

**DOWN
Construction
Preliminary Data
Long Branch Site**

**Aquifer System Monitor Wells:
Surficial OR-0649
Intermediate OR-0648
Floridan OR-0618
Floridan OR-0617**

SJRWMD Program No. 31-58200

**Division of Ground Water Programs,
Department of Resource Management
St. Johns River Water Management District
Palatka, Florida**

September 15, 2000

*All data, figures, tables and information are provisional and generated
for the Division of Ground Water Program's use.*

TABLE OF CONTENTS

General Information

Site Location

Asbuilts

Groundwater Levels

Drilling Rate

Water Quality

Aquifer Performance Test
Well development

Grout Table

Lithologic Description

Video Surveys

Geophysical Logs

General Information

Site: Long Branch

Service Request: Brian McGurk Division of Ground Water Programs

Purpose: Ground water model data for Division of Needs And Sources

Work:

Monitor Well Construction

CenTech Utility Corp.
Huss Drilling Inc.

Geophysical Logging:

SJRWMD
Southern Resources

Video Survey:

Florida Dept. of Transportation (FDOT)
Deep Venture

Report: Robert Brooks and John Segó

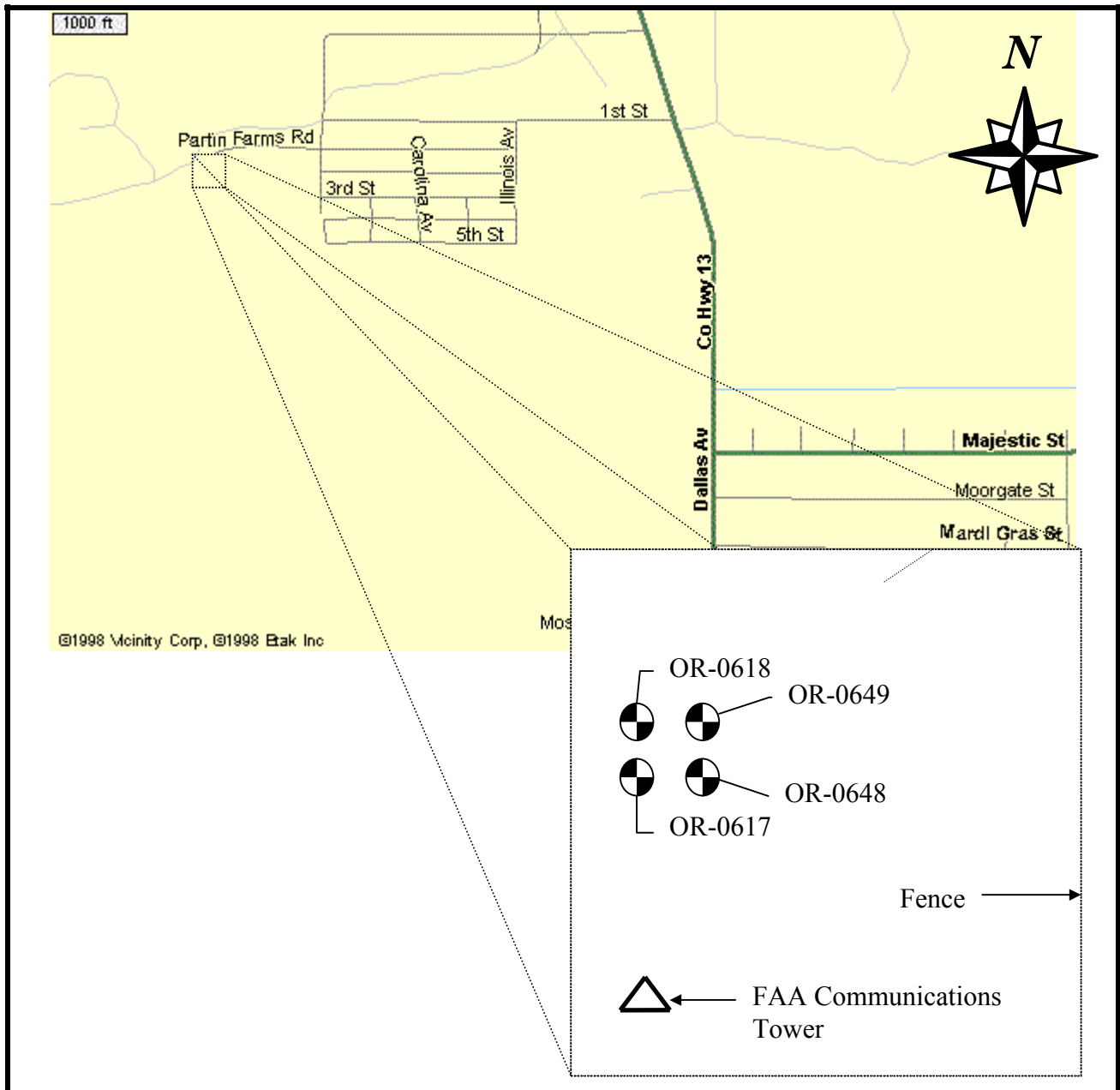
Notes:

Floridan Monitor Well OR-0618

1. 9/21/95, Geophysical logging tool gets lodged in bore hole at an estimated depth of 1362 ft. Attempts to retrieve with tremie pipe fails. CenTech loses 20-ft section of steel tremie pipe down bore hole.
2. 9/22/95, video survey bore hole, obstruction at 1360 ft.
3. 9/26-27/95, drill out to total depth (1507 ft) with 5^{7/8} mill bit.
4. 10/01/95, drill out to total depth (1507 ft) with 5^{7/8} mill bit.
5. 10/03/95, video survey bore hole, obstruction and poor visibility at 1386 ft.

Floridan Monitor Well OR-0617

1. 7/19/95, Decision made (Brian McGurk) to backplug to 550 ft and not to hang/set smaller diameter casing.

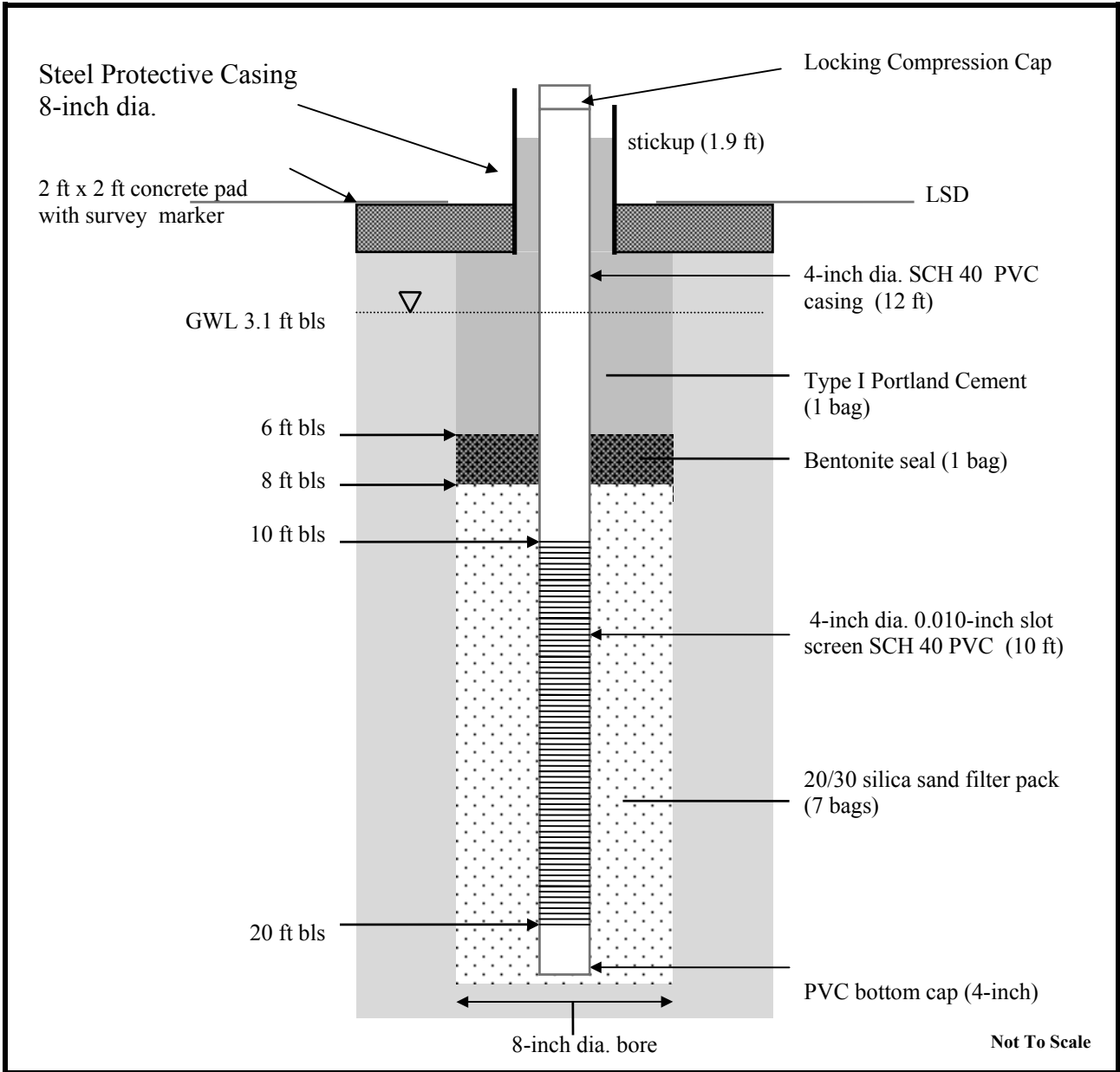


Site: Long Branch
GPS Lat/Long: 283138/810645
TRS: 223233
Topo: Bithlo
Site Elevation: ~ 60 ft NGVD

Project No: 31-58200

SJRWMD

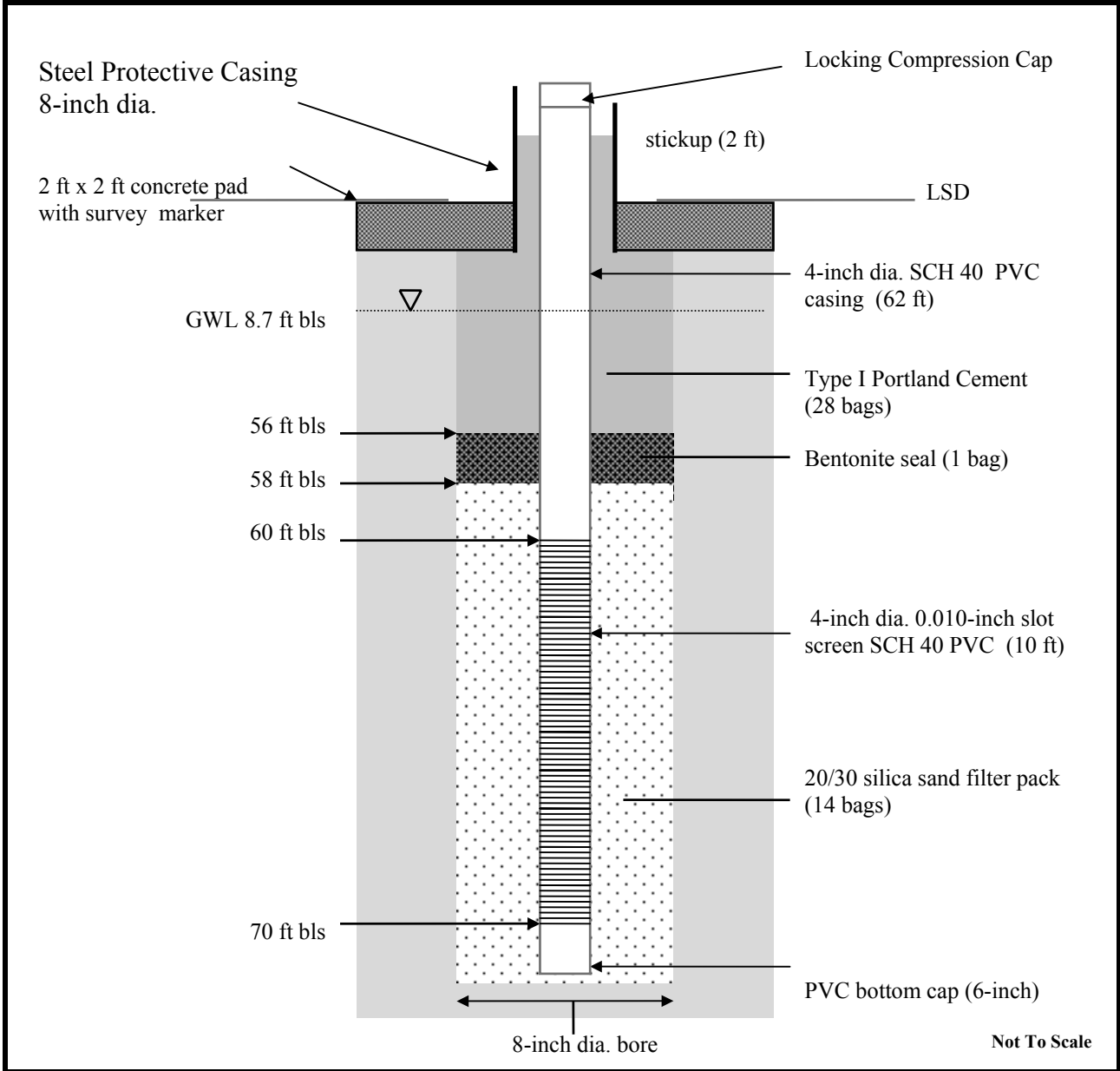
Figure 1. Site Map



Site: Long Branch
Driller: Huss Drilling Inc.
Well Completed: November 20, 1996

SJRWMD

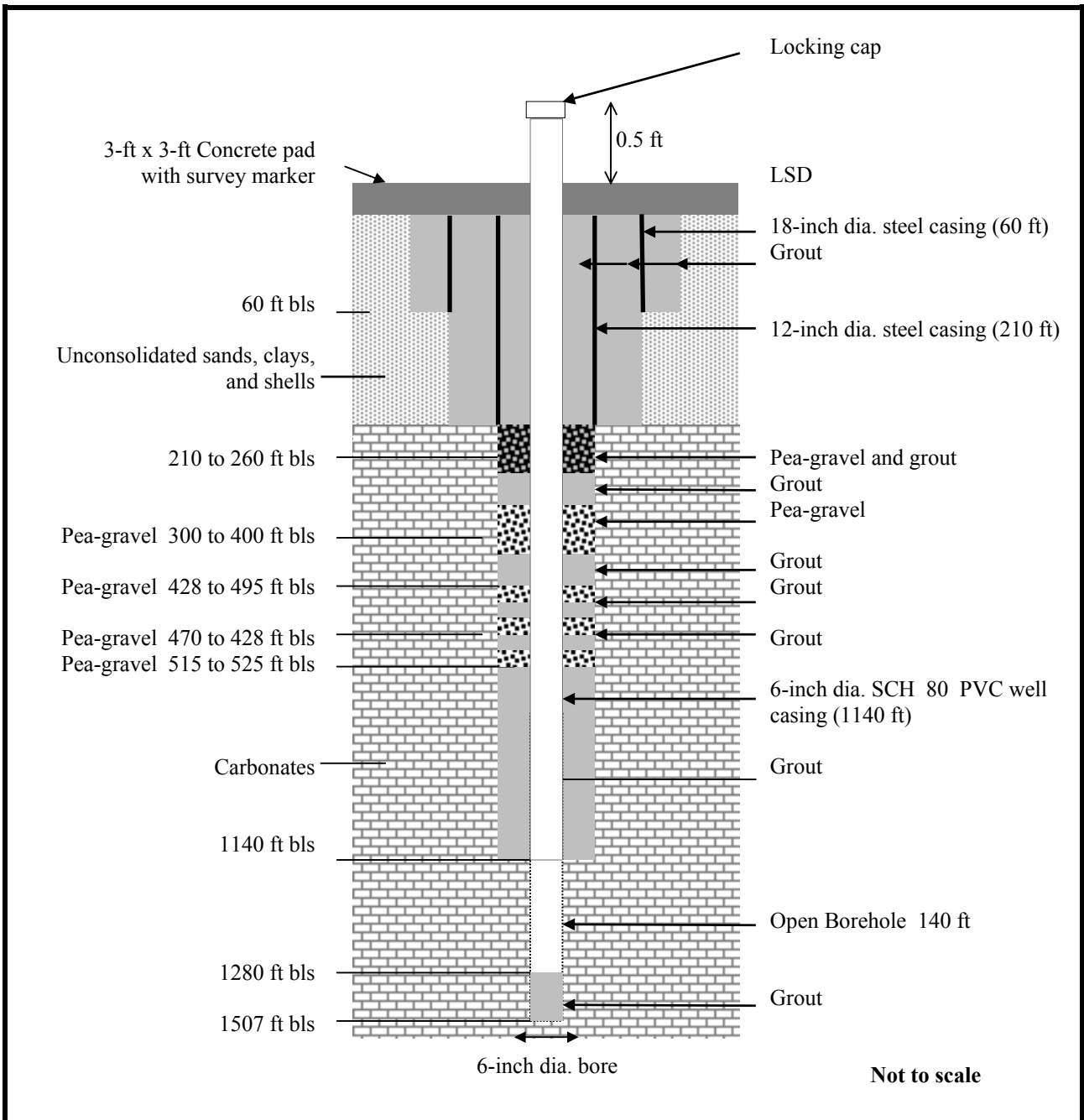
Figure 2. Surficial Monitor Well OR-0649



Site: Long Branch
Driller: Huss Drilling Inc.
Well Completed: November 18, 1996

SJRWMD

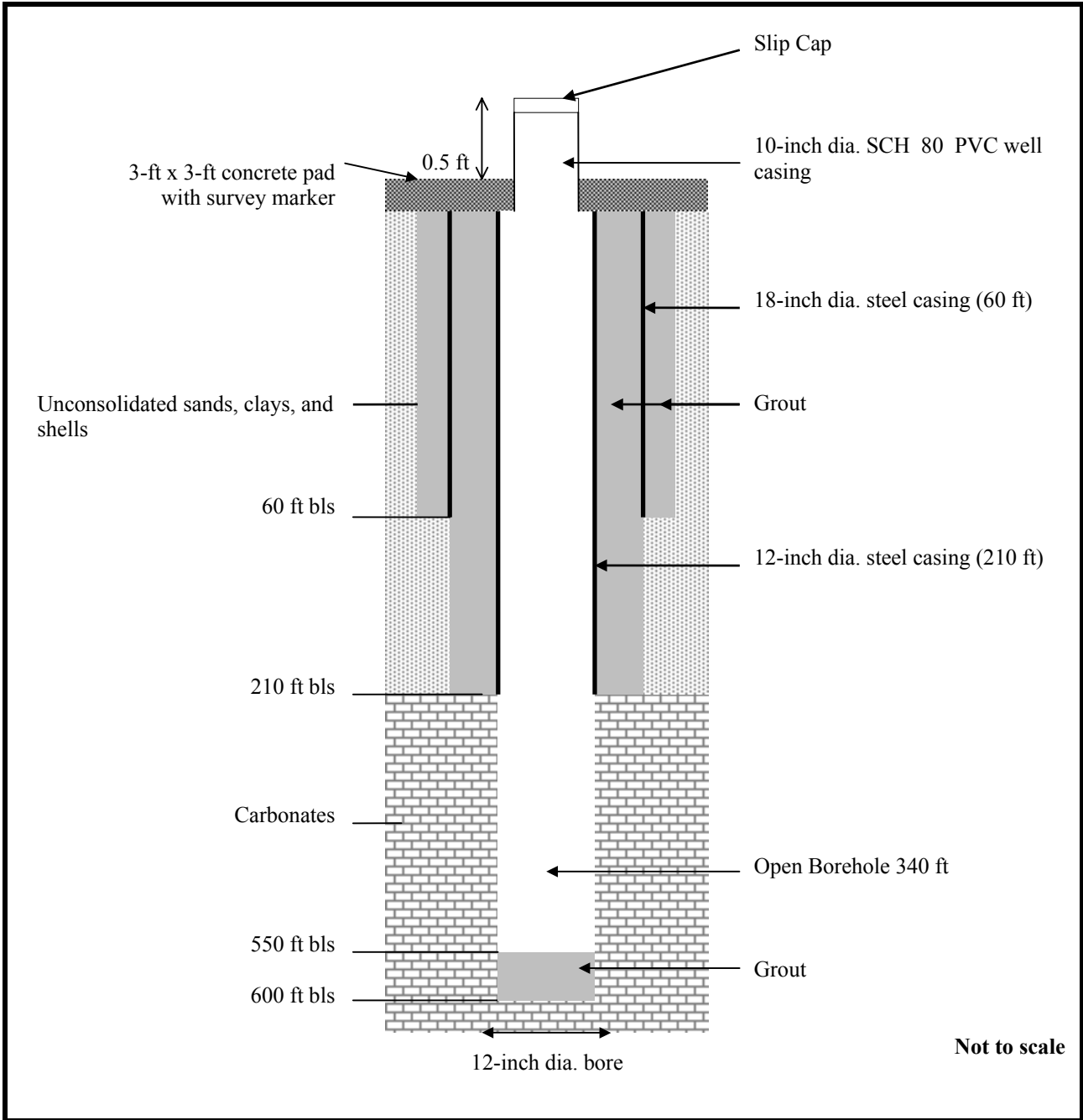
Figure 3. Intermediate Monitor Well OR-0648



Site:	Long Branch
Driller:	CenTech Utility Corp.
Well Completed:	October 6, 1995

SJRWMD

Figure 4. Floridan Monitor Well OR-0618



Site:	Long Branch
Driller:	CenTech Utility Corp.
Well Completed:	July 19, 1995

SJRWMD

Figure 5. Floridan Monitor Well OR-0617

Table 1.**Ground Water Levels**Site: Long BranchWell Number: OR-0618Hydrologist: J. Sego

Water Levels			Well Borehole Characteristics	
Date/Time (yy:mm:dd/hh:mm)	Casing (ft bls)	Rod (ft bls)	Total Depth (ft bls)	Open Hole (ft)
950808-0930	23.5	24.6	403	193
950808-1215	25.2	21.8	431	221
950808-1530	24.9	24.0	463	253
950809-1035	23.0	21.6	493	288
950810-0630	21.9	21.9	525	315
950810-0915	21.8	21.2	555	345
950810-1115	21.9	22.0	585	375
950810-1420	22.2	21.8	619	409
950810-1710	21.9	21.8	650	440
950811-0905	21.7	21.6	681	471
950811-1230	21.8	21.8	711	501
950814-1015	21.6	21.5	741	531
950814-1310	21.7	21.6	771	561
950814-1650	21.8	21.8	803	593
950815-0630	21.7	NR	810	600
950815-0920	21.2	21.6	834	624
950815-1205	21.3	21.5	864	654
950815-1420	21.6	22.0	898	688
950815-1550	21.3	21.2	928	718
950815-1730	21.7	21.8	960	750
950816-0630	21.7	NR	970	760
950816-0750	21.5	21.3	990	780
950816-0950	21.5	21.5	1020	810
950816-1200	21.6	21.6	1052	842
950816-1445	21.6	21.4	1082	872
950816-1820	22.0	22.3	1114	904
950817-0630	21.8	NR	1114	904
950818-1630	22.28	NR	1144	934
950915-1010	21.0	NR	1166	28

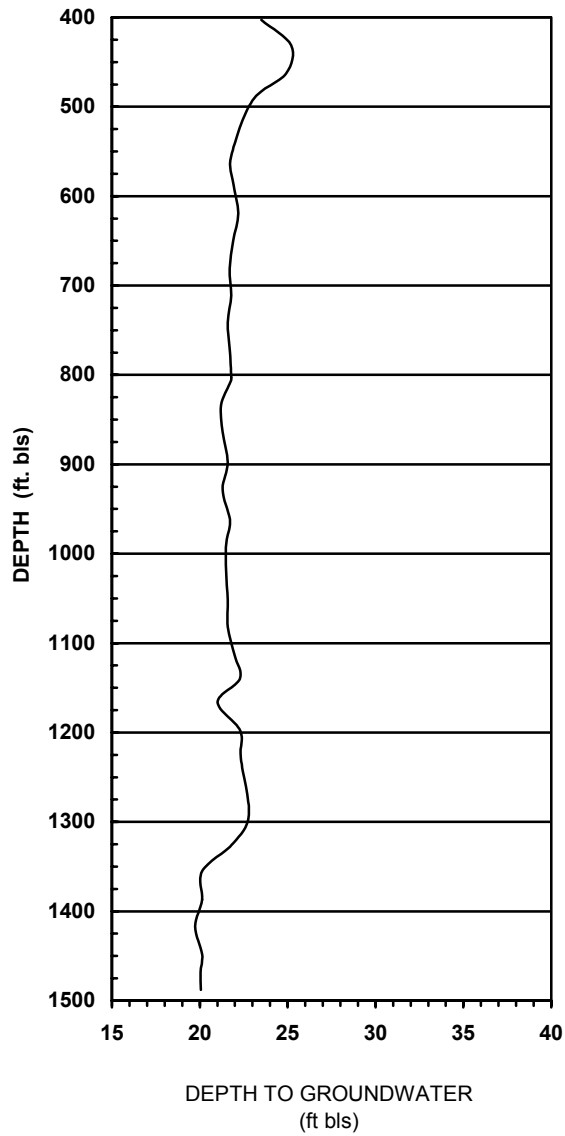
Table 1.**Ground Water Levels**Site: Long BranchWell Number: OR-0618Hydrologist: J. Sego

Water Levels			Well Borehole Characteristics	
Date/Time (yy:mm:dd/hh:mm)	Casing (ft bls)	Rod (ft bls)	Total Depth (ft bls)	Open Hole (ft)
950915-1207	22.3	22.0	1198	60
950915-1351	22.34	22.44	1229	91
950818-NA	NR	NR	1260	122
950918-0950	22.8	23.0	1292	154
950918-1255	21.9	23.8	1324	186
950918-1529	20.14	24.01	1355	218
950918-1720	20.14	23.89	1387	249
950919-0745	19.74	27.74	1417	279
950919-0946	20.14	29.94	1448	310
950919-1203	20.04	31.04	1468	330
950919-1455	20.07	35.56	1488	350

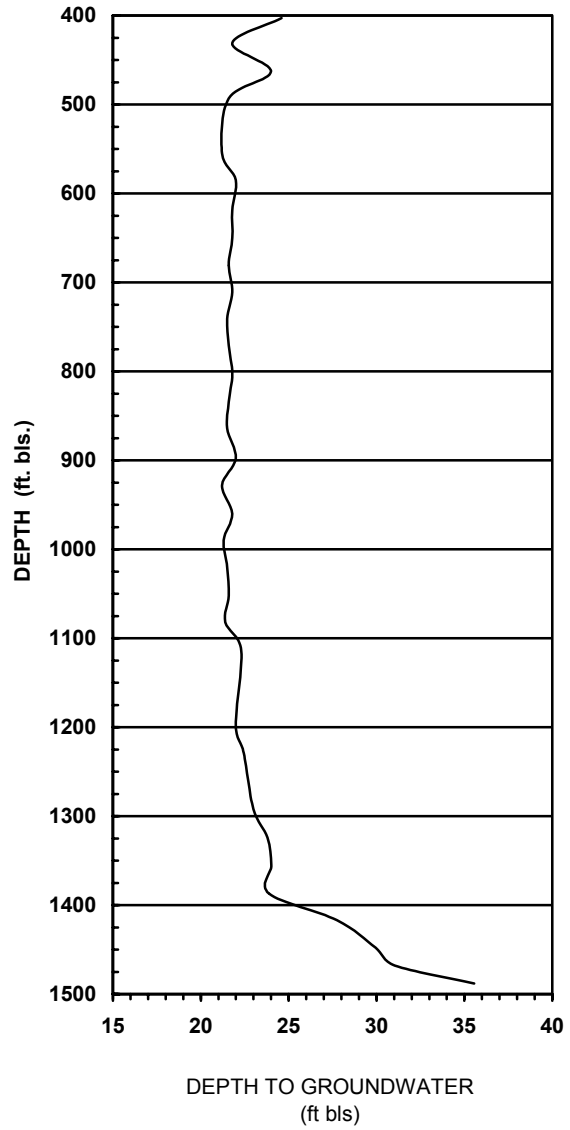
Table 2.**Ground Water Levels**Site: Long BranchWell Number: OR-0617Hydrologist: J. Sego

Water Levels			Well Borehole Characteristics	
Date/Time (yy:mm:dd/hh:mm)	Casing (ft bls)	Rod (ft bls)	Total Depth (ft bls)	Open Hole (ft)
950713-0820	25.2	23.2	400	190
950713-1125	26.2	23.5	434	224
950713-1440	25.9	23.0	462	252
950714-0600	23.5	NR	495	285
950714-0720	24.4	23.4	497	287
950717-0600	22.9	NR	528	318
950717-1020	23.9	23.0	558	348
950717-1210	24.9	23.6	589	379

Depth to Groundwater (Casing)



Depth to Groundwater (Rod)

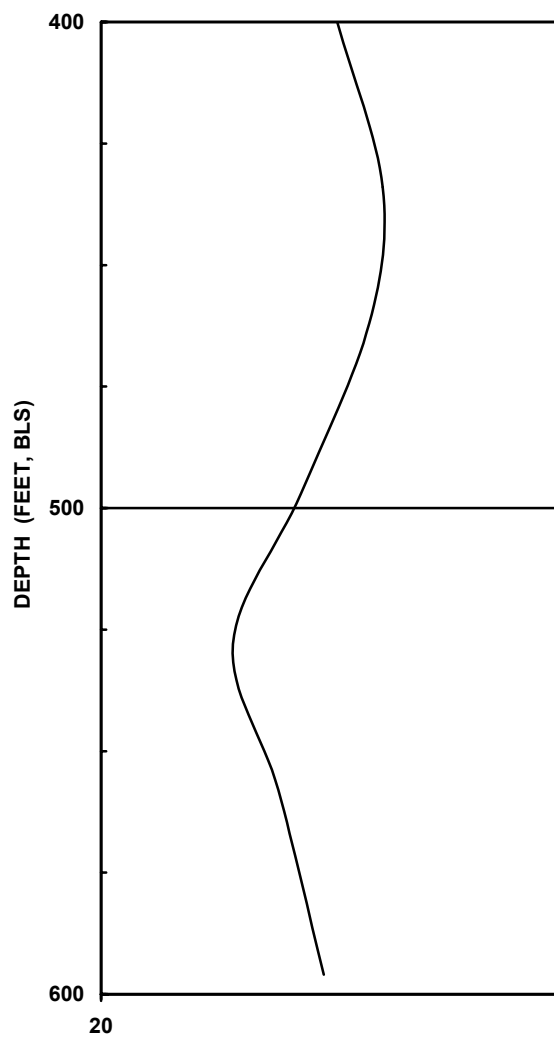


Site: Long Branch

SJRWMD

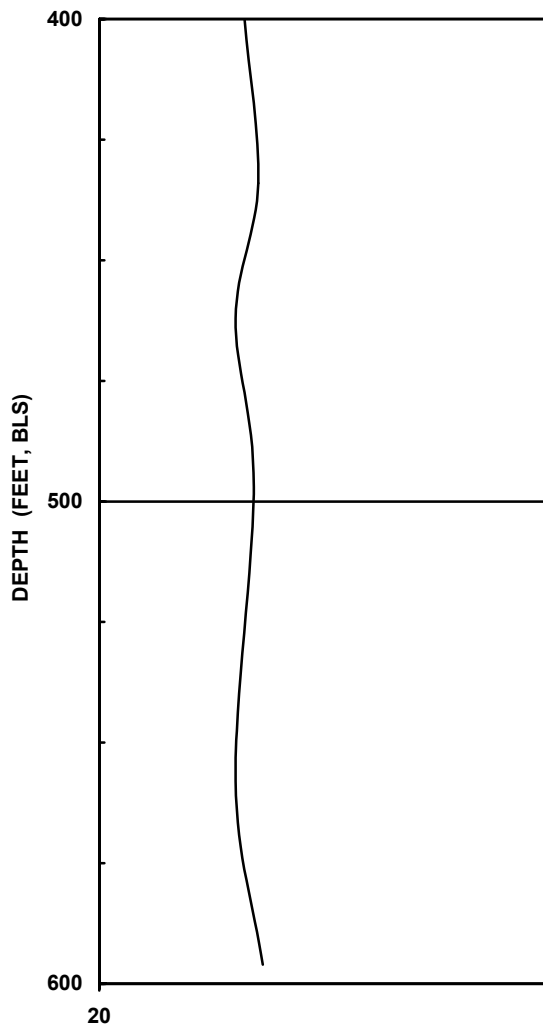
**Figure 6. Drilling Ground Water Levels
Floridan Monitor Well OR-0618**

Depth to Groundwater (Casing)



DEPTH TO GROUNDWATER
(ft bls)

Depth to Groundwater (Rod)



DEPTH TO GROUNDWATER
(ft bls)

Site:

Long Branch

SJRWMD

**Figure 7. Drilling Ground Water Levels
Floridan Monitor Well OR-0617**

Table 3.**Drilling Rate**Site: Long BranchWell Number: OR-0618Hydrologist: J. Segó

Drilling Time Data			
Bit Size (inch)	From (ft bls)	To (ft bls)	Time (ft/hr)
12	403	430	12
12	430	460	11
12	460	490	6
12	490	520	5
12	520	550	9
12	550	585	21
12	585	619	12
12	619	650	12
12	650	680	12
12	680	711	10
12	711	741	8
12	741	771	9
12	771	803	10
12	803	834	9
12	834	864	12
12	864	898	20
12	898	928	28
12	928	960	26
12	960	990	21
12	990	1020	20
12	1020	1052	19
12	1052	1082	12
12	1082	1114	10
12	1114	1140	7
12	1140	1166	26
12	NA	NA	NA
6	1166	1198	30
6	1198	1229	27
6	1229	1260	31
6	1260	1292	16

Table 3. Drilling Rate

Site: Long Branch

Well Number: OR-0618

Hydrologist: J. Segó

Drilling Time Data			
Bit Size (inch)	From (ft bls)	To (ft bls)	Time (ft/hr)
6	1292	1324	16
6	1324	1355	18
6	1355	1387	21
6	1387	1417	20
6	1417	1448	21
6	1448	1468	14
6	1468	1488	11
6	1488	1507	16

Table 4. Drilling Rate

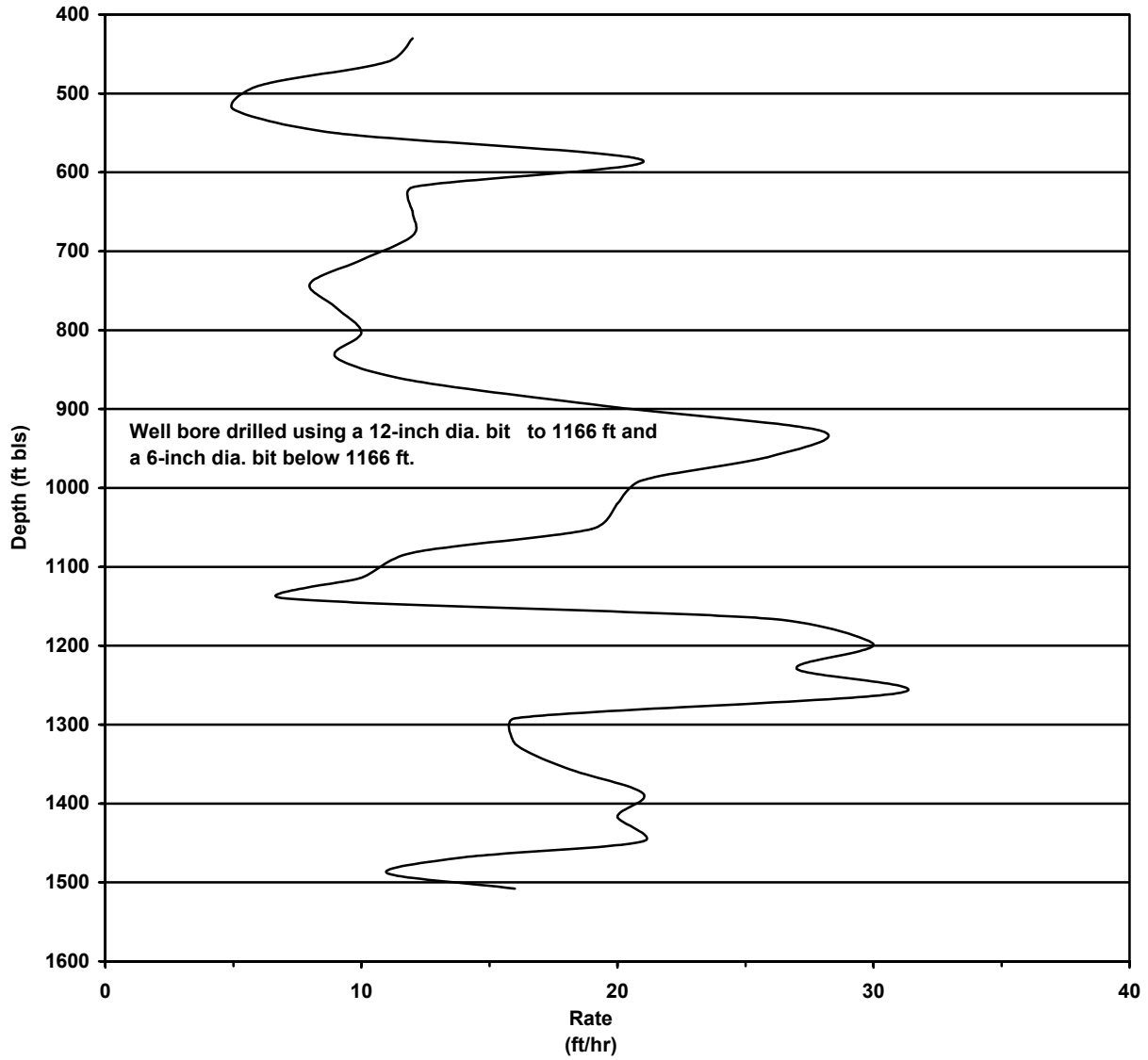
Site: Long Branch

Well Number: OR-0617

Hydrologist: J. Segó

Drilling Time Data			
Bit Size (in)	From (ft bls)	To (ft bls)	Time (ft/hr)
11 ^{7/8}	0	400	NR
11 ^{7/8}	400	434	12
11 ^{7/8}	434	462	10
11 ^{7/8}	462	497	9
11 ^{7/8}	497	528	5
11 ^{7/8}	528	558	12
11 ^{7/8}	558	596	12

Drilling Time



Site: Long Branch

SJRWMD

Figure 8. Drilling Time Data Floridan

Monitor Well OR-0618

Table 5. Groundwater Quality and Development

Site: Long Branch

Well Number: OR-0649

Hydrologist: R. Brooks

L A B	Date/Time (yyymmdd/hhmm)	Rate (gpm)	Σ Vol (gal)	GWL Static/Pumping (ft bls)	Screen Interval (ft)	Temp (Deg C)	pH	Specific Conductivity (us/cm)
✓	991120-1625	2.5	150	3.1/8.4	10-20	23.5	5.0	53

Comments

1. Well installed with 6^{1/4} hollow stem augers.

Table 6. Groundwater Quality and Development

Site: Long Branch

Well Number: OR-0648

Hydrologist: R. Brooks

L A B	Date/Time (yyymmdd/hhmm)	Rate (gpm)	Σ Vol (gal)	GWL Static/Pumping (ft bls)	Screen Interval (ft)	Temp (Deg C)	pH	Specific Conductivity (us/cm)
✓	961121-0815	4.5	653	7.4/24.7	60-70	23.5	7.2	750

Comments

1. Well installed with mud rotary.

Table 7. Groundwater Quality and Development

Site: Long Branch

Well Number: OR-0618

Hydrologist: J. Sego

Date/Time (yyymmdd/hhmm)	Sample Depth (ft bls)	Open Hole (ft)	Temp (°C)	Chlorides (mg/L)	Specific Conductivity (us/cm)
950927-0920	1507	367	-	-	12000
950927-1625	1507	367	-	-	5900
950927-1630	1507	367	-	-	6800
950927-1635	1507	367	-	-	6800
950927-1645	1507	367	-	-	6600
950927-1650	1507	367	-	-	6900
950927-1700	1507	367	-	-	6800

Comments

1. Well pumped between 200 to 400 gpm during flowmeter portion of geophysical logging.

Table 8.**Groundwater Quality**Site: Long BranchWell Number: OR-0618Hydrologist: J. Sego

Date/Time (yymmdd/hhmm)	Sample Depth (ft bls)	Open Hole (ft)	Temp (°C)	Chlorides (mg/L)	Specific Conductivity (us/cm)
950807-1205	220	10	26.5	45	776
950807-1330	250	40	25.5	28	396
950807-1520	280	70	25.5	60	396
950807-1635	310	100	26	61	348
950807-1735	340	130	26	61	353
950808-0750	370	160	24	61	301
950808-0915	403	193	24	61	412
950808-1205	431	223	25.5	65	438
950808-1525	463	253	26	65	441
950809-1030	494	284	25	62	440
950810-1705	524	315	25	58	448
950810-0915	555	345	25	51	420
950810-1115	585	375	25	51	448
950810-1405	619	409	25	51	470
950810-1710	650	440	25	51	470
950811-0900	680	470	25	58	475
950811-1225	711	501	25	65	468
950814-1000	741	531	27	65	463
950814-1300	771	561	26.5	44	441
950814-1645	803	593	26	58	446
950815-0915	810	624	25	51	463
950815-1200	834	654	25	41	468
950815-1400	864	688	25.5	37	481
950815-1545	898	718	25.5	71	584
950815-1725	928	750	26	71	578
950815-0745	960	780	25	122	725
950816-0945	970	810	25.5	52	540
950816-1155	1052	842	26	45	470
950816-1440	1082	872	26	44	468
950816-1815	1114	904	26	36	459
950817-1100	1144	934	26	235	1274
950915-1145	1198	60	28	1300	5452
950915-1325	1229	91	27.5	1300	5510
950915-1515	1260	122	28	1330	5452

Table 9. Groundwater Quality

Site: Long Branch

Well Number: OR-0618

Hydrologist: J. Segó

Date/Time (yymmdd/hhmm)	Sample Depth (ft bls)	Open Hole (ft)	Temp (°C)	Chlorides (mg/L)	Specific Conductivity (us/cm)
950918-0915	1292	154	27.5	1500	5985
950918-1210	1324	186	28	2010	7614
950918-1455	1355	218	28	2140	9024
950919-1715	1387	249	28	2700	9870
950919-0735	1417	279	28	4920	16975
950919-0941	1448	310	27.5	7000	19000
950919-1415	1468	330	28	8260	21432
950919-1455	1488	350	NA	NA	NA
950919-1645	1507	370	28.5	7400	22785

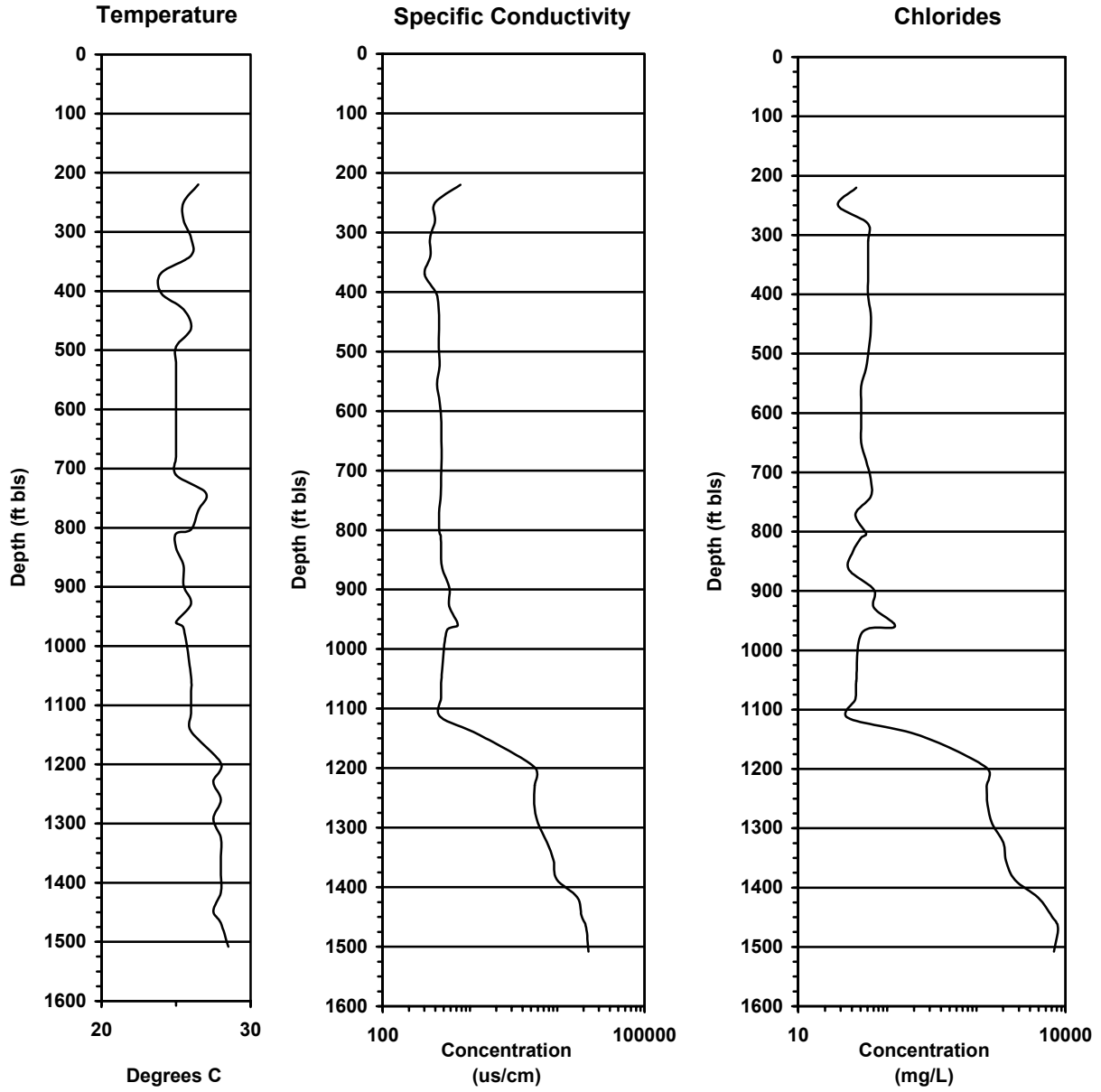
Table 10. Downhole Sample Water Quality

Site: Long Branch

Well Number: OR-0618

Hydrologist: J. Segó

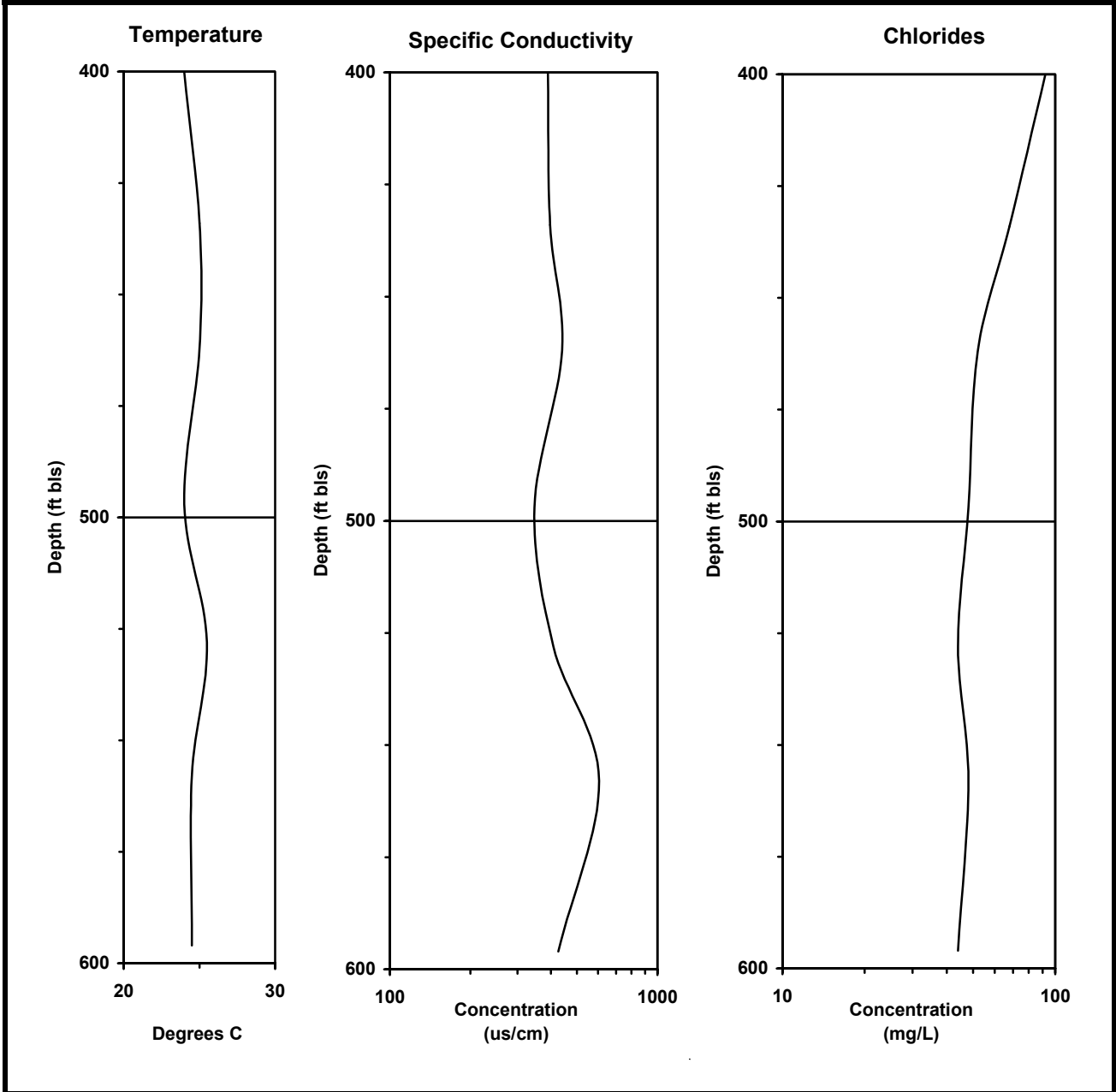
Date/Time (yy:mm:dd/hh:mm)	Sample Depth (ft bls)	Open Hole (ft)	Temp (°C)	Chlorides (mg/L)	Specific Conductivity (us/cm)
950818-1128	1138	928	27	600	2659
951002-1425	1383	1173	28.5	400	12183



Site: Long Branch

SJRWMD

Figure 9. Ground Water Quality Floridan Monitor Well OR-0618



Site: Long Branch

SJRWMD
 Figure 10. Ground Water Quality Floridan Monitor Well OR-0617

Table 11.**Well Development****Site:** Long Branch**Well Number:** OR-0618**Hydrologist:** J. Sego

Pump	Type: Diesel Turbine	Size: (3) 14-inch dia. bowls	
Rate (gpm)	600	Date: August 18, 1995	
Start Time:	1723	Stop Time:	1759
Time	GWL (ft bls)	Temp (°C)	Conductivity (us/cm)
0	22.28	NA	NA
1	NR	28	625
2	22.87	NR	NR
8	22.85	NR	NR
10	NR	25.5	1300
13	22.79	NR	NR
15	NR	25	1800
17	22.87	NR	NR
20	NR	25	1790
21	22.77	NR	NR
24	NR	26	1750
25	NR	26	1750
30	22.72	NR	NR
31	NR	25.5	1695
36	22.22	NR	NR

Comments: Data recorded during geophysical logging.

Table 12.

Grout Data

Site: Long Branch

Well Number: OR-0618

DATE	TAG DEPTH (ft bls)	ANNULUS/BORE (inch dia.)	VOLUME (yards/bags)	GROUT/MATERIAL	COMMENTS
7/21/95	60	24-A	1.9 yards	Type I	Tremie grout 60-ft of 18-inch dia. steel casing
7/24/95	210	18-A	10 yards	Type I	Pressure grout 210-ft of 12-inch dia. steel casing
NR	15	18-A	0.4 yards	Type I	Grout through tremie pipe
08/23/95	1140	12-A	0.6 yards	Type I	Set 1140-ft of 6-inch dia. SCH 80 PVC casing; grout through tremie pipe
08/25/95	1134	12-A	5 yards	Type I	Grout through tremie pipe
08/28/95	1118	12-A	5 yards	Type I	Grout through tremie pipe
08/29/95	1021	12-A	5 yards	Type I	Grout through tremie pipe
08/30/95	879	12-A	5 yards	Type I	Grout through tremie pipe
08/31/95	704	12-A	5 yards	Type I	Grout through tremie pipe
09/02/95	642	12-A	5 yards	Type I	Grout through tremie pipe
09/05/95	602	12-A	5 yards	Type I	Grout through tremie pipe
09/06/95	539	12-A	5 yards	Type I	Grout through tremie pipe
09/07/95	525	12-A	2 yards	Peagravel	Gravel used to fill voids
09/07/95	515	12-A	5 yards	Type I	Grout through tremie pipe
09/07/95	470	12-A	4 yards	Peagravel	Gravel used to fill voids
09/07/95	428	12-A	5 yards	Type I	Grout through tremie pipe
09/07/95	495	12-A	4 yards	Peagravel	Gravel used to fill voids
09/08/95	428	12-A	5 yards	Type I	Grout through tremie pipe
09/11/95	400	12-A	8 yards	Peagravel	Gravel used to fill voids
09/11/95	300	12-A	5 yards	Type I	Grout through tremie pipe
09/12/95	260	12-A	8 yards	Peagravel	Gravel used to fill voids
09/12/95	225	12-A	5 yards	Type I	Grout through tremie pipe
09/12/95	225	12-A	8 yards	Peagravel	Gravel used to fill voids
09/12/95	210	12-A	5.6 yards	Type I	Grout through tremie pipe to land surface
NR	1507	6-B	4 yards 35 bags	Peagravel Type I	Backplug bore
NR	1280	6-B	NA	NA	Final tag on bore

Table 13.**Grout Data****Site:** Long Branch**Well Number:** OR-0617

DATE	TAG DEPTH (ft bls)	ANNULUS/BORE (inch dia.)	VOLUME (yards/bags)	GROUT/MATERIAL	COMMENTS
07/07/95	60	18-A	3.5 yds	Type I	Pressure grout 60-ft of 18-inch dia. steel casing
07/09/95	210	12-A	15 yds	Type I	Pressure grout 210-ft of 12-inch dia. steel casing
07/20/95	600	12-B	40 bags	Type I	Backplug bore
NR	550	12-B	NA	NA	Final tag on bore

Lithologic Description

Site: Long Branch

Well Number: OR-0648

Samples Described By: Robert Brooks

From (ft)	To (ft)	Hammer Blow Counts	Lithology
4	6	5/8/7/9	Sand, dark brown, fine, organic (4-5); Sandy clay, light brown
9	11	11/10/9/9	Sandy clay, light brown (9-10); Sand, creme, fine
14	16	12/8/7/8	Sand, creme, fine
19	21	8/5/4/6	Clay, light brown, sandy with small beds of fine sand
24	26	6/8/11/14	Sand, light brown, fine to medium
29	31	5/5/6/11	Sand, gray, fine to medium
34	36	9/9/9/8	Clay, dark greenish gray, semi-stiff (34-35); Sand, gray, fine to medium
39	41	4/3/3/2	Clay, greenish gray with shell inclusions, semi- stiff
44	46	3/2/5/11	Same as Above (SAA)
49	51	8/3/4/6	SAA
54	56	2/2/9/12	Clay, greenish gray with shell inclusions, semi- stiff (54-55); Sand, gray, fine, minor shell fragments and clay
59	61	5/13/30/32	Clay, semi-stiff to stiff, gray (59-60); Sand, gray, medium, minor shell fragments
64	66	7/7/7/8	Sand, gray, medium, with shell fragments
69	71	1/2/4/15	Clay, light greenish gray, semi-stiff to stiff, with weather shell inclusions
74	76	8/7/10/13	Sand, gray silty to very fine, with very fine shell fragments
79	81	7/3/3/5	No Return
84	86	8/12/11/8	Clay, sand (very fine to coarse), and shell, gray with coarse phosphate
89	91	16/12/15/13	Sand, gray, fine to medium, with shell fragments and minor silts
94	96	3/4/3/6	Clay, light greenish gray, semi-stiff, minor sand, phosphate pebbles
99	101	4/4/4/8	Clay, green, stiff, phosphatic, minor sand
104	106	6/6/8/12	Clay, stiff, green
109	111	5/7/7/13	Clay, stiff, abundant phosphate pebbles, green
114	116	7/8/8/10	Clay, silty, green
119	121	4/4/7/10	Clay, stiff, abundant phosphate pebbles, green
124	126	3/2/6/10	SAA
129	131	6/5/10/20	SAA
134	136	5/9/8/13	SAA
139	141	5/50 for 6-inches	No Return
144	146	27/20/27/38	Clay, green, very stiff

Lithologic Description

Site: Long Branch

Well Number: OR-0618

Samples Described By: John Sego

From (ft)	To (ft)	Lithology
0	210	Undifferentiated sands and clays
210	230	Limestone, creme, pelletal, vuggy porosity, friable
230	240	Limestone, tan, fine-grained, intergranular porosity, with trace dolomite, gray
240	280	Limestone, tan, pelletal ~grainstone, fossiliferous (<i>Leidocyclina</i>), with trace dolomite, gray
280	390	SAA, fossiliferous (<i>dictyoconus</i>),
390	400	Limestone, tan, dolomitic, with phosphorite
400	410	Dolomite, tan-gray, with limestone, creme
410	420	Dolomite, creme-tan, fossiliferous (<i>dictyoconus</i>)
420	500	Dolomite, brown, sucrosic, hard, with limestone, creme
500	530	Dolomite, pale yellowish brown, with limestone, pale orange
530	610	Dolomite, grayish orange, with limestone, pale orange
610	690	Dolomite, grayish orange, sucrosic, with limestone grayish orange
690	800	Dolomite, marled tan-gray, moldic porosity
800	1000	Dolomite, pale yellow brown, sucrosic, pinpoint porosity, with trace peat and limestone, white
1000	1090	Dolomite, pale orange, pinpoint and moldic porosity, peat @ 1060 ft bls and 1090 ft bls
1090	1100	Dolomite, dark yellowish brown, sucrosic, pinpoint porosity
1100	1140	Dolomite, pale yellowish brown, pinpoint porosity, with some dark brown dolomite
1140	1190	Dolomite, dark yellowish brown, pinpoint porosity, with some dark brown dolomite, peat @ 1170 ft bls
1190	1230	Dolomite, yellowish brown, sucrosic
1230	1507	Dolomite, dark brown, hard, trace clay, gray @ 1295 ft bls

Table 14.**Video Surveys**

Date	Logger	Well ID	Casing/ Bore dia. (inch)	Survey Depth (ft bls)	Depth (ft bls)	Comments
9/21/95	FDOT	OR-0618	6/6	1142	1507	Sediments in suspension, poor or no visibility
9/22/95	Deep Venture	OR-0618	6/6	1360	1507	Obstruction at 1360 ft
10/03/95	Deep Venture	OR-0618	6/6	1386	1507	Obstruction and poor visibility at 1386 ft

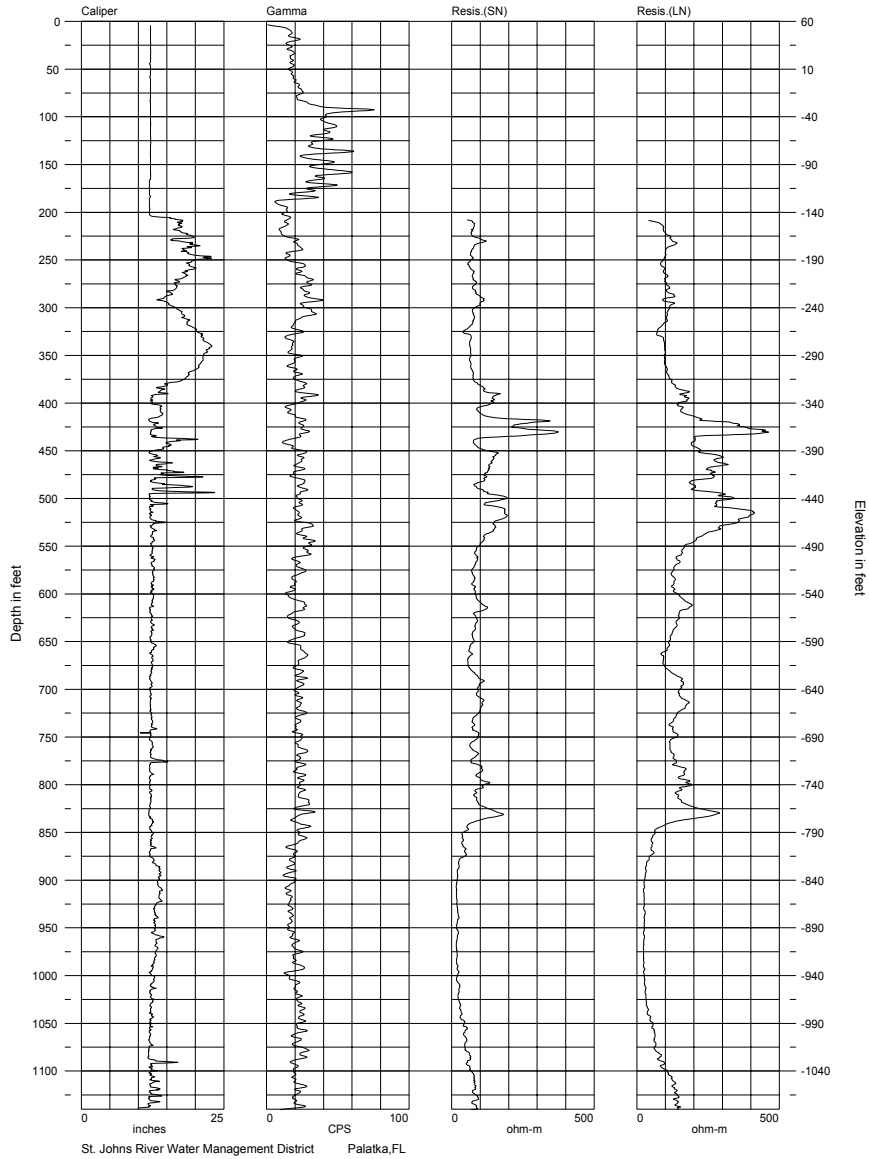
Geophysical Logs

Site: Long Branch

Well ID: OR-0618

Logger: Southern Resources

Date: 8/18/95



Geophysical Logs

Site: Long Branch

Well ID: OR-0618

Logger: Southern Resources

Date: 8/18/95

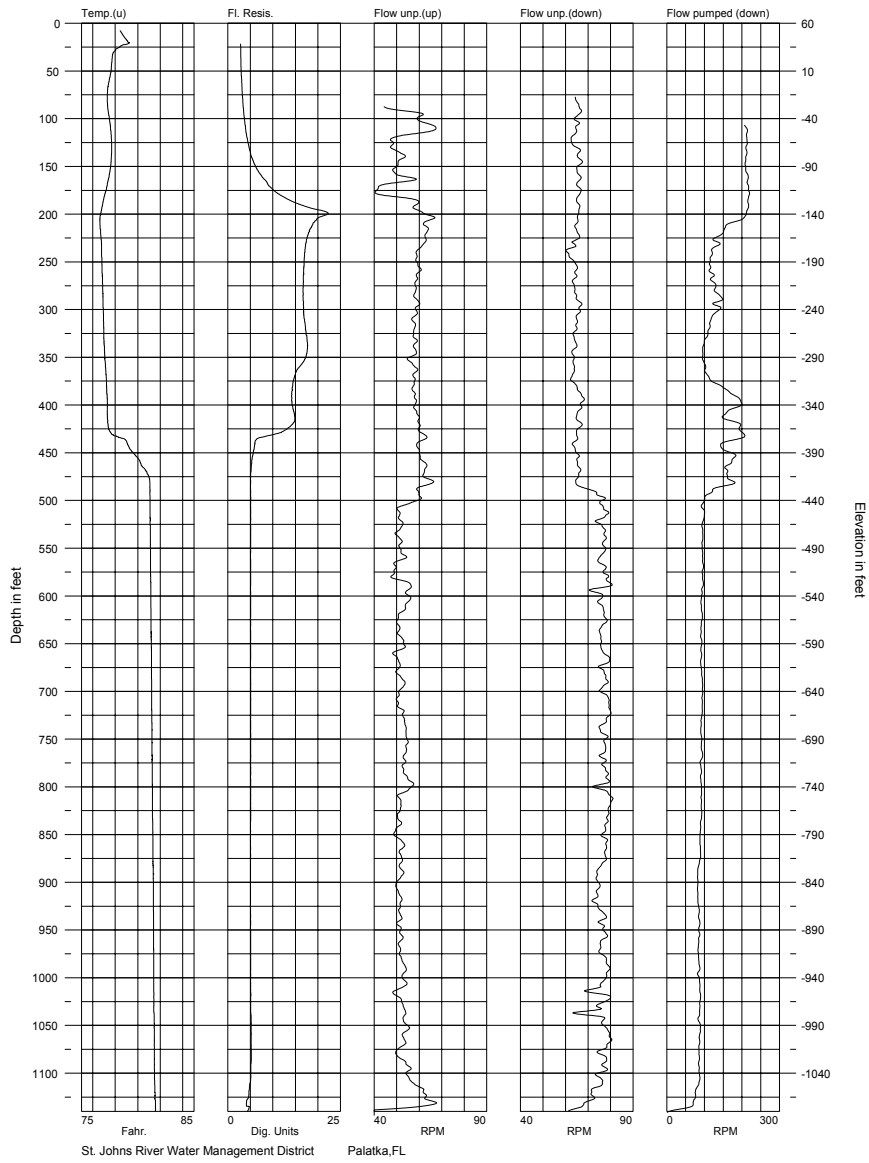


Table 15. Geophysical Logs Available (not included in report)

Date	Logger	Well ID	Casing/ Bore dia. (inch)	Survey Depth (ft bls)	Depth (ft bls)	Logs Available
7/18/95	SJRWMD	OR-0617	12/12	593	596	Caliper, Gamma, Temp
10/2/95	Southern Resources	OR-0618	6/6	1502	1507	Caliper, Resistivity (16-64), SP, Fluid Resistivity, Flowmeter unpumped