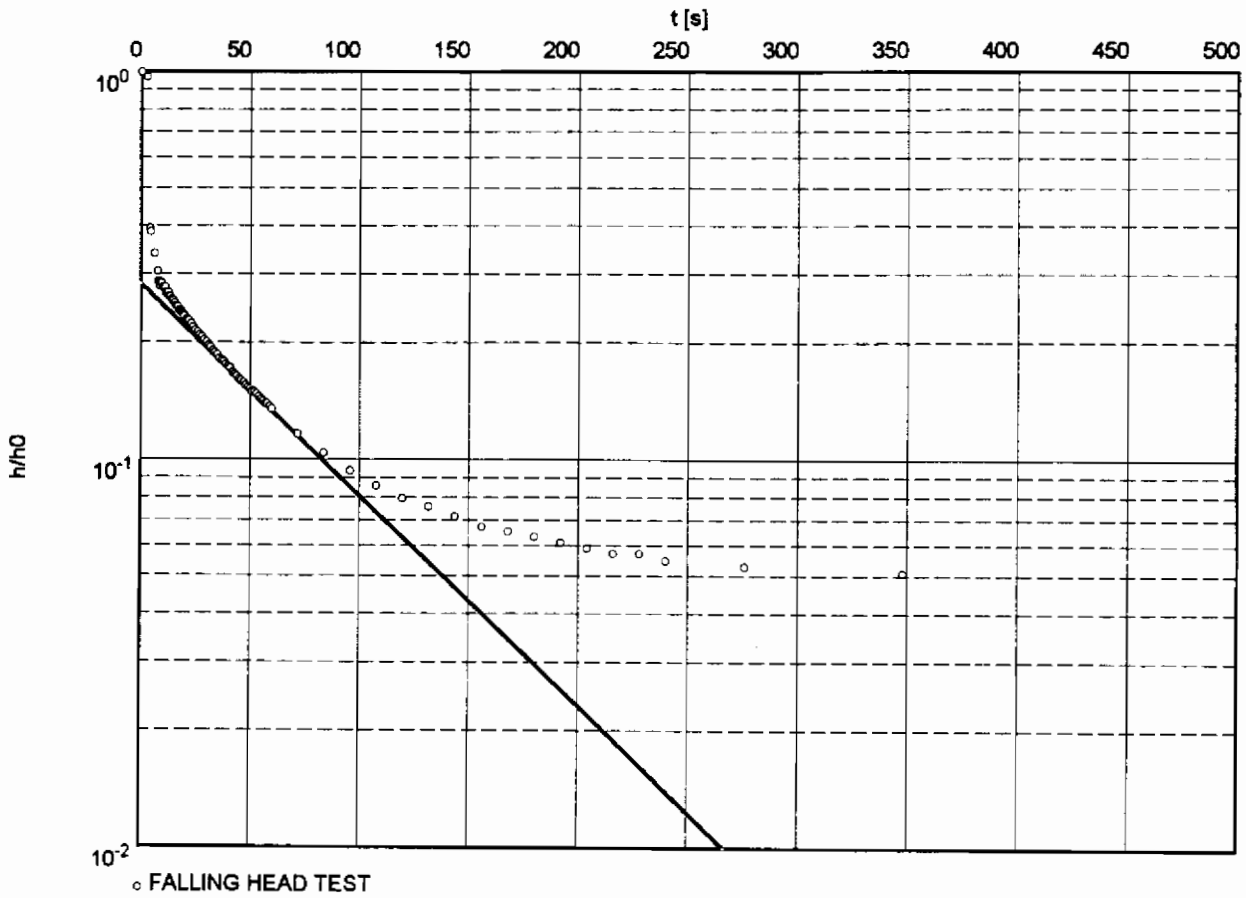
Slug Test No. 1	Test conducted on: 17.10.96
NBCE-054-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	348.0000	0.4100	0.4100	
102	360.0000	0.4070	0.4070	
103	372.0000	0.4010	0.4010	
104	384.0000	0.3980	0.3980	
105	396.0000	0.3940	0.3940	
106	408.0000	0.3880	0.3880	
107	420.0000	0.3850	0.3850	
108	432.0000	0.3820	0.3820	
109	444.0000	0.3760	0.3760	
110	456.0000	0.3720	0.3720	
111	468.0000	0.3690	0.3690	
112	480.0000	0.3660	0.3660	
113	492.0000	0.3630	0.3630	
114	504.0000	0.3570	0.3570	
115	516.0000	0.3530	0.3530	
116	528.0000	0.3500	0.3500	
117	540.0000	0.3470	0.3470	
118	576.0000	0.3410	0.3410	
119	588.0000	0.3380	0.3380	
120	600.0000	0.3340	0.3340	
121	720.0000	0.3090	0.3090	
122	840.0000	0.2900	0.2900	
123	960.0000	0.2710	0.2710	
124	1080.0000	0.2550	0.2550	
125	1200.0000	0.2430	0.2430	
126	1320.0000	0.2330	0.2330	
127	1440.0000	0.2240	0.2240	
128	1560.0000	0.2140	0.2140	
129	1680.0000	0.2080	0.2080	
130	1800.0000	0.2020	0.2020	
131	1920.0000	0.1950	0.1950	
132	2040.0000	0.1890	0.1890	
133	2160.0000	0.1860	0.1860	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-001	



Hydraulic conductivity [ft/s]: 4.42×10^{-4}

Hydraulic conductivity [ft/day]: 38.2

L = 1.7 ft
b = 10.4 ft
D = 10.4 ft (full penetration)

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-3.1000	-3.1000
2	2.4960	-3.0050	-3.0050
3	3.9960	-1.2140	-1.2140
4	4.5000	-1.1890	-1.1890
5	6.0000	-1.0430	-1.0430
6	7.5000	-0.9420	-0.9420
7	7.9980	-0.8850	-0.8850
8	8.4960	-0.8600	-0.8600
9	9.0000	-0.8790	-0.8790
10	9.4980	-0.8720	-0.8720
11	9.9960	-0.8530	-0.8530
12	10.5000	-0.8470	-0.8470
13	10.9980	-0.8530	-0.8530
14	11.4960	-0.8280	-0.8280
15	12.0000	-0.8220	-0.8220
16	12.4980	-0.8280	-0.8280
17	12.9960	-0.8090	-0.8090
18	13.5000	-0.8090	-0.8090
19	13.9980	-0.7970	-0.7970
20	14.4960	-0.7900	-0.7900
21	15.0000	-0.7900	-0.7900
22	15.4980	-0.7780	-0.7780
23	15.9960	-0.7650	-0.7650
24	16.5000	-0.7650	-0.7650
25	16.9980	-0.7590	-0.7590
26	17.4960	-0.7460	-0.7460
27	18.0000	-0.7460	-0.7460
28	18.4980	-0.7400	-0.7400
29	18.9960	-0.7330	-0.7330
30	19.5000	-0.7270	-0.7270
31	19.9980	-0.7210	-0.7210
32	21.0000	-0.7080	-0.7080
33	21.9960	-0.7020	-0.7020
34	22.9980	-0.6890	-0.6890
35	24.0000	-0.6760	-0.6760
36	24.9960	-0.6640	-0.6640
37	25.9980	-0.6570	-0.6570
38	27.0000	-0.6450	-0.6450
39	27.9960	-0.6380	-0.6380
40	28.9980	-0.6260	-0.6260
41	30.0000	-0.6190	-0.6190
42	30.9960	-0.6070	-0.6070
43	31.9980	-0.6000	-0.6000
44	33.0000	-0.5880	-0.5880
45	33.9960	-0.5810	-0.5810
46	34.9980	-0.5750	-0.5750
47	36.0000	-0.5620	-0.5620
48	36.9960	-0.5560	-0.5560
49	37.9980	-0.5500	-0.5500
50	39.0000	-0.5430	-0.5430

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1 — Test conducted on: 18.10.96

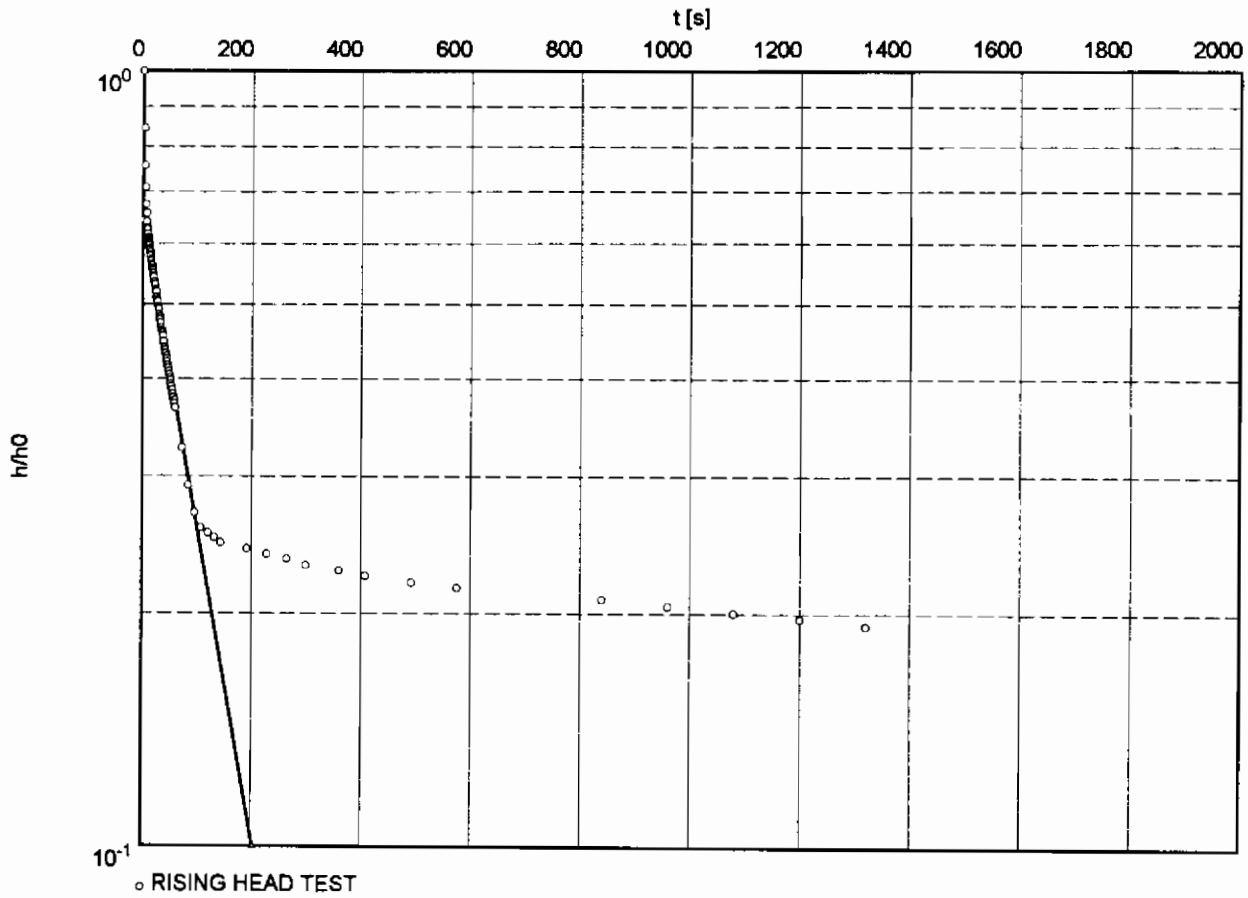
NBCE-065-001 — FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	39.9960	-0.5370	-0.5370
52	40.9980	-0.5310	-0.5310
53	42.0000	-0.5180	-0.5180
54	42.9960	-0.5120	-0.5120
55	43.9980	-0.5060	-0.5060
56	45.0000	-0.4990	-0.4990
57	45.9960	-0.4930	-0.4930
58	46.9980	-0.4870	-0.4870
59	48.0000	-0.4800	-0.4800
60	48.9960	-0.4740	-0.4740
61	49.9980	-0.4680	-0.4680
62	51.0000	-0.4610	-0.4610
63	51.9960	-0.4610	-0.4610
64	52.9980	-0.4550	-0.4550
65	54.0000	-0.4490	-0.4490
66	54.9960	-0.4420	-0.4420
67	55.9980	-0.4360	-0.4360
68	57.0000	-0.4300	-0.4300
69	57.9960	-0.4300	-0.4300
70	58.9980	-0.4230	-0.4230
71	60.0000	-0.4170	-0.4170
72	72.0000	-0.3600	-0.3600
73	84.0000	-0.3220	-0.3220
74	96.0000	-0.2900	-0.2900
75	108.0000	-0.2650	-0.2650
76	120.0000	-0.2460	-0.2460
77	132.0000	-0.2340	-0.2340
78	144.0000	-0.2210	-0.2210
79	156.0000	-0.2080	-0.2080
80	168.0000	-0.2020	-0.2020
81	180.0000	-0.1960	-0.1960
82	192.0000	-0.1890	-0.1890
83	204.0000	-0.1830	-0.1830
84	216.0000	-0.1770	-0.1770
85	228.0000	-0.1770	-0.1770
86	240.0000	-0.1700	-0.1700
87	276.0000	-0.1640	-0.1640
88	348.0000	-0.1580	-0.1580

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-001	



Hydraulic conductivity [ft/s]: 3.23×10^{-4}

Hydraulic conductivity [ft/day]: 27.9

L = 1.7 ft
b = 10.4 ft
D = 10.4 ft (full penetration)

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	2.4960	1.4100	1.4100	
3	3.4980	1.2640	1.2640	
4	4.5000	1.1820	1.1820	
5	5.4960	1.1250	1.1250	
6	6.4980	1.0940	1.0940	
7	6.9960	1.0620	1.0620	
8	7.5000	1.0680	1.0680	
9	7.9980	1.0490	1.0490	
10	8.4960	1.0430	1.0430	
11	9.0000	1.0300	1.0300	
12	9.4980	1.0300	1.0300	
13	9.9960	1.0180	1.0180	
14	10.5000	1.0110	1.0110	
15	10.9980	1.0050	1.0050	
16	11.4960	0.9990	0.9990	
17	12.0000	0.9930	0.9930	
18	12.4980	0.9860	0.9860	
19	12.9960	0.9800	0.9800	
20	13.5000	0.9740	0.9740	
21	13.9980	0.9670	0.9670	
22	14.4960	0.9610	0.9610	
23	15.0000	0.9550	0.9550	
24	15.4980	0.9480	0.9480	
25	15.9960	0.9420	0.9420	
26	16.5000	0.9420	0.9420	
27	16.9980	0.9360	0.9360	
28	17.4960	0.9290	0.9290	
29	18.0000	0.9230	0.9230	
30	18.4980	0.9170	0.9170	
31	18.9960	0.9100	0.9100	
32	19.5000	0.9040	0.9040	
33	19.9980	0.9040	0.9040	
34	21.0000	0.8910	0.8910	
35	21.9960	0.8850	0.8850	
36	22.9980	0.8720	0.8720	
37	24.0000	0.8660	0.8660	
38	24.9960	0.8530	0.8530	
39	25.9980	0.8470	0.8470	
40	27.0000	0.8410	0.8410	
41	27.9960	0.8280	0.8280	
42	28.9980	0.8220	0.8220	
43	30.0000	0.8090	0.8090	
44	30.9960	0.8030	0.8030	
45	31.9980	0.7970	0.7970	
46	33.0000	0.7900	0.7900	
47	33.9960	0.7780	0.7780	
48	34.9980	0.7710	0.7710	
49	36.0000	0.7650	0.7650	
50	36.9960	0.7590	0.7590	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

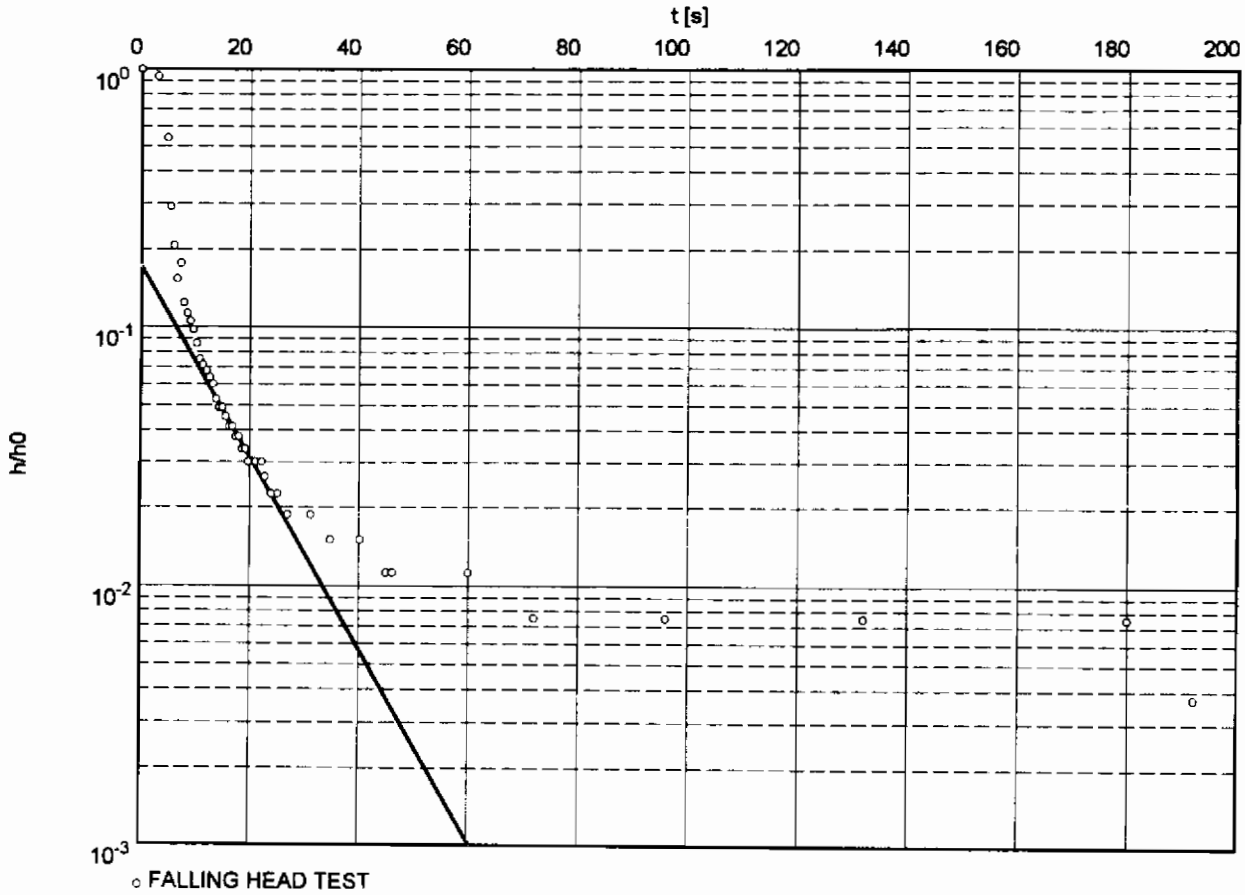
Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	37.9980	0.7460	0.7460
52	39.0000	0.7460	0.7460
53	39.9960	0.7330	0.7330
54	40.9980	0.7270	0.7270
55	42.0000	0.7210	0.7210
56	42.9960	0.7140	0.7140
57	43.9980	0.7080	0.7080
58	45.0000	0.7020	0.7020
59	45.9960	0.6950	0.6950
60	46.9980	0.6890	0.6890
61	48.0000	0.6830	0.6830
62	48.9960	0.6760	0.6760
63	49.9980	0.6700	0.6700
64	51.0000	0.6640	0.6640
65	51.9960	0.6570	0.6570
66	52.9980	0.6510	0.6510
67	54.0000	0.6450	0.6450
68	54.9960	0.6380	0.6380
69	55.9980	0.6320	0.6320
70	57.0000	0.6260	0.6260
71	57.9960	0.6260	0.6260
72	58.9980	0.6190	0.6190
73	60.0000	0.6130	0.6130
74	72.0000	0.5440	0.5440
75	84.0000	0.4870	0.4870
76	96.0000	0.4490	0.4490
77	108.0000	0.4300	0.4300
78	120.0000	0.4230	0.4230
79	132.0000	0.4170	0.4170
80	144.0000	0.4110	0.4110
81	192.0000	0.4040	0.4040
82	228.0000	0.3980	0.3980
83	264.0000	0.3920	0.3920
84	300.0000	0.3850	0.3850
85	360.0000	0.3790	0.3790
86	408.0000	0.3730	0.3730
87	492.0000	0.3660	0.3660
88	576.0000	0.3600	0.3600
89	840.0000	0.3480	0.3480
90	960.0000	0.3410	0.3410
91	1080.0000	0.3350	0.3350
92	1200.0000	0.3290	0.3290
93	1320.0000	0.3220	0.3220

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-002	



Hydraulic conductivity [ft/s]: 5.07×10^{-3}

Hydraulic conductivity [ft/day]: 438

L = 1.0 ft
b = 9.6 ft
D = 9.6 ft (full penetration)

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1 — Test conducted on: 18.10.96

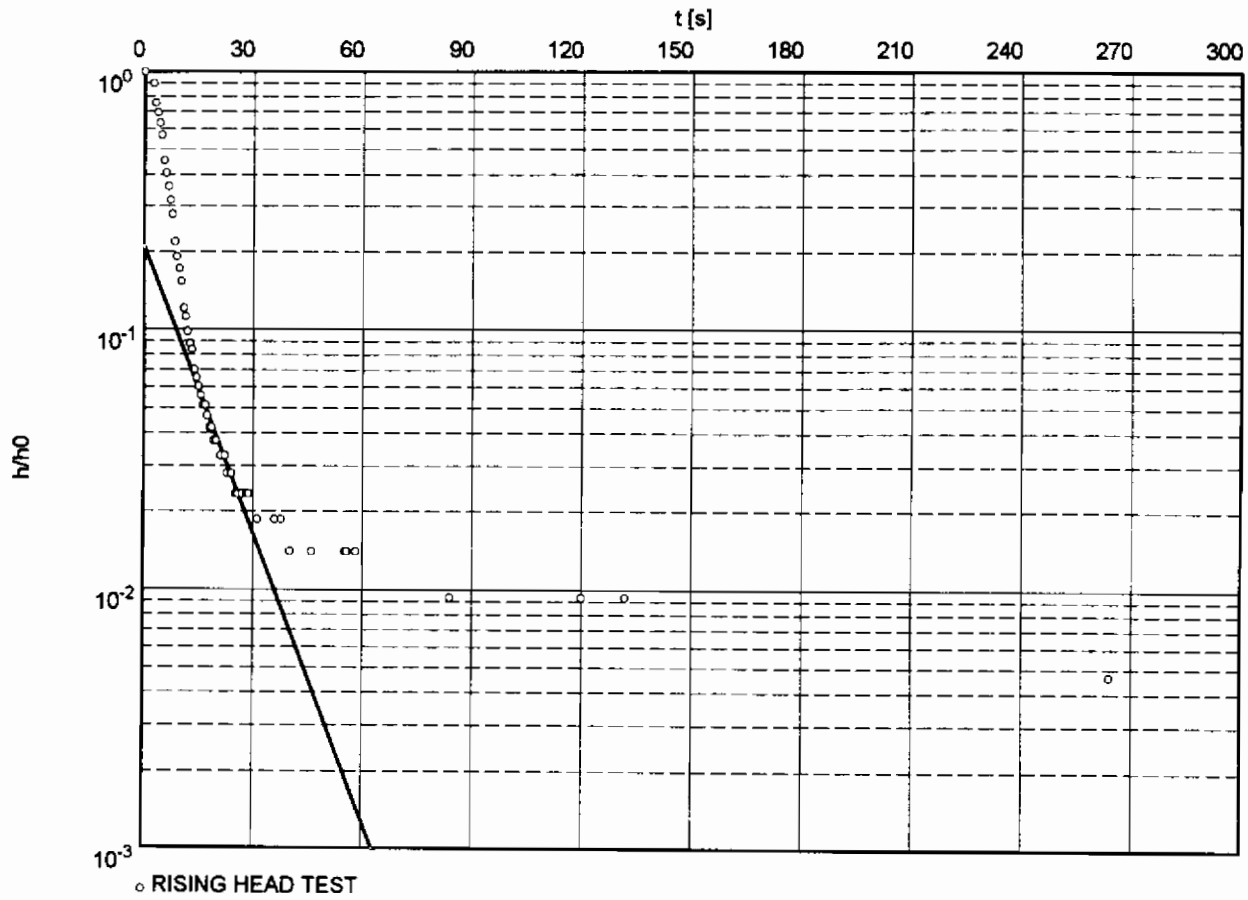
NBCE-065-002 — FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.6700	-2.6700	
2	3.0000	-2.5100	-2.5100	
3	4.8000	-1.4400	-1.4400	
4	5.4000	-0.7800	-0.7800	
5	6.0000	-0.5500	-0.5500	
6	6.6000	-0.4100	-0.4100	
7	7.2000	-0.4700	-0.4700	
8	7.8000	-0.3300	-0.3300	
9	8.4000	-0.3000	-0.3000	
10	9.0000	-0.2800	-0.2800	
11	9.6000	-0.2600	-0.2600	
12	10.2000	-0.2300	-0.2300	
13	10.8000	-0.2000	-0.2000	
14	11.4000	-0.1900	-0.1900	
15	12.0000	-0.1800	-0.1800	
16	12.6000	-0.1700	-0.1700	
17	13.2000	-0.1600	-0.1600	
18	13.8000	-0.1400	-0.1400	
19	14.4000	-0.1300	-0.1300	
20	15.0000	-0.1300	-0.1300	
21	15.6000	-0.1200	-0.1200	
22	16.2000	-0.1100	-0.1100	
23	16.8000	-0.1100	-0.1100	
24	17.4000	-0.1000	-0.1000	
25	18.0000	-0.1000	-0.1000	
26	18.6000	-0.0900	-0.0900	
27	19.2000	-0.0900	-0.0900	
28	19.8000	-0.0800	-0.0800	
29	21.0000	-0.0800	-0.0800	
30	22.2000	-0.0800	-0.0800	
31	22.8000	-0.0700	-0.0700	
32	24.0000	-0.0600	-0.0600	
33	25.2000	-0.0600	-0.0600	
34	27.0000	-0.0500	-0.0500	
35	31.2000	-0.0500	-0.0500	
36	34.8000	-0.0400	-0.0400	
37	40.2000	-0.0400	-0.0400	
38	45.0000	-0.0300	-0.0300	
39	46.2000	-0.0300	-0.0300	
40	60.0000	-0.0300	-0.0300	
41	72.0000	-0.0200	-0.0200	
42	96.0000	-0.0200	-0.0200	
43	132.0000	-0.0200	-0.0200	
44	180.0000	-0.0200	-0.0200	
45	192.0000	-0.0100	-0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-002	



Hydraulic conductivity [ft/s]: 5.15×10^{-3}

Hydraulic conductivity [ft/day]: 445

L = 1.0 ft
b = 9.6 ft
D = 9.6 ft (full penetration)

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.1500	2.1500
2	2.4000	1.9400	1.9400
3	3.0000	1.6300	1.6300
4	3.6000	1.4900	1.4900
5	4.2000	1.3600	1.3600
6	4.8000	1.2200	1.2200
7	5.4000	0.9700	0.9700
8	6.0000	0.8700	0.8700
9	6.6000	0.7700	0.7700
10	7.2000	0.6800	0.6800
11	7.8000	0.6000	0.6000
12	8.4000	0.4700	0.4700
13	9.0000	0.4100	0.4100
14	9.6000	0.3700	0.3700
15	10.2000	0.3300	0.3300
16	10.8000	0.2600	0.2600
17	11.4000	0.2400	0.2400
18	12.0000	0.2100	0.2100
19	12.6000	0.1900	0.1900
20	13.2000	0.1800	0.1800
21	13.8000	0.1500	0.1500
22	14.4000	0.1400	0.1400
23	15.0000	0.1300	0.1300
24	15.6000	0.1200	0.1200
25	16.2000	0.1100	0.1100
26	16.8000	0.1100	0.1100
27	17.4000	0.1000	0.1000
28	18.0000	0.0900	0.0900
29	18.6000	0.0900	0.0900
30	19.2000	0.0800	0.0800
31	19.8000	0.0800	0.0800
32	21.0000	0.0700	0.0700
33	22.2000	0.0700	0.0700
34	22.8000	0.0600	0.0600
35	24.0000	0.0600	0.0600
36	25.2000	0.0500	0.0500
37	25.8000	0.0500	0.0500
38	27.0000	0.0500	0.0500
39	28.2000	0.0500	0.0500
40	28.8000	0.0500	0.0500
41	31.2000	0.0400	0.0400
42	36.0000	0.0400	0.0400
43	37.8000	0.0400	0.0400
44	40.2000	0.0300	0.0300
45	46.2000	0.0300	0.0300
46	55.2000	0.0300	0.0300
47	55.8000	0.0300	0.0300
48	58.2000	0.0300	0.0300
49	84.0000	0.0200	0.0200
50	120.0000	0.0200	0.0200

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

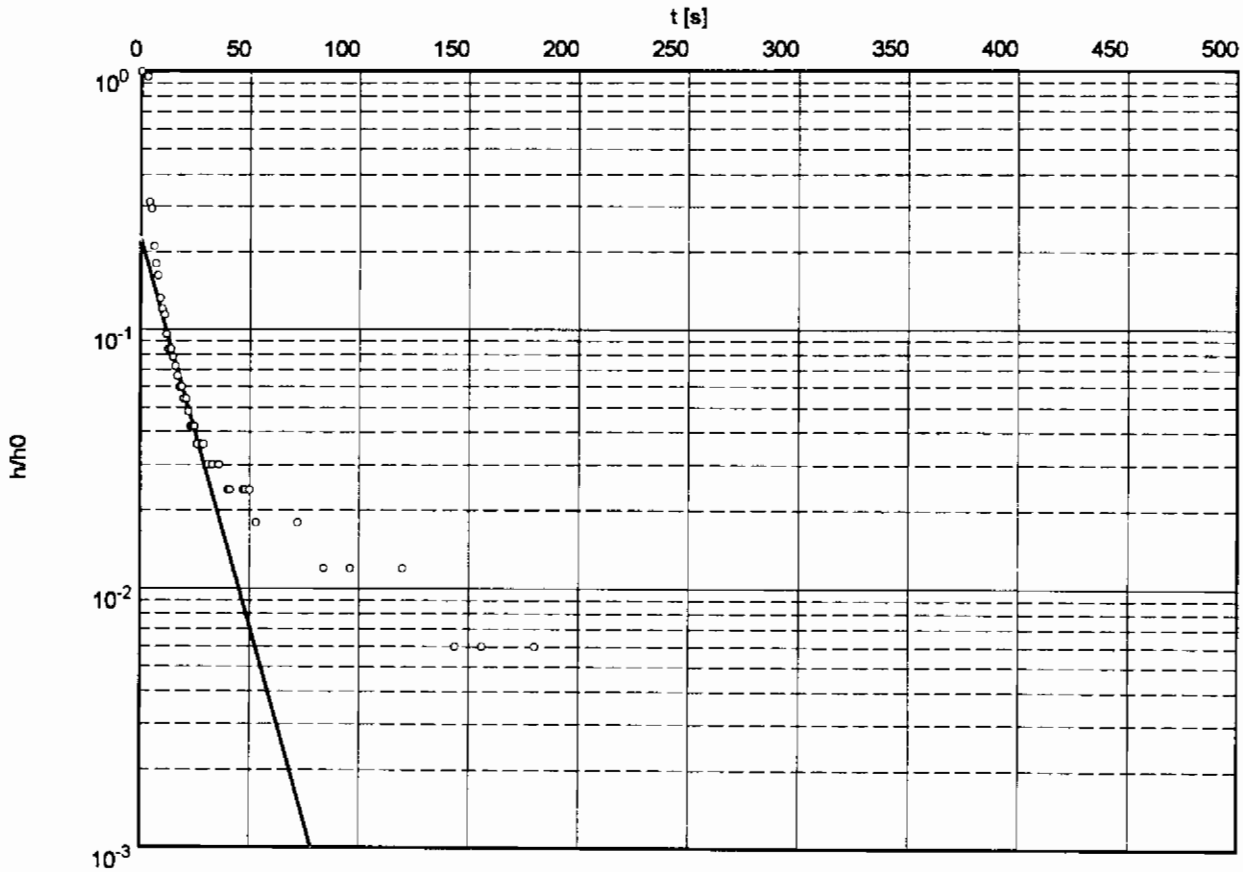
Slug Test No. 1	Test conducted on: 18.10.96
NBCE-065-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	132.0000	0.0200	0.0200	
52	264.0000	0.0100	0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-070-002	



○ FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 6.08×10^{-4}

Hydraulic conductivity [ft/day]: 52.5

L = 6.1 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

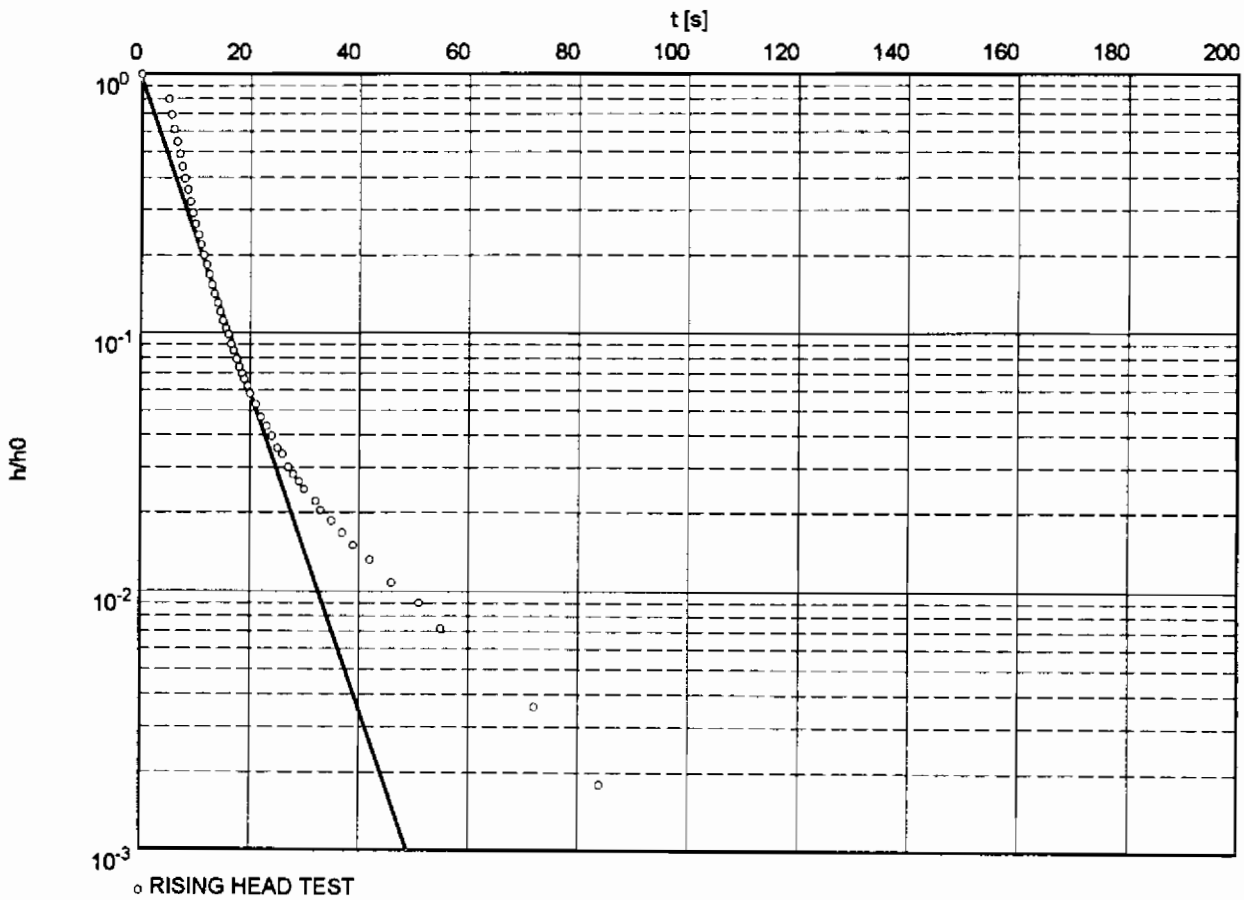
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-070-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-1.6700	-1.6700	
2	3.0000	-1.5900	-1.5900	
3	4.0000	-0.5200	-0.5200	
4	5.0000	-0.4900	-0.4900	
5	6.0000	-0.3500	-0.3500	
6	7.0000	-0.3000	-0.3000	
7	8.0000	-0.2700	-0.2700	
8	9.0000	-0.2200	-0.2200	
9	10.0000	-0.2000	-0.2000	
10	11.0000	-0.1900	-0.1900	
11	12.0000	-0.1600	-0.1600	
12	13.0000	-0.1400	-0.1400	
13	14.0000	-0.1400	-0.1400	
14	15.0000	-0.1300	-0.1300	
15	16.0000	-0.1200	-0.1200	
16	17.0000	-0.1100	-0.1100	
17	18.0000	-0.1000	-0.1000	
18	19.0000	-0.1000	-0.1000	
19	20.0000	-0.0900	-0.0900	
20	21.0000	-0.0900	-0.0900	
21	22.0000	-0.0800	-0.0800	
22	23.0000	-0.0700	-0.0700	
23	24.0000	-0.0700	-0.0700	
24	25.0000	-0.0700	-0.0700	
25	26.0000	-0.0600	-0.0600	
26	28.0000	-0.0600	-0.0600	
27	29.0000	-0.0600	-0.0600	
28	31.0000	-0.0500	-0.0500	
29	33.0000	-0.0500	-0.0500	
30	36.0000	-0.0500	-0.0500	
31	40.0000	-0.0400	-0.0400	
32	41.0000	-0.0400	-0.0400	
33	47.0000	-0.0400	-0.0400	
34	48.0000	-0.0400	-0.0400	
35	50.0000	-0.0400	-0.0400	
36	53.0000	-0.0300	-0.0300	
37	72.0000	-0.0300	-0.0300	
38	84.0000	-0.0200	-0.0200	
39	96.0000	-0.0200	-0.0200	
40	120.0000	-0.0200	-0.0200	
41	144.0000	-0.0100	-0.0100	
42	156.0000	-0.0100	-0.0100	
43	180.0000	-0.0100	-0.0100	
44	240.0000	0.0000	0.0000	
45	372.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-070-002	



Hydraulic conductivity [ft/s]: 1.23×10^{-3}

Hydraulic conductivity [ft/day]: 106

L = 6.1 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-070-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	4.9980	1.3350	1.3350	
3	5.4960	1.1580	1.1580	
4	6.0000	1.0220	1.0220	
5	6.4980	0.9120	0.9120	
6	6.9960	0.8170	0.8170	
7	7.5000	0.7320	0.7320	
8	7.9980	0.6590	0.6590	
9	8.4960	0.5960	0.5960	
10	9.0000	0.5390	0.5390	
11	9.4980	0.4860	0.4860	
12	9.9960	0.4410	0.4410	
13	10.5000	0.4000	0.4000	
14	10.9980	0.3660	0.3660	
15	11.4960	0.3340	0.3340	
16	12.0000	0.3060	0.3060	
17	12.4980	0.2800	0.2800	
18	12.9960	0.2550	0.2550	
19	13.5000	0.2360	0.2360	
20	13.9980	0.2170	0.2170	
21	14.4960	0.2020	0.2020	
22	15.0000	0.1860	0.1860	
23	15.4980	0.1730	0.1730	
24	15.9960	0.1640	0.1640	
25	16.5000	0.1510	0.1510	
26	16.9980	0.1420	0.1420	
27	17.4960	0.1320	0.1320	
28	18.0000	0.1230	0.1230	
29	18.4980	0.1160	0.1160	
30	18.9960	0.1100	0.1100	
31	19.5000	0.1040	0.1040	
32	19.9980	0.0970	0.0970	
33	21.0000	0.0880	0.0880	
34	21.9960	0.0780	0.0780	
35	22.9980	0.0720	0.0720	
36	24.0000	0.0660	0.0660	
37	24.9960	0.0590	0.0590	
38	25.9980	0.0560	0.0560	
39	27.0000	0.0500	0.0500	
40	27.9960	0.0470	0.0470	
41	28.9980	0.0440	0.0440	
42	30.0000	0.0410	0.0410	
43	31.9980	0.0370	0.0370	
44	33.0000	0.0340	0.0340	
45	34.9980	0.0310	0.0310	
46	36.9960	0.0280	0.0280	
47	39.0000	0.0250	0.0250	
48	42.0000	0.0220	0.0220	
49	45.9960	0.0180	0.0180	
50	51.0000	0.0150	0.0150	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

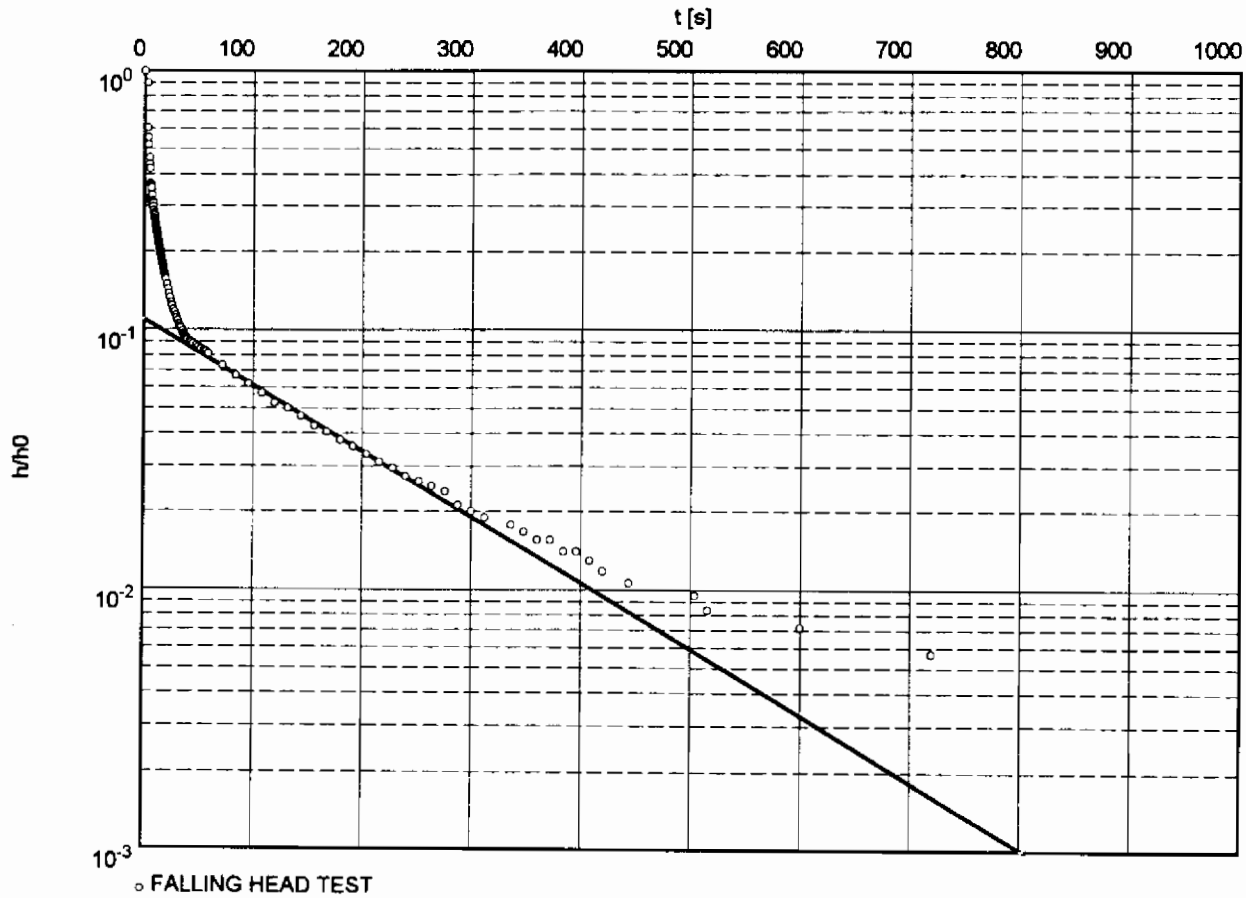
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-070-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	54.9960	0.0120	0.0120	
52	72.0000	0.0060	0.0060	
53	84.0000	0.0030	0.0030	
54	192.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	



Hydraulic conductivity [ft/s]: 3.15×10^{-5}

Hydraulic conductivity [ft/day]: 2.72

L = 10.9 ft
b = 10.9 ft
D = 10.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.6450	-2.6450
2	2.7960	-2.3860	-2.3860
3	3.0000	-1.5950	-1.5950
4	3.1980	-1.1950	-1.1950
5	3.3960	-1.3710	-1.3710
6	3.7980	-1.4590	-1.4590
7	4.5960	-1.1500	-1.1500
8	4.8000	-1.2230	-1.2230
9	5.1960	-1.1060	-1.1060
10	5.4000	-0.9680	-0.9680
11	5.5980	-0.8600	-0.8600
12	5.7960	-0.8260	-0.8260
13	6.0000	-0.8540	-0.8540
14	6.1980	-0.9170	-0.9170
15	6.3960	-0.9490	-0.9490
16	6.6000	-0.9300	-0.9300
17	6.7980	-0.8730	-0.8730
18	6.9960	-0.8260	-0.8260
19	7.2000	-0.7910	-0.7910
20	7.3980	-0.7940	-0.7940
21	7.5960	-0.8100	-0.8100
22	7.8000	-0.8220	-0.8220
23	7.9980	-0.8100	-0.8100
24	8.1960	-0.7850	-0.7850
25	8.4000	-0.7590	-0.7590
26	8.5980	-0.7400	-0.7400
27	8.7960	-0.7340	-0.7340
28	9.1980	-0.7310	-0.7310
29	9.3960	-0.7250	-0.7250
30	9.6000	-0.7090	-0.7090
31	9.7980	-0.6960	-0.6960
32	9.9960	-0.6840	-0.6840
33	10.2000	-0.6740	-0.6740
34	10.3980	-0.6710	-0.6710
35	10.5960	-0.6650	-0.6650
36	10.8000	-0.6550	-0.6550
37	10.9980	-0.6460	-0.6460
38	11.1960	-0.6400	-0.6400
39	11.4000	-0.6300	-0.6300
40	11.5980	-0.6210	-0.6210
41	11.7960	-0.6140	-0.6140
42	12.0000	-0.6110	-0.6110
43	12.1980	-0.6020	-0.6020
44	12.3960	-0.5950	-0.5950
45	12.6000	-0.5890	-0.5890
46	12.7980	-0.5830	-0.5830
47	12.9960	-0.5730	-0.5730
48	13.2000	-0.5670	-0.5670
49	13.3980	-0.5640	-0.5640
50	13.5960	-0.5580	-0.5580

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	13.8000	-0.5510	-0.5510
52	13.9980	-0.5450	-0.5450
53	14.1960	-0.5390	-0.5390
54	14.4000	-0.5360	-0.5360
55	14.5980	-0.5290	-0.5290
56	14.7960	-0.5230	-0.5230
57	15.0000	-0.5170	-0.5170
58	15.1980	-0.5130	-0.5130
59	15.3960	-0.5070	-0.5070
60	15.6000	-0.5010	-0.5010
61	15.7980	-0.4980	-0.4980
62	15.9960	-0.4910	-0.4910
63	16.2000	-0.4880	-0.4880
64	16.3980	-0.4850	-0.4850
65	16.5960	-0.4790	-0.4790
66	16.8000	-0.4760	-0.4760
67	16.9980	-0.4690	-0.4690
68	17.1960	-0.4660	-0.4660
69	17.4000	-0.4630	-0.4630
70	17.5980	-0.4570	-0.4570
71	17.7960	-0.4500	-0.4500
72	18.0000	-0.4470	-0.4470
73	18.1980	-0.4440	-0.4440
74	18.3960	-0.4410	-0.4410
75	18.6000	-0.4350	-0.4350
76	18.7980	-0.4350	-0.4350
77	18.9960	-0.4280	-0.4280
78	19.2000	-0.4220	-0.4220
79	19.3980	-0.4190	-0.4190
80	19.5960	-0.4160	-0.4160
81	19.9980	-0.4130	-0.4130
82	21.0000	-0.3940	-0.3940
83	21.9960	-0.3780	-0.3780
84	22.9980	-0.3620	-0.3620
85	24.0000	-0.3500	-0.3500
86	24.9960	-0.3370	-0.3370
87	25.9980	-0.3270	-0.3270
88	27.0000	-0.3150	-0.3150
89	27.9960	-0.3090	-0.3090
90	28.9980	-0.2990	-0.2990
91	30.0000	-0.2930	-0.2930
92	30.9960	-0.2860	-0.2860
93	31.9980	-0.2770	-0.2770
94	33.0000	-0.2710	-0.2710
95	33.9960	-0.2680	-0.2680
96	34.9980	-0.2610	-0.2610
97	36.0000	-0.2550	-0.2550
98	36.9960	-0.2520	-0.2520
99	37.9980	-0.2490	-0.2490
100	39.0000	-0.2460	-0.2460

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

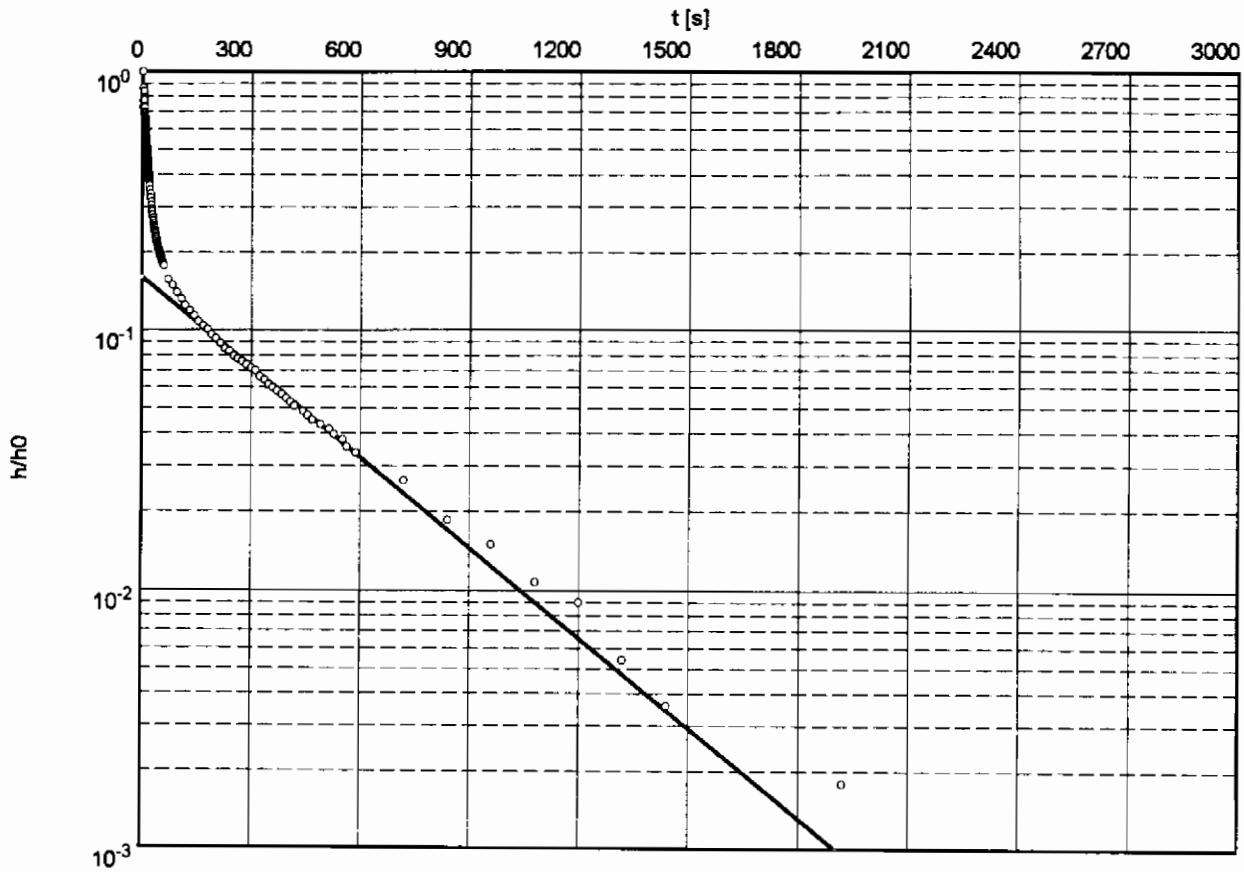
Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	39.9960	-0.2420	-0.2420	
102	42.0000	-0.2390	-0.2390	
103	42.9960	-0.2360	-0.2360	
104	45.0000	-0.2330	-0.2330	
105	48.0000	-0.2300	-0.2300	
106	49.9980	-0.2270	-0.2270	
107	51.9960	-0.2230	-0.2230	
108	54.9960	-0.2200	-0.2200	
109	57.0000	-0.2170	-0.2170	
110	58.9980	-0.2140	-0.2140	
111	72.0000	-0.1920	-0.1920	
112	84.0000	-0.1760	-0.1760	
113	96.0000	-0.1640	-0.1640	
114	108.0000	-0.1510	-0.1510	
115	120.0000	-0.1380	-0.1380	
116	132.0000	-0.1320	-0.1320	
117	144.0000	-0.1230	-0.1230	
118	156.0000	-0.1130	-0.1130	
119	168.0000	-0.1070	-0.1070	
120	180.0000	-0.1000	-0.1000	
121	192.0000	-0.0940	-0.0940	
122	204.0000	-0.0880	-0.0880	
123	216.0000	-0.0820	-0.0820	
124	228.0000	-0.0780	-0.0780	
125	240.0000	-0.0720	-0.0720	
126	252.0000	-0.0690	-0.0690	
127	264.0000	-0.0660	-0.0660	
128	276.0000	-0.0630	-0.0630	
129	288.0000	-0.0560	-0.0560	
130	300.0000	-0.0530	-0.0530	
131	312.0000	-0.0500	-0.0500	
132	336.0000	-0.0470	-0.0470	
133	348.0000	-0.0440	-0.0440	
134	360.0000	-0.0410	-0.0410	
135	372.0000	-0.0410	-0.0410	
136	384.0000	-0.0370	-0.0370	
137	396.0000	-0.0370	-0.0370	
138	408.0000	-0.0340	-0.0340	
139	420.0000	-0.0310	-0.0310	
140	444.0000	-0.0280	-0.0280	
141	504.0000	-0.0250	-0.0250	
142	516.0000	-0.0220	-0.0220	
143	600.0000	-0.0190	-0.0190	
144	720.0000	-0.0150	-0.0150	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	



○ RISING HEAD TEST

Hydraulic conductivity [ft/s]: 1.43×10^{-5}

Hydraulic conductivity [ft/day]: 1.24

L = 10.9 ft
b = 10.9 ft
D = 10.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.6700	1.6700
2	2.1960	1.4430	1.4430
3	2.4000	1.2860	1.2860
4	2.5980	1.2190	1.2190
5	2.7960	1.3460	1.3460
6	3.0000	1.4050	1.4050
7	3.1980	1.2890	1.2890
8	3.6000	1.2760	1.2760
9	3.7980	1.2920	1.2920
10	3.9960	1.2130	1.2130
11	4.2000	1.1820	1.1820
12	4.3980	1.2190	1.2190
13	4.5960	1.2100	1.2100
14	4.8000	1.1600	1.1600
15	4.9980	1.1500	1.1500
16	5.1960	1.1630	1.1630
17	5.4000	1.1470	1.1470
18	5.5980	1.1190	1.1190
19	5.7960	1.1120	1.1120
20	6.0000	1.1090	1.1090
21	6.1980	1.0970	1.0970
22	6.3960	1.0780	1.0780
23	6.6000	1.0680	1.0680
24	6.7980	1.0650	1.0650
25	6.9960	1.0520	1.0520
26	7.2000	1.0370	1.0370
27	7.3980	1.0300	1.0300
28	7.5960	1.0240	1.0240
29	7.8000	1.0110	1.0110
30	7.9980	0.9990	0.9990
31	8.1960	0.9930	0.9930
32	8.4000	0.9830	0.9830
33	8.5980	0.9740	0.9740
34	8.7960	0.9640	0.9640
35	9.0000	0.9550	0.9550
36	9.1980	0.9450	0.9450
37	9.3960	0.9390	0.9390
38	9.6000	0.9260	0.9260
39	9.7980	0.9200	0.9200
40	9.9960	0.9140	0.9140
41	10.2000	0.9010	0.9010
42	10.3980	0.8950	0.8950
43	10.5960	0.8850	0.8850
44	10.8000	0.8790	0.8790
45	10.9980	0.8700	0.8700
46	11.1960	0.8630	0.8630
47	11.4000	0.8570	0.8570
48	11.5980	0.8480	0.8480
49	11.7960	0.8380	0.8380
50	12.0000	0.8320	0.8320

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1 — Test conducted on: 20.10.96

NBCE-097-001 — RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	12.1980	0.8220	0.8220
52	12.3960	0.8160	0.8160
53	12.6000	0.8100	0.8100
54	12.7980	0.8030	0.8030
55	12.9960	0.7940	0.7940
56	13.2000	0.7880	0.7880
57	13.3980	0.7810	0.7810
58	13.5960	0.7750	0.7750
59	13.8000	0.7660	0.7660
60	13.9980	0.7590	0.7590
61	14.1960	0.7560	0.7560
62	14.4000	0.7470	0.7470
63	14.5980	0.7400	0.7400
64	14.7960	0.7340	0.7340
65	15.0000	0.7310	0.7310
66	15.1980	0.7250	0.7250
67	15.3960	0.7180	0.7180
68	15.6000	0.7120	0.7120
69	15.7980	0.7060	0.7060
70	15.9960	0.6990	0.6990
71	16.2000	0.6930	0.6930
72	16.3980	0.6900	0.6900
73	16.5960	0.6840	0.6840
74	16.8000	0.6770	0.6770
75	16.9980	0.6740	0.6740
76	17.1960	0.6680	0.6680
77	17.4000	0.6650	0.6650
78	17.5980	0.6580	0.6580
79	17.7960	0.6550	0.6550
80	18.0000	0.6490	0.6490
81	18.1980	0.6460	0.6460
82	18.3960	0.6390	0.6390
83	18.6000	0.6330	0.6330
84	18.7980	0.6300	0.6300
85	18.9960	0.6270	0.6270
86	19.2000	0.6210	0.6210
87	19.3980	0.6170	0.6170
88	19.5960	0.6110	0.6110
89	19.8000	0.6080	0.6080
90	19.9980	0.6050	0.6050
91	21.0000	0.5800	0.5800
92	21.9960	0.5610	0.5610
93	22.9980	0.5420	0.5420
94	24.0000	0.5230	0.5230
95	24.9960	0.5070	0.5070
96	25.9980	0.4910	0.4910
97	27.0000	0.4790	0.4790
98	27.9960	0.4660	0.4660
99	28.9980	0.4530	0.4530
100	30.0000	0.4410	0.4410

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	30.9960	0.4310	0.4310	
102	31.9980	0.4220	0.4220	
103	33.0000	0.4160	0.4160	
104	33.9960	0.4060	0.4060	
105	34.9980	0.4000	0.4000	
106	36.0000	0.3940	0.3940	
107	36.9960	0.3840	0.3840	
108	37.9980	0.3810	0.3810	
109	39.0000	0.3720	0.3720	
110	39.9960	0.3650	0.3650	
111	40.9980	0.3620	0.3620	
112	42.0000	0.3560	0.3560	
113	42.9960	0.3530	0.3530	
114	43.9980	0.3460	0.3460	
115	45.0000	0.3430	0.3430	
116	45.9960	0.3400	0.3400	
117	46.9980	0.3340	0.3340	
118	48.0000	0.3300	0.3300	
119	48.9960	0.3270	0.3270	
120	49.9980	0.3240	0.3240	
121	51.0000	0.3210	0.3210	
122	51.9960	0.3180	0.3180	
123	52.9980	0.3150	0.3150	
124	54.0000	0.3120	0.3120	
125	54.9960	0.3080	0.3080	
126	55.9980	0.3050	0.3050	
127	57.0000	0.3020	0.3020	
128	57.9960	0.2990	0.2990	
129	60.0000	0.2960	0.2960	
130	72.0000	0.2610	0.2610	
131	84.0000	0.2490	0.2490	
132	96.0000	0.2330	0.2330	
133	108.0000	0.2200	0.2200	
134	120.0000	0.2080	0.2080	
135	132.0000	0.1980	0.1980	
136	144.0000	0.1890	0.1890	
137	156.0000	0.1790	0.1790	
138	168.0000	0.1730	0.1730	
139	180.0000	0.1670	0.1670	
140	192.0000	0.1600	0.1600	
141	204.0000	0.1540	0.1540	
142	216.0000	0.1480	0.1480	
143	228.0000	0.1410	0.1410	
144	240.0000	0.1380	0.1380	
145	252.0000	0.1320	0.1320	
146	264.0000	0.1290	0.1290	
147	276.0000	0.1260	0.1260	
148	288.0000	0.1220	0.1220	
149	300.0000	0.1190	0.1190	
150	312.0000	0.1160	0.1160	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

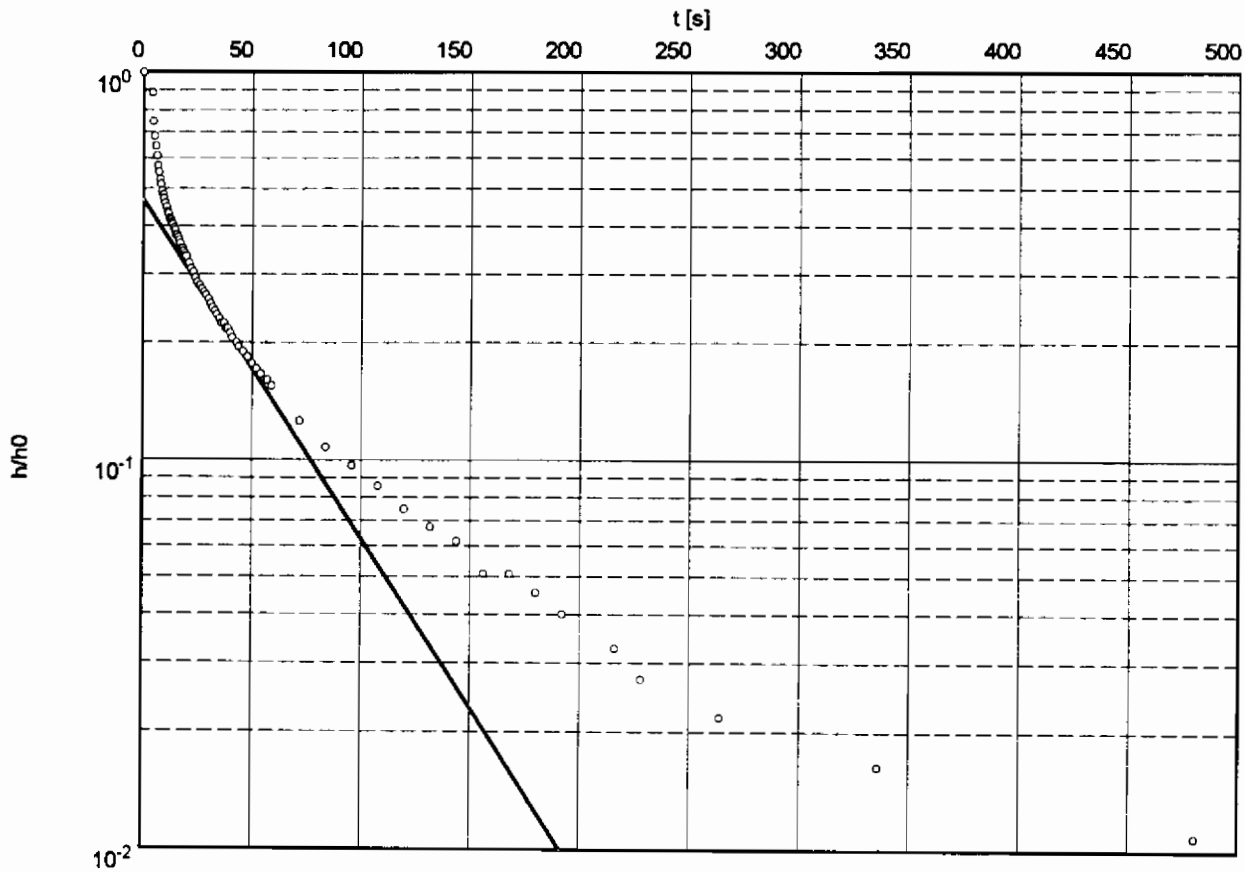
Slug Test No. 1	Test conducted on: 20.10.96
NBCE-097-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
151	324.0000	0.1100	0.1100
152	336.0000	0.1070	0.1070
153	348.0000	0.1030	0.1030
154	360.0000	0.1000	0.1000
155	372.0000	0.0970	0.0970
156	384.0000	0.0940	0.0940
157	396.0000	0.0910	0.0910
158	408.0000	0.0880	0.0880
159	420.0000	0.0850	0.0850
160	444.0000	0.0810	0.0810
161	456.0000	0.0780	0.0780
162	468.0000	0.0750	0.0750
163	492.0000	0.0720	0.0720
164	516.0000	0.0690	0.0690
165	528.0000	0.0660	0.0660
166	552.0000	0.0630	0.0630
167	564.0000	0.0590	0.0590
168	588.0000	0.0560	0.0560
169	720.0000	0.0440	0.0440
170	840.0000	0.0310	0.0310
171	960.0000	0.0250	0.0250
172	1080.0000	0.0180	0.0180
173	1200.0000	0.0150	0.0150
174	1320.0000	0.0090	0.0090
175	1440.0000	0.0060	0.0060
176	1920.0000	0.0030	0.0030
177	2040.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-530-002	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 1.80×10^{-4}

Hydraulic conductivity [ft/day]: 15.6

L = 6.0 ft
b = 8.0 ft
D = 8.0 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-530-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-0.5500	-0.5500
2	3.9960	-0.4860	-0.4860
3	4.5000	-0.4100	-0.4100
4	4.9980	-0.3750	-0.3750
5	5.4960	-0.3530	-0.3530
6	6.0000	-0.3340	-0.3340
7	6.4980	-0.3150	-0.3150
8	6.9960	-0.3030	-0.3030
9	7.5000	-0.2900	-0.2900
10	7.9980	-0.2810	-0.2810
11	8.4960	-0.2710	-0.2710
12	9.0000	-0.2650	-0.2650
13	9.4980	-0.2580	-0.2580
14	9.9960	-0.2520	-0.2520
15	10.5000	-0.2460	-0.2460
16	10.9980	-0.2390	-0.2390
17	11.4960	-0.2360	-0.2360
18	12.0000	-0.2300	-0.2300
19	12.4980	-0.2270	-0.2270
20	12.9960	-0.2240	-0.2240
21	13.5000	-0.2210	-0.2210
22	13.9980	-0.2170	-0.2170
23	14.4960	-0.2140	-0.2140
24	15.0000	-0.2080	-0.2080
25	15.4980	-0.2080	-0.2080
26	15.9960	-0.2050	-0.2050
27	16.5000	-0.2020	-0.2020
28	16.9980	-0.1980	-0.1980
29	17.4960	-0.1920	-0.1920
30	18.0000	-0.1920	-0.1920
31	18.4980	-0.1890	-0.1890
32	18.9960	-0.1860	-0.1860
33	19.5000	-0.1830	-0.1830
34	19.9980	-0.1830	-0.1830
35	21.0000	-0.1760	-0.1760
36	21.9960	-0.1700	-0.1700
37	22.9980	-0.1670	-0.1670
38	24.0000	-0.1610	-0.1610
39	24.9960	-0.1570	-0.1570
40	25.9980	-0.1540	-0.1540
41	27.0000	-0.1510	-0.1510
42	27.9960	-0.1480	-0.1480
43	28.9980	-0.1450	-0.1450
44	30.0000	-0.1420	-0.1420
45	30.9960	-0.1380	-0.1380
46	31.9980	-0.1350	-0.1350
47	33.0000	-0.1320	-0.1320
48	33.9960	-0.1290	-0.1290
49	34.9980	-0.1260	-0.1260
50	36.0000	-0.1230	-0.1230

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

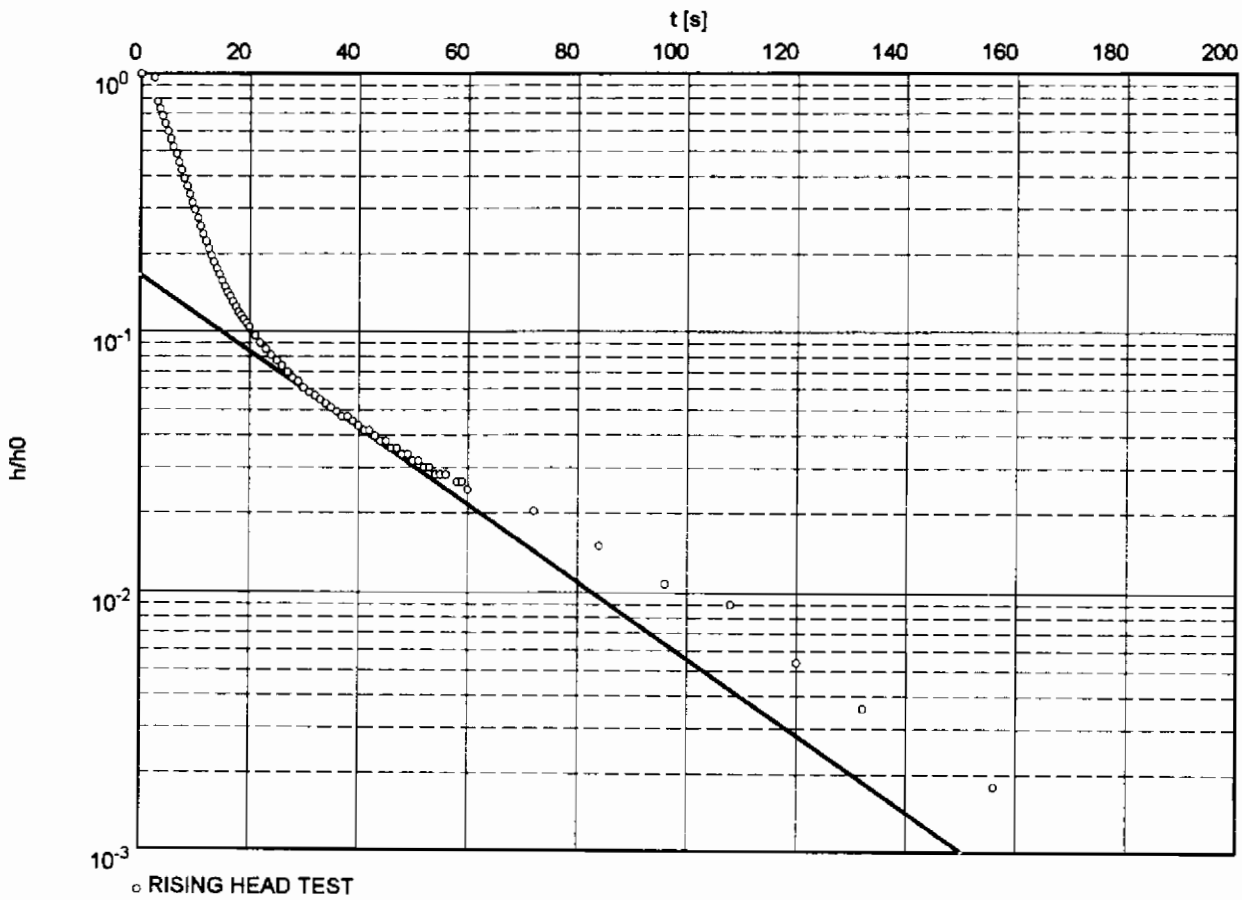
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-530-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	36.9960	-0.1230	-0.1230	
52	37.9980	-0.1190	-0.1190	
53	39.0000	-0.1190	-0.1190	
54	39.9960	-0.1160	-0.1160	
55	40.9980	-0.1130	-0.1130	
56	42.9960	-0.1100	-0.1100	
57	43.9980	-0.1070	-0.1070	
58	45.9960	-0.1040	-0.1040	
59	48.0000	-0.1010	-0.1010	
60	49.9980	-0.0970	-0.0970	
61	51.9960	-0.0940	-0.0940	
62	54.0000	-0.0910	-0.0910	
63	57.0000	-0.0880	-0.0880	
64	58.9980	-0.0850	-0.0850	
65	72.0000	-0.0690	-0.0690	
66	84.0000	-0.0590	-0.0590	
67	96.0000	-0.0530	-0.0530	
68	108.0000	-0.0470	-0.0470	
69	120.0000	-0.0410	-0.0410	
70	132.0000	-0.0370	-0.0370	
71	144.0000	-0.0340	-0.0340	
72	156.0000	-0.0280	-0.0280	
73	168.0000	-0.0280	-0.0280	
74	180.0000	-0.0250	-0.0250	
75	192.0000	-0.0220	-0.0220	
76	216.0000	-0.0180	-0.0180	
77	228.0000	-0.0150	-0.0150	
78	264.0000	-0.0120	-0.0120	
79	336.0000	-0.0090	-0.0090	
80	480.0000	-0.0060	-0.0060	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-530-002	



Hydraulic conductivity [ft/s]: 3.06×10^{-4}

Hydraulic conductivity [ft/day]: 26.4

L = 6.0 ft
b = 8.0 ft
D = 8.0 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-530-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.6700	1.6700
2	2.4960	1.6120	1.6120
3	3.0000	1.3030	1.3030
4	3.4980	1.2180	1.2180
5	3.9960	1.1420	1.1420
6	4.5000	1.0660	1.0660
7	4.9980	0.9940	0.9940
8	5.4960	0.9310	0.9310
9	6.0000	0.8680	0.8680
10	6.4980	0.8110	0.8110
11	6.9960	0.7540	0.7540
12	7.5000	0.7030	0.7030
13	7.9980	0.6530	0.6530
14	8.4960	0.6090	0.6090
15	9.0000	0.5680	0.5680
16	9.4980	0.5270	0.5270
17	9.9960	0.4920	0.4920
18	10.5000	0.4570	0.4570
19	10.9980	0.4260	0.4260
20	11.4960	0.3970	0.3970
21	12.0000	0.3720	0.3720
22	12.4980	0.3500	0.3500
23	12.9960	0.3280	0.3280
24	13.5000	0.3090	0.3090
25	13.9980	0.2930	0.2930
26	14.4960	0.2770	0.2770
27	15.0000	0.2620	0.2620
28	15.4980	0.2490	0.2490
29	15.9960	0.2360	0.2360
30	16.5000	0.2270	0.2270
31	16.9980	0.2170	0.2170
32	17.4960	0.2080	0.2080
33	18.0000	0.1980	0.1980
34	18.4980	0.1920	0.1920
35	18.9960	0.1860	0.1860
36	19.5000	0.1790	0.1790
37	19.9980	0.1730	0.1730
38	21.0000	0.1610	0.1610
39	21.9960	0.1510	0.1510
40	22.9980	0.1420	0.1420
41	24.0000	0.1350	0.1350
42	24.9960	0.1290	0.1290
43	25.9980	0.1230	0.1230
44	27.0000	0.1160	0.1160
45	27.9960	0.1100	0.1100
46	28.9980	0.1070	0.1070
47	30.0000	0.1010	0.1010
48	30.9960	0.0970	0.0970
49	31.9980	0.0940	0.0940
50	33.0000	0.0910	0.0910

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1 — Test conducted on: 19.10.96

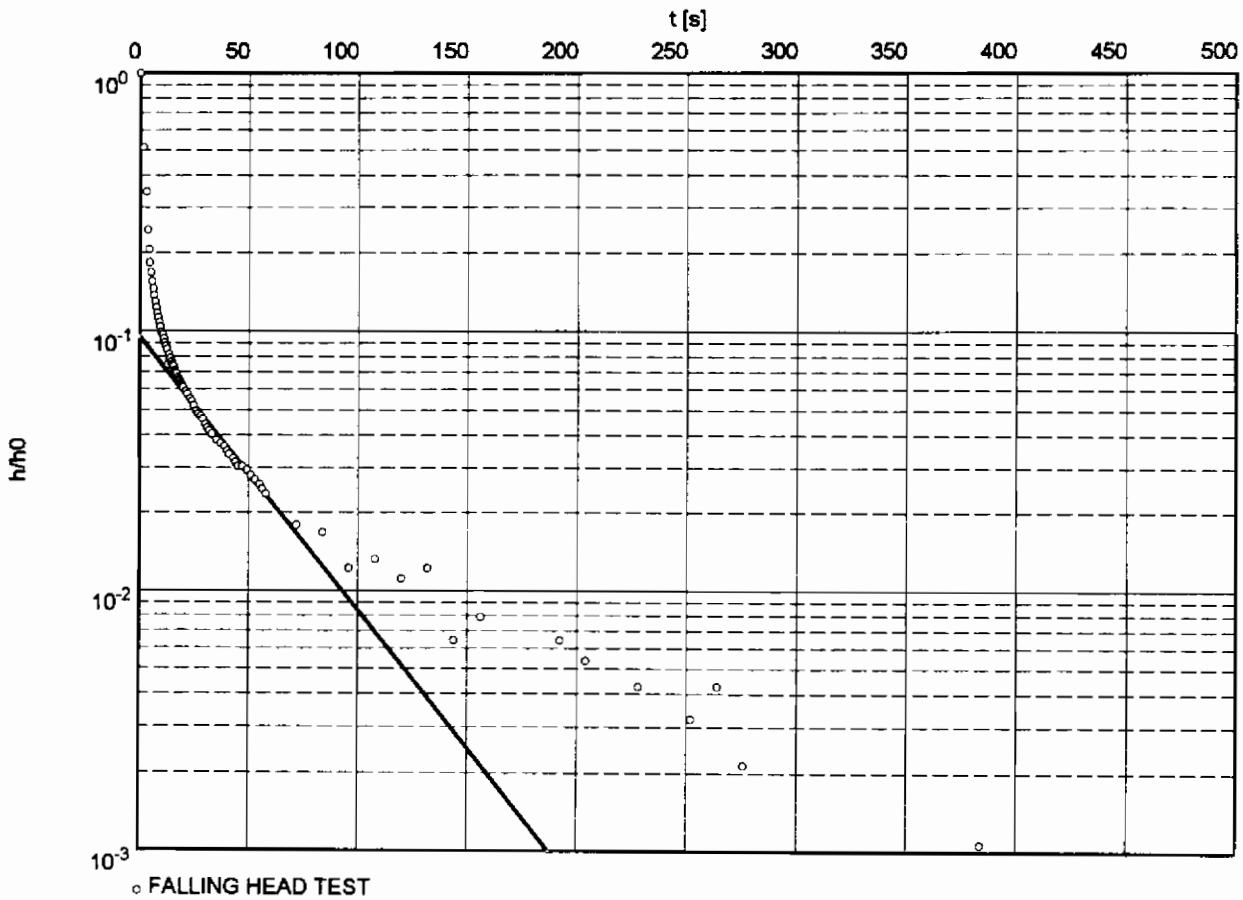
NBCE-530-002 — RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.9960	0.0880	0.0880
52	34.9980	0.0850	0.0850
53	36.0000	0.0820	0.0820
54	36.9960	0.0780	0.0780
55	37.9980	0.0780	0.0780
56	39.0000	0.0750	0.0750
57	39.9960	0.0720	0.0720
58	40.9980	0.0690	0.0690
59	42.0000	0.0690	0.0690
60	42.9960	0.0660	0.0660
61	43.9980	0.0630	0.0630
62	45.0000	0.0630	0.0630
63	45.9960	0.0590	0.0590
64	46.9980	0.0590	0.0590
65	48.0000	0.0560	0.0560
66	48.9960	0.0560	0.0560
67	49.9980	0.0530	0.0530
68	51.0000	0.0530	0.0530
69	51.9960	0.0500	0.0500
70	52.9980	0.0500	0.0500
71	54.0000	0.0470	0.0470
72	54.9960	0.0470	0.0470
73	55.9980	0.0470	0.0470
74	57.9960	0.0440	0.0440
75	58.9980	0.0440	0.0440
76	60.0000	0.0410	0.0410
77	72.0000	0.0340	0.0340
78	84.0000	0.0250	0.0250
79	96.0000	0.0180	0.0180
80	108.0000	0.0150	0.0150
81	120.0000	0.0090	0.0090
82	132.0000	0.0060	0.0060
83	156.0000	0.0030	0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	



Hydraulic conductivity [ft/s]: 1.60×10^{-4}

Hydraulic conductivity [ft/day]: 13.8

L = 8.2 ft
b = 8.2 ft
D = 8.2 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.8000	-2.8000
2	1.5000	-1.4330	-1.4330
3	3.0000	-0.9690	-0.9690
4	3.4980	-0.6880	-0.6880
5	3.9960	-0.5770	-0.5770
6	4.5000	-0.5140	-0.5140
7	4.9980	-0.4700	-0.4700
8	5.4960	-0.4350	-0.4350
9	6.0000	-0.4070	-0.4070
10	6.4980	-0.3850	-0.3850
11	6.9960	-0.3630	-0.3630
12	7.5000	-0.3440	-0.3440
13	7.9980	-0.3280	-0.3280
14	8.4960	-0.3150	-0.3150
15	9.0000	-0.3030	-0.3030
16	9.4980	-0.2900	-0.2900
17	9.9960	-0.2770	-0.2770
18	10.5000	-0.2710	-0.2710
19	10.9980	-0.2620	-0.2620
20	11.4960	-0.2520	-0.2520
21	12.0000	-0.2460	-0.2460
22	12.4980	-0.2390	-0.2390
23	12.9960	-0.2080	-0.2080
24	13.5000	-0.2270	-0.2270
25	13.9980	-0.2200	-0.2200
26	14.4960	-0.2140	-0.2140
27	15.0000	-0.2080	-0.2080
28	15.4980	-0.2050	-0.2050
29	15.9960	-0.1980	-0.1980
30	16.5000	-0.1950	-0.1950
31	16.9980	-0.1920	-0.1920
32	17.4960	-0.1860	-0.1860
33	18.0000	-0.1830	-0.1830
34	18.4980	-0.1790	-0.1790
35	18.9960	-0.1760	-0.1760
36	19.5000	-0.1730	-0.1730
37	19.9980	-0.1700	-0.1700
38	21.0000	-0.1640	-0.1640
39	21.9960	-0.1610	-0.1610
40	22.9980	-0.1540	-0.1540
41	24.0000	-0.1510	-0.1510
42	24.9960	-0.1450	-0.1450
43	25.9980	-0.1380	-0.1380
44	27.0000	-0.1350	-0.1350
45	27.9960	-0.1320	-0.1320
46	28.9980	-0.1290	-0.1290
47	30.0000	-0.1230	-0.1230
48	30.9960	-0.1190	-0.1190
49	31.9980	-0.1160	-0.1160
50	33.0000	-0.1130	-0.1130

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

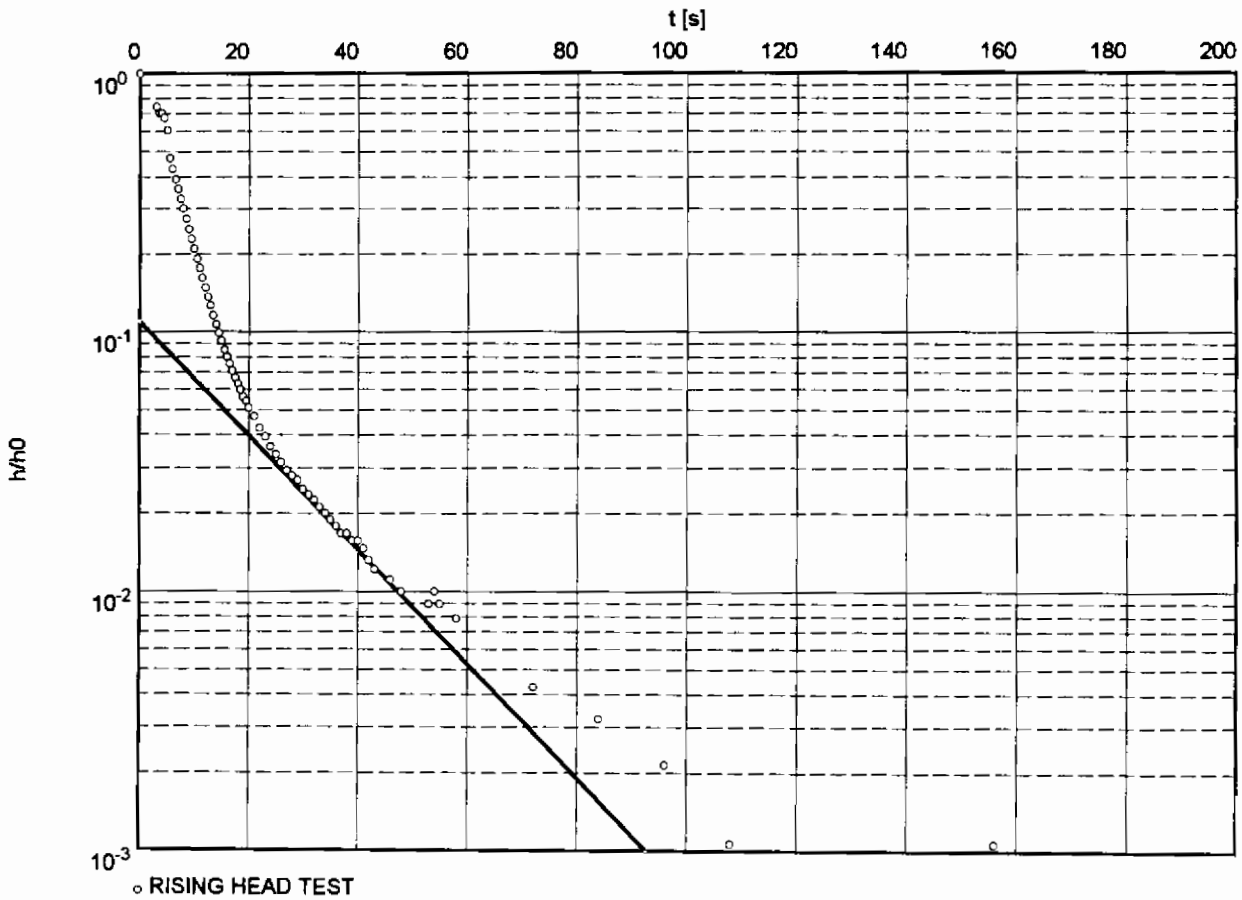
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	34.9980	-0.1070	-0.1070
52	36.9960	-0.1040	-0.1040
53	39.0000	-0.1010	-0.1010
54	39.9960	-0.0970	-0.0970
55	40.9980	-0.0940	-0.0940
56	42.9960	-0.0910	-0.0910
57	43.9980	-0.0880	-0.0880
58	45.0000	-0.0850	-0.0850
59	46.9980	-0.0850	-0.0850
60	48.9960	-0.0820	-0.0820
61	51.0000	-0.0780	-0.0780
62	52.9980	-0.0750	-0.0750
63	54.9960	-0.0720	-0.0720
64	55.9980	-0.0690	-0.0690
65	57.9960	-0.0660	-0.0660
66	72.0000	-0.0500	-0.0500
67	84.0000	-0.0470	-0.0470
68	96.0000	-0.0340	-0.0340
69	108.0000	-0.0370	-0.0370
70	120.0000	-0.0310	-0.0310
71	132.0000	-0.0340	-0.0340
72	144.0000	-0.0180	-0.0180
73	156.0000	-0.0220	-0.0220
74	192.0000	-0.0180	-0.0180
75	204.0000	-0.0150	-0.0150
76	228.0000	-0.0120	-0.0120
77	252.0000	-0.0090	-0.0090
78	264.0000	-0.0120	-0.0120
79	276.0000	-0.0060	-0.0060
80	384.0000	-0.0030	-0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	



Hydraulic conductivity [ft/s]: 3.34×10^{-4}

Hydraulic conductivity [ft/day]: 28.9

L = 8.2 ft
b = 8.2 ft
D = 8.2 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.8000	2.8000
2	3.0000	2.0850	2.0850
3	3.4980	1.9620	1.9620
4	3.9960	1.9660	1.9660
5	4.5000	1.8900	1.8900
6	4.9980	1.6910	1.6910
7	5.4960	1.3190	1.3190
8	6.0000	1.2020	1.2020
9	6.4980	1.0950	1.0950
10	6.9960	1.0030	1.0030
11	7.5000	0.9180	0.9180
12	7.9980	0.8390	0.8390
13	8.4960	0.7670	0.7670
14	9.0000	0.7000	0.7000
15	9.4980	0.6400	0.6400
16	9.9960	0.5870	0.5870
17	10.5000	0.5360	0.5360
18	10.9980	0.4920	0.4920
19	11.4960	0.4510	0.4510
20	12.0000	0.4130	0.4130
21	12.4980	0.3810	0.3810
22	12.9960	0.3530	0.3530
23	13.5000	0.3250	0.3250
24	13.9980	0.2990	0.2990
25	14.4960	0.2770	0.2770
26	15.0000	0.2580	0.2580
27	15.4980	0.2390	0.2390
28	15.9960	0.2240	0.2240
29	16.5000	0.2110	0.2110
30	16.9980	0.1980	0.1980
31	17.4960	0.1860	0.1860
32	18.0000	0.1760	0.1760
33	18.4980	0.1670	0.1670
34	18.9960	0.1570	0.1570
35	19.5000	0.1510	0.1510
36	19.9980	0.1420	0.1420
37	21.0000	0.1320	0.1320
38	21.9960	0.1190	0.1190
39	22.9980	0.1100	0.1100
40	24.0000	0.1010	0.1010
41	24.9960	0.0940	0.0940
42	25.9980	0.0880	0.0880
43	27.0000	0.0820	0.0820
44	27.9960	0.0780	0.0780
45	28.9980	0.0750	0.0750
46	30.0000	0.0690	0.0690
47	30.9960	0.0660	0.0660
48	31.9980	0.0630	0.0630
49	33.0000	0.0590	0.0590
50	33.9960	0.0560	0.0560

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

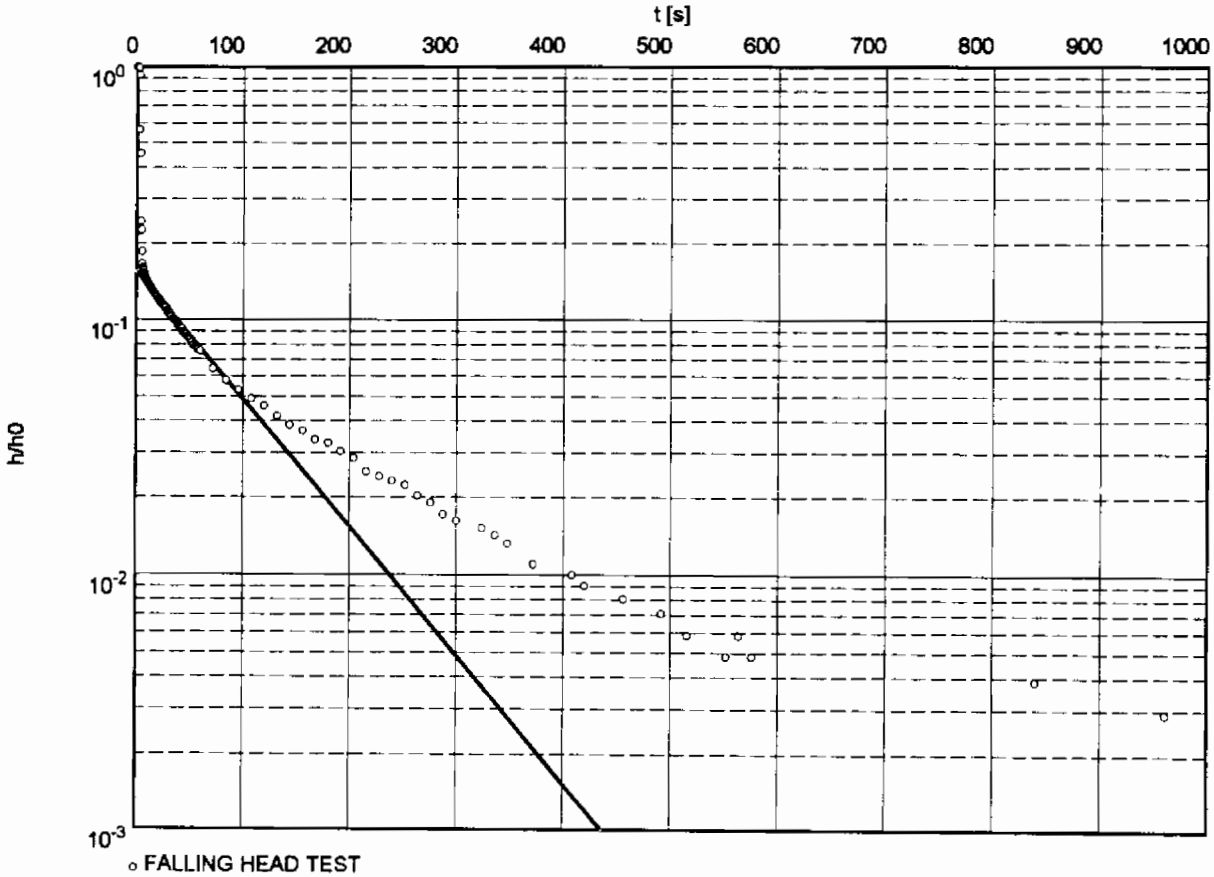
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-538-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	34.9980	0.0530	0.0530
52	36.0000	0.0500	0.0500
53	36.9960	0.0470	0.0470
54	37.9980	0.0470	0.0470
55	39.0000	0.0440	0.0440
56	39.9960	0.0440	0.0440
57	40.9980	0.0410	0.0410
58	42.0000	0.0370	0.0370
59	42.9960	0.0340	0.0340
60	45.9960	0.0310	0.0310
61	48.0000	0.0280	0.0280
62	52.9980	0.0250	0.0250
63	54.0000	0.0280	0.0280
64	54.9960	0.0250	0.0250
65	57.9960	0.0220	0.0220
66	72.0000	0.0120	0.0120
67	84.0000	0.0090	0.0090
68	96.0000	0.0060	0.0060
69	108.0000	0.0030	0.0030
70	156.0000	-0.0030	-0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	



Hydraulic conductivity [ft/s]: 9.35×10^{-5}

Hydraulic conductivity [ft/day]: 8.08

L = 7.0 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-3.1000	-3.1000
2	1.9980	-3.0760	-3.0760
3	2.1960	-2.8710	-2.8710
4	2.4000	-2.8680	-2.8680
5	2.5980	-1.7490	-1.7490
6	3.3960	-1.4080	-1.4080
7	3.6000	-0.6910	-0.6910
8	4.2000	-0.7570	-0.7570
9	4.3980	-0.7000	-0.7000
10	5.1960	-0.5740	-0.5740
11	5.4000	-0.5140	-0.5140
12	5.5980	-0.4980	-0.4980
13	6.1980	-0.4950	-0.4950
14	6.3960	-0.4860	-0.4860
15	6.6000	-0.4920	-0.4920
16	6.9960	-0.4830	-0.4830
17	7.2000	-0.4730	-0.4730
18	7.5960	-0.4700	-0.4700
19	7.8000	-0.4670	-0.4670
20	7.9980	-0.4600	-0.4600
21	8.4000	-0.4570	-0.4570
22	8.7960	-0.4540	-0.4540
23	9.0000	-0.4510	-0.4510
24	9.1980	-0.4480	-0.4480
25	9.3960	-0.4450	-0.4450
26	9.6000	-0.4450	-0.4450
27	9.7980	-0.4420	-0.4420
28	9.9960	-0.4380	-0.4380
29	10.3980	-0.4350	-0.4350
30	10.8000	-0.4320	-0.4320
31	10.9980	-0.4320	-0.4320
32	11.1960	-0.4290	-0.4290
33	11.4000	-0.4290	-0.4290
34	11.5980	-0.4260	-0.4260
35	11.7960	-0.4260	-0.4260
36	12.0000	-0.4230	-0.4230
37	12.1980	-0.4230	-0.4230
38	12.6000	-0.4190	-0.4190
39	12.7980	-0.4160	-0.4160
40	12.9960	-0.4160	-0.4160
41	13.3980	-0.4130	-0.4130
42	13.5960	-0.4130	-0.4130
43	13.8000	-0.4100	-0.4100
44	14.4000	-0.4070	-0.4070
45	15.0000	-0.4040	-0.4040
46	15.6000	-0.4000	-0.4000
47	16.2000	-0.3970	-0.3970
48	16.8000	-0.3940	-0.3940
49	17.4000	-0.3910	-0.3910
50	18.0000	-0.3880	-0.3880

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	18.6000	-0.3850	-0.3850
52	18.7980	-0.3850	-0.3850
53	19.3980	-0.3820	-0.3820
54	19.9980	-0.3780	-0.3780
55	21.0000	-0.3720	-0.3720
56	21.9960	-0.3690	-0.3690
57	22.9980	-0.3630	-0.3630
58	24.0000	-0.3590	-0.3590
59	24.9960	-0.3560	-0.3560
60	25.9980	-0.3500	-0.3500
61	27.0000	-0.3470	-0.3470
62	27.9960	-0.3440	-0.3440
63	28.9980	-0.3370	-0.3370
64	30.0000	-0.3310	-0.3310
65	30.9960	-0.3280	-0.3280
66	31.9980	-0.3250	-0.3250
67	33.0000	-0.3180	-0.3180
68	34.9980	-0.3120	-0.3120
69	36.0000	-0.3090	-0.3090
70	36.9960	-0.3060	-0.3060
71	37.9980	-0.3030	-0.3030
72	39.0000	-0.2990	-0.2990
73	39.9960	-0.2930	-0.2930
74	40.9980	-0.2900	-0.2900
75	42.0000	-0.2870	-0.2870
76	42.9960	-0.2840	-0.2840
77	43.9980	-0.2770	-0.2770
78	45.0000	-0.2740	-0.2740
79	46.9980	-0.2710	-0.2710
80	48.0000	-0.2650	-0.2650
81	49.9980	-0.2620	-0.2620
82	51.0000	-0.2580	-0.2580
83	51.9960	-0.2520	-0.2520
84	54.0000	-0.2460	-0.2460
85	55.9980	-0.2430	-0.2430
86	57.0000	-0.2390	-0.2390
87	57.9960	-0.2360	-0.2360
88	60.0000	-0.2330	-0.2330
89	72.0000	-0.1980	-0.1980
90	84.0000	-0.1790	-0.1790
91	96.0000	-0.1640	-0.1640
92	108.0000	-0.1510	-0.1510
93	120.0000	-0.1420	-0.1420
94	132.0000	-0.1290	-0.1290
95	144.0000	-0.1190	-0.1190
96	156.0000	-0.1130	-0.1130
97	168.0000	-0.1040	-0.1040
98	180.0000	-0.1010	-0.1010
99	192.0000	-0.0940	-0.0940
100	204.0000	-0.0880	-0.0880

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

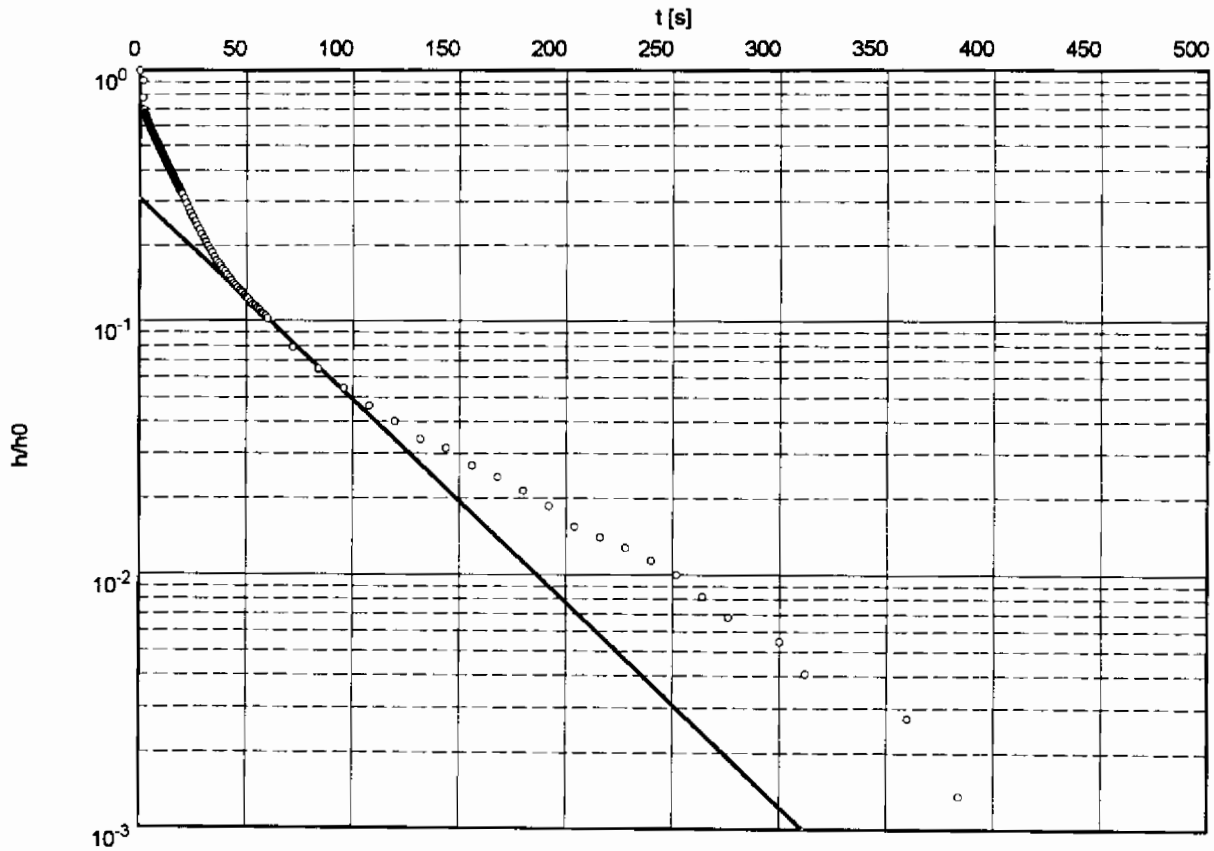
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	216.0000	-0.0780	-0.0780
102	228.0000	-0.0750	-0.0750
103	240.0000	-0.0720	-0.0720
104	252.0000	-0.0690	-0.0690
105	264.0000	-0.0630	-0.0630
106	276.0000	-0.0590	-0.0590
107	288.0000	-0.0530	-0.0530
108	300.0000	-0.0500	-0.0500
109	324.0000	-0.0470	-0.0470
110	336.0000	-0.0440	-0.0440
111	348.0000	-0.0410	-0.0410
112	372.0000	-0.0340	-0.0340
113	408.0000	-0.0310	-0.0310
114	420.0000	-0.0280	-0.0280
115	456.0000	-0.0250	-0.0250
116	492.0000	-0.0220	-0.0220
117	516.0000	-0.0180	-0.0180
118	552.0000	-0.0150	-0.0150
119	564.0000	-0.0180	-0.0180
120	576.0000	-0.0150	-0.0150
121	840.0000	-0.0120	-0.0120
122	960.0000	-0.0090	-0.0090

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	



○ RISING HEAD TEST

Hydraulic conductivity [ft/s]: 1.49×10^{-4}

Hydraulic conductivity [ft/day]: 12.9

L = 7.0 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.2000	2.2000
2	1.3980	2.0000	2.0000
3	1.5960	1.7070	1.7070
4	1.8000	1.5270	1.5270
5	1.9980	1.5300	1.5300
6	2.1960	1.4830	1.4830
7	2.4000	1.4670	1.4670
8	2.5980	1.4540	1.4540
9	2.7960	1.4290	1.4290
10	3.0000	1.4170	1.4170
11	3.1980	1.3980	1.3980
12	3.3960	1.3880	1.3880
13	3.6000	1.3720	1.3720
14	3.7980	1.3600	1.3600
15	3.9960	1.3470	1.3470
16	4.2000	1.3340	1.3340
17	4.3980	1.3220	1.3220
18	4.5960	1.3120	1.3120
19	4.8000	1.3000	1.3000
20	4.9980	1.2870	1.2870
21	5.1960	1.2750	1.2750
22	5.4000	1.2650	1.2650
23	5.5980	1.2520	1.2520
24	5.7960	1.2430	1.2430
25	6.0000	1.2340	1.2340
26	6.1980	1.2240	1.2240
27	6.3960	1.2110	1.2110
28	6.6000	1.2020	1.2020
29	6.7980	1.1930	1.1930
30	6.9960	1.1830	1.1830
31	7.2000	1.1700	1.1700
32	7.3980	1.1610	1.1610
33	7.5960	1.1520	1.1520
34	7.8000	1.1450	1.1450
35	7.9980	1.1360	1.1360
36	8.1960	1.1260	1.1260
37	8.4000	1.1170	1.1170
38	8.5980	1.1070	1.1070
39	8.7960	1.0980	1.0980
40	9.0000	1.0880	1.0880
41	9.1980	1.0790	1.0790
42	9.3960	1.0690	1.0690
43	9.6000	1.0630	1.0630
44	9.7980	1.0540	1.0540
45	9.9960	1.0440	1.0440
46	10.2000	1.0380	1.0380
47	10.3980	1.0280	1.0280
48	10.5960	1.0190	1.0190
49	10.8000	1.0130	1.0130
50	10.9980	1.0030	1.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	11.1960	0.9970	0.9970
52	11.4000	0.9870	0.9870
53	11.5980	0.9810	0.9810
54	11.7960	0.9720	0.9720
55	12.0000	0.9650	0.9650
56	12.1980	0.9560	0.9560
57	12.3960	0.9500	0.9500
58	12.6000	0.9400	0.9400
59	12.7980	0.9340	0.9340
60	12.9960	0.9270	0.9270
61	13.2000	0.9180	0.9180
62	13.3980	0.9120	0.9120
63	13.5960	0.9050	0.9050
64	13.8000	0.8960	0.8960
65	13.9980	0.8900	0.8900
66	14.1960	0.8830	0.8830
67	14.4000	0.8770	0.8770
68	14.5980	0.8670	0.8670
69	14.7960	0.8610	0.8610
70	15.0000	0.8550	0.8550
71	15.1980	0.8490	0.8490
72	15.3960	0.8420	0.8420
73	15.6000	0.8360	0.8360
74	15.7980	0.8300	0.8300
75	15.9960	0.8230	0.8230
76	16.2000	0.8140	0.8140
77	16.3980	0.8080	0.8080
78	16.5960	0.8010	0.8010
79	16.8000	0.7980	0.7980
80	16.9980	0.7890	0.7890
81	17.1960	0.7820	0.7820
82	17.4000	0.7790	0.7790
83	17.5980	0.7730	0.7730
84	17.7960	0.7660	0.7660
85	18.0000	0.7600	0.7600
86	18.1980	0.7540	0.7540
87	18.3960	0.7480	0.7480
88	18.6000	0.7410	0.7410
89	18.7980	0.7350	0.7350
90	18.9960	0.7290	0.7290
91	19.2000	0.7250	0.7250
92	19.3980	0.7190	0.7190
93	19.5960	0.7130	0.7130
94	19.8000	0.7070	0.7070
95	19.9980	0.7030	0.7030
96	21.0000	0.6750	0.6750
97	21.9960	0.6470	0.6470
98	22.9980	0.6180	0.6180
99	24.0000	0.5930	0.5930
100	24.9960	0.5710	0.5710

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	25.9980	0.5490	0.5490	
102	27.0000	0.5270	0.5270	
103	27.9960	0.5080	0.5080	
104	28.9980	0.4890	0.4890	
105	30.0000	0.4700	0.4700	
106	30.9960	0.4540	0.4540	
107	31.9980	0.4380	0.4380	
108	33.0000	0.4220	0.4220	
109	33.9960	0.4100	0.4100	
110	34.9980	0.3940	0.3940	
111	36.0000	0.3810	0.3810	
112	36.9960	0.3720	0.3720	
113	37.9980	0.3630	0.3630	
114	39.0000	0.3530	0.3530	
115	39.9960	0.3440	0.3440	
116	40.9980	0.3340	0.3340	
117	42.0000	0.3250	0.3250	
118	42.9960	0.3180	0.3180	
119	43.9980	0.3090	0.3090	
120	45.0000	0.3030	0.3030	
121	45.9960	0.2960	0.2960	
122	46.9980	0.2900	0.2900	
123	48.0000	0.2840	0.2840	
124	48.9960	0.2770	0.2770	
125	49.9980	0.2710	0.2710	
126	51.0000	0.2680	0.2680	
127	51.9960	0.2610	0.2610	
128	52.9980	0.2550	0.2550	
129	54.0000	0.2520	0.2520	
130	54.9960	0.2460	0.2460	
131	55.9980	0.2430	0.2430	
132	57.0000	0.2360	0.2360	
133	57.9960	0.2330	0.2330	
134	58.9980	0.2300	0.2300	
135	60.0000	0.2240	0.2240	
136	72.0000	0.1730	0.1730	
137	84.0000	0.1420	0.1420	
138	96.0000	0.1190	0.1190	
139	108.0000	0.1010	0.1010	
140	120.0000	0.0880	0.0880	
141	132.0000	0.0750	0.0750	
142	144.0000	0.0690	0.0690	
143	156.0000	0.0590	0.0590	
144	168.0000	0.0530	0.0530	
145	180.0000	0.0470	0.0470	
146	192.0000	0.0410	0.0410	
147	204.0000	0.0340	0.0340	
148	216.0000	0.0310	0.0310	
149	228.0000	0.0280	0.0280	
150	240.0000	0.0250	0.0250	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

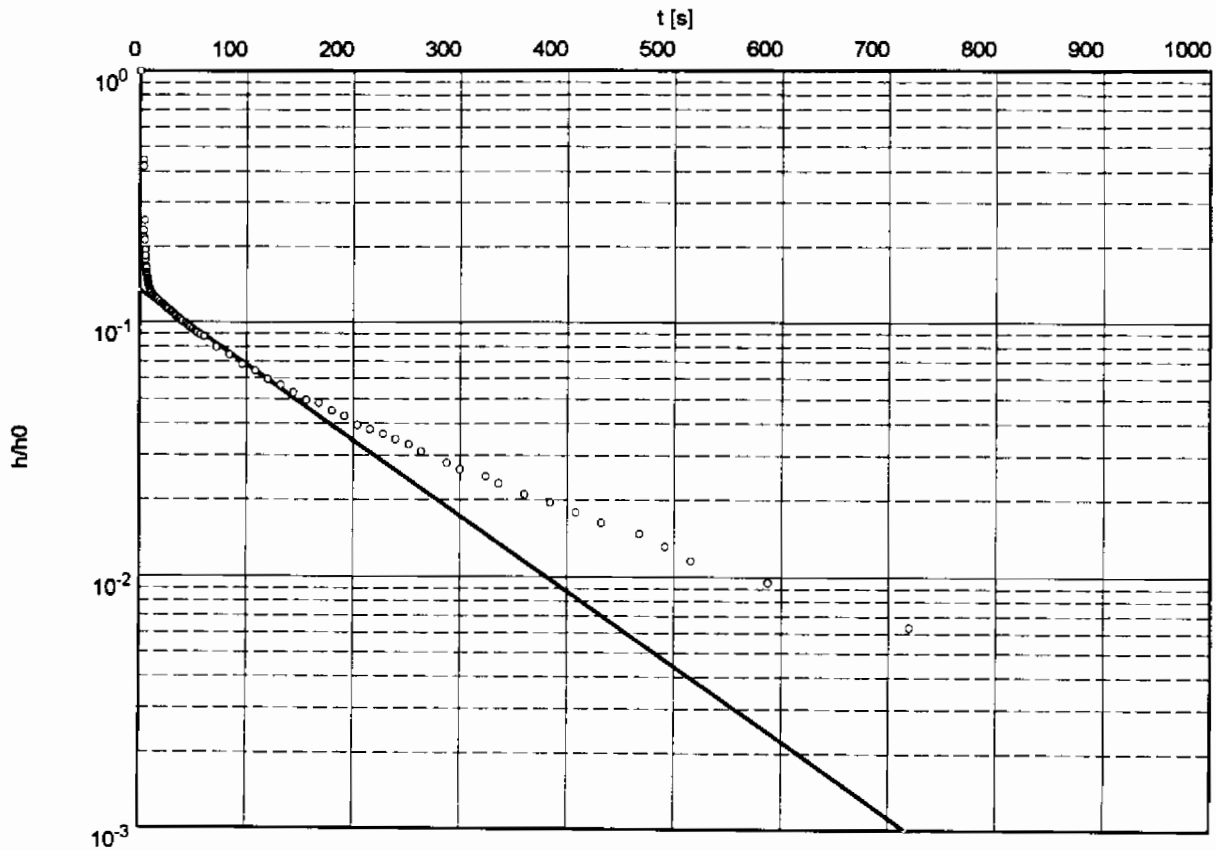
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
151	252.0000	0.0220	0.0220
152	264.0000	0.0180	0.0180
153	276.0000	0.0150	0.0150
154	300.0000	0.0120	0.0120
155	312.0000	0.0090	0.0090
156	360.0000	0.0060	0.0060
157	384.0000	0.0030	0.0030
158	432.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARELSTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 4.52×10^{-5}

Hydraulic conductivity [ft/day]: 3.91

L = 8.2 ft
b = 8.2 ft
D = 8.2 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARELSTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-1.9030	-1.9030
2	3.3960	-0.8440	-0.8440
3	3.6000	-0.7970	-0.7970
4	3.7980	-0.4410	-0.4410
5	4.2000	-0.4120	-0.4120
6	4.3980	-0.4820	-0.4820
7	4.5960	-0.4030	-0.4030
8	4.8000	-0.3210	-0.3210
9	4.9980	-0.3370	-0.3370
10	5.1960	-0.3680	-0.3680
11	5.4000	-0.3490	-0.3490
12	5.5980	-0.3150	-0.3150
13	5.7960	-0.3080	-0.3080
14	6.0000	-0.3180	-0.3180
15	6.1980	-0.3120	-0.3120
16	6.3960	-0.2990	-0.2990
17	6.6000	-0.2930	-0.2930
18	6.9960	-0.2900	-0.2900
19	7.2000	-0.2830	-0.2830
20	7.3980	-0.2800	-0.2800
21	7.5960	-0.2770	-0.2770
22	7.9980	-0.2740	-0.2740
23	8.1960	-0.2710	-0.2710
24	8.4000	-0.2670	-0.2670
25	8.7960	-0.2640	-0.2640
26	9.1980	-0.2610	-0.2610
27	9.6000	-0.2580	-0.2580
28	9.9960	-0.2550	-0.2550
29	10.5960	-0.2520	-0.2520
30	11.4000	-0.2490	-0.2490
31	12.1980	-0.2450	-0.2450
32	12.9960	-0.2420	-0.2420
33	14.4000	-0.2390	-0.2390
34	15.7980	-0.2360	-0.2360
35	16.9980	-0.2330	-0.2330
36	18.7980	-0.2300	-0.2300
37	21.0000	-0.2260	-0.2260
38	21.9960	-0.2230	-0.2230
39	22.9980	-0.2230	-0.2230
40	24.0000	-0.2200	-0.2200
41	24.9960	-0.2170	-0.2170
42	27.0000	-0.2140	-0.2140
43	28.9980	-0.2110	-0.2110
44	30.9960	-0.2080	-0.2080
45	33.0000	-0.2040	-0.2040
46	33.9960	-0.2010	-0.2010
47	36.0000	-0.1980	-0.1980
48	37.9980	-0.1950	-0.1950
49	39.9960	-0.1920	-0.1920
50	42.9960	-0.1890	-0.1890

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARELSTON Evaluated by: TKK — Date: 14.11.96

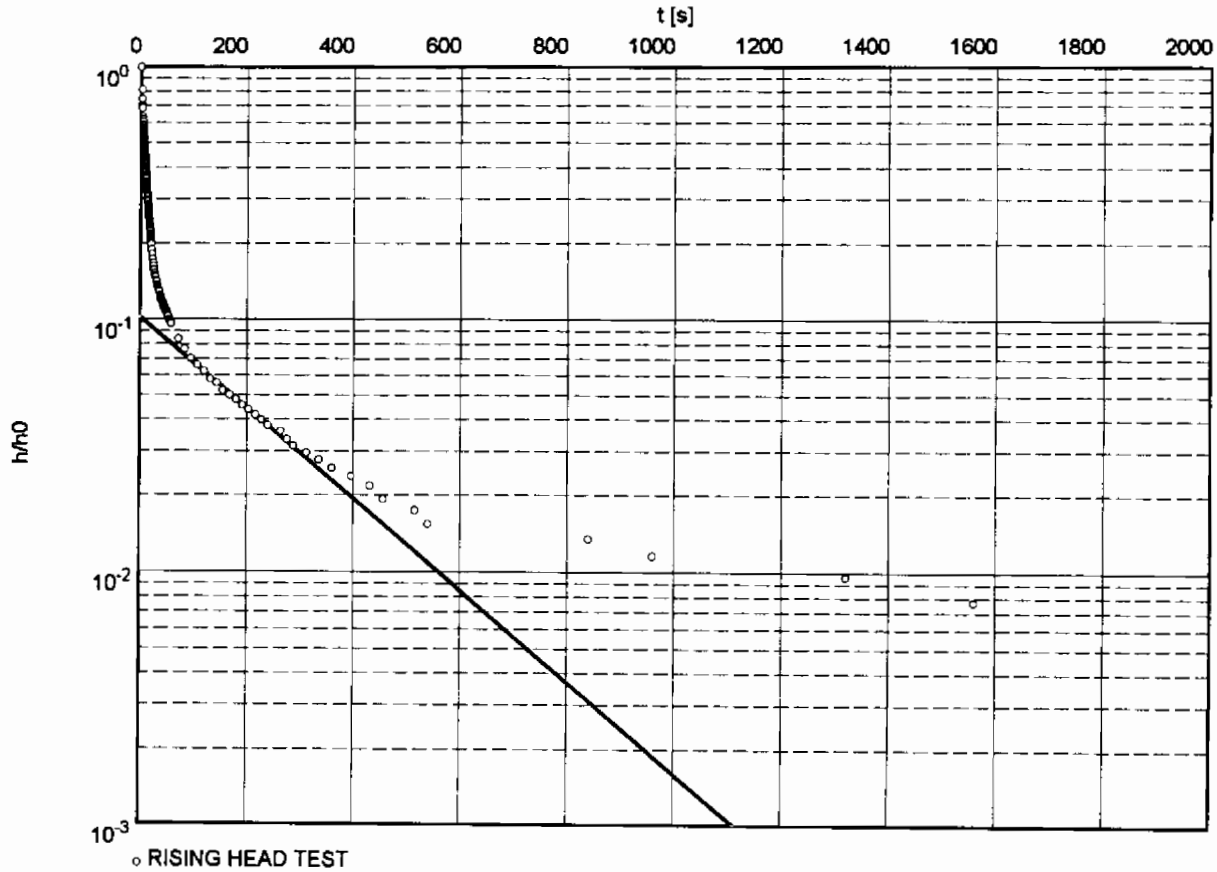
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	45.0000	-0.1850	-0.1850	
52	46.9980	-0.1820	-0.1820	
53	49.9980	-0.1790	-0.1790	
54	51.9960	-0.1760	-0.1760	
55	54.0000	-0.1730	-0.1730	
56	57.0000	-0.1700	-0.1700	
57	60.0000	-0.1670	-0.1670	
58	72.0000	-0.1510	-0.1510	
59	84.0000	-0.1410	-0.1410	
60	96.0000	-0.1290	-0.1290	
61	108.0000	-0.1220	-0.1220	
62	120.0000	-0.1130	-0.1130	
63	132.0000	-0.1070	-0.1070	
64	144.0000	-0.1000	-0.1000	
65	156.0000	-0.0940	-0.0940	
66	168.0000	-0.0910	-0.0910	
67	180.0000	-0.0850	-0.0850	
68	192.0000	-0.0810	-0.0810	
69	204.0000	-0.0750	-0.0750	
70	216.0000	-0.0720	-0.0720	
71	228.0000	-0.0690	-0.0690	
72	240.0000	-0.0660	-0.0660	
73	252.0000	-0.0630	-0.0630	
74	264.0000	-0.0590	-0.0590	
75	288.0000	-0.0530	-0.0530	
76	300.0000	-0.0500	-0.0500	
77	324.0000	-0.0470	-0.0470	
78	336.0000	-0.0440	-0.0440	
79	360.0000	-0.0400	-0.0400	
80	384.0000	-0.0370	-0.0370	
81	408.0000	-0.0340	-0.0340	
82	432.0000	-0.0310	-0.0310	
83	468.0000	-0.0280	-0.0280	
84	492.0000	-0.0250	-0.0250	
85	516.0000	-0.0220	-0.0220	
86	588.0000	-0.0180	-0.0180	
87	720.0000	-0.0120	-0.0120	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	



Hydraulic conductivity [ft/s]: 2.74×10^{-5}

Hydraulic conductivity [ft/day]: 2.37

L = 8.2 ft
b = 8.2 ft
D = 8.2 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.5620	1.5620
2	1.8000	1.2660	1.2660
3	1.9980	1.1020	1.1020
4	2.4000	1.1590	1.1590
5	2.7960	1.0710	1.0710
6	3.1980	0.9890	0.9890
7	3.3960	0.9630	0.9630
8	3.6000	0.9380	0.9380
9	3.7980	0.9410	0.9410
10	3.9960	0.9130	0.9130
11	4.2000	0.9100	0.9100
12	4.3980	0.8910	0.8910
13	4.5960	0.8780	0.8780
14	4.8000	0.8660	0.8660
15	4.9980	0.8500	0.8500
16	5.1960	0.8400	0.8400
17	5.4000	0.8250	0.8250
18	5.5980	0.8120	0.8120
19	5.7960	0.7990	0.7990
20	6.0000	0.7900	0.7900
21	6.1980	0.7770	0.7770
22	6.3960	0.7650	0.7650
23	6.6000	0.7520	0.7520
24	6.7980	0.7400	0.7400
25	6.9960	0.7300	0.7300
26	7.2000	0.7180	0.7180
27	7.3980	0.7080	0.7080
28	7.5960	0.6950	0.6950
29	7.8000	0.6890	0.6890
30	7.9980	0.6770	0.6770
31	8.1960	0.6670	0.6670
32	8.4000	0.6580	0.6580
33	8.5980	0.6480	0.6480
34	8.7960	0.6390	0.6390
35	9.0000	0.6260	0.6260
36	9.1980	0.6170	0.6170
37	9.3960	0.6100	0.6100
38	9.6000	0.6010	0.6010
39	9.7980	0.5910	0.5910
40	9.9960	0.5820	0.5820
41	10.2000	0.5730	0.5730
42	10.3980	0.5660	0.5660
43	10.5960	0.5570	0.5570
44	10.8000	0.5470	0.5470
45	10.9980	0.5410	0.5410
46	11.1960	0.5320	0.5320
47	11.4000	0.5250	0.5250
48	11.5980	0.5160	0.5160
49	11.7960	0.5090	0.5090
50	12.0000	0.5000	0.5000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	12.1980	0.4940	0.4940
52	12.3960	0.4870	0.4870
53	12.6000	0.4810	0.4810
54	12.7980	0.4750	0.4750
55	12.9960	0.4650	0.4650
56	13.2000	0.4590	0.4590
57	13.3980	0.4560	0.4560
58	13.5960	0.4460	0.4460
59	13.8000	0.4400	0.4400
60	13.9980	0.4370	0.4370
61	14.1960	0.4310	0.4310
62	14.4000	0.4240	0.4240
63	14.5980	0.4180	0.4180
64	14.7960	0.4120	0.4120
65	15.0000	0.4090	0.4090
66	15.1980	0.4020	0.4020
67	15.3960	0.3960	0.3960
68	15.6000	0.3930	0.3930
69	15.7980	0.3870	0.3870
70	15.9960	0.3800	0.3800
71	16.2000	0.3770	0.3770
72	16.3980	0.3740	0.3740
73	16.5960	0.3680	0.3680
74	16.8000	0.3640	0.3640
75	16.9980	0.3580	0.3580
76	17.1960	0.3550	0.3550
77	17.4000	0.3520	0.3520
78	17.5980	0.3490	0.3490
79	17.7960	0.3460	0.3460
80	18.0000	0.3390	0.3390
81	18.1980	0.3360	0.3360
82	18.3960	0.3330	0.3330
83	18.6000	0.3300	0.3300
84	18.7980	0.3270	0.3270
85	18.9960	0.3240	0.3240
86	19.2000	0.3200	0.3200
87	19.3980	0.3170	0.3170
88	19.5960	0.3140	0.3140
89	19.8000	0.3110	0.3110
90	19.9980	0.3080	0.3080
91	21.0000	0.2950	0.2950
92	21.9960	0.2830	0.2830
93	22.9980	0.2700	0.2700
94	24.0000	0.2610	0.2610
95	24.9960	0.2540	0.2540
96	25.9980	0.2450	0.2450
97	27.0000	0.2380	0.2380
98	27.9960	0.2320	0.2320
99	28.9980	0.2290	0.2290
100	30.0000	0.2230	0.2230

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	30.9960	0.2200	0.2200	
102	31.9980	0.2130	0.2130	
103	33.0000	0.2100	0.2100	
104	33.9960	0.2070	0.2070	
105	34.9980	0.2040	0.2040	
106	36.0000	0.2010	0.2010	
107	36.9960	0.1940	0.1940	
108	37.9980	0.1910	0.1910	
109	39.0000	0.1880	0.1880	
110	39.9960	0.1850	0.1850	
111	40.9980	0.1850	0.1850	
112	42.0000	0.1820	0.1820	
113	42.9960	0.1790	0.1790	
114	43.9980	0.1790	0.1790	
115	45.0000	0.1750	0.1750	
116	45.9960	0.1720	0.1720	
117	46.9980	0.1720	0.1720	
118	48.0000	0.1690	0.1690	
119	48.9960	0.1690	0.1690	
120	49.9980	0.1660	0.1660	
121	51.0000	0.1630	0.1630	
122	52.9980	0.1600	0.1600	
123	54.9960	0.1560	0.1560	
124	57.0000	0.1530	0.1530	
125	58.9980	0.1500	0.1500	
126	72.0000	0.1310	0.1310	
127	84.0000	0.1190	0.1190	
128	96.0000	0.1090	0.1090	
129	108.0000	0.1030	0.1030	
130	120.0000	0.0970	0.0970	
131	132.0000	0.0900	0.0900	
132	144.0000	0.0870	0.0870	
133	156.0000	0.0810	0.0810	
134	168.0000	0.0780	0.0780	
135	180.0000	0.0750	0.0750	
136	192.0000	0.0710	0.0710	
137	204.0000	0.0680	0.0680	
138	216.0000	0.0650	0.0650	
139	228.0000	0.0620	0.0620	
140	240.0000	0.0590	0.0590	
141	264.0000	0.0560	0.0560	
142	276.0000	0.0520	0.0520	
143	288.0000	0.0490	0.0490	
144	312.0000	0.0460	0.0460	
145	336.0000	0.0430	0.0430	
146	360.0000	0.0400	0.0400	
147	396.0000	0.0370	0.0370	
148	432.0000	0.0340	0.0340	
149	456.0000	0.0300	0.0300	
150	516.0000	0.0270	0.0270	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

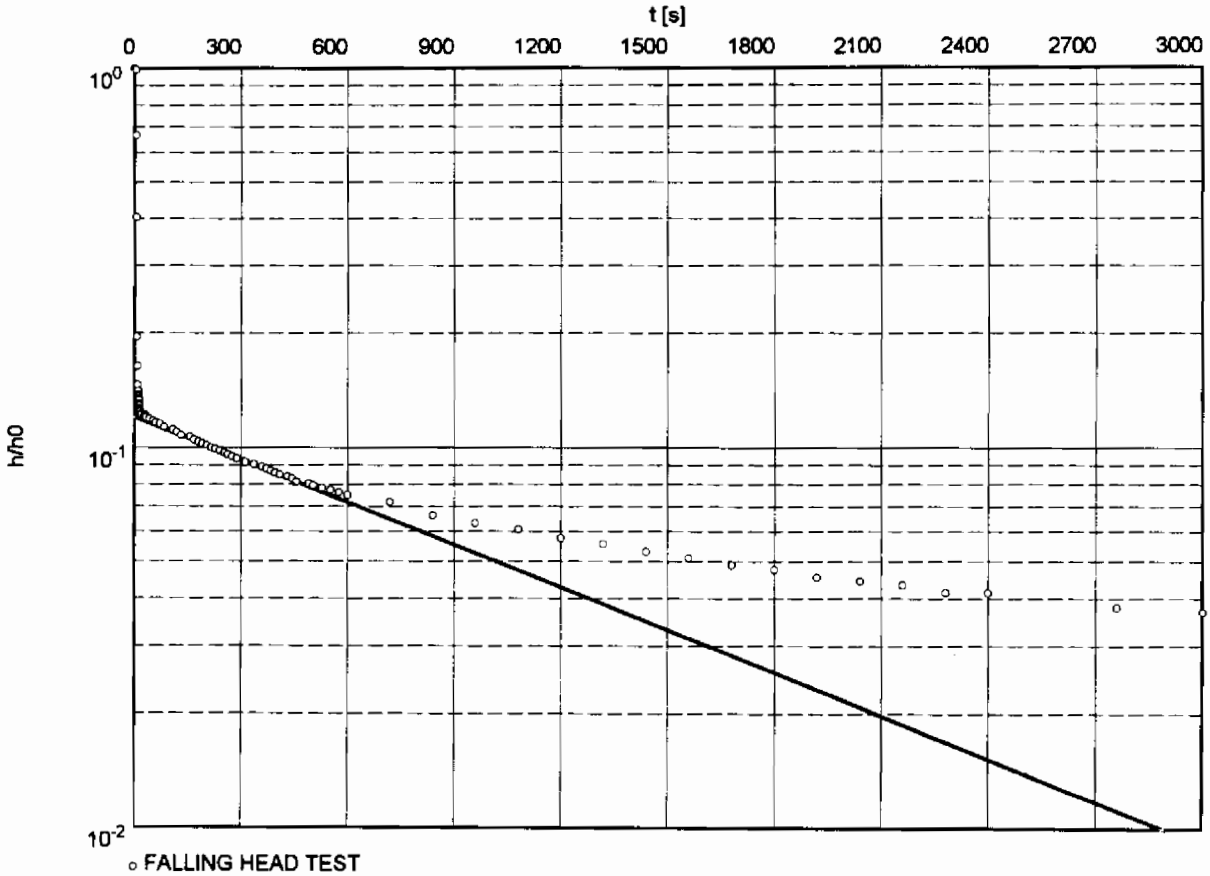
Slug Test No. 1	Test conducted on: 19.10.96
NBCE-549-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
151	540.0000	0.0240	0.0240	
152	840.0000	0.0210	0.0210	
153	960.0000	0.0180	0.0180	
154	1320.0000	0.0150	0.0150	
155	1560.0000	0.0120	0.0120	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	



Hydraulic conductivity [ft/s]: 5.45×10^{-6}

Hydraulic conductivity [ft/day]: 4.71 x 10^-1

L = 8.7 ft
b = 8.7 ft
D = 8.7 ft
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.9000	-2.9000	
2	3.9960	-2.8780	-2.8780	
3	4.5000	-1.9330	-1.9330	
4	6.0000	-1.1680	-1.1680	
5	7.5000	-0.5650	-0.5650	
6	7.9980	-0.4730	-0.4730	
7	8.4960	-0.4160	-0.4160	
8	9.0000	-0.4230	-0.4230	
9	9.4980	-0.4230	-0.4230	
10	9.9960	-0.4070	-0.4070	
11	10.5000	-0.3970	-0.3970	
12	10.9980	-0.3940	-0.3940	
13	11.4960	-0.3880	-0.3880	
14	12.0000	-0.3850	-0.3850	
15	12.4980	-0.3780	-0.3780	
16	12.9960	-0.3750	-0.3750	
17	13.5000	-0.3750	-0.3750	
18	13.9980	-0.3720	-0.3720	
19	14.4960	-0.3660	-0.3660	
20	15.9960	-0.3630	-0.3630	
21	16.5000	-0.3600	-0.3600	
22	18.4980	-0.3560	-0.3560	
23	19.9980	-0.3530	-0.3530	
24	25.9980	-0.3500	-0.3500	
25	28.9980	-0.3470	-0.3470	
26	30.0000	-0.3530	-0.3530	
27	30.9960	-0.3500	-0.3500	
28	33.9960	-0.3470	-0.3470	
29	42.0000	-0.3440	-0.3440	
30	51.9960	-0.3410	-0.3410	
31	60.0000	-0.3370	-0.3370	
32	72.0000	-0.3340	-0.3340	
33	84.0000	-0.3280	-0.3280	
34	108.0000	-0.3220	-0.3220	
35	120.0000	-0.3180	-0.3180	
36	132.0000	-0.3120	-0.3120	
37	156.0000	-0.3090	-0.3090	
38	168.0000	-0.3030	-0.3030	
39	180.0000	-0.3000	-0.3000	
40	192.0000	-0.2960	-0.2960	
41	204.0000	-0.2930	-0.2930	
42	216.0000	-0.2900	-0.2900	
43	228.0000	-0.2870	-0.2870	
44	240.0000	-0.2840	-0.2840	
45	252.0000	-0.2810	-0.2810	
46	264.0000	-0.2770	-0.2770	
47	276.0000	-0.2740	-0.2740	
48	288.0000	-0.2710	-0.2710	
49	312.0000	-0.2650	-0.2650	
50	336.0000	-0.2620	-0.2620	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

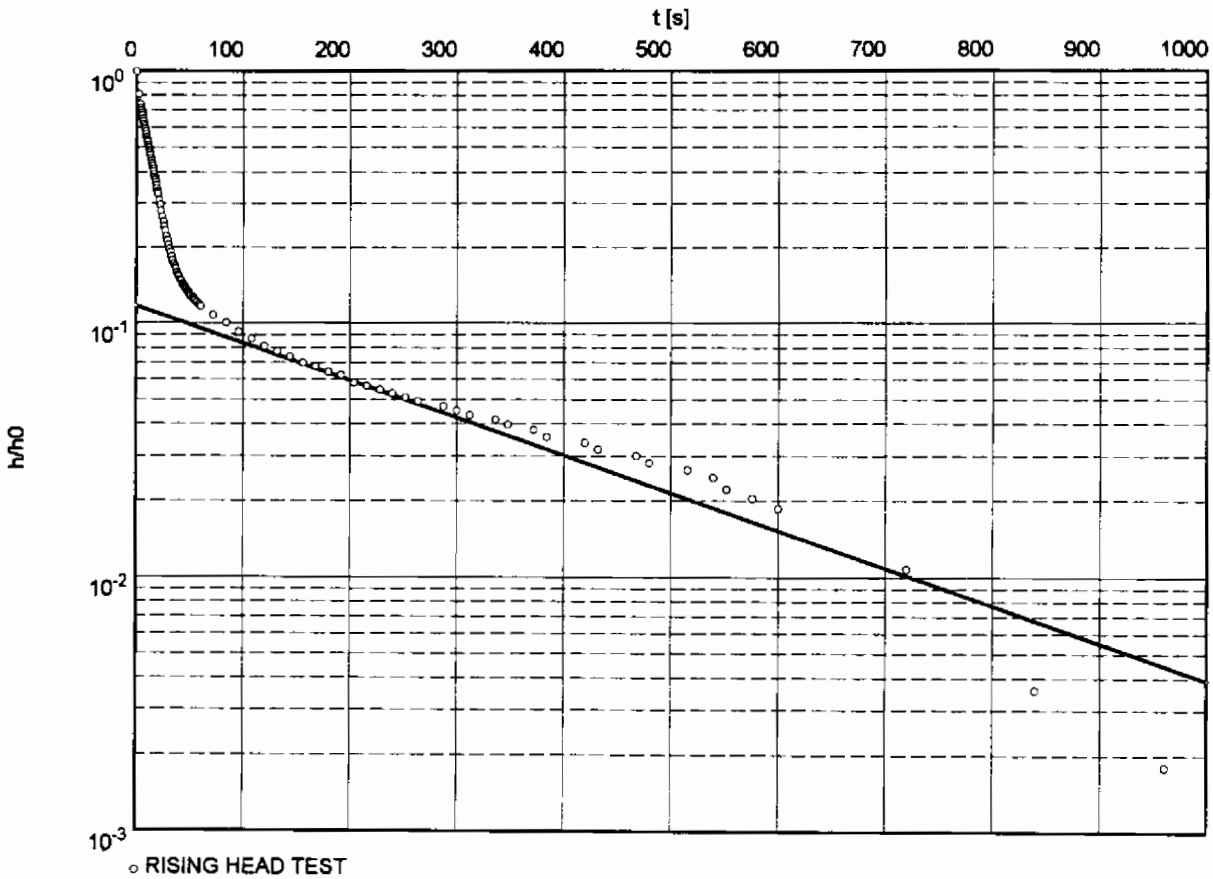
Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	360.0000	-0.2580	-0.2580
52	372.0000	-0.2550	-0.2550
53	384.0000	-0.2520	-0.2520
54	396.0000	-0.2490	-0.2490
55	408.0000	-0.2460	-0.2460
56	432.0000	-0.2430	-0.2430
57	444.0000	-0.2400	-0.2400
58	456.0000	-0.2360	-0.2360
59	492.0000	-0.2330	-0.2330
60	504.0000	-0.2300	-0.2300
61	528.0000	-0.2270	-0.2270
62	552.0000	-0.2240	-0.2240
63	576.0000	-0.2210	-0.2210
64	600.0000	-0.2170	-0.2170
65	720.0000	-0.2080	-0.2080
66	840.0000	-0.1920	-0.1920
67	960.0000	-0.1830	-0.1830
68	1080.0000	-0.1760	-0.1760
69	1200.0000	-0.1670	-0.1670
70	1320.0000	-0.1610	-0.1610
71	1440.0000	-0.1540	-0.1540
72	1560.0000	-0.1480	-0.1480
73	1680.0000	-0.1420	-0.1420
74	1800.0000	-0.1380	-0.1380
75	1920.0000	-0.1320	-0.1320
76	2040.0000	-0.1290	-0.1290
77	2160.0000	-0.1260	-0.1260
78	2280.0000	-0.1200	-0.1200
79	2400.0000	-0.1200	-0.1200
80	2760.0000	-0.1100	-0.1100
81	3000.0000	-0.1070	-0.1070

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	



Hydraulic conductivity [ft/s]: 2.15×10^{-5}

Hydraulic conductivity [ft/day]: 1.86

L = 8.7 ft
b = 8.7 ft
D = 8.7 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.6700	1.6700
2	2.4960	1.3540	1.3540
3	3.0000	1.2430	1.2430
4	3.4980	1.2370	1.2370
5	3.9960	1.1930	1.1930
6	4.5000	1.1640	1.1640
7	4.9980	1.1360	1.1360
8	5.4960	1.1110	1.1110
9	6.0000	1.0820	1.0820
10	6.4980	1.0570	1.0570
11	6.9960	1.0320	1.0320
12	7.5000	1.0070	1.0070
13	7.9980	0.9850	0.9850
14	8.4960	0.9620	0.9620
15	9.0000	0.9400	0.9400
16	9.4980	0.9150	0.9150
17	9.9960	0.8930	0.8930
18	10.5000	0.8740	0.8740
19	10.9980	0.8520	0.8520
20	11.4960	0.8330	0.8330
21	12.0000	0.8140	0.8140
22	12.4980	0.7950	0.7950
23	12.9960	0.7760	0.7760
24	13.5000	0.7540	0.7540
25	13.9980	0.7380	0.7380
26	14.4960	0.7190	0.7190
27	15.0000	0.7040	0.7040
28	15.4980	0.6850	0.6850
29	15.9960	0.6690	0.6690
30	16.5000	0.6530	0.6530
31	16.9980	0.6370	0.6370
32	17.4960	0.6220	0.6220
33	18.0000	0.6060	0.6060
34	18.4980	0.5900	0.5900
35	18.9960	0.5740	0.5740
36	19.5000	0.5580	0.5580
37	19.9980	0.5460	0.5460
38	21.0000	0.5170	0.5170
39	21.9960	0.4920	0.4920
40	22.9980	0.4670	0.4670
41	24.0000	0.4450	0.4450
42	24.9960	0.4230	0.4230
43	25.9980	0.4040	0.4040
44	27.0000	0.3880	0.3880
45	27.9960	0.3690	0.3690
46	28.9980	0.3560	0.3560
47	30.0000	0.3410	0.3410
48	30.9960	0.3280	0.3280
49	31.9980	0.3180	0.3180
50	33.0000	0.3060	0.3060

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.9960	0.2960	0.2960
52	34.9980	0.2870	0.2870
53	36.0000	0.2810	0.2810
54	36.9960	0.2740	0.2740
55	37.9980	0.2650	0.2650
56	39.0000	0.2580	0.2580
57	39.9960	0.2550	0.2550
58	40.9980	0.2490	0.2490
59	42.0000	0.2460	0.2460
60	42.9960	0.2390	0.2390
61	43.9980	0.2360	0.2360
62	45.0000	0.2330	0.2330
63	45.9960	0.2300	0.2300
64	46.9980	0.2270	0.2270
65	48.0000	0.2240	0.2240
66	48.9960	0.2210	0.2210
67	49.9980	0.2170	0.2170
68	51.0000	0.2140	0.2140
69	52.9980	0.2110	0.2110
70	54.0000	0.2080	0.2080
71	54.9960	0.2050	0.2050
72	57.0000	0.2020	0.2020
73	58.9980	0.1980	0.1980
74	60.0000	0.1950	0.1950
75	72.0000	0.1790	0.1790
76	84.0000	0.1670	0.1670
77	96.0000	0.1540	0.1540
78	108.0000	0.1450	0.1450
79	120.0000	0.1350	0.1350
80	132.0000	0.1290	0.1290
81	144.0000	0.1230	0.1230
82	156.0000	0.1160	0.1160
83	168.0000	0.1130	0.1130
84	180.0000	0.1070	0.1070
85	192.0000	0.1040	0.1040
86	204.0000	0.0970	0.0970
87	216.0000	0.0940	0.0940
88	228.0000	0.0910	0.0910
89	240.0000	0.0880	0.0880
90	252.0000	0.0850	0.0850
91	264.0000	0.0820	0.0820
92	288.0000	0.0780	0.0780
93	300.0000	0.0750	0.0750
94	312.0000	0.0720	0.0720
95	336.0000	0.0690	0.0690
96	348.0000	0.0660	0.0660
97	372.0000	0.0630	0.0630
98	384.0000	0.0590	0.0590
99	420.0000	0.0560	0.0560
100	432.0000	0.0530	0.0530

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 14.11.96

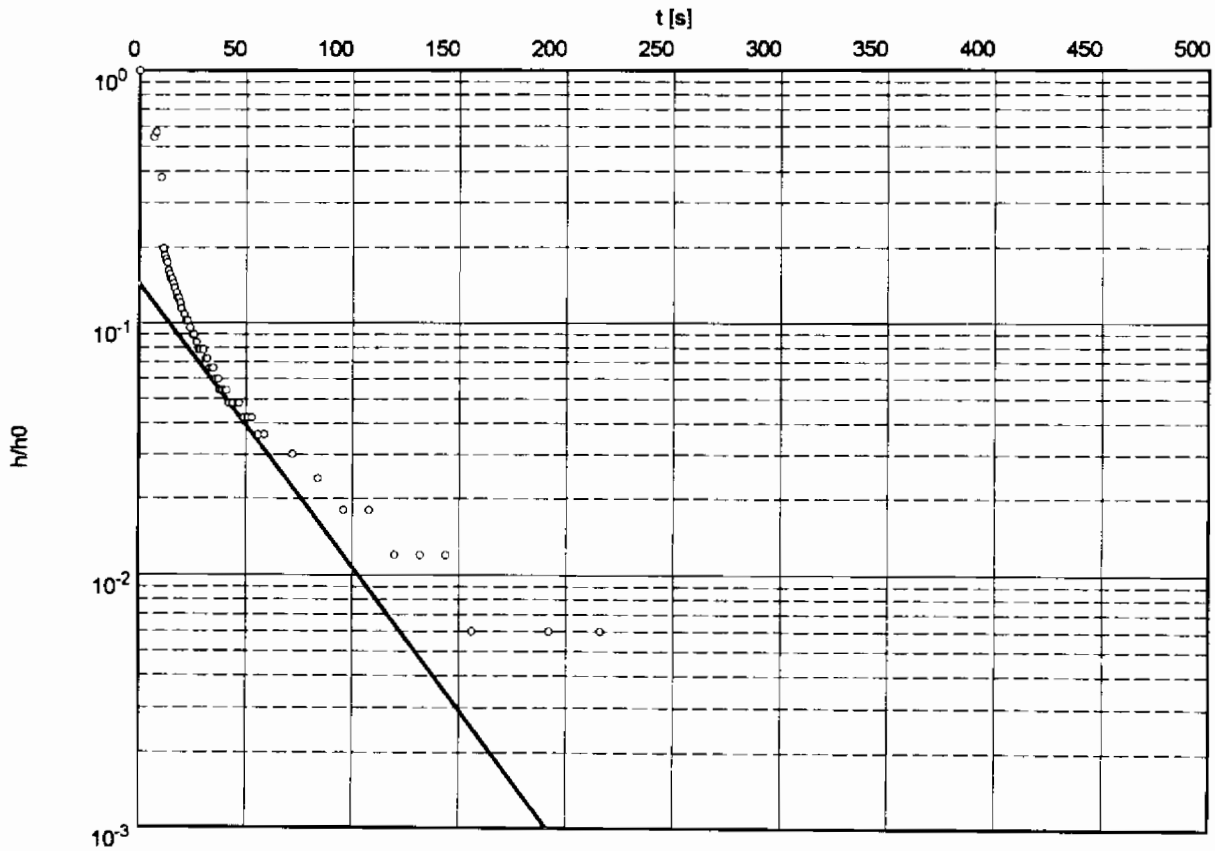
Slug Test No. 1	Test conducted on: 20.10.96
NBCE-566-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	468.0000	0.0500	0.0500
102	480.0000	0.0470	0.0470
103	516.0000	0.0440	0.0440
104	540.0000	0.0410	0.0410
105	552.0000	0.0370	0.0370
106	576.0000	0.0340	0.0340
107	600.0000	0.0310	0.0310
108	720.0000	0.0180	0.0180
109	840.0000	0.0060	0.0060
110	960.0000	-0.0030	-0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 1.68×10^{-4}

Hydraulic conductivity [ft/day]: 14.5

L= 8.45 ft
b= 8.45 ft
D= 8.45 ft (full penetration)
Reff= 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-1.6700	-1.6700
2	6.6000	-0.9100	-0.9100
3	7.8000	-0.9500	-0.9500
4	10.2000	-0.6300	-0.6300
5	11.4000	-0.3300	-0.3300
6	12.0000	-0.3100	-0.3100
7	12.6000	-0.3000	-0.3000
8	13.2000	-0.2900	-0.2900
9	13.8000	-0.2700	-0.2700
10	14.4000	-0.2600	-0.2600
11	15.0000	-0.2500	-0.2500
12	15.6000	-0.2500	-0.2500
13	16.2000	-0.2400	-0.2400
14	16.8000	-0.2300	-0.2300
15	17.4000	-0.2200	-0.2200
16	18.0000	-0.2100	-0.2100
17	18.6000	-0.2100	-0.2100
18	19.2000	-0.2000	-0.2000
19	19.8000	-0.1900	-0.1900
20	21.0000	-0.1800	-0.1800
21	22.2000	-0.1700	-0.1700
22	22.8000	-0.1700	-0.1700
23	24.0000	-0.1600	-0.1600
24	25.2000	-0.1500	-0.1500
25	25.8000	-0.1500	-0.1500
26	27.0000	-0.1400	-0.1400
27	28.2000	-0.1300	-0.1300
28	28.8000	-0.1300	-0.1300
29	30.0000	-0.1300	-0.1300
30	31.2000	-0.1200	-0.1200
31	31.8000	-0.1200	-0.1200
32	33.0000	-0.1100	-0.1100
33	34.2000	-0.1100	-0.1100
34	34.8000	-0.1100	-0.1100
35	36.0000	-0.1000	-0.1000
36	37.2000	-0.1000	-0.1000
37	37.8000	-0.0900	-0.0900
38	39.0000	-0.0900	-0.0900
39	40.2000	-0.0900	-0.0900
40	40.8000	-0.0900	-0.0900
41	42.0000	-0.0800	-0.0800
42	43.8000	-0.0800	-0.0800
43	46.2000	-0.0800	-0.0800
44	46.8000	-0.0800	-0.0800
45	49.2000	-0.0700	-0.0700
46	51.0000	-0.0700	-0.0700
47	52.8000	-0.0700	-0.0700
48	55.8000	-0.0600	-0.0600
49	58.8000	-0.0600	-0.0600
50	72.0000	-0.0500	-0.0500

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

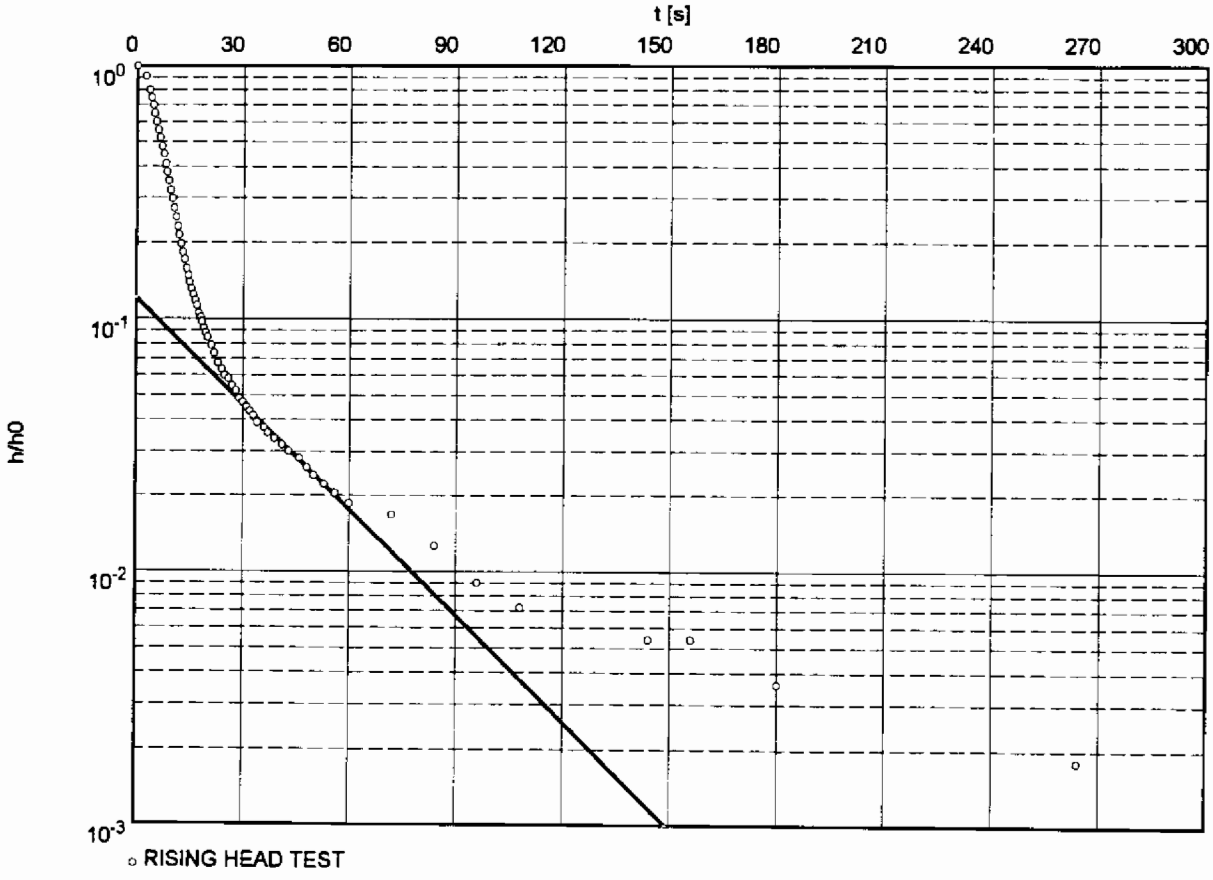
Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	84.0000	-0.0400	-0.0400	
52	96.0000	-0.0300	-0.0300	
53	108.0000	-0.0300	-0.0300	
54	120.0000	-0.0200	-0.0200	
55	132.0000	-0.0200	-0.0200	
56	144.0000	-0.0200	-0.0200	
57	156.0000	-0.0100	-0.0100	
58	192.0000	-0.0100	-0.0100	
59	216.0000	-0.0100	-0.0100	
60	264.0000	0.0000	0.0000	
61	420.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	



Hydraulic conductivity [ft/s]: 2.08×10^{-4}

Hydraulic conductivity [ft/day]: 18.0

L = 8.45 ft
b = 8.45 ft
D = 8.45 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.6700	1.6700
2	2.4960	1.5250	1.5250
3	3.4980	1.3430	1.3430
4	3.9960	1.2520	1.2520
5	4.5000	1.1640	1.1640
6	4.9980	1.0790	1.0790
7	5.4960	1.0040	1.0040
8	6.0000	0.9310	0.9310
9	6.4980	0.8660	0.8660
10	6.9960	0.8000	0.8000
11	7.5000	0.7430	0.7430
12	7.9980	0.6840	0.6840
13	8.4960	0.6330	0.6330
14	9.0000	0.5830	0.5830
15	9.4980	0.5360	0.5360
16	9.9960	0.4950	0.4950
17	10.5000	0.4550	0.4550
18	10.9980	0.4200	0.4200
19	11.4960	0.3850	0.3850
20	12.0000	0.3570	0.3570
21	12.4980	0.3290	0.3290
22	12.9960	0.3040	0.3040
23	13.5000	0.2850	0.2850
24	13.9980	0.2630	0.2630
25	14.4960	0.2470	0.2470
26	15.0000	0.2320	0.2320
27	15.4980	0.2190	0.2190
28	15.9960	0.2070	0.2070
29	16.5000	0.1970	0.1970
30	16.9980	0.1880	0.1880
31	17.4960	0.1750	0.1750
32	18.0000	0.1690	0.1690
33	18.4980	0.1630	0.1630
34	18.9960	0.1530	0.1530
35	19.5000	0.1470	0.1470
36	19.9980	0.1410	0.1410
37	21.0000	0.1310	0.1310
38	21.9960	0.1220	0.1220
39	22.9980	0.1120	0.1120
40	24.0000	0.1060	0.1060
41	24.9960	0.1000	0.1000
42	25.9980	0.0970	0.0970
43	27.0000	0.0910	0.0910
44	27.9960	0.0870	0.0870
45	28.9980	0.0810	0.0810
46	30.0000	0.0780	0.0780
47	30.9960	0.0750	0.0750
48	31.9980	0.0720	0.0720
49	33.0000	0.0690	0.0690
50	33.9960	0.0650	0.0650

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

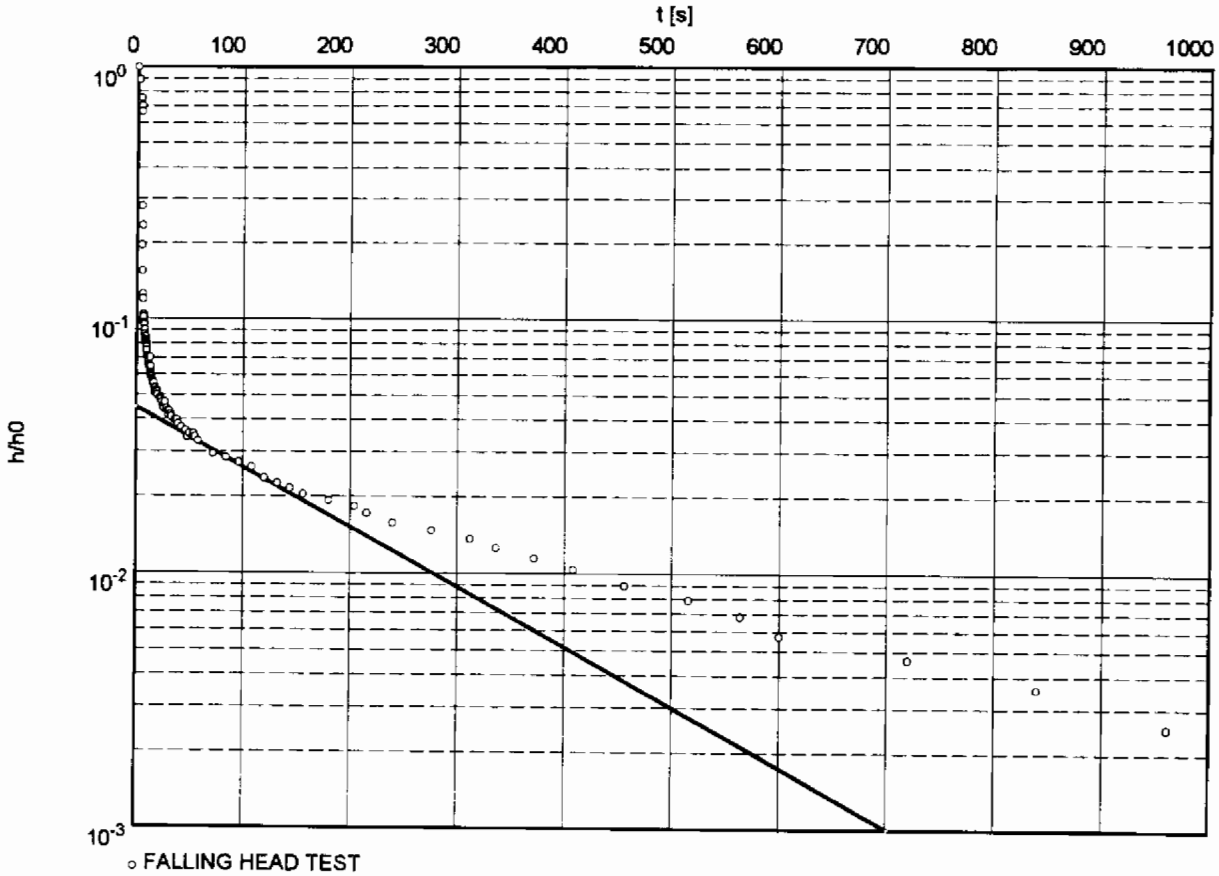
Slug Test No. 1	Test conducted on: 22.10.96
NBCE-570-003	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	36.0000	0.0620	0.0620
52	36.9960	0.0590	0.0590
53	39.0000	0.0560	0.0560
54	40.9980	0.0530	0.0530
55	42.9960	0.0500	0.0500
56	45.9960	0.0470	0.0470
57	48.0000	0.0430	0.0430
58	49.9980	0.0400	0.0400
59	52.9980	0.0370	0.0370
60	55.9980	0.0340	0.0340
61	60.0000	0.0310	0.0310
62	72.0000	0.0280	0.0280
63	84.0000	0.0210	0.0210
64	96.0000	0.0150	0.0150
65	108.0000	0.0120	0.0120
66	144.0000	0.0090	0.0090
67	156.0000	0.0090	0.0090
68	180.0000	0.0060	0.0060
69	264.0000	0.0030	0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	



Hydraulic conductivity [ft/s]: 5.49×10^{-5}

Hydraulic conductivity [ft/day]: 4.74

L = 5.3 ft
B = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.8000	-2.8000
2	1.9980	-2.4930	-2.4930
3	2.5980	-2.0580	-2.0580
4	3.7980	-2.1060	-2.1060
5	3.9960	1.9560	1.9560
6	4.2000	-1.8630	-1.8630
7	4.3980	-0.7850	-0.7850
8	4.8000	-0.5460	-0.5460
9	4.9980	-0.6560	-0.6560
10	5.4000	-0.4320	-0.4320
11	5.5980	-0.3500	-0.3500
12	5.7960	-0.2710	-0.2710
13	6.0000	-0.3340	-0.3340
14	6.1980	-0.2840	-0.2840
15	6.3960	-0.2900	-0.2900
16	6.6000	-0.2840	-0.2840
17	6.7980	-0.2680	-0.2680
18	7.2000	-0.2650	-0.2650
19	7.3980	-0.2520	-0.2520
20	7.8000	-0.2430	-0.2430
21	7.9980	-0.2370	-0.2370
22	8.4000	-0.2300	-0.2300
23	8.5980	-0.2270	-0.2270
24	8.7960	-0.2240	-0.2240
25	9.0000	-0.2180	-0.2180
26	9.3960	-0.2150	-0.2150
27	9.6000	-0.2080	-0.2080
28	10.2000	-0.1990	-0.1990
29	10.8000	-0.1960	-0.1960
30	10.9980	-0.1930	-0.1930
31	11.1960	-0.1860	-0.1860
32	11.4000	-0.1890	-0.1890
33	11.5980	-0.1830	-0.1830
34	12.0000	-0.1800	-0.1800
35	12.6000	-0.1770	-0.1770
36	12.7980	-0.1960	-0.1960
37	13.2000	-0.1800	-0.1800
38	13.3980	-0.1700	-0.1700
39	13.5960	-0.1670	-0.1670
40	14.1960	-0.1640	-0.1640
41	14.5980	-0.1610	-0.1610
42	15.1980	-0.1580	-0.1580
43	15.7980	-0.1550	-0.1550
44	16.2000	-0.1520	-0.1520
45	16.5960	-0.1550	-0.1550
46	16.8000	-0.1480	-0.1480
47	17.1960	-0.1480	-0.1480
48	17.4000	-0.1450	-0.1450
49	17.7960	-0.1480	-0.1480
50	18.1980	-0.1420	-0.1420

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	18.6000	-0.1450	-0.1450	
52	19.2000	-0.1450	-0.1450	
53	19.3980	-0.1420	-0.1420	
54	19.5960	-0.1390	-0.1390	
55	19.9980	-0.1390	-0.1390	
56	21.9960	-0.1360	-0.1360	
57	22.9980	-0.1330	-0.1330	
58	24.0000	-0.1300	-0.1300	
59	24.9960	-0.1260	-0.1260	
60	25.9980	-0.1230	-0.1230	
61	27.0000	-0.1300	-0.1300	
62	27.9960	-0.1230	-0.1230	
63	28.9980	-0.1200	-0.1200	
64	30.0000	-0.1170	-0.1170	
65	30.9960	-0.1200	-0.1200	
66	31.9980	-0.1170	-0.1170	
67	33.0000	-0.1140	-0.1140	
68	36.0000	-0.1110	-0.1110	
69	37.9980	-0.1110	-0.1110	
70	39.0000	-0.1070	-0.1070	
71	42.0000	-0.1040	-0.1040	
72	45.9960	-0.1010	-0.1010	
73	48.0000	-0.0950	-0.0950	
74	49.9980	-0.0980	-0.0980	
75	52.9980	-0.0950	-0.0950	
76	54.0000	-0.0980	-0.0980	
77	54.9960	-0.0950	-0.0950	
78	57.9960	-0.0920	-0.0920	
79	72.0000	-0.0820	-0.0820	
80	84.0000	-0.0790	-0.0790	
81	96.0000	-0.0760	-0.0760	
82	108.0000	-0.0730	-0.0730	
83	120.0000	-0.0660	-0.0660	
84	132.0000	-0.0630	-0.0630	
85	144.0000	-0.0600	-0.0600	
86	156.0000	-0.0570	-0.0570	
87	180.0000	-0.0540	-0.0540	
88	204.0000	-0.0510	-0.0510	
89	216.0000	-0.0480	-0.0480	
90	240.0000	-0.0440	-0.0440	
91	276.0000	-0.0410	-0.0410	
92	312.0000	-0.0380	-0.0380	
93	336.0000	-0.0350	-0.0350	
94	372.0000	-0.0320	-0.0320	
95	408.0000	-0.0290	-0.0290	
96	456.0000	-0.0250	-0.0250	
97	516.0000	-0.0220	-0.0220	
98	564.0000	-0.0190	-0.0190	
99	600.0000	-0.0160	-0.0160	
100	720.0000	-0.0130	-0.0130	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

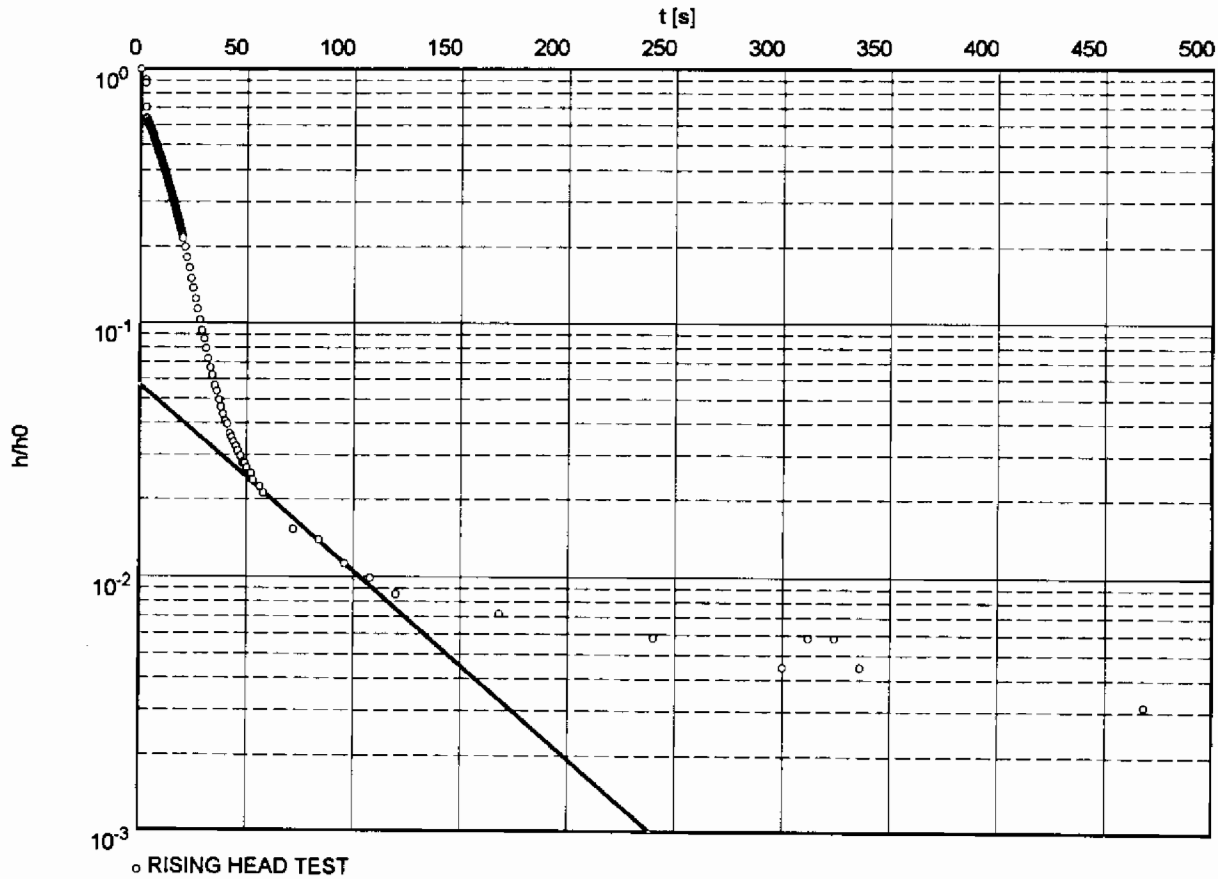
Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	840.0000	-0.0100	-0.0100	
102	960.0000	-0.0070	-0.0070	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	



Hydraulic conductivity [ft/s]: 1.72×10^{-4}

Hydraulic conductivity [ft/day]: 14.9

L = 5.3 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.2300	2.2300	
2	2.1960	2.0230	2.0230	
3	2.4000	1.9470	1.9470	
4	2.5980	1.5690	1.5690	
5	2.7960	1.4210	1.4210	
6	3.0000	1.4080	1.4080	
7	3.1980	1.3510	1.3510	
8	3.3960	1.3800	1.3800	
9	3.6000	1.3610	1.3610	
10	3.7980	1.3550	1.3550	
11	3.9960	1.3390	1.3390	
12	4.2000	1.3230	1.3230	
13	4.3980	1.3170	1.3170	
14	4.5960	1.3070	1.3070	
15	4.8000	1.2920	1.2920	
16	4.9980	1.2760	1.2760	
17	5.1960	1.2600	1.2600	
18	5.4000	1.2510	1.2510	
19	5.5980	1.2380	1.2380	
20	5.7960	1.2250	1.2250	
21	6.0000	1.2130	1.2130	
22	6.1980	1.1880	1.1880	
23	6.3960	1.1750	1.1750	
24	6.6000	1.1650	1.1650	
25	6.7980	1.1530	1.1530	
26	6.9960	1.1400	1.1400	
27	7.2000	1.1280	1.1280	
28	7.3980	1.1150	1.1150	
29	7.5960	1.1020	1.1020	
30	7.8000	1.0900	1.0900	
31	7.9980	1.0770	1.0770	
32	8.1960	1.0680	1.0680	
33	8.4000	1.0550	1.0550	
34	8.5980	1.0430	1.0430	
35	8.7960	1.0300	1.0300	
36	9.0000	1.0210	1.0210	
37	9.1980	1.0080	1.0080	
38	9.3960	0.9950	0.9950	
39	9.6000	0.9860	0.9860	
40	9.7980	0.9730	0.9730	
41	9.9960	0.9610	0.9610	
42	10.2000	0.9510	0.9510	
43	10.3980	0.9390	0.9390	
44	10.5960	0.9290	0.9290	
45	10.8000	0.9170	0.9170	
46	10.9980	0.9070	0.9070	
47	11.1960	0.8940	0.8940	
48	11.4000	0.8850	0.8850	
49	11.5980	0.8720	0.8720	
50	11.7960	0.8630	0.8630	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	12.0000	0.8530	0.8530
52	12.1980	0.8410	0.8410
53	12.3960	0.8310	0.8310
54	12.6000	0.8220	0.8220
55	12.7980	0.8090	0.8090
56	12.9960	0.8000	0.8000
57	13.2000	0.7900	0.7900
58	13.3980	0.7810	0.7810
59	13.5960	0.7680	0.7680
60	13.8000	0.7590	0.7590
61	13.9980	0.7490	0.7490
62	14.1960	0.7400	0.7400
63	14.4000	0.7310	0.7310
64	14.5980	0.7210	0.7210
65	14.7960	0.7120	0.7120
66	15.0000	0.6990	0.6990
67	15.1980	0.6900	0.6900
68	15.3960	0.6800	0.6800
69	15.6000	0.6710	0.6710
70	15.7980	0.6640	0.6640
71	15.9960	0.6550	0.6550
72	16.2000	0.6460	0.6460
73	16.3980	0.6360	0.6360
74	16.5960	0.6270	0.6270
75	16.8000	0.6170	0.6170
76	16.9980	0.6080	0.6080
77	17.1960	0.5980	0.5980
78	17.4000	0.5890	0.5890
79	17.5980	0.5820	0.5820
80	17.7960	0.5730	0.5730
81	18.0000	0.5640	0.5640
82	18.1980	0.5570	0.5570
83	18.3960	0.5480	0.5480
84	18.6000	0.5380	0.5380
85	18.7980	0.5320	0.5320
86	18.9960	0.5230	0.5230
87	19.2000	0.5160	0.5160
88	19.3980	0.5070	0.5070
89	19.5960	0.4970	0.4970
90	19.8000	0.4910	0.4910
91	19.9980	0.4820	0.4820
92	21.0000	0.4440	0.4440
93	21.9960	0.4030	0.4030
94	22.9980	0.3680	0.3680
95	24.0000	0.3340	0.3340
96	24.9960	0.3050	0.3050
97	25.9980	0.2770	0.2770
98	27.0000	0.2520	0.2520
99	27.9960	0.2290	0.2290
100	28.9980	0.2070	0.2070

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 15.11.96

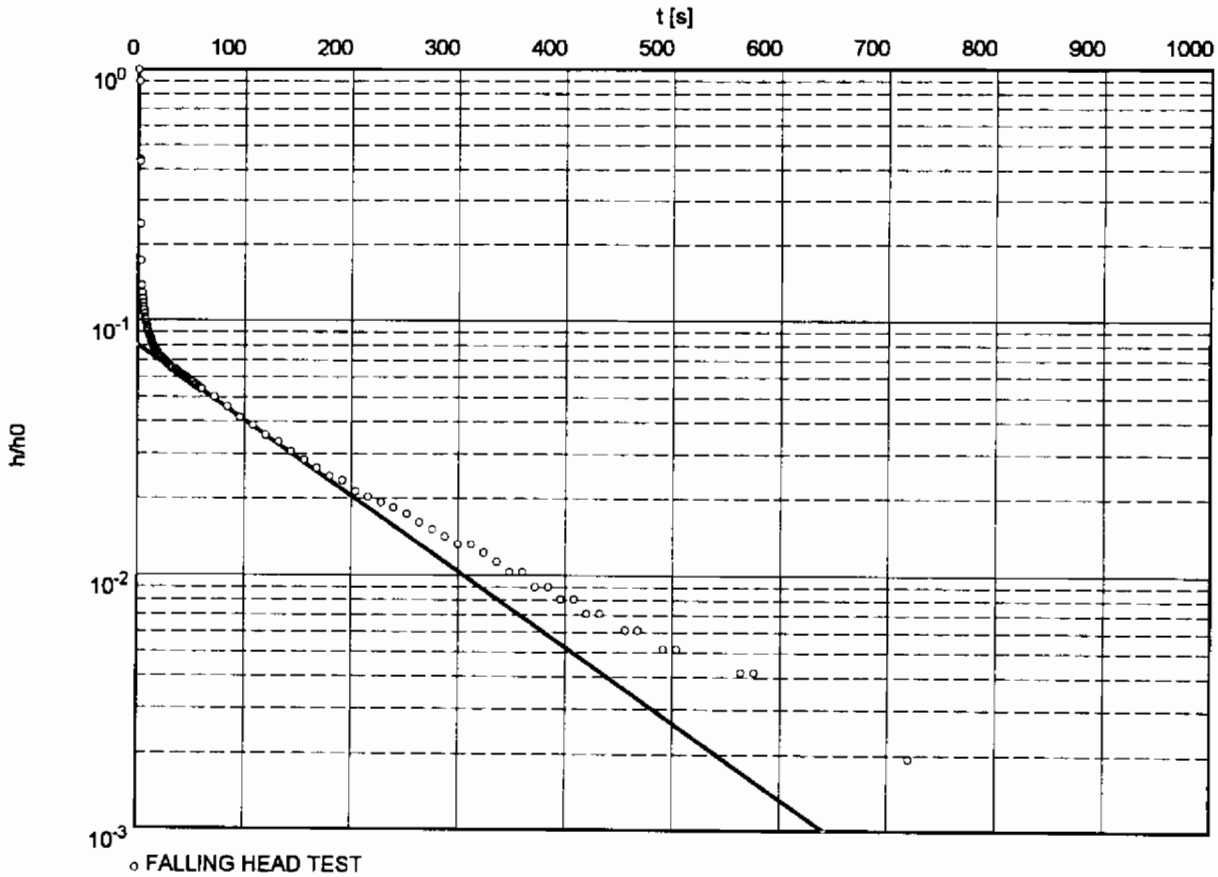
Slug Test No. #1	Test conducted on: 20.10.96
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	30.0000	0.1920	0.1920	
102	30.9960	0.1760	0.1760	
103	31.9980	0.1600	0.1600	
104	33.0000	0.1480	0.1480	
105	33.9960	0.1380	0.1380	
106	34.9980	0.1260	0.1260	
107	36.0000	0.1190	0.1190	
108	36.9960	0.1100	0.1100	
109	37.9980	0.1030	0.1030	
110	39.0000	0.0970	0.0970	
111	39.9960	0.0910	0.0910	
112	40.9980	0.0880	0.0880	
113	42.0000	0.0810	0.0810	
114	42.9960	0.0780	0.0780	
115	43.9980	0.0750	0.0750	
116	45.0000	0.0720	0.0720	
117	45.9960	0.0690	0.0690	
118	46.9980	0.0660	0.0660	
119	48.0000	0.0620	0.0620	
120	48.9960	0.0620	0.0620	
121	49.9980	0.0590	0.0590	
122	51.9960	0.0560	0.0560	
123	52.9980	0.0530	0.0530	
124	55.9980	0.0500	0.0500	
125	57.9960	0.0470	0.0470	
126	72.0000	0.0340	0.0340	
127	84.0000	0.0310	0.0310	
128	96.0000	0.0250	0.0250	
129	108.0000	0.0220	0.0220	
130	120.0000	0.0190	0.0190	
131	168.0000	0.0160	0.0160	
132	240.0000	0.0130	0.0130	
133	300.0000	0.0100	0.0100	
134	312.0000	0.0130	0.0130	
135	324.0000	0.0130	0.0130	
136	336.0000	0.0100	0.0100	
137	468.0000	0.0070	0.0070	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-572-001	



Hydraulic conductivity [ft/s]: 6.41×10^{-5}

Hydraulic conductivity [ft/day]: 5.54

L = 5.9 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	3.1120	3.1120	
2	0.9960	2.8090	2.8090	
3	1.5000	1.3630	1.3630	
4	1.9980	1.3380	1.3380	
5	2.4960	0.7510	0.7510	
6	3.0000	0.5360	0.5360	
7	3.4980	0.4260	0.4260	
8	3.9960	0.3970	0.3970	
9	4.5000	0.3780	0.3780	
10	4.9980	0.3630	0.3630	
11	5.4960	0.3500	0.3500	
12	6.0000	0.3410	0.3410	
13	6.4980	0.3280	0.3280	
14	6.9960	0.3190	0.3190	
15	7.5000	0.3120	0.3120	
16	7.9980	0.3030	0.3030	
17	8.4960	0.2960	0.2960	
18	9.0000	0.2900	0.2900	
19	9.4980	0.2870	0.2870	
20	9.9960	0.2810	0.2810	
21	10.5000	0.2740	0.2740	
22	10.9980	0.2710	0.2710	
23	11.4960	0.2680	0.2680	
24	12.0000	0.2650	0.2650	
25	12.4980	0.2620	0.2620	
26	12.9960	0.2590	0.2590	
27	13.5000	0.2550	0.2550	
28	13.9980	0.2520	0.2520	
29	14.4960	0.2490	0.2490	
30	15.0000	0.2460	0.2460	
31	15.4980	0.2430	0.2430	
32	15.9960	0.2430	0.2430	
33	16.5000	0.2400	0.2400	
34	16.9980	0.2400	0.2400	
35	17.4960	0.2370	0.2370	
36	18.0000	0.2330	0.2330	
37	18.4980	0.2330	0.2330	
38	18.9960	0.2300	0.2300	
39	19.5000	0.2270	0.2270	
40	19.9980	0.2270	0.2270	
41	21.0000	0.2240	0.2240	
42	21.9960	0.2240	0.2240	
43	22.9980	0.2210	0.2210	
44	24.0000	0.2180	0.2180	
45	24.9960	0.2180	0.2180	
46	25.9980	0.2140	0.2140	
47	27.0000	0.2110	0.2110	
48	27.9960	0.2110	0.2110	
49	28.9980	0.2080	0.2080	
50	30.0000	0.2080	0.2080	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	30.9960	0.2050	0.2050
52	31.9980	0.2020	0.2020
53	33.0000	0.2020	0.2020
54	34.9980	0.1990	0.1990
55	36.0000	0.1990	0.1990
56	36.9960	0.1960	0.1960
57	37.9980	0.1960	0.1960
58	39.0000	0.1920	0.1920
59	39.9960	0.1920	0.1920
60	40.9980	0.1890	0.1890
61	42.0000	0.1890	0.1890
62	42.9960	0.1890	0.1890
63	43.9980	0.1860	0.1860
64	45.0000	0.1860	0.1860
65	45.9960	0.1860	0.1860
66	46.9980	0.1830	0.1830
67	48.0000	0.1830	0.1830
68	48.9960	0.1800	0.1800
69	49.9980	0.1800	0.1800
70	51.0000	0.1770	0.1770
71	51.9960	0.1770	0.1770
72	54.0000	0.1730	0.1730
73	54.9960	0.1730	0.1730
74	57.0000	0.1700	0.1700
75	57.9960	0.1700	0.1700
76	58.9980	0.1670	0.1670
77	60.0000	0.1670	0.1670
78	72.0000	0.1550	0.1550
79	84.0000	0.1420	0.1420
80	96.0000	0.1290	0.1290
81	108.0000	0.1200	0.1200
82	120.0000	0.1100	0.1100
83	132.0000	0.1040	0.1040
84	144.0000	0.0950	0.0950
85	156.0000	0.0880	0.0880
86	168.0000	0.0820	0.0820
87	180.0000	0.0760	0.0760
88	192.0000	0.0730	0.0730
89	204.0000	0.0660	0.0660
90	216.0000	0.0630	0.0630
91	228.0000	0.0600	0.0600
92	240.0000	0.0570	0.0570
93	252.0000	0.0540	0.0540
94	264.0000	0.0500	0.0500
95	276.0000	0.0470	0.0470
96	288.0000	0.0440	0.0440
97	300.0000	0.0410	0.0410
98	312.0000	0.0410	0.0410
99	324.0000	0.0380	0.0380
100	336.0000	0.0350	0.0350

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

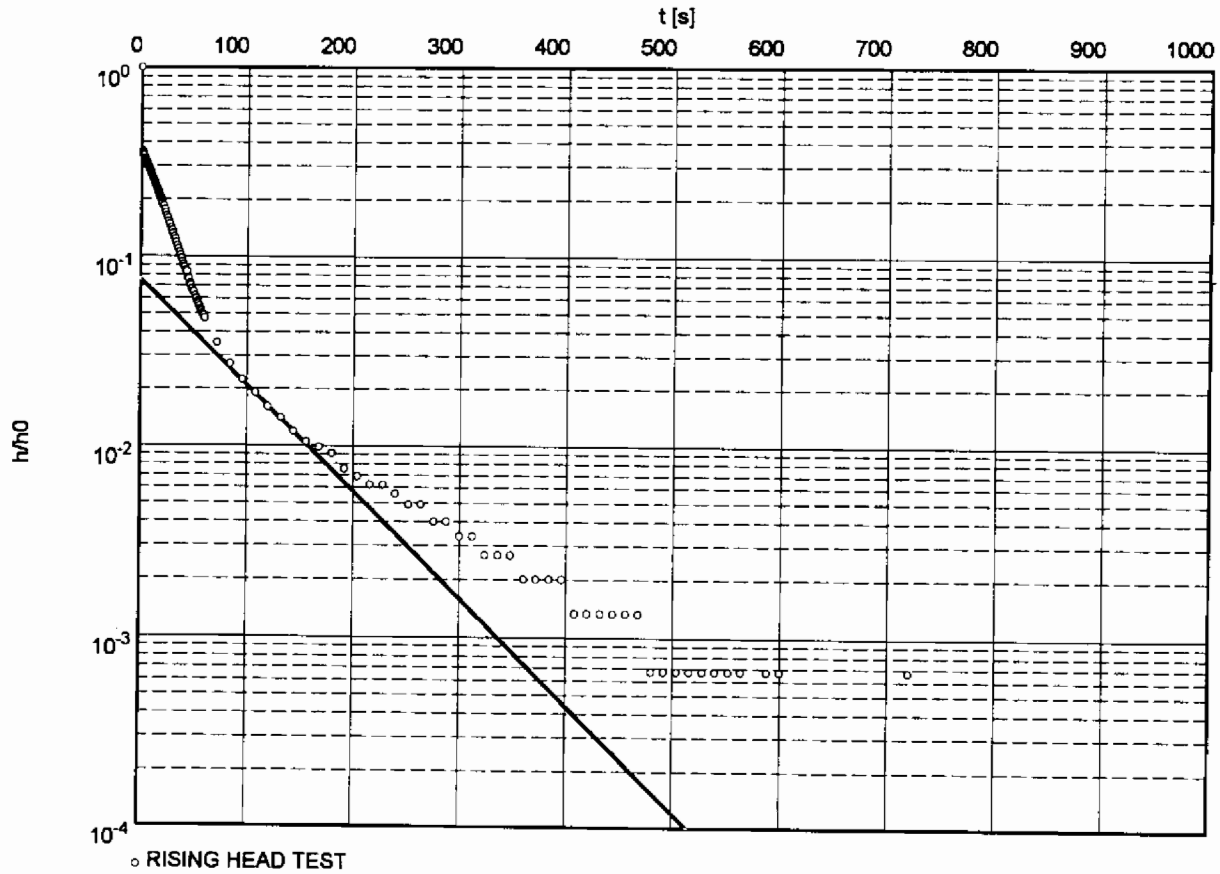
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	348.0000	0.0320	0.0320
102	360.0000	0.0320	0.0320
103	372.0000	0.0280	0.0280
104	384.0000	0.0280	0.0280
105	396.0000	0.0250	0.0250
106	408.0000	0.0250	0.0250
107	420.0000	0.0220	0.0220
108	432.0000	0.0220	0.0220
109	456.0000	0.0190	0.0190
110	468.0000	0.0190	0.0190
111	492.0000	0.0160	0.0160
112	504.0000	0.0160	0.0160
113	564.0000	0.0130	0.0130
114	576.0000	0.0130	0.0130
115	720.0000	0.0060	0.0060
116	840.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.1997
NBCE-572-001	



Hydraulic conductivity [ft/s]: 1.20×10^{-4}

Hydraulic conductivity [ft/day]: 10.4

L = 5.9 ft
b = 7.9 ft
D = 7.9 ft (full [penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka	Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	4.5020	4.5020
2	0.9960	1.6110	1.6110
3	1.5000	1.5760	1.5760
4	1.9980	1.5480	1.5480
5	2.4960	1.5220	1.5220
6	3.0000	1.4720	1.4720
7	3.4980	1.4720	1.4720
8	3.9960	1.4440	1.4440
9	4.5000	1.4210	1.4210
10	4.9980	1.3990	1.3990
11	5.4960	1.3770	1.3770
12	6.0000	1.3550	1.3550
13	6.4980	1.3330	1.3330
14	6.9960	1.3140	1.3140
15	7.5000	1.2950	1.2950
16	7.9980	1.2730	1.2730
17	8.4960	1.2510	1.2510
18	9.0000	1.2320	1.2320
19	9.4980	1.2130	1.2130
20	9.9960	1.1950	1.1950
21	10.5000	1.1720	1.1720
22	10.9980	1.1540	1.1540
23	11.4960	1.1380	1.1380
24	12.0000	1.1190	1.1190
25	12.4980	1.1000	1.1000
26	12.9960	1.0810	1.0810
27	13.5000	1.0620	1.0620
28	13.9980	1.0460	1.0460
29	14.4960	1.0270	1.0270
30	15.0000	1.0120	1.0120
31	15.4980	0.9960	0.9960
32	15.9960	0.9770	0.9770
33	16.5000	0.9610	0.9610
34	16.9980	0.9450	0.9450
35	17.4960	0.9270	0.9270
36	18.0000	0.9140	0.9140
37	18.4980	0.8980	0.8980
38	18.9960	0.8820	0.8820
39	19.5000	0.8670	0.8670
40	19.9980	0.8480	0.8480
41	21.0000	0.8230	0.8230
42	21.9960	0.7910	0.7910
43	22.9980	0.7660	0.7660
44	24.0000	0.7370	0.7370
45	24.9960	0.7150	0.7150
46	25.9980	0.6870	0.6870
47	27.0000	0.6620	0.6620
48	27.9960	0.6360	0.6360
49	28.9980	0.6140	0.6140
50	30.0000	0.5920	0.5920

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #2	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	30.9960	0.5700	0.5700	
52	31.9980	0.5510	0.5510	
53	33.0000	0.5290	0.5290	
54	33.9960	0.5100	0.5100	
55	34.9980	0.4910	0.4910	
56	36.0000	0.4730	0.4730	
57	36.9960	0.4540	0.4540	
58	37.9980	0.4380	0.4380	
59	39.0000	0.4220	0.4220	
60	39.9960	0.4060	0.4060	
61	40.9980	0.3910	0.3910	
62	42.0000	0.3780	0.3780	
63	42.9960	0.3720	0.3720	
64	43.9980	0.3460	0.3460	
65	45.0000	0.3400	0.3400	
66	45.9960	0.3240	0.3240	
67	46.9980	0.3150	0.3150	
68	48.0000	0.3020	0.3020	
69	48.9960	0.2930	0.2930	
70	49.9980	0.2900	0.2900	
71	51.0000	0.2770	0.2770	
72	51.9960	0.2680	0.2680	
73	52.9980	0.2580	0.2580	
74	54.0000	0.2520	0.2520	
75	54.9960	0.2450	0.2450	
76	55.9980	0.2360	0.2360	
77	57.0000	0.2300	0.2300	
78	57.9960	0.2230	0.2230	
79	58.9980	0.2170	0.2170	
80	60.0000	0.2110	0.2110	
81	72.0000	0.1570	0.1570	
82	84.0000	0.1220	0.1220	
83	96.0000	0.1000	0.1000	
84	108.0000	0.0850	0.0850	
85	120.0000	0.0720	0.0720	
86	132.0000	0.0630	0.0630	
87	144.0000	0.0530	0.0530	
88	156.0000	0.0470	0.0470	
89	168.0000	0.0440	0.0440	
90	180.0000	0.0410	0.0410	
91	192.0000	0.0340	0.0340	
92	204.0000	0.0310	0.0310	
93	216.0000	0.0280	0.0280	
94	228.0000	0.0280	0.0280	
95	240.0000	0.0250	0.0250	
96	252.0000	0.0220	0.0220	
97	264.0000	0.0220	0.0220	
98	276.0000	0.0180	0.0180	
99	288.0000	0.0180	0.0180	
100	300.0000	0.0150	0.0150	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

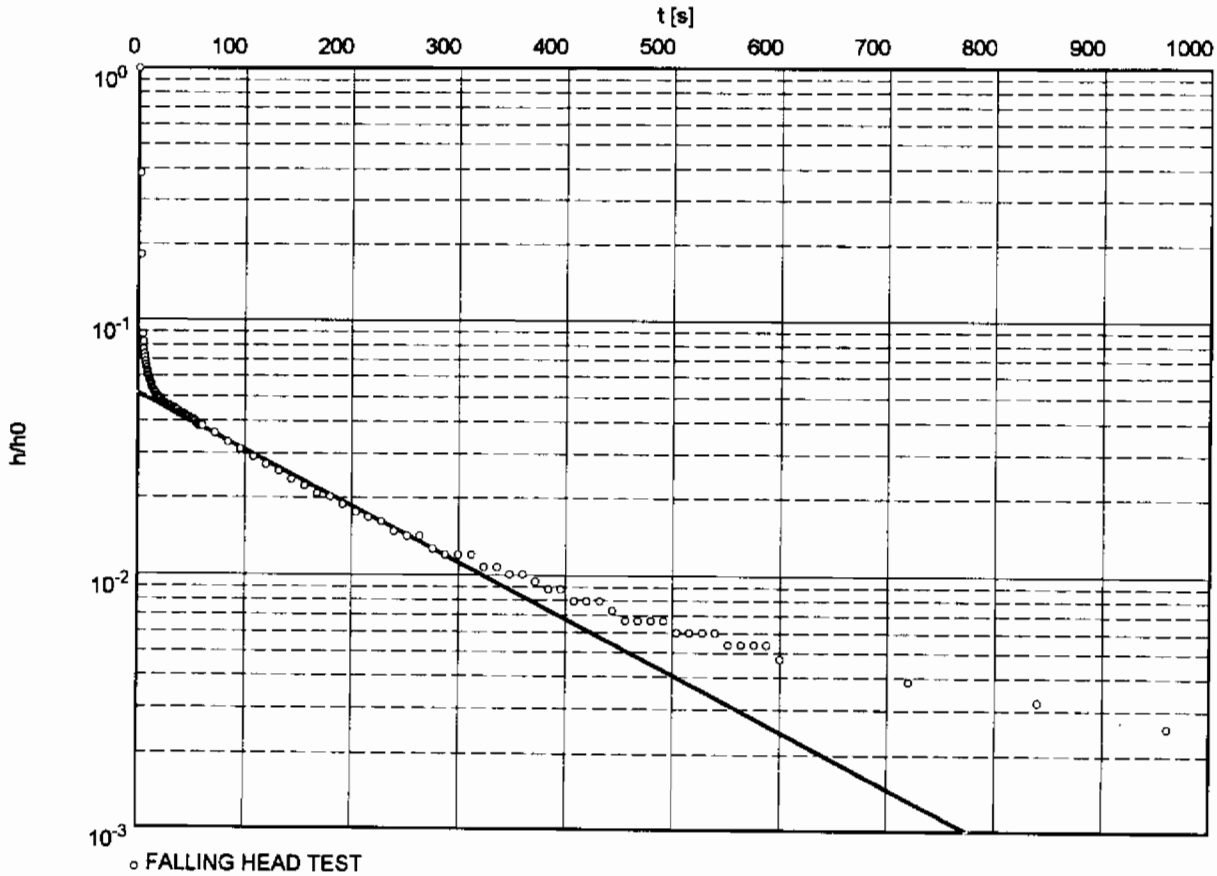
Slug Test No. #2	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	312.0000	0.0150	0.0150
102	324.0000	0.0120	0.0120
103	336.0000	0.0120	0.0120
104	348.0000	0.0120	0.0120
105	360.0000	0.0090	0.0090
106	372.0000	0.0090	0.0090
107	384.0000	0.0090	0.0090
108	396.0000	0.0090	0.0090
109	408.0000	0.0060	0.0060
110	420.0000	0.0060	0.0060
111	432.0000	0.0060	0.0060
112	444.0000	0.0060	0.0060
113	456.0000	0.0060	0.0060
114	468.0000	0.0060	0.0060
115	480.0000	0.0030	0.0030
116	492.0000	0.0030	0.0030
117	504.0000	0.0030	0.0030
118	516.0000	0.0030	0.0030
119	528.0000	0.0030	0.0030
120	540.0000	0.0030	0.0030
121	552.0000	0.0030	0.0030
122	564.0000	0.0030	0.0030
123	576.0000	0.0000	0.0000
124	588.0000	0.0030	0.0030
125	600.0000	0.0030	0.0030
126	720.0000	0.0030	0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	



Hydraulic conductivity [ft/s]: 4.76×10^{-5}

Hydraulic conductivity [ft/day]: 3.59

L = 5.9 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	4.6730	4.6730	
2	1.9980	1.7920	1.7920	
3	3.0000	0.8450	0.8450	
4	3.9960	0.3690	0.3690	
5	4.5000	0.4100	0.4100	
6	4.9980	0.3810	0.3810	
7	5.4960	0.3560	0.3560	
8	6.0000	0.3400	0.3400	
9	6.4980	0.3280	0.3280	
10	6.9960	0.3180	0.3180	
11	7.5000	0.3090	0.3090	
12	7.9980	0.2990	0.2990	
13	8.4960	0.2930	0.2930	
14	9.0000	0.2870	0.2870	
15	9.4980	0.2800	0.2800	
16	9.9960	0.2770	0.2770	
17	10.5000	0.2710	0.2710	
18	10.9980	0.2680	0.2680	
19	11.4960	0.2640	0.2640	
20	12.0000	0.2610	0.2610	
21	12.4980	0.2580	0.2580	
22	12.9960	0.2520	0.2520	
23	13.5000	0.2490	0.2490	
24	13.9980	0.2490	0.2490	
25	14.4960	0.2460	0.2460	
26	15.0000	0.2420	0.2420	
27	15.4980	0.2420	0.2420	
28	15.9960	0.2390	0.2390	
29	16.5000	0.2390	0.2390	
30	16.9980	0.2330	0.2330	
31	17.4960	0.2330	0.2330	
32	18.0000	0.2330	0.2330	
33	18.4980	0.2330	0.2330	
34	18.9960	0.2300	0.2300	
35	19.5000	0.2300	0.2300	
36	19.9980	0.2270	0.2270	
37	21.0000	0.2270	0.2270	
38	21.9960	0.2230	0.2230	
39	22.9980	0.2200	0.2200	
40	24.0000	0.2200	0.2200	
41	24.9960	0.2170	0.2170	
42	25.9980	0.2170	0.2170	
43	27.0000	0.2140	0.2140	
44	27.9960	0.2140	0.2140	
45	28.9980	0.2140	0.2140	
46	30.0000	0.2110	0.2110	
47	30.9960	0.2110	0.2110	
48	31.9980	0.2080	0.2080	
49	33.0000	0.2080	0.2080	
50	33.9960	0.2050	0.2050	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	34.9980	0.2080	0.2080	
52	36.0000	0.2050	0.2050	
53	36.9960	0.2050	0.2050	
54	37.9980	0.2010	0.2010	
55	39.0000	0.2010	0.2010	
56	39.9960	0.2010	0.2010	
57	40.9980	0.1980	0.1980	
58	42.0000	0.1980	0.1980	
59	42.9960	0.1980	0.1980	
60	43.9980	0.1950	0.1950	
61	45.0000	0.1950	0.1950	
62	45.9960	0.1920	0.1920	
63	46.9980	0.1920	0.1920	
64	48.0000	0.1920	0.1920	
65	48.9960	0.1890	0.1890	
66	49.9980	0.1890	0.1890	
67	51.0000	0.1890	0.1890	
68	51.9960	0.1890	0.1890	
69	52.9980	0.1860	0.1860	
70	54.0000	0.1860	0.1860	
71	54.9960	0.1820	0.1820	
72	55.9980	0.1820	0.1820	
73	57.0000	0.1790	0.1790	
74	57.9960	0.1790	0.1790	
75	58.9980	0.1790	0.1790	
76	60.0000	0.1790	0.1790	
77	72.0000	0.1670	0.1670	
78	84.0000	0.1540	0.1540	
79	96.0000	0.1450	0.1450	
80	108.0000	0.1350	0.1350	
81	120.0000	0.1260	0.1260	
82	132.0000	0.1190	0.1190	
83	144.0000	0.1100	0.1100	
84	156.0000	0.1040	0.1040	
85	168.0000	0.0970	0.0970	
86	180.0000	0.0940	0.0940	
87	192.0000	0.0880	0.0880	
88	204.0000	0.0820	0.0820	
89	216.0000	0.0780	0.0780	
90	228.0000	0.0750	0.0750	
91	240.0000	0.0690	0.0690	
92	252.0000	0.0660	0.0660	
93	264.0000	0.0660	0.0660	
94	276.0000	0.0590	0.0590	
95	288.0000	0.0560	0.0560	
96	300.0000	0.0560	0.0560	
97	312.0000	0.0560	0.0560	
98	324.0000	0.0500	0.0500	
99	336.0000	0.0500	0.0500	
100	348.0000	0.0470	0.0470	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

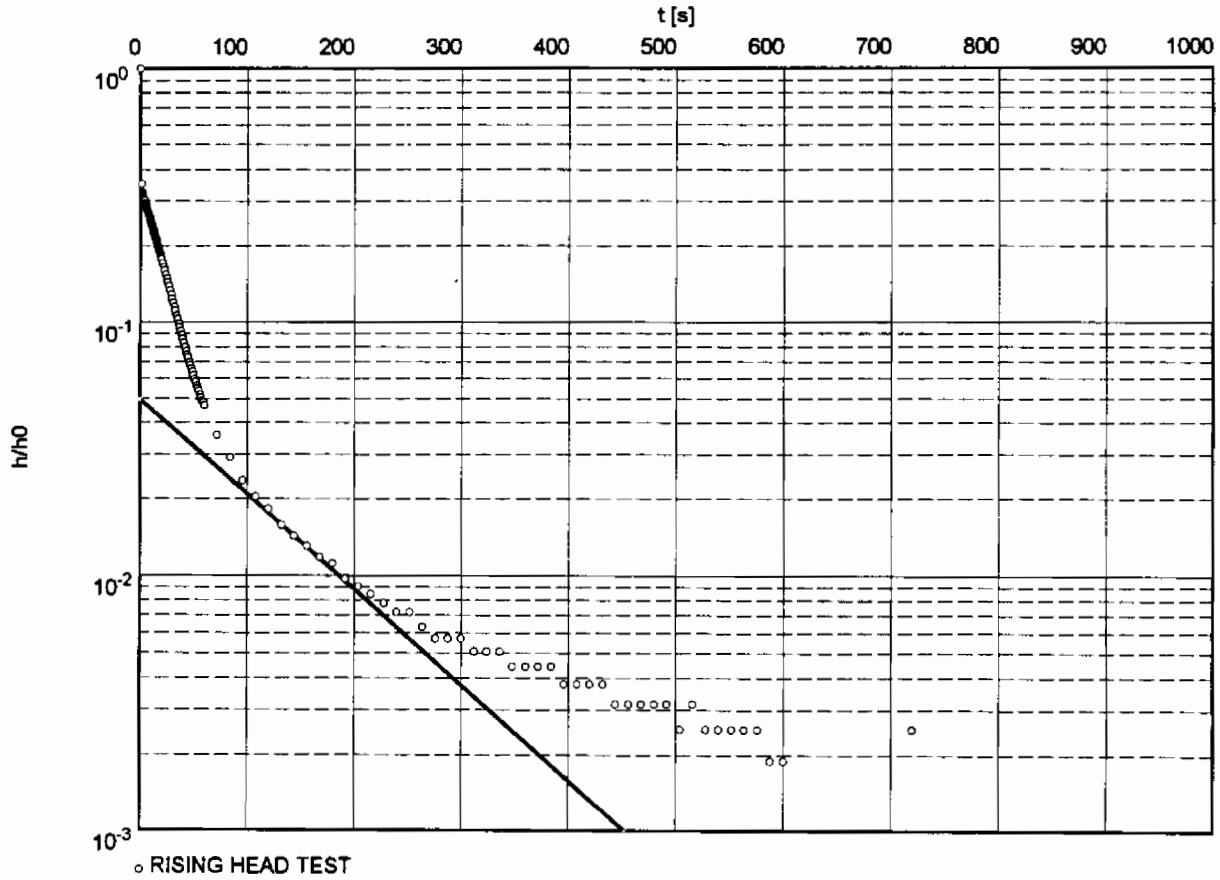
Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	360.0000	0.0470	0.0470	
102	372.0000	0.0440	0.0440	
103	384.0000	0.0410	0.0410	
104	396.0000	0.0410	0.0410	
105	408.0000	0.0370	0.0370	
106	420.0000	0.0370	0.0370	
107	432.0000	0.0370	0.0370	
108	444.0000	0.0340	0.0340	
109	456.0000	0.0310	0.0310	
110	468.0000	0.0310	0.0310	
111	480.0000	0.0310	0.0310	
112	492.0000	0.0310	0.0310	
113	504.0000	0.0280	0.0280	
114	516.0000	0.0280	0.0280	
115	528.0000	0.0280	0.0280	
116	540.0000	0.0280	0.0280	
117	552.0000	0.0250	0.0250	
118	564.0000	0.0250	0.0250	
119	576.0000	0.0250	0.0250	
120	588.0000	0.0250	0.0250	
121	600.0000	0.0220	0.0220	
122	720.0000	0.0180	0.0180	
123	840.0000	0.0150	0.0150	
124	960.0000	0.0120	0.0120	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	



Hydraulic conductivity [ft/s]: 8.07×10^{-5}

Hydraulic conductivity [ft/day]: 6.08

L = 5.9 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	4.7530	4.7530	
2	0.9960	1.6570	1.6570	
3	1.5000	1.5410	1.5410	
4	1.9980	1.5120	1.5120	
5	2.4960	1.4900	1.4900	
6	3.0000	1.4680	1.4680	
7	3.4980	1.4430	1.4430	
8	3.9960	1.4270	1.4270	
9	4.5000	1.3990	1.3990	
10	4.9980	1.3740	1.3740	
11	5.4960	1.3510	1.3510	
12	6.0000	1.3330	1.3330	
13	6.4980	1.3110	1.3110	
14	6.9960	1.2880	1.2880	
15	7.5000	1.2700	1.2700	
16	7.9980	1.2470	1.2470	
17	8.4960	1.2320	1.2320	
18	9.0000	1.2100	1.2100	
19	9.4980	1.1910	1.1910	
20	9.9960	1.1720	1.1720	
21	10.5000	1.1530	1.1530	
22	10.9980	1.1340	1.1340	
23	11.4960	1.1150	1.1150	
24	12.0000	1.0990	1.0990	
25	12.4980	1.0800	1.0800	
26	12.9960	1.0620	1.0620	
27	13.5000	1.0460	1.0460	
28	13.9980	1.0270	1.0270	
29	14.4960	1.0110	1.0110	
30	15.0000	0.9950	0.9950	
31	15.4980	0.9760	0.9760	
32	15.9960	0.9610	0.9610	
33	16.5000	0.9450	0.9450	
34	16.9980	0.9290	0.9290	
35	17.4960	0.9130	0.9130	
36	18.0000	0.8980	0.8980	
37	18.4980	0.8820	0.8820	
38	18.9960	0.8690	0.8690	
39	19.5000	0.8530	0.8530	
40	19.9980	0.8380	0.8380	
41	21.0000	0.8090	0.8090	
42	21.9960	0.7810	0.7810	
43	22.9980	0.7560	0.7560	
44	24.0000	0.7270	0.7270	
45	24.9960	0.7020	0.7020	
46	25.9980	0.6800	0.6800	
47	27.0000	0.6550	0.6550	
48	27.9960	0.6300	0.6300	
49	28.9980	0.6080	0.6080	
50	30.0000	0.5850	0.5850	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka | Date: 18.03.1997

Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	30.9960	0.5630	0.5630	
52	31.9980	0.5440	0.5440	
53	33.0000	0.5260	0.5260	
54	33.9960	0.5030	0.5030	
55	34.9980	0.4880	0.4880	
56	36.0000	0.4690	0.4690	
57	36.9960	0.4530	0.4530	
58	37.9980	0.4370	0.4370	
59	39.0000	0.4210	0.4210	
60	39.9960	0.4060	0.4060	
61	40.9980	0.3930	0.3930	
62	42.0000	0.3770	0.3770	
63	42.9960	0.3650	0.3650	
64	43.9980	0.3520	0.3520	
65	45.0000	0.3430	0.3430	
66	45.9960	0.3300	0.3300	
67	46.9980	0.3210	0.3210	
68	48.0000	0.3110	0.3110	
69	48.9960	0.3020	0.3020	
70	49.9980	0.2920	0.2920	
71	51.0000	0.2830	0.2830	
72	51.9960	0.2760	0.2760	
73	52.9980	0.2670	0.2670	
74	54.0000	0.2610	0.2610	
75	54.9960	0.2540	0.2540	
76	55.9980	0.2450	0.2450	
77	57.0000	0.2390	0.2390	
78	57.9960	0.2320	0.2320	
79	58.9980	0.2290	0.2290	
80	60.0000	0.2230	0.2230	
81	72.0000	0.1690	0.1690	
82	84.0000	0.1380	0.1380	
83	96.0000	0.1120	0.1120	
84	108.0000	0.0970	0.0970	
85	120.0000	0.0870	0.0870	
86	132.0000	0.0750	0.0750	
87	144.0000	0.0680	0.0680	
88	156.0000	0.0620	0.0620	
89	168.0000	0.0560	0.0560	
90	180.0000	0.0530	0.0530	
91	192.0000	0.0460	0.0460	
92	204.0000	0.0430	0.0430	
93	216.0000	0.0400	0.0400	
94	228.0000	0.0370	0.0370	
95	240.0000	0.0340	0.0340	
96	252.0000	0.0340	0.0340	
97	264.0000	0.0300	0.0300	
98	276.0000	0.0270	0.0270	
99	288.0000	0.0270	0.0270	
100	300.0000	0.0270	0.0270	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T Kafka Date: 18.03.1997

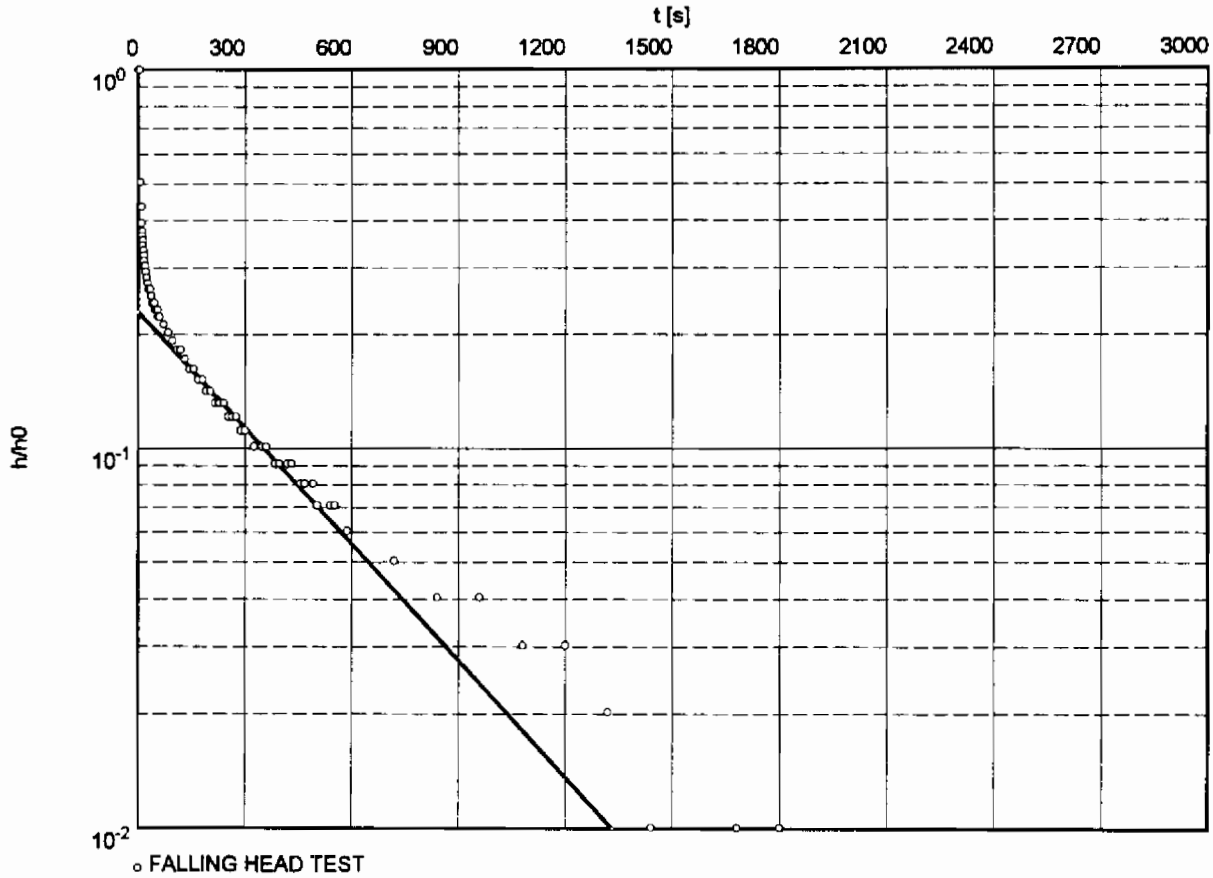
Slug Test No. #3	Test conducted on: 17.03.1997
NBCE-572-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	312.0000	0.0240	0.0240
102	324.0000	0.0240	0.0240
103	336.0000	0.0240	0.0240
104	348.0000	0.0210	0.0210
105	360.0000	0.0210	0.0210
106	372.0000	0.0210	0.0210
107	384.0000	0.0210	0.0210
108	396.0000	0.0180	0.0180
109	408.0000	0.0180	0.0180
110	420.0000	0.0180	0.0180
111	432.0000	0.0180	0.0180
112	444.0000	0.0150	0.0150
113	456.0000	0.0150	0.0150
114	468.0000	0.0150	0.0150
115	480.0000	0.0150	0.0150
116	492.0000	0.0150	0.0150
117	504.0000	0.0120	0.0120
118	516.0000	0.0150	0.0150
119	528.0000	0.0120	0.0120
120	540.0000	0.0120	0.0120
121	552.0000	0.0120	0.0120
122	564.0000	0.0120	0.0120
123	576.0000	0.0120	0.0120
124	588.0000	0.0090	0.0090
125	600.0000	0.0090	0.0090
126	720.0000	0.0120	0.0120

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	



Hydraulic conductivity [ft/s]: 1.32×10^{-5}

Hydraulic conductivity [ft/day]: 1.14

L = 10.2 ft
b = 10.2 ft
D = 10.2 ft (full penetration)
Ref = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-0.9900	-0.9900
2	4.0000	-0.9900	-0.9900
3	6.0000	-0.5000	-0.5000
4	7.0000	-0.4300	-0.4300
5	8.0000	-0.4300	-0.4300
6	9.0000	-0.3900	-0.3900
7	10.0000	-0.3700	-0.3700
8	11.0000	-0.3600	-0.3600
9	12.0000	-0.3500	-0.3500
10	13.0000	-0.3400	-0.3400
11	14.0000	-0.3300	-0.3300
12	15.0000	-0.3200	-0.3200
13	16.0000	-0.3100	-0.3100
14	17.0000	-0.3000	-0.3000
15	18.0000	-0.3000	-0.3000
16	19.0000	-0.3000	-0.3000
17	20.0000	-0.2900	-0.2900
18	21.0000	-0.2900	-0.2900
19	22.0000	-0.2800	-0.2800
20	23.0000	-0.2800	-0.2800
21	24.0000	-0.2700	-0.2700
22	26.0000	-0.2700	-0.2700
23	28.0000	-0.2600	-0.2600
24	29.0000	-0.2600	-0.2600
25	31.0000	-0.2600	-0.2600
26	33.0000	-0.2600	-0.2600
27	35.0000	-0.2500	-0.2500
28	36.0000	-0.2500	-0.2500
29	39.0000	-0.2400	-0.2400
30	42.0000	-0.2400	-0.2400
31	43.0000	-0.2400	-0.2400
32	44.0000	-0.2400	-0.2400
33	45.0000	-0.2400	-0.2400
34	48.0000	-0.2300	-0.2300
35	50.0000	-0.2300	-0.2300
36	52.0000	-0.2300	-0.2300
37	53.0000	-0.2300	-0.2300
38	54.0000	-0.2300	-0.2300
39	55.0000	-0.2300	-0.2300
40	56.0000	-0.2200	-0.2200
41	60.0000	-0.2200	-0.2200
42	72.0000	-0.2100	-0.2100
43	84.0000	-0.2000	-0.2000
44	96.0000	-0.1900	-0.1900
45	108.0000	-0.1800	-0.1800
46	120.0000	-0.1800	-0.1800
47	132.0000	-0.1700	-0.1700
48	144.0000	-0.1600	-0.1600
49	156.0000	-0.1600	-0.1600
50	168.0000	-0.1500	-0.1500

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

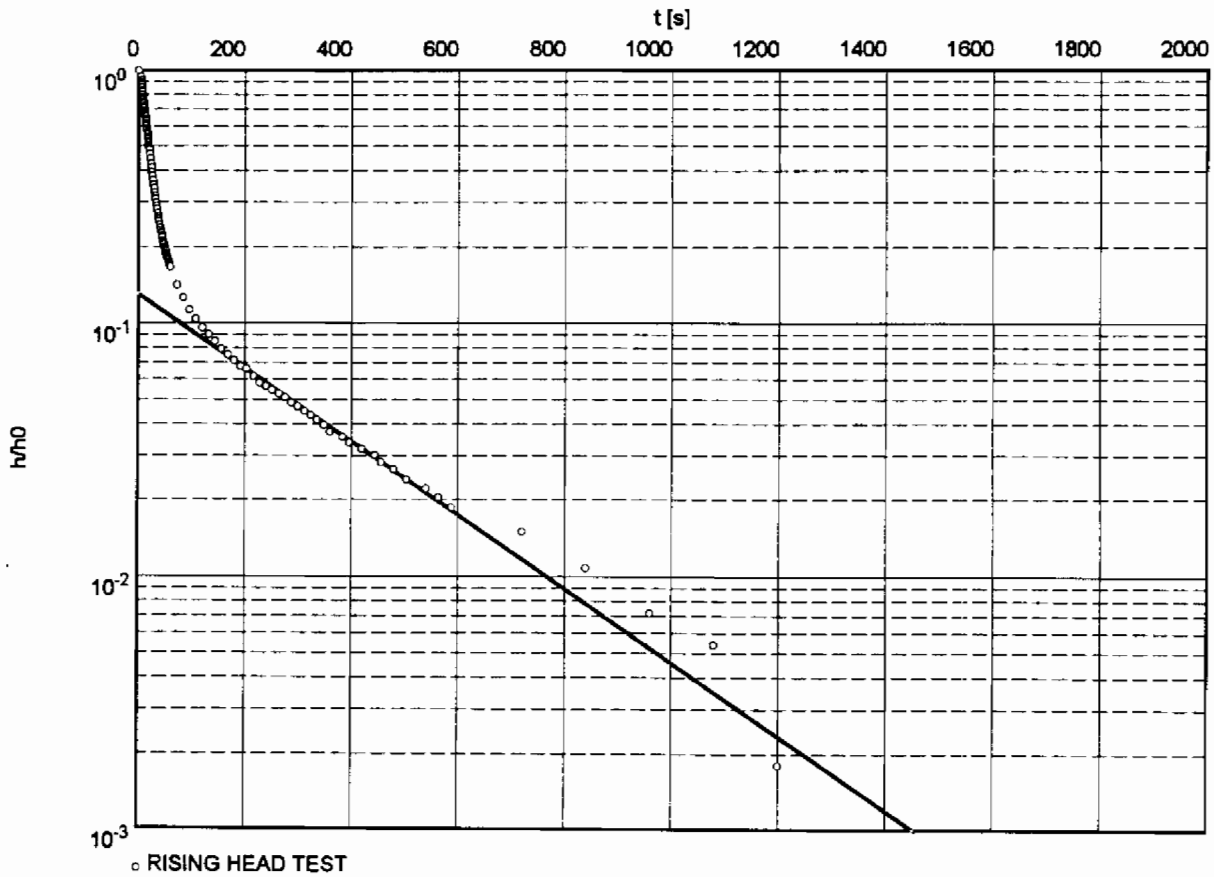
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	180.0000	-0.1500	-0.1500
52	192.0000	-0.1400	-0.1400
53	204.0000	-0.1400	-0.1400
54	216.0000	-0.1300	-0.1300
55	228.0000	-0.1300	-0.1300
56	240.0000	-0.1300	-0.1300
57	252.0000	-0.1200	-0.1200
58	264.0000	-0.1200	-0.1200
59	276.0000	-0.1200	-0.1200
60	288.0000	-0.1100	-0.1100
61	300.0000	-0.1100	-0.1100
62	324.0000	-0.1000	-0.1000
63	348.0000	-0.1000	-0.1000
64	360.0000	-0.1000	-0.1000
65	384.0000	-0.0900	-0.0900
66	396.0000	-0.0900	-0.0900
67	420.0000	-0.0900	-0.0900
68	432.0000	-0.0900	-0.0900
69	456.0000	-0.0800	-0.0800
70	468.0000	-0.0800	-0.0800
71	492.0000	-0.0800	-0.0800
72	504.0000	-0.0700	-0.0700
73	540.0000	-0.0700	-0.0700
74	552.0000	-0.0700	-0.0700
75	588.0000	-0.0600	-0.0600
76	720.0000	-0.0500	-0.0500
77	840.0000	-0.0400	-0.0400
78	960.0000	-0.0400	-0.0400
79	1080.0000	-0.0300	-0.0300
80	1200.0000	-0.0300	-0.0300
81	1320.0000	-0.0200	-0.0200
82	1440.0000	-0.0100	-0.0100
83	1680.0000	-0.0100	-0.0100
84	1800.0000	-0.0100	-0.0100
85	2160.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	



Hydraulic conductivity [ft/s]: 1.89×10^{-5}

Hydraulic conductivity [ft/day]: 1.63

L = 10.2 ft
b = 10.2 ft
D = 10.2 ft (full penetration)
Ref = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	3.4980	1.5730	1.5730	
3	3.9960	1.5730	1.5730	
4	4.5000	1.5230	1.5230	
5	4.9980	1.4880	1.4880	
6	5.4960	1.4630	1.4630	
7	6.0000	1.4190	1.4190	
8	6.4980	1.3880	1.3880	
9	6.9960	1.3590	1.3590	
10	7.5000	1.3310	1.3310	
11	7.9980	1.3030	1.3030	
12	8.4960	1.2780	1.2780	
13	9.0000	1.2490	1.2490	
14	9.4980	1.2240	1.2240	
15	9.9960	1.2020	1.2020	
16	10.5000	1.1770	1.1770	
17	10.9980	1.1520	1.1520	
18	11.4960	1.1300	1.1300	
19	12.0000	1.1080	1.1080	
20	12.4980	1.0860	1.0860	
21	12.9960	1.0640	1.0640	
22	13.5000	1.0450	1.0450	
23	13.9980	1.0190	1.0190	
24	14.4960	1.0010	1.0010	
25	15.0000	0.9790	0.9790	
26	15.4980	0.9600	0.9600	
27	15.9960	0.9410	0.9410	
28	16.5000	0.9220	0.9220	
29	16.9980	0.9030	0.9030	
30	17.4960	0.8840	0.8840	
31	18.0000	0.8680	0.8680	
32	18.4980	0.8490	0.8490	
33	18.9960	0.8340	0.8340	
34	19.5000	0.8150	0.8150	
35	19.9980	0.8020	0.8020	
36	21.0000	0.7710	0.7710	
37	21.9960	0.7390	0.7390	
38	22.9980	0.7080	0.7080	
39	24.0000	0.6830	0.6830	
40	24.9960	0.6570	0.6570	
41	25.9980	0.6320	0.6320	
42	27.0000	0.6070	0.6070	
43	27.9960	0.5850	0.5850	
44	28.9980	0.5660	0.5660	
45	30.0000	0.5440	0.5440	
46	30.9960	0.5280	0.5280	
47	31.9980	0.5130	0.5130	
48	33.0000	0.4970	0.4970	
49	33.9960	0.4810	0.4810	
50	34.9980	0.4690	0.4690	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	36.0000	0.4530	0.4530
52	36.9960	0.4400	0.4400
53	37.9980	0.4280	0.4280
54	39.0000	0.4180	0.4180
55	39.9960	0.4060	0.4060
56	40.9980	0.3960	0.3960
57	42.0000	0.3870	0.3870
58	42.9960	0.3770	0.3770
59	43.9980	0.3680	0.3680
60	45.0000	0.3620	0.3620
61	45.9960	0.3520	0.3520
62	46.9980	0.3460	0.3460
63	48.0000	0.3400	0.3400
64	48.9960	0.3330	0.3330
65	49.9980	0.3270	0.3270
66	51.0000	0.3210	0.3210
67	51.9960	0.3140	0.3140
68	52.9980	0.3080	0.3080
69	54.0000	0.3050	0.3050
70	54.9960	0.2990	0.2990
71	55.9980	0.2950	0.2950
72	57.0000	0.2890	0.2890
73	57.9960	0.2860	0.2860
74	58.9980	0.2830	0.2830
75	60.0000	0.2770	0.2770
76	72.0000	0.2360	0.2360
77	84.0000	0.2100	0.2100
78	96.0000	0.1880	0.1880
79	108.0000	0.1730	0.1730
80	120.0000	0.1600	0.1600
81	132.0000	0.1510	0.1510
82	144.0000	0.1410	0.1410
83	156.0000	0.1320	0.1320
84	168.0000	0.1250	0.1250
85	180.0000	0.1190	0.1190
86	192.0000	0.1130	0.1130
87	204.0000	0.1100	0.1100
88	216.0000	0.1030	0.1030
89	228.0000	0.0970	0.0970
90	240.0000	0.0940	0.0940
91	252.0000	0.0910	0.0910
92	264.0000	0.0880	0.0880
93	276.0000	0.0850	0.0850
94	288.0000	0.0810	0.0810
95	300.0000	0.0780	0.0780
96	312.0000	0.0750	0.0750
97	324.0000	0.0720	0.0720
98	336.0000	0.0690	0.0690
99	348.0000	0.0660	0.0660
100	360.0000	0.0620	0.0620

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

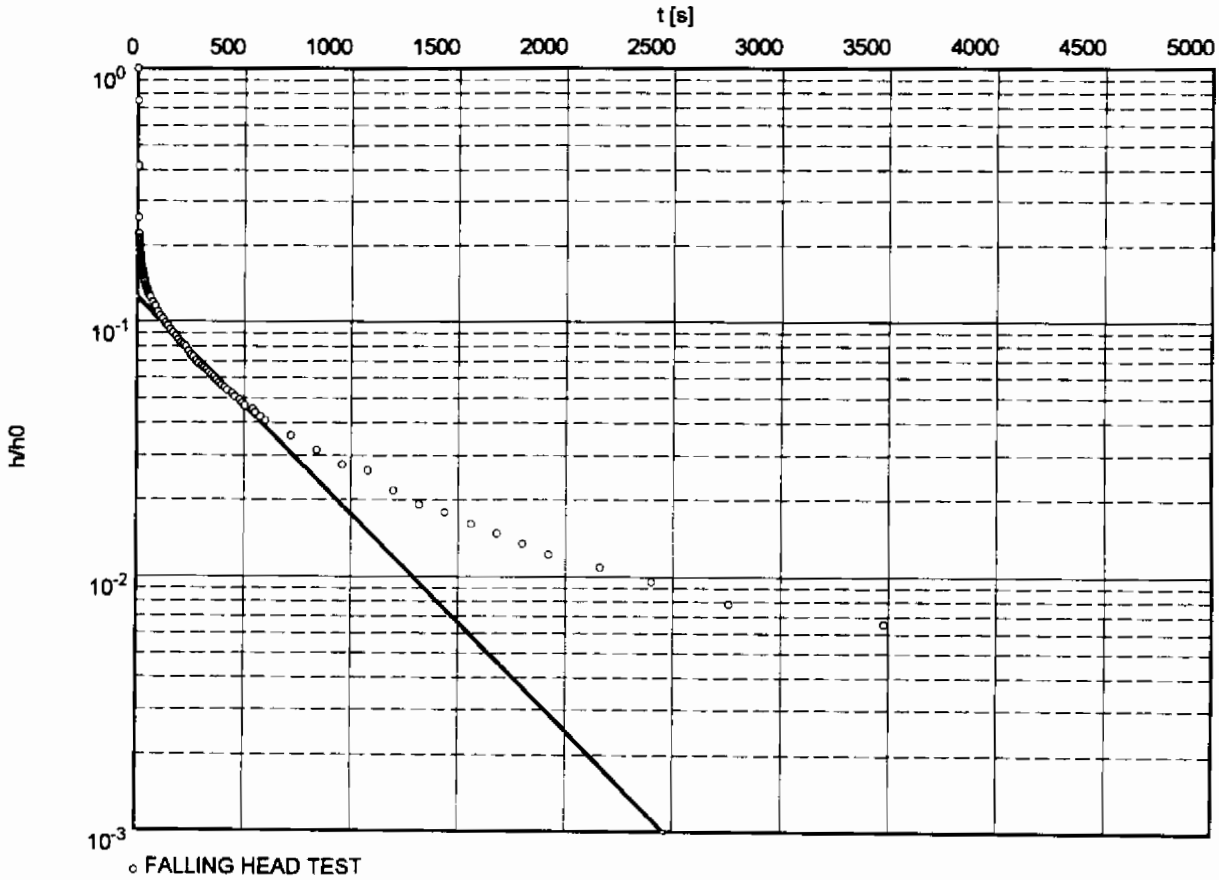
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	384.0000	0.0590	0.0590
102	396.0000	0.0560	0.0560
103	420.0000	0.0530	0.0530
104	444.0000	0.0500	0.0500
105	456.0000	0.0470	0.0470
106	480.0000	0.0440	0.0440
107	504.0000	0.0400	0.0400
108	540.0000	0.0370	0.0370
109	564.0000	0.0340	0.0340
110	588.0000	0.0310	0.0310
111	720.0000	0.0250	0.0250
112	840.0000	0.0180	0.0180
113	960.0000	0.0120	0.0120
114	1080.0000	0.0090	0.0090
115	1200.0000	0.0030	0.0030
116	1440.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	



Hydraulic conductivity [ft/s]: 1.20×10^{-5}

Hydraulic conductivity [ft/day]: 1.04

L = 9.1 ft
b = 9.1 ft
D = 9.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.3030	-2.3030
2	3.4980	-1.7210	-1.7210
3	4.9980	-0.9530	-0.9530
4	6.4980	-0.5960	-0.5960
5	6.9960	-0.5140	-0.5140
6	7.9980	-0.5110	-0.5110
7	8.4960	-0.4920	-0.4920
8	9.0000	-0.4860	-0.4860
9	9.4980	-0.4760	-0.4760
10	9.9960	-0.4670	-0.4670
11	10.5000	-0.4610	-0.4610
12	10.9980	-0.4510	-0.4510
13	11.4960	-0.4480	-0.4480
14	12.0000	-0.4420	-0.4420
15	12.4980	-0.4320	-0.4320
16	12.9960	-0.4290	-0.4290
17	13.5000	-0.4260	-0.4260
18	13.9980	-0.4200	-0.4200
19	14.4960	-0.4130	-0.4130
20	15.0000	-0.4130	-0.4130
21	15.4980	-0.4070	-0.4070
22	15.9960	-0.4040	-0.4040
23	16.5000	-0.4010	-0.4010
24	17.4960	-0.3940	-0.3940
25	18.0000	-0.3910	-0.3910
26	18.4980	-0.3880	-0.3880
27	18.9960	-0.3850	-0.3850
28	19.5000	-0.3820	-0.3820
29	19.9980	-0.3780	-0.3780
30	21.0000	-0.3750	-0.3750
31	21.9960	-0.3690	-0.3690
32	22.9980	-0.3660	-0.3660
33	24.0000	-0.3630	-0.3630
34	24.9960	-0.3560	-0.3560
35	27.0000	-0.3530	-0.3530
36	27.9960	-0.3500	-0.3500
37	28.9980	-0.3440	-0.3440
38	30.9960	-0.3410	-0.3410
39	31.9980	-0.3370	-0.3370
40	33.0000	-0.3340	-0.3340
41	33.9960	-0.3310	-0.3310
42	36.0000	-0.3280	-0.3280
43	37.9980	-0.3220	-0.3220
44	40.9980	-0.3180	-0.3180
45	42.0000	-0.3150	-0.3150
46	43.9980	-0.3120	-0.3120
47	45.9960	-0.3090	-0.3090
48	48.0000	-0.3060	-0.3060
49	49.9980	-0.3030	-0.3030
50	51.0000	-0.3000	-0.3000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	52.9980	-0.2960	-0.2960
52	55.9980	-0.2930	-0.2930
53	57.9960	-0.2900	-0.2900
54	60.0000	-0.2870	-0.2870
55	72.0000	-0.2740	-0.2740
56	84.0000	-0.2650	-0.2650
57	96.0000	-0.2520	-0.2520
58	108.0000	-0.2430	-0.2430
59	120.0000	-0.2360	-0.2360
60	132.0000	-0.2270	-0.2270
61	144.0000	-0.2210	-0.2210
62	156.0000	-0.2140	-0.2140
63	168.0000	-0.2080	-0.2080
64	180.0000	-0.2020	-0.2020
65	192.0000	-0.1950	-0.1950
66	204.0000	-0.1890	-0.1890
67	216.0000	-0.1860	-0.1860
68	228.0000	-0.1830	-0.1830
69	240.0000	-0.1760	-0.1760
70	252.0000	-0.1700	-0.1700
71	264.0000	-0.1670	-0.1670
72	276.0000	-0.1610	-0.1610
73	288.0000	-0.1570	-0.1570
74	300.0000	-0.1540	-0.1540
75	312.0000	-0.1510	-0.1510
76	324.0000	-0.1480	-0.1480
77	336.0000	-0.1450	-0.1450
78	348.0000	-0.1420	-0.1420
79	360.0000	-0.1380	-0.1380
80	372.0000	-0.1350	-0.1350
81	384.0000	-0.1320	-0.1320
82	396.0000	-0.1290	-0.1290
83	408.0000	-0.1260	-0.1260
84	420.0000	-0.1230	-0.1230
85	444.0000	-0.1200	-0.1200
86	456.0000	-0.1160	-0.1160
87	480.0000	-0.1130	-0.1130
88	492.0000	-0.1100	-0.1100
89	504.0000	-0.1070	-0.1070
90	540.0000	-0.1040	-0.1040
91	552.0000	-0.1010	-0.1010
92	576.0000	-0.0970	-0.0970
93	600.0000	-0.0940	-0.0940
94	720.0000	-0.0820	-0.0820
95	840.0000	-0.0720	-0.0720
96	960.0000	-0.0630	-0.0630
97	1080.0000	-0.0600	-0.0600
98	1200.0000	-0.0500	-0.0500
99	1320.0000	-0.0440	-0.0440
100	1440.0000	-0.0410	-0.0410

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

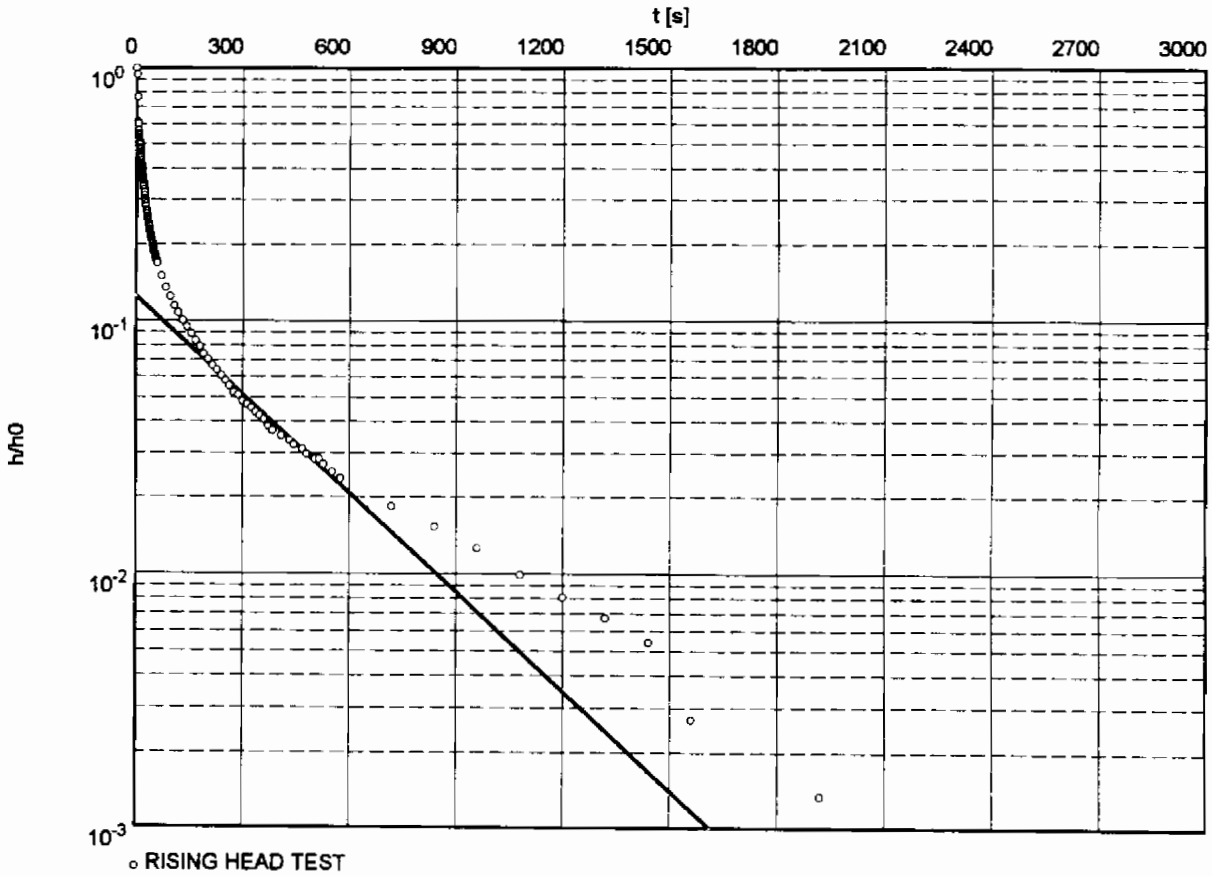
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	1560.0000	-0.0370	-0.0370
102	1680.0000	-0.0340	-0.0340
103	1800.0000	-0.0310	-0.0310
104	1920.0000	-0.0280	-0.0280
105	2160.0000	-0.0250	-0.0250
106	2400.0000	-0.0220	-0.0220
107	2760.0000	-0.0180	-0.0180
108	3480.0000	-0.0150	-0.0150

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	



Hydraulic conductivity [ft/s]: 1.84×10^{-5}

Hydraulic conductivity [ft/day]: 1.59

L = 9.1 ft
b = 9.1 ft
D = 9.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.2300	2.2300
2	1.9800	2.1020	2.1020
3	3.0000	1.7040	1.7040
4	3.4980	1.3600	1.3600
5	4.9980	1.3410	1.3410
6	5.4960	1.2560	1.2560
7	6.0000	1.2180	1.2180
8	6.4980	1.2020	1.2020
9	6.9960	1.1800	1.1800
10	7.5000	1.1580	1.1580
11	7.9980	1.1390	1.1390
12	8.4960	1.1200	1.1200
13	9.0000	1.1010	1.1010
14	9.4980	1.0700	1.0700
15	9.9960	1.0540	1.0540
16	10.5000	1.0320	1.0320
17	10.9980	1.0100	1.0100
18	11.4960	0.9940	0.9940
19	12.0000	0.9780	0.9780
20	12.4980	0.9530	0.9530
21	12.9960	0.9340	0.9340
22	13.5000	0.9210	0.9210
23	13.9980	0.9060	0.9060
24	14.4960	0.8930	0.8930
25	15.0000	0.8800	0.8800
26	15.4980	0.8650	0.8650
27	15.9960	0.8520	0.8520
28	16.5000	0.8360	0.8360
29	16.9980	0.8240	0.8240
30	17.4960	0.8110	0.8110
31	18.0000	0.7980	0.7980
32	18.4980	0.7860	0.7860
33	18.9960	0.7760	0.7760
34	19.5000	0.7640	0.7640
35	19.9980	0.7540	0.7540
36	21.0000	0.7320	0.7320
37	21.9960	0.7130	0.7130
38	22.9980	0.6940	0.6940
39	24.0000	0.6750	0.6750
40	24.9960	0.6590	0.6590
41	25.9980	0.6440	0.6440
42	27.0000	0.6280	0.6280
43	27.9960	0.6120	0.6120
44	28.9980	0.5990	0.5990
45	30.0000	0.5870	0.5870
46	30.9960	0.5740	0.5740
47	31.9980	0.5620	0.5620
48	33.0000	0.5520	0.5520
49	33.9960	0.5390	0.5390
50	34.9980	0.5300	0.5300

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	36.0000	0.5210	0.5210
52	36.9960	0.5110	0.5110
53	37.9980	0.5020	0.5020
54	39.0000	0.4920	0.4920
55	39.9960	0.4860	0.4860
56	40.9980	0.4760	0.4760
57	42.0000	0.4700	0.4700
58	42.9960	0.4640	0.4640
59	43.9980	0.4540	0.4540
60	45.0000	0.4510	0.4510
61	45.9960	0.4450	0.4450
62	46.9980	0.4350	0.4350
63	48.0000	0.4290	0.4290
64	48.9960	0.4260	0.4260
65	49.9980	0.4190	0.4190
66	51.0000	0.4130	0.4130
67	51.9960	0.4070	0.4070
68	52.9980	0.4040	0.4040
69	54.0000	0.3970	0.3970
70	54.9960	0.3940	0.3940
71	55.9980	0.3910	0.3910
72	57.0000	0.3850	0.3850
73	57.9960	0.3820	0.3820
74	58.9980	0.3780	0.3780
75	60.0000	0.3750	0.3750
76	72.0000	0.3340	0.3340
77	84.0000	0.3000	0.3000
78	96.0000	0.2770	0.2770
79	108.0000	0.2550	0.2550
80	120.0000	0.2400	0.2400
81	132.0000	0.2240	0.2240
82	144.0000	0.2110	0.2110
83	156.0000	0.1980	0.1980
84	168.0000	0.1860	0.1860
85	180.0000	0.1760	0.1760
86	192.0000	0.1640	0.1640
87	204.0000	0.1570	0.1570
88	216.0000	0.1480	0.1480
89	228.0000	0.1420	0.1420
90	240.0000	0.1350	0.1350
91	252.0000	0.1290	0.1290
92	264.0000	0.1230	0.1230
93	276.0000	0.1160	0.1160
94	288.0000	0.1130	0.1130
95	300.0000	0.1070	0.1070
96	312.0000	0.1040	0.1040
97	324.0000	0.1010	0.1010
98	336.0000	0.0970	0.0970
99	348.0000	0.0940	0.0940
100	360.0000	0.0910	0.0910

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

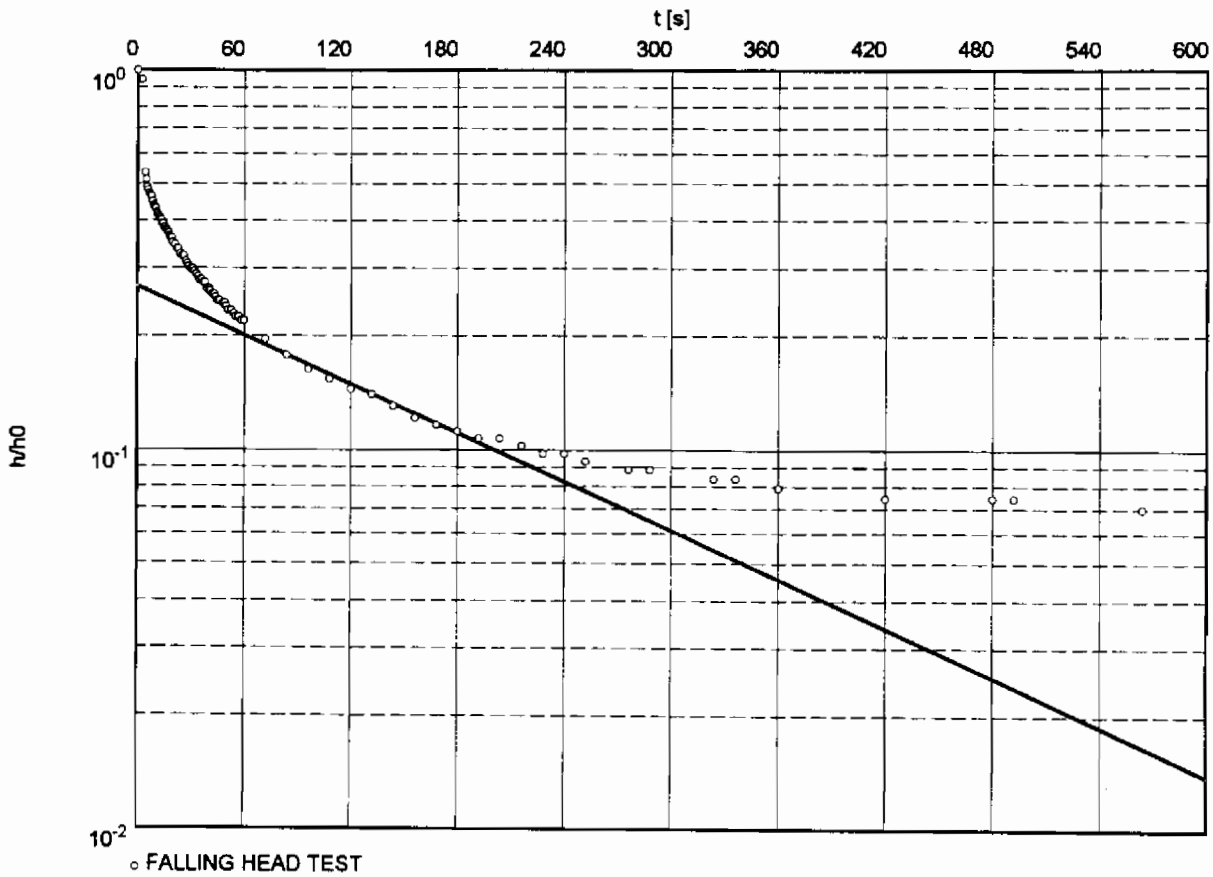
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-596-002	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	372.0000	0.0850	0.0850	
102	384.0000	0.0820	0.0820	
103	408.0000	0.0780	0.0780	
104	432.0000	0.0750	0.0750	
105	444.0000	0.0720	0.0720	
106	468.0000	0.0690	0.0690	
107	480.0000	0.0660	0.0660	
108	504.0000	0.0630	0.0630	
109	516.0000	0.0630	0.0630	
110	528.0000	0.0600	0.0600	
111	552.0000	0.0560	0.0560	
112	576.0000	0.0530	0.0530	
113	720.0000	0.0410	0.0410	
114	840.0000	0.0340	0.0340	
115	960.0000	0.0280	0.0280	
116	1080.0000	0.0220	0.0220	
117	1200.0000	0.0180	0.0180	
118	1320.0000	0.0150	0.0150	
119	1440.0000	0.0120	0.0120	
120	1560.0000	0.0060	0.0060	
121	1920.0000	0.0030	0.0030	
122	2160.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.12.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	



Hydraulic conductivity [ft/s]: 3.08×10^{-5}

Hydraulic conductivity [ft/day]: 2.68

L = 9.5 ft
b = 11.3 ft
D = 11.3 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.12.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.1500	-2.1500
2	2.4000	-2.0300	-2.0300
3	4.2000	-1.1500	-1.1500
4	4.8000	-1.1000	-1.1000
5	5.4000	-1.0500	-1.0500
6	6.0000	-1.0300	-1.0300
7	6.6000	-1.0100	-1.0100
8	7.2000	-1.0000	-1.0000
9	7.8000	-0.9900	-0.9900
10	8.4000	-0.9600	-0.9600
11	9.0000	-0.9400	-0.9400
12	9.6000	-0.9300	-0.9300
13	10.2000	-0.9200	-0.9200
14	10.8000	-0.9000	-0.9000
15	11.4000	-0.8900	-0.8900
16	12.0000	-0.8800	-0.8800
17	12.6000	-0.8700	-0.8700
18	13.2000	-0.8600	-0.8600
19	13.8000	-0.8400	-0.8400
20	14.4000	-0.8400	-0.8400
21	15.0000	-0.8200	-0.8200
22	15.6000	-0.8200	-0.8200
23	16.2000	-0.8100	-0.8100
24	16.8000	-0.8000	-0.8000
25	17.4000	-0.7900	-0.7900
26	18.0000	-0.7800	-0.7800
27	18.6000	-0.7700	-0.7700
28	19.2000	-0.7700	-0.7700
29	19.8000	-0.7500	-0.7500
30	21.0000	-0.7400	-0.7400
31	22.2000	-0.7200	-0.7200
32	22.8000	-0.7200	-0.7200
33	24.0000	-0.7000	-0.7000
34	25.2000	-0.6900	-0.6900
35	25.8000	-0.6900	-0.6900
36	27.0000	-0.6700	-0.6700
37	28.2000	-0.6600	-0.6600
38	28.8000	-0.6500	-0.6500
39	30.0000	-0.6400	-0.6400
40	31.2000	-0.6400	-0.6400
41	31.8000	-0.6300	-0.6300
42	33.0000	-0.6200	-0.6200
43	34.2000	-0.6100	-0.6100
44	34.8000	-0.6000	-0.6000
45	36.0000	-0.6000	-0.6000
46	37.2000	-0.5900	-0.5900
47	37.8000	-0.5900	-0.5900
48	39.0000	-0.5700	-0.5700
49	40.2000	-0.5700	-0.5700
50	40.8000	-0.5600	-0.5600

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.12.96

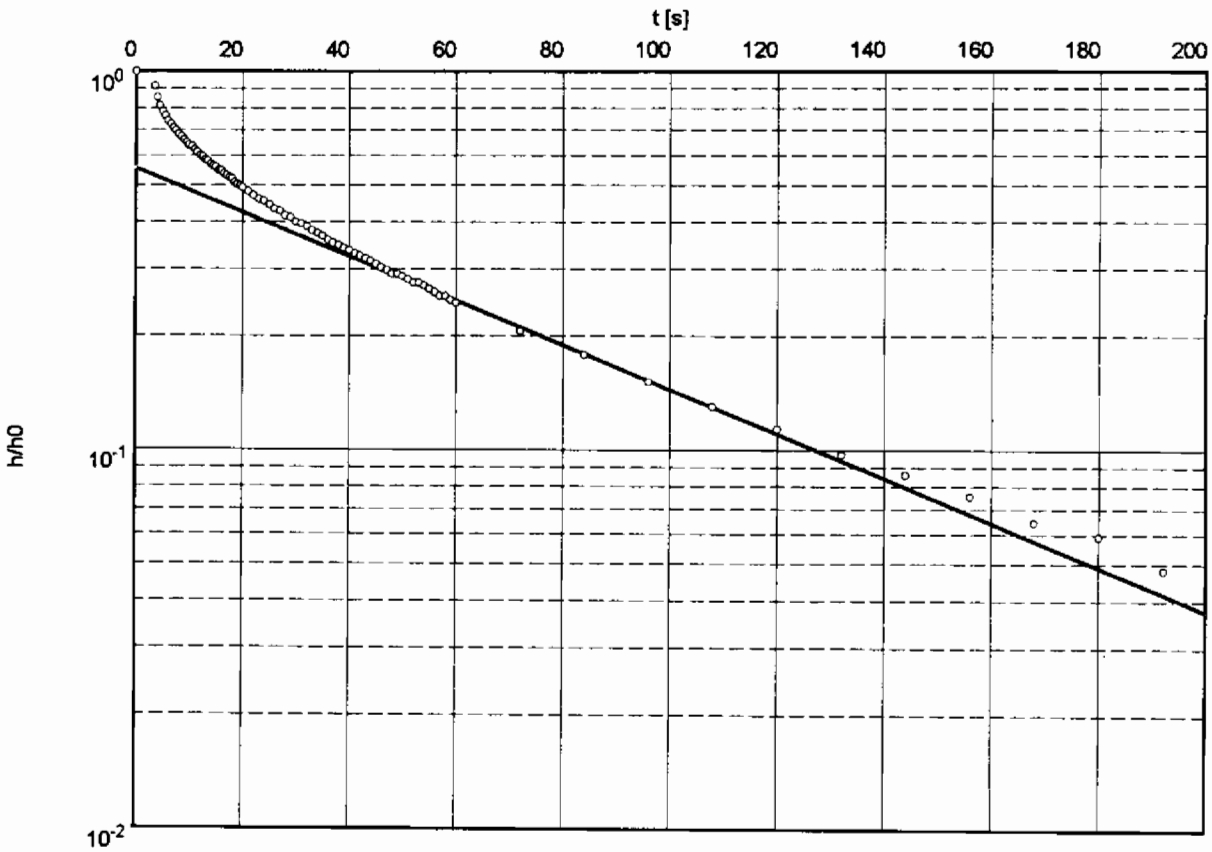
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	42.0000	-0.5500	-0.5500	
52	43.2000	-0.5500	-0.5500	
53	43.8000	-0.5400	-0.5400	
54	45.0000	-0.5300	-0.5300	
55	46.2000	-0.5300	-0.5300	
56	48.0000	-0.5200	-0.5200	
57	49.2000	-0.5200	-0.5200	
58	49.8000	-0.5100	-0.5100	
59	51.0000	-0.5000	-0.5000	
60	52.8000	-0.5000	-0.5000	
61	54.0000	-0.4900	-0.4900	
62	55.2000	-0.4800	-0.4800	
63	57.0000	-0.4800	-0.4800	
64	58.2000	-0.4700	-0.4700	
65	60.0000	-0.4700	-0.4700	
66	72.0000	-0.4200	-0.4200	
67	84.0000	-0.3800	-0.3800	
68	96.0000	-0.3500	-0.3500	
69	108.0000	-0.3300	-0.3300	
70	120.0000	-0.3100	-0.3100	
71	132.0000	-0.3000	-0.3000	
72	144.0000	-0.2800	-0.2800	
73	156.0000	-0.2600	-0.2600	
74	168.0000	-0.2500	-0.2500	
75	180.0000	-0.2400	-0.2400	
76	192.0000	-0.2300	-0.2300	
77	204.0000	-0.2300	-0.2300	
78	216.0000	-0.2200	-0.2200	
79	228.0000	-0.2100	-0.2100	
80	240.0000	-0.2100	-0.2100	
81	252.0000	-0.2000	-0.2000	
82	276.0000	-0.1900	-0.1900	
83	288.0000	-0.1900	-0.1900	
84	324.0000	-0.1800	-0.1800	
85	336.0000	-0.1800	-0.1800	
86	360.0000	-0.1700	-0.1700	
87	420.0000	-0.1600	-0.1600	
88	480.0000	-0.1600	-0.1600	
89	492.0000	-0.1600	-0.1600	
90	564.0000	-0.1500	-0.1500	
91	1680.0000	-0.0700	-0.0700	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 12.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	



○ RISING HEAD TEST

Hydraulic conductivity [ft/s]: 8.44×10^{-5}

Hydraulic conductivity [ft/day]: 7.29

L = 9.5 ft
b = 11.3 ft
D = 11.3 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 12.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.1640	1.1640
2	3.4980	1.0630	1.0630
3	3.9960	0.9940	0.9940
4	4.5000	0.9440	0.9440
5	4.9980	0.9120	0.9120
6	5.4960	0.8870	0.8870
7	6.0000	0.8620	0.8620
8	6.4980	0.8430	0.8430
9	6.9960	0.8240	0.8240
10	7.5000	0.8110	0.8110
11	7.9980	0.7930	0.7930
12	8.4960	0.7800	0.7800
13	9.0000	0.7670	0.7670
14	9.4980	0.7550	0.7550
15	9.9960	0.7420	0.7420
16	10.5000	0.7360	0.7360
17	10.9980	0.7230	0.7230
18	11.4960	0.7110	0.7110
19	12.0000	0.6980	0.6980
20	12.4980	0.6920	0.6920
21	12.9960	0.6790	0.6790
22	13.5000	0.6730	0.6730
23	13.9980	0.6600	0.6600
24	14.4960	0.6540	0.6540
25	15.0000	0.6480	0.6480
26	15.4980	0.6350	0.6350
27	15.9960	0.6350	0.6350
28	16.5000	0.6230	0.6230
29	16.9980	0.6160	0.6160
30	17.4960	0.6100	0.6100
31	18.0000	0.6040	0.6040
32	18.4980	0.5910	0.5910
33	18.9960	0.5850	0.5850
34	19.5000	0.5790	0.5790
35	19.9980	0.5720	0.5720
36	21.0000	0.5600	0.5600
37	21.9960	0.5470	0.5470
38	22.9980	0.5340	0.5340
39	24.0000	0.5280	0.5280
40	24.9960	0.5160	0.5160
41	25.9980	0.5030	0.5030
42	27.0000	0.4970	0.4970
43	27.9960	0.4840	0.4840
44	28.9980	0.4780	0.4780
45	30.0000	0.4650	0.4650
46	30.9960	0.4590	0.4590
47	31.9980	0.4530	0.4530
48	33.0000	0.4400	0.4400
49	33.9960	0.4340	0.4340
50	34.9980	0.4270	0.4270

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 12.11.96

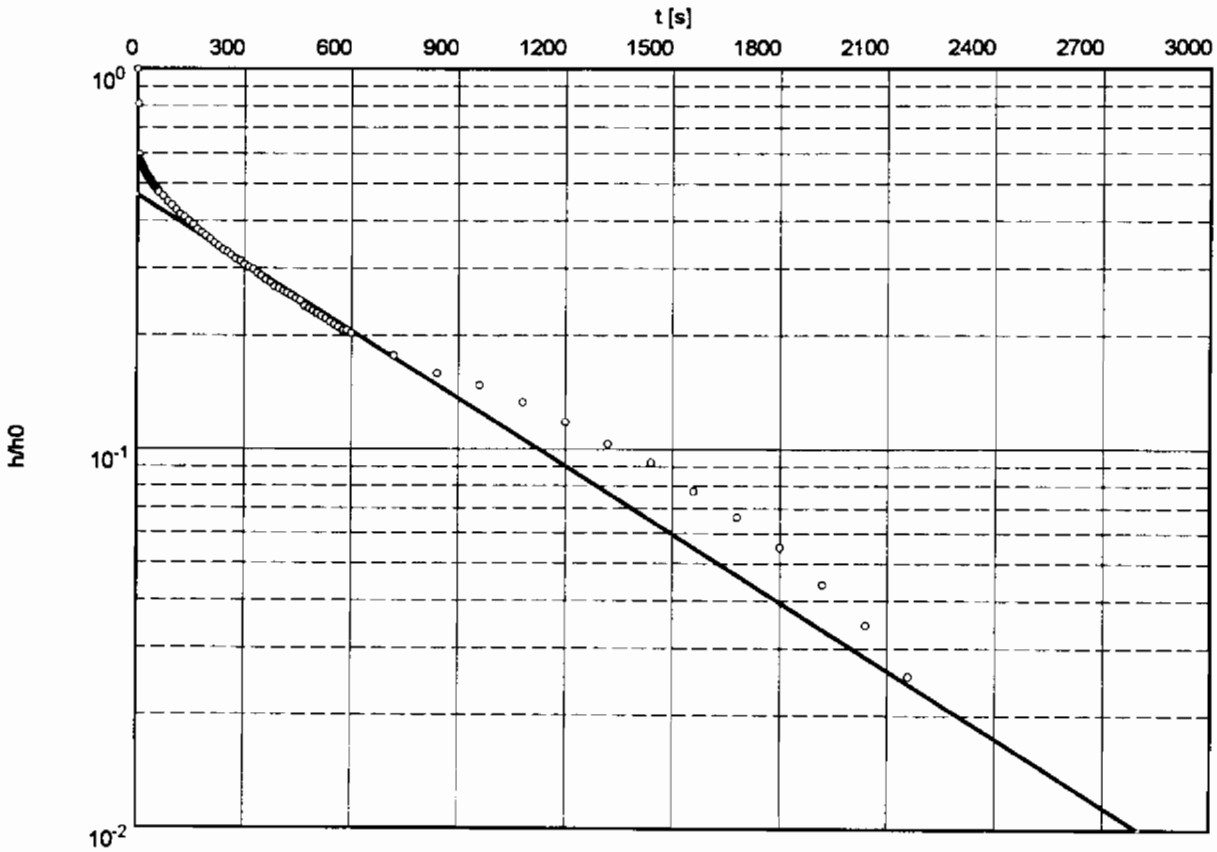
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-001	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	36.0000	0.4150	0.4150
52	36.9960	0.4090	0.4090
53	37.9980	0.4020	0.4020
54	39.0000	0.3960	0.3960
55	39.9960	0.3900	0.3900
56	40.9980	0.3830	0.3830
57	42.0000	0.3770	0.3770
58	42.9960	0.3710	0.3710
59	43.9980	0.3650	0.3650
60	45.0000	0.3580	0.3580
61	45.9960	0.3520	0.3520
62	46.9980	0.3460	0.3460
63	48.0000	0.3390	0.3390
64	48.9960	0.3390	0.3390
65	49.9980	0.3330	0.3330
66	51.0000	0.3270	0.3270
67	51.9960	0.3210	0.3210
68	52.9980	0.3210	0.3210
69	54.0000	0.3140	0.3140
70	54.9960	0.3080	0.3080
71	55.9980	0.3020	0.3020
72	57.0000	0.2950	0.2950
73	57.9960	0.2950	0.2950
74	58.9980	0.2890	0.2890
75	60.0000	0.2830	0.2830
76	72.0000	0.2390	0.2390
77	84.0000	0.2070	0.2070
78	96.0000	0.1760	0.1760
79	108.0000	0.1510	0.1510
80	120.0000	0.1320	0.1320
81	132.0000	0.1130	0.1130
82	144.0000	0.1000	0.1000
83	156.0000	0.0880	0.0880
84	168.0000	0.0750	0.0750
85	180.0000	0.0690	0.0690
86	192.0000	0.0560	0.0560
87	204.0000	0.0500	0.0500
88	216.0000	0.0440	0.0440
89	228.0000	0.0370	0.0370
90	240.0000	0.0310	0.0310
91	264.0000	0.0250	0.0250
92	276.0000	0.0180	0.0180
93	300.0000	0.0120	0.0120
94	324.0000	0.0060	0.0060
95	348.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 8.43×10^{-6}

Hydraulic conductivity [ft/day]: 0.729

L = 9.1 ft
b = 9.1 ft
D = 9.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.7200	-2.7200
2	4.0000	-2.2000	-2.2000
3	5.0000	-1.6200	-1.6200
4	6.0000	-1.5700	-1.5700
5	7.0000	-1.5600	-1.5600
6	8.0000	-1.5500	-1.5500
7	9.0000	-1.5400	-1.5400
8	10.0000	-1.5300	-1.5300
9	11.0000	-1.5300	-1.5300
10	12.0000	-1.5200	-1.5200
11	13.0000	-1.5100	-1.5100
12	14.0000	-1.5100	-1.5100
13	15.0000	-1.4900	-1.4900
14	16.0000	-1.4900	-1.4900
15	17.0000	-1.4900	-1.4900
16	18.0000	-1.4800	-1.4800
17	19.0000	-1.4700	-1.4700
18	20.0000	-1.4700	-1.4700
19	21.0000	-1.4600	-1.4600
20	22.0000	-1.4500	-1.4500
21	23.0000	-1.4500	-1.4500
22	24.0000	-1.4400	-1.4400
23	25.0000	-1.4400	-1.4400
24	26.0000	-1.4300	-1.4300
25	27.0000	-1.4300	-1.4300
26	28.0000	-1.4200	-1.4200
27	29.0000	-1.4200	-1.4200
28	30.0000	-1.4100	-1.4100
29	31.0000	-1.4100	-1.4100
30	32.0000	-1.4000	-1.4000
31	33.0000	-1.4000	-1.4000
32	34.0000	-1.3900	-1.3900
33	35.0000	-1.3900	-1.3900
34	36.0000	-1.3900	-1.3900
35	37.0000	-1.3800	-1.3800
36	38.0000	-1.3800	-1.3800
37	39.0000	-1.3700	-1.3700
38	40.0000	-1.3700	-1.3700
39	41.0000	-1.3600	-1.3600
40	42.0000	-1.3600	-1.3600
41	43.0000	-1.3500	-1.3500
42	44.0000	-1.3500	-1.3500
43	45.0000	-1.3500	-1.3500
44	46.0000	-1.3400	-1.3400
45	47.0000	-1.3400	-1.3400
46	48.0000	-1.3400	-1.3400
47	49.0000	-1.3300	-1.3300
48	50.0000	-1.3300	-1.3300
49	51.0000	-1.3300	-1.3300
50	52.0000	-1.3200	-1.3200

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	53.0000	-1.3200	-1.3200
52	54.0000	-1.3100	-1.3100
53	55.0000	-1.3100	-1.3100
54	56.0000	-1.3100	-1.3100
55	57.0000	-1.3000	-1.3000
56	58.0000	-1.3000	-1.3000
57	59.0000	-1.3000	-1.3000
58	60.0000	-1.2900	-1.2900
59	72.0000	-1.2600	-1.2600
60	84.0000	-1.2200	-1.2200
61	96.0000	-1.1900	-1.1900
62	108.0000	-1.1600	-1.1600
63	120.0000	-1.1300	-1.1300
64	132.0000	-1.1100	-1.1100
65	144.0000	-1.0800	-1.0800
66	156.0000	-1.0600	-1.0600
67	168.0000	-1.0300	-1.0300
68	180.0000	-1.0100	-1.0100
69	192.0000	-0.9900	-0.9900
70	204.0000	-0.9700	-0.9700
71	216.0000	-0.9500	-0.9500
72	228.0000	-0.9300	-0.9300
73	240.0000	-0.9100	-0.9100
74	252.0000	-0.9000	-0.9000
75	264.0000	-0.8800	-0.8800
76	276.0000	-0.8600	-0.8600
77	288.0000	-0.8500	-0.8500
78	300.0000	-0.8300	-0.8300
79	312.0000	-0.8200	-0.8200
80	324.0000	-0.8100	-0.8100
81	336.0000	-0.7900	-0.7900
82	348.0000	-0.7800	-0.7800
83	360.0000	-0.7600	-0.7600
84	372.0000	-0.7500	-0.7500
85	384.0000	-0.7300	-0.7300
86	396.0000	-0.7200	-0.7200
87	408.0000	-0.7100	-0.7100
88	420.0000	-0.7000	-0.7000
89	432.0000	-0.6900	-0.6900
90	444.0000	-0.6800	-0.6800
91	456.0000	-0.6700	-0.6700
92	468.0000	-0.6500	-0.6500
93	480.0000	-0.6400	-0.6400
94	492.0000	-0.6300	-0.6300
95	504.0000	-0.6200	-0.6200
96	516.0000	-0.6100	-0.6100
97	528.0000	-0.6000	-0.6000
98	540.0000	-0.5900	-0.5900
99	552.0000	-0.5800	-0.5800
100	564.0000	-0.5700	-0.5700

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

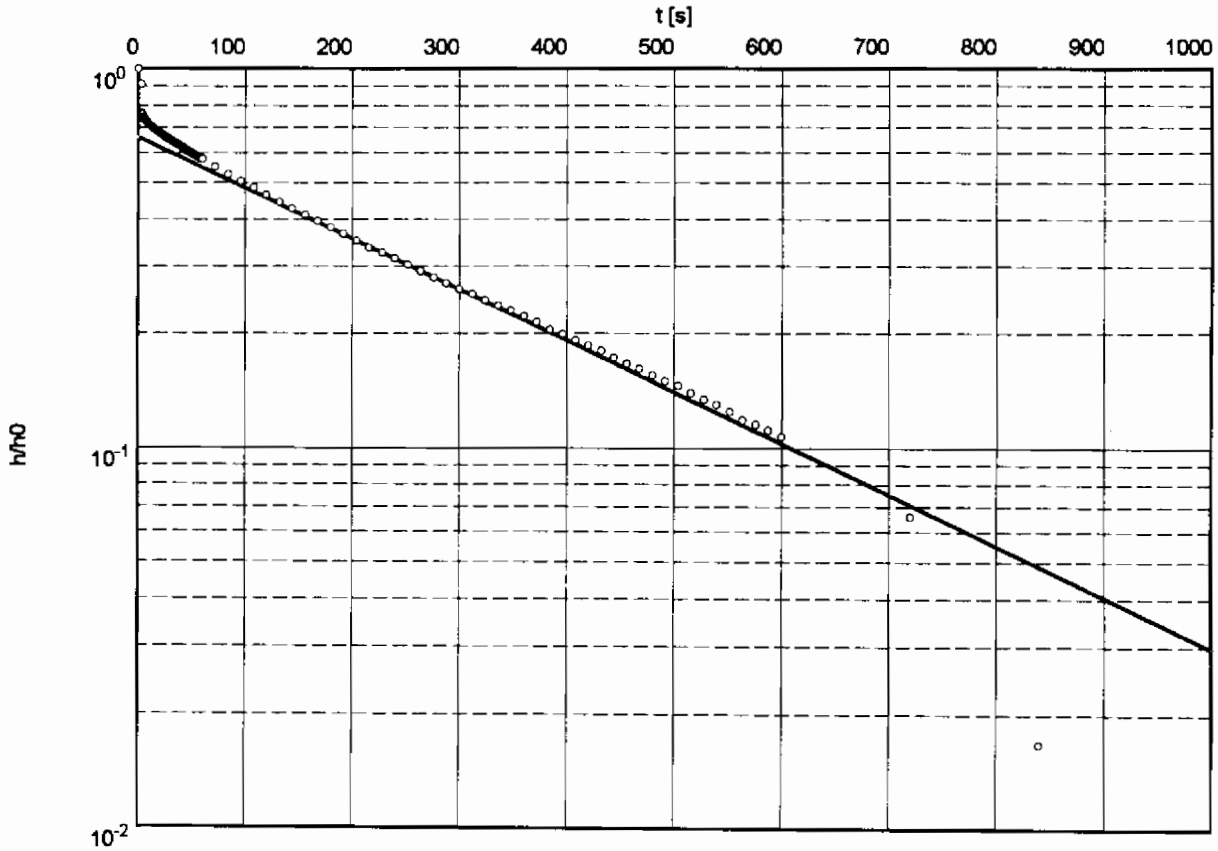
Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	576.0000	-0.5600	-0.5600
102	588.0000	-0.5600	-0.5600
103	600.0000	-0.5500	-0.5500
104	720.0000	-0.4800	-0.4800
105	840.0000	-0.4300	-0.4300
106	960.0000	-0.4000	-0.4000
107	1080.0000	-0.3600	-0.3600
108	1200.0000	-0.3200	-0.3200
109	1320.0000	-0.2800	-0.2800
110	1440.0000	-0.2500	-0.2500
111	1560.0000	-0.2100	-0.2100
112	1680.0000	-0.1800	-0.1800
113	1800.0000	-0.1500	-0.1500
114	1920.0000	-0.1200	-0.1200
115	2040.0000	-0.0940	-0.0940
116	2160.0000	-0.0690	-0.0690

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	



○ RISING HEAD TEST

Hydraulic conductivity [ft/s]: 1.90×10^{-5}

Hydraulic conductivity [ft/day]: 1.64

L = 9.1 ft
b = 9.1 ft
D = 9.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	3.0000	1.5240	1.5240	
3	3.4980	1.2750	1.2750	
4	3.9960	1.2620	1.2620	
5	4.5000	1.2430	1.2430	
6	4.9980	1.2430	1.2430	
7	5.4960	1.2340	1.2340	
8	6.0000	1.2270	1.2270	
9	6.4980	1.2210	1.2210	
10	6.9960	1.2180	1.2180	
11	7.5000	1.2120	1.2120	
12	7.9980	1.2050	1.2050	
13	8.4960	1.2050	1.2050	
14	9.0000	1.1990	1.1990	
15	9.4980	1.1930	1.1930	
16	9.9960	1.1900	1.1900	
17	10.5000	1.1860	1.1860	
18	10.9980	1.1830	1.1830	
19	11.4960	1.1800	1.1800	
20	12.0000	1.1770	1.1770	
21	12.4980	1.1740	1.1740	
22	12.9960	1.1710	1.1710	
23	13.5000	1.1680	1.1680	
24	13.9980	1.1640	1.1640	
25	14.4960	1.1610	1.1610	
26	15.0000	1.1610	1.1610	
27	15.4980	1.1580	1.1580	
28	15.9960	1.1550	1.1550	
29	16.5000	1.1520	1.1520	
30	16.9980	1.1490	1.1490	
31	17.4960	1.1450	1.1450	
32	18.0000	1.1420	1.1420	
33	18.4980	1.1390	1.1390	
34	18.9960	1.1390	1.1390	
35	19.5000	1.1360	1.1360	
36	19.9980	1.1330	1.1330	
37	21.0000	1.1270	1.1270	
38	21.9960	1.1200	1.1200	
39	22.9980	1.1170	1.1170	
40	24.0000	1.1110	1.1110	
41	24.9960	1.1080	1.1080	
42	25.9980	1.1010	1.1010	
43	27.0000	1.0980	1.0980	
44	27.9960	1.0920	1.0920	
45	28.9980	1.0890	1.0890	
46	30.0000	1.0820	1.0820	
47	30.9960	1.0790	1.0790	
48	31.9980	1.0730	1.0730	
49	33.0000	1.0700	1.0700	
50	33.9960	1.0670	1.0670	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	34.9980	1.0600	1.0600	
52	36.0000	1.0570	1.0570	
53	36.9960	1.0540	1.0540	
54	37.9980	1.0480	1.0480	
55	39.0000	1.0440	1.0440	
56	39.9960	1.0410	1.0410	
57	40.9980	1.0350	1.0350	
58	42.0000	1.0320	1.0320	
59	42.9960	1.0290	1.0290	
60	43.9980	1.0220	1.0220	
61	45.0000	1.0190	1.0190	
62	45.9960	1.0160	1.0160	
63	46.9980	1.0100	1.0100	
64	48.0000	1.0070	1.0070	
65	48.9960	1.0030	1.0030	
66	49.9980	1.0000	1.0000	
67	51.0000	0.9940	0.9940	
68	51.9960	0.9910	0.9910	
69	52.9980	0.9880	0.9880	
70	54.0000	0.9840	0.9840	
71	54.9960	0.9780	0.9780	
72	55.9980	0.9750	0.9750	
73	57.0000	0.9720	0.9720	
74	57.9960	0.9690	0.9690	
75	58.9980	0.9660	0.9660	
76	60.0000	0.9620	0.9620	
77	72.0000	0.9180	0.9180	
78	84.0000	0.8770	0.8770	
79	96.0000	0.8420	0.8420	
80	108.0000	0.8080	0.8080	
81	120.0000	0.7730	0.7730	
82	132.0000	0.7410	0.7410	
83	144.0000	0.7130	0.7130	
84	156.0000	0.6850	0.6850	
85	168.0000	0.6590	0.6590	
86	180.0000	0.6340	0.6340	
87	192.0000	0.6090	0.6090	
88	204.0000	0.5840	0.5840	
89	216.0000	0.5610	0.5610	
90	228.0000	0.5430	0.5430	
91	240.0000	0.5240	0.5240	
92	252.0000	0.5050	0.5050	
93	264.0000	0.4860	0.4860	
94	276.0000	0.4670	0.4670	
95	288.0000	0.4510	0.4510	
96	300.0000	0.4350	0.4350	
97	312.0000	0.4230	0.4230	
98	324.0000	0.4070	0.4070	
99	336.0000	0.3940	0.3940	
100	348.0000	0.3820	0.3820	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

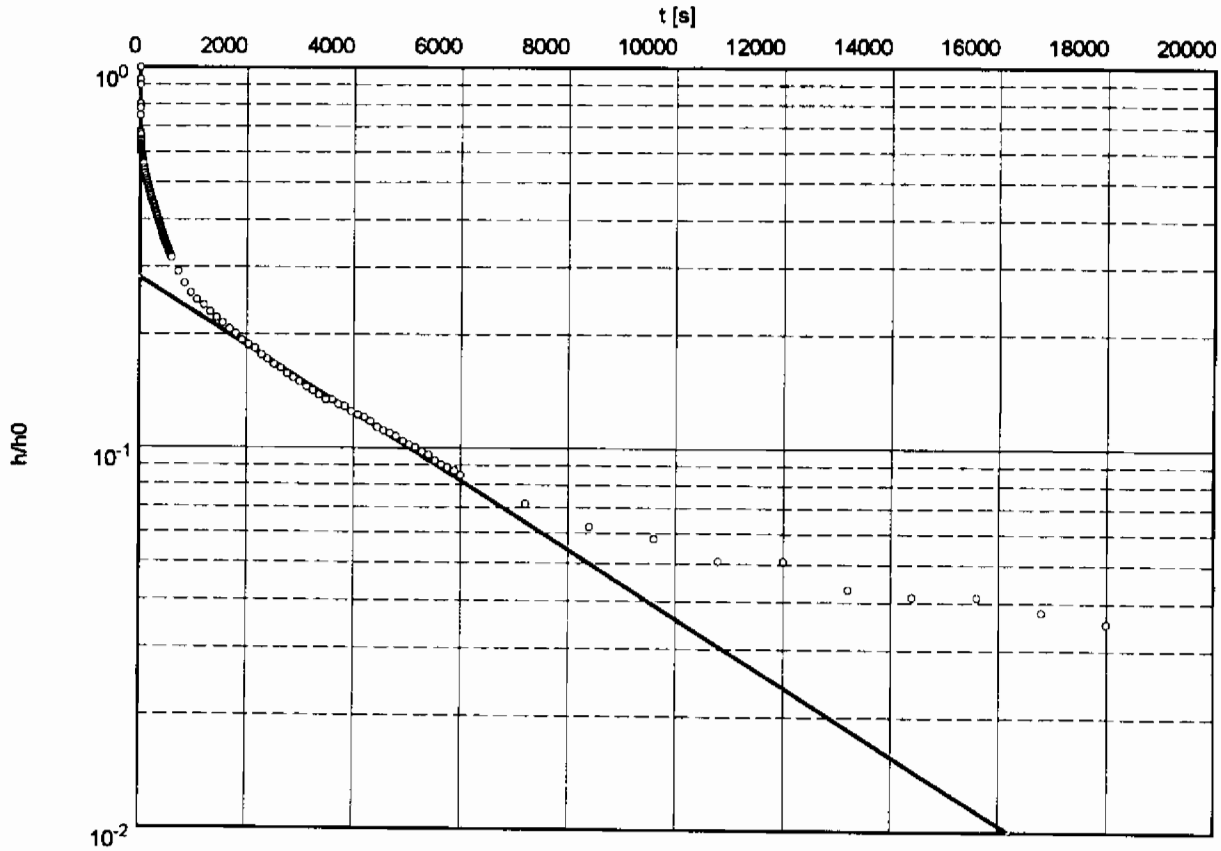
Slug Test No. 1	Test conducted on: 22.10.96
NBCE-GDE-003	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	360.0000	0.3690	0.3690	
102	372.0000	0.3560	0.3560	
103	384.0000	0.3400	0.3400	
104	396.0000	0.3310	0.3310	
105	408.0000	0.3180	0.3180	
106	420.0000	0.3090	0.3090	
107	432.0000	0.2990	0.2990	
108	444.0000	0.2870	0.2870	
109	456.0000	0.2770	0.2770	
110	468.0000	0.2680	0.2680	
111	480.0000	0.2580	0.2580	
112	492.0000	0.2490	0.2490	
113	504.0000	0.2430	0.2430	
114	516.0000	0.2330	0.2330	
115	528.0000	0.2240	0.2240	
116	540.0000	0.2170	0.2170	
117	552.0000	0.2080	0.2080	
118	564.0000	0.1980	0.1980	
119	576.0000	0.1920	0.1920	
120	588.0000	0.1860	0.1860	
121	600.0000	0.1790	0.1790	
122	720.0000	0.1100	0.1100	
123	840.0000	0.0280	0.0280	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-007	



○ FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 1.13×10^{-6}

Hydraulic conductivity [ft/day]: 9.76 x 10^-2

L = 10.6 ft
b = 10.6 ft
D = 10.6 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-007	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-1.6700	-1.6700
2	2.1960	-1.5510	-1.5510
3	2.4000	-1.5000	-1.5000
4	2.5980	-1.3200	-1.3200
5	2.7960	-1.1280	-1.1280
6	3.1980	-1.3360	-1.3360
7	5.1960	-1.3020	-1.3020
8	5.4000	-1.2420	-1.2420
9	5.5980	-1.1190	-1.1190
10	6.7980	-1.0840	-1.0840
11	7.3980	-1.1030	-1.1030
12	8.7960	-1.0560	-1.0560
13	9.0000	-1.0680	-1.0680
14	9.1980	-1.0650	-1.0650
15	9.3960	-1.0460	-1.0460
16	10.8000	-1.0370	-1.0370
17	10.9980	-1.0400	-1.0400
18	11.1960	-1.0340	-1.0340
19	11.4000	-1.0240	-1.0240
20	12.9960	-1.0210	-1.0210
21	13.2000	-1.0180	-1.0180
22	13.3980	-1.0150	-1.0150
23	15.0000	-1.0120	-1.0120
24	15.3960	-1.0080	-1.0080
25	15.6000	-1.0050	-1.0050
26	17.4000	-1.0020	-1.0020
27	18.6000	-1.0020	-1.0020
28	18.7980	-0.9990	-0.9990
29	19.5960	-0.9960	-0.9960
30	21.9960	-0.9930	-0.9930
31	22.9980	-0.9890	-0.9890
32	24.0000	-0.9860	-0.9860
33	25.9980	-0.9830	-0.9830
34	27.0000	-0.9800	-0.9800
35	27.9960	-0.9800	-0.9800
36	28.9980	-0.9770	-0.9770
37	30.9960	-0.9740	-0.9740
38	33.0000	-0.9700	-0.9700
39	33.9960	-0.9670	-0.9670
40	36.9960	-0.9640	-0.9640
41	37.9980	-0.9610	-0.9610
42	39.9960	-0.9580	-0.9580
43	42.9960	-0.9550	-0.9550
44	45.0000	-0.9520	-0.9520
45	46.9980	-0.9480	-0.9480
46	48.9960	-0.9450	-0.9450
47	51.0000	-0.9420	-0.9420
48	52.9980	-0.9390	-0.9390
49	54.9960	-0.9360	-0.9360
50	57.0000	-0.9330	-0.9330

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-007	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	58.9980	-0.9300	-0.9300
52	72.0000	-0.9070	-0.9070
53	84.0000	-0.8920	-0.8920
54	96.0000	-0.8790	-0.8790
55	108.0000	-0.8630	-0.8630
56	120.0000	-0.8510	-0.8510
57	132.0000	-0.8380	-0.8380
58	144.0000	-0.8250	-0.8250
59	156.0000	-0.8130	-0.8130
60	168.0000	-0.8000	-0.8000
61	180.0000	-0.7880	-0.7880
62	192.0000	-0.7750	-0.7750
63	204.0000	-0.7660	-0.7660
64	216.0000	-0.7560	-0.7560
65	228.0000	-0.7440	-0.7440
66	240.0000	-0.7340	-0.7340
67	252.0000	-0.7250	-0.7250
68	264.0000	-0.7150	-0.7150
69	276.0000	-0.7090	-0.7090
70	288.0000	-0.6990	-0.6990
71	300.0000	-0.6900	-0.6900
72	312.0000	-0.6800	-0.6800
73	324.0000	-0.6740	-0.6740
74	336.0000	-0.6650	-0.6650
75	348.0000	-0.6550	-0.6550
76	360.0000	-0.6490	-0.6490
77	372.0000	-0.6430	-0.6430
78	384.0000	-0.6330	-0.6330
79	396.0000	-0.6270	-0.6270
80	408.0000	-0.6170	-0.6170
81	420.0000	-0.6110	-0.6110
82	432.0000	-0.6050	-0.6050
83	444.0000	-0.5980	-0.5980
84	456.0000	-0.5920	-0.5920
85	468.0000	-0.5860	-0.5860
86	480.0000	-0.5800	-0.5800
87	492.0000	-0.5730	-0.5730
88	504.0000	-0.5700	-0.5700
89	516.0000	-0.5640	-0.5640
90	528.0000	-0.5570	-0.5570
91	540.0000	-0.5510	-0.5510
92	552.0000	-0.5450	-0.5450
93	564.0000	-0.5420	-0.5420
94	576.0000	-0.5350	-0.5350
95	588.0000	-0.5320	-0.5320
96	600.0000	-0.5290	-0.5290
97	720.0000	-0.4850	-0.4850
98	840.0000	-0.4530	-0.4530
99	960.0000	-0.4280	-0.4280
100	1080.0000	-0.4090	-0.4090

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-007	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	1200.0000	-0.3970	-0.3970	
102	1320.0000	-0.3810	-0.3810	
103	1440.0000	-0.3680	-0.3680	
104	1560.0000	-0.3560	-0.3560	
105	1680.0000	-0.3430	-0.3430	
106	1800.0000	-0.3340	-0.3340	
107	1920.0000	-0.3210	-0.3210	
108	2040.0000	-0.3120	-0.3120	
109	2160.0000	-0.3050	-0.3050	
110	2280.0000	-0.2930	-0.2930	
111	2400.0000	-0.2860	-0.2860	
112	2520.0000	-0.2770	-0.2770	
113	2640.0000	-0.2710	-0.2710	
114	2760.0000	-0.2610	-0.2610	
115	2880.0000	-0.2550	-0.2550	
116	3000.0000	-0.2490	-0.2490	
117	3120.0000	-0.2420	-0.2420	
118	3240.0000	-0.2360	-0.2360	
119	3360.0000	-0.2300	-0.2300	
120	3480.0000	-0.2230	-0.2230	
121	3600.0000	-0.2230	-0.2230	
122	3720.0000	-0.2170	-0.2170	
123	3840.0000	-0.2140	-0.2140	
124	3960.0000	-0.2080	-0.2080	
125	4080.0000	-0.2040	-0.2040	
126	4200.0000	-0.2010	-0.2010	
127	4320.0000	-0.1950	-0.1950	
128	4440.0000	-0.1890	-0.1890	
129	4560.0000	-0.1850	-0.1850	
130	4680.0000	-0.1820	-0.1820	
131	4800.0000	-0.1790	-0.1790	
132	4920.0000	-0.1730	-0.1730	
133	5040.0000	-0.1700	-0.1700	
134	5160.0000	-0.1670	-0.1670	
135	5280.0000	-0.1630	-0.1630	
136	5400.0000	-0.1600	-0.1600	
137	5520.0000	-0.1540	-0.1540	
138	5640.0000	-0.1510	-0.1510	
139	5760.0000	-0.1480	-0.1480	
140	5880.0000	-0.1450	-0.1450	
141	6000.0000	-0.1410	-0.1410	
142	7200.0000	-0.1190	-0.1190	
143	8400.0000	-0.1040	-0.1040	
144	9600.0000	-0.0970	-0.0970	
145	10800.0000	-0.0850	-0.0850	
146	12000.0000	-0.0850	-0.0850	
147	13200.0000	-0.0720	-0.0720	
148	14400.0000	-0.0690	-0.0690	
149	15600.0000	-0.0690	-0.0690	
150	16800.0000	-0.0630	-0.0630	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

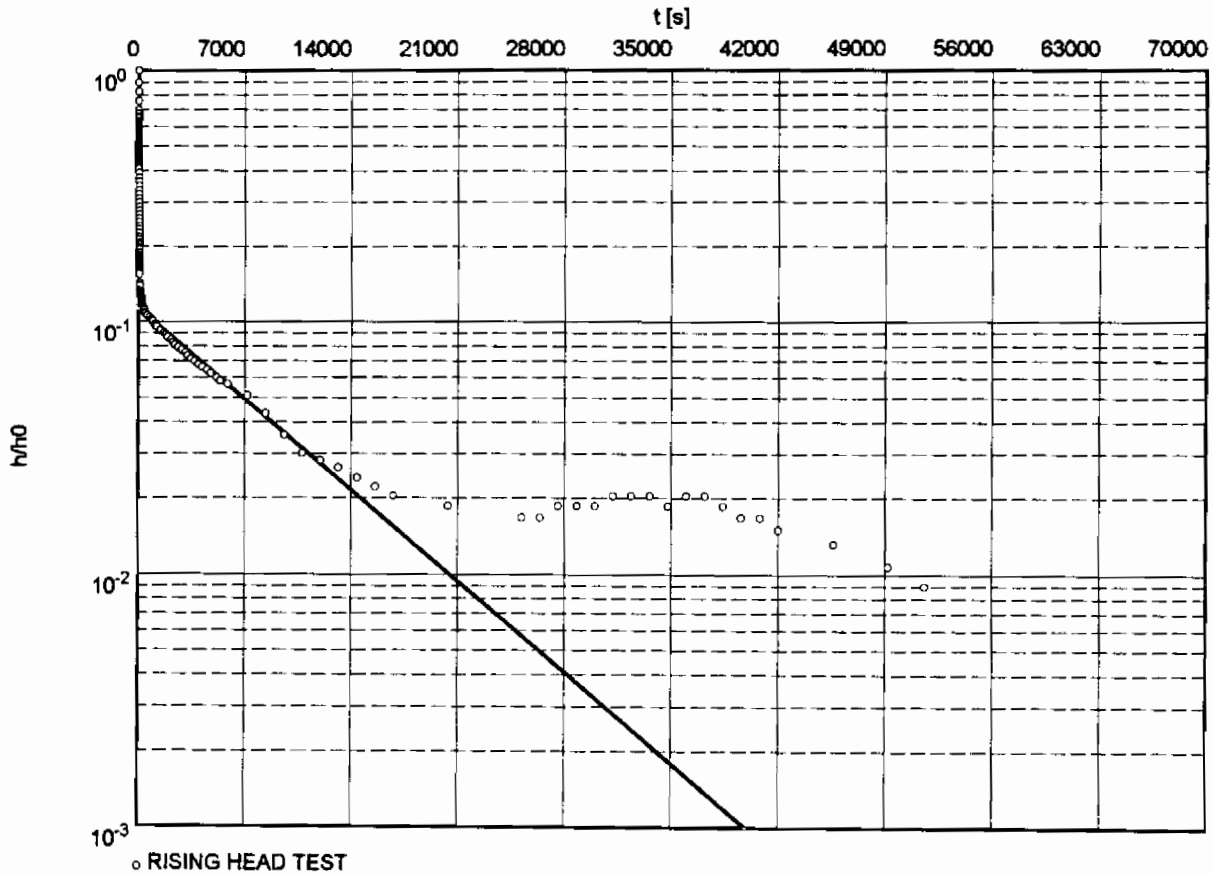
Slug Test No. 1	Test conducted on: 21.10.96
NBCE-GDE-007	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
151	18000.0000	-0.0590	-0.0590	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.11.96

Slug Test No. 2	Test conducted on: 21.10.96
NBCE-GDE-007	



Hydraulic conductivity [ft/s]: 6.52×10^{-7}

Hydraulic conductivity [ft/day]: 5.63 x 10^-2

L = 10.6 ft
b = 10.6 ft
D = 10.6 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 2	Test conducted on: 21.10.96
NBCE-GDE-007	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6700	1.6700	
2	3.1980	1.4940	1.4940	
3	3.3960	1.3800	1.3800	
4	4.2000	1.2670	1.2670	
5	4.3980	1.2670	1.2670	
6	4.5960	1.1440	1.1440	
7	5.1960	1.1380	1.1380	
8	5.4000	1.1660	1.1660	
9	5.5980	1.1250	1.1250	
10	5.7960	1.0680	1.0680	
11	6.0000	1.0460	1.0460	
12	6.1980	1.0680	1.0680	
13	6.3960	1.0900	1.0900	
14	6.6000	1.0810	1.0810	
15	6.7980	1.0490	1.0490	
16	6.9960	1.0270	1.0270	
17	7.2000	1.0270	1.0270	
18	7.3980	1.0370	1.0370	
19	7.8000	1.0210	1.0210	
20	7.9980	1.0050	1.0050	
21	8.1960	0.9960	0.9960	
22	8.7960	0.9890	0.9890	
23	9.0000	0.9770	0.9770	
24	9.1980	0.9670	0.9670	
25	9.3960	0.9640	0.9640	
26	9.6000	0.9610	0.9610	
27	9.7980	0.9580	0.9580	
28	9.9960	0.9480	0.9480	
29	10.2000	0.9420	0.9420	
30	10.3980	0.9360	0.9360	
31	10.5960	0.9300	0.9300	
32	10.8000	0.9260	0.9260	
33	10.9980	0.9200	0.9200	
34	11.1960	0.9140	0.9140	
35	11.4000	0.9070	0.9070	
36	11.5980	0.9010	0.9010	
37	11.7960	0.8980	0.8980	
38	12.0000	0.8920	0.8920	
39	12.1980	0.8890	0.8890	
40	12.3960	0.8820	0.8820	
41	12.6000	0.8760	0.8760	
42	12.7980	0.8700	0.8700	
43	12.9960	0.8660	0.8660	
44	13.2000	0.8600	0.8600	
45	13.3980	0.8540	0.8540	
46	13.5960	0.8480	0.8480	
47	13.8000	0.8440	0.8440	
48	13.9980	0.8380	0.8380	
49	14.1960	0.8320	0.8320	
50	14.4000	0.8260	0.8260	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 2	Test conducted on: 21.10.96
NBCE-GDE-007	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	14.5980	0.8190	0.8190
52	14.7960	0.8160	0.8160
53	15.0000	0.8100	0.8100
54	15.1980	0.8030	0.8030
55	15.3960	0.7970	0.7970
56	15.6000	0.7940	0.7940
57	15.7980	0.7880	0.7880
58	15.9960	0.7810	0.7810
59	16.2000	0.7750	0.7750
60	16.3980	0.7720	0.7720
61	16.5960	0.7660	0.7660
62	16.8000	0.7590	0.7590
63	16.9980	0.7530	0.7530
64	17.1960	0.7500	0.7500
65	17.4000	0.7430	0.7430
66	17.5980	0.7370	0.7370
67	17.7960	0.7340	0.7340
68	18.0000	0.7280	0.7280
69	18.1980	0.7210	0.7210
70	18.3960	0.7180	0.7180
71	18.6000	0.7120	0.7120
72	18.7980	0.7090	0.7090
73	18.9960	0.7060	0.7060
74	19.2000	0.6990	0.6990
75	19.3980	0.6930	0.6930
76	19.5960	0.6900	0.6900
77	19.8000	0.6840	0.6840
78	19.9980	0.6800	0.6800
79	21.0000	0.6520	0.6520
80	21.9960	0.6270	0.6270
81	22.9980	0.6050	0.6050
82	24.0000	0.5800	0.5800
83	24.9960	0.5580	0.5580
84	25.9980	0.5390	0.5390
85	27.0000	0.5170	0.5170
86	27.9960	0.4980	0.4980
87	28.9980	0.4790	0.4790
88	30.0000	0.4630	0.4630
89	30.9960	0.4470	0.4470
90	31.9980	0.4310	0.4310
91	33.0000	0.4160	0.4160
92	33.9960	0.4030	0.4030
93	34.9980	0.3900	0.3900
94	36.0000	0.3780	0.3780
95	36.9960	0.3650	0.3650
96	37.9980	0.3560	0.3560
97	39.0000	0.3460	0.3460
98	39.9960	0.3370	0.3370
99	40.9980	0.3310	0.3310
100	42.0000	0.3240	0.3240

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

Slug Test No. 2	Test conducted on: 21.10.96
NBCE-GDE-007	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	42.9960	0.3150	0.3150
102	43.9980	0.3080	0.3080
103	45.0000	0.3050	0.3050
104	45.9960	0.2990	0.2990
105	46.9980	0.2960	0.2960
106	48.0000	0.2900	0.2900
107	48.9960	0.2860	0.2860
108	49.9980	0.2830	0.2830
109	51.0000	0.2800	0.2800
110	51.9960	0.2770	0.2770
111	52.9980	0.2740	0.2740
112	54.0000	0.2710	0.2710
113	55.9980	0.2670	0.2670
114	57.0000	0.2640	0.2640
115	57.9960	0.2610	0.2610
116	60.0000	0.2580	0.2580
117	72.0000	0.2390	0.2390
118	84.0000	0.2330	0.2330
119	96.0000	0.2230	0.2230
120	108.0000	0.2200	0.2200
121	120.0000	0.2170	0.2170
122	132.0000	0.2140	0.2140
123	144.0000	0.2110	0.2110
124	156.0000	0.2080	0.2080
125	168.0000	0.2040	0.2040
126	192.0000	0.2010	0.2010
127	216.0000	0.1980	0.1980
128	240.0000	0.1950	0.1950
129	276.0000	0.1920	0.1920
130	312.0000	0.1890	0.1890
131	360.0000	0.1860	0.1860
132	420.0000	0.1820	0.1820
133	468.0000	0.1790	0.1790
134	564.0000	0.1760	0.1760
135	720.0000	0.1730	0.1730
136	840.0000	0.1700	0.1700
137	960.0000	0.1670	0.1670
138	1080.0000	0.1630	0.1630
139	1200.0000	0.1600	0.1600
140	1440.0000	0.1540	0.1540
141	1680.0000	0.1510	0.1510
142	1800.0000	0.1480	0.1480
143	1920.0000	0.1450	0.1450
144	2160.0000	0.1410	0.1410
145	2280.0000	0.1380	0.1380
146	2400.0000	0.1350	0.1350
147	2640.0000	0.1320	0.1320
148	2880.0000	0.1290	0.1290
149	3120.0000	0.1260	0.1260
150	3240.0000	0.1220	0.1220

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.11.96

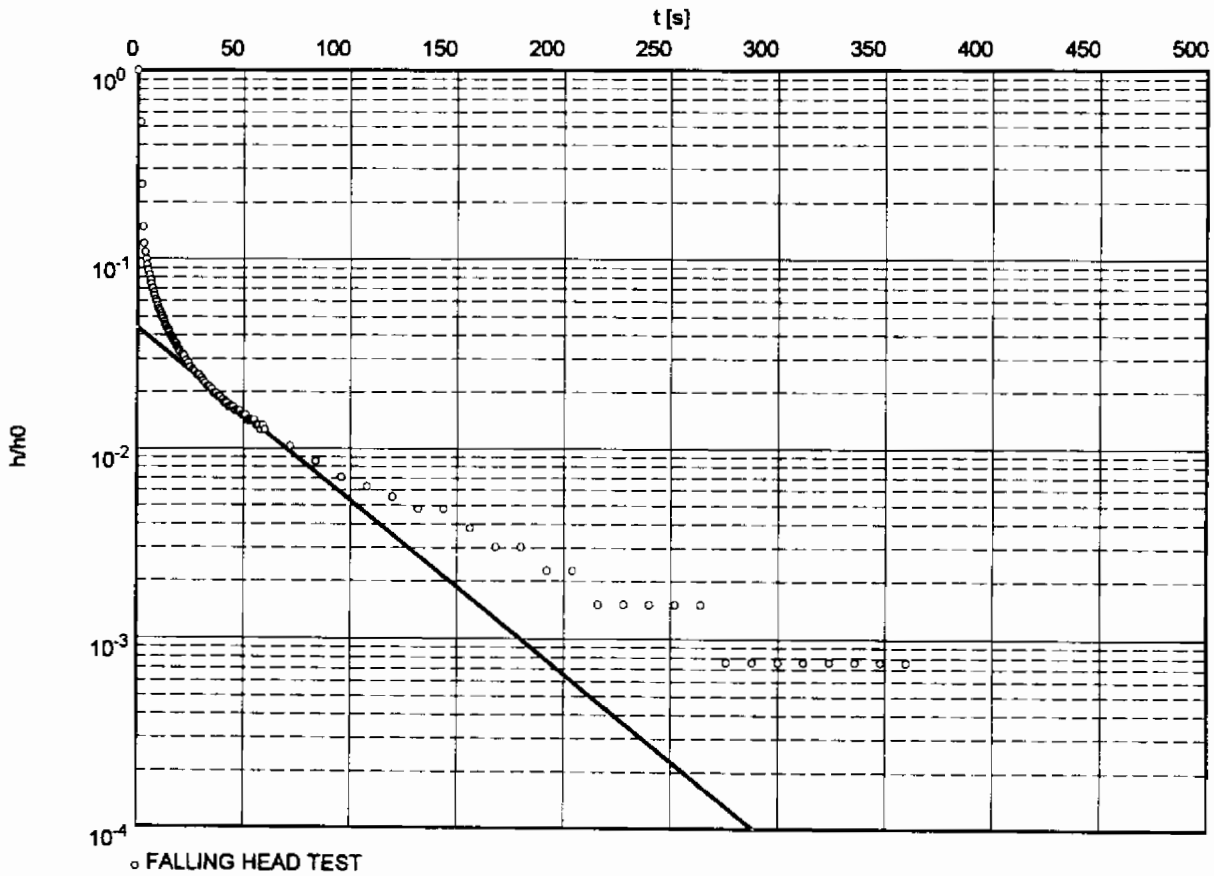
Slug Test No. 2	Test conducted on: 21.10.96
NBCE-GDE-007	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
151	3480.0000	0.1190	0.1190
152	3720.0000	0.1160	0.1160
153	3960.0000	0.1130	0.1130
154	4200.0000	0.1100	0.1100
155	4560.0000	0.1070	0.1070
156	4800.0000	0.1040	0.1040
157	5160.0000	0.1000	0.1000
158	5400.0000	0.0970	0.0970
159	5880.0000	0.0940	0.0940
160	7200.0000	0.0850	0.0850
161	8400.0000	0.0720	0.0720
162	9600.0000	0.0590	0.0590
163	10800.0000	0.0500	0.0500
164	12000.0000	0.0470	0.0470
165	13200.0000	0.0440	0.0440
166	14400.0000	0.0400	0.0400
167	15600.0000	0.0370	0.0370
168	16800.0000	0.0340	0.0340
169	20400.0000	0.0310	0.0310
170	25200.0000	0.0280	0.0280
171	26400.0000	0.0280	0.0280
172	27600.0000	0.0310	0.0310
173	28800.0000	0.0310	0.0310
174	30000.0000	0.0310	0.0310
175	31200.0000	0.0340	0.0340
176	32400.0000	0.0340	0.0340
177	33600.0000	0.0340	0.0340
178	34800.0000	0.0310	0.0310
179	36000.0000	0.0340	0.0340
180	37200.0000	0.0340	0.0340
181	38400.0000	0.0310	0.0310
182	39600.0000	0.0280	0.0280
183	40800.0000	0.0280	0.0280
184	42000.0000	0.0250	0.0250
185	45600.0000	0.0220	0.0220
186	49200.0000	0.0180	0.0180
187	51600.0000	0.0150	0.0150

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. 1	Test conducted on: 17.03.97
NBCE-GDE-020	



Hydraulic conductivity [ft/s]: 1.75×10^{-4}

Hydraulic conductivity [ft/day]: 15.1

L = 6.1 ft
b = 6.1 ft
D = 6.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. 1	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	3.9800	3.9800
2	1.5000	2.1140	2.1140
3	1.9980	0.9810	0.9810
4	2.4960	0.5860	0.5860
5	3.0000	0.4820	0.4820
6	3.4980	0.4320	0.4320
7	3.9960	0.3970	0.3970
8	4.5000	0.3690	0.3690
9	4.9980	0.3470	0.3470
10	5.4960	0.3250	0.3250
11	6.0000	0.3060	0.3060
12	6.4980	0.2930	0.2930
13	6.9960	0.2770	0.2770
14	7.5000	0.2650	0.2650
15	7.9980	0.2550	0.2550
16	8.4960	0.2420	0.2420
17	9.0000	0.2360	0.2360
18	9.4980	0.2240	0.2240
19	9.9960	0.2170	0.2170
20	10.5000	0.2110	0.2110
21	10.9980	0.2050	0.2050
22	11.4960	0.1980	0.1980
23	12.0000	0.1920	0.1920
24	12.4980	0.1860	0.1860
25	12.9960	0.1790	0.1790
26	13.5000	0.1760	0.1760
27	13.9980	0.1700	0.1700
28	14.4960	0.1670	0.1670
29	15.0000	0.1640	0.1640
30	15.4980	0.1570	0.1570
31	15.9960	0.1540	0.1540
32	16.5000	0.1510	0.1510
33	16.9980	0.1480	0.1480
34	17.4960	0.1450	0.1450
35	18.0000	0.1420	0.1420
36	18.4980	0.1380	0.1380
37	18.9960	0.1350	0.1350
38	19.5000	0.1320	0.1320
39	19.9980	0.1290	0.1290
40	21.0000	0.1260	0.1260
41	21.9960	0.1230	0.1230
42	22.9980	0.1160	0.1160
43	24.0000	0.1130	0.1130
44	24.9960	0.1070	0.1070
45	25.9980	0.1040	0.1040
46	27.0000	0.1010	0.1010
47	27.9960	0.0970	0.0970
48	28.9980	0.0970	0.0970
49	30.0000	0.0940	0.0940
50	30.9960	0.0910	0.0910

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. 1	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	31.9980	0.0880	0.0880
52	33.0000	0.0850	0.0850
53	33.9960	0.0850	0.0850
54	34.9980	0.0820	0.0820
55	36.0000	0.0780	0.0780
56	36.9960	0.0780	0.0780
57	37.9980	0.0750	0.0750
58	39.0000	0.0750	0.0750
59	39.9960	0.0720	0.0720
60	40.9980	0.0690	0.0690
61	42.0000	0.0690	0.0690
62	42.9960	0.0660	0.0660
63	43.9980	0.0660	0.0660
64	45.0000	0.0660	0.0660
65	45.9960	0.0630	0.0630
66	46.9980	0.0630	0.0630
67	48.0000	0.0630	0.0630
68	48.9960	0.0600	0.0600
69	49.9980	0.0600	0.0600
70	51.0000	0.0600	0.0600
71	51.9960	0.0560	0.0560
72	52.9980	0.0560	0.0560
73	54.0000	0.0560	0.0560
74	54.9960	0.0560	0.0560
75	55.9980	0.0530	0.0530
76	57.0000	0.0530	0.0530
77	57.9960	0.0500	0.0500
78	58.9980	0.0530	0.0530
79	60.0000	0.0500	0.0500
80	72.0000	0.0410	0.0410
81	84.0000	0.0340	0.0340
82	96.0000	0.0280	0.0280
83	108.0000	0.0250	0.0250
84	120.0000	0.0220	0.0220
85	132.0000	0.0190	0.0190
86	144.0000	0.0190	0.0190
87	156.0000	0.0150	0.0150
88	168.0000	0.0120	0.0120
89	180.0000	0.0120	0.0120
90	192.0000	0.0090	0.0090
91	204.0000	0.0090	0.0090
92	216.0000	0.0060	0.0060
93	228.0000	0.0060	0.0060
94	240.0000	0.0060	0.0060
95	252.0000	0.0060	0.0060
96	264.0000	0.0060	0.0060
97	276.0000	0.0030	0.0030
98	288.0000	0.0030	0.0030
99	300.0000	0.0030	0.0030
100	312.0000	0.0030	0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

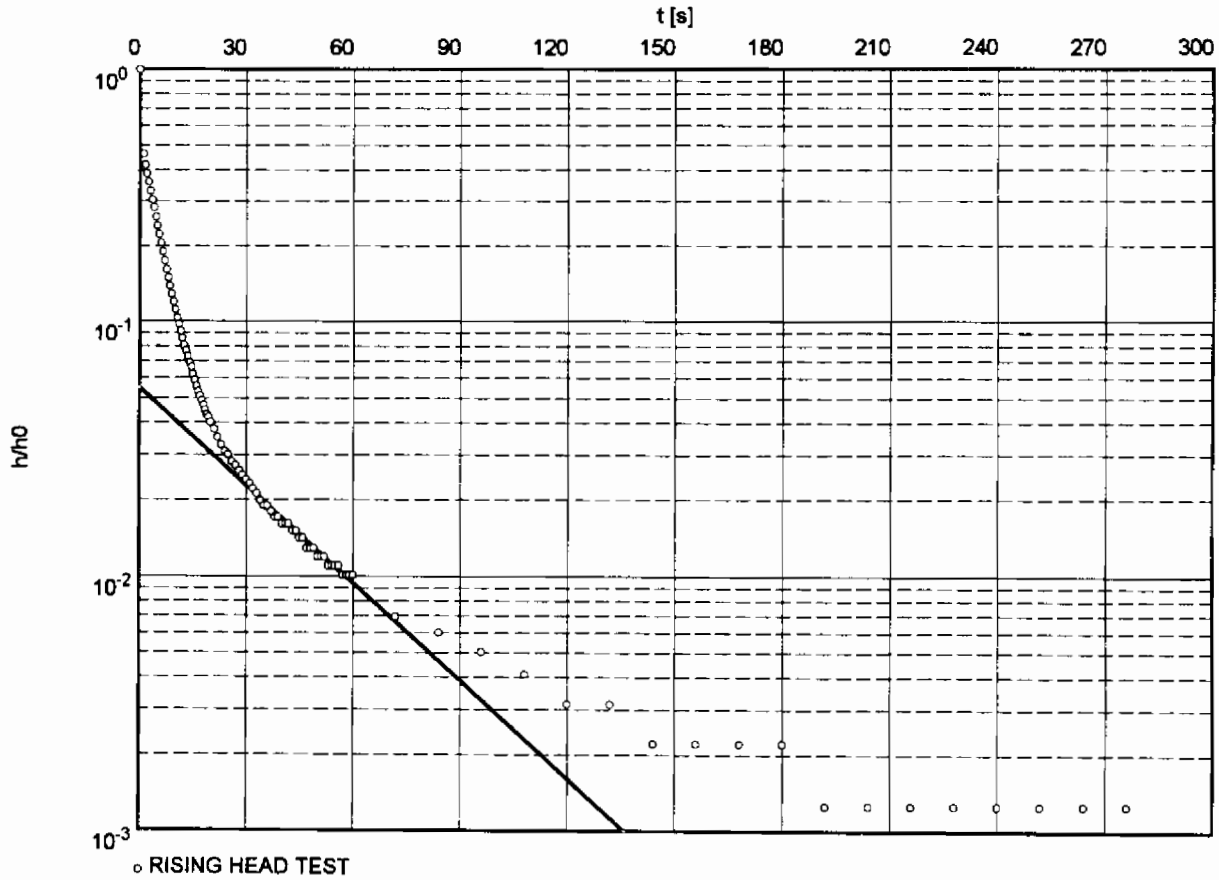
Slug Test No. 1	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	324.0000	0.0030	0.0030
102	336.0000	0.0030	0.0030
103	348.0000	0.0030	0.0030
104	360.0000	0.0030	0.0030
105	372.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd, Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #1	Test conducted on: 17.03.97
NBCE-GDE-020	



Hydraulic conductivity [ft/s]: 2.45×10^{-4}

Hydraulic conductivity [ft/day]: 21.2

L = 6.1 ft
b = 6.1 ft
D = 6.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #1	Test conducted on: 17.03.97
NBCE-GDE-020	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	3.1770	3.1770	
2	0.9960	1.4660	1.4660	
3	1.5000	1.3280	1.3280	
4	1.9980	1.2240	1.2240	
5	2.4960	1.1350	1.1350	
6	3.0000	1.0500	1.0500	
7	3.4980	0.9680	0.9680	
8	3.9960	0.8990	0.8990	
9	4.5000	0.8270	0.8270	
10	4.9980	0.7630	0.7630	
11	5.4960	0.7040	0.7040	
12	6.0000	0.6500	0.6500	
13	6.4980	0.6000	0.6000	
14	6.9960	0.5520	0.5520	
15	7.5000	0.5110	0.5110	
16	7.9980	0.4730	0.4730	
17	8.4960	0.4390	0.4390	
18	9.0000	0.4070	0.4070	
19	9.4980	0.3790	0.3790	
20	9.9960	0.3540	0.3540	
21	10.5000	0.3280	0.3280	
22	10.9980	0.3090	0.3090	
23	11.4960	0.2900	0.2900	
24	12.0000	0.2720	0.2720	
25	12.4980	0.2560	0.2560	
26	12.9960	0.2430	0.2430	
27	13.5000	0.2310	0.2310	
28	13.9980	0.2180	0.2180	
29	14.4960	0.2090	0.2090	
30	15.0000	0.1960	0.1960	
31	15.4980	0.1860	0.1860	
32	15.9960	0.1770	0.1770	
33	16.5000	0.1680	0.1680	
34	16.9980	0.1610	0.1610	
35	17.4960	0.1550	0.1550	
36	18.0000	0.1490	0.1490	
37	18.4980	0.1420	0.1420	
38	18.9960	0.1360	0.1360	
39	19.5000	0.1330	0.1330	
40	19.9980	0.1270	0.1270	
41	21.0000	0.1200	0.1200	
42	21.9960	0.1110	0.1110	
43	22.9980	0.1040	0.1040	
44	24.0000	0.0980	0.0980	
45	24.9960	0.0950	0.0950	
46	25.9980	0.0890	0.0890	
47	27.0000	0.0860	0.0860	
48	27.9960	0.0820	0.0820	
49	28.9980	0.0790	0.0790	
50	30.0000	0.0760	0.0760	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #1	Test conducted on: 17.03.97
NBCE-GDE-020	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	30.9960	0.0730	0.0730	
52	31.9980	0.0700	0.0700	
53	33.0000	0.0670	0.0670	
54	33.9960	0.0630	0.0630	
55	34.9980	0.0600	0.0600	
56	36.0000	0.0600	0.0600	
57	36.9960	0.0570	0.0570	
58	37.9980	0.0540	0.0540	
59	39.0000	0.0540	0.0540	
60	39.9960	0.0510	0.0510	
61	40.9980	0.0510	0.0510	
62	42.0000	0.0510	0.0510	
63	42.9960	0.0480	0.0480	
64	43.9980	0.0480	0.0480	
65	45.0000	0.0450	0.0450	
66	45.9960	0.0450	0.0450	
67	46.9980	0.0410	0.0410	
68	48.0000	0.0410	0.0410	
69	48.9960	0.0410	0.0410	
70	49.9980	0.0380	0.0380	
71	51.0000	0.0380	0.0380	
72	51.9960	0.0380	0.0380	
73	52.9980	0.0350	0.0350	
74	54.0000	0.0350	0.0350	
75	54.9960	0.0350	0.0350	
76	55.9980	0.0350	0.0350	
77	57.0000	0.0320	0.0320	
78	57.9960	0.0320	0.0320	
79	58.9980	0.0320	0.0320	
80	60.0000	0.0320	0.0320	
81	72.0000	0.0220	0.0220	
82	84.0000	0.0190	0.0190	
83	96.0000	0.0160	0.0160	
84	108.0000	0.0130	0.0130	
85	120.0000	0.0100	0.0100	
86	132.0000	0.0100	0.0100	
87	144.0000	0.0070	0.0070	
88	156.0000	0.0070	0.0070	
89	168.0000	0.0070	0.0070	
90	180.0000	0.0070	0.0070	
91	192.0000	0.0040	0.0040	
92	204.0000	0.0040	0.0040	
93	216.0000	0.0040	0.0040	
94	228.0000	0.0040	0.0040	
95	240.0000	0.0040	0.0040	
96	252.0000	0.0040	0.0040	
97	264.0000	0.0040	0.0040	
98	276.0000	0.0040	0.0040	
99	288.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.3440	2.3440
2	0.9960	2.4990	2.4990
3	1.5000	0.4320	0.4320
4	1.9980	0.5710	0.5710
5	2.4960	0.4660	0.4660
6	3.0000	0.4320	0.4320
7	3.4980	0.3940	0.3940
8	3.9960	0.3620	0.3620
9	4.5000	0.3370	0.3370
10	4.9980	0.3150	0.3150
11	5.4960	0.2960	0.2960
12	6.0000	0.2800	0.2800
13	6.4980	0.2650	0.2650
14	6.9960	0.2520	0.2520
15	7.5000	0.2420	0.2420
16	7.9980	0.2300	0.2300
17	8.4960	0.2200	0.2200
18	9.0000	0.2140	0.2140
19	9.4980	0.2050	0.2050
20	9.9960	0.1980	0.1980
21	10.5000	0.1920	0.1920
22	10.9980	0.1860	0.1860
23	11.4960	0.1830	0.1830
24	12.0000	0.1760	0.1760
25	12.4980	0.1730	0.1730
26	12.9960	0.1670	0.1670
27	13.5000	0.1640	0.1640
28	13.9980	0.1570	0.1570
29	14.4960	0.1540	0.1540
30	15.0000	0.1510	0.1510
31	15.4980	0.1480	0.1480
32	15.9960	0.1450	0.1450
33	16.5000	0.1420	0.1420
34	16.9980	0.1380	0.1380
35	17.4960	0.1350	0.1350
36	18.0000	0.1320	0.1320
37	18.4980	0.1290	0.1290
38	18.9960	0.1290	0.1290
39	19.5000	0.1260	0.1260
40	19.9980	0.1230	0.1230
41	21.0000	0.1190	0.1190
42	21.9960	0.1160	0.1160
43	22.9980	0.1100	0.1100
44	24.0000	0.1070	0.1070
45	24.9960	0.1040	0.1040
46	25.9980	0.1010	0.1010
47	27.0000	0.0970	0.0970
48	27.9960	0.0940	0.0940
49	28.9980	0.0910	0.0910
50	30.0000	0.0910	0.0910

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	30.9960	0.0880	0.0880
52	31.9980	0.0850	0.0850
53	33.0000	0.0850	0.0850
54	33.9960	0.0820	0.0820
55	34.9980	0.0780	0.0780
56	36.0000	0.0780	0.0780
57	36.9960	0.0750	0.0750
58	37.9980	0.0720	0.0720
59	39.0000	0.0720	0.0720
60	39.9960	0.0690	0.0690
61	40.9980	0.0690	0.0690
62	42.0000	0.0690	0.0690
63	42.9960	0.0660	0.0660
64	43.9980	0.0660	0.0660
65	45.0000	0.0630	0.0630
66	45.9960	0.0630	0.0630
67	46.9980	0.0600	0.0600
68	48.0000	0.0600	0.0600
69	48.9960	0.0600	0.0600
70	49.9980	0.0560	0.0560
71	51.0000	0.0560	0.0560
72	51.9960	0.0560	0.0560
73	52.9980	0.0530	0.0530
74	54.0000	0.0530	0.0530
75	54.9960	0.0530	0.0530
76	55.9980	0.0500	0.0500
77	57.0000	0.0500	0.0500
78	57.9960	0.0500	0.0500
79	58.9980	0.0470	0.0470
80	60.0000	0.0470	0.0470
81	72.0000	0.0410	0.0410
82	84.0000	0.0340	0.0340
83	96.0000	0.0310	0.0310
84	108.0000	0.0250	0.0250
85	120.0000	0.0220	0.0220
86	132.0000	0.0190	0.0190
87	144.0000	0.0190	0.0190
88	156.0000	0.0150	0.0150
89	168.0000	0.0120	0.0120
90	180.0000	0.0120	0.0120
91	192.0000	0.0120	0.0120
92	204.0000	0.0090	0.0090
93	216.0000	0.0090	0.0090
94	228.0000	0.0090	0.0090
95	240.0000	0.0090	0.0090
96	252.0000	0.0090	0.0090
97	264.0000	0.0060	0.0060
98	276.0000	0.0060	0.0060
99	288.0000	0.0060	0.0060
100	300.0000	0.0060	0.0060

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

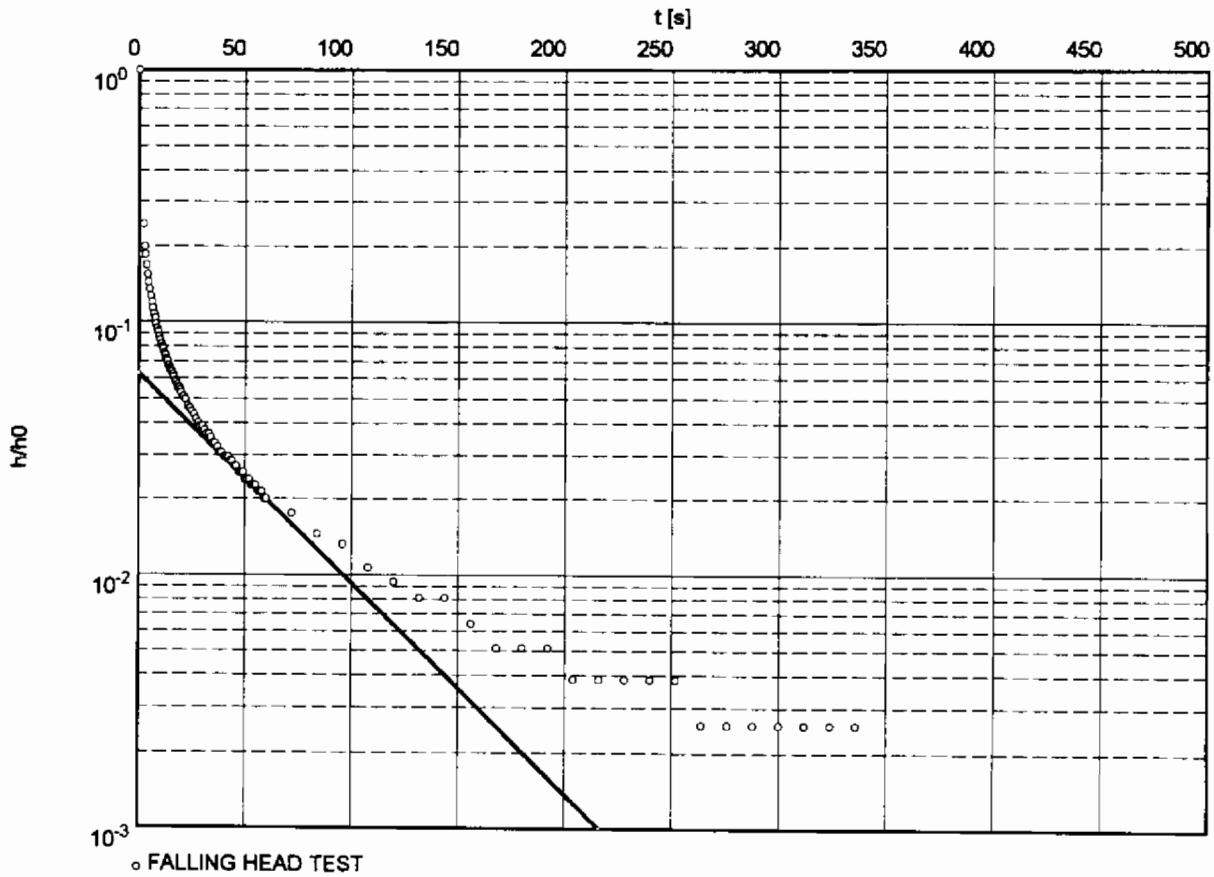
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	312.0000	0.0060	0.0060	
102	324.0000	0.0060	0.0060	
103	336.0000	0.0060	0.0060	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	



Hydraulic conductivity [ft/s]: 1.59×10^{-4}

Hydraulic conductivity [ft/day]: 13.7

L = 6.1 ft
b = 6.1 ft
D = 6.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.3440	2.3440
2	0.9960	2.4990	2.4990
3	1.5000	0.4320	0.4320
4	1.9980	0.5710	0.5710
5	2.4960	0.4660	0.4660
6	3.0000	0.4320	0.4320
7	3.4980	0.3940	0.3940
8	3.9960	0.3620	0.3620
9	4.5000	0.3370	0.3370
10	4.9980	0.3150	0.3150
11	5.4960	0.2960	0.2960
12	6.0000	0.2800	0.2800
13	6.4980	0.2650	0.2650
14	6.9960	0.2520	0.2520
15	7.5000	0.2420	0.2420
16	7.9980	0.2300	0.2300
17	8.4960	0.2200	0.2200
18	9.0000	0.2140	0.2140
19	9.4980	0.2050	0.2050
20	9.9960	0.1980	0.1980
21	10.5000	0.1920	0.1920
22	10.9980	0.1860	0.1860
23	11.4960	0.1830	0.1830
24	12.0000	0.1760	0.1760
25	12.4980	0.1730	0.1730
26	12.9960	0.1670	0.1670
27	13.5000	0.1640	0.1640
28	13.9980	0.1570	0.1570
29	14.4960	0.1540	0.1540
30	15.0000	0.1510	0.1510
31	15.4980	0.1480	0.1480
32	15.9960	0.1450	0.1450
33	16.5000	0.1420	0.1420
34	16.9980	0.1380	0.1380
35	17.4960	0.1350	0.1350
36	18.0000	0.1320	0.1320
37	18.4980	0.1290	0.1290
38	18.9960	0.1290	0.1290
39	19.5000	0.1260	0.1260
40	19.9980	0.1230	0.1230
41	21.0000	0.1190	0.1190
42	21.9960	0.1160	0.1160
43	22.9980	0.1100	0.1100
44	24.0000	0.1070	0.1070
45	24.9960	0.1040	0.1040
46	25.9980	0.1010	0.1010
47	27.0000	0.0970	0.0970
48	27.9960	0.0940	0.0940
49	28.9980	0.0910	0.0910
50	30.0000	0.0910	0.0910

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	30.9960	0.0880	0.0880
52	31.9980	0.0850	0.0850
53	33.0000	0.0850	0.0850
54	33.9960	0.0820	0.0820
55	34.9980	0.0780	0.0780
56	36.0000	0.0780	0.0780
57	36.9960	0.0750	0.0750
58	37.9980	0.0720	0.0720
59	39.0000	0.0720	0.0720
60	39.9960	0.0690	0.0690
61	40.9980	0.0690	0.0690
62	42.0000	0.0690	0.0690
63	42.9960	0.0660	0.0660
64	43.9980	0.0660	0.0660
65	45.0000	0.0630	0.0630
66	45.9960	0.0630	0.0630
67	46.9980	0.0600	0.0600
68	48.0000	0.0600	0.0600
69	48.9960	0.0600	0.0600
70	49.9980	0.0560	0.0560
71	51.0000	0.0560	0.0560
72	51.9960	0.0560	0.0560
73	52.9980	0.0530	0.0530
74	54.0000	0.0530	0.0530
75	54.9960	0.0530	0.0530
76	55.9980	0.0500	0.0500
77	57.0000	0.0500	0.0500
78	57.9960	0.0500	0.0500
79	58.9980	0.0470	0.0470
80	60.0000	0.0470	0.0470
81	72.0000	0.0410	0.0410
82	84.0000	0.0340	0.0340
83	96.0000	0.0310	0.0310
84	108.0000	0.0250	0.0250
85	120.0000	0.0220	0.0220
86	132.0000	0.0190	0.0190
87	144.0000	0.0190	0.0190
88	156.0000	0.0150	0.0150
89	168.0000	0.0120	0.0120
90	180.0000	0.0120	0.0120
91	192.0000	0.0120	0.0120
92	204.0000	0.0090	0.0090
93	216.0000	0.0090	0.0090
94	228.0000	0.0090	0.0090
95	240.0000	0.0090	0.0090
96	252.0000	0.0090	0.0090
97	264.0000	0.0060	0.0060
98	276.0000	0.0060	0.0060
99	288.0000	0.0060	0.0060
100	300.0000	0.0060	0.0060

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

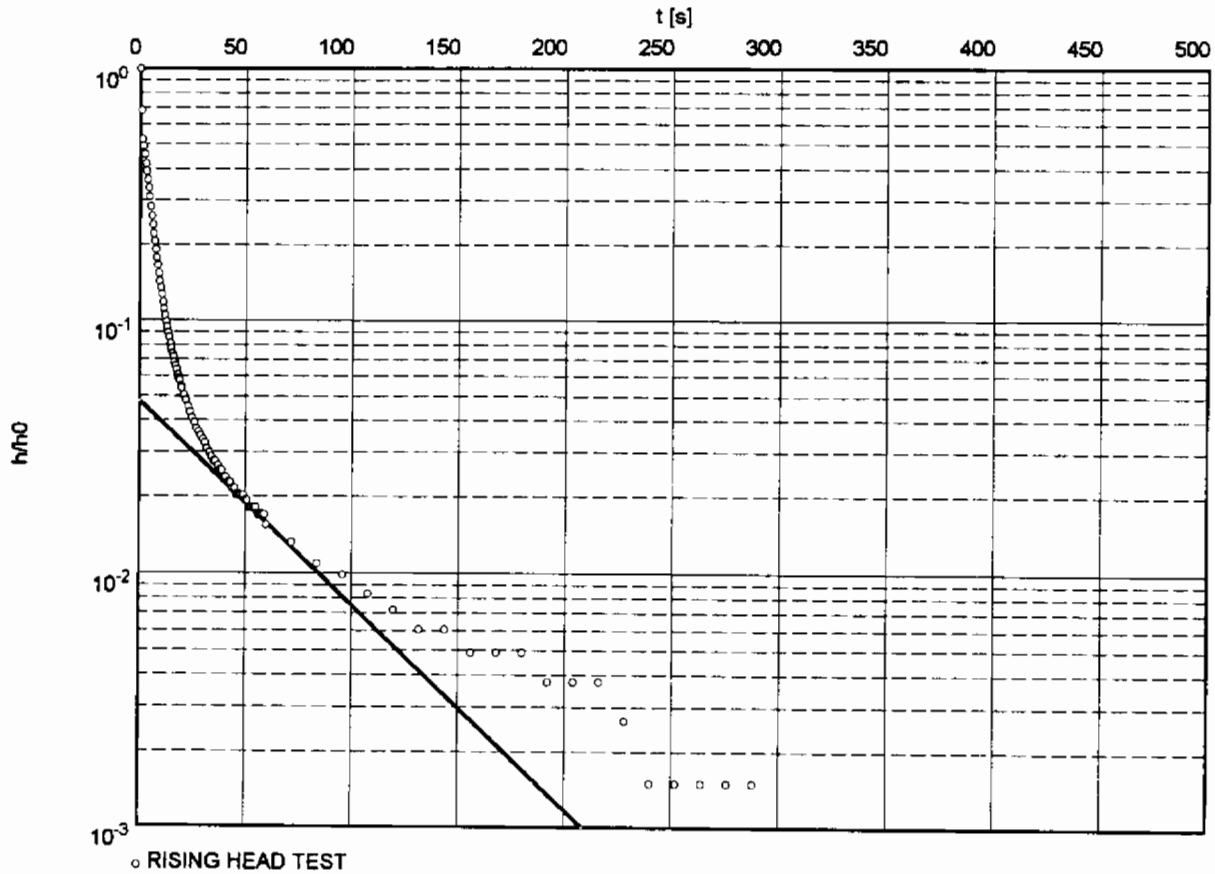
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	312.0000	0.0060	0.0060	
102	324.0000	0.0060	0.0060	
103	336.0000	0.0060	0.0060	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	



Hydraulic conductivity [ft/s]: 1.54×10^{-4}

Hyrdraulic conductivity [ft/day]: 13.3

L = 6.1 ft
b = 6.1 ft
D = 6.1 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	2.6570	2.6570
2	0.4980	1.8130	1.8130
3	0.9960	1.3880	1.3880
4	1.5000	1.2990	1.2990
5	1.9980	1.2050	1.2050
6	2.4960	1.1100	1.1100
7	3.0000	1.0350	1.0350
8	3.4980	0.9590	0.9590
9	3.9960	0.8900	0.8900
10	4.5000	0.8200	0.8200
11	4.9980	0.7540	0.7540
12	5.4960	0.6910	0.6910
13	6.0000	0.6370	0.6370
14	6.4980	0.5870	0.5870
15	6.9960	0.5460	0.5460
16	7.5000	0.5080	0.5080
17	7.9980	0.4700	0.4700
18	8.4960	0.4390	0.4390
19	9.0000	0.4070	0.4070
20	9.4980	0.3790	0.3790
21	9.9960	0.3570	0.3570
22	10.5000	0.3350	0.3350
23	10.9980	0.3130	0.3130
24	11.4960	0.2940	0.2940
25	12.0000	0.2780	0.2780
26	12.4980	0.2620	0.2620
27	12.9960	0.2500	0.2500
28	13.5000	0.2370	0.2370
29	13.9980	0.2270	0.2270
30	14.4960	0.2150	0.2150
31	15.0000	0.2050	0.2050
32	15.4980	0.1960	0.1960
33	15.9960	0.1900	0.1900
34	16.5000	0.1800	0.1800
35	16.9980	0.1740	0.1740
36	17.4960	0.1680	0.1680
37	18.0000	0.1610	0.1610
38	18.4980	0.1550	0.1550
39	18.9960	0.1520	0.1520
40	19.5000	0.1450	0.1450
41	19.9980	0.1420	0.1420
42	21.0000	0.1330	0.1330
43	21.9960	0.1270	0.1270
44	22.9980	0.1200	0.1200
45	24.0000	0.1140	0.1140
46	24.9960	0.1080	0.1080
47	25.9980	0.1040	0.1040
48	27.0000	0.0980	0.0980
49	27.9960	0.0950	0.0950
50	28.9980	0.0920	0.0920

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	30.0000	0.0890	0.0890
52	30.9960	0.0860	0.0860
53	31.9980	0.0820	0.0820
54	33.0000	0.0790	0.0790
55	33.9960	0.0760	0.0760
56	34.9980	0.0730	0.0730
57	36.0000	0.0730	0.0730
58	36.9960	0.0700	0.0700
59	37.9980	0.0670	0.0670
60	39.0000	0.0670	0.0670
61	39.9960	0.0630	0.0630
62	40.9980	0.0630	0.0630
63	42.0000	0.0600	0.0600
64	42.9960	0.0600	0.0600
65	43.9980	0.0570	0.0570
66	45.0000	0.0570	0.0570
67	45.9960	0.0540	0.0540
68	46.9980	0.0540	0.0540
69	48.0000	0.0540	0.0540
70	48.9960	0.0540	0.0540
71	49.9980	0.0510	0.0510
72	51.0000	0.0510	0.0510
73	51.9960	0.0480	0.0480
74	52.9980	0.0480	0.0480
75	54.0000	0.0480	0.0480
76	54.9960	0.0480	0.0480
77	55.9980	0.0450	0.0450
78	57.0000	0.0450	0.0450
79	57.9960	0.0450	0.0450
80	58.9980	0.0450	0.0450
81	60.0000	0.0410	0.0410
82	72.0000	0.0350	0.0350
83	84.0000	0.0290	0.0290
84	96.0000	0.0260	0.0260
85	108.0000	0.0220	0.0220
86	120.0000	0.0190	0.0190
87	132.0000	0.0160	0.0160
88	144.0000	0.0160	0.0160
89	156.0000	0.0130	0.0130
90	168.0000	0.0130	0.0130
91	180.0000	0.0130	0.0130
92	192.0000	0.0100	0.0100
93	204.0000	0.0100	0.0100
94	216.0000	0.0100	0.0100
95	228.0000	0.0070	0.0070
96	240.0000	0.0040	0.0040
97	252.0000	0.0040	0.0040
98	264.0000	0.0040	0.0040
99	276.0000	0.0040	0.0040
100	288.0000	0.0040	0.0040

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

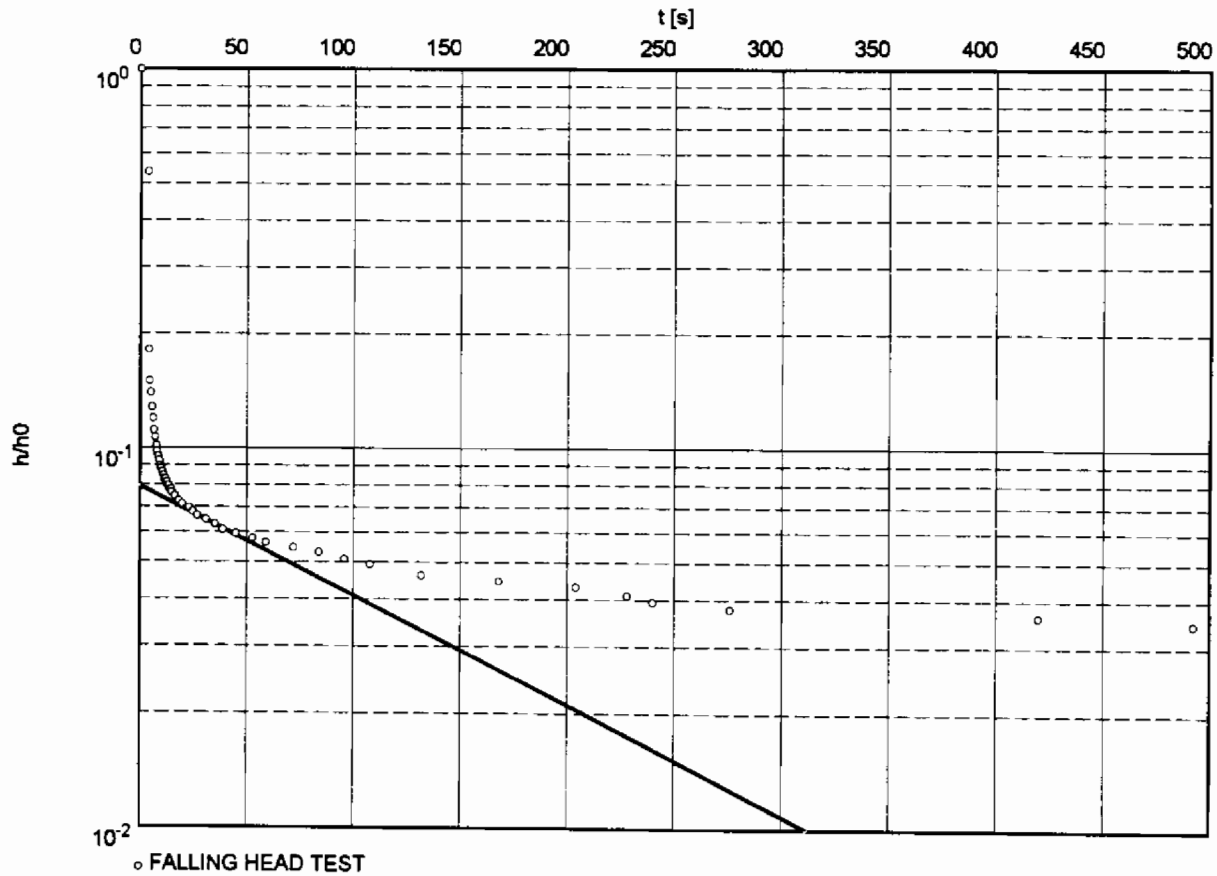
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-020	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	300.0000	0.0000	0.0000	
102	312.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-024	



Hydraulic conductivity [ft/s]: 4.17×10^{-5}

Hydraulic conductivity [ft/day]: 3.60

L = 8.8 ft
b = 8.8 ft
D = 8.8 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

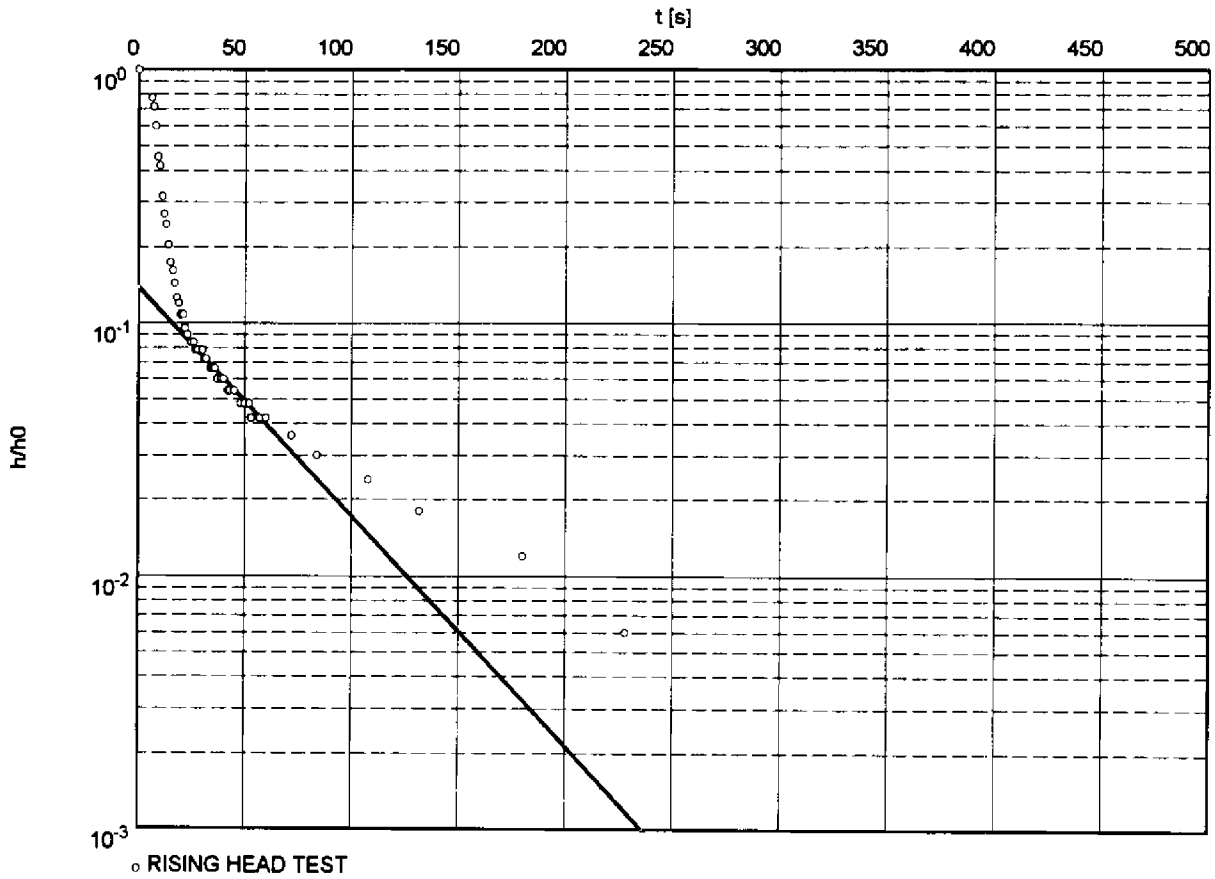
Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-1.9050	-1.9050
2	3.4980	-1.0200	-1.0200
3	3.9960	-0.3440	-0.3440
4	4.5000	-0.2840	-0.2840
5	4.9980	-0.2650	-0.2650
6	5.4960	-0.2430	-0.2430
7	6.0000	-0.2270	-0.2270
8	6.4980	-0.2110	-0.2110
9	6.9960	-0.2020	-0.2020
10	7.5000	-0.1920	-0.1920
11	7.9980	-0.1860	-0.1860
12	8.4960	-0.1800	-0.1800
13	9.0000	-0.1760	-0.1760
14	9.4980	-0.1700	-0.1700
15	9.9960	-0.1670	-0.1670
16	10.5000	-0.1640	-0.1640
17	10.9980	-0.1610	-0.1610
18	11.4960	-0.1570	-0.1570
19	12.0000	-0.1570	-0.1570
20	12.4980	-0.1540	-0.1540
21	12.9960	-0.1510	-0.1510
22	13.5000	-0.1510	-0.1510
23	13.9980	-0.1480	-0.1480
24	14.4960	-0.1480	-0.1480
25	15.0000	-0.1450	-0.1450
26	16.5000	-0.1420	-0.1420
27	18.0000	-0.1380	-0.1380
28	19.9980	-0.1350	-0.1350
29	22.9980	-0.1320	-0.1320
30	24.9960	-0.1290	-0.1290
31	27.0000	-0.1260	-0.1260
32	30.9960	-0.1230	-0.1230
33	34.9980	-0.1200	-0.1200
34	39.0000	-0.1160	-0.1160
35	45.0000	-0.1130	-0.1130
36	52.9980	-0.1100	-0.1100
37	58.9980	-0.1070	-0.1070
38	72.0000	-0.1040	-0.1040
39	84.0000	-0.1010	-0.1010
40	96.0000	-0.0970	-0.0970
41	108.0000	-0.0940	-0.0940
42	132.0000	-0.0880	-0.0880
43	168.0000	-0.0850	-0.0850
44	204.0000	-0.0820	-0.0820
45	228.0000	-0.0780	-0.0780
46	240.0000	-0.0750	-0.0750
47	276.0000	-0.0720	-0.0720
48	420.0000	-0.0690	-0.0690
49	492.0000	-0.0660	-0.0660

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-024	



Hydraulic conductivity [ft/s]: 1.35×10^{-4}

Hydraulic conductivity [ft/day]: 13.0

L = 8.8 ft
b = 8.8 ft
D = 8.8 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

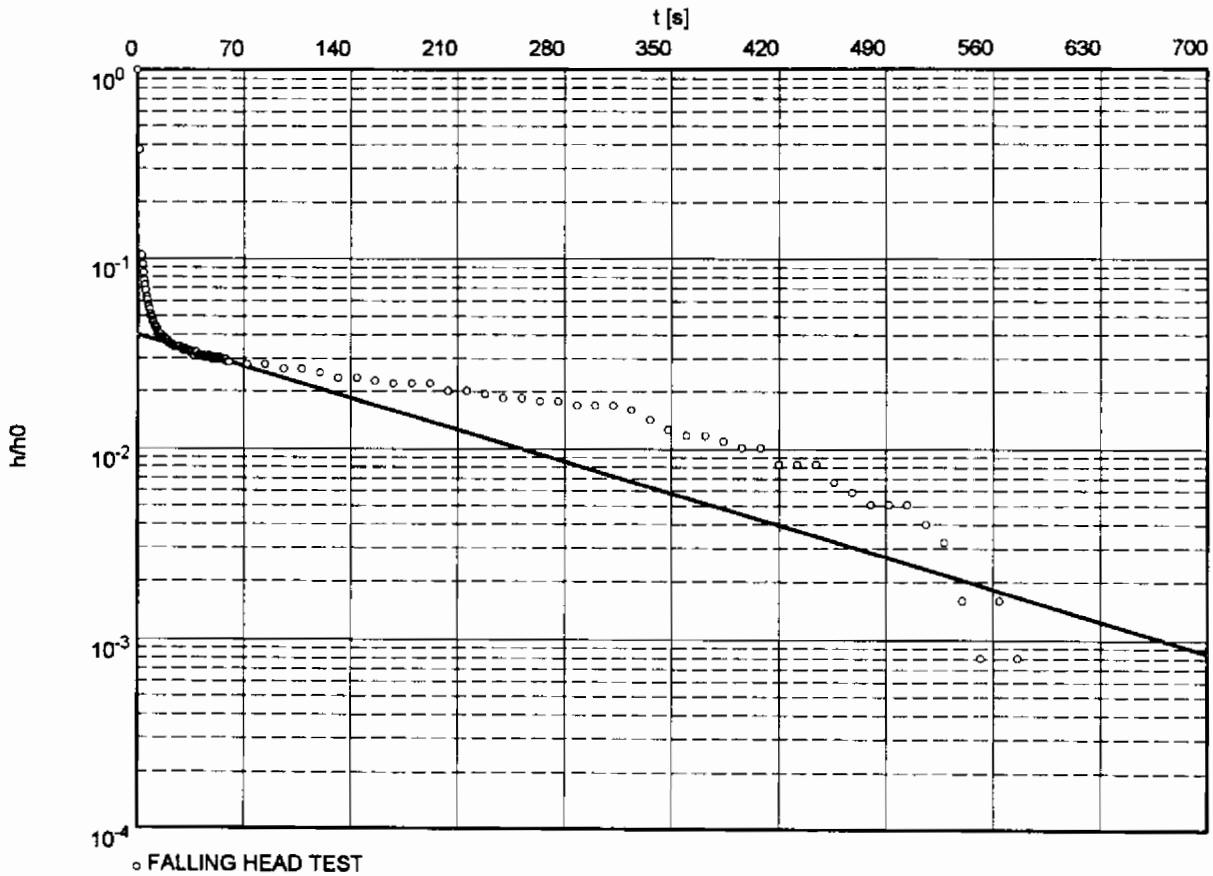
Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.6700	1.6700
2	6.0000	1.2900	1.2900
3	7.0000	1.1900	1.1900
4	8.0000	1.0000	1.0000
5	9.0000	0.7600	0.7600
6	10.0000	0.7000	0.7000
7	11.0000	0.5300	0.5300
8	12.0000	0.4500	0.4500
9	13.0000	0.4100	0.4100
10	14.0000	0.3400	0.3400
11	15.0000	0.2900	0.2900
12	16.0000	0.2700	0.2700
13	17.0000	0.2400	0.2400
14	18.0000	0.2100	0.2100
15	19.0000	0.2000	0.2000
16	20.0000	0.1800	0.1800
17	21.0000	0.1800	0.1800
18	22.0000	0.1600	0.1600
19	23.0000	0.1500	0.1500
20	25.0000	0.1400	0.1400
21	26.0000	0.1400	0.1400
22	27.0000	0.1300	0.1300
23	28.0000	0.1300	0.1300
24	30.0000	0.1300	0.1300
25	31.0000	0.1200	0.1200
26	32.0000	0.1200	0.1200
27	34.0000	0.1100	0.1100
28	35.0000	0.1100	0.1100
29	36.0000	0.1100	0.1100
30	37.0000	0.1000	0.1000
31	39.0000	0.1000	0.1000
32	40.0000	0.1000	0.1000
33	42.0000	0.0900	0.0900
34	43.0000	0.0900	0.0900
35	45.0000	0.0900	0.0900
36	48.0000	0.0800	0.0800
37	50.0000	0.0800	0.0800
38	52.0000	0.0800	0.0800
39	53.0000	0.0700	0.0700
40	57.0000	0.0700	0.0700
41	60.0000	0.0700	0.0700
42	72.0000	0.0600	0.0600
43	84.0000	0.0500	0.0500
44	108.0000	0.0400	0.0400
45	132.0000	0.0300	0.0300
46	180.0000	0.0200	0.0200
47	228.0000	0.0100	0.0100
48	288.0000	0.0000	0.0000
49	300.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	



Hydraulic conductivity [ft/s]: 3.65×10^{-5}

Hydraulic conductivity [ft/day]: 3.15

L = 8.5 ft
b = 8.5 ft
D = 8.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	3.7470	3.7470
2	1.5000	1.4170	1.4170
3	3.0000	0.3910	0.3910
4	3.4980	0.3500	0.3500
5	3.9960	0.3150	0.3150
6	4.5000	0.2870	0.2870
7	4.9980	0.2710	0.2710
8	5.4960	0.2550	0.2550
9	6.0000	0.2360	0.2360
10	6.4980	0.2270	0.2270
11	6.9960	0.2140	0.2140
12	7.5000	0.2080	0.2080
13	7.9980	0.2020	0.2020
14	8.4960	0.1920	0.1920
15	9.0000	0.1860	0.1860
16	9.4980	0.1830	0.1830
17	9.9960	0.1760	0.1760
18	10.5000	0.1730	0.1730
19	10.9980	0.1670	0.1670
20	11.4960	0.1670	0.1670
21	12.0000	0.1610	0.1610
22	12.4980	0.1610	0.1610
23	12.9960	0.1570	0.1570
24	13.5000	0.1540	0.1540
25	13.9980	0.1510	0.1510
26	14.4960	0.1510	0.1510
27	15.0000	0.1510	0.1510
28	15.4980	0.1450	0.1450
29	15.9960	0.1450	0.1450
30	16.5000	0.1450	0.1450
31	16.9980	0.1450	0.1450
32	17.4960	0.1420	0.1420
33	18.0000	0.1420	0.1420
34	18.4980	0.1420	0.1420
35	18.9960	0.1390	0.1390
36	19.5000	0.1390	0.1390
37	19.9980	0.1350	0.1350
38	21.0000	0.1350	0.1350
39	21.9960	0.1320	0.1320
40	22.9980	0.1320	0.1320
41	24.0000	0.1290	0.1290
42	24.9960	0.1290	0.1290
43	25.9980	0.1290	0.1290
44	27.0000	0.1290	0.1290
45	27.9960	0.1290	0.1290
46	28.9980	0.1260	0.1260
47	30.0000	0.1230	0.1230
48	30.9960	0.1260	0.1260
49	31.9980	0.1230	0.1230
50	33.0000	0.1230	0.1230

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.9960	0.1230	0.1230
52	34.9980	0.1200	0.1200
53	36.0000	0.1200	0.1200
54	36.9960	0.1160	0.1160
55	37.9980	0.1200	0.1200
56	39.0000	0.1200	0.1200
57	39.9960	0.1160	0.1160
58	40.9980	0.1160	0.1160
59	42.0000	0.1160	0.1160
60	42.9960	0.1160	0.1160
61	43.9980	0.1130	0.1130
62	45.0000	0.1130	0.1130
63	45.9960	0.1130	0.1130
64	46.9980	0.1160	0.1160
65	48.0000	0.1130	0.1130
66	48.9960	0.1100	0.1100
67	49.9980	0.1130	0.1130
68	51.0000	0.1130	0.1130
69	51.9960	0.1100	0.1100
70	52.9980	0.1100	0.1100
71	54.0000	0.1130	0.1130
72	54.9960	0.1100	0.1100
73	55.9980	0.1100	0.1100
74	57.0000	0.1100	0.1100
75	57.9960	0.1100	0.1100
76	58.9980	0.1070	0.1070
77	60.0000	0.1070	0.1070
78	72.0000	0.1040	0.1040
79	84.0000	0.1040	0.1040
80	96.0000	0.0980	0.0980
81	108.0000	0.0980	0.0980
82	120.0000	0.0940	0.0940
83	132.0000	0.0880	0.0880
84	144.0000	0.0880	0.0880
85	156.0000	0.0850	0.0850
86	168.0000	0.0820	0.0820
87	180.0000	0.0820	0.0820
88	192.0000	0.0820	0.0820
89	204.0000	0.0750	0.0750
90	216.0000	0.0750	0.0750
91	228.0000	0.0720	0.0720
92	240.0000	0.0690	0.0690
93	252.0000	0.0690	0.0690
94	264.0000	0.0660	0.0660
95	276.0000	0.0660	0.0660
96	288.0000	0.0630	0.0630
97	300.0000	0.0630	0.0630
98	312.0000	0.0630	0.0630
99	324.0000	0.0600	0.0600
100	336.0000	0.0530	0.0530

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

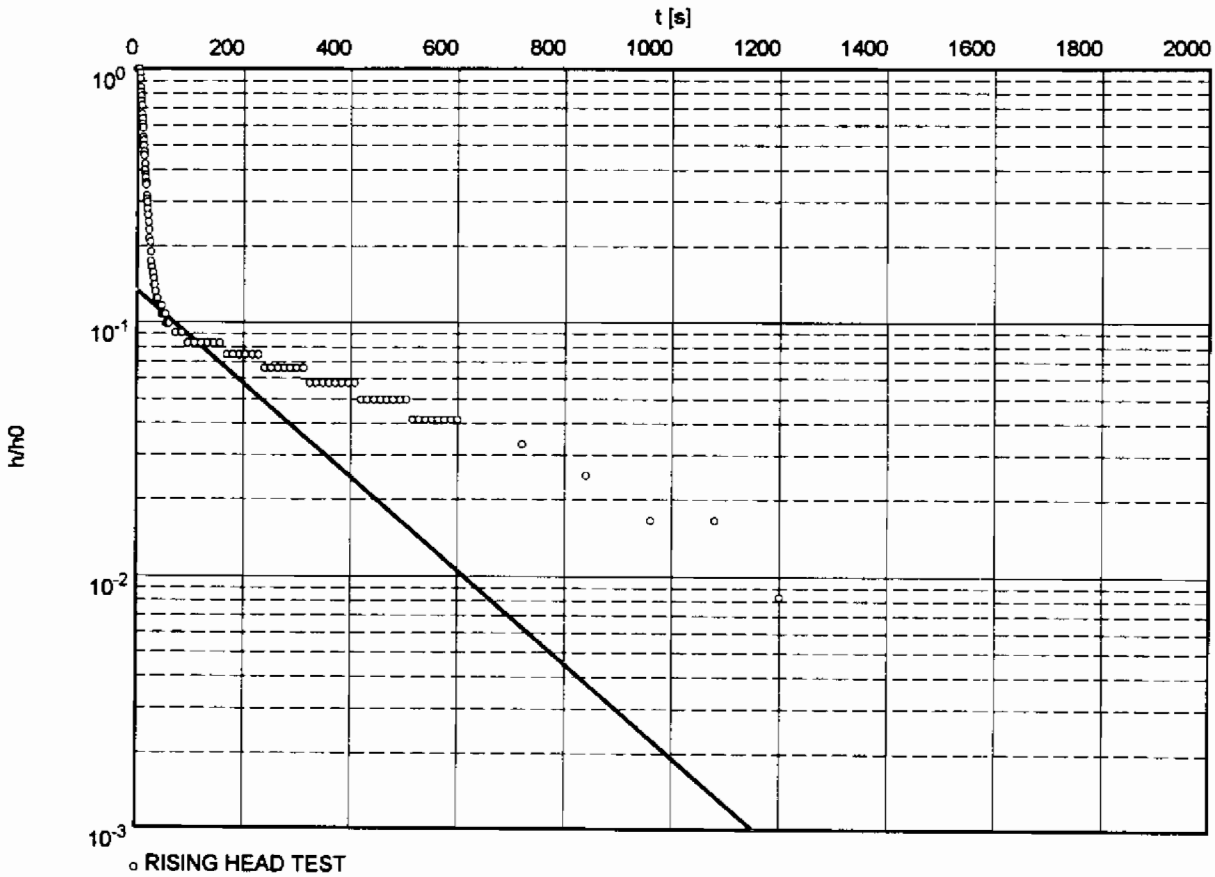
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
101	348.0000	0.0470	0.0470	
102	360.0000	0.0440	0.0440	
103	372.0000	0.0440	0.0440	
104	384.0000	0.0410	0.0410	
105	396.0000	0.0380	0.0380	
106	408.0000	0.0380	0.0380	
107	420.0000	0.0310	0.0310	
108	432.0000	0.0310	0.0310	
109	444.0000	0.0310	0.0310	
110	456.0000	0.0250	0.0250	
111	468.0000	0.0220	0.0220	
112	480.0000	0.0190	0.0190	
113	492.0000	0.0190	0.0190	
114	504.0000	0.0190	0.0190	
115	516.0000	0.0150	0.0150	
116	528.0000	0.0120	0.0120	
117	540.0000	0.0060	0.0060	
118	552.0000	0.0030	0.0030	
119	564.0000	0.0060	0.0060	
120	576.0000	0.0030	0.0030	
121	588.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	



Hydraulic conductivity [ft/s]: 2.82×10^{-5}

Hydraulic conductivity [ft/day]: 2.44

L = 8.5 ft
b = 8.5 ft
D = 8.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.2100	1.2100	
2	1.8000	1.4400	1.4400	
3	2.4000	1.3200	1.3200	
4	3.0000	1.2600	1.2600	
5	3.6000	1.2100	1.2100	
6	4.2000	1.1600	1.1600	
7	4.8000	1.1100	1.1100	
8	5.4000	1.0200	1.0200	
9	6.0000	0.9800	0.9800	
10	6.6000	0.9400	0.9400	
11	7.2000	0.9000	0.9000	
12	7.8000	0.8700	0.8700	
13	8.4000	0.8000	0.8000	
14	9.0000	0.7700	0.7700	
15	9.6000	0.7300	0.7300	
16	10.2000	0.7100	0.7100	
17	10.8000	0.6500	0.6500	
18	11.4000	0.6300	0.6300	
19	12.0000	0.6000	0.6000	
20	12.6000	0.5700	0.5700	
21	13.2000	0.5500	0.5500	
22	13.8000	0.5100	0.5100	
23	14.4000	0.4800	0.4800	
24	15.0000	0.4600	0.4600	
25	15.6000	0.4500	0.4500	
26	16.2000	0.4300	0.4300	
27	16.8000	0.4200	0.4200	
28	17.4000	0.3800	0.3800	
29	18.0000	0.3700	0.3700	
30	18.6000	0.3600	0.3600	
31	19.2000	0.3400	0.3400	
32	19.8000	0.3200	0.3200	
33	21.0000	0.3000	0.3000	
34	22.2000	0.2800	0.2800	
35	22.8000	0.2600	0.2600	
36	24.0000	0.2500	0.2500	
37	25.2000	0.2300	0.2300	
38	25.8000	0.2100	0.2100	
39	27.0000	0.2000	0.2000	
40	28.2000	0.2000	0.2000	
41	28.8000	0.1900	0.1900	
42	30.0000	0.1900	0.1900	
43	31.2000	0.1800	0.1800	
44	31.8000	0.1700	0.1700	
45	33.0000	0.1700	0.1700	
46	34.2000	0.1600	0.1600	
47	34.8000	0.1600	0.1600	
48	36.0000	0.1500	0.1500	
49	37.2000	0.1500	0.1500	
50	37.8000	0.1500	0.1500	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	39.0000	0.1500	0.1500	
52	40.2000	0.1400	0.1400	
53	40.8000	0.1400	0.1400	
54	42.0000	0.1400	0.1400	
55	43.2000	0.1400	0.1400	
56	43.8000	0.1400	0.1400	
57	45.0000	0.1400	0.1400	
58	46.2000	0.1400	0.1400	
59	46.8000	0.1300	0.1300	
60	48.0000	0.1300	0.1300	
61	49.2000	0.1300	0.1300	
62	49.8000	0.1300	0.1300	
63	51.0000	0.1300	0.1300	
64	52.2000	0.1300	0.1300	
65	52.8000	0.1300	0.1300	
66	54.0000	0.1300	0.1300	
67	55.2000	0.1200	0.1200	
68	55.8000	0.1200	0.1200	
69	57.0000	0.1200	0.1200	
70	58.2000	0.1200	0.1200	
71	58.8000	0.1200	0.1200	
72	60.0000	0.1200	0.1200	
73	72.0000	0.1100	0.1100	
74	84.0000	0.1100	0.1100	
75	96.0000	0.1000	0.1000	
76	108.0000	0.1000	0.1000	
77	120.0000	0.1000	0.1000	
78	132.0000	0.1000	0.1000	
79	144.0000	0.1000	0.1000	
80	156.0000	0.1000	0.1000	
81	168.0000	0.0900	0.0900	
82	180.0000	0.0900	0.0900	
83	192.0000	0.0900	0.0900	
84	204.0000	0.0900	0.0900	
85	216.0000	0.0900	0.0900	
86	228.0000	0.0900	0.0900	
87	240.0000	0.0800	0.0800	
88	252.0000	0.0800	0.0800	
89	264.0000	0.0800	0.0800	
90	276.0000	0.0800	0.0800	
91	288.0000	0.0800	0.0800	
92	300.0000	0.0800	0.0800	
93	312.0000	0.0800	0.0800	
94	324.0000	0.0700	0.0700	
95	336.0000	0.0700	0.0700	
96	348.0000	0.0700	0.0700	
97	360.0000	0.0700	0.0700	
98	372.0000	0.0700	0.0700	
99	384.0000	0.0700	0.0700	
100	396.0000	0.0700	0.0700	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

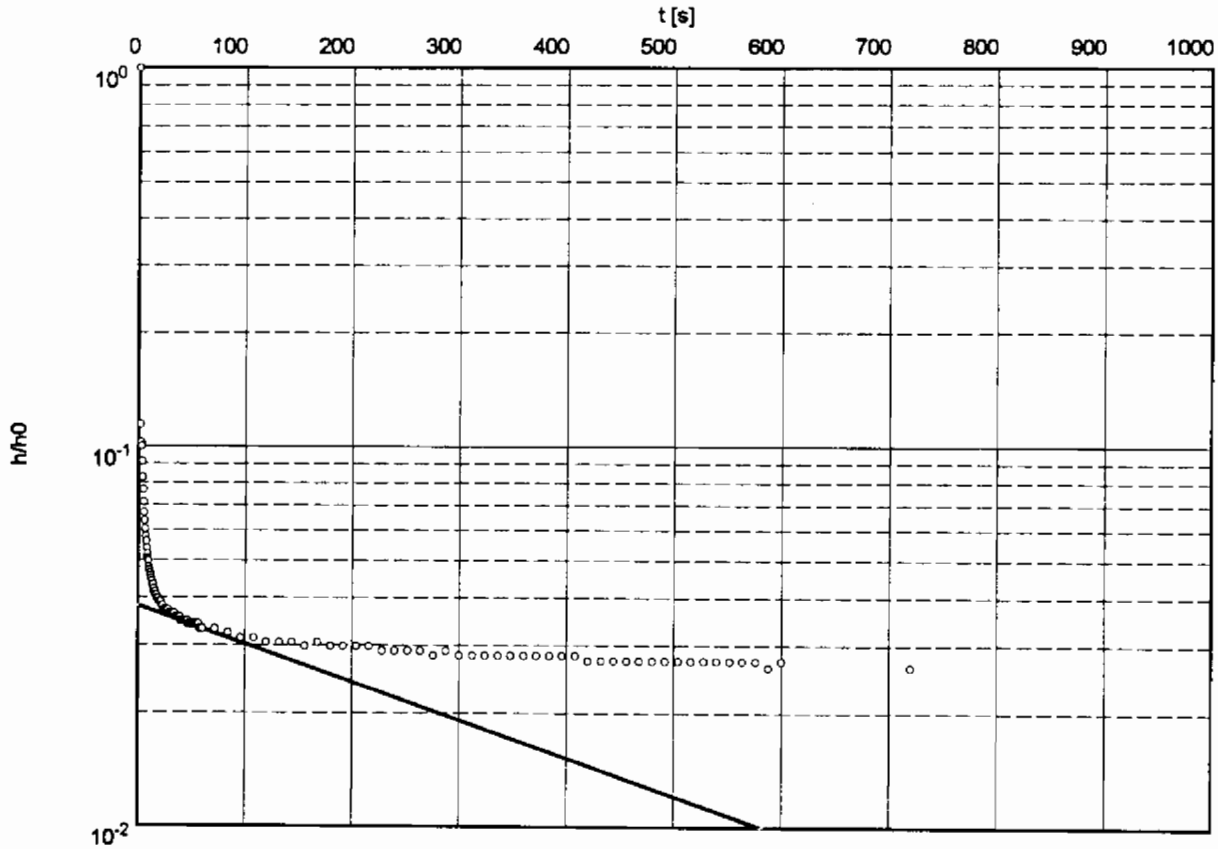
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	408.0000	0.0700	0.0700
102	420.0000	0.0600	0.0600
103	432.0000	0.0600	0.0600
104	444.0000	0.0600	0.0600
105	456.0000	0.0600	0.0600
106	468.0000	0.0600	0.0600
107	480.0000	0.0600	0.0600
108	492.0000	0.0600	0.0600
109	504.0000	0.0600	0.0600
110	516.0000	0.0500	0.0500
111	528.0000	0.0500	0.0500
112	540.0000	0.0500	0.0500
113	552.0000	0.0500	0.0500
114	564.0000	0.0500	0.0500
115	576.0000	0.0500	0.0500
116	588.0000	0.0500	0.0500
117	600.0000	0.0500	0.0500
118	720.0000	0.0400	0.0400
119	840.0000	0.0300	0.0300
120	960.0000	0.0200	0.0200
121	1080.0000	0.0200	0.0200
122	1200.0000	0.0100	0.0100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 1.52×10^{-5}

Hydraulic conductivity [ft/day]: 1.31

L = 8.5 ft
b = 8.5 ft
D = 8.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	3.8300	3.8300	
2	1.5000	0.4360	0.4360	
3	2.4960	0.3920	0.3920	
4	3.0000	0.3820	0.3820	
5	3.4980	0.3480	0.3480	
6	3.9960	0.3160	0.3160	
7	4.5000	0.2940	0.2940	
8	4.9980	0.2720	0.2720	
9	5.4960	0.2560	0.2560	
10	6.0000	0.2430	0.2430	
11	6.4980	0.2310	0.2310	
12	6.9960	0.2210	0.2210	
13	7.5000	0.2150	0.2150	
14	7.9980	0.2060	0.2060	
15	8.4960	0.1990	0.1990	
16	9.0000	0.1930	0.1930	
17	9.4980	0.1900	0.1900	
18	9.9960	0.1830	0.1830	
19	10.5000	0.1800	0.1800	
20	10.9980	0.1770	0.1770	
21	11.4960	0.1740	0.1740	
22	12.0000	0.1710	0.1710	
23	12.4980	0.1710	0.1710	
24	12.9960	0.1680	0.1680	
25	13.5000	0.1650	0.1650	
26	13.9980	0.1650	0.1650	
27	14.4960	0.1610	0.1610	
28	15.0000	0.1580	0.1580	
29	15.4980	0.1580	0.1580	
30	15.9960	0.1580	0.1580	
31	16.5000	0.1550	0.1550	
32	16.9980	0.1550	0.1550	
33	17.4960	0.1520	0.1520	
34	18.0000	0.1520	0.1520	
35	18.4980	0.1520	0.1520	
36	18.9960	0.1520	0.1520	
37	19.5000	0.1490	0.1490	
38	19.9980	0.1490	0.1490	
39	21.0000	0.1490	0.1490	
40	21.9960	0.1460	0.1460	
41	22.9980	0.1460	0.1460	
42	24.0000	0.1420	0.1420	
43	24.9960	0.1420	0.1420	
44	25.9980	0.1420	0.1420	
45	27.0000	0.1420	0.1420	
46	27.9960	0.1420	0.1420	
47	28.9980	0.1390	0.1390	
48	30.0000	0.1390	0.1390	
49	30.9960	0.1390	0.1390	
50	31.9980	0.1390	0.1390	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	33.0000	0.1390	0.1390	
52	33.9960	0.1390	0.1390	
53	34.9980	0.1360	0.1360	
54	36.0000	0.1360	0.1360	
55	36.9960	0.1360	0.1360	
56	37.9980	0.1360	0.1360	
57	39.0000	0.1360	0.1360	
58	39.9960	0.1330	0.1330	
59	40.9980	0.1330	0.1330	
60	42.0000	0.1330	0.1330	
61	42.9960	0.1330	0.1330	
62	43.9980	0.1330	0.1330	
63	45.0000	0.1330	0.1330	
64	45.9960	0.1330	0.1330	
65	46.9980	0.1300	0.1300	
66	48.0000	0.1300	0.1300	
67	48.9960	0.1300	0.1300	
68	49.9980	0.1300	0.1300	
69	51.0000	0.1300	0.1300	
70	51.9960	0.1300	0.1300	
71	52.9980	0.1300	0.1300	
72	54.0000	0.1300	0.1300	
73	54.9960	0.1300	0.1300	
74	55.9980	0.1300	0.1300	
75	57.0000	0.1300	0.1300	
76	57.9960	0.1270	0.1270	
77	58.9980	0.1270	0.1270	
78	60.0000	0.1270	0.1270	
79	72.0000	0.1270	0.1270	
80	84.0000	0.1240	0.1240	
81	96.0000	0.1200	0.1200	
82	108.0000	0.1200	0.1200	
83	120.0000	0.1170	0.1170	
84	132.0000	0.1170	0.1170	
85	144.0000	0.1170	0.1170	
86	156.0000	0.1140	0.1140	
87	168.0000	0.1170	0.1170	
88	180.0000	0.1140	0.1140	
89	192.0000	0.1140	0.1140	
90	204.0000	0.1140	0.1140	
91	216.0000	0.1140	0.1140	
92	228.0000	0.1110	0.1110	
93	240.0000	0.1110	0.1110	
94	252.0000	0.1110	0.1110	
95	264.0000	0.1110	0.1110	
96	276.0000	0.1080	0.1080	
97	288.0000	0.1110	0.1110	
98	300.0000	0.1080	0.1080	
99	312.0000	0.1080	0.1080	
100	324.0000	0.1080	0.1080	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

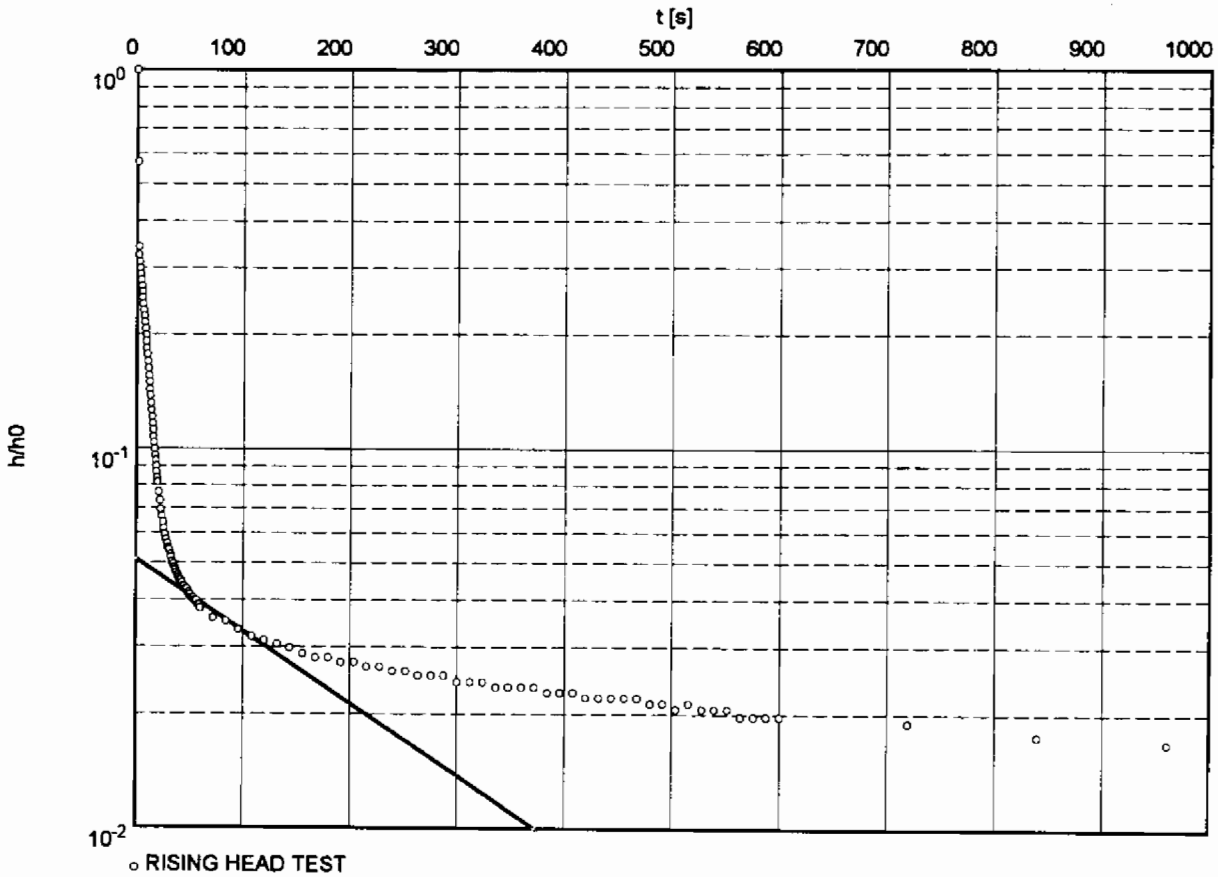
Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	336.0000	0.1080	0.1080
102	348.0000	0.1080	0.1080
103	360.0000	0.1080	0.1080
104	372.0000	0.1080	0.1080
105	384.0000	0.1080	0.1080
106	396.0000	0.1080	0.1080
107	408.0000	0.1080	0.1080
108	420.0000	0.1050	0.1050
109	432.0000	0.1050	0.1050
110	444.0000	0.1050	0.1050
111	456.0000	0.1050	0.1050
112	468.0000	0.1050	0.1050
113	480.0000	0.1050	0.1050
114	492.0000	0.1050	0.1050
115	504.0000	0.1050	0.1050
116	516.0000	0.1050	0.1050
117	528.0000	0.1050	0.1050
118	540.0000	0.1050	0.1050
119	552.0000	0.1050	0.1050
120	564.0000	0.1050	0.1050
121	576.0000	0.1050	0.1050
122	588.0000	0.1010	0.1010
123	600.0000	0.1050	0.1050
124	720.0000	0.1010	0.1010

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	



Hydraulic conductivity [ft/s]: 2.90×10^{-5}

Hydraulic conductivity [ft/day]: 2.51

L = 8.5 ft
b = 8.5 ft
D = 8.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	4.1620	4.1620	
2	0.9960	2.3690	2.3690	
3	1.5000	1.4170	1.4170	
4	1.9980	1.3510	1.3510	
5	2.4960	1.2940	1.2940	
6	3.0000	1.2440	1.2440	
7	3.4980	1.1970	1.1970	
8	3.9960	1.1550	1.1550	
9	4.5000	1.1110	1.1110	
10	4.9980	1.0730	1.0730	
11	5.4960	1.0360	1.0360	
12	6.0000	0.9980	0.9980	
13	6.4980	0.9600	0.9600	
14	6.9960	0.9250	0.9250	
15	7.5000	0.8900	0.8900	
16	7.9980	0.8560	0.8560	
17	8.4960	0.8240	0.8240	
18	9.0000	0.7930	0.7930	
19	9.4980	0.7610	0.7610	
20	9.9960	0.7330	0.7330	
21	10.5000	0.7040	0.7040	
22	10.9980	0.6730	0.6730	
23	11.4960	0.6470	0.6470	
24	12.0000	0.6220	0.6220	
25	12.4980	0.5940	0.5940	
26	12.9960	0.5720	0.5720	
27	13.5000	0.5460	0.5460	
28	13.9980	0.5240	0.5240	
29	14.4960	0.5020	0.5020	
30	15.0000	0.4830	0.4830	
31	15.4980	0.4640	0.4640	
32	15.9960	0.4450	0.4450	
33	16.5000	0.4300	0.4300	
34	16.9980	0.4140	0.4140	
35	17.4960	0.3980	0.3980	
36	18.0000	0.3860	0.3860	
37	18.4980	0.3730	0.3730	
38	18.9960	0.3600	0.3600	
39	19.5000	0.3480	0.3480	
40	19.9980	0.3380	0.3380	
41	21.0000	0.3190	0.3190	
42	21.9960	0.3030	0.3030	
43	22.9980	0.2880	0.2880	
44	24.0000	0.2750	0.2750	
45	24.9960	0.2660	0.2660	
46	25.9980	0.2560	0.2560	
47	27.0000	0.2470	0.2470	
48	27.9960	0.2400	0.2400	
49	28.9980	0.2340	0.2340	
50	30.0000	0.2280	0.2280	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	30.9960	0.2250	0.2250	
52	31.9980	0.2180	0.2180	
53	33.0000	0.2150	0.2150	
54	33.9960	0.2090	0.2090	
55	34.9980	0.2060	0.2060	
56	36.0000	0.2020	0.2020	
57	36.9960	0.1990	0.1990	
58	37.9980	0.1960	0.1960	
59	39.0000	0.1930	0.1930	
60	39.9960	0.1900	0.1900	
61	40.9980	0.1870	0.1870	
62	42.0000	0.1870	0.1870	
63	42.9960	0.1840	0.1840	
64	43.9980	0.1800	0.1800	
65	45.0000	0.1800	0.1800	
66	45.9960	0.1770	0.1770	
67	46.9980	0.1770	0.1770	
68	48.0000	0.1770	0.1770	
69	48.9960	0.1740	0.1740	
70	49.9980	0.1710	0.1710	
71	51.0000	0.1710	0.1710	
72	51.9960	0.1680	0.1680	
73	52.9980	0.1680	0.1680	
74	54.0000	0.1680	0.1680	
75	54.9960	0.1650	0.1650	
76	55.9980	0.1650	0.1650	
77	57.0000	0.1650	0.1650	
78	57.9960	0.1610	0.1610	
79	58.9980	0.1610	0.1610	
80	60.0000	0.1580	0.1580	
81	72.0000	0.1490	0.1490	
82	84.0000	0.1460	0.1460	
83	96.0000	0.1390	0.1390	
84	108.0000	0.1330	0.1330	
85	120.0000	0.1300	0.1300	
86	132.0000	0.1270	0.1270	
87	144.0000	0.1240	0.1240	
88	156.0000	0.1200	0.1200	
89	168.0000	0.1170	0.1170	
90	180.0000	0.1170	0.1170	
91	192.0000	0.1140	0.1140	
92	204.0000	0.1140	0.1140	
93	216.0000	0.1110	0.1110	
94	228.0000	0.1110	0.1110	
95	240.0000	0.1080	0.1080	
96	252.0000	0.1080	0.1080	
97	264.0000	0.1050	0.1050	
98	276.0000	0.1050	0.1050	
99	288.0000	0.1050	0.1050	
100	300.0000	0.1010	0.1010	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

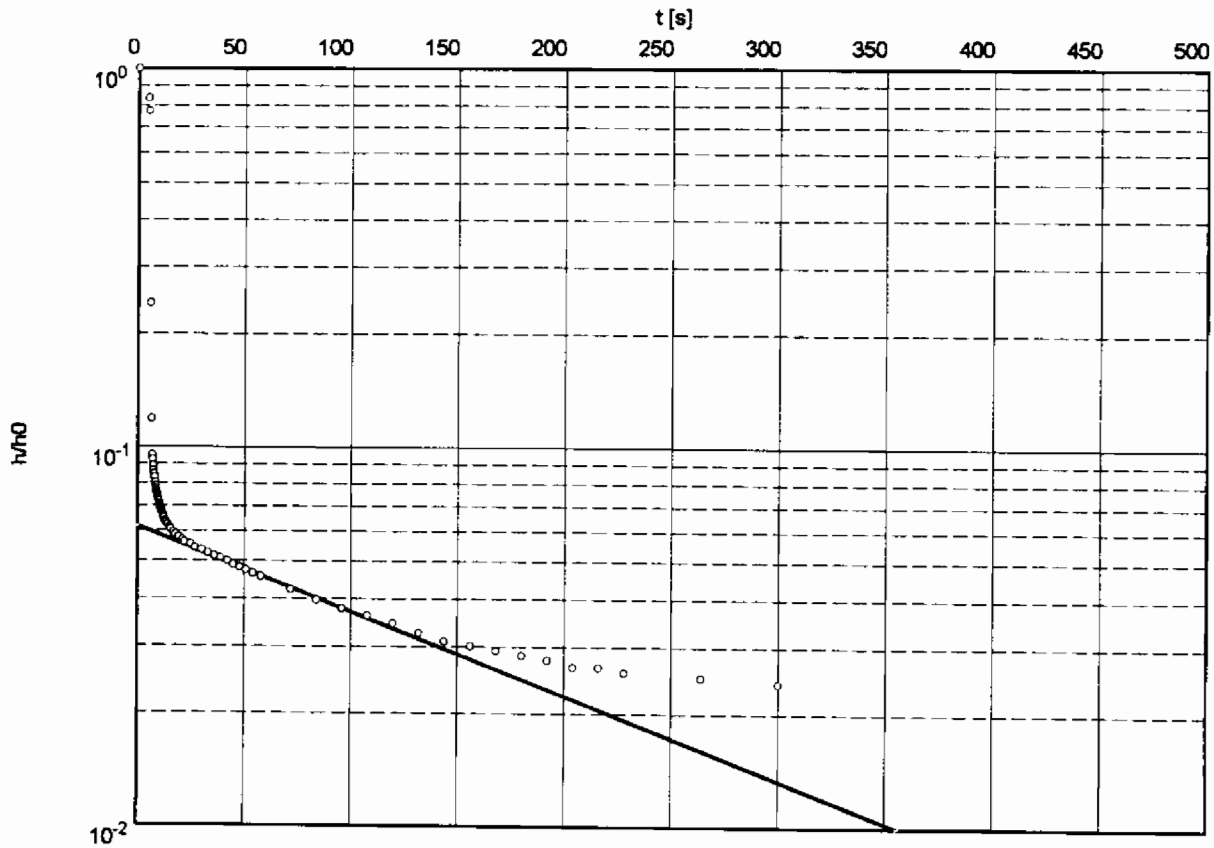
Slug Test No. #3	Test conducted on: 18.10.96
NBCE-GDE-024	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	312.0000	0.1010	0.1010
102	324.0000	0.1010	0.1010
103	336.0000	0.0980	0.0980
104	348.0000	0.0980	0.0980
105	360.0000	0.0980	0.0980
106	372.0000	0.0980	0.0980
107	384.0000	0.0950	0.0950
108	396.0000	0.0950	0.0950
109	408.0000	0.0950	0.0950
110	420.0000	0.0920	0.0920
111	432.0000	0.0920	0.0920
112	444.0000	0.0920	0.0920
113	456.0000	0.0920	0.0920
114	468.0000	0.0920	0.0920
115	480.0000	0.0890	0.0890
116	492.0000	0.0890	0.0890
117	504.0000	0.0860	0.0860
118	516.0000	0.0890	0.0890
119	528.0000	0.0860	0.0860
120	540.0000	0.0860	0.0860
121	552.0000	0.0860	0.0860
122	564.0000	0.0820	0.0820
123	576.0000	0.0820	0.0820
124	588.0000	0.0820	0.0820
125	600.0000	0.0820	0.0820
126	720.0000	0.0790	0.0790
127	840.0000	0.0730	0.0730
128	960.0000	0.0700	0.0700

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-025	



o FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 3.33×10^{-5}

Hydraulic conductivity [ft/day]: 2.88

L = 8.3 ft
b = 8.3 ft
D = 8.3 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.11.96

Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-3.6520	-3.6520	
2	4.8000	-3.0390	-3.0390	
3	4.9980	-2.8180	-2.8180	
4	5.7960	-0.8770	-0.8770	
5	6.3960	-0.4320	-0.4320	
6	6.6000	-0.3470	-0.3470	
7	6.7980	-0.3470	-0.3470	
8	6.9960	-0.3370	-0.3370	
9	7.2000	-0.3250	-0.3250	
10	7.3980	-0.3150	-0.3150	
11	7.5960	-0.3090	-0.3090	
12	7.8000	-0.3030	-0.3030	
13	7.9980	-0.2930	-0.2930	
14	8.1960	-0.2930	-0.2930	
15	8.4000	-0.2870	-0.2870	
16	8.5980	-0.2810	-0.2810	
17	8.7960	-0.2770	-0.2770	
18	9.0000	-0.2740	-0.2740	
19	9.1980	-0.2710	-0.2710	
20	9.3960	-0.2680	-0.2680	
21	9.6000	-0.2650	-0.2650	
22	9.7980	-0.2620	-0.2620	
23	9.9960	-0.2580	-0.2580	
24	10.2000	-0.2550	-0.2550	
25	10.5960	-0.2520	-0.2520	
26	10.8000	-0.2490	-0.2490	
27	11.1960	-0.2460	-0.2460	
28	11.5980	-0.2430	-0.2430	
29	12.0000	-0.2390	-0.2390	
30	12.3960	-0.2360	-0.2360	
31	12.7980	-0.2330	-0.2330	
32	13.3980	-0.2300	-0.2300	
33	13.9980	-0.2270	-0.2270	
34	14.7960	-0.2240	-0.2240	
35	15.6000	-0.2210	-0.2210	
36	16.8000	-0.2170	-0.2170	
37	17.7960	-0.2140	-0.2140	
38	19.3980	-0.2110	-0.2110	
39	21.0000	-0.2080	-0.2080	
40	21.9960	-0.2050	-0.2050	
41	24.9960	-0.2020	-0.2020	
42	27.0000	-0.1980	-0.1980	
43	30.0000	-0.1950	-0.1950	
44	33.0000	-0.1920	-0.1920	
45	36.0000	-0.1890	-0.1890	
46	39.0000	-0.1860	-0.1860	
47	42.0000	-0.1830	-0.1830	
48	45.0000	-0.1790	-0.1790	
49	48.0000	-0.1760	-0.1760	
50	51.0000	-0.1730	-0.1730	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.11.96

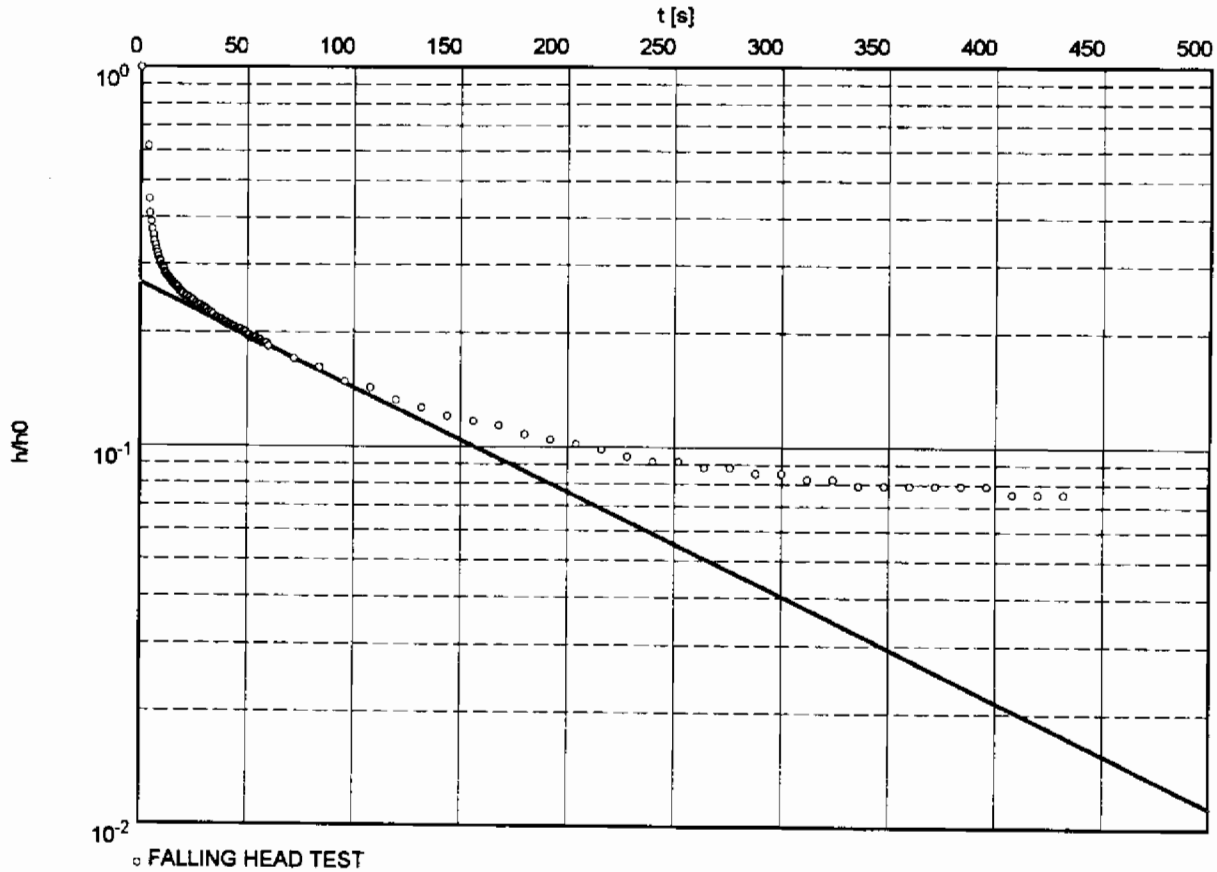
Slug Test No. #1	Test conducted on: 18.10.96
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	54.0000	-0.1700	-0.1700	
52	57.9960	-0.1670	-0.1670	
53	72.0000	-0.1540	-0.1540	
54	84.0000	-0.1450	-0.1450	
55	96.0000	-0.1380	-0.1380	
56	108.0000	-0.1320	-0.1320	
57	120.0000	-0.1260	-0.1260	
58	132.0000	-0.1190	-0.1190	
59	144.0000	-0.1130	-0.1130	
60	156.0000	-0.1100	-0.1100	
61	168.0000	-0.1070	-0.1070	
62	180.0000	-0.1040	-0.1040	
63	192.0000	-0.1010	-0.1010	
64	204.0000	-0.0970	-0.0970	
65	216.0000	-0.0970	-0.0970	
66	228.0000	-0.0940	-0.0940	
67	264.0000	-0.0910	-0.0910	
68	300.0000	-0.0880	-0.0880	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	



Hydraulic conductivity [ft/s]: 4.42×10^{-5}

Hydraulic conductivity [ft/day]: 3.33

L = 7.9 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	0.9970	0.9970	
2	3.4980	0.6150	0.6150	
3	3.9960	0.4450	0.4450	
4	4.5000	0.4070	0.4070	
5	4.9980	0.3880	0.3880	
6	5.4960	0.3690	0.3690	
7	6.0000	0.3560	0.3560	
8	6.4980	0.3440	0.3440	
9	6.9960	0.3340	0.3340	
10	7.5000	0.3250	0.3250	
11	7.9980	0.3190	0.3190	
12	8.4960	0.3120	0.3120	
13	9.0000	0.3060	0.3060	
14	9.4980	0.3030	0.3030	
15	9.9960	0.2960	0.2960	
16	10.5000	0.2930	0.2930	
17	10.9980	0.2900	0.2900	
18	11.4960	0.2840	0.2840	
19	12.0000	0.2810	0.2810	
20	12.4980	0.2770	0.2770	
21	12.9960	0.2770	0.2770	
22	13.5000	0.2740	0.2740	
23	13.9980	0.2710	0.2710	
24	14.4960	0.2680	0.2680	
25	15.0000	0.2680	0.2680	
26	15.4980	0.2650	0.2650	
27	15.9960	0.2620	0.2620	
28	16.5000	0.2620	0.2620	
29	16.9980	0.2620	0.2620	
30	17.4960	0.2590	0.2590	
31	18.0000	0.2550	0.2550	
32	18.4980	0.2550	0.2550	
33	18.9960	0.2520	0.2520	
34	19.5000	0.2520	0.2520	
35	19.9980	0.2490	0.2490	
36	21.0000	0.2460	0.2460	
37	21.9960	0.2460	0.2460	
38	22.9980	0.2430	0.2430	
39	24.0000	0.2400	0.2400	
40	24.9960	0.2400	0.2400	
41	25.9980	0.2360	0.2360	
42	27.0000	0.2330	0.2330	
43	27.9960	0.2330	0.2330	
44	28.9980	0.2300	0.2300	
45	30.0000	0.2300	0.2300	
46	30.9960	0.2270	0.2270	
47	31.9980	0.2240	0.2240	
48	33.0000	0.2240	0.2240	
49	33.9960	0.2210	0.2210	
50	34.9980	0.2170	0.2170	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	36.0000	0.2170	0.2170
52	36.9960	0.2140	0.2140
53	37.9980	0.2140	0.2140
54	39.0000	0.2110	0.2110
55	39.9960	0.2110	0.2110
56	40.9980	0.2080	0.2080
57	42.0000	0.2080	0.2080
58	42.9960	0.2050	0.2050
59	43.9980	0.2050	0.2050
60	45.0000	0.2020	0.2020
61	45.9960	0.2020	0.2020
62	46.9980	0.2020	0.2020
63	48.0000	0.1990	0.1990
64	48.9960	0.1990	0.1990
65	49.9980	0.1950	0.1950
66	51.0000	0.1950	0.1950
67	51.9960	0.1920	0.1920
68	52.9980	0.1920	0.1920
69	54.0000	0.1920	0.1920
70	54.9960	0.1890	0.1890
71	55.9980	0.1890	0.1890
72	57.0000	0.1860	0.1860
73	57.9960	0.1860	0.1860
74	58.9980	0.1860	0.1860
75	60.0000	0.1830	0.1830
76	72.0000	0.1700	0.1700
77	84.0000	0.1610	0.1610
78	96.0000	0.1480	0.1480
79	108.0000	0.1420	0.1420
80	120.0000	0.1320	0.1320
81	132.0000	0.1260	0.1260
82	144.0000	0.1200	0.1200
83	156.0000	0.1160	0.1160
84	168.0000	0.1130	0.1130
85	180.0000	0.1070	0.1070
86	192.0000	0.1040	0.1040
87	204.0000	0.1010	0.1010
88	216.0000	0.0980	0.0980
89	228.0000	0.0940	0.0940
90	240.0000	0.0910	0.0910
91	252.0000	0.0910	0.0910
92	264.0000	0.0880	0.0880
93	276.0000	0.0880	0.0880
94	288.0000	0.0850	0.0850
95	300.0000	0.0850	0.0850
96	312.0000	0.0820	0.0820
97	324.0000	0.0820	0.0820
98	336.0000	0.0790	0.0790
99	348.0000	0.0790	0.0790
100	360.0000	0.0790	0.0790

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

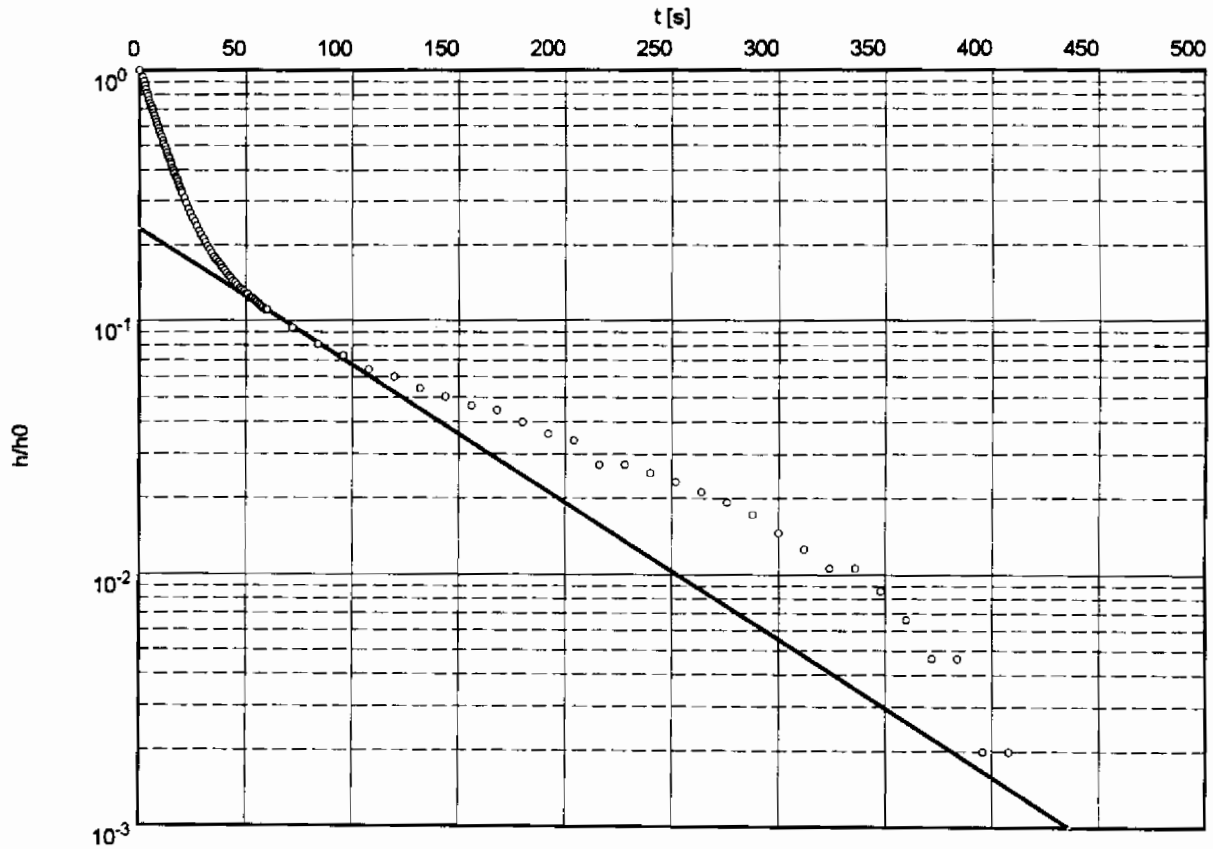
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	372.0000	0.0790	0.0790
102	384.0000	0.0790	0.0790
103	396.0000	0.0790	0.0790
104	408.0000	0.0750	0.0750
105	420.0000	0.0750	0.0750
106	432.0000	0.0750	0.0750

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	



○ RISING HEAD TEST

Hydraulic conductivity [ft/s]: 8.73×10^{-5}

Hydraulic conductivity [ft/day]: 7.54

L = 7.9 ft
b =7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.5110	1.5110
2	1.5000	1.4260	1.4260
3	1.9980	1.3660	1.3660
4	2.4960	1.3120	1.3120
5	3.0000	1.2680	1.2680
6	3.4980	1.2240	1.2240
7	3.9960	1.1890	1.1890
8	4.5000	1.1510	1.1510
9	4.9980	1.1160	1.1160
10	5.4960	1.0850	1.0850
11	6.0000	1.0530	1.0530
12	6.4980	1.0220	1.0220
13	6.9960	0.9930	0.9930
14	7.5000	0.9650	0.9650
15	7.9980	0.9370	0.9370
16	8.4960	0.9110	0.9110
17	9.0000	0.8860	0.8860
18	9.4980	0.8610	0.8610
19	9.9960	0.8360	0.8360
20	10.5000	0.8140	0.8140
21	10.9980	0.7880	0.7880
22	11.4960	0.7660	0.7660
23	12.0000	0.7470	0.7470
24	12.4980	0.7250	0.7250
25	12.9960	0.7060	0.7060
26	13.5000	0.6870	0.6870
27	13.9980	0.6680	0.6680
28	14.4960	0.6490	0.6490
29	15.0000	0.6340	0.6340
30	15.4980	0.6150	0.6150
31	15.9960	0.5990	0.5990
32	16.5000	0.5830	0.5830
33	16.9980	0.5670	0.5670
34	17.4960	0.5550	0.5550
35	18.0000	0.5390	0.5390
36	18.4980	0.5260	0.5260
37	18.9960	0.5140	0.5140
38	19.5000	0.5010	0.5010
39	19.9980	0.4890	0.4890
40	21.0000	0.4660	0.4660
41	21.9960	0.4440	0.4440
42	22.9980	0.4220	0.4220
43	24.0000	0.4030	0.4030
44	24.9960	0.3880	0.3880
45	25.9980	0.3750	0.3750
46	27.0000	0.3590	0.3590
47	27.9960	0.3430	0.3430
48	28.9980	0.3310	0.3310
49	30.0000	0.3210	0.3210
50	30.9960	0.3090	0.3090

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	31.9980	0.2990	0.2990
52	33.0000	0.2900	0.2900
53	33.9960	0.2800	0.2800
54	34.9980	0.2710	0.2710
55	36.0000	0.2640	0.2640
56	36.9960	0.2580	0.2580
57	37.9980	0.2520	0.2520
58	39.0000	0.2450	0.2450
59	39.9960	0.2390	0.2390
60	40.9980	0.2330	0.2330
61	42.0000	0.2270	0.2270
62	42.9960	0.2230	0.2230
63	43.9980	0.2170	0.2170
64	45.0000	0.2140	0.2140
65	45.9960	0.2080	0.2080
66	46.9980	0.2040	0.2040
67	48.0000	0.2010	0.2010
68	48.9960	0.1980	0.1980
69	49.9980	0.1920	0.1920
70	51.0000	0.1920	0.1920
71	51.9960	0.1860	0.1860
72	52.9980	0.1860	0.1860
73	54.0000	0.1820	0.1820
74	54.9960	0.1790	0.1790
75	55.9980	0.1760	0.1760
76	57.0000	0.1730	0.1730
77	57.9960	0.1700	0.1700
78	58.9980	0.1670	0.1670
79	60.0000	0.1670	0.1670
80	72.0000	0.1410	0.1410
81	84.0000	0.1220	0.1220
82	96.0000	0.1100	0.1100
83	108.0000	0.0970	0.0970
84	120.0000	0.0910	0.0910
85	132.0000	0.0820	0.0820
86	144.0000	0.0760	0.0760
87	156.0000	0.0700	0.0700
88	168.0000	0.0670	0.0670
89	180.0000	0.0600	0.0600
90	192.0000	0.0540	0.0540
91	204.0000	0.0510	0.0510
92	216.0000	0.0410	0.0410
93	228.0000	0.0410	0.0410
94	240.0000	0.0380	0.0380
95	252.0000	0.0350	0.0350
96	264.0000	0.0320	0.0320
97	276.0000	0.0290	0.0290
98	288.0000	0.0260	0.0260
99	300.0000	0.0220	0.0220
100	312.0000	0.0190	0.0190

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 18.03.97

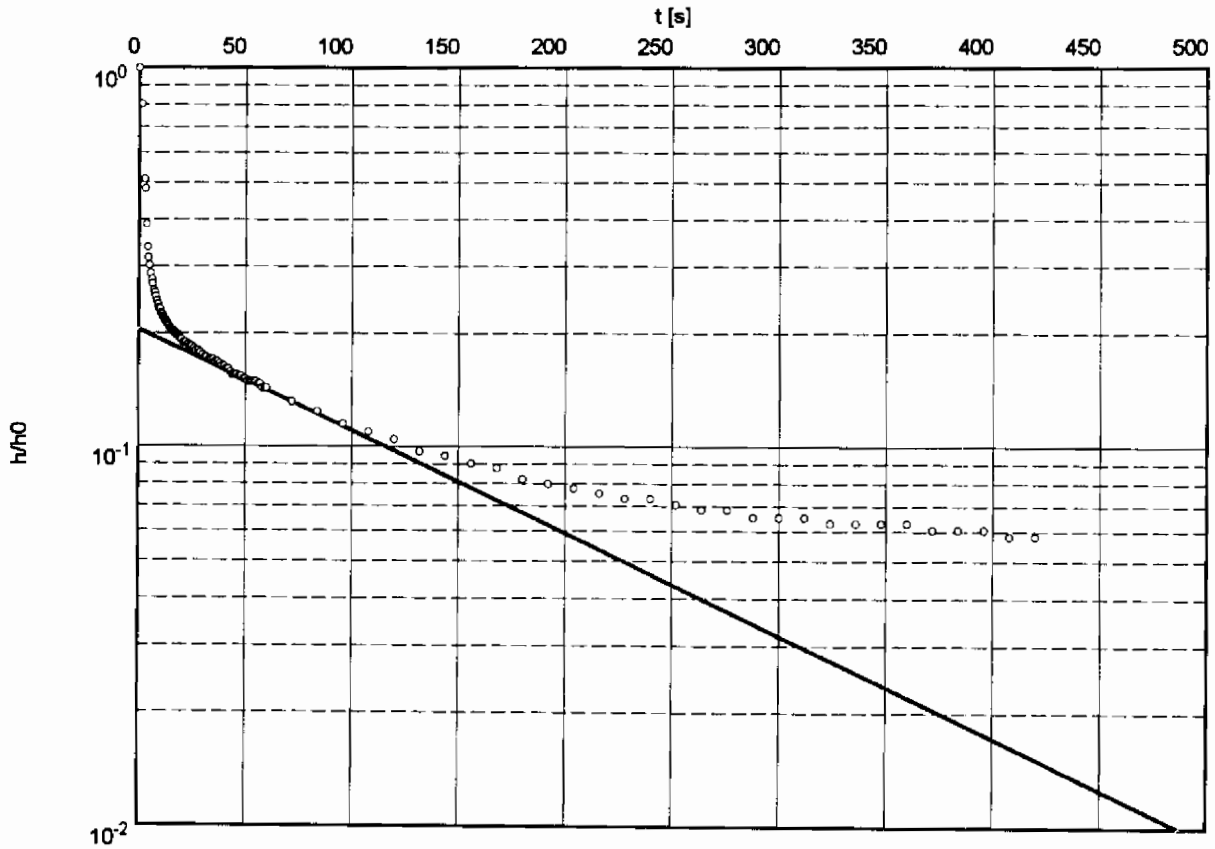
Slug Test No. #2	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	324.0000	0.0160	0.0160
102	336.0000	0.0160	0.0160
103	348.0000	0.0130	0.0130
104	360.0000	0.0100	0.0100
105	372.0000	0.0070	0.0070
106	384.0000	0.0070	0.0070
107	396.0000	0.0030	0.0030
108	408.0000	0.0030	0.0030
109	420.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX C, Page 1 Project: ZONE E – NAVBASE CHARLESTO Evaluated by: TKK — Date: 18.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	



○ FALLING HEAD TEST

Hydraulic conductivity [ft/s]: 4.32×10^{-5}

Hydraulic conductivity [ft/day]: 3.28

L=7.9 ft
b=7.9 ft
D=7.9 ft (full penetration)
Reff=0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX C, Page 2 Project: ZONE E – NAVBASE CHARLESTO Evaluated by: TKK / Date: 18.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	1.3040	1.3040
2	1.5000	1.0450	1.0450
3	2.4960	0.6650	0.6650
4	3.0000	0.6280	0.6280
5	3.4980	0.5050	0.5050
6	3.9960	0.4390	0.4390
7	4.5000	0.4110	0.4110
8	4.9980	0.3920	0.3920
9	5.4960	0.3730	0.3730
10	6.0000	0.3600	0.3600
11	6.4980	0.3510	0.3510
12	6.9960	0.3380	0.3380
13	7.5000	0.3320	0.3320
14	7.9980	0.3250	0.3250
15	8.4960	0.3160	0.3160
16	9.0000	0.3100	0.3100
17	9.4980	0.3030	0.3030
18	9.9960	0.3000	0.3000
19	10.5000	0.2940	0.2940
20	10.9980	0.2910	0.2910
21	11.4960	0.2870	0.2870
22	12.0000	0.2840	0.2840
23	12.4980	0.2810	0.2810
24	12.9960	0.2780	0.2780
25	13.5000	0.2750	0.2750
26	13.9980	0.2720	0.2720
27	14.4960	0.2680	0.2680
28	15.0000	0.2680	0.2680
29	15.4980	0.2650	0.2650
30	15.9960	0.2620	0.2620
31	16.5000	0.2620	0.2620
32	16.9980	0.2590	0.2590
33	17.4960	0.2590	0.2590
34	18.0000	0.2560	0.2560
35	18.4980	0.2560	0.2560
36	18.9960	0.2530	0.2530
37	19.5000	0.2500	0.2500
38	19.9980	0.2500	0.2500
39	21.0000	0.2460	0.2460
40	21.9960	0.2460	0.2460
41	22.9980	0.2430	0.2430
42	24.0000	0.2400	0.2400
43	24.9960	0.2400	0.2400
44	25.9980	0.2370	0.2370
45	27.0000	0.2340	0.2340
46	27.9960	0.2340	0.2340
47	28.9980	0.2310	0.2310
48	30.0000	0.2270	0.2270
49	30.9960	0.2240	0.2240
50	31.9980	0.2240	0.2240

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX C, Page 3 Project: ZONE E – NAVBASE CHARLESTO Evaluated by: TKK	Date: 18.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.0000	0.2210	0.2210
52	33.9960	0.2210	0.2210
53	34.9980	0.2210	0.2210
54	36.0000	0.2180	0.2180
55	36.9960	0.2180	0.2180
56	37.9980	0.2150	0.2150
57	39.0000	0.2120	0.2120
58	39.9960	0.2120	0.2120
59	40.9980	0.2090	0.2090
60	42.0000	0.2090	0.2090
61	42.9960	0.2050	0.2050
62	43.9980	0.2020	0.2020
63	45.0000	0.2020	0.2020
64	45.9960	0.2020	0.2020
65	46.9980	0.1990	0.1990
66	48.0000	0.1990	0.1990
67	48.9960	0.1960	0.1960
68	49.9980	0.1960	0.1960
69	51.0000	0.1930	0.1930
70	51.9960	0.1930	0.1930
71	52.9980	0.1930	0.1930
72	54.0000	0.1930	0.1930
73	54.9960	0.1930	0.1930
74	55.9980	0.1900	0.1900
75	57.0000	0.1900	0.1900
76	57.9960	0.1860	0.1860
77	58.9980	0.1860	0.1860
78	60.0000	0.1860	0.1860
79	72.0000	0.1710	0.1710
80	84.0000	0.1610	0.1610
81	96.0000	0.1490	0.1490
82	108.0000	0.1420	0.1420
83	120.0000	0.1360	0.1360
84	132.0000	0.1260	0.1260
85	144.0000	0.1230	0.1230
86	156.0000	0.1170	0.1170
87	168.0000	0.1140	0.1140
88	180.0000	0.1070	0.1070
89	192.0000	0.1040	0.1040
90	204.0000	0.1010	0.1010
91	216.0000	0.0980	0.0980
92	228.0000	0.0950	0.0950
93	240.0000	0.0950	0.0950
94	252.0000	0.0920	0.0920
95	264.0000	0.0890	0.0890
96	276.0000	0.0890	0.0890
97	288.0000	0.0850	0.0850
98	300.0000	0.0850	0.0850
99	312.0000	0.0850	0.0850
100	324.0000	0.0820	0.0820

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX C, Page 4 Project: ZONE E – NAVBASE CHARLESTO Evaluated by: TKK / Date: 18.03.97

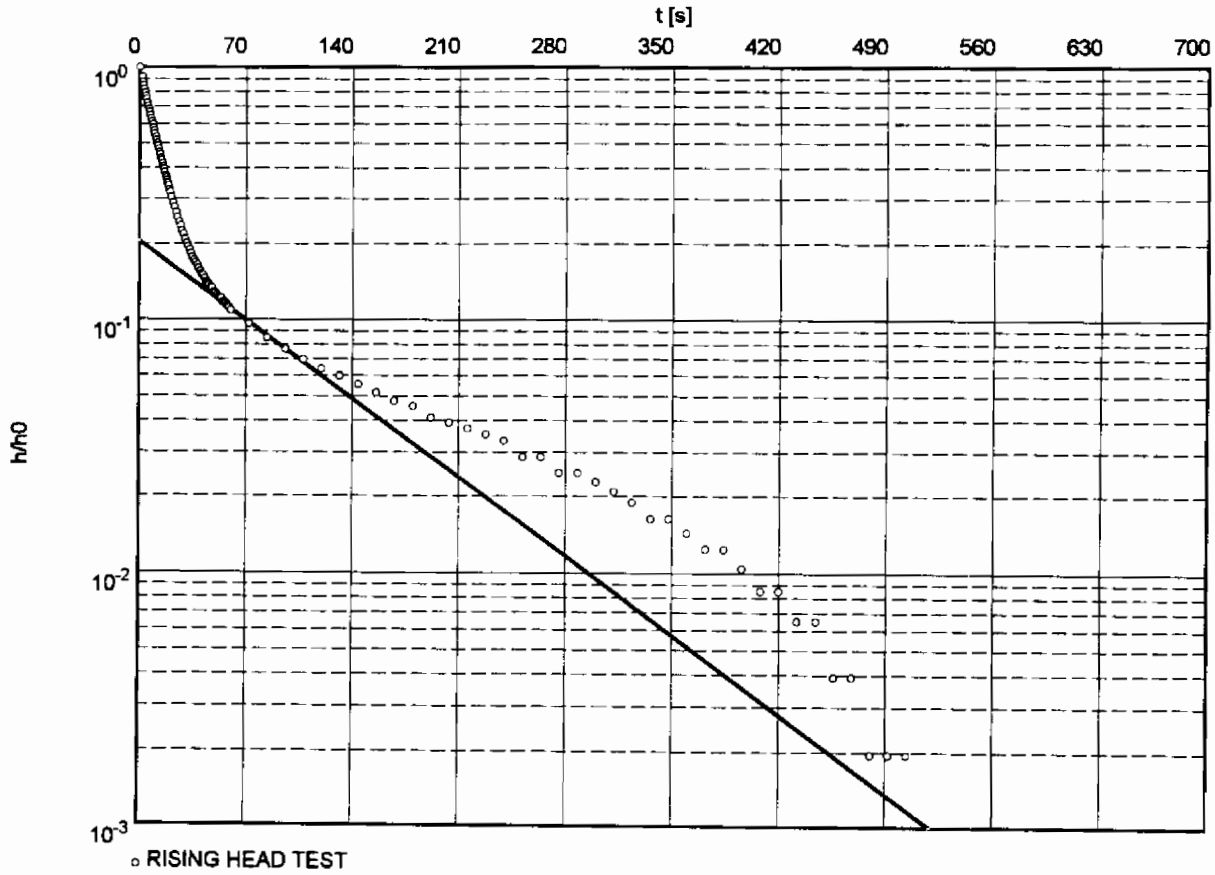
Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	336.0000	0.0820	0.0820
102	348.0000	0.0820	0.0820
103	360.0000	0.0820	0.0820
104	372.0000	0.0790	0.0790
105	384.0000	0.0790	0.0790
106	396.0000	0.0790	0.0790
107	408.0000	0.0760	0.0760
108	420.0000	0.0760	0.0760

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	



Hydraulic conductivity [ft/s]: 7.15×10^{-5}

Hydraulic conductivity [ft/day]: 6.18

L = 7.9 ft
b = 7.9 ft
D = 7.9 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.5360	1.5360	
2	1.5000	1.4100	1.4100	
3	1.9980	1.3440	1.3440	
4	2.4960	1.2960	1.2960	
5	3.0000	1.2520	1.2520	
6	3.4980	1.2140	1.2140	
7	3.9960	1.1790	1.1790	
8	4.5000	1.1450	1.1450	
9	4.9980	1.1100	1.1100	
10	5.4960	1.0780	1.0780	
11	6.0000	1.0470	1.0470	
12	6.4980	1.0190	1.0190	
13	6.9960	0.9870	0.9870	
14	7.5000	0.9620	0.9620	
15	7.9980	0.9330	0.9330	
16	8.4960	0.9080	0.9080	
17	9.0000	0.8830	0.8830	
18	9.4980	0.8580	0.8580	
19	9.9960	0.8360	0.8360	
20	10.5000	0.8100	0.8100	
21	10.9980	0.7880	0.7880	
22	11.4960	0.7660	0.7660	
23	12.0000	0.7470	0.7470	
24	12.4980	0.7280	0.7280	
25	12.9960	0.7060	0.7060	
26	13.5000	0.6870	0.6870	
27	13.9980	0.6680	0.6680	
28	14.4960	0.6520	0.6520	
29	15.0000	0.6340	0.6340	
30	15.4980	0.6180	0.6180	
31	15.9960	0.6020	0.6020	
32	16.5000	0.5860	0.5860	
33	16.9980	0.5700	0.5700	
34	17.4960	0.5550	0.5550	
35	18.0000	0.5420	0.5420	
36	18.4980	0.5290	0.5290	
37	18.9960	0.5170	0.5170	
38	19.5000	0.5010	0.5010	
39	19.9980	0.4880	0.4880	
40	21.0000	0.4660	0.4660	
41	21.9960	0.4440	0.4440	
42	22.9980	0.4250	0.4250	
43	24.0000	0.4060	0.4060	
44	24.9960	0.3870	0.3870	
45	25.9980	0.3720	0.3720	
46	27.0000	0.3590	0.3590	
47	27.9960	0.3430	0.3430	
48	28.9980	0.3340	0.3340	
49	30.0000	0.3180	0.3180	
50	30.9960	0.3080	0.3080	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK / Date: 19.03.97

Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	31.9980	0.2990	0.2990
52	33.0000	0.2900	0.2900
53	33.9960	0.2800	0.2800
54	34.9980	0.2710	0.2710
55	36.0000	0.2640	0.2640
56	36.9960	0.2580	0.2580
57	37.9980	0.2520	0.2520
58	39.0000	0.2450	0.2450
59	39.9960	0.2390	0.2390
60	40.9980	0.2330	0.2330
61	42.0000	0.2300	0.2300
62	42.9960	0.2230	0.2230
63	43.9980	0.2170	0.2170
64	45.0000	0.2140	0.2140
65	45.9960	0.2110	0.2110
66	46.9980	0.2070	0.2070
67	48.0000	0.2040	0.2040
68	48.9960	0.1980	0.1980
69	49.9980	0.1950	0.1950
70	51.0000	0.1920	0.1920
71	51.9960	0.1890	0.1890
72	52.9980	0.1860	0.1860
73	54.0000	0.1860	0.1860
74	54.9960	0.1800	0.1800
75	55.9980	0.1800	0.1800
76	57.0000	0.1770	0.1770
77	57.9960	0.1740	0.1740
78	58.9980	0.1710	0.1710
79	60.0000	0.1670	0.1670
80	72.0000	0.1480	0.1480
81	84.0000	0.1300	0.1300
82	96.0000	0.1170	0.1170
83	108.0000	0.1070	0.1070
84	120.0000	0.0980	0.0980
85	132.0000	0.0920	0.0920
86	144.0000	0.0850	0.0850
87	156.0000	0.0790	0.0790
88	168.0000	0.0730	0.0730
89	180.0000	0.0700	0.0700
90	192.0000	0.0630	0.0630
91	204.0000	0.0600	0.0600
92	216.0000	0.0570	0.0570
93	228.0000	0.0540	0.0540
94	240.0000	0.0510	0.0510
95	252.0000	0.0440	0.0440
96	264.0000	0.0440	0.0440
97	276.0000	0.0380	0.0380
98	288.0000	0.0380	0.0380
99	300.0000	0.0350	0.0350
100	312.0000	0.0320	0.0320

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.03.97

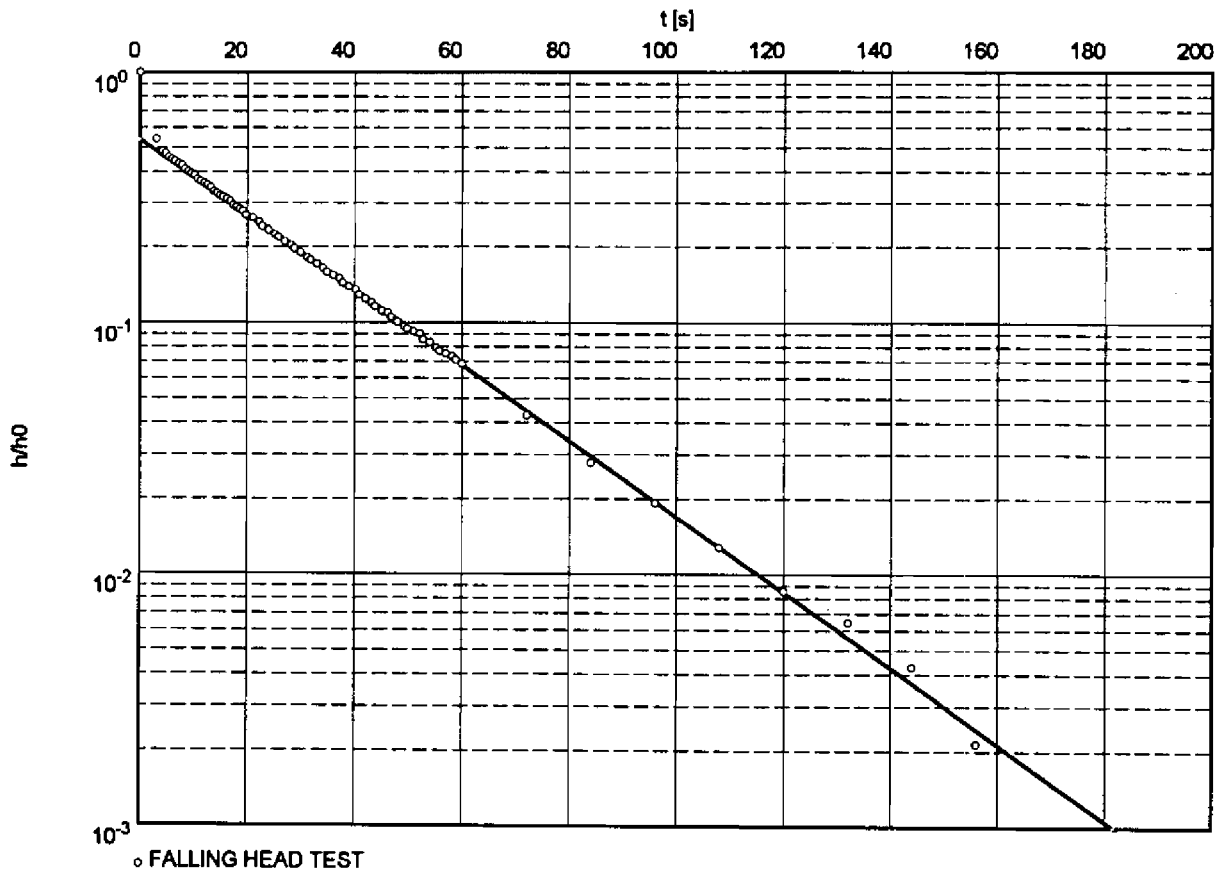
Slug Test No. #3	Test conducted on: 17.03.97
NBCE-GDE-025	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
101	324.0000	0.0290	0.0290
102	336.0000	0.0250	0.0250
103	348.0000	0.0250	0.0250
104	360.0000	0.0220	0.0220
105	372.0000	0.0190	0.0190
106	384.0000	0.0190	0.0190
107	396.0000	0.0160	0.0160
108	408.0000	0.0130	0.0130
109	420.0000	0.0130	0.0130
110	432.0000	0.0100	0.0100
111	444.0000	0.0100	0.0100
112	456.0000	0.0060	0.0060
113	468.0000	0.0060	0.0060
114	480.0000	0.0030	0.0030
115	492.0000	0.0030	0.0030
116	504.0000	0.0030	0.0030
117	516.0000	0.0000	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	



Hydraulic conductivity [ft/s]: 3.65×10^{-5}

Hydraulic conductivity [ft/day]: 3.15

L = 9.5 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-4.6800	-4.6800	
2	3.0000	-2.5300	-2.5300	
3	4.2000	-2.2500	-2.2500	
4	4.8000	-2.2200	-2.2200	
5	5.4000	-2.1400	-2.1400	
6	6.0000	-2.1000	-2.1000	
7	6.6000	-2.0600	-2.0600	
8	7.2000	-2.0200	-2.0200	
9	7.8000	-1.9800	-1.9800	
10	8.4000	-1.9100	-1.9100	
11	9.0000	-1.8700	-1.8700	
12	9.6000	-1.8400	-1.8400	
13	10.2000	-1.8000	-1.8000	
14	10.8000	-1.7400	-1.7400	
15	11.4000	-1.7100	-1.7100	
16	12.0000	-1.6800	-1.6800	
17	12.6000	-1.6500	-1.6500	
18	13.2000	-1.6100	-1.6100	
19	13.8000	-1.5600	-1.5600	
20	14.4000	-1.5300	-1.5300	
21	15.0000	-1.5000	-1.5000	
22	15.6000	-1.4800	-1.4800	
23	16.2000	-1.4500	-1.4500	
24	16.8000	-1.4200	-1.4200	
25	17.4000	-1.3700	-1.3700	
26	18.0000	-1.3500	-1.3500	
27	18.6000	-1.3200	-1.3200	
28	19.2000	-1.3000	-1.3000	
29	19.8000	-1.2500	-1.2500	
30	21.0000	-1.2200	-1.2200	
31	22.2000	-1.1700	-1.1700	
32	22.8000	-1.1300	-1.1300	
33	24.0000	-1.0900	-1.0900	
34	25.2000	-1.0500	-1.0500	
35	25.8000	-1.0200	-1.0200	
36	27.0000	-0.9800	-0.9800	
37	28.2000	-0.9500	-0.9500	
38	28.8000	-0.9200	-0.9200	
39	30.0000	-0.8900	-0.8900	
40	31.2000	-0.8500	-0.8500	
41	31.8000	-0.8300	-0.8300	
42	33.0000	-0.8000	-0.8000	
43	34.2000	-0.7700	-0.7700	
44	34.8000	-0.7400	-0.7400	
45	36.0000	-0.7200	-0.7200	
46	37.2000	-0.7000	-0.7000	
47	37.8000	-0.6700	-0.6700	
48	39.0000	-0.6500	-0.6500	
49	40.2000	-0.6300	-0.6300	
50	40.8000	-0.6000	-0.6000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

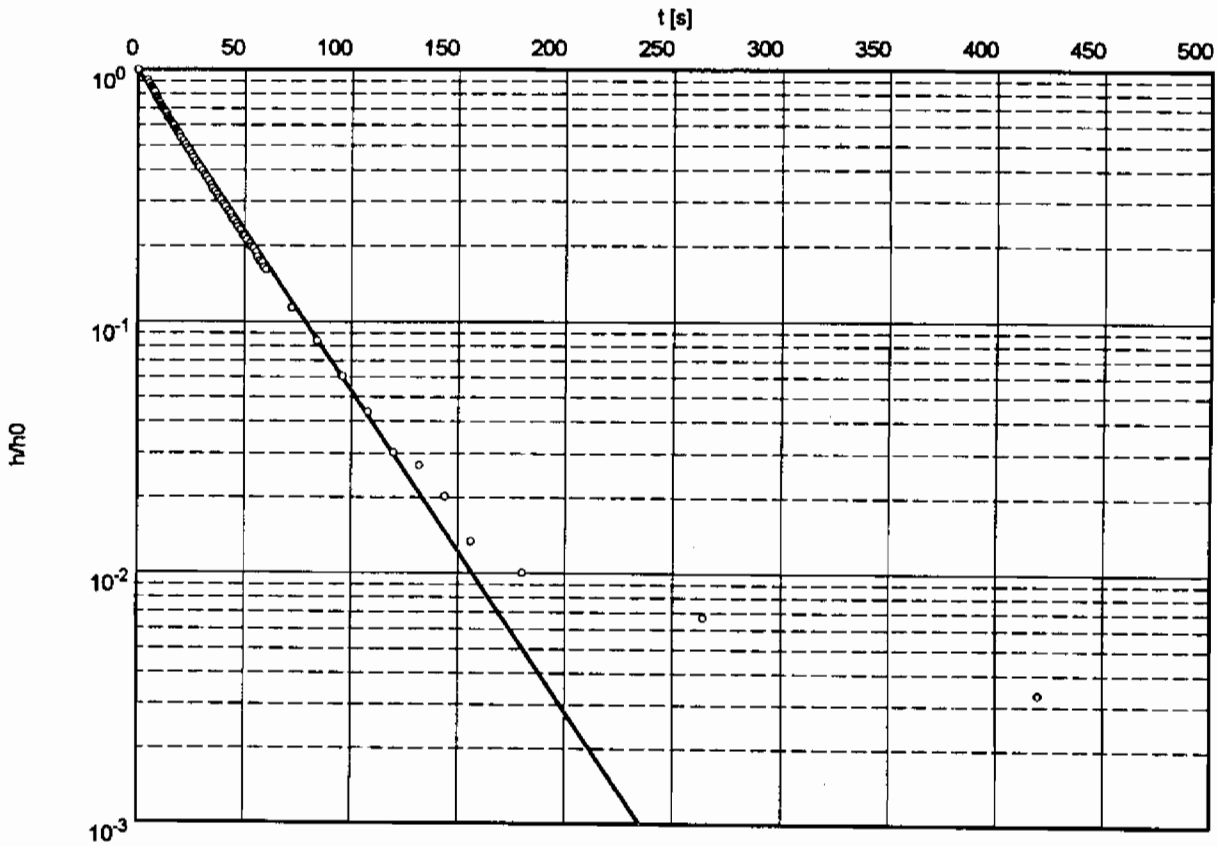
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	42.0000	-0.5800	-0.5800	
52	43.2000	-0.5600	-0.5600	
53	43.8000	-0.5400	-0.5400	
54	45.0000	-0.5200	-0.5200	
55	46.2000	-0.5100	-0.5100	
56	46.8000	-0.4900	-0.4900	
57	48.0000	-0.4700	-0.4700	
58	49.2000	-0.4500	-0.4500	
59	49.8000	-0.4400	-0.4400	
60	51.0000	-0.4300	-0.4300	
61	52.2000	-0.4200	-0.4200	
62	52.8000	-0.4000	-0.4000	
63	54.0000	-0.3900	-0.3900	
64	55.2000	-0.3700	-0.3700	
65	55.8000	-0.3600	-0.3600	
66	57.0000	-0.3500	-0.3500	
67	58.2000	-0.3400	-0.3400	
68	58.8000	-0.3300	-0.3300	
69	60.0000	-0.3200	-0.3200	
70	72.0000	-0.2000	-0.2000	
71	84.0000	-0.1300	-0.1300	
72	96.0000	-0.0900	-0.0900	
73	108.0000	-0.0600	-0.0600	
74	120.0000	-0.0400	-0.0400	
75	132.0000	-0.0300	-0.0300	
76	144.0000	-0.0200	-0.0200	
77	156.0000	-0.0100	-0.0100	
78	168.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	



o RISING HEAD TEST

Hydraulic conductivity [ft/s]: 3.10×10^{-5}

Hydraulic conductivity [ft/day]: 2.68

L = 9.5 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.9900	2.9900	
2	4.8000	2.7000	2.7000	
3	5.4000	2.6300	2.6300	
4	6.0000	2.5600	2.5600	
5	6.6000	2.5100	2.5100	
6	7.2000	2.4600	2.4600	
7	7.8000	2.4200	2.4200	
8	8.4000	2.3300	2.3300	
9	9.0000	2.2900	2.2900	
10	9.6000	2.2500	2.2500	
11	10.2000	2.2100	2.2100	
12	10.8000	2.1400	2.1400	
13	11.4000	2.1000	2.1000	
14	12.0000	2.0700	2.0700	
15	12.6000	2.0400	2.0400	
16	13.2000	2.0100	2.0100	
17	13.8000	1.9400	1.9400	
18	14.4000	1.9100	1.9100	
19	15.0000	1.8800	1.8800	
20	15.6000	1.8500	1.8500	
21	16.2000	1.8200	1.8200	
22	16.8000	1.7900	1.7900	
23	17.4000	1.7300	1.7300	
24	18.0000	1.7100	1.7100	
25	18.6000	1.6800	1.6800	
26	19.2000	1.6500	1.6500	
27	19.8000	1.6000	1.6000	
28	21.0000	1.5500	1.5500	
29	22.2000	1.5100	1.5100	
30	22.8000	1.4600	1.4600	
31	24.0000	1.4200	1.4200	
32	25.2000	1.3700	1.3700	
33	25.8000	1.3300	1.3300	
34	27.0000	1.2900	1.2900	
35	28.2000	1.2500	1.2500	
36	28.8000	1.2200	1.2200	
37	30.0000	1.1800	1.1800	
38	31.2000	1.1400	1.1400	
39	31.8000	1.1100	1.1100	
40	33.0000	1.0800	1.0800	
41	34.2000	1.0400	1.0400	
42	34.8000	1.0100	1.0100	
43	36.0000	0.9800	0.9800	
44	37.2000	0.9500	0.9500	
45	37.8000	0.9200	0.9200	
46	39.0000	0.9000	0.9000	
47	40.2000	0.8700	0.8700	
48	40.8000	0.8500	0.8500	
49	42.0000	0.8200	0.8200	
50	43.2000	0.8000	0.8000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

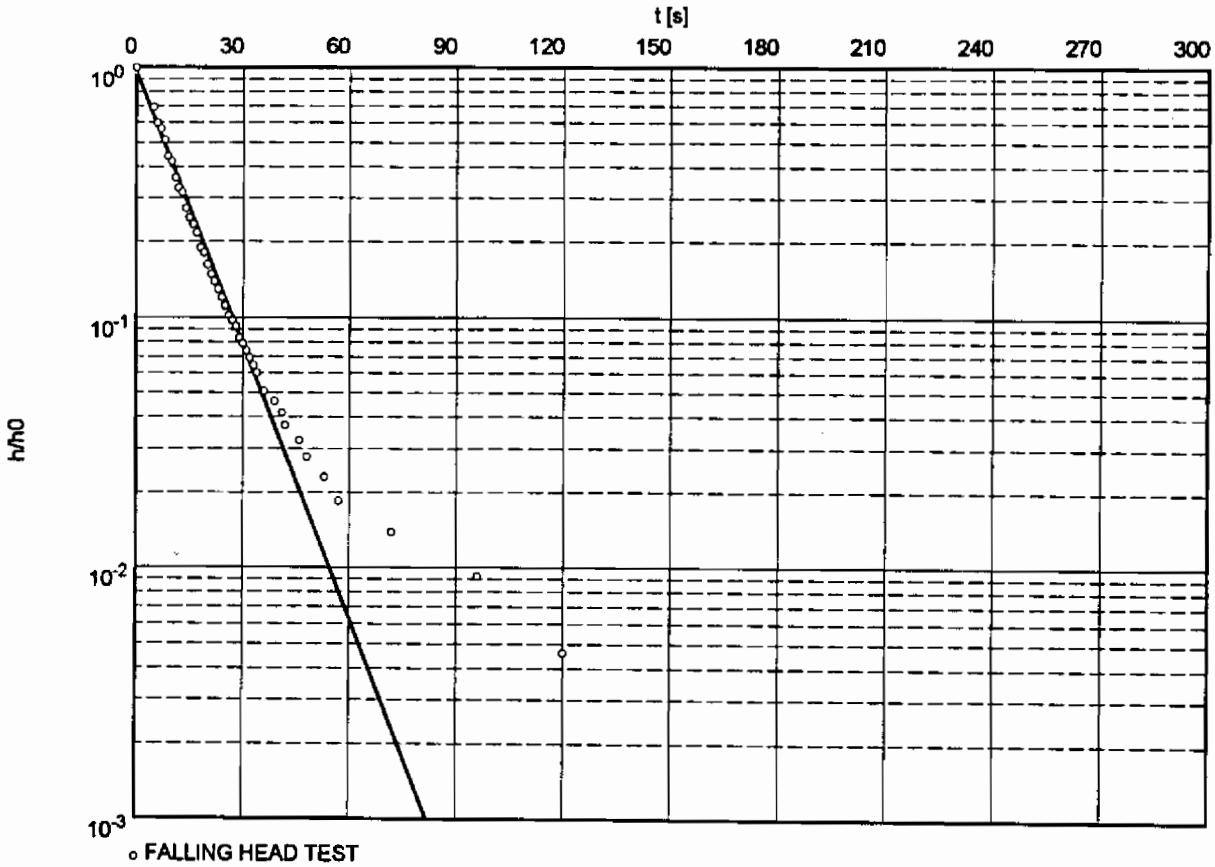
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-070-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	43.8000	0.7700	0.7700	
52	45.0000	0.7500	0.7500	
53	46.2000	0.7300	0.7300	
54	46.8000	0.7100	0.7100	
55	48.0000	0.6900	0.6900	
56	49.2000	0.6600	0.6600	
57	49.8000	0.6500	0.6500	
58	51.0000	0.6300	0.6300	
59	52.2000	0.6100	0.6100	
60	52.8000	0.5900	0.5900	
61	54.0000	0.5800	0.5800	
62	55.2000	0.5600	0.5600	
63	55.8000	0.5400	0.5400	
64	57.0000	0.5200	0.5200	
65	58.2000	0.5100	0.5100	
66	58.8000	0.4900	0.4900	
67	60.0000	0.4800	0.4800	
68	72.0000	0.3400	0.3400	
69	84.0000	0.2500	0.2500	
70	96.0000	0.1800	0.1800	
71	108.0000	0.1300	0.1300	
72	120.0000	0.0900	0.0900	
73	132.0000	0.0800	0.0800	
74	144.0000	0.0600	0.0600	
75	156.0000	0.0400	0.0400	
76	180.0000	0.0300	0.0300	
77	264.0000	0.0200	0.0200	
78	420.0000	0.0100	0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-530-02D	



Hydraulic conductivity [ft/s]: 7.55×10^{-5}

Hydraulic conductivity [ft/day]: 6.52

L = 11.8 ft
b = 11.8 ft
D = 11.8 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

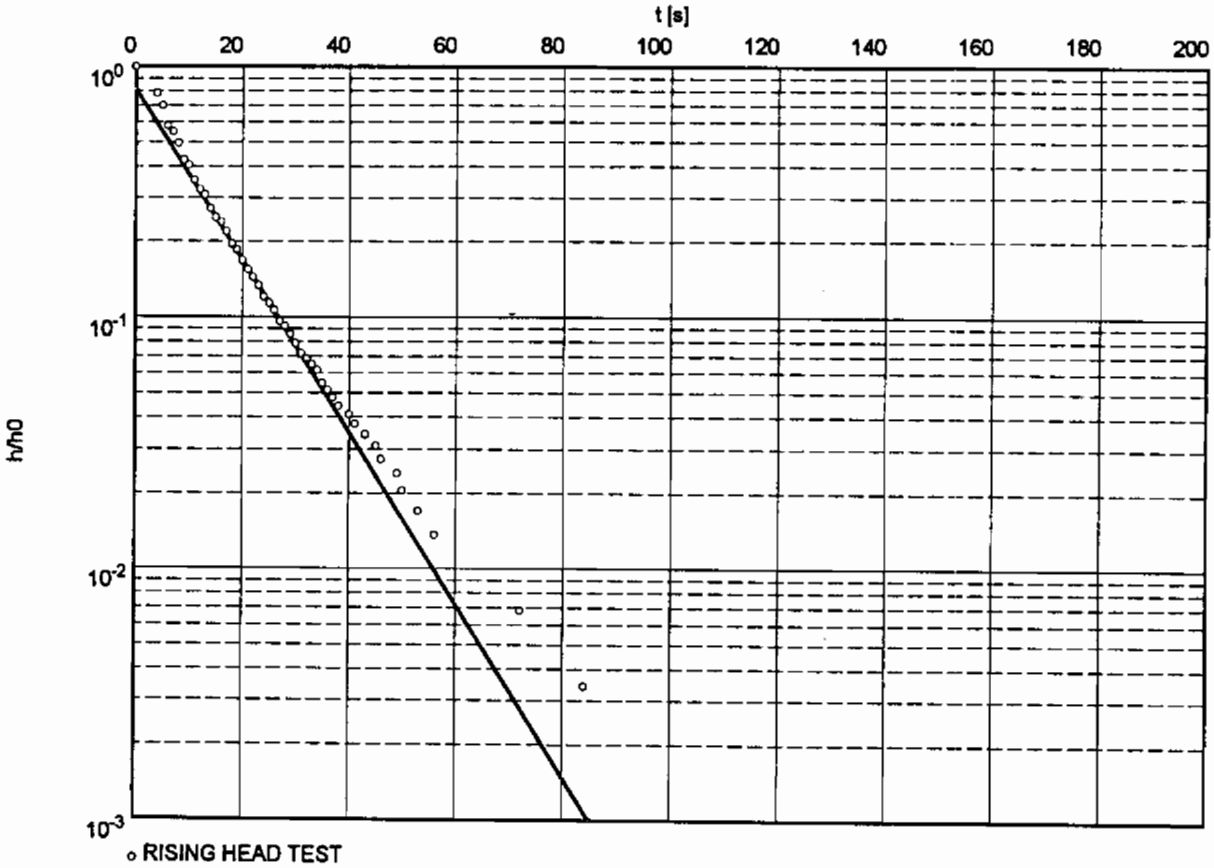
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-530-02D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	-2.1700	-2.1700
2	5.0000	-1.5000	-1.5000
3	6.0000	-1.3000	-1.3000
4	7.0000	-1.2300	-1.2300
5	8.0000	-1.1100	-1.1100
6	9.0000	-0.9500	-0.9500
7	10.0000	-0.9100	-0.9100
8	11.0000	-0.7800	-0.7800
9	12.0000	-0.7100	-0.7100
10	13.0000	-0.6800	-0.6800
11	14.0000	-0.5900	-0.5900
12	15.0000	-0.5400	-0.5400
13	16.0000	-0.5100	-0.5100
14	17.0000	-0.4700	-0.4700
15	18.0000	-0.4100	-0.4100
16	19.0000	-0.3900	-0.3900
17	20.0000	-0.3500	-0.3500
18	21.0000	-0.3200	-0.3200
19	22.0000	-0.3000	-0.3000
20	23.0000	-0.2800	-0.2800
21	24.0000	-0.2600	-0.2600
22	25.0000	-0.2400	-0.2400
23	26.0000	-0.2200	-0.2200
24	27.0000	-0.2100	-0.2100
25	28.0000	-0.2000	-0.2000
26	29.0000	-0.1800	-0.1800
27	30.0000	-0.1700	-0.1700
28	31.0000	-0.1600	-0.1600
29	32.0000	-0.1500	-0.1500
30	33.0000	-0.1400	-0.1400
31	34.0000	-0.1300	-0.1300
32	36.0000	-0.1100	-0.1100
33	39.0000	-0.1000	-0.1000
34	41.0000	-0.0900	-0.0900
35	42.0000	-0.0800	-0.0800
36	46.0000	-0.0700	-0.0700
37	48.0000	-0.0600	-0.0600
38	53.0000	-0.0500	-0.0500
39	57.0000	-0.0400	-0.0400
40	72.0000	-0.0300	-0.0300
41	96.0000	-0.0200	-0.0200
42	120.0000	-0.0100	-0.0100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-530-02D	



Hydraulic conductivity [ft/s]: 7.11×10^{-5}

Hydraulic conductivity [ft/day]: 6.14

L = 11.8 ft
b = 11.8 ft
D = 11.8 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

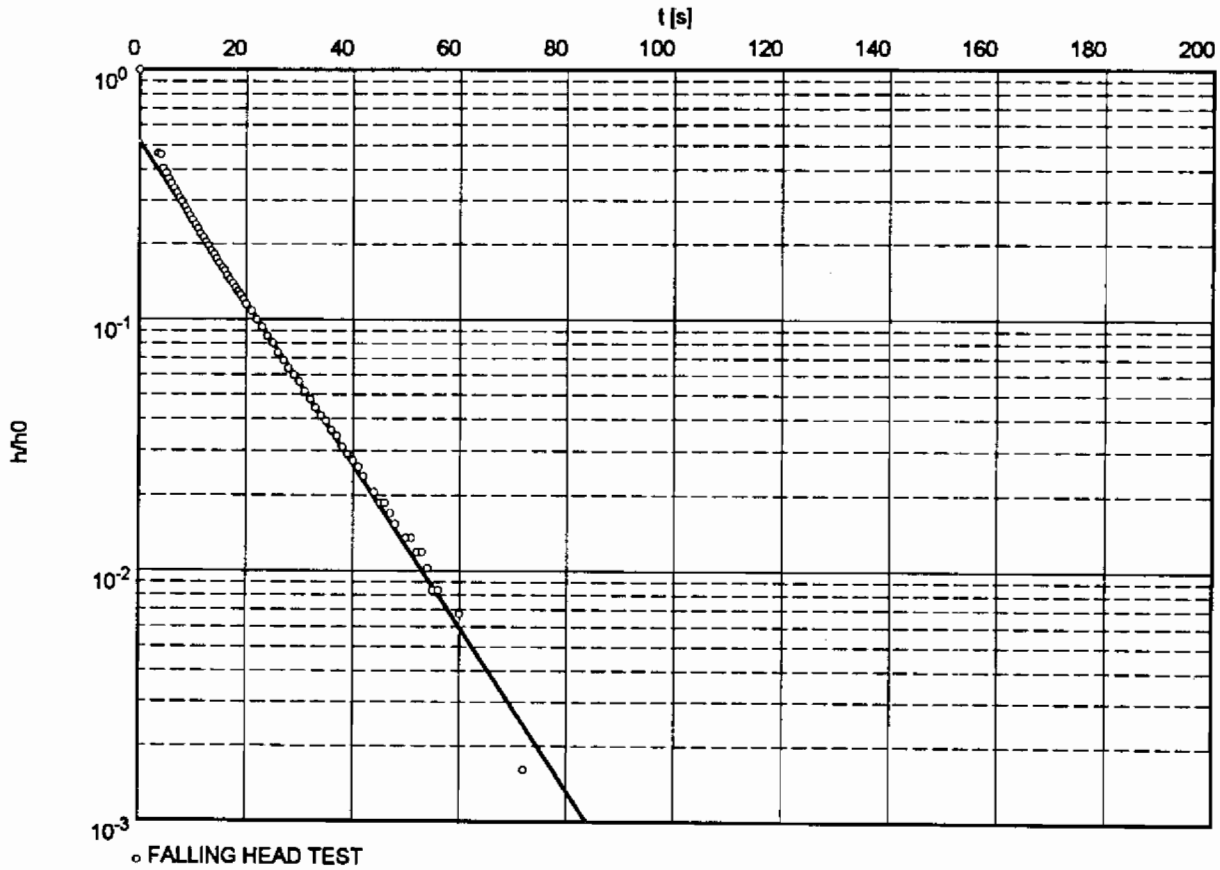
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-530-02D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.9300	2.9300	
2	4.0000	2.2900	2.2900	
3	5.0000	2.0400	2.0400	
4	6.0000	1.7000	1.7000	
5	7.0000	1.6000	1.6000	
6	8.0000	1.4400	1.4400	
7	9.0000	1.2400	1.2400	
8	10.0000	1.1800	1.1800	
9	11.0000	1.0300	1.0300	
10	12.0000	0.9400	0.9400	
11	13.0000	0.9000	0.9000	
12	14.0000	0.7900	0.7900	
13	15.0000	0.7300	0.7300	
14	16.0000	0.7000	0.7000	
15	17.0000	0.6400	0.6400	
16	18.0000	0.5700	0.5700	
17	19.0000	0.5400	0.5400	
18	20.0000	0.4900	0.4900	
19	21.0000	0.4500	0.4500	
20	22.0000	0.4200	0.4200	
21	23.0000	0.3900	0.3900	
22	24.0000	0.3500	0.3500	
23	25.0000	0.3300	0.3300	
24	26.0000	0.3100	0.3100	
25	27.0000	0.2800	0.2800	
26	28.0000	0.2700	0.2700	
27	29.0000	0.2500	0.2500	
28	30.0000	0.2300	0.2300	
29	31.0000	0.2100	0.2100	
30	32.0000	0.2000	0.2000	
31	33.0000	0.1900	0.1900	
32	34.0000	0.1800	0.1800	
33	35.0000	0.1600	0.1600	
34	36.0000	0.1500	0.1500	
35	37.0000	0.1400	0.1400	
36	38.0000	0.1300	0.1300	
37	40.0000	0.1200	0.1200	
38	41.0000	0.1100	0.1100	
39	43.0000	0.1000	0.1000	
40	45.0000	0.0900	0.0900	
41	46.0000	0.0800	0.0800	
42	49.0000	0.0700	0.0700	
43	50.0000	0.0600	0.0600	
44	53.0000	0.0500	0.0500	
45	56.0000	0.0400	0.0400	
46	72.0000	0.0200	0.0200	
47	84.0000	0.0100	0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	



Hydraulic conductivity [ft/s]: 7.12×10^{-5}

Hydraulic conductivity [ft/day]: 6.15

L = 10.9 ft
b = 10.9 ft
D = 10.9 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	3.7080	3.7080	
2	2.4960	4.3990	4.3990	
3	3.4980	1.7100	1.7100	
4	3.9960	1.6980	1.6980	
5	4.5000	1.4950	1.4950	
6	4.9980	1.4250	1.4250	
7	5.4960	1.3560	1.3560	
8	6.0000	1.2990	1.2990	
9	6.4980	1.2410	1.2410	
10	6.9960	1.1910	1.1910	
11	7.5000	1.1400	1.1400	
12	7.9980	1.0960	1.0960	
13	8.4960	1.0510	1.0510	
14	9.0000	1.0070	1.0070	
15	9.4980	0.9630	0.9630	
16	9.9960	0.9250	0.9250	
17	10.5000	0.8870	0.8870	
18	10.9980	0.8550	0.8550	
19	11.4960	0.8170	0.8170	
20	12.0000	0.7850	0.7850	
21	12.4980	0.7540	0.7540	
22	12.9960	0.7280	0.7280	
23	13.5000	0.6960	0.6960	
24	13.9980	0.6710	0.6710	
25	14.4960	0.6460	0.6460	
26	15.0000	0.6200	0.6200	
27	15.4980	0.5950	0.5950	
28	15.9960	0.5760	0.5760	
29	16.5000	0.5510	0.5510	
30	16.9980	0.5320	0.5320	
31	17.4960	0.5130	0.5130	
32	18.0000	0.4940	0.4940	
33	18.4980	0.4750	0.4750	
34	18.9960	0.4620	0.4620	
35	19.5000	0.4430	0.4430	
36	19.9980	0.4240	0.4240	
37	21.0000	0.3990	0.3990	
38	21.9960	0.3670	0.3670	
39	22.9980	0.3420	0.3420	
40	24.0000	0.3160	0.3160	
41	24.9960	0.2970	0.2970	
42	25.9980	0.2720	0.2720	
43	27.0000	0.2530	0.2530	
44	27.9960	0.2340	0.2340	
45	28.9980	0.2210	0.2210	
46	30.0000	0.2090	0.2090	
47	30.9960	0.1900	0.1900	
48	31.9980	0.1770	0.1770	
49	33.0000	0.1640	0.1640	
50	33.9960	0.1520	0.1520	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

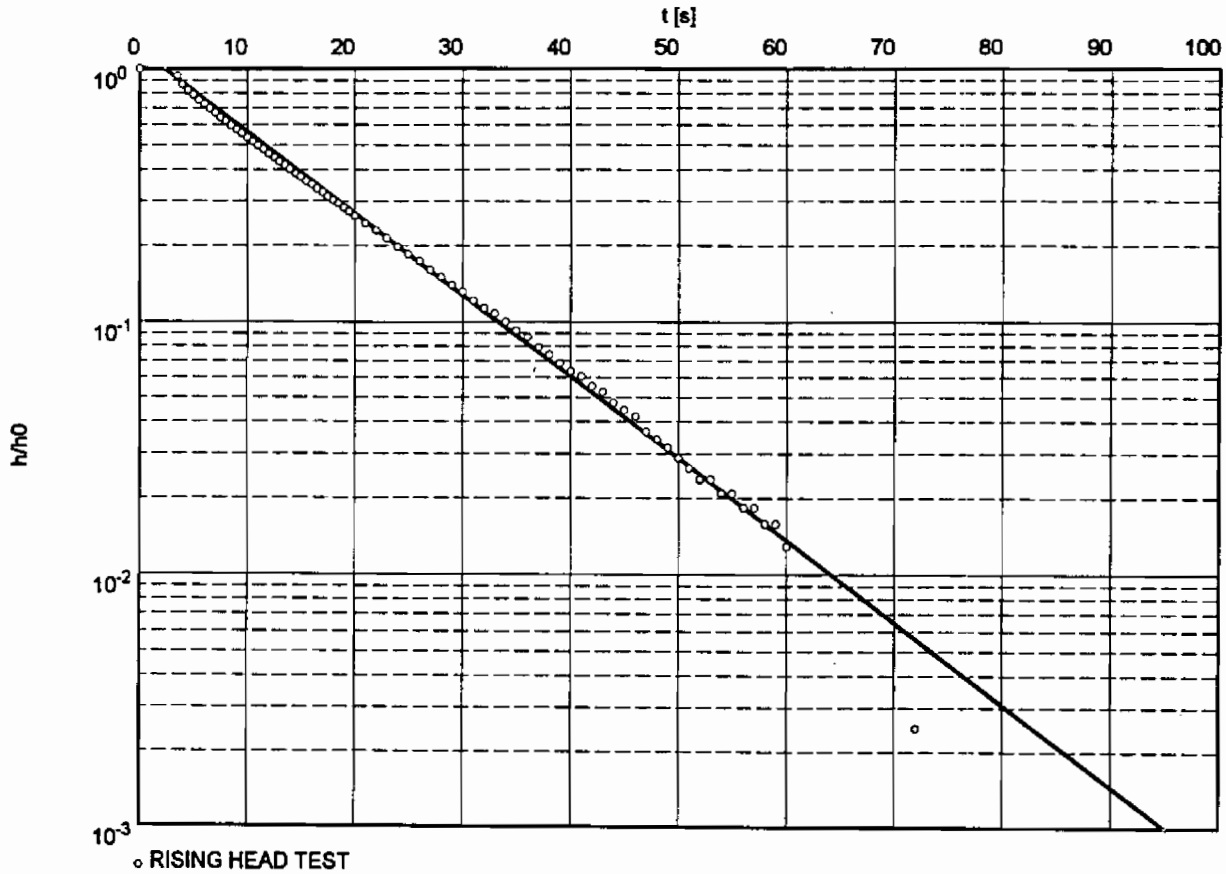
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	34.9980	0.1450	0.1450	
52	36.0000	0.1330	0.1330	
53	36.9960	0.1260	0.1260	
54	37.9980	0.1140	0.1140	
55	39.0000	0.1070	0.1070	
56	39.9960	0.1010	0.1010	
57	40.9980	0.0950	0.0950	
58	42.0000	0.0880	0.0880	
59	43.9980	0.0760	0.0760	
60	45.0000	0.0690	0.0690	
61	45.9960	0.0690	0.0690	
62	46.9980	0.0630	0.0630	
63	48.0000	0.0570	0.0570	
64	49.9980	0.0500	0.0500	
65	51.0000	0.0500	0.0500	
66	51.9960	0.0440	0.0440	
67	52.9980	0.0440	0.0440	
68	54.0000	0.0380	0.0380	
69	54.9960	0.0310	0.0310	
70	55.9980	0.0310	0.0310	
71	60.0000	0.0250	0.0250	
72	72.0000	0.0060	0.0060	
73	108.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	



Hydraulic conductivity [ft/s]: 7.11×10^{-5}

Hydraulic conductivity [ft/day]: 6.14

L = 10.9 ft
b = 10.9 ft
D = 10.9 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.4060	2.4060	
2	3.4980	2.2540	2.2540	
3	3.9960	2.0830	2.0830	
4	4.5000	1.9690	1.9690	
5	4.9980	1.8930	1.8930	
6	5.4960	1.8110	1.8110	
7	6.0000	1.7410	1.7410	
8	6.4980	1.6720	1.6720	
9	6.9960	1.6080	1.6080	
10	7.5000	1.5450	1.5450	
11	7.9980	1.4880	1.4880	
12	8.4960	1.4310	1.4310	
13	9.0000	1.3800	1.3800	
14	9.4980	1.3300	1.3300	
15	9.9960	1.2790	1.2790	
16	10.5000	1.2350	1.2350	
17	10.9980	1.1900	1.1900	
18	11.4960	1.1520	1.1520	
19	12.0000	1.1080	1.1080	
20	12.4980	1.0700	1.0700	
21	12.9960	1.0320	1.0320	
22	13.5000	0.9940	0.9940	
23	13.9980	0.9620	0.9620	
24	14.4960	0.9240	0.9240	
25	15.0000	0.8930	0.8930	
26	15.4980	0.8610	0.8610	
27	15.9960	0.8360	0.8360	
28	16.5000	0.8040	0.8040	
29	16.9980	0.7790	0.7790	
30	17.4960	0.7470	0.7470	
31	18.0000	0.7220	0.7220	
32	18.4980	0.7030	0.7030	
33	18.9960	0.6770	0.6770	
34	19.5000	0.6520	0.6520	
35	19.9980	0.6270	0.6270	
36	21.0000	0.5890	0.5890	
37	21.9960	0.5510	0.5510	
38	22.9980	0.5130	0.5130	
39	24.0000	0.4750	0.4750	
40	24.9960	0.4430	0.4430	
41	25.9980	0.4180	0.4180	
42	27.0000	0.3860	0.3860	
43	27.9960	0.3610	0.3610	
44	28.9980	0.3350	0.3350	
45	30.0000	0.3160	0.3160	
46	30.9960	0.2910	0.2910	
47	31.9980	0.2720	0.2720	
48	33.0000	0.2590	0.2590	
49	33.9960	0.2400	0.2400	
50	34.9980	0.2210	0.2210	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

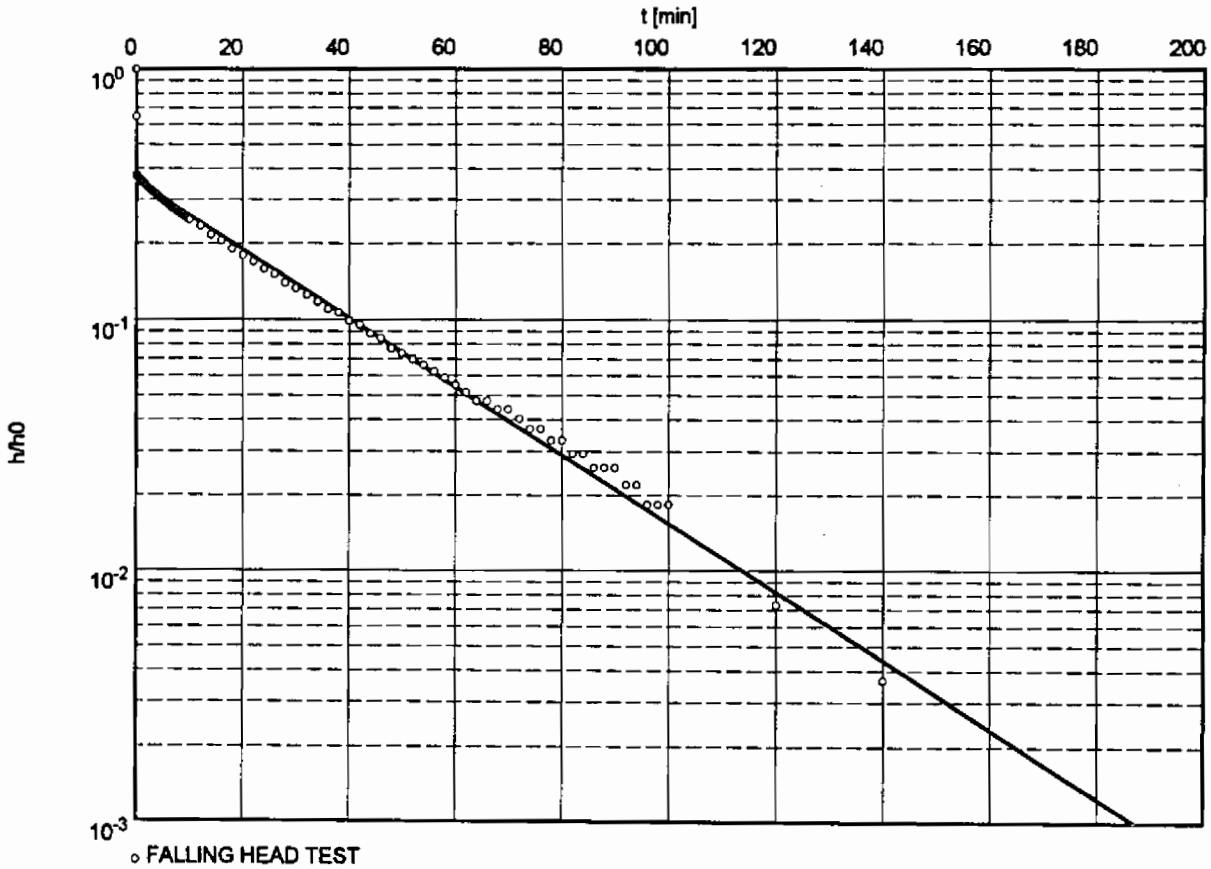
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-538-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	36.0000	0.2090	0.2090	
52	36.9960	0.1900	0.1900	
53	37.9980	0.1770	0.1770	
54	39.0000	0.1640	0.1640	
55	39.9960	0.1520	0.1520	
56	40.9980	0.1450	0.1450	
57	42.0000	0.1330	0.1330	
58	42.9960	0.1260	0.1260	
59	43.9980	0.1140	0.1140	
60	45.0000	0.1070	0.1070	
61	45.9960	0.1010	0.1010	
62	46.9980	0.0880	0.0880	
63	48.0000	0.0820	0.0820	
64	48.9960	0.0760	0.0760	
65	49.9980	0.0690	0.0690	
66	51.0000	0.0630	0.0630	
67	51.9960	0.0570	0.0570	
68	52.9980	0.0570	0.0570	
69	54.0000	0.0500	0.0500	
70	54.9960	0.0500	0.0500	
71	55.9980	0.0440	0.0440	
72	57.0000	0.0440	0.0440	
73	57.9960	0.0380	0.0380	
74	58.9980	0.0380	0.0380	
75	60.0000	0.0310	0.0310	
76	72.0000	0.0060	0.0060	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-02D	



Hydraulic conductivity [ft/min]: 4.57×10^{-5}

Hydraulic conductivity [ft/day]: 6.58 x 10^-2

L = 6.0 ft
b = 6.0 ft
D = 6.0 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-02D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.7300	-2.7300	
2	0.0333	-1.7600	-1.7600	
3	0.0500	-1.0200	-1.0200	
4	0.0667	-1.0300	-1.0300	
5	0.0833	-1.0200	-1.0200	
6	0.1333	-1.0200	-1.0200	
7	0.1500	-1.0100	-1.0100	
8	0.2000	-1.0100	-1.0100	
9	0.2333	-1.0100	-1.0100	
10	0.2833	-1.0000	-1.0000	
11	0.3333	-1.0000	-1.0000	
12	0.3667	-1.0000	-1.0000	
13	0.3833	-1.0000	-1.0000	
14	0.4000	-1.0000	-1.0000	
15	0.4333	-0.9900	-0.9900	
16	0.5000	-0.9900	-0.9900	
17	0.5500	-0.9900	-0.9900	
18	0.6167	-0.9900	-0.9900	
19	0.6500	-0.9800	-0.9800	
20	0.7000	-0.9800	-0.9800	
21	0.7833	-0.9800	-0.9800	
22	0.8333	-0.9700	-0.9700	
23	0.9000	-0.9700	-0.9700	
24	0.9667	-0.9700	-0.9700	
25	1.2000	-0.9600	-0.9600	
26	1.4000	-0.9500	-0.9500	
27	1.6000	-0.9400	-0.9400	
28	1.8000	-0.9300	-0.9300	
29	2.0000	-0.9200	-0.9200	
30	2.2000	-0.9100	-0.9100	
31	2.4000	-0.9000	-0.9000	
32	2.6000	-0.9000	-0.9000	
33	2.8000	-0.8900	-0.8900	
34	3.0000	-0.8800	-0.8800	
35	3.2000	-0.8800	-0.8800	
36	3.4000	-0.8700	-0.8700	
37	3.6000	-0.8600	-0.8600	
38	3.8000	-0.8500	-0.8500	
39	4.0000	-0.8500	-0.8500	
40	4.2000	-0.8400	-0.8400	
41	4.4000	-0.8300	-0.8300	
42	4.6000	-0.8300	-0.8300	
43	4.8000	-0.8200	-0.8200	
44	5.0000	-0.8100	-0.8100	
45	5.2000	-0.8100	-0.8100	
46	5.4000	-0.8000	-0.8000	
47	5.6000	-0.8000	-0.8000	
48	5.8000	-0.7900	-0.7900	
49	6.0000	-0.7800	-0.7800	
50	6.2000	-0.7800	-0.7800	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-02D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	6.4000	-0.7700	-0.7700	
52	6.6000	-0.7600	-0.7600	
53	6.8000	-0.7600	-0.7600	
54	7.0000	-0.7600	-0.7600	
55	7.2000	-0.7500	-0.7500	
56	7.4000	-0.7400	-0.7400	
57	7.6000	-0.7400	-0.7400	
58	7.8000	-0.7300	-0.7300	
59	8.0000	-0.7300	-0.7300	
60	8.2000	-0.7200	-0.7200	
61	8.4000	-0.7200	-0.7200	
62	8.6000	-0.7100	-0.7100	
63	8.8000	-0.7100	-0.7100	
64	9.0000	-0.7000	-0.7000	
65	9.2000	-0.7000	-0.7000	
66	9.4000	-0.6900	-0.6900	
67	9.6000	-0.6900	-0.6900	
68	9.8000	-0.6800	-0.6800	
69	10.0000	-0.6800	-0.6800	
70	12.0000	-0.6400	-0.6400	
71	14.0000	-0.5900	-0.5900	
72	16.0000	-0.5600	-0.5600	
73	18.0000	-0.5200	-0.5200	
74	20.0000	-0.4900	-0.4900	
75	22.0000	-0.4600	-0.4600	
76	24.0000	-0.4300	-0.4300	
77	26.0000	-0.4100	-0.4100	
78	28.0000	-0.3800	-0.3800	
79	30.0000	-0.3600	-0.3600	
80	32.0000	-0.3400	-0.3400	
81	34.0000	-0.3200	-0.3200	
82	36.0000	-0.3000	-0.3000	
83	38.0000	-0.2900	-0.2900	
84	40.0000	-0.2700	-0.2700	
85	42.0000	-0.2600	-0.2600	
86	44.0000	-0.2400	-0.2400	
87	46.0000	-0.2300	-0.2300	
88	48.0000	-0.2100	-0.2100	
89	50.0000	-0.2000	-0.2000	
90	52.0000	-0.1900	-0.1900	
91	54.0000	-0.1800	-0.1800	
92	56.0000	-0.1700	-0.1700	
93	58.0000	-0.1600	-0.1600	
94	60.0000	-0.1500	-0.1500	
95	62.0000	-0.1400	-0.1400	
96	64.0000	-0.1300	-0.1300	
97	66.0000	-0.1300	-0.1300	
98	68.0000	-0.1200	-0.1200	
99	70.0000	-0.1200	-0.1200	
100	72.0000	-0.1100	-0.1100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

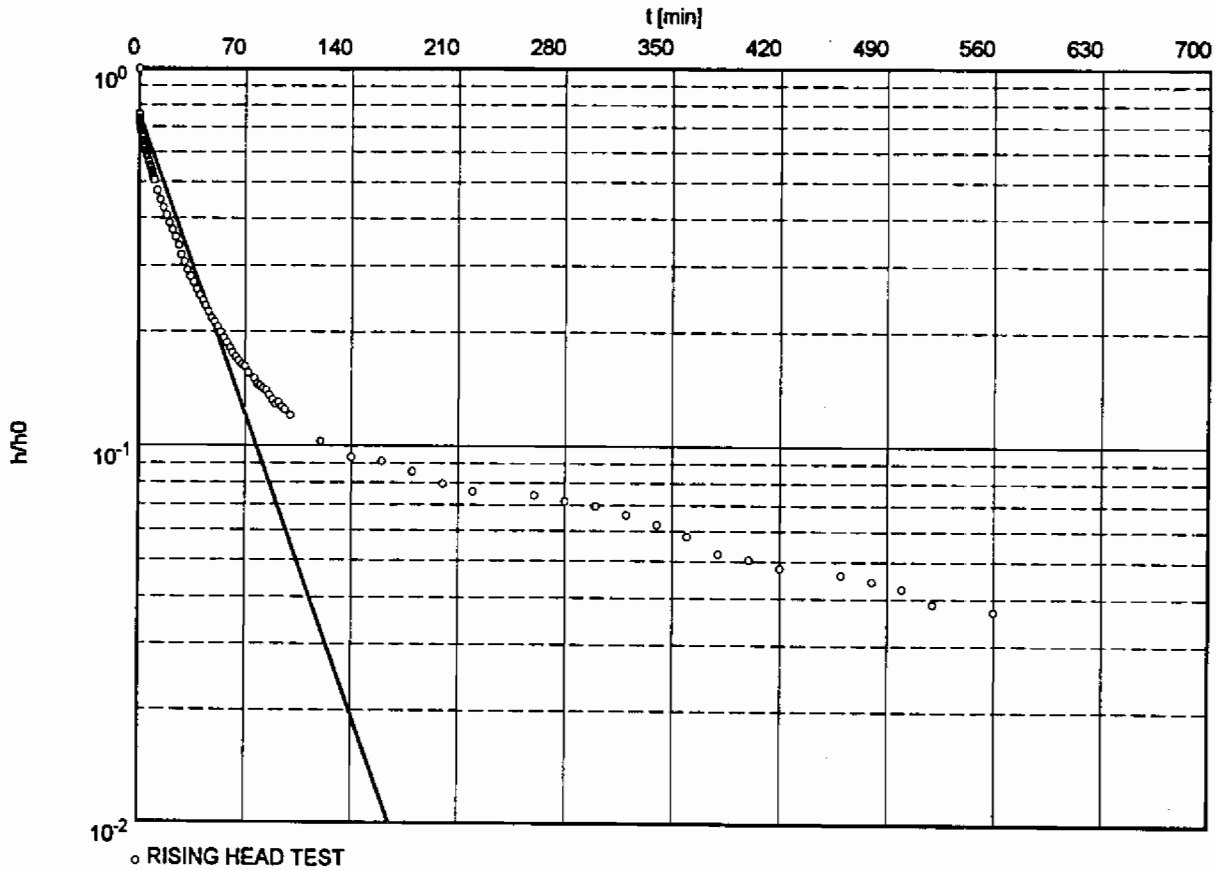
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-02D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	74.0000	-0.1000	-0.1000	
102	76.0000	-0.1000	-0.1000	
103	78.0000	-0.0900	-0.0900	
104	80.0000	-0.0900	-0.0900	
105	82.0000	-0.0800	-0.0800	
106	84.0000	-0.0800	-0.0800	
107	86.0000	-0.0700	-0.0700	
108	88.0000	-0.0700	-0.0700	
109	90.0000	-0.0700	-0.0700	
110	92.0000	-0.0600	-0.0600	
111	94.0000	-0.0600	-0.0600	
112	96.0000	-0.0500	-0.0500	
113	98.0000	-0.0500	-0.0500	
114	100.0000	-0.0500	-0.0500	
115	120.0000	-0.0200	-0.0200	
116	140.0000	0.0100	0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-559-02D	



Hydraulic conductivity [ft/min]: 3.80×10^{-5}

Hydraulic conductivity [ft/day]: 5.47 x 10^-2

L = 6.0 ft
b = 6.0 ft
D = 6.0 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-559-02D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	1.6260	1.6260	
2	0.0250	1.2350	1.2350	
3	0.0333	1.2220	1.2220	
4	0.0416	1.2000	1.2000	
5	0.0500	1.1970	1.1970	
6	0.0666	1.1940	1.1940	
7	0.0750	1.1900	1.1900	
8	0.0833	1.1870	1.1870	
9	0.1000	1.1900	1.1900	
10	0.1083	1.1840	1.1840	
11	0.1166	1.1870	1.1870	
12	0.1250	1.1840	1.1840	
13	0.1333	1.1810	1.1810	
14	0.1416	1.1780	1.1780	
15	0.1833	1.1750	1.1750	
16	0.1916	1.1710	1.1710	
17	0.2083	1.1680	1.1680	
18	0.2250	1.1650	1.1650	
19	0.2416	1.1680	1.1680	
20	0.2500	1.1650	1.1650	
21	0.2583	1.1680	1.1680	
22	0.2833	1.1650	1.1650	
23	0.2916	1.1620	1.1620	
24	0.3000	1.1650	1.1650	
25	0.3083	1.1590	1.1590	
26	0.3333	1.1650	1.1650	
27	0.3500	1.1620	1.1620	
28	0.3666	1.1560	1.1560	
29	0.3833	1.1590	1.1590	
30	0.4000	1.1520	1.1520	
31	0.4166	1.1560	1.1560	
32	0.4333	1.1520	1.1520	
33	0.5000	1.1430	1.1430	
34	0.5666	1.1460	1.1460	
35	0.5833	1.1370	1.1370	
36	0.6000	1.1400	1.1400	
37	0.6166	1.1370	1.1370	
38	0.6333	1.1340	1.1340	
39	0.6500	1.1400	1.1400	
40	0.6833	1.1370	1.1370	
41	0.7000	1.1300	1.1300	
42	0.7500	1.1340	1.1340	
43	0.7666	1.1270	1.1270	
44	0.8000	1.1240	1.1240	
45	0.8500	1.1210	1.1210	
46	0.9000	1.1240	1.1240	
47	0.9333	1.1180	1.1180	
48	0.9666	1.1150	1.1150	
49	0.9833	1.1180	1.1180	
50	1.2000	1.1080	1.1080	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-559-02D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	1.4000	1.0990	1.0990	
52	1.6000	1.0890	1.0890	
53	1.8000	1.0740	1.0740	
54	2.0000	1.0670	1.0670	
55	2.2000	1.0610	1.0610	
56	2.4000	1.0450	1.0450	
57	2.6000	1.0420	1.0420	
58	2.8000	1.0360	1.0360	
59	3.0000	1.0290	1.0290	
60	3.2000	1.0200	1.0200	
61	3.4000	1.0100	1.0100	
62	3.6000	1.0010	1.0010	
63	3.8000	0.9950	0.9950	
64	4.0000	0.9850	0.9850	
65	4.2000	0.9850	0.9850	
66	4.4000	0.9760	0.9760	
67	4.6000	0.9690	0.9690	
68	4.8000	0.9570	0.9570	
69	5.0000	0.9500	0.9500	
70	5.2000	0.9470	0.9470	
71	5.4000	0.9410	0.9410	
72	5.8000	0.9310	0.9310	
73	6.0000	0.9190	0.9190	
74	6.2000	0.9160	0.9160	
75	6.4000	0.9090	0.9090	
76	6.6000	0.9120	0.9120	
77	6.8000	0.9000	0.9000	
78	7.2000	0.8870	0.8870	
79	7.4000	0.8810	0.8810	
80	7.6000	0.8780	0.8780	
81	7.8000	0.8810	0.8810	
82	8.0000	0.8680	0.8680	
83	8.2000	0.8590	0.8590	
84	8.6000	0.8520	0.8520	
85	9.0000	0.8460	0.8460	
86	9.2000	0.8370	0.8370	
87	9.4000	0.8300	0.8300	
88	9.6000	0.8240	0.8240	
89	9.8000	0.8210	0.8210	
90	10.0000	0.8180	0.8180	
91	12.0000	0.7700	0.7700	
92	14.0000	0.7290	0.7290	
93	16.0000	0.6910	0.6910	
94	18.0000	0.6600	0.6600	
95	20.0000	0.6310	0.6310	
96	22.0000	0.6030	0.6030	
97	24.0000	0.5780	0.5780	
98	26.0000	0.5490	0.5490	
99	28.0000	0.5180	0.5180	
100	30.0000	0.4960	0.4960	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-559-02D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	32.0000	0.4730	0.4730	
102	34.0000	0.4540	0.4540	
103	36.0000	0.4390	0.4390	
104	38.0000	0.4200	0.4200	
105	40.0000	0.4040	0.4040	
106	42.0000	0.3910	0.3910	
107	44.0000	0.3790	0.3790	
108	46.0000	0.3660	0.3660	
109	48.0000	0.3530	0.3530	
110	50.0000	0.3440	0.3440	
111	52.0000	0.3340	0.3340	
112	54.0000	0.3220	0.3220	
113	56.0000	0.3120	0.3120	
114	58.0000	0.3030	0.3030	
115	60.0000	0.2930	0.2930	
116	62.0000	0.2840	0.2840	
117	64.0000	0.2780	0.2780	
118	66.0000	0.2710	0.2710	
119	68.0000	0.2650	0.2650	
120	70.0000	0.2620	0.2620	
121	72.0000	0.2520	0.2520	
122	76.0000	0.2430	0.2430	
123	78.0000	0.2360	0.2360	
124	80.0000	0.2330	0.2330	
125	82.0000	0.2300	0.2300	
126	84.0000	0.2270	0.2270	
127	86.0000	0.2210	0.2210	
128	88.0000	0.2140	0.2140	
129	90.0000	0.2080	0.2080	
130	92.0000	0.2110	0.2110	
131	94.0000	0.2050	0.2050	
132	96.0000	0.2020	0.2020	
133	100.0000	0.1950	0.1950	
134	120.0000	0.1670	0.1670	
135	140.0000	0.1510	0.1510	
136	160.0000	0.1480	0.1480	
137	180.0000	0.1390	0.1390	
138	200.0000	0.1290	0.1290	
139	220.0000	0.1230	0.1230	
140	260.0000	0.1200	0.1200	
141	280.0000	0.1160	0.1160	
142	300.0000	0.1130	0.1130	
143	320.0000	0.1070	0.1070	
144	340.0000	0.1010	0.1010	
145	360.0000	0.0940	0.0940	
146	380.0000	0.0850	0.0850	
147	400.0000	0.0820	0.0820	
148	420.0000	0.0780	0.0780	
149	460.0000	0.0750	0.0750	
150	480.0000	0.0720	0.0720	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 5 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

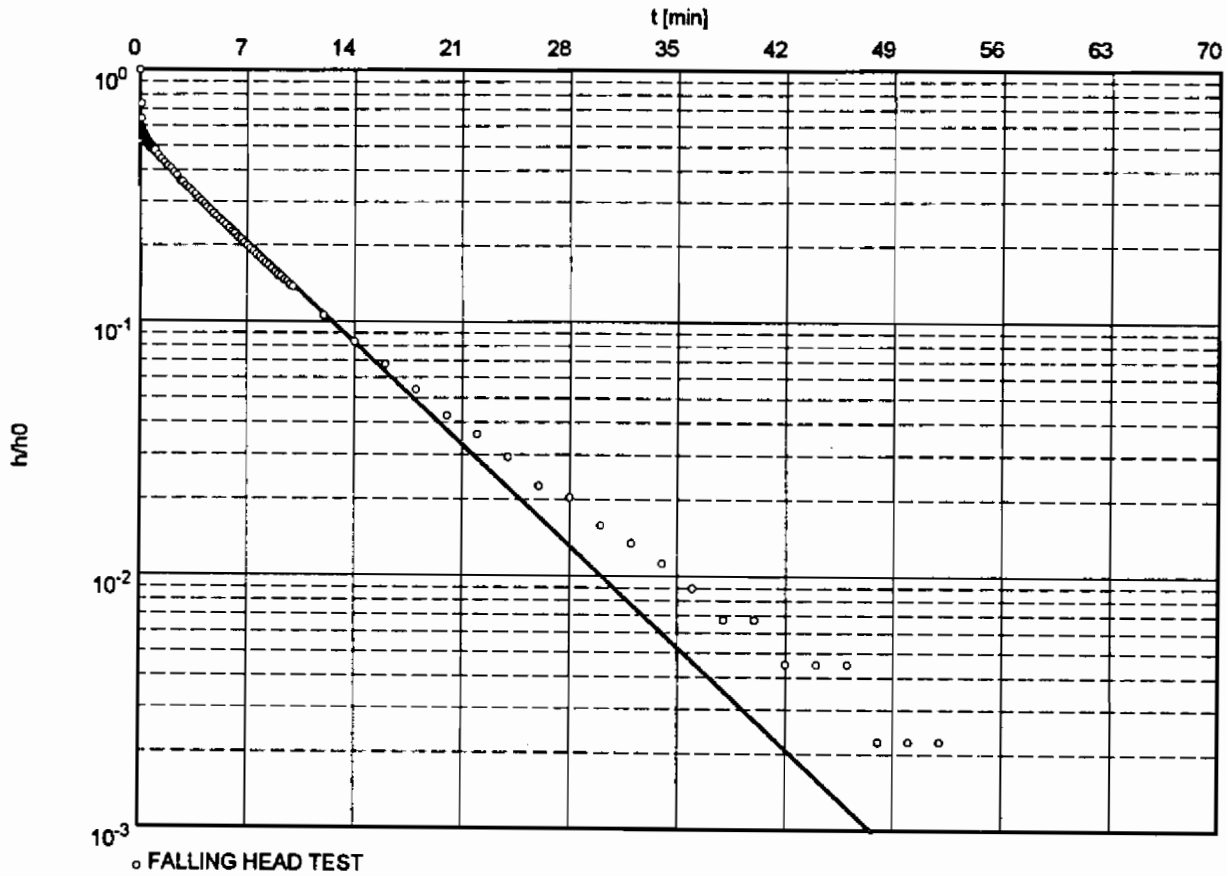
Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-559-02D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
151	500.0000	0.0690	0.0690	
152	520.0000	0.0630	0.0630	
153	560.0000	0.0600	0.0600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	



Hydraulic conductivity [ft/min]: 1.20×10^{-4}

Hydraulic conductivity [ft/day]: 1.73 x 10^-1

L = 11.5 ft
b = 11.5 ft
D = 11.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-4.4600	-4.4600	
2	0.0600	-5.3100	-5.3100	
3	0.0800	-3.2700	-3.2700	
4	0.0900	-2.8600	-2.8600	
5	0.1000	-2.6500	-2.6500	
6	0.1100	-2.6100	-2.6100	
7	0.1200	-2.6000	-2.6000	
8	0.1300	-2.5600	-2.5600	
9	0.1400	-2.5700	-2.5700	
10	0.1600	-2.5600	-2.5600	
11	0.1700	-2.5500	-2.5500	
12	0.1800	-2.5400	-2.5400	
13	0.1900	-2.5200	-2.5200	
14	0.2000	-2.5200	-2.5200	
15	0.2100	-2.5200	-2.5200	
16	0.2200	-2.5100	-2.5100	
17	0.2300	-2.4900	-2.4900	
18	0.2400	-2.4900	-2.4900	
19	0.2500	-2.4600	-2.4600	
20	0.2600	-2.4800	-2.4800	
21	0.2700	-2.4800	-2.4800	
22	0.2800	-2.4700	-2.4700	
23	0.2900	-2.4700	-2.4700	
24	0.3000	-2.4500	-2.4500	
25	0.3100	-2.4400	-2.4400	
26	0.3200	-2.4300	-2.4300	
27	0.3300	-2.4400	-2.4400	
28	0.3500	-2.4200	-2.4200	
29	0.3700	-2.4100	-2.4100	
30	0.3800	-2.4000	-2.4000	
31	0.4000	-2.3900	-2.3900	
32	0.4300	-2.3700	-2.3700	
33	0.4500	-2.3600	-2.3600	
34	0.4800	-2.3400	-2.3400	
35	0.5000	-2.3400	-2.3400	
36	0.5200	-2.3300	-2.3300	
37	0.5300	-2.3200	-2.3200	
38	0.5500	-2.3100	-2.3100	
39	0.6000	-2.2900	-2.2900	
40	0.6200	-2.2800	-2.2800	
41	0.6500	-2.2600	-2.2600	
42	0.6700	-2.2600	-2.2600	
43	0.6800	-2.2400	-2.2400	
44	0.7000	-2.2500	-2.2500	
45	0.7200	-2.2300	-2.2300	
46	0.7500	-2.2400	-2.2400	
47	0.7700	-2.2100	-2.2100	
48	0.7800	-2.1700	-2.1700	
49	0.8000	-2.1900	-2.1900	
50	0.8200	-2.1900	-2.1900	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.8300	-2.1800	-2.1800	
52	0.8500	-2.1700	-2.1700	
53	0.8700	-2.1800	-2.1800	
54	0.8800	-2.1600	-2.1600	
55	0.9000	-2.1400	-2.1400	
56	0.9200	-2.1500	-2.1500	
57	0.9300	-2.1400	-2.1400	
58	0.9500	-2.1300	-2.1300	
59	0.9700	-2.1300	-2.1300	
60	0.9800	-2.1300	-2.1300	
61	1.0000	-2.1200	-2.1200	
62	1.2000	-2.0400	-2.0400	
63	1.4000	-1.9700	-1.9700	
64	1.6000	-1.9100	-1.9100	
65	1.8000	-1.8400	-1.8400	
66	2.0000	-1.8000	-1.8000	
67	2.2000	-1.7400	-1.7400	
68	2.4000	-1.6900	-1.6900	
69	2.6000	-1.6100	-1.6100	
70	2.8000	-1.5900	-1.5900	
71	3.0000	-1.5400	-1.5400	
72	3.2000	-1.5000	-1.5000	
73	3.4000	-1.4600	-1.4600	
74	3.6000	-1.4200	-1.4200	
75	3.8000	-1.3700	-1.3700	
76	4.0000	-1.3400	-1.3400	
77	4.2000	-1.3000	-1.3000	
78	4.4000	-1.2600	-1.2600	
79	4.6000	-1.2300	-1.2300	
80	4.8000	-1.1900	-1.1900	
81	5.0000	-1.1600	-1.1600	
82	5.2000	-1.1300	-1.1300	
83	5.4000	-1.1000	-1.1000	
84	5.6000	-1.0700	-1.0700	
85	5.8000	-1.0400	-1.0400	
86	6.0000	-1.0100	-1.0100	
87	6.2000	-0.9900	-0.9900	
88	6.4000	-0.9600	-0.9600	
89	6.6000	-0.9400	-0.9400	
90	6.8000	-0.9100	-0.9100	
91	7.0000	-0.8900	-0.8900	
92	7.2000	-0.8600	-0.8600	
93	7.4000	-0.8400	-0.8400	
94	7.6000	-0.8200	-0.8200	
95	7.8000	-0.8000	-0.8000	
96	8.0000	-0.7800	-0.7800	
97	8.2000	-0.7600	-0.7600	
98	8.4000	-0.7400	-0.7400	
99	8.6000	-0.7200	-0.7200	
100	8.8000	-0.7000	-0.7000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

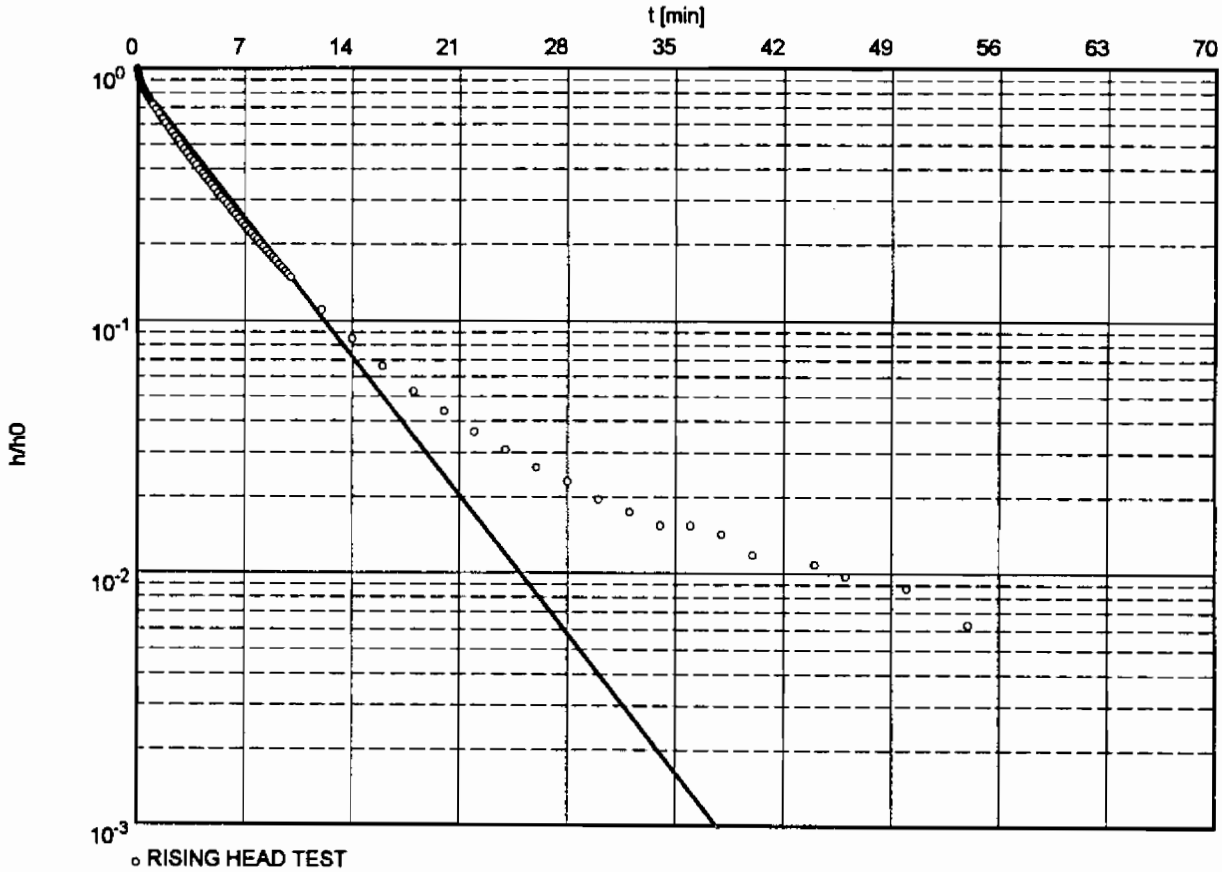
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	9.0000	-0.6800	-0.6800	
102	9.2000	-0.6700	-0.6700	
103	9.4000	-0.6500	-0.6500	
104	9.6000	-0.6400	-0.6400	
105	9.8000	-0.6200	-0.6200	
106	10.0000	-0.6100	-0.6100	
107	12.0000	-0.4700	-0.4700	
108	14.0000	-0.3700	-0.3700	
109	16.0000	-0.3000	-0.3000	
110	18.0000	-0.2400	-0.2400	
111	20.0000	-0.1900	-0.1900	
112	22.0000	-0.1600	-0.1600	
113	24.0000	-0.1300	-0.1300	
114	26.0000	-0.1000	-0.1000	
115	28.0000	-0.0900	-0.0900	
116	30.0000	-0.0700	-0.0700	
117	32.0000	-0.0600	-0.0600	
118	34.0000	-0.0500	-0.0500	
119	36.0000	-0.0400	-0.0400	
120	38.0000	-0.0300	-0.0300	
121	40.0000	-0.0300	-0.0300	
122	42.0000	-0.0200	-0.0200	
123	44.0000	-0.0200	-0.0200	
124	46.0000	-0.0200	-0.0200	
125	48.0000	-0.0100	-0.0100	
126	50.0000	-0.0100	-0.0100	
127	52.0000	-0.0100	-0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	



Hydraulic conductivity [ft/min]: 1.65×10^{-4}

Hydraulic conductivity [ft/day]: 2.38 x 10^-1

L = 11.5 ft
b = 11.5 ft
D = 11.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.8730	2.8730	
2	0.0333	2.8600	2.8600	
3	0.0416	2.7910	2.7910	
4	0.0500	2.7430	2.7430	
5	0.0583	2.7270	2.7270	
6	0.0666	2.7150	2.7150	
7	0.0750	2.6930	2.6930	
8	0.0833	2.6830	2.6830	
9	0.0916	2.6520	2.6520	
10	0.1000	2.6450	2.6450	
11	0.1083	2.6360	2.6360	
12	0.1166	2.6230	2.6230	
13	0.1250	2.6100	2.6100	
14	0.1333	2.5980	2.5980	
15	0.1416	2.5880	2.5880	
16	0.1500	2.5790	2.5790	
17	0.1583	2.5690	2.5690	
18	0.1666	2.5600	2.5600	
19	0.1750	2.5530	2.5530	
20	0.1833	2.5440	2.5440	
21	0.1916	2.5380	2.5380	
22	0.2000	2.5280	2.5280	
23	0.2083	2.5190	2.5190	
24	0.2166	2.5120	2.5120	
25	0.2250	2.5060	2.5060	
26	0.2333	2.5000	2.5000	
27	0.2416	2.4930	2.4930	
28	0.2500	2.4840	2.4840	
29	0.2583	2.4810	2.4810	
30	0.2666	2.4740	2.4740	
31	0.2750	2.4680	2.4680	
32	0.2833	2.4590	2.4590	
33	0.2916	2.4520	2.4520	
34	0.3000	2.4460	2.4460	
35	0.3083	2.4400	2.4400	
36	0.3166	2.4330	2.4330	
37	0.3250	2.4300	2.4300	
38	0.3333	2.4240	2.4240	
39	0.3500	2.4110	2.4110	
40	0.3666	2.4020	2.4020	
41	0.3833	2.3890	2.3890	
42	0.4000	2.3790	2.3790	
43	0.4166	2.3670	2.3670	
44	0.4333	2.3570	2.3570	
45	0.4500	2.3480	2.3480	
46	0.4666	2.3380	2.3380	
47	0.4833	2.3290	2.3290	
48	0.5000	2.3190	2.3190	
49	0.5166	2.3070	2.3070	
50	0.5333	2.3000	2.3000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.5500	2.2910	2.2910	
52	0.5666	2.2810	2.2810	
53	0.5833	2.2720	2.2720	
54	0.6000	2.2620	2.2620	
55	0.6166	2.2530	2.2530	
56	0.6333	2.2400	2.2400	
57	0.6500	2.2370	2.2370	
58	0.6666	2.2280	2.2280	
59	0.6833	2.2180	2.2180	
60	0.7000	2.2090	2.2090	
61	0.7166	2.2020	2.2020	
62	0.7333	2.1930	2.1930	
63	0.7500	2.1830	2.1830	
64	0.7666	2.1770	2.1770	
65	0.7833	2.1680	2.1680	
66	0.8000	2.1580	2.1580	
67	0.8166	2.1520	2.1520	
68	0.8333	2.1420	2.1420	
69	0.8500	2.1360	2.1360	
70	0.8666	2.1260	2.1260	
71	0.8833	2.1170	2.1170	
72	0.9000	2.1110	2.1110	
73	0.9166	2.1040	2.1040	
74	0.9333	2.0950	2.0950	
75	0.9500	2.0850	2.0850	
76	0.9666	2.0790	2.0790	
77	0.9833	2.0730	2.0730	
78	1.0000	2.0630	2.0630	
79	1.2000	1.9750	1.9750	
80	1.4000	1.8920	1.8920	
81	1.6000	1.8130	1.8130	
82	1.8000	1.7400	1.7400	
83	2.0000	1.6680	1.6680	
84	2.2000	1.6010	1.6010	
85	2.4000	1.5380	1.5380	
86	2.6000	1.4810	1.4810	
87	2.8000	1.4210	1.4210	
88	3.0000	1.3700	1.3700	
89	3.2000	1.3200	1.3200	
90	3.4000	1.2690	1.2690	
91	3.6000	1.2250	1.2250	
92	3.8000	1.1800	1.1800	
93	4.0000	1.1360	1.1360	
94	4.2000	1.0950	1.0950	
95	4.4000	1.0570	1.0570	
96	4.6000	1.0190	1.0190	
97	4.8000	0.9840	0.9840	
98	5.0000	0.9490	0.9490	
99	5.2000	0.9140	0.9140	
100	5.4000	0.8830	0.8830	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

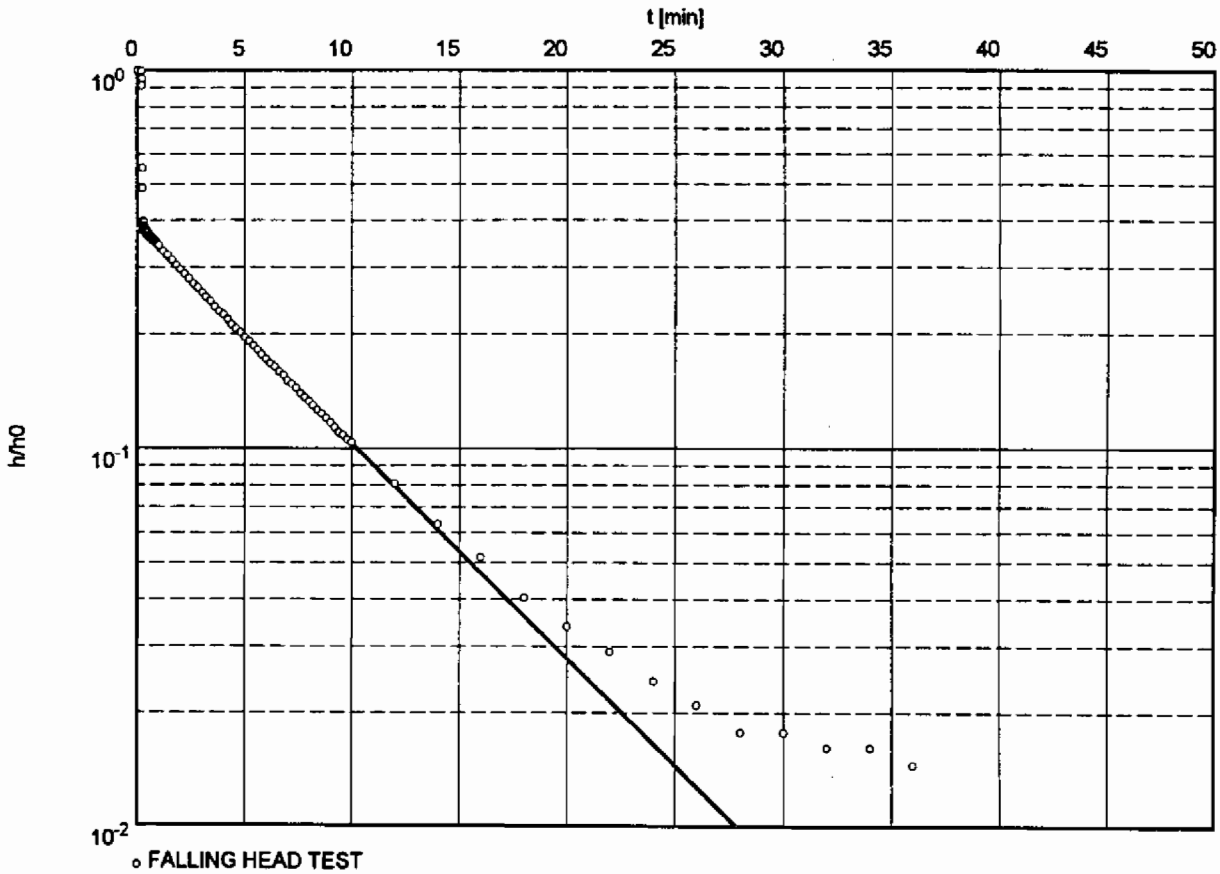
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-559-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	5.6000	0.8540	0.8540	
102	5.8000	0.8260	0.8260	
103	6.0000	0.7970	0.7970	
104	6.2000	0.7720	0.7720	
105	6.4000	0.7470	0.7470	
106	6.6000	0.7210	0.7210	
107	6.8000	0.6990	0.6990	
108	7.0000	0.6740	0.6740	
109	7.2000	0.6520	0.6520	
110	7.4000	0.6330	0.6330	
111	7.6000	0.6110	0.6110	
112	7.8000	0.5950	0.5950	
113	8.0000	0.5760	0.5760	
114	8.2000	0.5570	0.5570	
115	8.4000	0.5380	0.5380	
116	8.6000	0.5220	0.5220	
117	8.8000	0.5060	0.5060	
118	9.0000	0.4930	0.4930	
119	9.2000	0.4780	0.4780	
120	9.4000	0.4620	0.4620	
121	9.6000	0.4490	0.4490	
122	9.8000	0.4360	0.4360	
123	10.0000	0.4240	0.4240	
124	12.0000	0.3160	0.3160	
125	14.0000	0.2430	0.2430	
126	16.0000	0.1890	0.1890	
127	18.0000	0.1510	0.1510	
128	20.0000	0.1260	0.1260	
129	22.0000	0.1040	0.1040	
130	24.0000	0.0880	0.0880	
131	26.0000	0.0750	0.0750	
132	28.0000	0.0660	0.0660	
133	30.0000	0.0560	0.0560	
134	32.0000	0.0500	0.0500	
135	34.0000	0.0440	0.0440	
136	36.0000	0.0440	0.0440	
137	38.0000	0.0410	0.0410	
138	40.0000	0.0340	0.0340	
139	44.0000	0.0310	0.0310	
140	46.0000	0.0280	0.0280	
141	50.0000	0.0250	0.0250	
142	54.0000	0.0180	0.0180	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	



Hydraulic conductivity [ft/min]: 1.35×10^{-4}

Hydraulic conductivity [ft/day]: 1.94 x 10^-1

L = 9.7 ft
b = 9.7 ft
D = 9.7 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	6.2000	6.2000	
2	0.1700	5.7800	5.7800	
3	0.1800	5.6900	5.6900	
4	0.1900	6.1800	6.1800	
5	0.2000	5.9000	5.9000	
6	0.2100	5.6500	5.6500	
7	0.2200	3.4100	3.4100	
8	0.2300	3.0100	3.0100	
9	0.2600	2.4000	2.4000	
10	0.2700	2.4700	2.4700	
11	0.2800	2.4400	2.4400	
12	0.2900	2.3900	2.3900	
13	0.3200	2.3800	2.3800	
14	0.3300	2.3800	2.3800	
15	0.3500	2.3700	2.3700	
16	0.3700	2.3600	2.3600	
17	0.3800	2.3500	2.3500	
18	0.4000	2.3400	2.3400	
19	0.4200	2.3400	2.3400	
20	0.4300	2.3300	2.3300	
21	0.4700	2.3100	2.3100	
22	0.4800	2.3100	2.3100	
23	0.5000	2.3000	2.3000	
24	0.5200	2.2900	2.2900	
25	0.5300	2.2900	2.2900	
26	0.5500	2.2800	2.2800	
27	0.5700	2.2800	2.2800	
28	0.5800	2.2700	2.2700	
29	0.6000	2.2600	2.2600	
30	0.6200	2.2600	2.2600	
31	0.6300	2.2500	2.2500	
32	0.6500	2.2400	2.2400	
33	0.6700	2.2400	2.2400	
34	0.6800	2.2300	2.2300	
35	0.7000	2.2200	2.2200	
36	0.7200	2.2200	2.2200	
37	0.7300	2.2100	2.2100	
38	0.7500	2.2100	2.2100	
39	0.7700	2.2000	2.2000	
40	0.8000	2.1900	2.1900	
41	0.8300	2.1800	2.1800	
42	0.8500	2.1700	2.1700	
43	0.8700	2.1700	2.1700	
44	0.8800	2.1600	2.1600	
45	0.9000	2.1500	2.1500	
46	0.9200	2.1500	2.1500	
47	0.9300	2.1400	2.1400	
48	0.9500	2.1300	2.1300	
49	0.9800	2.1300	2.1300	
50	1.0000	2.1200	2.1200	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	1.2000	2.0500	2.0500	
52	1.4000	2.0000	2.0000	
53	1.6000	1.9400	1.9400	
54	1.8000	1.8800	1.8800	
55	2.0000	1.8300	1.8300	
56	2.2000	1.7800	1.7800	
57	2.4000	1.7300	1.7300	
58	2.6000	1.6800	1.6800	
59	2.8000	1.6400	1.6400	
60	3.0000	1.5900	1.5900	
61	3.2000	1.5500	1.5500	
62	3.4000	1.5100	1.5100	
63	3.6000	1.4600	1.4600	
64	3.8000	1.4200	1.4200	
65	4.0000	1.3900	1.3900	
66	4.2000	1.3500	1.3500	
67	4.4000	1.3100	1.3100	
68	4.6000	1.2800	1.2800	
69	4.8000	1.2500	1.2500	
70	5.0000	1.2100	1.2100	
71	5.2000	1.1800	1.1800	
72	5.4000	1.1500	1.1500	
73	5.6000	1.1200	1.1200	
74	5.8000	1.0900	1.0900	
75	6.0000	1.0600	1.0600	
76	6.2000	1.0300	1.0300	
77	6.4000	1.0100	1.0100	
78	6.6000	0.9800	0.9800	
79	6.8000	0.9600	0.9600	
80	7.0000	0.9300	0.9300	
81	7.2000	0.9100	0.9100	
82	7.4000	0.8900	0.8900	
83	7.6000	0.8600	0.8600	
84	7.8000	0.8400	0.8400	
85	8.0000	0.8200	0.8200	
86	8.2000	0.8000	0.8000	
87	8.4000	0.7800	0.7800	
88	8.6000	0.7600	0.7600	
89	8.8000	0.7400	0.7400	
90	9.0000	0.7200	0.7200	
91	9.2000	0.7000	0.7000	
92	9.4000	0.6800	0.6800	
93	9.6000	0.6700	0.6700	
94	9.8000	0.6500	0.6500	
95	10.0000	0.6400	0.6400	
96	12.0000	0.5000	0.5000	
97	14.0000	0.3900	0.3900	
98	16.0000	0.3200	0.3200	
99	18.0000	0.2500	0.2500	
100	20.0000	0.2100	0.2100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

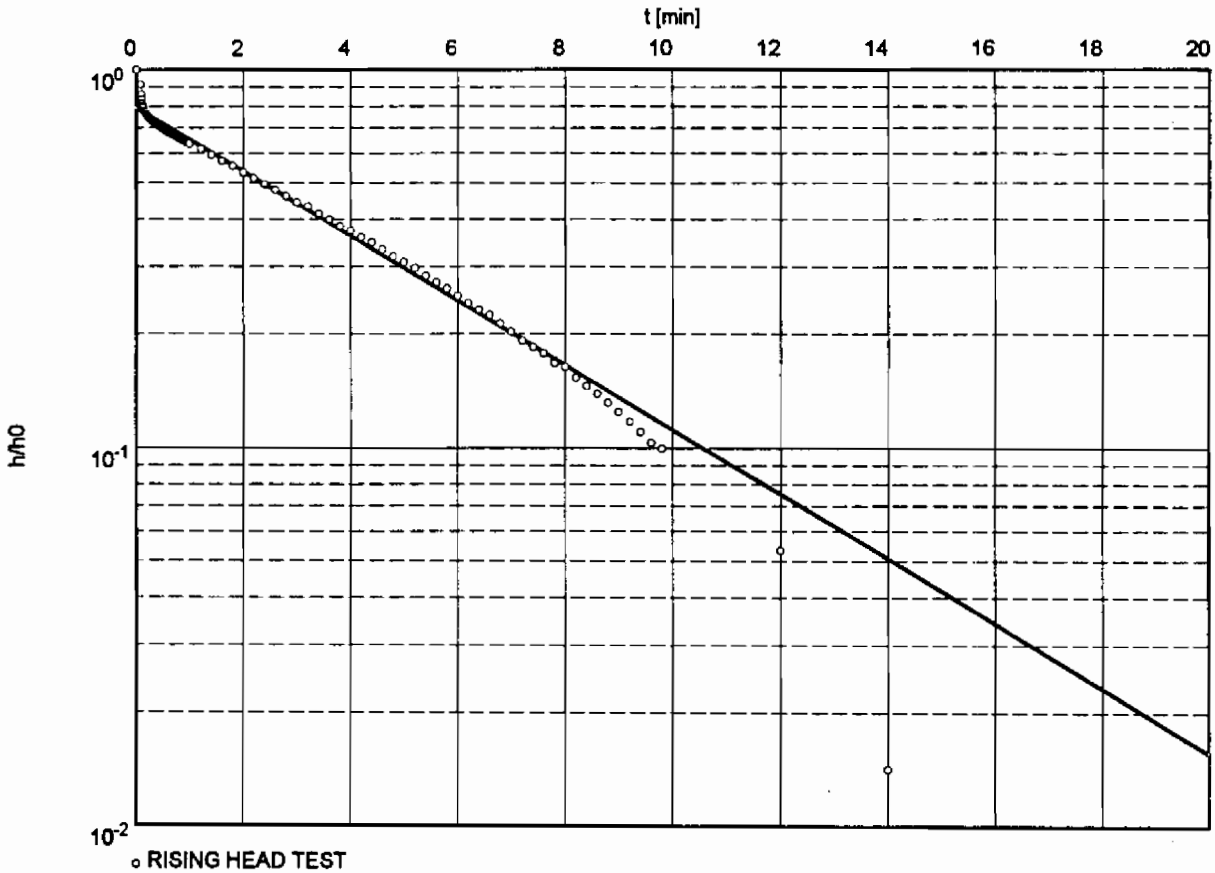
Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	22.0000	0.1800	0.1800	
102	24.0000	0.1500	0.1500	
103	26.0000	0.1300	0.1300	
104	28.0000	0.1100	0.1100	
105	30.0000	0.1100	0.1100	
106	32.0000	0.1000	0.1000	
107	34.0000	0.1000	0.1000	
108	36.0000	0.0900	0.0900	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	



Hydraulic conductivity [ft/min]: 2.04×10^{-4}

Hydraulic conductivity [ft/day]: 2.94 x 10^-1

L = 9.7 ft
b = 9.7 ft
D = 9.7 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	2.8200	2.8200
2	0.0800	2.5800	2.5800
3	0.0900	2.4200	2.4200
4	0.1000	2.3500	2.3500
5	0.1100	2.2900	2.2900
6	0.1200	2.2600	2.2600
7	0.1300	2.2400	2.2400
8	0.1400	2.2000	2.2000
9	0.1500	2.1900	2.1900
10	0.1600	2.1700	2.1700
11	0.1700	2.1700	2.1700
12	0.1800	2.1500	2.1500
13	0.1900	2.1400	2.1400
14	0.2000	2.1300	2.1300
15	0.2100	2.1200	2.1200
16	0.2200	2.1200	2.1200
17	0.2300	2.1100	2.1100
18	0.2400	2.1000	2.1000
19	0.2500	2.0900	2.0900
20	0.2600	2.0800	2.0800
21	0.2700	2.0800	2.0800
22	0.2800	2.0800	2.0800
23	0.2900	2.0600	2.0600
24	0.3000	2.0600	2.0600
25	0.3100	2.0600	2.0600
26	0.3200	2.0500	2.0500
27	0.3300	2.0400	2.0400
28	0.3500	2.0300	2.0300
29	0.3700	2.0300	2.0300
30	0.3800	2.0200	2.0200
31	0.4000	2.0100	2.0100
32	0.4200	2.0000	2.0000
33	0.4300	2.0000	2.0000
34	0.4500	1.9900	1.9900
35	0.4700	1.9800	1.9800
36	0.4800	1.9800	1.9800
37	0.5000	1.9700	1.9700
38	0.5200	1.9600	1.9600
39	0.5300	1.9500	1.9500
40	0.5500	1.9500	1.9500
41	0.5700	1.9400	1.9400
42	0.5800	1.9400	1.9400
43	0.6000	1.9200	1.9200
44	0.6200	1.9200	1.9200
45	0.6300	1.9100	1.9100
46	0.6500	1.9100	1.9100
47	0.6700	1.9100	1.9100
48	0.6800	1.9000	1.9000
49	0.7000	1.8900	1.8900
50	0.7200	1.8900	1.8900

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.7300	1.8800	1.8800	
52	0.7500	1.8700	1.8700	
53	0.7700	1.8700	1.8700	
54	0.7800	1.8600	1.8600	
55	0.8000	1.8500	1.8500	
56	0.8200	1.8500	1.8500	
57	0.8300	1.8400	1.8400	
58	0.8500	1.8400	1.8400	
59	0.8700	1.8400	1.8400	
60	0.8800	1.8300	1.8300	
61	0.9000	1.8200	1.8200	
62	0.9200	1.8200	1.8200	
63	0.9300	1.8100	1.8100	
64	0.9500	1.8100	1.8100	
65	0.9700	1.8100	1.8100	
66	0.9800	1.8000	1.8000	
67	1.0000	1.7900	1.7900	
68	1.2000	1.7300	1.7300	
69	1.4000	1.6700	1.6700	
70	1.6000	1.6100	1.6100	
71	1.8000	1.5600	1.5600	
72	2.0000	1.5000	1.5000	
73	2.2000	1.4500	1.4500	
74	2.4000	1.4000	1.4000	
75	2.6000	1.3500	1.3500	
76	2.8000	1.3000	1.3000	
77	3.0000	1.2500	1.2500	
78	3.2000	1.2200	1.2200	
79	3.4000	1.1700	1.1700	
80	3.6000	1.1300	1.1300	
81	3.8000	1.0800	1.0800	
82	4.0000	1.0500	1.0500	
83	4.2000	1.0100	1.0100	
84	4.4000	0.9800	0.9800	
85	4.6000	0.9400	0.9400	
86	4.8000	0.9000	0.9000	
87	5.0000	0.8700	0.8700	
88	5.2000	0.8400	0.8400	
89	5.4000	0.8000	0.8000	
90	5.6000	0.7700	0.7700	
91	5.8000	0.7400	0.7400	
92	6.0000	0.7100	0.7100	
93	6.2000	0.6800	0.6800	
94	6.4000	0.6500	0.6500	
95	6.6000	0.6300	0.6300	
96	6.8000	0.6000	0.6000	
97	7.0000	0.5700	0.5700	
98	7.2000	0.5400	0.5400	
99	7.4000	0.5200	0.5200	
100	7.6000	0.5000	0.5000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

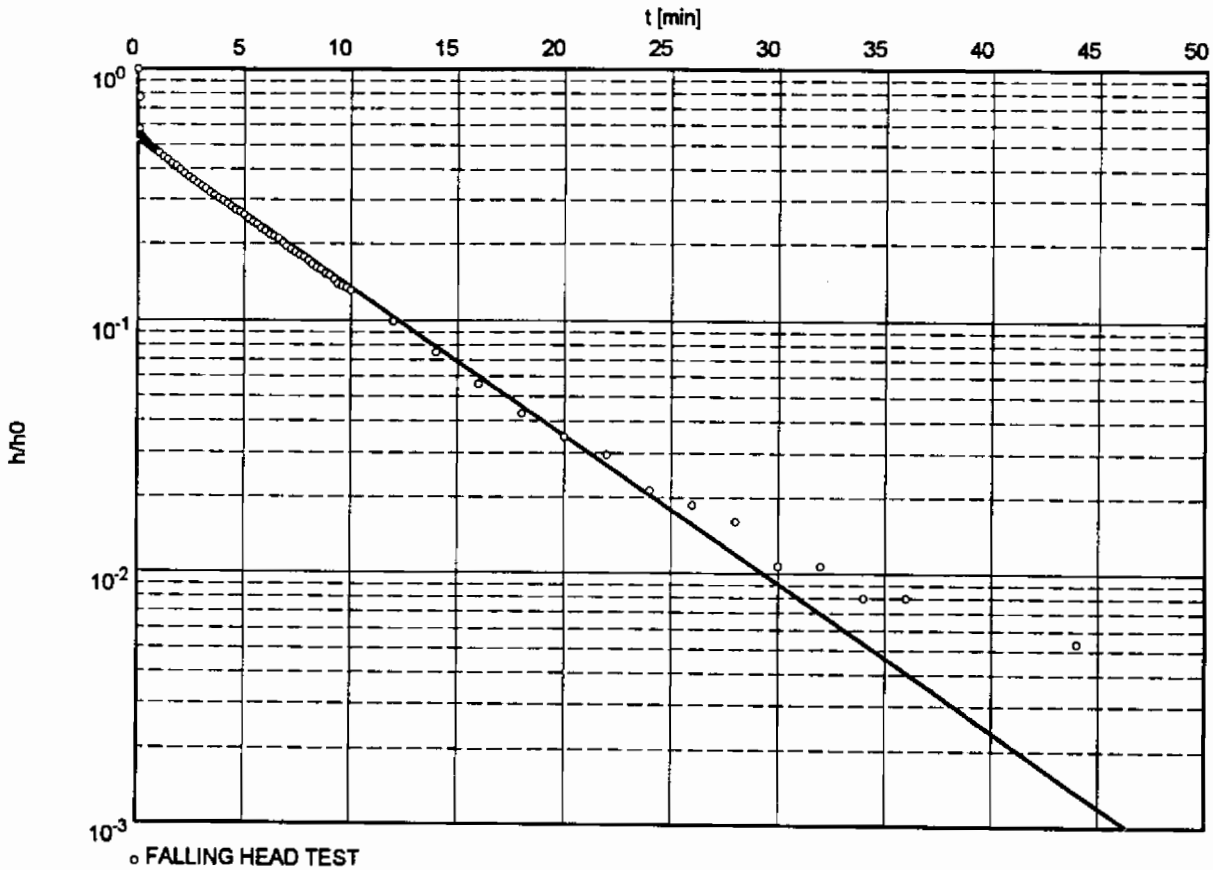
Slug Test No. 1	Test conducted on: 20 OCT 96
NBCE-566-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	7.8000	0.4700	0.4700	
102	8.0000	0.4600	0.4600	
103	8.2000	0.4300	0.4300	
104	8.4000	0.4100	0.4100	
105	8.6000	0.3900	0.3900	
106	8.8000	0.3700	0.3700	
107	9.0000	0.3500	0.3500	
108	9.2000	0.3300	0.3300	
109	9.4000	0.3100	0.3100	
110	9.6000	0.2900	0.2900	
111	9.8000	0.2800	0.2800	
112	12.0000	0.1500	0.1500	
113	14.0000	0.0400	0.0400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	



Hydraulic conductivity [ft/min]: 1.21×10^{-4}

Hydraulic conductivity [ft/day]: 1.72 x 10^-1

L = 11.8 ft
b = 11.8 ft
D = 11.8 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-3.7500	-3.7500	
2	0.0800	-2.8900	-2.8900	
3	0.1000	-2.1500	-2.1500	
4	0.1100	-2.0300	-2.0300	
5	0.1200	-2.0300	-2.0300	
6	0.1300	-2.0400	-2.0400	
7	0.1400	-2.0300	-2.0300	
8	0.1500	-2.0200	-2.0200	
9	0.1700	-2.0100	-2.0100	
10	0.1800	-2.0100	-2.0100	
11	0.1900	-2.0000	-2.0000	
12	0.2000	-1.9900	-1.9900	
13	0.2200	-1.9900	-1.9900	
14	0.2300	-1.9800	-1.9800	
15	0.2400	-1.9700	-1.9700	
16	0.2600	-1.9700	-1.9700	
17	0.2700	-1.9600	-1.9600	
18	0.2800	-1.9500	-1.9500	
19	0.3000	-1.9500	-1.9500	
20	0.3100	-1.9400	-1.9400	
21	0.3200	-1.9400	-1.9400	
22	0.3500	-1.9300	-1.9300	
23	0.3700	-1.9200	-1.9200	
24	0.3800	-1.9200	-1.9200	
25	0.4000	-1.9100	-1.9100	
26	0.4200	-1.9100	-1.9100	
27	0.4300	-1.9000	-1.9000	
28	0.4500	-1.8900	-1.8900	
29	0.4700	-1.8900	-1.8900	
30	0.4800	-1.8800	-1.8800	
31	0.5200	-1.8700	-1.8700	
32	0.5500	-1.8600	-1.8600	
33	0.5700	-1.8500	-1.8500	
34	0.5800	-1.8500	-1.8500	
35	0.6000	-1.8400	-1.8400	
36	0.6200	-1.8400	-1.8400	
37	0.6500	-1.8300	-1.8300	
38	0.6700	-1.8200	-1.8200	
39	0.6800	-1.8200	-1.8200	
40	0.7000	-1.8100	-1.8100	
41	0.7200	-1.8000	-1.8000	
42	0.7500	-1.8000	-1.8000	
43	0.7700	-1.7900	-1.7900	
44	0.7800	-1.7800	-1.7800	
45	0.8000	-1.7800	-1.7800	
46	0.8300	-1.7700	-1.7700	
47	0.8500	-1.7700	-1.7700	
48	0.8800	-1.7600	-1.7600	
49	0.9000	-1.7500	-1.7500	
50	0.9300	-1.7400	-1.7400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.9800	-1.7400	-1.7400	
52	1.0000	-1.7300	-1.7300	
53	1.2000	-1.6700	-1.6700	
54	1.4000	-1.6200	-1.6200	
55	1.6000	-1.5700	-1.5700	
56	1.8000	-1.5300	-1.5300	
57	2.0000	-1.4800	-1.4800	
58	2.2000	-1.4300	-1.4300	
59	2.4000	-1.3900	-1.3900	
60	2.6000	-1.3500	-1.3500	
61	2.8000	-1.3100	-1.3100	
62	3.0000	-1.2700	-1.2700	
63	3.2000	-1.2400	-1.2400	
64	3.4000	-1.2000	-1.2000	
65	3.6000	-1.1700	-1.1700	
66	3.8000	-1.1400	-1.1400	
67	4.0000	-1.1100	-1.1100	
68	4.2000	-1.0800	-1.0800	
69	4.4000	-1.0500	-1.0500	
70	4.6000	-1.0200	-1.0200	
71	4.8000	-1.0000	-1.0000	
72	5.0000	-0.9700	-0.9700	
73	5.2000	-0.9400	-0.9400	
74	5.4000	-0.9100	-0.9100	
75	5.6000	-0.8900	-0.8900	
76	5.8000	-0.8600	-0.8600	
77	6.0000	-0.8400	-0.8400	
78	6.2000	-0.8100	-0.8100	
79	6.4000	-0.8000	-0.8000	
80	6.6000	-0.7800	-0.7800	
81	6.8000	-0.7500	-0.7500	
82	7.0000	-0.7300	-0.7300	
83	7.2000	-0.7100	-0.7100	
84	7.4000	-0.6900	-0.6900	
85	7.6000	-0.6700	-0.6700	
86	7.8000	-0.6600	-0.6600	
87	8.0000	-0.6400	-0.6400	
88	8.2000	-0.6200	-0.6200	
89	8.4000	-0.6000	-0.6000	
90	8.6000	-0.5900	-0.5900	
91	8.8000	-0.5700	-0.5700	
92	9.0000	-0.5600	-0.5600	
93	9.2000	-0.5400	-0.5400	
94	9.4000	-0.5200	-0.5200	
95	9.6000	-0.5100	-0.5100	
96	9.8000	-0.5000	-0.5000	
97	10.0000	-0.4900	-0.4900	
98	12.0000	-0.3700	-0.3700	
99	14.0000	-0.2800	-0.2800	
100	16.0000	-0.2100	-0.2100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

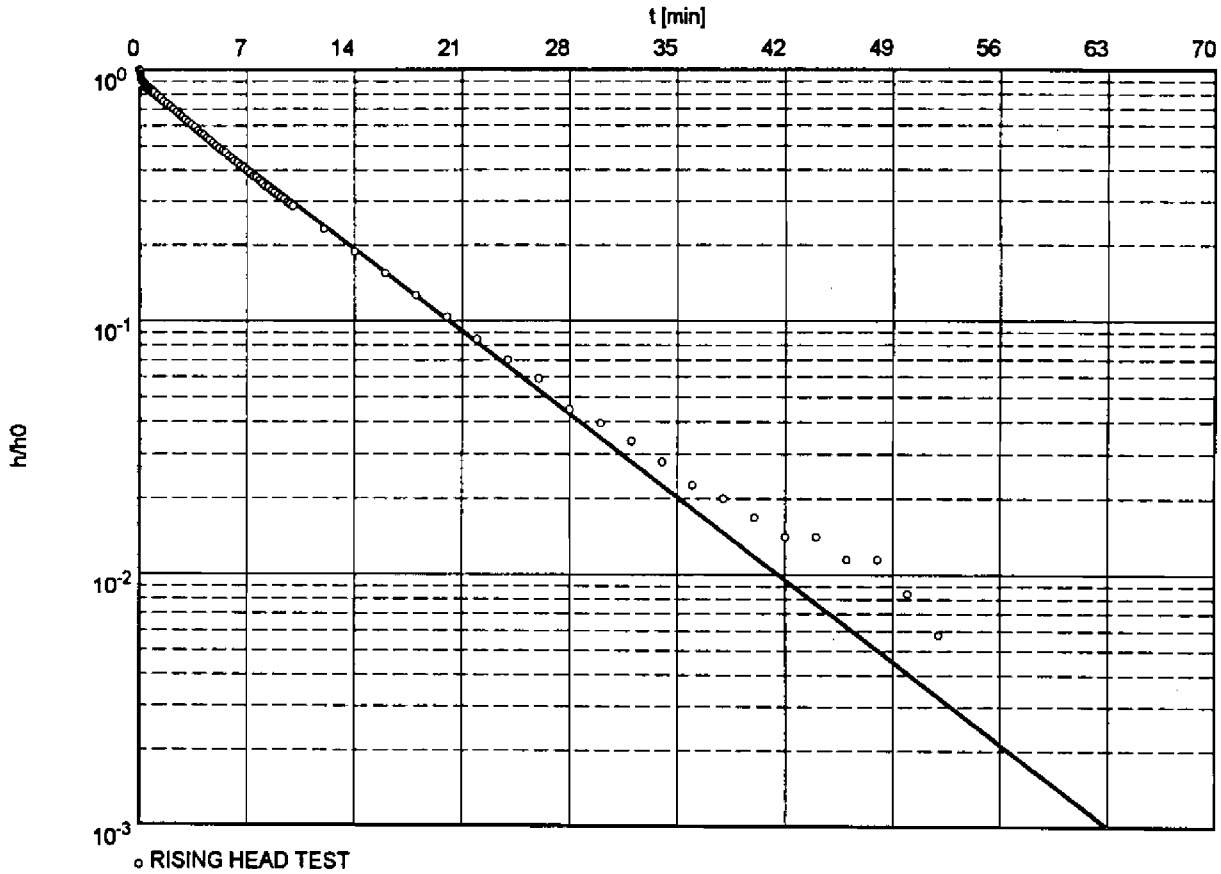
Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	18.0000	-0.1600	-0.1600	
102	20.0000	-0.1300	-0.1300	
103	22.0000	-0.1100	-0.1100	
104	24.0000	-0.0800	-0.0800	
105	26.0000	-0.0700	-0.0700	
106	28.0000	-0.0600	-0.0600	
107	30.0000	-0.0400	-0.0400	
108	32.0000	-0.0400	-0.0400	
109	34.0000	-0.0300	-0.0300	
110	36.0000	-0.0300	-0.0300	
111	44.0000	-0.0200	-0.0200	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	



Hydraulic conductivity [ft/min]: 9.70×10^{-5}

Hydraulic conductivity [ft/day]: 1.40 x 10^-1

L = 11.8 ft
b = 11.8 ft
D = 11.8 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.2580	2.2580	
2	0.0666	2.2260	2.2260	
3	0.0750	2.1690	2.1690	
4	0.0833	2.1380	2.1380	
5	0.0916	2.1190	2.1190	
6	0.1000	2.1060	2.1060	
7	0.1083	2.1000	2.1000	
8	0.1166	2.0870	2.0870	
9	0.1333	2.0810	2.0810	
10	0.1416	2.0750	2.0750	
11	0.1500	2.0690	2.0690	
12	0.1666	2.0620	2.0620	
13	0.1750	2.0560	2.0560	
14	0.1833	2.0500	2.0500	
15	0.2083	2.0430	2.0430	
16	0.2250	2.0370	2.0370	
17	0.2333	2.0310	2.0310	
18	0.2500	2.0240	2.0240	
19	0.2666	2.0180	2.0180	
20	0.2916	2.0120	2.0120	
21	0.3083	2.0050	2.0050	
22	0.3250	1.9990	1.9990	
23	0.3500	1.9930	1.9930	
24	0.3666	1.9870	1.9870	
25	0.3833	1.9800	1.9800	
26	0.4166	1.9740	1.9740	
27	0.4333	1.9680	1.9680	
28	0.4500	1.9610	1.9610	
29	0.4833	1.9550	1.9550	
30	0.5000	1.9490	1.9490	
31	0.5333	1.9420	1.9420	
32	0.5666	1.9360	1.9360	
33	0.5833	1.9300	1.9300	
34	0.6000	1.9300	1.9300	
35	0.6166	1.9240	1.9240	
36	0.6333	1.9170	1.9170	
37	0.6666	1.9110	1.9110	
38	0.6833	1.9050	1.9050	
39	0.7000	1.9050	1.9050	
40	0.7166	1.8980	1.8980	
41	0.7500	1.8920	1.8920	
42	0.7666	1.8860	1.8860	
43	0.7833	1.8860	1.8860	
44	0.8000	1.8790	1.8790	
45	0.8333	1.8730	1.8730	
46	0.8500	1.8670	1.8670	
47	0.8833	1.8600	1.8600	
48	0.9166	1.8540	1.8540	
49	0.9500	1.8420	1.8420	
50	1.0000	1.8350	1.8350	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	1.2000	1.7850	1.7850	
52	1.4000	1.7410	1.7410	
53	1.6000	1.6970	1.6970	
54	1.8000	1.6590	1.6590	
55	2.0000	1.6150	1.6150	
56	2.2000	1.5770	1.5770	
57	2.4000	1.5390	1.5390	
58	2.6000	1.5010	1.5010	
59	2.8000	1.4630	1.4630	
60	3.0000	1.4320	1.4320	
61	3.2000	1.4000	1.4000	
62	3.4000	1.3620	1.3620	
63	3.6000	1.3310	1.3310	
64	3.8000	1.2990	1.2990	
65	4.0000	1.2680	1.2680	
66	4.2000	1.2430	1.2430	
67	4.4000	1.2110	1.2110	
68	4.6000	1.1860	1.1860	
69	4.8000	1.1540	1.1540	
70	5.0000	1.1290	1.1290	
71	5.2000	1.0980	1.0980	
72	5.4000	1.0720	1.0720	
73	5.6000	1.0540	1.0540	
74	5.8000	1.0280	1.0280	
75	6.0000	1.0030	1.0030	
76	6.2000	0.9780	0.9780	
77	6.4000	0.9590	0.9590	
78	6.6000	0.9340	0.9340	
79	6.8000	0.9150	0.9150	
80	7.0000	0.8960	0.8960	
81	7.2000	0.8770	0.8770	
82	7.4000	0.8520	0.8520	
83	7.6000	0.8390	0.8390	
84	7.8000	0.8140	0.8140	
85	8.0000	0.7950	0.7950	
86	8.2000	0.7760	0.7760	
87	8.4000	0.7630	0.7630	
88	8.6000	0.7450	0.7450	
89	8.8000	0.7320	0.7320	
90	9.0000	0.7130	0.7130	
91	9.2000	0.7000	0.7000	
92	9.4000	0.6880	0.6880	
93	9.6000	0.6690	0.6690	
94	9.8000	0.6560	0.6560	
95	10.0000	0.6440	0.6440	
96	12.0000	0.5240	0.5240	
97	14.0000	0.4230	0.4230	
98	16.0000	0.3470	0.3470	
99	18.0000	0.2840	0.2840	
100	20.0000	0.2340	0.2340	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

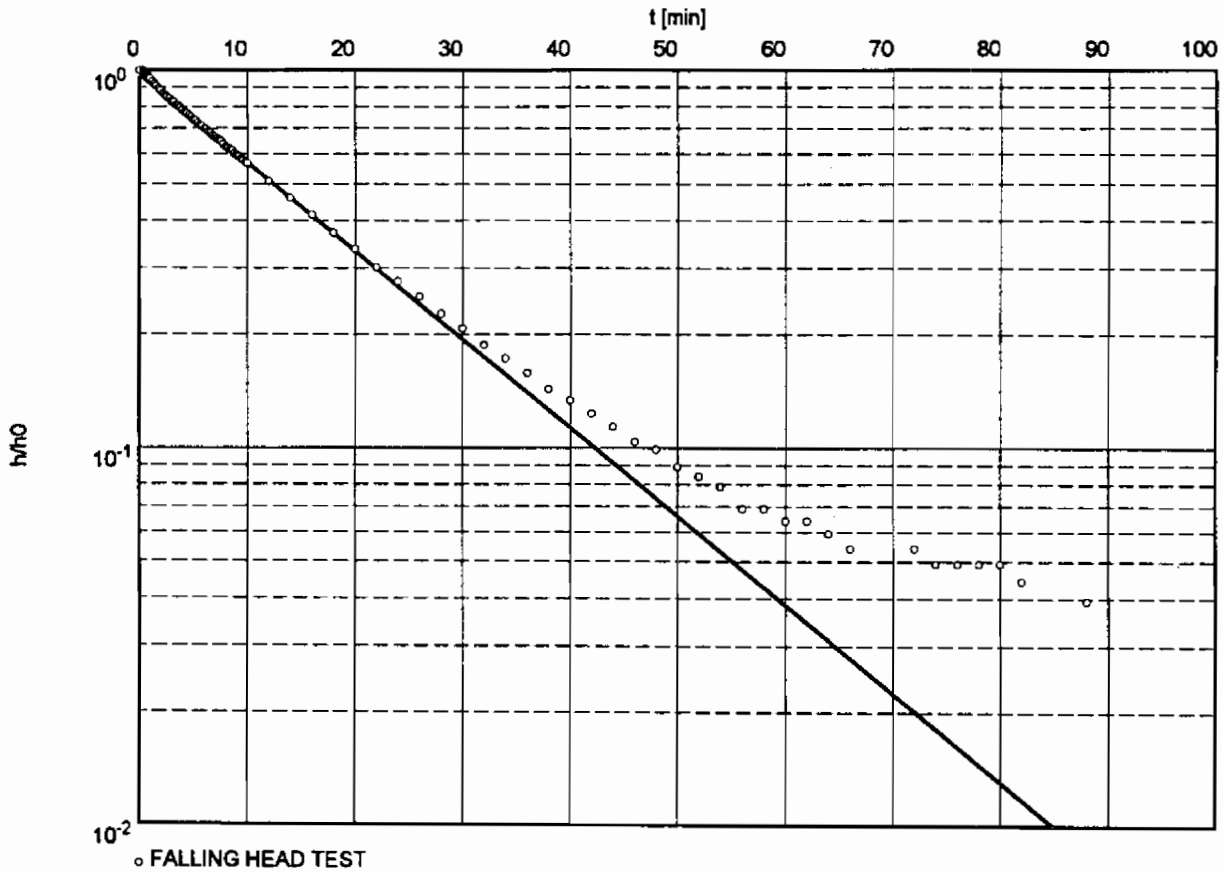
Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-570-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	22.0000	0.1900	0.1900	
102	24.0000	0.1580	0.1580	
103	26.0000	0.1330	0.1330	
104	28.0000	0.1010	0.1010	
105	30.0000	0.0890	0.0890	
106	32.0000	0.0760	0.0760	
107	34.0000	0.0630	0.0630	
108	36.0000	0.0510	0.0510	
109	38.0000	0.0450	0.0450	
110	40.0000	0.0380	0.0380	
111	42.0000	0.0320	0.0320	
112	44.0000	0.0320	0.0320	
113	46.0000	0.0260	0.0260	
114	48.0000	0.0260	0.0260	
115	50.0000	0.0190	0.0190	
116	52.0000	0.0130	0.0130	
117	54.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	



Hydraulic conductivity [ft/min]: 4.95×10^{-5}

Hydraulic conductivity [ft/day]: 7.13 x 10^-2

L = 11.5 ft
b = 11.5 ft
D = 11.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.0300	-2.0300	
2	0.1000	-2.0800	-2.0800	
3	0.1333	-2.0800	-2.0800	
4	0.1667	-2.0700	-2.0700	
5	0.2167	-2.0700	-2.0700	
6	0.2333	-2.0600	-2.0600	
7	0.2833	-2.0500	-2.0500	
8	0.3167	-2.0500	-2.0500	
9	0.3667	-2.0400	-2.0400	
10	0.4000	-2.0300	-2.0300	
11	0.4333	-2.0300	-2.0300	
12	0.4667	-2.0200	-2.0200	
13	0.5000	-2.0100	-2.0100	
14	0.5333	-2.0100	-2.0100	
15	0.5667	-2.0000	-2.0000	
16	0.6000	-2.0000	-2.0000	
17	0.6500	-1.9900	-1.9900	
18	0.6833	-1.9800	-1.9800	
19	0.7167	-1.9800	-1.9800	
20	0.7500	-1.9700	-1.9700	
21	0.7833	-1.9600	-1.9600	
22	0.8333	-1.9600	-1.9600	
23	0.8500	-1.9500	-1.9500	
24	0.9000	-1.9400	-1.9400	
25	0.9333	-1.9400	-1.9400	
26	0.9833	-1.9300	-1.9300	
27	1.2000	-1.8900	-1.8900	
28	1.4000	-1.8600	-1.8600	
29	1.6000	-1.8400	-1.8400	
30	1.8000	-1.8100	-1.8100	
31	2.0000	-1.7900	-1.7900	
32	2.2000	-1.7600	-1.7600	
33	2.4000	-1.7400	-1.7400	
34	2.6000	-1.7200	-1.7200	
35	2.8000	-1.7000	-1.7000	
36	3.0000	-1.6800	-1.6800	
37	3.2000	-1.6700	-1.6700	
38	3.4000	-1.6400	-1.6400	
39	3.6000	-1.6300	-1.6300	
40	3.8000	-1.6100	-1.6100	
41	4.0000	-1.5900	-1.5900	
42	4.2000	-1.5700	-1.5700	
43	4.4000	-1.5600	-1.5600	
44	4.6000	-1.5400	-1.5400	
45	4.8000	-1.5200	-1.5200	
46	5.0000	-1.5000	-1.5000	
47	5.2000	-1.4900	-1.4900	
48	5.4000	-1.4700	-1.4700	
49	5.6000	-1.4500	-1.4500	
50	5.8000	-1.4400	-1.4400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	6.0000	-1.4200	-1.4200	
52	6.2000	-1.4100	-1.4100	
53	6.4000	-1.3900	-1.3900	
54	6.6000	-1.3800	-1.3800	
55	6.8000	-1.3600	-1.3600	
56	7.0000	-1.3500	-1.3500	
57	7.2000	-1.3300	-1.3300	
58	7.4000	-1.3200	-1.3200	
59	7.6000	-1.3100	-1.3100	
60	7.8000	-1.2900	-1.2900	
61	8.0000	-1.2700	-1.2700	
62	8.2000	-1.2600	-1.2600	
63	8.4000	-1.2500	-1.2500	
64	8.6000	-1.2400	-1.2400	
65	8.8000	-1.2200	-1.2200	
66	9.0000	-1.2100	-1.2100	
67	9.2000	-1.2000	-1.2000	
68	9.4000	-1.1800	-1.1800	
69	9.6000	-1.1700	-1.1700	
70	9.8000	-1.1600	-1.1600	
71	10.0000	-1.1500	-1.1500	
72	12.0000	-1.0300	-1.0300	
73	14.0000	-0.9300	-0.9300	
74	16.0000	-0.8400	-0.8400	
75	18.0000	-0.7500	-0.7500	
76	20.0000	-0.6800	-0.6800	
77	22.0000	-0.6100	-0.6100	
78	24.0000	-0.5600	-0.5600	
79	26.0000	-0.5100	-0.5100	
80	28.0000	-0.4600	-0.4600	
81	30.0000	-0.4200	-0.4200	
82	32.0000	-0.3800	-0.3800	
83	34.0000	-0.3500	-0.3500	
84	36.0000	-0.3200	-0.3200	
85	38.0000	-0.2900	-0.2900	
86	40.0000	-0.2700	-0.2700	
87	42.0000	-0.2500	-0.2500	
88	44.0000	-0.2300	-0.2300	
89	46.0000	-0.2100	-0.2100	
90	48.0000	-0.2000	-0.2000	
91	50.0000	-0.1800	-0.1800	
92	52.0000	-0.1700	-0.1700	
93	54.0000	-0.1600	-0.1600	
94	56.0000	-0.1400	-0.1400	
95	58.0000	-0.1400	-0.1400	
96	60.0000	-0.1300	-0.1300	
97	62.0000	-0.1300	-0.1300	
98	64.0000	-0.1200	-0.1200	
99	66.0000	-0.1100	-0.1100	
100	72.0000	-0.1100	-0.1100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

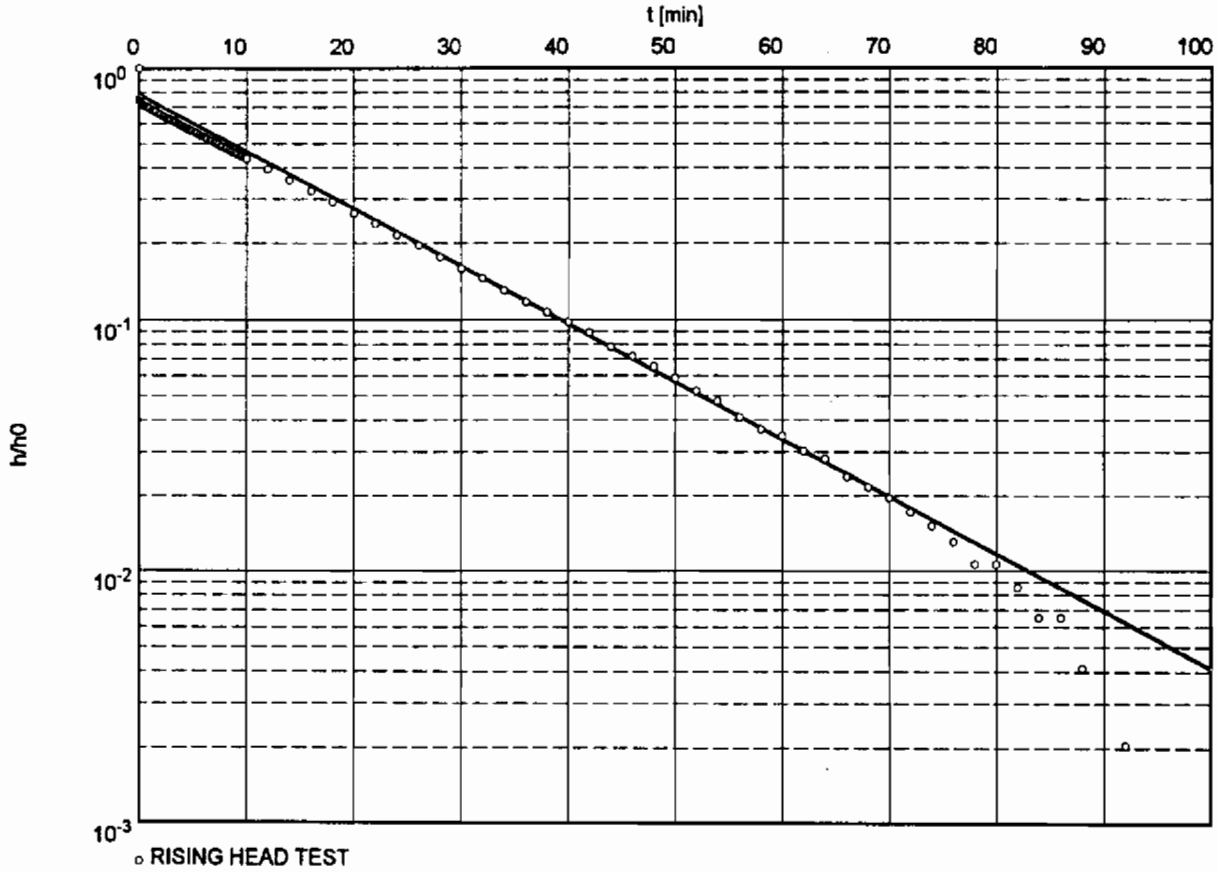
Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
101	74.0000	-0.1000	-0.1000
102	76.0000	-0.1000	-0.1000
103	78.0000	-0.1000	-0.1000
104	80.0000	-0.1000	-0.1000
105	82.0000	-0.0900	-0.0900
106	88.0000	-0.0800	-0.0800

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	



Hydraulic conductivity [ft/min]: 4.83×10^{-5}

Hydraulic conductivity [ft/day]: 6.96 x 10^-2

L = 11.5 ft
b = 11.5 ft
D = 11.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.9190	2.9190	
2	0.0416	2.2170	2.2170	
3	0.0500	2.1720	2.1720	
4	0.0583	2.1660	2.1660	
5	0.0666	2.1600	2.1600	
6	0.0833	2.1470	2.1470	
7	0.1000	2.1410	2.1410	
8	0.1166	2.1340	2.1340	
9	0.1333	2.1280	2.1280	
10	0.1666	2.1220	2.1220	
11	0.2000	2.1150	2.1150	
12	0.2416	2.1090	2.1090	
13	0.2750	2.1030	2.1030	
14	0.3166	2.0960	2.0960	
15	0.3666	2.0900	2.0900	
16	0.4166	2.0840	2.0840	
17	0.4666	2.0770	2.0770	
18	0.5166	2.0710	2.0710	
19	0.5500	2.0650	2.0650	
20	0.6000	2.0580	2.0580	
21	0.6666	2.0520	2.0520	
22	0.7166	2.0460	2.0460	
23	0.7666	2.0390	2.0390	
24	0.8166	2.0330	2.0330	
25	0.8833	2.0270	2.0270	
26	0.9333	2.0200	2.0200	
27	0.9833	2.0140	2.0140	
28	1.2000	1.9890	1.9890	
29	1.4000	1.9700	1.9700	
30	1.6000	1.9440	1.9440	
31	1.8000	1.9250	1.9250	
32	2.0000	1.9060	1.9060	
33	2.2000	1.8870	1.8870	
34	2.4000	1.8620	1.8620	
35	2.6000	1.8430	1.8430	
36	2.8000	1.8240	1.8240	
37	3.0000	1.8110	1.8110	
38	3.2000	1.7920	1.7920	
39	3.4000	1.7730	1.7730	
40	3.6000	1.7540	1.7540	
41	3.8000	1.7350	1.7350	
42	4.0000	1.7160	1.7160	
43	4.2000	1.6970	1.6970	
44	4.4000	1.6780	1.6780	
45	4.6000	1.6660	1.6660	
46	4.8000	1.6470	1.6470	
47	5.0000	1.6340	1.6340	
48	5.2000	1.6150	1.6150	
49	5.4000	1.5960	1.5960	
50	5.6000	1.5830	1.5830	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	5.8000	1.5640	1.5640	
52	6.0000	1.5520	1.5520	
53	6.2000	1.5330	1.5330	
54	6.4000	1.5200	1.5200	
55	6.6000	1.5010	1.5010	
56	6.8000	1.4880	1.4880	
57	7.0000	1.4690	1.4690	
58	7.2000	1.4570	1.4570	
59	7.4000	1.4440	1.4440	
60	7.6000	1.4250	1.4250	
61	7.8000	1.4120	1.4120	
62	8.0000	1.4000	1.4000	
63	8.2000	1.3870	1.3870	
64	8.4000	1.3740	1.3740	
65	8.6000	1.3550	1.3550	
66	8.8000	1.3430	1.3430	
67	9.0000	1.3300	1.3300	
68	9.2000	1.3170	1.3170	
69	9.4000	1.3050	1.3050	
70	9.6000	1.2920	1.2920	
71	9.8000	1.2790	1.2790	
72	10.0000	1.2670	1.2670	
73	12.0000	1.1460	1.1460	
74	14.0000	1.0380	1.0380	
75	16.0000	0.9370	0.9370	
76	18.0000	0.8480	0.8480	
77	20.0000	0.7660	0.7660	
78	22.0000	0.6960	0.6960	
79	24.0000	0.6270	0.6270	
80	26.0000	0.5700	0.5700	
81	28.0000	0.5130	0.5130	
82	30.0000	0.4620	0.4620	
83	32.0000	0.4240	0.4240	
84	34.0000	0.3800	0.3800	
85	36.0000	0.3420	0.3420	
86	38.0000	0.3100	0.3100	
87	40.0000	0.2850	0.2850	
88	42.0000	0.2590	0.2590	
89	44.0000	0.2280	0.2280	
90	46.0000	0.2090	0.2090	
91	48.0000	0.1900	0.1900	
92	50.0000	0.1710	0.1710	
93	52.0000	0.1520	0.1520	
94	54.0000	0.1390	0.1390	
95	56.0000	0.1200	0.1200	
96	58.0000	0.1070	0.1070	
97	60.0000	0.1010	0.1010	
98	62.0000	0.0880	0.0880	
99	64.0000	0.0820	0.0820	
100	66.0000	0.0690	0.0690	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

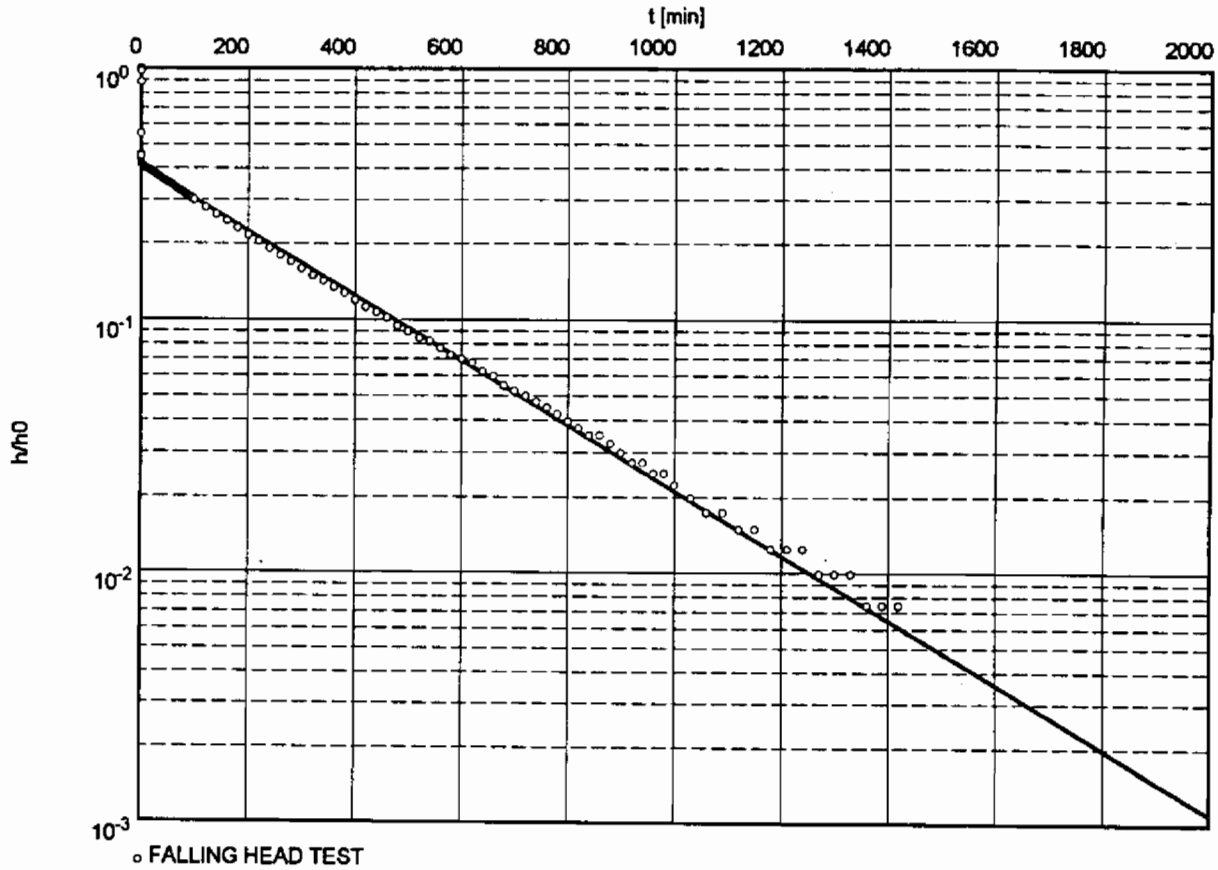
Slug Test No. 1	Test conducted on: 21 OCT 96
NBCE-596-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	68.0000	0.0630	0.0630	
102	70.0000	0.0570	0.0570	
103	72.0000	0.0500	0.0500	
104	74.0000	0.0440	0.0440	
105	76.0000	0.0380	0.0380	
106	78.0000	0.0310	0.0310	
107	80.0000	0.0310	0.0310	
108	82.0000	0.0250	0.0250	
109	84.0000	0.0190	0.0190	
110	86.0000	0.0190	0.0190	
111	88.0000	0.0120	0.0120	
112	92.0000	0.0060	0.0060	
113	98.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-01D	



Hydraulic conductivity [ft/min]: 2.81×10^{-6}

Hydraulic conductivity [ft/day]: 4.05 x 10^-3

L = 11.0 ft
b = 11.0 ft
D = 11.0 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-4.0300	-4.0300	
2	0.0600	-3.9400	-3.9400	
3	0.0700	-3.5600	-3.5600	
4	0.0800	-2.2200	-2.2200	
5	0.0900	-1.8300	-1.8300	
6	0.1200	-1.8100	-1.8100	
7	0.1300	-1.7000	-1.7000	
8	0.1500	-1.6800	-1.6800	
9	0.1600	-1.6700	-1.6700	
10	0.1700	-1.6700	-1.6700	
11	0.1800	-1.6700	-1.6700	
12	0.2100	-1.6700	-1.6700	
13	0.3800	-1.6700	-1.6700	
14	0.7800	-1.6700	-1.6700	
15	1.4000	-1.6600	-1.6600	
16	2.0000	-1.6600	-1.6600	
17	2.6000	-1.6600	-1.6600	
18	3.0000	-1.6500	-1.6500	
19	3.6000	-1.6500	-1.6500	
20	4.2000	-1.6500	-1.6500	
21	4.8000	-1.6400	-1.6400	
22	5.2000	-1.6400	-1.6400	
23	6.0000	-1.6400	-1.6400	
24	6.6000	-1.6300	-1.6300	
25	7.0000	-1.6300	-1.6300	
26	7.6000	-1.6300	-1.6300	
27	8.2000	-1.6200	-1.6200	
28	8.8000	-1.6200	-1.6200	
29	9.2000	-1.6200	-1.6200	
30	10.0000	-1.6100	-1.6100	
31	12.0000	-1.6000	-1.6000	
32	14.0000	-1.5900	-1.5900	
33	16.0000	-1.5900	-1.5900	
34	18.0000	-1.5700	-1.5700	
35	20.0000	-1.5600	-1.5600	
36	22.0000	-1.5500	-1.5500	
37	24.0000	-1.5400	-1.5400	
38	26.0000	-1.5300	-1.5300	
39	28.0000	-1.5200	-1.5200	
40	30.0000	-1.5100	-1.5100	
41	32.0000	-1.5000	-1.5000	
42	34.0000	-1.4900	-1.4900	
43	36.0000	-1.4800	-1.4800	
44	38.0000	-1.4700	-1.4700	
45	40.0000	-1.4600	-1.4600	
46	42.0000	-1.4500	-1.4500	
47	44.0000	-1.4400	-1.4400	
48	46.0000	-1.4300	-1.4300	
49	48.0000	-1.4200	-1.4200	
50	50.0000	-1.4100	-1.4100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	52.0000	-1.4100	-1.4100	
52	54.0000	-1.4000	-1.4000	
53	56.0000	-1.3900	-1.3900	
54	58.0000	-1.3800	-1.3800	
55	60.0000	-1.3700	-1.3700	
56	62.0000	-1.3600	-1.3600	
57	64.0000	-1.3500	-1.3500	
58	66.0000	-1.3400	-1.3400	
59	68.0000	-1.3300	-1.3300	
60	70.0000	-1.3200	-1.3200	
61	72.0000	-1.3100	-1.3100	
62	74.0000	-1.3000	-1.3000	
63	76.0000	-1.3000	-1.3000	
64	78.0000	-1.2900	-1.2900	
65	80.0000	-1.2800	-1.2800	
66	82.0000	-1.2700	-1.2700	
67	84.0000	-1.2600	-1.2600	
68	86.0000	-1.2600	-1.2600	
69	88.0000	-1.2500	-1.2500	
70	90.0000	-1.2400	-1.2400	
71	92.0000	-1.2300	-1.2300	
72	94.0000	-1.2200	-1.2200	
73	96.0000	-1.2200	-1.2200	
74	98.0000	-1.2000	-1.2000	
75	100.0000	-1.2000	-1.2000	
76	120.0000	-1.1200	-1.1200	
77	140.0000	-1.0500	-1.0500	
78	160.0000	-0.9900	-0.9900	
79	180.0000	-0.9300	-0.9300	
80	200.0000	-0.8700	-0.8700	
81	220.0000	-0.8200	-0.8200	
82	240.0000	-0.7700	-0.7700	
83	260.0000	-0.7200	-0.7200	
84	280.0000	-0.6800	-0.6800	
85	300.0000	-0.6400	-0.6400	
86	320.0000	-0.6000	-0.6000	
87	340.0000	-0.5700	-0.5700	
88	360.0000	-0.5400	-0.5400	
89	380.0000	-0.5100	-0.5100	
90	400.0000	-0.4800	-0.4800	
91	420.0000	-0.4500	-0.4500	
92	440.0000	-0.4300	-0.4300	
93	460.0000	-0.4100	-0.4100	
94	480.0000	-0.3800	-0.3800	
95	500.0000	-0.3600	-0.3600	
96	520.0000	-0.3400	-0.3400	
97	540.0000	-0.3300	-0.3300	
98	560.0000	-0.3100	-0.3100	
99	580.0000	-0.2900	-0.2900	
100	600.0000	-0.2800	-0.2800	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

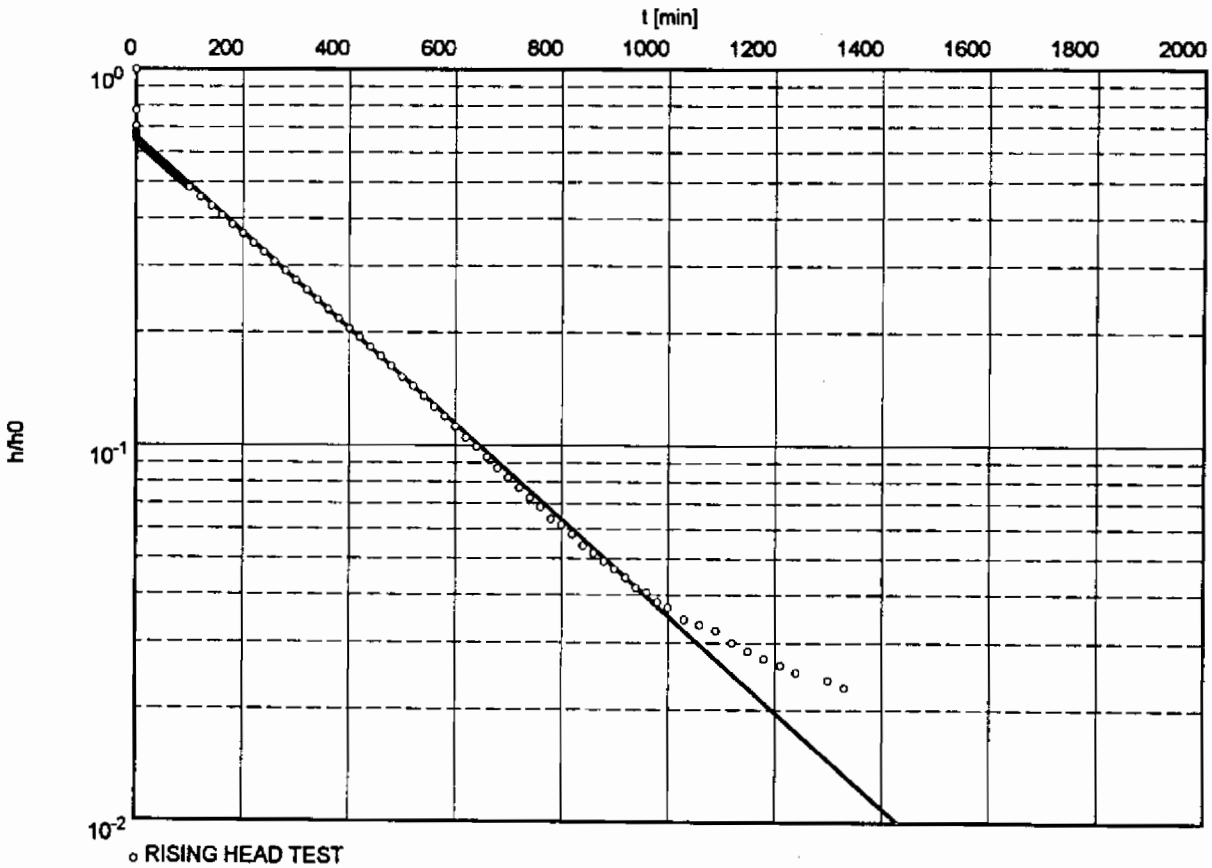
Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-01D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	620.0000	-0.2700	-0.2700	
102	640.0000	-0.2500	-0.2500	
103	660.0000	-0.2400	-0.2400	
104	680.0000	-0.2200	-0.2200	
105	700.0000	-0.2100	-0.2100	
106	720.0000	-0.2000	-0.2000	
107	740.0000	-0.1900	-0.1900	
108	760.0000	-0.1800	-0.1800	
109	780.0000	-0.1700	-0.1700	
110	800.0000	-0.1600	-0.1600	
111	820.0000	-0.1500	-0.1500	
112	840.0000	-0.1400	-0.1400	
113	860.0000	-0.1400	-0.1400	
114	880.0000	-0.1300	-0.1300	
115	900.0000	-0.1200	-0.1200	
116	920.0000	-0.1100	-0.1100	
117	940.0000	-0.1100	-0.1100	
118	960.0000	-0.1000	-0.1000	
119	980.0000	-0.1000	-0.1000	
120	1000.0000	-0.0900	-0.0900	
121	1030.0000	-0.0800	-0.0800	
122	1060.0000	-0.0700	-0.0700	
123	1090.0000	-0.0700	-0.0700	
124	1120.0000	-0.0600	-0.0600	
125	1150.0000	-0.0600	-0.0600	
126	1180.0000	-0.0500	-0.0500	
127	1210.0000	-0.0500	-0.0500	
128	1240.0000	-0.0500	-0.0500	
129	1270.0000	-0.0400	-0.0400	
130	1300.0000	-0.0400	-0.0400	
131	1330.0000	-0.0400	-0.0400	
132	1360.0000	-0.0300	-0.0300	
133	1390.0000	-0.0300	-0.0300	
134	1420.0000	-0.0300	-0.0300	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-01D	



Hydraulic conductivity [ft/min]: 2.78×10^{-6}

Hydraulic conductivity [ft/day]: 4.00 x 10^-3

L = 11.0 ft
b = 11.0 ft
D = 11.0 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.6300	2.6300	
2	0.1366	2.0440	2.0440	
3	0.1500	1.8510	1.8510	
4	0.1533	1.7840	1.7840	
5	0.1633	1.7620	1.7620	
6	0.1666	1.7590	1.7590	
7	0.1766	1.7330	1.7330	
8	0.1800	1.7430	1.7430	
9	0.1833	1.7150	1.7150	
10	0.1866	1.7080	1.7080	
11	0.1900	1.7270	1.7270	
12	0.1966	1.7210	1.7210	
13	0.2100	1.7150	1.7150	
14	0.2133	1.7110	1.7110	
15	0.2166	1.7210	1.7210	
16	0.2233	1.7180	1.7180	
17	0.2633	1.7150	1.7150	
18	0.3666	1.7110	1.7110	
19	0.4333	1.7080	1.7080	
20	0.5500	1.7050	1.7050	
21	0.7166	1.7020	1.7020	
22	1.2000	1.6990	1.6990	
23	1.4000	1.6950	1.6950	
24	1.6000	1.6920	1.6920	
25	2.2000	1.6890	1.6890	
26	2.6000	1.6860	1.6860	
27	3.0000	1.6830	1.6830	
28	3.6000	1.6800	1.6800	
29	4.2000	1.6760	1.6760	
30	4.8000	1.6730	1.6730	
31	5.2000	1.6700	1.6700	
32	5.8000	1.6670	1.6670	
33	6.4000	1.6640	1.6640	
34	7.0000	1.6610	1.6610	
35	7.4000	1.6570	1.6570	
36	8.0000	1.6540	1.6540	
37	8.8000	1.6510	1.6510	
38	9.2000	1.6480	1.6480	
39	10.0000	1.6450	1.6450	
40	12.0000	1.6320	1.6320	
41	14.0000	1.6230	1.6230	
42	16.0000	1.6130	1.6130	
43	18.0000	1.6040	1.6040	
44	20.0000	1.5940	1.5940	
45	22.0000	1.5850	1.5850	
46	24.0000	1.5750	1.5750	
47	26.0000	1.5660	1.5660	
48	28.0000	1.5560	1.5560	
49	30.0000	1.5460	1.5460	
50	32.0000	1.5400	1.5400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	34.0000	1.5310	1.5310	
52	36.0000	1.5210	1.5210	
53	38.0000	1.5120	1.5120	
54	40.0000	1.5020	1.5020	
55	42.0000	1.4930	1.4930	
56	44.0000	1.4860	1.4860	
57	46.0000	1.4770	1.4770	
58	48.0000	1.4700	1.4700	
59	50.0000	1.4580	1.4580	
60	52.0000	1.4510	1.4510	
61	54.0000	1.4420	1.4420	
62	56.0000	1.4360	1.4360	
63	58.0000	1.4260	1.4260	
64	60.0000	1.4170	1.4170	
65	62.0000	1.4100	1.4100	
66	64.0000	1.4040	1.4040	
67	66.0000	1.3940	1.3940	
68	68.0000	1.3850	1.3850	
69	70.0000	1.3790	1.3790	
70	72.0000	1.3690	1.3690	
71	74.0000	1.3630	1.3630	
72	76.0000	1.3530	1.3530	
73	78.0000	1.3470	1.3470	
74	80.0000	1.3410	1.3410	
75	82.0000	1.3310	1.3310	
76	84.0000	1.3250	1.3250	
77	86.0000	1.3150	1.3150	
78	88.0000	1.3090	1.3090	
79	90.0000	1.3030	1.3030	
80	92.0000	1.2960	1.2960	
81	94.0000	1.2870	1.2870	
82	96.0000	1.2800	1.2800	
83	98.0000	1.2740	1.2740	
84	100.0000	1.2680	1.2680	
85	120.0000	1.1950	1.1950	
86	140.0000	1.1310	1.1310	
87	160.0000	1.0680	1.0680	
88	180.0000	1.0110	1.0110	
89	200.0000	0.9570	0.9570	
90	220.0000	0.9030	0.9030	
91	240.0000	0.8560	0.8560	
92	260.0000	0.8080	0.8080	
93	280.0000	0.7640	0.7640	
94	300.0000	0.7220	0.7220	
95	320.0000	0.6810	0.6810	
96	340.0000	0.6400	0.6400	
97	360.0000	0.6050	0.6050	
98	380.0000	0.5730	0.5730	
99	400.0000	0.5380	0.5380	
100	420.0000	0.5100	0.5100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 25 NOV 96

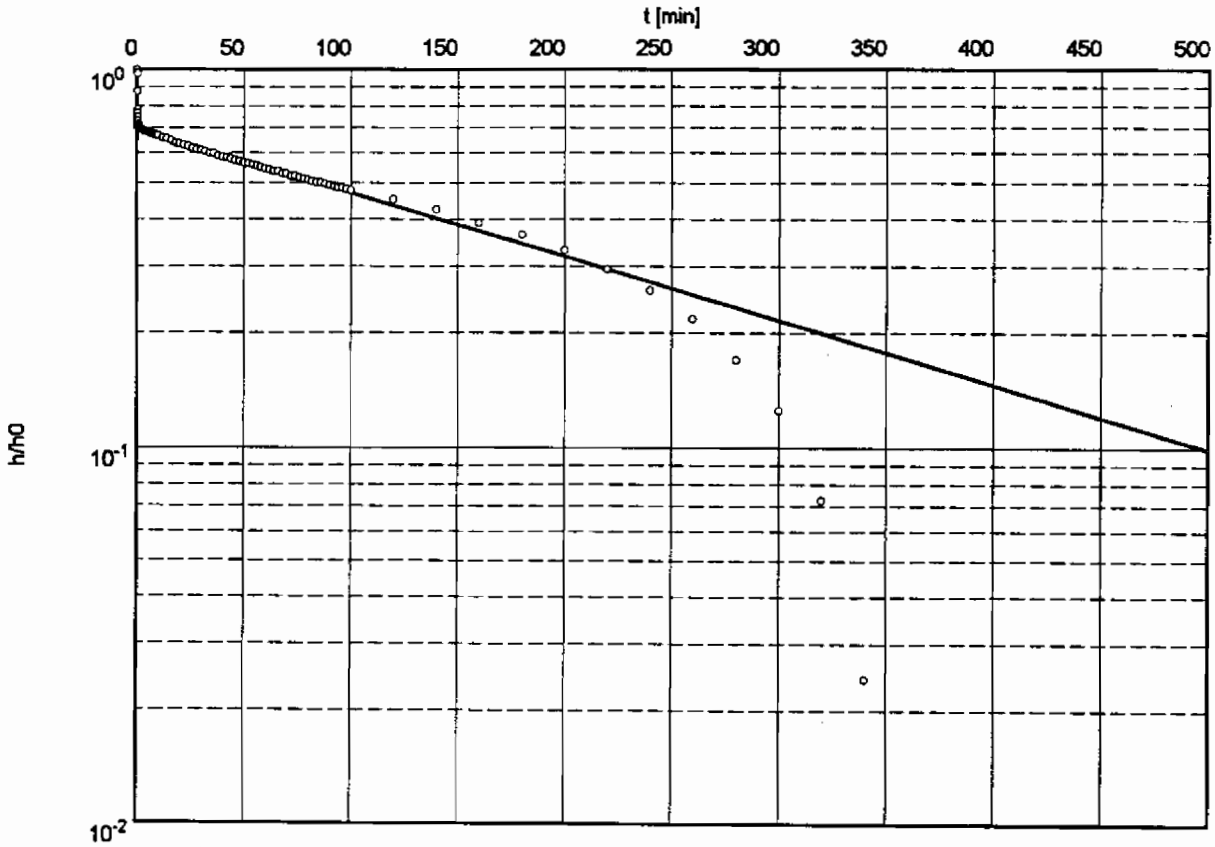
Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-01D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	440.0000	0.4810	0.4810	
102	460.0000	0.4530	0.4530	
103	480.0000	0.4270	0.4270	
104	500.0000	0.3990	0.3990	
105	520.0000	0.3770	0.3770	
106	540.0000	0.3550	0.3550	
107	560.0000	0.3320	0.3320	
108	580.0000	0.3130	0.3130	
109	600.0000	0.2940	0.2940	
110	620.0000	0.2750	0.2750	
111	640.0000	0.2590	0.2590	
112	660.0000	0.2440	0.2440	
113	680.0000	0.2280	0.2280	
114	700.0000	0.2150	0.2150	
115	720.0000	0.2020	0.2020	
116	740.0000	0.1900	0.1900	
117	760.0000	0.1800	0.1800	
118	780.0000	0.1670	0.1670	
119	800.0000	0.1610	0.1610	
120	820.0000	0.1520	0.1520	
121	840.0000	0.1420	0.1420	
122	860.0000	0.1360	0.1360	
123	880.0000	0.1290	0.1290	
124	900.0000	0.1230	0.1230	
125	920.0000	0.1170	0.1170	
126	940.0000	0.1100	0.1100	
127	960.0000	0.1070	0.1070	
128	980.0000	0.1010	0.1010	
129	1000.0000	0.0980	0.0980	
130	1030.0000	0.0910	0.0910	
131	1060.0000	0.0880	0.0880	
132	1090.0000	0.0850	0.0850	
133	1120.0000	0.0790	0.0790	
134	1150.0000	0.0750	0.0750	
135	1180.0000	0.0720	0.0720	
136	1210.0000	0.0690	0.0690	
137	1240.0000	0.0660	0.0660	
138	1300.0000	0.0630	0.0630	
139	1330.0000	0.0600	0.0600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-03D	



o FALLING HEAD TEST

Hydraulic conductivity [ft/min]: 3.67×10^{-6}

Hydraulic conductivity [ft/day]: 5.28 x 10^-3

L = 11.1 ft
b = 11.1 ft
D = 11.1 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.4800	-2.4800	
2	0.2500	-2.4200	-2.4200	
3	0.2700	-2.1700	-2.1700	
4	0.2800	-1.9500	-1.9500	
5	0.2900	-1.9000	-1.9000	
6	0.3000	-1.8500	-1.8500	
7	0.3200	-1.8100	-1.8100	
8	0.3300	-1.7400	-1.7400	
9	0.3500	-1.7500	-1.7500	
10	0.4000	-1.7400	-1.7400	
11	0.6700	-1.7400	-1.7400	
12	0.8800	-1.7700	-1.7700	
13	0.9000	-1.7300	-1.7300	
14	0.9200	-1.7400	-1.7400	
15	0.9300	-1.7500	-1.7500	
16	1.2000	-1.7400	-1.7400	
17	1.4000	-1.7300	-1.7300	
18	1.6000	-1.7200	-1.7200	
19	2.2000	-1.7200	-1.7200	
20	2.6000	-1.7100	-1.7100	
21	3.2000	-1.7000	-1.7000	
22	3.8000	-1.7000	-1.7000	
23	4.8000	-1.6900	-1.6900	
24	5.2000	-1.6900	-1.6900	
25	6.0000	-1.6800	-1.6800	
26	6.8000	-1.6700	-1.6700	
27	7.4000	-1.6700	-1.6700	
28	8.2000	-1.6600	-1.6600	
29	9.0000	-1.6600	-1.6600	
30	9.8000	-1.6500	-1.6500	
31	12.0000	-1.6300	-1.6300	
32	14.0000	-1.6200	-1.6200	
33	16.0000	-1.6000	-1.6000	
34	18.0000	-1.5800	-1.5800	
35	20.0000	-1.5700	-1.5700	
36	22.0000	-1.5600	-1.5600	
37	24.0000	-1.5500	-1.5500	
38	26.0000	-1.5300	-1.5300	
39	28.0000	-1.5200	-1.5200	
40	30.0000	-1.5100	-1.5100	
41	32.0000	-1.5000	-1.5000	
42	34.0000	-1.4800	-1.4800	
43	36.0000	-1.4800	-1.4800	
44	38.0000	-1.4600	-1.4600	
45	40.0000	-1.4500	-1.4500	
46	42.0000	-1.4400	-1.4400	
47	44.0000	-1.4300	-1.4300	
48	46.0000	-1.4200	-1.4200	
49	48.0000	-1.4100	-1.4100	
50	50.0000	-1.4000	-1.4000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

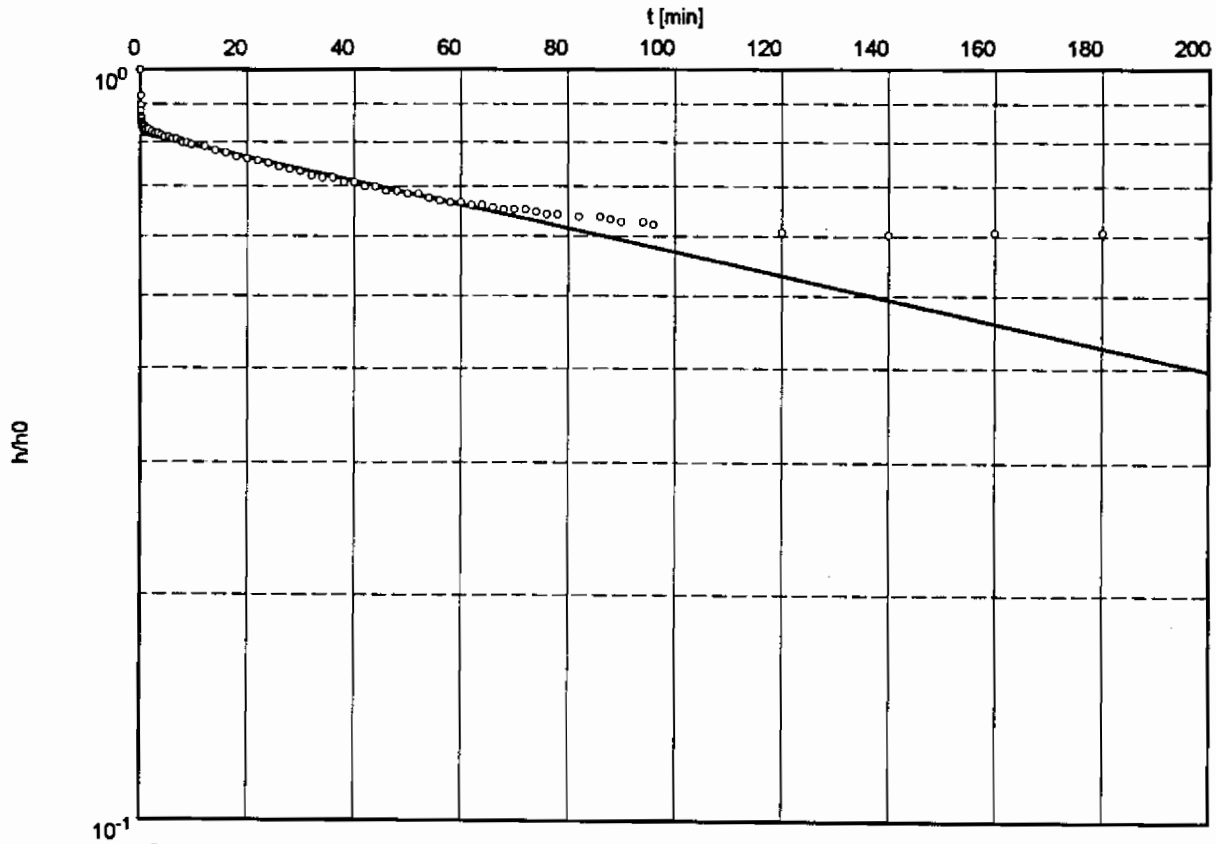
Slug Test No. 1	Test conducted on: 22 OCT 96
NBCE-GDE-03D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	52.0000	-1.3900	-1.3900	
52	54.0000	-1.3800	-1.3800	
53	56.0000	-1.3700	-1.3700	
54	58.0000	-1.3600	-1.3600	
55	60.0000	-1.3500	-1.3500	
56	62.0000	-1.3400	-1.3400	
57	64.0000	-1.3300	-1.3300	
58	66.0000	-1.3300	-1.3300	
59	68.0000	-1.3100	-1.3100	
60	70.0000	-1.3100	-1.3100	
61	72.0000	-1.2900	-1.2900	
62	74.0000	-1.2900	-1.2900	
63	76.0000	-1.2800	-1.2800	
64	78.0000	-1.2700	-1.2700	
65	80.0000	-1.2600	-1.2600	
66	82.0000	-1.2500	-1.2500	
67	84.0000	-1.2400	-1.2400	
68	86.0000	-1.2400	-1.2400	
69	88.0000	-1.2300	-1.2300	
70	90.0000	-1.2200	-1.2200	
71	92.0000	-1.2100	-1.2100	
72	94.0000	-1.2000	-1.2000	
73	96.0000	-1.2000	-1.2000	
74	98.0000	-1.1900	-1.1900	
75	100.0000	-1.1800	-1.1800	
76	120.0000	-1.1200	-1.1200	
77	140.0000	-1.0500	-1.0500	
78	160.0000	-0.9700	-0.9700	
79	180.0000	-0.9000	-0.9000	
80	200.0000	-0.8200	-0.8200	
81	220.0000	-0.7300	-0.7300	
82	240.0000	-0.6400	-0.6400	
83	260.0000	-0.5400	-0.5400	
84	280.0000	-0.4200	-0.4200	
85	300.0000	-0.3100	-0.3100	
86	320.0000	-0.1800	-0.1800	
87	340.0000	-0.0600	-0.0600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-03D	



o RISING HEAD TEST

Hydraulic conductivity [ft/min]: 3.44×10^{-6}

Hydraulic conductivity [ft/day]: 4.95 x 10^-3

L = 11.1 ft
b = 11.1 ft
D = 11.1 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.0900	2.0900	
2	0.1300	1.9300	1.9300	
3	0.1400	1.8700	1.8700	
4	0.1600	1.8400	1.8400	
5	0.1700	1.8100	1.8100	
6	0.1900	1.8000	1.8000	
7	0.2000	1.7800	1.7800	
8	0.2300	1.7700	1.7700	
9	0.2400	1.7700	1.7700	
10	0.2500	1.7700	1.7700	
11	0.3200	1.7600	1.7600	
12	0.5300	1.7600	1.7600	
13	0.5500	1.7600	1.7600	
14	0.5700	1.7600	1.7600	
15	0.7700	1.7500	1.7500	
16	0.7800	1.7600	1.7600	
17	0.8000	1.7500	1.7500	
18	1.2000	1.7400	1.7400	
19	1.6000	1.7400	1.7400	
20	2.2000	1.7300	1.7300	
21	2.8000	1.7200	1.7200	
22	3.4000	1.7200	1.7200	
23	4.0000	1.7100	1.7100	
24	4.6000	1.7000	1.7000	
25	5.4000	1.7000	1.7000	
26	6.0000	1.6900	1.6900	
27	6.8000	1.6900	1.6900	
28	7.6000	1.6800	1.6800	
29	8.0000	1.6700	1.6700	
30	8.8000	1.6700	1.6700	
31	9.6000	1.6600	1.6600	
32	12.0000	1.6500	1.6500	
33	14.0000	1.6300	1.6300	
34	16.0000	1.6200	1.6200	
35	18.0000	1.6000	1.6000	
36	20.0000	1.5900	1.5900	
37	22.0000	1.5800	1.5800	
38	24.0000	1.5700	1.5700	
39	26.0000	1.5500	1.5500	
40	28.0000	1.5400	1.5400	
41	30.0000	1.5300	1.5300	
42	32.0000	1.5100	1.5100	
43	34.0000	1.5000	1.5000	
44	36.0000	1.5000	1.5000	
45	38.0000	1.4800	1.4800	
46	40.0000	1.4800	1.4800	
47	42.0000	1.4600	1.4600	
48	44.0000	1.4600	1.4600	
49	46.0000	1.4400	1.4400	
50	48.0000	1.4400	1.4400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka Date: 25 NOV 96

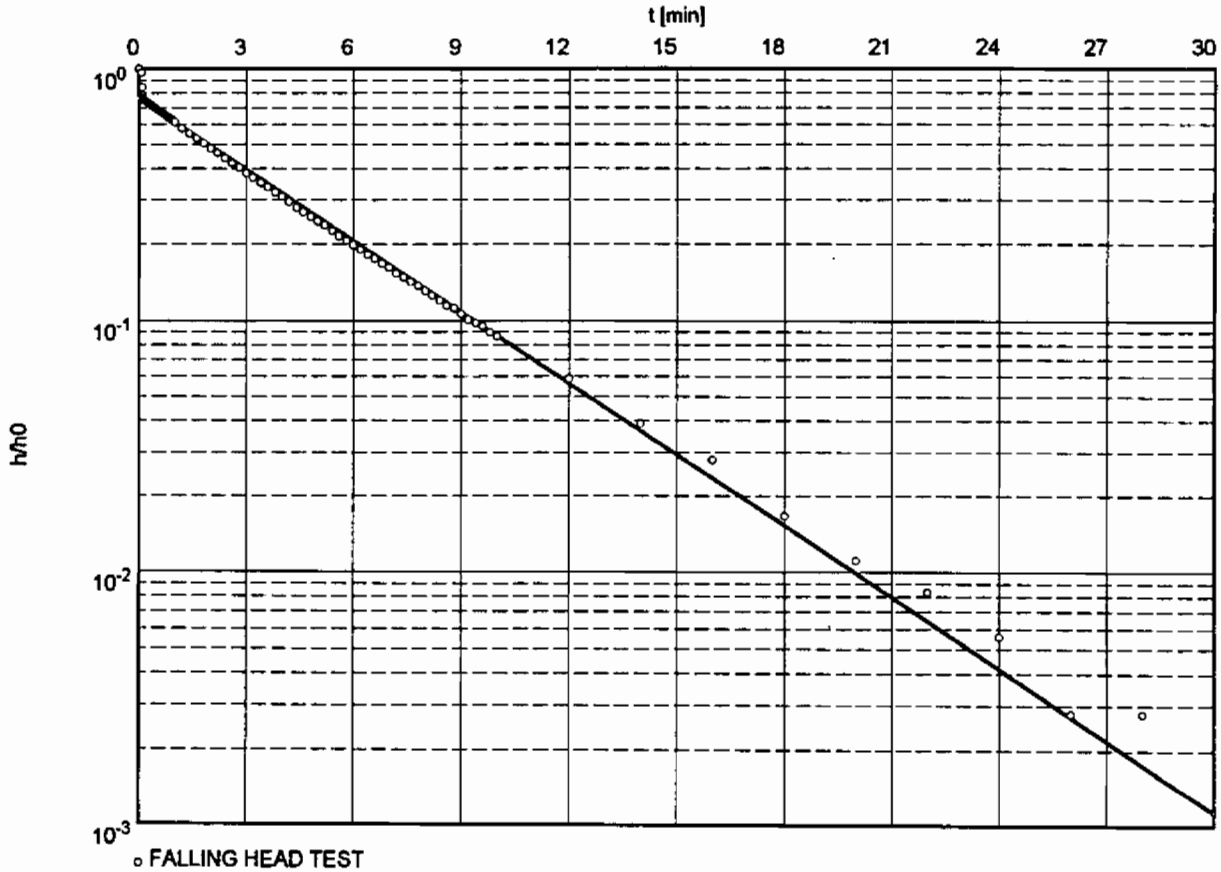
Slug Test No. 1	Test conducted on: 23 OCT 96
NBCE-GDE-03D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
51	50.0000	1.4300	1.4300
52	52.0000	1.4300	1.4300
53	54.0000	1.4100	1.4100
54	56.0000	1.4000	1.4000
55	58.0000	1.3900	1.3900
56	60.0000	1.3900	1.3900
57	62.0000	1.3800	1.3800
58	64.0000	1.3800	1.3800
59	66.0000	1.3700	1.3700
60	68.0000	1.3600	1.3600
61	70.0000	1.3600	1.3600
62	72.0000	1.3600	1.3600
63	74.0000	1.3500	1.3500
64	76.0000	1.3400	1.3400
65	78.0000	1.3400	1.3400
66	82.0000	1.3300	1.3300
67	86.0000	1.3300	1.3300
68	88.0000	1.3200	1.3200
69	90.0000	1.3100	1.3100
70	94.0000	1.3100	1.3100
71	96.0000	1.3000	1.3000
72	120.0000	1.2700	1.2700
73	140.0000	1.2600	1.2600
74	160.0000	1.2700	1.2700
75	180.0000	1.2700	1.2700

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	



Hydraulic conductivity [ft/min]: 2.06×10^{-4}

Hydraulic conductivity [ft/day]: 2.97 x 10^-1

L = 11.7 ft
b = 11.7 ft
D = 11.7 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-3.5900	-3.5900	
2	0.0700	-3.4700	-3.4700	
3	0.0800	-3.0300	-3.0300	
4	0.0900	-2.8100	-2.8100	
5	0.1000	-2.7400	-2.7400	
6	0.1100	-2.7100	-2.7100	
7	0.1200	-2.7100	-2.7100	
8	0.1300	-2.7000	-2.7000	
9	0.1400	-2.7000	-2.7000	
10	0.1500	-2.6900	-2.6900	
11	0.1600	-2.6800	-2.6800	
12	0.1700	-2.6700	-2.6700	
13	0.1800	-2.6700	-2.6700	
14	0.1900	-2.6700	-2.6700	
15	0.2000	-2.6600	-2.6600	
16	0.2100	-2.6500	-2.6500	
17	0.2200	-2.6500	-2.6500	
18	0.2300	-2.6400	-2.6400	
19	0.2400	-2.6300	-2.6300	
20	0.2500	-2.6300	-2.6300	
21	0.2600	-2.6200	-2.6200	
22	0.2700	-2.6200	-2.6200	
23	0.2800	-2.6100	-2.6100	
24	0.2900	-2.6000	-2.6000	
25	0.3000	-2.5900	-2.5900	
26	0.3100	-2.5900	-2.5900	
27	0.3200	-2.5800	-2.5800	
28	0.3300	-2.5800	-2.5800	
29	0.3500	-2.5600	-2.5600	
30	0.3700	-2.5600	-2.5600	
31	0.3800	-2.5400	-2.5400	
32	0.4000	-2.5300	-2.5300	
33	0.4200	-2.5200	-2.5200	
34	0.4300	-2.5100	-2.5100	
35	0.4500	-2.5000	-2.5000	
36	0.4700	-2.4900	-2.4900	
37	0.4800	-2.4800	-2.4800	
38	0.5000	-2.4700	-2.4700	
39	0.5200	-2.4600	-2.4600	
40	0.5300	-2.4500	-2.4500	
41	0.5500	-2.4400	-2.4400	
42	0.5700	-2.4300	-2.4300	
43	0.5800	-2.4200	-2.4200	
44	0.6000	-2.4200	-2.4200	
45	0.6200	-2.4100	-2.4100	
46	0.6300	-2.4000	-2.4000	
47	0.6500	-2.3900	-2.3900	
48	0.6700	-2.3800	-2.3800	
49	0.6800	-2.3700	-2.3700	
50	0.7000	-2.3600	-2.3600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.7200	-2.3500	-2.3500	
52	0.7300	-2.3400	-2.3400	
53	0.7500	-2.3300	-2.3300	
54	0.7700	-2.3200	-2.3200	
55	0.7800	-2.3100	-2.3100	
56	0.8000	-2.3000	-2.3000	
57	0.8200	-2.2900	-2.2900	
58	0.8300	-2.2800	-2.2800	
59	0.8500	-2.2800	-2.2800	
60	0.8700	-2.2700	-2.2700	
61	0.8800	-2.2600	-2.2600	
62	0.9000	-2.2500	-2.2500	
63	0.9200	-2.2400	-2.2400	
64	0.9300	-2.2300	-2.2300	
65	0.9500	-2.2200	-2.2200	
66	0.9700	-2.2200	-2.2200	
67	0.9800	-2.2100	-2.2100	
68	1.0000	-2.2000	-2.2000	
69	1.2000	-2.0700	-2.0700	
70	1.4000	-1.9800	-1.9800	
71	1.6000	-1.8900	-1.8900	
72	1.8000	-1.8000	-1.8000	
73	2.0000	-1.7200	-1.7200	
74	2.2000	-1.6500	-1.6500	
75	2.4000	-1.5700	-1.5700	
76	2.6000	-1.5000	-1.5000	
77	2.8000	-1.4400	-1.4400	
78	3.0000	-1.3700	-1.3700	
79	3.2000	-1.3100	-1.3100	
80	3.4000	-1.2500	-1.2500	
81	3.6000	-1.2000	-1.2000	
82	3.8000	-1.1500	-1.1500	
83	4.0000	-1.1000	-1.1000	
84	4.2000	-1.0500	-1.0500	
85	4.4000	-1.0000	-1.0000	
86	4.6000	-0.9600	-0.9600	
87	4.8000	-0.9200	-0.9200	
88	5.0000	-0.8800	-0.8800	
89	5.2000	-0.8500	-0.8500	
90	5.4000	-0.8100	-0.8100	
91	5.6000	-0.7700	-0.7700	
92	5.8000	-0.7400	-0.7400	
93	6.0000	-0.7100	-0.7100	
94	6.2000	-0.6800	-0.6800	
95	6.4000	-0.6500	-0.6500	
96	6.6000	-0.6300	-0.6300	
97	6.8000	-0.6000	-0.6000	
98	7.0000	-0.5800	-0.5800	
99	7.2000	-0.5500	-0.5500	
100	7.4000	-0.5300	-0.5300	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

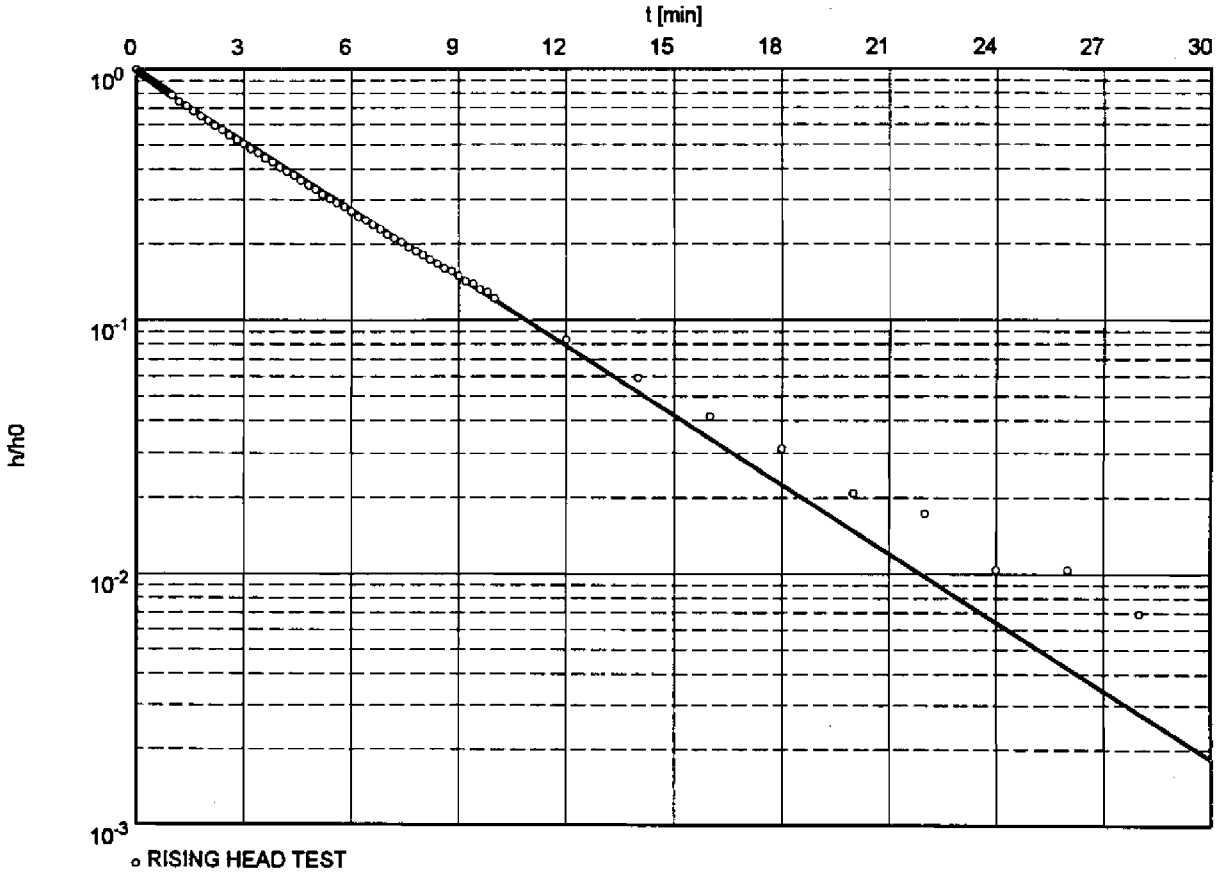
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	7.6000	-0.5100	-0.5100	
102	7.8000	-0.4900	-0.4900	
103	8.0000	-0.4700	-0.4700	
104	8.2000	-0.4500	-0.4500	
105	8.4000	-0.4300	-0.4300	
106	8.6000	-0.4100	-0.4100	
107	8.8000	-0.4000	-0.4000	
108	9.0000	-0.3800	-0.3800	
109	9.2000	-0.3600	-0.3600	
110	9.4000	-0.3500	-0.3500	
111	9.6000	-0.3400	-0.3400	
112	9.8000	-0.3200	-0.3200	
113	10.0000	-0.3100	-0.3100	
114	12.0000	-0.2100	-0.2100	
115	14.0000	-0.1400	-0.1400	
116	16.0000	-0.1000	-0.1000	
117	18.0000	-0.0600	-0.0600	
118	20.0000	-0.0400	-0.0400	
119	22.0000	-0.0300	-0.0300	
120	24.0000	-0.0200	-0.0200	
121	26.0000	-0.0100	-0.0100	
122	28.0000	-0.0100	-0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	



Hydraulic conductivity [ft/min]: 1.98×10^{-4}

Hydraulic conductivity [ft/day]: 2.85 x 10^-1

L = 11.7 ft
b = 11.7 ft
D = 11.7 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.8900	2.8900	
2	0.0700	2.9800	2.9800	
3	0.0800	3.1300	3.1300	
4	0.0900	2.8400	2.8400	
5	0.1200	2.8200	2.8200	
6	0.1300	2.8100	2.8100	
7	0.1400	2.8000	2.8000	
8	0.1500	2.7900	2.7900	
9	0.1600	2.7800	2.7800	
10	0.1700	2.7700	2.7700	
11	0.1800	2.7600	2.7600	
12	0.2000	2.7500	2.7500	
13	0.2100	2.7400	2.7400	
14	0.2300	2.7300	2.7300	
15	0.2400	2.7200	2.7200	
16	0.2600	2.7100	2.7100	
17	0.2700	2.7000	2.7000	
18	0.2900	2.6900	2.6900	
19	0.3100	2.6800	2.6800	
20	0.3200	2.6700	2.6700	
21	0.3500	2.6500	2.6500	
22	0.3700	2.6400	2.6400	
23	0.3800	2.6300	2.6300	
24	0.4000	2.6200	2.6200	
25	0.4200	2.6100	2.6100	
26	0.4300	2.6000	2.6000	
27	0.4500	2.5900	2.5900	
28	0.4700	2.5800	2.5800	
29	0.4800	2.5700	2.5700	
30	0.5000	2.5600	2.5600	
31	0.5200	2.5500	2.5500	
32	0.5300	2.5400	2.5400	
33	0.5500	2.5300	2.5300	
34	0.5700	2.5200	2.5200	
35	0.5800	2.5100	2.5100	
36	0.6000	2.5000	2.5000	
37	0.6200	2.4900	2.4900	
38	0.6300	2.4800	2.4800	
39	0.6500	2.4700	2.4700	
40	0.6700	2.4600	2.4600	
41	0.6800	2.4500	2.4500	
42	0.7000	2.4400	2.4400	
43	0.7200	2.4400	2.4400	
44	0.7300	2.4200	2.4200	
45	0.7500	2.4200	2.4200	
46	0.7700	2.4100	2.4100	
47	0.7800	2.4000	2.4000	
48	0.8000	2.3900	2.3900	
49	0.8200	2.3800	2.3800	
50	0.8300	2.3700	2.3700	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.8500	2.3600	2.3600	
52	0.8700	2.3500	2.3500	
53	0.8800	2.3400	2.3400	
54	0.9000	2.3300	2.3300	
55	0.9200	2.3200	2.3200	
56	0.9300	2.3100	2.3100	
57	0.9500	2.3100	2.3100	
58	0.9700	2.3000	2.3000	
59	0.9800	2.2900	2.2900	
60	1.0000	2.2800	2.2800	
61	1.2000	2.1500	2.1500	
62	1.4000	2.0600	2.0600	
63	1.6000	1.9600	1.9600	
64	1.8000	1.8800	1.8800	
65	2.0000	1.8000	1.8000	
66	2.2000	1.7200	1.7200	
67	2.4000	1.6500	1.6500	
68	2.6000	1.5700	1.5700	
69	2.8000	1.5100	1.5100	
70	3.0000	1.4500	1.4500	
71	3.2000	1.3800	1.3800	
72	3.4000	1.3300	1.3300	
73	3.6000	1.2700	1.2700	
74	3.8000	1.2200	1.2200	
75	4.0000	1.1700	1.1700	
76	4.2000	1.1200	1.1200	
77	4.4000	1.0800	1.0800	
78	4.6000	1.0300	1.0300	
79	4.8000	0.9900	0.9900	
80	5.0000	0.9500	0.9500	
81	5.2000	0.9100	0.9100	
82	5.4000	0.8700	0.8700	
83	5.6000	0.8400	0.8400	
84	5.8000	0.8100	0.8100	
85	6.0000	0.7800	0.7800	
86	6.2000	0.7400	0.7400	
87	6.4000	0.7200	0.7200	
88	6.6000	0.6900	0.6900	
89	6.8000	0.6600	0.6600	
90	7.0000	0.6300	0.6300	
91	7.2000	0.6100	0.6100	
92	7.4000	0.5900	0.5900	
93	7.6000	0.5600	0.5600	
94	7.8000	0.5400	0.5400	
95	8.0000	0.5200	0.5200	
96	8.2000	0.5000	0.5000	
97	8.4000	0.4800	0.4800	
98	8.6000	0.4600	0.4600	
99	8.8000	0.4500	0.4500	
100	9.0000	0.4300	0.4300	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

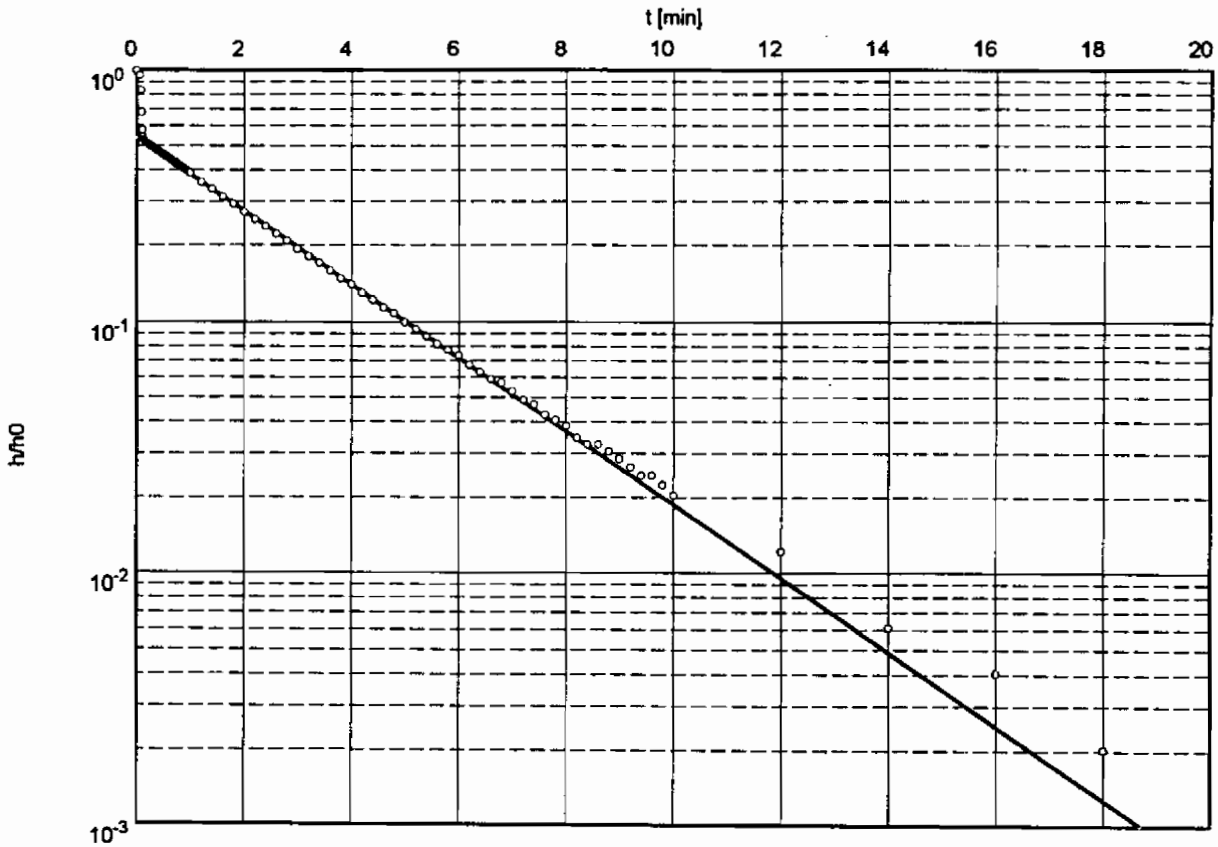
Slug Test No. 1	Test conducted on: 19 OCT 96
NBCE-GDE-19D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	9.2000	0.4100	0.4100	
102	9.4000	0.4000	0.4000	
103	9.6000	0.3800	0.3800	
104	9.8000	0.3700	0.3700	
105	10.0000	0.3500	0.3500	
106	12.0000	0.2400	0.2400	
107	14.0000	0.1700	0.1700	
108	16.0000	0.1200	0.1200	
109	18.0000	0.0900	0.0900	
110	20.0000	0.0600	0.0600	
111	22.0000	0.0500	0.0500	
112	24.0000	0.0300	0.0300	
113	26.0000	0.0300	0.0300	
114	28.0000	0.0200	0.0200	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	



o FALLING HEAD TEST

Hydraulic conductivity [ft/min]: 4.78×10^{-4}

Hydraulic conductivity [ft/day]: 6.88 x 10^-1

L = 6.2 ft
b = 6.2 ft
D = 6.2 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	-4.9300	-4.9300	
2	0.0600	-4.7000	-4.7000	
3	0.0800	-4.1000	-4.1000	
4	0.0900	-3.3600	-3.3600	
5	0.1000	-2.8500	-2.8500	
6	0.1100	-2.6700	-2.6700	
7	0.1200	-2.6600	-2.6600	
8	0.1300	-2.6100	-2.6100	
9	0.1400	-2.5700	-2.5700	
10	0.1500	-2.5400	-2.5400	
11	0.1600	-2.5400	-2.5400	
12	0.1700	-2.5300	-2.5300	
13	0.1800	-2.5200	-2.5200	
14	0.1900	-2.5200	-2.5200	
15	0.2000	-2.5100	-2.5100	
16	0.2100	-2.5000	-2.5000	
17	0.2200	-2.4900	-2.4900	
18	0.2300	-2.4800	-2.4800	
19	0.2400	-2.4700	-2.4700	
20	0.2500	-2.4700	-2.4700	
21	0.2600	-2.4600	-2.4600	
22	0.2700	-2.4500	-2.4500	
23	0.2800	-2.4400	-2.4400	
24	0.2900	-2.4300	-2.4300	
25	0.3000	-2.4300	-2.4300	
26	0.3100	-2.4200	-2.4200	
27	0.3200	-2.4100	-2.4100	
28	0.3300	-2.4000	-2.4000	
29	0.3500	-2.3800	-2.3800	
30	0.3700	-2.3700	-2.3700	
31	0.3800	-2.3600	-2.3600	
32	0.4000	-2.3400	-2.3400	
33	0.4200	-2.3300	-2.3300	
34	0.4300	-2.3200	-2.3200	
35	0.4500	-2.3100	-2.3100	
36	0.4700	-2.2900	-2.2900	
37	0.4800	-2.2800	-2.2800	
38	0.5000	-2.2700	-2.2700	
39	0.5200	-2.2600	-2.2600	
40	0.5300	-2.2400	-2.2400	
41	0.5500	-2.2300	-2.2300	
42	0.5700	-2.2200	-2.2200	
43	0.5800	-2.2100	-2.2100	
44	0.6000	-2.1900	-2.1900	
45	0.6200	-2.1800	-2.1800	
46	0.6300	-2.1700	-2.1700	
47	0.6500	-2.1500	-2.1500	
48	0.6700	-2.1400	-2.1400	
49	0.6800	-2.1300	-2.1300	
50	0.7000	-2.1200	-2.1200	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
51	0.7200	-2.1100	-2.1100
52	0.7300	-2.0900	-2.0900
53	0.7500	-2.0800	-2.0800
54	0.7700	-2.0700	-2.0700
55	0.7800	-2.0600	-2.0600
56	0.8000	-2.0500	-2.0500
57	0.8200	-2.0400	-2.0400
58	0.8300	-2.0200	-2.0200
59	0.8500	-2.0100	-2.0100
60	0.8700	-2.0000	-2.0000
61	0.8800	-1.9900	-1.9900
62	0.9000	-1.9800	-1.9800
63	0.9200	-1.9700	-1.9700
64	0.9300	-1.9600	-1.9600
65	0.9500	-1.9500	-1.9500
66	0.9700	-1.9300	-1.9300
67	0.9800	-1.9200	-1.9200
68	1.0000	-1.9100	-1.9100
69	1.2000	-1.7600	-1.7600
70	1.4000	-1.6500	-1.6500
71	1.6000	-1.5400	-1.5400
72	1.8000	-1.4400	-1.4400
73	2.0000	-1.3400	-1.3400
74	2.2000	-1.2500	-1.2500
75	2.4000	-1.1700	-1.1700
76	2.6000	-1.0900	-1.0900
77	2.8000	-1.0200	-1.0200
78	3.0000	-0.9500	-0.9500
79	3.2000	-0.8900	-0.8900
80	3.4000	-0.8400	-0.8400
81	3.6000	-0.7800	-0.7800
82	3.8000	-0.7300	-0.7300
83	4.0000	-0.6900	-0.6900
84	4.2000	-0.6400	-0.6400
85	4.4000	-0.6000	-0.6000
86	4.6000	-0.5600	-0.5600
87	4.8000	-0.5300	-0.5300
88	5.0000	-0.4900	-0.4900
89	5.2000	-0.4600	-0.4600
90	5.4000	-0.4300	-0.4300
91	5.6000	-0.4000	-0.4000
92	5.8000	-0.3800	-0.3800
93	6.0000	-0.3600	-0.3600
94	6.2000	-0.3300	-0.3300
95	6.4000	-0.3100	-0.3100
96	6.6000	-0.2900	-0.2900
97	6.8000	-0.2800	-0.2800
98	7.0000	-0.2600	-0.2600
99	7.2000	-0.2400	-0.2400
100	7.4000	-0.2300	-0.2300

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

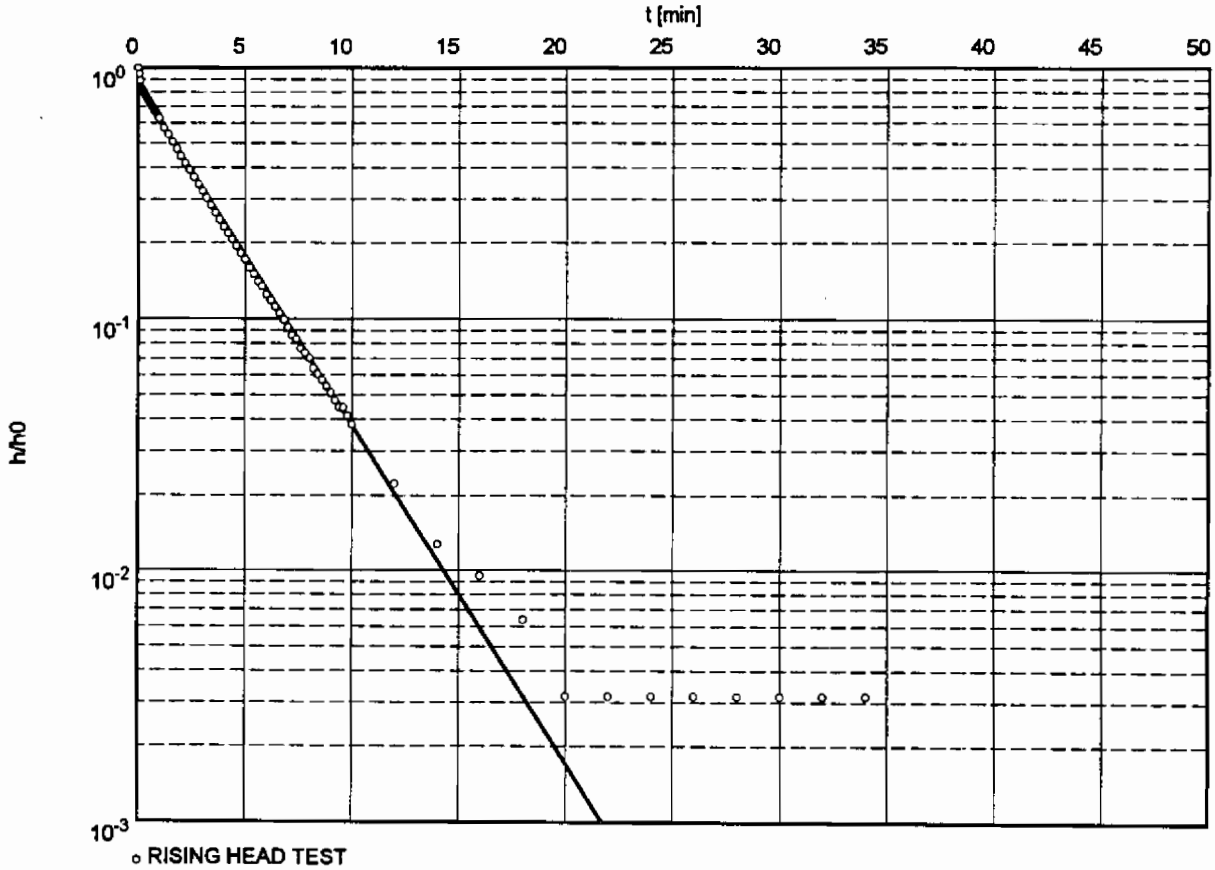
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	7.6000	-0.2100	-0.2100	
102	7.8000	-0.2000	-0.2000	
103	8.0000	-0.1900	-0.1900	
104	8.2000	-0.1700	-0.1700	
105	8.4000	-0.1600	-0.1600	
106	8.6000	-0.1600	-0.1600	
107	8.8000	-0.1500	-0.1500	
108	9.0000	-0.1400	-0.1400	
109	9.2000	-0.1300	-0.1300	
110	9.4000	-0.1200	-0.1200	
111	9.6000	-0.1200	-0.1200	
112	9.8000	-0.1100	-0.1100	
113	10.0000	-0.1000	-0.1000	
114	12.0000	-0.0600	-0.0600	
115	14.0000	-0.0300	-0.0300	
116	16.0000	-0.0200	-0.0200	
117	18.0000	-0.0100	-0.0100	
118	20.0000	0.0000	0.0000	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	



Hydraulic conductivity [ft/min]: 4.41×10^{-4}

Hydraulic conductivity [ft/day]: 6.35 x 10^-1

L = 6.2 ft
b = 6.2 ft
D = 6.2 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	3.1500	3.1500	
2	0.0700	2.9700	2.9700	
3	0.0800	2.8100	2.8100	
4	0.0900	2.6600	2.6600	
5	0.1000	2.6600	2.6600	
6	0.1100	2.6500	2.6500	
7	0.1200	2.6400	2.6400	
8	0.1300	2.6200	2.6200	
9	0.1400	2.6100	2.6100	
10	0.1500	2.6100	2.6100	
11	0.1600	2.6000	2.6000	
12	0.1700	2.5900	2.5900	
13	0.1800	2.5800	2.5800	
14	0.1900	2.5700	2.5700	
15	0.2000	2.5600	2.5600	
16	0.2100	2.5500	2.5500	
17	0.2200	2.5400	2.5400	
18	0.2300	2.5300	2.5300	
19	0.2400	2.5300	2.5300	
20	0.2500	2.5200	2.5200	
21	0.2600	2.5100	2.5100	
22	0.2700	2.5000	2.5000	
23	0.2800	2.5000	2.5000	
24	0.2900	2.4900	2.4900	
25	0.3000	2.4800	2.4800	
26	0.3100	2.4700	2.4700	
27	0.3200	2.4700	2.4700	
28	0.3300	2.4600	2.4600	
29	0.3500	2.4400	2.4400	
30	0.3700	2.4200	2.4200	
31	0.3800	2.4100	2.4100	
32	0.4000	2.4000	2.4000	
33	0.4200	2.3800	2.3800	
34	0.4300	2.3700	2.3700	
35	0.4500	2.3600	2.3600	
36	0.4700	2.3500	2.3500	
37	0.4800	2.3300	2.3300	
38	0.5000	2.3200	2.3200	
39	0.5200	2.3000	2.3000	
40	0.5300	2.2900	2.2900	
41	0.5500	2.2800	2.2800	
42	0.5700	2.2700	2.2700	
43	0.5800	2.2500	2.2500	
44	0.6000	2.2400	2.2400	
45	0.6200	2.2300	2.2300	
46	0.6300	2.2200	2.2200	
47	0.6500	2.2100	2.2100	
48	0.6700	2.2000	2.2000	
49	0.6800	2.1800	2.1800	
50	0.7000	2.1700	2.1700	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
51	0.7200	2.1600	2.1600	
52	0.7300	2.1500	2.1500	
53	0.7500	2.1400	2.1400	
54	0.7700	2.1200	2.1200	
55	0.7800	2.1100	2.1100	
56	0.8000	2.1000	2.1000	
57	0.8200	2.0900	2.0900	
58	0.8300	2.0800	2.0800	
59	0.8500	2.0700	2.0700	
60	0.8700	2.0600	2.0600	
61	0.8800	2.0500	2.0500	
62	0.9000	2.0300	2.0300	
63	0.9200	2.0300	2.0300	
64	0.9300	2.0100	2.0100	
65	0.9500	2.0000	2.0000	
66	0.9700	1.9900	1.9900	
67	0.9800	1.9800	1.9800	
68	1.0000	1.9700	1.9700	
69	1.2000	1.8100	1.8100	
70	1.4000	1.7000	1.7000	
71	1.6000	1.5900	1.5900	
72	1.8000	1.4900	1.4900	
73	2.0000	1.4000	1.4000	
74	2.2000	1.3100	1.3100	
75	2.4000	1.2300	1.2300	
76	2.6000	1.1500	1.1500	
77	2.8000	1.0800	1.0800	
78	3.0000	1.0100	1.0100	
79	3.2000	0.9500	0.9500	
80	3.4000	0.8900	0.8900	
81	3.6000	0.8300	0.8300	
82	3.8000	0.7800	0.7800	
83	4.0000	0.7300	0.7300	
84	4.2000	0.6900	0.6900	
85	4.4000	0.6500	0.6500	
86	4.6000	0.6100	0.6100	
87	4.8000	0.5700	0.5700	
88	5.0000	0.5400	0.5400	
89	5.2000	0.5000	0.5000	
90	5.4000	0.4700	0.4700	
91	5.6000	0.4400	0.4400	
92	5.8000	0.4200	0.4200	
93	6.0000	0.3900	0.3900	
94	6.2000	0.3700	0.3700	
95	6.4000	0.3500	0.3500	
96	6.6000	0.3300	0.3300	
97	6.8000	0.3100	0.3100	
98	7.0000	0.2900	0.2900	
99	7.2000	0.2700	0.2700	
100	7.4000	0.2600	0.2600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 4 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 25 NOV 96

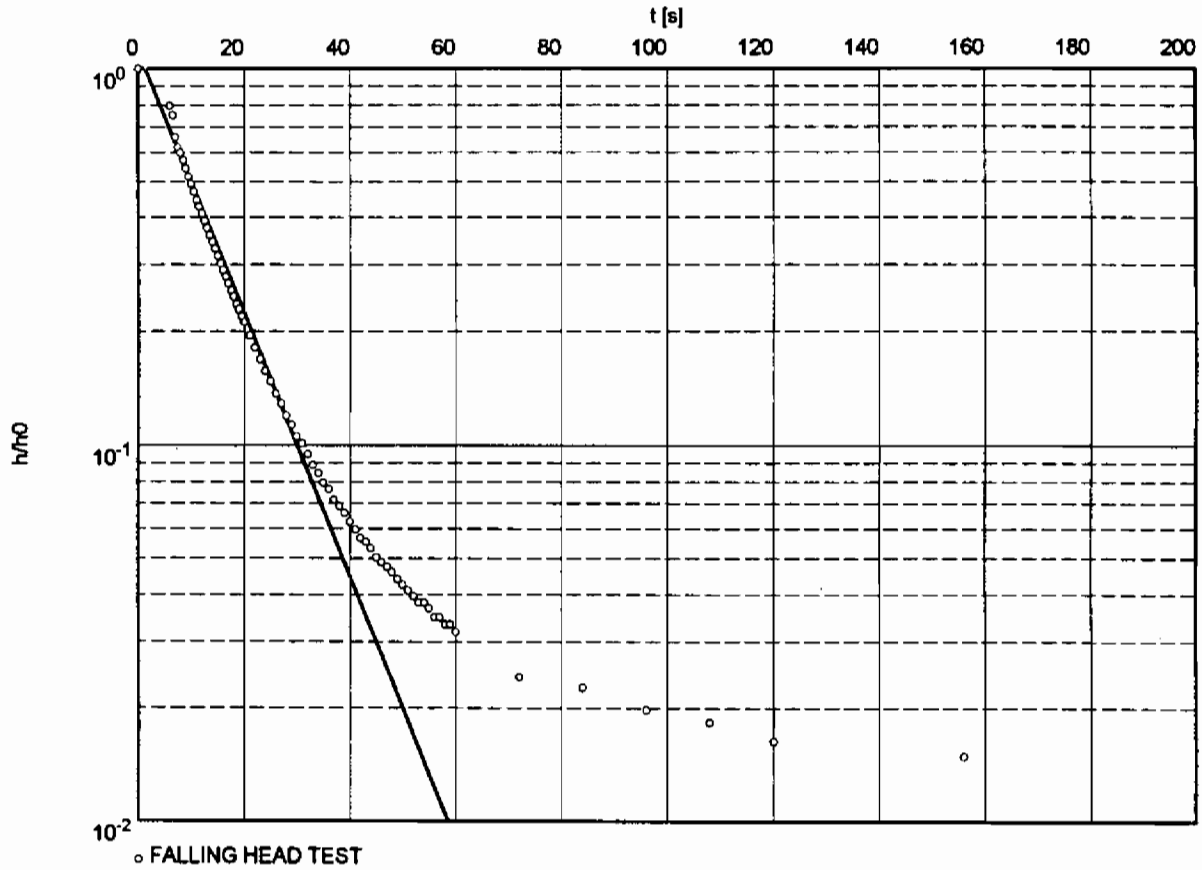
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-20D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
101	7.6000	0.2400	0.2400	
102	7.8000	0.2300	0.2300	
103	8.0000	0.2200	0.2200	
104	8.2000	0.2000	0.2000	
105	8.4000	0.1900	0.1900	
106	8.6000	0.1800	0.1800	
107	8.8000	0.1700	0.1700	
108	9.0000	0.1600	0.1600	
109	9.2000	0.1500	0.1500	
110	9.4000	0.1400	0.1400	
111	9.6000	0.1400	0.1400	
112	9.8000	0.1300	0.1300	
113	10.0000	0.1200	0.1200	
114	12.0000	0.0700	0.0700	
115	14.0000	0.0400	0.0400	
116	16.0000	0.0300	0.0300	
117	18.0000	0.0200	0.0200	
118	20.0000	0.0100	0.0100	
119	22.0000	0.0100	0.0100	
120	24.0000	0.0100	0.0100	
121	26.0000	0.0100	0.0100	
122	28.0000	0.0100	0.0100	
123	30.0000	0.0100	0.0100	
124	32.0000	0.0100	0.0100	
125	34.0000	0.0100	0.0100	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 26 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-22D	



Hydraulic conductivity [ft/s]: 7.90×10^{-5}

Hydraulic conductivity [ft/day]: 6.83

L = 10.5 ft
b = 10.5 ft
D = 10.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 26 NOV 96

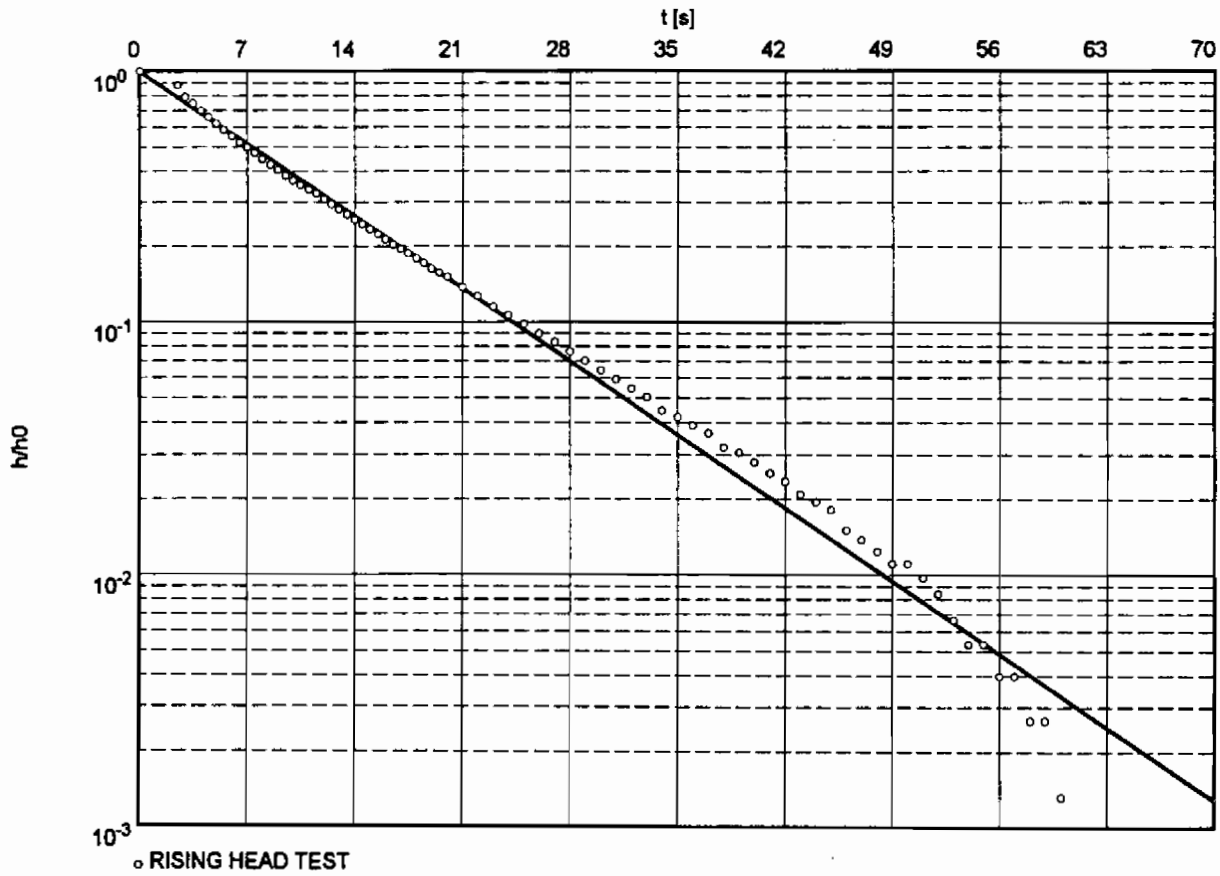
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-22D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	40.9980	-0.1230	-0.1230	
52	42.0000	-0.1170	-0.1170	
53	42.9960	-0.1140	-0.1140	
54	43.9980	-0.1100	-0.1100	
55	45.0000	-0.1040	-0.1040	
56	45.9960	-0.1010	-0.1010	
57	46.9980	-0.0980	-0.0980	
58	48.0000	-0.0950	-0.0950	
59	48.9960	-0.0910	-0.0910	
60	49.9980	-0.0880	-0.0880	
61	51.0000	-0.0850	-0.0850	
62	51.9960	-0.0820	-0.0820	
63	52.9980	-0.0790	-0.0790	
64	54.0000	-0.0790	-0.0790	
65	54.9960	-0.0760	-0.0760	
66	55.9980	-0.0720	-0.0720	
67	57.0000	-0.0720	-0.0720	
68	57.9960	-0.0690	-0.0690	
69	58.9980	-0.0690	-0.0690	
70	60.0000	-0.0660	-0.0660	
71	72.0000	-0.0500	-0.0500	
72	84.0000	-0.0470	-0.0470	
73	96.0000	-0.0410	-0.0410	
74	108.0000	-0.0380	-0.0380	
75	120.0000	-0.0340	-0.0340	
76	156.0000	-0.0310	-0.0310	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 26 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-22D	



Hydraulic conductivity [ft/s]: 9.35×10^{-5}

Hydraulic conductivity [ft/day]: 8.08

L = 10.5 ft
b = 10.5 ft
D = 10.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 26 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-22D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.2620	2.2620	
2	2.4960	1.9890	1.9890	
3	3.0000	1.7900	1.7900	
4	3.4980	1.6880	1.6880	
5	3.9960	1.5740	1.5740	
6	4.5000	1.4830	1.4830	
7	4.9980	1.3970	1.3970	
8	5.4960	1.3180	1.3180	
9	6.0000	1.2480	1.2480	
10	6.4980	1.1780	1.1780	
11	6.9960	1.1180	1.1180	
12	7.5000	1.0610	1.0610	
13	7.9980	1.0040	1.0040	
14	8.4960	0.9530	0.9530	
15	9.0000	0.9060	0.9060	
16	9.4980	0.8620	0.8620	
17	9.9960	0.8240	0.8240	
18	10.5000	0.7890	0.7890	
19	10.9980	0.7570	0.7570	
20	11.4960	0.7320	0.7320	
21	12.0000	0.6940	0.6940	
22	12.4980	0.6620	0.6620	
23	12.9960	0.6330	0.6330	
24	13.5000	0.6020	0.6020	
25	13.9980	0.5760	0.5760	
26	14.4960	0.5510	0.5510	
27	15.0000	0.5260	0.5260	
28	15.4980	0.5030	0.5030	
29	15.9960	0.4810	0.4810	
30	16.5000	0.4590	0.4590	
31	16.9980	0.4400	0.4400	
32	17.4960	0.4210	0.4210	
33	18.0000	0.4020	0.4020	
34	18.4980	0.3860	0.3860	
35	18.9960	0.3670	0.3670	
36	19.5000	0.3540	0.3540	
37	19.9980	0.3390	0.3390	
38	21.0000	0.3100	0.3100	
39	21.9960	0.2850	0.2850	
40	22.9980	0.2590	0.2590	
41	24.0000	0.2400	0.2400	
42	24.9960	0.2210	0.2210	
43	25.9980	0.2020	0.2020	
44	27.0000	0.1870	0.1870	
45	27.9960	0.1710	0.1710	
46	28.9980	0.1580	0.1580	
47	30.0000	0.1450	0.1450	
48	30.9960	0.1330	0.1330	
49	31.9980	0.1230	0.1230	
50	33.0000	0.1140	0.1140	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka / Date: 26 NOV 96

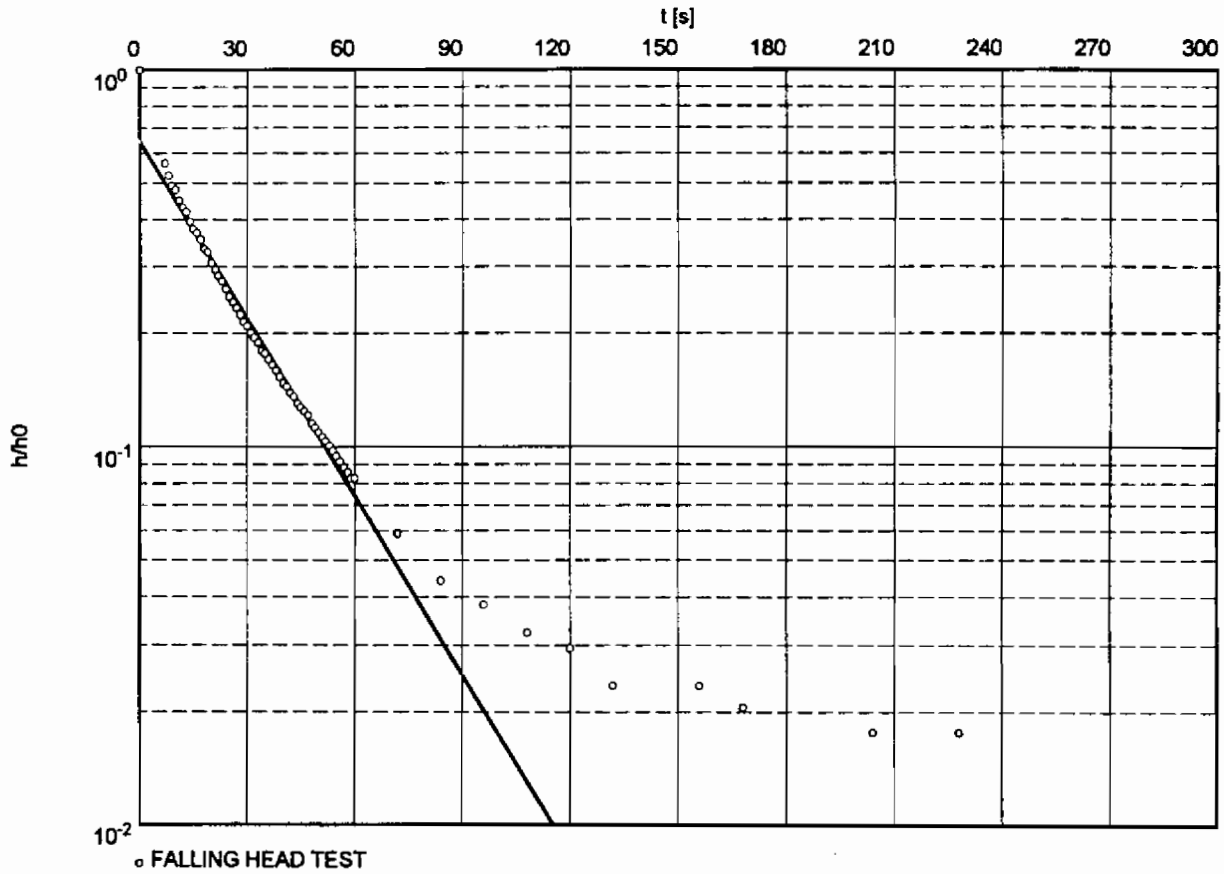
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-22D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
51	33.9960	0.1010	0.1010
52	34.9980	0.0950	0.0950
53	36.0000	0.0880	0.0880
54	36.9960	0.0820	0.0820
55	37.9980	0.0720	0.0720
56	39.0000	0.0690	0.0690
57	39.9960	0.0630	0.0630
58	40.9980	0.0570	0.0570
59	42.0000	0.0530	0.0530
60	42.9960	0.0470	0.0470
61	43.9980	0.0440	0.0440
62	45.0000	0.0410	0.0410
63	45.9960	0.0340	0.0340
64	46.9980	0.0310	0.0310
65	48.0000	0.0280	0.0280
66	48.9960	0.0250	0.0250
67	49.9980	0.0250	0.0250
68	51.0000	0.0220	0.0220
69	51.9960	0.0190	0.0190
70	52.9980	0.0150	0.0150
71	54.0000	0.0120	0.0120
72	54.9960	0.0120	0.0120
73	55.9980	0.0090	0.0090
74	57.0000	0.0090	0.0090
75	57.9960	0.0060	0.0060
76	58.9980	0.0060	0.0060
77	60.0000	0.0030	0.0030

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-24D	



Hydraulic conductivity [ft/s]: 3.11×10^{-5}

Hydraulic conductivity [ft/day]: 2.69

L = 12.5 ft
b = 12.5 ft
D = 12.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-24D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-3.4000	-3.4000	
2	4.0000	-4.0600	-4.0600	
3	7.0000	-1.9200	-1.9200	
4	8.0000	-1.7800	-1.7800	
5	9.0000	-1.6700	-1.6700	
6	10.0000	-1.6300	-1.6300	
7	11.0000	-1.5200	-1.5200	
8	12.0000	-1.4600	-1.4600	
9	13.0000	-1.4200	-1.4200	
10	14.0000	-1.3400	-1.3400	
11	15.0000	-1.2800	-1.2800	
12	16.0000	-1.2500	-1.2500	
13	17.0000	-1.2000	-1.2000	
14	18.0000	-1.1300	-1.1300	
15	19.0000	-1.1100	-1.1100	
16	20.0000	-1.0400	-1.0400	
17	21.0000	-1.0000	-1.0000	
18	22.0000	-0.9600	-0.9600	
19	23.0000	-0.9300	-0.9300	
20	24.0000	-0.8900	-0.8900	
21	25.0000	-0.8500	-0.8500	
22	26.0000	-0.8200	-0.8200	
23	27.0000	-0.7900	-0.7900	
24	28.0000	-0.7600	-0.7600	
25	29.0000	-0.7300	-0.7300	
26	30.0000	-0.7100	-0.7100	
27	31.0000	-0.6800	-0.6800	
28	32.0000	-0.6600	-0.6600	
29	33.0000	-0.6400	-0.6400	
30	34.0000	-0.6100	-0.6100	
31	35.0000	-0.6000	-0.6000	
32	36.0000	-0.5800	-0.5800	
33	37.0000	-0.5600	-0.5600	
34	38.0000	-0.5400	-0.5400	
35	39.0000	-0.5200	-0.5200	
36	40.0000	-0.5000	-0.5000	
37	41.0000	-0.4900	-0.4900	
38	42.0000	-0.4700	-0.4700	
39	43.0000	-0.4600	-0.4600	
40	44.0000	-0.4400	-0.4400	
41	45.0000	-0.4300	-0.4300	
42	46.0000	-0.4200	-0.4200	
43	47.0000	-0.4100	-0.4100	
44	48.0000	-0.3900	-0.3900	
45	49.0000	-0.3800	-0.3800	
46	50.0000	-0.3700	-0.3700	
47	51.0000	-0.3600	-0.3600	
48	52.0000	-0.3500	-0.3500	
49	53.0000	-0.3400	-0.3400	
50	54.0000	-0.3300	-0.3300	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

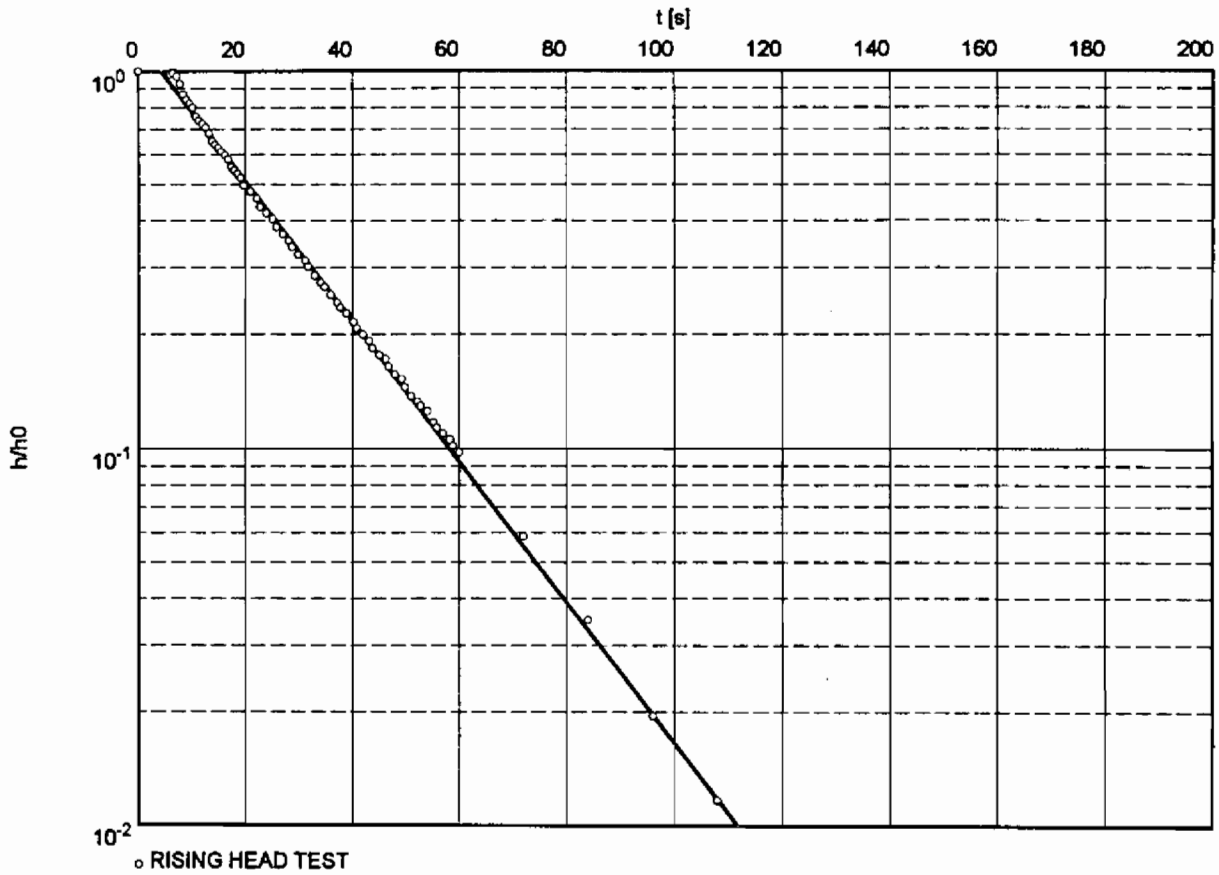
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-24D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	55.0000	-0.3200	-0.3200	
52	56.0000	-0.3100	-0.3100	
53	57.0000	-0.3000	-0.3000	
54	58.0000	-0.2900	-0.2900	
55	59.0000	-0.2800	-0.2800	
56	60.0000	-0.2800	-0.2800	
57	72.0000	-0.2000	-0.2000	
58	84.0000	-0.1500	-0.1500	
59	96.0000	-0.1300	-0.1300	
60	108.0000	-0.1100	-0.1100	
61	120.0000	-0.1000	-0.1000	
62	132.0000	-0.0800	-0.0800	
63	156.0000	-0.0800	-0.0800	
64	168.0000	-0.0700	-0.0700	
65	204.0000	-0.0600	-0.0600	
66	228.0000	-0.0600	-0.0600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 18 NOV 96
NBCE-GDE-24D	



Hydraulic conductivity [ft/s]: 3.70×10^{-5}

Hydraulic conductivity [ft/day]: 3.20

L = 12.5 ft
b = 12.5 ft
D = 12.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 21 NOV 96

Slug Test No. 1	Test conducted on: 18 NOV 96
NBCE-GDE-24D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.5600	2.5600	
2	6.0000	2.5100	2.5100	
3	6.6000	2.5300	2.5300	
4	7.2000	2.4800	2.4800	
5	7.8000	2.3700	2.3700	
6	8.4000	2.2200	2.2200	
7	9.0000	2.1500	2.1500	
8	9.6000	2.1000	2.1000	
9	10.2000	2.0500	2.0500	
10	10.8000	1.9400	1.9400	
11	11.4000	1.8900	1.8900	
12	12.0000	1.8500	1.8500	
13	12.6000	1.8100	1.8100	
14	13.2000	1.7500	1.7500	
15	13.8000	1.6700	1.6700	
16	14.4000	1.6300	1.6300	
17	15.0000	1.6000	1.6000	
18	15.6000	1.5600	1.5600	
19	16.2000	1.5300	1.5300	
20	16.8000	1.4900	1.4900	
21	17.4000	1.4200	1.4200	
22	18.0000	1.3900	1.3900	
23	18.6000	1.3600	1.3600	
24	19.2000	1.3300	1.3300	
25	19.8000	1.2700	1.2700	
26	21.0000	1.2200	1.2200	
27	22.2000	1.1700	1.1700	
28	22.8000	1.1100	1.1100	
29	24.0000	1.0700	1.0700	
30	25.2000	1.0300	1.0300	
31	25.8000	0.9800	0.9800	
32	27.0000	0.9400	0.9400	
33	28.2000	0.9000	0.9000	
34	28.8000	0.8700	0.8700	
35	30.0000	0.8300	0.8300	
36	31.2000	0.8000	0.8000	
37	31.8000	0.7700	0.7700	
38	33.0000	0.7300	0.7300	
39	34.2000	0.7000	0.7000	
40	34.8000	0.6800	0.6800	
41	36.0000	0.6500	0.6500	
42	37.2000	0.6200	0.6200	
43	37.8000	0.6000	0.6000	
44	39.0000	0.5800	0.5800	
45	40.2000	0.5500	0.5500	
46	40.8000	0.5300	0.5300	
47	42.0000	0.5100	0.5100	
48	43.2000	0.4900	0.4900	
49	43.8000	0.4700	0.4700	
50	45.0000	0.4500	0.4500	

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Slug Test No. 1	Test conducted on: 18 NOV 96
NBCE-GDE-24D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	46.2000	0.4400	0.4400	
52	46.8000	0.4200	0.4200	
53	48.0000	0.4000	0.4000	
54	49.2000	0.3900	0.3900	
55	49.8000	0.3700	0.3700	
56	51.0000	0.3500	0.3500	
57	52.2000	0.3400	0.3400	
58	52.8000	0.3300	0.3300	
59	54.0000	0.3200	0.3200	
60	55.2000	0.3000	0.3000	
61	55.8000	0.2900	0.2900	
62	57.0000	0.2800	0.2800	
63	58.2000	0.2700	0.2700	
64	58.8000	0.2600	0.2600	
65	60.0000	0.2500	0.2500	
66	72.0000	0.1500	0.1500	
67	84.0000	0.0900	0.0900	
68	96.0000	0.0500	0.0500	
69	108.0000	0.0300	0.0300	
70	120.0000	0.0000	0.0000	

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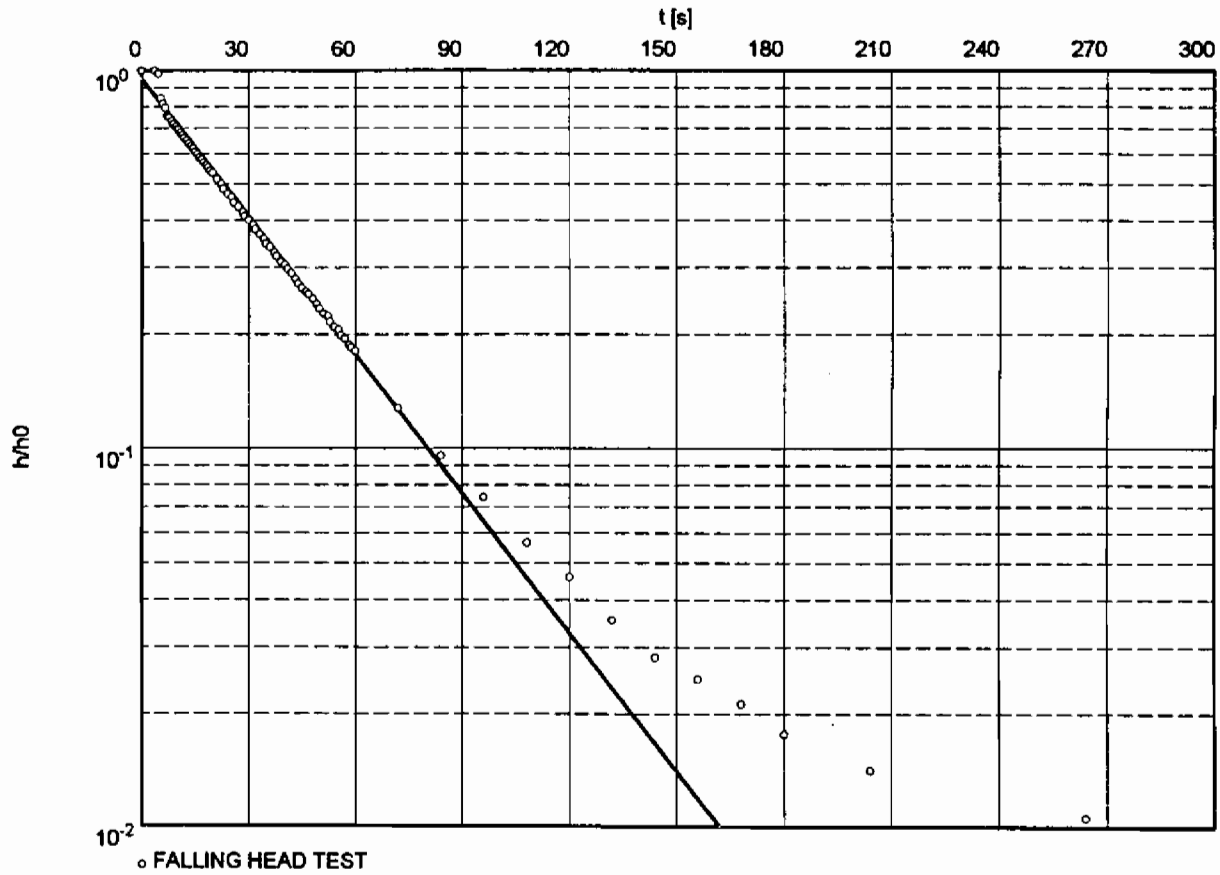
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	



Hydraulic conductivity [ft/s]: 2.43×10^{-5}

Hydraulic conductivity [ft/day]: 2.10

L = 12.5 ft
b = 12.5 ft
D = 12.5 ft (full penetration)
rc = 0.083 ft

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Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	-2.8300	-2.8300	
2	3.6000	-2.8300	-2.8300	
3	4.8000	-2.7700	-2.7700	
4	5.4000	-2.3800	-2.3800	
5	6.0000	-2.3000	-2.3000	
6	6.6000	-2.2500	-2.2500	
7	7.2000	-2.1400	-2.1400	
8	7.8000	-2.1200	-2.1200	
9	8.4000	-2.0700	-2.0700	
10	9.0000	-2.0300	-2.0300	
11	9.6000	-2.0000	-2.0000	
12	10.2000	-1.9700	-1.9700	
13	10.8000	-1.9300	-1.9300	
14	11.4000	-1.9000	-1.9000	
15	12.0000	-1.8700	-1.8700	
16	12.6000	-1.8400	-1.8400	
17	13.2000	-1.8100	-1.8100	
18	13.8000	-1.7800	-1.7800	
19	14.4000	-1.7500	-1.7500	
20	15.0000	-1.7200	-1.7200	
21	15.6000	-1.6900	-1.6900	
22	16.2000	-1.6600	-1.6600	
23	16.8000	-1.6400	-1.6400	
24	17.4000	-1.6100	-1.6100	
25	18.0000	-1.5800	-1.5800	
26	18.6000	-1.5600	-1.5600	
27	19.2000	-1.5300	-1.5300	
28	19.8000	-1.5100	-1.5100	
29	21.0000	-1.4500	-1.4500	
30	22.2000	-1.4100	-1.4100	
31	22.8000	-1.3700	-1.3700	
32	24.0000	-1.3300	-1.3300	
33	25.2000	-1.3000	-1.3000	
34	25.8000	-1.2600	-1.2600	
35	27.0000	-1.2300	-1.2300	
36	28.2000	-1.1900	-1.1900	
37	28.8000	-1.1600	-1.1600	
38	30.0000	-1.1300	-1.1300	
39	31.2000	-1.1000	-1.1000	
40	31.8000	-1.0700	-1.0700	
41	33.0000	-1.0400	-1.0400	
42	34.2000	-1.0100	-1.0100	
43	34.8000	-0.9800	-0.9800	
44	36.0000	-0.9600	-0.9600	
45	37.2000	-0.9300	-0.9300	
46	37.8000	-0.9100	-0.9100	
47	39.0000	-0.8800	-0.8800	
48	40.2000	-0.8600	-0.8600	
49	40.8000	-0.8400	-0.8400	
50	42.0000	-0.8200	-0.8200	

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Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	FALLING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	43.2000	-0.7900	-0.7900	
52	43.8000	-0.7700	-0.7700	
53	45.0000	-0.7500	-0.7500	
54	46.2000	-0.7300	-0.7300	
55	46.8000	-0.7200	-0.7200	
56	48.0000	-0.7000	-0.7000	
57	49.2000	-0.6800	-0.6800	
58	49.8000	-0.6600	-0.6600	
59	51.0000	-0.6400	-0.6400	
60	52.2000	-0.6300	-0.6300	
61	52.8000	-0.6100	-0.6100	
62	54.0000	-0.5900	-0.5900	
63	55.2000	-0.5800	-0.5800	
64	55.8000	-0.5600	-0.5600	
65	57.0000	-0.5500	-0.5500	
66	58.2000	-0.5300	-0.5300	
67	58.8000	-0.5200	-0.5200	
68	60.0000	-0.5100	-0.5100	
69	72.0000	-0.3600	-0.3600	
70	84.0000	-0.2700	-0.2700	
71	96.0000	-0.2100	-0.2100	
72	108.0000	-0.1600	-0.1600	
73	120.0000	-0.1300	-0.1300	
74	132.0000	-0.1000	-0.1000	
75	144.0000	-0.0800	-0.0800	
76	156.0000	-0.0700	-0.0700	
77	168.0000	-0.0600	-0.0600	
78	180.0000	-0.0500	-0.0500	
79	204.0000	-0.0400	-0.0400	
80	264.0000	-0.0300	-0.0300	

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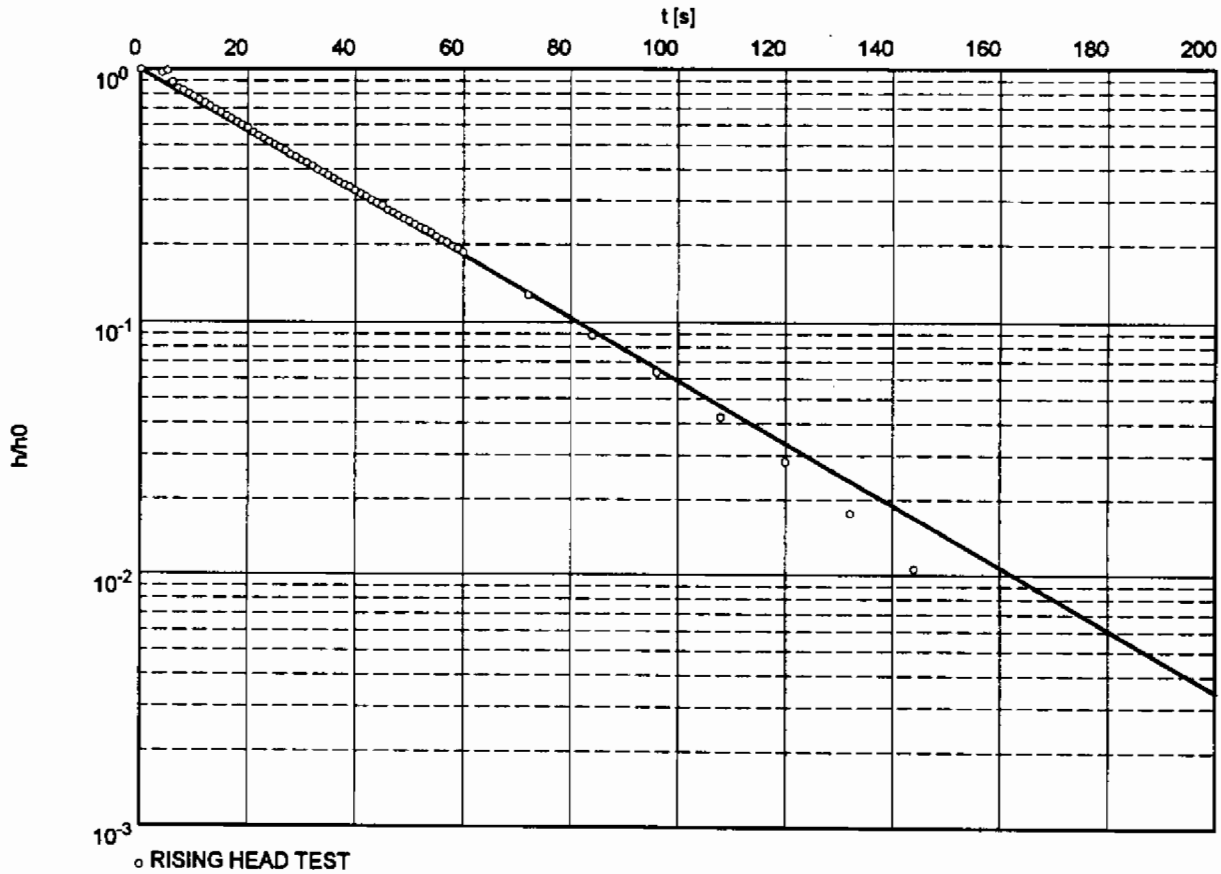
Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	



Hydraulic conductivity [ft/s]: 2.45×10^{-5}

Hydraulic conductivity [ft/day]: 2.12

L = 12.5 ft
b = 12.5 ft
D = 12.5 ft (full penetration)
rc = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 20 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
1	0.0000	2.8400	2.8400	
2	4.0000	2.7600	2.7600	
3	5.0000	2.8100	2.8100	
4	6.0000	2.5300	2.5300	
5	7.0000	2.3800	2.3800	
6	8.0000	2.3400	2.3400	
7	9.0000	2.2700	2.2700	
8	10.0000	2.2100	2.2100	
9	11.0000	2.1400	2.1400	
10	12.0000	2.0800	2.0800	
11	13.0000	2.0200	2.0200	
12	14.0000	1.9600	1.9600	
13	15.0000	1.9100	1.9100	
14	16.0000	1.8500	1.8500	
15	17.0000	1.8000	1.8000	
16	18.0000	1.7500	1.7500	
17	19.0000	1.7000	1.7000	
18	20.0000	1.6600	1.6600	
19	21.0000	1.5900	1.5900	
20	22.0000	1.5500	1.5500	
21	23.0000	1.5000	1.5000	
22	24.0000	1.4600	1.4600	
23	25.0000	1.4200	1.4200	
24	26.0000	1.3800	1.3800	
25	27.0000	1.3400	1.3400	
26	28.0000	1.3000	1.3000	
27	29.0000	1.2700	1.2700	
28	30.0000	1.2300	1.2300	
29	31.0000	1.2000	1.2000	
30	32.0000	1.1700	1.1700	
31	33.0000	1.1300	1.1300	
32	34.0000	1.1000	1.1000	
33	35.0000	1.0700	1.0700	
34	36.0000	1.0400	1.0400	
35	37.0000	1.0100	1.0100	
36	38.0000	0.9800	0.9800	
37	39.0000	0.9600	0.9600	
38	40.0000	0.9300	0.9300	
39	41.0000	0.9000	0.9000	
40	42.0000	0.8800	0.8800	
41	43.0000	0.8500	0.8500	
42	44.0000	0.8300	0.8300	
43	45.0000	0.8100	0.8100	
44	46.0000	0.7800	0.7800	
45	47.0000	0.7600	0.7600	
46	48.0000	0.7400	0.7400	
47	49.0000	0.7200	0.7200	
48	50.0000	0.7000	0.7000	
49	51.0000	0.6800	0.6800	
50	52.0000	0.6600	0.6600	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC. 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 3 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: T. Kafka | Date: 20 NOV 96

Slug Test No. 1	Test conducted on: 18 OCT 96
NBCE-GDE-25D	RISING HEAD TEST

Static water level: 0.0000 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]	
51	53.0000	0.6500	0.6500	
52	54.0000	0.6300	0.6300	
53	55.0000	0.6100	0.6100	
54	56.0000	0.5900	0.5900	
55	57.0000	0.5800	0.5800	
56	58.0000	0.5600	0.5600	
57	59.0000	0.5500	0.5500	
58	60.0000	0.5300	0.5300	
59	72.0000	0.3600	0.3600	
60	84.0000	0.2500	0.2500	
61	96.0000	0.1800	0.1800	
62	108.0000	0.1200	0.1200	
63	120.0000	0.0800	0.0800	
64	132.0000	0.0500	0.0500	
65	144.0000	0.0300	0.0300	

Appendix D

Determination of Hydraulic Conductivity From Grain Size

D.1 METHODOLOGY

As introduced in Section 2.3.5.2, the method of estimating hydraulic conductivity data from grain-size distribution data has been practiced for many years. The geotechnical data gathered during the Zone E RFI provides an opportunity to assess the aquifer hydraulic conductivity at many more locations than simply well locations (i.e., slug tests and specific capacity tests). This method is an empirically derived assessment of hydraulic conductivity based on the structure and composition of porous media, specifically sands with minimal fines content. As stated previously in Section 2.3.5.2, the Qs lithologic unit most closely adheres to the empirical relations established by many of the methods.

The Zone E Qs sample population consisted of two undisturbed Shelby tube samples and seven undisturbed samples collected by pushing split-spoon samplers. Additionally, four Shelby tubes collected from Qs material during the drilling activities in Zone K were included. Grain-size distribution curves for each set of samples were obtained by standard sieve analysis and hydrometer methods by a certified geotechnical lab. The distribution curves and related data analyses may be found in Appendix B.

A Fortran software code, MVASKF, was used to calculate hydraulic conductivity from the grain size distribution data (Vukovic and Soro, 1992). The software uses 10 separate formulas from various authors: Hazen, Slichter, Terzaghi, Beyer, Sauerbrei, Kruger, Kozeny, Zunker, Zamarin, and USBR. Input data are interpreted from the grain-size distribution curve as percent of material passing through the sieves for each grain diameter in millimeters. Sample porosity, which was required as input data for some of the empirical methods, was determined for all the samples by laboratory analysis. These data are tabulated in Table D.1.

Table D.1
Hydraulic Conductivity (feet/day)
Results from Grains Size Distribution Analyses

	Zone K Shelby Tubes				Zone E Pushed Split-Spoon Samples						Zone E Shelby Tubes	
Methods	*161001*	*162001*	*163001*	*GDK001*	*023005*	*065014*	*070005*	*526010*	*551005*	*572009A*	*569002*	*538001*
Hazen	43.65	44.79	0.33	36.85	44.22	34.30	14.34	1.17	0.38	26.02	32.31	19.19
Slichter	21.12	22.56	0.17	16.53	15.76	14.31	4.17	0.34	0.18	10.35	10.15	5.70
USBR	10.23	9.38	10.23	10.23	10.23	9.38	10.23	111.40	1.04	10.23	12.08	9.38
Beyer	27.86	28.63	0.12	25.34	39.40	25.97	147.40	0.92	0.14	19.87	29.76	19.62
Sauerbrei	65.48	70.30	72.00	53.57	31.46	44.50	16.50	17.83	5.07	38.55	25.20	15.25
Kruger	41.10	43.09	7.68e-02	18.68	20.18	2.54	1.94	10.03	5.98	32.60	52.16	13.07
Kozeny	0.14	0.15	8.53e-02	0.11	6.07e-02	8.59e-02	3.29e-02	0.69	1.47	5.44	115.09	15.22
Zunker	0.51	0.55	4.88e-02	0.31	0.24	0.14	7.17e-02	1.14	1.42	7.63	58.11	9.84
Zamarin	23.84	24.35	5.92e-02	8.05	11.17	1.00	0.72	5.64	3.66	27.61	62.65	13.35
Terzaghi	37.42	40.25	3.03e-01	29.20	27.64	25.31	7.14	0.58	0.31	18.23	17.60	9.81
σ_I	0.33	0.51	1.41	0.65	0.39	0.92	0.96	1.74	2.78	1.3	0.88	0.57
Sk_I	0.5	0.01	0.94	0.33	0.11	0.12	0.22	0.14	0.35	0.44	0.127	0.46
Geomean	11.60	12.10	0.35	8.16	7.80	4.60	2.30	2.10	0.97	16.40	32.10	12.30
Median	25.90	26.50	0.14	17.60	18.00	11.90	5.70	1.20	0.12	19.10	31.00	13.20

Note:
Individual author methods taken from Vukovic and Soro (1992).

D.2 Results and Evaluation

The variability in the results between samples was not entirely unexpected since fines content still varied significantly in the Qs samples. However, the range in hydraulic conductivity values calculated for each sample was greater than expected. In order to better understand which methods may be more accurate and may better reflect the true sorting and fines content of the samples, the grain-size distribution data were used to calculate the inclusive graphic standard deviation (σ_I) and inclusive graphic skewness (Sk_I) (Folk, 1980). The inclusive graphic standard deviation and inclusive graphic skewness are mathematical expressions of the grain sorting and skewness, respectively, provided the grain-size distribution is lognormally distributed. The grain-size diameters were converted to the logarthimic phi scale (Φ), a measurement unit used by sedimentologists to evaluate grain-size data in units of equal value and facilitate graphical plotting and statistical calculations. The conversion uses the following expression:

$$\Phi = \frac{-\log[d]}{\log 2}$$

where Φ is a number representing the grain-size diameter, d, in millimeters. Inclusive graphic standard deviation, σ_I was calculated using:

$$\sigma_I = \frac{\Phi 84 + \Phi 16 - 2\Phi 50}{2(\Phi 16 - \Phi 84)} + \frac{\Phi 95 + \Phi 5 - 2\Phi 50}{2(\Phi 5 - \Phi 95)}$$

where $\Phi 84$, $\Phi 16$, $\Phi 5$, and $\Phi 95$ represent the phi sizes for the 84th, 16th, 5th, and 95th percentile respectively. Similarly, inclusive graphic skewness (Sk_I) was calculated using:

$$Sk_I = \frac{\Phi 84 + \Phi 16 - 2\Phi 50}{2(\Phi 16 - \Phi 84)} + \frac{\Phi 95 + \Phi 5 - 2\Phi 50}{2(\Phi 5 - \Phi 95)}.$$

To better understand the relationship between sorting, skewness, and hydraulic conductivity (K), scatter plots of σ_I versus K and Sk_I versus K were made (Figures D-1 and D-2). The symbols represent the K values from the 10 different methods, named by author abbreviation. The median and geometric mean of all the K values at each sample location were also calculated for comparison. On these plots, each sample location has only one σ_I or Sk_I value (y-axis) over the range of K values calculated by each method. Figures D-3 and D-4 were plotted at a smaller x-axis scale to resolve the clustered data seen in Figures D-1 and D-2.

A substantial range in sorting and skewness exists between all the samples, which were thought to be more homogeneous initially. In Figure D-1, samples range between $0.33\Phi(<0.35\Phi$ very well sorted) and 3.1Φ ($2\text{-}4\Phi$ very poorly sorted). Additionally, the large disparity in K estimates for each sample is significant. For example, 569002, a moderately sorted silty sand, had a range in K values from 10.2 to 115 feet/day. Sample 551005, a very poorly sorted, very silty sand ranged between 0.14 to 6.0 feet/day (Figure D-3). Since the range in K values is greater at the less well-sorted location, the methods apparently are sensitive to sorting. However, from a contaminant transport standpoint, the range in K values for the well-sorted materials is more worrisome since the overall magnitude of values is greater.

Figure D-2 shows the relationship between skewness and hydraulic conductivity. All Zone E samples fall within the skewness range of 0.1 to 0.5, which correlates to strongly fine skewed (1 to 0.3) and fine skewed (0.3 to 0.1) samples. These skewness values indicate that the samples deviate from a normal grain-size distribution in the fine-grained fractions. Hydraulic conductivity was expected to be sensitive to skewness such that increasingly fine skewed samples would result in wide ranges of K values. Visually, the K values appear to have little correlation with skewness since there is minimal clustering of samples. However, when calculating the difference between the high and low K values for each sample, the range in K values appears to increase as the grain-size distribution approaches a near symmetrical or normal distribution, contrary to the expected relationship. For instance, as samples become nearly symmetrical, the range in K values increases

from 538001 (5.7 to 19.6 ft/day) to 572009A (5.4 to 38.6 ft/day) to 551005 (0.14 to 6.0 ft/day), and to 070005 ($3.3*10^{-2}$ to 16.5 ft/day). However, the samples progress toward better sorting from 551005 < 572009A < 070005 < 538001 such that the second-best sorted sample, 070005, has the greatest range in K values.

Due to the wide disparity of K values for each sample, each method was investigated closely to see if it behaved as expected for a various σ_1. If certain samples resulted in K values that were nonsensical, the samples were removed from the sample pool. For instance, 583009A had K values on the order of 10^{-2} ft/day, which are low for silty sand and more closely reflect K values measured in silty, clayey sands and sandy clays at NAVBASE. Similarly, 572009A, a poorly sorted, strongly finely skewed sand was removed because its values were similar to those of a well-sorted sand.

The general criterion for testing the methods was that K values for sands that were well to very well sorted should, in general, be higher that those for a poorly to very poorly sorted sand. Any variation in K values between two similarly sorted sands might reflect the skewness of each sample. Two of the methods quickly eliminated were: USBR, which showed no sensitivity to either skewness or sorting in any samples and Sauerbrei, which had a higher K value for a poorly sorted, finely skewed sand (526010) than a well-sorted, finely skewed sand (070005) and consistently showed the higher values for several poorly and moderately sorted sands. Methods were evaluated further using samples 070005, 065014, and 569002, which are all moderately sorted, finely skewed sands with minor deviations in their σ_1 and Sk_1 values, such that their K values should conceivably be within an order of magnitude. This eliminated four more methods: Zunker, Zamarin, Kruger, and Kozeny. Of the four remaining methods, Hazen, Terzaghi, and Beyer closely coincide while Slichter is consistently low. Although the Slichter method appears to follow expected trends with sorting and skewness, its values were too low when compared to those of the other four methods.

Based on the range of K values from the remaining three methods, sand deposits could be categorized into three major sorting classes: poorly, moderately, and well. Based on the Zone E data, a range of K values for each class was determined (Table D.2).

Table D.2
Estimated Ranges in Hydraulic Conductivity
Based on Sorting of Sand Deposits

Poorly Sorted	Moderately Sorted	Well Sorted
0.1-5 ft/day	5-25 ft/day	25-100? ft/day

These values can be used with relative confidence in any manner that requires estimation of hydraulic conductivity for a sand to silty sand unit. However, these values are only one representation of hydraulic conductivity and should be used in conjunction with other hydraulic conductivities estimates from other methods. These results reflect those produced by the slug test evaluations, further substantiating the use of grain-size distributions as an estimator of hydraulic conductivity.

Figure D-1

INCLUSIVE GRAPHIC STANDARD DEVIATION VERSUS HYDRAULIC CONDUCTIVITY

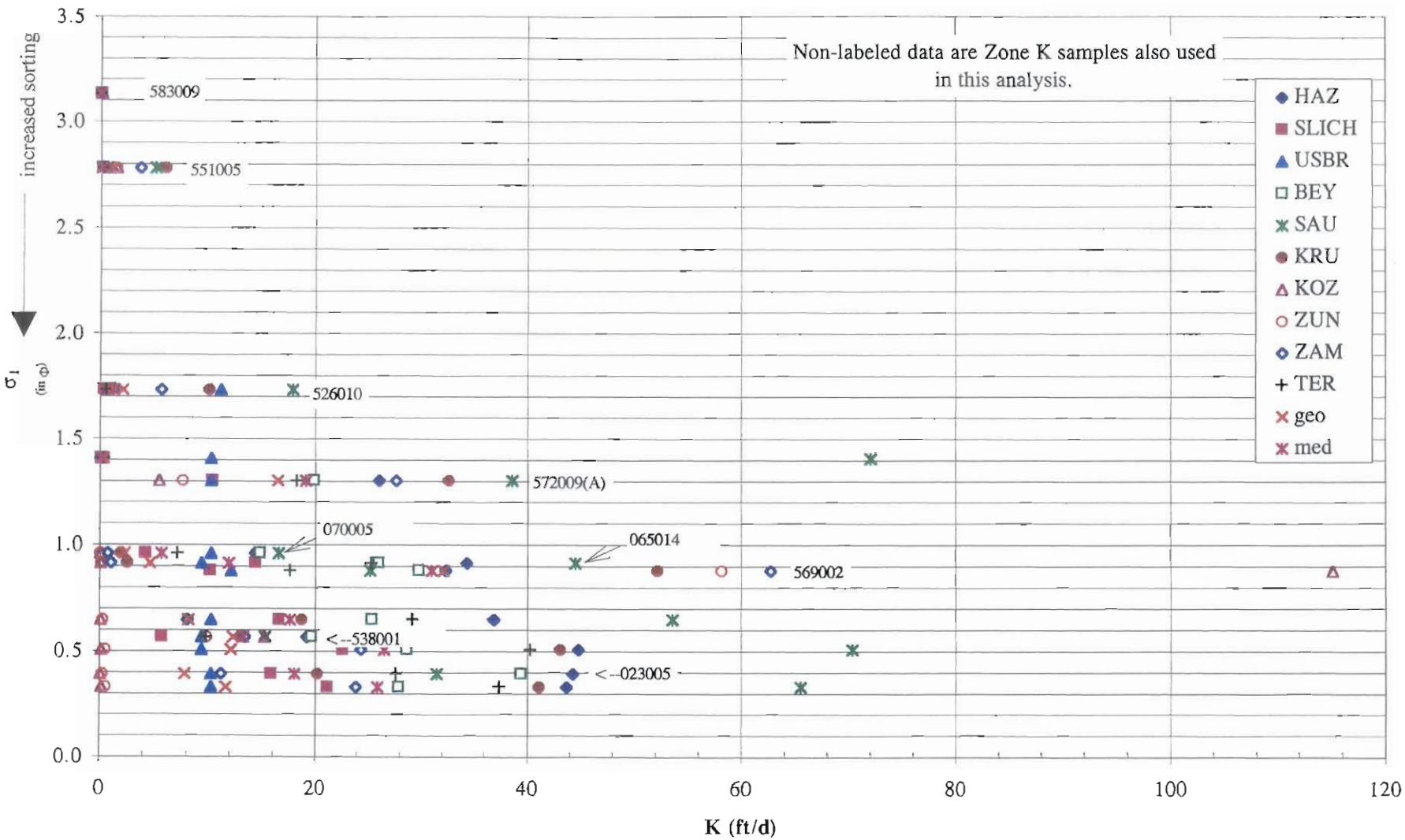


Figure D-2

INCLUSIVE GRAPHIC SKEWNESS VERSUS HYDRAULIC CONDUCTIVITY

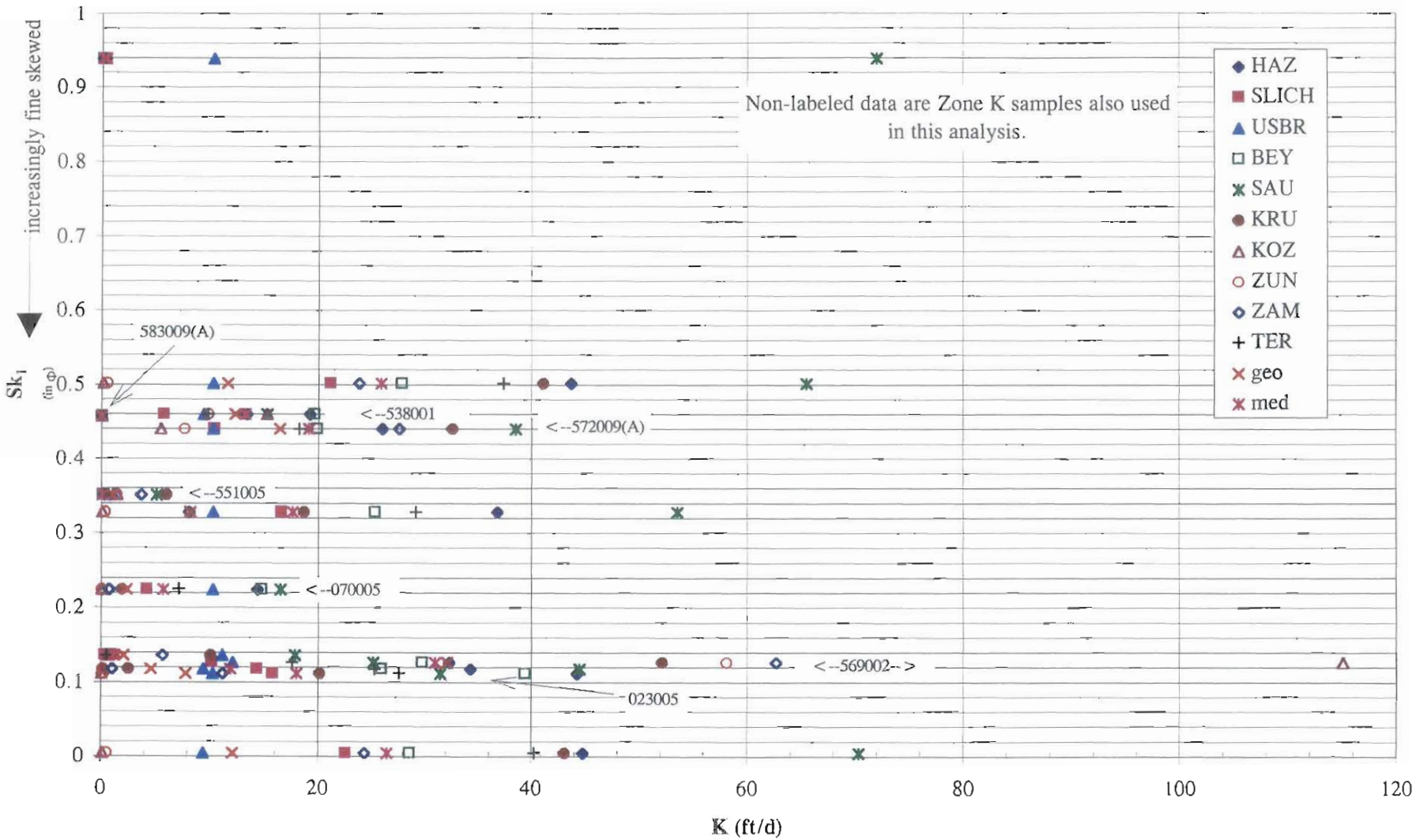


Figure D-3

INCLUSIVE GRAPHIC STANDARD DEVIATION VERSUS HYDRAULIC CONDUCTIVITY

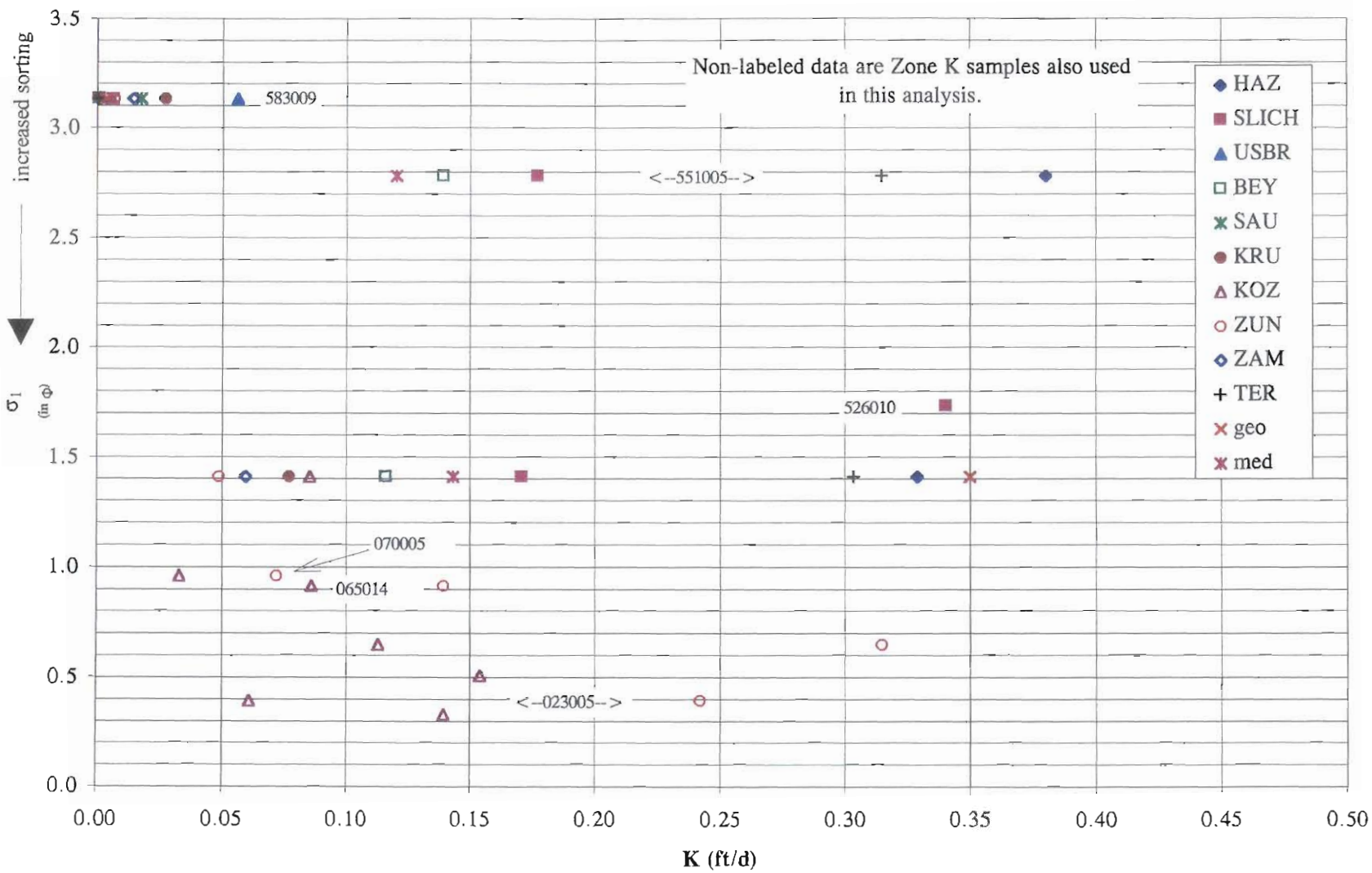
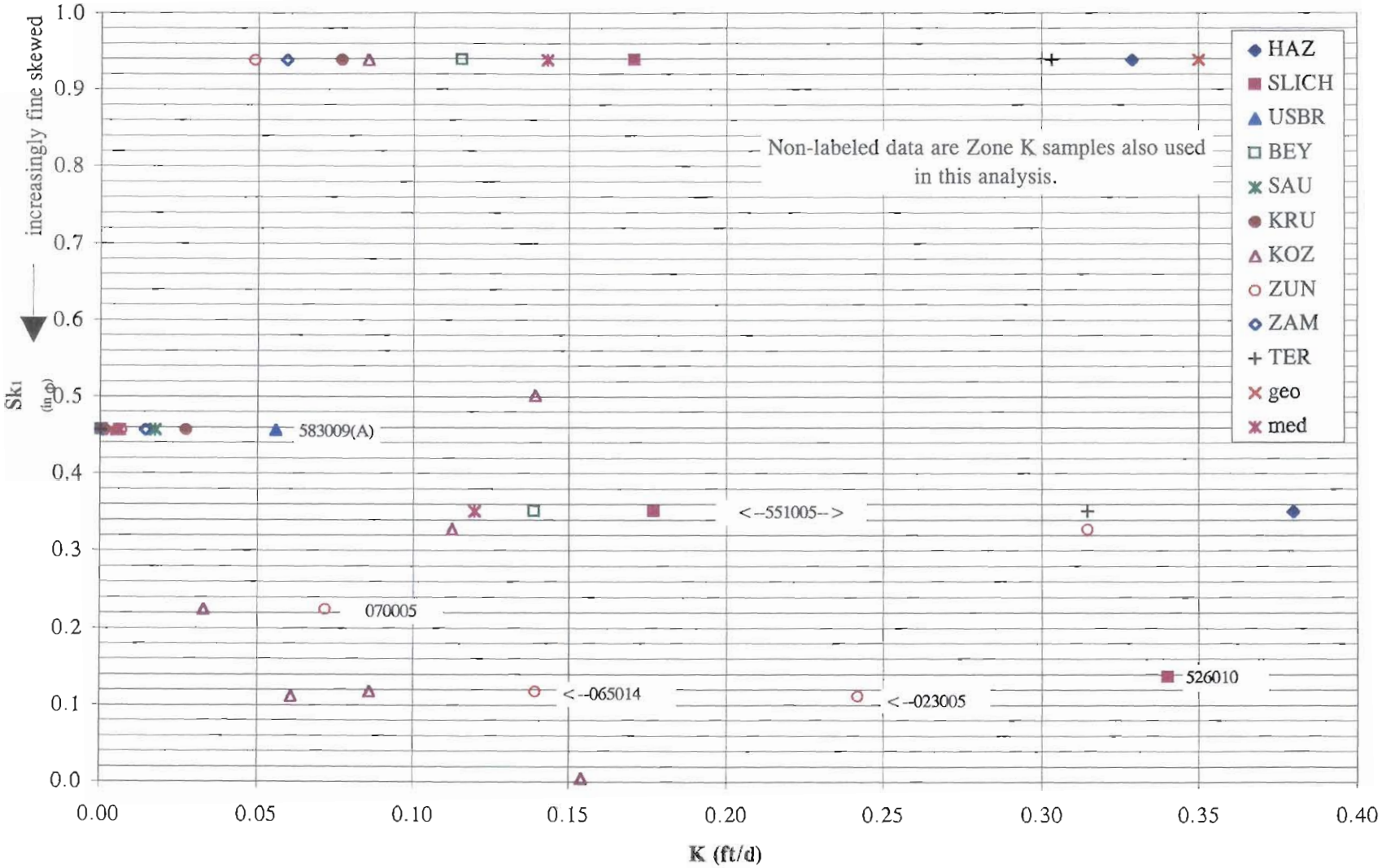


Figure D-4
INCLUSIVE GRAPHIC SKEWNESS VERSUS HYDRAULIC CONDUCTIVITY



Appendix E

SWMU 70 Single Well Pumping Test

E.1 INTRODUCTION

The pumping test conducted at SWMU 70 was deemed necessary because of the greater reliability in hydraulic conductivity estimates resulting from the increased stress of a pumping test as compared to a slug test and the ability to estimate aquifer storage from the data. This appendix discusses in greater detail the data presented in Section 2.3.5.3.

During the RFI, one deep monitoring well (07001D) and two shallow monitoring wells (070001 and 070002) were installed at SWMU 70. In addition, two shallow monitoring wells associated with AOC 549 (549002 and 549003) are within about 60 feet from the proposed shallow pumping well, 070001. Located in the southeast corner of SWMU 70 next to Building 5, 070001 was installed to 12.5 ft bgs with a screened interval extending from 2.5 to 11.5 ft bgs.

Three pumping periods were conducted at 070001: 1) to establish a viable discharge rate; 2) to perform a pumping test using the existing wells at SWMU 70; and 3) to perform a second pumping test using additional piezometers installed within 10 feet of the pumping well. All three pumping periods will be discussed in this appendix.

E.2 TEST DESIGN AND IMPLEMENTATION

E.2.1 Establishing Pumping Rate

A pretest was conducted on February 17, 1997, using two peristaltic pumps to estimate the optimum discharge rate to be pumped from 070001. Discharge from the pumps was increased three separate times over an hour while monitoring drawdown in the well. Maximum drawdown stabilized at 1.30 feet in 070001 (approximately 19% of its saturated thickness) with both peristaltic pumps running at maximum rates, yielding at total cumulative discharge of approximately 0.4 gpm. An average discharge rate of 1 gpm was expected to result in drawdown approximately 25% to 30% of the saturated thickness at the pumping well while not overstressing the groundwater system.

Each of the two pumping tests was composed of three separate steps: a prepumping monitoring period to establish antecedent trends in water levels; a pumping period during which drawdown and pump discharge were monitored; and a post-pumping period or recovery period in which water levels were recorded in all observation wells and pumping well. Barometric pressure was recorded throughout each stage. A Hermit 2000™ (InSitu Inc.) data logger recorded data from the barometric probe and water level within each well using a pressure transducer. The time interval for data collection was on a log cycle for the first 100 minutes, after which readings were taken every 15 minutes.

E.2.2 Initial Pumping Test Using Existing Well Locations

The first pumping test at SWMU 70 began on March 4, 1997. Well 070001 was pumped for 530 minutes at 1 gpm. While water levels fluctuated in all the nearby monitoring wells (070002, 07001D, and 549002), these changes were not definitively concluded to be solely pumping responses and not the result of other environmental factors such as tidal cycles or barometric pressure changes.

Evaluation of the March 4, 1997, pumping test data indicated that either the pumping rate and duration of the test had to be increased or additional observation wells had to be installed closer to the pumping well. Since increasing discharge was not desirable due to the likelihood of dewatering the pumping well and increasing IDW, three piezometers — 070PZ1, 070PZ2, and 070PZ3 — were installed at distances of 4.9, 5.1, and 9.9 feet, respectively, from 070001. Piezometers 070PZ1 and 070PZ3 were installed roughly at 90° to one another, which allows for determination of hydraulic conductivity in two planar directions, and thus an evaluation of aquifer anisotropy (Figure E-1). The construction and lithologic logs for the piezometers are located at the end of this appendix.

E.2.3 Second Pumping Test Using New Piezometer Locations

The second pumping test at SWMU 70 began at 1154 on April 30, 1997, with background monitoring of groundwater levels at all piezometer and well locations for the prepumping period. The piezometers 070PZ1-PZ3, pumping well 070001, and nearby monitoring wells 070002 and 549002 were monitored during the prepumping period. Since the results from the first pumping test suggested that 070002 and 549002 were not affected during the first pumping test, these locations were expected to provide reliable background groundwater level data.

The pumping stage began at 0720 hours on May 1, 1997, and continued for 10 hours 35 minutes (10.58 hours or 635 minutes) until 1755 hours. Pumping was terminated after drawdown appeared to have stabilized and a 500-gallon tanker and two 55-gallon drums at the site had been filled. Constant discharge were measured periodically to maintain the rate at approximately 1 gpm. Total volume pumped from the aquifer was 604.1 gallons. The average discharge rate was calculated as 0.95 gpm. Table E-1 lists the initial parameters of the pumping test and results.

Table E-1
Pumping Test Parameters

Well	r (ft)	H_0 (ft)	b (ft)	s (ft)
070001 (pumping well)	0	5.78	6.48	2.353
070PZ1	5.1	5.80	3.20	0.188
070PZ2	9.9	5.77	3.23	0.133
070PZ3	4.9	5.81	3.19	0.199
070002	54.3	5.68	6.54	nd
549002	61.8	5.87	8.55	nd

Discharge (Q)	=	0.95 gpm
Pumping time (t)	=	10.58 hr
Total volume	=	604.1 gal
Recovery time (t')	=	20.25 hr

Notes:

r	=	radial distance to pumping well
H_0	=	initial head in well prior to pumping (depth to water bgs)
b	=	saturated thickness of observation well
s	=	drawdown induced by pumping (nd indicates "none detected")

E.3 DATA ANALYSIS

E.3.1 Establishing Prepumping Trends

Before analyzing the pumping test data, environmental influences must be investigated for possible biasing of groundwater levels, namely barometric pressure and tidal cycles. This enables the evaluation of the "true" drawdown data in all piezometers. Water levels were plotted versus time for each piezometer (Figure E-2). The maximum change in head for each piezometer was seen in the time range 0 to 280 minutes and measured 0.043 feet at PZ1, 0.013 feet at PZ2, and 0.043 at PZ3. After 280 to 355 minutes, water levels in the piezometers gradually declined, but remained above the initial water level at t=0 minutes. Monitoring wells 549002 and 070002 showed declining water levels throughout, without the initial increase evident in the piezometers. The overall change in water levels for the monitoring wells was 0.068 feet at 549002, and 0.019 at 070002.

Tidal data for April 30, 1997, indicate that three distinct tide changes occurred during the pre-pumping monitoring period: high tide at 1504 hours (t=190 min.), low tide at 2117 hours (t=563 min.), and high tide at 0232 hours (t=878 min.). There is little indication of tidal cycles in piezometer water levels. A lag period in tidal response at SWMU 70 is likely since it is located approximately 400 feet west of the Cooper River; however, some superimposing of previous tidal events would also be evident. Nonetheless, the water level in well 549002, the closest of the wells to the river and with similar lithology as the piezometers, showed no definitive tidal signature. Given the short duration of the pumping test (less than 11 hours) and the average tidal cycle of six hours in the Cooper River, tidal amplitudes need not be considered in evaluating the pumping test data.

Barometric pressure increased and decreased several times during the prepumping monitoring period. It declined from 14.751 pounds per square inch (psi) at t=0 to 14.708 psi at t=400 minutes, increased to 14.719 psi at t=580 minutes, decreased to 14.685 psi at t=970

minutes, and increased to 14.704 psi at t=1165 minutes. The overall change in barometric pressure during the pumping period was 0.047 psi.

Water levels in confined aquifers respond inversely to barometric pressure changes: as pressure increases, water levels decrease and vice versa. In unconfined aquifers barometeric pressure changes are usually less influential since the pressure differential is applied directly to the water table, which is monitored by the shallow wells. However, there are cases where entrapped air in pore spaces resulting from the fluctuation of the water table may be influenced by barometric pressure (Todd, 1980; Freeze and Cherry, 1979). To determine the effect barometric pressure changes have on water levels, the barometric efficiency (BE;%) may be calculated using the formula:

$$BE = \gamma \frac{\Delta H}{\Delta p}$$

where γ is the specific weight of water (62.4 pounds per square foot [lb/ft^2]) and h is the change of head over the same time period from which the barometric pressure change, p (lb/ft^2), is taken. BE is typically in the range of 20-80% (Kruseman and deRidder, 1992).

The influence barometric pressure has on the water levels in the piezometers is unclear. Looking strictly at the time period of 0 to 280 minutes when pressure drops quickly from 14.75 to 14.70 psi, piezometer heads all increase, the greatest of which is measured in PZ1 and PZ3 at 0.043 feet. The BE for these piezometers over this time period is 52%. However, a similar rapid decline in pressure from 14.72 psi at 600 minutes to 14.68 psi at 850 minutes correlates to decreasing water levels in the piezometers instead of the expected increases. In fact, after 280 minutes, water levels appear to behave independently of atmospheric pressure. As a result, a BE cannot be calculated for each piezometer with any certainty.

One final attempt at determining barometric pressure influences on groundwater levels at SWMU 70 was undertaken by investigating the barometric pressure during the pumping test (Figure E-3). Barometric pressure was more stable during the pumping period than the pre-pumping period, but still showed a general decrease over the time of the test. Since declining atmospheric pressure during the pumping test period would increase water levels, some fraction of drawdown should effectively be negated. Thus, it should be possible to determine the difference between actual drawdown and observed drawdown as influenced by pressure. An equation, $s' = s + Hp$ equates observed drawdown and Hp, the head (feet) influenced by the pressure gradient to the actual drawdown (s') (Kruseman and deRidder, 1992). Using a BE of 52% at PZ1 and PZ3 from the time period t=0 to 280 minutes, Hp may be substituted for H into the BE expression and solved for Hp. Given Hp and s, s' may be calculated for every s value, thus providing a comparison of s and s'. The results showed that the contribution of pressure-influenced head in the Hp term had a negligible effect in counteracting the observed drawdown in PZ1 and PZ3. As a result, no significant reduction in drawdown would occur in response to rising atmospheric pressure during the test.

E.3.2 Generalized Unconfined Aquifer Response to Pumping

Response in unconfined aquifers to pumping follows three distinct behaviors, which are seen as different slope segments on a drawdown versus time plot (Kruseman and deRidder, 1992). At early times after pumping begins, the aquifer yields water quickly, creating an initial steep line segment as it releases water from storage due to aquifer material compaction and water expansion. This behavior is similar to that in confined aquifers since horizontal flow is dominant. After pumping has continued for an indeterminant period of time, the aquifer appears to reach equilibrium as drawdown remains steady with time. This flat intermediate segment is the second distinct slope seen on a drawdown plot. During this period, the aquifer dewaters as the water table declines vertically in response to pumping. Eventually, flow in the unconfined aquifer becomes dominantly horizontal again and a third line segment of increasing slope appears. This increased drawdown at late times is referred to as delayed yield.

Plots of drawdown versus elapsed time may be seen in Figure E-4 for each of the three piezometers and pumping well. Total drawdown for the three piezometers and the pumping well was included in Table E-1. Since drawdown was not evident at the background monitoring wells (549002 and 070002), these locations will not be involved in the data analysis (Figure E-5).

The drawdown data for 070001 are steep at early time, followed by a flatter portion during intermediate time, and what appears to be the beginnings of a second steeper slope at late time. The second steep slope section is not very clear since pumping was terminated shortly after its inception. The piezometers all show early steep drawdown sections. PZ1 and PZ3 both appear to be reaching the intermediate, flatter time segment at the same time. However, PZ2 and PZ3 both display unusual decreases in drawdown around 400 to 500 minutes. PZ3 appears to return to the flatter time period after this decrease while PZ2 remains slightly depressed. What caused the decline in drawdown in PZ2 and PZ3 is unclear.

E.3.3 Pumping Test Analysis

The software program AquiferTest 2.51 (Waterloo Hydrogeologic Institute, 1996) was used to analyze drawdown data from the piezometers. Both the Theis (1935) and Neuman methods (1972) are available in the package and were deemed appropriate methods to estimate aquifer characteristics. These were used for comparative analysis as well.

The Neuman method was developed specifically for unconfined aquifer systems since it treats the water table as a moving boundary thereby recognizing the vertical flow components induced as the water table declines in response to pumping. The Neuman method is a curve-fitting method by which the user matches the drawdown at a specific observation well to a type curve. Neuman has two sets of type curves: Type A curves are for matching the early time data and initial portion of the flat intermediate time segment, which correlate to the elastic, early time storativity of the unconfined aquifer; Type B curves are for matching the later intermediate time and late time when

drawdown increases as the result of gravity drainage and dewatering of the aquifer material, indicative of the specific yield of the unconfined aquifer. Only the Type A matches can be made on the SWMU 70 piezometers since the drawdown did not appear to reach the delayed yield or gravity drainage portion of the curve. The curve-fitting plots for PZ1, PZ2, and PZ3 may be seen in Figures E-6 through E-8.

The drawdown data from the piezometers match well to the Neuman Type A curves. The type curves underpredict the early time drawdown data at each piezometer. PZ1 and PZ3 data match more closely overall than PZ2. The software computes both the horizontal (K_h) and vertical conductivity (K_v), the storativity (S) and specific yield (Sy) based upon the curve matching. These values are summarized in Table E-2 below.

Table E-2
Aquifer Characteristics Resulting from Neuman (1972) Analysis

Piezometer	β	K_h (ft/d)	K_v (ft/d)	S	Sy
070PZ1	0.05	21	1.7	0.152	1,520
070PZ2	0.01	77	0.33	0.054	542
070PZ3	0.10	34	0.59	0.134	1,340

Note:
β is the value of the Neuman type curve selected for matching.

The results indicate reasonable values of K_h for PZ1 and PZ3 which are both within 5 feet of the pumping well. The K_h value at PZ2 is about four times greater than that of either PZ1 or PZ3. Given the low discharge and relatively short duration of the test, it is likely that small, local-scale heterogeneities might be significant, and could possibly account for this disparity in K_h. Shelby tube data from similar deposits in Zone E indicated vertical permeabilities in the range of 4 ft/day. When used in conjunction with slug test K_h values, the K_v/K_h ratio was approximately 0.1. PZ1 and PZ3 seem to support this finding.

The Neuman analysis results for aquifer storage and specific yield are unusual. These values are far beyond the range of those reported for unconfined aquifers in sandy materials. The S values would more closely reflect the Sy values one might expect for unconfined sand aquifers. The Sy values calculated are too high to be meaningful.

The Theis method is the first unsteady-state flow method that incorporated time and storativity. The assumptions of the Theis method are:

- The aquifer is confined and of infinite areal extent.
- The aquifer is homogeneous, isotropic, and of uniform thickness over the area of influence.
- The piezometric surface is horizontal over the area of influence.
- The aquifer is pumped at a constant discharge rate.
- The well penetrates the entire thickness of the aquifer and receives water from horizontal flow.

Although the pumping test was conducted on an unconfined aquifer, it may be justified that the drawdown data from the piezometers suggest that only the elastic storage of the aquifer was evaluated since the early steep data are most prominent. Given the small radius of influence being tested (less than 10 feet) and that drawdown in all piezometers was < 0.2 feet, the second and third assumptions above are reasonable. The pumping well and piezometers did not fully penetrate the aquifer; however, the discharge rate was low enough to assume that the saturated thickness can be substituted for the aquifer thickness. Since delayed yield in the piezometers was never evident,

gravity drainage had yet to initiate, eliminating much of the vertical flow component potential. Since vertical flow components were likely induced at the pumping well, its drawdown will not be analyzed.

Table E-3 depicts the K_h and aquifer storage (S) results from the Theis analysis using the AquiferTest 2.51 software. Software output is presented in figures E-9 through E-11.

Table E-3
Theis Method Results

Piezometer	T (ft^2/min)	K_h (ft/day)	S
070PZ1	0.176	39.2	0.146
070PZ2	0.405	90.1	0.066
070PZ3	0.232	51.7	0.105

Note:
aquifer thickness = saturated thickness = 6.48 feet

E.3.4 Recovery Tests

Water levels in the piezometers and pumping well were monitored until 1421 hours on May 1, 1997, for a total of 1215.8 minutes (20.26 hours). Monitoring of this recovery period provides an independent check on aquifer hydraulic conductivity since the aquifer essentially rebounds from the pumping effects. Once the pump is turned off, rising water levels in the pumping well and piezometers are referred to as the residual drawdown (s') and may be plotted versus the ratio of t/t' where t' is the time since shutting off the pump. It is generally agreed that recovery test data are often more reliable than pumping test data since recovery occurs at a constant rate, whereas attaining a constant pumping rate is more difficult (Kruseman and deRidder, 1992). Recovery in PZ1, PZ2, PZ3, and 070001 was complete in 765, 465, 675, and 225 minutes, respectively (Figure E-12).

The Theis-Jacob recovery test method was used for recovery test data analysis. It assumes that the effects of pumping are fully reversible once pumping is terminated. This method is included in the AquiferTest software. The s' vs. t/t' plots for each piezometer are shown in Figures E-13 through E-15. Table E-4 shows the results of the recovery test data and averages these values with those from the pumping test analysis.

Table E-4
Summary of Pumping Test and Recovery Test Results

Piezometer	Pumping K_h (ft/day)	Recovery K_h (ft/day)	% Diff	Geomean (ft/day)	Storage
070PZ1	39.2	43.6	10.1	41.3	0.146
070PZ2	90.1	78.3	-13.1	84.0	0.066
070PZ3	51.7	46.1	-10.8	48.8	0.105
Mean				55.3	0.105

It is clear that recovery test and pumping test results compare favorably. The recovery data also confirm the disparity in K_h between PZ1 and PZ3 with PZ2, further reinforcing the likelihood that local-scale hetereogeneities were influenced by the test.

The K_h values of PZ1 and PZ3 are within close agreement and probably within the error of the test and analysis, indicating isotropic conditions within 5 feet of the pumping well. However, the K_h of PZ2 was 2.03 and 1.72 times those of PZ1 and PZ3, respectively, suggesting some degree of anistropy within 10 feet of the pumping well. All the values of aquifer storage fall well within the range typically reported for unconfined aquifers of 0.01 to 0.3 (Freeze and Cherry, 1979; Driscoll, 1995; Todd, 1980) and within close agreement to yield values published for sand of 0.1 to 0.3.

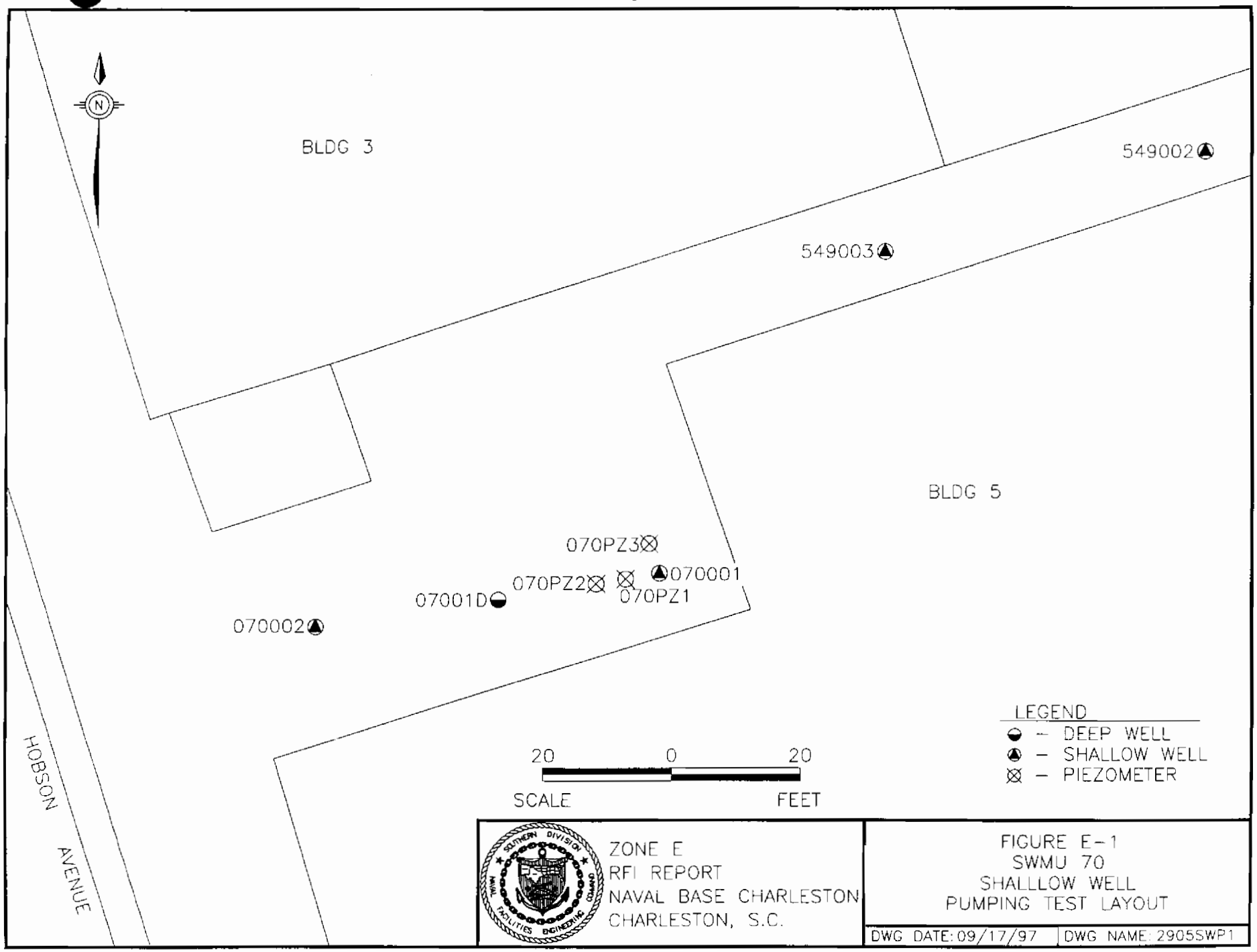

N
BLDG 3
549002
549003
BLDG 5
070PZ3
070001
070PZ2
070PZ1
07001D
070002
HOBSON AVENUE
LEGEND
– DEEP WELL
– SHALLOW WELL
– PIEZOMETER
20 0 20
SCALE FEET
SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
ZONE E
RFI REPORT
NAVAL BASE CHARLESTON
CHARLESTON, S.C.
FIGURE E-1
SWMU 70
SHALLLOW WELL
PUMPING TEST LAYOUT
DWG DATE: 09/17/97
DWG NAME: 2905SWP1

Figure E-2

OSCILLATIONS IN HEAD DURING PRETEST BACKGROUND PERIOD

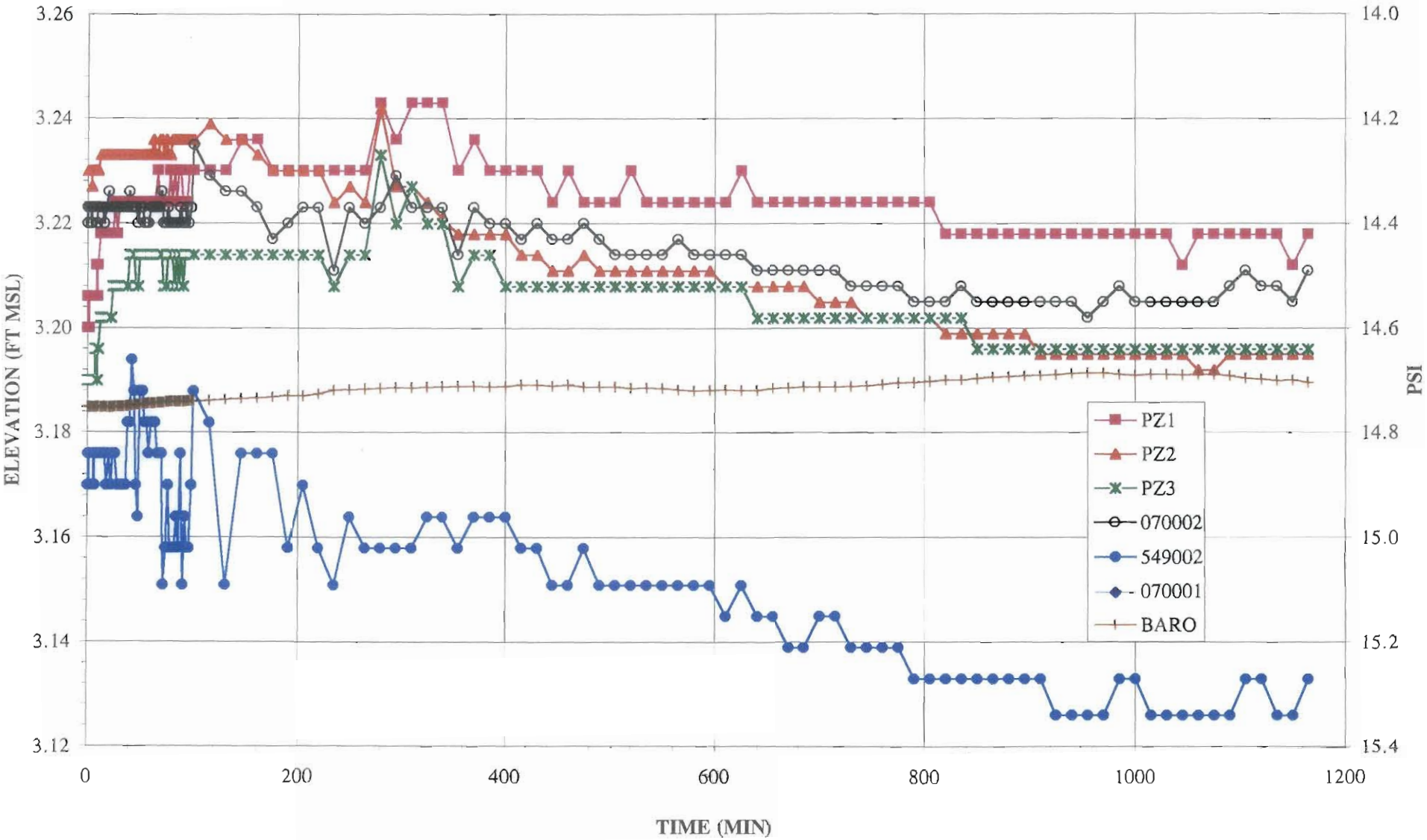


Figure E-3
BAROMETRIC PRESSURE DURING PUMPING TEST

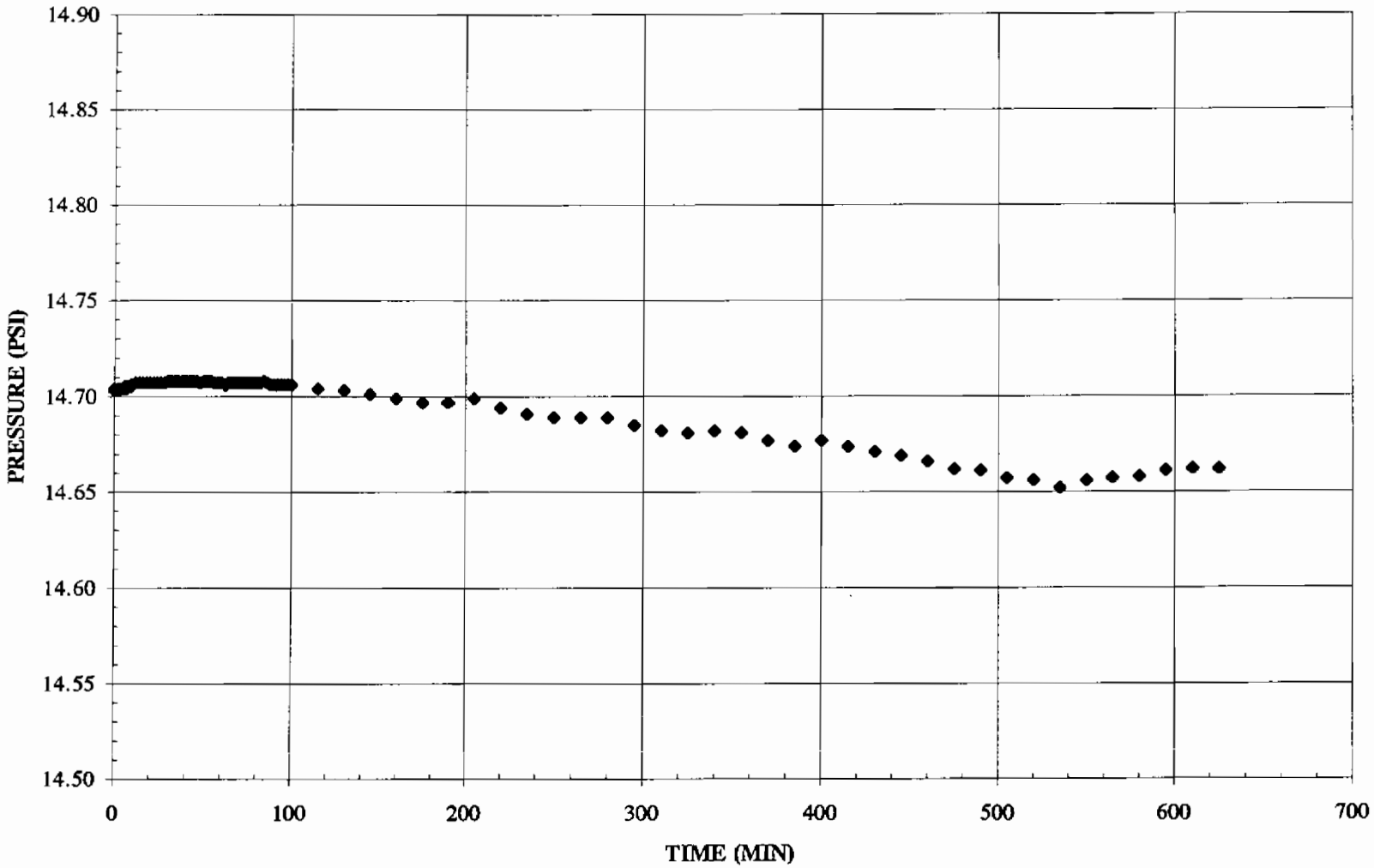


Figure E-4
DRAWDOWN DURING PUMPING TEST

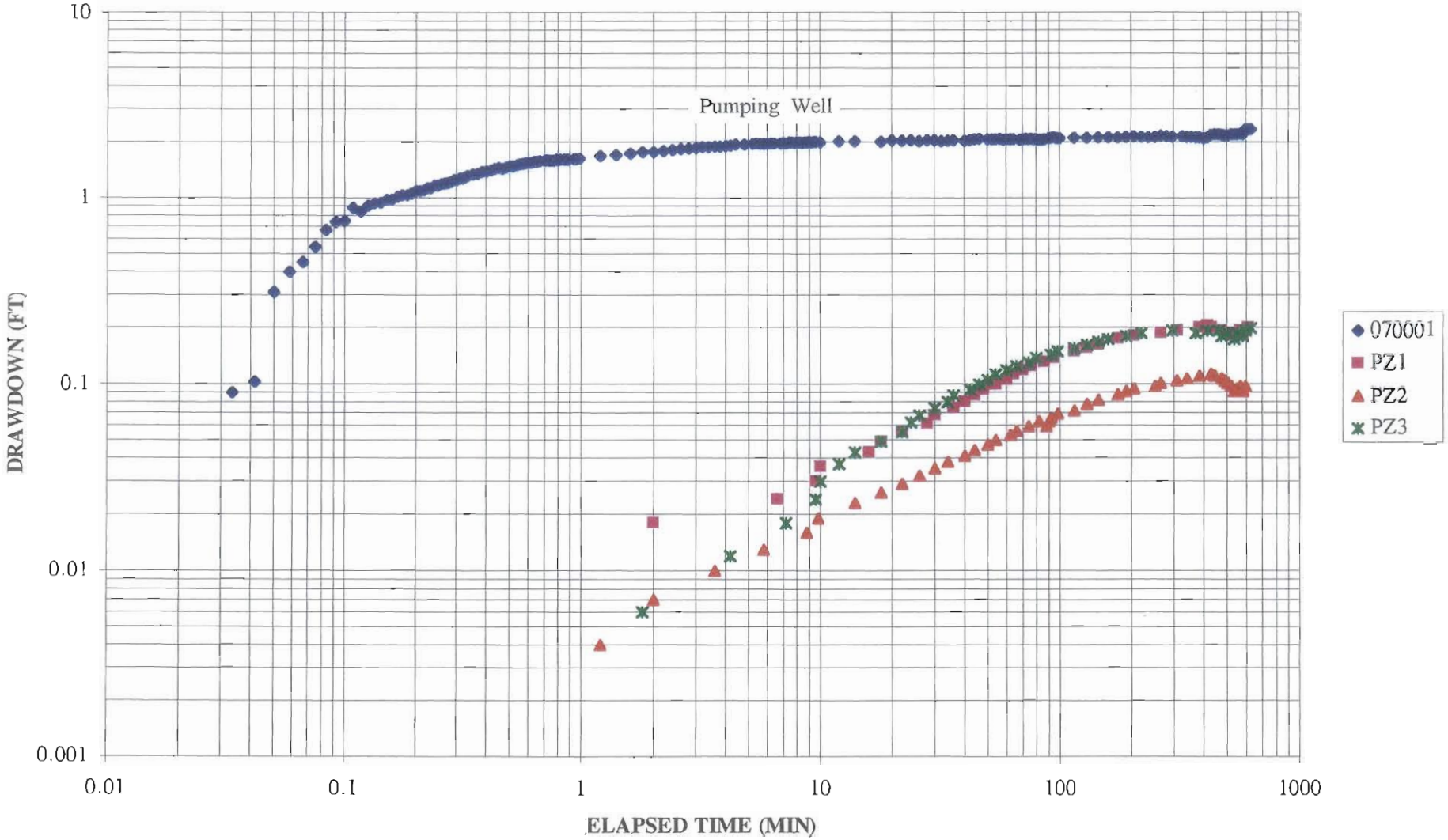
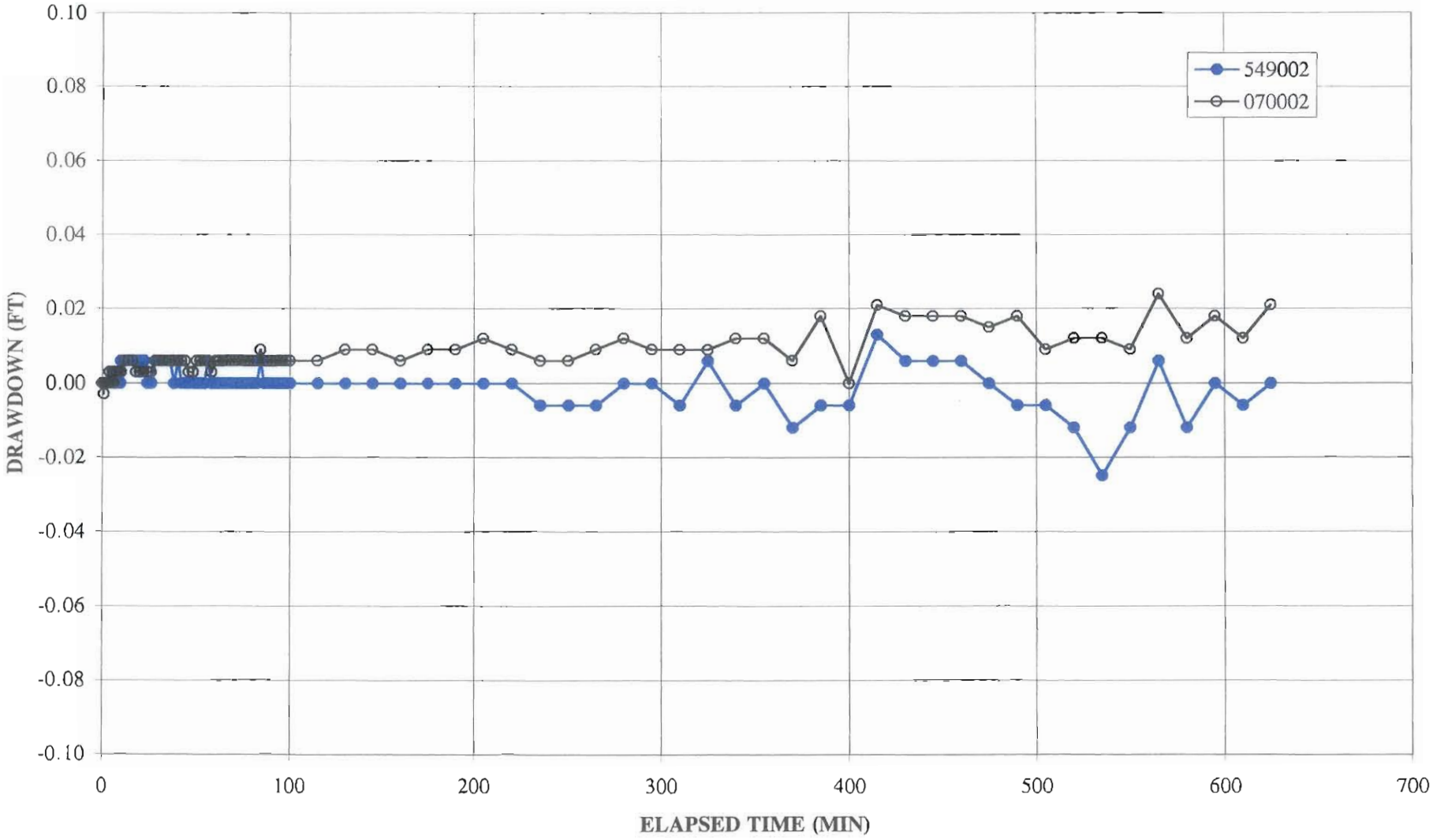
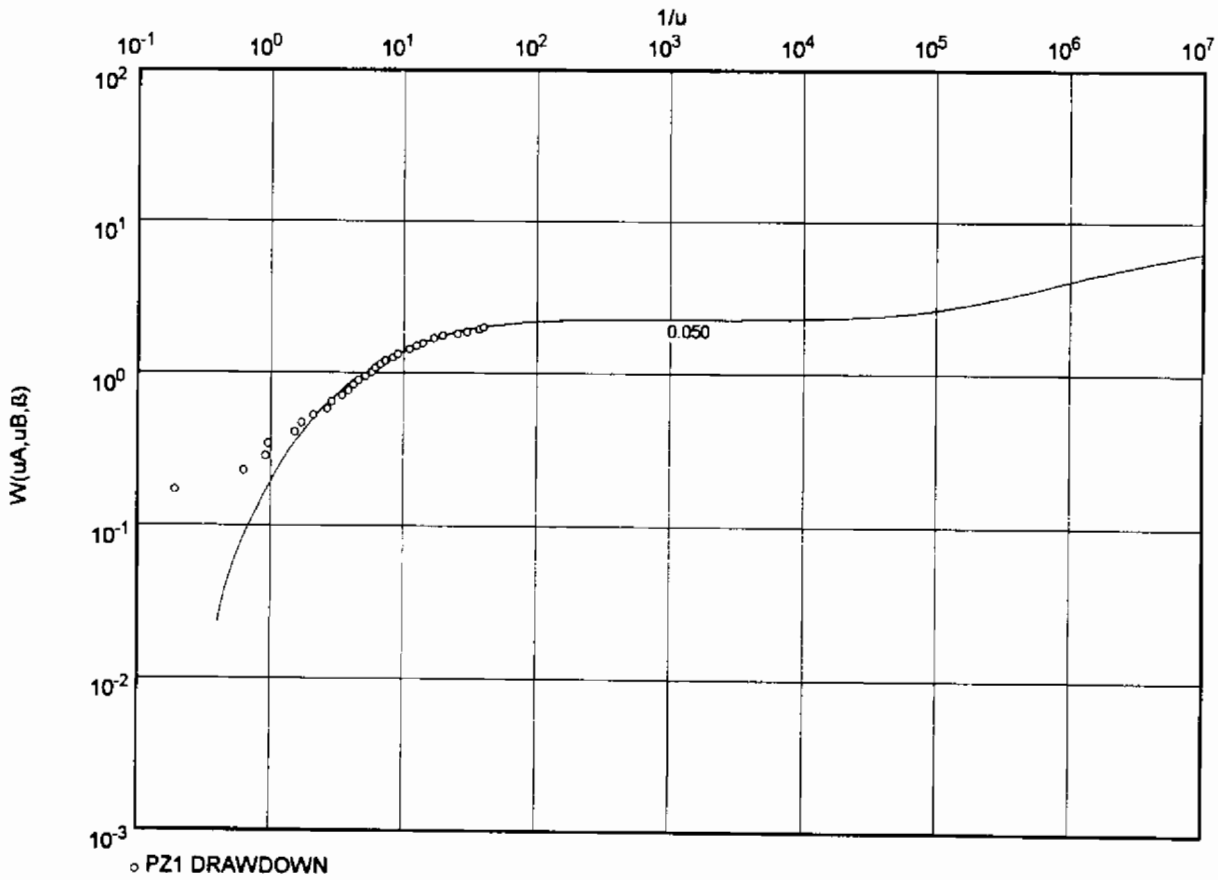


Figure E-5
DRAWDOWN AT WELLS 070002 AND 549002



EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-6, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 9.51×10^{-2}

Hydraulic conductivity [ft/min]: 1.46×10^{-2}

Hydraulic conductivity vertical [ft/min]: 1.18×10^{-3}

Aquifer thickness [ft]: 6.48

Storativity: 1.52×10^{-1}

Specific yield: 1.52×10^{3}

Hydraulic conductivity [ft/day] = 21.0

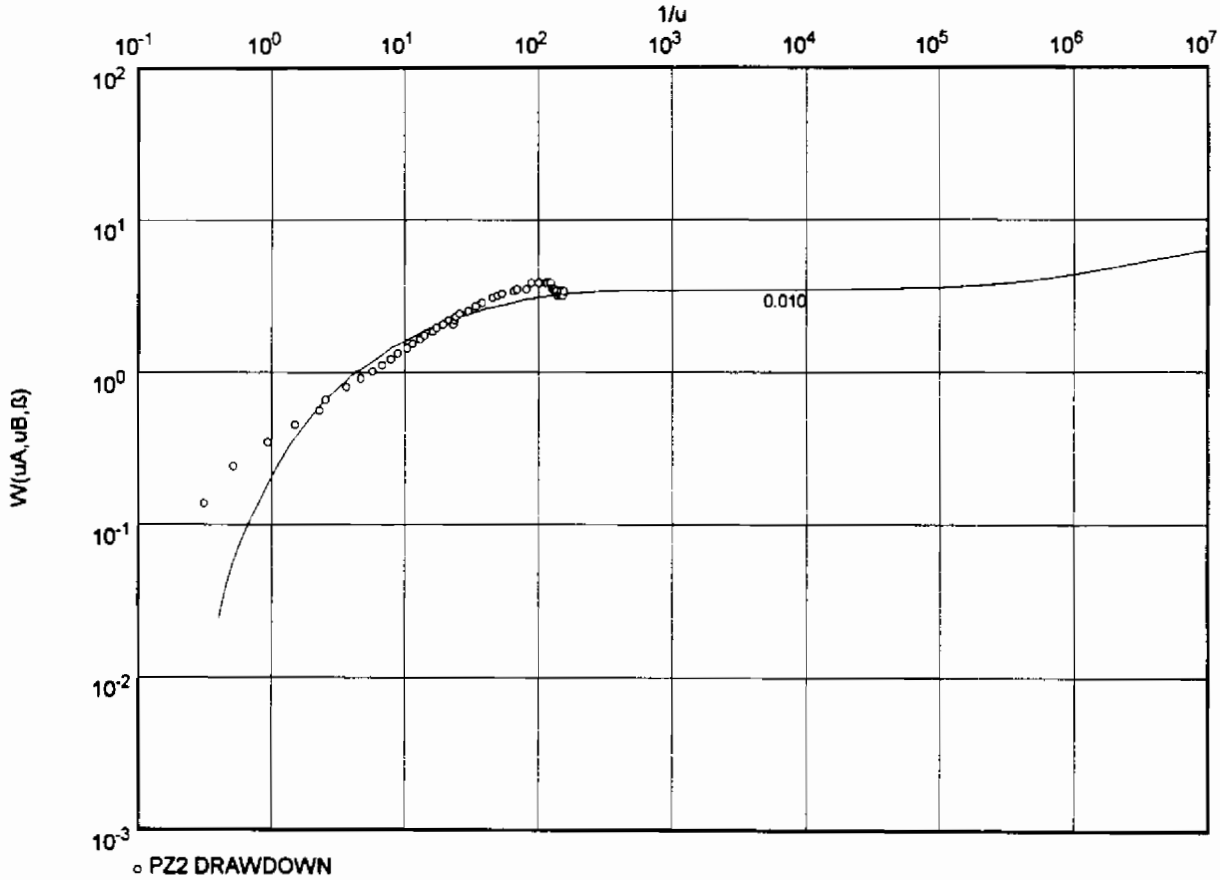
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-6, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	PZ1 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 5.10 ft
Static water level: 0.00 ft below datum	

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	Corrected drawdown [ft]
2	2.00	0.02	0.02	0.02
3	6.60	0.02	0.02	0.02
4	9.60	0.03	0.03	0.03
5	10.00	0.04	0.04	0.04
6	16.00	0.04	0.04	0.04
7	18.00	0.05	0.05	0.05
8	22.00	0.06	0.06	0.05
9	28.00	0.06	0.06	0.06
10	30.00	0.07	0.07	0.07
11	36.00	0.07	0.07	0.07
12	40.00	0.08	0.08	0.08
13	44.00	0.09	0.09	0.09
14	48.00	0.09	0.09	0.09
15	54.00	0.10	0.10	0.10
16	60.00	0.11	0.11	0.10
17	64.00	0.11	0.11	0.11
18	70.00	0.12	0.12	0.12
19	76.00	0.12	0.12	0.12
20	86.00	0.13	0.13	0.13
21	94.00	0.14	0.14	0.14
22	115.00	0.15	0.15	0.15
23	130.00	0.16	0.16	0.15
24	145.00	0.16	0.16	0.16
25	175.00	0.17	0.17	0.17
26	205.00	0.18	0.18	0.18
27	265.00	0.19	0.19	0.18
28	310.00	0.19	0.19	0.19
29	385.00	0.20	0.20	0.20
30	415.00	0.21	0.21	0.20

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-7, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 3.46×10^{-1}

Hydraulic conductivity [ft/min]: 5.35×10^{-2}

Hydraulic conductivity vertical [ft/min]: 2.29×10^{-4}

Aquifer thickness [ft]: 6.48

Storativity: 5.42×10^{-2}

Specific yield: 5.42×10^{2}

Hydraulic conductivity [ft/day] = 77.0

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-7, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.05.1997

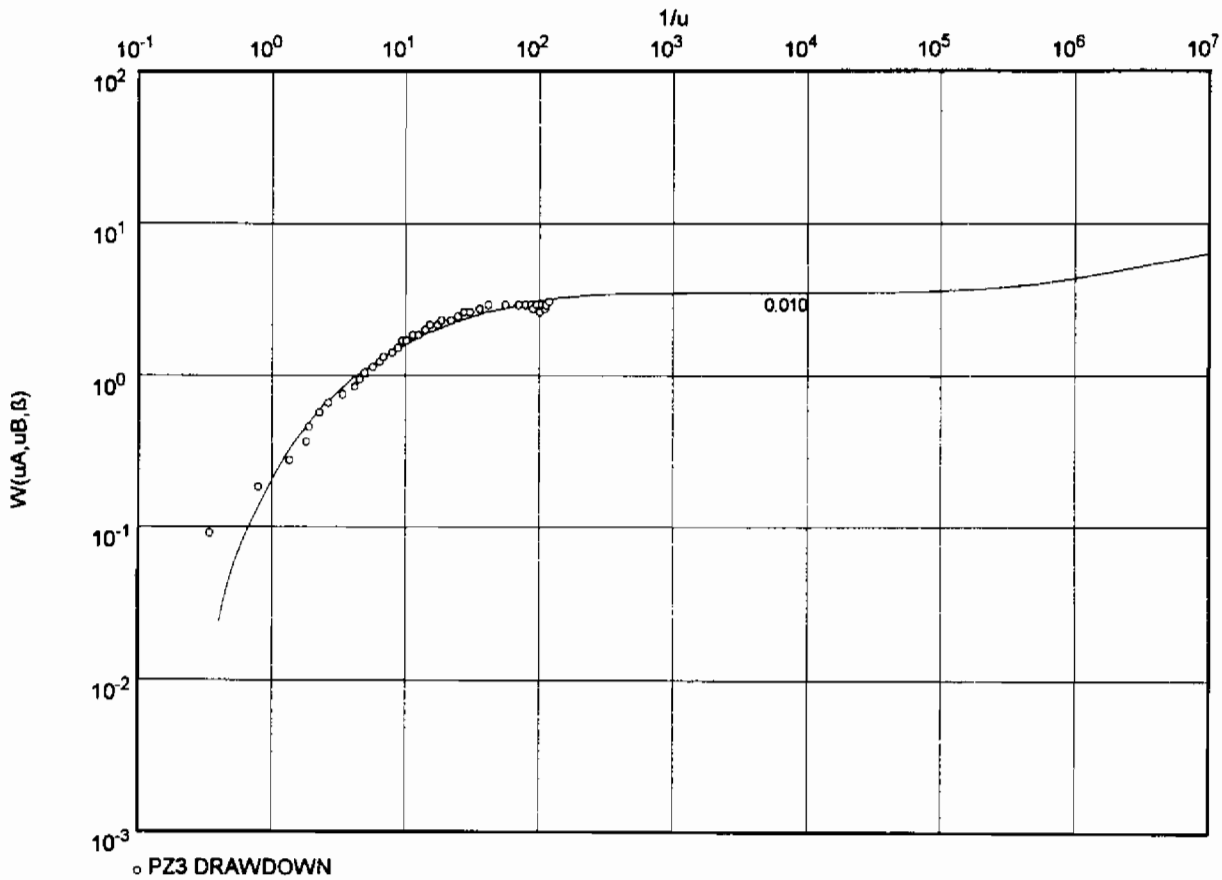
Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	PZ2 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 9.90 ft

Static water level: 0.00 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	1.20	0.00	0.00	
2	2.00	0.01	0.01	
3	3.60	0.01	0.01	
4	5.80	0.01	0.01	
5	8.80	0.02	0.02	
6	9.80	0.02	0.02	
7	14.00	0.02	0.02	
8	18.00	0.03	0.03	
9	22.00	0.03	0.03	
10	26.00	0.03	0.03	
11	30.00	0.04	0.04	
12	34.00	0.04	0.04	
13	40.00	0.04	0.04	
14	44.00	0.04	0.04	
15	50.00	0.05	0.05	
16	54.00	0.05	0.05	
17	62.00	0.05	0.05	
18	66.00	0.06	0.06	
19	74.00	0.06	0.06	
20	82.00	0.06	0.06	
21	88.00	0.06	0.06	
22	90.00	0.06	0.06	
23	92.00	0.07	0.07	
24	98.00	0.07	0.07	
25	115.00	0.07	0.07	
26	130.00	0.08	0.08	
27	145.00	0.08	0.08	
28	175.00	0.09	0.09	
29	190.00	0.09	0.09	
30	205.00	0.09	0.09	
31	250.00	0.10	0.10	
32	265.00	0.10	0.10	
33	310.00	0.10	0.10	
34	340.00	0.11	0.11	
35	385.00	0.11	0.11	
36	430.00	0.11	0.11	
37	445.00	0.11	0.11	
38	475.00	0.11	0.11	
39	490.00	0.10	0.10	
40	505.00	0.10	0.10	
41	520.00	0.10	0.10	
42	535.00	0.09	0.09	
43	550.00	0.09	0.09	
44	565.00	0.10	0.10	
45	580.00	0.09	0.09	
46	595.00	0.10	0.10	

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-8, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 16.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 1.52×10^{-1}

Hydraulic conductivity [ft/min]: 2.34×10^{-2}

Hydraulic conductivity vertical [ft/min]: 4.10×10^{-4}

Aquifer thickness [ft]: 6.48

Storativity: 1.34×10^{-1}

Specific yield: 1.34×10^{3}

Hydraulic conductivity [ft/day] = 33.7

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis NEUMAN's method Unconfined aquifer with delayed watertable response	FIGURE E-8, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 16.05.1997

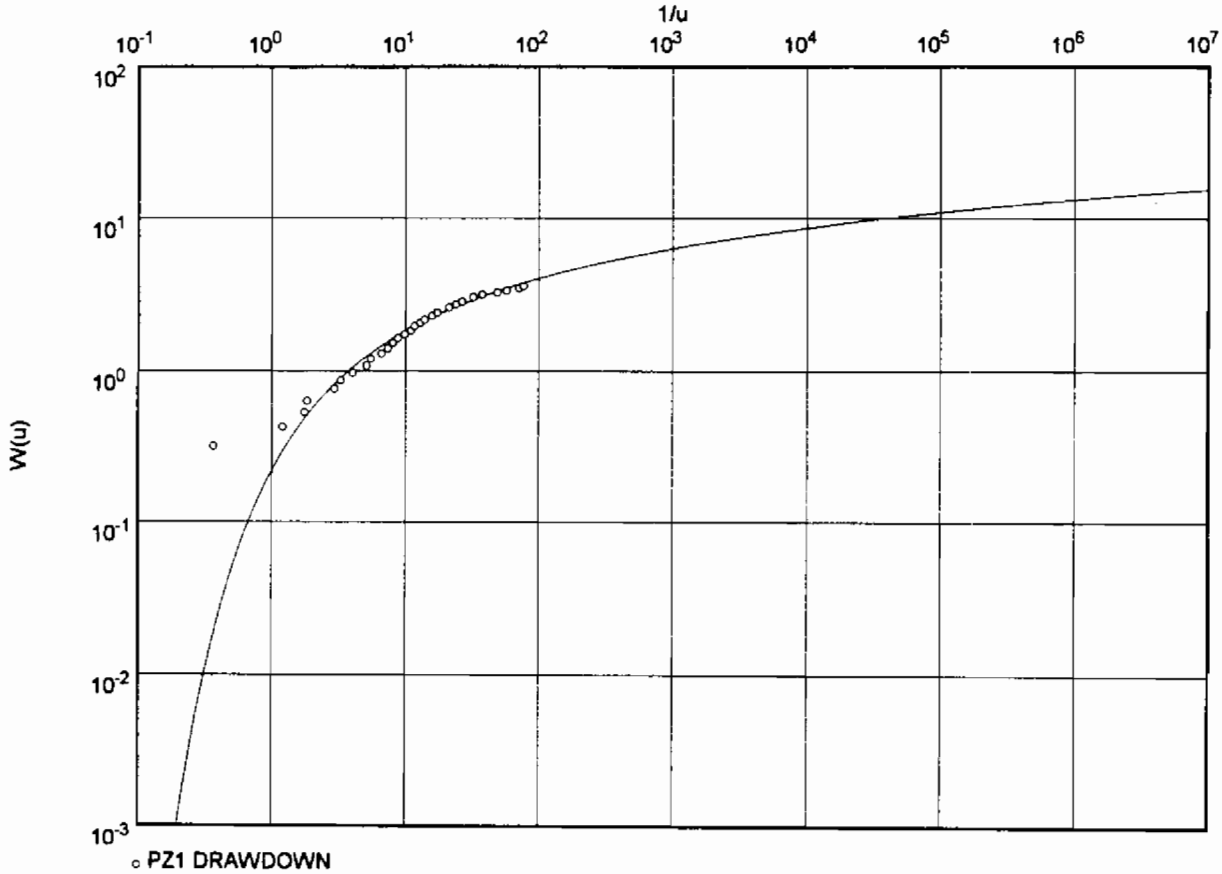
Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	PZ3 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 4.90 ft

Static water level: 0.00 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	1.80	0.01	0.01	
2	4.20	0.01	0.01	
3	7.20	0.02	0.02	
4	9.60	0.02	0.02	
5	10.00	0.03	0.03	
6	12.00	0.04	0.04	
7	14.00	0.04	0.04	
8	18.00	0.05	0.05	
9	22.00	0.06	0.06	
10	24.00	0.06	0.06	
11	26.00	0.07	0.07	
12	30.00	0.07	0.07	
13	34.00	0.08	0.08	
14	36.00	0.09	0.09	
15	42.00	0.09	0.09	
16	46.00	0.10	0.10	
17	50.00	0.11	0.11	
18	54.00	0.11	0.11	
19	60.00	0.12	0.12	
20	66.00	0.12	0.12	
21	74.00	0.13	0.13	
22	80.00	0.14	0.14	
23	92.00	0.14	0.14	
24	98.00	0.15	0.15	
25	115.00	0.15	0.15	
26	130.00	0.16	0.16	
27	145.00	0.17	0.17	
28	160.00	0.17	0.17	
29	190.00	0.18	0.18	
30	220.00	0.19	0.19	
31	295.00	0.19	0.19	
32	370.00	0.19	0.19	
33	415.00	0.19	0.19	
34	460.00	0.19	0.19	
35	475.00	0.18	0.18	
36	505.00	0.19	0.19	
37	535.00	0.17	0.17	
38	550.00	0.19	0.19	
39	580.00	0.18	0.18	
40	595.00	0.19	0.19	
41	625.00	0.20	0.20	

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-9, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 13.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 1.76×10^{-1}

Hydraulic conductivity [ft/min]: 2.72×10^{-2}

Aquifer thickness [ft]: 6.48

Hydraulic conductivity [ft/day] = 39.2

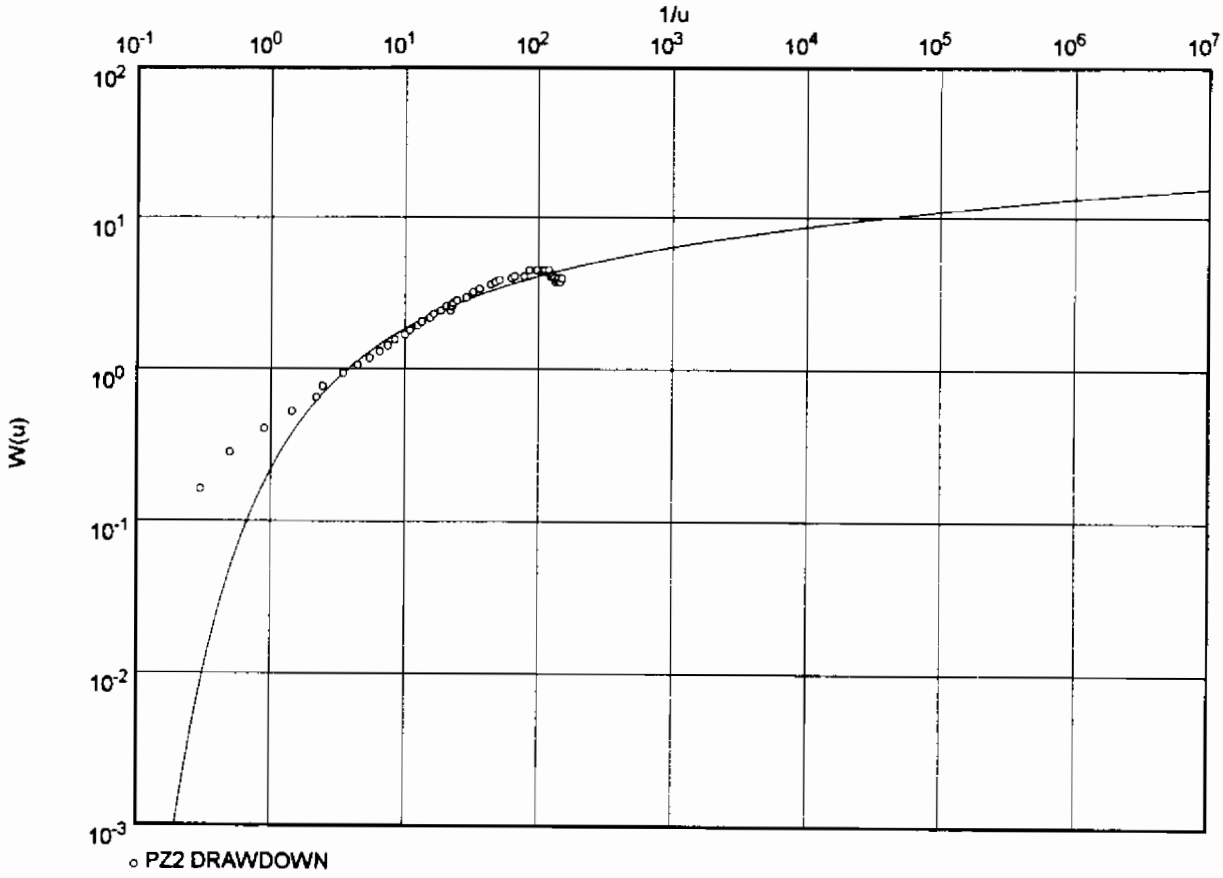
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-9, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 13.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	PZ1 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 5.10 ft
Static water level: 0.00 ft below datum	

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	Corrected drawdown [ft]
2	2.00	0.02	0.02	0.02
3	6.60	0.02	0.02	0.02
4	9.60	0.03	0.03	0.03
5	10.00	0.04	0.04	0.04
6	16.00	0.04	0.04	0.04
7	18.00	0.05	0.05	0.05
8	22.00	0.06	0.06	0.05
9	28.00	0.06	0.06	0.06
10	30.00	0.07	0.07	0.07
11	36.00	0.07	0.07	0.07
12	40.00	0.08	0.08	0.08
13	44.00	0.09	0.09	0.09
14	48.00	0.09	0.09	0.09
15	54.00	0.10	0.10	0.10
16	60.00	0.11	0.11	0.10
17	64.00	0.11	0.11	0.11
18	70.00	0.12	0.12	0.12
19	76.00	0.12	0.12	0.12
20	86.00	0.13	0.13	0.13
21	94.00	0.14	0.14	0.14
22	115.00	0.15	0.15	0.15
23	130.00	0.16	0.16	0.15
24	145.00	0.16	0.16	0.16
25	175.00	0.17	0.17	0.17
26	205.00	0.18	0.18	0.18
27	265.00	0.19	0.19	0.18
28	310.00	0.19	0.19	0.19
29	385.00	0.20	0.20	0.20
30	415.00	0.21	0.21	0.20

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-10, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 15.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 4.05×10^{-1}

Hydraulic conductivity [ft/min]: 6.26×10^{-2}

Aquifer thickness [ft]: 6.48

Hydraulic conductivity [ft/day] = 90.1

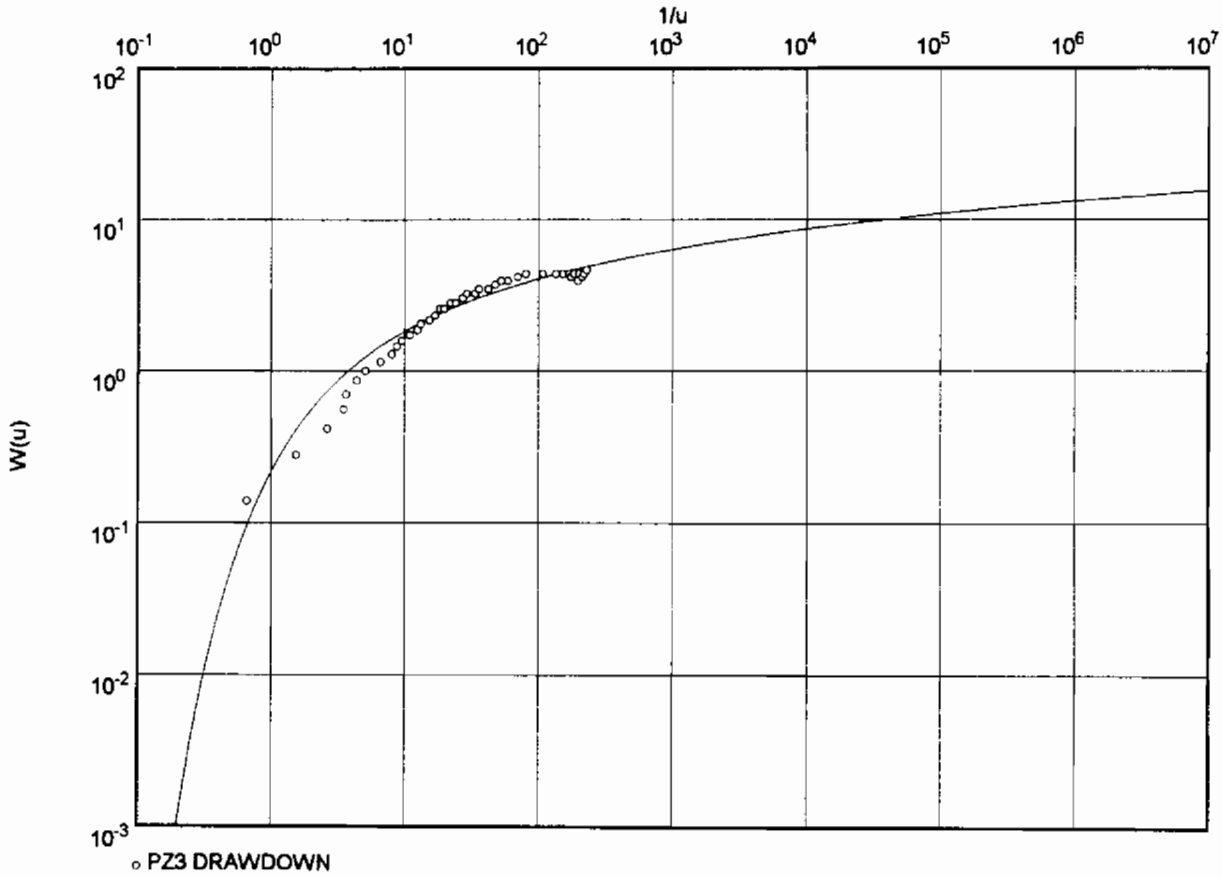
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-10, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 15.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	PZ2 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 9.90 ft
Static water level: 0.00 ft below datum	

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	Corrected drawdown [ft]
1	1.20	0.00	0.00	0.00
2	2.00	0.01	0.01	0.01
3	3.60	0.01	0.01	0.01
4	5.80	0.01	0.01	0.01
5	8.80	0.02	0.02	0.02
6	9.80	0.02	0.02	0.02
7	14.00	0.02	0.02	0.02
8	18.00	0.03	0.03	0.03
9	22.00	0.03	0.03	0.03
10	26.00	0.03	0.03	0.03
11	30.00	0.04	0.04	0.03
12	34.00	0.04	0.04	0.04
13	40.00	0.04	0.04	0.04
14	44.00	0.04	0.04	0.04
15	50.00	0.05	0.05	0.05
16	54.00	0.05	0.05	0.05
17	62.00	0.05	0.05	0.05
18	66.00	0.06	0.06	0.06
19	74.00	0.06	0.06	0.06
20	82.00	0.06	0.06	0.06
21	88.00	0.06	0.06	0.06
22	90.00	0.06	0.06	0.06
23	92.00	0.07	0.07	0.07
24	98.00	0.07	0.07	0.07
25	115.00	0.07	0.07	0.07
26	130.00	0.08	0.08	0.08
27	145.00	0.08	0.08	0.08
28	175.00	0.09	0.09	0.09
29	190.00	0.09	0.09	0.09
30	205.00	0.09	0.09	0.09
31	250.00	0.10	0.10	0.10
32	265.00	0.10	0.10	0.10
33	310.00	0.10	0.10	0.10
34	340.00	0.11	0.11	0.11
35	385.00	0.11	0.11	0.11
36	430.00	0.11	0.11	0.11
37	445.00	0.11	0.11	0.11
38	475.00	0.11	0.11	0.11
39	490.00	0.10	0.10	0.10
40	505.00	0.10	0.10	0.10
41	520.00	0.10	0.10	0.10
42	535.00	0.09	0.09	0.09
43	550.00	0.09	0.09	0.09
44	565.00	0.10	0.10	0.10
45	580.00	0.09	0.09	0.09
46	595.00	0.10	0.10	0.10

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-11, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 16.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	
Discharge 0.94 U.S.gal/min	



Transmissivity [ft²/min]: 2.32×10^{-1}

Hydraulic conductivity [ft/min]: 3.59×10^{-2}

Aquifer thickness [ft]: 6.48

Hydraulic conductivity [ft/day] = 51.7

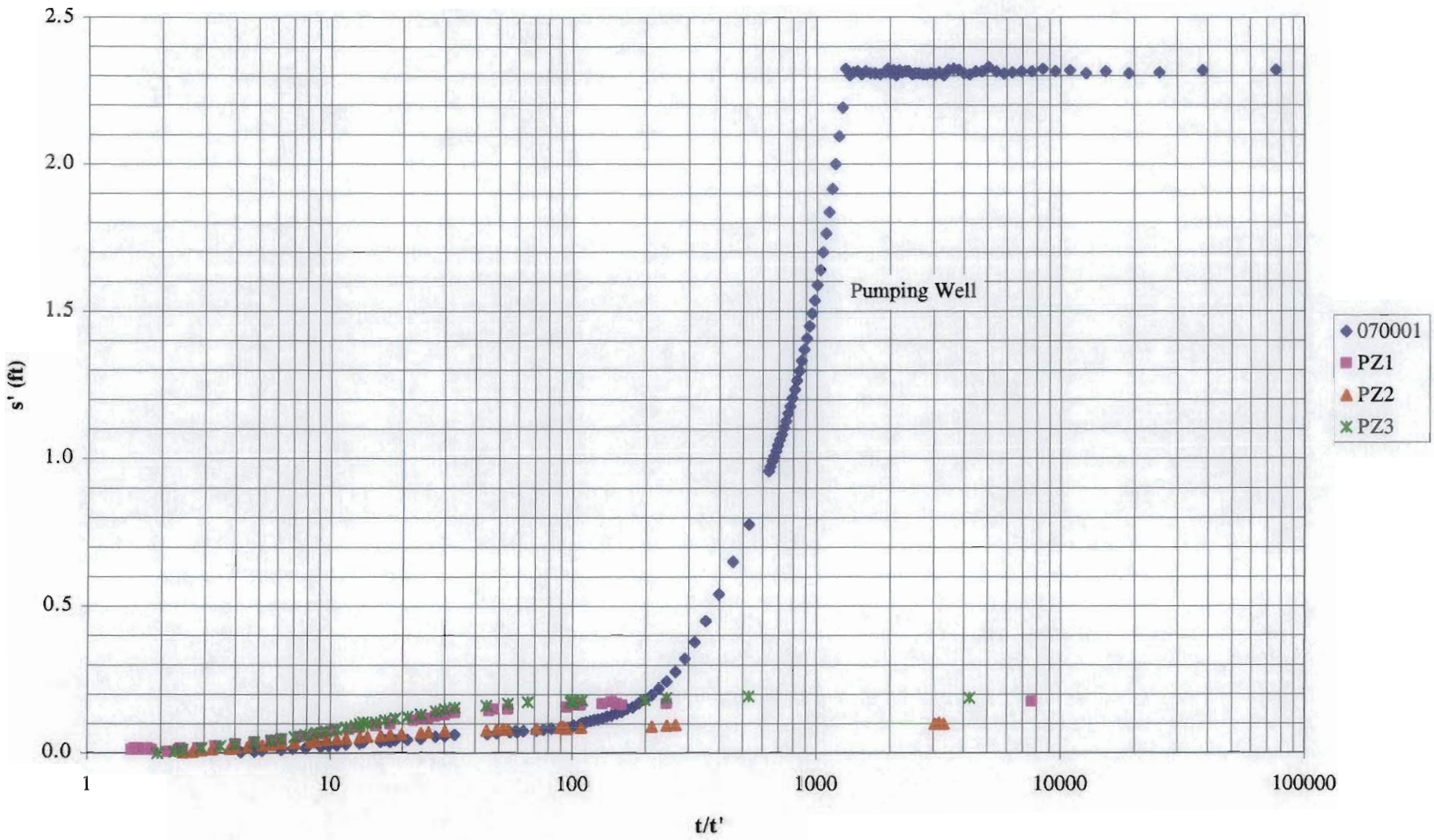
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Theis analysis method Unconfined aquifer	FIGURE E-11, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 16.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	PZ3 DRAWDOWN
Discharge 0.94 U.S.gal/min	Distance from the pumping well 4.90 ft

Static water level: 0.00 ft below datum

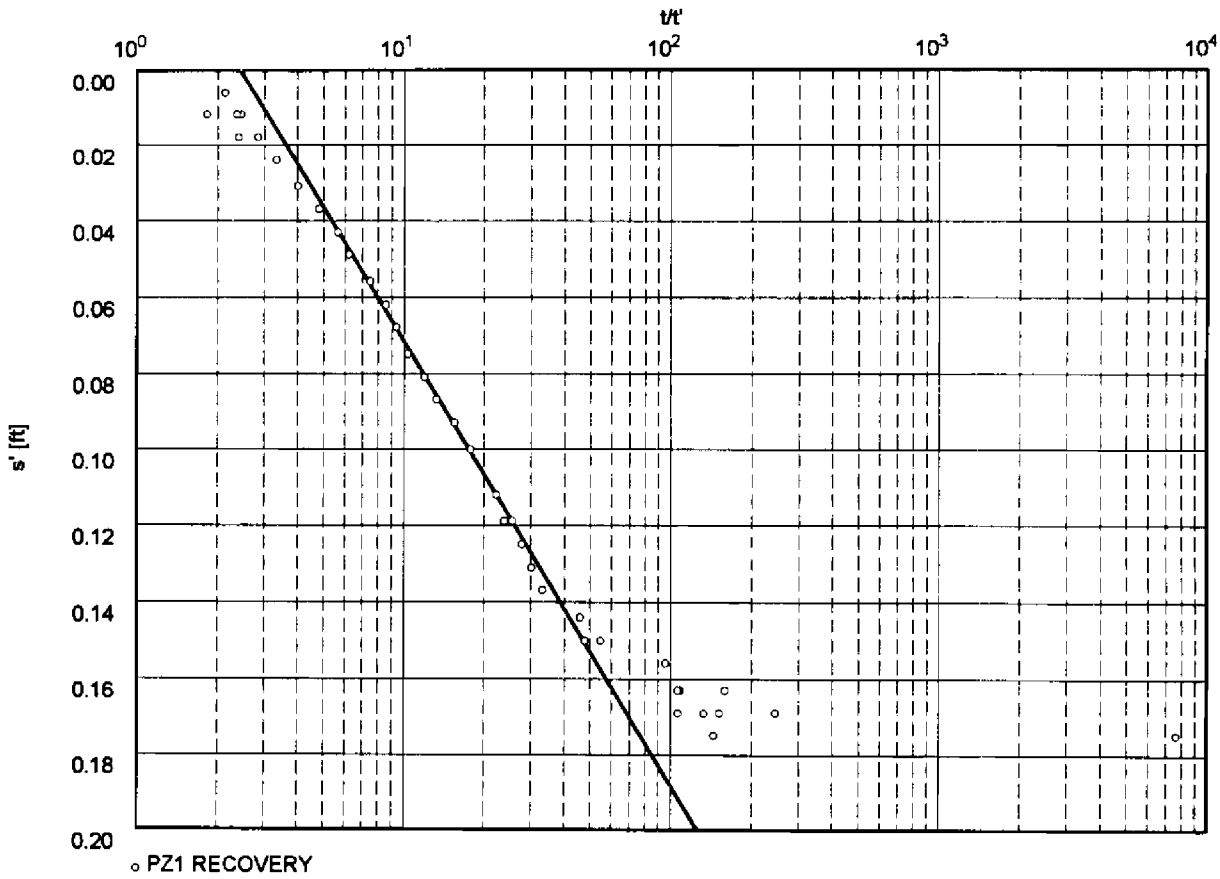
	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	Corrected drawdown [ft]
1	1.80	0.01	0.01	0.01
2	4.20	0.01	0.01	0.01
3	7.20	0.02	0.02	0.02
4	9.60	0.02	0.02	0.02
5	10.00	0.03	0.03	0.03
6	12.00	0.04	0.04	0.04
7	14.00	0.04	0.04	0.04
8	18.00	0.05	0.05	0.05
9	22.00	0.06	0.06	0.05
10	24.00	0.06	0.06	0.06
11	26.00	0.07	0.07	0.07
12	30.00	0.07	0.07	0.07
13	34.00	0.08	0.08	0.08
14	36.00	0.09	0.09	0.09
15	42.00	0.09	0.09	0.09
16	46.00	0.10	0.10	0.10
17	50.00	0.11	0.11	0.11
18	54.00	0.11	0.11	0.11
19	60.00	0.12	0.12	0.12
20	66.00	0.12	0.12	0.12
21	74.00	0.13	0.13	0.13
22	80.00	0.14	0.14	0.14
23	92.00	0.14	0.14	0.14
24	98.00	0.15	0.15	0.15
25	115.00	0.15	0.15	0.15
26	130.00	0.16	0.16	0.16
27	145.00	0.17	0.17	0.17
28	160.00	0.17	0.17	0.17
29	190.00	0.18	0.18	0.18
30	220.00	0.19	0.19	0.19
31	295.00	0.19	0.19	0.19
32	370.00	0.19	0.19	0.19
33	415.00	0.19	0.19	0.19
34	460.00	0.19	0.19	0.19
35	475.00	0.18	0.18	0.18
36	505.00	0.19	0.19	0.19
37	535.00	0.17	0.17	0.17
38	550.00	0.19	0.19	0.19
39	580.00	0.18	0.18	0.18
40	595.00	0.19	0.19	0.19
41	625.00	0.20	0.20	0.20

Figure E-12
RECOVERY TEST DATA AT PIEZOMETERS AND PUMPING WELL



EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-13, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	
Discharge 0.94 U.S.gal/min	
	Pumping test duration: 635.00 min



Transmissivity [ft²/min]: 1.97×10^{-1}

Hydraulic conductivity [ft/min]: 3.03×10^{-2}

Aquifer thickness [ft]: 6.50

Hydraulic conductivity [ft/day] = 43.6

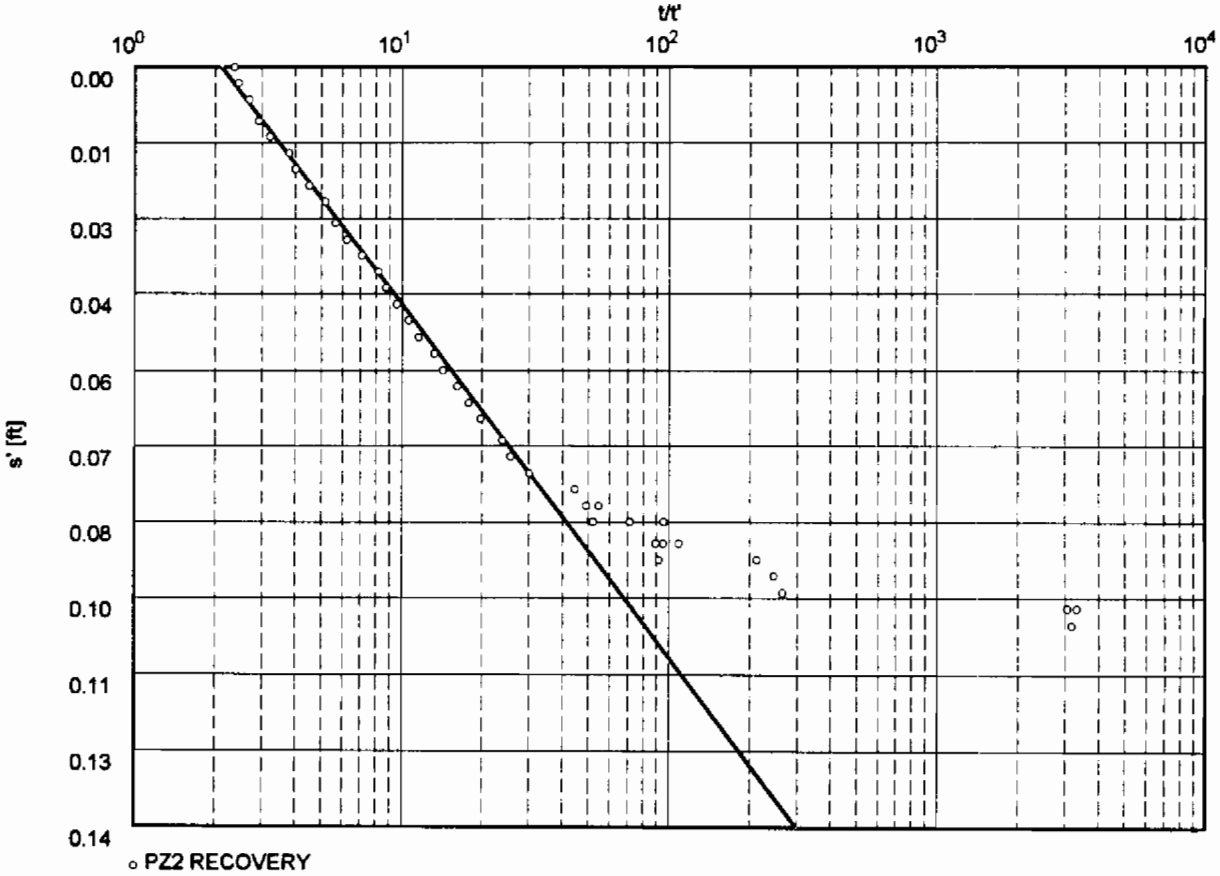
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-13, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ1	PZ1 RECOVERY
Discharge 0.94 U.S.gal/min	Distance from the pumping well 5.10 ft
Static water level: 0.00 ft below datum	Pumping test duration: 635.00 min

	Time from end of pumping [min]	Water level [ft]	Residual drawdown [ft]
2	0.08	0.17	0.17
3	2.60	0.17	0.17
4	4.00	0.16	0.16
5	4.20	0.17	0.17
6	4.40	0.17	0.17
7	4.80	0.17	0.17
8	5.91	0.16	0.16
9	6.00	0.17	0.17
10	6.02	0.16	0.16
11	6.68	0.16	0.16
12	11.80	0.15	0.15
13	13.60	0.15	0.15
14	14.20	0.14	0.14
15	19.80	0.14	0.14
16	21.80	0.13	0.13
17	23.80	0.13	0.13
18	25.80	0.12	0.12
19	27.80	0.12	0.12
20	29.80	0.11	0.11
21	37.80	0.10	0.10
22	43.80	0.09	0.09
23	51.80	0.09	0.09
24	57.80	0.08	0.08
25	67.80	0.08	0.08
26	75.80	0.07	0.07
27	83.80	0.06	0.06
28	97.80	0.06	0.06
29	120.80	0.05	0.05
30	135.80	0.04	0.04
31	165.80	0.04	0.04
32	210.80	0.03	0.03
33	270.80	0.02	0.02
34	345.80	0.02	0.02
35	435.80	0.01	0.01
36	450.80	0.02	0.02
37	465.80	0.01	0.01
38	555.80	0.01	0.01
39	765.80	0.01	0.01

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-14, Page 1 Project: Zone E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	
Discharge 0.94 U.S.gal/min	
	Pumping test duration: 635.00 min



Transmissivity [ft²/min]: 3.53×10^{-1}

Hydraulic conductivity [ft/min]: 5.44×10^{-2}

Aquifer thickness [ft]: 6.50

Hydraulic conductivity [ft/day] = 78.3

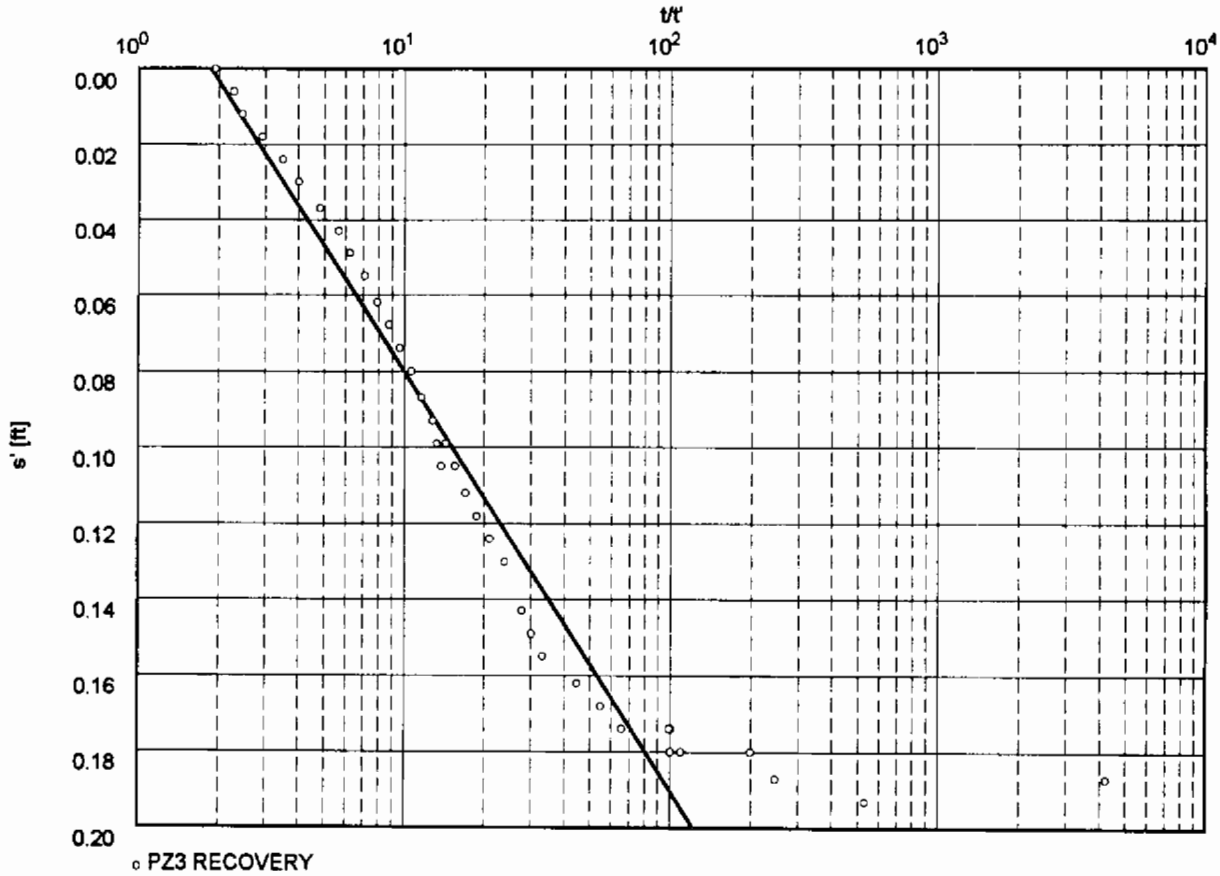
EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-14, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ2	PZ2 RECOVERY
Discharge 0.94 U.S.gal/min	Distance from the pumping well 9.90 ft
Static water level: 0.00 ft below datum	Pumping test duration: 635.00 min

	Time from end of pumping [min]	Water level [ft]	Residual drawdown [ft]	
2	0.19	0.10	0.10	
3	0.20	0.10	0.10	
4	0.21	0.10	0.10	
5	2.40	0.10	0.10	
6	2.60	0.09	0.09	
7	3.00	0.09	0.09	
8	5.88	0.09	0.09	
9	6.72	0.08	0.08	
10	6.75	0.09	0.09	
11	7.00	0.09	0.09	
12	7.20	0.09	0.09	
13	9.00	0.08	0.08	
14	11.80	0.08	0.08	
15	12.40	0.08	0.08	
16	13.20	0.08	0.08	
17	14.60	0.08	0.08	
18	21.80	0.08	0.08	
19	25.80	0.07	0.07	
20	27.80	0.07	0.07	
21	33.80	0.07	0.07	
22	37.80	0.06	0.06	
23	41.80	0.06	0.06	
24	47.80	0.06	0.06	
25	51.80	0.05	0.05	
26	59.80	0.05	0.05	
27	65.80	0.05	0.05	
28	73.80	0.04	0.04	
29	81.80	0.04	0.04	
30	87.80	0.04	0.04	
31	103.80	0.04	0.04	
32	120.80	0.03	0.03	
33	135.80	0.03	0.03	
34	150.80	0.03	0.03	
35	180.80	0.02	0.02	
36	210.80	0.02	0.02	
37	225.80	0.02	0.02	
38	285.80	0.01	0.01	
39	330.80	0.01	0.01	
40	375.80	0.01	0.01	
41	435.80	0.00	0.00	
42	465.80	0.00	0.00	

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-15, Page 1 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK / Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	
Discharge 0.94 U.S.gal/min	
	Pumping test duration: 635.00 min



Transmissivity [ft²/min]: 2.08×10^{-1}

Hydraulic conductivity [ft/min]: 3.20×10^{-2}

Aquifer thickness [ft]: 6.50

Hydraulic conductivity [ft/day] = 46.1

EnSafe 935 Houston Northcutt Blvd. Mt Pleasant, SC 29464 Ph. 803/884-0029	Pumping test analysis Recovery method after THEIS & JACOB Confined aquifer	FIGURE E-15, Page 2 Project: Zone E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 19.05.1997

Pumping Test No. 2	Test conducted on: 01.05.1997
070PZ3	PZ3 RECOVERY
Discharge 0.94 U.S.gal/min	Distance from the pumping well 4.90 ft
Static water level: 0.00 ft below datum	Pumping test duration: 635.00 min

	Time from end of pumping [min]	Water level [ft]	Residual drawdown [ft]	
2	0.15	0.19	0.19	
3	1.20	0.19	0.19	
4	2.60	0.19	0.19	
5	3.20	0.18	0.18	
6	5.84	0.18	0.18	
7	6.38	0.17	0.17	
8	6.42	0.18	0.18	
9	6.50	0.17	0.17	
10	9.80	0.17	0.17	
11	11.80	0.17	0.17	
12	14.60	0.16	0.16	
13	19.80	0.15	0.15	
14	21.80	0.15	0.15	
15	23.80	0.14	0.14	
16	27.80	0.13	0.13	
17	31.80	0.12	0.12	
18	35.80	0.12	0.12	
19	39.80	0.11	0.11	
20	43.80	0.11	0.11	
21	47.80	0.10	0.10	
22	49.80	0.11	0.11	
23	51.80	0.10	0.10	
24	53.80	0.09	0.09	
25	59.80	0.09	0.09	
26	65.80	0.08	0.08	
27	73.80	0.07	0.07	
28	81.80	0.07	0.07	
29	91.80	0.06	0.06	
30	103.80	0.06	0.06	
31	120.80	0.05	0.05	
32	135.80	0.04	0.04	
33	165.80	0.04	0.04	
34	210.80	0.03	0.03	
35	255.80	0.02	0.02	
36	330.80	0.02	0.02	
37	435.80	0.01	0.01	
38	495.80	0.01	0.01	
39	675.80	0.00	0.00	

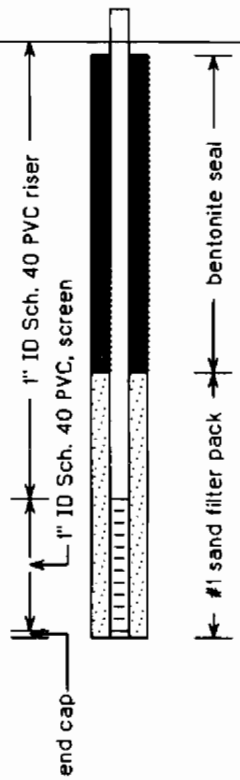
EnSafe/Allen & Hoshall

Monitoring Well NBCE070PZ1

Project: *ZONE E - Naval Base Charleston*	Coordinates: *2316603 E, 376677 N*
Location: *Charleston, SC*	Surface Elevation: *9.0 feet msl*
Started at *1430 on 04-18-97*	TOC Elevation: *9.99 feet msl*
Completed at *1600 on 04-18-97*	Depth to Groundwater: *6.79 feet TOC* Measured: *4/30/97*
Drilling Method: *3.25" OD Stainless Steel Hand Auger*	Groundwater Elevation: *3.20 feet msl*
Drilling Company: *Miller Drilling SC Cert#1236*	Total Well Depth: *9.0 feet bgs*
Geologist: *P. Bayley*	Well Screen: *6.9 to 8.9 feet bgs*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface conditons: concrete	
							SP	Sand: dark-brown grading rapidly to orange-brown; very fine to fine; soft, damp with moisture increasing slightly with depth.	
5								@4 to 7 ft.: grades to very light orange-brown; fine to medium; soft, moist.	
								@ 6 ft.: wet	
							SP/SM	@7 to 9 ft.: grades to orange; fine to medium/coarse, trace to some silt; soft, wet.	2
									0
10								Sample descriptions are from hand auger cuttings.	
								Temporary water-level observation well for pumping test in well NBCE070001.	
15									
20									

WELL DIAGRAM



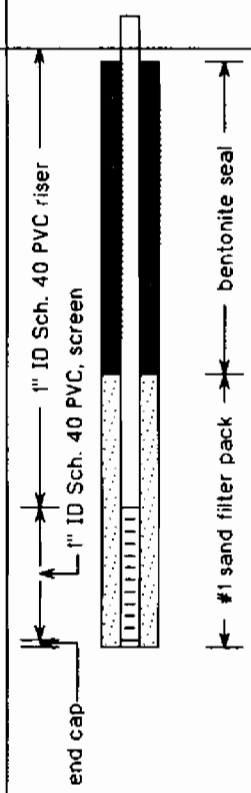
EnSafe/Allen & Hoshall

Monitoring Well NBCE070PZ2

Project: *ZONE E – Naval Base Charleston*	Coordinates: *2316598 E, 376676 N*
Location: *Charleston, SC*	Surface Elevation: *9.0 feet msl*
Started at *1430 on 04-18-97*	TOC Elevation: *9.92 feet msl*
Completed at *1600 on 04-18-97*	Depth to Groundwater: *6.69 feet TOC* Measured: *4/30/97*
Drilling Method: *3.25" OD Stainless Steel Hand Auger*	Groundwater Elevation: *3.23 feet msl*
Drilling Company: *Miller Drilling SC Cert#1236*	Total Well Depth: *9.0 feet bgs*
Geologist: *P. Bayley*	Well Screen: *6.9 to 8.9 feet bgs*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface conditons: concrete	
								Sand: dark-brown grading rapidly to orange-brown; very fine to fine; soft, damp with moisture increasing slightly with depth.	
							SP	@4 to 7 ft.: grades to very light orange-brown; fine to medium; soft, moist.	
5								@ 6 ft.: wet	
							SP SM	@7 to 9 ft.: grades to orange; fine to medium/coarse, trace to some silt; soft, wet.	2
									0
10								Sample descriptions are from hand auger cuttings. Temporary water-level observation well for pumping test in well NBCE070001.	
15									
20									

WELL DIAGRAM



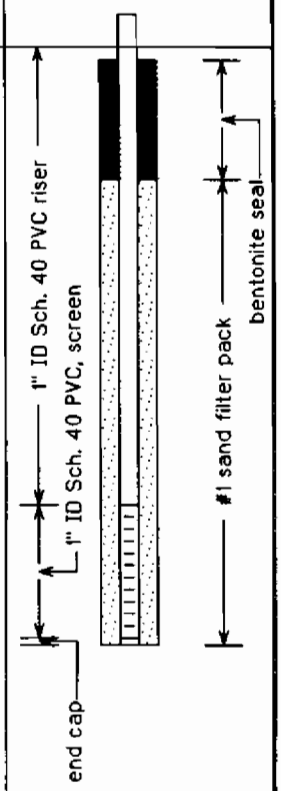
EnSafe/Allen & Hoshall

Monitoring Well NBCE070PZ3

Project: *ZONE E – Naval Base Charleston*	Coordinates: *2316606 E, 376682 N*
Location: *Charleston, SC*	Surface Elevation: *9.0 feet msl*
Started at *1430 on 04-18-97*	TOC Elevation: *9.95 feet msl*
Completed at *1600 on 04-18-97*	Depth to Groundwater: *6.76 feet TOC* Measured: *4/30/97*
Drilling Method: *3.25" OD Stainless Steel Hand Auger*	Groundwater Elevation: *3.19 feet msl*
Drilling Company: *Miller Drilling SC Cert#1236*	Total Well Depth: *9.0 feet bgs*
Geologist: *P. Bayley*	Well Screen: *6.9 to 8.9 feet bgs*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface conditons: concrete	
							SP	Sand: dark-brown grading rapidly to orange-brown; very fine to fine; soft, damp with moisture increasing slightly with depth.	
5								@4 to 7 ft.: grades to very light orange-brown; fine to medium; soft, moist.	
								@ 6 ft.: wet	
							SP SM	@7 to 9 ft.: grades to orange; fine to medium/coarse, trace to some silt; soft, wet.	2
									0
10								Sample descriptions are from hand auger cuttings.	
								Temporary water-level observation well for pumping test in well NBCE070001.	
15									
20									

WELL DIAGRAM



Appendix F

Specific Capacity Test and Recovery Test Results

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCE065007

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     2.95
DEPTH TO WATER DURING TEST (FT) =          6.57
THE LENGTH OF THE TEST (HR) =              .567
PUMPING RATE (GPM) =          .58
THICKNESS OF AQUIFER (FT) =                10.8
OPEN INTERVAL (FT) =          10.8
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .1602211

```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.455281E-04
                 (FT*FT/DAY) =  12.57363
                 (GAL/DAY/FT) =  94.05701
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  1.347482E-05
                         (FT/DAY) =  1.164225
                         (GAL/DAY/FT*FT) =  7.734548
```

WELL NUMBER NBCE065007

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     2.95
DEPTH TO WATER DURING TEST (FT) =          6.57
THE LENGTH OF THE TEST (HR) =              .567
PUMPING RATE (GPM) =          .58
THICKNESS OF AQUIFER (FT) =                10.8
OPEN INTERVAL (FT) =          10.8
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .1602211

```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.224194E-04
                 (FT*FT/DAY) =  10.57704
                 (GAL/DAY/FT) =  79.12151
          USING A STORAGE COEFFICIENT =  .2
          NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  1.133513E-05
                         (FT/DAY) =  .9793551
                         (GAL/DAY/FT*FT) =  6.506364
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

```
WELL NUMBER NBCE570004


WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     9.66
DEPTH TO WATER DURING TEST (FT) =          10.24
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .34
THICKNESS OF AQUIFER (FT) =                7.6
OPEN INTERVAL (FT) =          7.6
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2


SPECIFIC CAPACITY (GPM/FT) =  .5862081

TRANSMISSIVITY:  (FT*FT/SEC) =  5.415908E-04
                 (FT*FT/DAY) =  46.79344
                 (GAL/DAY/FT) =  350.0383
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  7.126194E-05
                         (FT/DAY) =  6.157031
                         (GAL/DAY/FT*FT) =  40.90435

WELL NUMBER NBCE570004


WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     9.66
DEPTH TO WATER DURING TEST (FT) =          10.24
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .34
THICKNESS OF AQUIFER (FT) =                7.6
OPEN INTERVAL (FT) =          7.6
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2


SPECIFIC CAPACITY (GPM/FT) =  .5862081

TRANSMISSIVITY:  (FT*FT/SEC) =  4.571063E-04
                 (FT*FT/DAY) =  39.49398
                 (GAL/DAY/FT) =  295.4347
          USING A STORAGE COEFFICIENT =  .2
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  6.014557E-05
                         (FT/DAY) =  5.196577
                         (GAL/DAY/FT*FT) =  34.52355

THE NUMBER OF WELLS IN THIS RECORD IS  2
```

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                  SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

```
WELL NUMBER NBCEGDE026


WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     5.54
DEPTH TO WATER DURING TEST (FT) =          7.72
THE LENGTH OF THE TEST (HR) =              .467
PUMPING RATE (GPM) =          .41
THICKNESS OF AQUIFER (FT) =                5
OPEN INTERVAL (FT) =          5
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2


SPECIFIC CAPACITY (GPM/FT) =  .1880736

TRANSMISSIVITY:  (FT*FT/SEC) =  1.694294E-04
                 (FT*FT/DAY) =  14.6387
                 (GAL/DAY/FT) =  109.5048
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  3.388588E-05
                         (FT/DAY) =  2.92774
                         (GAL/DAY/FT*FT) =  19.4505

WELL NUMBER NBCEGDE026


WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     5.54
DEPTH TO WATER DURING TEST (FT) =          7.72
THE LENGTH OF THE TEST (HR) =              .467
PUMPING RATE (GPM) =          .41
THICKNESS OF AQUIFER (FT) =                5
OPEN INTERVAL (FT) =          5
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2


SPECIFIC CAPACITY (GPM/FT) =  .1880736

TRANSMISSIVITY:  (FT*FT/SEC) =  1.419689E-04
                 (FT*FT/DAY) =  12.26612
                 (GAL/DAY/FT) =  91.75667
          USING A STORAGE COEFFICIENT =  .2
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  2.839379E-05
                         (FT/DAY) =  2.453223
                         (GAL/DAY/FT*FT) =  16.29803

THE NUMBER OF WELLS IN THIS RECORD IS  2
```

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE26D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     5.55
DEPTH TO WATER DURING TEST (FT) =          5.67
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .48
THICKNESS OF AQUIFER (FT) =                10.4
OPEN INTERVAL (FT) =          10.4
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = 4.00008

```
TRANSMISSIVITY:  (FT*FT/SEC) =  6.681889E-03
                 (FT*FT/DAY) =  577.3152
                 (GAL/DAY/FT) =  4318.607
           USING A STORAGE COEFFICIENT =  .105
           NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  6.424894E-04
                         (FT/DAY) =  55.51108
                         (GAL/DAY/FT*FT) =  368.7889
```

WELL NUMBER NBCEGDE26D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     5.55
DEPTH TO WATER DURING TEST (FT) =          5.67
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .48
THICKNESS OF AQUIFER (FT) =                10.4
OPEN INTERVAL (FT) =          10.4
STORAGE COEFFICIENT =         .01
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = 4.00008

```
TRANSMISSIVITY:  (FT*FT/SEC) =  8.521324E-03
                 (FT*FT/DAY) =  736.2424
                 (GAL/DAY/FT) =  5507.461
           USING A STORAGE COEFFICIENT =  .01
           NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  8.193581E-04
                         (FT/DAY) =  70.79255
                         (GAL/DAY/FT*FT) =  470.3116
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
SPECIFIC CAPACITY TESTS
****

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE027

WELL DIAMETER (IN) = 4.68
STATIC WATER LEVEL (FT) = 7.58
DEPTH TO WATER DURING TEST (FT) = 8.3
THE LENGTH OF THE TEST (HR) = .3
PUMPING RATE (GPM) = .44
THICKNESS OF AQUIFER (FT) = 8.399999
OPEN INTERVAL (FT) = 8.399999
STORAGE COEFFICIENT = .105
WELL-LOSS COEFFICIENT = 2

SPECIFIC CAPACITY (GPM/FT) = .6111125

TRANSMISSIVITY: (FT*FT/SEC) = 6.473263E-04
(FT*FT/DAY) = 55.92899
(GAL/DAY/FT) = 418.3768
USING A STORAGE COEFFICIENT = .105
NUMBER OF ITERATIONS = 5

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 7.706265E-05
(FT/DAY) = 6.658213
(GAL/DAY/FT*FT) = 44.23397

WELL NUMBER NBCEGDE027

WELL DIAMETER (IN) = 4.68
STATIC WATER LEVEL (FT) = 7.58
DEPTH TO WATER DURING TEST (FT) = 8.3
THE LENGTH OF THE TEST (HR) = .3
PUMPING RATE (GPM) = .44

THICKNESS OF AQUIFER (FT) = 8.399999
OPEN INTERVAL (FT) = 8.399999
STORAGE COEFFICIENT = .2
WELL-LOSS COEFFICIENT = 2

SPECIFIC CAPACITY (GPM/FT) = .6111125

TRANSMISSIVITY: (FT*FT/SEC) = 5.623267E-04
(FT*FT/DAY) = 48.58502
(GAL/DAY/FT) = 363.4403
USING A STORAGE COEFFICIENT = .2
NUMBER OF ITERATIONS = 5

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 6.694365E-05
(FT/DAY) = 5.783932
(GAL/DAY/FT*FT) = 38.42566

THE NUMBER OF WELLS IN THIS RECORD IS 2

DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
SPECIFIC CAPACITY TESTS
****

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE27D

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 7.44
DEPTH TO WATER DURING TEST (FT) = 7.65
THE LENGTH OF THE TEST (HR) = .167
PUMPING RATE (GPM) = .4
THICKNESS OF AQUIFER (FT) = 12.2
OPEN INTERVAL (FT) = 12.2
STORAGE COEFFICIENT = .105
WELL-LOSS COEFFICIENT = 2

SPECIFIC CAPACITY (GPM/FT) = 1.904776

TRANSMISSIVITY: (FT*FT/SEC) = 2.900045E-03
(FT*FT/DAY) = 250.5639
(GAL/DAY/FT) = 1874.343
USING A STORAGE COEFFICIENT = .105
NUMBER OF ITERATIONS = 5

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 2.377086E-04
(FT/DAY) = 20.53802
(GAL/DAY/FT*FT) = 136.4447

WELL NUMBER NBCEGDE27D

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 7.44
DEPTH TO WATER DURING TEST (FT) = 7.65
THE LENGTH OF THE TEST (HR) = .167
PUMPING RATE (GPM) = .4
THICKNESS OF AQUIFER (FT) = 12.2
OPEN INTERVAL (FT) = 12.2
STORAGE COEFFICIENT = .01
WELL-LOSS COEFFICIENT = 2

SPECIFIC CAPACITY (GPM/FT) = 1.904776

TRANSMISSIVITY: (FT*FT/SEC) = 3.783665E-03
(FT*FT/DAY) = 326.9086
(GAL/DAY/FT) = 2445.44
USING A STORAGE COEFFICIENT = .01
NUMBER OF ITERATIONS = 4

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 3.101365E-04
(FT/DAY) = 26.79579
(GAL/DAY/FT*FT) = 178.0183

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE028

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     7.46
DEPTH TO WATER DURING TEST (FT) =          7.81
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .4
THICKNESS OF AQUIFER (FT) =                6.5
OPEN INTERVAL (FT) =          6.5
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = 1.142863

```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.220352E-03
                 (FT*FT/DAY) =  105.4384
                 (GAL/DAY/FT) =  788.7321
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  1.877465E-04
                         (FT/DAY) =  16.2213
                         (GAL/DAY/FT*FT) =  107.7665
```

WELL NUMBER NBCEGDE028

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     7.46
DEPTH TO WATER DURING TEST (FT) =          7.81
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .4
THICKNESS OF AQUIFER (FT) =                6.5
OPEN INTERVAL (FT) =          6.5
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = 1.142863

```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.061684E-03
                 (FT*FT/DAY) =  91.72949
                 (GAL/DAY/FT) =  686.1824
          USING A STORAGE COEFFICIENT =  .2
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  1.63336E-04
                         (FT/DAY) =  14.11223
                         (GAL/DAY/FT*FT) =  93.75485
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE029

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     4.68
DEPTH TO WATER DURING TEST (FT) =          5.86
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .515
THICKNESS OF AQUIFER (FT) =                8.439999
OPEN INTERVAL (FT) =          8.439999
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .4364415

```
TRANSMISSIVITY:  (FT*FT/SEC) =  3.747651E-04
                 (FT*FT/DAY) =  32.3797
                 (GAL/DAY/FT) =  242.2164
           USING A STORAGE COEFFICIENT =  .105
           NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  4.440345E-05
                         (FT/DAY) =  3.836458
                         (GAL/DAY/FT*FT) =  25.48758
```

WELL NUMBER NBCEGDE029

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     4.68
DEPTH TO WATER DURING TEST (FT) =          5.86
THE LENGTH OF THE TEST (HR) =              .167
PUMPING RATE (GPM) =          .515
THICKNESS OF AQUIFER (FT) =                8.439999
OPEN INTERVAL (FT) =          8.439999
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .4364415

```
TRANSMISSIVITY:  (FT*FT/SEC) =  3.10459E-04
                 (FT*FT/DAY) =  26.82366
                 (GAL/DAY/FT) =  200.6543
           USING A STORAGE COEFFICIENT =  .2
           NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  3.678424E-05
                         (FT/DAY) =  3.178158
                         (GAL/DAY/FT*FT) =  21.11416
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE29D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     4.52
DEPTH TO WATER DURING TEST (FT) =          10.24
THE LENGTH OF THE TEST (HR) =              .3
PUMPING RATE (GPM) =          .38
THICKNESS OF AQUIFER (FT) =                6.5
OPEN INTERVAL (FT) =          6.5
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

```
SPECIFIC CAPACITY (GPM/FT) =  6.643359E-02

TRANSMISSIVITY:  (FT*FT/SEC) =  6.300563E-05
                 (FT*FT/DAY) =  5.443687
                 (GAL/DAY/FT) =  40.7215
           USING A STORAGE COEFFICIENT =  .105
           NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  9.693174E-06
                         (FT/DAY) =  .8374903
                         (GAL/DAY/FT*FT) =  5.563882
```

WELL NUMBER NBCEGDE29D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     4.52
DEPTH TO WATER DURING TEST (FT) =          10.24
THE LENGTH OF THE TEST (HR) =              .3
PUMPING RATE (GPM) =          .38
THICKNESS OF AQUIFER (FT) =                6.5
OPEN INTERVAL (FT) =          6.5
STORAGE COEFFICIENT =         .01
WELL-LOSS COEFFICIENT =       2
```

```
SPECIFIC CAPACITY (GPM/FT) =  6.643359E-02

TRANSMISSIVITY:  (FT*FT/SEC) =  9.565013E-05
                 (FT*FT/DAY) =  8.264172
                 (GAL/DAY/FT) =  61.82014
           USING A STORAGE COEFFICIENT =  .01
           NUMBER OF ITERATIONS =  3

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  1.471541E-05
                         (FT/DAY) =  1.271411
                         (GAL/DAY/FT*FT) =  8.446643
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE030

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     4.78
DEPTH TO WATER DURING TEST (FT) =          5.45
THE LENGTH OF THE TEST (HR) =              .1
PUMPING RATE (GPM) =          .499
THICKNESS OF AQUIFER (FT) =                7
OPEN INTERVAL (FT) =          7
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .7447794

```
TRANSMISSIVITY:  (FT*FT/SEC) =  6.431071E-04
                 (FT*FT/DAY) =  55.56446
                 (GAL/DAY/FT) =  415.6499
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  5

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  9.187245E-05
                         (FT/DAY) =  7.93778
                         (GAL/DAY/FT*FT) =  52.73479
```

WELL NUMBER NBCEGDE030

```
WELL DIAMETER (IN) =          4.68
STATIC WATER LEVEL (FT) =     4.78
DEPTH TO WATER DURING TEST (FT) =          5.45
THE LENGTH OF THE TEST (HR) =              .1
PUMPING RATE (GPM) =          .499
THICKNESS OF AQUIFER (FT) =                7
OPEN INTERVAL (FT) =          7
STORAGE COEFFICIENT =         .2
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .7447794

```
TRANSMISSIVITY:  (FT*FT/SEC) =  5.332802E-04
                 (FT*FT/DAY) =  46.07541
                 (GAL/DAY/FT) =  344.6671
          USING A STORAGE COEFFICIENT =  .2
          NUMBER OF ITERATIONS =  6

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  7.618289E-05
                         (FT/DAY) =  6.582201
                         (GAL/DAY/FT*FT) =  43.72898
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

```
*****************************************************************
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
                 SPECIFIC CAPACITY TESTS
*****************************************************************
```

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER NBCEGDE30D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     5.1
DEPTH TO WATER DURING TEST (FT) =          8.609999
THE LENGTH OF THE TEST (HR) =              .267
PUMPING RATE (GPM) =          .45
THICKNESS OF AQUIFER (FT) =                4.6
OPEN INTERVAL (FT) =          4.6
STORAGE COEFFICIENT =         .105
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .1282052

```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.364681E-04
                 (FT*FT/DAY) =  11.79085
                 (GAL/DAY/FT) =  88.20142
          USING A STORAGE COEFFICIENT =  .105
          NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  2.966699E-05
                         (FT/DAY) =  2.563228
                         (GAL/DAY/FT*FT) =  17.02885
```

WELL NUMBER NBCEGDE30D

```
WELL DIAMETER (IN) =          2
STATIC WATER LEVEL (FT) =     5.1
DEPTH TO WATER DURING TEST (FT) =          8.609999
THE LENGTH OF THE TEST (HR) =              .267
PUMPING RATE (GPM) =          .45
THICKNESS OF AQUIFER (FT) =                4.6
OPEN INTERVAL (FT) =          4.6
STORAGE COEFFICIENT =         .01
WELL-LOSS COEFFICIENT =       2
```

SPECIFIC CAPACITY (GPM/FT) = .1282052

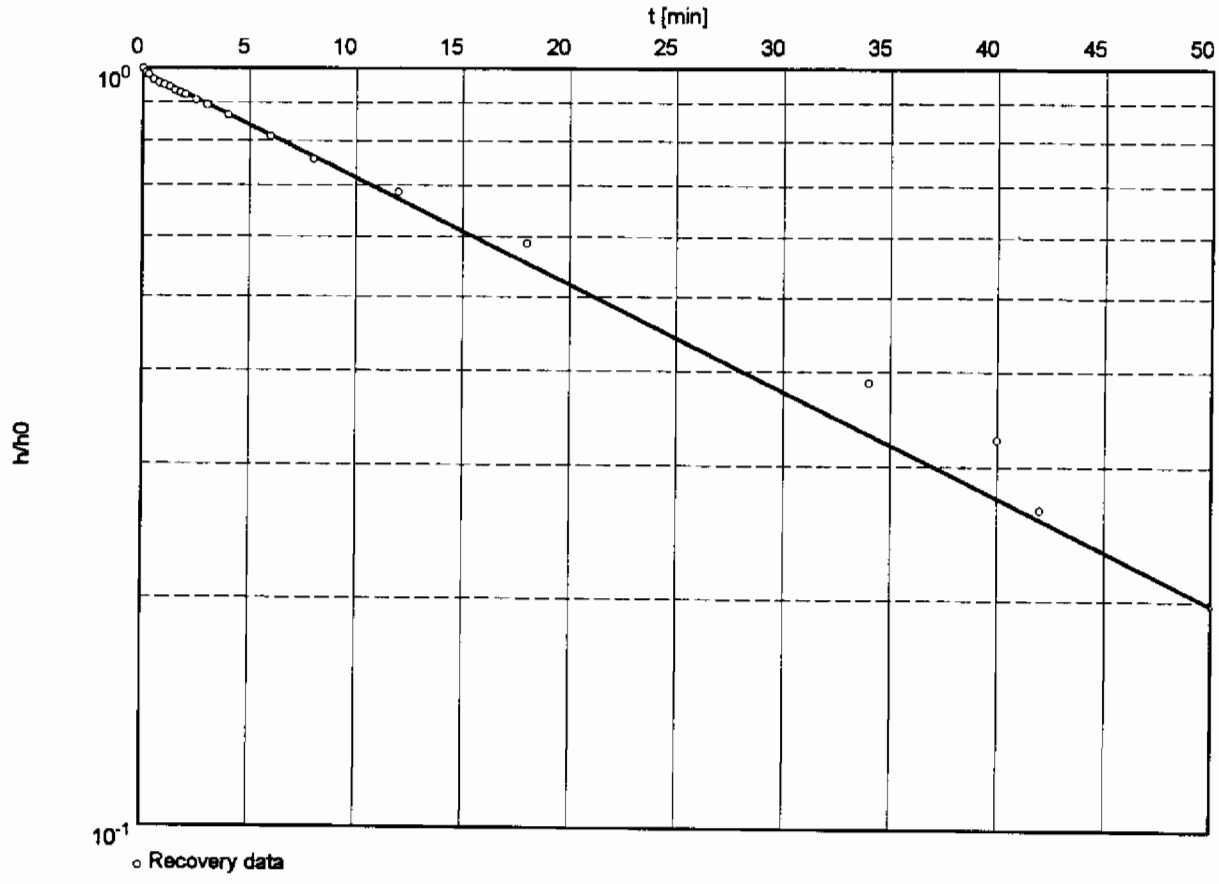
```
TRANSMISSIVITY:  (FT*FT/SEC) =  1.983481E-04
                 (FT*FT/DAY) =  17.13727
                 (GAL/DAY/FT) =  128.1954
          USING A STORAGE COEFFICIENT =  .01
          NUMBER OF ITERATIONS =  4

HYDRAULIC CONDUCTIVITY:  (FT/SEC) =  4.311914E-05
                         (FT/DAY) =  3.725494
                         (GAL/DAY/FT*FT) =  24.75039
```

THE NUMBER OF WELLS IN THIS RECORD IS 2

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK / Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1997
NBCE-065-008	



Hydraulic conductivity [ft/min]: 1.82×10^{-4}

Hydraulic conductivity [ft/day]: 0.262

L = 10.6 ft
b = 10.6 ft
D = 10.6 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

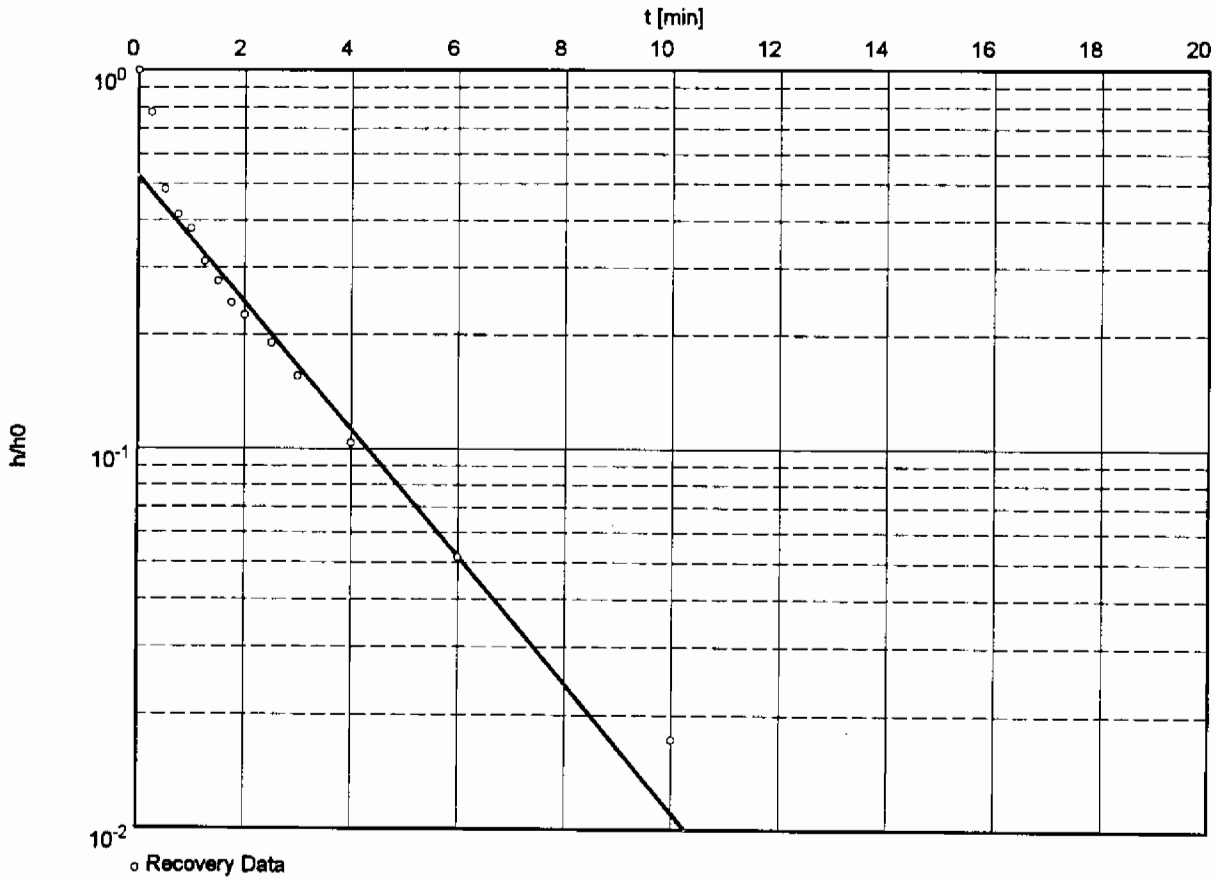
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1997
NBCE-065-008	Recovery data

Static water level: 4.1000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	11.6000	7.5000
2	0.1600	11.5000	7.4000
3	0.2500	11.4600	7.3600
4	0.5000	11.3500	7.2500
5	0.7500	11.2800	7.1800
6	1.0000	11.2300	7.1300
7	1.2500	11.1700	7.0700
8	1.5000	11.1100	7.0100
9	1.7500	11.0600	6.9600
10	2.0000	11.0100	6.9100
11	2.5000	10.9100	6.8100
12	3.0000	10.8000	6.7000
13	4.0000	10.6000	6.5000
14	6.0000	10.1800	6.0800
15	8.0000	9.7800	5.6800
16	12.0000	9.2400	5.1400
17	18.0000	8.5000	4.4000
18	34.0000	7.0000	2.9000
19	40.0000	6.5400	2.4400
20	42.0000	6.0700	1.9700

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-570-004	



Hydraulic conductivity [ft/min]: 2.76×10^{-3}

Hydraulic conductivity [ft/day]: 3.97

L = 7.6 ft
b = 7.6 ft
D = 7.6 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

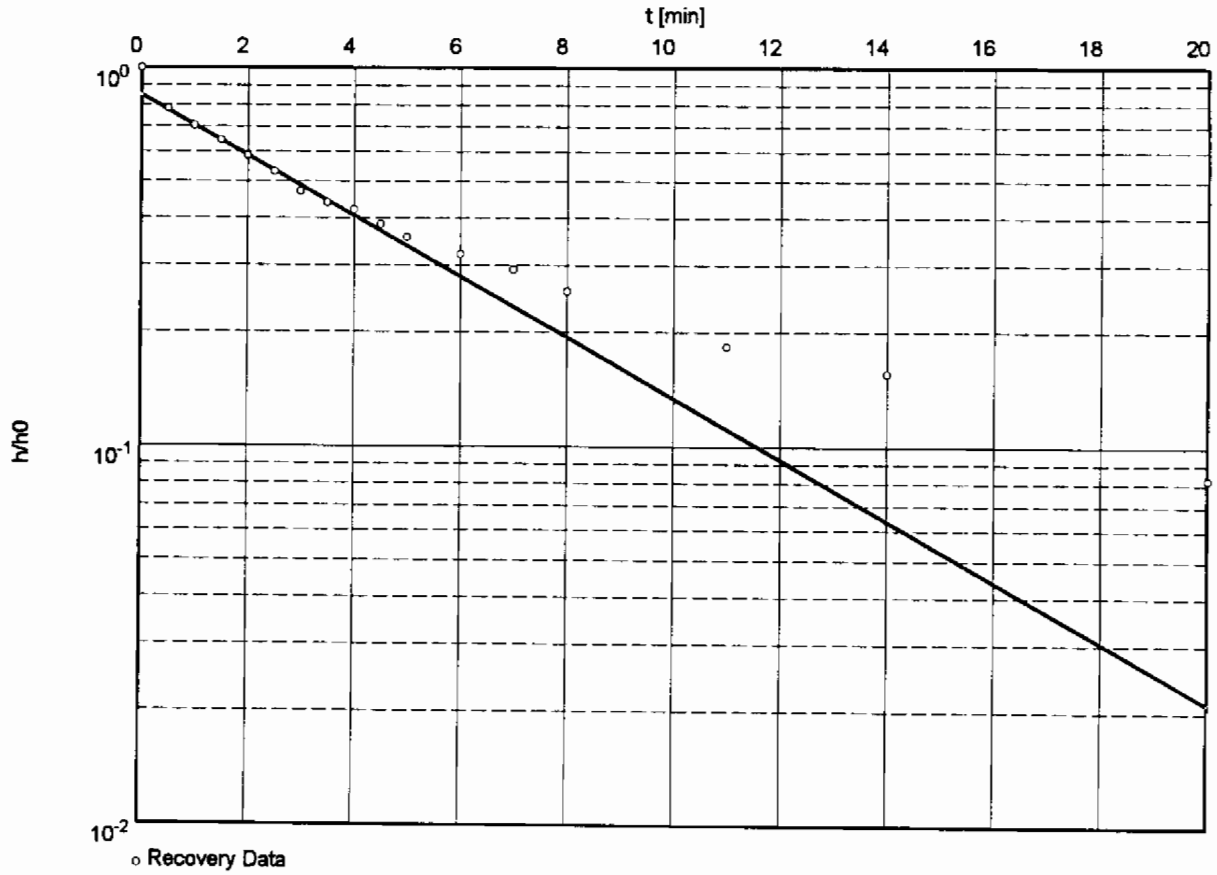
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-570-004	Recovery Data

Static water level: 9.6600 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	10.2400	0.5800
2	0.2500	10.1100	0.4500
3	0.5000	9.9400	0.2800
4	0.7500	9.9000	0.2400
5	1.0000	9.8800	0.2200
6	1.2500	9.8400	0.1800
7	1.5000	9.8200	0.1600
8	1.7500	9.8000	0.1400
9	2.0000	9.7900	0.1300
10	2.5000	9.7700	0.1100
11	3.0000	9.7500	0.0900
12	4.0000	9.7200	0.0600
13	6.0000	9.6900	0.0300
14	10.0000	9.6700	0.0100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 02.11.1996
NBCE-GDE-026	



Hydraulic conductivity [ft/min]: 1.76×10^{-3}

Hydraulic conductivity [ft/day]: 2.54

L = 5.0 ft
b = 5.0 ft
D = 5.0 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK	Date: 25.06.1997

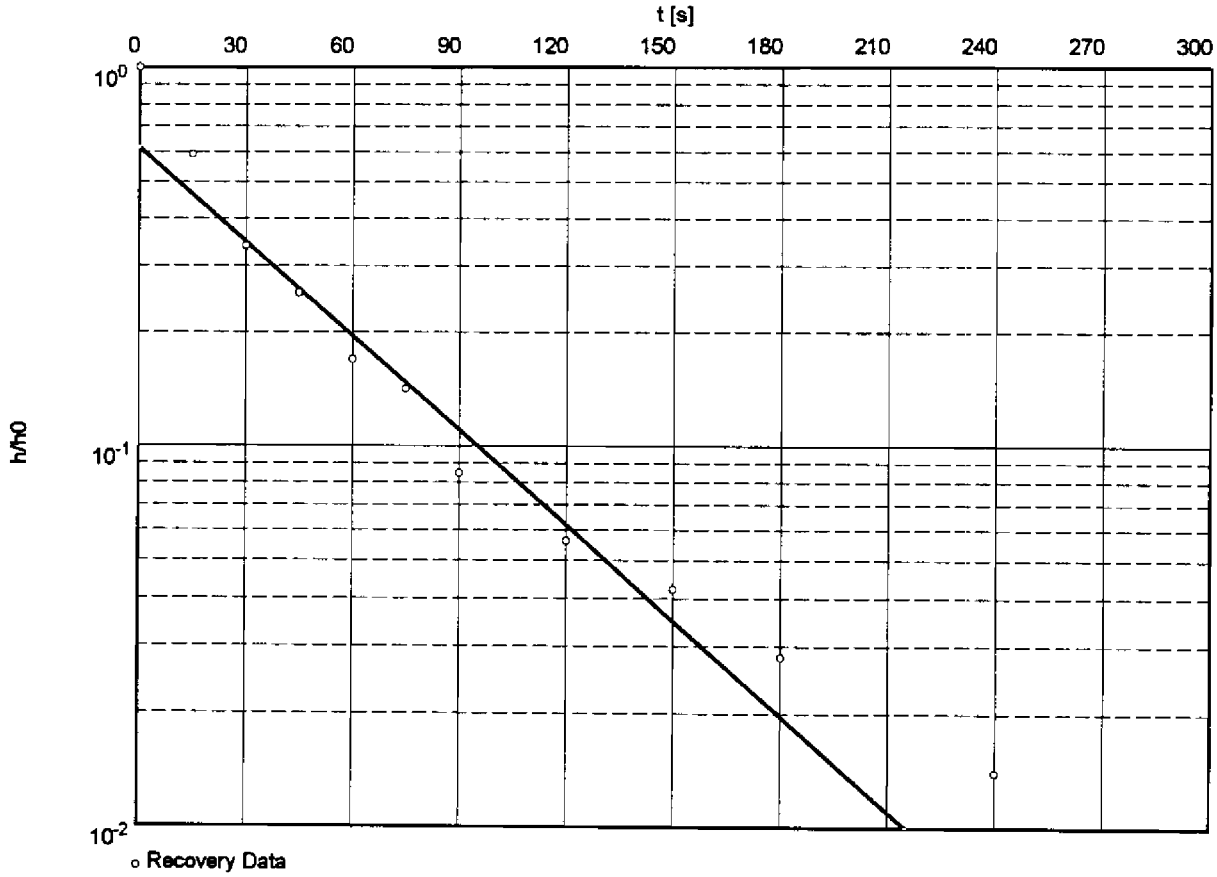
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 02.11.1996
NBCE-GDE-026	Recovery Data

Static water level: 5.5400 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	7.7300	2.1900
2	0.5000	7.2500	1.7100
3	1.0000	7.0800	1.5400
4	1.5000	6.9500	1.4100
5	2.0000	6.8200	1.2800
6	2.5000	6.7000	1.1600
7	3.0000	6.5700	1.0300
8	3.5000	6.5000	0.9600
9	4.0000	6.4600	0.9200
10	4.5000	6.3800	0.8400
11	5.0000	6.3200	0.7800
12	6.0000	6.2400	0.7000
13	7.0000	6.1800	0.6400
14	8.0000	6.1000	0.5600
15	11.0000	5.9400	0.4000
16	14.0000	5.8800	0.3400
17	20.0000	5.7200	0.1800

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.96
NBCE-GDE-027	



Hydraulic conductivity [ft/s]: 1.28×10^{-4}

Hydraulic conductivity [ft/day]: 11.1

L = 8.4 ft
b = 8.4 ft
D = 8.4 ft
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

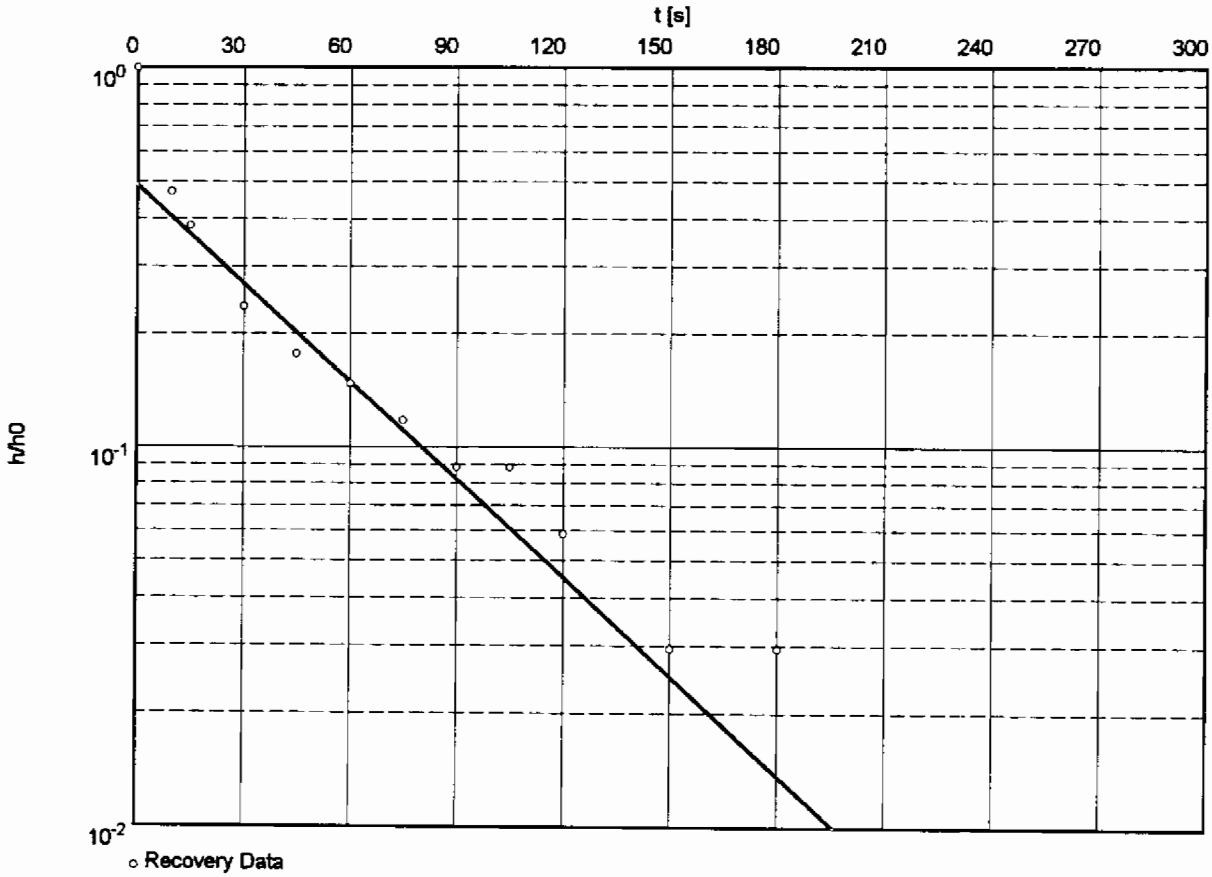
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.96
NBCE-GDE-027	Recovery Data

Static water level: 7.5800 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	8.2900	0.7100
2	15.0000	8.0000	0.4200
3	30.0000	7.8200	0.2400
4	45.0000	7.7600	0.1800
5	60.0000	7.7000	0.1200
6	75.0000	7.6800	0.1000
7	90.0000	7.6400	0.0600
8	120.0000	7.6200	0.0400
9	150.0000	7.6100	0.0300
10	180.0000	7.6000	0.0200
11	240.0000	7.5900	0.0100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.96
NBCE-GDE-028	



Hydraulic conductivity [ft/s]: 1.58×10^{-4}

Hydraulic conductivity [ft/day]: 13.7

L = 6.5
b = 6.5
D = 6.5 (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK / Date: 25.06.1997

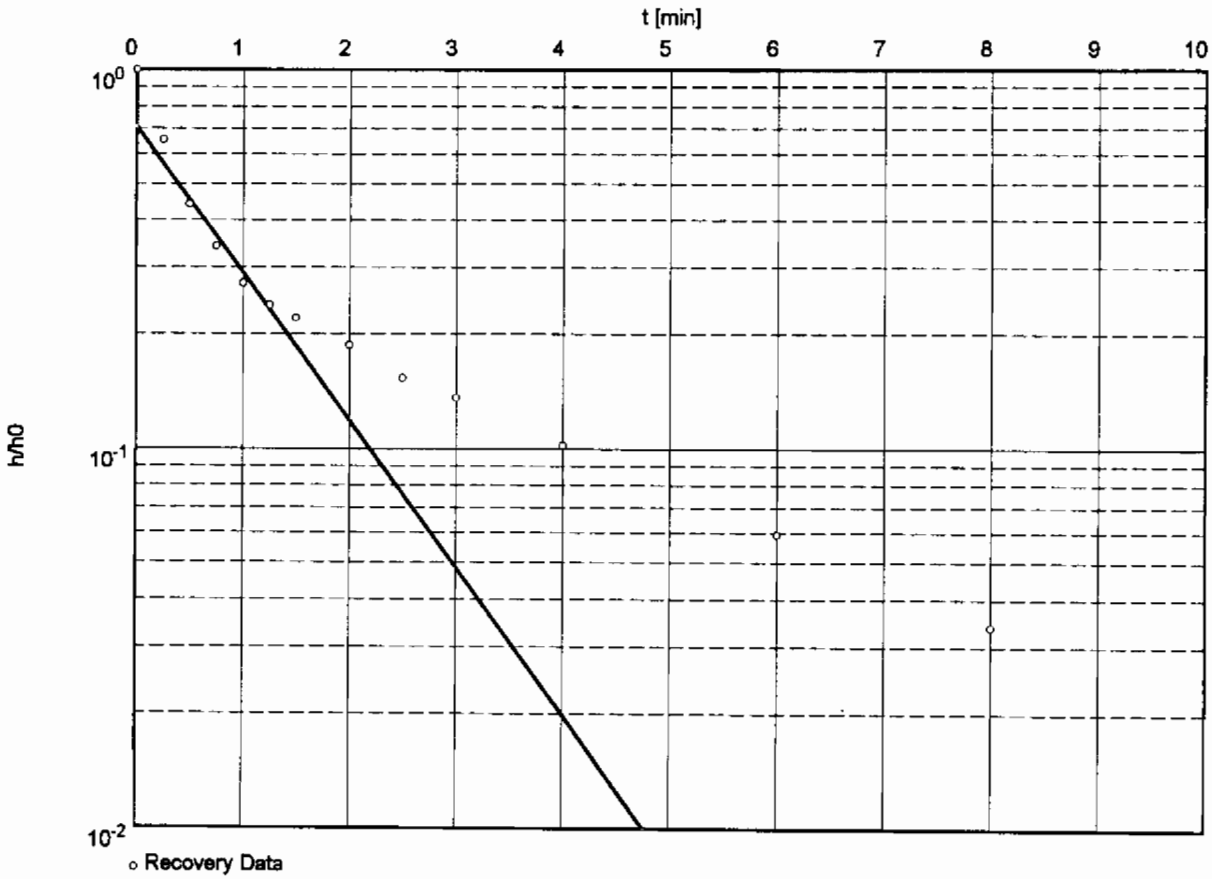
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.96
NBCE-GDE-028	Recovery Data

Static water level: 7.4600 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	7.8000	0.3400
2	9.6000	7.6200	0.1600
3	15.0000	7.5900	0.1300
4	30.0000	7.5400	0.0800
5	45.0000	7.5200	0.0600
6	60.0000	7.5100	0.0500
7	75.0000	7.5000	0.0400
8	90.0000	7.4900	0.0300
9	105.0000	7.4900	0.0300
10	120.0000	7.4800	0.0200
11	150.0000	7.4700	0.0100
12	180.0000	7.4700	0.0100
13	240.0000	7.4600	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 02.11.1996
NBCE-GDE-029	



Hydraulic conductivity [ft/min]: 5.95×10^{-3}

Hydraulic conductivity [ft/day]: 8.57

L = 8.4 ft
b = 8.4 ft
D = 8.4 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 25.06.1997

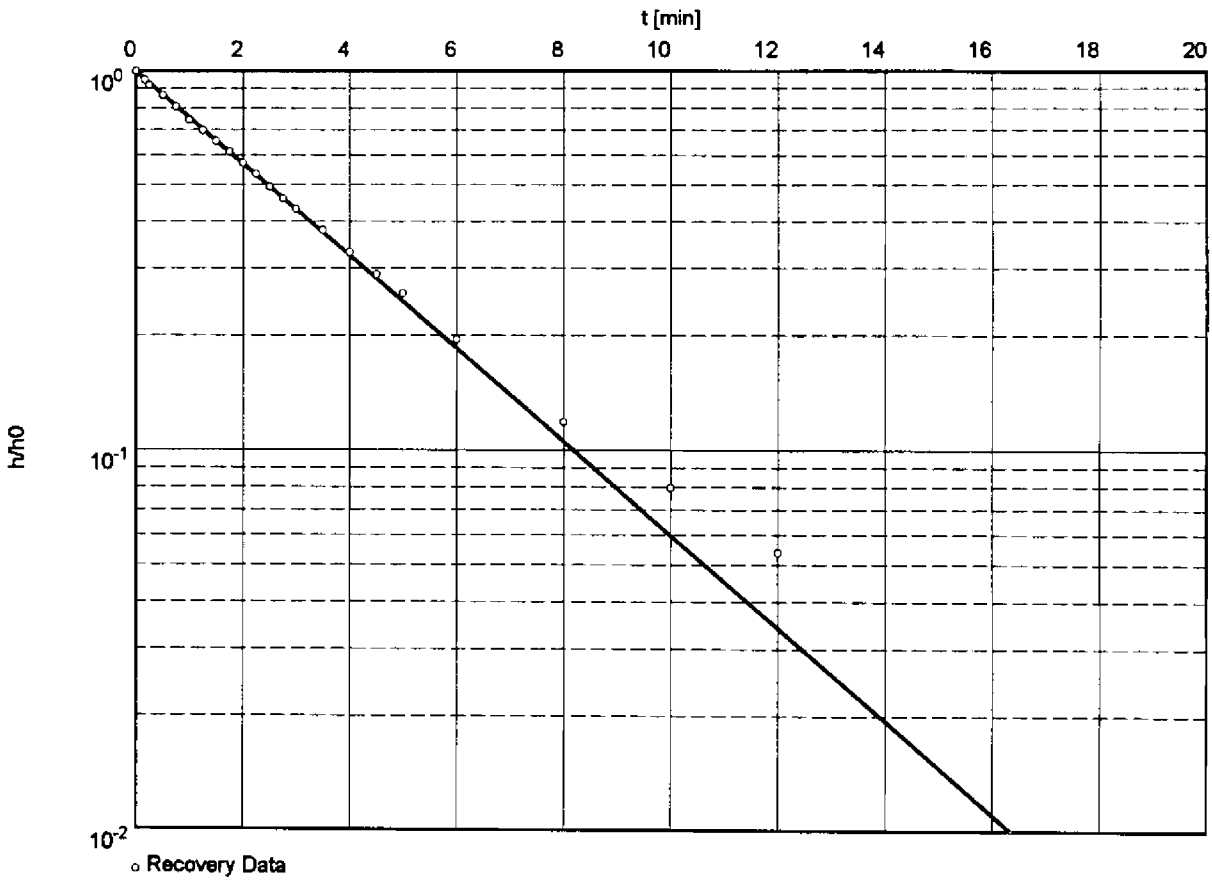
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 02.11.1996
NBCE-GDE-029	Recovery Data

Static water level: 4.6800 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]	
1	0.0000	5.8600	1.1800	
2	0.2500	5.4500	0.7700	
3	0.5000	5.2000	0.5200	
4	0.7500	5.0800	0.4000	
5	1.0000	5.0000	0.3200	
6	1.2500	4.9600	0.2800	
7	1.5000	4.9400	0.2600	
8	2.0000	4.9000	0.2200	
9	2.5000	4.8600	0.1800	
10	3.0000	4.8400	0.1600	
11	4.0000	4.8000	0.1200	
12	6.0000	4.7500	0.0700	
13	8.0000	4.7200	0.0400	

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.1996
NBCE-GDE-29D	



Hydraulic conductivity [ft/min]: 3.88×10^{-4}

Hydraulic conductivity [ft/day]: 0.560

L = 6.5 ft
b = 6.5 ft
D = 6.5 ft (full penetration)
r = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

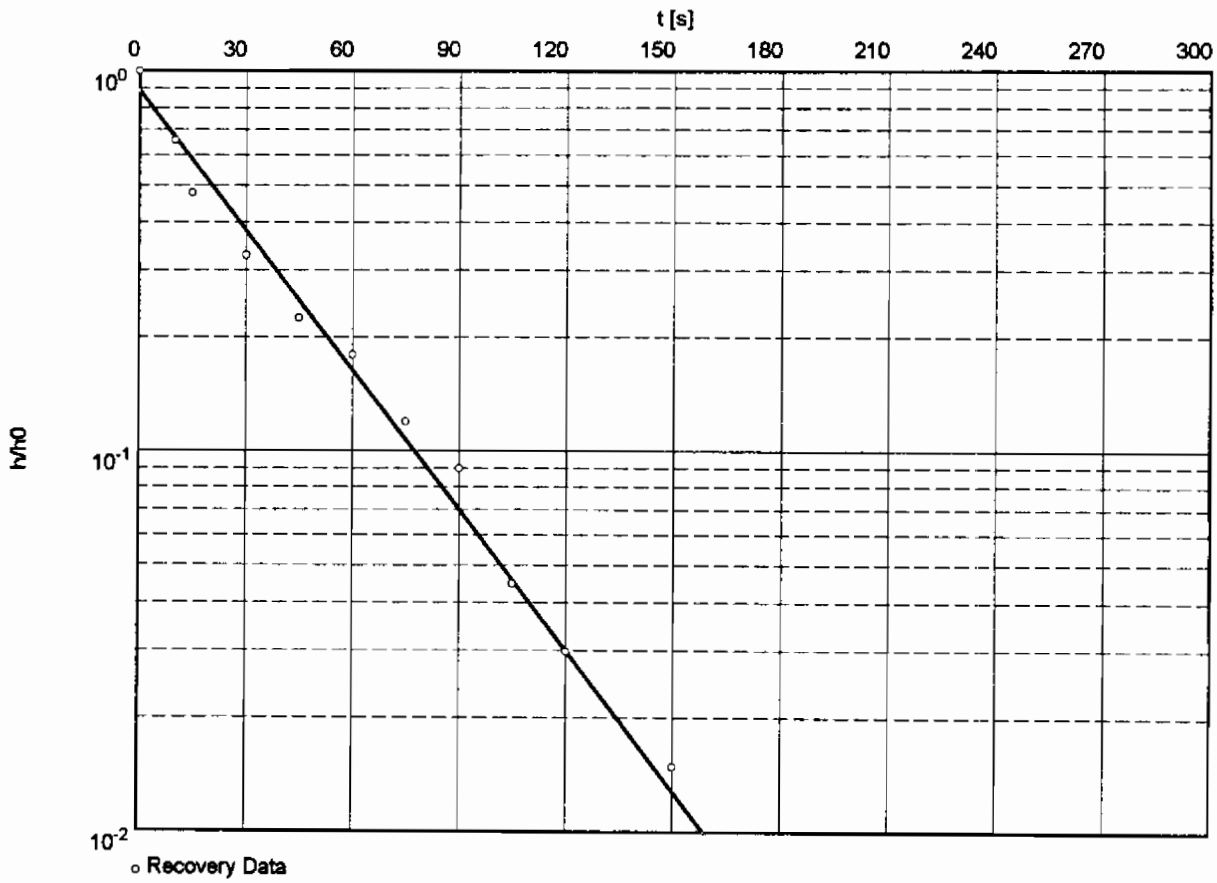
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 03.11.1996
NBCE-GDE-29D	Recovery Data

Static water level: 4.5200 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	10.2800	5.7600
2	0.1600	9.9800	5.4600
3	0.2500	9.8000	5.2800
4	0.5000	9.5000	4.9800
5	0.7500	9.1500	4.6300
6	1.0000	8.8000	4.2800
7	1.2500	8.5400	4.0200
8	1.5000	8.2800	3.7600
9	1.7500	8.0400	3.5200
10	2.0000	7.8000	3.2800
11	2.2500	7.6000	3.0800
12	2.5000	7.3500	2.8300
13	2.7500	7.1600	2.6400
14	3.0000	7.0000	2.4800
15	3.5000	6.7000	2.1800
16	4.0000	6.4200	1.9000
17	4.5000	6.1800	1.6600
18	5.0000	6.0000	1.4800
19	6.0000	5.6400	1.1200
20	8.0000	5.2000	0.6800
21	10.0000	4.9800	0.4600
22	12.0000	4.8300	0.3100

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E--NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-GDE-030	



Hydraulic conductivity [ft/s]: 3.70×10^{-5}

Hydraulic conductivity [ft/day]: 3.20

L = 7.0 ft
b = 7.0 ft
D = 7.0 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK	Date: 25.06.1997

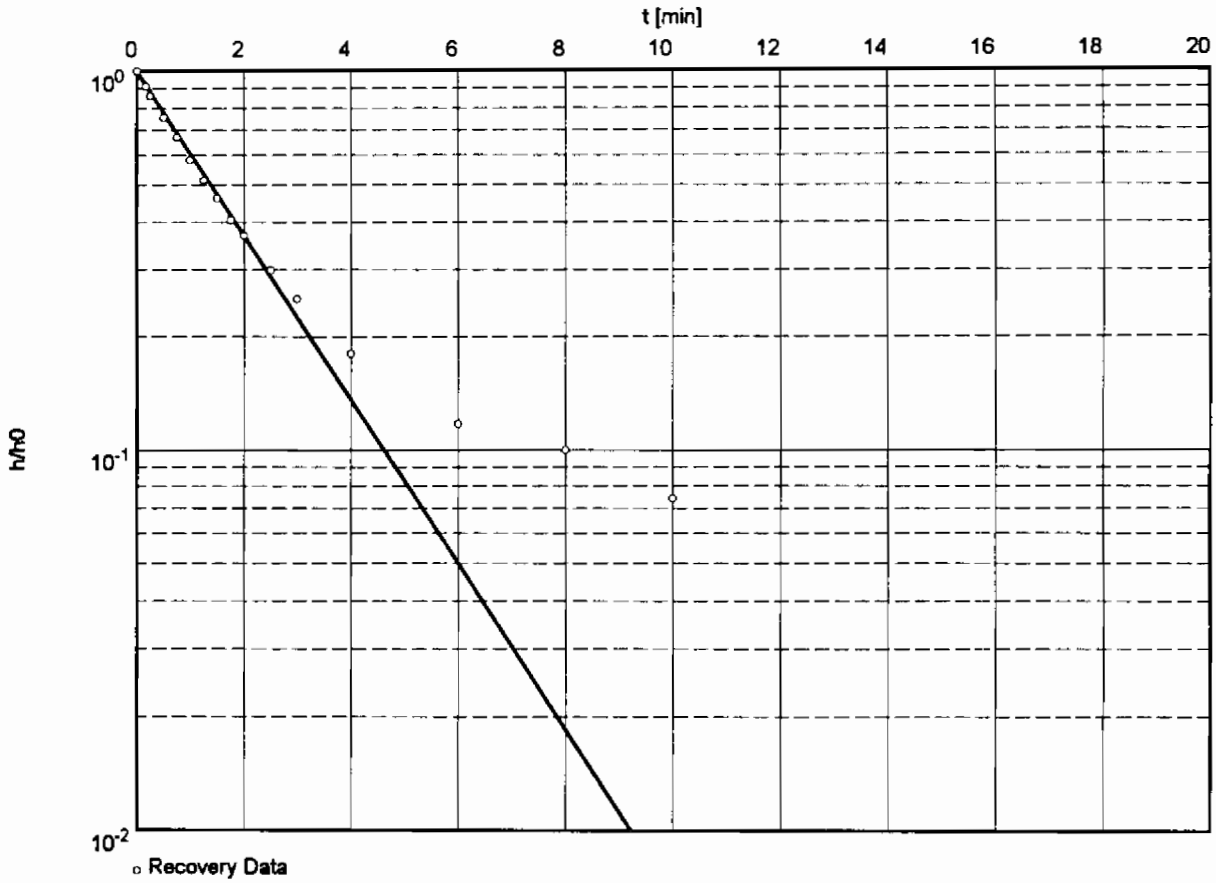
Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-GDE-030	Recovery Data

Static water level: 4.7800 ft below datum

	Pumping test duration [s]	Water level [ft]	Drawdown [ft]
1	0.0000	5.4500	0.6700
2	9.9600	5.2200	0.4400
3	15.0000	5.1000	0.3200
4	30.0000	5.0000	0.2200
5	45.0000	4.9300	0.1500
6	60.0000	4.9000	0.1200
7	75.0000	4.8600	0.0800
8	90.0000	4.8400	0.0600
9	105.0000	4.8100	0.0300
10	120.0000	4.8000	0.0200
11	150.0000	4.7900	0.0100
12	180.0000	4.7800	0.0000
13	240.0000	4.7800	0.0000

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-GDE-30D	



Hydraulic conductivity [ft/min]: 8.67×10^{-4}

Hydraulic conductivity [ft/day]: 1.25

L = 4.6 ft
b = 4.6 ft
D = 4.6 ft (full penetration)
r = 0.083 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	APPENDIX F, Page 2 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 25.06.1997

Slug Test No. SPECIFIC CAPACITY	Test conducted on: 04.11.1996
NBCE-GDE-30D	Recovery Data

Static water level: 5.1000 ft below datum

	Pumping test duration [min]	Water level [ft]	Drawdown [ft]
1	0.0000	8.6100	3.5100
2	0.1600	8.3000	3.2000
3	0.2500	8.1200	3.0200
4	0.5000	7.7500	2.6500
5	0.7500	7.4500	2.3500
6	1.0000	7.1400	2.0400
7	1.2500	6.9000	1.8000
8	1.5000	6.7200	1.6200
9	1.7500	6.5200	1.4200
10	2.0000	6.3900	1.2900
11	2.5000	6.1500	1.0500
12	3.0000	5.9800	0.8800
13	4.0000	5.7300	0.6300
14	6.0000	5.5100	0.4100
15	8.0000	5.4500	0.3500
16	10.0000	5.3600	0.2600

Appendix G

Tidal Influence Study

G.1 CONTINUOUS WATER LEVEL MONITORING

As mentioned in Section 2.3.7.3, water levels were recorded continuously to collect real-time groundwater elevation data during a month-long period (November 1 through December 2, 1996) for determining the impact of tidal forces in the Cooper River upon the hydrogeologic system. Because continuous water level measurements were collected at 15-minute intervals, a very thorough investigation into tidal response can be conducted; however, because of the large amount of data generated, only a fraction of well locations may be feasibly monitored as compared to the scale of a zonewide synoptic groundwater level event. Continuous monitoring was hoped to provide some insight as to the integrity of the quay wall and other anthropogenic influences within the highly industrialized Zone E.

Surface water elevation in the Cooper River and atmospheric barometric pressure were recorded coincidentally from a former gauging station near AOC 605/SWMU 18 (NBCE00004E in Figure 2-2) using a Hermit™ 2000 data logger (InSitu Inc). Figure G-1 is a plot of river elevation and barometric pressure versus time. Figures G-2 through G-16 depict groundwater elevation and temperature during the study period at each well location (refer to Table 2.13 and Figure 2-11 in Section 2.3.7 for monitoring well locations and associated time periods). Figure G-17 presents the precipitation recorded during the study period from the USGS weather station at NBCCGDC003 in Zone C.

G.1.1 Barometric Pressure

Barometric pressure fluctuated between a low of 14.608 psi on November 8 and a high of 15.056 psi November 19, 1996 (Figure G-1). The letters in this figure coincide with the major pressure highs and lows during the study period (note inverted pressure scale). While the pressure appears to oscillate greatly, changes remained under 0.45 psi throughout the entire period.

Since aquifers are elastic bodies, barometric pressure changes induce hydrostatic pressure changes that act upon the top of a confined aquifer. Water levels in a well installed within a confined aquifer will reflect the hydrostatic pressure, which is a function of not only the atmospheric pressure but also the weight of the water column above the confining unit. When atmospheric pressure increases, the water column is depressed, yielding lower water levels. Decreasing atmospheric pressure results in rising water levels. Unconfined aquifers are less likely to be influenced since the pressure differential is applied to the water table which is transmitted directly to a shallow monitoring well, although entrapped air below the water table may provide some means of minor pressure fluctuations (Todd, 1980). Shallow and deep well responses were compared to barometric pressure changes to verify these relationships that might mask true tidal influences.

Shallow Wells

Comparison of groundwater elevation in the four shallow wells versus barometric pressure is shown in Figures G-18 through G-21. Locations GDE005, GDE023, and GDE025 show that the daily tidal cycle undulates between highs and lows throughout the study period, which is best seen as the subtle wave form superimposed on the daily oscillations at GDE005 (Figure G-18). At GDE005, lows and highs in pressure seem to roughly correlate to lows and highs in groundwater elevation until the period of November 16 through November 25, 1996 (Julian dates 35385-35394) when groundwater elevations rise to the highest elevations recorded although the pressure at "E" is only 0.004 psi less than that at "C." After November 25, 1996 (JD 35394), groundwater elevations remain depressed despite further increases and decreases in barometric pressure. The same may be said about well 530002, where pressure and elevation appear to correlate during the first 10 days of monitoring; however, beginning November 27, 1996 (JD 35396), groundwater elevations fall while pressure rises (Figure G-21). The sharp and anomalous rise in elevation about December 1, 1996, is thought to be related to a recharge event and is discussed later in this appendix.

Ascertaining any relationship between pressure and elevation at locations GDE023 and GDE025 is difficult since the tidal amplitudes are so great (Figures G-19 and G-20, respectively). A possible correlation may be evident from November 1 to 16, 1996, but is unclear after that. Instead, the undulations in the daily tidal cycles appear to more closely reflect the similar undulations seen in the river elevation data, which was thought to be largely governed by lunar cycles.

Deep Wells

The deep wells studied were divided into two groups: one that showed significant and measurable tidal fluctuations and the other that showed negligible tidal responses. If tidal forces were as strong as those seen at GDE023 and GDE025, then it was speculated that barometric pressure effects would be dampened and less decipherable, making correlation between pressure and groundwater elevation impractical. At locations not as tidally dominated, barometric pressure might have a stronger influence.

G.1.2 Tidally Influenced Locations

The hydraulic conditions at the deep well locations monitored in this study are mixed, largely due to the heterogeneity in the subsurface and limited areal extent of the aquitards. Semi-confined to confined conditions are thought to exist at all deep well locations except 53002D, 17202D, and 55902D, at which the aquifers are likely unconfined to semi-confined. Therefore, barometric pressure influences would vary depending upon the hydraulic characteristics at each location.

Comparison of groundwater elevation in deep wells with barometric pressure are shown in Figures G-22 through G-32 (note varying time scales). Superimposed undulations on the daily tidal cycles are seen clearly in GDE05D, GDE25D, GDE22D, GDE23D, 17202D, 56601D, and GDE24D. These undulations might reflect pressure changes or the lunar cycle, which was presumed to be the cause of similar undulations of the daily tidal cycle in the Cooper River.

When comparing these gentle undulations to atmospheric pressure changes, highs and lows in each dataset roughly correlate; however, the maxima of the peaks and the minima of the troughs in the groundwater elevation undulations precede the maxima of the peaks and the minima of the troughs in the pressure data. This suggests that a cumulative effect of magnitude and duration of a pressure high or low may be more influential on groundwater elevation.

Boring log and geologic cross-section data show that the aquifer monitored by GDE05D is closest to a confined aquifer of all tidal study locations. As a result, barometric pressure fluctuations would have the greatest impact on groundwater elevation at GDE05D (Figure G-22). However, its response does not vary significantly from other deep locations. Similar lows in pressure do not elicit similar highs in groundwater elevation. For example, the lows in pressure labeled "C," "E," and "I" are very close — "C" and "E" differ by 0.004 psi and "E" and "I" differ by 0.041 psi. The corresponding groundwater elevation highs related to "C" and "E" differ by 0.143 feet, while those related to "E" and "I" differ by 0.429 feet. Groundwater elevations corresponding to high-pressure period "D" are virtually the equal to those related to a less distinct high pressure period "F." It is suspected that the maxima and minima of pressure highs and lows do not influence the groundwater system at this scale, but as was evident in the shallow wells, the cumulative effect of the magnitude and duration of a pressure change may have a minimal influence on groundwater elevation.

BE at GDE05D was calculated to substantiate the limited barometric pressure influence on groundwater elevation (Figure G-33). Using the method of Dawson and Istok (1991), a BE of 11% was estimated, a nominal value considering the typical range of 20% to 70% reported by Todd (1980).

G.1.3 Non-Tidally Influenced Locations

Since locations 55102D, 02301D, 55902D, and 53002D exhibited nominal or negligible tidal responses, barometric pressure changes might be more influential on groundwater elevations at these sites (Figures G29-G32). No pressure-elevation correlation is evident at 53002D and 02301D. At 55102D the two significant increases in groundwater elevation on November 6 and November 12, 1996 do not correspond to coincident decreases in pressure (Figure G-29). However, the pressure lows labeled "A" and "C" are approximately 5.5 days apart; the elevation increases are approximately 6.5 days apart, suggesting that there may be some dampening lag time associated with barometric pressure response at this location. This is not unreasonable considering that the aquitard here is approximately 12 feet thick and may dampen the barometric pressure throughout its thickness. At 55902D, barometric pressure and groundwater elevation correlate closely (Figure G-31). Barometric efficiency was estimated at 80% at this location, as shown in Figure G-34 (Dawson and Istok, 1991). Eight feet of Qsp and Qmp at this location may provide locally confining conditions that account for greater BE at 55902D.

This study assumes that barometric pressure changes have little impact on groundwater elevations at those locations with significant and measurable tidal oscillations. Instead, the undulations of the daily tidal cycles likely reflect similar undulations in the Cooper River that are thought to be related to lunar cycles. At locations with negligible to no tidal influence, barometric pressure influences may be greater but their magnitude is governed by local geologic and hydrogeologic conditions.

G.2 TIDAL ANALYTICAL MODEL

A simple tidal analytical model was used to estimate the effect tidal fluctuations in the Cooper River had on each well location during the monitoring period. The model is based upon one-dimensional flow in a confined aquifer following the differential equation governing

$$\frac{\partial^2 h}{\partial x^2} = \frac{S}{T}\frac{\partial h}{\partial t} \qquad (1)$$

groundwater flow, where h is the net rise and fall of the piezometric surface with reference to tidal surface water, x is the distance from tidal source, S is the coefficient of aquifer storage, and T is the transmissivity (Todd, 1980). Setting the amplitude equal to h_0, the boundary conditions to $h = h_0 \sin\omega t$ at $x = 0$ and $h = 0$ at $x = \infty$, where $\omega = 2\pi/t_0$, the solution to the above equation is

$$h = h_0 e^{-x\sqrt{\frac{\pi S}{t_0 T}}}\left(\sin\frac{2\pi t}{t_0} - x\sqrt{\frac{\pi S}{t_0 T}}\right). \qquad (2)$$

The variable t_0 is the tidal period in days (measured at 0.51 days during study period). This complex expression reduces to

$$h_x = h_0 e^{-x\sqrt{\frac{\pi S}{t_0 T}}} \qquad (3)$$

for a tidal amplitude, h_x, of groundwater fluctuations at a distance of x from the tidal source, (i.e., shoreline or quay wall). Todd (1980) notes that this equation also applies to unconfined aquifers as long as the tidal range fluctuations are small in relation to the saturated thickness. This is assumed to be the case at NAVBASE since the greatest tidal fluctuation was estimated at 2.5 feet at GDE023, approximately 20% of its saturated thickness.

Equation 3 was used to calculate the predicted amplitude at each of the 15 well locations which could be compared to the observed amplitudes. These results will be highly dependent upon the S and T estimates used. However, this analytical model cannot account for any anthropogenic influences that may affect the natural groundwater flow system. Based on the degree of

overprediction or underprediction of observed amplitudes by the model-predicted amplitudes, it is possible to speculate on the role of these man-made influences.

Well locations 02301D, 530002, 53002D, and 55902D were not evaluated since no obvious tidal features were evident (Figures G-7, G-13, G-14, and G-15, respectively). The best explanation for the lack of responses at 530002, 53002D, and 55902D is that they lie at distances of approximately 750, 773, and 950 feet from the nearest shoreline, respectively. This is not the case with 02301D, which lies within 350 feet of the waterfront. The highly interbedded nature of the deposits within the screened interval at 02301D may have dampened the tidal response.

Based on the magnitude of the responses at all 15 wells, groundwater elevations appear to be tidally influenced at locations within 300 feet from the nearest surface water boundary. This is not an exact boundary since local permeable zones may exist throughout the subsurface in Zone E, which may allow tidal pressure waves to propagate farther inland than 300 feet.

G.2.1 Input Data

The input data with the greatest reliability are those of hydraulic conductivity (Section 2.3.5). Of the 11 wells displaying tidal influences, site-specific K_h values were available at five locations (GDE025, GDE25D, GDE24D, 56601D, and GDE22D). All other locations were given representative values based upon the dominant lithology (Table 2.11). Estimation of aquifer thickness tended to err on the conservative side to yield higher transmissivity estimates.

An aquifer storage parameter of 0.105 from the upper 10 feet of the subsurface at SWMU 70 was used in equation (3) since it is the only site-specific value available to date (Section 2.3.5.3). Aquifer storage is highly variable and entirely dependent upon lithology, and as a result, is the least reliable variable of those required for input. Furthermore, the extreme heterogeneity in the

subsurface at Zone E has created complicated flow conditions at the base of the surficial aquifer, implying that aquifer storage will vary as well.

Table G.1 shows the predicted amplitudes, $h_{0(p)}$, for each well location based upon the input data. The observed amplitudes, $h_{0(ob)}$, were estimated by summing the difference between tidal maxima and minima at various intervals and dividing it in half, resulting in an average tidal amplitude. There was poor agreement between $h_{0(p)}$ and $h_{0(ob)}$ values using an S value of 0.105 with the closest agreement at location GDE025 (2.5 times greater).

Table G.1
Tidal Model Results with Aquifer Storage Equal to 0.105

Location	lith. type	b (ft)	K_h (ft/day)	T (ft^2/day)	x (ft)	$h_{0(p)}$ (ft)	$h_{0(ob)}$ (ft)
GDE005	Qs"	8.0	11	88	70	0.0063	0.098
GDE05D	Tu"	2.4	0.07	0.17	95	1.45E-79	0.135
GDE025	Qs	20.6	4.11*	84	25	0.340	0.869
GDE25D	Qs/Qcso	15.3	2.11	32	45	0.0038	0.326
GDE24D	Qcso/Qso	26.0	2.93	76	55	0.017	0.770
GDE23D	Qs"	12.5	11	138	60	0.036	0.700
GDE023	Fs/Fc"	11.3	120	1356	60	0.656	2.50
GDE22D	Qs	10.5	7.43	78	300	3.49E-12	0.360
55102D	Qs"	12.3	11	135	140	1.59E-4	0.050
17202D	Tu"	9.8	0.07	0.69	130	1.47E-55	0.208
56601D	Tu	9.7	0.239	2.3	115	1.06E-26	0.287

Notes:
" = locations without site-specific aquifer parameters; lith-type values used from Table 2.11
x = distance from Cooper River
b = aquifer thickness
* = geometric mean from two test dates.

Water levels at well pair GDE025/25D were expected to reflect the greatest tidal fluctuations since they lie closest to the river of all locations, monitor natural shoreline conditions in the absence of a quay wall, and consist of permeable Qs and Qcso deposits. The model was used to solve for a

separate storage value for these two wells by setting $h_{0(p)} = h_{0(ob)}$. Storage values of 0.03 and 0.01 were calculated for GDE025 and 25D, respectively. These lower S values were then applied to all the remaining wells of similar lithology (i.e., Qs, Qso, and Qcso) to improve the $h_{0(p)}$ values.

Because of the very fine-grained and silty nature of the Tu deposits, a new Tu-specific aquifer storage value was needed to assist in modeling these deposits. Of the three locations monitoring Tu deposits, GDE05D was chosen for estimating the new S value since this location lies the closest to the waterfront and should theoretically be subject to the greatest tidal influence. Setting $h_{0(p)} = h_{0(ob)}$ and solving for S resulted in a value of 0.000027, nearly 370 times smaller than the 0.01 used for the deep wells in the permeable Qs, Qso, and Qcso deposits. This value, however, compares favorably to the 10^{-5} value reported for fine-grained deposits in confined aquifers (Driscoll, 1986). The new aquifer storage value was applied to the two remaining Tu locations, 17202D and 56601D.

Table G.2 shows the improved agreement between the $h_{0(p)}$ and $h_{0(ob)}$ values using the new lithologic-specific storage values.

Overprediction of tidal amplitudes ranged between 5% at GDE005 to 70% at 56601D. Underprediction of tidal amplitudes varied from 5% at GDE23D to 51% at GDE023. The one anomaly was the negligible $h_{0(p)}$ value at GDE22D, which is 770 times smaller than its $h_{0(ob)}$.

Table G.2
Tidal Model Results with Adjusted Aquifer Storage

Location	lith. type	b (ft)	K_h (ft/day	T (ft^2/day)	x (ft)	$h_{0(p)}$ (ft)	$h_{0(ob)}$ (ft)	% diff
GDE005	Qs"	8.0	11	88	70	0.103	0.098	0.05
GDE05D	Tu"	2.4	0.07	0.17	95	0.135	0.135	CAL
GDE025	Qs	20.6	4.11*	84	25	0.869	0.869	CAL
GDE25D	Qs/Qcso	15.3	2.11	32	45	0.327	0.326	CAL

Table G.2
Tidal Model Results with Adjusted Aquifer Storage

Location	lith. type	b (ft)	K_h (ft/day	T (ft^2/day)	x (ft)	$h_{0(p)}$ (ft)	$h_{0(ob)}$ (ft)	% diff
GDE24D	Qcso/Qso	26.0	2.93	76	55	0.530	0.770	-0.31
GDE23D	Qs"	12.5	11	138	60	0.666	0.700	-0.05
GDE023	Fs/Fc"	11.3	120	1356	60	1.23	2.50	-0.51
GDE22D	Qs	10.5	7.43	78	300	4.67E-04	0.360	77,100
55102D	Qs"	12.3	11	135	140	0.121	0.050	0.59
17202D	Tu"	9.8	0.07	0.69	130	0.328	0.208	0.37
56601D	Tu	9.7	0.239	2.3	115	0.956	0.287	0.70

Notes:
" = locations without site-specific aquifer parameters; lith-type values used from Table 2.11
x = distance from Cooper River
b = aquifer thickness
* = geometric mean from two test dates
CAL = calibration of S value required setting $h_{0(p)} = h_{0(ob)}$.

Clearly, the model fails in regard to location GDE22D. The best possible explanation is that the T and S input data do not adequately reflect the hydrogeologic conditions there. Its boring log shows that medium- to coarse-grained Qs deposits dominate the screened interval, suggesting a highly permeable zone. Increasing the hydraulic conductivity from its site-specific value of 7.4 feet/day to the Qs-specific value of 11 feet/day resulted in four-fold increase in $h_{0(p)}$ from 0.0005 to 0.002 feet, which is still 166 times smaller than $h_{0(ob)}$. Using S=0.01, the K_h value required to fulfill the observed tidal amplitude is 143 feet/day, which is closer in magnitude to those measured in gravelly fill at NAVBASE. Keeping the site-specific K_h value of 7.4 feet/day constant resulted in an aquifer storage of 0.0005 needed to satisfy $h_{0(p)} = h_{0(ob)}$. Although this value is 20 times lower than the 0.01 value used, it falls well within the range of S values for confined aquifers (Todd, 1980).

Anthropogenic sources are thought to account for the 50% and 31% disparities between $h_{0(p)}$ and $h_{0(ob)}$ values at GDE023 and GDE24D, respectively. Cross section A-A' (Figure 2-4A) shows Fs

and Fc deposits within the screened interval at GDE023. Since highly transmissive Fs deposits would govern the tidal response in the well, the Fs K_h value of 120 feet/day was applied (Table 2.11). Well GDE023 lies only 62 feet from the nearest quay wall to the south. Since $h_{0(ob)}$ values are the same as those measured in the Cooper River during the study period, there must be a direct hydraulic connection to the river for which the model cannot account, most likely related to utilities. A 30-inch storm sewer line runs SW-NE along Pier C to an Outfall 25 at the river and passes within approximately 20 feet of GDE023 (SEC Donohoue, 1983). Invert elevations vary from 0.0 ft msl to -4.2 ft msl along the segment of pipe closest to GDE023, which place the storm sewer at or below the water table during the study period. Well GDE24D is too deep for utilities to influence. However, since the quay wall begins near GDE24D, the increased tidal amplitudes observed may be the result of the lack of continuity in the quay wall.

The model was most successful at locations 55102D, 56601D, and 17202D where predicted amplitudes were greater than observed amplitudes, suggesting that no anthropogenic sources influence the responses at these locations. The low tidal signature measured at 55102D of 0.05 feet was unexpected given its proximity to the quay wall to the north (~140 feet) and the permeable Qs deposits within its screened interval. Improving model accuracy requires fine-tuning the S and K_h estimates. The S value predicted when equating $h_{0(p)}$ and $h_{0(ob)}$ is 0.017, 58% higher than that applied. Most likely, the K_h value of 11 feet/day is too high for this location since a 5-foot thick Qc deposit lies within the upper portion of the screened interval. A combination of these changes might better reflect hydrogeologic conditions at this location.

Locations 17202D and 56601D monitor Tu deposits. The greatest deviation between $h_{0(p)}$ and $h_{0(ob)}$ at the two locations is at 56601D and probably reflects a higher aquifer storage in this vicinity since a site-specific K_h value was available. The deviation at 17202D is only 37%, which would likely be improved if a site-specific K_h value were available.

G.2.2 Time Lag (t_L)

The time lag between a tidal pressure wave in the Cooper River and its response in a well may be calculated from the following expression:

$$t_L = x\sqrt{\frac{4\pi T}{t_0 S}}. \qquad (4)$$

The variables in equation (4) are the same as those in (3). Time lags were calculated at each well using the new aquifer storage estimates of 0.01 and 0.03 for shallow and deep wells in Qs-like deposits, respectively, and 0.00027 for Tu deposits. Assessing the time lags provides another comparison of the analytical model to real-world observations. Table G.3 shows the predicted lag times for each well location in hours and day.

Table G.3
Tidal Lag Times at each well location

Location	Lith. Type	t_L	t_L
GDE005	Qs"	0.26	6.2
GDE05D	Tu"	0.24*	5.7
GDE025	Qs	0.09*	2.1
GDE25D	Qs/Qcso	0.17*	4.0
GDE24D	Qcso/Qso	0.13	3.1
GDE23D	Qs"	0.11	2.6
GDE023	Fs/Fc"	0.06	1.4
GDE22D	Qs	0.70	17
55102D	Qs"	0.25	5.9
17202D	Tu"	0.17	4.0
56601D	Tu	0.08	1.9

Notes:
" = locations without site-specific aquifer parameters; lith-type values used from Table 2.11
* = locations calibrated for more sensitive S-values; t_L values based on $h_{0(p)} = h_{0(ob)}$.

The highest tidal lag time was calculated at GDE22D at 17 hours, the smallest at GDE023 at 1.4 hours. The small lag time at GDE023 reflects the highly permeable fill material in the locale and the likely influence of the storm sewers in that area as discussed previously. Otherwise, time lags did not vary with lithology in any predictable manner.

Given the time range of approximately six hours between high and low tides in the Cooper River, wells with t_L values between three to six hours would be out of phase with the river. Hence, a trough in groundwater elevation at the well would not coincide with a surface water peak in the river.

Plots comparing tidal responses in the river with well responses are presented in Figures G-35 through G-45 for the most tidally responsive well locations. Tidal responses in groundwater are nearly in phase with those in the river. In fact, no matter the distance from the source, tidal response appears to be rapid, although the magnitude of tidal amplitudes varies greatly. Although the geologic heterogeneity is great within the subsurface, apparently the individual units behave collectively to permit the propagation of tidal responses inland.

Closer inspection is required at locations with predicted t_L values greater than three to six hours since their tidal oscillations would be out of phase with the river. These locations are GDE005, GDE05D, GDE25D, GDE22D, 55102D, and 17202D. A distinct marker peak in the river elevation data may be used to compare the response at each well. The most obvious feature in the river elevation data is the "trough" labeled "A" on Figure G-1 on November 9, 1996, one of the three lowest tide marks at approximately -3.2 feet msl. If the system is as dynamic as it appears, then water levels in wells should reflect this low in surface water elevation.

The trough correlating to "A" is distinct at GDE22D, but is delayed by approximately two to three hours (Figure G-40). This reflects the similar problem with the low $h_{0(p)}$ value at GDE22D and

indicates that the input parameters do not accurately reflect the local hydrogeology. Using an aquifer storage value of 0.0005 that would equate the predicted and observed tidal amplitudes as discussed previously, the time lag improves to 3.7 hours, a much closer estimate to that observed.

At GDE25D, trough "A" is distinct and coincident with the river elevation (Figure G-36). Thus, its time lag should be lower than the four hours predicted. Since this location was used to calibrate the S values for Qs deposits, it should mimic the observed data as closely as possible. The fact that the model does not accurately predict the time lag indicates its accuracy regarding time lag calculations is within $\pm$ 2 hours for the purposes of this study.

Groundwater elevation at GDE005 and GDE05D also respond to trough "A" (Figures G-37 and G-38, respectively). At both locations groundwater elevation responses to "A" are nearly in-phase and certainly less than the six hour t_L values; increasing the time scale results in graphical estimation of the time lag at approximately two to three hours, which is close to the $\pm$ 2-hour error range of the predicted time lag. It is worth noting that a 30-inch storm water sewer passes within 10 to 20 feet of GDE005 and connects to Outfall 35 on Pier H. This provides another possibility the discrepancy in observed and predicted time lag at GDE005, although the evidence for storm sewer interaction is not nearly as conclusive as that at GDE023.

The observed tidal amplitude is so minimal at 55102D that it is difficult to clearly ascertain any correlation between the "A" trough and groundwater elevation (Figure G-39). Inspection of the general tidal oscillation in this well suggests that the tidal lag is very close to being in-phase with river tidal oscillations, not out of phase by nearly six hours as predicted by the t_L calculation. This is unusual since the agreement between the predicted and observed tidal amplitudes were within 60% as discussed previously. However, decreases in time lag result in increases in tidal amplitudes and vice versa. Thus, it appears that further definition of the S and K_h input parameters would improve the predicted time lags and tidal amplitudes values as a whole, although

each may individually vary from the observed time lag and tidal amplitudes by a greater margin. Doing so would be meaningless, however, since the minimal tidal influence at 55102D has no overall effect on groundwater movement.

A separate marker peak is needed for location 17202D since it was only monitored during the second half the the study period. A high tide just before Julian date 35396 (November 27, 1996) and about 1 foot lower in elevation than the other high-tide peaks during that time period was chosen as the best marker ("B" on Figure G-44). This peak corresponds closely to groundwater elevation at this location. It is unclear why an even lower high tide peak ("C") does not influence groundwater elevation. However, groundwater elevation responses overall appear to be approximately one to two hours out of phase, which is still within the ±2-hour agreement decided as relative accuracy for the time lag calculations.

G.3 TEMPERATURE PROFILES

The groundwater level elevation and temperature profiles were presented in Figures G-2 through G-16 previously. Groundwater temperatures increased during the monitoring periods at: 55102D (approximately -0.15°C), GDE25D (approximately -0.2°C), 02301D (<-0.1°C), 55902D (<-0.2°C), and 53002D (<-0.1°C). Temperatures decreases were seen in five well locations and tended to be much greater in magnitude than the increases: GDE005 (approximately +3.0°C), GDE023 (approximately +1.6°C), 530002 (approximately +1.0°C), GDE025 (approximately +1.0°C), and GDE24D (< +0.1°C). Stable groundwater temperatures were evident at GDE05D, GDE22D, and 17202D, while location 56601D showed decreasing and then increasing temperatures.

Temperature fluctuations were most dramatic at locations GDE023, GDE25D, GDE025, GDE005, and 530002. At every location except 530002, these fluctuations coincide closely with tidal amplitudes, further evidence that the system responds rapidly to tidal oscillations. Since no

temperature data were gathered from the Cooper River, direct correlation with river water temperature with groundwater temperature cannot be made; however, these data suggest that water temperature in the river may vary as tides rise and fall. The magnitude of temperature oscillations is greatest at GDE023, helping to substantiate the idea that a storm sewer may be behaving as a local pathway from the river (Figure G-9). At locations GDE005 and GDE025, diurnal temperature gradients increase over the monitoring period, possibly reflecting diurnal temperature changes that are somewhat greater that time of year and affect surface water, which also affects groundwater in these locations close to the river (Figures G-2 and G-4). The temperature fluctuations at 530002 look suspiciously like those in more tidally influenced locations, but clearly groundwater elevation does not display any tidal influence.

G.4 VERTICAL GRADIENTS

The continuous water level recordings at the four well pair locations allows for a continuous monitoring of the vertical gradient with respect to tidal oscillations (Figures G-46 through G-49). Recall from Section 2.3.4 that the sign convention in this report for vertical gradients is that positive gradients indicate the potential for downward flow and negative gradients indicate the potential for upward flow. Well pair GDE005/05D exhibited upward gradients during the entire study period which decreased in magnitude between November 11 and November 28, 1996 (Figure G-46). An upward gradient at this location is expected since it lies within 95 feet of the river, a natural groundwater discharge zone. Conversely, well pair 530002/02D lies further away from the nearest river boundary and exhibited a downward potential throughout its monitoring period (Figure G-49). The large increase in the gradient between December 1 and 2, 1996 reflects the greater but coincident increase in water level at the shallow well as opposed to the deep.

Well pairs GDE025/25D and GDE023/23D exhibited reversals in vertical hydraulic gradient during the study period (Figures G-47 and G-48, respectively). Of the two well pairs, the

magnitudes of vertical gradients were greatest at GDE023/23D. At both locations, upward gradients predominated in general except during many high-tide periods, which is consistent with the hydrogeologic role of the Cooper River as a discharge zone. These downward gradient trends are likely localized in extent and were more common and greater in magnitude at GDE023/23D. The suspected greater degree of anthropogenic alterations and extent of fill deposits at the GDE023/23D well pair as compared to well pair GDE025/25D may account for these differences.

G.5 RECHARGE EVENTS

Daily precipitation data, obtained from the USGS weather station and continuous water level recording station in Zone C at well NBCCGDC003 during the monitoring period, is presented as a bar graph in Figure G-17. Rainfall was less than 0.2 inches except for an 0.86-inch event on November 8, 1996 and 1.06 inch event on December 12, 1996. Since precipitation effects would be more evident in wells exhibiting limited or no tidal influences, locations 55102D, 02301D, 55902D, 530002, and 53002D were only considered. Refer to Table 2.14 for the monitoring periods of these well locations and which precipitation event could be present during those times.

The anomalous groundwater level increases at 12/2/96 in 530002 and 53002D coincide with the 1.06-inch rainfall event. Since these locations show no correlation with barometric pressure changes, recharge is considered the only explanation for these increases. The rise in groundwater elevation at shallow well 530002 is greater and slightly precedes that seen at deep well 53002D, suggesting that groundwater recharge accounts for these anomalous increases in elevation. Since these locations are covered in either asphalt or concrete, its unclear how a relatively small recharge event of this magnitude could affect the subsurface so quickly. A 12-inch shallow storm sewer is within approximately 20 to 30 feet of the well pair. Invert elevations decrease from 5.8 to 3.0 ft msl along this segment; the deeper section of this sewer is at or below the water table. Potential leaks in the sewer line would artificially recharge the shallow aquifer. The presence of

highly permeable Qs and Qso deposits and deeper elevations at this location makes the rapid propagation of this recharge in the deep well reasonable.

Location 55902D also displays increasing groundwater elevation during the high precipitation event of December 1, 1996. However, given the 80% BE at 55902D, it cannot be fully substantiated that the rise in groundwater elevation reflects the precipitation event or decreasing barometric pressures during that period.

It is unclear whether or not the anomalous increases in water levels at 55102D at November 6 and 12, 1996 are precipitation effects. If so, the increase at November 12 would correlate to the November 8 rainfall event, a lag time of about four days would seem reasonable. By this reasoning, the November 6 increase in water level would correlate to a precipitation event before the monitoring period. Additional data may clarify this possibility.

If the increases in groundwater level at locations 530002 and 53002D are not influenced by storm water sewers, then it is clear that the recharge rate at this location is substantially greater than anticipated. To date, there is no site-specific recharge rate based on physical data collected at NAVBASE. An estimate of 1 inch/year is being used to calibrate a USGS groundwater flow model and falls wthin the literature range of 0 to 4 inches/year (Aucott, 1988). The data from 530002 and 53002D suggest that the rate may be closer to the higher end of the 0 to 4 inches/year range in this locale. More specific recharge estimate data would be required to further define recharge at NAVBASE.

G.6 CONCLUSIONS

The tidal influence study has provided a wealth of data regarding tidal amplitudes, lag times, temperature profiles, vertical gradients, and recharge events. The following conclusions can be made:

- Tidal influence was generally limited to 300 feet from the waterfront.

- Tidal response in wells was primarily influenced by geologic units within the screened interval.

- A tidal model predicted tidal amplitudes and time lags to compare with observed responses. This allowed for increased definition of the aquifer input parameters in several locations and the speculation that anthropogenic sources were influential at others.

- Storm water sewers near GDE023 and GDE005 are thought to influence tidal responses at these locations. Rapid groundwater recharge at well pair 530002/02D is thought to have been enhanced by a shallow storm water sewer in that locale. The lack of continuity in the quay wall near GDE24D might account for the underpredictions of its tidal amplitudes.

- Tidal lag times averaged two to three hours despite geologic heterogeneity between locations and distances from the tidal source.

- Groundwater temperature profiles (Figures 2-11A through 2-11D) displayed oscillations in groundwater temperature coinciding with tidal oscillations at several well locations, most notably GDE023, GDE025, GDE25D, GDE005, and 530002.

- The distribution of vertical gradients in general reflected the role of the Cooper River as a discharge zone with upward gradients predominantly close to the river shoreline and downward gradients at greater distances from the waterfront. The reversal of upward to downward gradients at two locations were coincident with high tides in the river and are considered localized in nature.

Figure G-1
COOPER RIVER ELEVATION AND BAROMETRIC PRESSURE DURING STUDY PERIOD

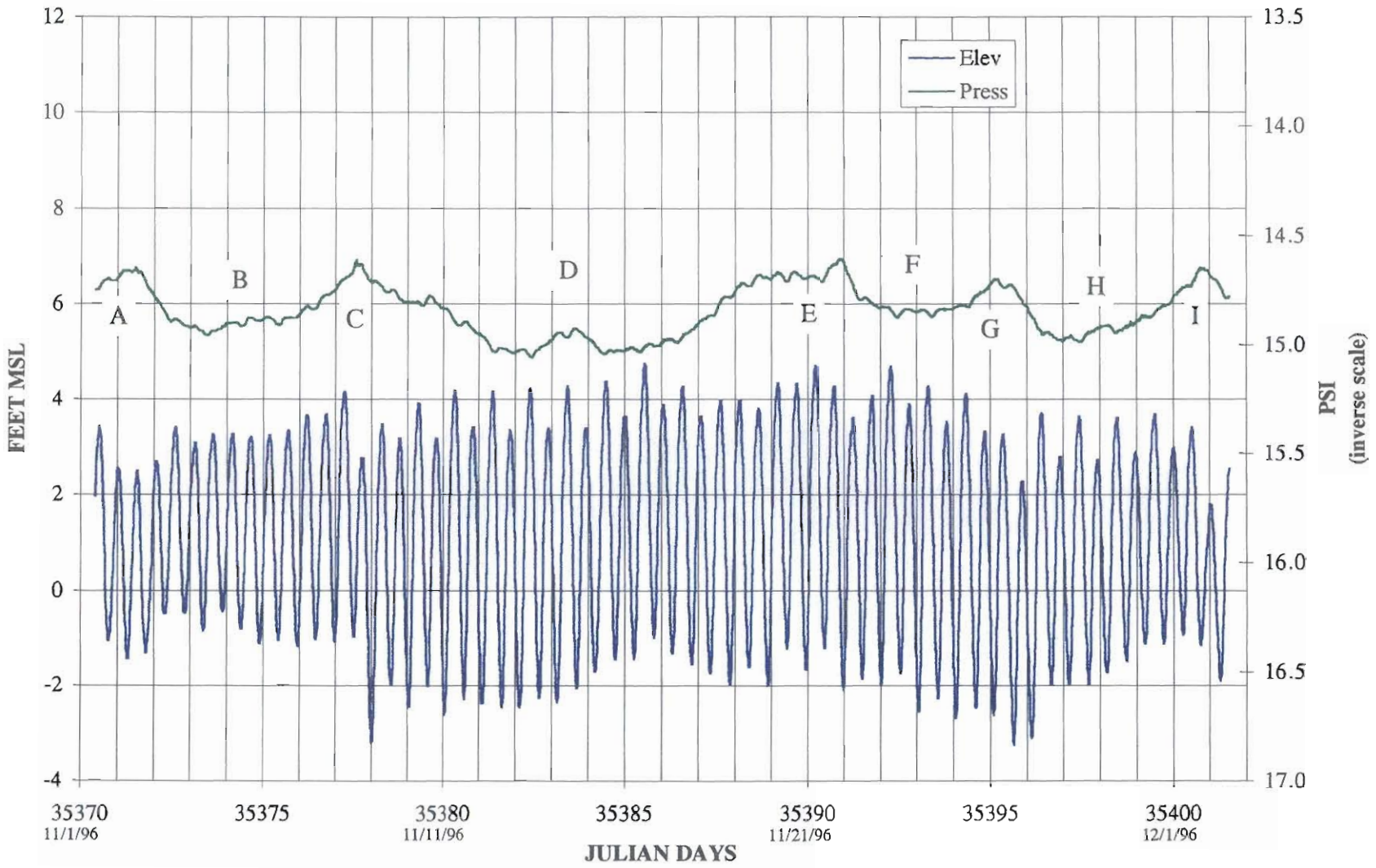


Figure G-2

GDE005

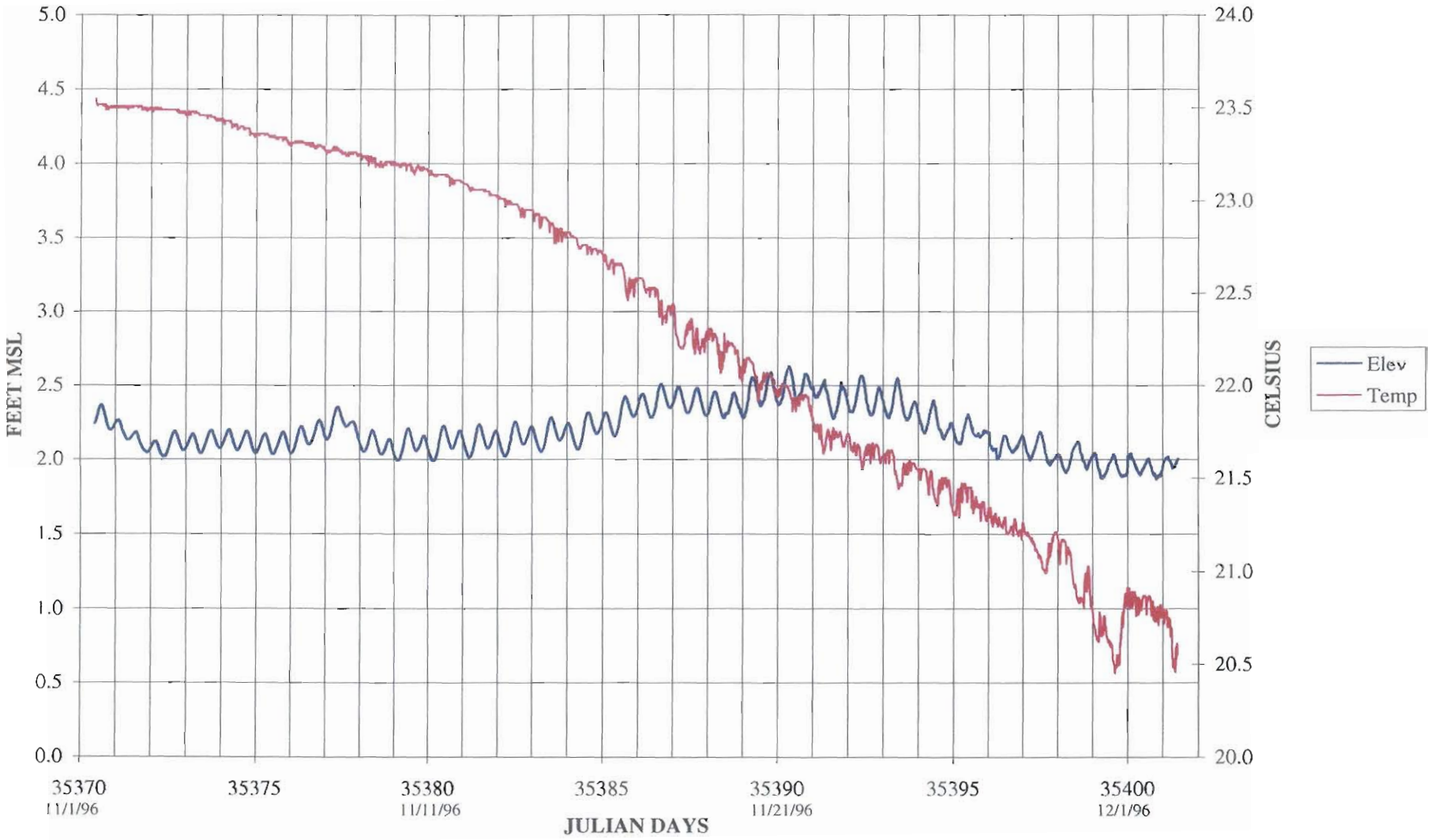


Figure G-3

GDE05D

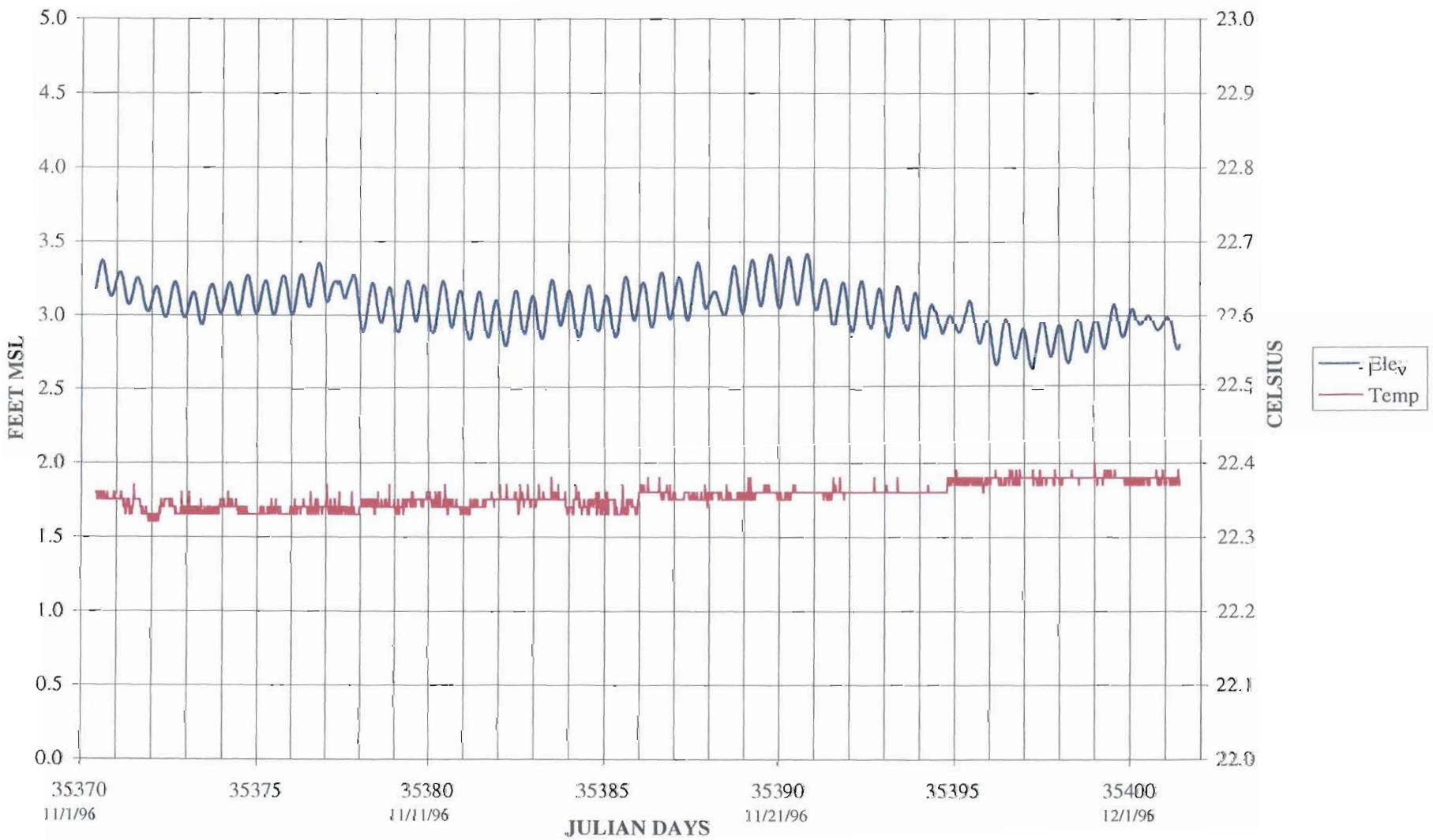


Figure G-4

GDE025

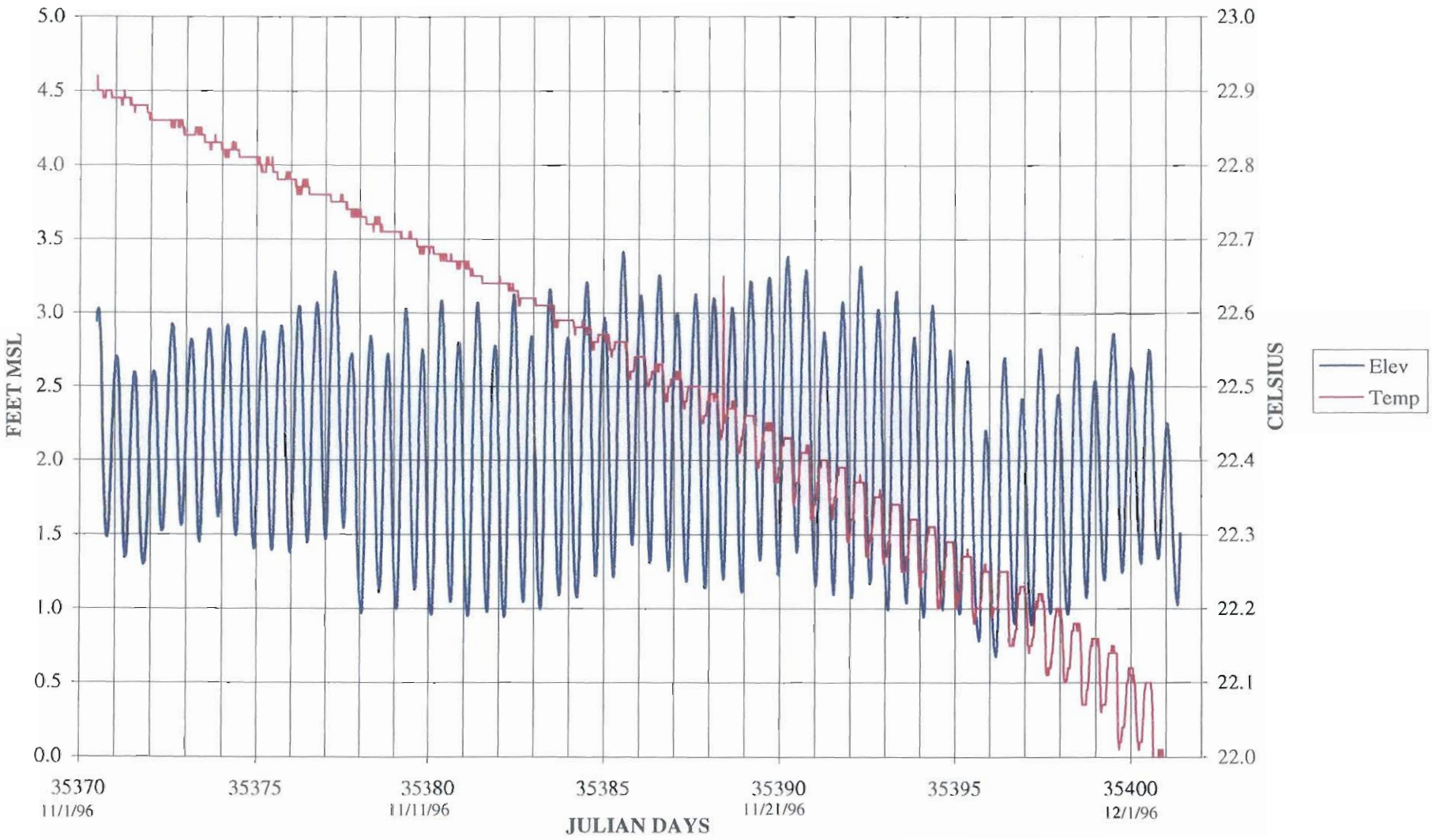


Figure G-5

GDE25D

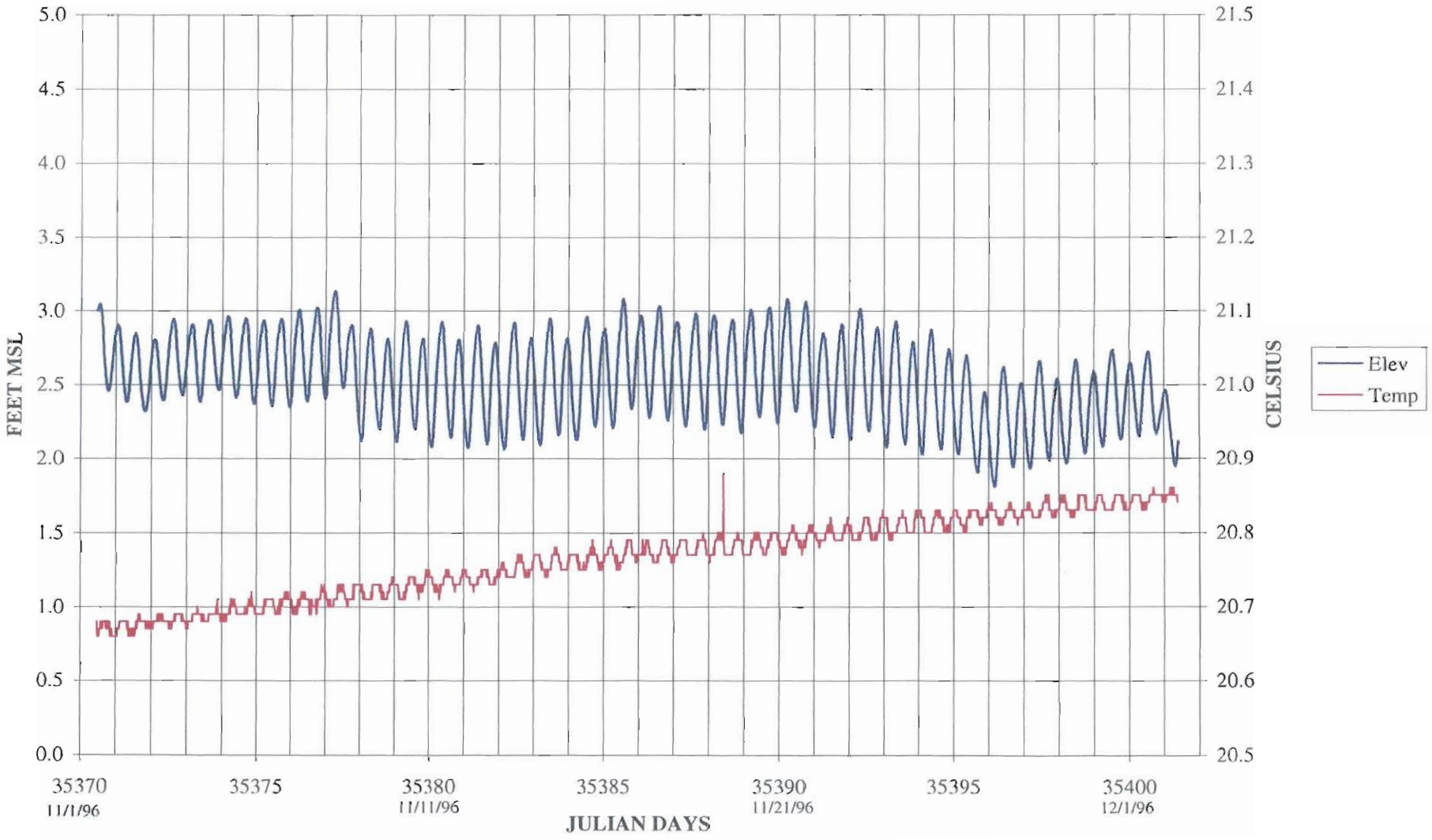


Figure G-6

55102D

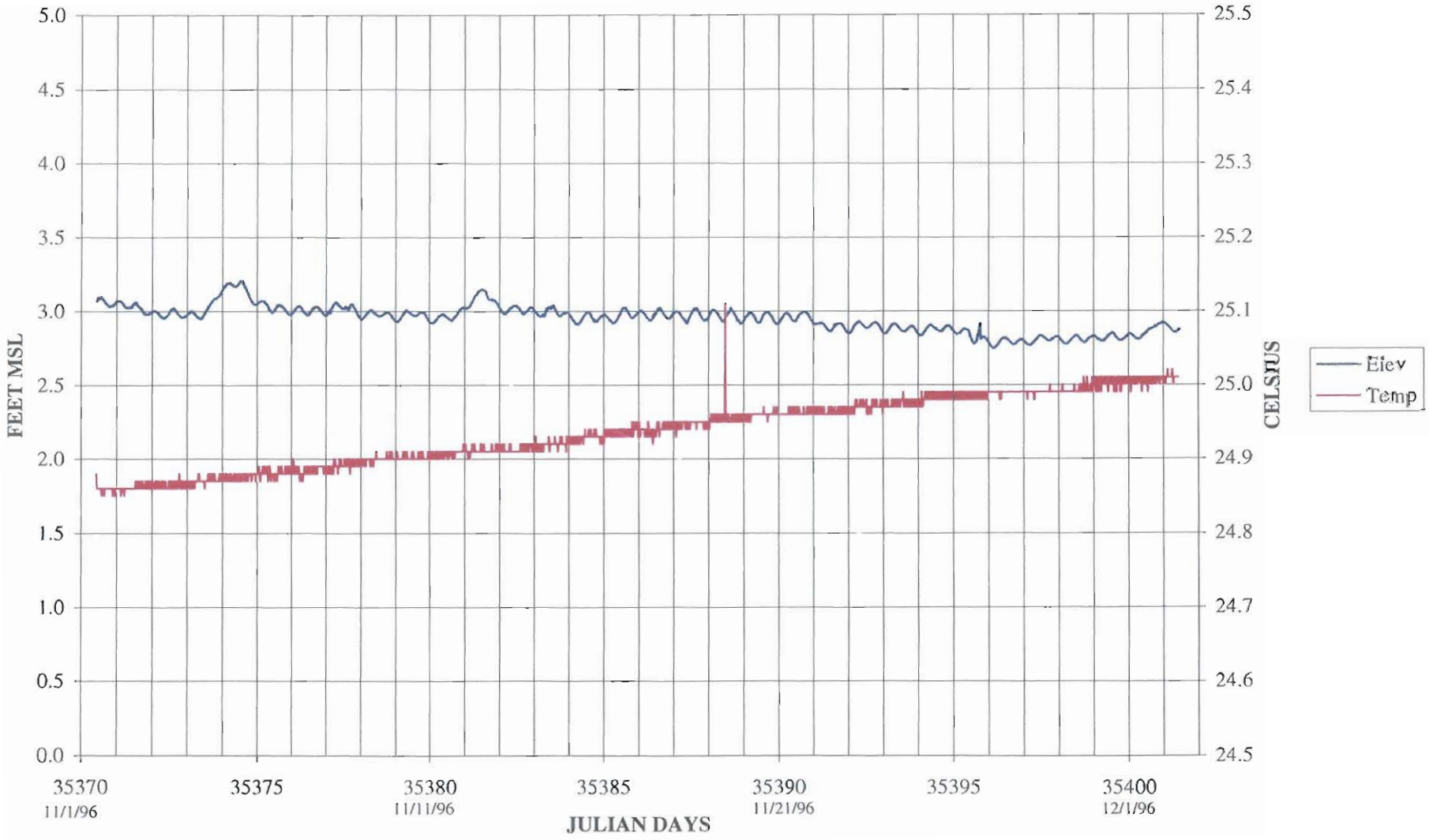


Figure G-7

02301D

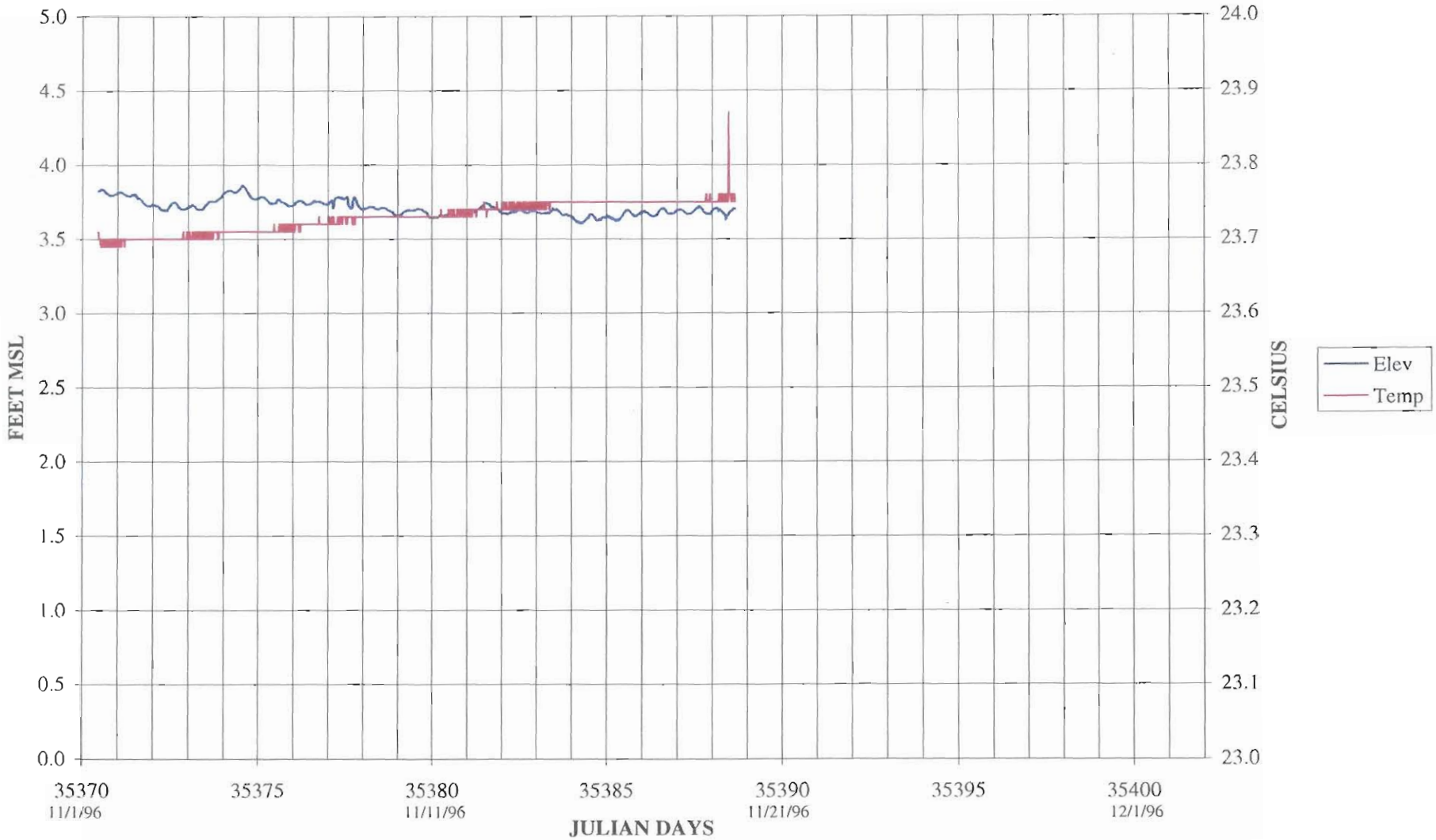


Figure G-8

GDE22D

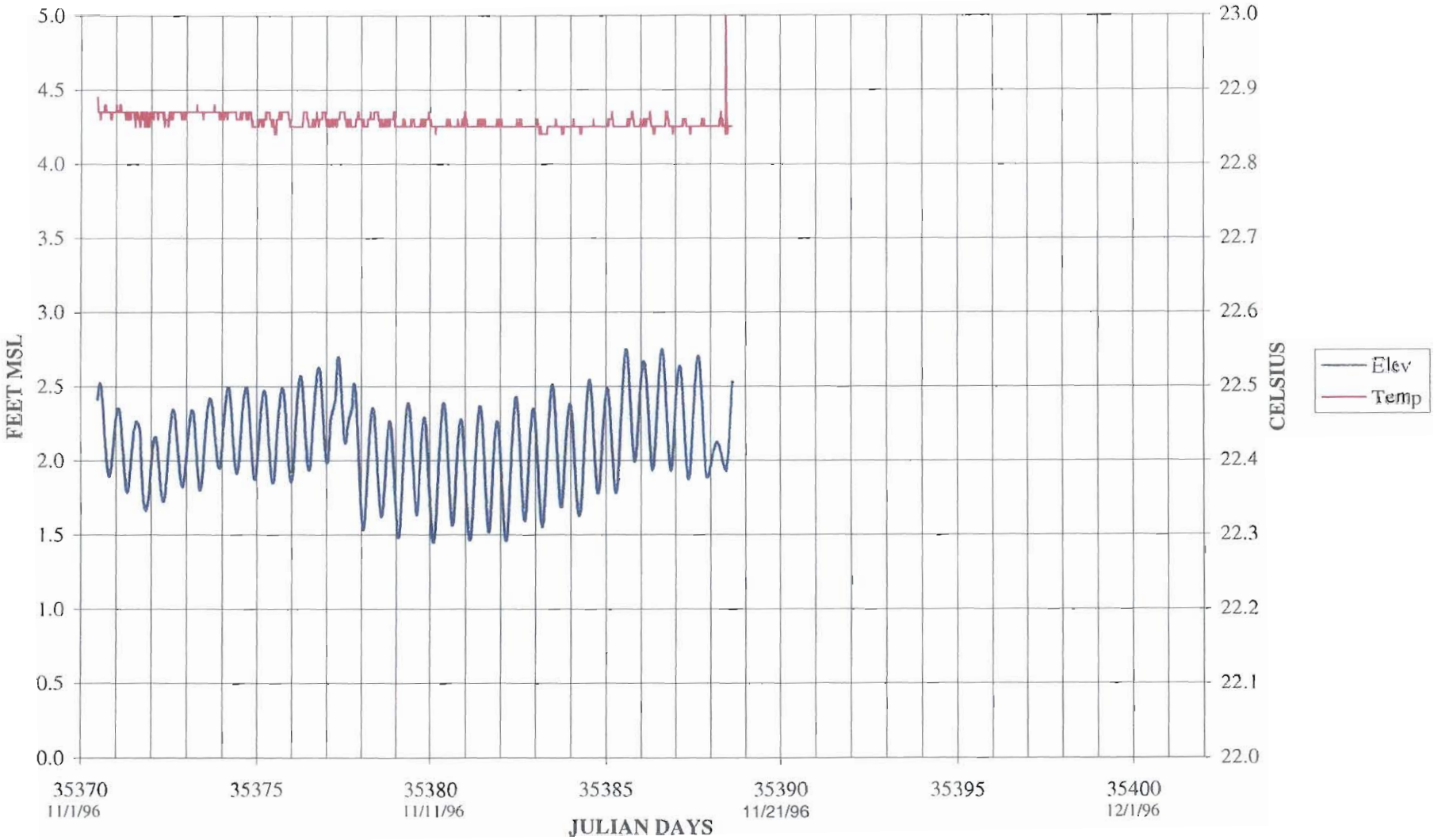


Figure G-9

GDE023

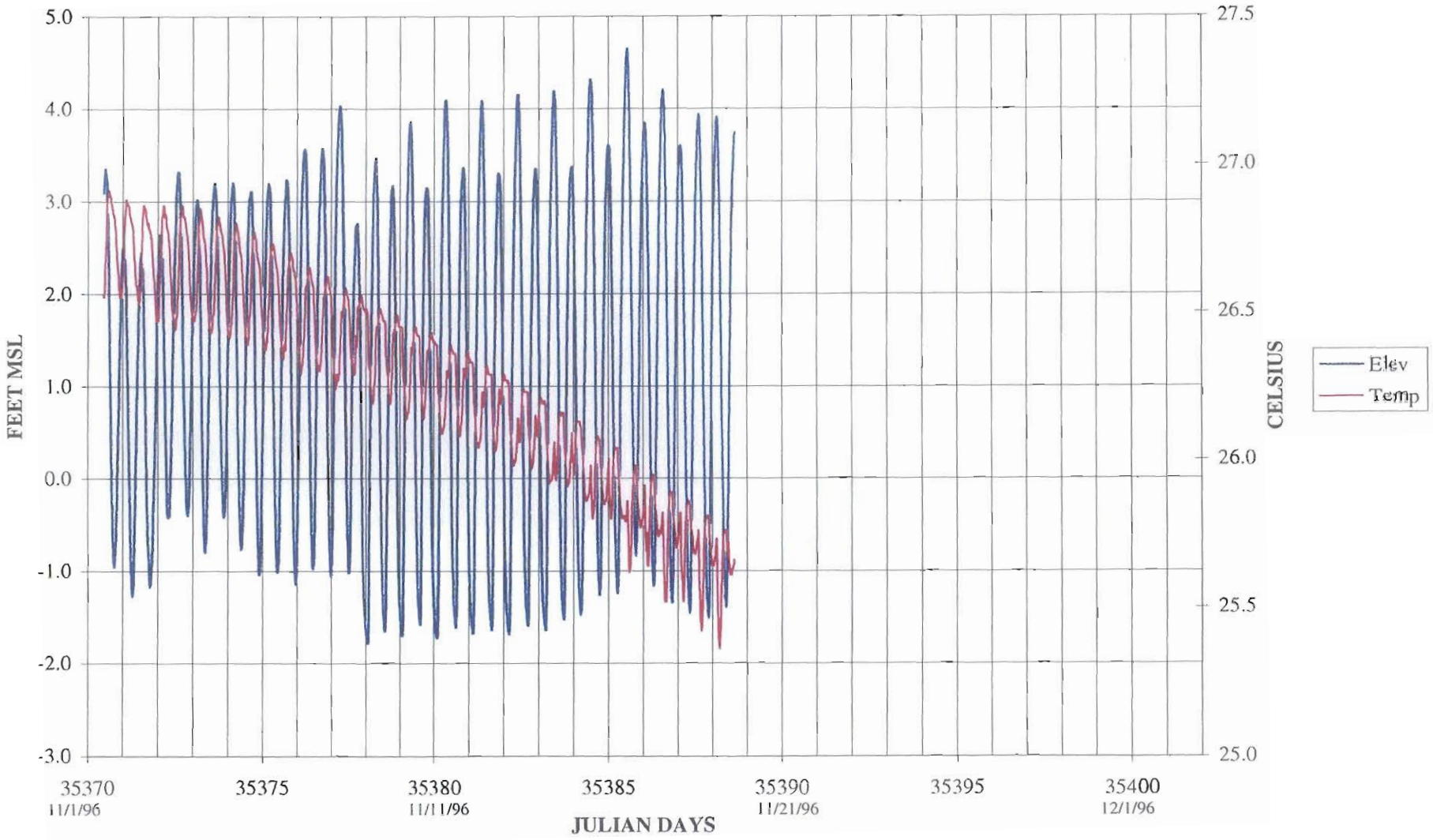


Figure G-10

GDE23D

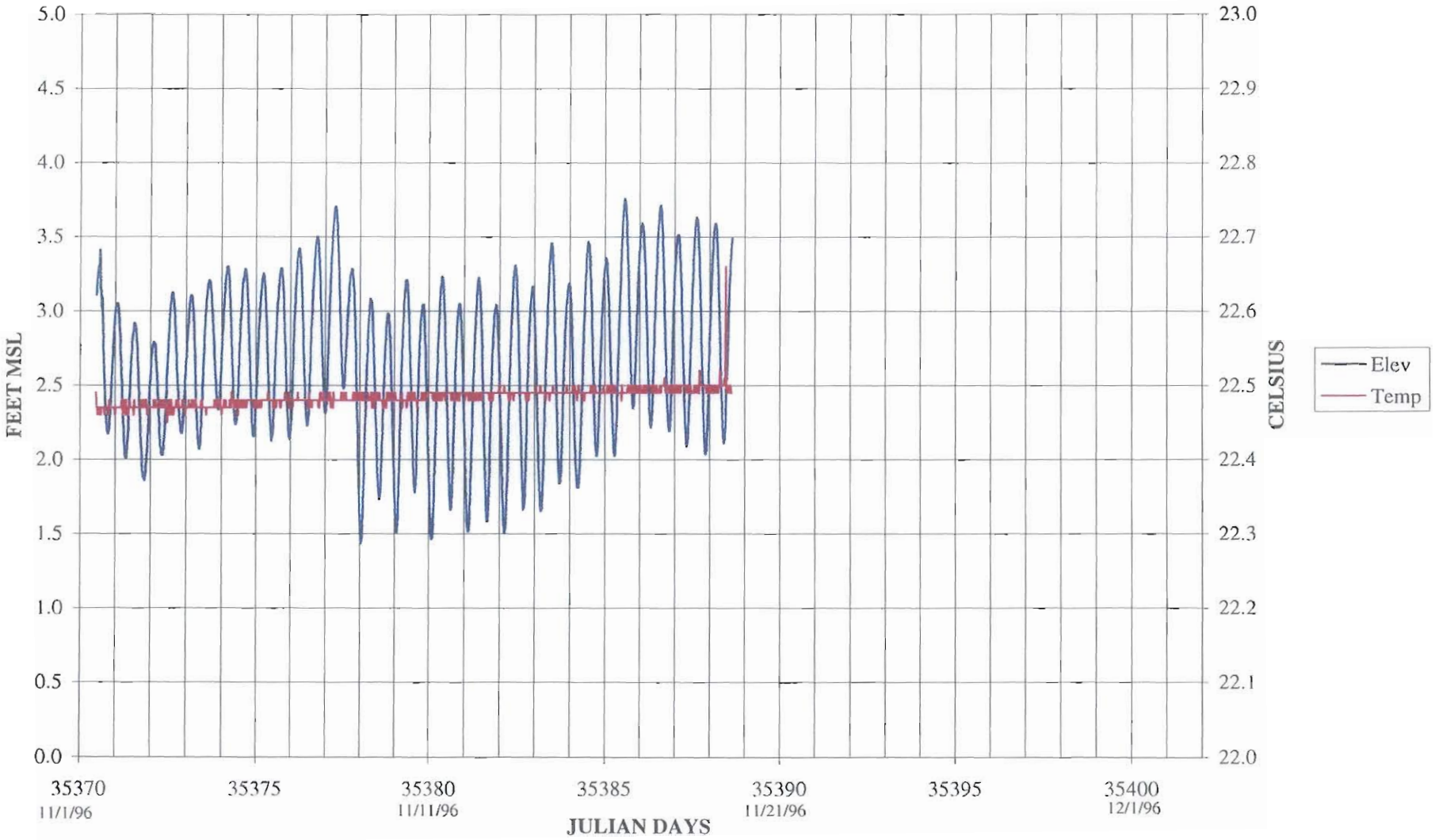


Figure G-11

GDE24D

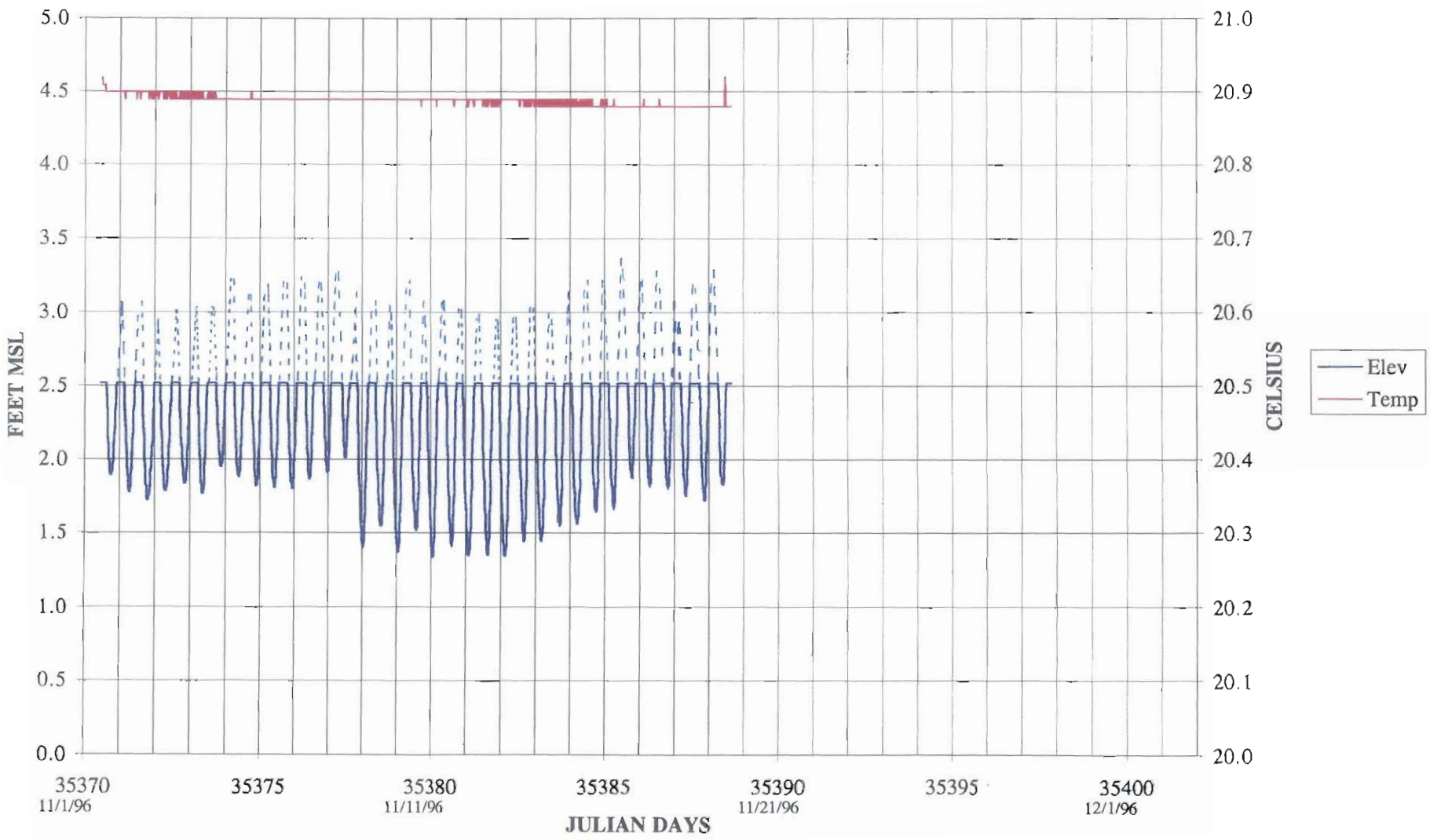


Figure G-12

17202D

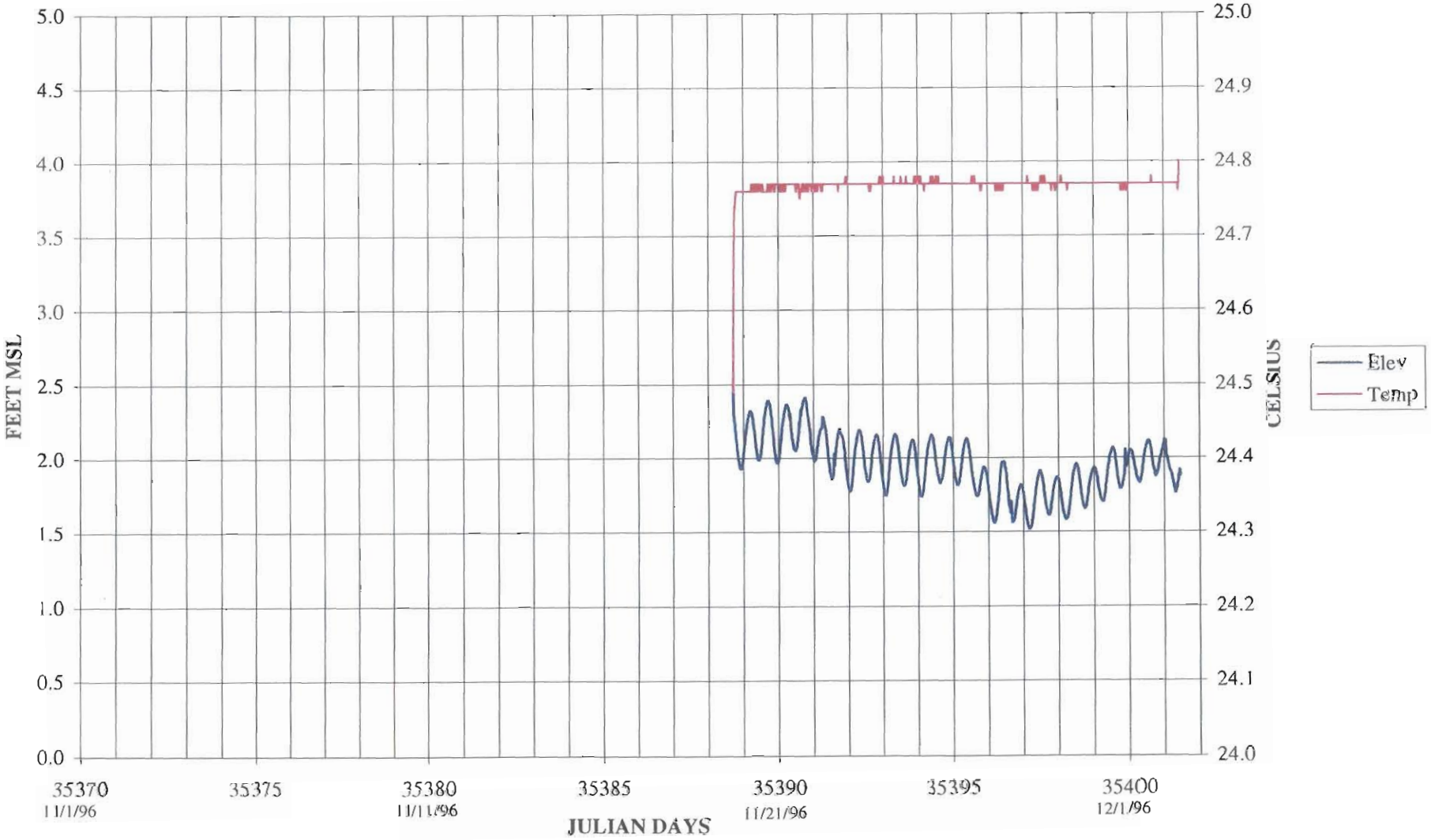


Figure G-13

530002

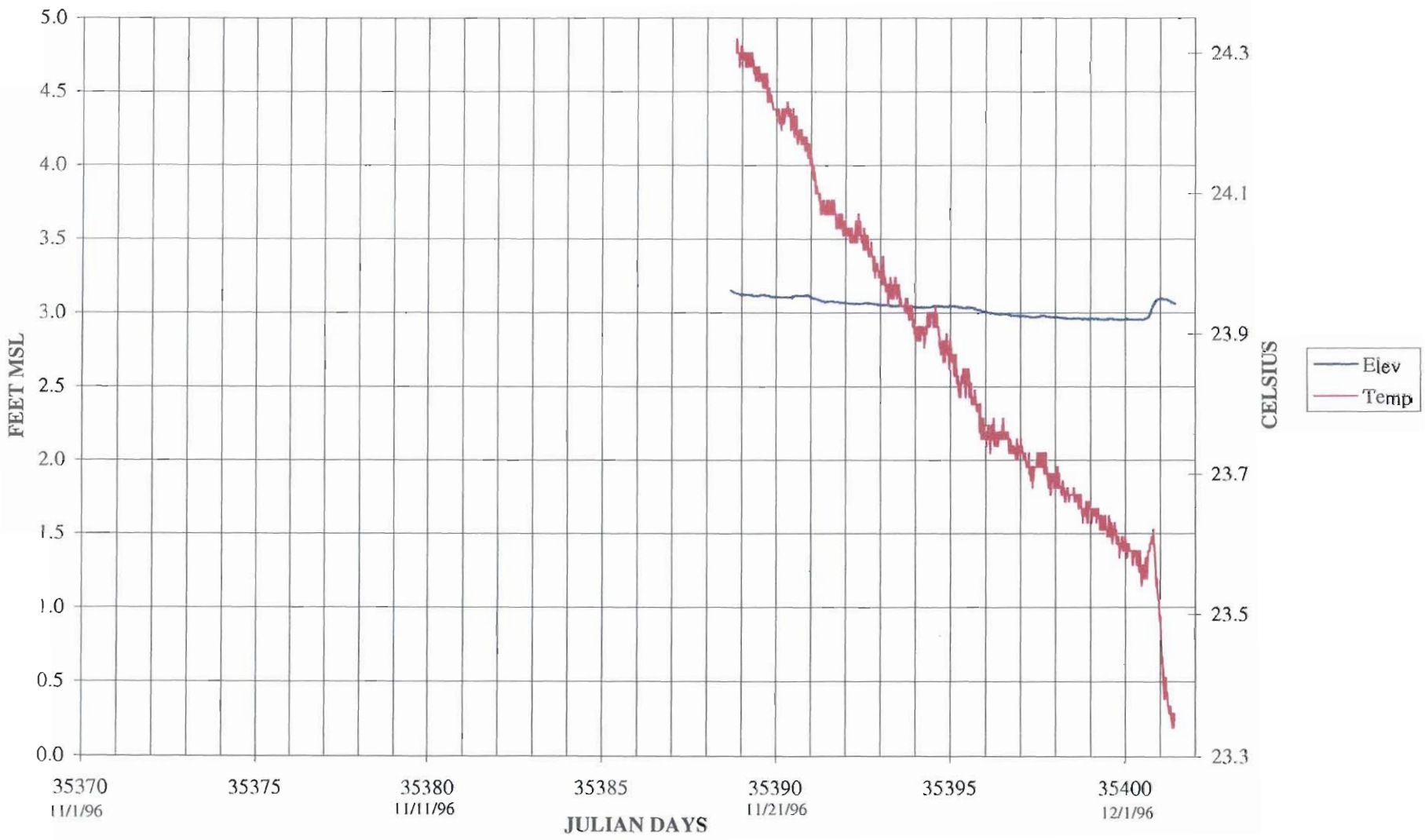


Figure G-14

53002D

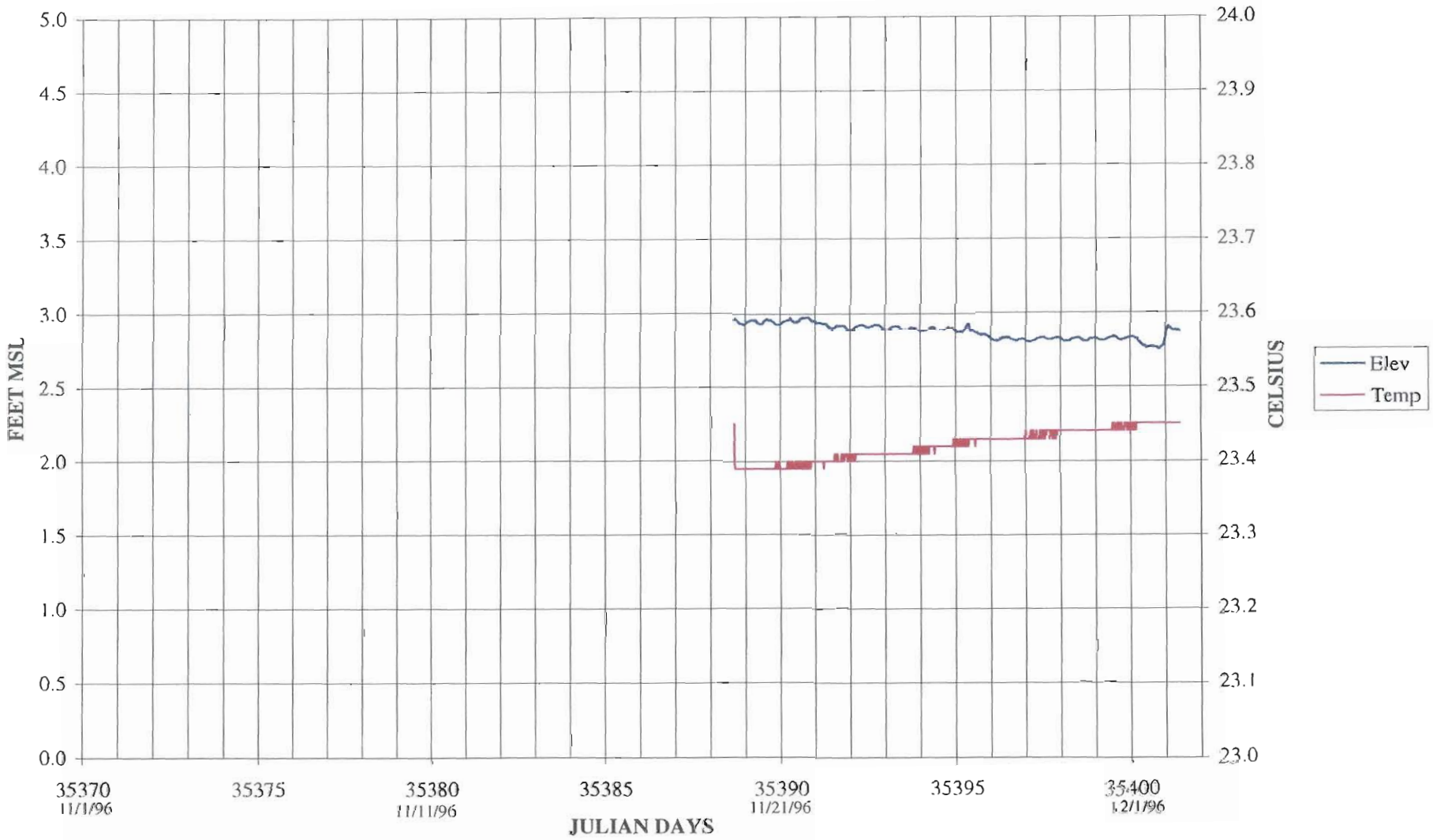


Figure G-15

55902D

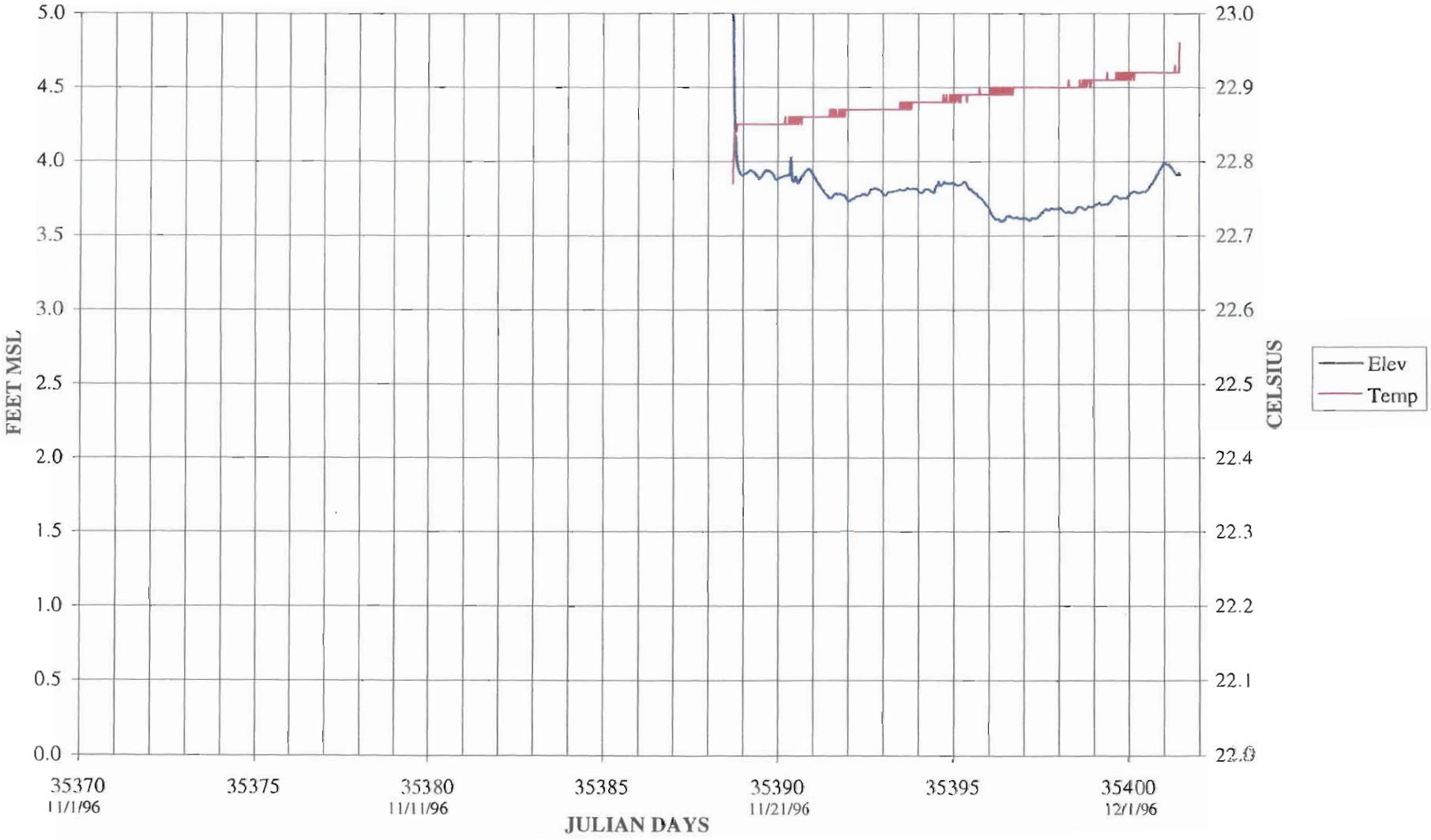


Figure G-16

56601D

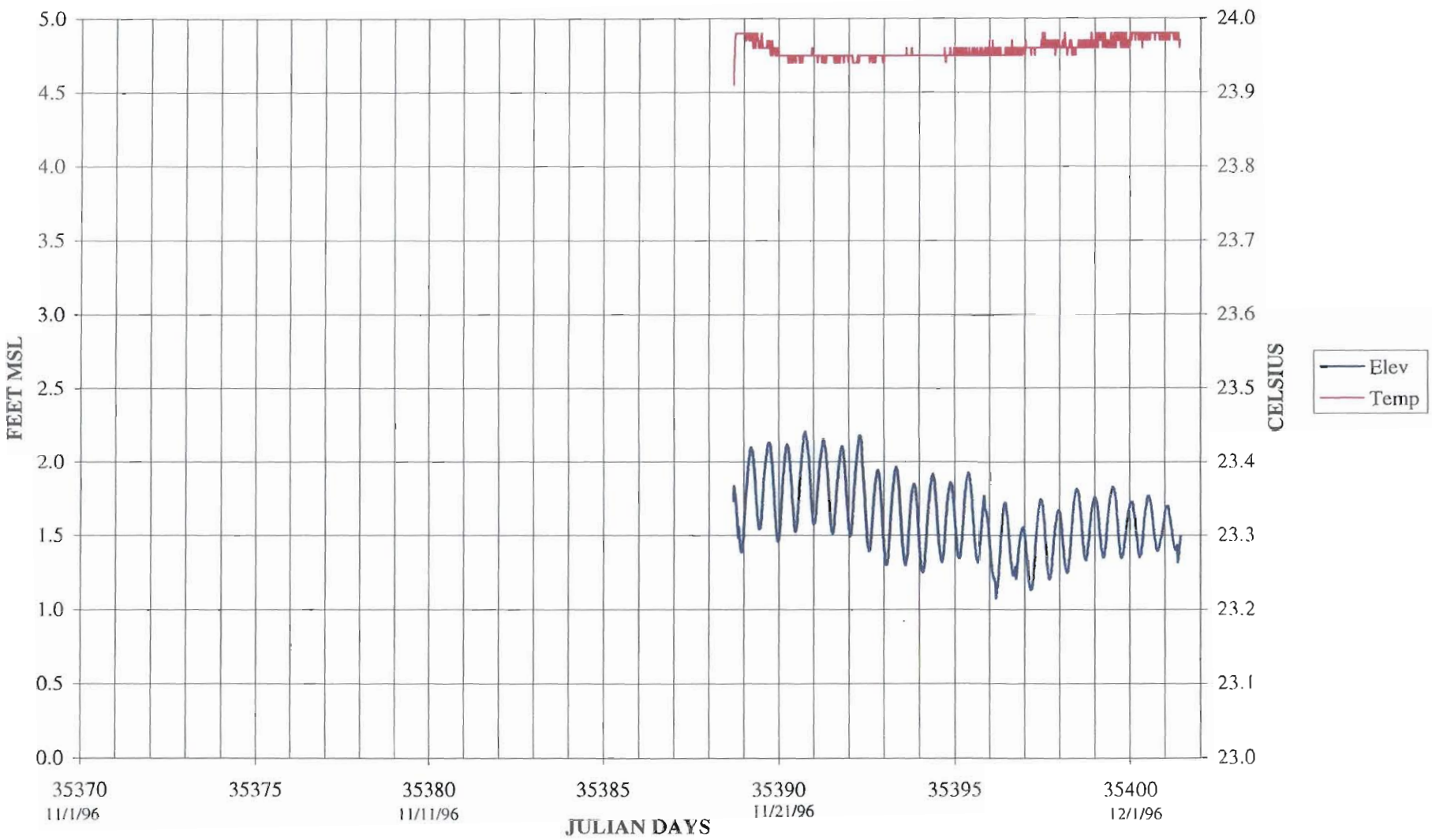


Figure G-17
PRECIPITATION DURING TIDAL STUDY RECORDED AT NBCCGDC003

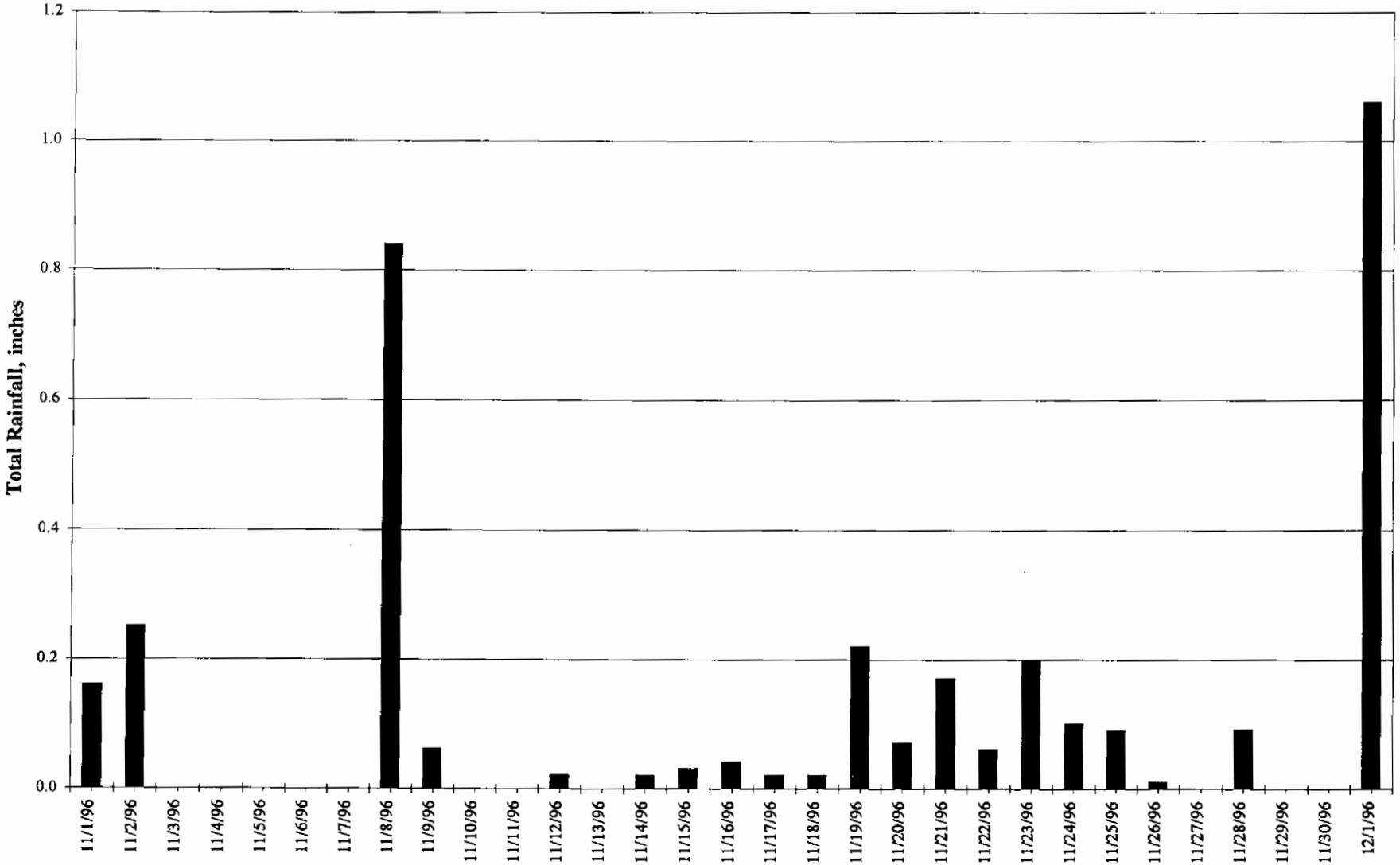


Figure G-18
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE005

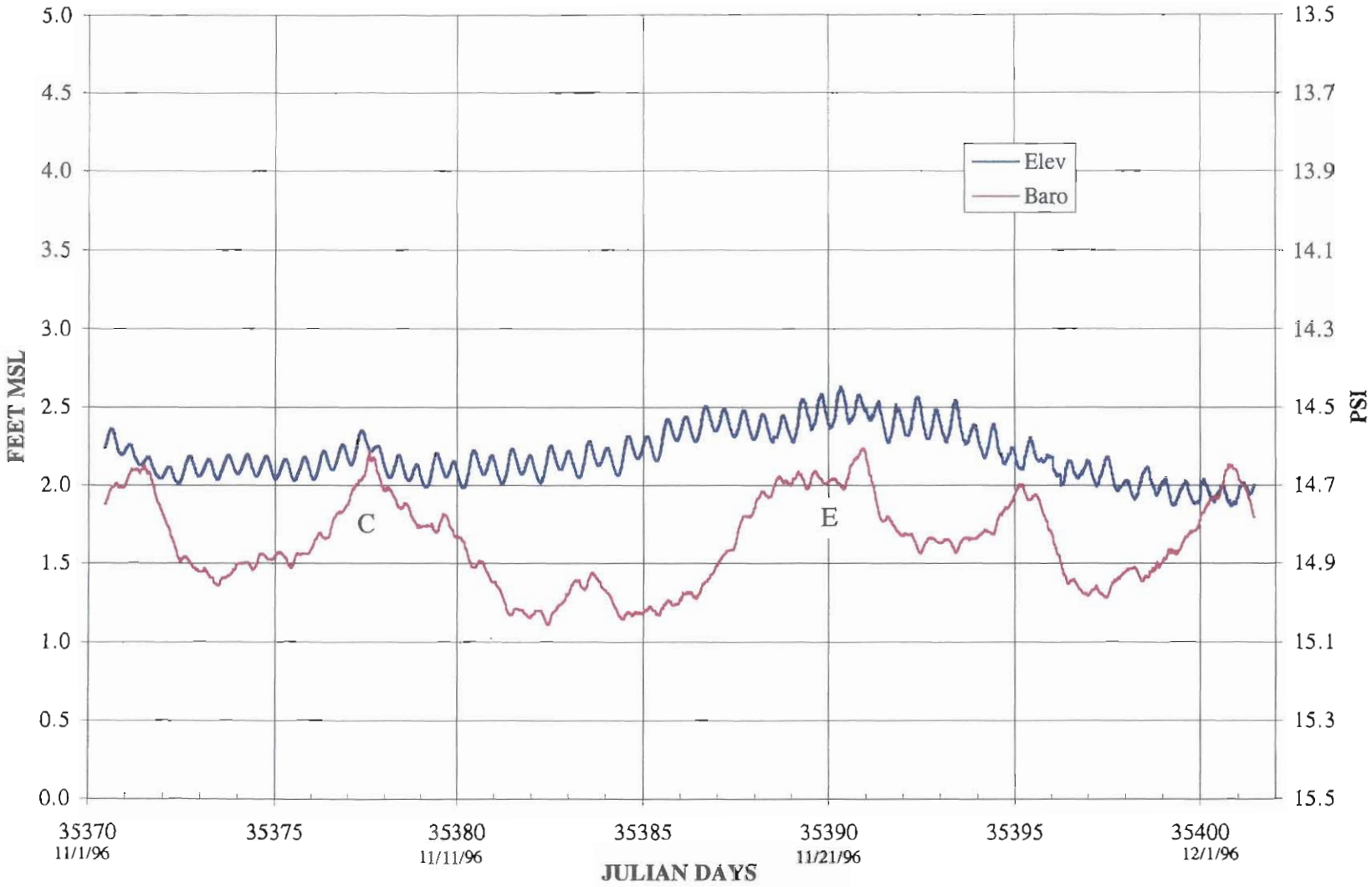


Figure G-19
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE023

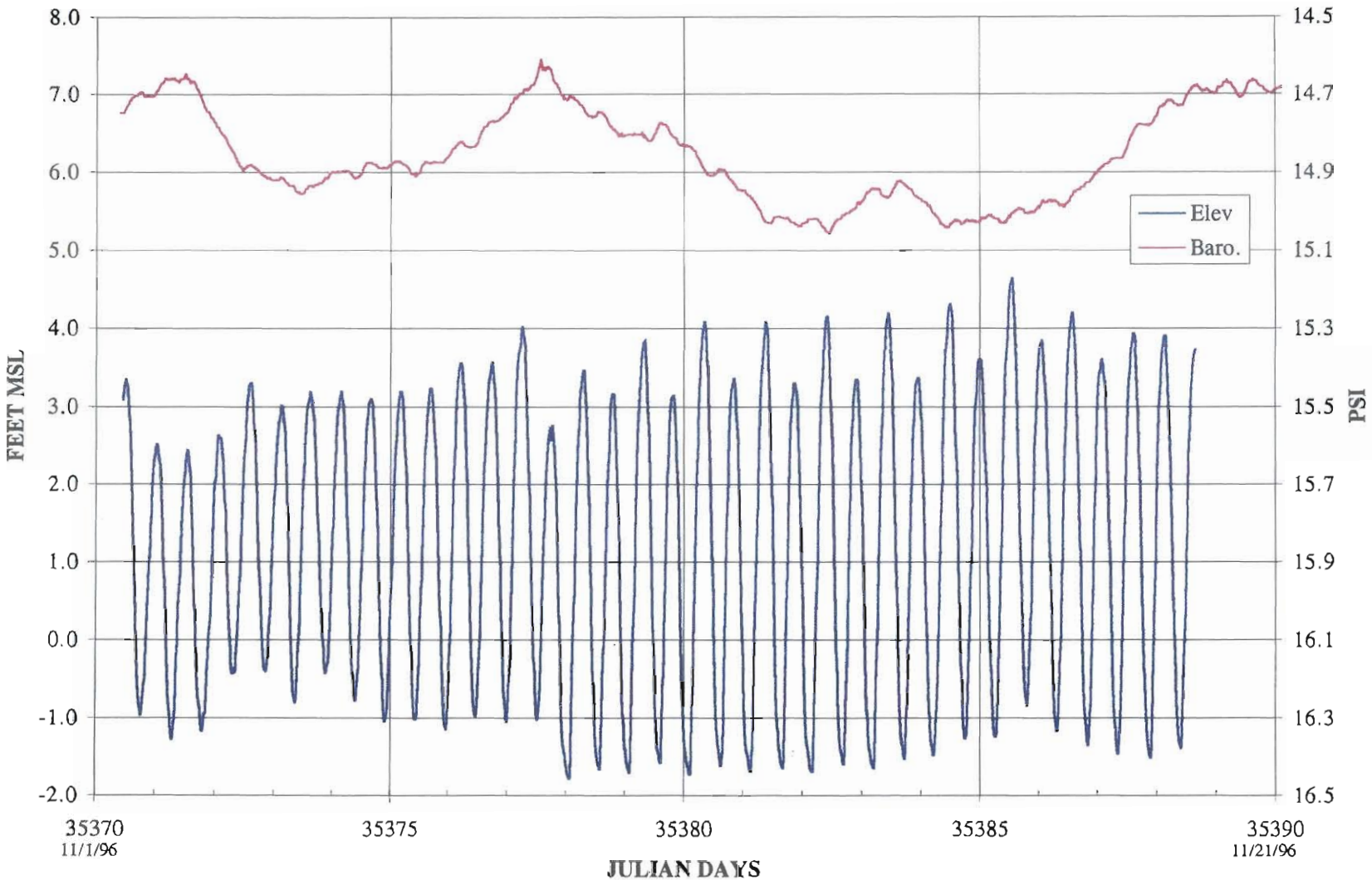


Figure G-20
COMPARISON OF WATER LEVEL ELEVATIONS AND BAROMETRIC PRESSURE AT GDE025

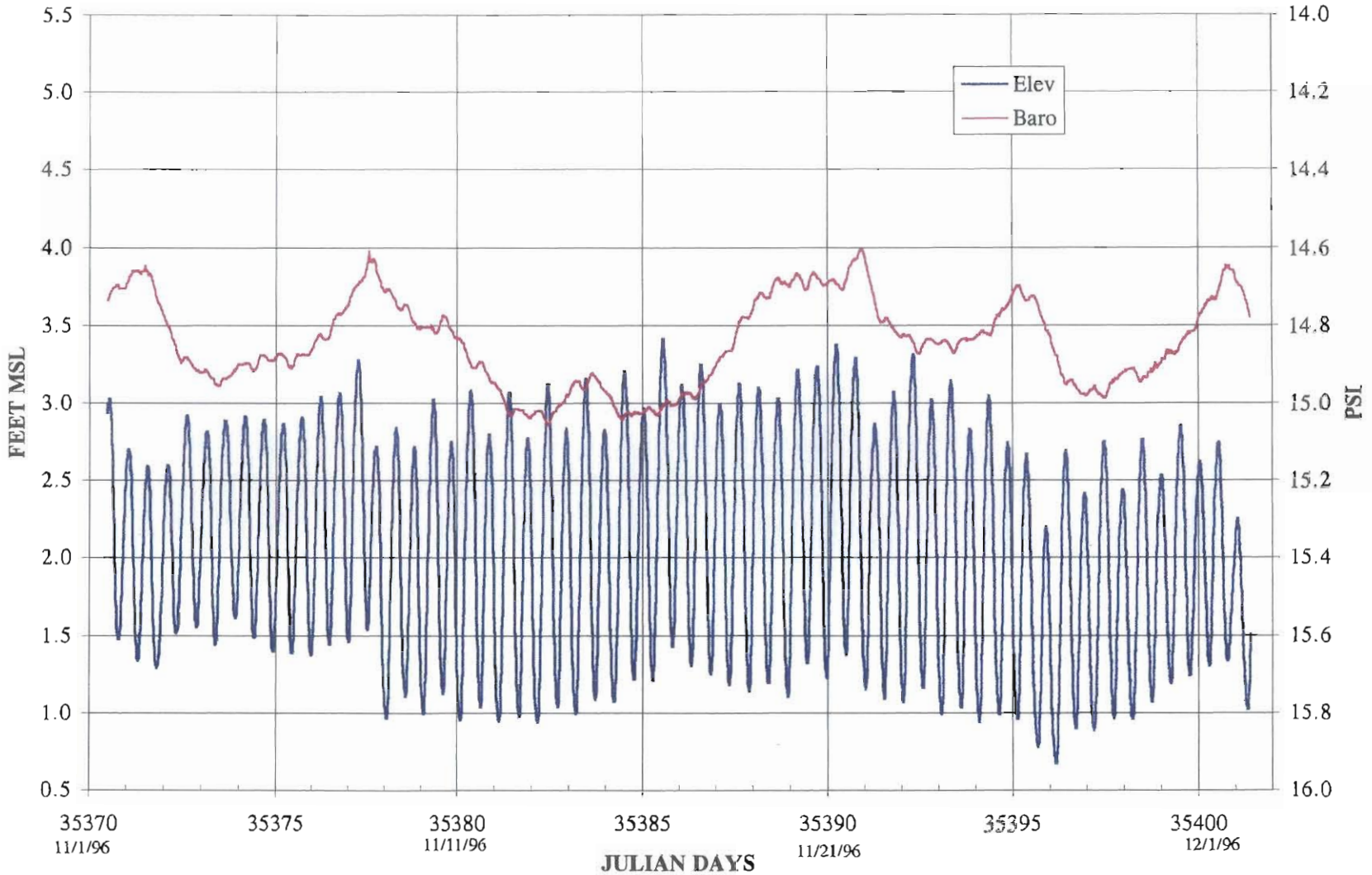


Figure G-21
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 530002

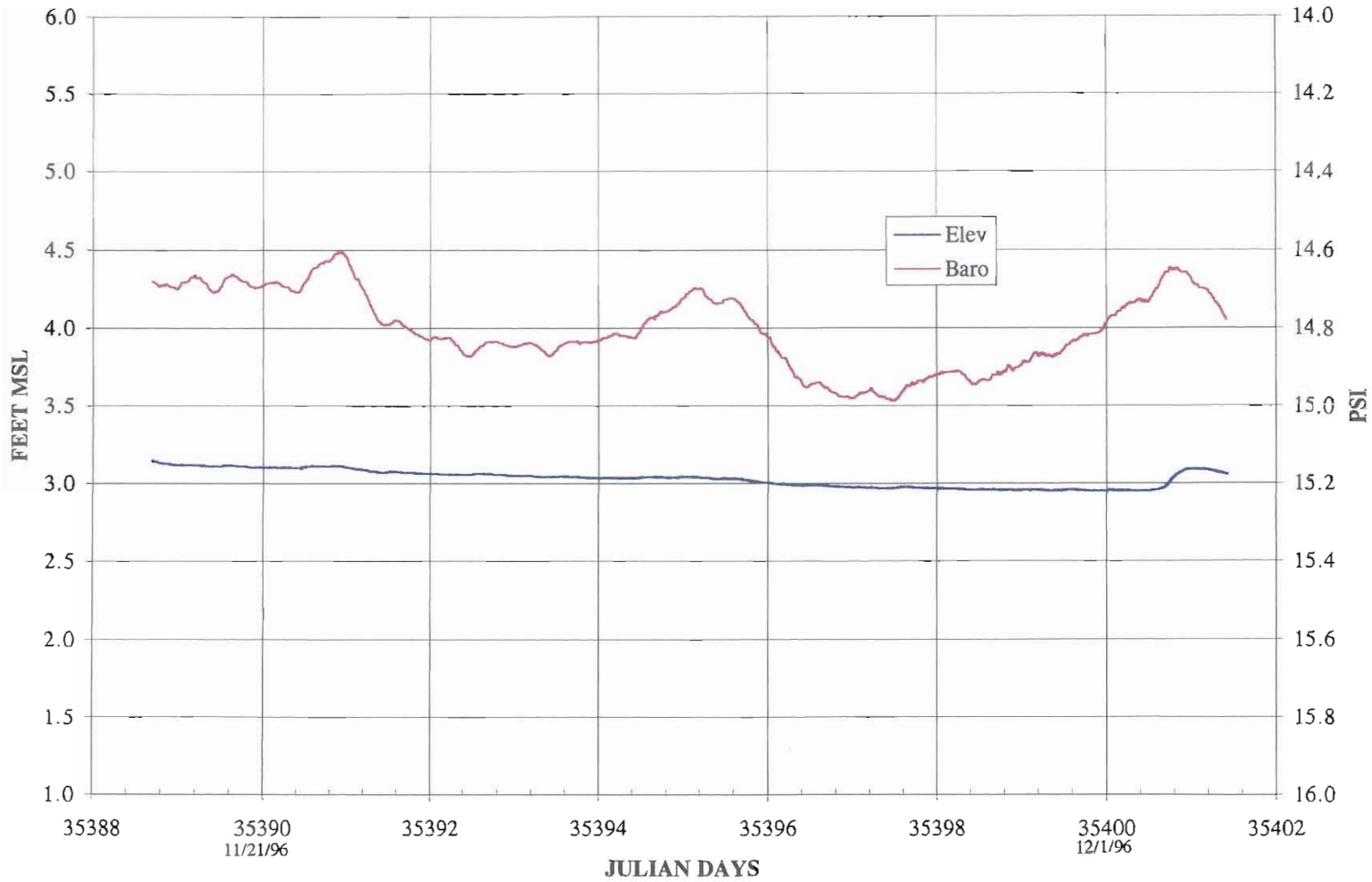


Figure G-22
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE05D

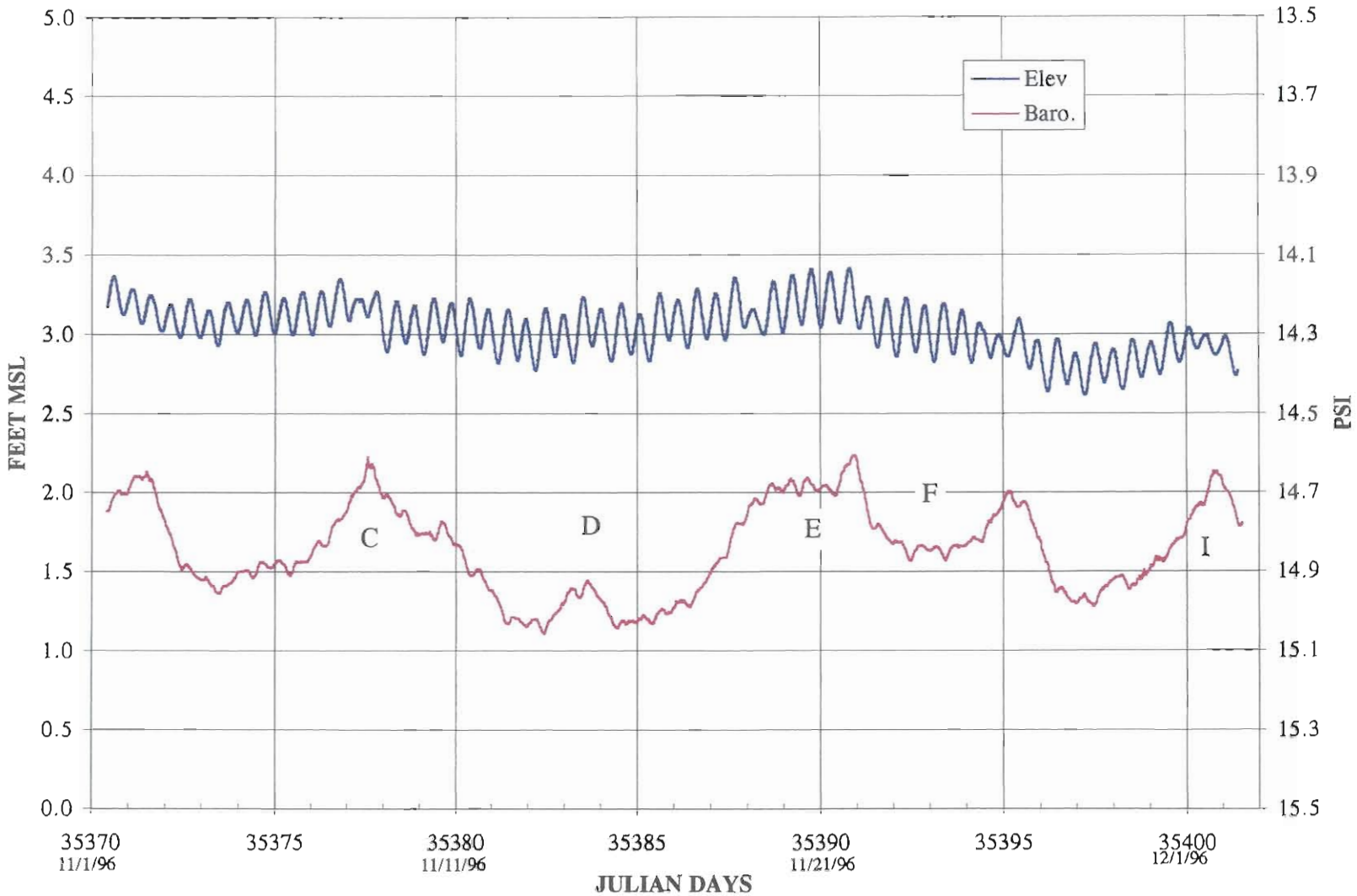


Figure G-23
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE25D

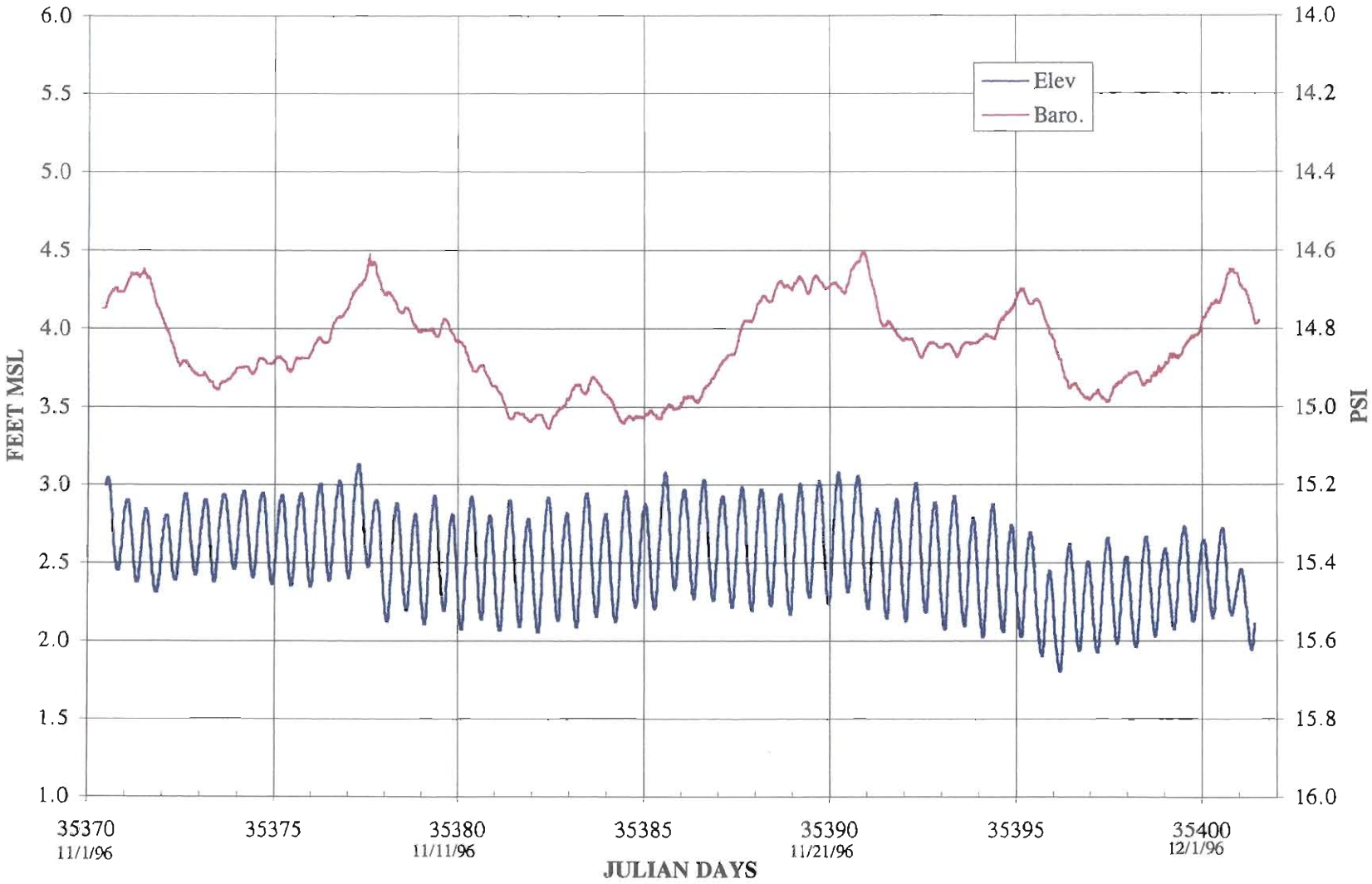


Figure G-24
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE22D

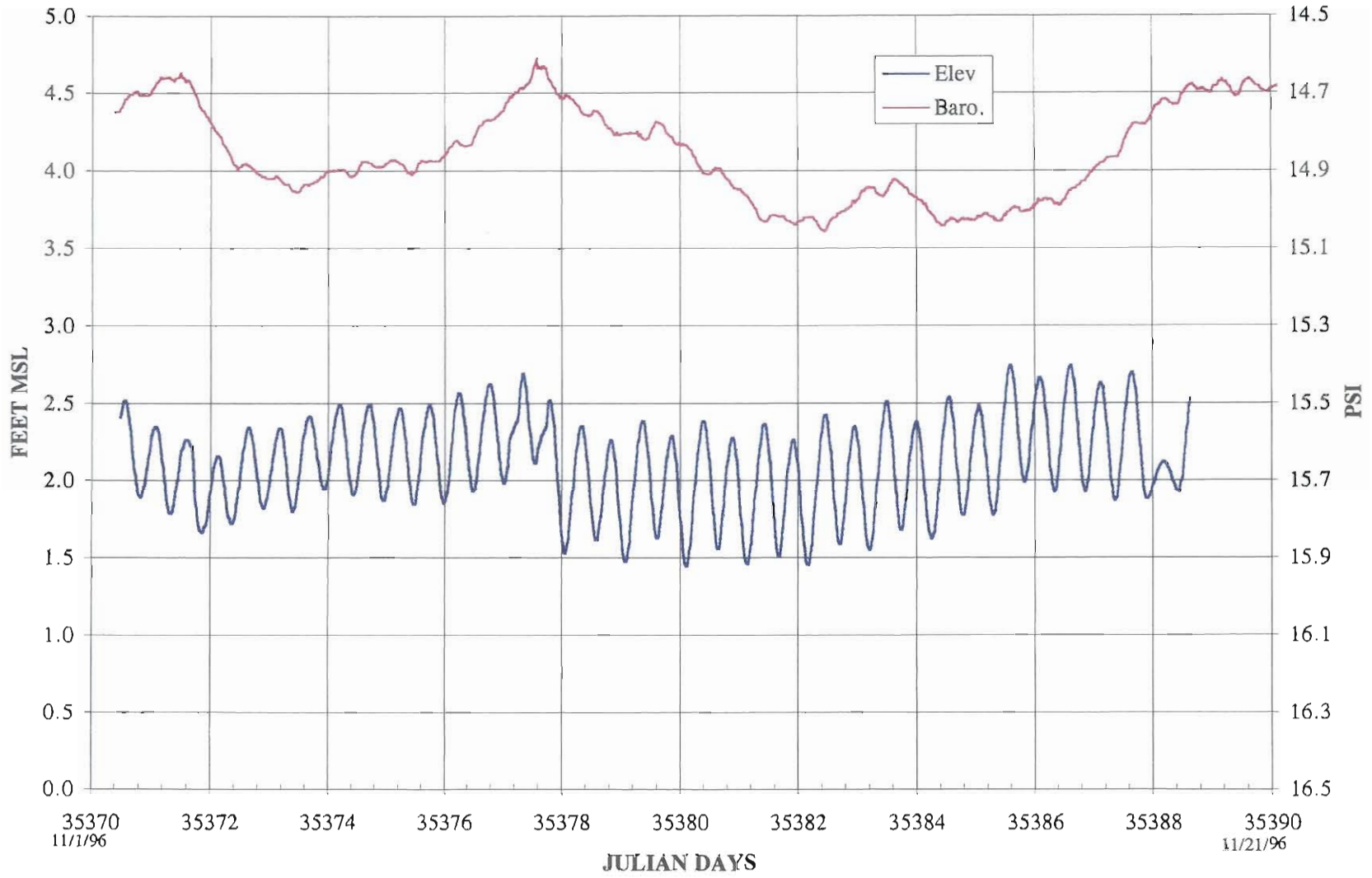


Figure G-25
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE23D

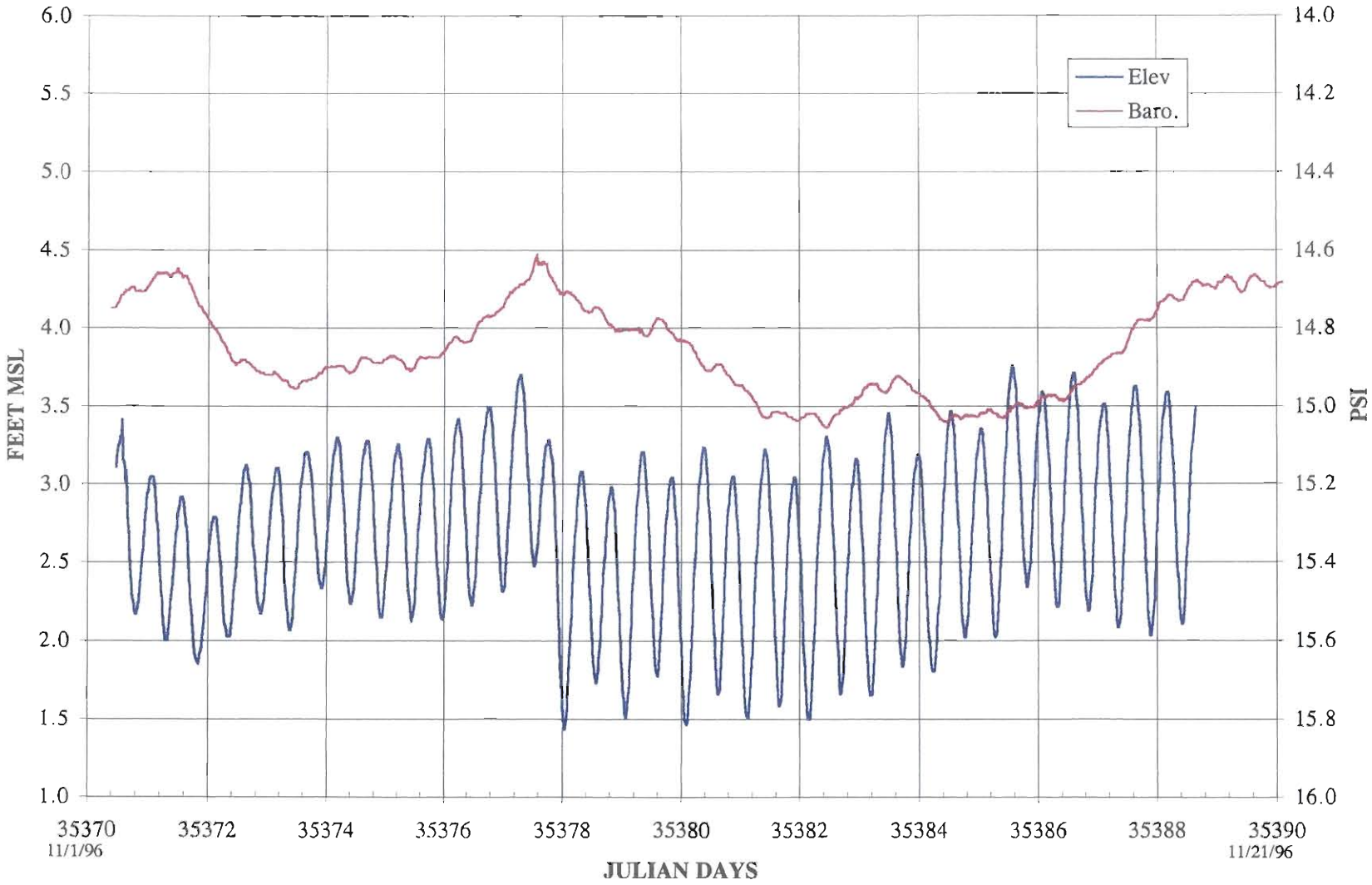


Figure G-26
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 17202D

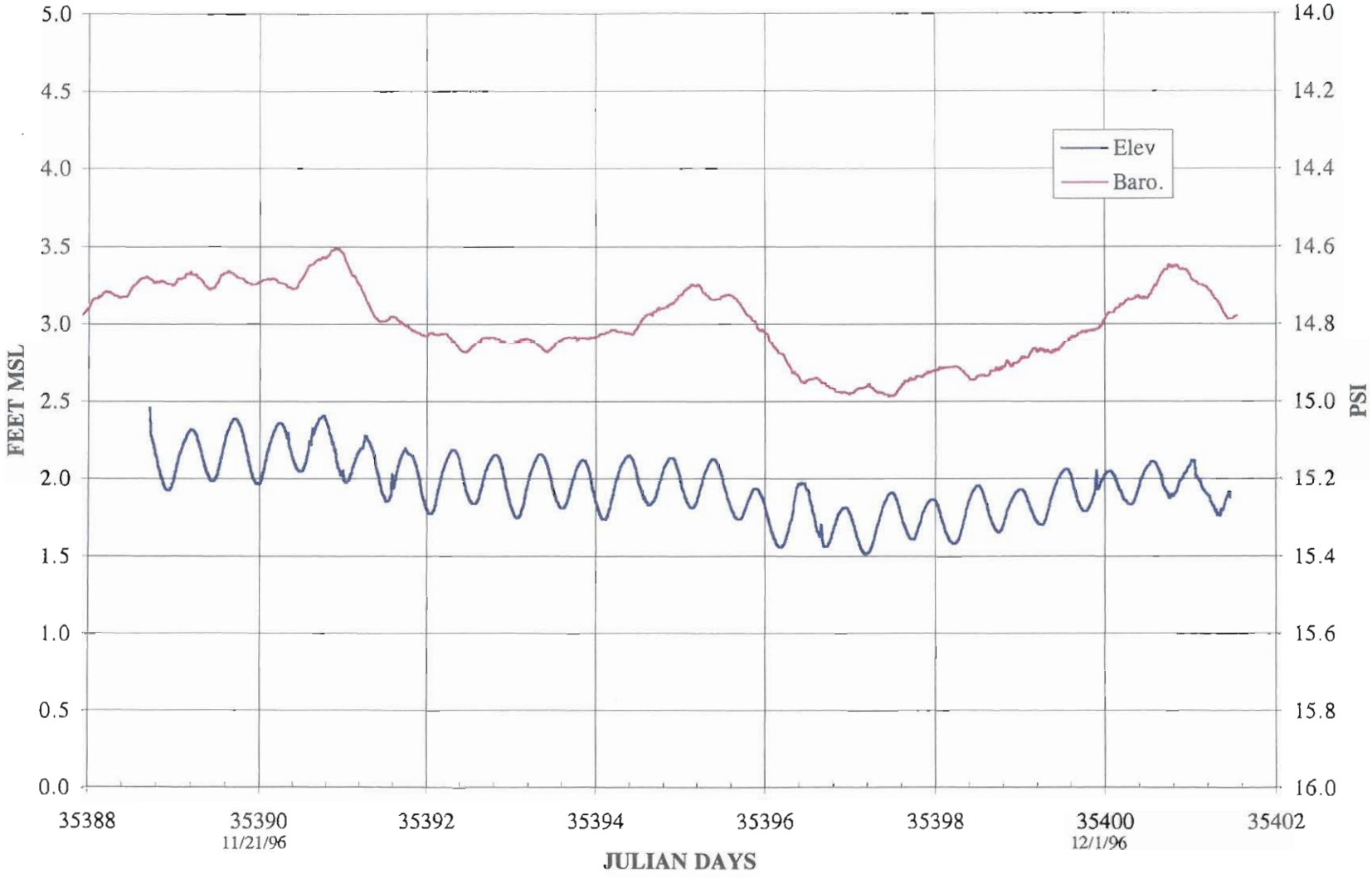


Figure G-27
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 56601D

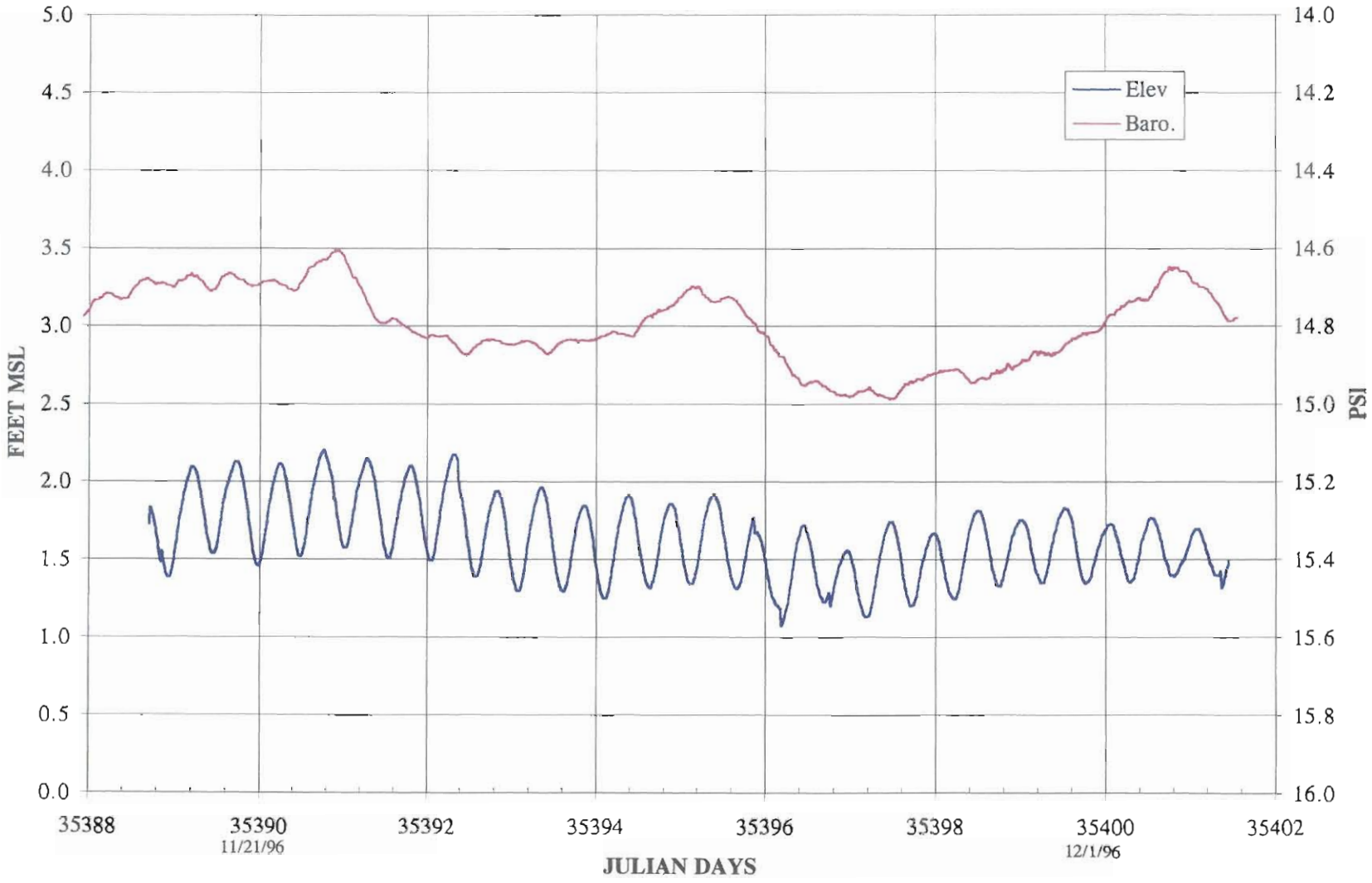


Figure G-28
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT GDE24D

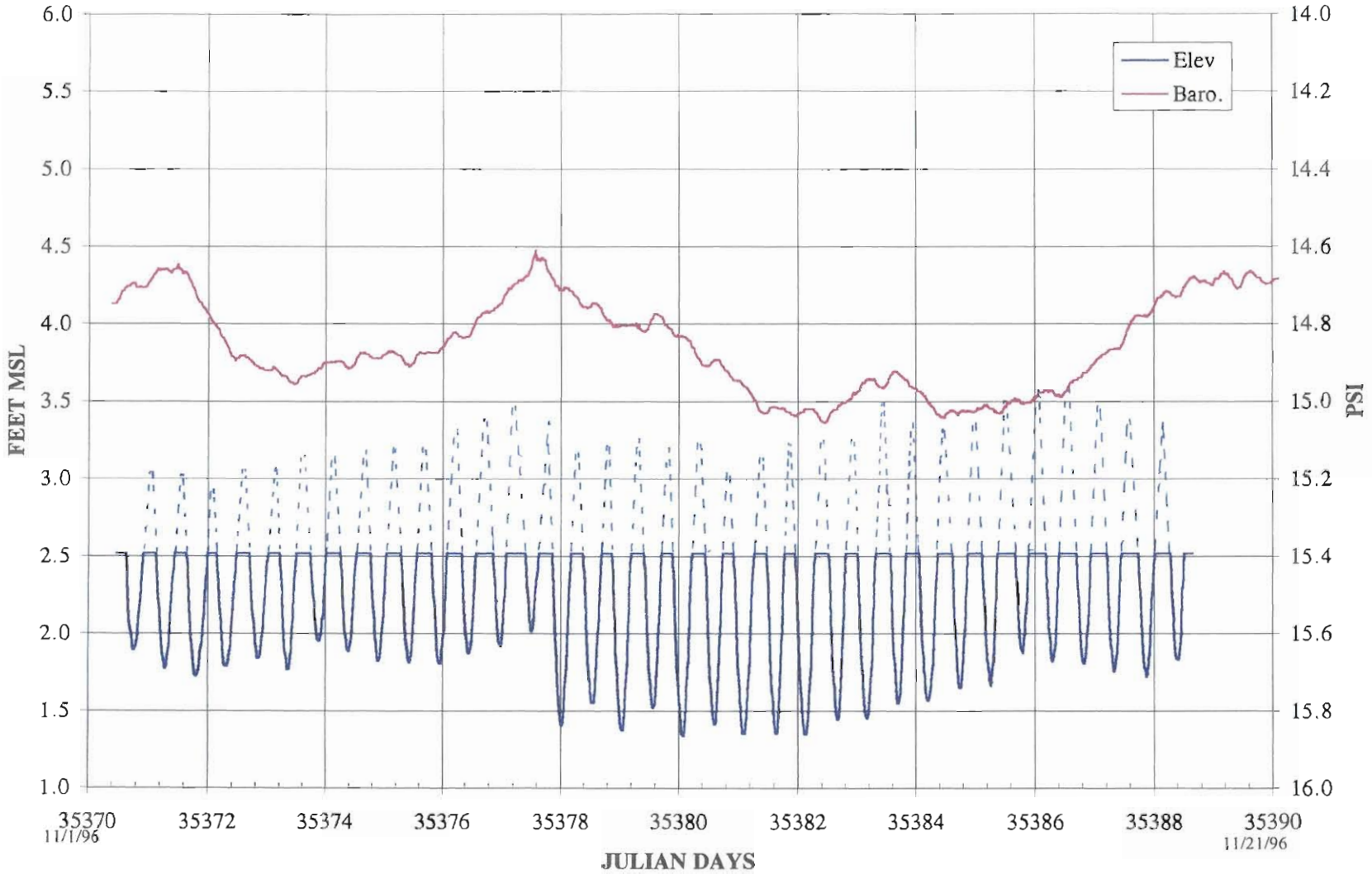


Figure G-29
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 55102D

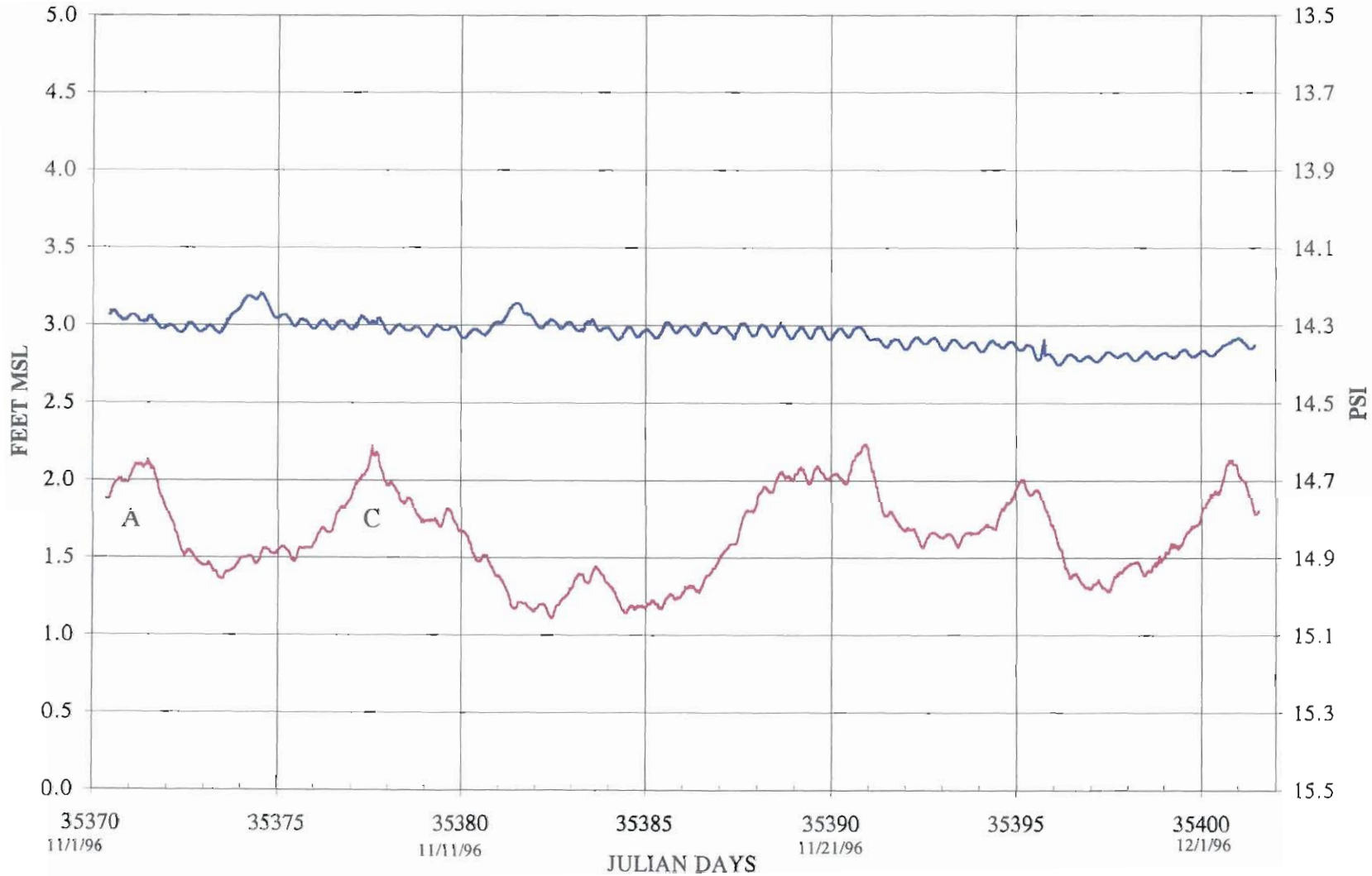


Figure G-30
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 02301D

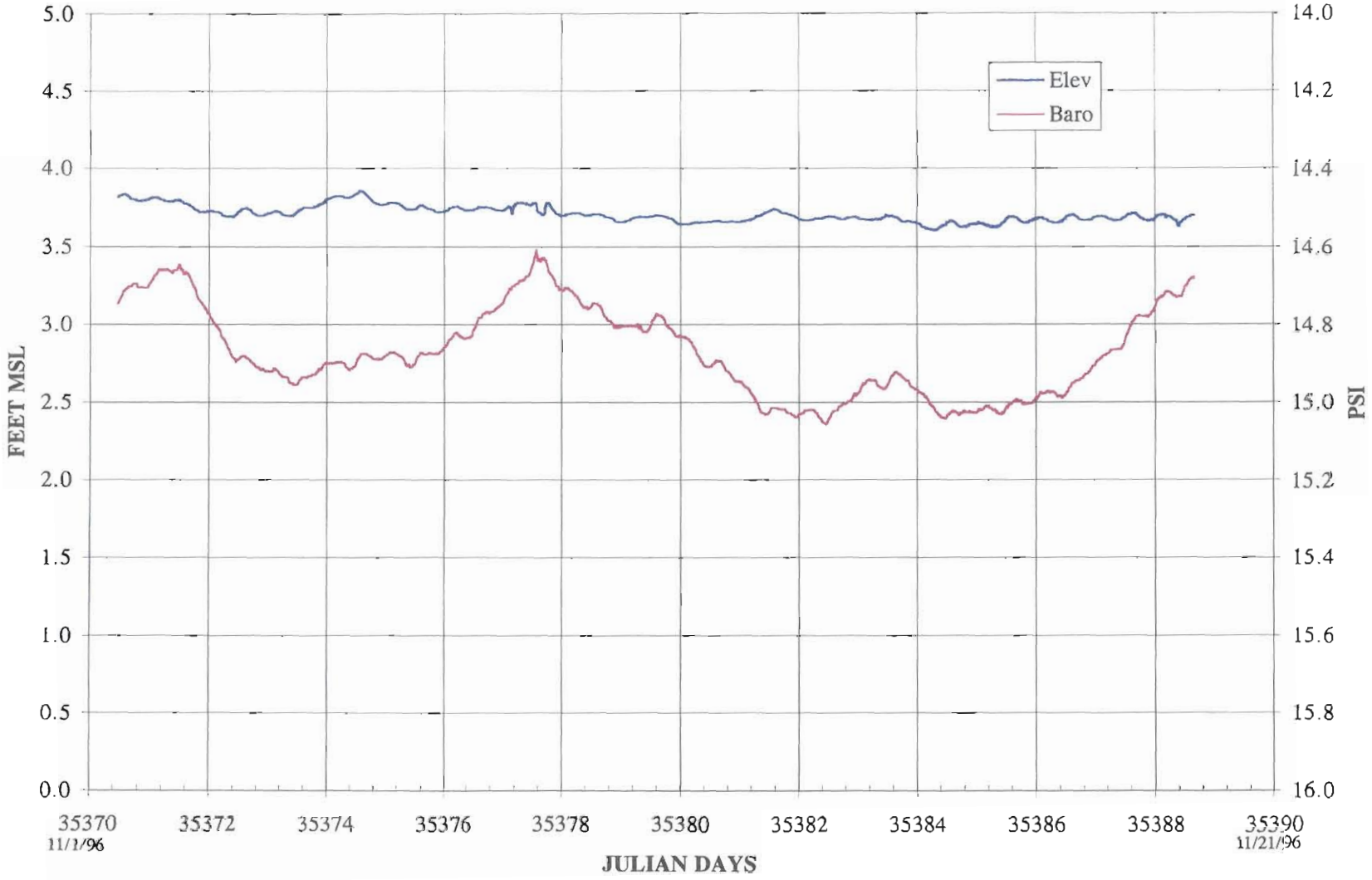


Figure G-31
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 55902D

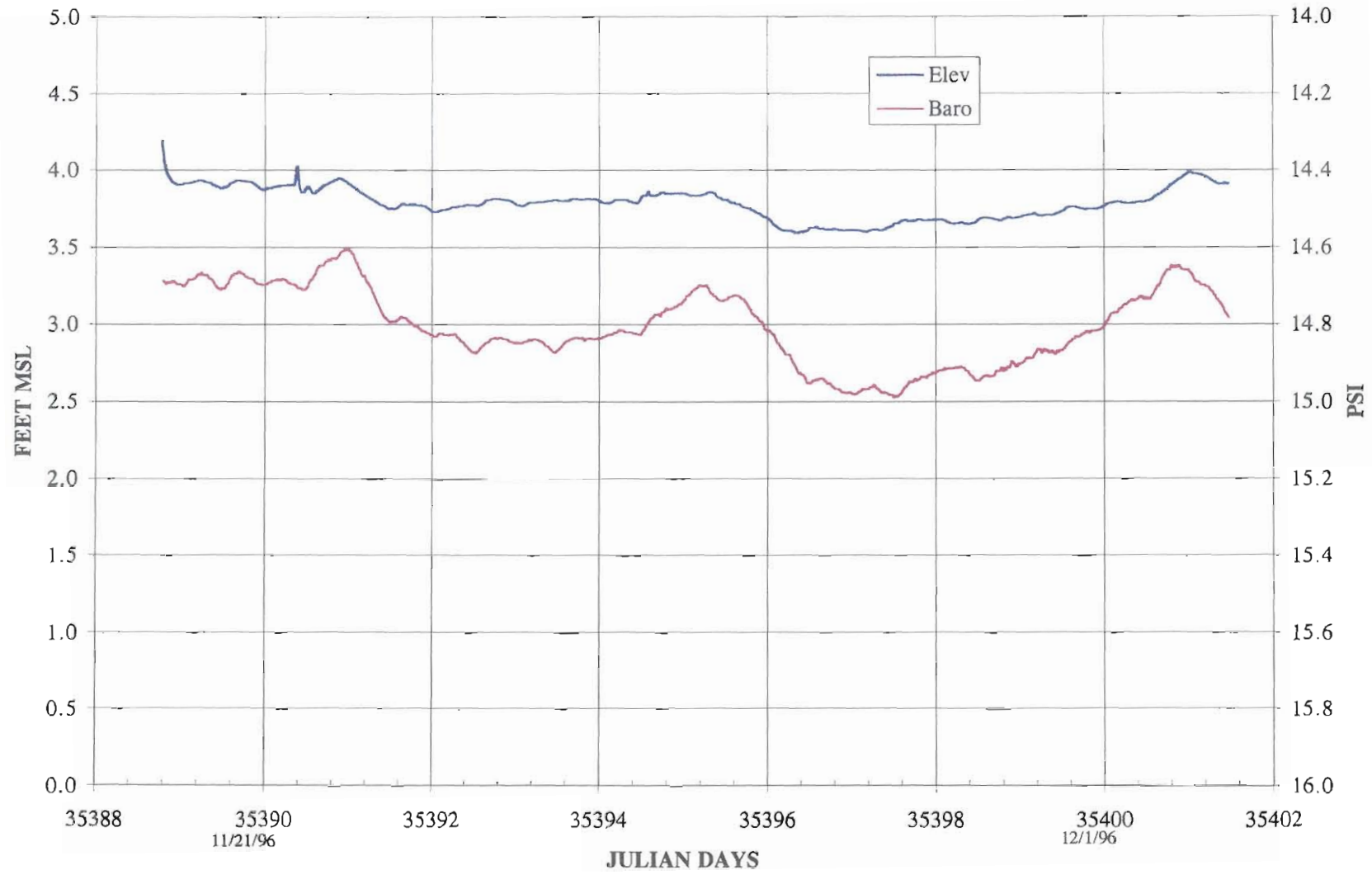


Figure G-32
COMPARISON OF WATER LEVEL ELEVATION AND BAROMETRIC PRESSURE AT 53002D

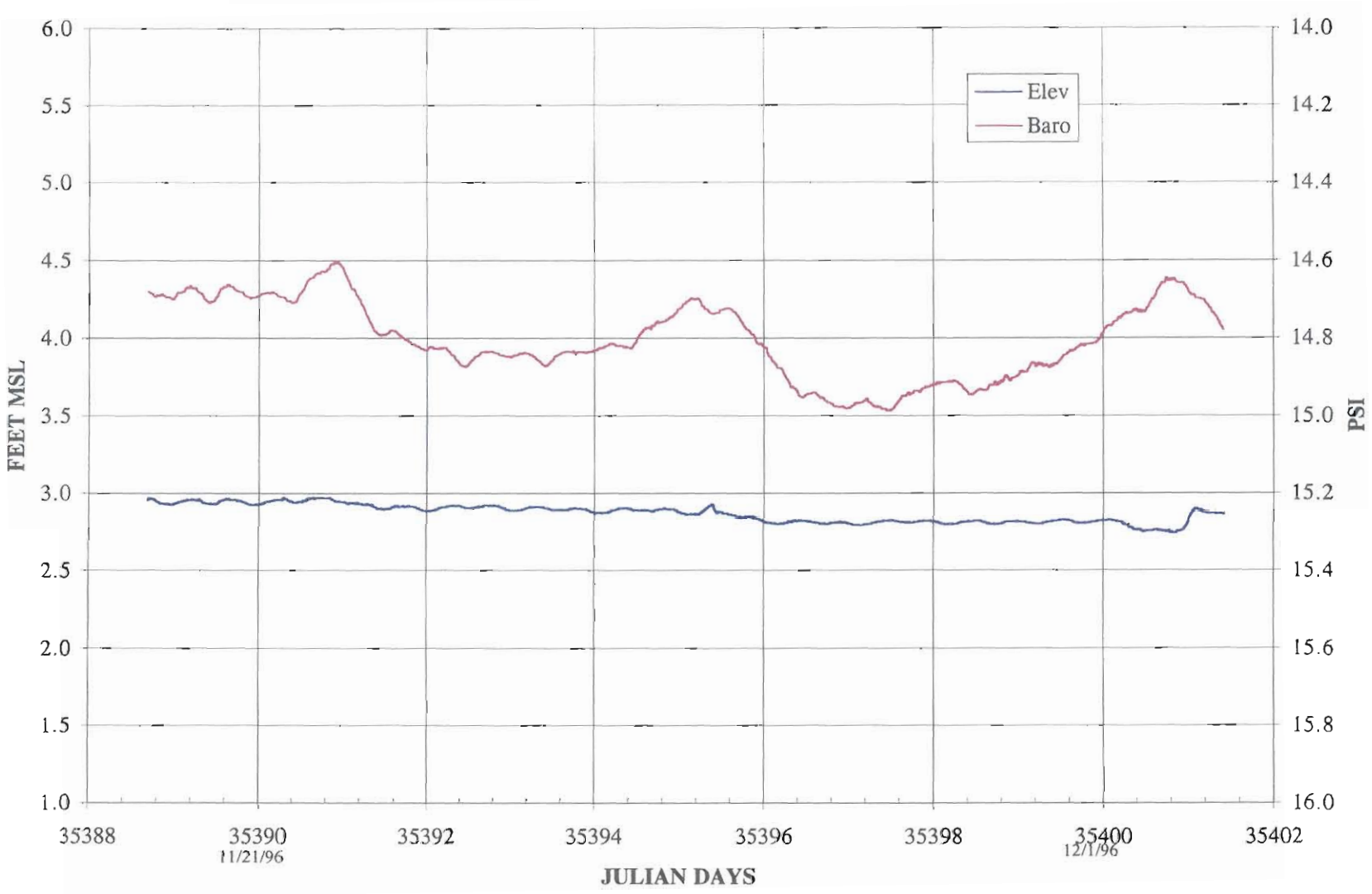


Figure G-33
BAROMETRIC EFFICIENCY AT GDE05D

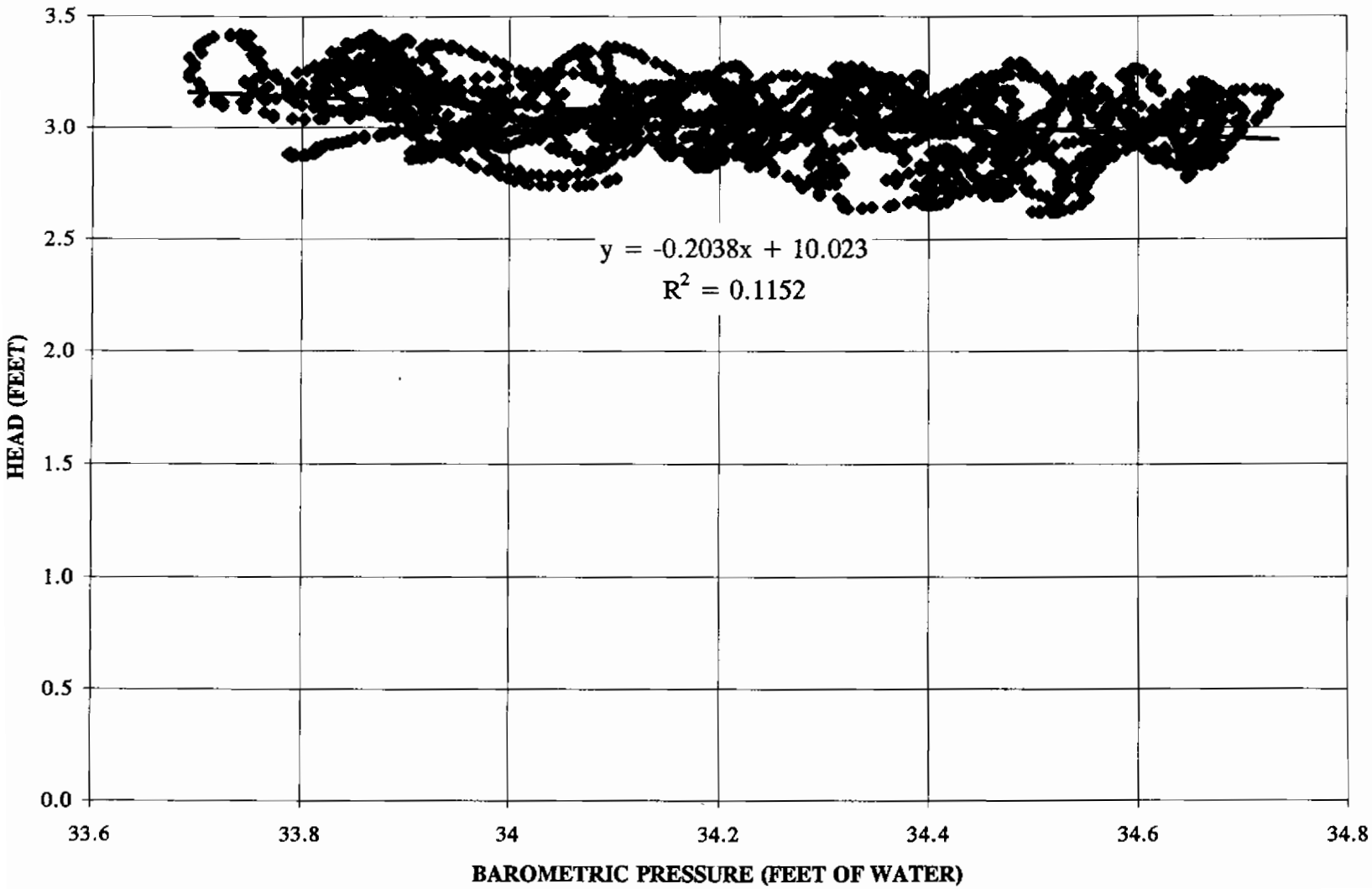


Figure G-34
BAROMETRIC EFFICIENCY AT 55902D

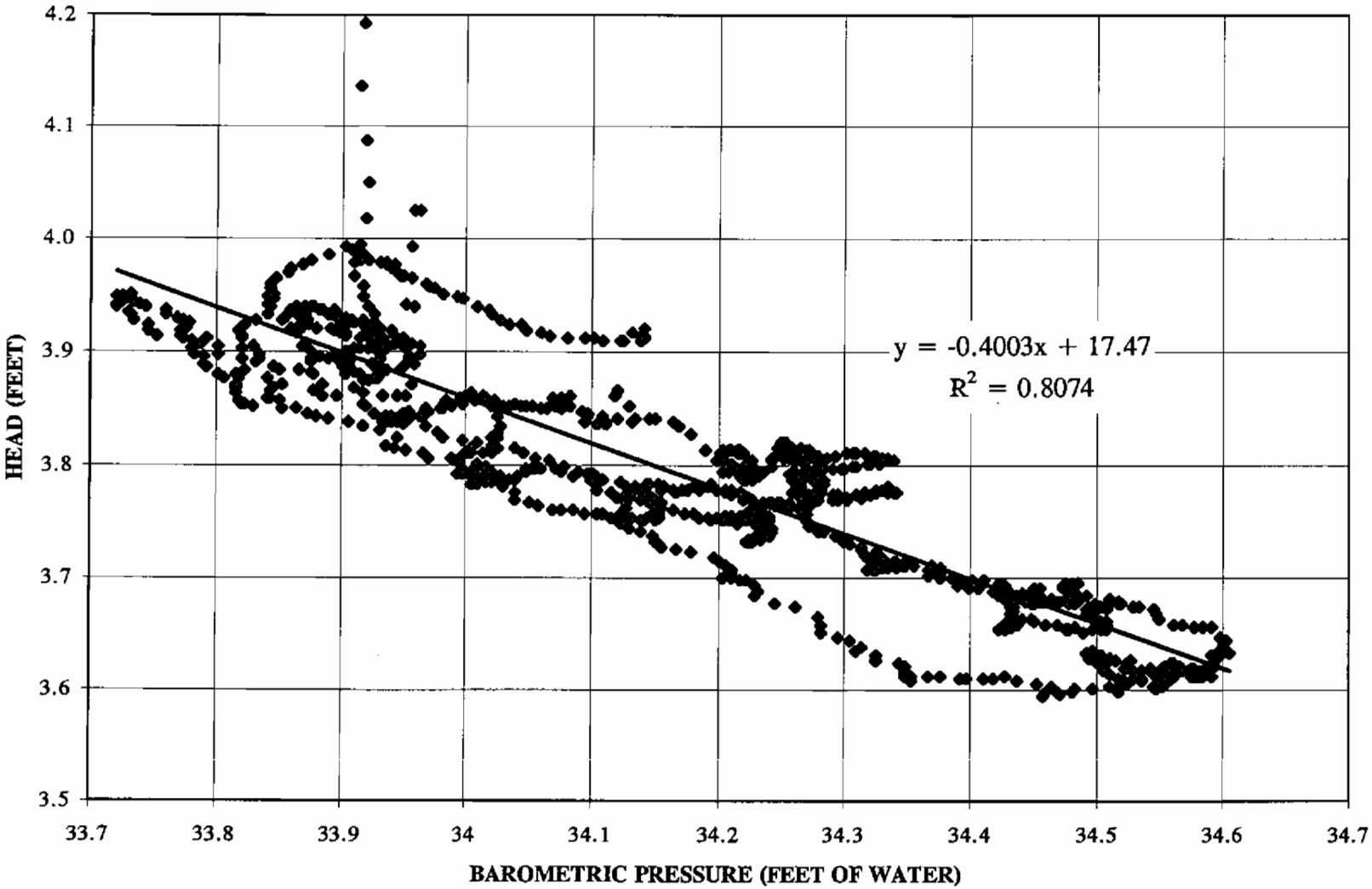


Figure G-35

COMPARISON OF WATER LEVEL ELEVATION:
GDE025 AND COOPER RIVER

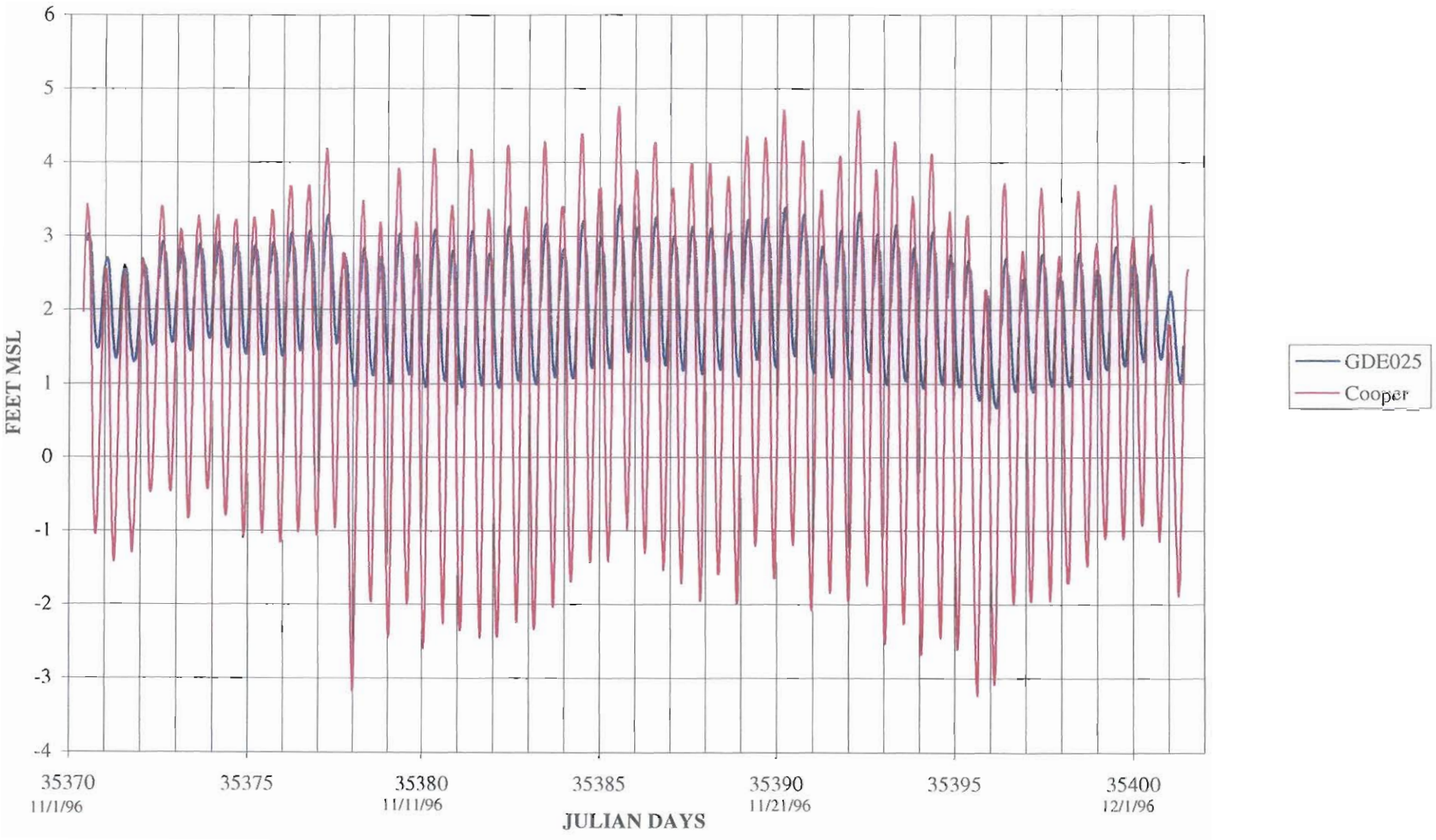


Figure G-36

COMPARISON OF WATER LEVEL ELEVATION:
GDE25D AND COOPER RIVER

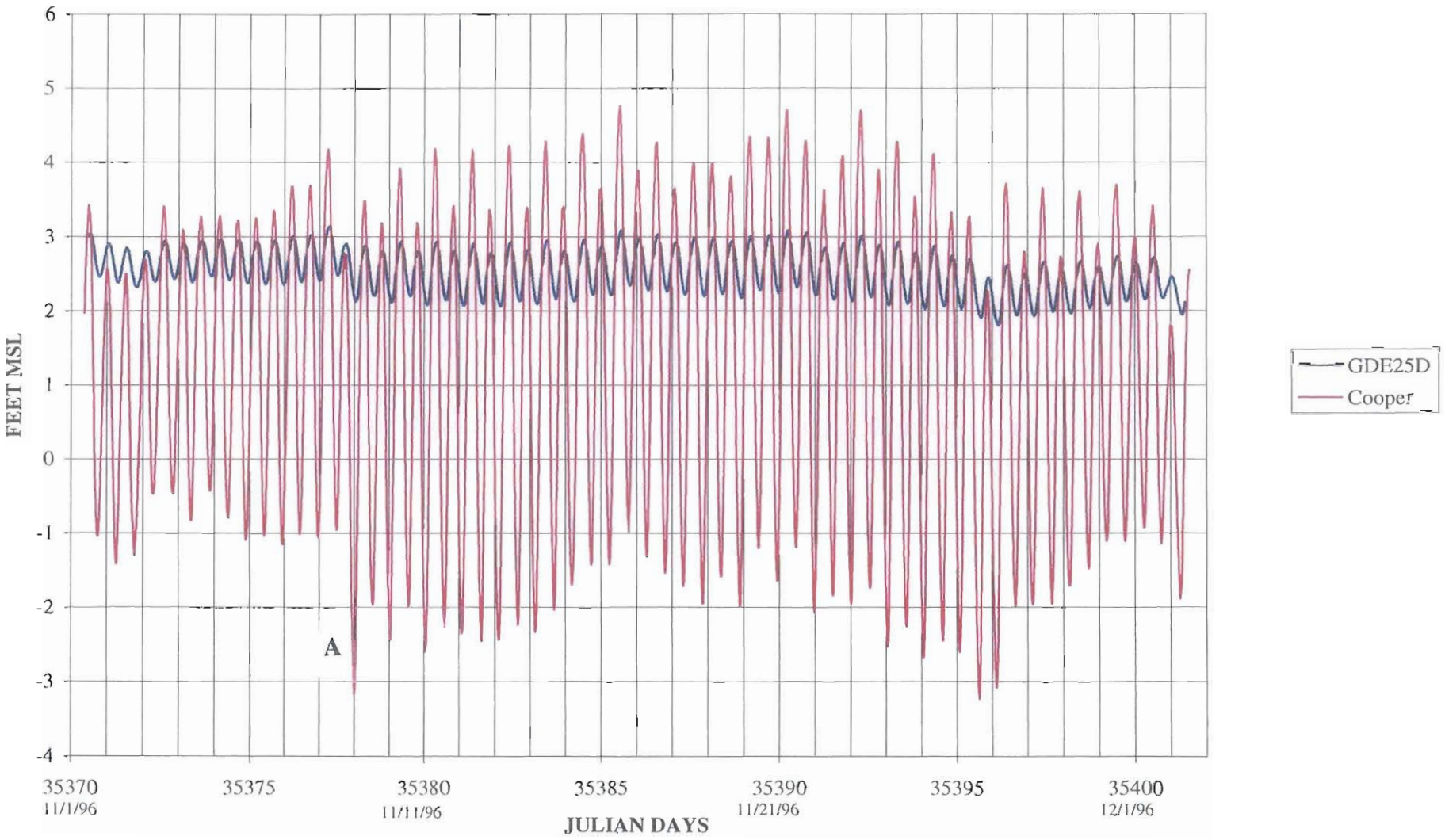


Figure G-37

COMPARISON OF WATER LEVEL ELEVATION:
GDE005 AND COOPER RIVER

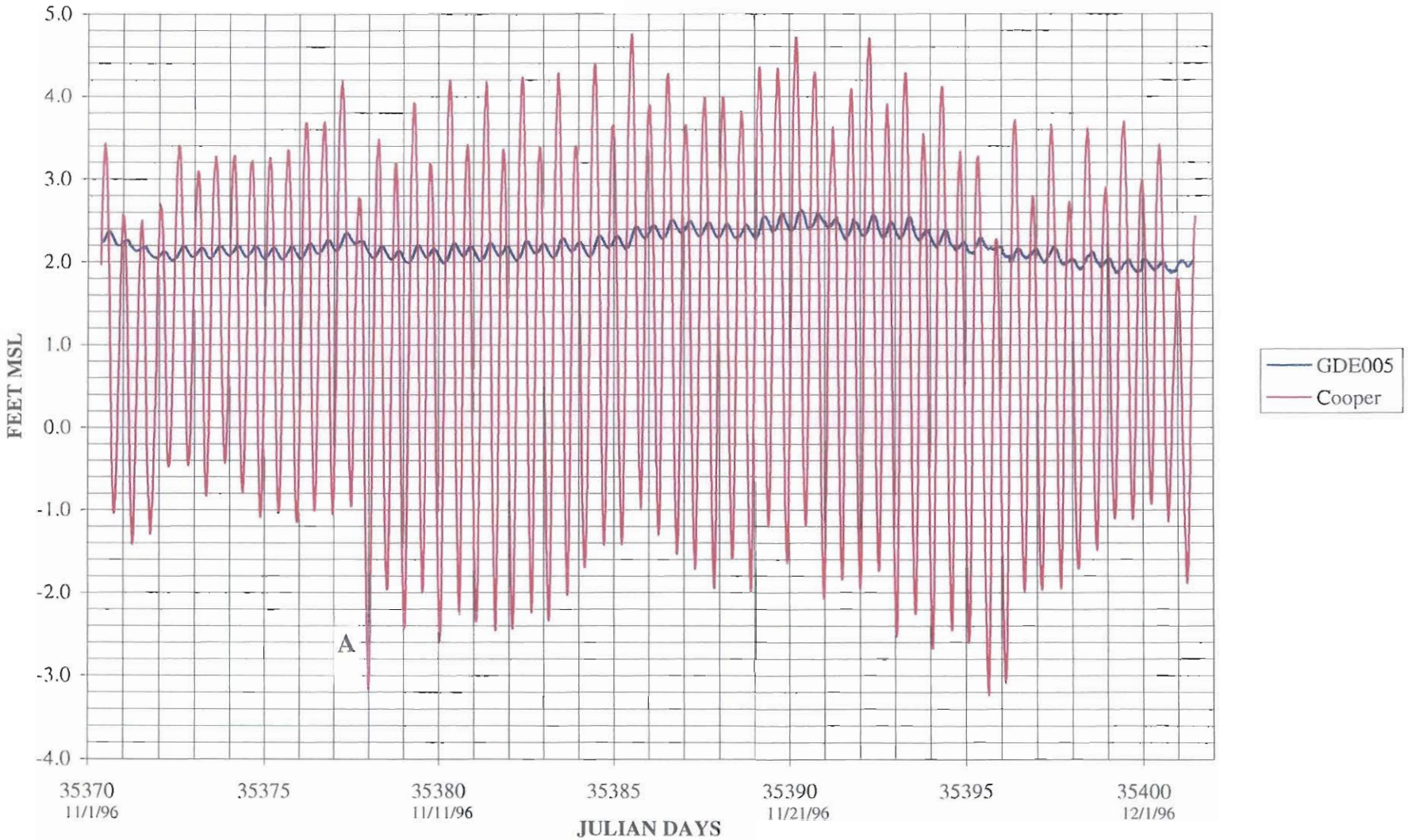


Figure G-38

COMPARISON OF WATER LEVEL ELEVATION:
GDE05D AND COOPER RIVER

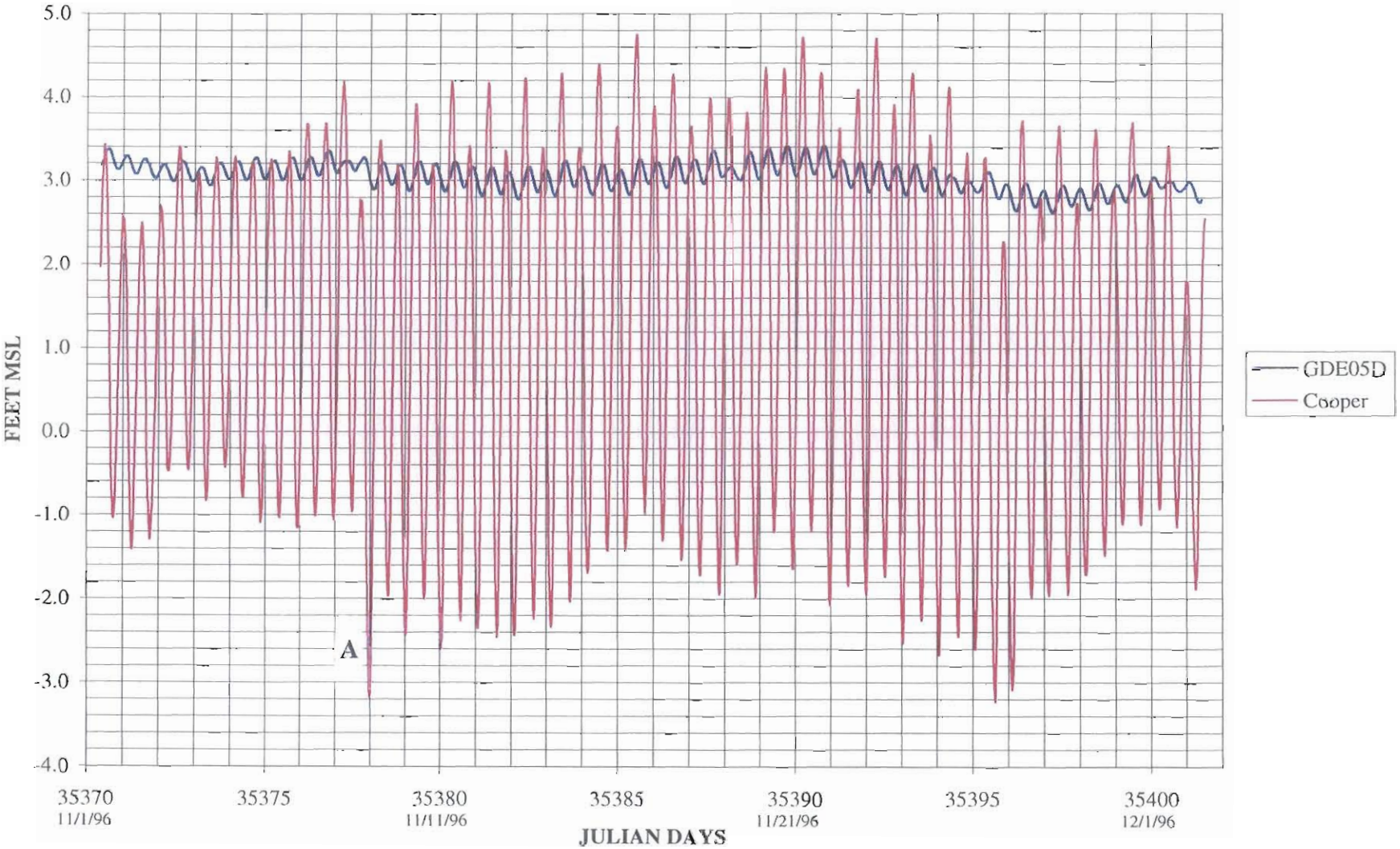


Figure G-39

COMPARISON OF WATER LEVEL ELEVATION:
55102D AND COOPER RIVER

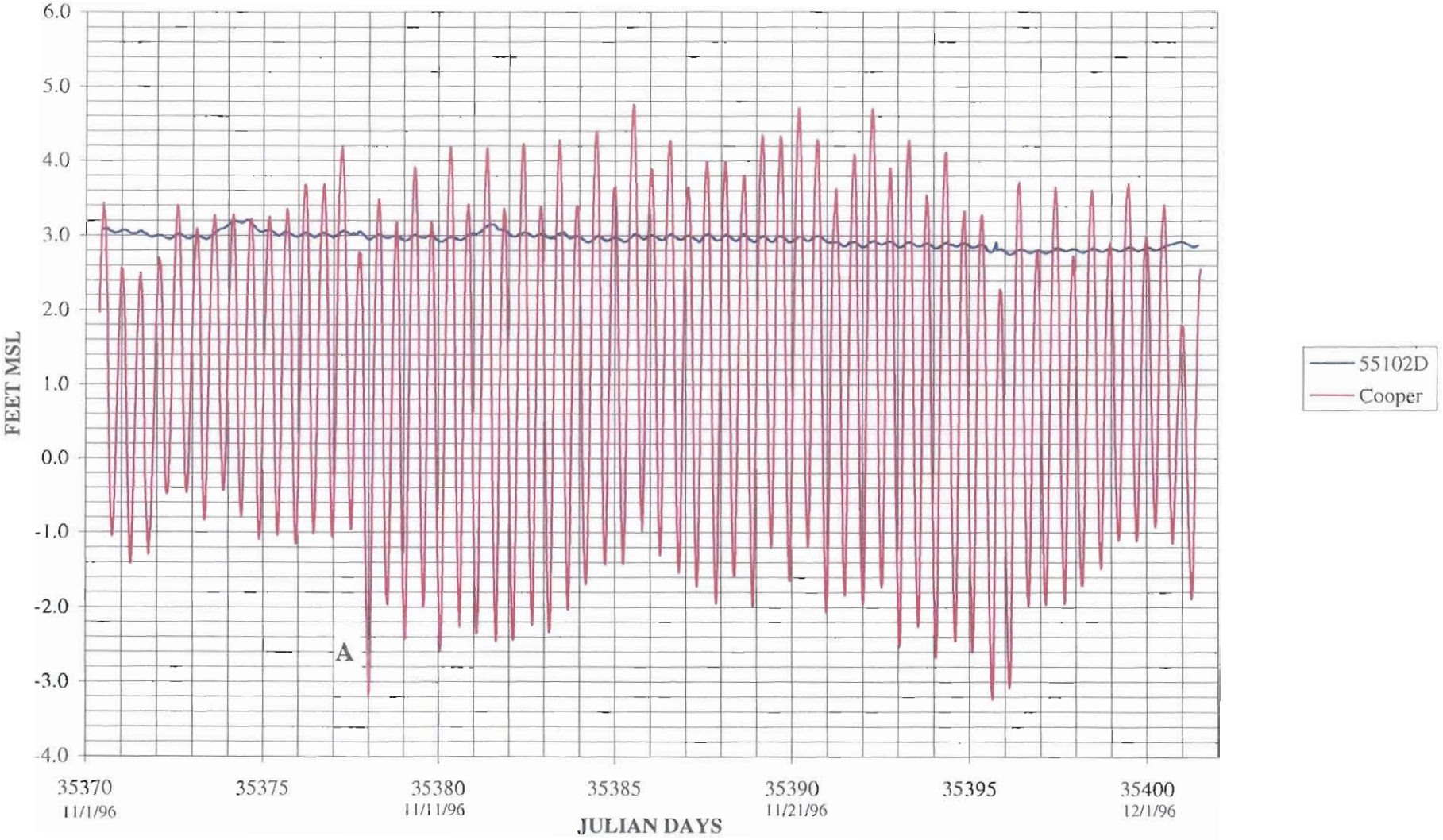
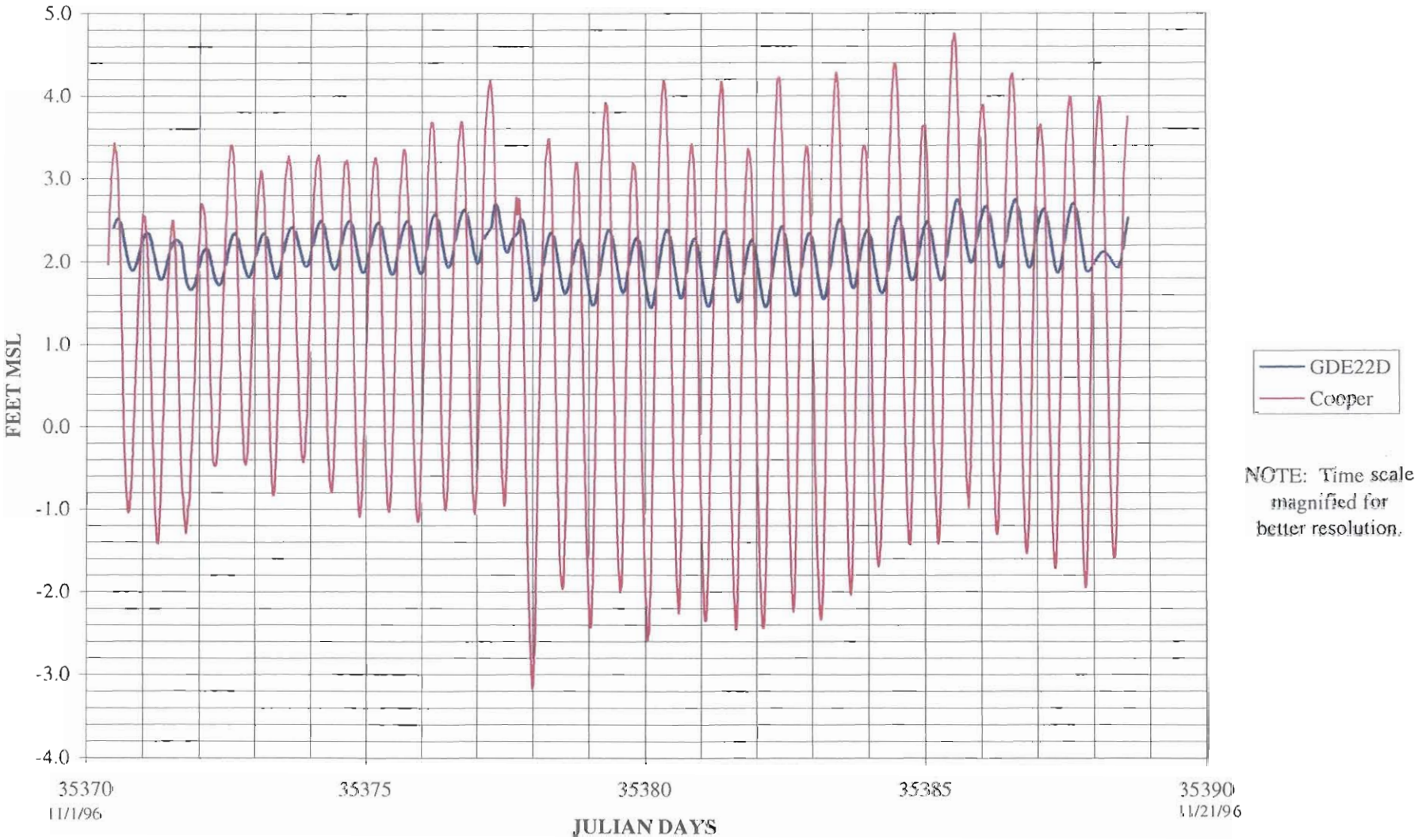


Figure G-40

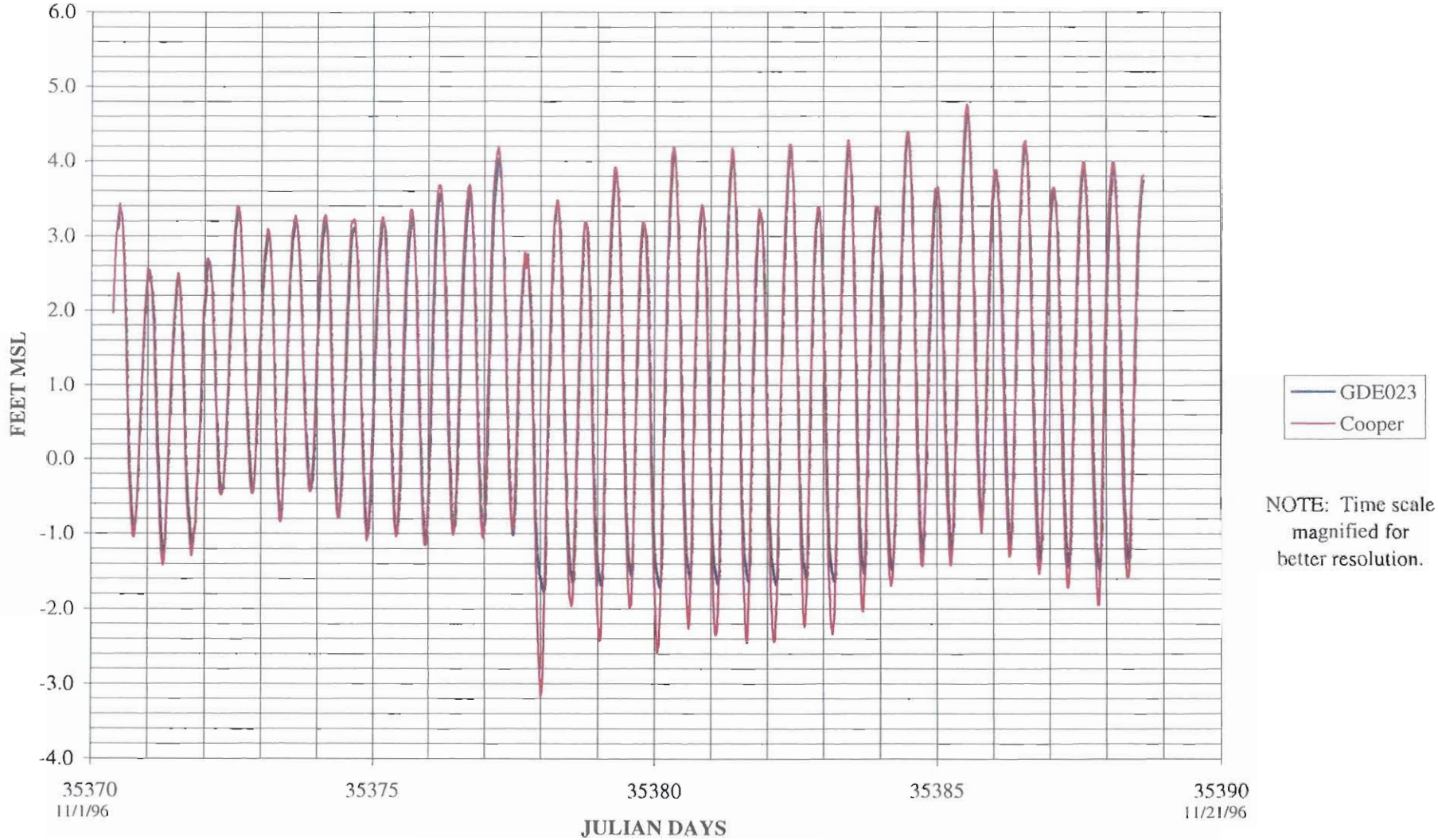
COMPARISON OF WATER LEVEL ELEVATION:
GDE22D AND COOPER RIVER



NOTE: Time scale magnified for better resolution.

Figure G-41

COMPARISON OF WATER LEVEL ELEVATION:
GDE023 AND COOPER RIVER



NOTE: Time scale magnified for better resolution.

Figure G-42

COMPARISON OF WATER LEVEL ELEVATION:
GDE23D AND COOPER RIVER

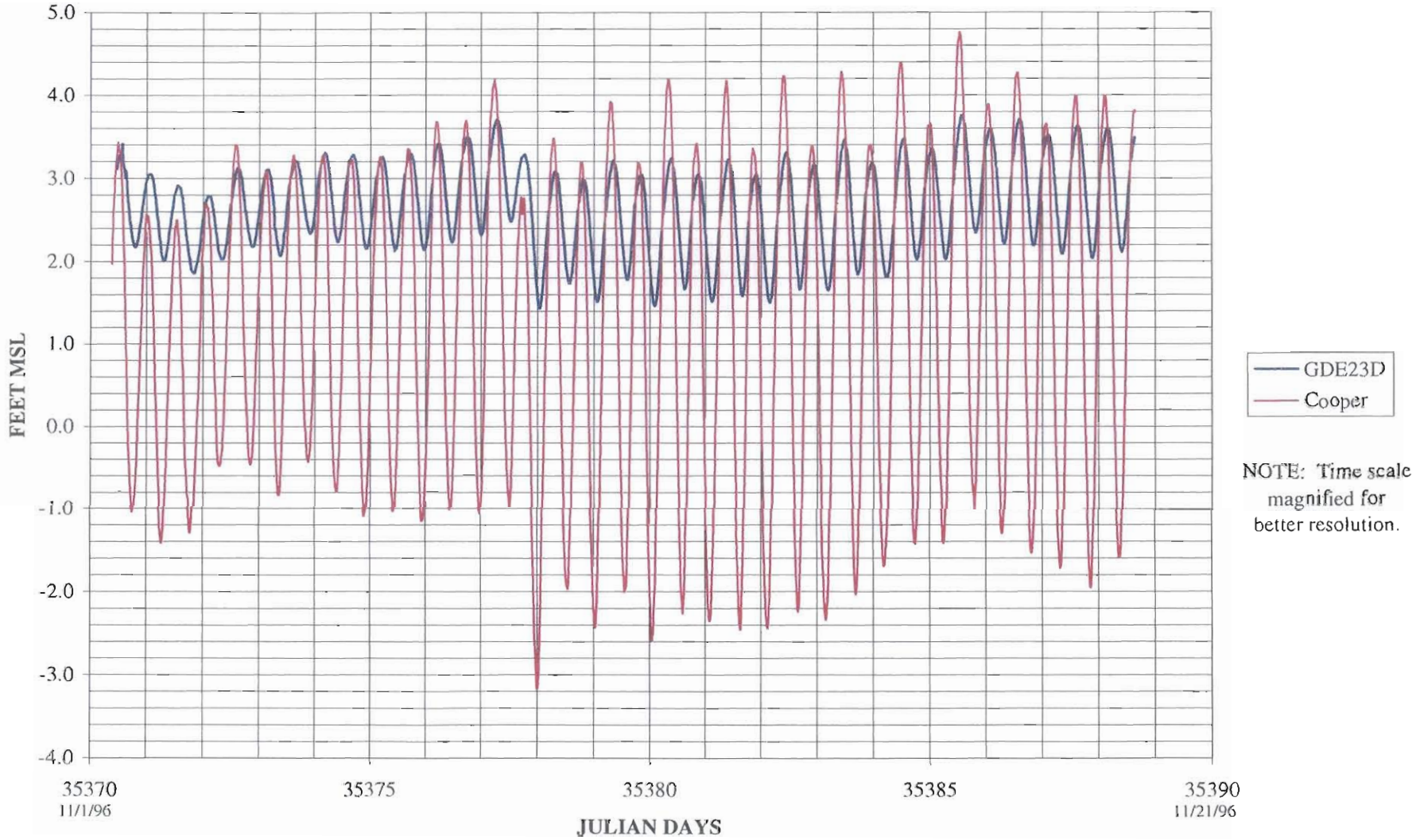


Figure G-43

COMPARISON OF WATER LEVEL ELEVATION:
GDE24D AND COOPER RIVER

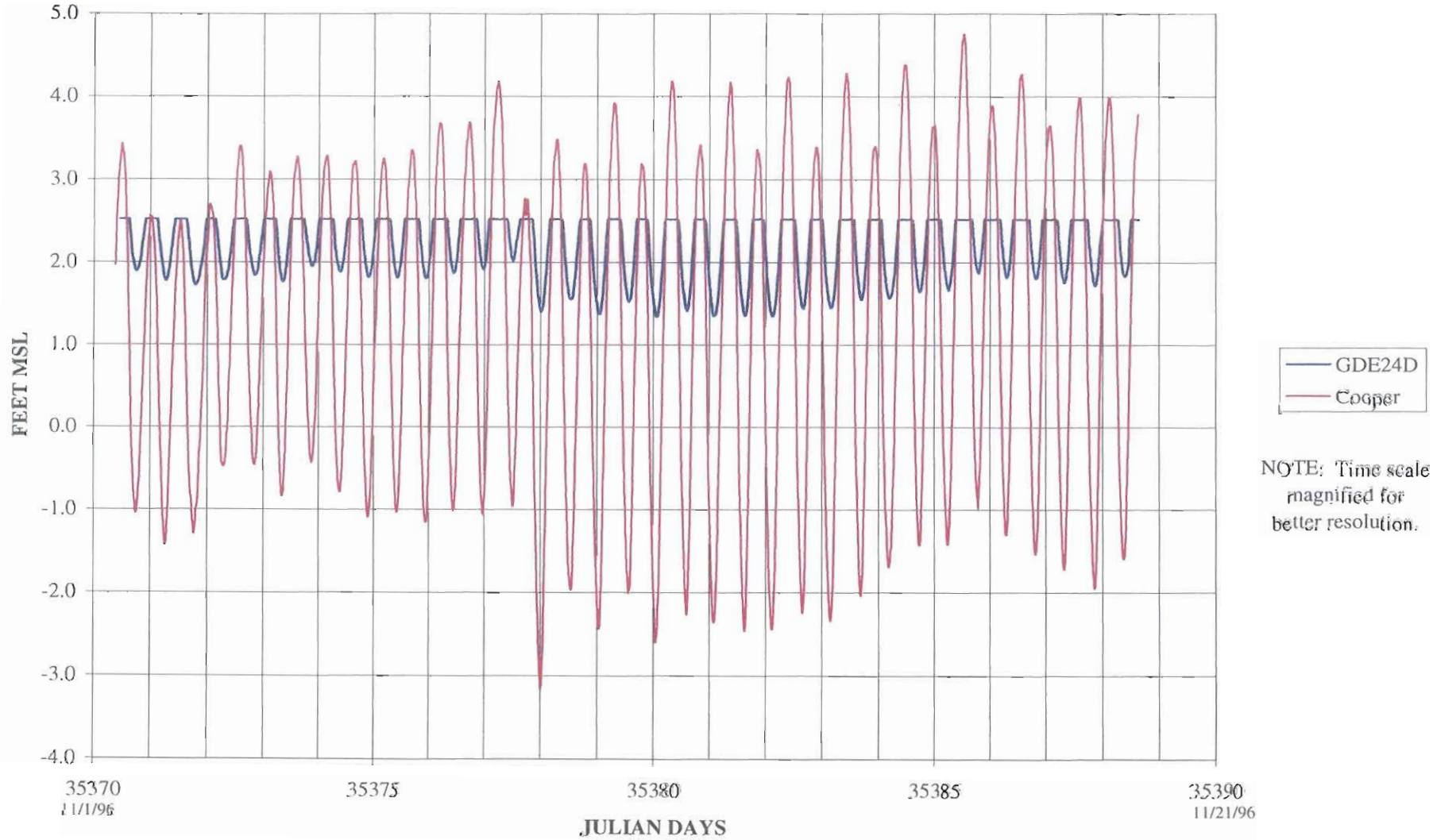


Figure G-44

COMPARISON OF WATER LEVEL ELEVATION:
17202D AND COOPER RIVER

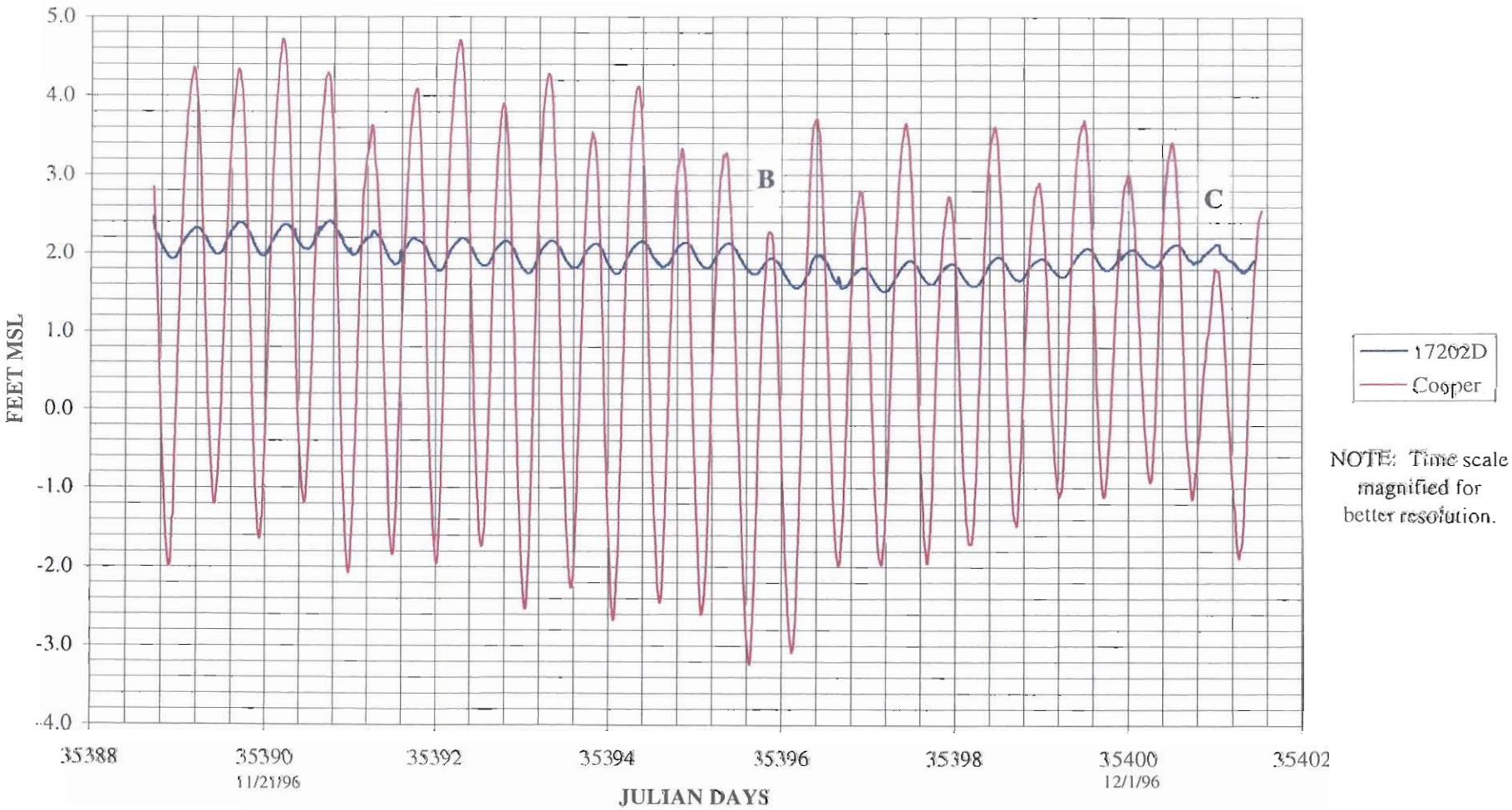


Figure G-45

COMPARISON OF WATER LEVEL ELEVATION:
56601D AND COOPER RIVER

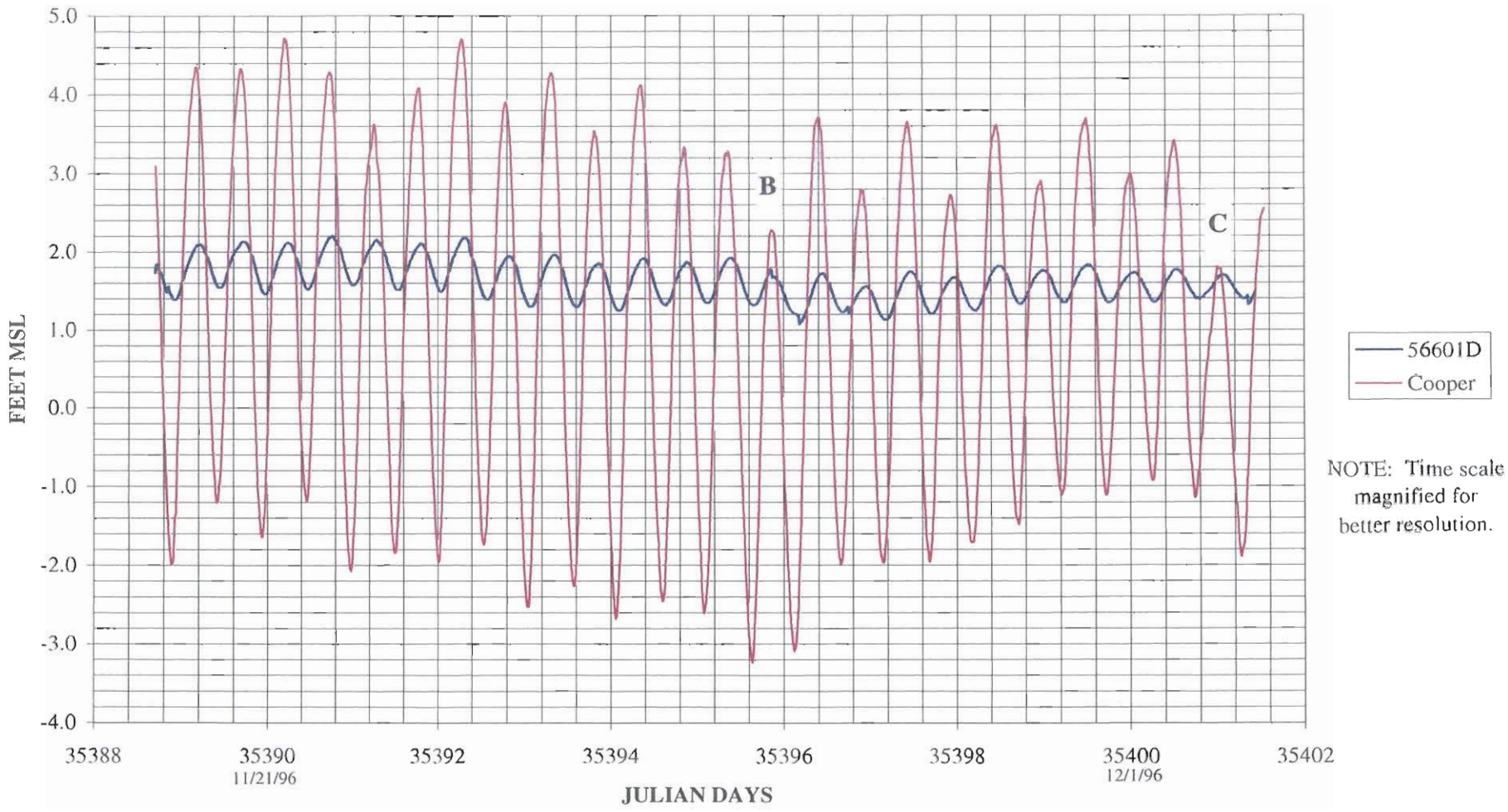


Figure G-46
VERTICAL GRADIENTS AT WELL PAIR GDE005/05D

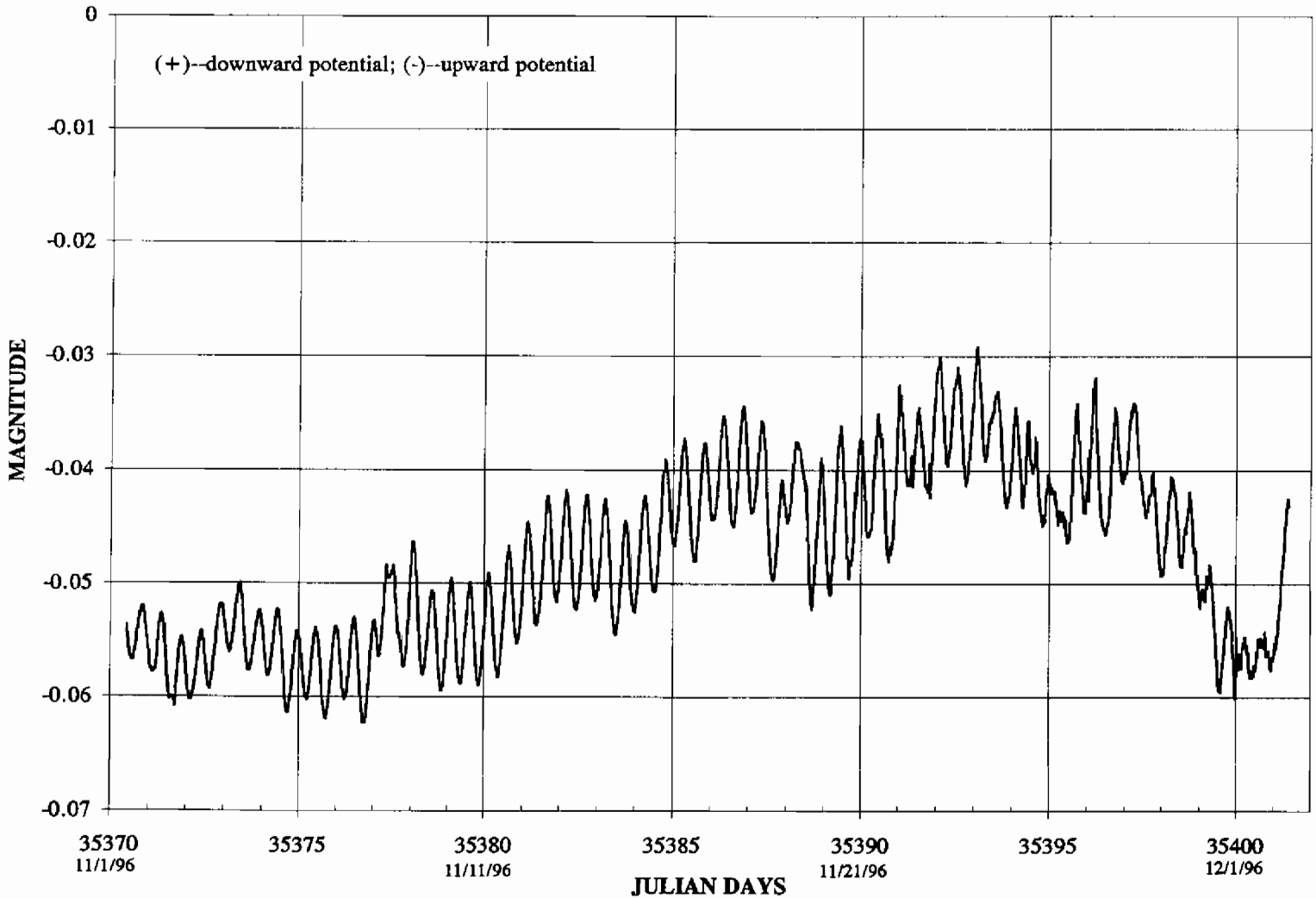


Figure G-47
VERTICAL GRADIENTS AT WELL PAIR GDE025/25D

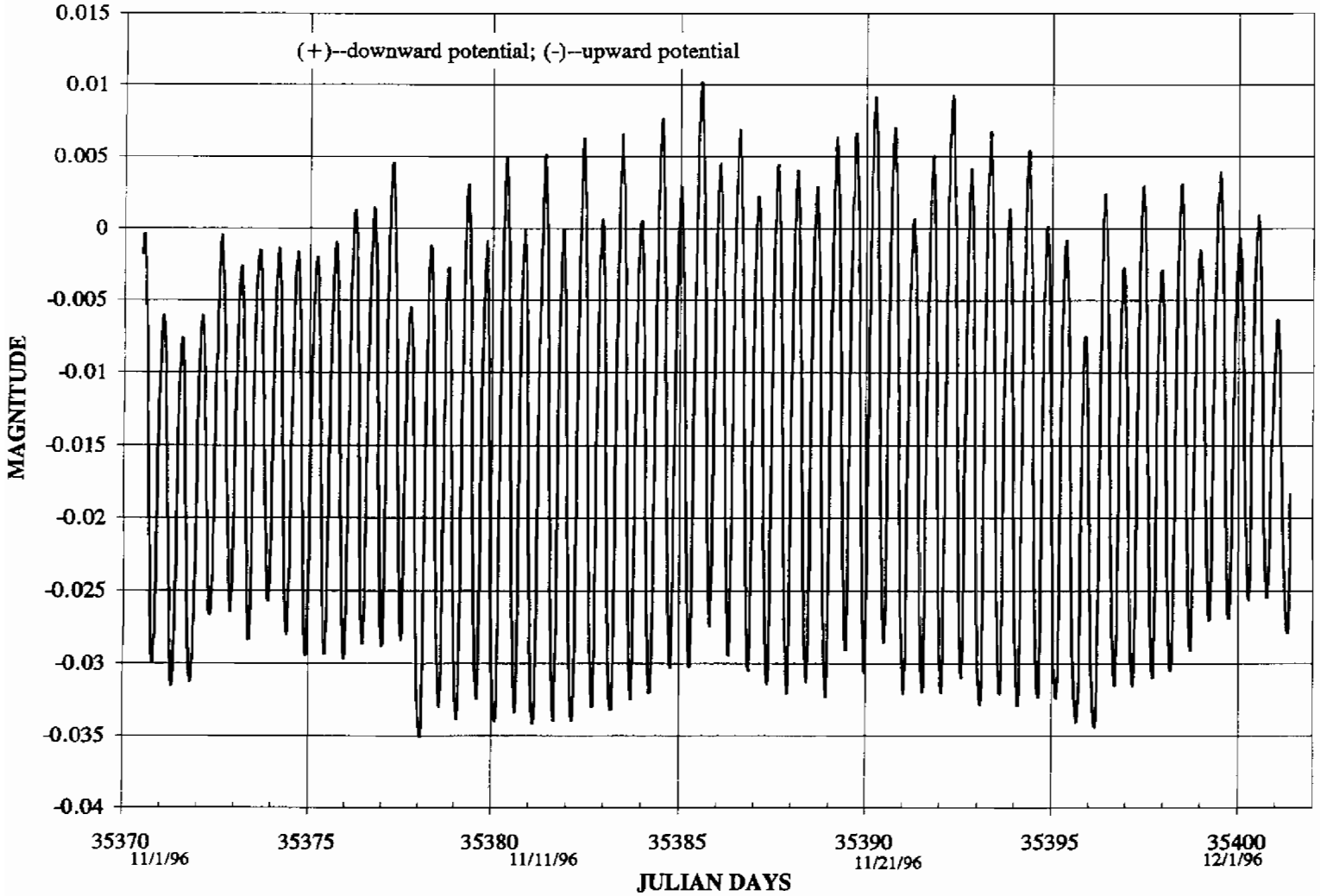


Figure G-48
VERTICAL GRADIENTS AT WELL PAIR GDE023/23D

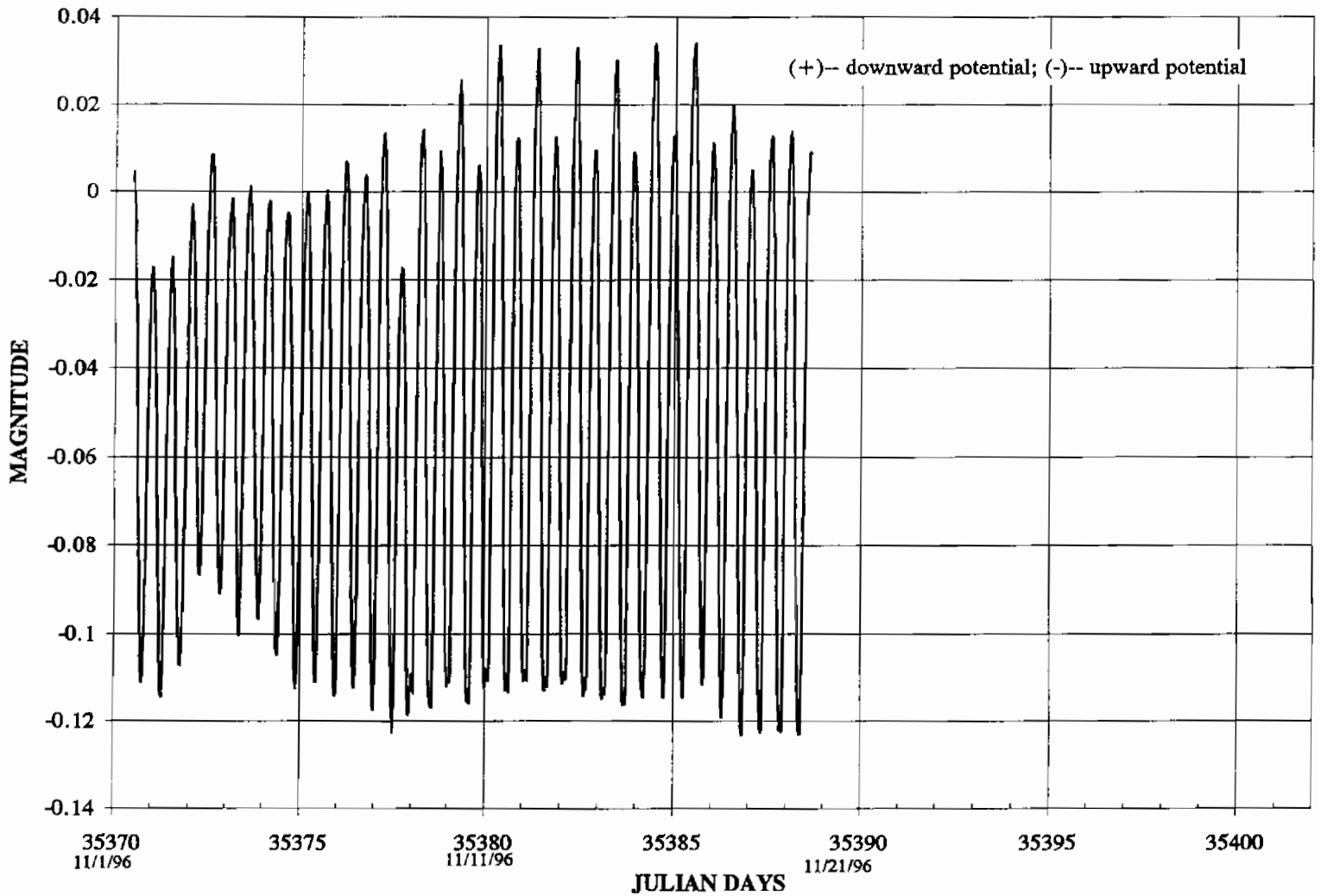
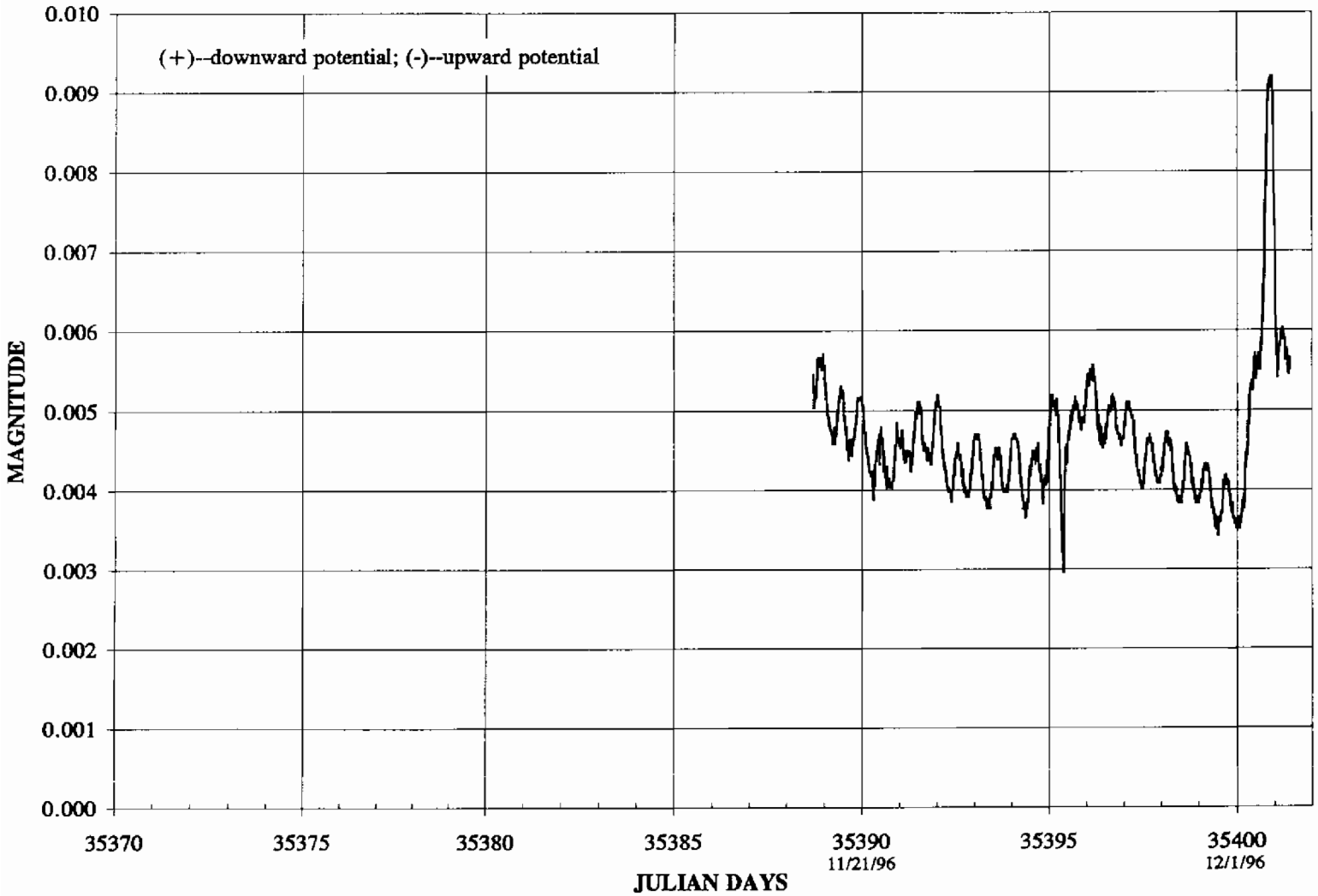



Figure G-49
VERTICAL GRADIENTS AT WELL PAIR 530-002/02D