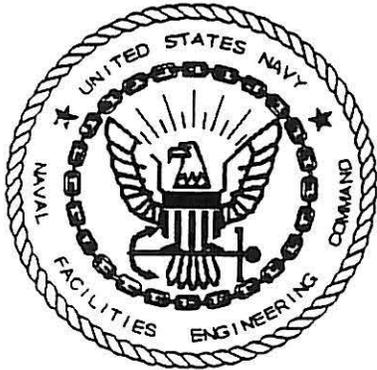


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CNC CHARLESTON
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DRAFT ZONE E RESOURCE CONSERVATION AND RECOVERY FACILITY INVESTIGATION
REPORT VOLUME VII OF XV APPENDICES A AND B CNC CHARLESTON SC
11/1/1997
ENSAFE

**DRAFT ZONE E
RCRA FACILITY INVESTIGATION REPORT
NAVBASE CHARLESTON**

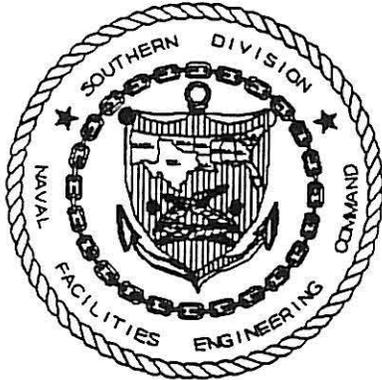


**VOLUME VII OF XV
APPENDICES A & B**

**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:

**EnSafe Inc.
5724 Summer Trees Drive
Memphis, Tennessee 38134
(901) 372-7962**

November 1997

Appendix A
Well Construction Logs

EnSafe/Allen & Hoshall

Monitoring Well NBCE018001

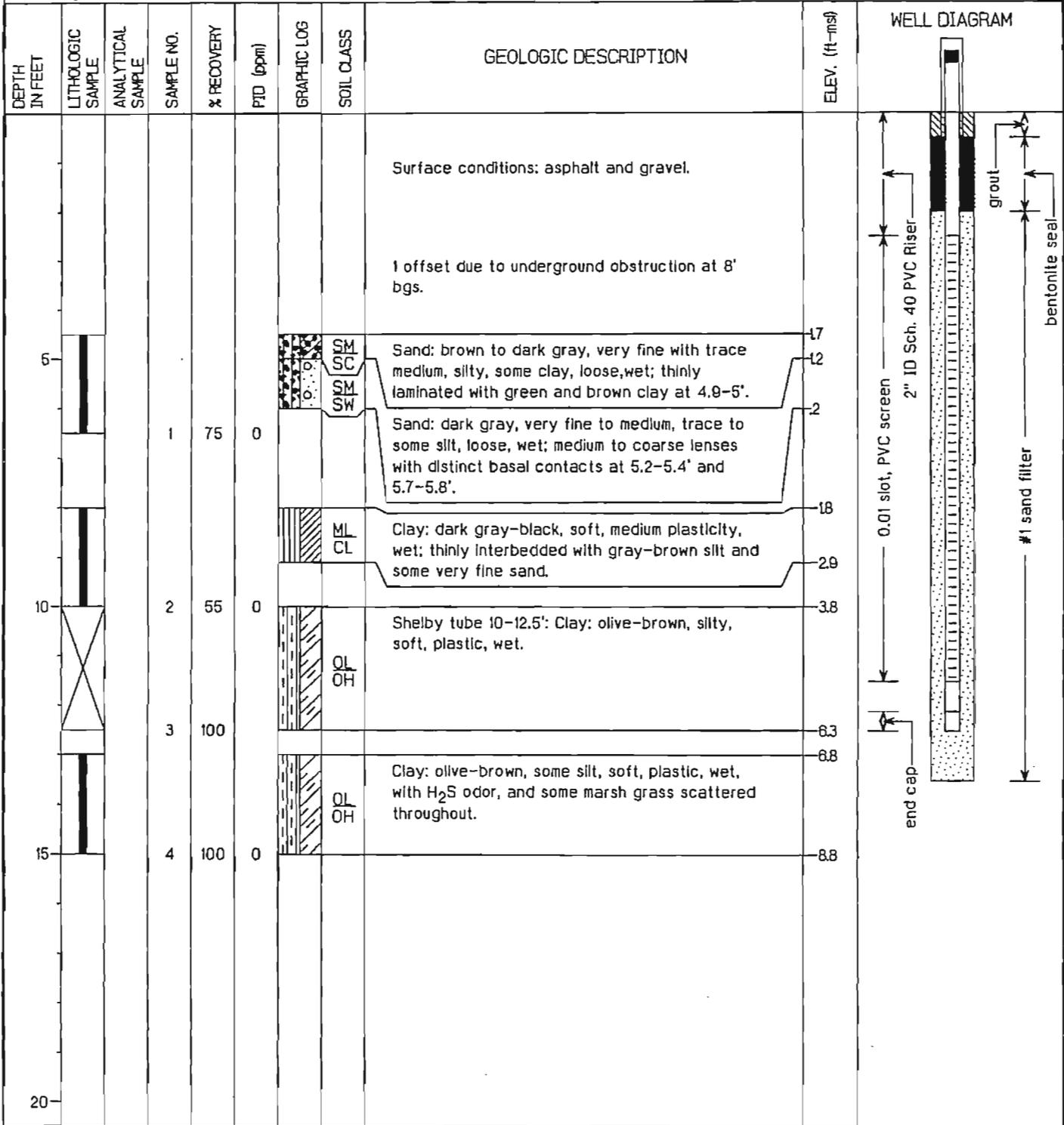
Project: ZONE E - Naval Base Charleston	Coordinates: 2320742.45 E, 373478.30 N
Location: Charleston, SC	Surface Elevation: 8.2 feet msl
Started at 1310 on 10-12-95	TOC Elevation: 10.66 feet msl
Completed at 1530 on 10-12-95	Depth to Groundwater: 7.42 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.24 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.5 feet bgs
Geologist: T. Kafka	Well Screen: 3.5 to 12.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt and gravel		
4.5							1 offset due to underground obstruction at 4.5' bgs.			
0-8						FILL	Auger cuttings 0-8': cobbly fill, cobbles 7-8 cm dia., clayey, sandy matrix, moist, petroleum odor.			
9.5							Cuttings at 9.5': gray to dark gray clayey sand with gravel sized particles.			
13.5			1	50	0		SM SC	Sand: tan to yellow with green, very fine to fine, moderately well-sorted, frequent gravel fragments, silty, clayey, wet.	3.7 4.4	

EnSafe/Allen & Hoshall

Monitoring Well NBCE018002

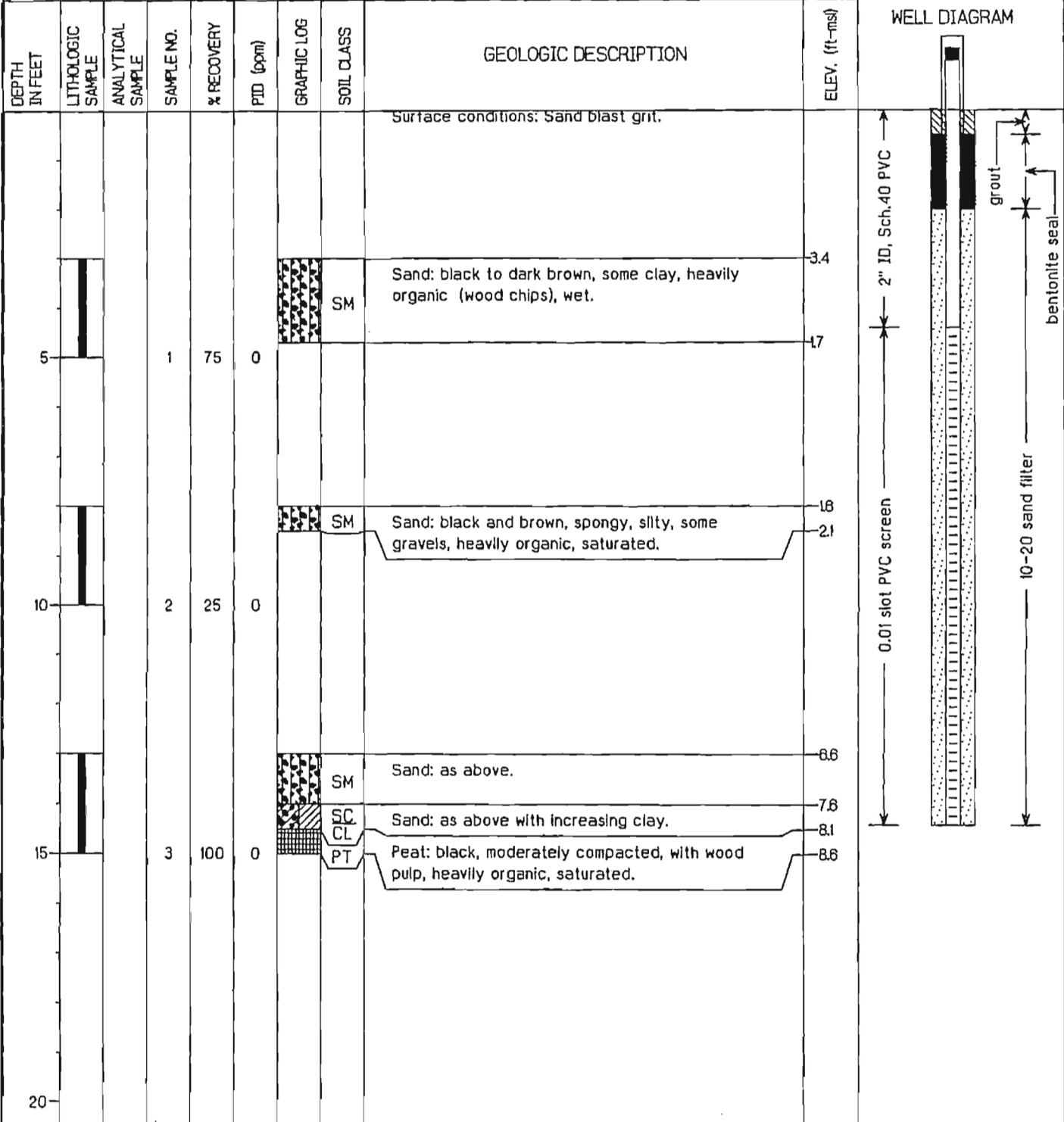
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2320754.47 E, 373412.91 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>6.2 feet msl</i>
Started at <i>0920 on 10-12-95</i>	TOC Elevation: <i>8.77 feet msl</i>
Completed at <i>1115 on 10-16-95</i>	Depth to Groundwater: <i>7.60 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.77 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>P. Bayley</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCE021001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317707.84 E, 377656.86 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>6.4 feet msl</i>
Started at <i>1130 on 10-7-94</i>	TOC Elevation: <i>9.28 feet msl</i>
Completed at <i>1300 on 10-7-94</i>	Depth to Groundwater: <i>8.32 feet TOC</i> Measured: <i>10-12-93</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>0.96 feet msl</i>
Drilling Company: <i>Environmental Technology and Engineering</i>	Total Well Depth: <i>14.4 feet bgs</i>
Geologist: <i>B. Dotson</i>	Well Screen: <i>4.4 to 14.4 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCE021002

Project: ZONE E - Naval Base Charleston

Coordinates: 2317682.87 E, 377727.38 N

Location: Charleston, SC

Surface Elevation: 7.60 feet msl

Started at 1400 on 10-7-94

TOC Elevation: 12.01 feet msl

Completed at 1500 on 10-7-94

Depth to Groundwater: 5.51 feet TOC Measured: 10-12-93

Drilling Method: 4.25" ID (7.5" OD) HSA with spft spoon

Groundwater Elevation: 2.17 feet msl

Drilling Company: Environmental Technology and Engineering

Total Well Depth: 14.3 feet bgs

Geologist: B. Dotson

Well Screen: 4.3 to 14.3 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: sand blast grit. Hand auger samples: 1' to 4'-- Sand: light brown, medium,		<p>WELL DIAGRAM</p> <p>2" ID, Sch. 40 PVC</p> <p>0.01 slot PVC screen</p> <p>10-20 sand filter</p> <p>grout</p> <p>bentonite seal</p>
5			1	85	0			At 5', encountered fly ash and wood chips. Wet.		
7.4							SP	Sand: light and dark, fine to medium with pebbles, organic material, silty, saturated.	4	
10									2.1	
15			2	100	0		PT	Peat: clayey, heavily organic, strong organic odor, saturated.	5.4	
20									7.4	

EnSafe/Allen & Hoshall

Monitoring Well NBCE021003

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317575.44 E, 377668.35 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.0 feet msl</i>
Started at <i>0800 on 10-8-94</i>	TOC Elevation: <i>12.65 feet msl</i>
Completed at <i>0850 on 10-8-94</i>	Depth to Groundwater: <i>5.92 feet TOC</i> Measured: <i>10-12-93</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.00 feet msl</i>
Drilling Company: <i>Environmental Technology and Engineering</i>	Total Well Depth: <i>14.3 feet bgs</i>
Geologist: <i>B. Dotson</i>	Well Screen: <i>4.3 to 14.3 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Concrete and asphalt.		
5			1	100	0	GP	GP	Recovery is probably slough. Sand with silt and gravel.	5	
10			2	50	0	SC	SC	Sand: clayey, woody, black organic material, strong H ₂ S odor.	0	
15			3	50		SP	SP	Sand: gray, fine to medium, saturated.	5	
20									8	

EnSafe/Allen & Hoshall

Monitoring Well NBCE023001

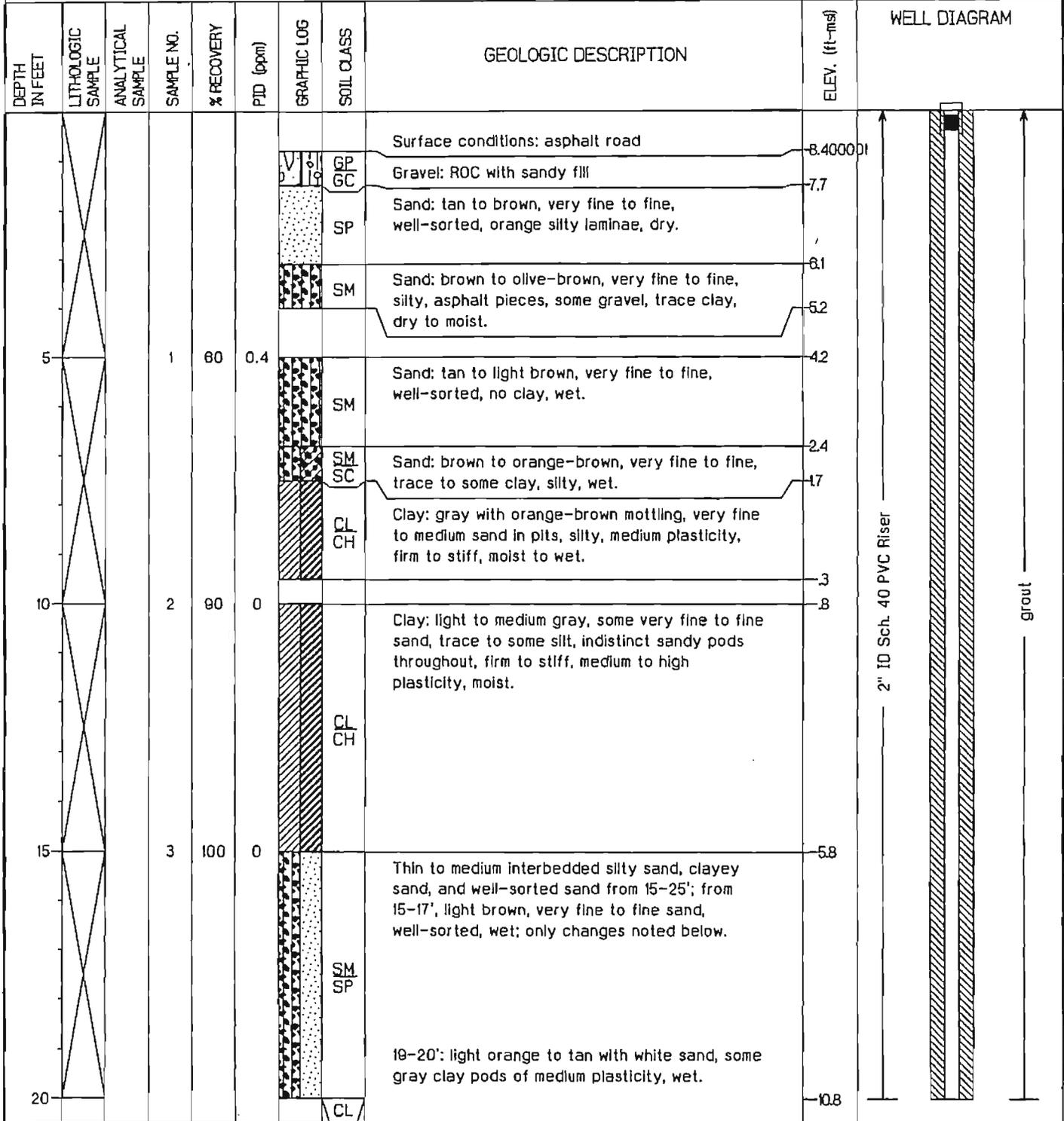
Project: ZONE E - Naval Base Charleston	Coordinates: 2317136.81 E, 377155.05 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 1230 on 10-17-95	TOC Elevation: 8.89 feet msl
Completed at 1415 on 10-17-95	Depth to Groundwater: 6.27 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.62 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: P. Bayley	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt street.		
5			1	85	0		SP SM	Sand: brown with light brown indistinct alternating bands, very fine to fine, some silt, soft, wet.	4.7	
									3	
10			2	70	0		CP	Clay: gray with orange mottling, some very fine to fine sand with occasional granules, some silt, soft to firm, plastic, wet.	8	
								Shelby tube (10-12.5'): top-- brown, very fine to fine, silty sand; bottom-- clay.	10	
			3	100	0		CL SM		3.3	
								Clay: gray with orange mottling, some very fine to fine sand, some silt, soft to firm, plastic, wet.	3.8	
15			4	75	0		CP		5.3	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE02301D

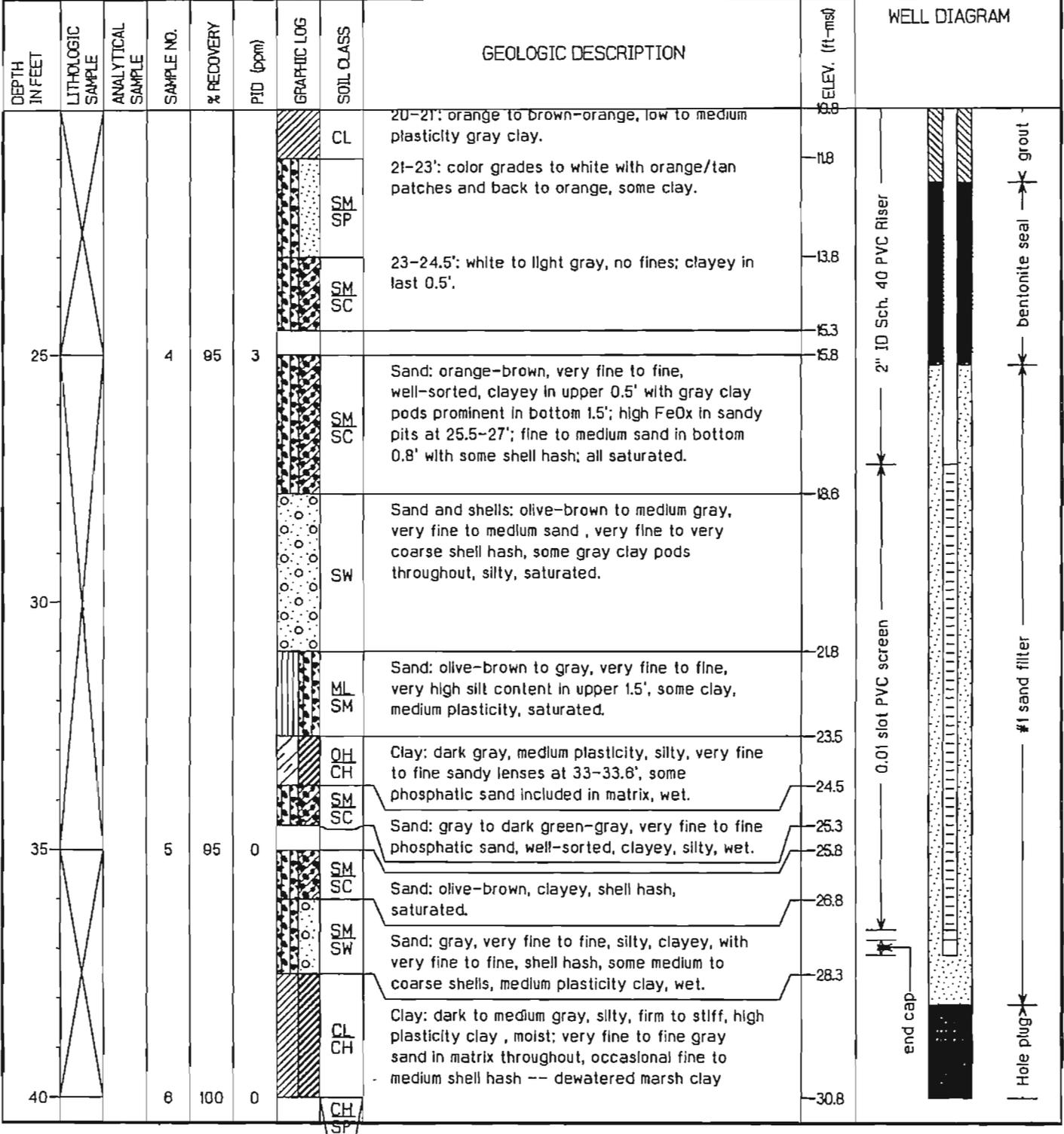
Project: ZONE E - Naval Base Charleston	Coordinates: 2317132.72 E, 377169.39 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 1020 on 12-02-95	TOC Elevation: 9.04 feet msl
Completed at 1130 on 12-03-95	Depth to Groundwater: 6.59 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.45 feet msl
Drilling Company: Alliance Environmental (SC Cert #889)	Total Well Depth: 37.1 feet bgs
Geologist: T. Kafka	Well Screen: 27.2 to 36.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE02301D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317132.72 E, 377169.39 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 1020 on 12-02-95	TOC Elevation: 9.04 feet msl
Completed at 1130 on 12-03-95	Depth to Groundwater: 6.59 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.45 feet msl
Drilling Company: Alliance Environmental (SC Cert #889)	Total Well Depth: 37.1 feet bgs
Geologist: T. Kafka	Well Screen: 27.2 to 36.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE02301D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317132.72 E, 377169.39 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 1020 on 12-02-95	TOC Elevation: 9.04 feet msl
Completed at 1130 on 12-03-95	Depth to Groundwater: 6.59 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.45 feet msl
Drilling Company: Alliance Environmental (SC Cert #889)	Total Well Depth: 37.1 feet bgs
Geologist: T. Kafka	Well Screen: 27.2 to 36.6 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			7	100	0		SH SP	Clay: dark gray, silty, high plasticity, with very fine to fine, gray, thin, distinct sand lenses/stringers throughout, wet.	30.8	
50			8	100	0		CH OH	Clay: dark gray to green-gray, silty, stiff, very fine to fine sand in thin laminae and partings throughout; higher sand content of 20-25% at 42.5-42.8', 25-30% at 49-50'.	35.8	
55			9	100	0		SW	Sand: gray to green-gray, fine to coarse, poorly-sorted, fine to medium shell fragments, silty, trace gray clay, wet; some PO ₄ nodules up to 0.25' in last 0.5'.	40.8	
60							CH OH	Clay: as above with trace very fine to fine gray sand, high plasticity, moist to wet, trace effervescence with HCL--dewatered marsh clay of consistent lithology. Clay: as above with black silty laminae and partings, trace very fine gray sand in partings.	42.8	

EnSafe/Allen & Hoshall

Monitoring Well NBCE02301D

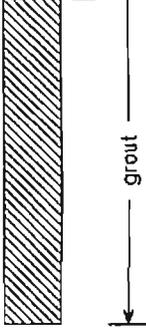
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>237132.72 E, 377169.39 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.2 feet msl</i>
Started at <i>1020 on 12-02-95</i>	TOC Elevation: <i>9.04 feet msl</i>
Completed at <i>1130 on 12-03-95</i>	Depth to Groundwater: <i>6.59 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>2.45 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert #889)</i>	Total Well Depth: <i>37.1 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>27.2 to 36.6 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
65			10	100	0		CH OH	Clay: as above with very fine to fine sand in very few partings.		
70										
75			11	100	0			Clay: as above, no sand in matrix or evident as partings or lenses.		
80										

EnSafe/Allen & Hoshall

Monitoring Well NBCE02301D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317132.72 E, 377169.39 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.2 feet msl</i>
Started at <i>1020 on 12-02-95</i>	TOC Elevation: <i>9.04 feet msl</i>
Completed at <i>1130 on 12-03-95</i>	Depth to Groundwater: <i>6.59 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>2.45 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert #889)</i>	Total Well Depth: <i>37.1 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>27.2 to 36.6 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
85			12	100	0		OH		75.8	
90										
95										
100										

EnSafe/Allen & Hoshall

Monitoring Well NBCE025001

Project: ZONE E - Naval Base Charleston	Coordinates: 2316880.58 E, 376624.45 N
Location: Charleston, SC	Surface Elevation: 9.0 feet msl
Started at N/A on 10-8-93	TOC Elevation: 8.90 feet msl
Completed at N/A on 10-8-93	Depth to Groundwater: 8.91 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: -0.01 feet msl
Drilling Company: Environmental Technology and Testing	Total Well Depth: 14.0 feet bgs
Geologist: B. Dotson	Well Screen: 4.0 to 14.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Asphalt.		
5			1	85	0	[Pattern]	SC	Sand: brown with gray mottling, clayey, stiff and friable, moist.	6	
									3.3	
						[Pattern]	SC	Sand: brown, clayey, stiff.	1	
						[Pattern]	SP	Sand: light gray sand, fine, well-sorted, saturated, soft.	0	
10			2	100	0	[Pattern]	SC SM	Sand: brown, clayey, with silt and gravels, light mottling, friable, saturated.	0.5 1	
						[Pattern]	SW	Sand: light gray, fine, saturated, soft.	4	
						[Pattern]	CL	Clay: light gray, with fine sand, saturated.	4.5	
15			3	66	0				5.5	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE025002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316776.20 E, 376595.63 N

Location: Charleston, SC

Surface Elevation: feet msl

Started at 1410 on 10-8-93

TOC Elevation: 8.90 feet msl

Completed at 1515 on 10-8-93

Depth to Groundwater: 5.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 3.02 feet msl

Drilling Company: Environmental Technology and Engineering

Total Well Depth: 14.4 feet bgs

Geologist: B. Dotson

Well Screen: 4.4 to 14.4 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: Asphalt and concrete.		
5			1	100	0		SW	Sand: brown, fine to medlum, well-sorted, moist. Sample collected with posthole digger.		
10			2	66	0		SW	Sand: light brown, fine to medium, well-sorted, with some clay at bottom of spoon, saturated.		
15			3	50	0		SW SC	Sand: light brown, fine to medium, well-sorted, saturated. Sand: light brown, fine to medium, well-sorted, clayey, saturated.		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE025003

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316591.89 E, 376490.61 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.4 feet msl</i>
Started at <i>0940 on 11-2-93</i>	TOC Elevation: <i>9.44 feet msl</i>
Completed at <i>0920 on 11-2-93</i>	Depth to Groundwater: <i>6.64 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA</i>	Groundwater Elevation: <i>2.80 feet msl</i>
Drilling Company: <i>ETE</i>	Total Well Depth: <i>13.4 feet bgs</i>
Geologist: <i>LAK</i>	Well Screen: <i>3.4 to 13.4 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							SP	Surface conditions: Concrete. Logged from hand auger and drilling cuttings. Sand: light brown, fine, minor fines, slightly moist. Sand: orange-brown, fine, slightly more fines and more moist.		
5							SC	Clayey and very moist. Cuttings to TD: Sand: orange-brown, very fine, clayey, saturated.	4.4	
10									4	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE025004

Project: ZONE E - Naval Base Charleston	Coordinates: 2316564.77 E, 376533.43 N
Location: Charleston, SC	Surface Elevation: 9.5 feet msl
Started at 1030 on 2-2-96	TOC Elevation: 9.41 feet msl
Completed at 1130 on 2-2-96	Depth to Groundwater: 6.72 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with spit spoon	Groundwater Elevation: 2.69 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.5 feet bgs
Geologist: B. Blythe	Well Screen: 3.5 to 12.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		<p>WELL DIAGRAM</p> <p>end cap</p> <p>2" ID Sch. 40 PVC Riser</p> <p>0.01 slot PVC screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p>
5			1	85	0		SW	Sand: tan to yellow-brown, fine to medium, clean, dry to moist--fill sand.	5.5	
10			2	60	0		SW	Sand: as above becoming brown-tan with rust, medium to coarse, saturated at 9.3'.	3.8	
15			3	100	0		SP SM	Sand: brown-tan, coarse, muddy, wet.	7	
20									2	

EnSafe/Allen & Hoshall

Monitoring Well NBCE053001

Project: ZONE E - Naval Base Charleston	Coordinates: 2317061.78 E, 377659.49 N
Location: Charleston, SC	Surface Elevation: 9.9 feet msl
Started at 0940 on 11-20-95	TOC Elevation: 9.76 feet msl
Completed at 1120 on 11-20-95	Depth to Groundwater: 7.08 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.68 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		
5			1	65	0	SP GC	SP GC	Sand: brown, fine, mixed with clayey gravel, moist.	5.9 5.2	
						SP	SP	Sand: tan to brown-red, very fine to fine, clean, dry to moist.	3.9	
10			2	60	0	SP SC CL	SP SC CL	Sand: as above, increasing moisture. Clay: gray with red mottling, with fine to medium sand, medium to high plasticity, dry to moist.	2.1 1.7 0.8	
						SC CL	SC CL	Clay: as above.	2.1 2.9	
15			3	40	0					
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE054001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317733.35 E, 377737.47 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>6.8 feet msl</i>
Started at <i>1245 on 11-9-95</i>	TOC Elevation: <i>9.65 feet msl</i>
Completed at <i>1345 on 11-9-95</i>	Depth to Groundwater: <i>7.89 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.76 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: gravel		
5			1	45	0	SP SM		Sand: dark brown to brown, mixed with gravel and mottled black clay, large quartz cobbles, moist.	2.3 1.4	
10			2	100	0	SC OH		Clay: dark gray to black, high organic content, root fragments from 0 to 0.5', firm, moist to wet, H ₂ S odor; dark brown sand interbedded throughout.	1.2 3.2	
15			3	100	0	SC OH		Clay: black to dark brown clay with peat, firm with soft spots, moist; with dark gray sand lens at 13.6'.	5.2 7.2	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE054002

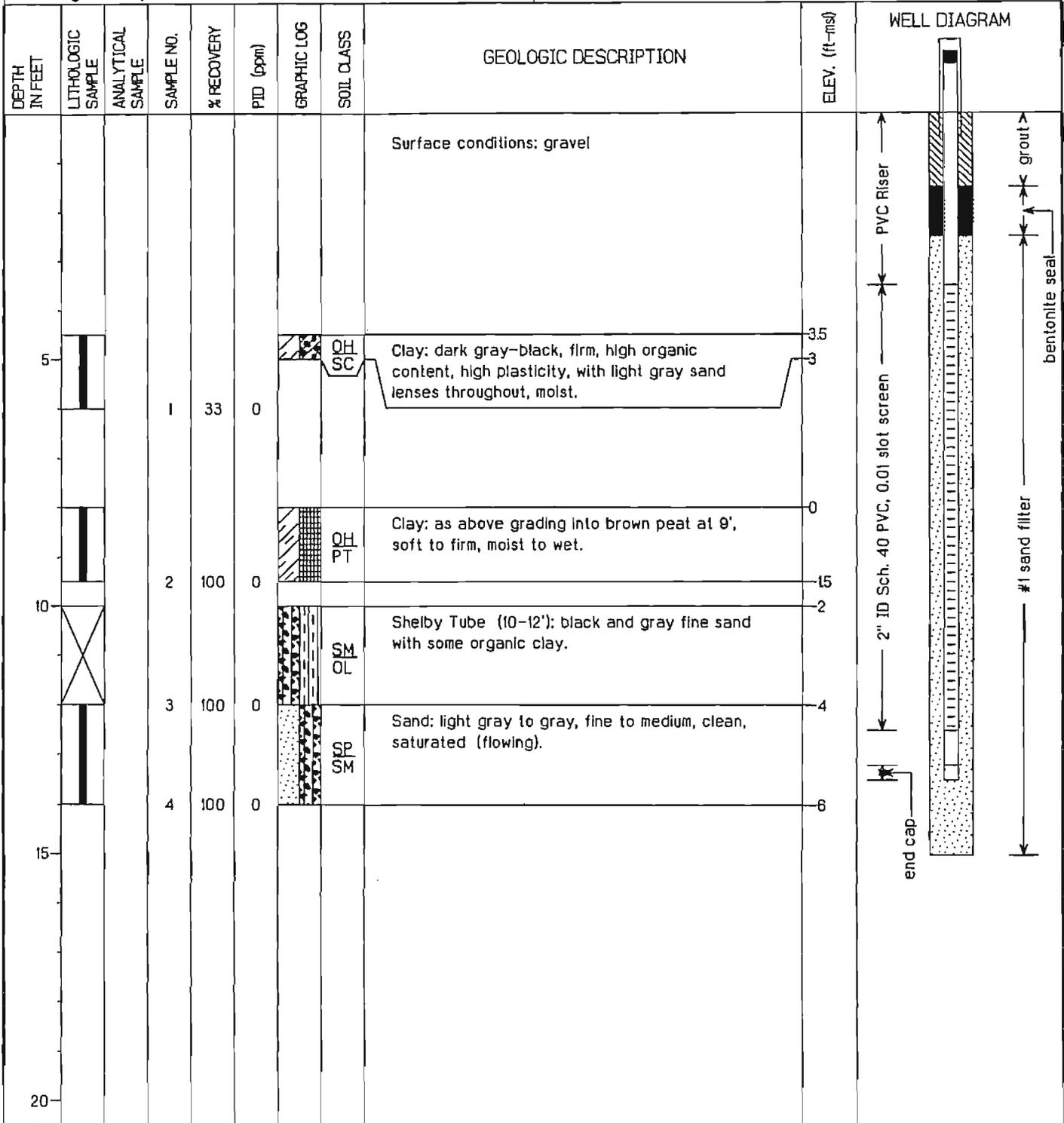
Project: ZONE E - Naval Base Charleston	Coordinates: 2317778.56 E, 377627.07 N
Location: Charleston, SC	Surface Elevation: 5.6 feet msl
Started at 1500 on 11-9-95	TOC Elevation: 8.10 feet msl
Completed at 1640 on 11-9-95	Depth to Groundwater: 6.67 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 1.43 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: gravel		
5			1	100	0	CL OL OH	Clay: red-brown with light gray mottling, soft to firm, moist. Clay: green-brown, soft, clean, high plasticity, wet.	11 -6 -9		
10			2	75	0	SC OH	Clay: dark gray to black, high organic content, root fragments from 9 9.5', firm, moist to wet, H ₂ S odor; dark brown sand interbedded throughout.	2.4 -3.9		
15			3	100	0	SC OH	Clay: black to dark brown clay with peat, firm with soft spots, moist; with dark gray sand lens at 13.6'.	5.4 -7.4		
20										

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Monitoring Well NBCE054003

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317630.33 E, 377702.80 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.0 feet msl</i>
Started at <i>0830 on 11-9-95</i>	TOC Elevation: <i>10.43 feet msl</i>
Completed at <i>1220 on 11-9-95</i>	Depth to Groundwater: <i>8.70 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.73 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>3.5 to 12.5 feet bgs</i>



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Monitoring Well NBCE063001

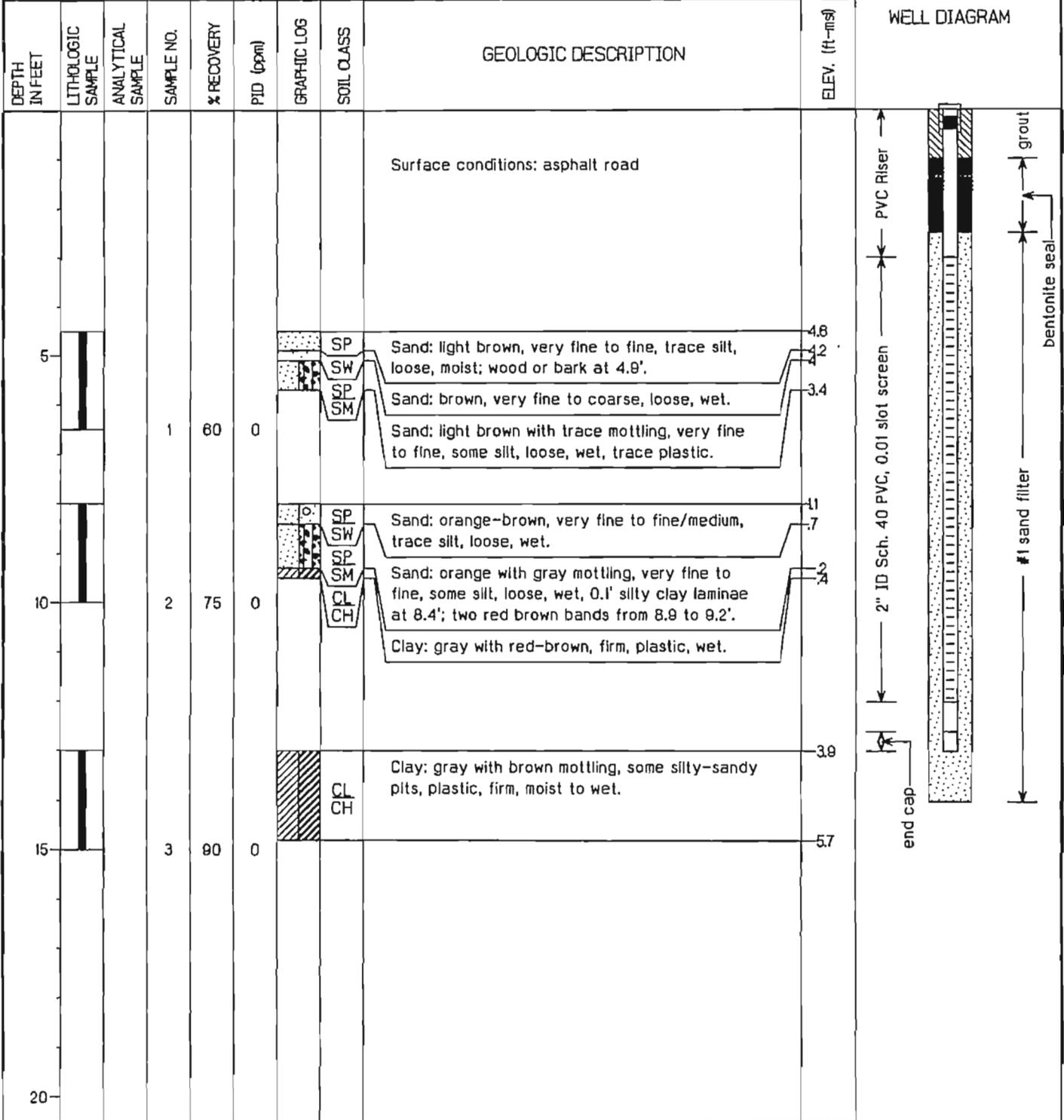
Project: ZONE E - Naval Base Charleston	Coordinates: 2316987.09 E, 377143.76 N
Location: Charleston, SC	Surface Elevation: 9.4 feet msl
Started at 1015 on 10-11-95	TOC Elevation: 9.04 feet msl
Completed at 1435 on 10-11-95	Depth to Groundwater: 6.50 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.54 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13 feet bgs
Geologist: T. Kafka	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road.		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p> <p>end cap</p>
5								2 offsets due to concrete obstructions at 7.5' and 4.5' bgs.		
			1	50	0		CL	Clay: gray to orange brown, with very fine to fine sand, high amount iron oxide minerals, low plasticity, moist.	3.2 2.2	
10							CL	Clay: gray to brown-tan, trace very fine to fine sand, low plasticity, soft, wet.	8 12	
			2	75	0		CL SC	Sand: gray to tan, very fine to fine, clayey, some silt, moderately to well-sorted, high FeOx content.	2.1	
15										
20										

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Monitoring Well NBCE063002

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317065.45 E, 377177.51 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.1 feet msl</i>
Started at <i>1500 on 10-10-95</i>	TOC Elevation: <i>8.72 feet msl</i>
Completed at <i>1640 on 10-10-95</i>	Depth to Groundwater: <i>6.18 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.54 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13 feet bgs</i>
Geologist: <i>P. Bayley</i>	Well Screen: <i>3.0 to 12.0 feet bgs</i>



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Monitoring Well NBCE065001

Project: ZONE E - Naval Base Charleston	Coordinates: 237543.39 E, 377256.57 N
Location: Charleston, SC	Surface Elevation: 7.1 feet msl
Started at 1000 on 12-7-95	TOC Elevation: 6.92 feet msl
Completed at 1150 on 12-7-95	Depth to Groundwater: 2.78 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.14 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete walk		
5			1	60	0	SM GM OL		Sand: light brown, gravelly, muddy, dry to moist.	3.1 2.8	
								Clay: dark gray-black, high organic content, fat, soft, moist to wet, low plasticity, H ₂ S odor --Marsh clay.	1.9	
							OL	Clay: Marsh clay as above.	.9	
10			2	85	0	PT		Peat: dark brown with light brown root material and grass fibers, soft, moist, H ₂ S odor.	1.6 2.8	
							PT	Peat: as above with interbedded clay laminae throughout.	3.9	
15			3	100	0				5.9	end cap
20										

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Monitoring Well NBCE065002

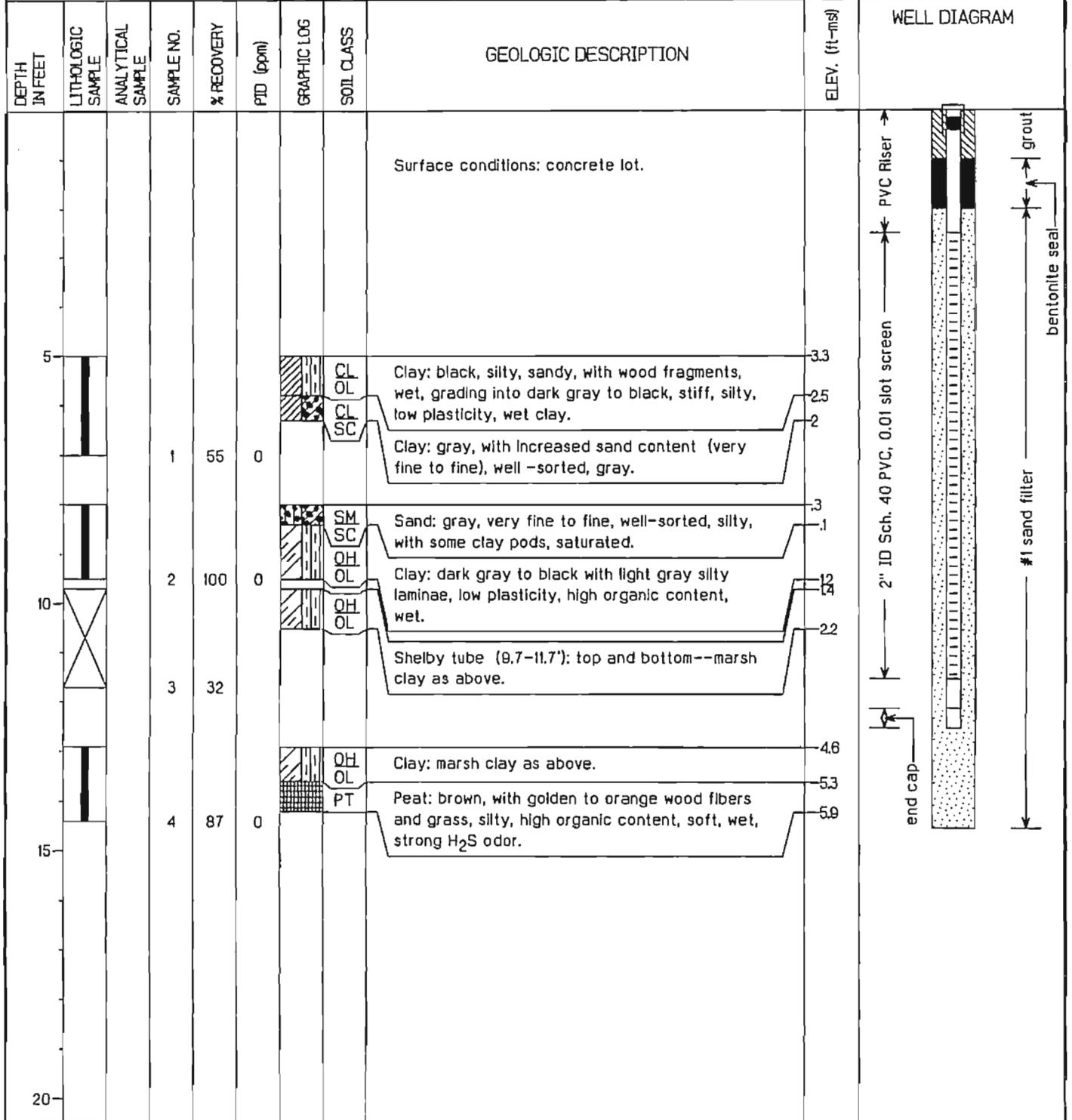
Project: ZONE E - Naval Base Charleston	Coordinates: 2317574.05 E, 377165.28 N
Location: Charleston, SC	Surface Elevation: 7.3 feet msl
Started at 1330 on 12-7-95	TOC Elevation: 7.16 feet msl
Completed at 1500 on 12-7-95	Depth to Groundwater: 3.79 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.37 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete walk		<p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p> <p>end cap</p>
5			1	80	0	SM GM OL	Sand: light brown, gravelly, dry to moist. Clay: dark gray-black, high organic content, fat, soft, moist to wet, low plasticity--Marsh clay.	3.3 3.3 2.1		
						OL	Clay: Marsh clay as above.	7		
10			2	100	0	PT	Peat: dark gray-green to black, with root material and grass fibers, soft, wet.	1.7 2.7		
						PT	Peat: as above.	3.7		
15			3	100	0			5.7		
20										

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Monitoring Well NBCE065003

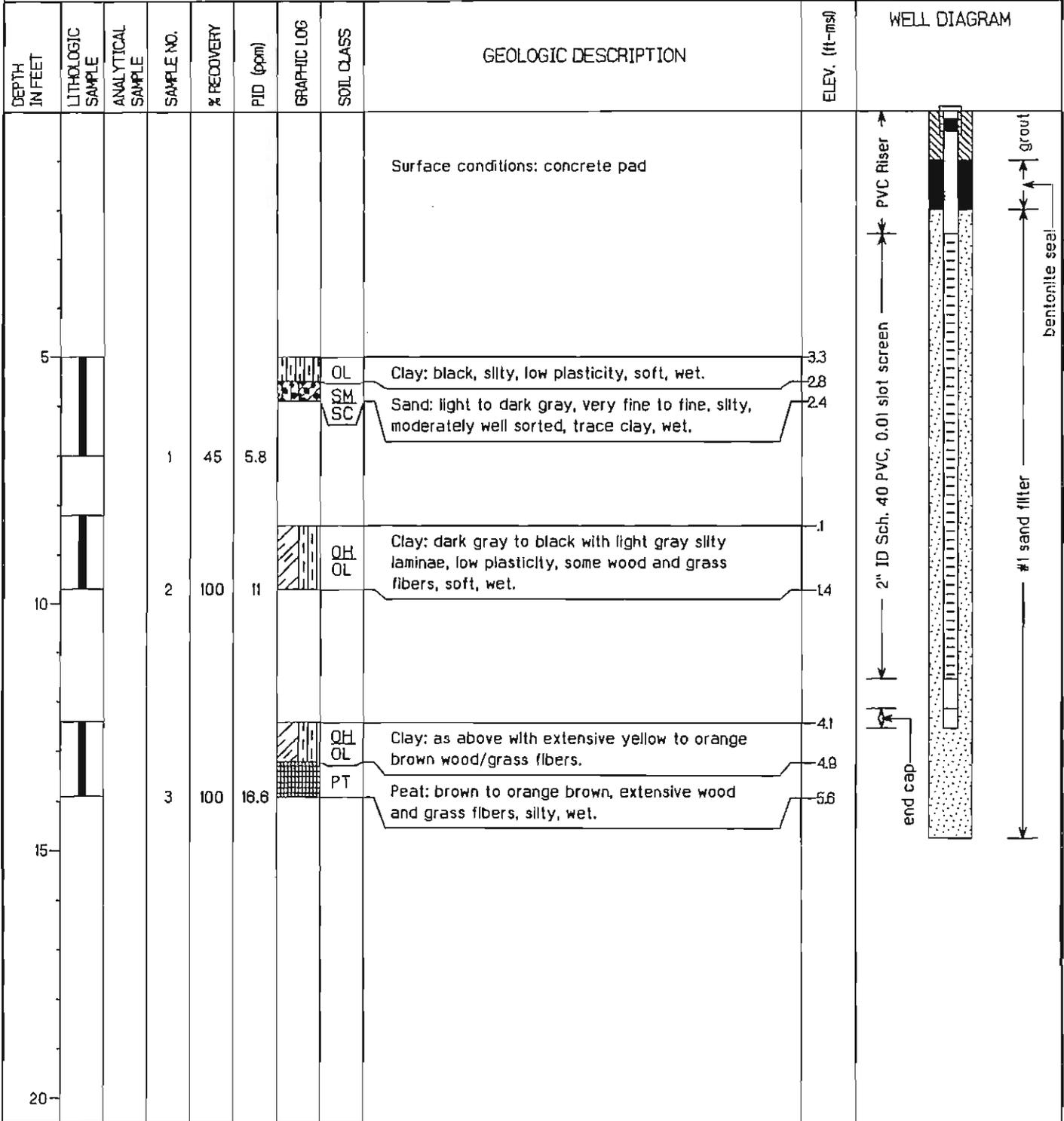
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317469.31 E, 377112.29 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.3 feet msl</i>
Started at <i>1015 on 10-26-95</i>	TOC Elevation: <i>8.15 feet msl</i>
Completed at <i>1200 on 10-26-95</i>	Depth to Groundwater: <i>2.65 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>5.50 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>



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Monitoring Well NBCE065004

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317441.43 E, 377076.90 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.3 feet msl</i>
Started at <i>1055 on 10-18-95</i>	TOC Elevation: <i>8.11 feet msl</i>
Completed at <i>1140 on 10-23-95</i>	Depth to Groundwater: <i>2.12 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>5.99 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>



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Monitoring Well NBCE06504D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>237°42'31" E, 377°19'32" N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.5 feet msl</i>
Started at <i>1030 on 1-19-96</i>	TOC Elevation: <i>8.41 feet msl</i>
Completed at <i>1200 on 1-19-96</i>	Depth to Groundwater: <i>6.97 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>1.44 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert #889)</i>	Total Well Depth: <i>39.7 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>29.8 to 39.2 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							GW GM	Surface conditions: concrete Gravel: light brown, cobbles and silty medium sand, wet.		<p>2" ID Sch. 40 PVC Riser</p> <p>grout</p>
							SM SC	Sand: brown, fine to medium, with some silty clay, moist.	8.5	
							OL OH	Clay: dark gray, fat, firm, moist.	5.5 5	
5			1	70	11.5		OL	Clay: black, fat, moist, marsh clay.	3.5	
							PT	Peat: brown, high organic content.	.7	
10							SW	Sand: gray, fine to medium, no fines, moist.	3.1	
									5.1	
15			2	88	3.4		SW	Sand: as above.	8.5	
20										

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Monitoring Well NBCE06504D

Project: ZONE E - Naval Base Charleston

Coordinates: 231742131 E, 377119.32 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1030 on 1-19-96

TOC Elevation: 8.41 feet msl

Completed at 1200 on 1-19-96

Depth to Groundwater: 6.97 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

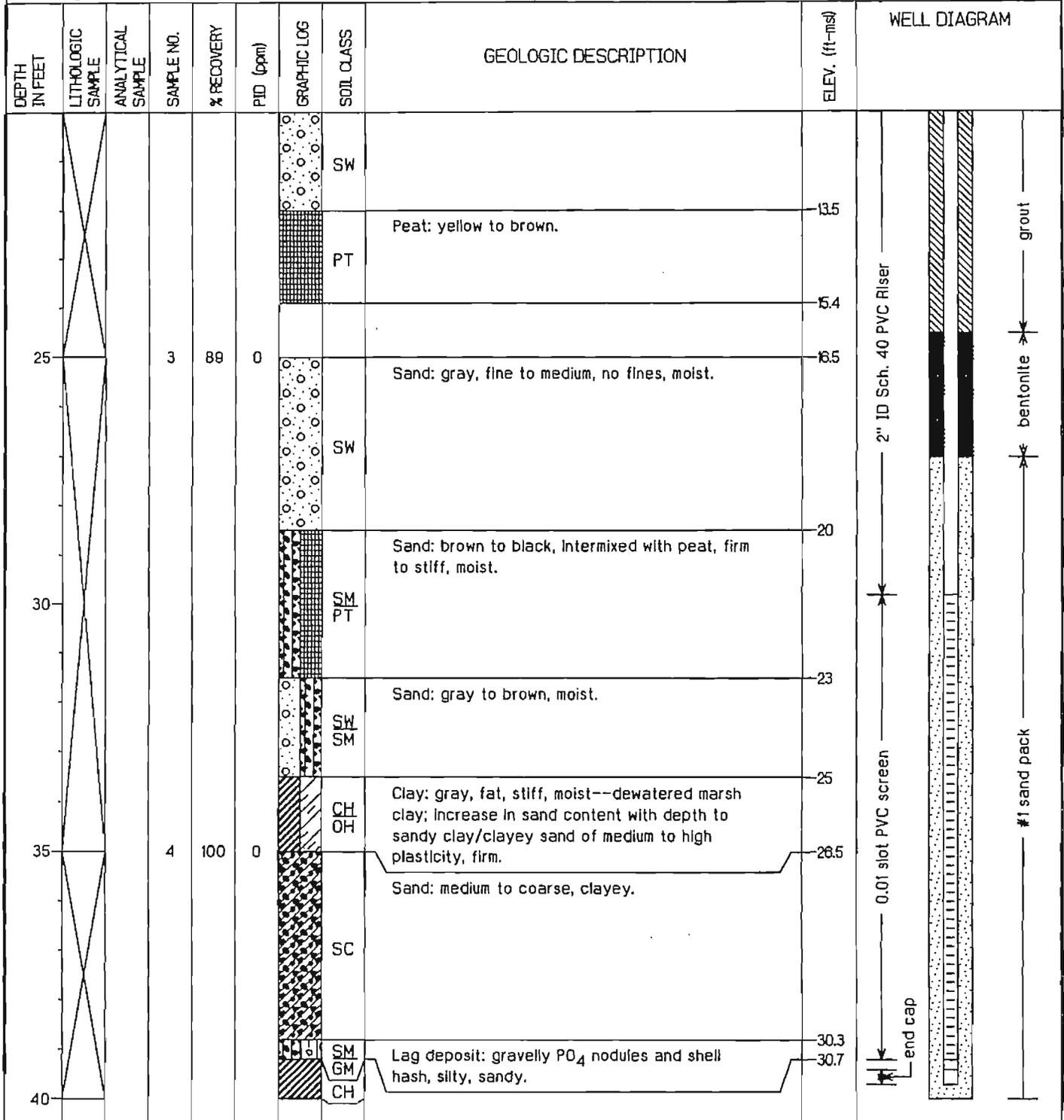
Groundwater Elevation: 1.44 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39.7 feet bgs

Geologist: B. Blythe

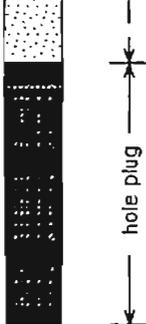
Well Screen: 29.8 to 39.2 feet bgs



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Monitoring Well NBCE06504D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>23742131 E, 377119.32 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.5 feet msl</i>
Started at <i>1030 on 1-19-96</i>	TOC Elevation: <i>8.41 feet msl</i>
Completed at <i>1200 on 1-19-96</i>	Depth to Groundwater: <i>6.97 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>144 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert #889)</i>	Total Well Depth: <i>39.7 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>29.8 to 39.2 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0		CH	Clay: gray, fat, firm to stiff, with fine sand and shell hash laminae interspersed throughout--dewatered marsh clay.		
			6	100				Shelby tube 45-47.5': dewatered marsh clay as above.	39	
50										
55										
80										

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Monitoring Well NBCE065005

Project: ZONE E - Naval Base Charleston

Coordinates: 2317412.39 E, 377162.28 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1300 on 10-26-95

TOC Elevation: 8.22 feet msl

Completed at 1500 on 10-26-95

Depth to Groundwater: 5.48 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

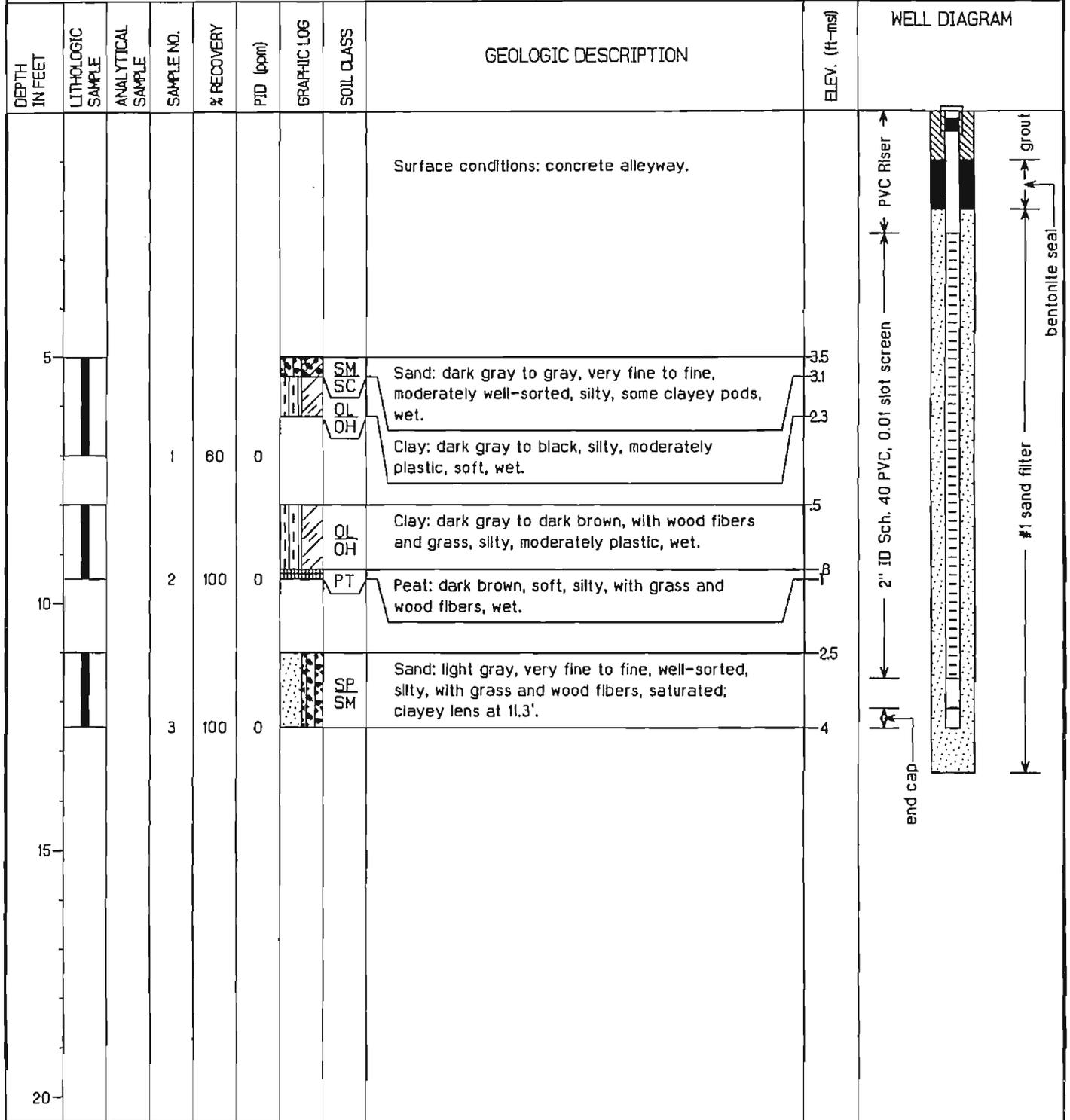
Groundwater Elevation: 2.74 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



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Monitoring Well NBCE065006

Project: ZONE E - Naval Base Charleston

Coordinates: 2317402.43 E, 377243.38 N

Location: Charleston, SC

Surface Elevation: 8.3 feet msl

Started at 0905 on 11-7-95

TOC Elevation: 8.02 feet msl

Completed at 1300 on 11-7-95

Depth to Groundwater: 5.27 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

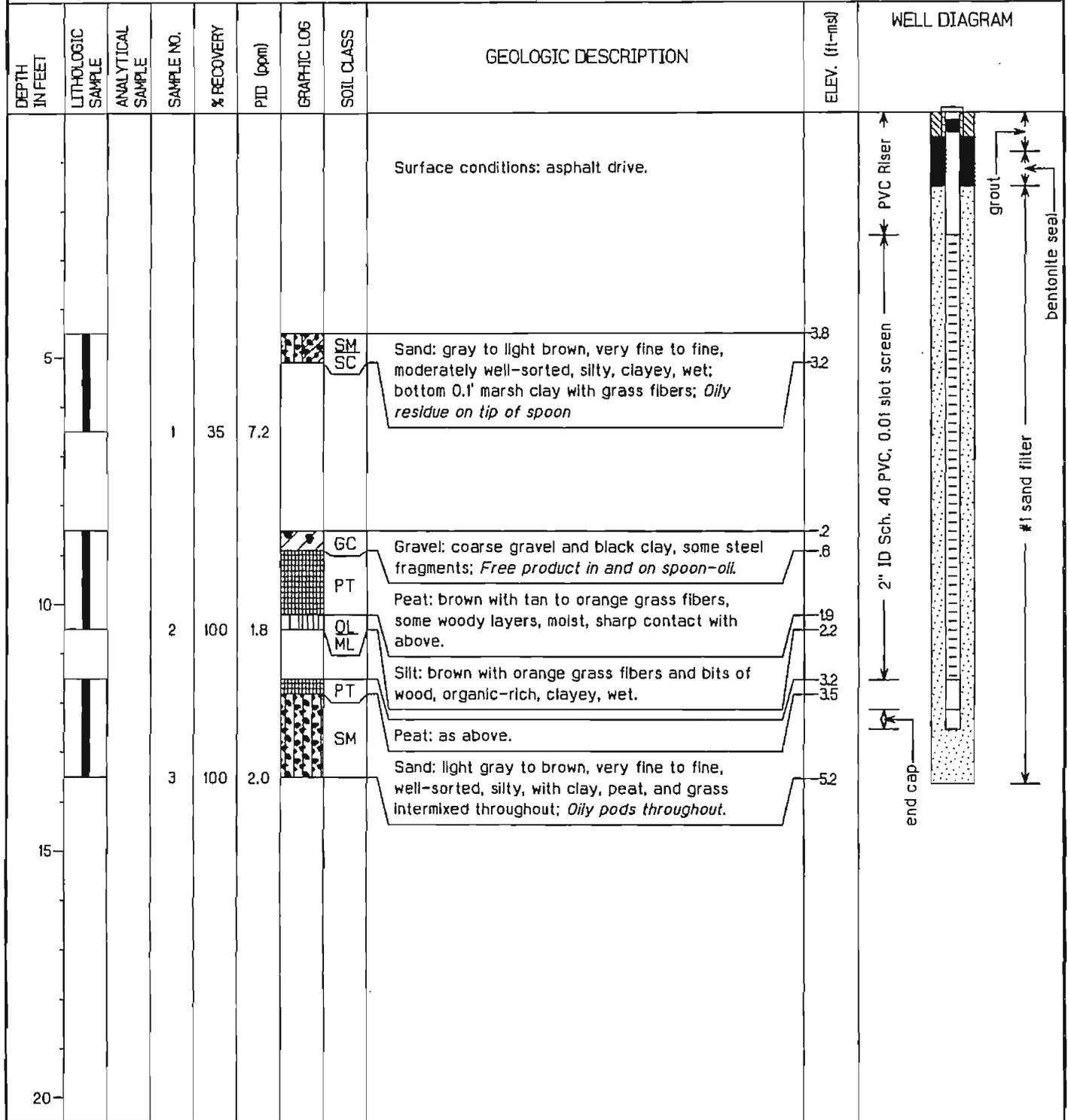
Groundwater Elevation: 2.75 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



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Monitoring Well NBCE065007

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317497.72 E, 377055.81 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.6 feet msl</i>
Started at <i>0900 on 9-11-96</i>	TOC Elevation: <i>8.31 feet msl</i>
Completed at <i>1030 on 9-11-96</i>	Depth to Groundwater: <i>2.83 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>5.48 feet msl</i>
Drilling Company: <i>Atlantic Drilling (S.C.# 1210)</i>	Total Well Depth: <i>13.3 feet bgs</i>
Geologist: <i>J. Cooley</i>	Well Screen: <i>3.3 to 12.3 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Asphalt.		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p> <p>end cap</p>
5			1	100		SP	Sand: gray; fine to very fine, shell hash throughout.	PID reading of 150 ppm in cuttings from 2.0 to 4.0 ft.	4.6	
									3.1	
						SP	Sand: gray; very fine.		8	
10			2	100		ML	Silt: black; clayey.	PID reading spike of 1710 ppm in cuttings from 10.0 to 13.0 ft.	4	
									14	
						SP	Sand: lt. gray; very fine to fine; w/shell fragments.		4.4	
15			3	100		CL	Clay: dark gray-black; silty.		5.4	
									6.4	
20										

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Monitoring Well NBCE065008

Project: ZONE E - Naval Base Charleston	Coordinates: 2317407.86 E, 377029.95 N
Location: Charleston, SC	Surface Elevation: 8.3 feet msl
Started at 1104 on 9-11-96	TOC Elevation: 7.99 feet msl
Completed at 1225 on 9-11-96	Depth to Groundwater: 3.72 feet TOC Measured: 10/16/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.27 feet msl
Drilling Company: Atlantic Drilling (S.C.# 1210)	Total Well Depth: 14.5 feet bgs
Geologist: J. Cooley	Well Screen: 4.5 to 13.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Asphalt.		<p>WELL DIAGRAM</p> <p>gROUT</p> <p>bentonite seal</p> <p>#1 sand filter</p> <p>end cap</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>PVC Riser</p>
5			1	100		SP CL	Sand: gray; silty; interlayered with dark gray silty clay.	4.3		
								2.3		
						CL	Clay: dark gray.	3		
10			2	100		CL PT	Clay: as above with peat stringers, grass, and roots.	7		
								17		
15			3	100		SP	Sand: very fine.	5.7		
								7.7		
20										

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Monitoring Well NBCE067001

Project: ZONE E - Naval Base Charleston	Coordinates: 2316777.86 E, 376883.52 N
Location: Charleston, SC	Surface Elevation: 9.1 feet msl
Started at 0950 on 10-05-95	TOC Elevation: 8.91 feet msl
Completed at 1420 on 10-05-95	Depth to Groundwater: 6.19 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.72 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.5 feet bgs
Geologist: T. Kafka	Well Screen: 3.3 to 12.3 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete foundation inside Bldg. 3.		
5			1	73	0		CL SC SP	Sand: black to brown-black, very fine to fine, some silt, clayey, moist to wet; saturated at 5.1'. Sand: tan, very fine to fine, well-sorted, no clay or silt, wet.	4.3 3.7 3.2	
10			2	100	0		SP	Sand: light brown to tan, as above.	8	
15								Flowing sands on auger and in borehole from 9-14'. No further split spoons attempted.	14	
20								Well constructed with pointed well cap on bottom.		

EnSafe/Allen & Hoshall

Monitoring Well NBCE067002

Project: ZONE E - Naval Base Charleston	Coordinates: 237174.46 E, 377024.23 N
Location: Charleston, SC	Surface Elevation: 9.0 feet msl
Started at 1220 on 10-17-95	TOC Elevation: 8.74 feet msl
Completed at 1420 on 10-17-95	Depth to Groundwater: 6.68 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.06 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13 feet bgs
Geologist: T. Kafka	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road		
5			1	80	0		SM	Sand: dark brown to brown gray, very fine to fine, well-sorted, silty, wet.	4	
							SP	Sand: orange to orange brown, as above with less silt, cleaner sand.	2.7 2.4	
10			2	80	0		SC CL	Sand: green to gray with brown-orange mottling, very fine to fine, moderately to well-sorted, clayey, some silt, moist to wet.	1 2	
							SM SP	Sand: light gray, very fine to fine, some silt, well-sorted, high concentration FeOx, saturated (flowing).	2.3 3.6	
15										
20										

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Monitoring Well NBCE070001

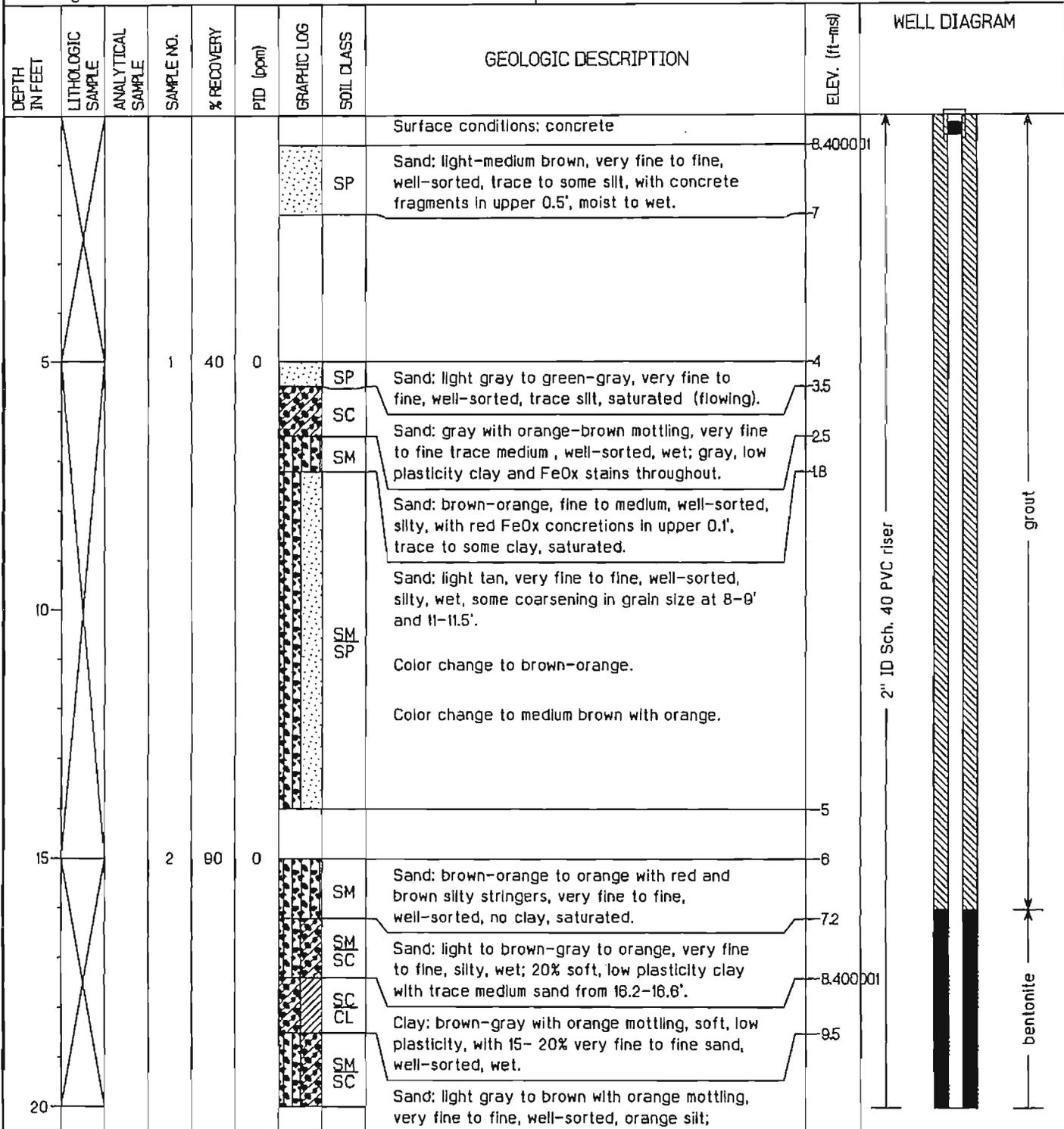
Project: ZONE E - Naval Base Charleston	Coordinates: 2316607.46 E, 376677.52 N
Location: Charleston, SC	Surface Elevation: 9.0 feet msl
Started at 1055 on 10-25-95	TOC Elevation: 8.82 feet msl
Completed at 1215 on 10-25-95	Depth to Groundwater: 6.21 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.61 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: T. Kafka	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditons: concrete		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>end cap</p> <p>grout</p>
5			1	100	0	[Dotted pattern]	SP	Sand: orange-brown to tan with orange-brown silty bands, very fine to fine, well-sorted, moist with increased water content at 6'.	4	
									2	
						[Dotted pattern]	SP	Sand: as above, wet.	1.4	
						[Checkered pattern]	SC CL	Sand: orange-brown, fine to medium with trace coarse, poorly sorted, silty, clayey with 1" thick clay lens at 8.7', wet.	0.6	
10			2	100	0	[Dotted pattern]	SP	Sand: tan to orange-brown mottling, poorly sorted fine to medium with trace coarse in upper 0.3' grading to well-sorted very fine to fine for remainder, saturated to flowing.	0.8	
								No third split spoon due to non-cohesive sand flowing ~3' inside HSA from 10-12' bgs.		
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE07001D

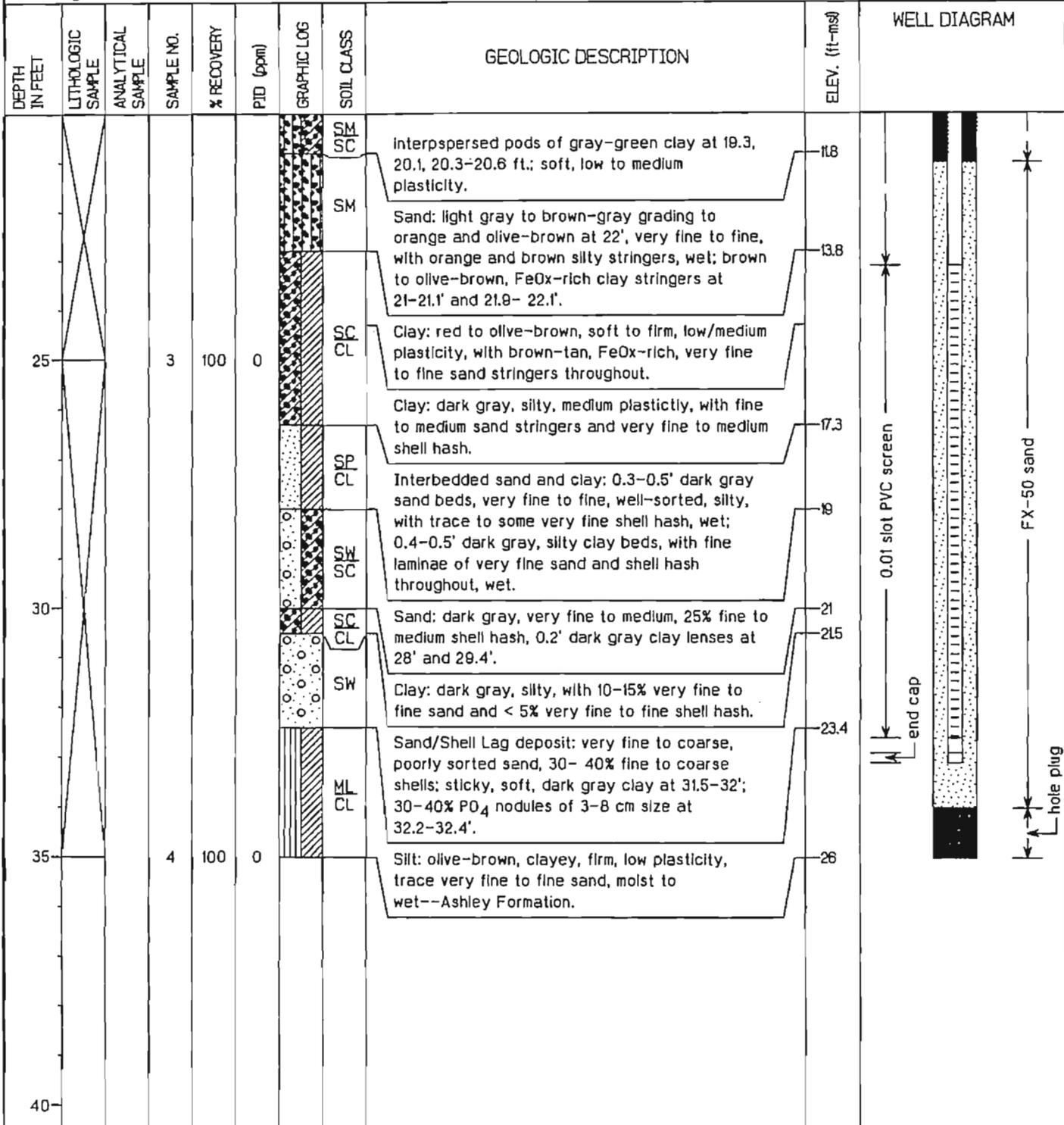
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316582.98 E, 376673.33 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.0 feet msl</i>
Started at <i>1315 on 1-10-96</i>	TOC Elevation: <i>8.76 feet msl</i>
Completed at <i>1445 on 1-10-96</i>	Depth to Groundwater: <i>6.21 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>2.55 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert# 889)</i>	Total Well Depth: <i>33.1 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>23.1 to 32.6 feet bgs</i>



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Monitoring Well NBCE07001D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316582.98 E, 376673.33 N
Location: Charleston, SC	Surface Elevation: 9.0 feet msl
Started at 1315 on 1-10-96	TOC Elevation: 8.76 feet msl
Completed at 1445 on 1-10-96	Depth to Groundwater: 6.21 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.55 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 33.1 feet bgs
Geologist: T. Kafka	Well Screen: 23.1 to 32.6 feet bgs



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Monitoring Well NBCE070002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316553.80 E, 376669.12 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1330 on 10-25-95

TOC Elevation: 8.68 feet msl

Completed at 1450 on 10-25-95

Depth to Groundwater: 6.14 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

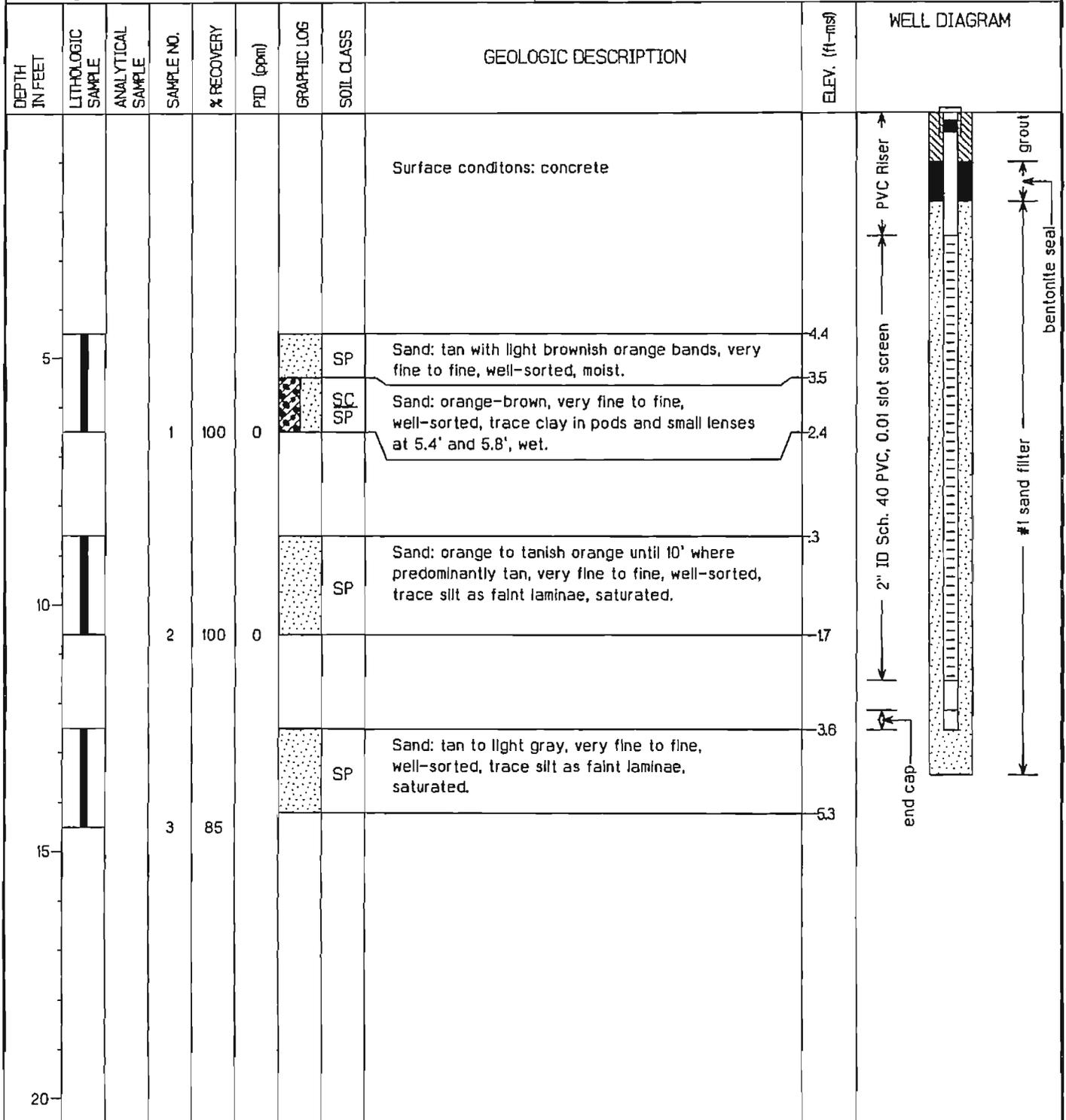
Groundwater Elevation: 2.54 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



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Monitoring Well NBCE083001

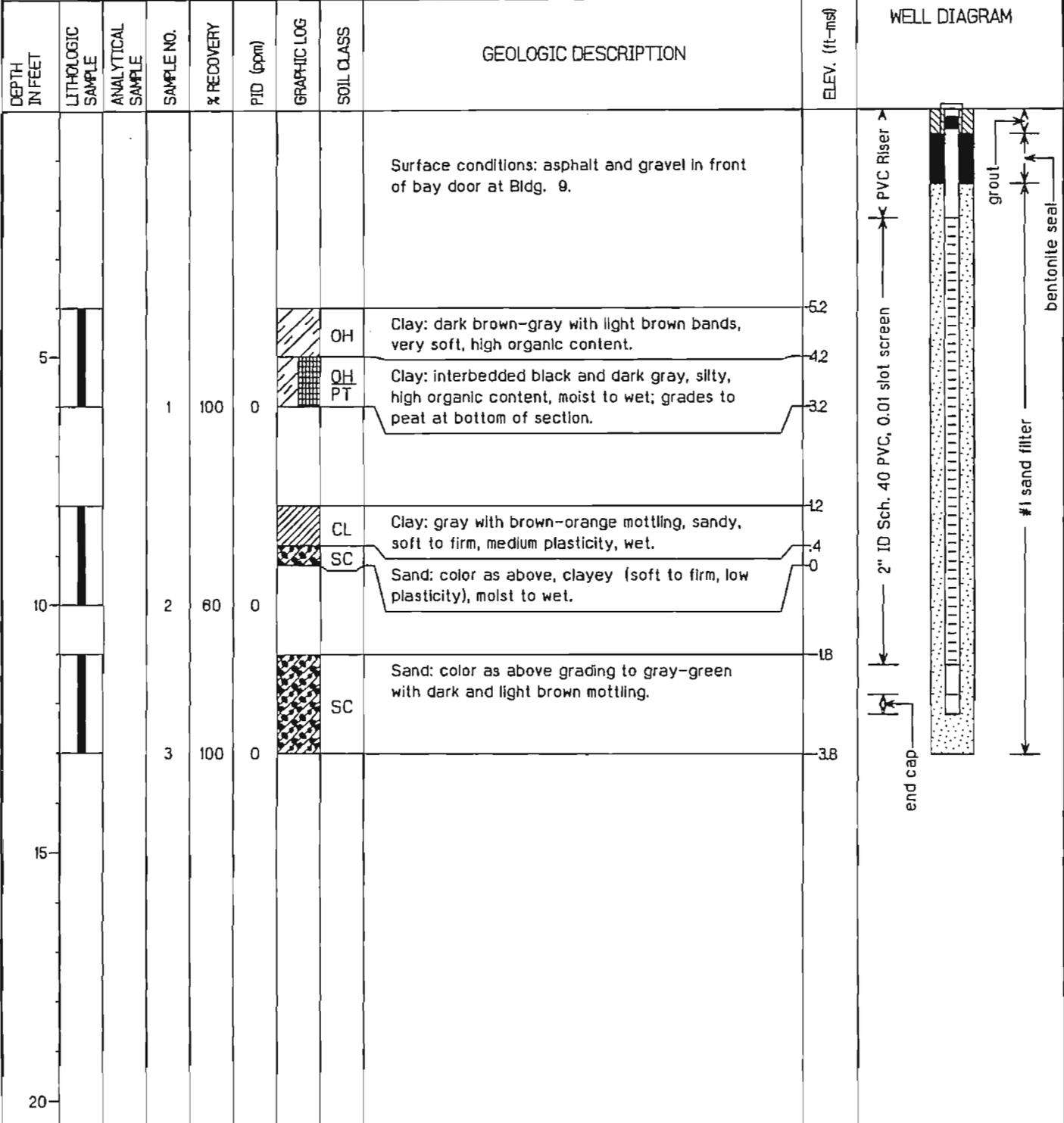
Project: ZONE E - Naval Base Charleston	Coordinates: 2317445.35 E, 375445.59 N
Location: Charleston, SC	Surface Elevation: 9.8 feet msl
Started at 1455 on 12-5-95	TOC Elevation: 9.70 feet msl
Completed at 1620 on 12-5-95	Depth to Groundwater: 6.35 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.35 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditons: asphalt and gravel.		
5			1	80	0	SM SC CH		Sand: brown to light brown, fine, muddy, with high plasticity clay, wet.	5.6 5.3	
								Clay: red-brown with gray mottling, sandy, high plasticity, firm to stiff.	4.6	
10			2	80	0	CH SC SP CH		Clay: as above.	1.8 1.5	
								Sand: gray, fine, with medium plasticity clay.	0.9 0.8	
								Sand: gray, fine to medium, saturated.	0	
								Clay: red-brown with gray mottling as above.	0.7	
15			3	100	0	CH		Clay: gray with red-brown mottling, high plasticity, clean, stiff, moist.	2.7	
20										

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Monitoring Well NBCE083002

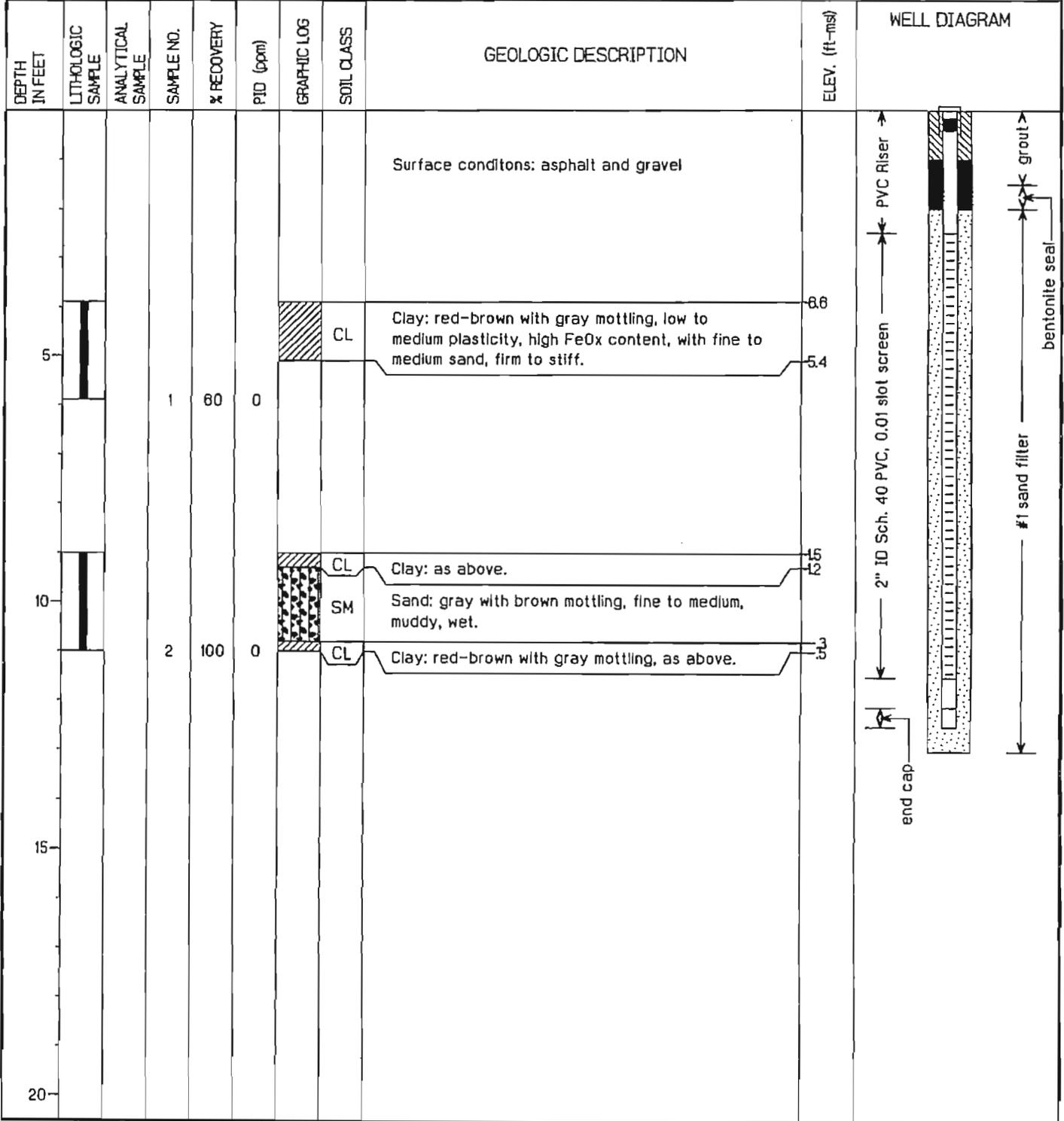
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317522.90 E, 375469.29 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.2 feet msl</i>
Started at <i>1350 on 12-18-95</i>	TOC Elevation: <i>9.08 feet msl</i>
Completed at <i>1520 on 12-18-95</i>	Depth to Groundwater: <i>7.81 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.27 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.2 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.2 to 11.2 feet bgs</i>



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Monitoring Well NBCE084001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317363.62 E, 375417.27 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>10.5 feet msl</i>
Started at <i>1025 on 12-6-95</i>	TOC Elevation: <i>10.28 feet msl</i>
Completed at <i>1200 on 12-6-95</i>	Depth to Groundwater: <i>7.35 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.93 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCE084002

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317395.32 E, 375585.60 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.9 feet msl</i>
Started at <i>1345 on 12-6-95</i>	TOC Elevation: <i>9.71 feet msl</i>
Completed at <i>1510 on 12-6-95</i>	Depth to Groundwater: <i>6.10 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>3.61 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditons: asphalt and gravel.		<p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p> <p>end cap</p>
5.9			1	85	0	SP	SP	Sand: light tan, very fine, clean, dry to moist.	5.9	
5.3						CL CH	CL CH	Clay: red with gray mottling, with fine sand, high plasticity, firm to stiff, moist; increased sand content in last 0.4', medium plasticity.	5.3 4.2	
10.8			2	20	0	CL CH SP	CL CH SP	Clay: as above. Sand: gray with brown mottling, medium to coarse, saturated.	10.8 10.6 10.3	
11			3	25	0	SM	SM	Sand: as above, fine to medium, saturated.	11 16	

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Monitoring Well NBCE097001

Project: ZONE E - Naval Base Charleston

Coordinates: 2318595.42 E, 375468.30 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1305 on 10-11-95

TOC Elevation: 8.66 feet msl

Completed at 1430 on 10-11-95

Depth to Groundwater: 3.94 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

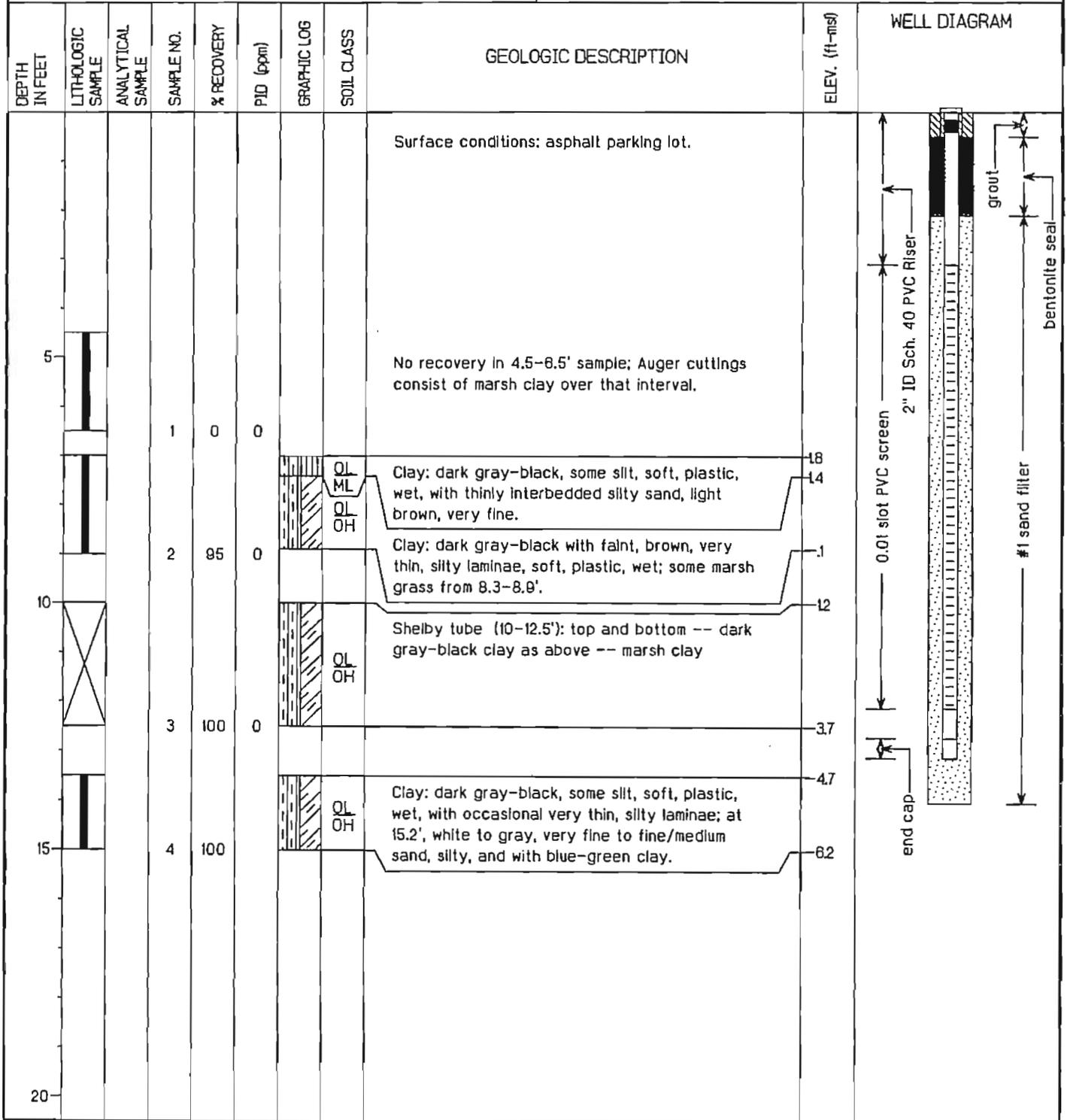
Groundwater Elevation: 4.72 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.1 feet bgs

Geologist: P. Bayley

Well Screen: 3.1 to 12.1 feet bgs



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Monitoring Well NBCE100001

Project: ZONE E - Naval Base Charleston	Coordinates: 2318794.32 E, 374753.43 N
Location: Charleston, SC	Surface Elevation: 8.2 feet msl
Started at 1515 on 10-17-95	TOC Elevation: 8.10 feet msl
Completed at 1630 on 10-17-95	Depth to Groundwater: 3.78 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.32 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: T. Kafka	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
5			1	80	0		SC SP	Sand: light gray with clear quartz grains and many dark mafic minerals, very fine to fine with trace medium, moderately well-sorted, some clay pods in upper 0.8', with shell hash, wet.	3.2 1.6	
10			2	100	0		OH OL	Clay: dark gray to black, medium plasticity, wood fibers throughout, silty, fat, soft, wet-- marsh clay. Shelby tube (9.8-11.8'): top and bottom -- marsh clay as above.	1.1	
			3	100			OH OL	Clay: as above.	3.6 4.1	
15			4	100	0				5.6	
20										

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Monitoring Well NBCE102001

Project: ZONE E - Naval Base Charleston	Coordinates: 2319237.58 E, 374846.97 N
Location: Charleston, SC	Surface Elevation: 8.9 feet msl
Started at 1530 on 2-1-96	TOC Elevation: 8.82 feet msl
Completed at 1640 on 2-1-96	Depth to Groundwater: 4.21 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.61 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete inside Bldg. 79.		
5			1	80	0	OL	Clay: black, gray, green and brown, high organic content, fat, soft.	4.9		
						SP	Sand: gray, medium, saturated (flowing), Oily sheen on surface and oil pocket found in lower clay section.	3.8 3.1		
10			2	100	0	OH	Clay: black to dark green, some organic debris, high plasticity, soft, moist to wet.	0.9 1.1		
						OH PT	Clay: as above increasing in peat-like organic content with depth.	2.1 4.1		
15							While extracting augers, oily sheen evident from 5-15'.			
20										

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Monitoring Well NBCE106001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2320348.43 E, 373726.32 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.9 feet msl</i>
Started at <i>1415 on 10-3-95</i>	TOC Elevation: <i>11.40 feet msl</i>
Completed at <i>1650 on 10-3-95</i>	Depth to Groundwater: <i>10.28 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with spit spoon</i>	Groundwater Elevation: <i>1.12 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>17 feet bgs</i>
Geologist: <i>J. Williams</i>	Well Screen: <i>7.0 to 16.0 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt and gravel		
5			1	50	0		SC CL	Clay: light to dark gray, sandy, soft.	4.4 3.4	
10			2	60	0		SC	Sand: light gray with oxidized zones, clayey.	4 B	
15			4	80	0		CL	Clay: gray, tight.	4.6 5.1	
							SC	Sand: gray to medium brown, fine, with soft clay.	8.2	
20										

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Monitoring Well NBCE10601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320331.04 E, 373711.39 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1440 on 12-01-95

TOC Elevation: 10.92 feet msl

Completed at 1655 on 12-01-95

Depth to Groundwater: 9.72 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD Casing, 3.8" ID Coring Bit)

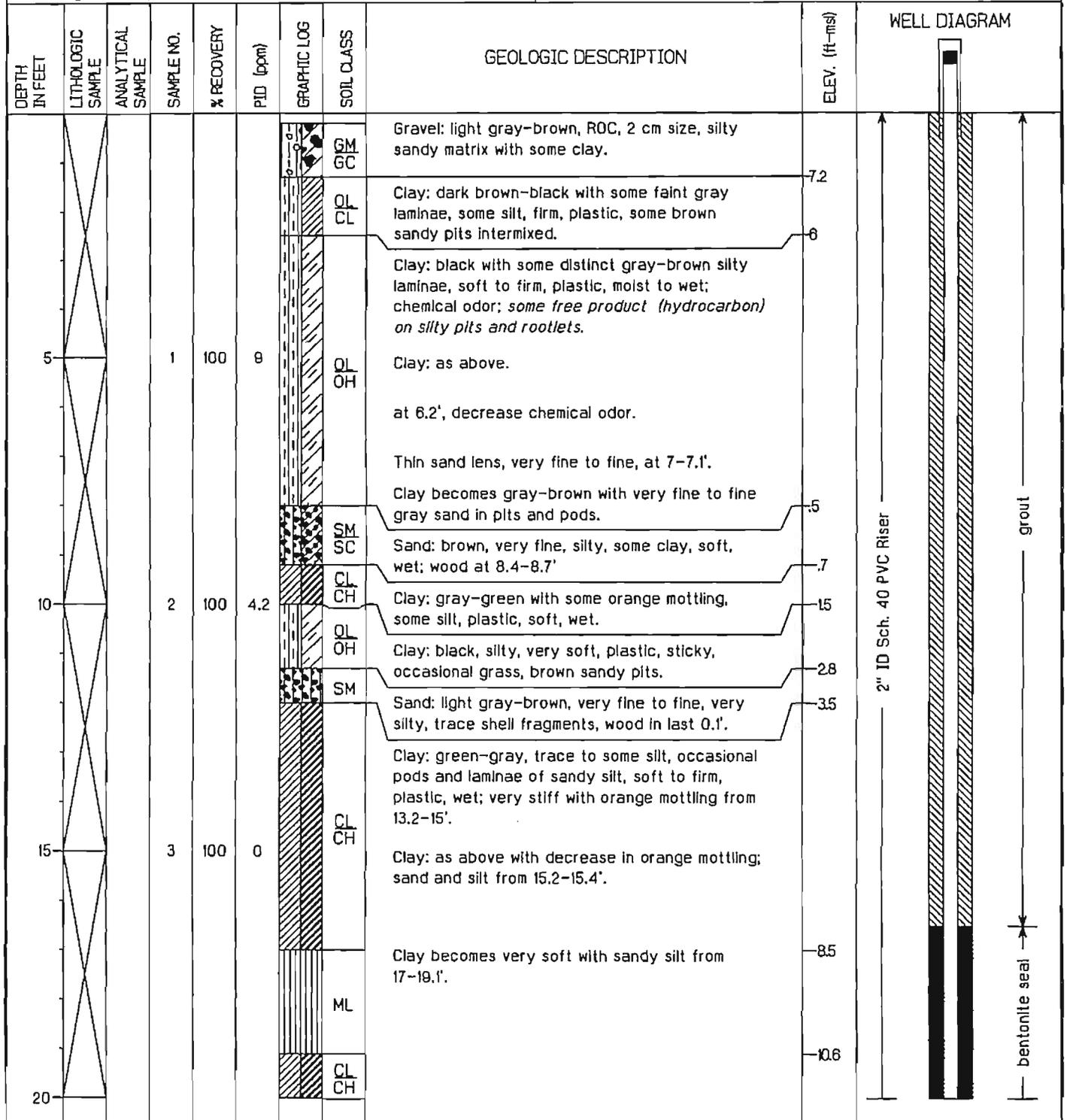
Groundwater Elevation: 120 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 32.9 feet bgs

Geologist: P. Bayley

Well Screen: 23 to 32.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE10601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320331.04 E, 373711.39 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1440 on 12-01-95

TOC Elevation: 10.92 feet msl

Completed at 1655 on 12-01-95

Depth to Groundwater: 9.72 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD Casing, 3.8" ID Coring Bit)

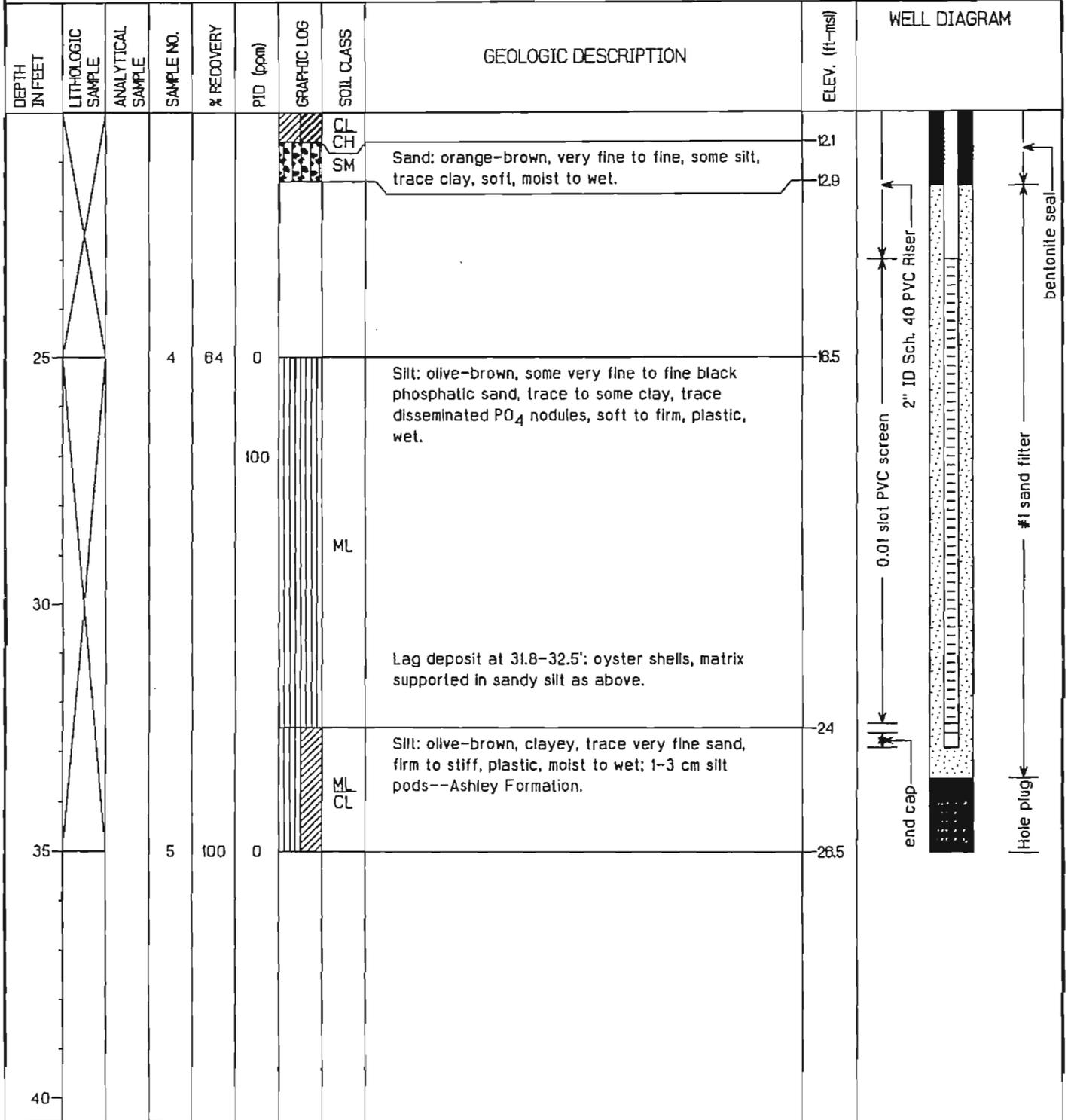
Groundwater Elevation: 120 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 32.9 feet bgs

Geologist: P. Bayley

Well Screen: 23 to 32.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE145001

Project: ZONE E - Naval Base Charleston	Coordinates: 231804137 E, 375424.22 N
Location: Charleston, SC	Surface Elevation: 8.7 feet msl
Started at 1445 on 1-25-96	TOC Elevation: 8.63 feet msl
Completed at 1615 on 1-25-96	Depth to Groundwater: 3.88 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.75 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.0 feet bgs
Geologist: B. Blythe	Well Screen: 2.0 to 11.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		
5			1	50	0		Clay: blue-green with black, some medium sand, firm, moist. Sand: black to dark gray, medium, very silty, soft, saturated (flowing), small lenses of black organic, fat marsh clay interlayered.	4.5 4.2 3.5		
10			2	100	0		Sand: as above. Clay: gray, with red-brown sandy mottling, stiff.	7 1		
15			3	100	0		Clay: as above.	3.3		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE14501D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318044.60 E, 375429.07 N

Location: Charleston, SC

Surface Elevation: 8.7 feet msl

Started at 0910 on 1-23-96

TOC Elevation: 8.62 feet msl

Completed at 1020 on 1-23-96

Depth to Groundwater: 6.25 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

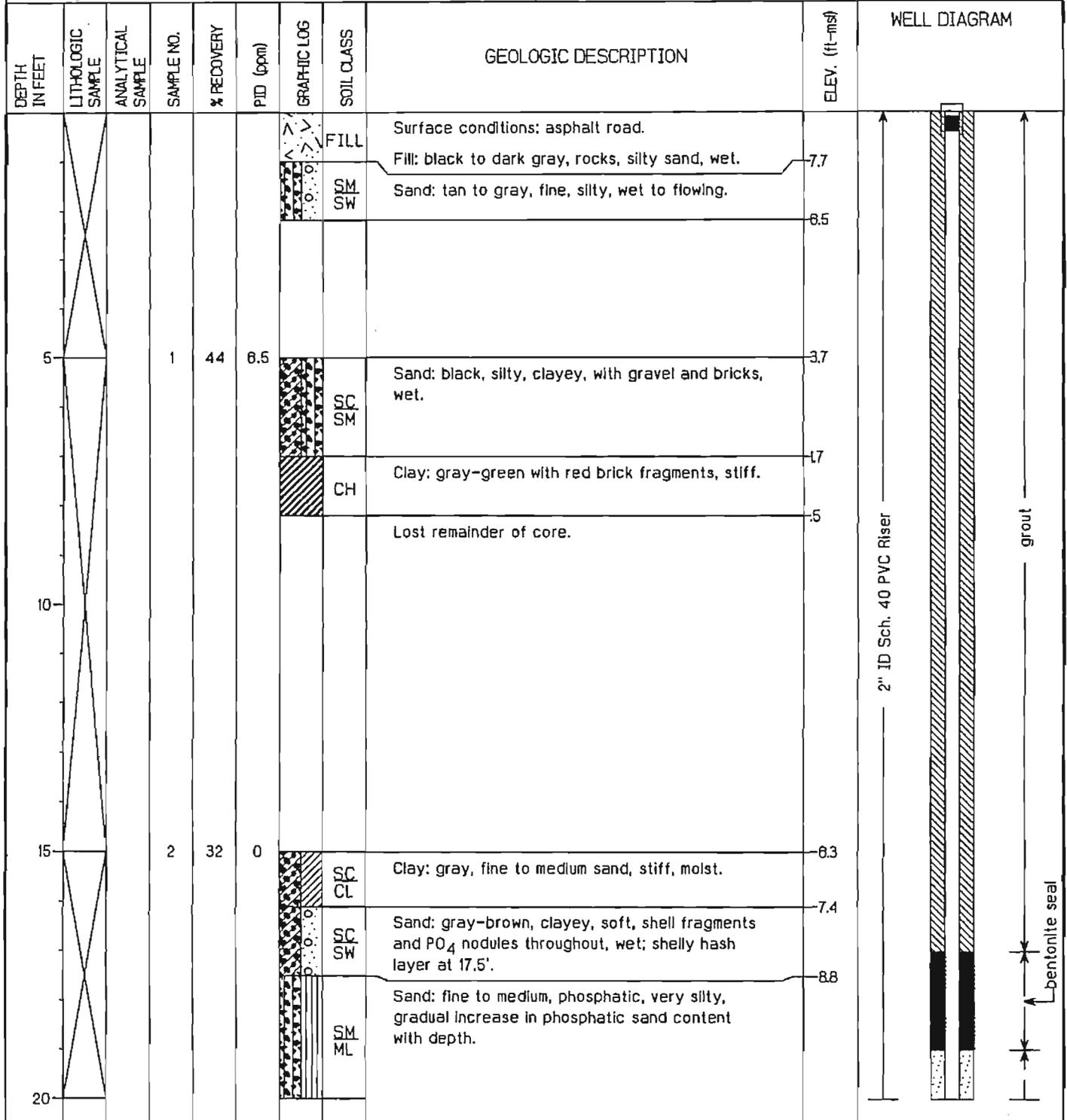
Groundwater Elevation: 2.37 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 31 feet bgs

Geologist: B. Blythe

Well Screen: 211 to 30.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE14501D

Project: ZONE E - Naval Base Charleston	Coordinates: 2318044.60 E, 375428.07 N
Location: Charleston, SC	Surface Elevation: 8.7 feet msl
Started at 0910 on 1-23-96	TOC Elevation: 8.62 feet msl
Completed at 1020 on 1-23-96	Depth to Groundwater: 6.25 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.37 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 31 feet bgs
Geologist: B. Blythe	Well Screen: 211 to 30.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		MPE	Sand: phosphatic sand as above, shelly hash with oyster shell fragments at 29.5' (lag bed).		<p>0.01 slot PVC screen 2" ID Sch. 40 PVC Riser #1 sand filter Hole plug end cap</p>
30			4	100	0		CPE	Silt: green-brown, sandy, clayey, shell fragments throughout section, pits of phosphatic sand in upper 1', stiff--Ashley Formation.	21.3	
35			5	100	0				28.3	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE145002

Project: ZONE E - Naval Base Charleston	Coordinates: 231804184 E, 375366.51 N
Location: Charleston, SC	Surface Elevation: 8.5 feet msl
Started at 1010 on 1-25-96	TOC Elevation: 8.52 feet msl
Completed at 1150 on 1-25-96	Depth to Groundwater: 3.54 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.98 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.0 feet bgs
Geologist: B. Blythe	Well Screen: 2.0 to 11.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PIID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt		
4.7			1	15	0	Wto: GP SW	GP SW	Sand: brown-gray, gravelly, shell hash and phosphate pebbles, small wood fragments, saturated.	4.4	
1.5			2	100	0	Wto: GP SW CL	GP SW CL	Sand: black, silty, gravelly, with shell hash. Clay: gray, mottled red sandy sections, firm to stiff, moist.	1.2	
10			3	80	0	CL	CL	Clay: as above.	15	
15									3.1	

EnSafe/Allen & Hoshall

Monitoring Well NBCE145003

Project: ZONE E - Naval Base Charleston

Coordinates: 2317972.43 E, 375382.01 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 1125 on 1-26-96

TOC Elevation: 9.14 feet msl

Completed at 1230 on 1-26-96

Depth to Groundwater: 3.98 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

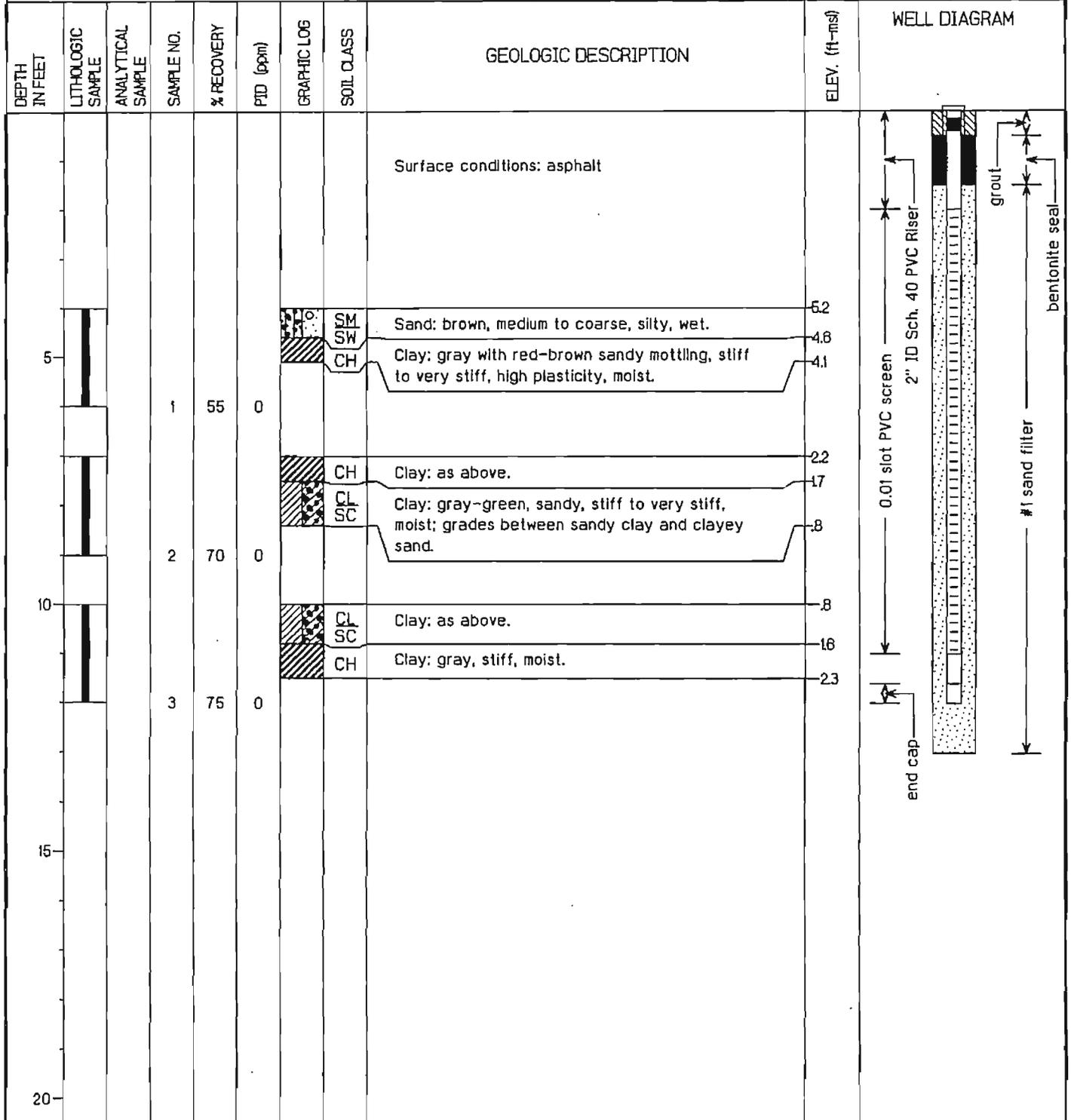
Groundwater Elevation: 5.18 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.0 feet bgs

Geologist: B. Blythe

Well Screen: 2.0 to 11.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE172001

Project: ZONE E - Naval Base Charleston

Coordinates: 2317719.65 E, 375827.32 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 0950 on 10-09-95

TOC Elevation: 8.58 feet msl

Completed at 1140 on 10-09-95

Depth to Groundwater: 6.75 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

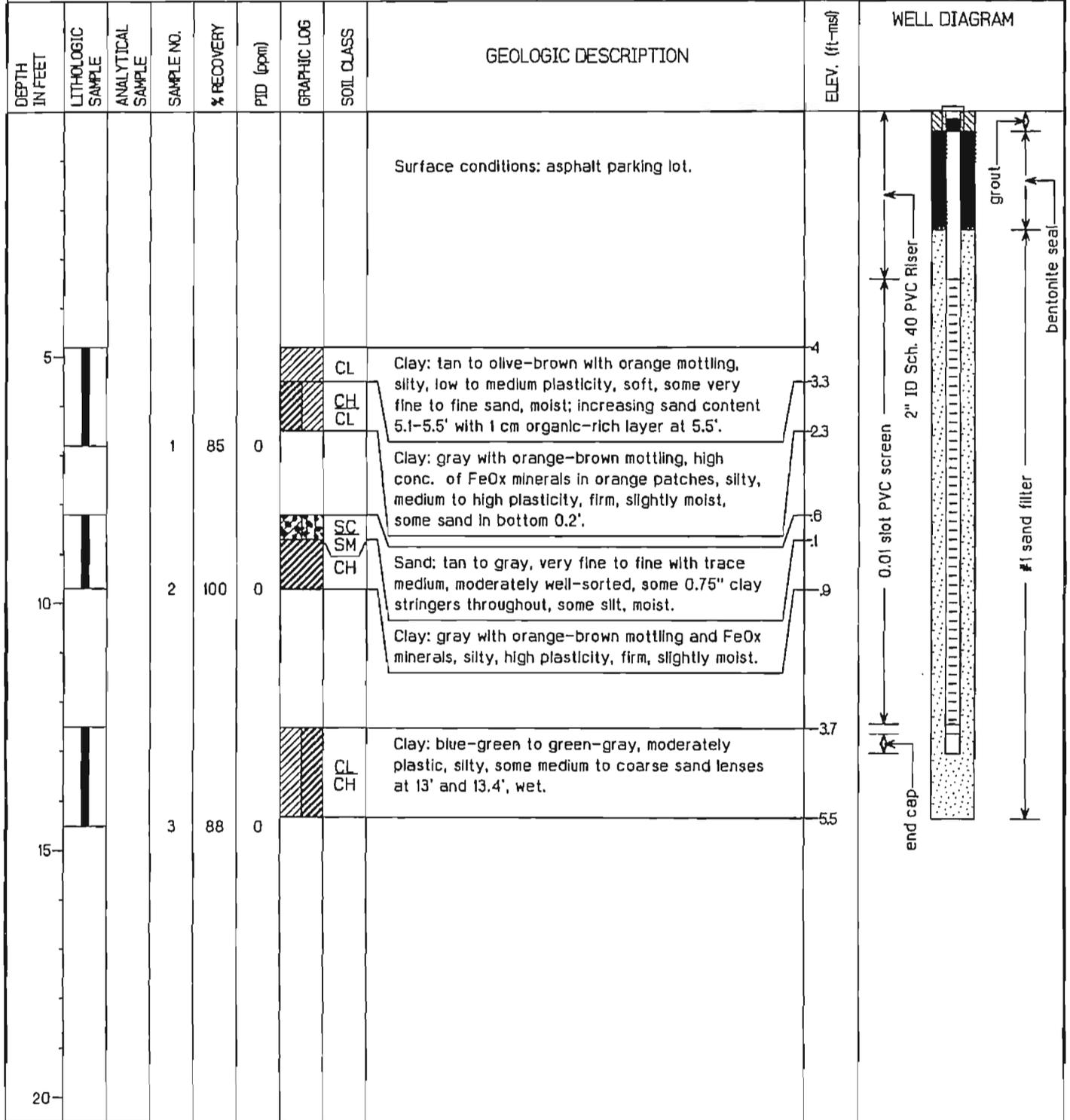
Groundwater Elevation: 1.83 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: T. Kafka

Well Screen: 3.4 to 12.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE172002

Project: ZONE E - Naval Base Charleston

Coordinates: 2317660.15 E, 375895.39 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 0855 on 10-06-95

TOC Elevation: 8.50 feet msl

Completed at 1215 on 10-06-95

Depth to Groundwater: 7.04 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

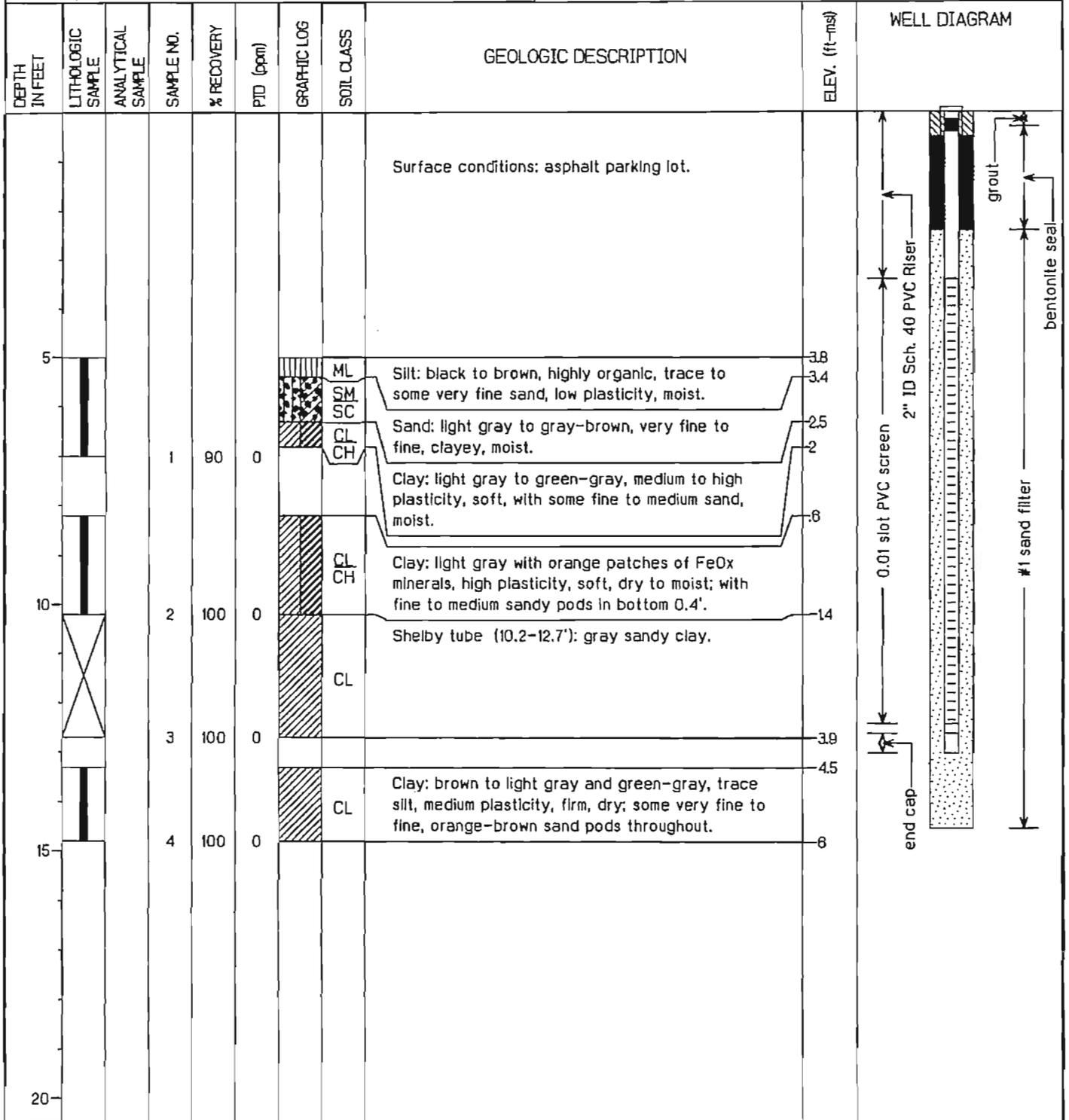
Groundwater Elevation: 1.46 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: T. Kafka

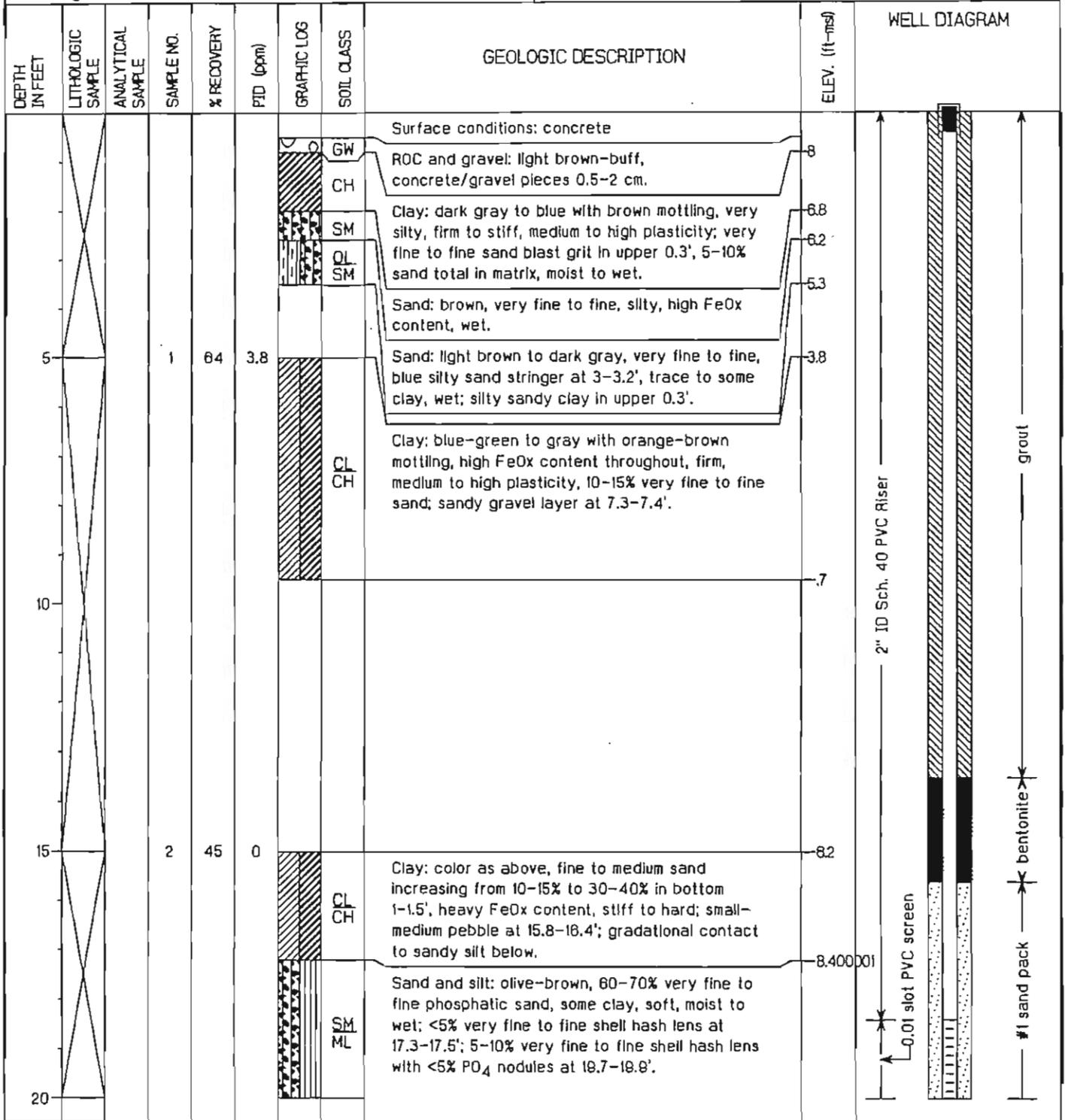
Well Screen: 3.4 to 12.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE17202D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317662.20 E, 375889.00 N
Location: Charleston, SC	Surface Elevation: 8.8 feet msl
Started at 1530 on 1-12-96	TOC Elevation: 8.70 feet msl
Completed at 1700 on 1-12-96	Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 1.43 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 28.4 feet bgs
Geologist: T. Kafka	Well Screen: 18.4 to 27.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE17202D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317662.20 E, 375889.00 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.8 feet msl</i>
Started at <i>1530 on 1-12-96</i>	TOC Elevation: <i>8.70 feet msl</i>
Completed at <i>1700 on 1-12-96</i>	Depth to Groundwater: <i>7.27 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>1.43 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC Cert# 889)</i>	Total Well Depth: <i>28.4 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>18.4 to 27.9 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
24							SM ML		24	<p>0.01 slot PVC screen</p> <p>#1 sand pack</p> <p>end cap</p> <p>hole plug</p>
25			3	62	0		SM ML	Sand and silt: as above with thin lag deposit at 26-27' comprised of 5% PO ₄ nodules (mm size) and 5-10% oyster shell fragments; gradational basal contact with Ashley Formation.	22	
30							SM CL	Silt: olive-brown, clayey, trace to some very fine to fine sand in upper 1', soft to firm, moist; phosphatic sand pits at 28-28.2' and 28.5'--Ashley Formation.	22	
35			4	100	0				26.2	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE525001

Project: ZONE E - Naval Base Charleston

Coordinates: 2317301.90 E, 377795.45 N

Location: Charleston, SC

Surface Elevation: 9.9 feet msl

Started at 1020 on 1-17-96

TOC Elevation: 9.69 feet msl

Completed at 1130 on 1-17-96

Depth to Groundwater: 5.00 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 4.69 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PIID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt lot.		<p>WELL DIAGRAM</p> <p>end cap</p> <p>2" ID Sch 40 PVC Riser</p> <p>0.01 slot, PVC screen</p> <p>#1 sand filter</p> <p>grout</p> <p>bentonite seal</p>
5			1	55	0		SC CL	Clay: green gray with brown and red FeOx mottling, firm to stiff, ~50% sand, moist.	4.9	
			2	100	0		CL	Clay: as above, very stiff, small sandy lens at 9.7'.	3.8	
10			3	50	0		CL	Clay: as above.	1.9	
15									1.1	
20									2.1	

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Monitoring Well NBCE526001

Project: ZONE E - Naval Base Charleston	Coordinates: 2317185.51 E, 377663.37 N
Location: Charleston, SC	Surface Elevation: 8.8 feet msl
Started at 1015 on 2-29-96	TOC Elevation: 8.61 feet msl
Completed at 1130 on 2-29-96	Depth to Groundwater: 4.52 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.09 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PIID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		<p>WELL DIAGRAM</p> <p>end cap</p> <p>0.01 slot, PVC screen</p> <p>2" ID Sch 40 PVC Riser</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p>
5			1	100	0	SM SP SW	Sand: red with tan-brown, fine, silty. Sand: black, gravelly, muddy, wet.	4.9 4.6		
10			2	75	0	SC CL CH	Sand: black grading to gray and gray-green, medium, clayey, firm to stiff, saturated. Clay: gray, stiff, moist.	3 7 12		
15			3	85	0	CH	Clay: gray with FeOx mottling, stiff to hard, with medium sand, moist.	2.2 3.8		

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Monitoring Well NBCE52601D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317188.94 E, 377698.46 N
Location: Charleston, SC	Surface Elevation: 8.7 feet msl
Started at 0850 on 1-04-96	TOC Elevation: 8.60 feet msl
Completed at 1215 on 1-04-96	Depth to Groundwater: 6.34 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.26 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 58.2 feet bgs
Geologist: T. Kafka	Well Screen: 48.2 to 57.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							GC	Surface conditions: asphalt road		
							SM GC	Gravel: concrete and asphalt.	7.7	
							GC	Sand and gravel: with very fine to coarse sand matrix, pebbles and large gravels, dry, poorly sorted, odd odor (note high FID hits).	8.7	
							GC	Gravel: concrete fragments with sand and clay.	5.7	
							GM CL	Gravel and clay: green sandy clay and silty mixture, some wood, concrete fragments, coarse sand, some pebbles, sour odor.	3.7	
5			1	100	300					
							SM SC	Sand: green-gray to medium gray, fine to medium, moderately well-sorted, with some small pebbles, some clay, silty, wet; dark black wood with silt, dark stained at 11.8-12'.	2.3 3.3	
							CL	Clay: olive brown to blue-gray, ~50-60% FeOx pods with some fine to medium sand throughout; trace sand in upper 2' increasing in bottom 1'; firm to stiff, high plasticity, moist.		
15			2	40	10.5		SM SC	Sand: light to medium gray with some green, very fine to fine, well-sorted, some black phosphatic sand in matrix (<5%), clayey, wet.	6.6 7.7	
							SP SM	Sand: light gray to white, very fine to fine, well-sorted, trace silt; green, medium plasticity clay partings from 21.2-21.5'; saturated from 17-18.5'.		
20										

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Monitoring Well NBCE52601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317188.94 E, 377698.46 N

Location: Charleston, SC

Surface Elevation: 8.7 feet msl

Started at 0850 on 1-04-96

TOC Elevation: 8.60 feet msl

Completed at 1215 on 1-04-96

Depth to Groundwater: 6.34 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

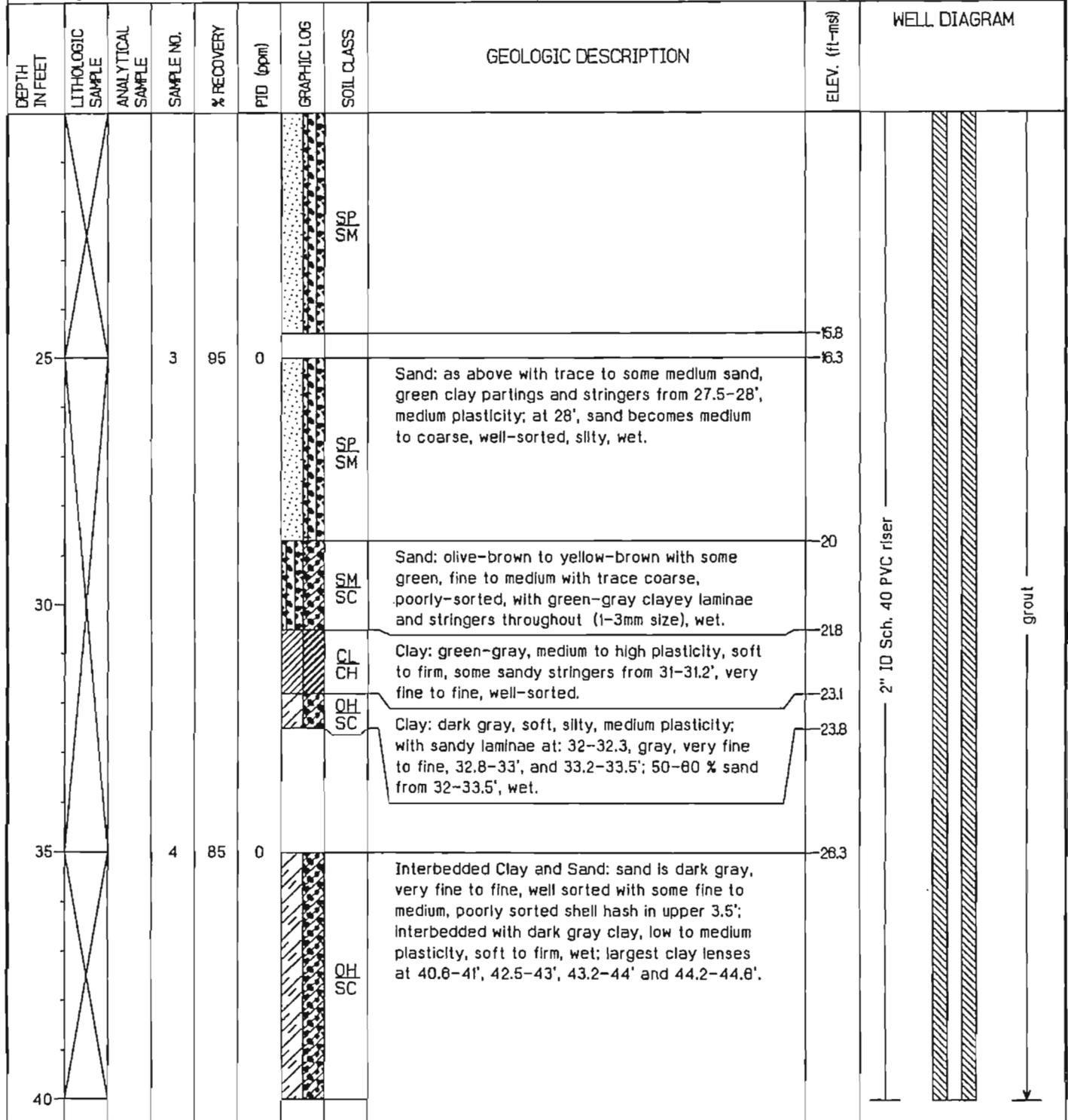
Groundwater Elevation: 2.26 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 58.2 feet bgs

Geologist: T. Kafka

Well Screen: 48.2 to 57.7 feet bgs



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Monitoring Well NBCE52601D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317188.94 E, 377698.46 N
Location: Charleston, SC	Surface Elevation: 8.7 feet msl
Started at 0850 on 1-04-96	TOC Elevation: 8.60 feet msl
Completed at 1215 on 1-04-96	Depth to Groundwater: 6.34 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.26 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 58.2 feet bgs
Geologist: T. Kafka	Well Screen: 48.2 to 57.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0		OH SC	Interbedded Clay and Sand: sand is fine to medium with trace to some fine to very coarse shell hash; shells 1-2 cm long, wet.	38.3	<p>2" ID Sch. 40 PVC riser</p> <p>0.01 slot PVC screen</p> <p>end cap</p> <p>bentonite</p> <p>FX-50 sand</p> <p>hole plug</p>
50							CH OH	Clay: dark gray, silty, stiff to hard, some very fine to fine sand stringers and laminae at 47.5-48' and 48.5-48.8'; 30-40% sand in matrix. 50-51.8': very stiff to hard clay with shells, trace sand, clean.	43.1	
55			8	100	0		SC OH	Interbedded Sand and Clay: sand is very fine to fine, well-sorted, wet, comprising ~ 20% matrix; clay is dark gray, silty, high plasticity; greatest sand content 30-40% from 51.3-53'.	46.3	
60			7	100	0		CH OH	Clay: dark gray, silty, firm to hard, moist, clean-- dewatered marsh clay. Shelby Tube from 60.0 to 62.5 ft.: top and bottom consist of dewatered marsh clay as above.		

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Monitoring Well NBCE526002

Project: ZONE E - Naval Base Charleston	Coordinates: 2317126.78 E, 377614.09 N
Location: Charleston, SC	Surface Elevation: 9.7 feet msl
Started at 1455 on 11-16-95	TOC Elevation: 9.51 feet msl
Completed at 1620 on 11-16-95	Depth to Groundwater: 6.21 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.30 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road		
5			1	70	0		SP	Sand: gray to dark gray grading to tan and brown-red at 4.8', fine, moist.	5.2	
			2	55	0		CP CH	Clay: red-brown with gray mottling, with fine sand, high plasticity, firm to stiff, moist.	3.8	
10			3	55	0		CP CH	Clay: as above with increasing sand content at 12.2' grading to sandy clay.	2	
15									13	
20									2.4	

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Monitoring Well NBCE528001

Project: ZONE E - Naval Base Charleston	Coordinates: 2316753.96 E, 377407.71 N
Location: Charleston, SC	Surface Elevation: 10.5 feet msl
Started at 1435 on 10-27-95	TOC Elevation: 10.38 feet msl
Completed at 1615 on 10-27-95	Depth to Groundwater: 7.63 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.75 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.5 feet bgs
Geologist: B. Blythe	Well Screen: 3.5 to 12.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		
5			1	60	0		SM	Sand: light brown, brown and orange, very fine, silty.	5.8 4.9	
10			2	87	0		SM	Sand: light gray-brown, very fine, silty, loose, saturated, flowing sand; grades into brown silty sand with increased organic mud content in bottom 0.3'.	2.4 1.4	
15			3	75	0	 	SM CH	Sand: as above. Clay: light to dark gray with orange-brown zones mixed throughout, very stiff.	2.5 3.4 4	
20										

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Monitoring Well NBCE530001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316461.09 E, 377038.58 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 1330 on 1-10-96

TOC Elevation: 7.63 feet msl

Completed at 1445 on 1-10-96

Depth to Groundwater: 5.37 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

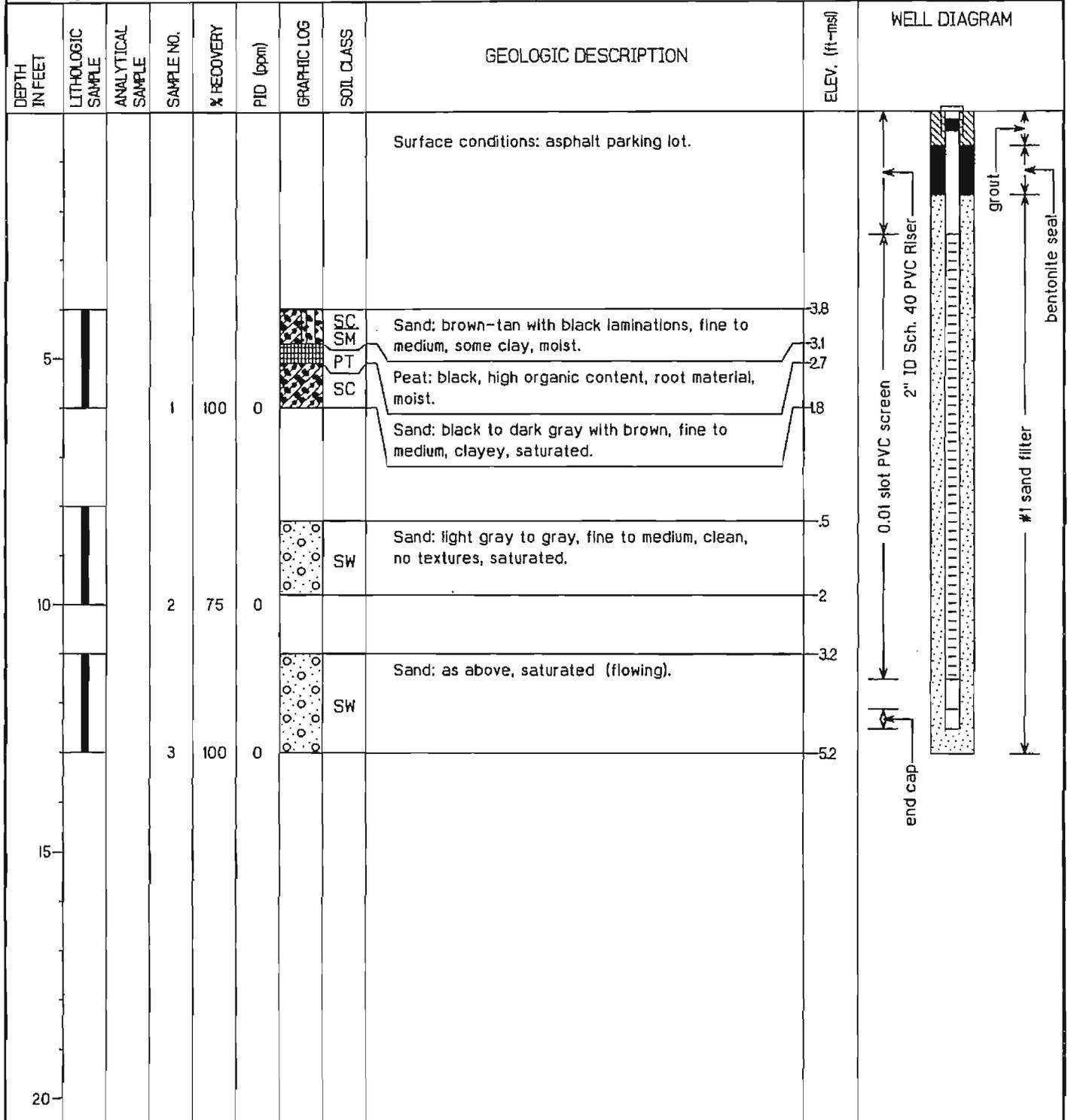
Groundwater Elevation: 2.26 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



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Monitoring Well NBCE53001D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316472.28 E, 37704197 N
Location: Charleston, SC	Surface Elevation: 7.8 feet msl
Started at 1220 on 1-22-96	TOC Elevation: 7.58 feet msl
Completed at 1330 on 1-22-96	Depth to Groundwater: 5.11 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.47 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 413 feet bgs
Geologist: B. Bythe	Well Screen: 313 to 40.8 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road.		<p>2" ID Sch. 40 PVC riser</p> <p>grout</p>
							GM GC	Gravel: black to dark brown, with medium sand and clayey matrix, wet.	8.6	
							SM GM	Sand: tan to yellow-orange, fine to medium, some gravel intermixed.	4.7	
5			1	60	0		SM	Sand: brown, fine, silty, wet.	2.8	
							SW	Sand: gray, fine to medium, no fines, wet, some shell hash intermixed throughout.	1.7	
10									5.6	
15			2	84	0		SW	Sand: as above.	7.2	
20										

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Monitoring Well NBCE53001D

Project: ZONE E - Naval Base Charleston

Coordinates: 231647228 E, 37704197 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 1220 on 1-22-96

TOC Elevation: 7.58 feet msl

Completed at 1330 on 1-22-96

Depth to Groundwater: 5.11 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

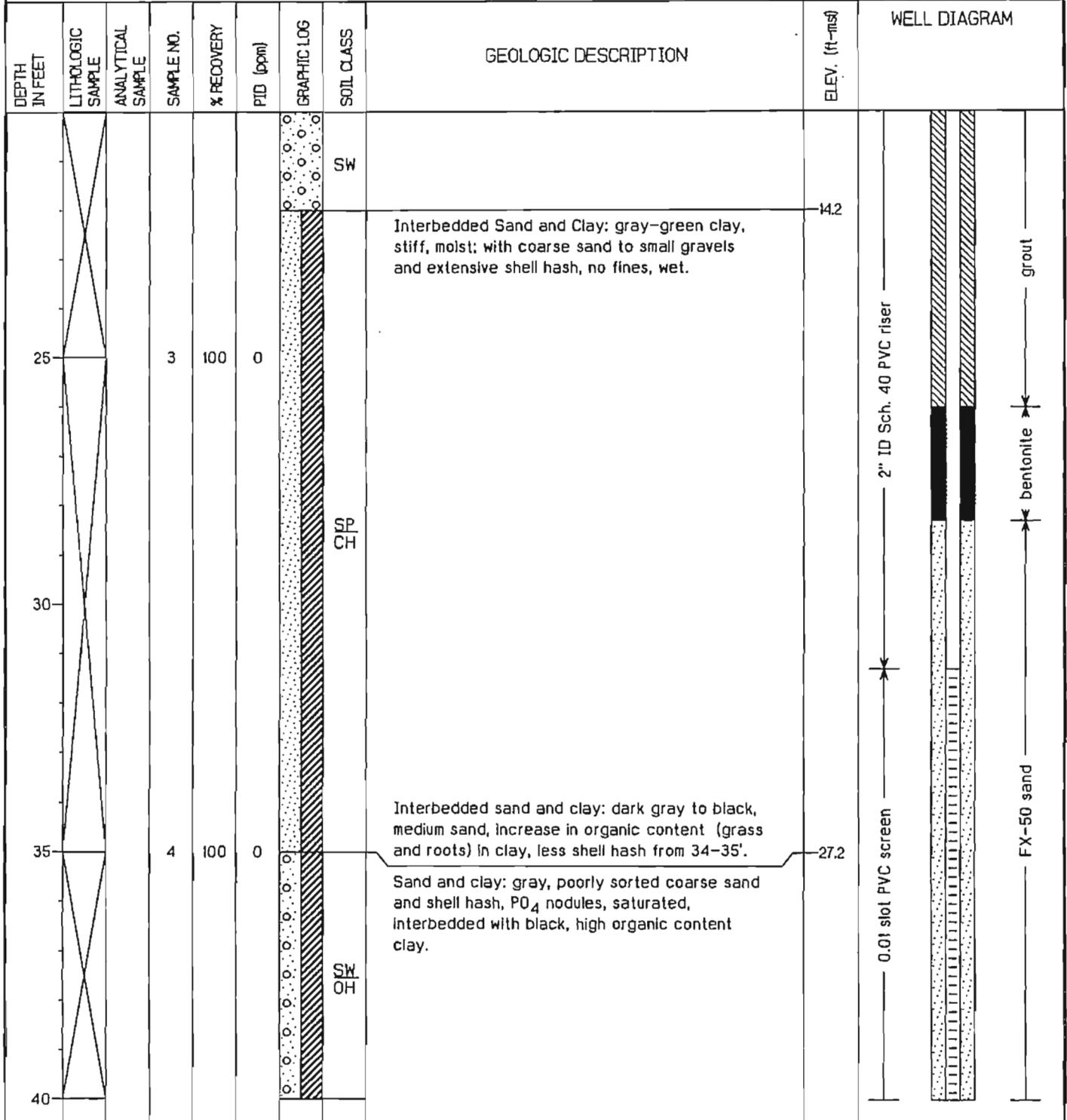
Groundwater Elevation: 2.47 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 41.3 feet bgs

Geologist: B. Bythe

Well Screen: 31.3 to 40.8 feet bgs



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Monitoring Well NBCE53001D

Project: ZONE E - Naval Base Charleston

Coordinates: 231647228 E, 37704197 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 1220 on 1-22-96

TOC Elevation: 7.58 feet msl

Completed at 1330 on 1-22-96

Depth to Groundwater: 5.11 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

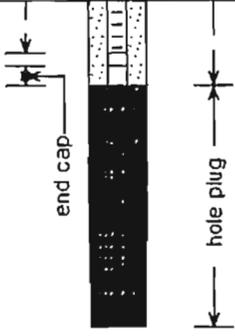
Groundwater Elevation: 2.47 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 41.3 feet bgs

Geologist: B. Bythe

Well Screen: 31.3 to 40.8 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0		OH	Clay: black, high organic content, stiff, moist-- dewatered marsh clay.	32.7	
50									37.2	
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCE530002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316693.79 E, 377260.88 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 1050 on 1-10-96

TOC Elevation: 9.53 feet msl

Completed at 1230 on 1-10-96

Depth to Groundwater: 6.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.65 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
5			1	100	5.9	SP	Sand: light to dark tan, fine, clean, some red FeOx patches, moist.	5.2		
10			2	100	0	SP	Sand: as above changing to light gray at 8.8', medium to coarse.	3.7		
15			3	100	0	SP SC	Sand: as above becoming slightly clayey.	1.3		
20									3.3	

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Monitoring Well NBCE53002D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316687.26 E, 377281.96 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0850 on 1-07-96

TOC Elevation: 9.46 feet msl

Completed at 1215 on 1-07-96

Depth to Groundwater: 6.91 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

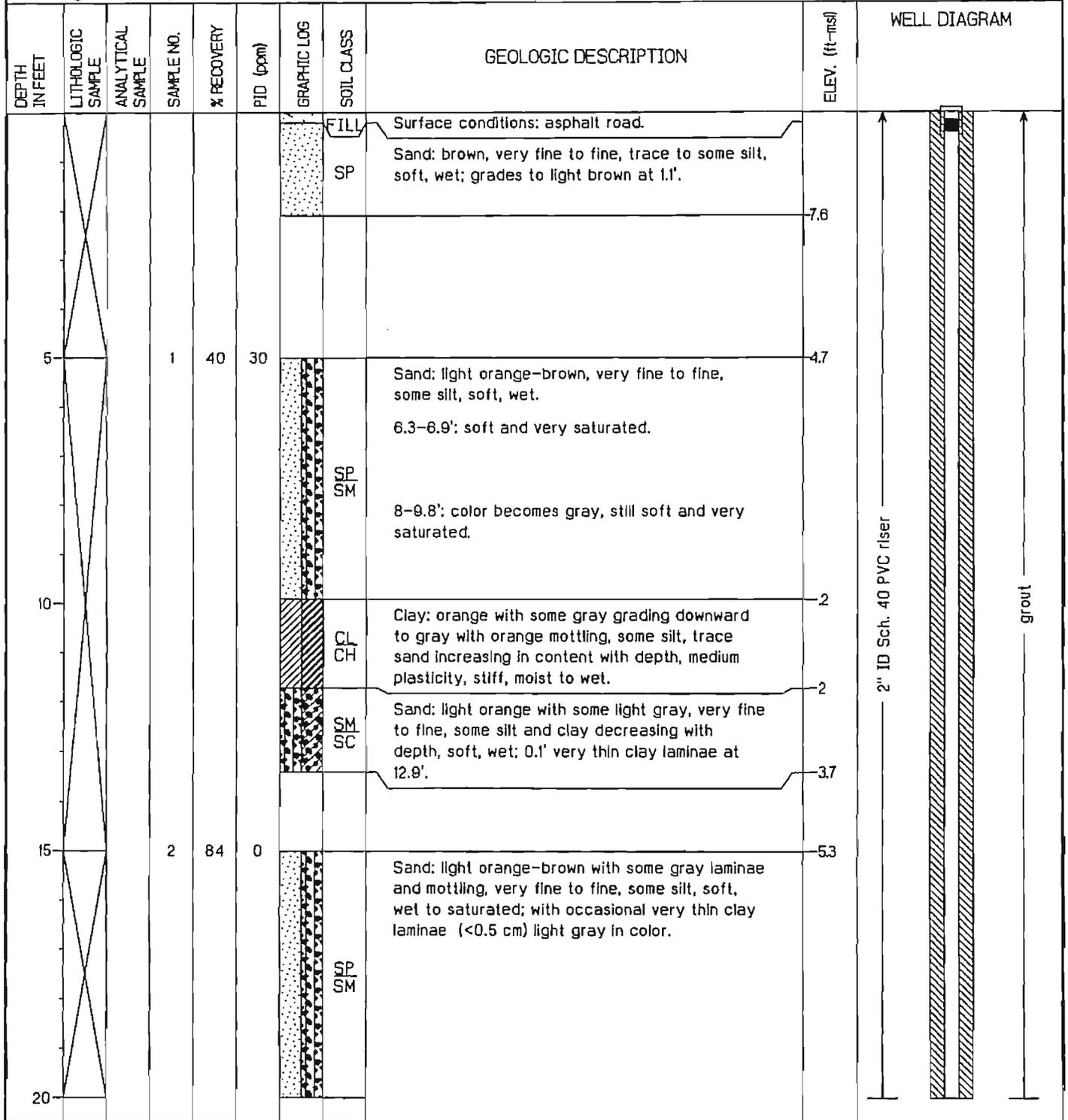
Groundwater Elevation: 2.55 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 46.9 feet bgs

Geologist: P. Bayley

Well Screen: 37.0 to 46.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE53002D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316687.26 E, 377281.96 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0850 on 1-07-96

TOC Elevation: 9.46 feet msl

Completed at 1215 on 1-07-96

Depth to Groundwater: 6.91 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.55 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 46.9 feet bgs

Geologist: P. Bayley

Well Screen: 37.0 to 46.4 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		SP	<p>21-22.3': sand becomes gray, very fine to fine, some silt, with very thin clay laminae decreasing in frequency with depth, soft, wet.</p> <p>22.3-25': sand becomes orange, as above with very thin clay laminae decreasing in frequency with depth from 22.3-23.7' and 24.6-25'.</p> <p>25-27.6': sand as above with thinly interbedded clay laminae 1-2 cm thick from 25.7-27.6'.</p>		
30						SP	<p>Sand and shell hash: light brown grading to gray-brown with depth, very fine to fine/medium, trace silt.</p> <p>30-31.1': with 4 cm, olive-brown clay laminae.</p> <p>31.3-32.9': shell hash lens with dark gray sand and dark gray-black, silty clay, soft, plastic, wet.</p> <p>32.9-35': sand becomes dark gray, very fine to fine, trace to some silt, soft, wet; with some very thin <0.5 cm clay laminae.</p>	17.9		
35			4	94	0		SP	<p>35-38.5': sand as above with occasional shell fragments; at 35.8', occasional thin clay laminae <1 cm thick increasing with depth to interbedded sand and clay lenses.</p> <p>37.6-37.9': olive-brown clay laminae.</p>		
							CL	<p>37.9-38.5': sand becomes gray, very fine to fine, some silt, some shell fragments in basal 0.2', soft, wet.</p>	28.8	
40							SP	<p>Clay: dark gray, some silt, trace very fine sand, firm, plastic, wet; with occasional very thin</p>	30.3	

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Monitoring Well NBCE53002D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316887.26 E, 377281.96 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0850 on 1-07-96

TOC Elevation: 9.46 feet msl

Completed at 1215 on 1-07-96

Depth to Groundwater: 6.91 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

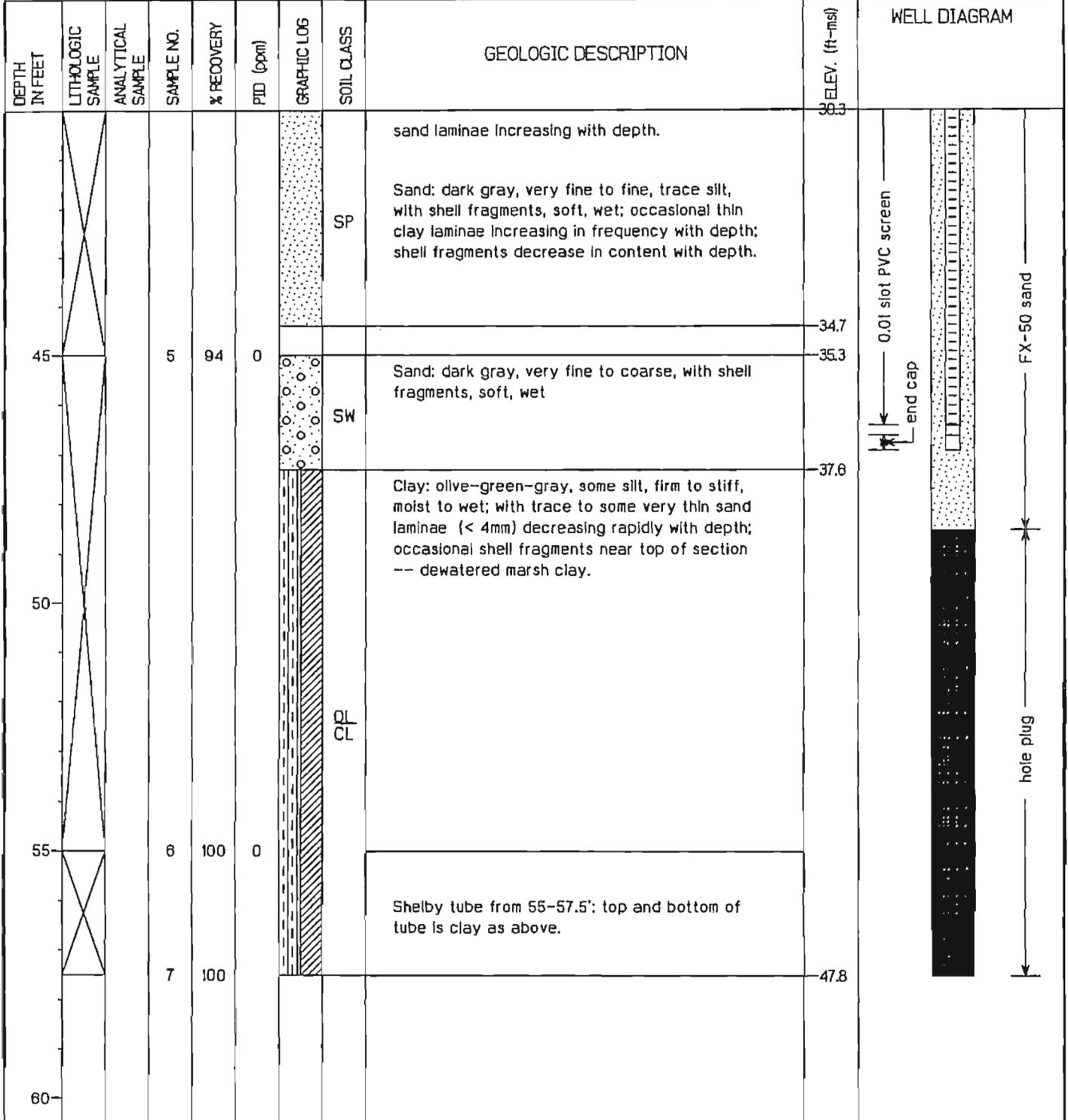
Groundwater Elevation: 2.55 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 46.9 feet bgs

Geologist: P. Bayley

Well Screen: 37.0 to 46.4 feet bgs



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Monitoring Well NBCE538001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316569.75 E, 377009.16 N

Location: Charleston, SC

Surface Elevation: 7.9 feet msl

Started at 0915 on 11-9-95

TOC Elevation: 7.75 feet msl

Completed at 1055 on 11-9-95

Depth to Groundwater: 6.05 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

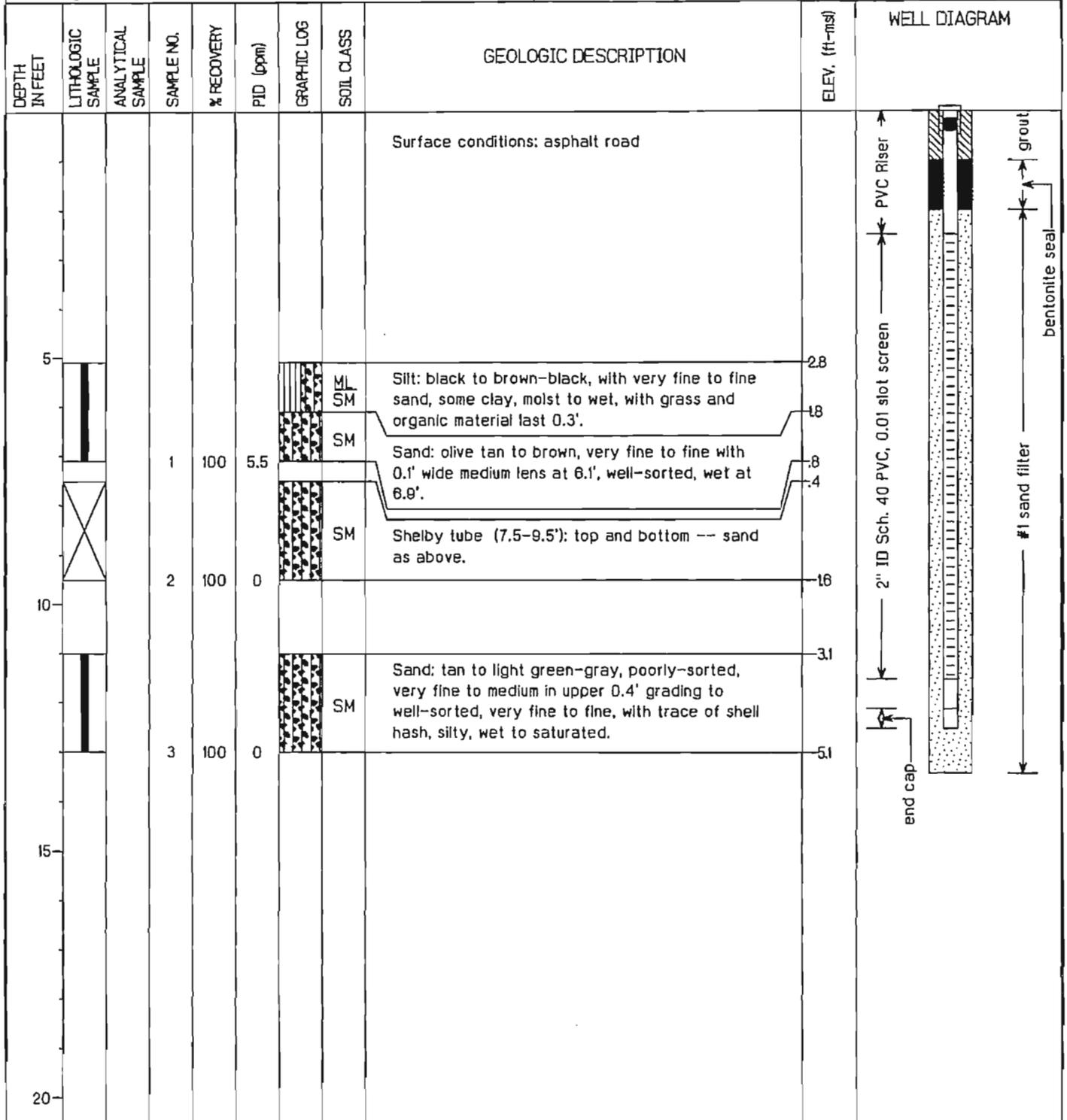
Groundwater Elevation: 1.70 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

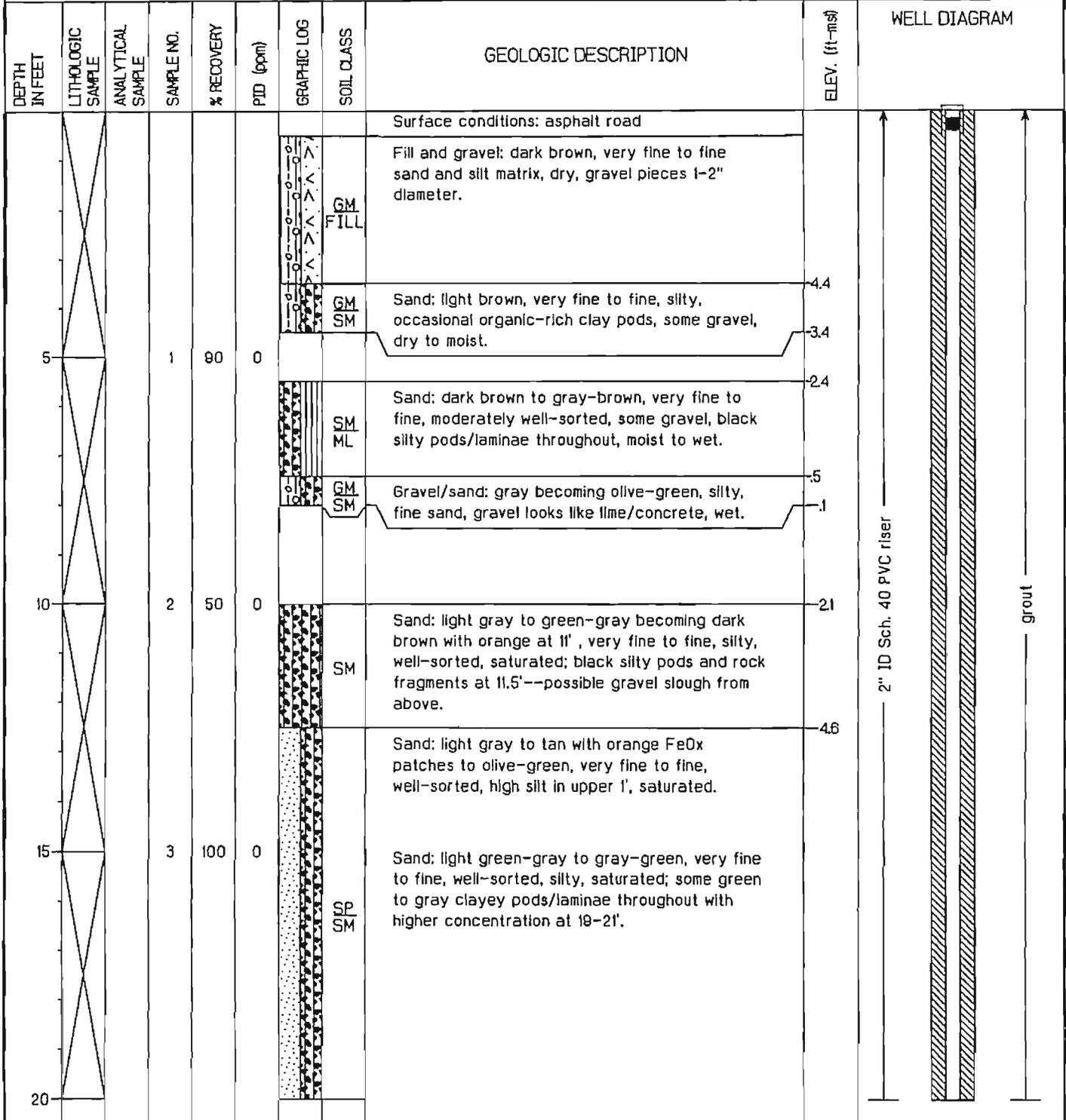
Well Screen: 2.5 to 11.5 feet bgs



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Monitoring Well NBCE53801D

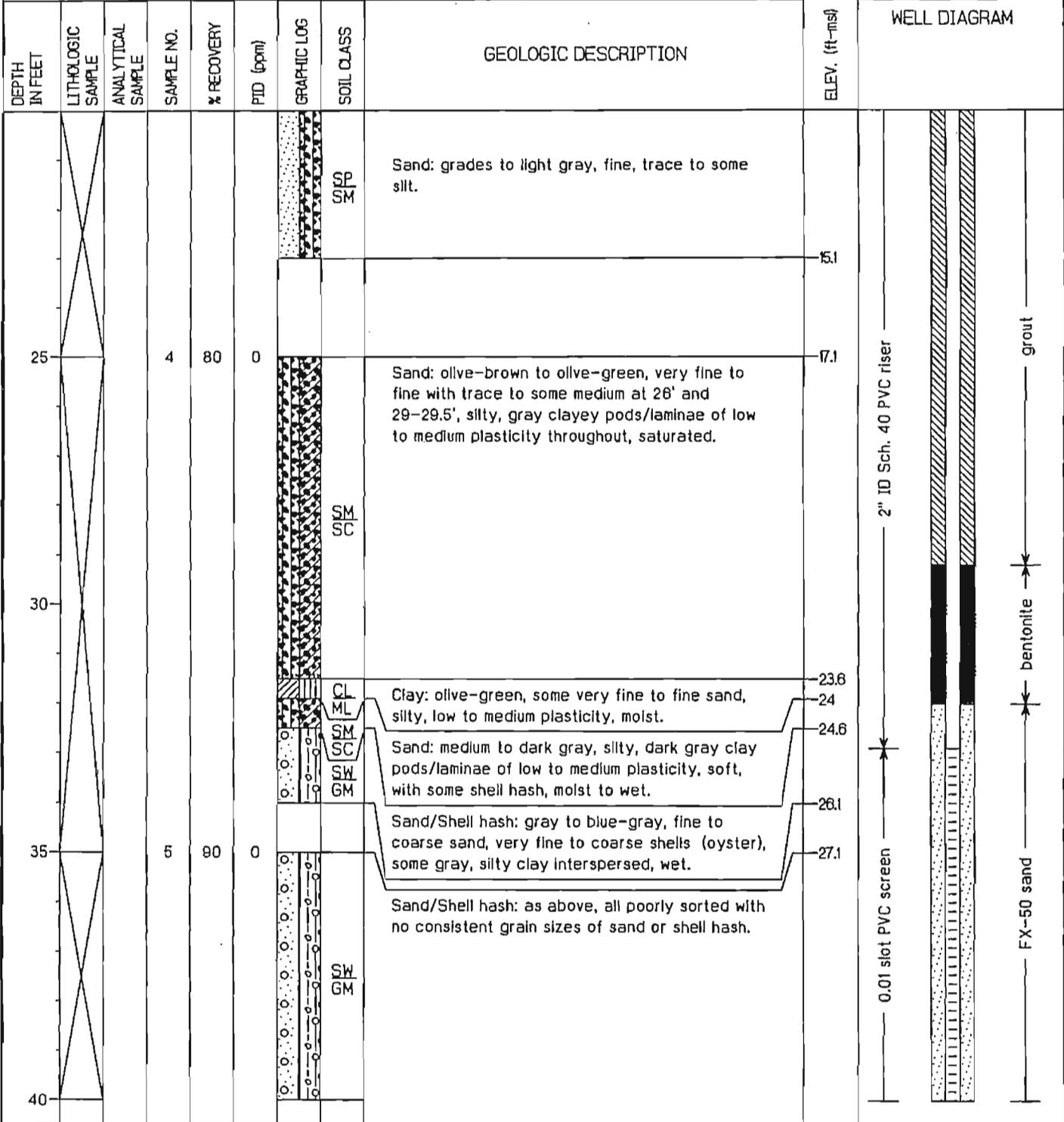
Project: ZONE E - Naval Base Charleston	Coordinates: 2316559.07 E, 377007.11 N
Location: Charleston, SC	Surface Elevation: 7.9 feet msl
Started at 1400 on 12-03-95	TOC Elevation: 7.71 feet msl
Completed at 1730 on 12-03-95	Depth to Groundwater: 5.21 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.50 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 42.8 feet bgs
Geologist: T. Kafka	Well Screen: 32.9 to 42.3 feet bgs



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Monitoring Well NBCE53801D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316559.07 E, 377007.11 N
Location: Charleston, SC	Surface Elevation: 7.9 feet msl
Started at 1400 on 12-03-95	TOC Elevation: 7.71 feet msl
Completed at 1730 on 12-03-95	Depth to Groundwater: 5.21 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.50 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 42.8 feet bgs
Geologist: T. Kafka	Well Screen: 32.9 to 42.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE53801D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316559.07 E, 377007.11 N

Location: Charleston, SC

Surface Elevation: 7.9 feet msl

Started at 1400 on 12-03-95

TOC Elevation: 7.71 feet msl

Completed at 1730 on 12-03-95

Depth to Groundwater: 5.21 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

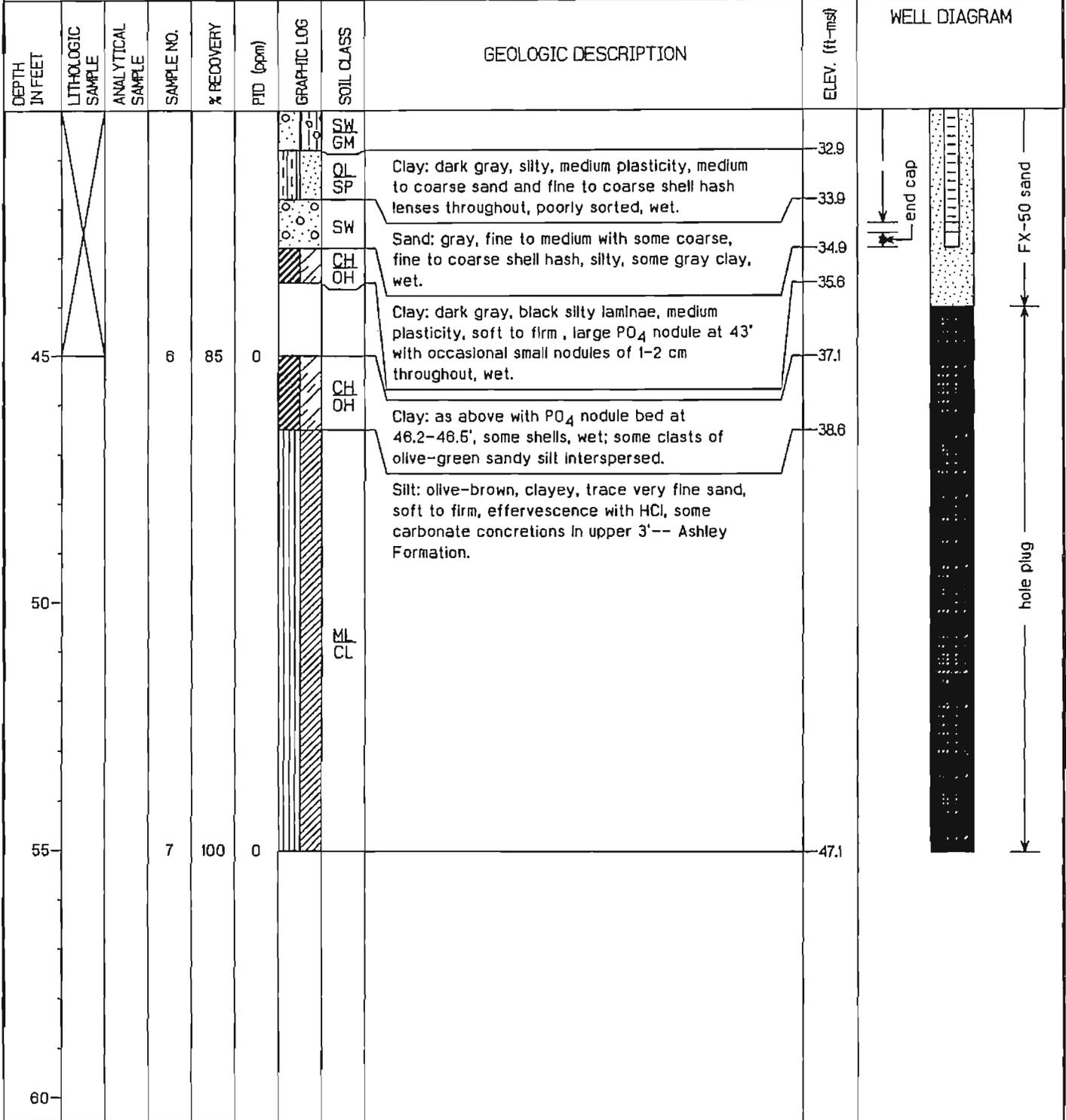
Groundwater Elevation: 2.50 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 42.8 feet bgs

Geologist: T. Kafka

Well Screen: 32.9 to 42.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE539001

Project: ZONE E - Naval Base Charleston

Coordinates: 231644251 E, 376903.51 N

Location: Charleston, SC

Surface Elevation: 0.5 feet msl

Started at 1405 on 11-8-95

TOC Elevation: 0.33 feet msl

Completed at 1530 on 11-8-95

Depth to Groundwater: 7.07 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

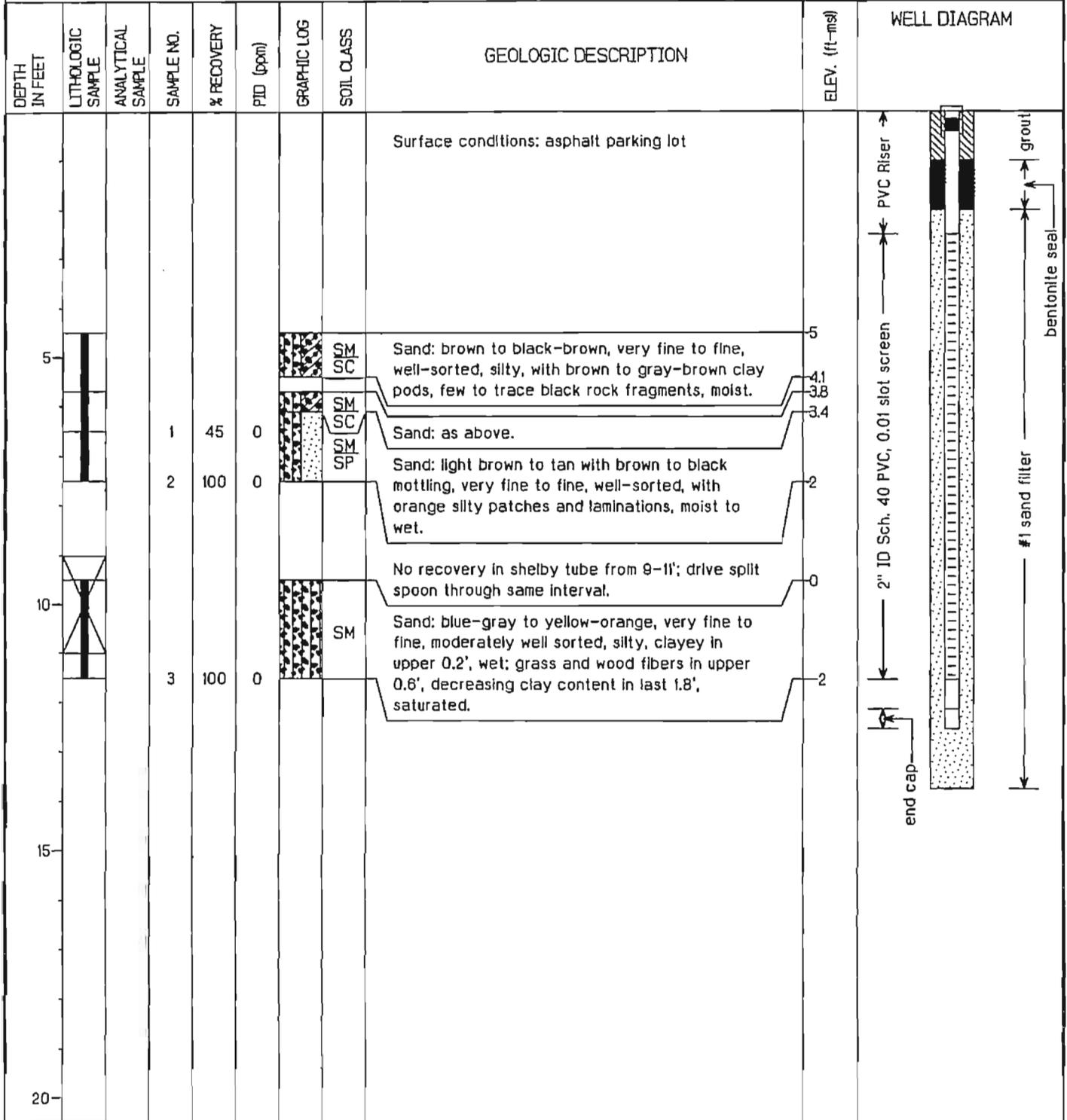
Groundwater Elevation: 2.26 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

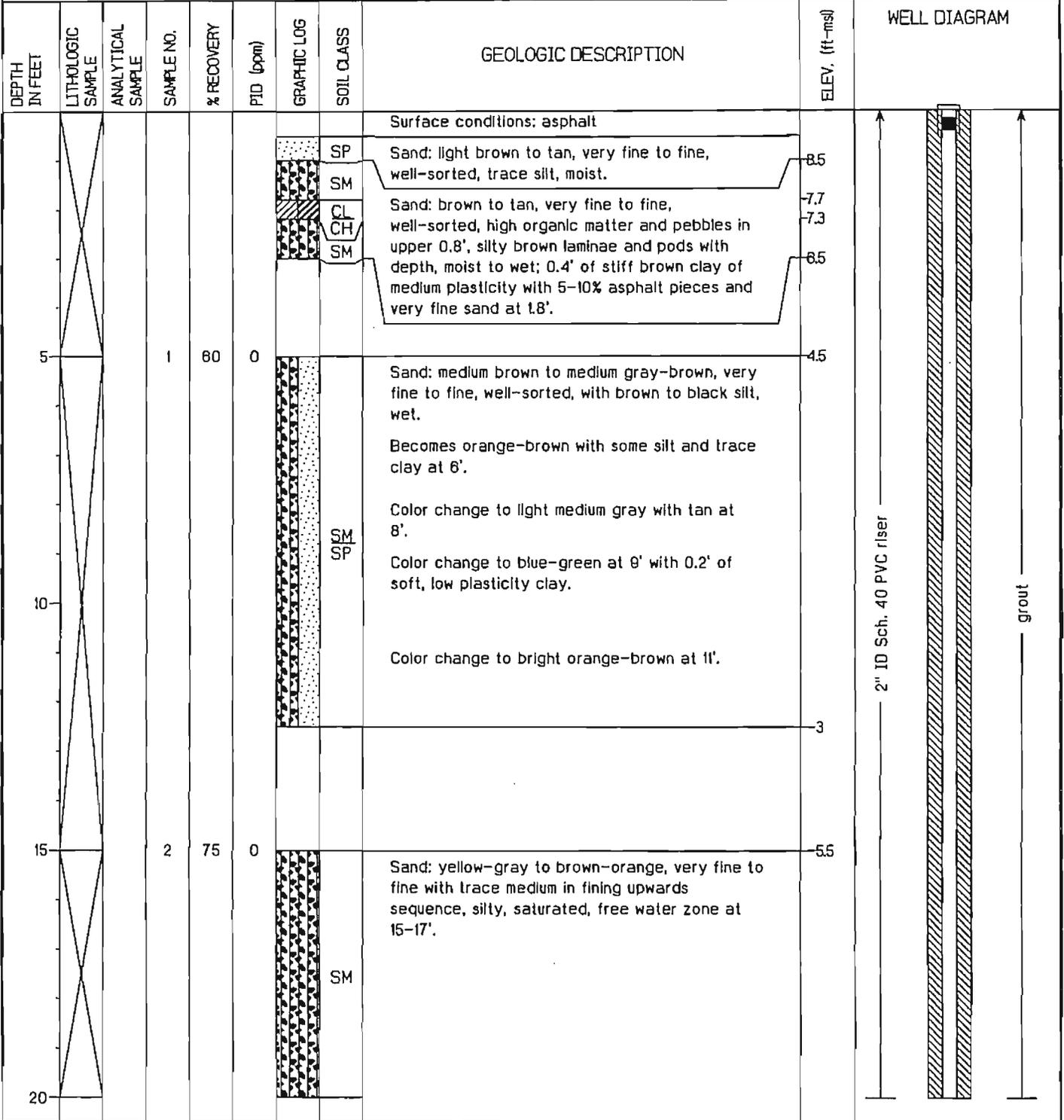
Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE53901D

Project: ZONE E - Naval Base Charleston	Coordinates: 231644102 E, 376909.29 N
Location: Charleston, SC	Surface Elevation: 9.5 feet msl
Started at 0820 on 1-10-96	TOC Elevation: 9.36 feet msl
Completed at 1020 on 1-10-96	Depth to Groundwater: 6.93 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.43 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 38.2 feet bgs
Geologist: T. Kafka	Well Screen: 28.2 to 37.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE53901D

Project: ZONE E - Naval Base Charleston

Coordinates: 231644102 E, 37690929 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 0820 on 1-10-96

TOC Elevation: 9.36 feet msl

Completed at 1020 on 1-10-96

Depth to Groundwater: 6.93 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

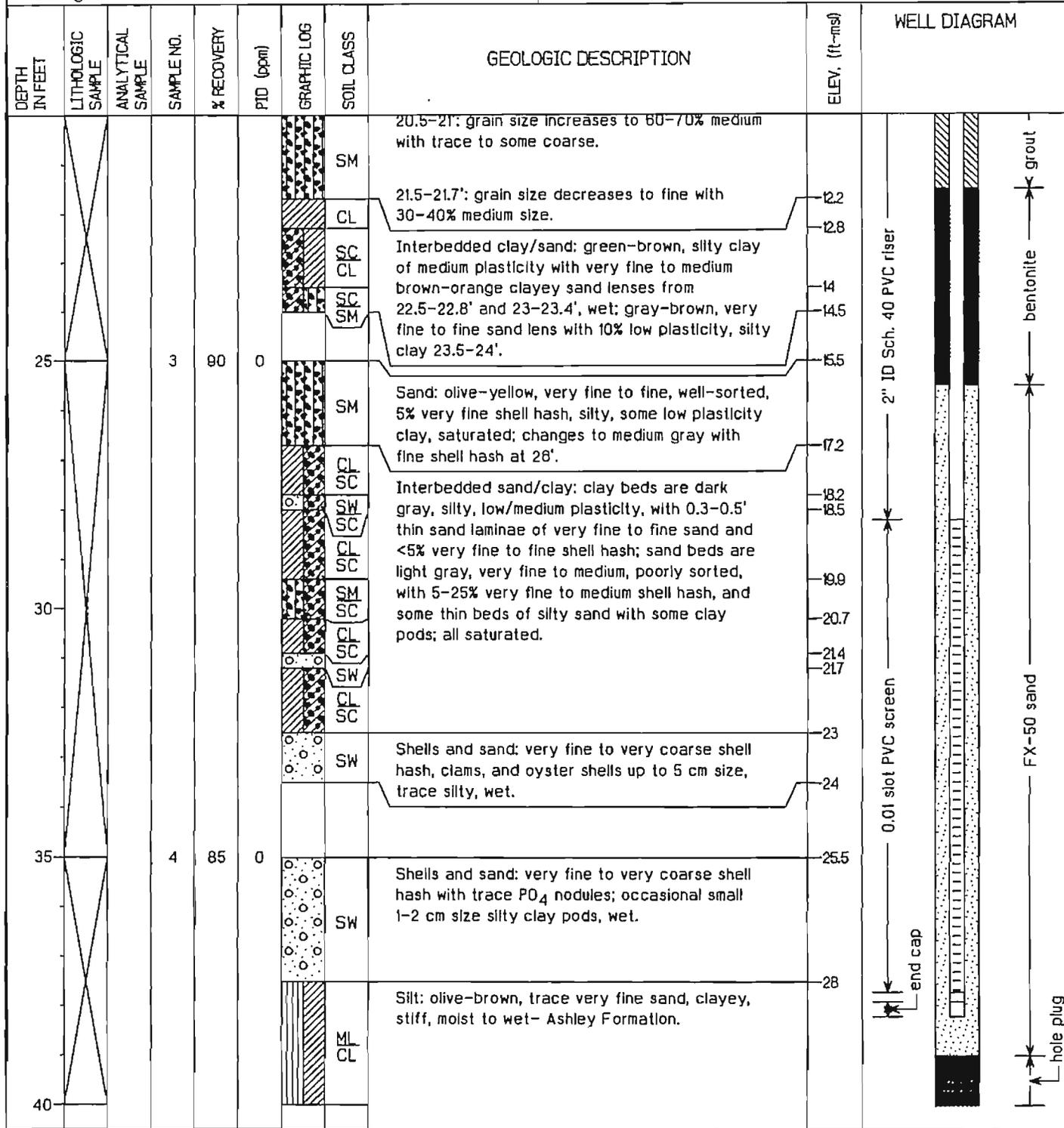
Groundwater Elevation: 2.43 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 38.2 feet bgs

Geologist: T. Kafka

Well Screen: 28.2 to 37.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE53901D

Project: ZONE E - Naval Base Charleston

Coordinates: 231644102 E, 37690929 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 0820 on 1-10-96

TOC Elevation: 9.36 feet msl

Completed at 1020 on 1-10-96

Depth to Groundwater: 6.93 feet TDC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.43 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 38.2 feet bgs

Geologist: T. Kafka

Well Screen: 28.2 to 37.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0		CLF		35.5	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCE542001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316806.06 E, 376959.02 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0830 on 10-04-95

TOC Elevation: 8.80 feet msl

Completed at 1025 on 10-04-95

Depth to Groundwater: 8.10 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

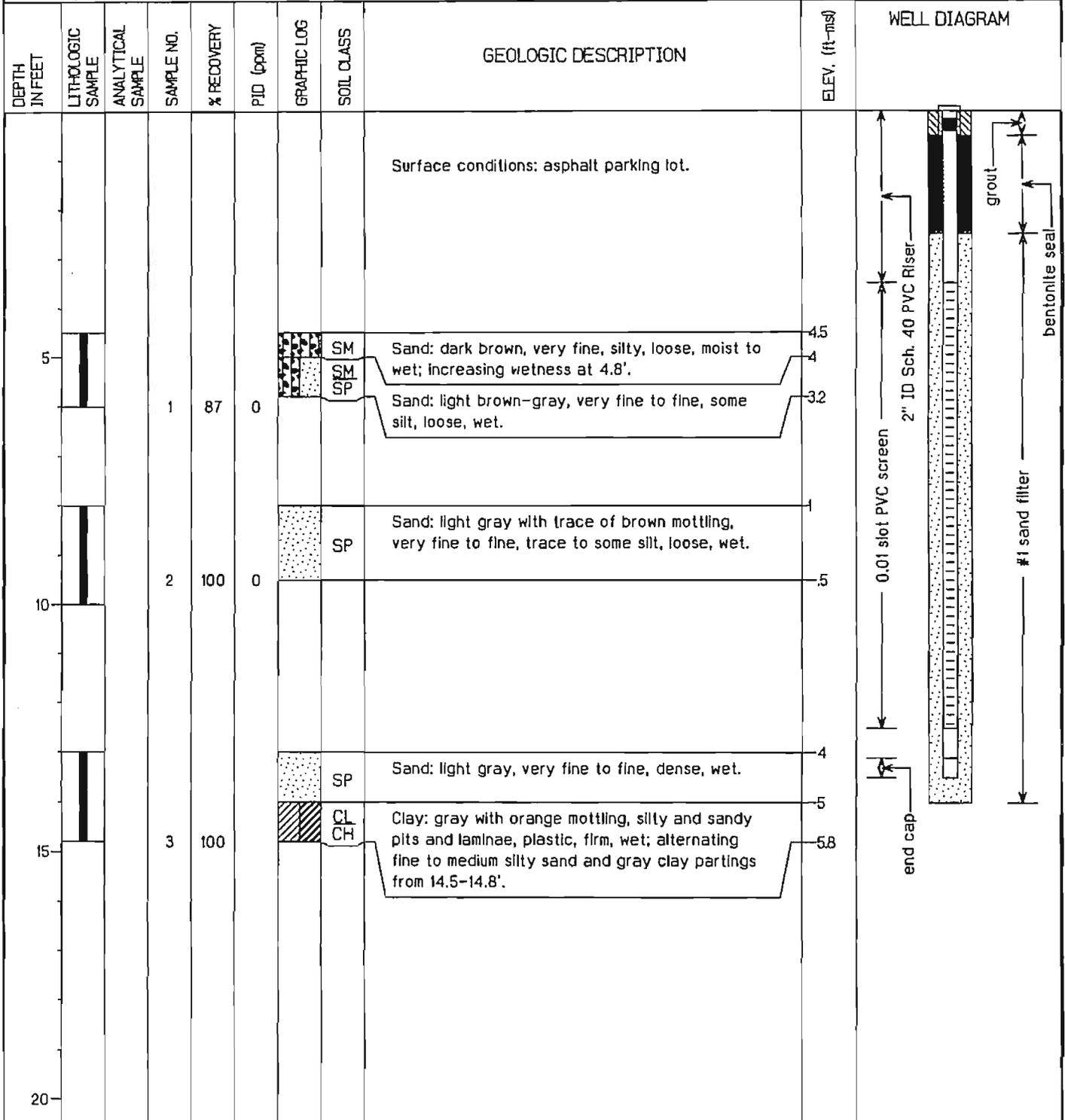
Groundwater Elevation: 2.70 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: P. Bayley

Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE542002

Project: ZONE E - Naval Base Charleston

Coordinates: 231678124 E, 377028.93 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1025 on 10-03-95

TOC Elevation: 8.79 feet msl

Completed at 1545 on 10-03-95

Depth to Groundwater: 6.31 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.48 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: P. Bayley

Well Screen: 3.5 to 12.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
5			1	73	123	[Stippled pattern]	SP	Sand: light brown-gray, very fine to fine, trace silt, loose, wet, hydrocarbon or solvent odor.	4.5 3.4	
10			2	100	55.7	[Stippled pattern]	SP	Sand: light brown-gray with occasional brown mottling, very fine to fine, trace silt, loose, wet.	1 1	
15								Due to non-cohesive, saturated sands, unable to obtain additional lithologic samples. Drilled to depth and installed well.		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE542003

Project: ZONE E - Naval Base Charleston

Coordinates: 2316878.59 E, 377092.23 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 1315 on 10-04-95

TOC Elevation: 9.24 feet msl

Completed at 1500 on 10-04-95

Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

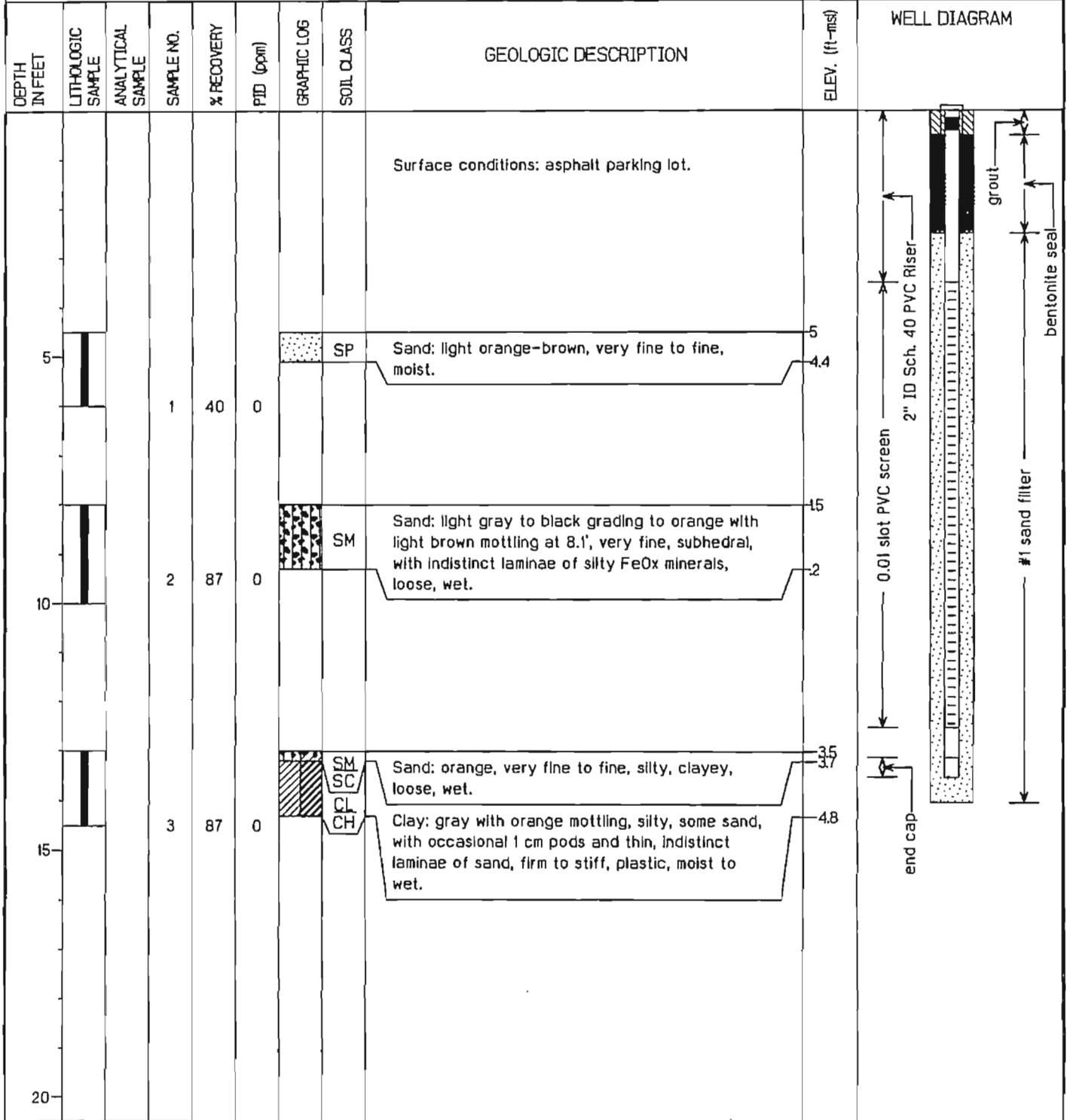
Groundwater Elevation: 2.63 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: P. Bayley

Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE542004

Project: ZONE E - Naval Base Charleston

Coordinates: 2316906.65 E, 37699111 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 0900 on 10-26-95

TOC Elevation: 8.59 feet msl

Completed at 1300 on 10-26-95

Depth to Groundwater: 5.71 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.88 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: P. Bayley

Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
5			1	80	0		ML	Silt: dark brown, with very fine sand and trace of clay, loose, wet; color change to light brown from 5.4-8'.	4.3	
									2.7	
10			2	75	0		CL	Clay: blue green with orange mottling, some silt with some sandy pods, firm, plastic, wet.	0.8	
									0.9	
15			3	75	0		CL CH	Clay: gray and yellow orange, some silt, firm, plastic, wet; sandy from 13.6-14.3'.	4	
									5.5	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE543001

Project: ZONE E - Naval Base Charleston

Coordinates: 2317141.7 E, 377096.14 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0840 on 10-18-95

TOC Elevation: 8.78 feet msl

Completed at 0955 on 10-18-95

Depth to Groundwater: 6.33 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

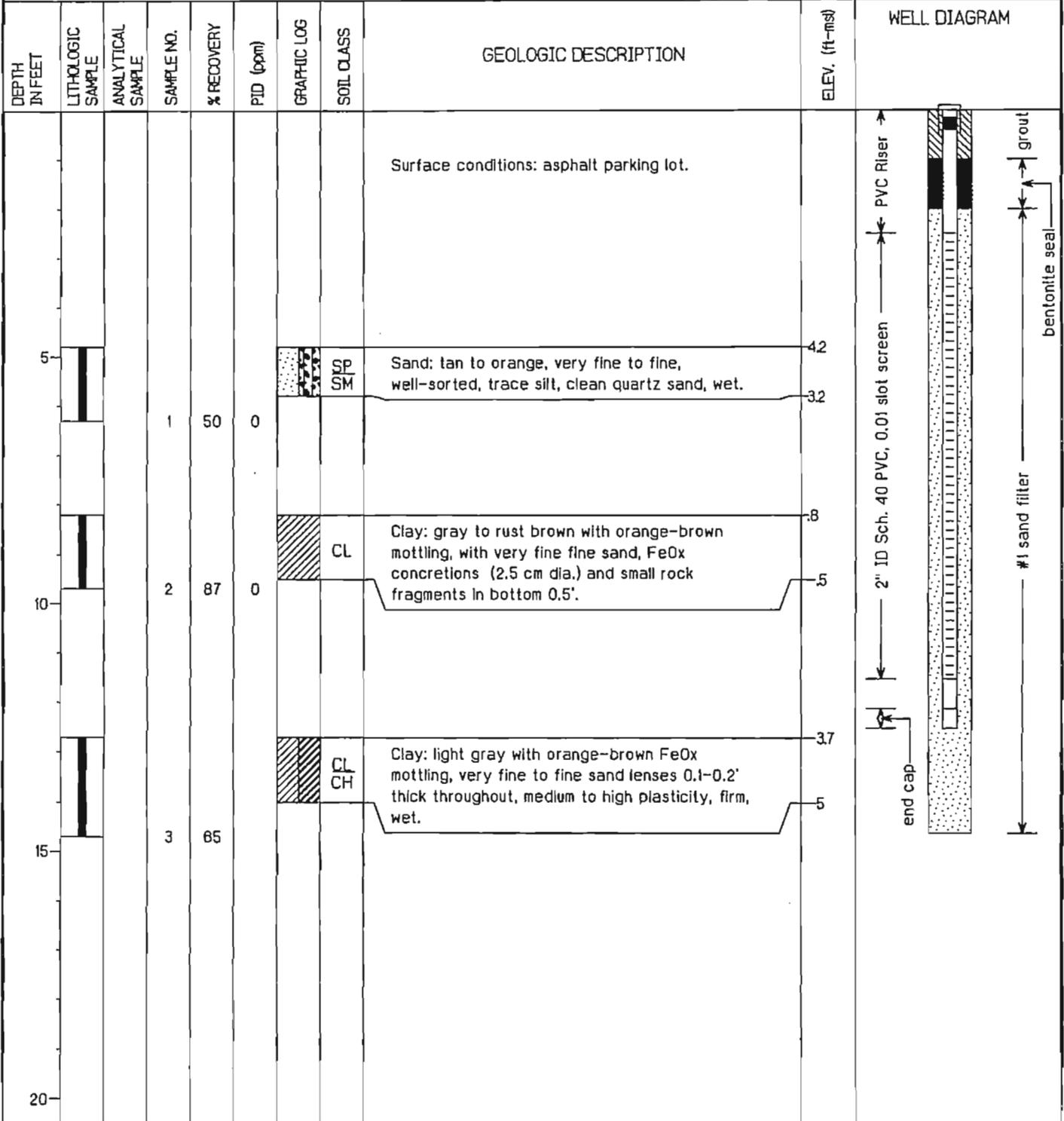
Groundwater Elevation: 2.45 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE549001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316837.93 E, 376790.50 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0930 on 10-17-95

TOC Elevation: 8.77 feet msl

Completed at 1115 on 10-17-95

Depth to Groundwater: 5.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

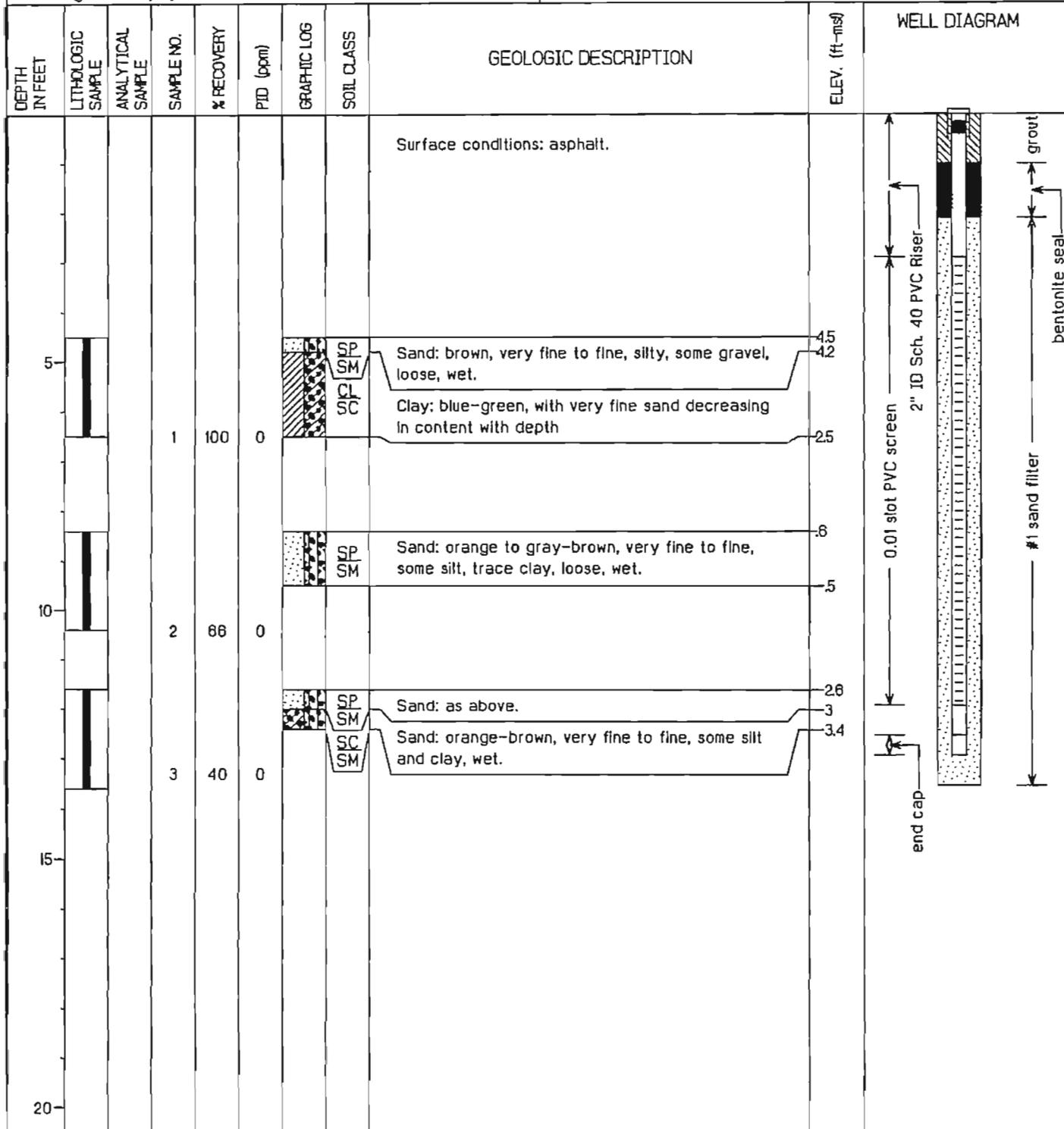
Groundwater Elevation: 2.89 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.9 feet bgs

Geologist: P. Bayley

Well Screen: 2.9 to 11.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE549002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316693.01 E, 376743.68 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1350 on 10-9-95

TOC Elevation: 8.76 feet msl

Completed at 1530 on 10-9-95

Depth to Groundwater: 6.11 feet TOC

Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.65 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 14.0 feet bgs

Geologist: J. Williams

Well Screen: 4.0 to 13.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	FTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt pavement in alleyway between Bldgs. 3 and 5.		<p>WELL DIAGRAM</p> <p>2" ID Sch. 40 PVC Riser</p> <p>0.01 slot PVC screen</p> <p>#2 sand filter</p> <p>bentonite seal</p> <p>end cap</p>
5			1	50	0	SW	Sand: red, poorly sorted, saturated.	4.5		
10			2	33	0	SW	Sand: as above.	1		
15			3	50	0	SW	Sand: light tan, pebbly, saturated.	4		
20								5		

EnSafe/Allen & Hoshall

Monitoring Well NBCE549003

Project: ZONE E - Naval Base Charleston

Coordinates: 2316643.18 E, 376727.91 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1000 on 10-9-95

TOC Elevation: 8.70 feet msl

Completed at 1215 on 10-9-95

Depth to Groundwater: 6.09 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.61 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 14.9 feet bgs

Geologist: J. Williams

Well Screen: 4.9 to 13.9 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: gravel and asphalt pavement.		
5			1	75	0	SW	Sand: dark brown grading to light tan, coarse, saturated.	4.4		
10			2	50	0	SW	Sand: light tan to whitish, saturated.	4		
15			3	100	0	SW	Sand: light tan, saturated.	4.1		
20									8.1	

EnSafe/Allen & Hoshall

Monitoring Well NBCE550001

Project: ZONE E - Naval Base Charleston

Coordinates: 2317683.72 E, 377114.02 N

Location: Charleston, SC

Surface Elevation: 8.7 feet msl

Started at 1020 on 1-15-96

TOC Elevation: 8.54 feet msl

Completed at 1140 on 1-15-96

Depth to Groundwater: 5.92 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 2.62 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: B. Blythe

Well Screen: 3.5 to 12.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road		
			1	75	0		SP	Sand: light gray, medium, clean, dry, fill sand.	5.2	
							CL SC	Clay: black to brown with green, low to medium plasticity, firm, moist, with some sand in matrix.	4.7	
5							CL SC		3.7	
			2	85	0		CL SC CH	Clay: as above. Clay: green with red and orange mottling, firm to stiff, occasional sand lenses, moist to wet.	2.7	
10									3	
			3	50	0		OH	Clay: black, high organic content, soft, wet.	2.3	
									3.3	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE551001

Project: ZONE E - Naval Base Charleston

Coordinates: 237420.84 E, 376599.54 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1035 on 10-10-95

TOC Elevation: 8.18 feet msl

Completed at 1200 on 10-10-95

Depth to Groundwater: 4.70 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

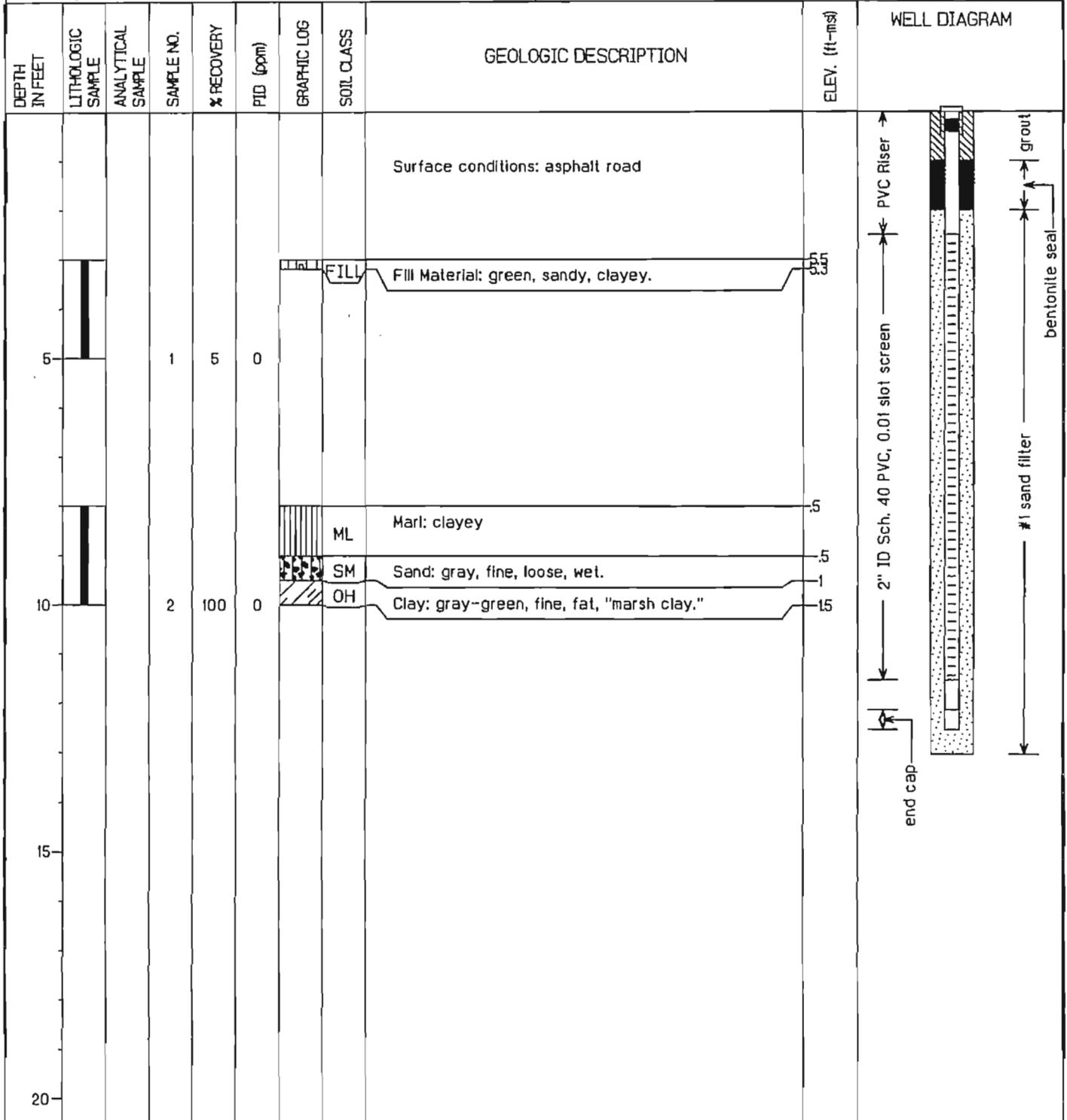
Groundwater Elevation: 3.48 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: S. Weatherford

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE551002

Project: ZONE E - Naval Base Charleston

Coordinates: 2317326.29 E, 37661150 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1350 on 10-10-95

TOC Elevation: 8.46 feet msl

Completed at 1530 on 10-10-95

Depth to Groundwater: 6.00 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

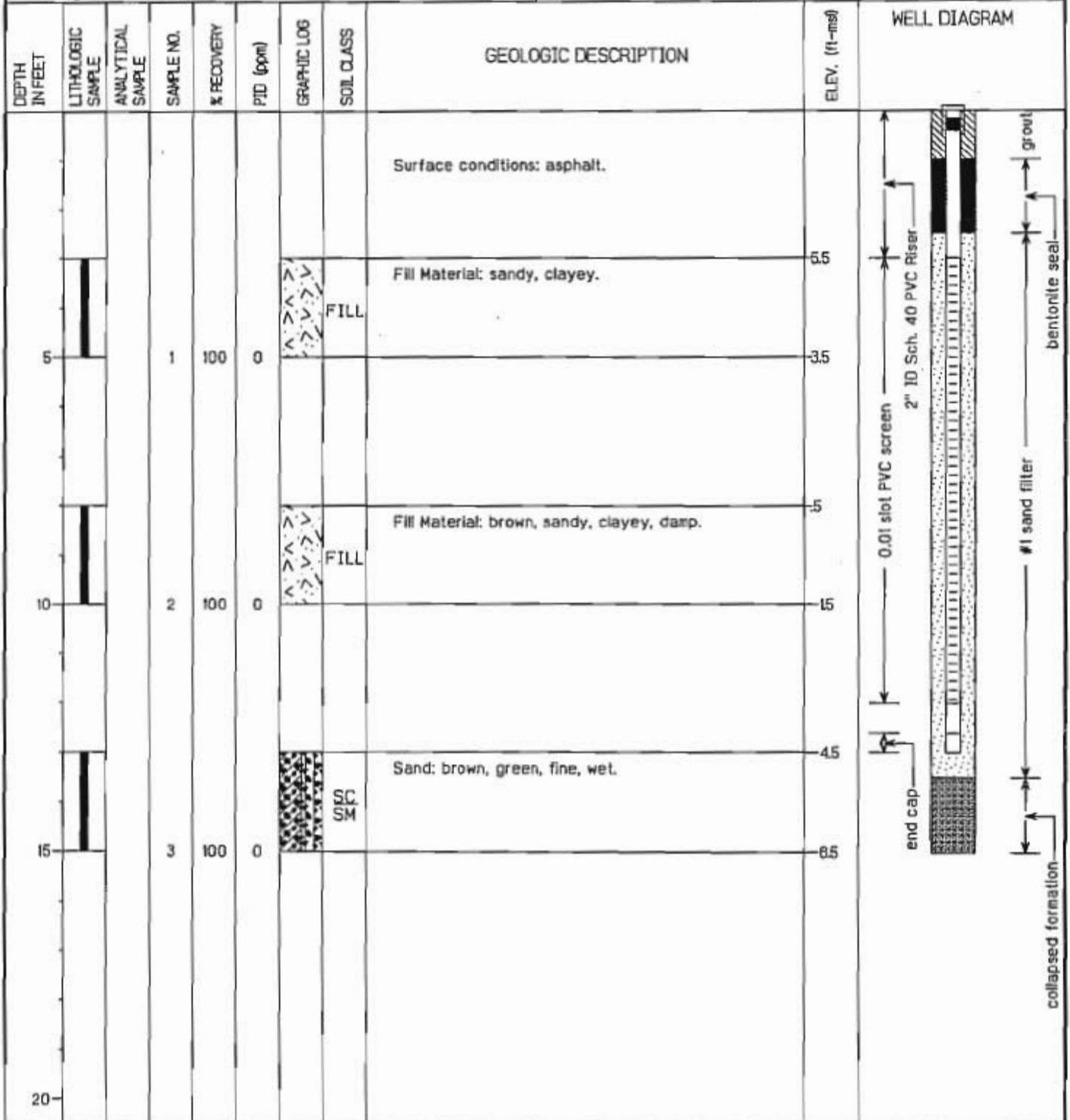
Groundwater Elevation: 2.46 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: S. Weatherford

Well Screen: 3 to 12 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE55102D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317329.13 E, 376602.18 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1340 on 12-15-95

TOC Elevation: 8.36 feet msl

Completed at 1515 on 12-15-95

Depth to Groundwater: 5.70 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

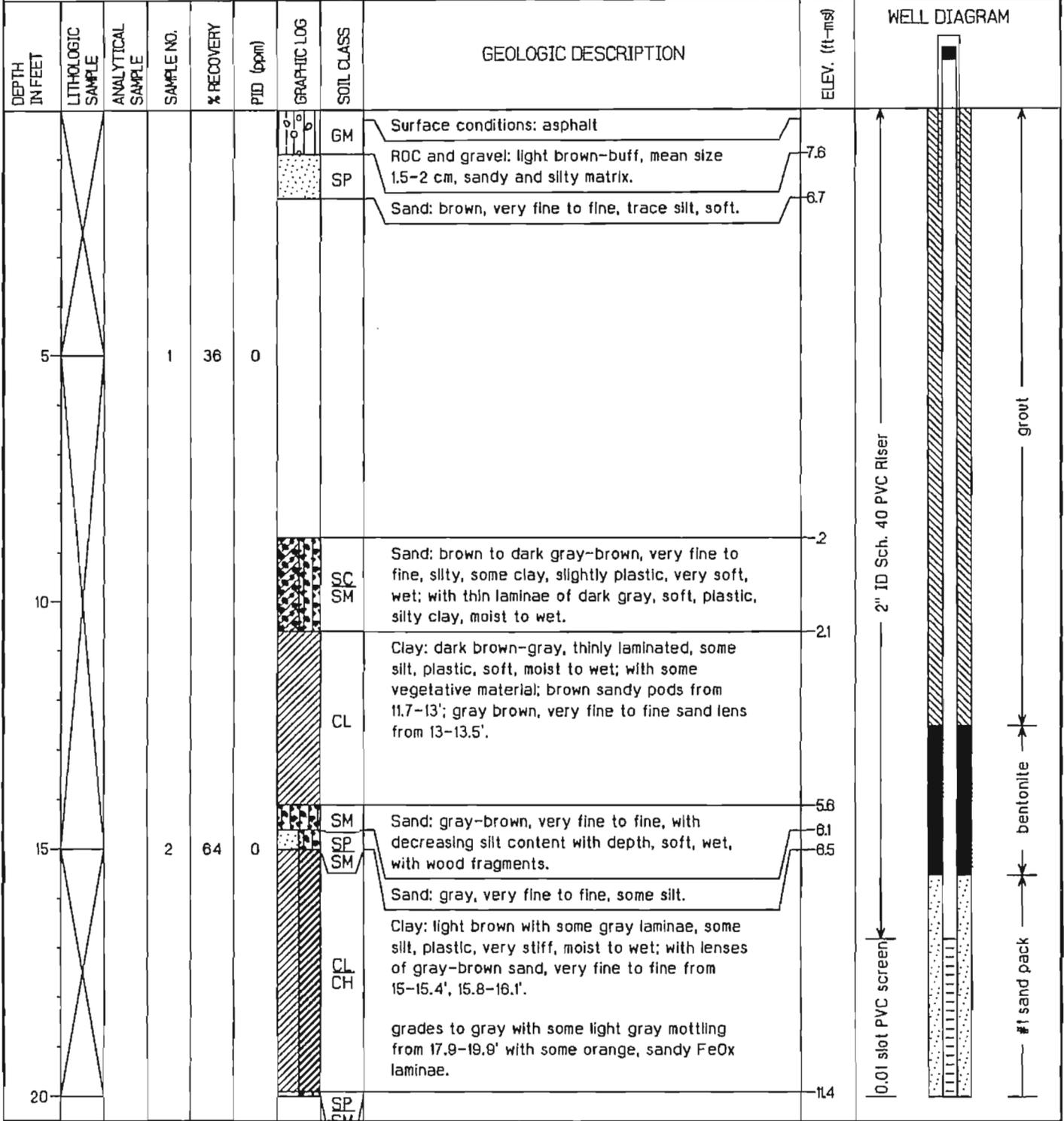
Groundwater Elevation: 2.66 feet msl

Drilling Company: Alliance Environmental (SC Cert # 889)

Total Well Depth: 26.7 feet bgs

Geologist: P. Bayley

Well Screen: 16.8 to 26.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE55102D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317329.13 E, 376602.18 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1340 on 12-15-95

TOC Elevation: 8.36 feet msl

Completed at 1515 on 12-15-95

Depth to Groundwater: 5.70 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

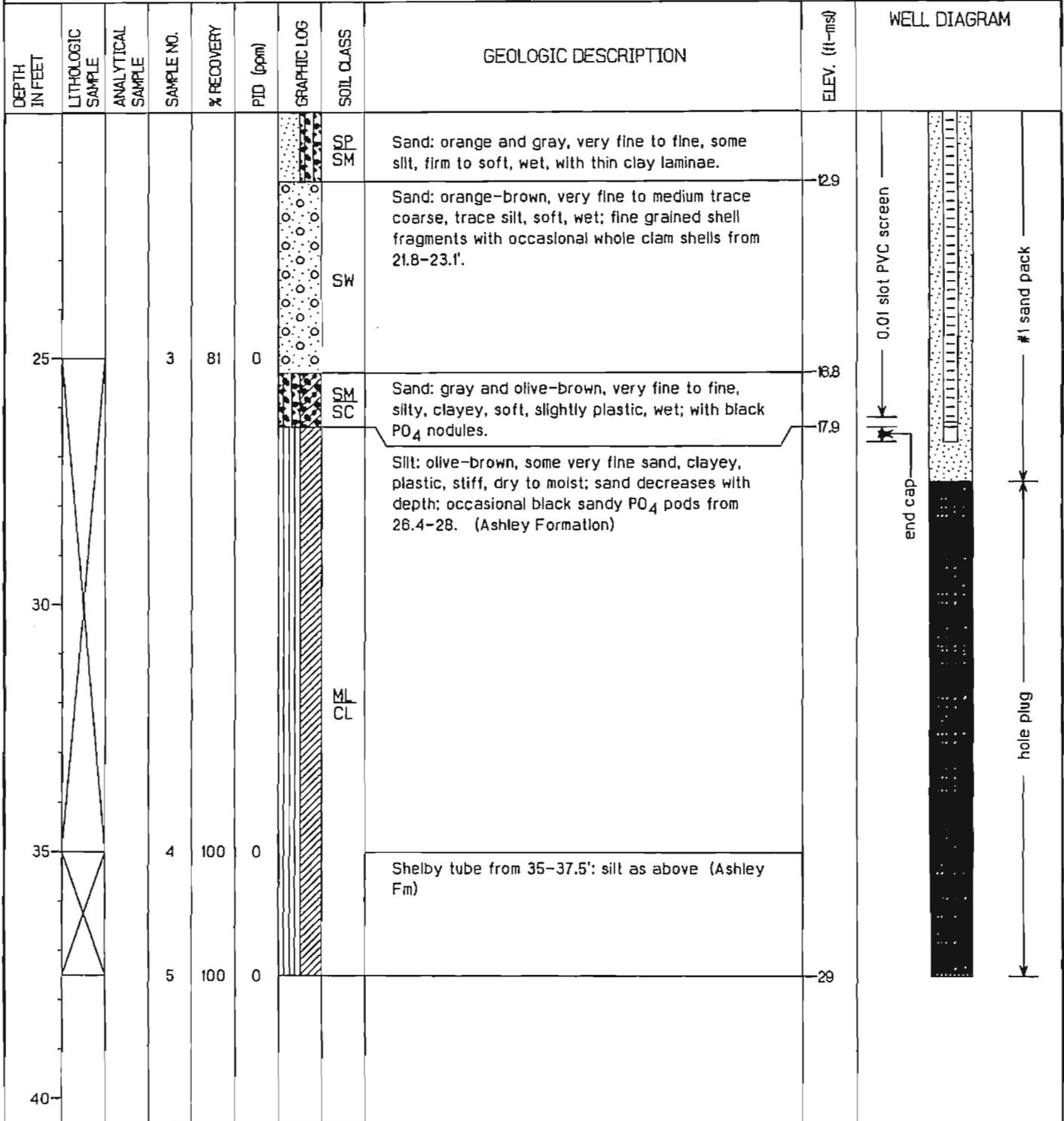
Groundwater Elevation: 2.66 feet msl

Drilling Company: Alliance Environmental (SC Cert # 889)

Total Well Depth: 26.7 feet bgs

Geologist: P. Bayley

Well Screen: 16.8 to 26.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE559001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316538.54 E, 376283.46 N

Location: Charleston, SC

Surface Elevation: 10.2 feet msl

Started at 1340 on 11-7-95

TOC Elevation: 12.65 feet msl

Completed at 1455 on 11-7-95

Depth to Groundwater: 9.47 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

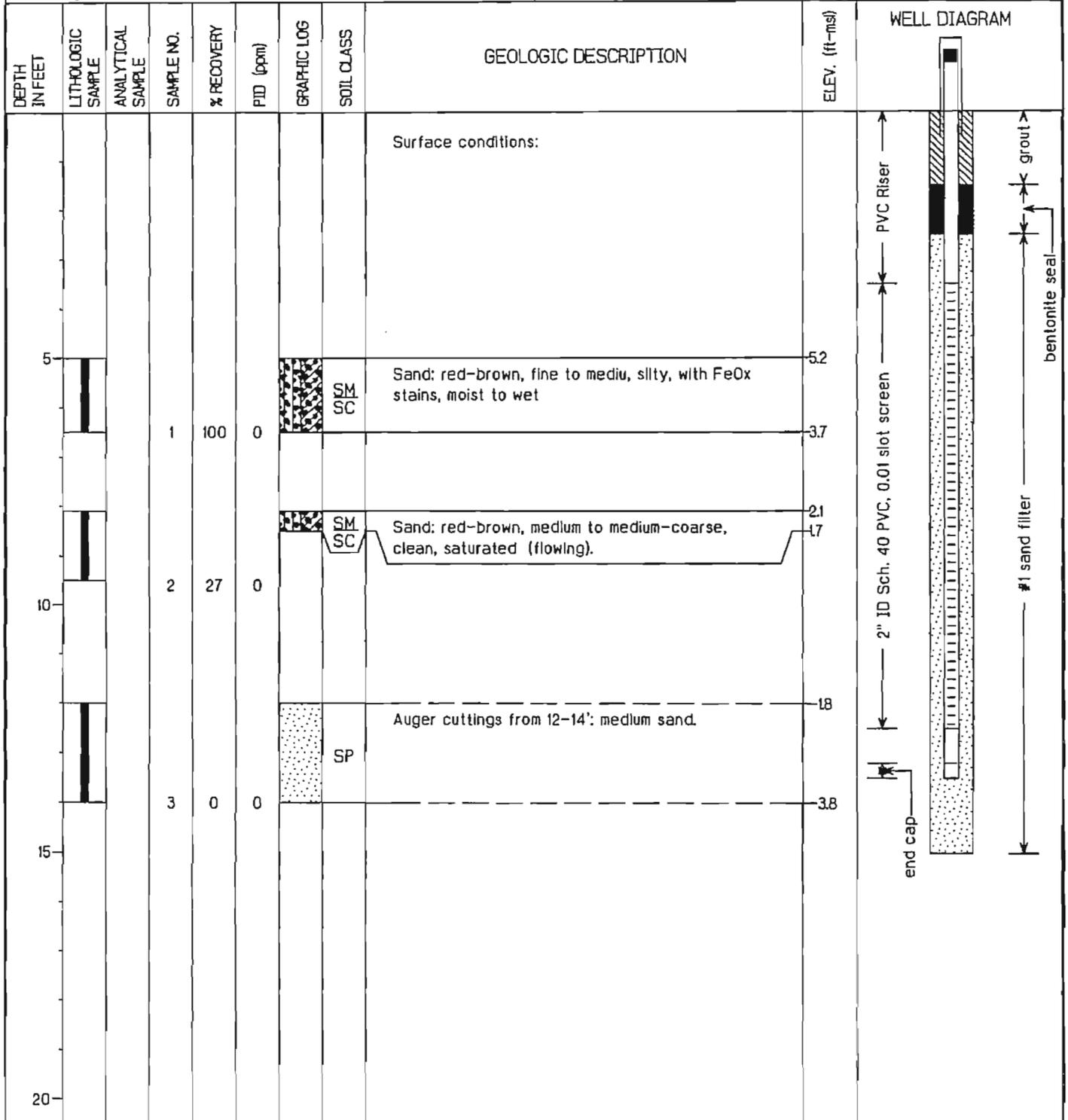
Groundwater Elevation: 3.18 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: B. Blythe

Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE559002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316575.59 E, 376185.21 N

Location: Charleston, SC

Surface Elevation: 9.3 feet msl

Started at 1140 on 11-13-95

TOC Elevation: 9.53 feet msl

Completed at 1325 on 11-13-95

Depth to Groundwater: 5.69 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

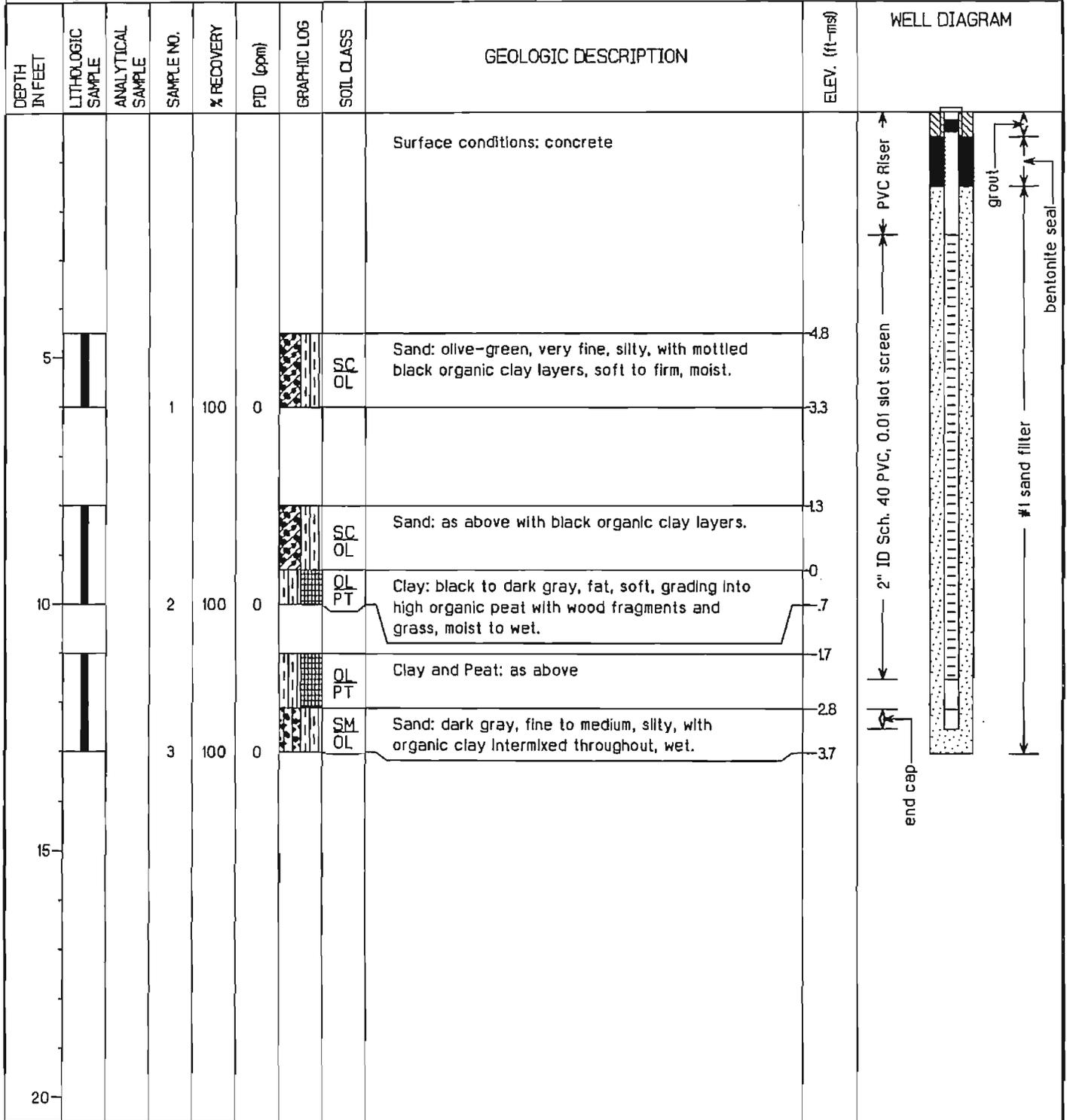
Groundwater Elevation: 3.84 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE55902D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316569.58 E, 376179.08 N

Location: Charleston, SC

Surface Elevation: 9.8 feet msl

Started at 0900 on 1-22-96

TOC Elevation: 9.54 feet msl

Completed at 1000 on 1-22-96

Depth to Groundwater: 6.65 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

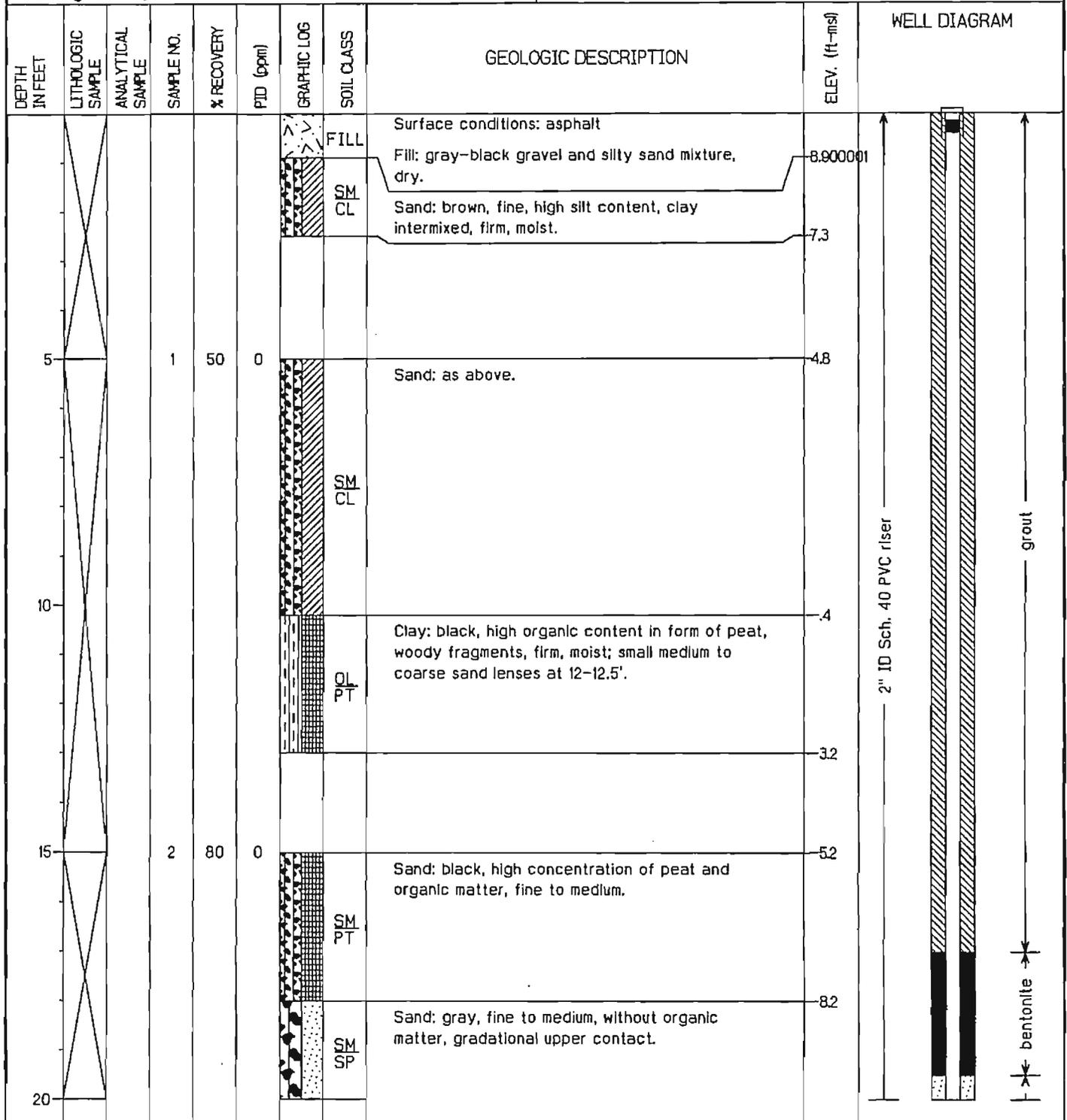
Groundwater Elevation: 2.89 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 27 feet bgs

Geologist: B. Blythe

Well Screen: 22.1 to 26.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE55902D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316569.58 E, 376179.08 N

Location: Charleston, SC

Surface Elevation: 9.8 feet msl

Started at 0900 on 1-22-96

TOC Elevation: 9.54 feet msl

Completed at 1000 on 1-22-96

Depth to Groundwater: 6.65 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.89 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 27 feet bgs

Geologist: B. Blythe

Well Screen: 22.1 to 26.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							SM SP			
							CH OH	Clay: gray, fat, clean, stiff, some organic material.	11.7	
							SM ML	Sand: gray, increase in phosphatic sand content, medium grain size, high silt content.	12.7	
25			3	93	0		SM ML	Sand: as above with 30-40% phosphatic sand content, few oyster shells --Lag deposit.	14.5	
							ML CL	Clay: olive-green, silty--Ashley Formation.	15.2	
									16.7	
30			4	100	0				18.7	
									20.2	
35										
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE559003

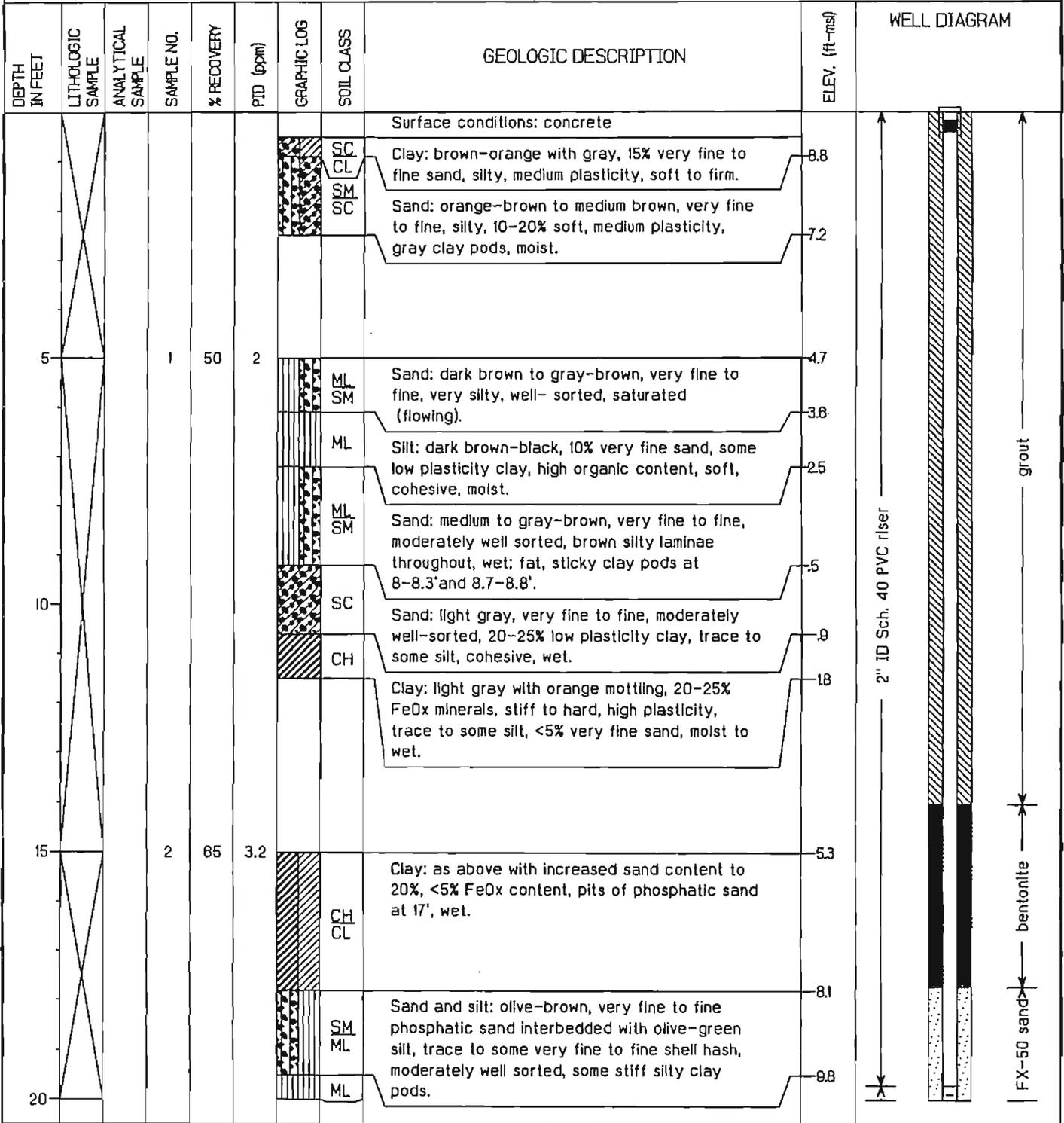
Project: ZONE E -- Naval Base Charleston	Coordinates: 2316685.81 E, 375853.79 N
Location: Charleston, SC	Surface Elevation: 9.8 feet msl
Started at 1115 on 11-16-95	TOC Elevation: 9.59 feet msl
Completed at 1240 on 11-16-95	Depth to Groundwater: 5.30 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.29 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>grout</p> <p>bentonite seal</p> <p>#1 sand filler</p> <p>end cap</p>
5			1	90	0	FILL SC	<p>FILL: black to dark black clay, with sand and small pieces of brick.</p> <p>Sand: gray to green with black mottling, with low plasticity clay, moist to wet.</p>	5.1 4.7 3.3		
10			2	100	0	OH	Clay: mottled black to dark black, high organic content, fat, soft to firm, high plasticity, moist.	1.8		
						OH	Clay: as above with bottom 0.1' of clayey sand.	1.2		
15			3	75	0			2.7		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE55903D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316706.58 E, 375848.15 N
Location: Charleston, SC	Surface Elevation: 9.7 feet msl
Started at 0835 on 1-11-96	TOC Elevation: 9.64 feet msl
Completed at 0950 on 1-11-96	Depth to Groundwater: 7.69 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 1.95 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 29.7 feet bgs
Geologist: T. Kafka	Well Screen: 19.7 to 29.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE55903D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316706.58 E, 375848.15 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0835 on 1-11-96

TOC Elevation: 9.64 feet msl

Completed at 0850 on 1-11-96

Depth to Groundwater: 7.69 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

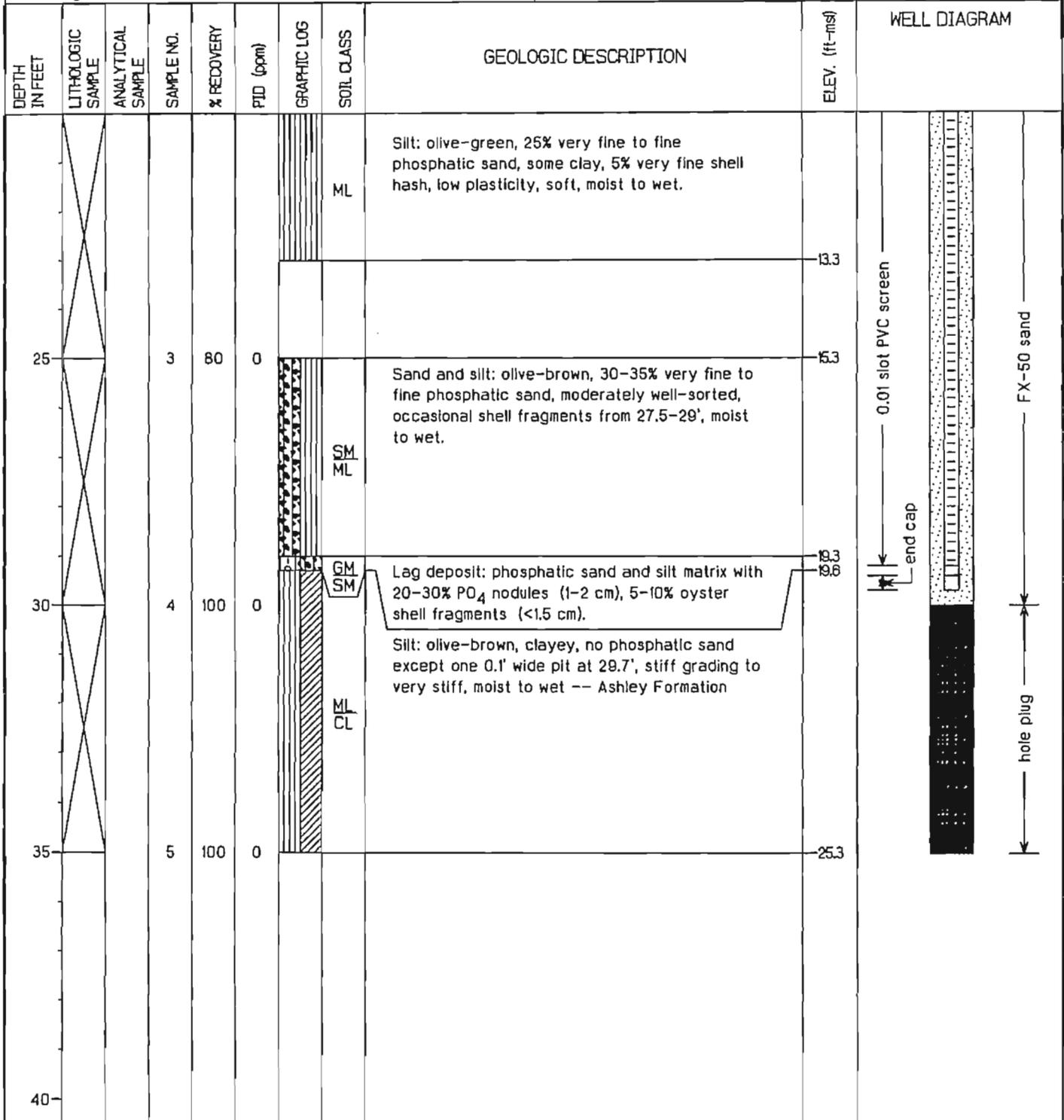
Groundwater Elevation: 1.95 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 29.7 feet bgs

Geologist: T. Kafka

Well Screen: 19.7 to 29.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE559004

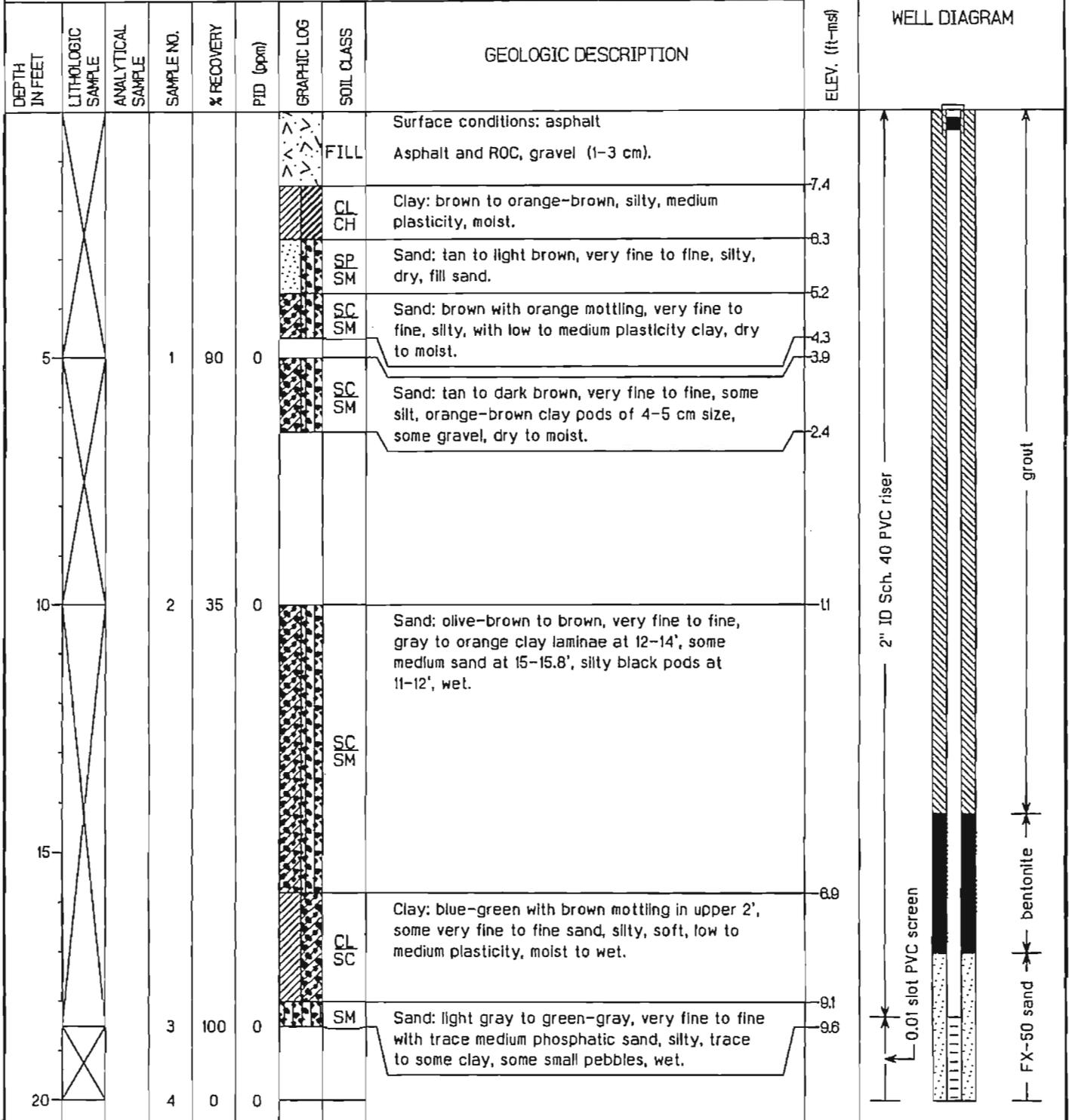
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316339.14 E, 376058.49 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.9 feet msl</i>
Started at <i>1455 on 11-13-95</i>	TOC Elevation: <i>8.81 feet msl</i>
Completed at <i>1700 on 11-13-95</i>	Depth to Groundwater: <i>7.30 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>151 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>grout</p> <p>end cap</p>
5			1	87	0		SW	Sand: fine to medium, clean, with some clay lenses, moist to wet.	4.4	
									3.1	
10			2	100	0		CL	Clay: gray with brown mottling in upper 0.6', inorganic, firm, intermixed with fine to medium, clean sand; grades into gray to light brown silty sand with sandy clay lens at 9.5-10'.	0.9	
			3	100	0		SC	Shelby tube (9.5-11.5'): top and bottom -- clay as above with some sand.	26	
			4	100	0		SP	Sand: gray with light brown mottling, very fine to fine, wet.	4.6	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE55904D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316345.98 E, 37606142 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.9 feet msl</i>
Started at <i>0950 on 12-04-95</i>	TOC Elevation: <i>8.78 feet msl</i>
Completed at <i>1435 on 12-04-95</i>	Depth to Groundwater: <i>7.25 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>153 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC cert #889)</i>	Total Well Depth: <i>28.2 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>18.3 to 27.7 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCE55904D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316345.98 E, 37606142 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 0950 on 12-04-95

TOC Elevation: 8.78 feet msl

Completed at 1435 on 12-04-95

Depth to Groundwater: 7.25 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.53 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 28.2 feet bgs

Geologist: T. Kafka

Well Screen: 18.3 to 27.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			5	100	0			Recovery mainly slough from 18.5-22.5' as a result of short runs in order to obtain shelly tube sample of phosphatic sand.	13.6	<p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>hole plug</p>
25			6	100	0	SM	Shelby tube from 22.5-25': top and bottom of tube; Silt: olive brown to gray brown, sandy-very fine to fine phosphatic sand.	13.6		
						SM	Silt: olive-brown, very fine to fine phosphatic sand in pits/laminae, clayey, occasional PO ₄ nodules (< 1.5 cm) especially 26', coarse white oyster shells, low plasticity, soft, moist to wet.			
30			7	100	0		Silt: olive-brown, clayey, some phosphatic sand in laminae in upper 1', medium to high plasticity, firm to stiff, moist--Ashley Formation.	18.6		
						CF	Shelby tube from 29-31.5' consists Ashley Formation as above.			
35			8	100	0					
			9	100	0				28.1	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE559005

Project: ZONE E - Naval Base Charleston

Coordinates: 2316469.42 E, 375794.95 N

Location: Charleston, SC

Surface Elevation: 10.5 feet msl

Started at 0900 on 11-16-95

TOC Elevation: 10.47 feet msl

Completed at 1025 on 11-16-95

Depth to Groundwater: 10.06 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

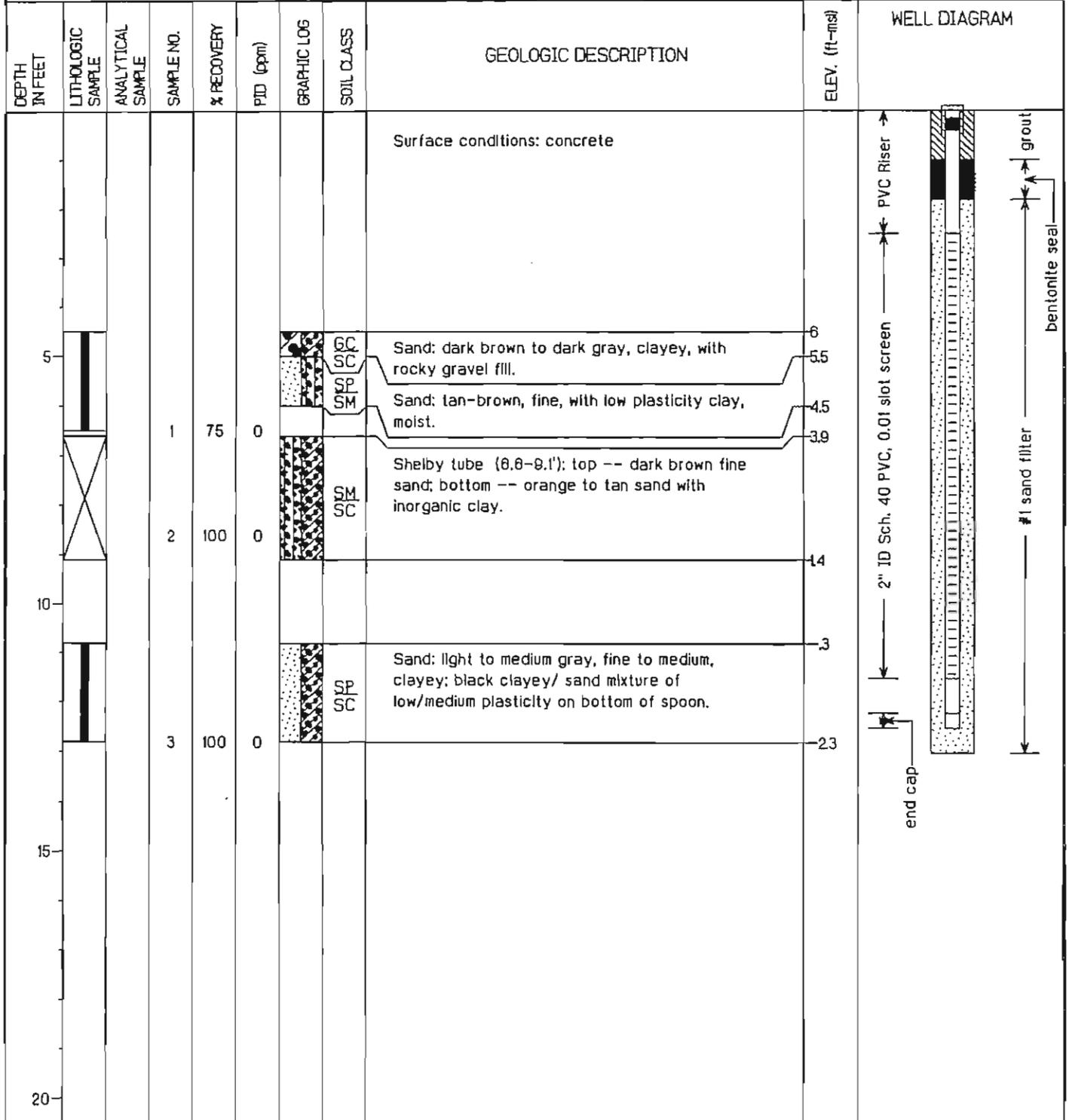
Groundwater Elevation: 0.41 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE563001

Project: ZONE E - Naval Base Charleston	Coordinates: 2317159.42 E, 375699.85 N
Location: Charleston, SC	Surface Elevation: 11.0 feet msl
Started at 0920 on 1-30-96	TOC Elevation: 10.88 feet msl
Completed at 1155 on 1-30-96	Depth to Groundwater: 7.68 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.20 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.0 feet bgs
Geologist: B. Blythe	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		
5			1	50	0	CH SC	Clay: red to brown with rusty mottling, medium sand, stiff, medium to high plasticity, moist; bottom 0.3' grades to clayey sand of low to medium plasticity.	7.5 6.5		
10			2	35	0	CL	Clay: red-brown, stiff, some medium sand, moist to wet; tan, fine, clean sand in last 0.1' of sample.	3 2.3		
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE56301D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317159.63 E, 375689.91 N

Location: Charleston, SC

Surface Elevation: 11.1 feet msl

Started at 1620 on 1-30-96

TOC Elevation: 10.88 feet msl

Completed at 1110 on 1-31-96

Depth to Groundwater: 7.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

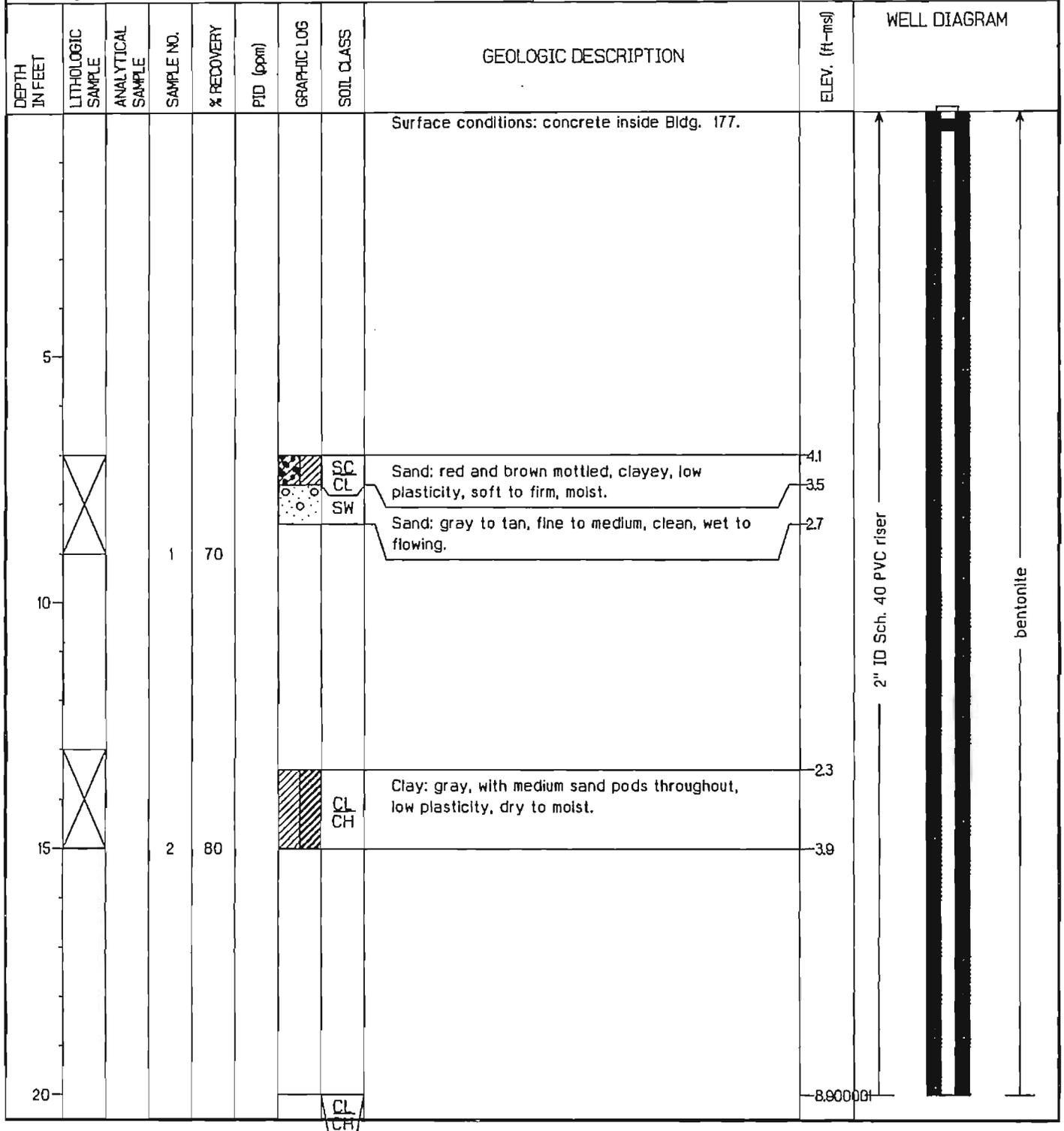
Groundwater Elevation: 3.00 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 35.5 feet bgs

Geologist: B. Blythe

Well Screen: 25.0 to 34.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE56301D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317159.63 E, 375689.91 N

Location: Charleston, SC

Surface Elevation: 11.1 feet msl

Started at 1620 on 1-30-96

TOC Elevation: 10.88 feet msl

Completed at 1110 on 1-31-96

Depth to Groundwater: 7.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

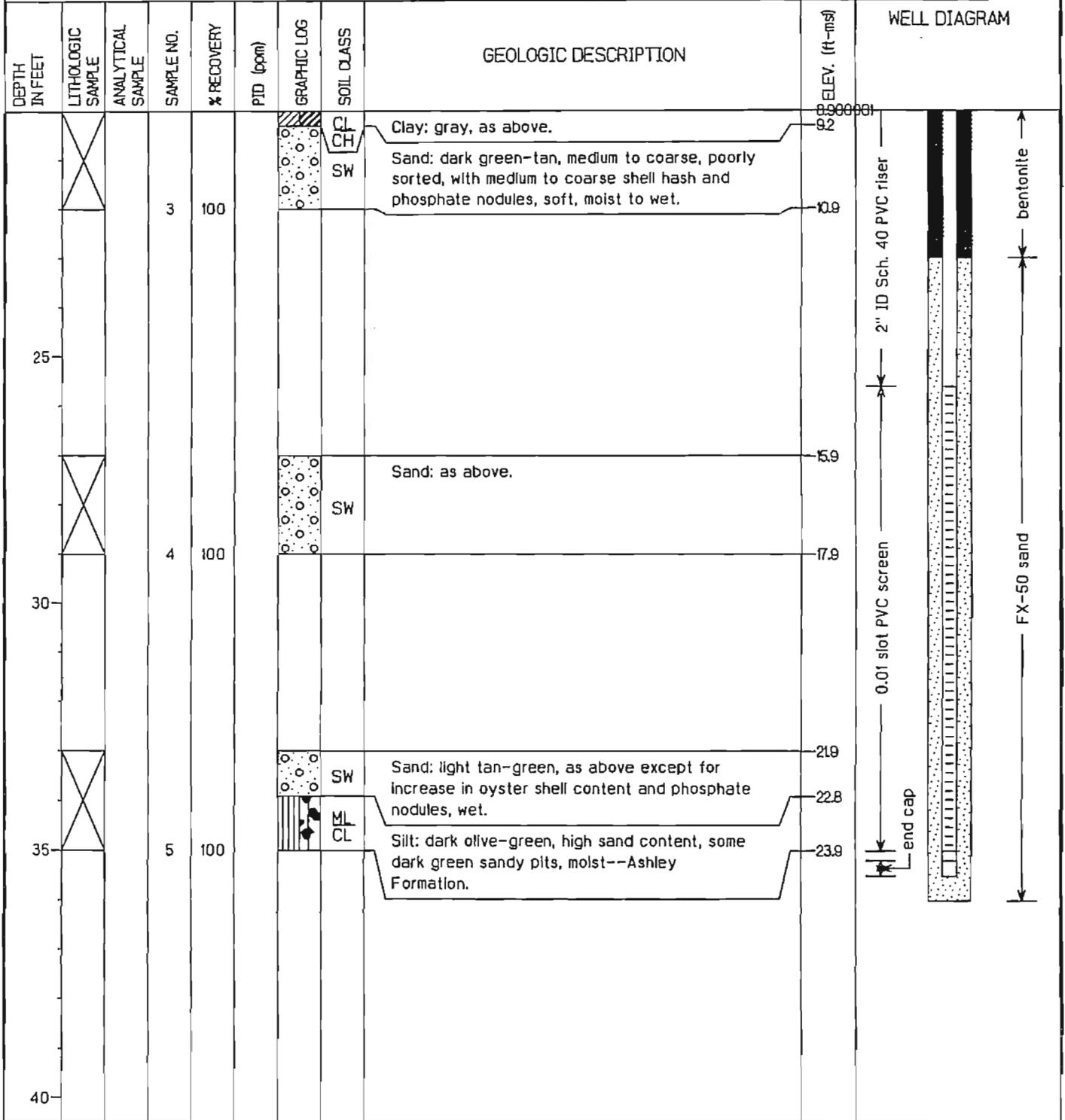
Groundwater Elevation: 3.00 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 35.5 feet bgs

Geologist: B. Blythe

Well Screen: 25.0 to 34.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE563002

Project: ZONE E - Naval Base Charleston	Coordinates: 2317123.31 E, 375738.83 N
Location: Charleston, SC	Surface Elevation: 110 feet msl
Started at 1520 on 1-31-96	TOC Elevation: 10.80 feet msl
Completed at 1620 on 1-31-96	Depth to Groundwater: 7.81 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.99 feet msl
Drilling Company: Atlantic Drilling	Total Well Depth: 13.0 feet bgs
Geologist: B. Blythe	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		
5			1	100	500		CP CH	Clay: red-brown to gray, low to medium plasticity, firm to stiff increasing in hardness with depth, moist.	7	
10			2	100	300		SP	Sand: gray to red-brown, medium, clean, moist to wet, some low plasticity clay in bottom of spoon; evidence of flowing sand in bottom 0.1'.	2.8	
15			3	100	0		CH	Clay: dark gray to red-brown, very firm to stiff, clean.	12	
20									3	

EnSafe/Allen & Hoshall

Monitoring Well NBCE563003

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316936.43 E, 375635.39 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>10.9 feet msl</i>
Started at <i>1010 on 2-1-96</i>	TOC Elevation: <i>10.93 feet msl</i>
Completed at <i>1120 on 2-1-96</i>	Depth to Groundwater: <i>7.58 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>3.35 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		
5			1	75	0	GM GC SP SC		Sand: dark brown-black, gravelly, with muddy clay and silt, soft, moist.	6.9 6.4	
								Sand: yellow-tan, medium, loose, moist, grading to medium to coarse, clayey sand, stiff, moist.	5.4	
10			2	50	0	SC SP		Sand: yellow grading to red-brown, medium to coarse, clayey, soft, wet.	2.9 1.9	
								Sand: as above.	.1	
15			3	100	0	SC SP CH		Clay: gray with dark mottling, firm to stiff, sticky, high plasticity, moist.	.8 2.1	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE566001

Project: ZONE E -- Naval Base Charleston

Coordinates: 2318095.03 E, 376050.46 N

Location: Charleston, SC

Surface Elevation: 8.7 feet msl

Started at 1440 on 10-06-95

TOC Elevation: 8.48 feet msl

Completed at 1610 on 10-06-95

Depth to Groundwater: 6.86 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

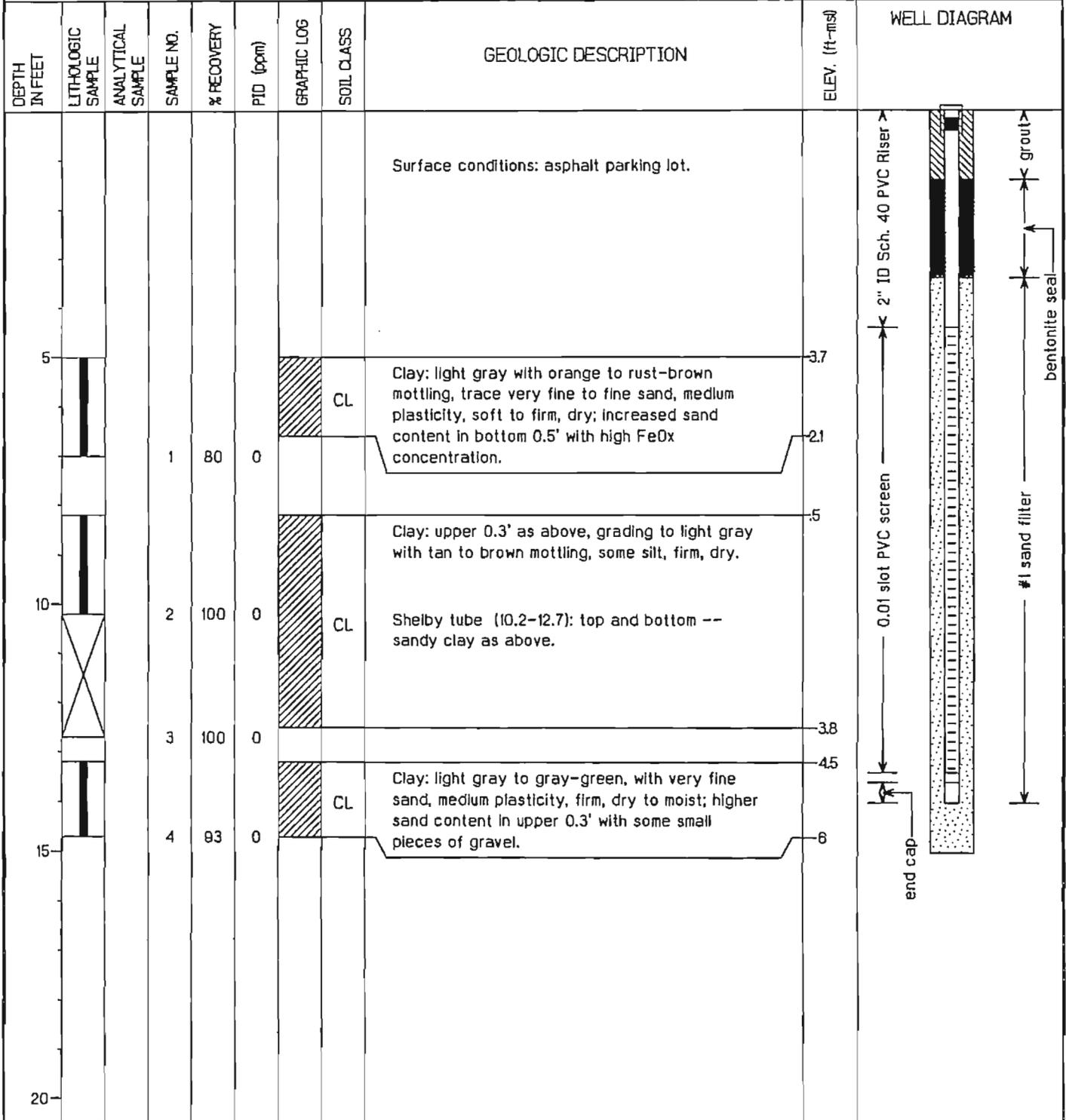
Groundwater Elevation: 1.62 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 14.0 feet bgs

Geologist: T. Kafka

Well Screen: 4.4 to 13.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE56601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318102.18 E, 376055.72 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1410 on 12-16-95

TOC Elevation: 8.48 feet msl

Completed at 1550 on 12-16-95

Depth to Groundwater: 7.77 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

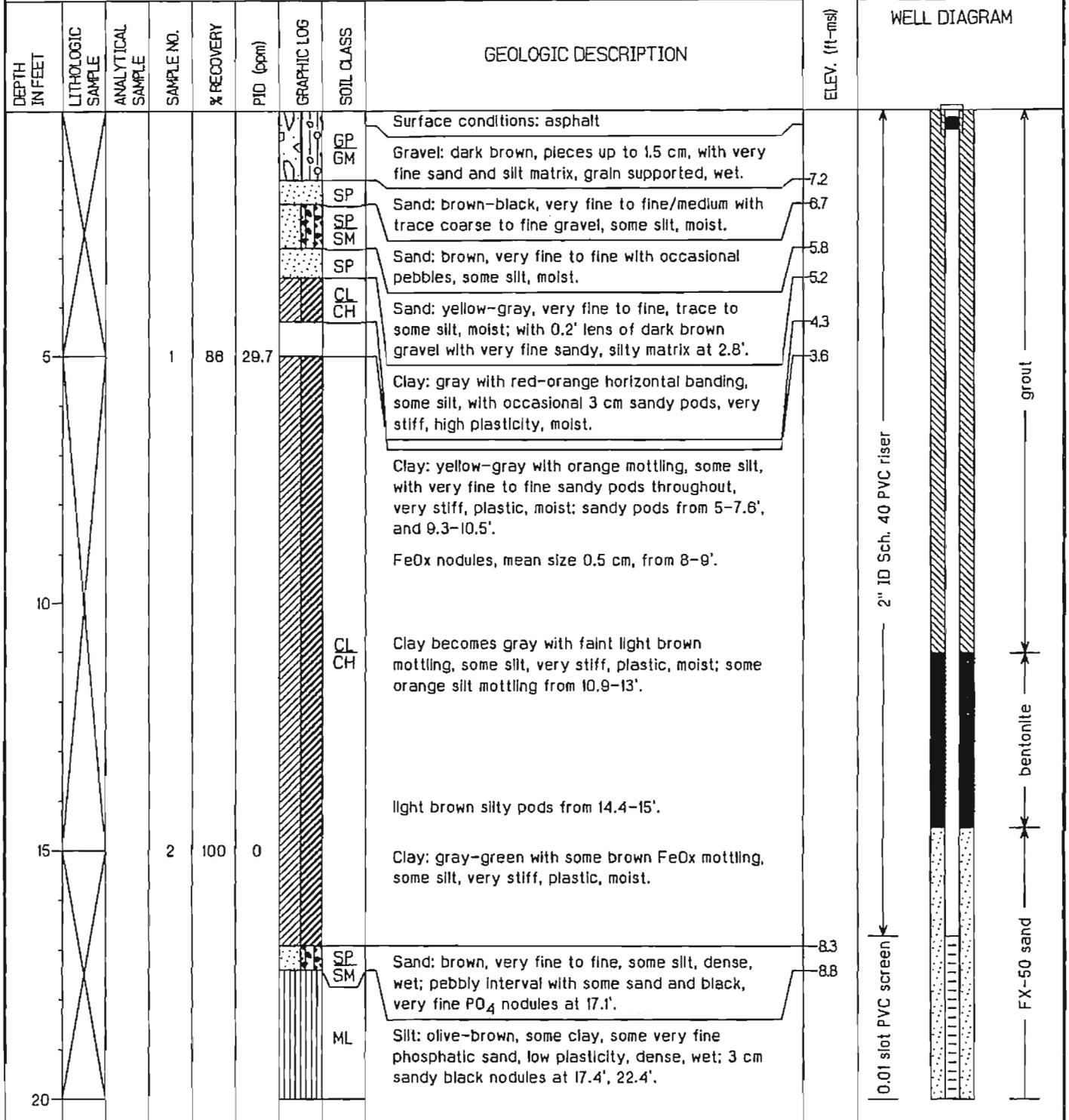
Groundwater Elevation: 0.71 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 26.6 feet bgs

Geologist: P. Bayley

Well Screenshot: 16.7 to 26.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE56601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318102.18 E, 376055.72 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1410 on 12-16-95

TOC Elevation: 8.48 feet msl

Completed at 1550 on 12-16-95

Depth to Groundwater: 7.77 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 0.71 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 26.6 feet bgs

Geologist: P. Bayley

Well Screen: 16.7 to 26.1 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	84	0		ML		13.8	<p>0.01 slot PVC screen end cap FX-50 sand hole plug</p>
25							ML	Silt: olive-brown, some clay, some sand, trace effervescence w/HCl, shell fragments from 26-28.8', increasing in content with depth.	16.4	
30							CLF	Silt: olive-brown, clayey, stiff, medium plasticity, moist; some black sand from 26.6-28.4'--Ashley Formation.	18	
35			4	100	0				26.4	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE569001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316797.11 E, 375540.63 N

Location: Charleston, SC

Surface Elevation: 10.1 feet msl

Started at 0920 on 11-8-95

TOC Elevation: 10.01 feet msl

Completed at 1120 on 11-8-95

Depth to Groundwater: 5.87 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

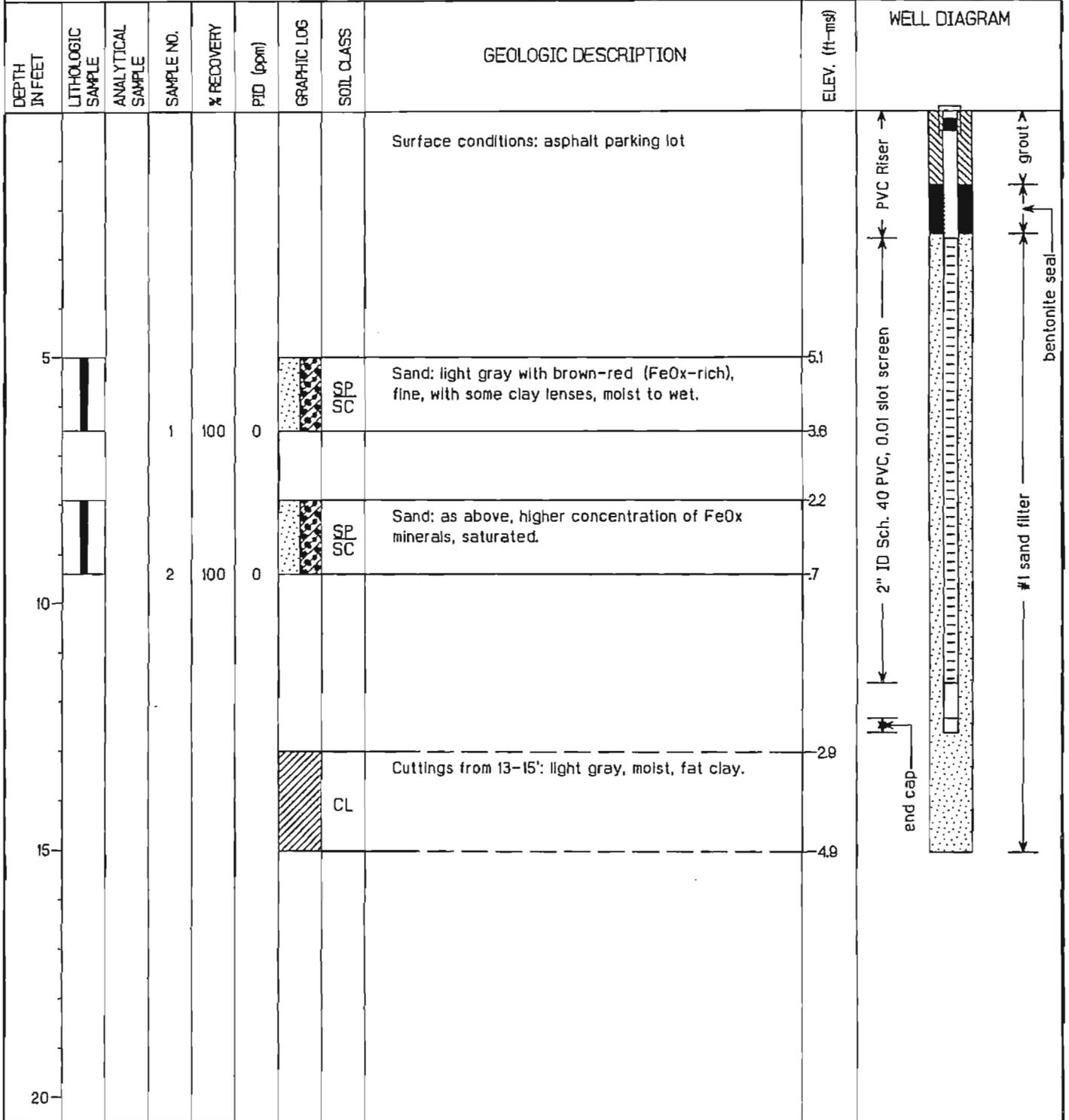
Groundwater Elevation: 4.14 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.6 feet bgs

Geologist: B. Blythe

Well Screen: 2.6 to 11.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE56901D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316803.72 E, 375545.55 N

Location: Charleston, SC

Surface Elevation: 10.5 feet msl

Started at 1055 on 1-21-96

TOC Elevation: 10.25 feet msl

Completed at 1155 on 1-21-96

Depth to Groundwater: 6.16 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

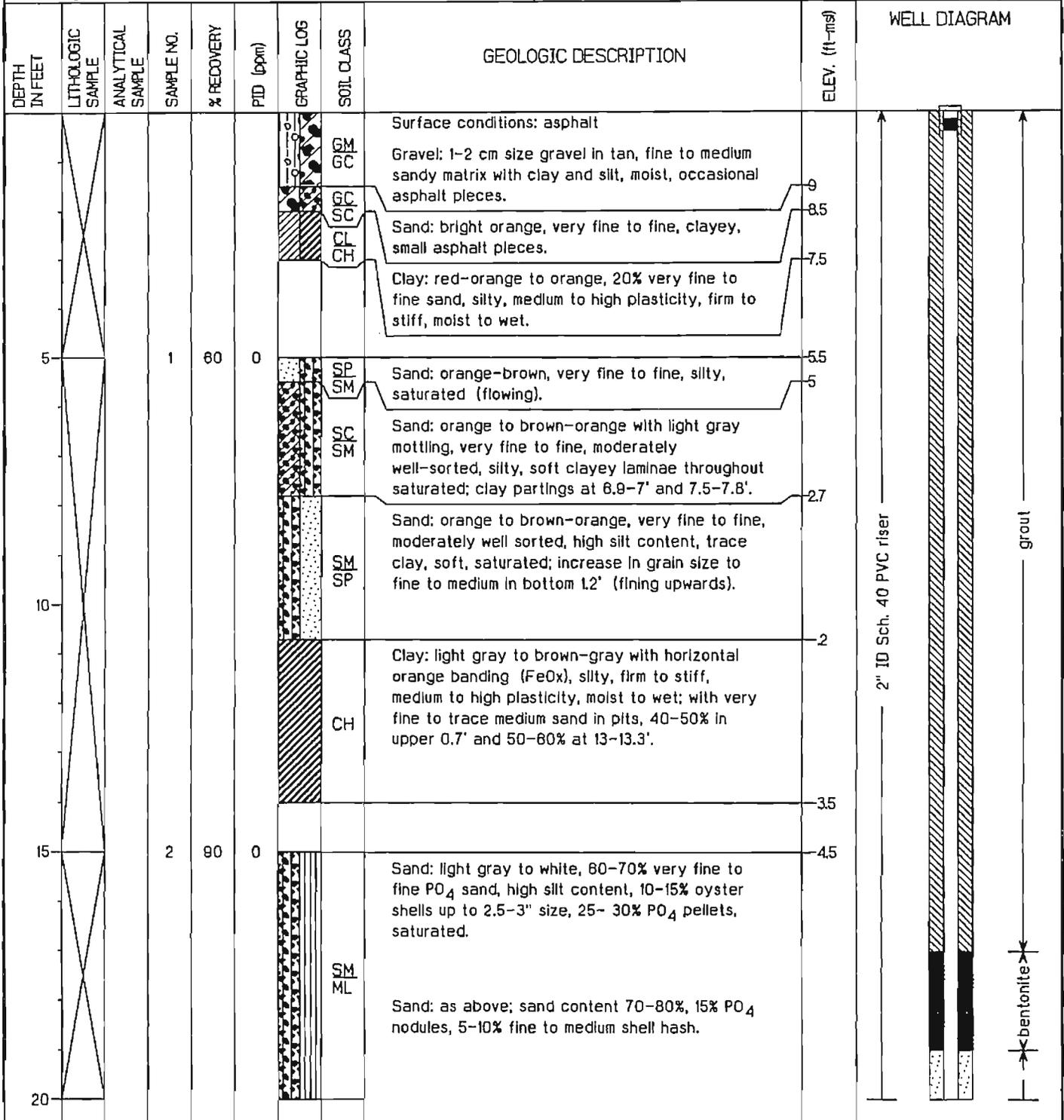
Groundwater Elevation: 4.09 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 31.0 feet bgs

Geologist: T. Kafka

Well Screen: 21.0 to 30.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE56901D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316803.72 E, 375545.55 N

Location: Charleston, SC

Surface Elevation: 10.5 feet msl

Started at 1055 on 1-21-96

TOC Elevation: 10.25 feet msl

Completed at 1155 on 1-21-96

Depth to Groundwater: 8.16 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

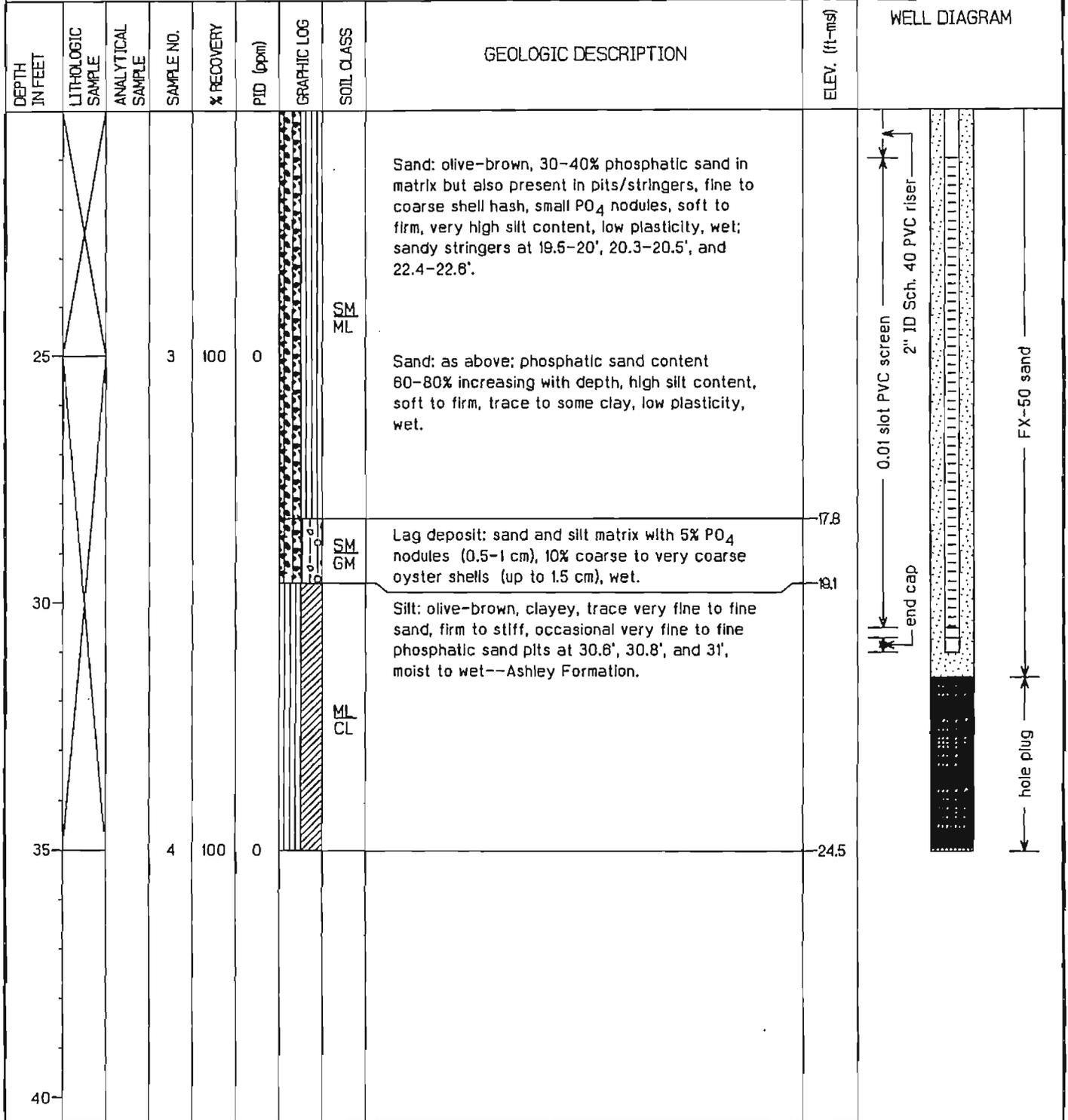
Groundwater Elevation: 4.09 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 31.0 feet bgs

Geologist: T. Kafka

Well Screen: 21.0 to 30.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE569002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316608.97 E, 375463.88 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 0920 on 11-8-95

TOC Elevation: 8.76 feet msl

Completed at 1120 on 11-8-95

Depth to Groundwater: 3.66 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

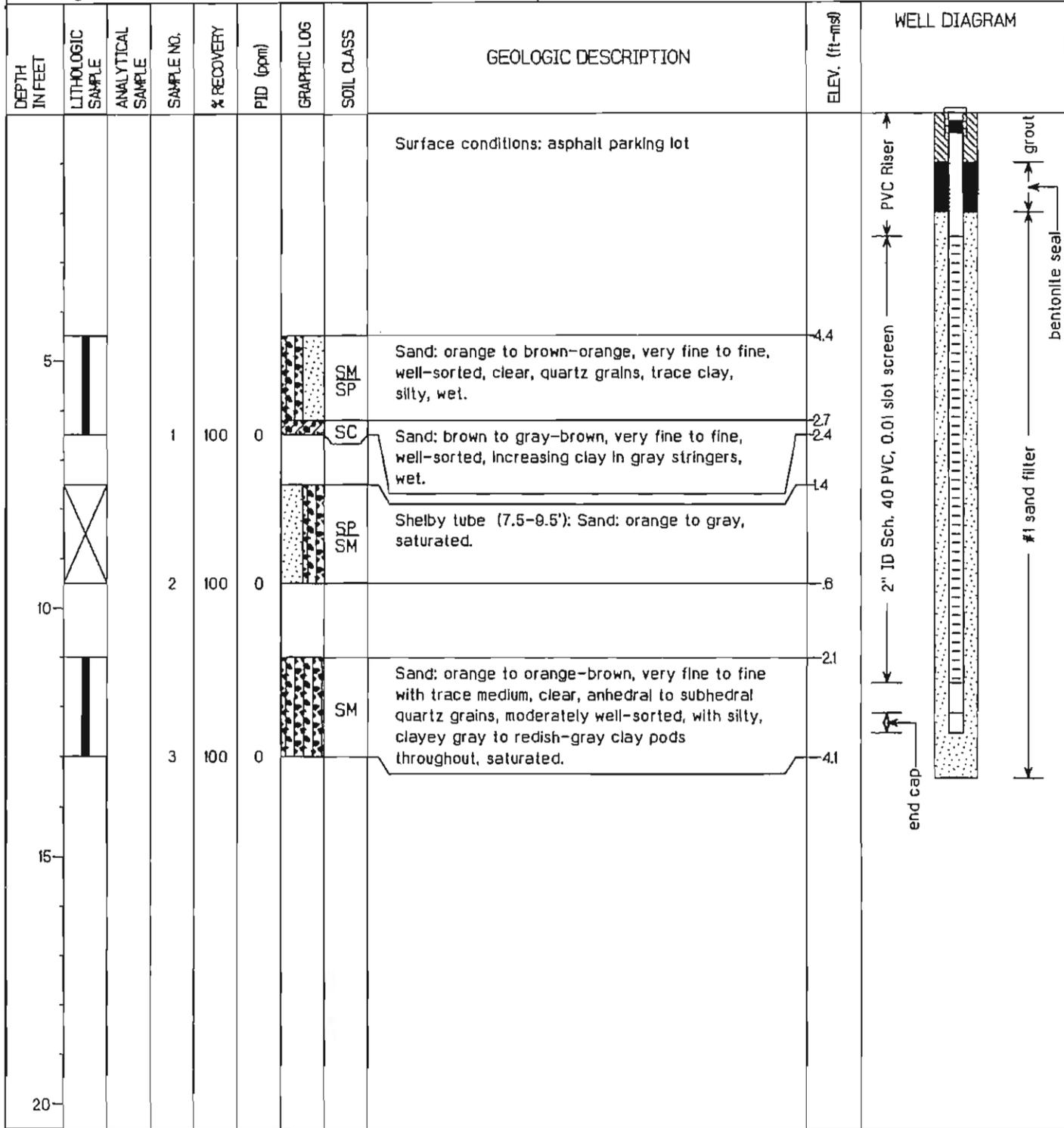
Groundwater Elevation: 5.10 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE570001

Project: ZONE E - Naval Base Charleston

Coordinates: 2316760.59 E, 3754117 N

Location: Charleston, SC

Surface Elevation: 11.5 feet msl

Started at 1345 on 1-15-96

TOC Elevation: 11.35 feet msl

Completed at 1420 on 1-15-96

Depth to Groundwater: 6.26 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 5.09 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
								Coal layer underneath asphalt.		
5			1	55	0		CL SC	Clay: red with gray mottling, low plasticity, with fine to medium sand, moist to wet.	7.5	
									6.4	
							SP	Sand: red and gray, medium, saturated (flowing).	3.5	
10			2	60	0				2.3	
							SP	Sand: as above.	.5	
			3	85	0				12	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE570002

Project: ZONE E - Naval Base Charleston

Coordinates: 2316833.06 E, 375202.25 N

Location: Charleston, SC

Surface Elevation: 13.2 feet msl

Started at 1515 on 11-7-95

TOC Elevation: 16.67 feet msl

Completed at 1630 on 11-7-95

Depth to Groundwater: 10.58 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

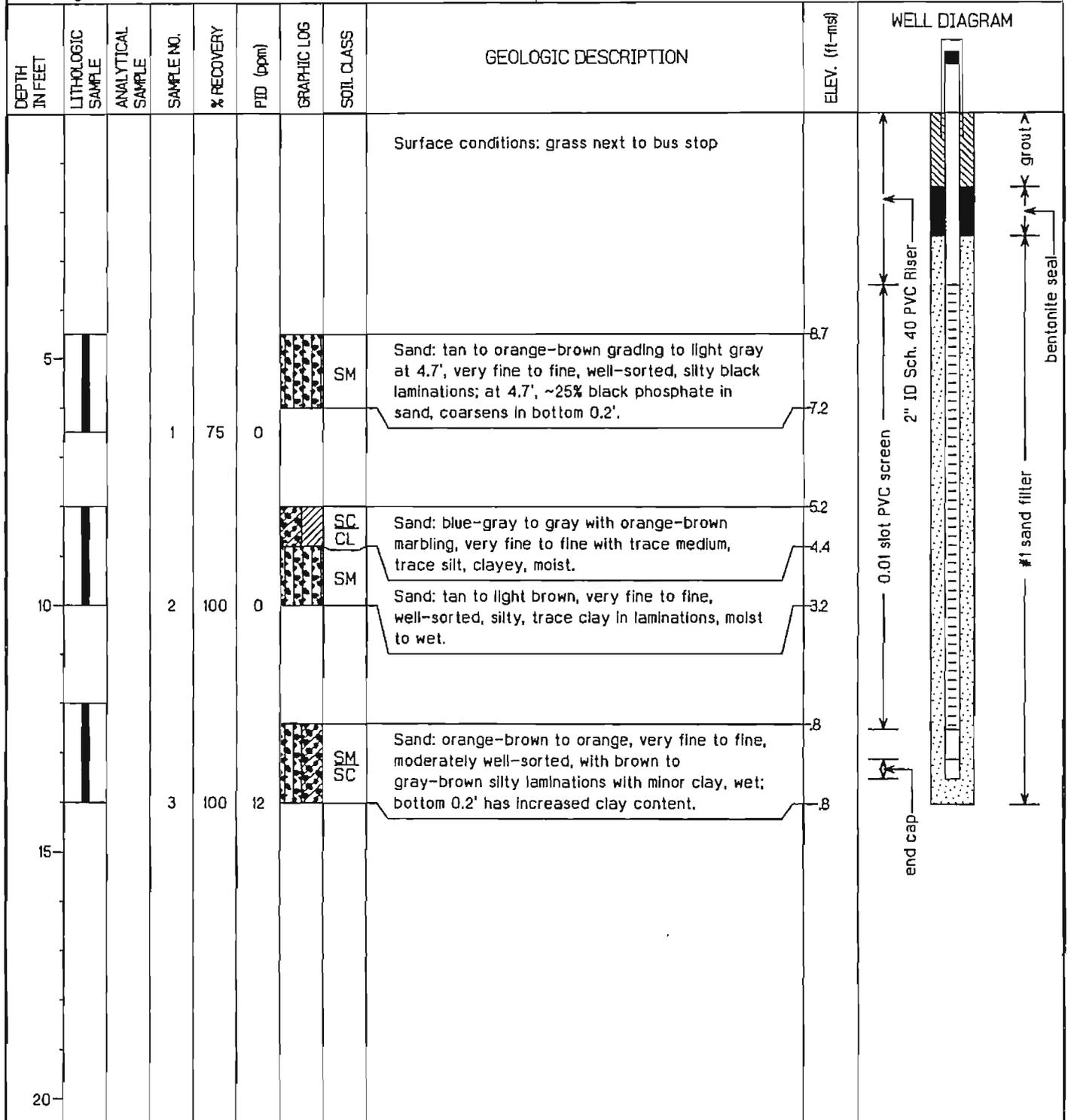
Groundwater Elevation: 6.09 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: T. Kafka

Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57002D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316872.18 E, 375226.57 N

Location: Charleston, SC

Surface Elevation: 13.7 feet msl

Started at 1015 on 1-20-96

TOC Elevation: 13.67 feet msl

Completed at 1150 on 1-20-96

Depth to Groundwater: 7.70 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

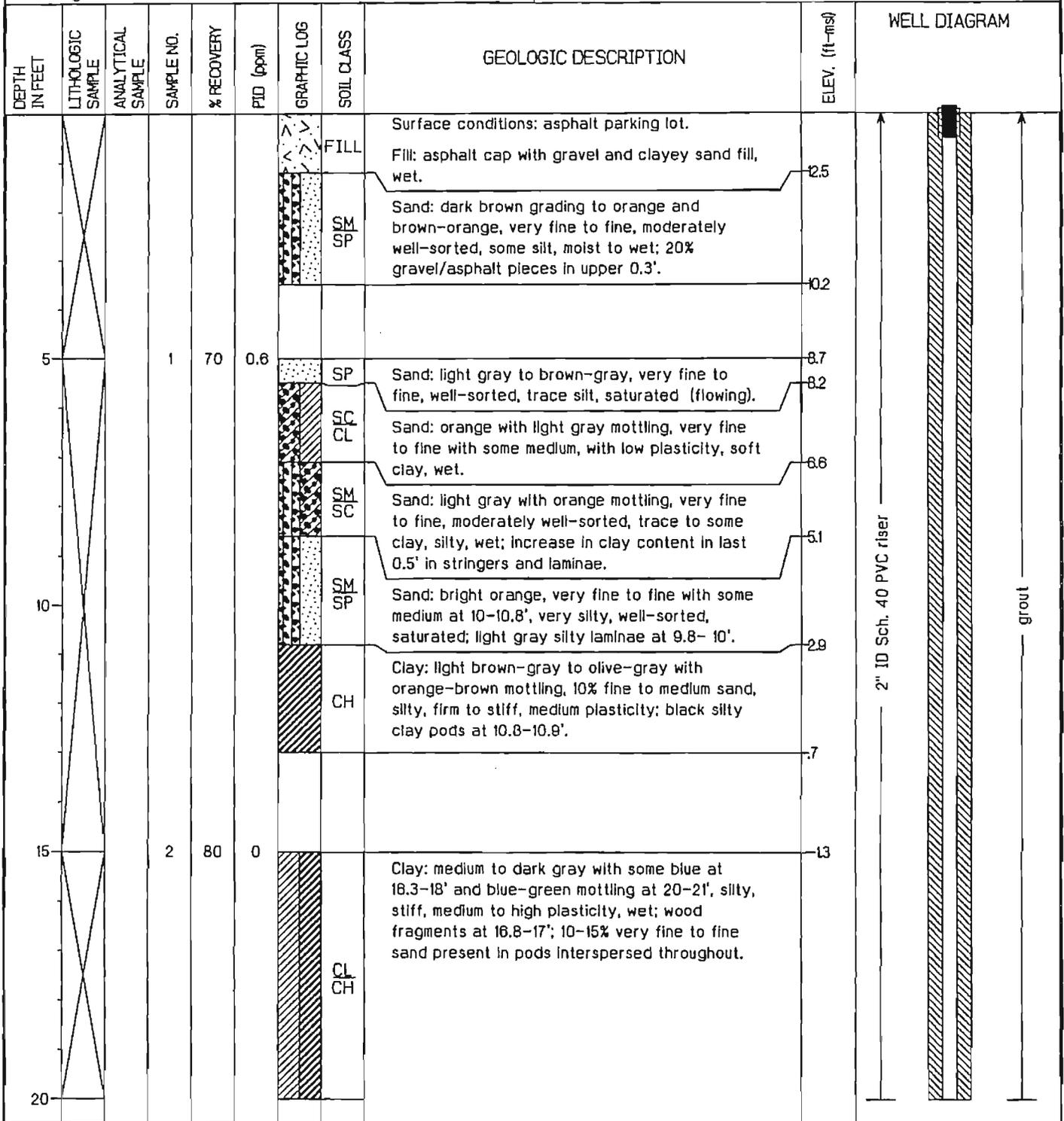
Groundwater Elevation: 5.97 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 35.4 feet bgs

Geologist: T. Kafka

Well Screen: 25.4 to 34.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57002D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316872.18 E, 375226.57 N

Location: Charleston, SC

Surface Elevation: 13.7 feet msl

Started at 1015 on 1-20-96

TOC Elevation: 13.67 feet msl

Completed at 1150 on 1-20-96

Depth to Groundwater: 7.70 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

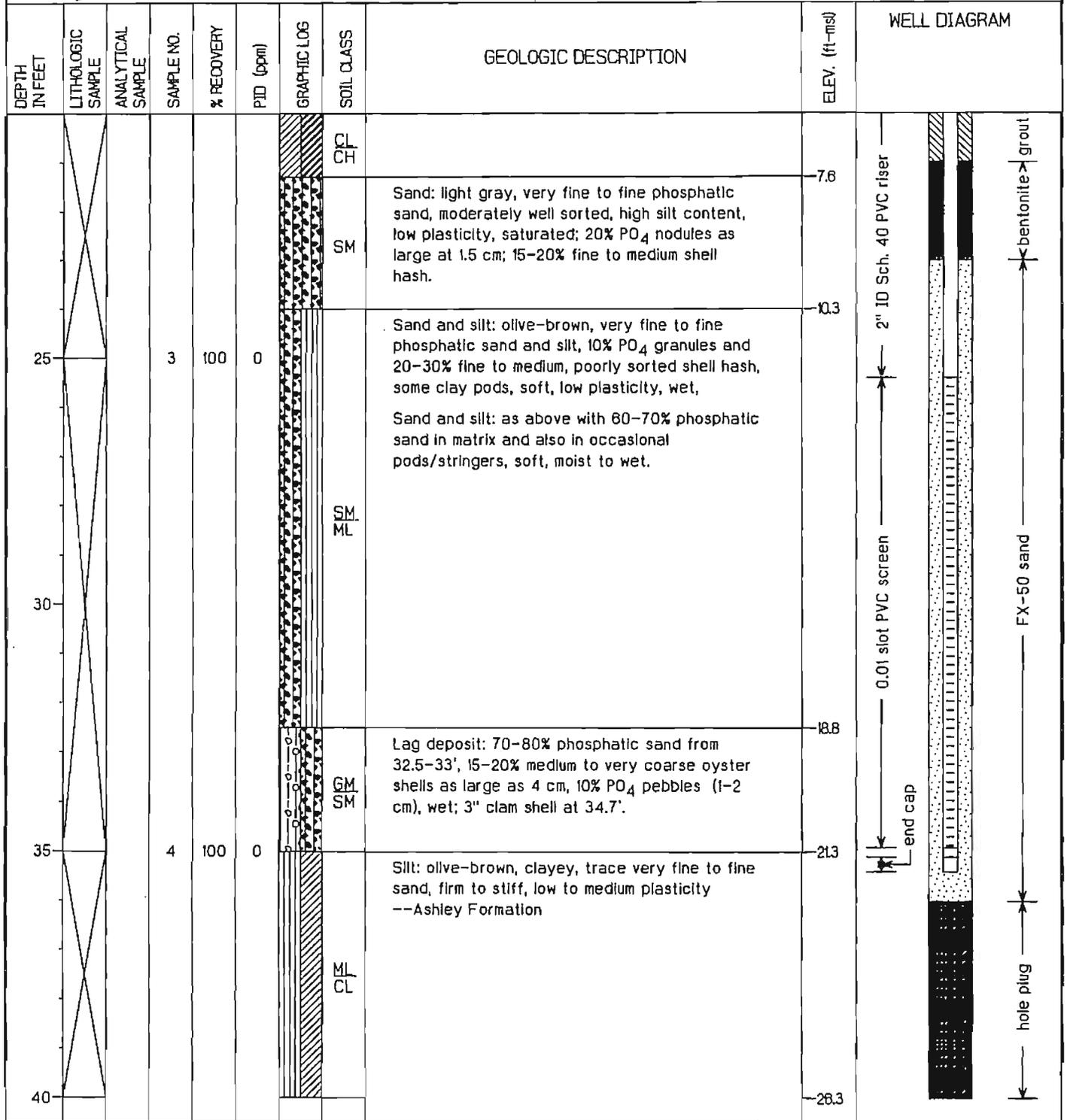
Groundwater Elevation: 5.97 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 35.4 feet bgs

Geologist: T. Kafka

Well Screen: 25.4 to 34.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE570003

Project: ZONE E - Naval Base Charleston

Coordinates: 2316600.03 E, 375310.32 N

Location: Charleston, SC

Surface Elevation: 11.2 feet msl

Started at 1010 on 11-17-95

TOC Elevation: 10.96 feet msl

Completed at 1125 on 11-17-95

Depth to Groundwater: 4.74 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 6.22 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PIID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot		
6			1	80	0		SP/SC	Sand: gray, fine to medium, with clayey, red FeOx-rich pod at 6.3', moist to wet.	6.7	
									5.1	
10			2	85	0		SP/SC	Sand: as above with sand and clay lens at 8.5-8.7'; high FeOx content from 8.7-10'.	2.9	
									1.2	
								Sand: as above.	2	
			3	75	0		SP/SC		13	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE57003D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316615.43 E, 375275.97 N

Location: Charleston, SC

Surface Elevation: 11.8 feet msl

Started at 1440 on 1-20-96

TOC Elevation: 11.58 feet msl

Completed at 1615 on 1-20-96

Depth to Groundwater: 5.38 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

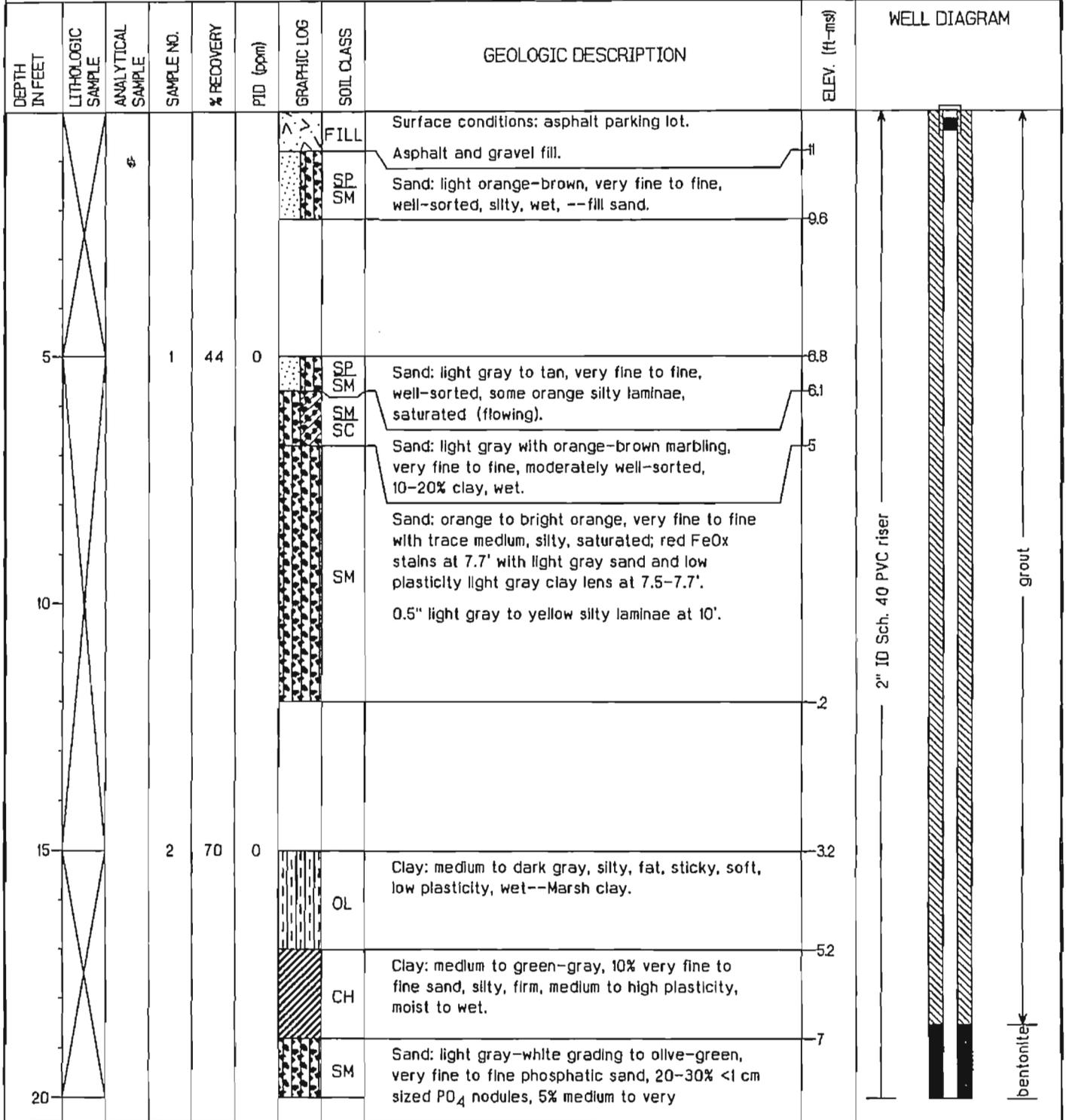
Groundwater Elevation: 6.20 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 32.5 feet bgs

Geologist: T. Kafka

Well Screen: 22.5 to 32.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57003D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316615.43 E, 375275.97 N

Location: Charleston, SC

Surface Elevation: 11.8 feet msl

Started at 1440 on 1-20-96

TOC Elevation: 11.58 feet msl

Completed at 1615 on 1-20-96

Depth to Groundwater: 5.38 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

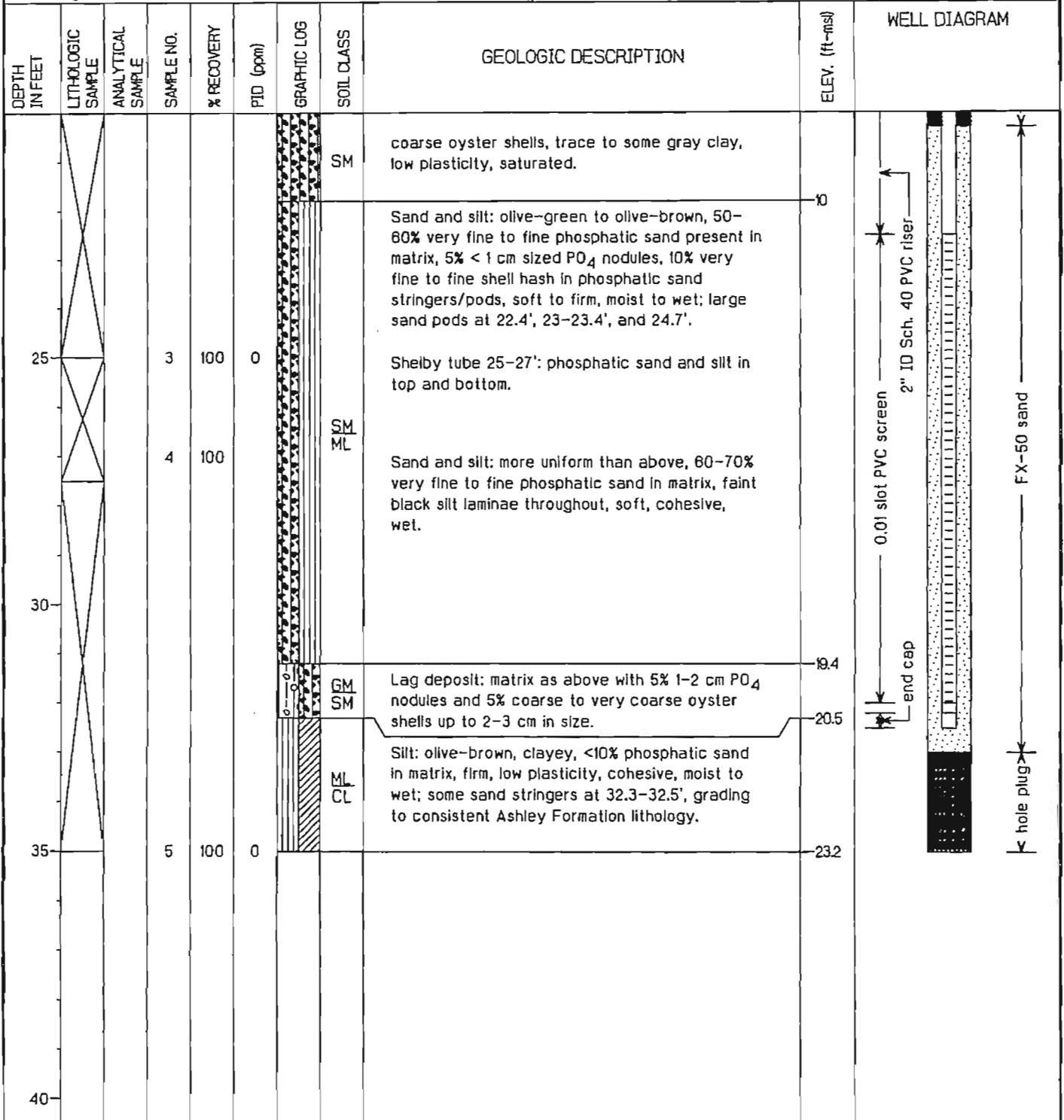
Groundwater Elevation: 6.20 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 32.5 feet bgs

Geologist: T. Kafka

Well Screen: 22.5 to 32.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE570004

Project: ZONE E - Naval Base Charleston

Coordinates: 2316777.37 E, 375024.70 N

Location: Charleston, SC

Surface Elevation: 14.1 feet msl

Started at 1100 on 9-12-96

TOC Elevation: 17.17 feet msl

Completed at 1215 on 9-12-96

Depth to Groundwater: 8.96 feet TOC Measured: 10/16/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

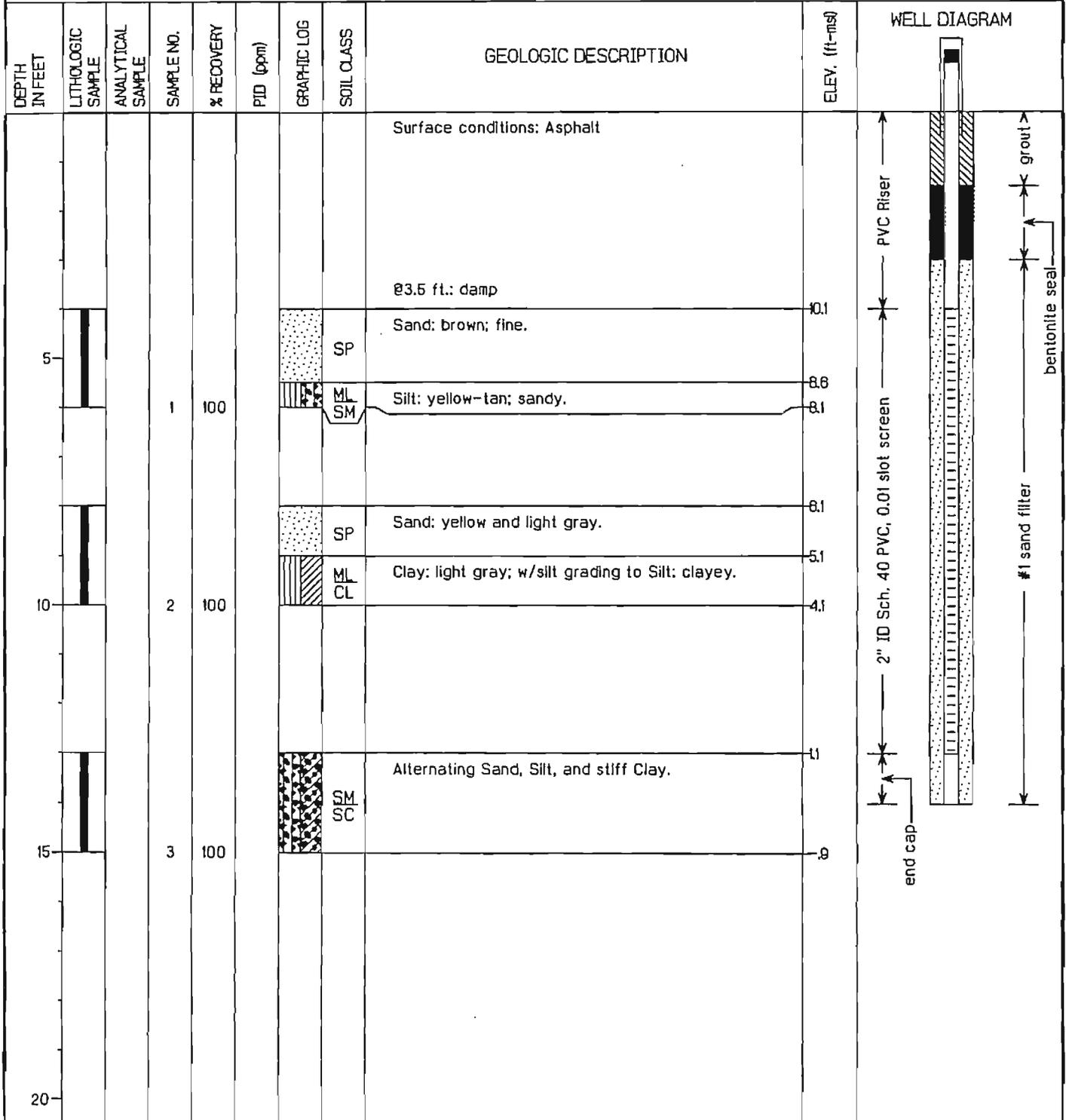
Groundwater Elevation: 8.21 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 14.0 feet bgs

Geologist: J. Cooley

Well Screen: 4.0 to 13.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE572001

Project: ZONE E - Naval Base Charleston	Coordinates: 2317217.27 E, 375450.35 N
Location: Charleston, SC	Surface Elevation: 11.1 feet msl
Started at 1030 on 11-1-95	TOC Elevation: 10.91 feet msl
Completed at 1220 on 11-1-95	Depth to Groundwater: 6.93 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.98 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.0 feet bgs
Geologist: B. Blythe	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot		
5			1	75	0		SM	Sand: light to dark brown, very fine to fine, silty, moist to wet.	6.8 5.6	
10			2	40	0		SM	Sand: light brown to tan, very fine to fine, silty, saturated, flowing.	2.1 1.5	
15			3	100	0		SM	Sand: gray, fine to medium, silty, saturated, flowing.	1.9	
							CL/CH	Clay: gray, fat, very clean.	3.5 3.8	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE572002

Project: ZONE E - Naval Base Charleston	Coordinates: 2317192.74 E, 375514.06 N
Location: Charleston, SC	Surface Elevation: 10.8 feet msl
Started at 1030 on 10-16-95	TOC Elevation: 10.53 feet msl
Completed at 1615 on 10-16-95	Depth to Groundwater: 6.57 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.96 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.0 feet bgs
Geologist: T. Kafka	Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot.		
5			1	100	0		SP SM	Sand: brown, very fine to fine, some silt, damp to moist.	6.3 5.3	
10			2	45	0		SP	Sand: light gray to tan-gray, very fine to fine, well-sorted, trace silt, wet.	2.5 1.8	
			3	0				No recovery in shelly tube (10-12.5'); cuttings were saturated gray to tan-gray sand.		
15			4	65	0		SP SM	Sand: gray to light gray, very fine to fine, moderately well-sorted, silty with some clayey pods; clay content increases in basal 0.2'.	2.6 3.9	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE572003

Project: ZONE E - Naval Base Charleston

Coordinates: 2317156.93 E, 375467.65 N

Location: Charleston, SC

Surface Elevation: 10.4 feet msl

Started at 1240 on 11-1-95

TOC Elevation: 10.21 feet msl

Completed at 1400 on 11-1-95

Depth to Groundwater: 6.17 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 4.04 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot		
5			1	100	0		SM	Sand: gray-brown, very fine, silty, moist to wet.	5.8	
									4.4	
10			2	73	0		SM	Sand: tan to light brown, very fine to fine, silty, saturated (flowing).	2.4	
									1.3	
15			3	100	0		SP	Sand: as above grading to coarser texture at 14.5', trace of clay.	2.8	
									4.8	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE573001

Project: ZONE E - Naval Base Charleston	Coordinates: 2317258.04 E, 375592.96 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 0905 on 11-7-95	TOC Elevation: 9.03 feet msl
Completed at 1140 on 11-7-95	Depth to Groundwater: 5.46 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.57 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt pavement.		
5			1	30	0		SP SC	Sand: light gray, fine to medium, with small lenses of soft, black clay, wet.	4.2 3.8	
10			2	55	0		SP SC	Sand: as above with fewer clay lenses, wet.	1.2 -4	
15			3	100	0		CL SC	Clay: gray to light gray, with 50% fine and 50% medium sand, firm, medium plasticity; small sand lens (70% sand) from 13.7-13.9', wet.	3.3 5.3	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE57301D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317260.66 E, 375585.28 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 0950 on 1-6-96

TOC Elevation: 9.03 feet msl

Completed at 1140 on 1-6-96

Depth to Groundwater: 5.66 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

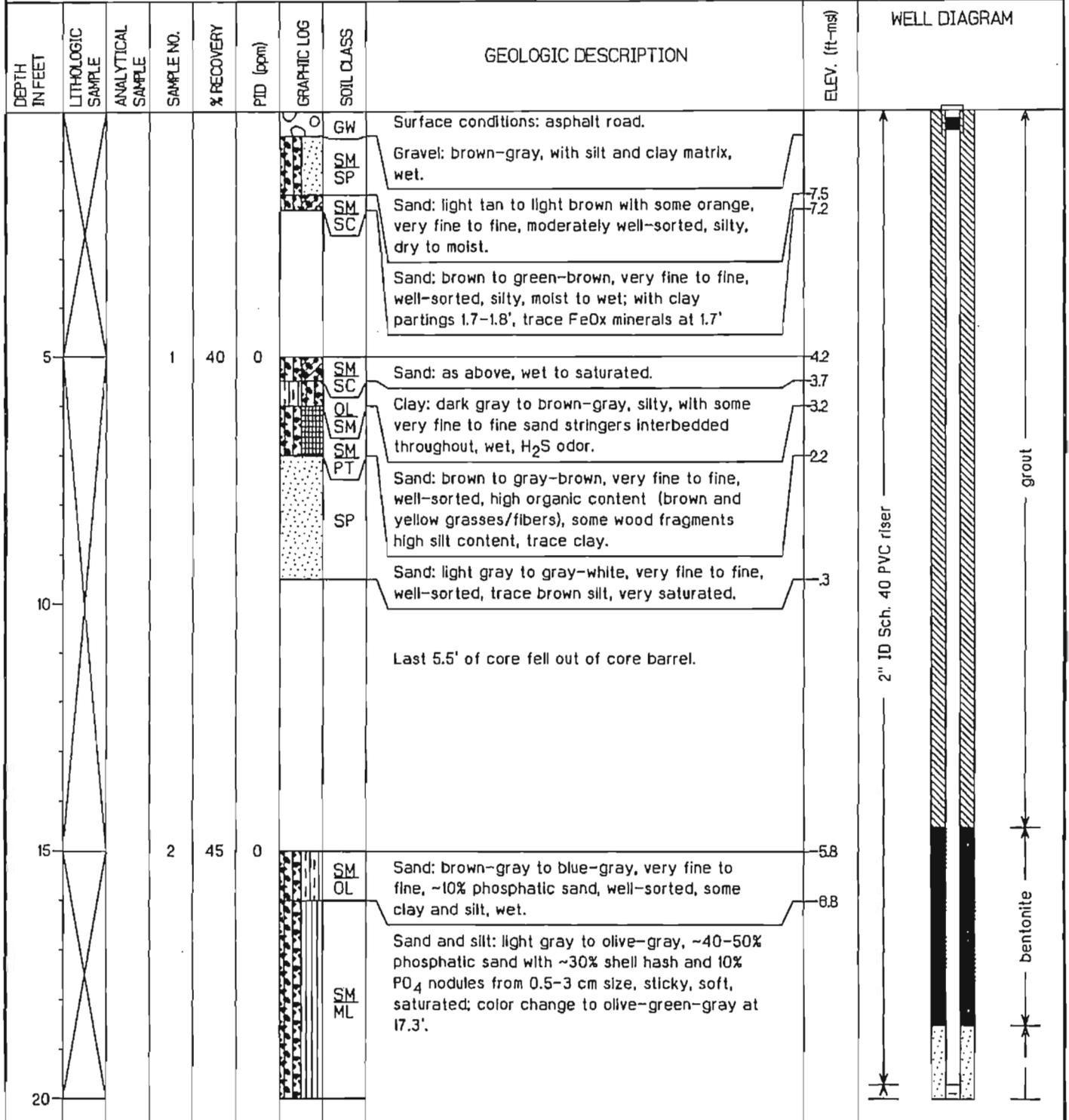
Groundwater Elevation: 3.37 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 29.7 feet bgs

Geologist: T. Kafka

Well Screen: 19.7 to 29.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57301D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317260.66 E, 375585.28 N
Location: Charleston, SC	Surface Elevation: 9.2 feet msl
Started at 0950 on 1-6-96	TOC Elevation: 9.03 feet msl
Completed at 1140 on 1-6-96	Depth to Groundwater: 5.66 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 3.37 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 29.7 feet bgs
Geologist: T. Kafka	Well Screen: 19.7 to 29.2 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		SM ML	Silt: olive-brown, with ~15-20% very fine sand in matrix, pods of phosphatic sand throughout, 5% of shell hash and PO ₄ nodules in upper 1', some clay, low plasticity, soft to slightly firm, wet; 0.2' lenses of PO ₄ nodules and shell hash from 21.5', 22', 23.2', 24.7'	15.8	<p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>hole plug</p>
30			4	80	0		SM ML	Silt and sand: olive-brown, ~50-80% phosphatic sand content, trace to some shell hash in upper 2' decreasing with depth, low plasticity, soft to slightly firm, wet. 29-30', 5% shell hash and PO ₄ nodules from 0.5-2 cm and 1-2 cm white oyster shells--lag deposit	16.8	
35			5	100	0		CL	Silt: olive-brown, ~20% phosphatic sand in upper 1' decreasing rapidly with depth, low plasticity, firm, moist to wet, trace effervesence with HCl-- Ashley Formation.	20.8	
40									25.8	

EnSafe/Allen & Hoshall

Monitoring Well NBCE574001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317576.21 E, 375618.54 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.5 feet msl</i>
Started at <i>1055 on 12-4-95</i>	TOC Elevation: <i>9.39 feet msl</i>
Completed at <i>1235 on 12-4-95</i>	Depth to Groundwater: <i>3.48 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>5.91 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>2.5 to 11.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete.		
5			1	75	0	SM SM OL	SM SM OL	Sand: dark green-gray to black, fine, silty, wet. Sand: light gray, very fine to fine, silty, interbedded with dark green black clay, soft; chunk of palmetto wood in bottom cap.	4.8 4.2 3.3	
10			2	100	0	SM PT OL CL CH	SM PT OL CL CH	Sand: brown, fine, loose, with silty peat material and woody fragments in bottom 0.3'. Clay: gray, high organic content, with ~10% very fine sand in matrix. Clay: gray to red-brown, high plasticity, firm to stiff, moist.	1 1.9 2.3 3	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE57401D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317572.01 E, 375625.51 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 1345 on 1-6-96

TOC Elevation: 9.42 feet msl

Completed at 1540 on 1-6-96

Depth to Groundwater: 7.77 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

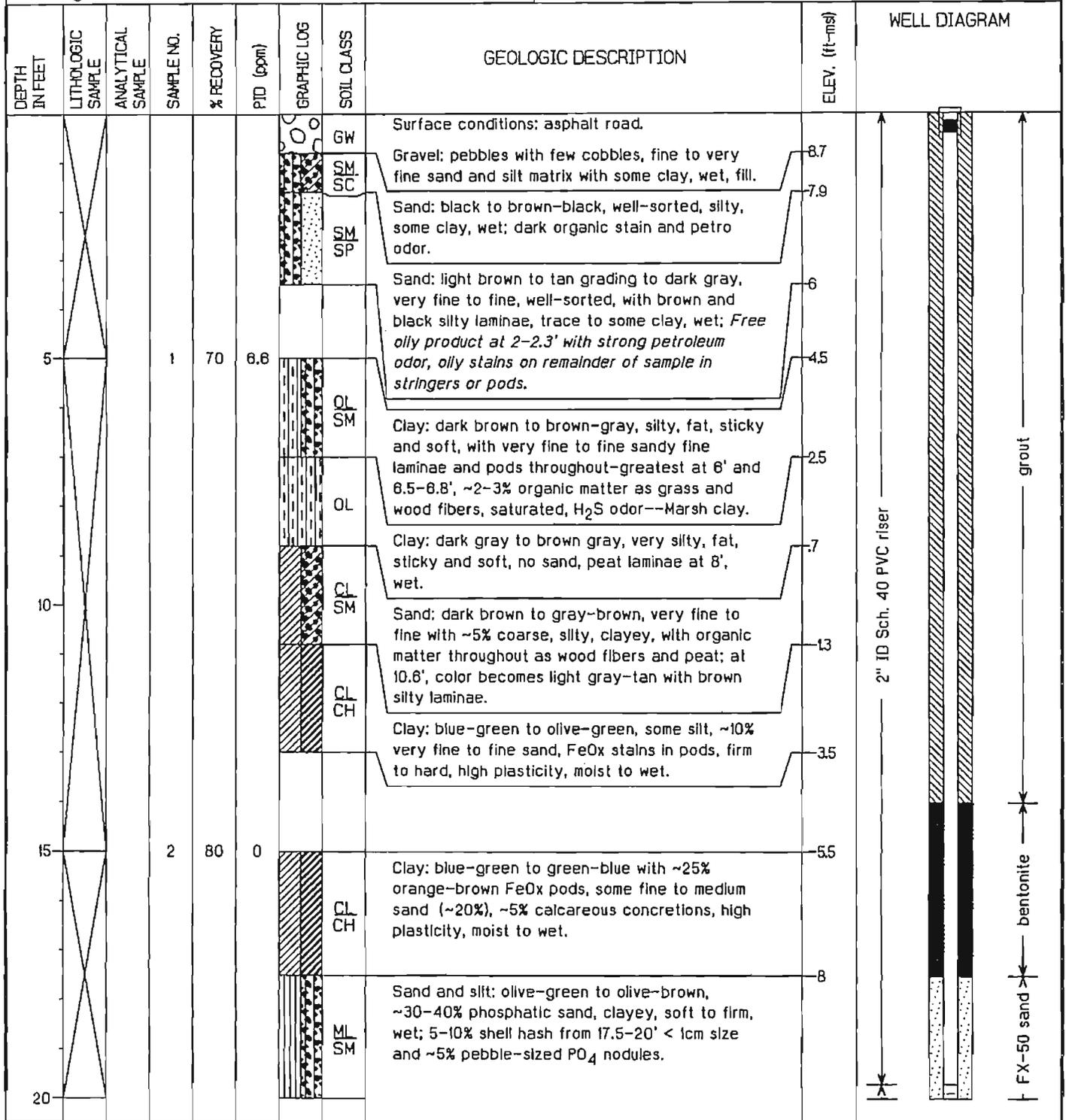
Groundwater Elevation: 165 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 29.7 feet bgs

Geologist: T. Kafka

Well Screen: 19.7 to 29.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57401D

Project: ZONE E -- Naval Base Charleston

Coordinates: 2317572.01 E, 375625.51 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 1345 on 1-6-96

TOC Elevation: 9.42 feet msl

Completed at 1540 on 1-6-96

Depth to Groundwater: 7.77 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

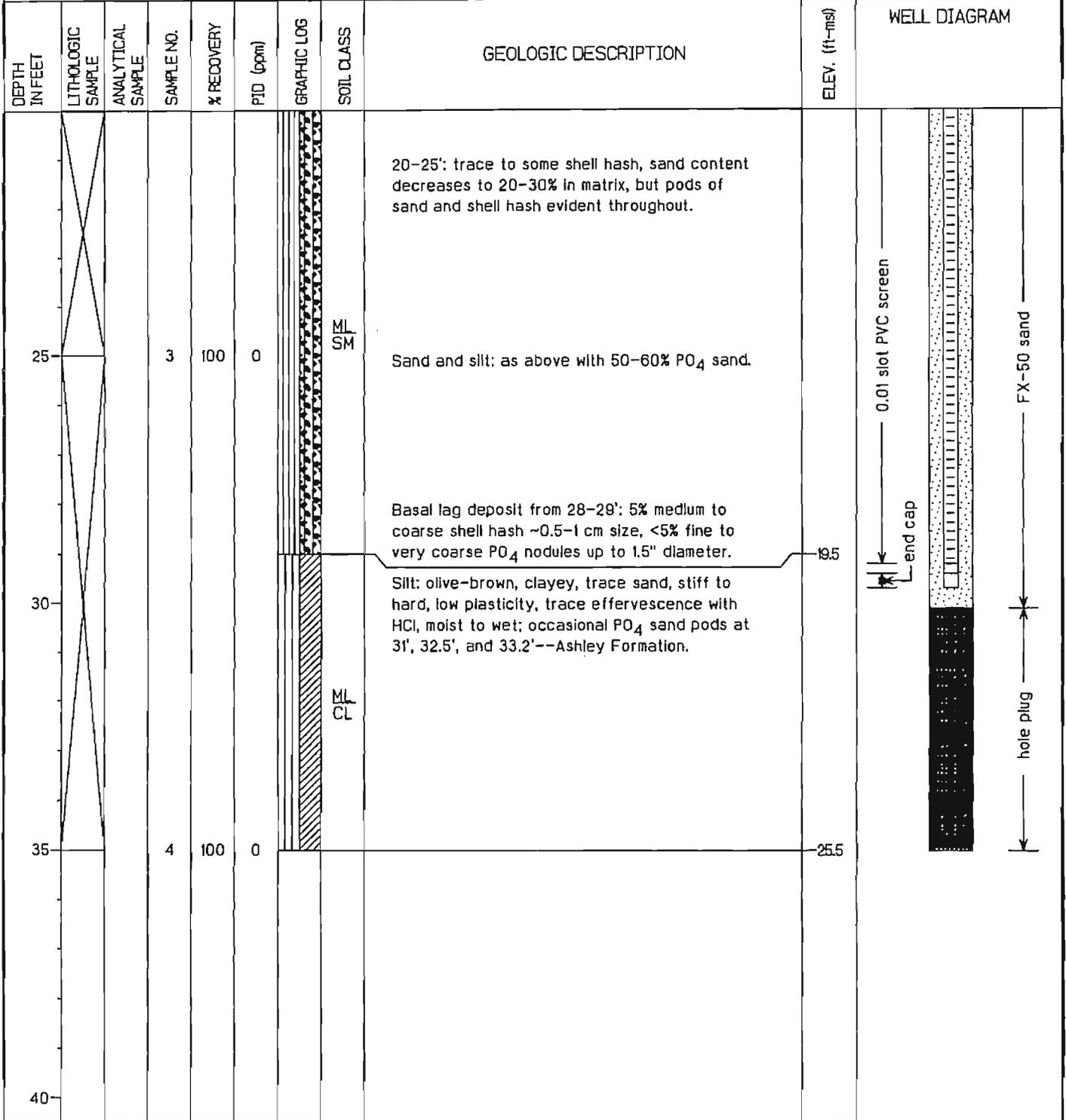
Groundwater Elevation: 1.65 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 29.7 feet bgs

Geologist: T. Kafka

Well Screen: 19.7 to 29.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE574002

Project: ZONE E - Naval Base Charleston

Coordinates: 2317594.24 E, 375570.47 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 1450 on 12-4-95

TOC Elevation: 9.22 feet msl

Completed at 1620 on 12-4-95

Depth to Groundwater: 2.94 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

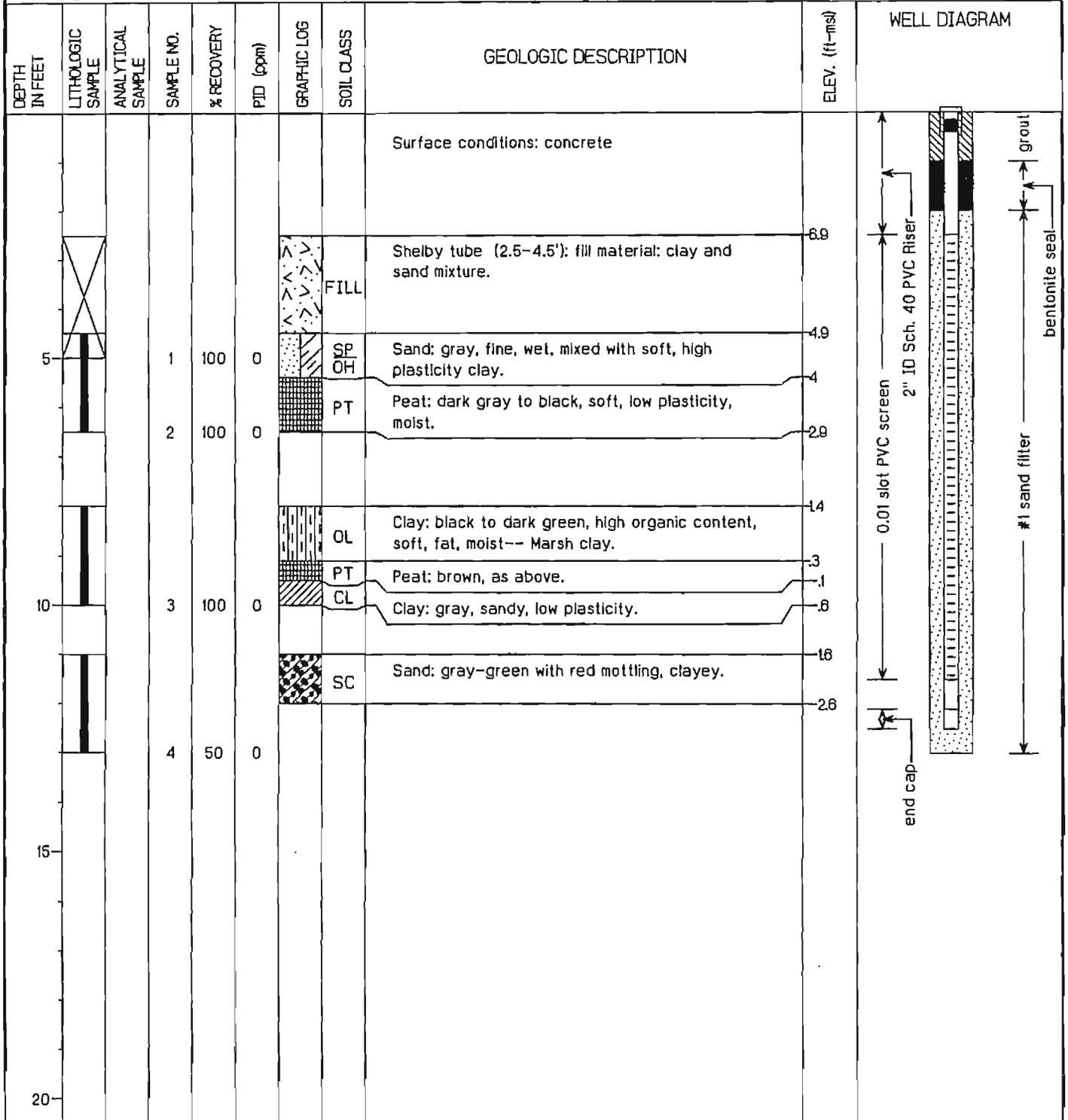
Groundwater Elevation: 6.28 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE574003

Project: ZONE E - Naval Base Charleston	Coordinates: 2317608.95 E, 375511.90 N
Location: Charleston, SC	Surface Elevation: 9.5 feet msl
Started at 1220 on 12-5-95	TOC Elevation: 9.40 feet msl
Completed at 1410 on 12-5-95	Depth to Groundwater: 6.51 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.89 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		
5			1	75	0	SM	SM	Sand: black to dark brown, fine, silty, wet.	6.5	
						CH	CH	Clay: dark green with brown-red mottling, fat, high plasticity, moist	4.8	
									4	
						CH CL	CH CL	Clay: as above, with sand laminae throughout.	15	
10			2	100	0	SC SW	SC SW	Sand: gray with red-brown mottling, fine to medium, clayey.	3	
									5	
						CH	CH	Clay: gray with red-brown FeOx mottling, firm to stiff, high plasticity, moist; grades into gray, stiff, fat clay.	15	
			3	100	0				3.5	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE576001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317648.56 E, 375676.44 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.1 feet msl</i>
Started at <i>1500 on 10-4-95</i>	TOC Elevation: <i>8.85 feet msl</i>
Completed at <i>1700 on 10-4-95</i>	Depth to Groundwater: <i>7.05 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.80 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.0 feet bgs</i>
Geologist: <i>S. Weatherford</i>	Well Screen: <i>3.0 to 12.0 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		<p>WELL DIAGRAM</p> <p>2" ID Sch. 40 PVC Riser</p> <p>0.01 slot PVC screen</p> <p>end cap</p> <p>#2 sand filter</p> <p>bentonite seal</p> <p>collapsed formation</p>
5			1	100	0		SC	Sand: brown, clayey, loose.	9.1	
							CL	Clay: red to green, mottled, sandy, tight, moist.	5.1	
									4.1	
10			2	75	0		SC	Sand: green, clayey, loose.	1.1	
							CH	Clay: red to green, mottled, tight, dry.	0.6	
									0.4	
15			3	100	0		CH	Clay: red to green, mottled, tight, wet.	3.9	
							CL	Clay: gray to green, sandy, loose, wet.	4.9	
									5.9	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE576002

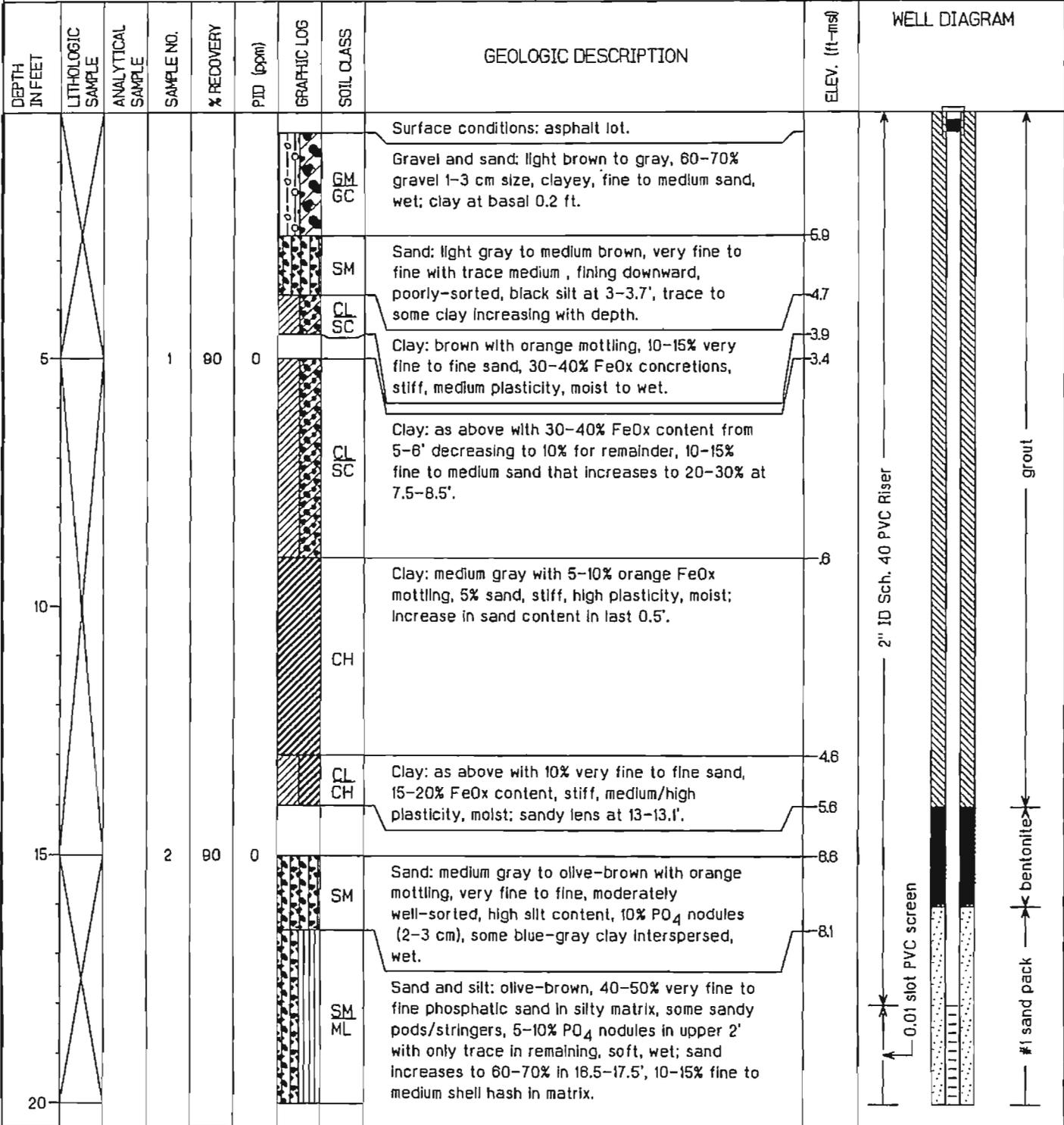
Project: ZONE E - Naval Base Charleston	Coordinates: 2317850.76 E, 37570106 N
Location: Charleston, SC	Surface Elevation: 8.4 feet msl
Started at 1030 on 10-4-95	TOC Elevation: 8.32 feet msl
Completed at 1230 on 10-4-95	Depth to Groundwater: 5.34 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.98 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 14.5 feet bgs
Geologist: G. Temple	Well Screen: 4.5 to 13.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt		
5			1	33	0		CL	Clay: light brown with dark streaks.	3.8 3.2	
10			2	75	1		CL	Clay: brown and gray, moist.	1	
							OH	Clay: brown to gray, organic material.	6 16	
15			3	83	0.5		CL	Clay: gray and brown, moist.	5.1 7.1	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE57602D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317830.09 E, 375762.94 N
Location: Charleston, SC	Surface Elevation: 8.4 feet msl
Started at 0900 on 1-18-96	TOC Elevation: 8.34 feet msl
Completed at 1030 on 1-18-96	Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 1.73 feet msl
Drilling Company: Alliance Environmental (SC Cert# 889)	Total Well Depth: 28.0 feet bgs
Geologist: T. Kafka	Well Screen: 18.0 to 27.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE57602D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317830.09 E, 375762.94 N

Location: Charleston, SC

Surface Elevation: 8.4 feet msl

Started at 0900 on 1-18-96

TOC Elevation: 8.34 feet msl

Completed at 1030 on 1-18-96

Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.73 feet msl

Drilling Company: Alliance Environmental (SC Cert# 889)

Total Well Depth: 28.0 feet bgs

Geologist: T. Kafka

Well Screen: 18.0 to 27.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		ML	Sand and silt: as above, 5% PO ₄ nodules <1 cm size, lag deposit at ~26-27.2' with 5-10% shell fragments up to 3 cm size, 70-80% phosphatic sand content overall, gradational contact with Ashley Fm below.	18.8	
30							CL	Silt: olive-brown, clayey, low plasticity, soft to firm, moist to wet, ~30% phosphatic sandy pits in upper 1' decreasing to < 5% for remainder--Ashley Formation.	26.6	
35			4	100	0					
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE580001

Project: ZONE E - Naval Base Charleston

Coordinates: 2317636.21 E, 375426.56 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 1400 on 10-9-85

TOC Elevation: 9.05 feet msl

Completed at 1535 on 10-9-85

Depth to Groundwater: 5.87 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

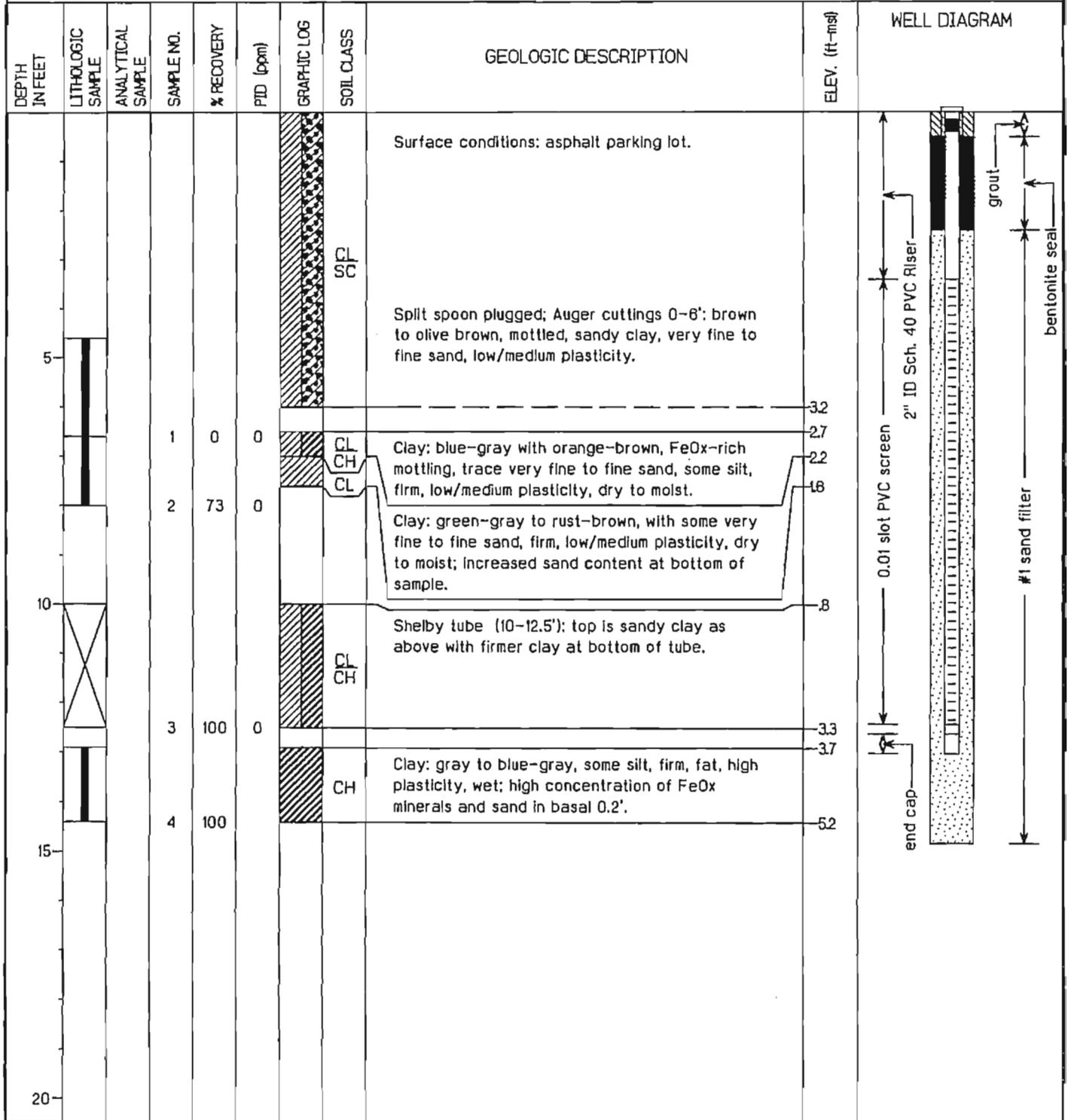
Groundwater Elevation: 3.18 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: T. Kafka

Well Screen: 3.4 to 12.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE58001D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317640.29 E, 375420.14 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0825 on 1-21-96

TOC Elevation: 9.29 feet msl

Completed at 1010 on 1-21-96

Depth to Groundwater: 7.67 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

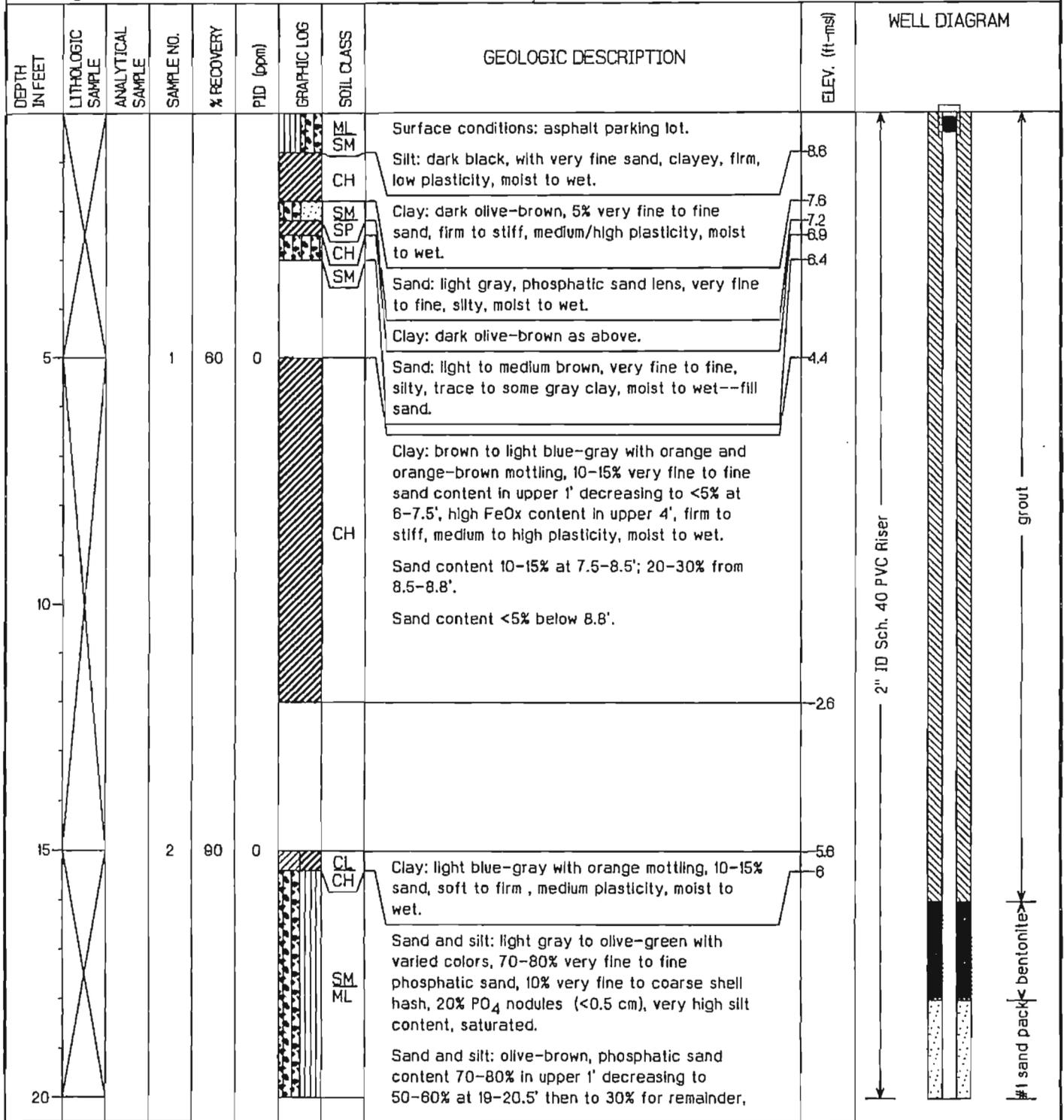
Groundwater Elevation: 1.62 feet msl

Drilling Company: Alliance Environmental (SC cert #89)

Total Well Depth: 30.0 feet bgs

Geologist: T. Kafka

Well Screen: 20.0 to 29.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE58001D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317640.29 E, 375420.14 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0825 on 1-21-96

TOC Elevation: 9.29 feet msl

Completed at 1010 on 1-21-96

Depth to Groundwater: 7.67 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

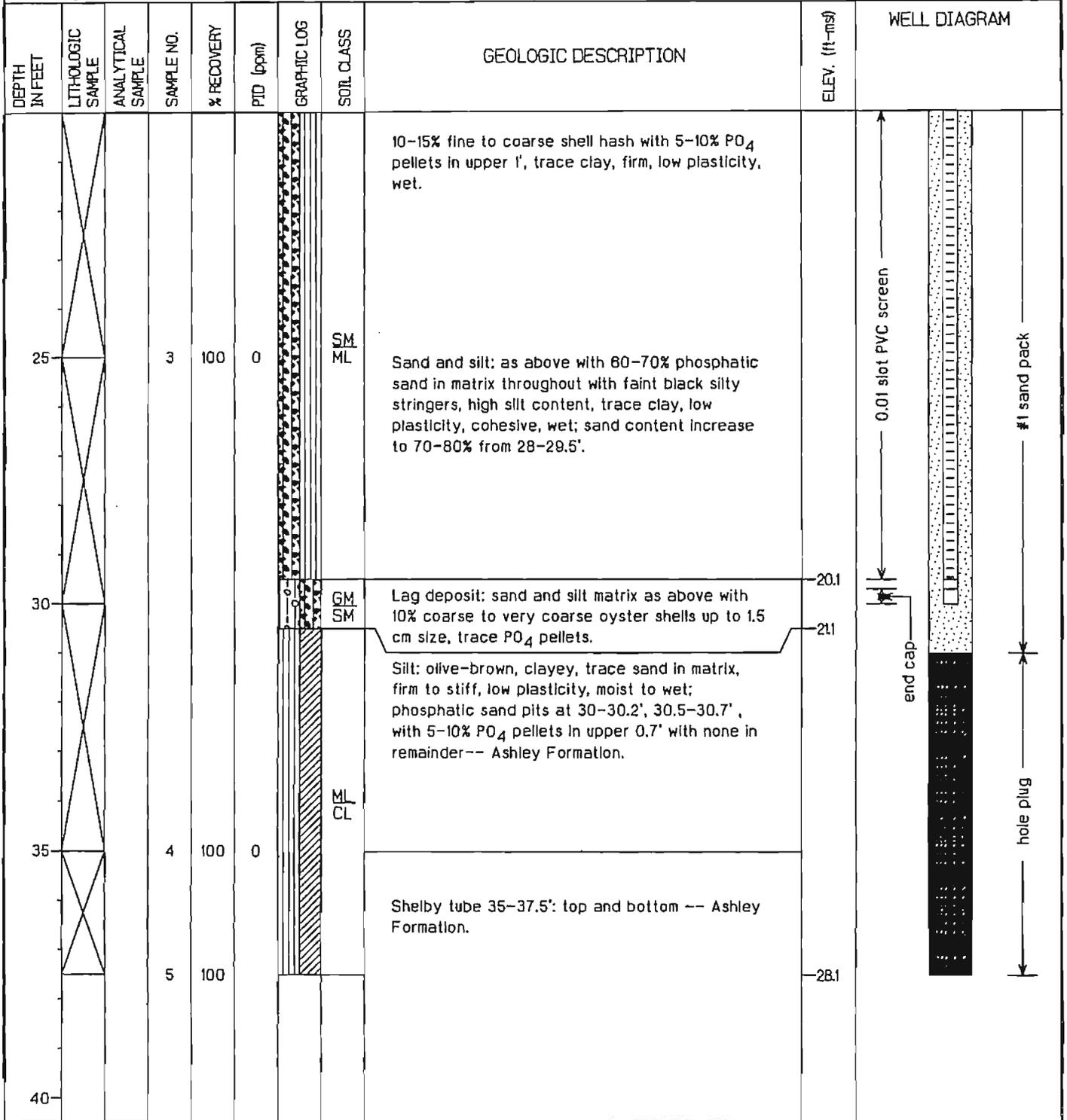
Groundwater Elevation: 1.62 feet msl

Drilling Company: Alliance Environmental (SC cert #89)

Total Well Depth: 30.0 feet bgs

Geologist: T. Kafka

Well Screen: 20.0 to 29.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE580002

Project: ZONE E - Naval Base Charleston

Coordinates: 2317463.94 E, 375286.29 N

Location: Charleston, SC

Surface Elevation: 10.7 feet msl

Started at 0840 on 10-10-95

TOC Elevation: 10.33 feet msl

Completed at 1030 on 10-10-95

Depth to Groundwater: 6.23 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

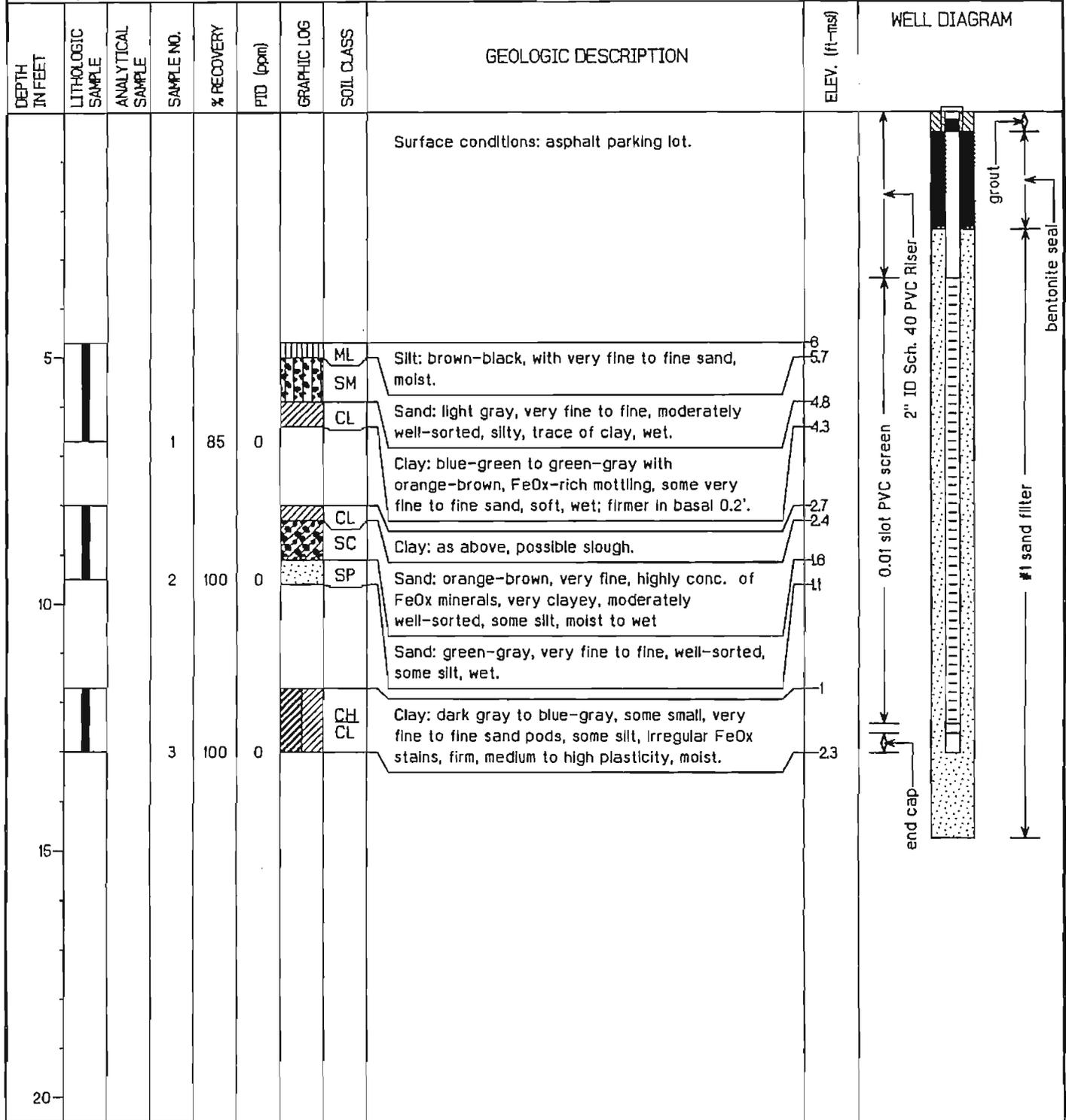
Groundwater Elevation: 4.10 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: T. Kafka

Well Screen: 3.4 to 12.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE583001

Project: ZONE E - Naval Base Charleston

Coordinates: 2318360.30 E, 375554.72 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1500 on 11-2-95

TOC Elevation: 9.74 feet msl

Completed at 1555 on 11-2-95

Depth to Groundwater: 6.77 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

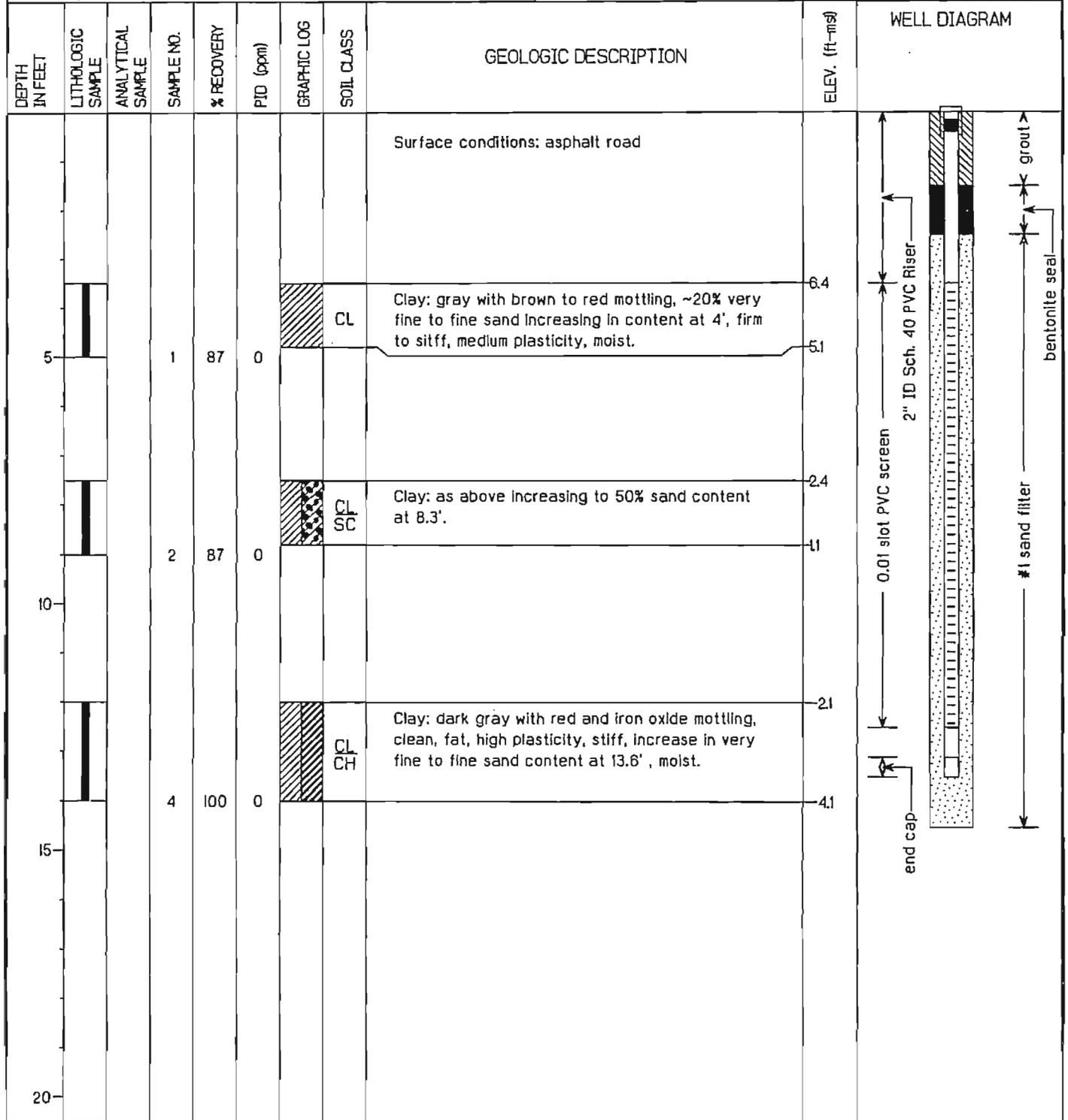
Groundwater Elevation: 2.97 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: B. Blythe

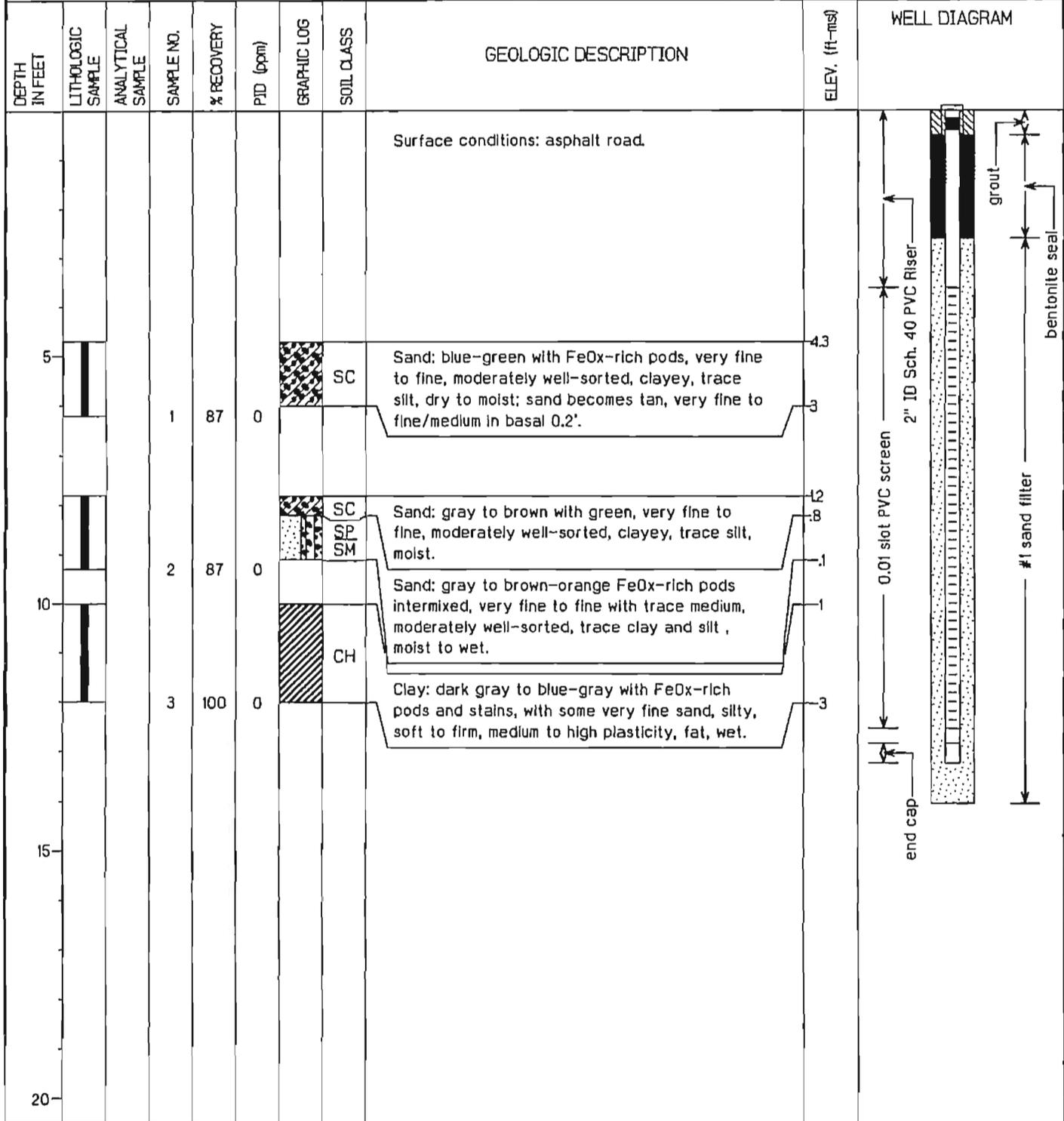
Well Screen: 3.5 to 12.5 feet bgs



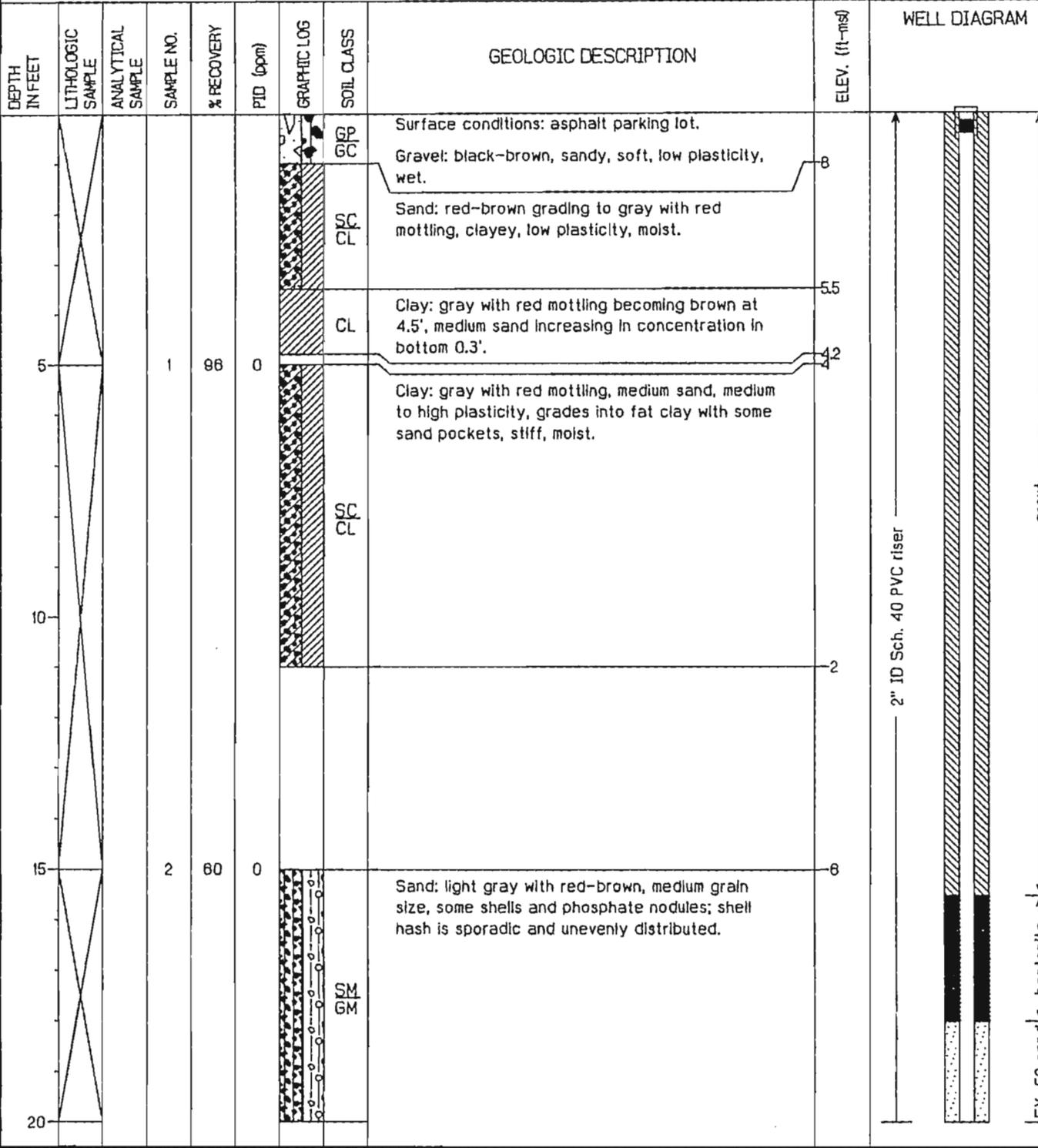
EnSafe/Allen & Hoshall

Monitoring Well NBCE583002

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2318446.16 E, 375612.37 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.0 feet msl</i>
Started at <i>1345 on 10-10-95</i>	TOC Elevation: <i>8.82 feet msl</i>
Completed at <i>1520 on 10-10-95</i>	Depth to Groundwater: <i>6.50 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.32 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.2 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>3.6 to 12.6 feet bgs</i>



EnSafe/Allen & Hoshall		Monitoring Well NBCE58302D	
Project: ZONE E - Naval Base Charleston		Coordinates: 2318502.70 E, 375589.67 N	
Location: Charleston, SC		Surface Elevation: 9.0 feet msl	
Started at 0815 on 1-19-96		TOC Elevation: 8.85 feet msl	
Completed at 0945 on 1-19-96		Depth to Groundwater: 6.96 feet TOC Measured: 3/13/96	
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)		Groundwater Elevation: 1.89 feet msl	
Drilling Company: Alliance Environmental (SC cert #889)		Total Well Depth: 30.2 feet bgs	
Geologist: B. Blythe		Well Screen: 20.3 to 29.7 feet bgs	



EnSafe/Allen & Hoshall

Monitoring Well NBCE58302D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318502.70 E, 375589.67 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0815 on 1-19-96

TOC Elevation: 8.85 feet msl

Completed at 0945 on 1-19-96

Depth to Groundwater: 6.96 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 189 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 30.2 feet bgs

Geologist: B. Blythe

Well Screen: 20.3 to 29.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		SPM	Sand: as above with increase in phosphatic concentration; lag deposit at 29.3-29.9' with shell hash and phosphate nodules.		
30							CLM	Clay: drab green, silty, occasional pockets of sand throughout-- Ashley Formation.	20.8	
35			4	100	0				26	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE583003

Project: ZONE E - Naval Base Charleston

Coordinates: 2318540.62 E, 375540.29 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0840 on 10-11-95

TOC Elevation: 9.25 feet msl

Completed at 1010 on 10-11-95

Depth to Groundwater: 5.49 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

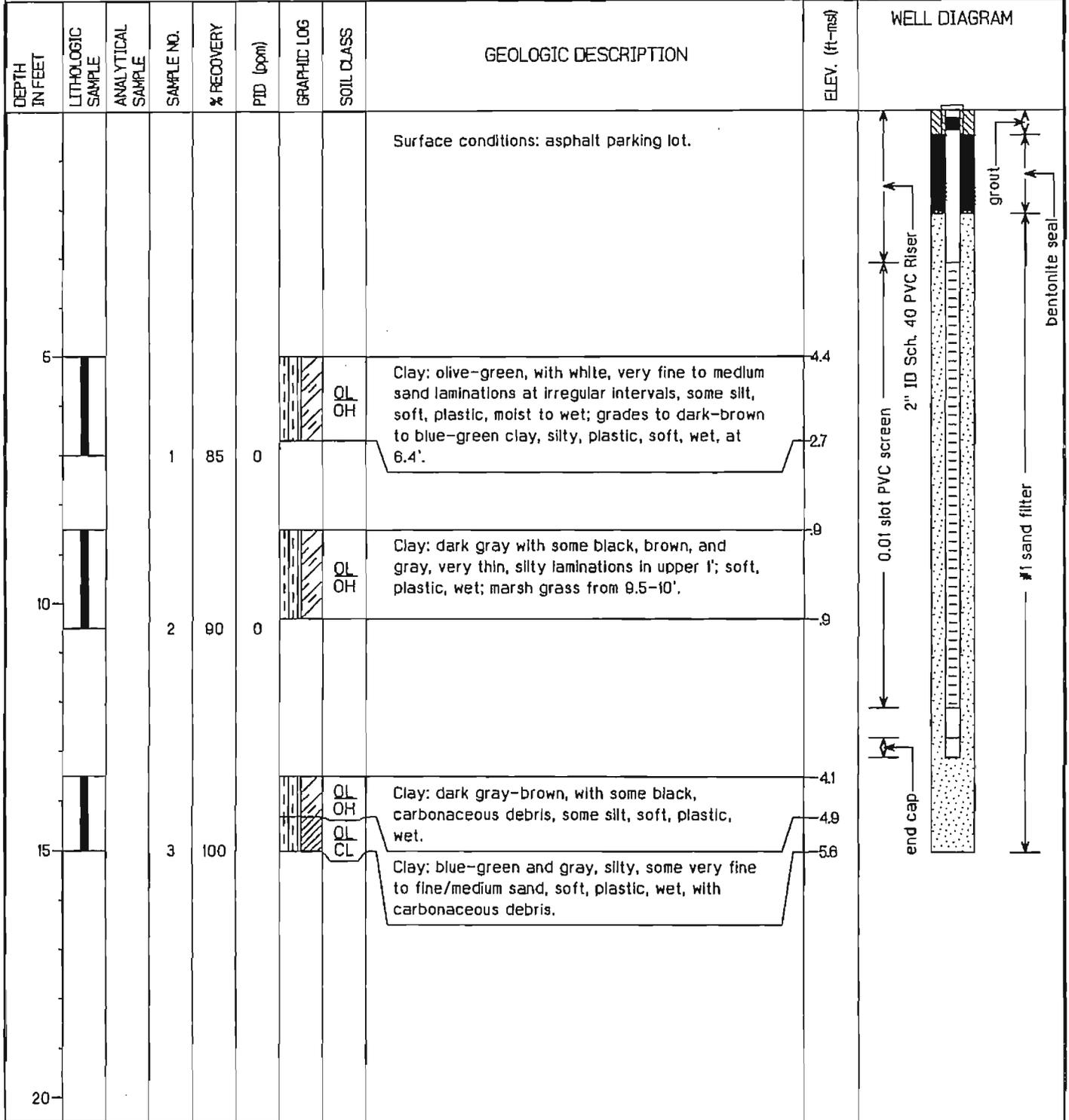
Groundwater Elevation: 3.76 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.1 feet bgs

Geologist: P. Bayley

Well Screen: 3.1 to 12.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE586001

Project: ZONE E - Naval Base Charleston

Coordinates: 2318712.89 E, 37528127 N

Location: Charleston, SC

Surface Elevation: 8.2 feet msl

Started at 1240 on 11-8-95

TOC Elevation: 8.06 feet msl

Completed at 1410 on 11-8-95

Depth to Groundwater: 2.41 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

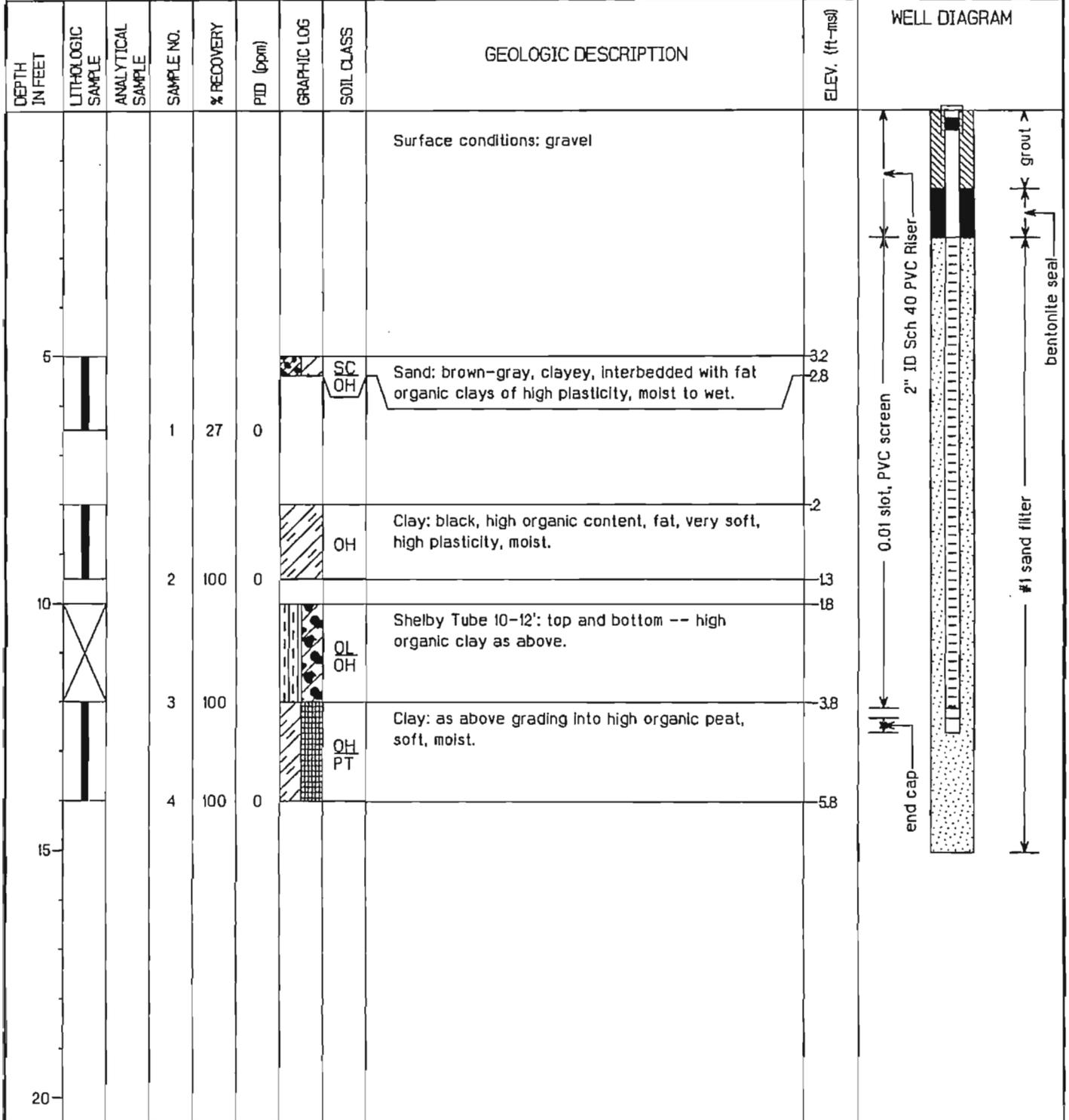
Groundwater Elevation: 5.65 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.6 feet bgs

Geologist: B. Blythe

Well Screen: 2.6 to 12.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE590001

Project: ZONE E - Naval Base Charleston

Coordinates: 2319156.31 E, 374827.84 N

Location: Charleston, SC

Surface Elevation: 8.3 feet msl

Started at 1525 on 1-9-96

TOC Elevation: 8.11 feet msl

Completed at 1620 on 1-9-96

Depth to Groundwater: 2.96 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

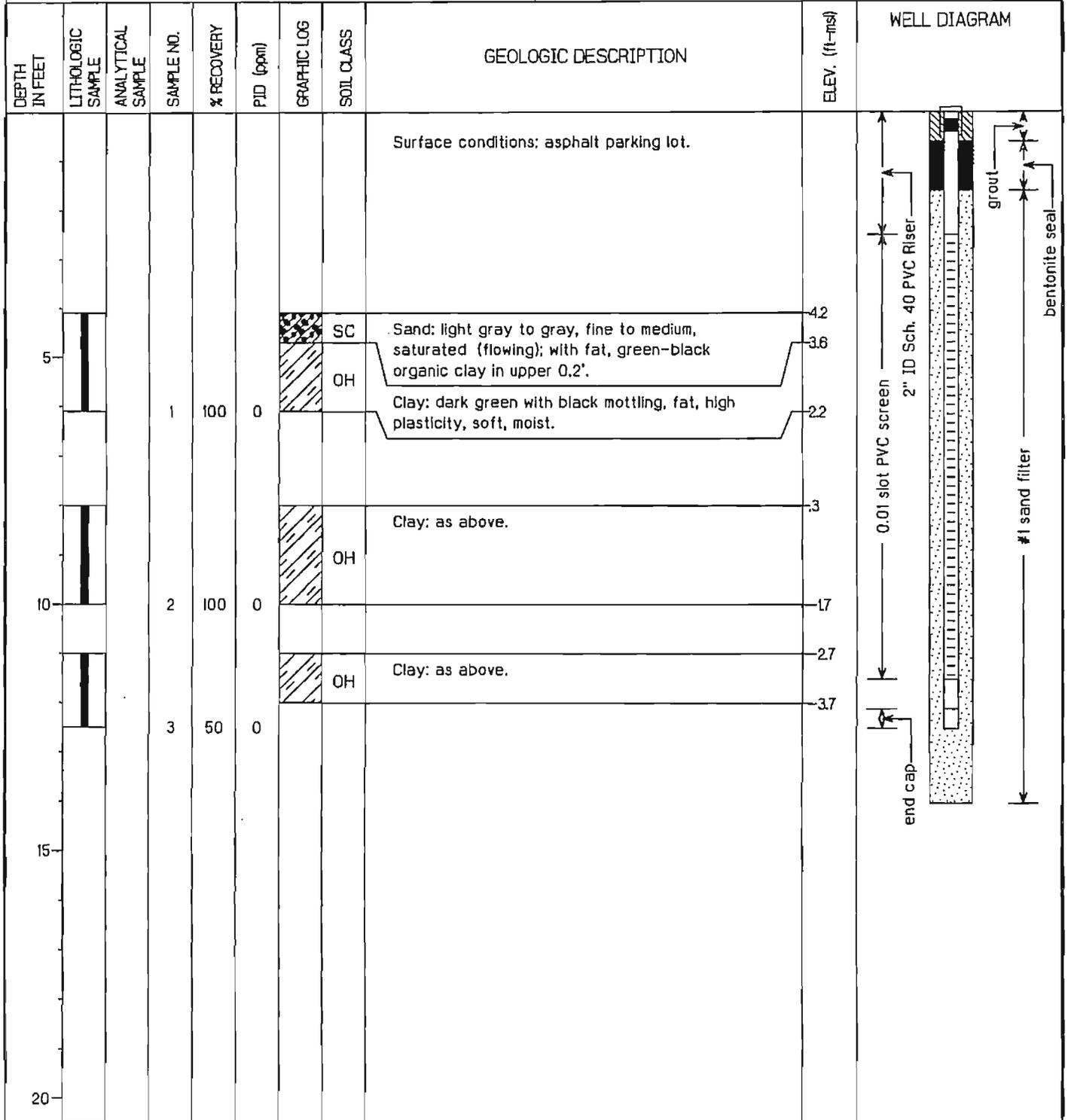
Groundwater Elevation: 5.15 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE59001D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319148.72 E, 374836.34 N

Location: Charleston, SC

Surface Elevation: 8.1 feet msl

Started at 1405 on 1-8-96

TOC Elevation: 7.97 feet msl

Completed at 1620 on 1-8-96

Depth to Groundwater: 4.26 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

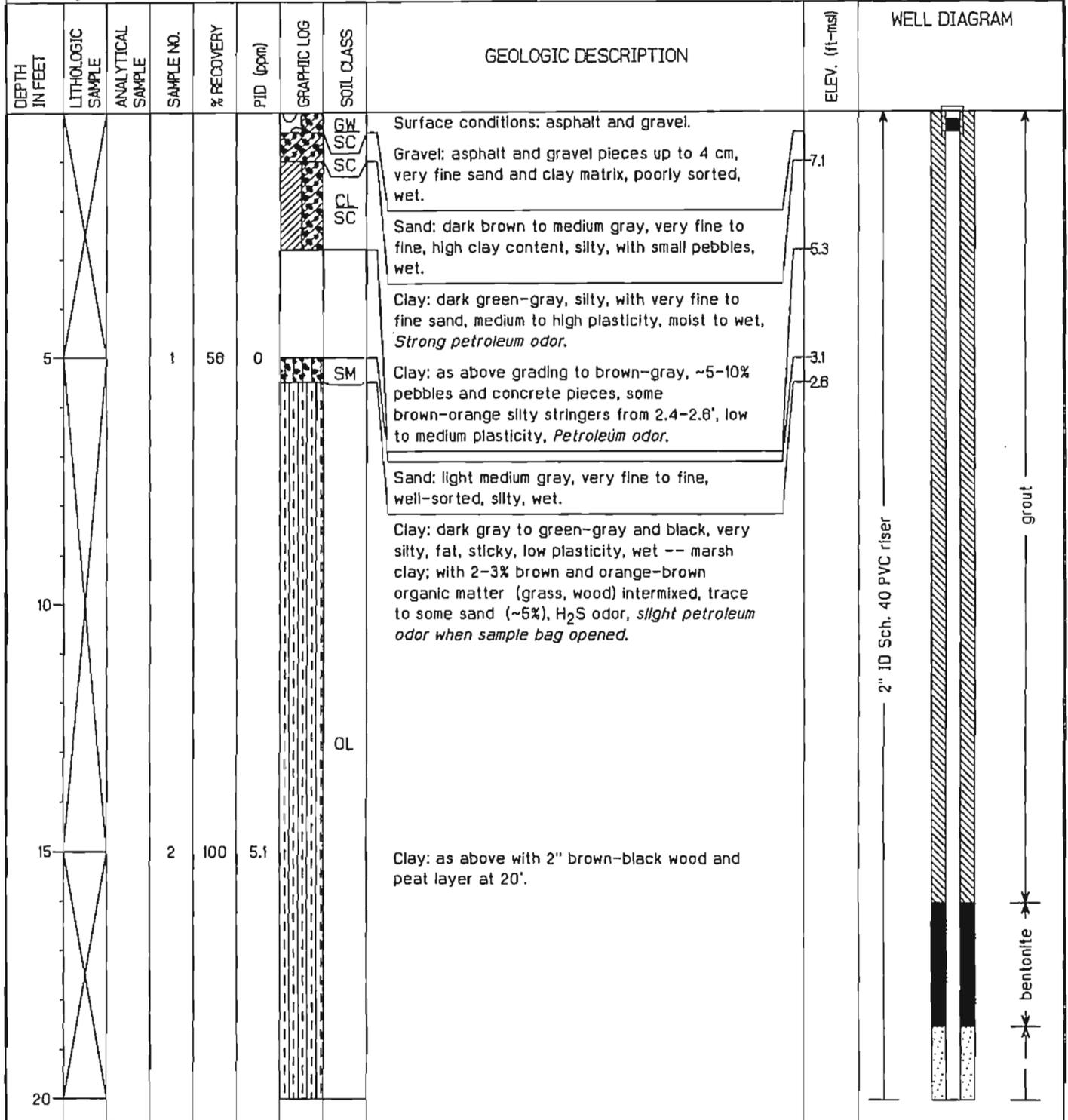
Groundwater Elevation: 3.61 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 30.0 feet bgs

Geologist: T. Kafka

Well Screen: 20.1 to 29.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE59001D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319148.72 E, 374836.34 N

Location: Charleston, SC

Surface Elevation: 8.1 feet msl

Started at 1405 on 1-8-96

TOC Elevation: 7.87 feet msl

Completed at 1620 on 1-8-96

Depth to Groundwater: 4.26 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 3.61 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 30.0 feet bgs

Geologist: T. Kafka

Well Screen: 20.1 to 29.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							OL			
							SM ML	Sand: light medium gray, very fine to fine, well-sorted, grades into phosphatic sand with silt at 22.2', some clay, wet; few oyster shells in upper 0.1' up to 4 cm diameter.	13.9 14.9	
25			3	80	3.3		SM ML	Sand: light gray to olive-brown, very fine to fine phosphatic sand comprising 60-70% of matrix, high silt content, some light tan to white clay of low plasticity.	16.9	
								Lag deposit 29.2-30' with <5% oyster shells up to 4-5 cm size, no PO ₄ nodules evident.		
30							ML CL	Silt: olive-brown, firm, low plasticity, moist to wet; some PO ₄ sand pods at 30.2', 30.4', 30.7', 32.1'; trace very fine sand in matrix, clayey, trace effervescence with HCl; some 0.5-1 cm PO ₄ nodules present (5-10%) in sand pods--Ashley Formation.	21.9	
35			4	100	0				26.9	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE596001

Project: ZONE E - Naval Base Charleston

Coordinates: 2319324.94 E, 374620.32 N

Location: Charleston, SC

Surface Elevation: 9.3 feet msl

Started at 1535 on 10-31-95

TOC Elevation: 9.10 feet msl

Completed at 1650 on 10-31-95

Depth to Groundwater: 4.67 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

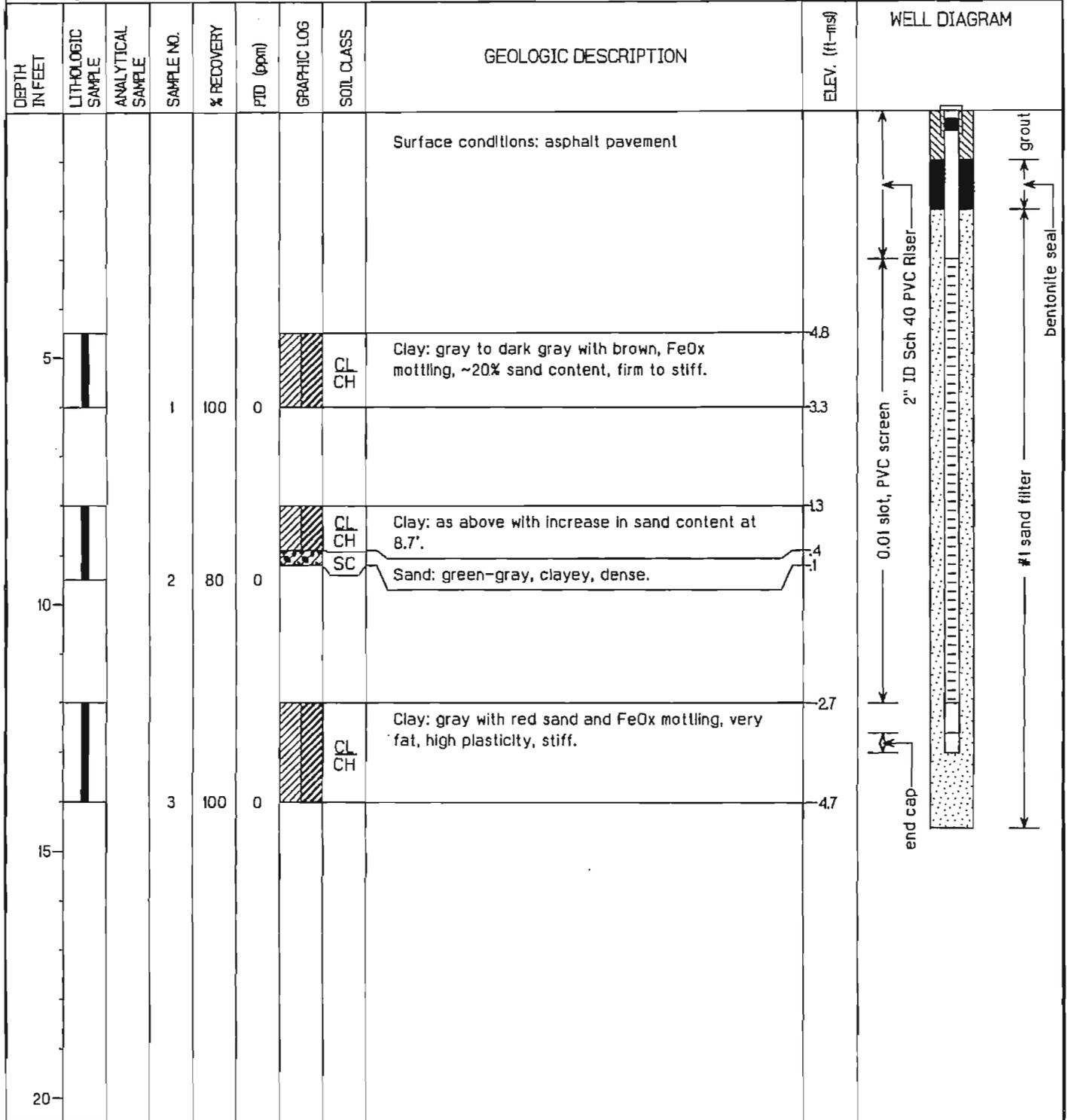
Groundwater Elevation: 4.43 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE59601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319347.53 E, 374608.31 N

Location: Charleston, SC

Surface Elevation: 9.6 feet msl

Started at 0940 on 12-13-95

TOC Elevation: 9.32 feet msl

Completed at 1110 on 12-13-95

Depth to Groundwater: 5.24 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

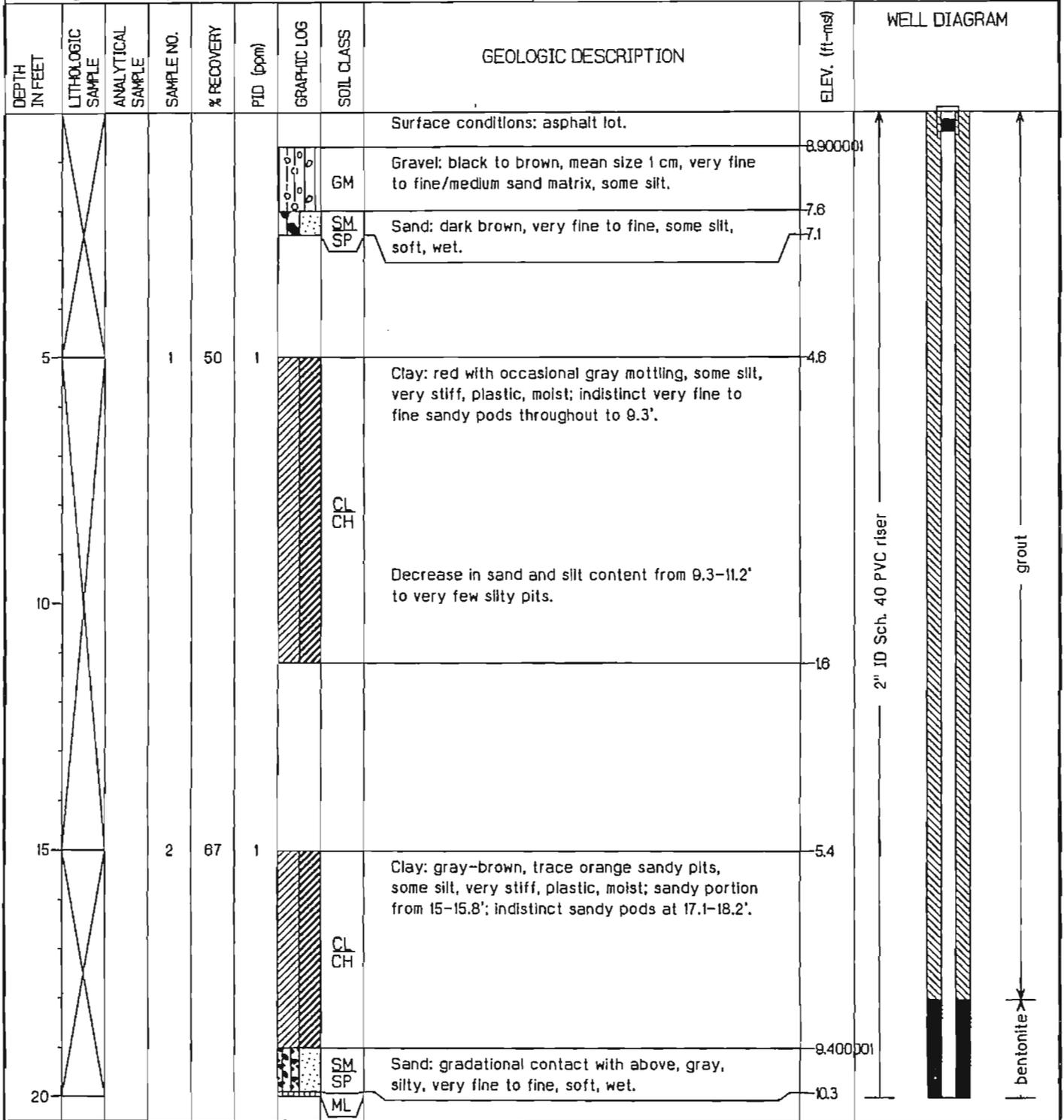
Groundwater Elevation: 4.08 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 33.6 feet bgs

Geologist: P. Bayley

Well Screen: 23.7 to 33.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE59601D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319347.53 E, 374608.31 N

Location: Charleston, SC

Surface Elevation: 9.6 feet msl

Started at 0940 on 12-13-95

TOC Elevation: 9.32 feet msl

Completed at 1110 on 12-13-95

Depth to Groundwater: 5.24 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 4.08 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 33.6 feet bgs

Geologist: P. Bayley

Well Screen: 23.7 to 33.1 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	1		ML	Silt: olive-brown, some black very fine phosphatic sand, trace to some clay, soft, plastic, wet.		
30								Lag deposit at 32-33': matrix supported oyster shells.		
35			4	100	1		CL	Silt: olive-brown, clayey, firm to stiff, plastic, moist to wet-- Ashley Formation.	23.4 25.4	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCE596002

Project: ZONE E ~ Naval Base Charleston

Coordinates: 2319356.00 E, 374587.69 N

Location: Charleston, SC

Surface Elevation: 9.5 feet msl

Started at 1035 on 10-31-95

TOC Elevation: 9.29 feet msl

Completed at 1430 on 10-31-95

Depth to Groundwater: 5.02 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 4.27 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: T. Kafka

Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PIID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt pavement		
5			1	100	0		CL CH	Clay: gray with orange-brown mottling, trace very fine sand, high amount FeOx minerals, medium to high plasticity, soft to firm, moist to wet.	4.8 3.3	
10			2	87	0		CL CH	Clay: gray to olive brown-green, less FeOx than above, increased sand content; red and gray mottling from 9.3-9.5'.	1.5 2	
15			3	100	0		CL CH	Clay: gray with red mottling, lower sand content than above with two FeOx-rich layers at 12.2 and 12.3', firm to stiff, very fat.	2.5 4.5	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE596003

Project: ZONE E - Naval Base Charleston

Coordinates: 2319165.47 E, 374502.46 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 1505 on 10-30-95

TOC Elevation: 9.05 feet msl

Completed at 1700 on 10-30-95

Depth to Groundwater: 3.33 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

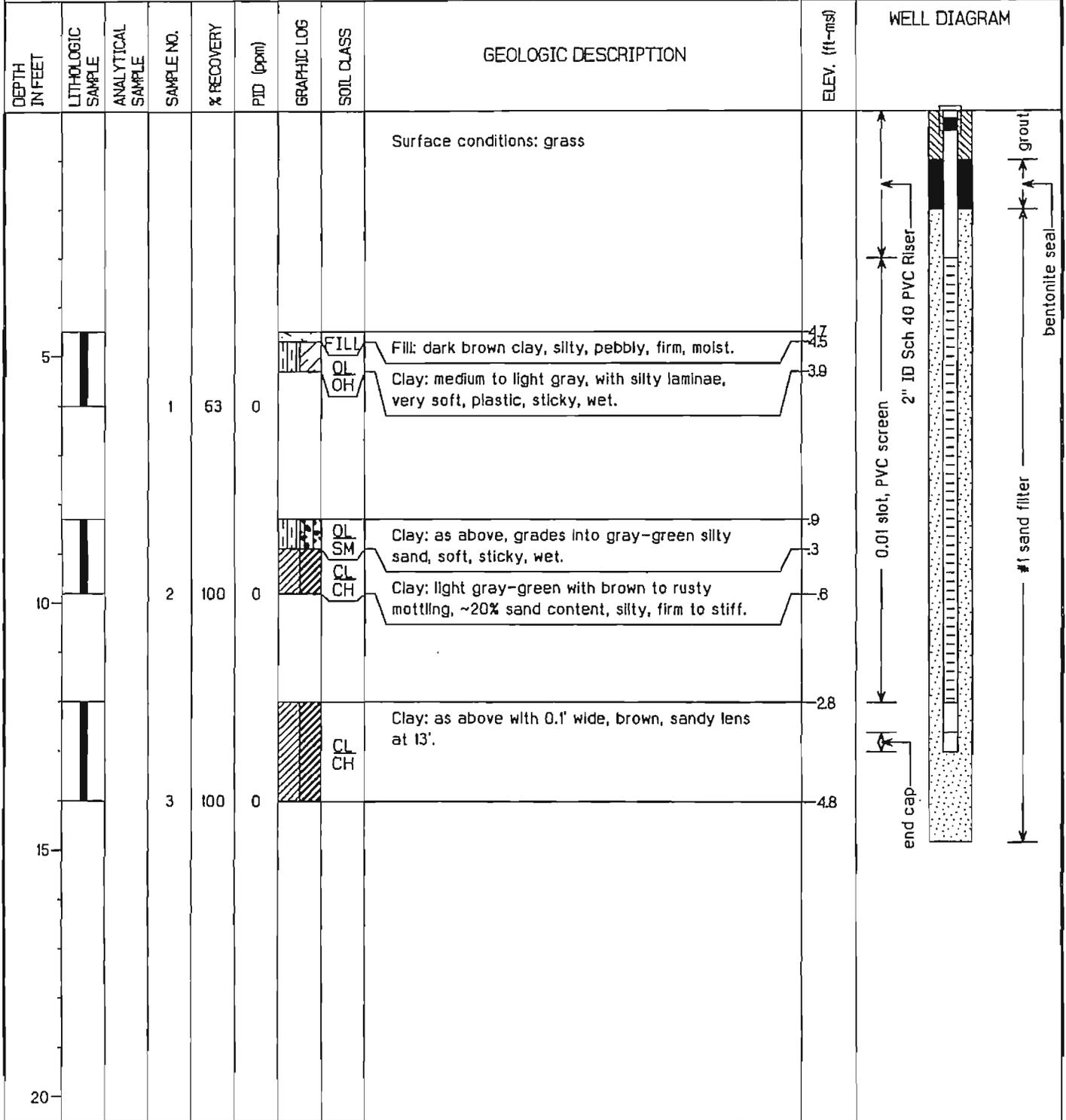
Groundwater Elevation: 5.72 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE596004

Project: ZONE E - Naval Base Charleston

Coordinates: 2319209.58 E, 374442.85 N

Location: Charleston, SC

Surface Elevation: 9.3 feet msl

Started at 0930 on 10-30-95

TOC Elevation: 8.90 feet msl

Completed at 1415 on 10-30-95

Depth to Groundwater: 3.53 feet TOC Measured: 3/13/95

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 5.37 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: grass		
5			1	73	0		CH	Clay: gray with brown-red mottling, firm to stiff, moist.	4.8	
									3.7	
10			2	80	0		CH	Clay: as above, with increasing sand content at 8.8-9' (~25%), moist.	1.3	
									0.1	
								Shelby tube (10-12.5'): top and bottom -- clay as above.	0.7	
			3	100	0		CH		3.2	
									3.7	
15			4	100	0		CH	Clay: light gray with red mottling, approximately 25% sand, wet.	5.7	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE59604D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319179.91 E, 374476.88 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0930 on 12-16-95

TOC Elevation: 9.23 feet msl

Completed at 1100 on 12-16-95

Depth to Groundwater: 5.04 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

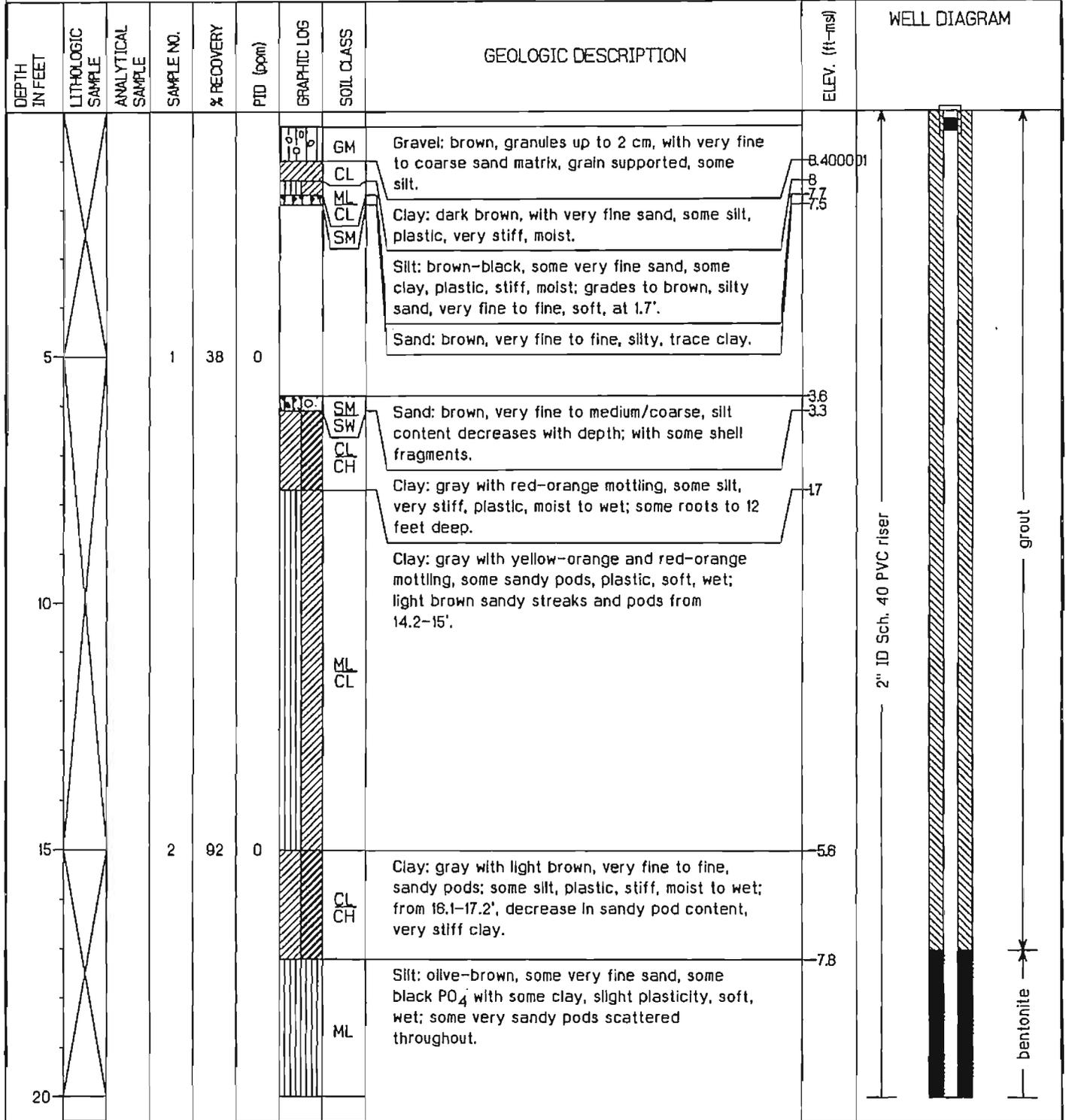
Groundwater Elevation: 4.19 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 32.1 feet bgs

Geologist: P. Bayley

Well Screen: 22.2 to 31.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE59604D

Project: ZONE E - Naval Base Charleston

Coordinates: 231979.91 E, 374476.88 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0930 on 12-16-95

TOC Elevation: 9.23 feet msl

Completed at 1100 on 12-16-95

Depth to Groundwater: 5.04 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

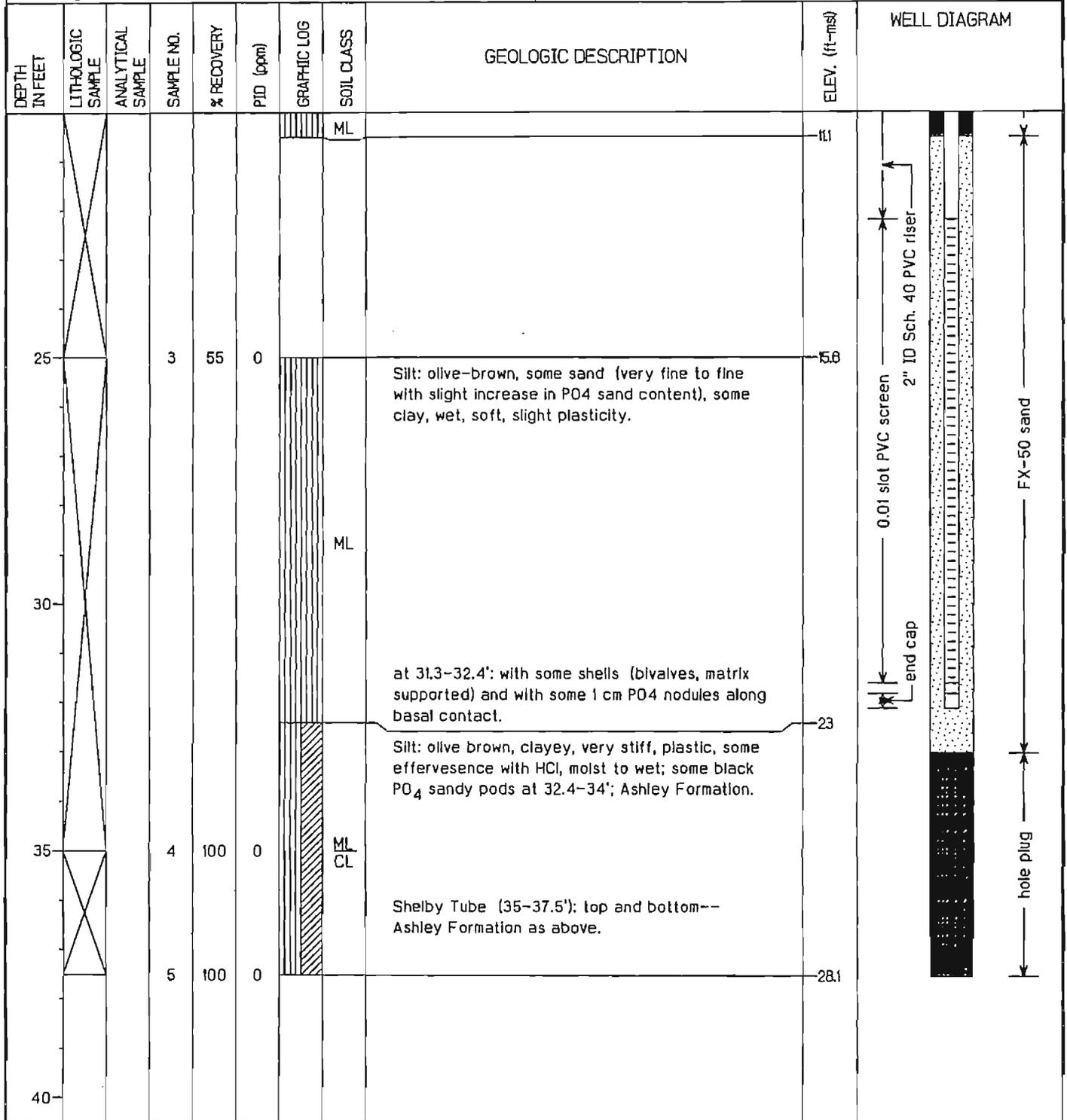
Groundwater Elevation: 4.19 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 32.1 feet bgs

Geologist: P. Bayley

Well Screen: 22.2 to 31.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE598001

Project: ZONE E - Naval Base Charleston

Coordinates: 2319876.16 E, 374371.93 N

Location: Charleston, SC

Surface Elevation: 8.1 feet msl

Started at 1620 on 10-11-95

TOC Elevation: 7.98 feet msl

Completed at 0910 on 10-12-95

Depth to Groundwater: 4.56 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

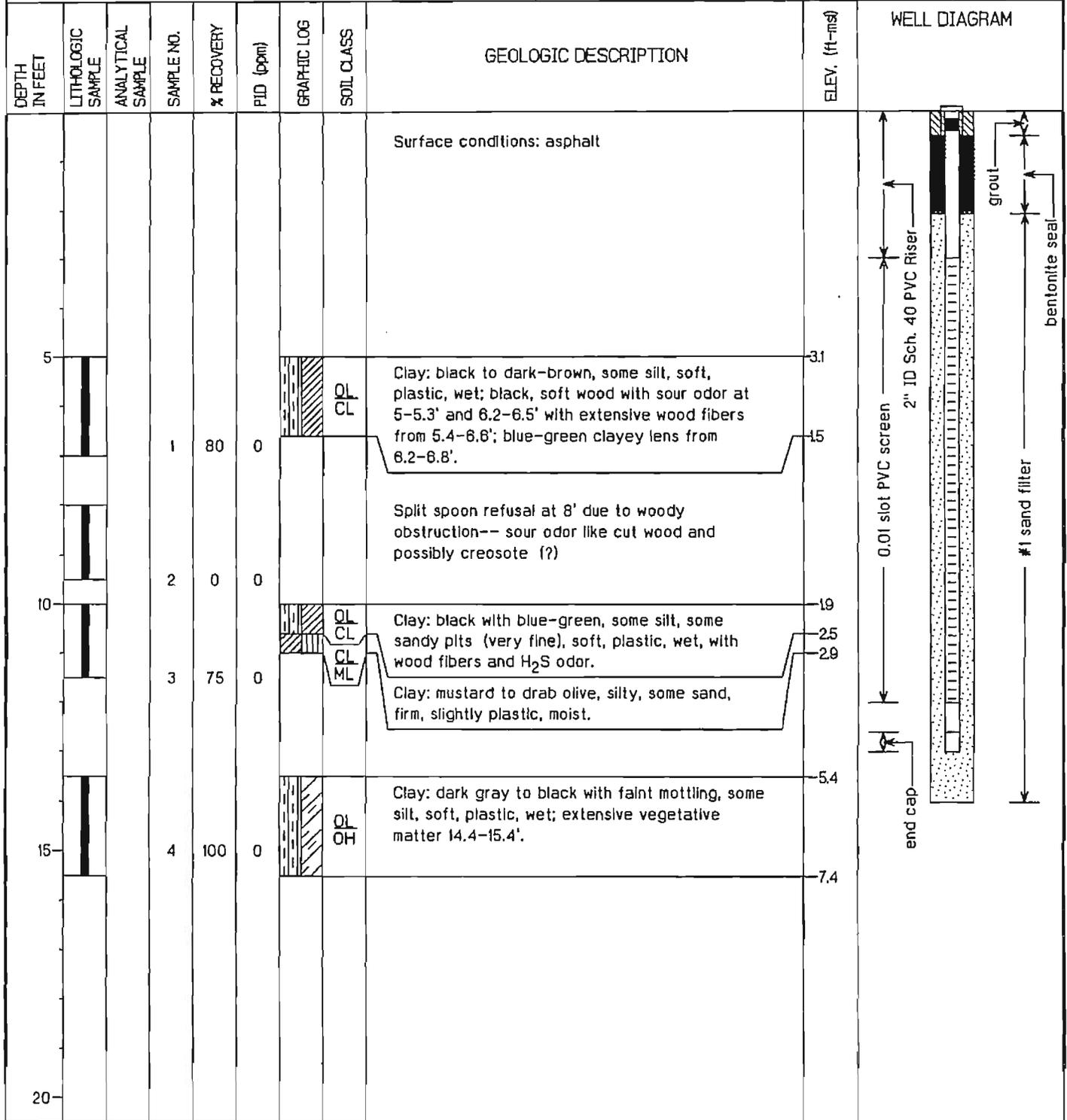
Groundwater Elevation: 3.42 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: P. Bayley

Well Screen: 3.0 to 12.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE599001

Project: ZONE E - Naval Base Charleston

Coordinates: 2319933.00 E, 374300.16 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1135 on 10-12-95

TOC Elevation: 8.38 feet msl

Completed at 1315 on 10-12-95

Depth to Groundwater: 5.31 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

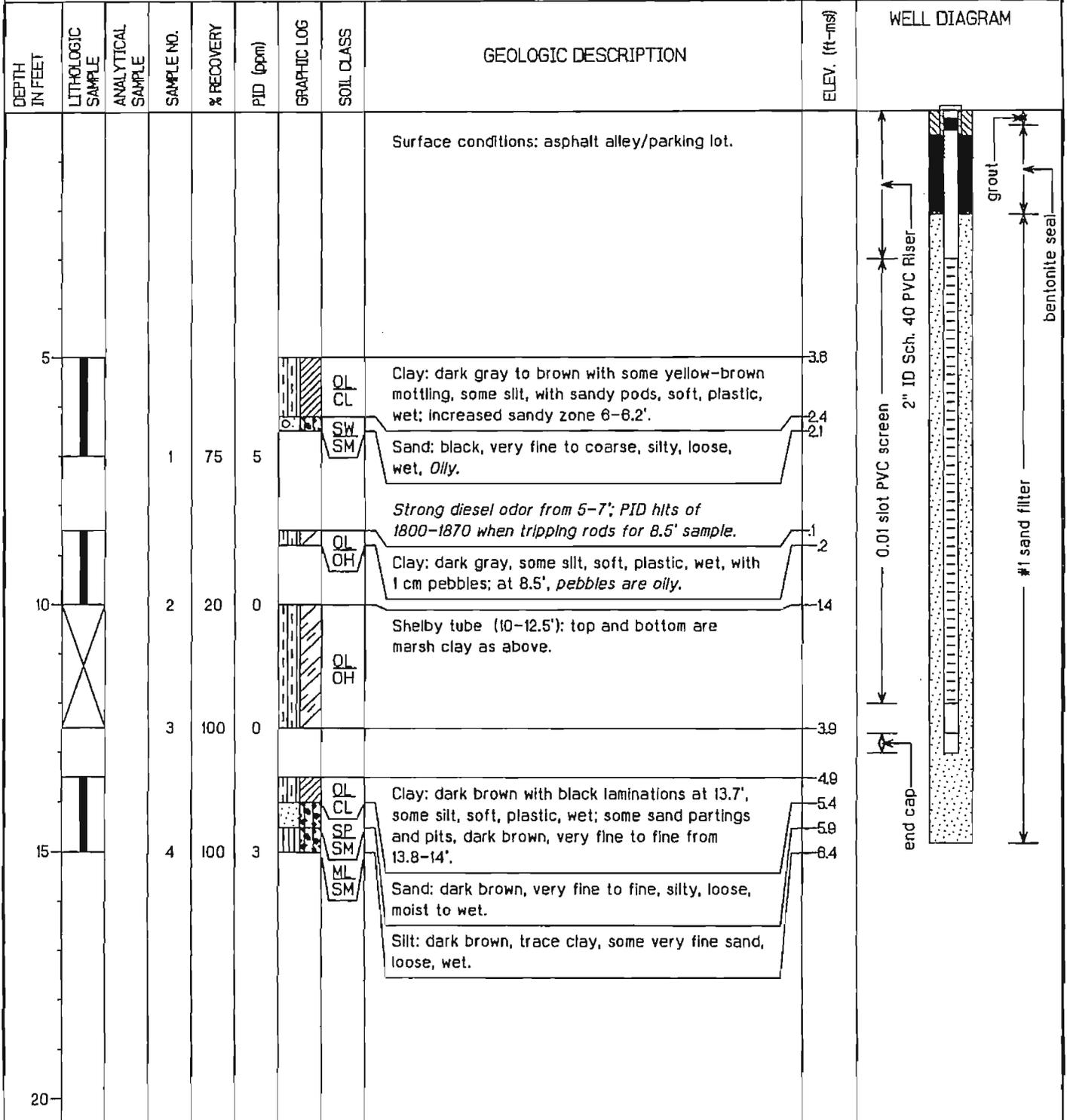
Groundwater Elevation: 3.07 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: P. Bayley

Well Screen: 3.0 to 12.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCE605001

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2320758.61 E, 373543.48 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.7 feet msl</i>
Started at <i>0915 on 10-16-95</i>	TOC Elevation: <i>9.51 feet msl</i>
Completed at <i>1100 on 10-16-95</i>	Depth to Groundwater: <i>9.05 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>0.46 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>15 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>5 to 14 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: grass/dirt near quaywall		<p>WELL DIAGRAM</p> <p>2" ID Sch. 40 PVC Riser</p> <p>0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>end cap</p> <p>grout</p>
5			1	80	0		SM SC	Sand: gray black to tan with black mottling, some silt, moderately well-sorted, increased clay content at 5.8', moist.	4.9 3.7	
10			2	55	3.3		SM SC OH OL	Sand: dark gray to olive brown, very fine to fine, well-sorted, with 0.03' wide gray clay stringers, saturated, wood fragments in top 0.2'. Clay: dark gray to black, silty, small wood fibers, moderate plasticity, wet--"marsh clay."	13 6 2	
15			3	100	0		SC	Sand: tan to gray, very fine to fine, clayey stringers and pods throughout, wood fragments at 12.9'.	24 3.9	
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE605002

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2320699.34 E, 373447.06 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>6.6 feet msl</i>
Started at <i>1235 on 10-16-95</i>	TOC Elevation: <i>9.30 feet msl</i>
Completed at <i>0945 on 10-17-95</i>	Depth to Groundwater: <i>7.08 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.24 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>3 to 12 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: large cobbles and fill Auger cuttings 0-3.5': gravel with wood fragments, dark black, wet with slight oily sheen.		
5			1	0			Wood pieces block spoon: strong pine and creosote odor. PID 50-70 ppm downhole.			
10			2	70	0	SM SC CL	Sand: tan to olive brown, very fine to fine, well to moderately well-sorted, clay pods, silty, saturated.	2 3 3.4		
11.3-12.8							Wood pieces blocked spoon from 11.3-12.8.			
15			3	87	0	OH OL	Clay: black to dark gray with patches of green gray, silty, trace of very fine sand, littered with wood fragments, moderately plastic, wet.	5.8 7.2		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCE605003

Project: ZONE E - Naval Base Charleston

Coordinates: 232051227 E, 37337119 N

Location: Charleston, SC

Surface Elevation: 8.4 feet msl

Started at 0905 on 10-12-95

TOC Elevation: 11.01 feet msl

Completed at 1120 on 10-12-95

Depth to Groundwater: 5.88 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 5.13 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: gravel next to drum storage in 1278.		
0.4						FILL		Fill: ROC, with wood, pebbles, gravel, and heavy petroleum odor.		
1.8			1	20	0	FILL OH OL		Fill: wood with pebbles and gravel, wet, oily sheen.		
2.4			2	50	0			Clay: dark gray to black, trace medium sand, with brown wood/grass silvers, minor iron oxide pits, silty, organic-rich, wet, medium to high plasticity.		
5								Offset due to obstruction at 4.5' bgs, probably a piling.		
10										
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE001

Project: ZONE E - Naval Base Charleston

Coordinates: 2320189.49 E, 373486.64 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 1430 on 10-2-95

TOC Elevation: 9.06 feet msl

Completed at 1715 on 10-2-95

Depth to Groundwater: 6.10 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

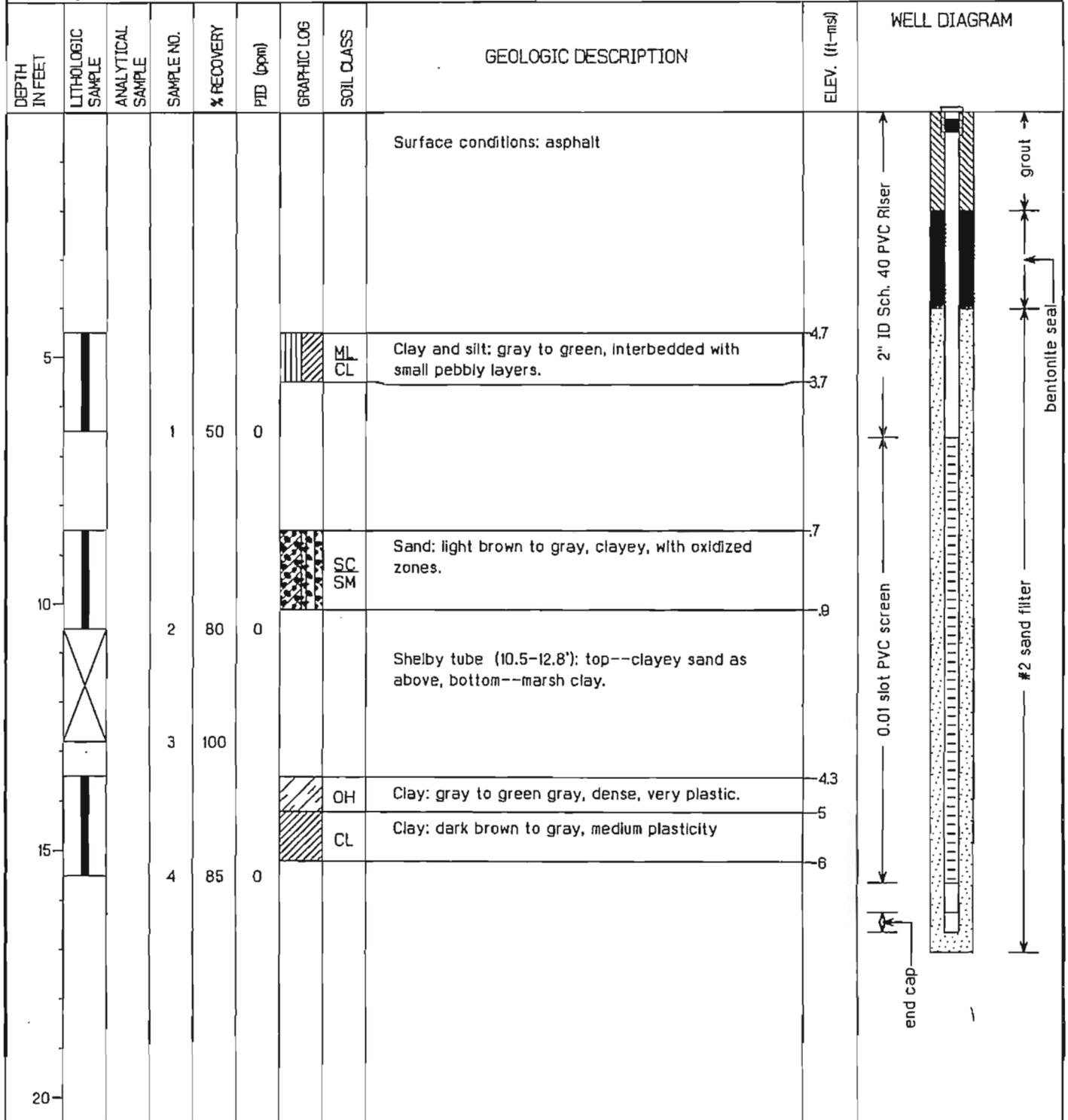
Groundwater Elevation: 2.96 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 16.6 feet bgs

Geologist: J. Williams

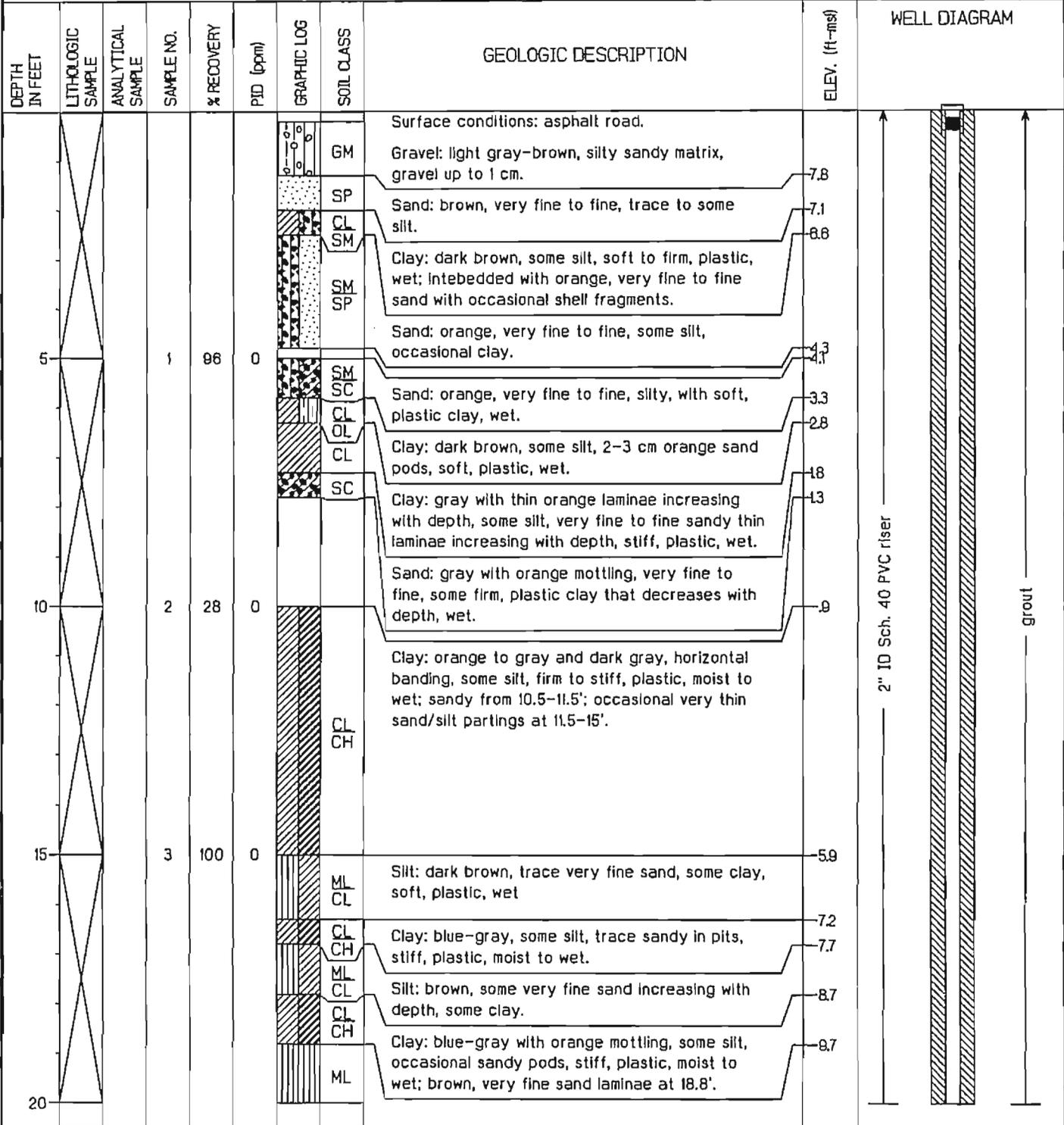
Well Screen: 6.6 to 15.6 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE01D

Project: ZONE E - Naval Base Charleston	Coordinates: 2320180.21E, 373507.93 N
Location: Charleston, SC	Surface Elevation: 9.1 feet msl
Started at 0850 on 12-01-95	TOC Elevation: 8.83 feet msl
Completed at 1145 on 12-01-95	Depth to Groundwater: 6.07 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.76 feet msl
Drilling Company: Alliance Environmental (SC Cert #889)	Total Well Depth: 35.5 feet bgs
Geologist: P. Bayley	Well Screen: 25.6 to 35.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE01D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320180.21 E, 373507.93 N

Location: Charleston, SC

Surface Elevation: 9.1 feet msl

Started at 0850 on 12-01-95

TOC Elevation: 8.83 feet msl

Completed at 1145 on 12-01-95

Depth to Groundwater: 6.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

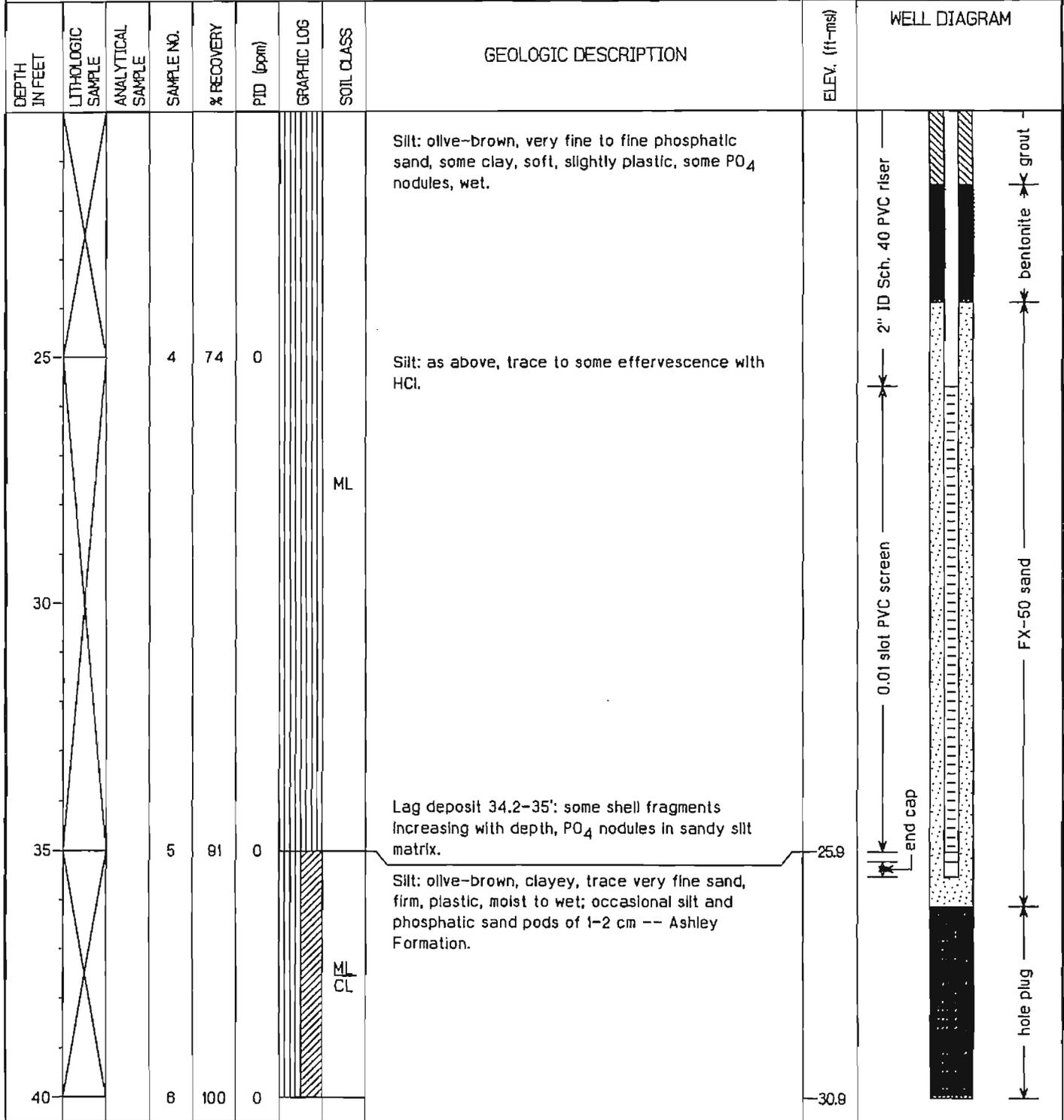
Groundwater Elevation: 2.76 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 35.5 feet bgs

Geologist: P. Bayley

Well Screen: 25.6 to 35.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE002

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2325068.37 E, 373697.50 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.1 feet msl</i>
Started at <i>1110 on 9-27-95</i>	TOC Elevation: <i>8.98 feet msl</i>
Completed at <i>1200 on 9-28-95</i>	Depth to Groundwater: <i>10.53 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>-155 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>16.3 feet bgs</i>
Geologist: <i>P. Bayley</i>	Well Screen: <i>6.0 to 15.0 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt pavement near quaywall. Lithology from 2 different holes due to an underground obstruction.		
5			1	80	0	SC	Sand: dark gray-black to green, interbedded with distinct laminae, some clay, silty, medium plasticity; spongy wood encountered at 6.6'.	3.3 2.1		
10			2	100	0	SC CL	Cuttings from 7-9.5': 0.8' asphalt and ROC; 0.7' dark brown sandy silt; 1' orange, very fine sand; becomes blue-green clay, silty with some sand.	4 2.4		
15			3	85	0	CL CH	Clay: gray, soft to firm, plastic, wet; very fine to fine sandy lens at 14.5-15.2'; grades into olive drab clay, with very fine to fine sand, soft, plastic, moist or wet.	5.4 7.1		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE02D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320582.70 E, 373684.06 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0945 on 12-11-95

TOC Elevation: 8.75 feet msl

Completed at 1125 on 12-11-95

Depth to Groundwater: 10.29 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

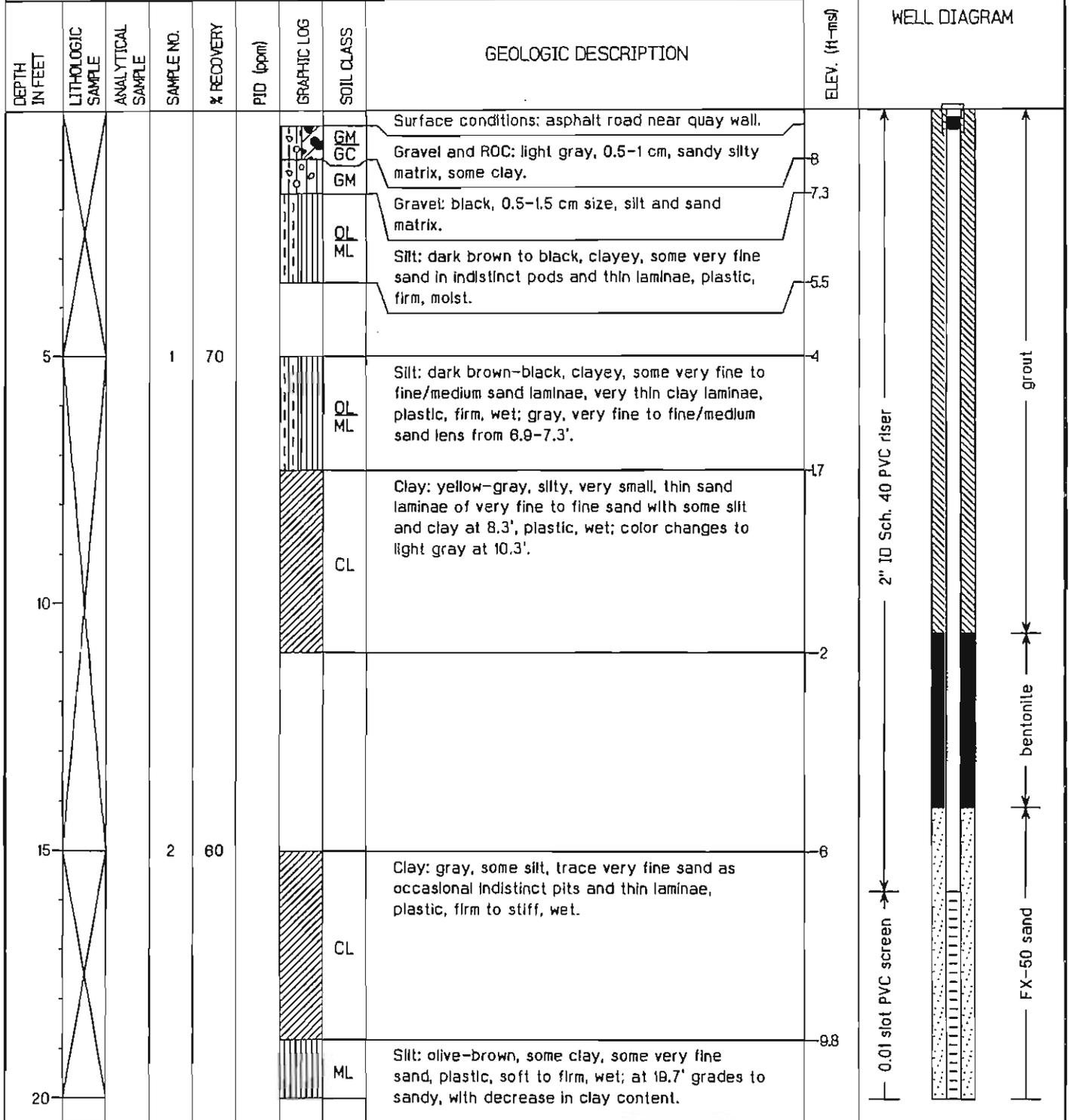
Groundwater Elevation: -1.54 feet msl

Drilling Company: Alliance Environmental (SC Cert #8889)

Total Well Depth: 25.7 feet bgs

Geologist: P. Bayley (REVISED 1-10-97)

Well Screen: 15.8 to 25.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE02D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320582.70 E, 373684.06 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 0945 on 12-11-95

TOC Elevation: 8.75 feet msl

Completed at 1125 on 12-11-95

Depth to Groundwater: 10.29 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: -154 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 25.7 feet bgs

Geologist: P. Bayley (REVISED 1-10-97)

Well Screen: 15.8 to 25.2 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	80			ML		14.1	<p>0.01 slot PVC screen end cap FX-50 sand</p>
30						ML	Silt: as above with oyster shell lag bed at 33.5-34'.	8		
35			4	98			ML CL	Silt: olive-brown, clayey, firm, plastic, wet, effervescent with HCl -- Ashley Formation.	25 26	
40										

REVISED WELL CONSTRUCTION LOG
DATE--10JAN97

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE2D1

Project: ZONE E - Naval Base Charleston

Coordinates: 2320557.67 E, 373709.80 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 0830 on 9-13-96

TOC Elevation: 8.95 feet msl

Completed at 1115 on 9-13-96

Depth to Groundwater: 10.75 feet TOC Measured: 1/8/97

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

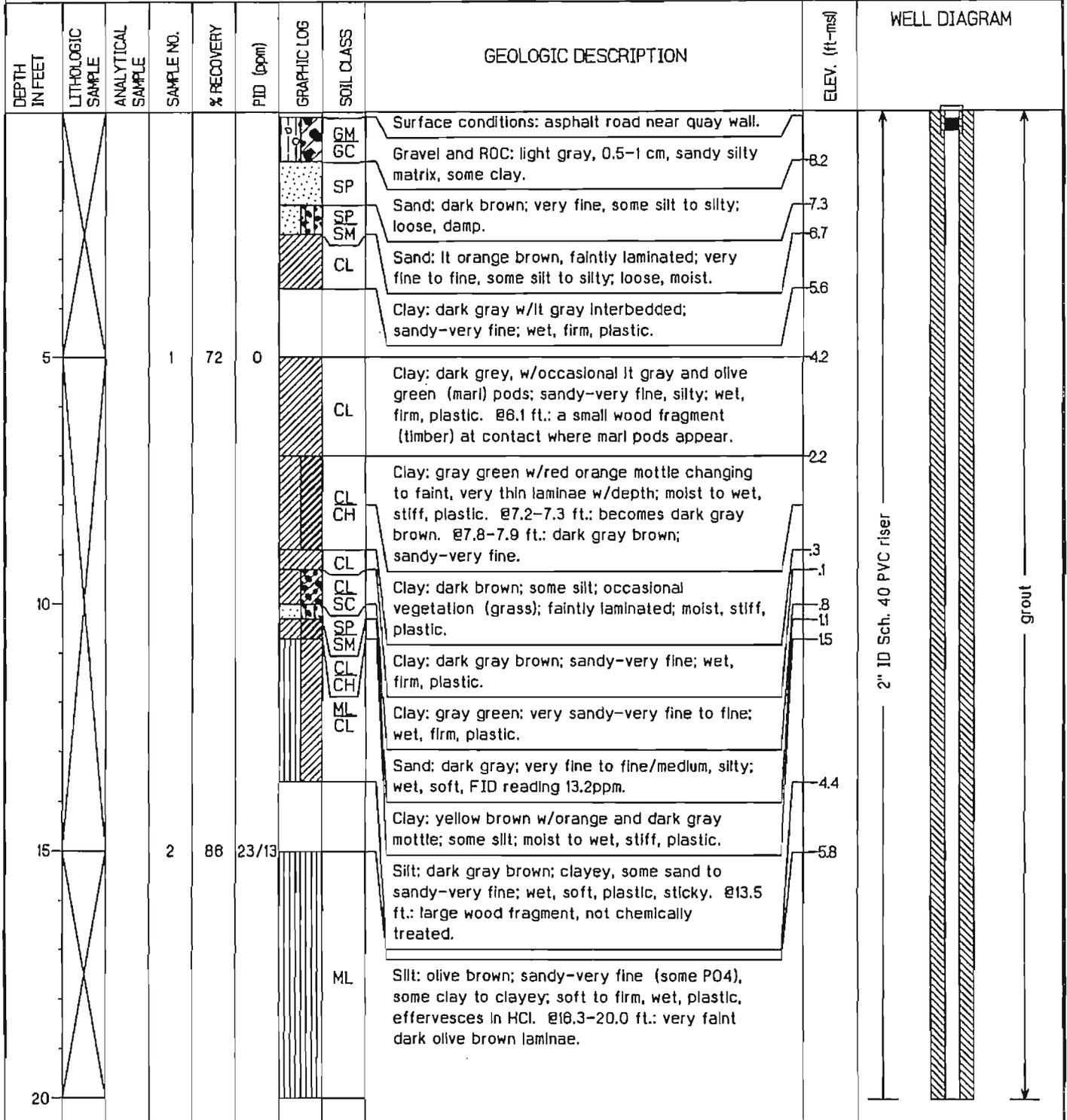
Groundwater Elevation: -1.80 feet msl

Drilling Company: Boart-Longyear (SC Cert #1232)

Total Well Depth: 34.5 feet bgs

Geologist: P. Bayley

Well Screen: 24.7 to 33.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE2D1

Project: ZONE E - Naval Base Charleston

Coordinates: 2320557.67 E, 373709.80 N

Location: Charleston, SC

Surface Elevation: 9.2 feet msl

Started at 0830 on 9-13-96

TOC Elevation: 8.95 feet msl

Completed at 1115 on 9-13-96

Depth to Groundwater: 10.75 feet TOC Measured: 1/8/97

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

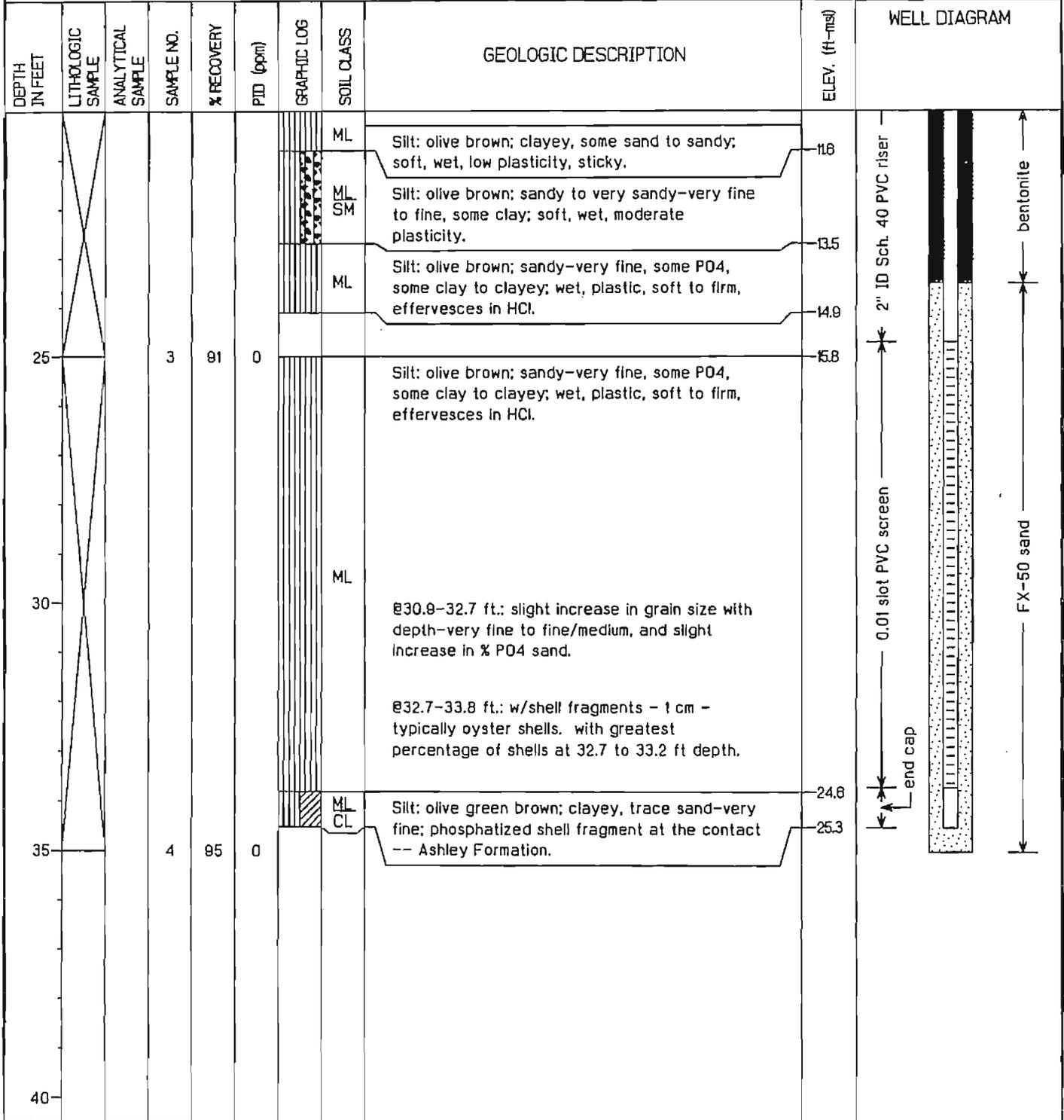
Groundwater Elevation: -1.80 feet msl

Drilling Company: Boart-Longyear (SC Cert #1232)

Total Well Depth: 34.5 feet bgs

Geologist: P. Bayley

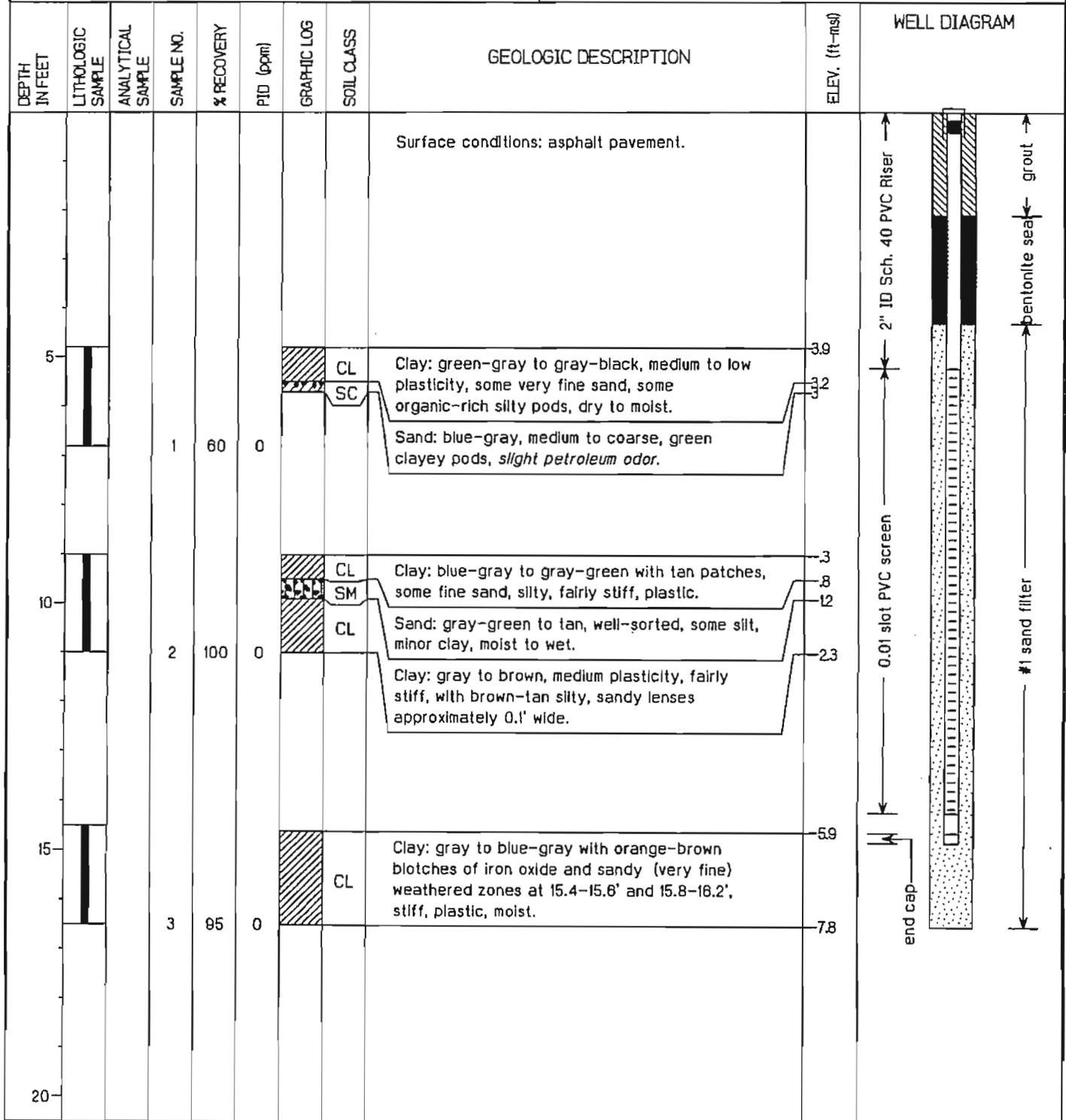
Well Screen: 24.7 to 33.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE003

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2320290.73 E, 373958.85 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.7 feet msl</i>
Started at <i>1450 on 9-28-95</i>	TOC Elevation: <i>8.50 feet msl</i>
Completed at <i>1235 on 9-29-95</i>	Depth to Groundwater: <i>8.22 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>0.28 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>14.8 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>5.2 to 14.2 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE03D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320294.94 E, 37396198 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1320 on 11-30-95

TOC Elevation: 8.41 feet msl

Completed at 1600 on 11-30-95

Depth to Groundwater: 8.09 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

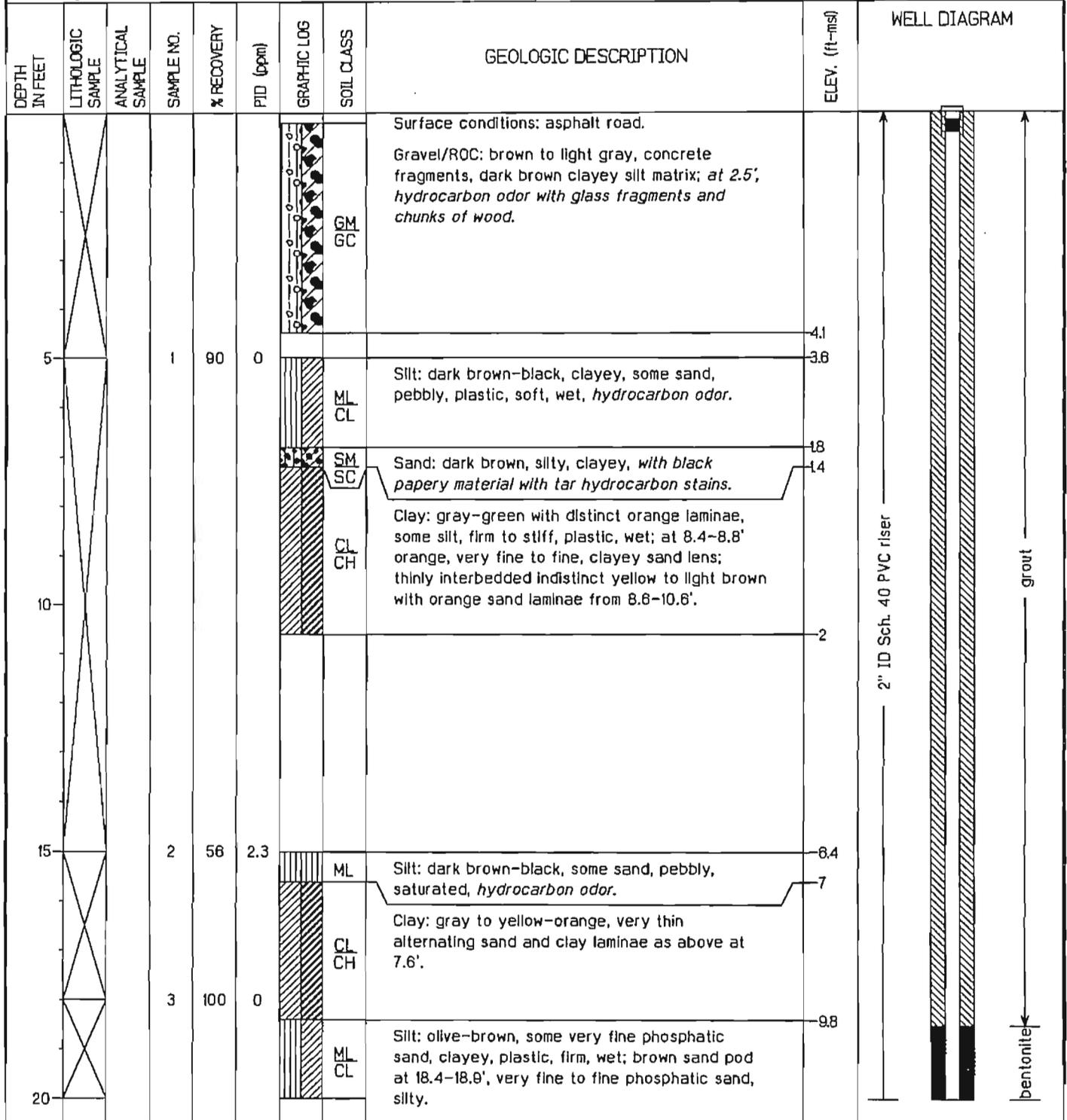
Groundwater Elevation: 0.32 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 32.6 feet bgs

Geologist: P. Bayley

Well Screen: 22.7 to 32.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE03D

Project: ZONE E - Naval Base Charleston

Coordinates: 2320294.94 E, 373961.98 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1320 on 11-30-95

TOC Elevation: 8.41 feet msl

Completed at 1600 on 11-30-95

Depth to Groundwater: 8.09 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 0.32 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 32.6 feet bgs

Geologist: P. Bayley

Well Screen: 22.7 to 32.1 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			4	100	0		ML CL	at 20.5-20.6', gray-brown, very fine to fine sand laminae with fine to medium shell fragments.		<p>2" ID Sch. 40 PVC riser</p> <p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>bentonite</p> <p>hole plug</p>
30			5	100	0		ML CL	Silt: as above; (significant sample expansion during coring). Lag deposit at 31.5-32': oyster shells, matrix supported.		
35			6	100	0		ML CL	Silt: olive-brown, clayey, trace very fine sand, firm, plastic, moist to wet; some silt pods with phosphatic sand from 33-33.5' about 1-3 cm size -- Ashley Formation.	23.4	
40									26.4	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE004

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2319698.50 E, 374309.44 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.3 feet msl</i>
Started at <i>1055 on 11-2-95</i>	TOC Elevation: <i>9.21 feet msl</i>
Completed at <i>1230 on 11-2-95</i>	Depth to Groundwater: <i>5.29 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>3.92 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>3.5 to 12.5 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt parking lot		
5			1	87	0		CH	Clay: brown to red with gray mottling, firm, stiff, moist.	5.8	
							SM	Sand: green, fine, silty, moist.	4.5	
10			2	80	0		CH	Clay: brown to red with gray mottling, with increased sand content at 9.3', moist to wet.	8.4	
15			3	100	0		CH	Clay: gray with iron oxide mottling throughout, firm, stiff, with increased sand content from 13.4-13.6'.	2.7	
20									4.7	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE04D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319686.13 E, 374298.52 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0850 on 11-29-95

TOC Elevation: 9.35 feet msl

Completed at 1630 on 11-29-95

Depth to Groundwater: 5.56 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

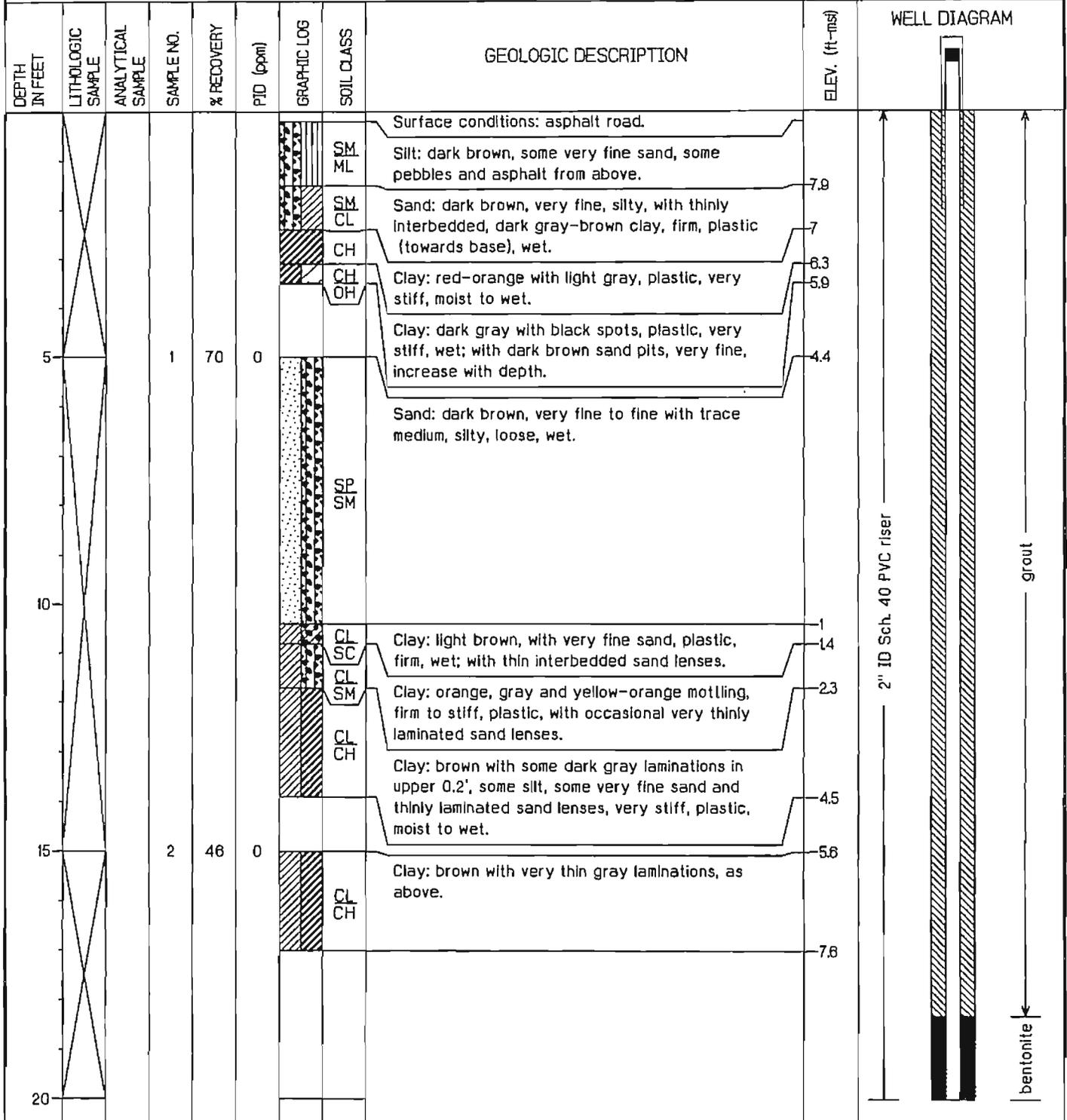
Groundwater Elevation: 3.79 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 33 feet bgs

Geologist: P. Bayley

Well Screen: 23.1 to 32.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE04D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319686.13 E, 374298.52 N

Location: Charleston, SC

Surface Elevation: 9.4 feet msl

Started at 0850 on 11-29-95

TOC Elevation: 9.35 feet msl

Completed at 1630 on 11-29-95

Depth to Groundwater: 5.56 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

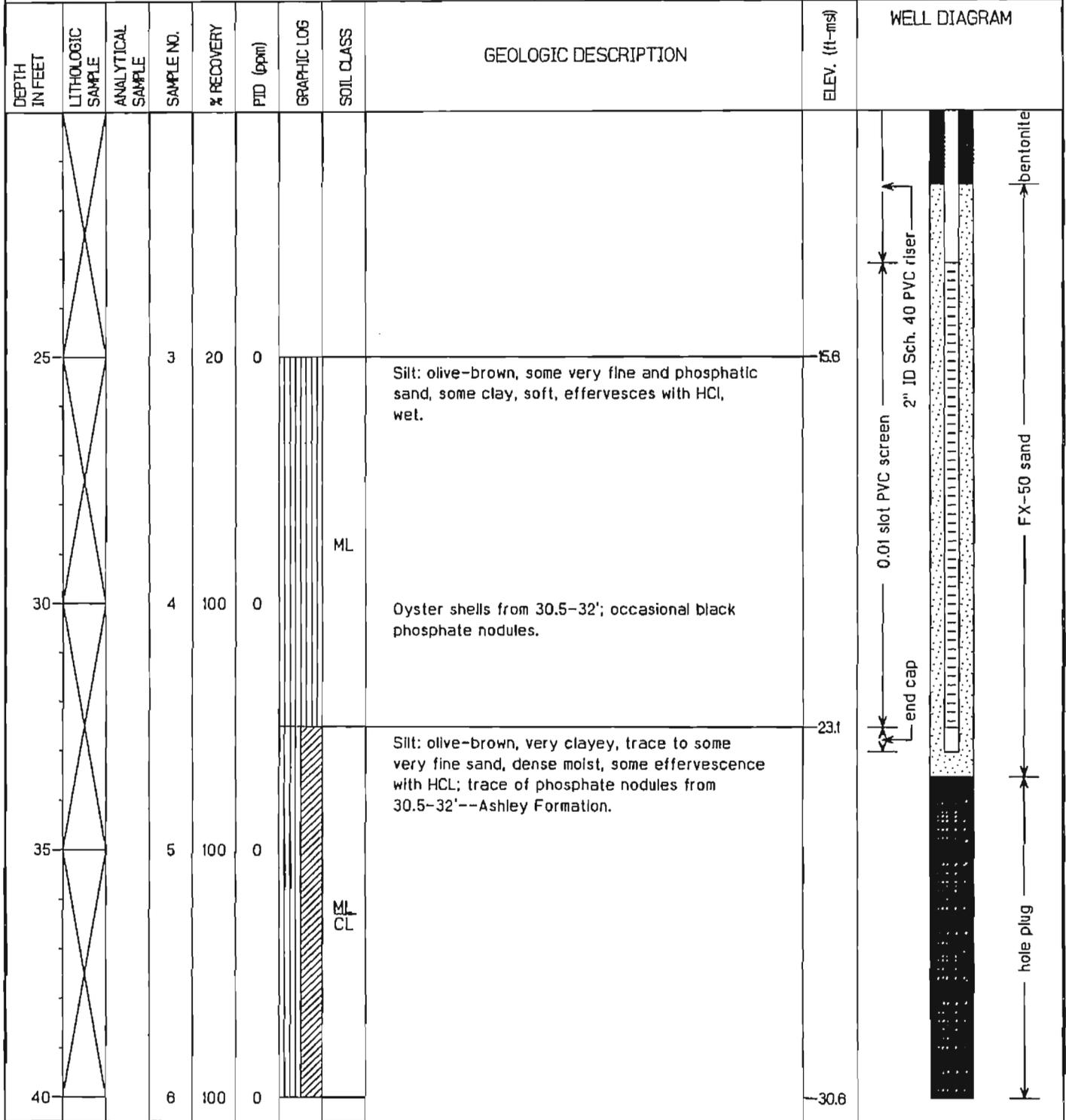
Groundwater Elevation: 3.79 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 33 feet bgs

Geologist: P. Bayley

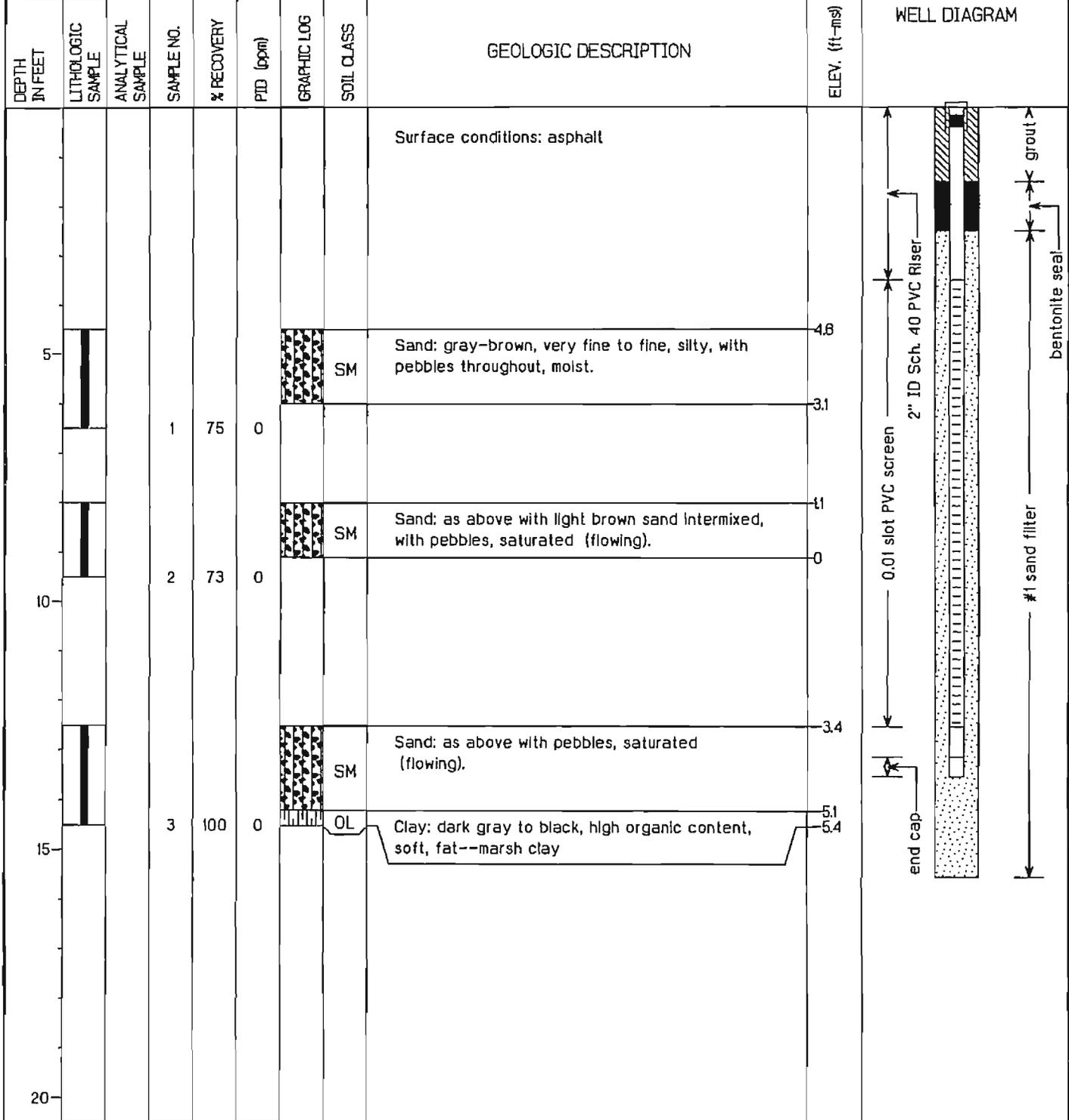
Well Screen: 23.1 to 32.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE005

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2319494.44 E, 374840.00 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.1 feet msl</i>
Started at <i>0815 on 11-2-95</i>	TOC Elevation: <i>8.88 feet msl</i>
Completed at <i>0940 on 11-2-95</i>	Depth to Groundwater: <i>8.92 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>1.96 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.5 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>3.5 to 12.5 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE05D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319448.10 E, 374857.99 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1430 on 12-11-95

TOC Elevation: 8.70 feet msl

Completed at 1615 on 12-11-95

Depth to Groundwater: 6.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

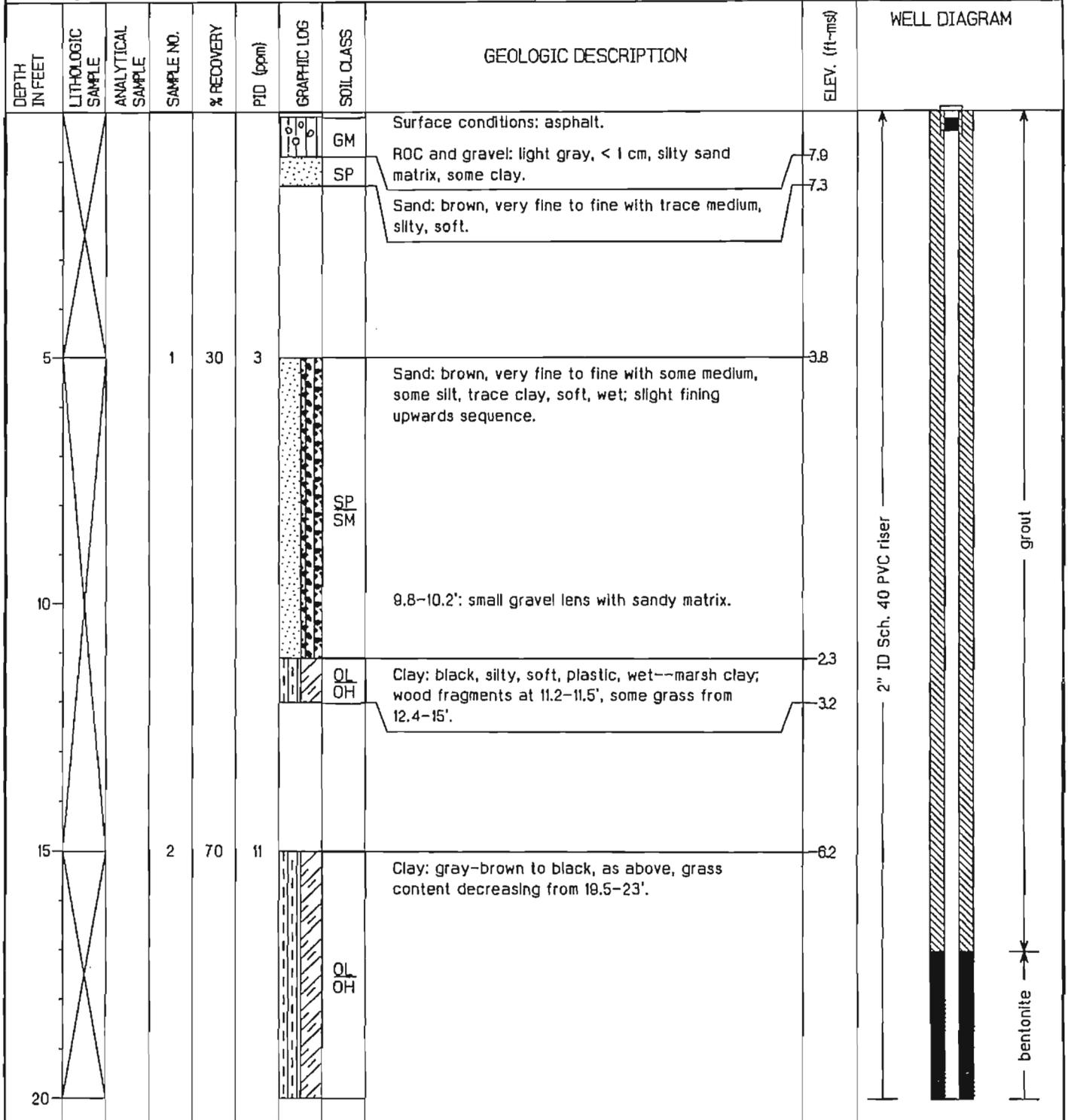
Groundwater Elevation: 2.63 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.3 feet bgs

Geologist: P. Bayley

Well Screen: 21.4 to 30.8 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE05D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319448.10 E, 374857.99 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1430 on 12-11-95

TOC Elevation: 8.70 feet msl

Completed at 1615 on 12-11-95

Depth to Groundwater: 6.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

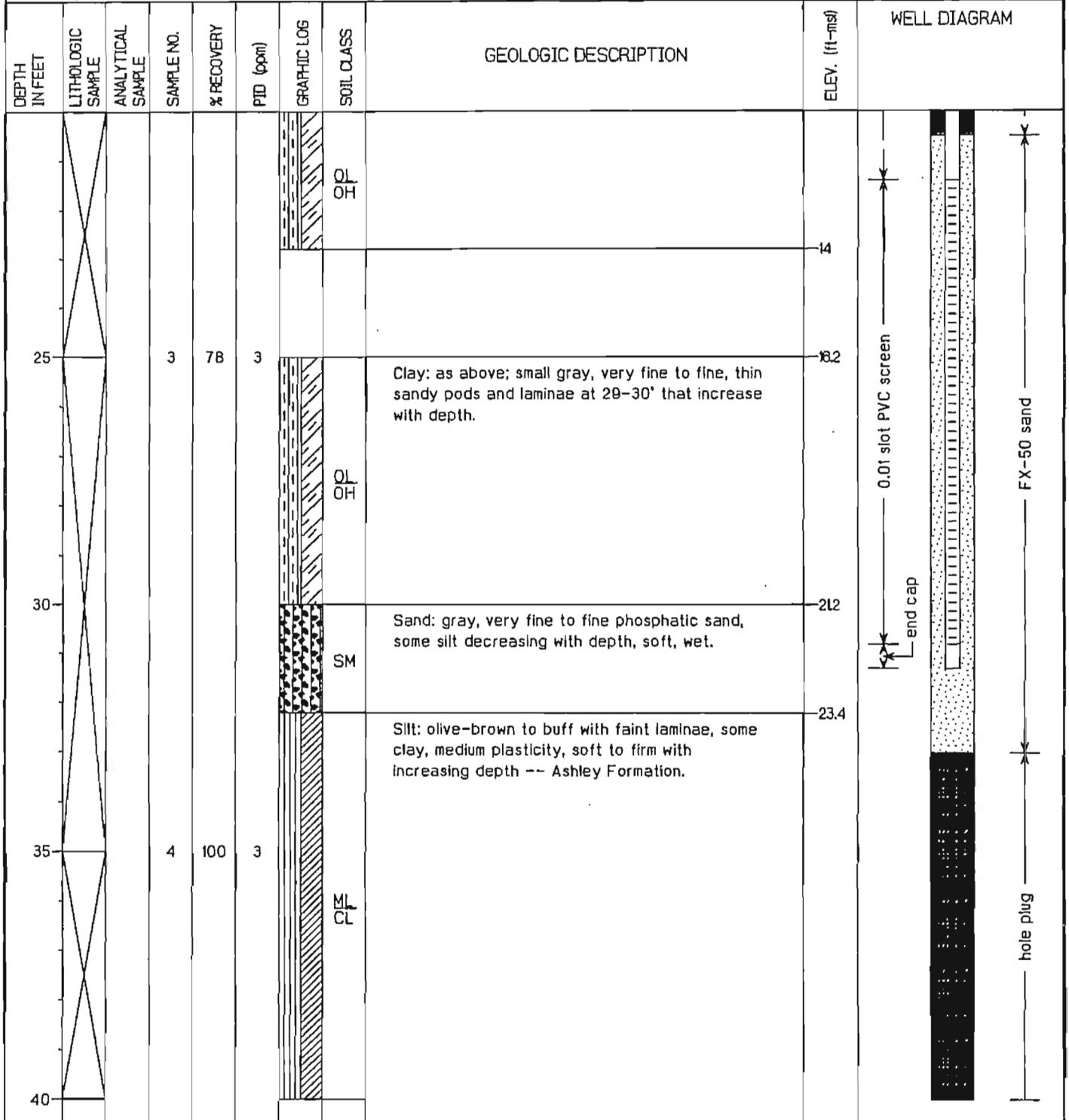
Groundwater Elevation: 2.63 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.3 feet bgs

Geologist: P. Bayley

Well Screen: 21.4 to 30.8 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE05D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319448.10 E, 374857.99 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1430 on 12-11-95

TOC Elevation: 8.70 feet msl

Completed at 1615 on 12-11-95

Depth to Groundwater: 6.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (8.5" OD casing, 3.8" ID coring bit)

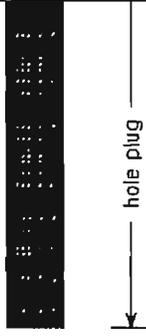
Groundwater Elevation: 2.63 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.3 feet bgs

Geologist: P. Bayley

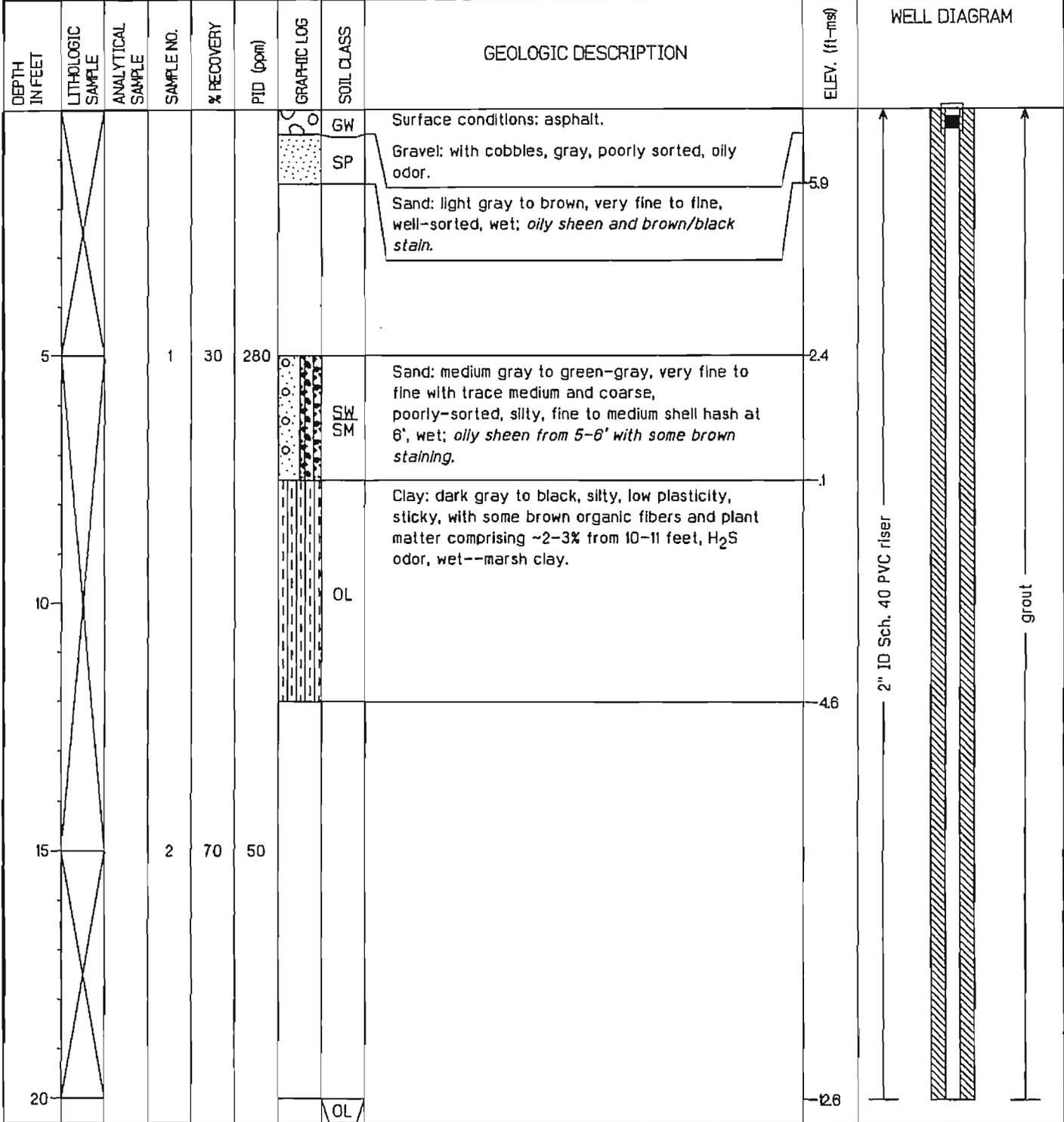
Well Screen: 21.4 to 30.8 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	3		CL		38.2	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE06D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2319039.74 E, 374820.06 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>7.4 feet msl</i>
Started at <i>1450 on 1-5-96</i>	TOC Elevation: <i>7.12 feet msl</i>
Completed at <i>1650 on 1-5-96</i>	Depth to Groundwater: <i>4.01 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>3.11 feet msl</i>
Drilling Company: <i>Alliance Environmental (SC cert #889)</i>	Total Well Depth: <i>43.4 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>33.4 to 42.9 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE06D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319039.74 E, 374820.06 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 1450 on 1-5-96

TOC Elevation: 7.12 feet msl

Completed at 1650 on 1-5-96

Depth to Groundwater: 4.01 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

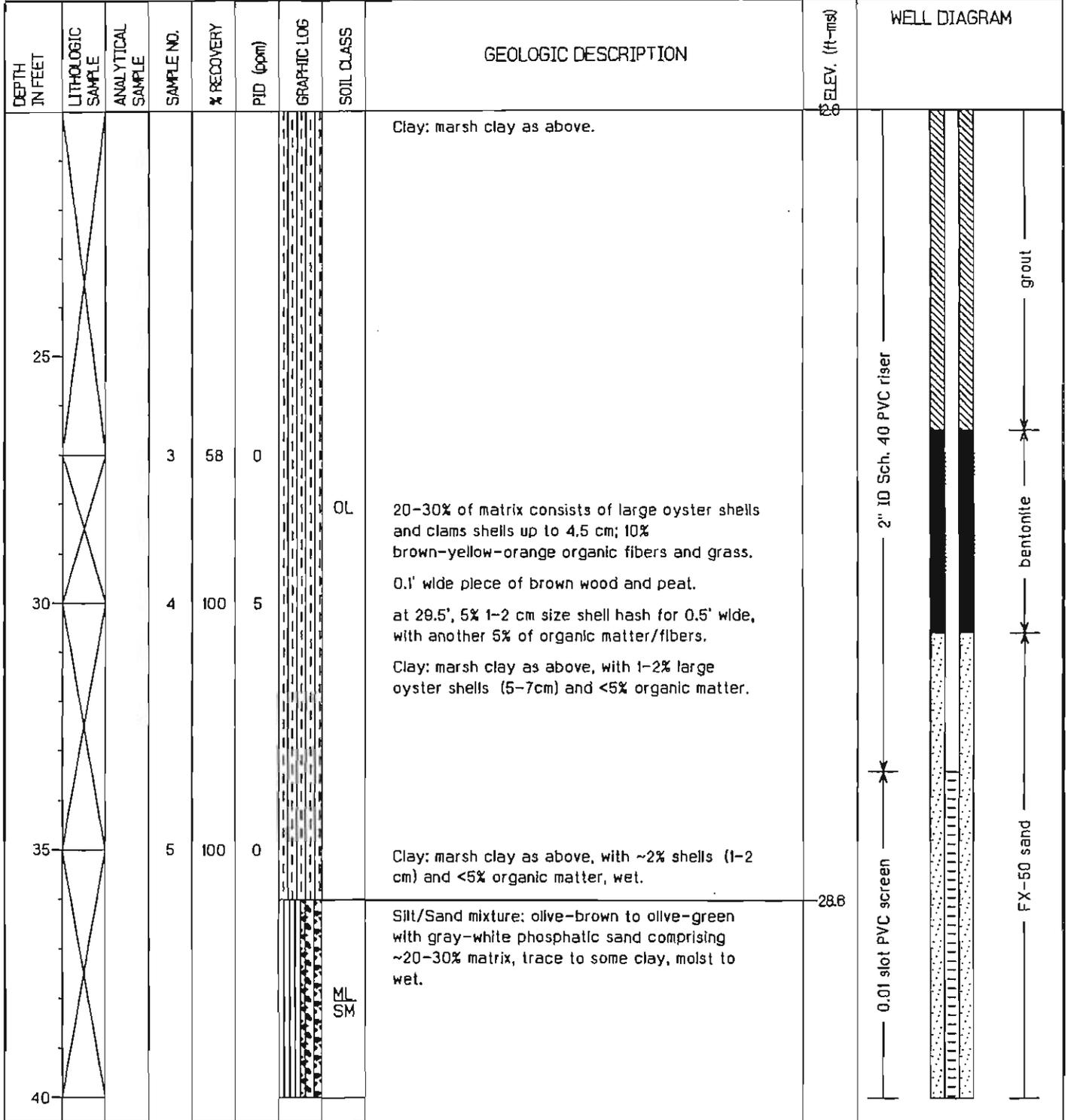
Groundwater Elevation: 3.11 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 43.4 feet bgs

Geologist: T. Kafka

Well Screen: 33.4 to 42.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE06D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319039.74 E, 374820.06 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 1450 on 1-5-96

TOC Elevation: 7.12 feet msl

Completed at 1650 on 1-5-96

Depth to Groundwater: 4.01 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 3.11 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 43.4 feet bgs

Geologist: T. Kafka

Well Screen: 33.4 to 42.9 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			6	100	0		SM CLF	Silt: olive-brown to olive-green, trace to some very fine sand, clayey, firm, moist to wet; trace effervesence in matrix; occasional oyster shells in last 0.5' -- Ashley Formation.	35.6 37.8	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE007

Project: ZONE E - Naval Base Charleston

Coordinates: 2319030.68 E, 374532.44 N

Location: Charleston, SC

Surface Elevation: 8.1 feet msl

Started at 1450 on 1-4-96

TOC Elevation: 7.90 feet msl

Completed at 1610 on 1-4-96

Depth to Groundwater: 3.27 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

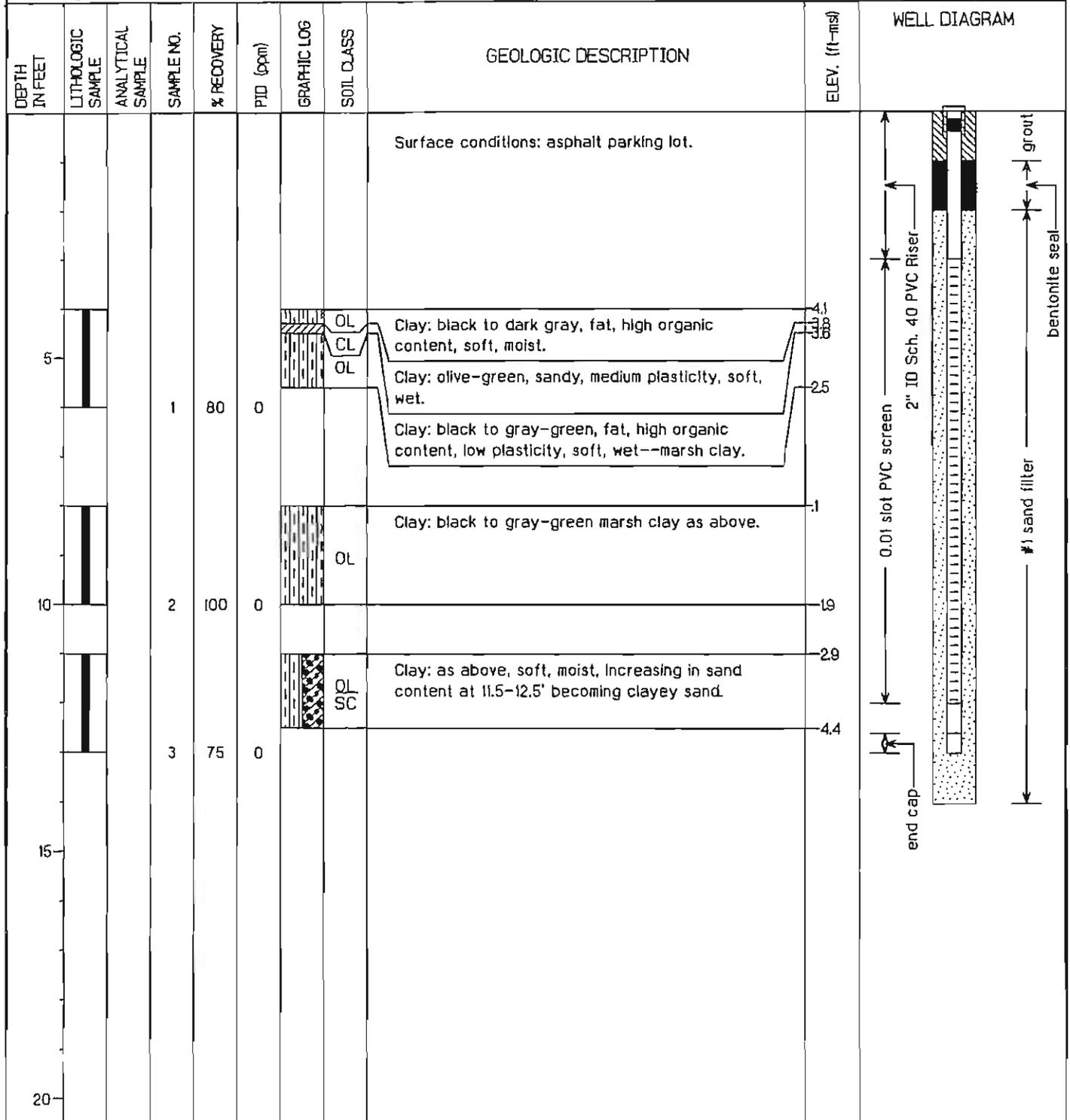
Groundwater Elevation: 4.63 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.0 feet bgs

Geologist: B. Blythe

Well Screen: 3.0 to 12.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE07D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319029.26 E, 374544.09 N

Location: Charleston, SC

Surface Elevation: 8.0 feet msl

Started at 0950 on 1-5-96

TOC Elevation: 7.80 feet msl

Completed at 1115 on 1-5-96

Depth to Groundwater: 4.31 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

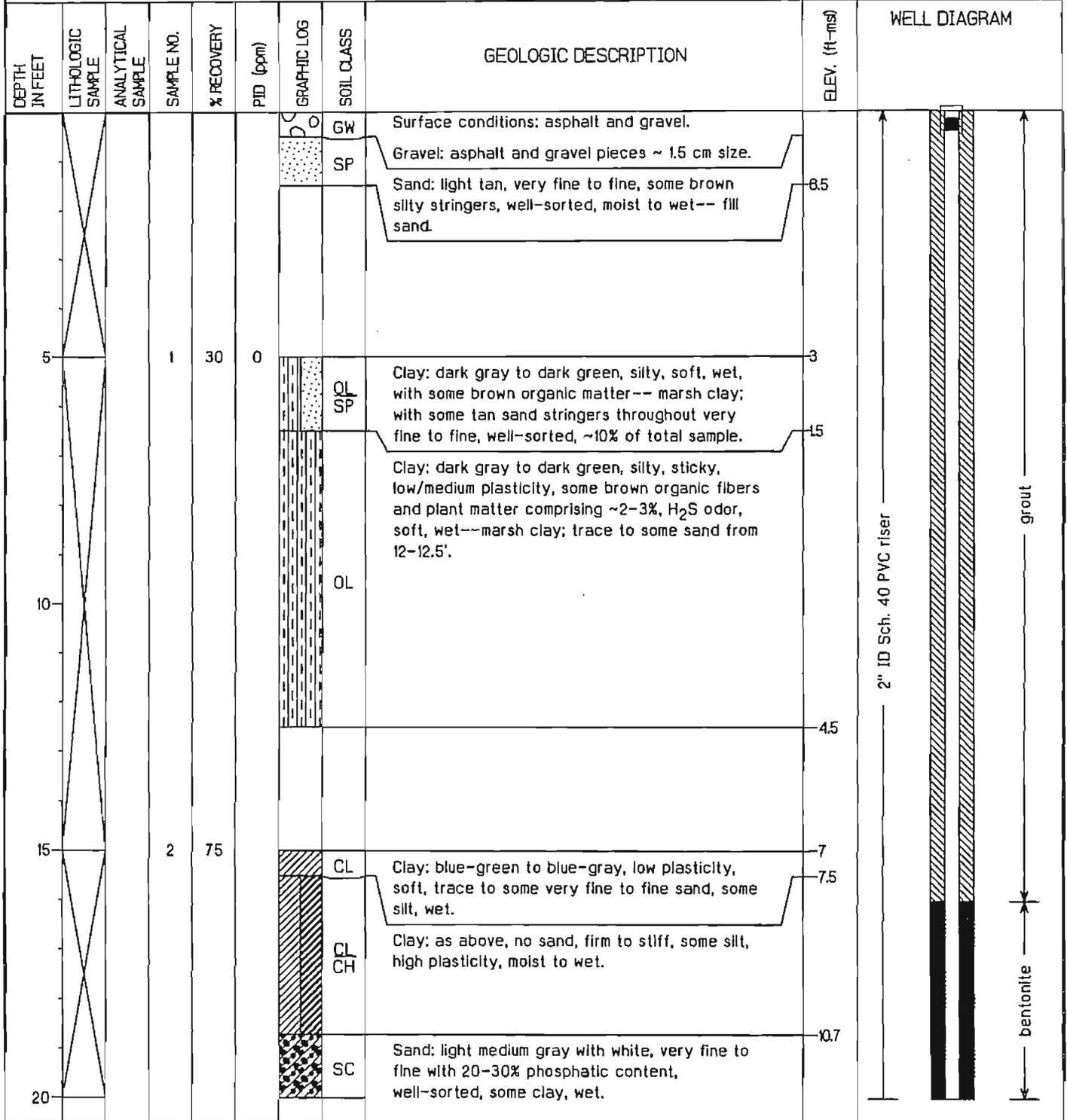
Groundwater Elevation: 3.49 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 32 feet bgs

Geologist: T. Kafka

Well Screen: 22 to 31.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE07D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319029.26 E, 374544.09 N

Location: Charleston, SC

Surface Elevation: 8.0 feet msl

Started at 0950 on 1-5-96

TOC Elevation: 7.80 feet msl

Completed at 1115 on 1-5-96

Depth to Groundwater: 4.31 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

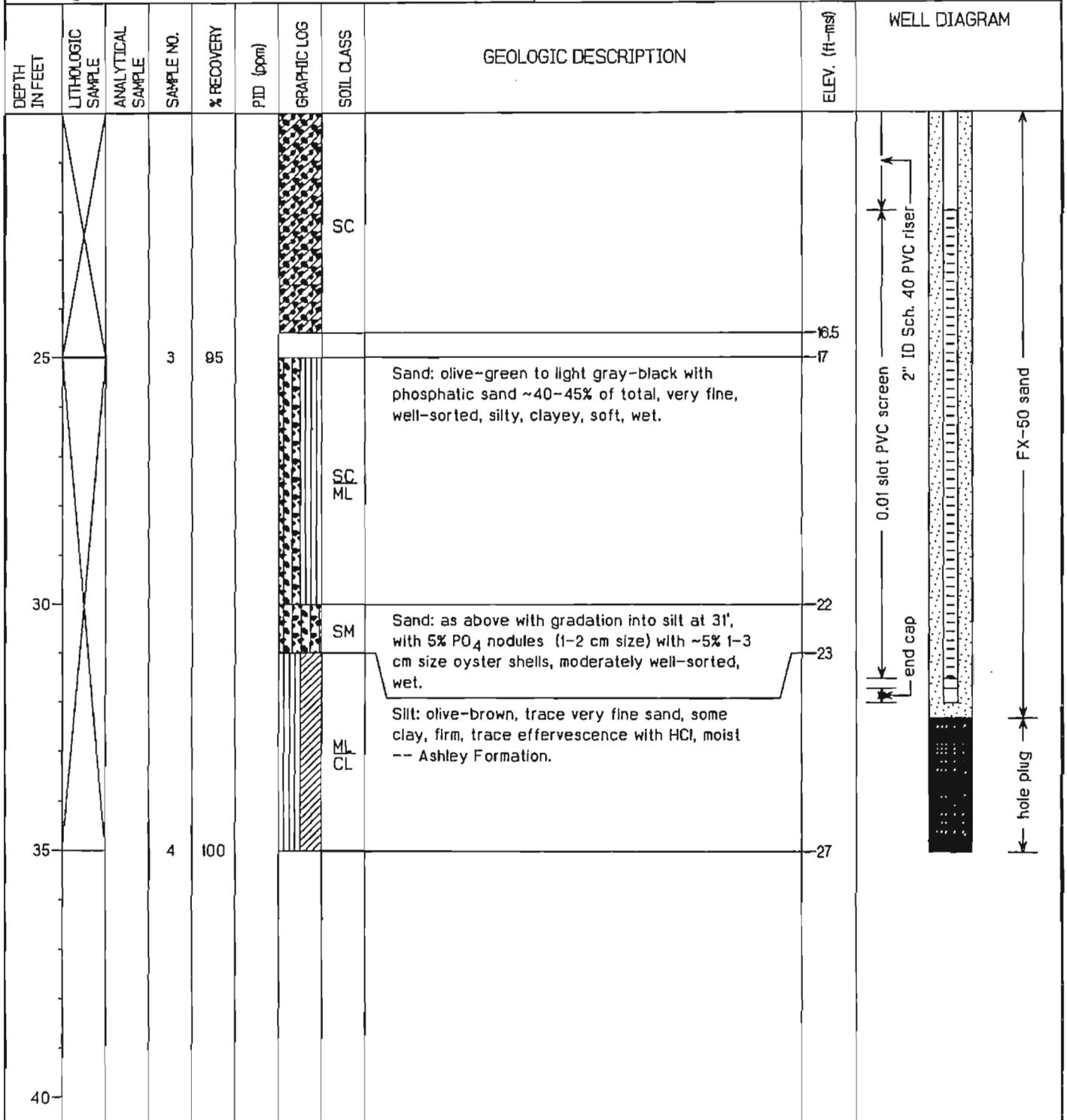
Groundwater Elevation: 3.49 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 32 feet bgs

Geologist: T. Kafka

Well Screen: 22 to 31.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE008

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316698.64 E, 374359.33 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>7.6 feet msl</i>
Started at <i>0845 on 10-3-95</i>	TOC Elevation: <i>7.31 feet msl</i>
Completed at <i>1200 on 10-3-95</i>	Depth to Groundwater: <i>3.76 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>3.55 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>15.4 feet bgs</i>
Geologist: <i>J. Williams</i>	Well Screen: <i>5.4 to 14.4 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (gpm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt and gravel.		
5			1	100	0	OH	Clay: dark gray to black, low to medium plasticity, silty, soft, wet- marsh clay.	3.1		
								11		
10			2	100	0	OH	Clay: marsh clay as above.	9		
							Shelby tube (10.5-13'): top and bottom of tube-- marsh clay as above.	5.4		
			3	100				6		
15			4	100	0	OH	Clay: marsh clay as above.	8		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE08D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318693.49 E, 374365.00 N

Location: Charleston, SC

Surface Elevation: 7.9 feet msl

Started at 1010 on 12-12-95

TOC Elevation: 7.68 feet msl

Completed at 1130 on 12-12-95

Depth to Groundwater: 3.97 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

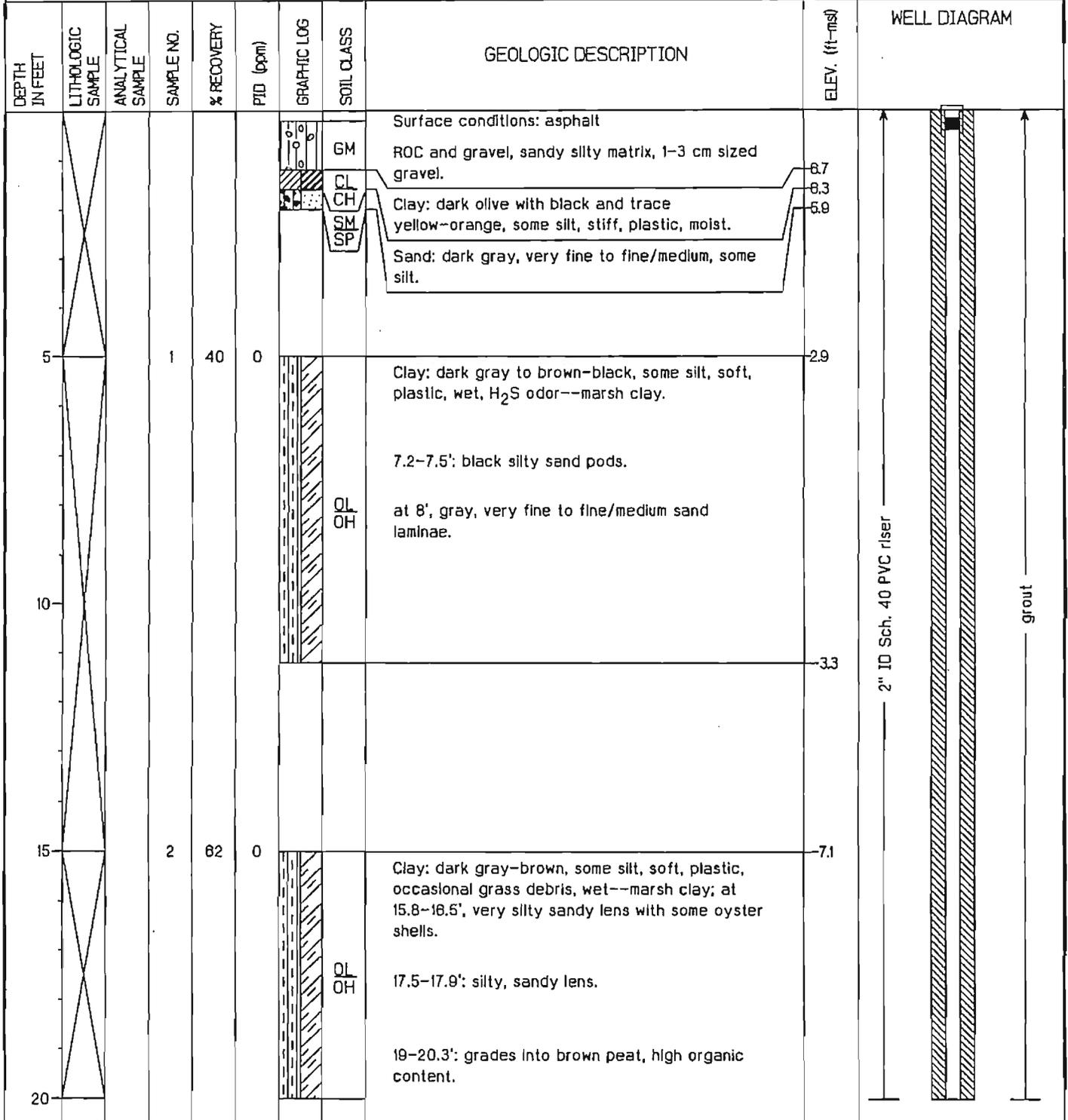
Groundwater Elevation: 3.71 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39.3 feet bgs

Geologist: P. Bayley

Well Screen: 29.4 to 38.8 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE08D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318693.49 E, 374365.00 N

Location: Charleston, SC

Surface Elevation: 7.9 feet msl

Started at 1010 on 12-12-95

TOC Elevation: 7.68 feet msl

Completed at 1130 on 12-12-95

Depth to Groundwater: 3.97 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

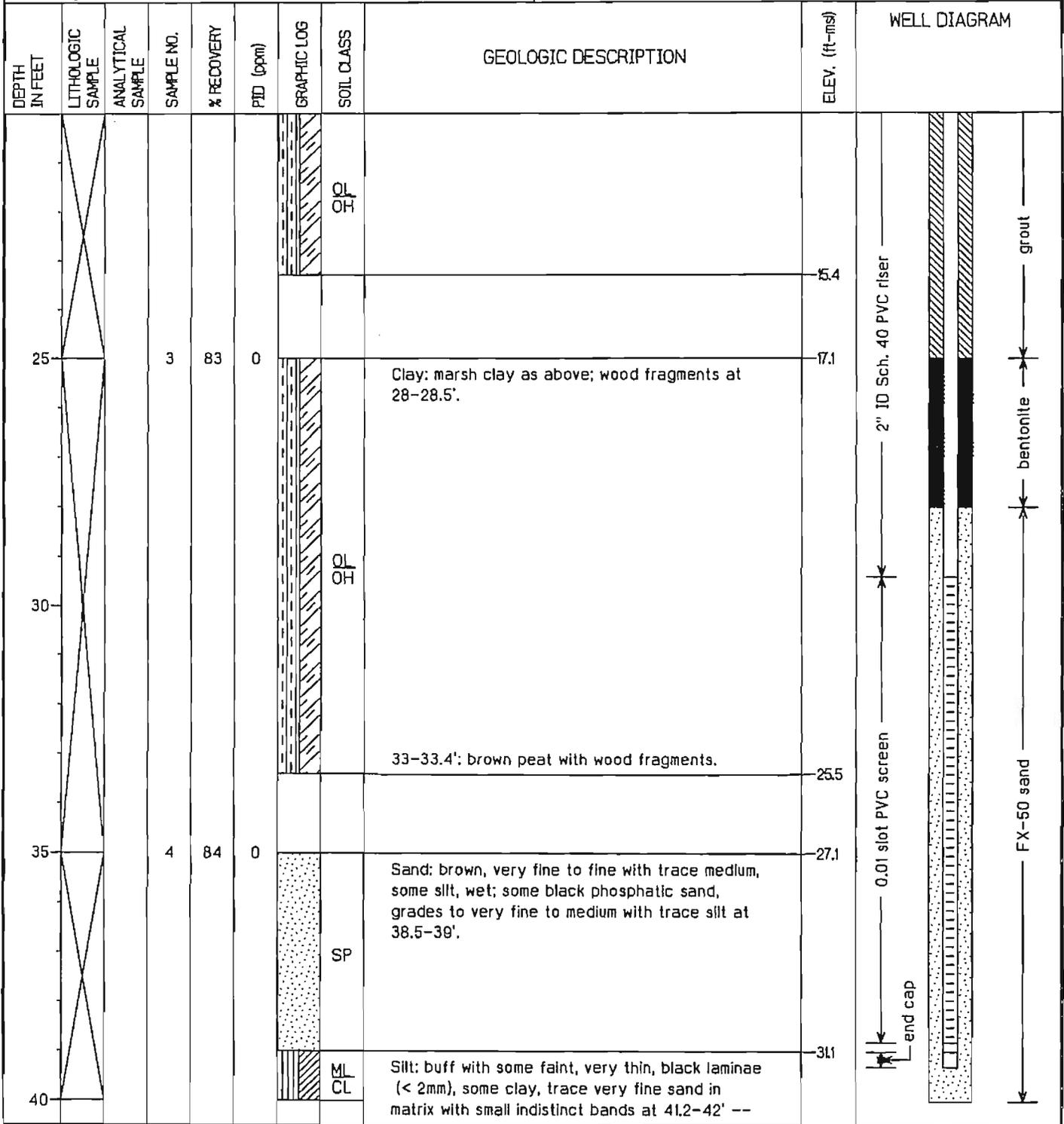
Groundwater Elevation: 3.71 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39.3 feet bgs

Geologist: P. Bayley

Well Screen: 29.4 to 38.8 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE08D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318693.49 E, 374365.00 N

Location: Charleston, SC

Surface Elevation: 7.9 feet msl

Started at 1010 on 12-12-95

TOC Elevation: 7.68 feet msl

Completed at 1130 on 12-12-95

Depth to Groundwater: 3.97 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 3.71 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39.3 feet bgs

Geologist: P. Bayley

Well Screen: 29.4 to 38.8 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0		CLF		37.1	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE009

Project: ZONE E - Naval Base Charleston

Coordinates: 2318577.85 E, 374839.00 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1155 on 10-2-95

TOC Elevation: 8.61 feet msl

Completed at 1640 on 10-2-95

Depth to Groundwater: 4.75 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

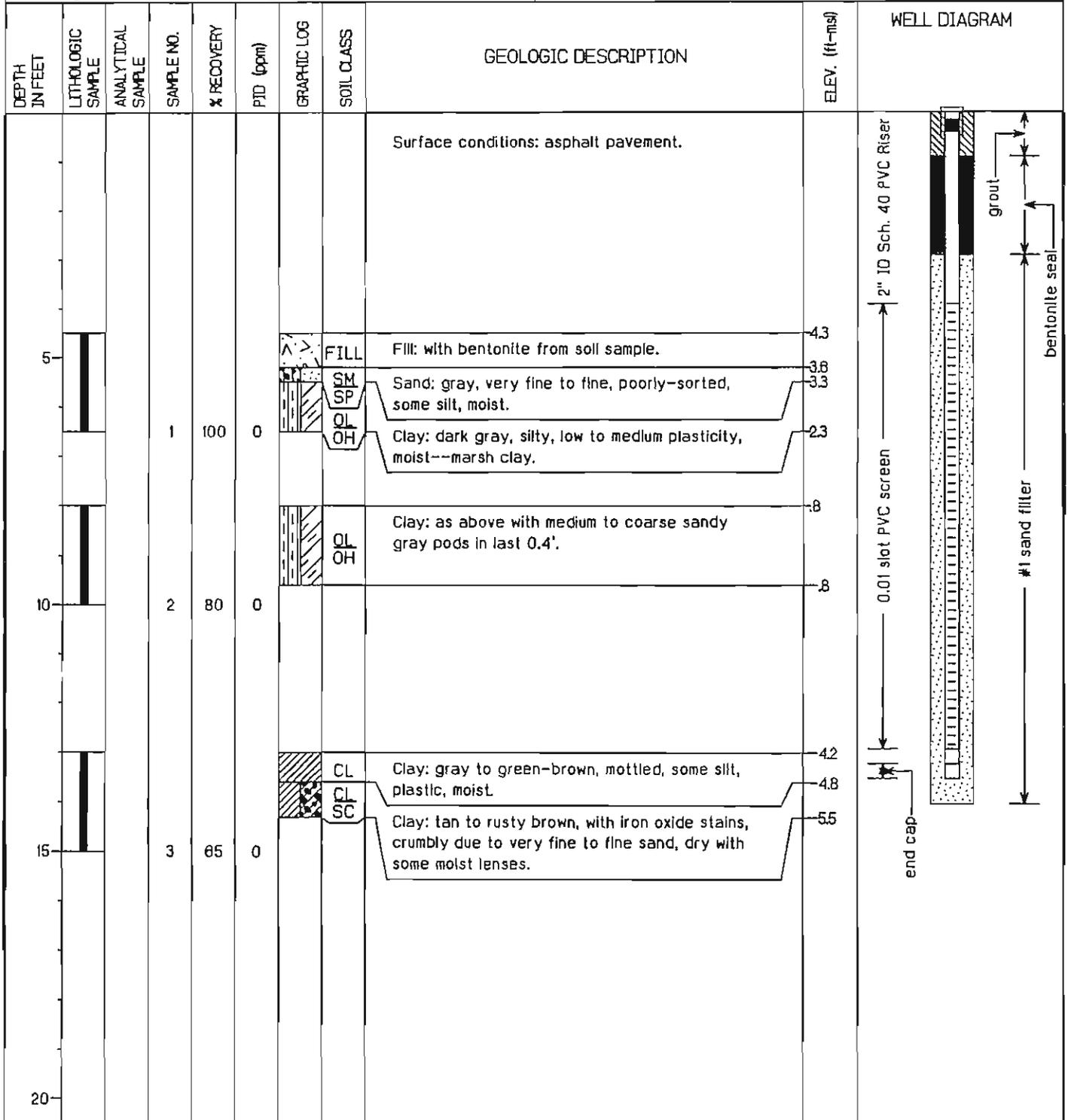
Groundwater Elevation: 3.86 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: T. Kafka

Well Screen: 3.9 to 12.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE09D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318576.17 E, 374845.67 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1410 on 12-12-95

TOC Elevation: 8.91 feet msl

Completed at 1500 on 12-12-95

Depth to Groundwater: 6.63 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

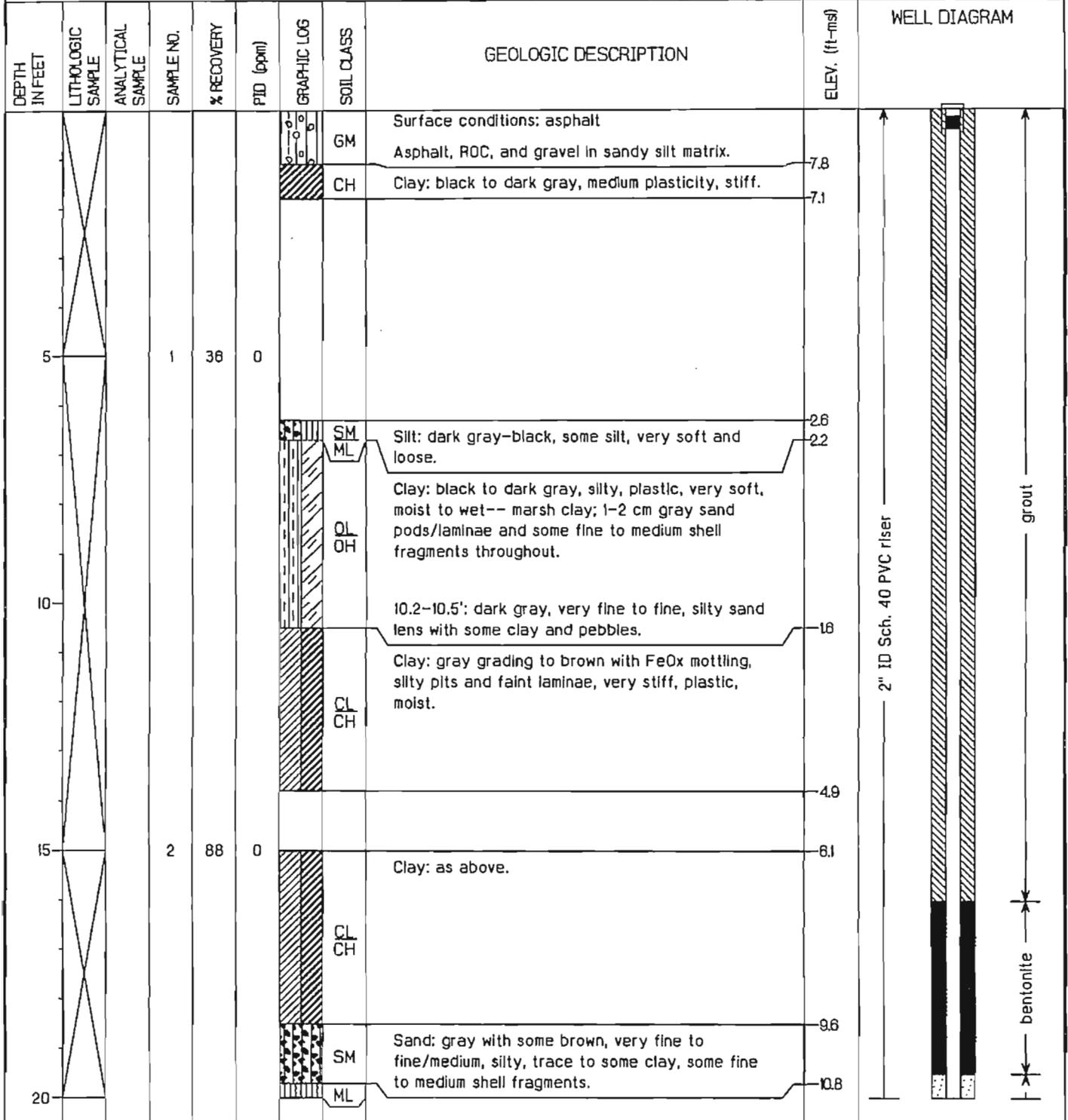
Groundwater Elevation: 2.28 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.5 feet bgs

Geologist: P. Bayley

Well Screen: 21.5 to 31.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE09D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318576.17 E, 374845.67 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1410 on 12-12-95

TOC Elevation: 8.91 feet msl

Completed at 1500 on 12-12-95

Depth to Groundwater: 6.63 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.28 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.5 feet bgs

Geologist: P. Bayley

Well Screen: 21.5 to 31.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	95	0		ML	Silt: brown to light brown with faint laminae, some sand, trace to some clay; becomes olive-brown at 24.3'.	8.6 8.1	
30						ML	Silt: olive brown, some very fine sand, trace to some clay. 30.5-31.2': matrix-supported oyster shells.			
35			4	100	0		CL	Silt: olive-brown, clayey, firm, moist, some black phosphatic sandy pods from 31.2-33.8' -- Ashley Formation.	22.3	
40									26.1	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE010

Project: ZONE E - Naval Base Charleston

Coordinates: 231880125 E, 375327.16 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1525 on 9-28-95

TOC Elevation: 8.78 feet msl

Completed at 1700 on 9-28-95

Depth to Groundwater: 4.19 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

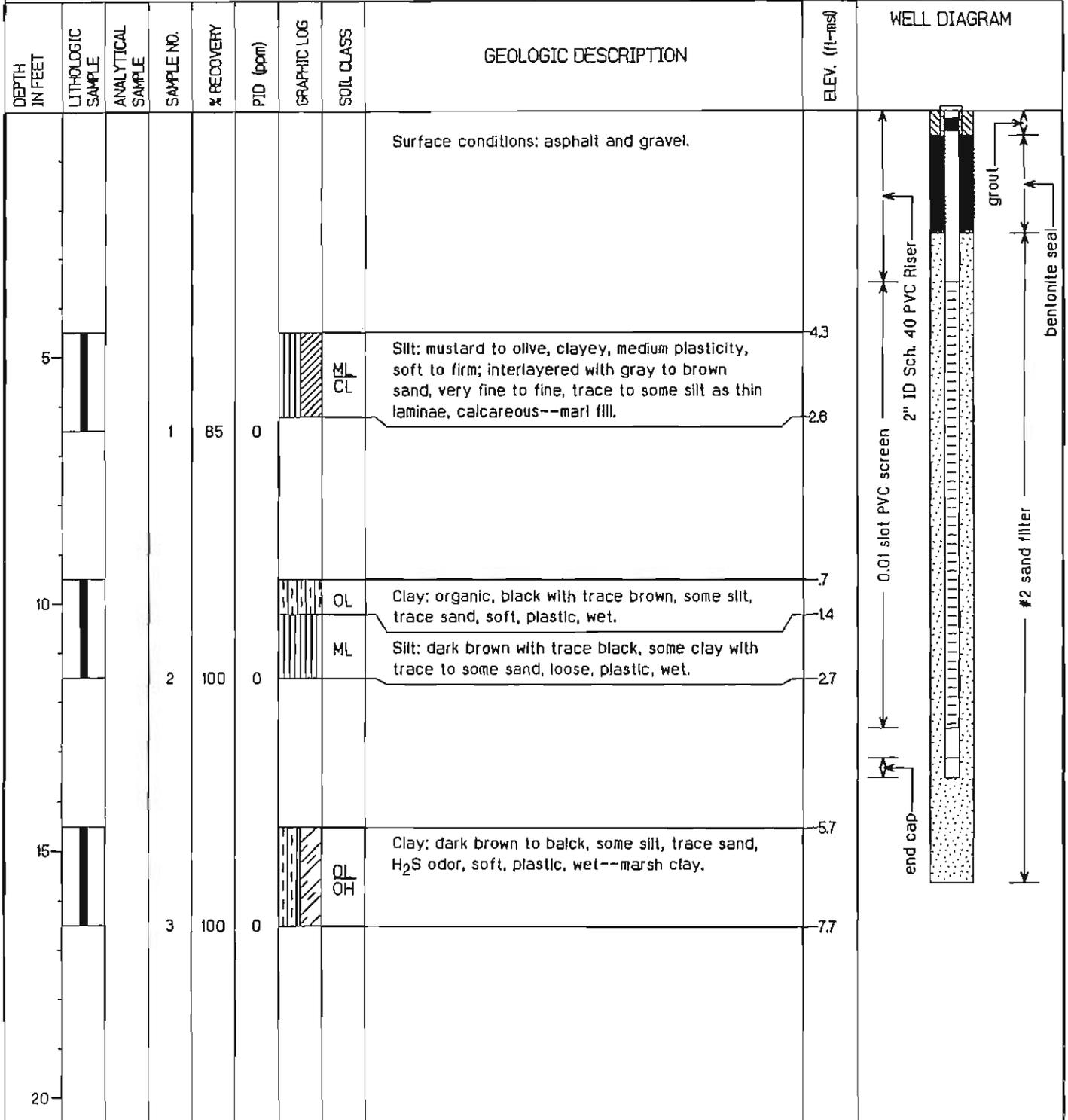
Groundwater Elevation: 4.59 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13.5 feet bgs

Geologist: P. Bayley

Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE10D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318801.10 E, 375332.76 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1535 on 1-22-96

TOC Elevation: 8.53 feet msl

Completed at 1645 on 1-22-96

Depth to Groundwater: 7.88 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

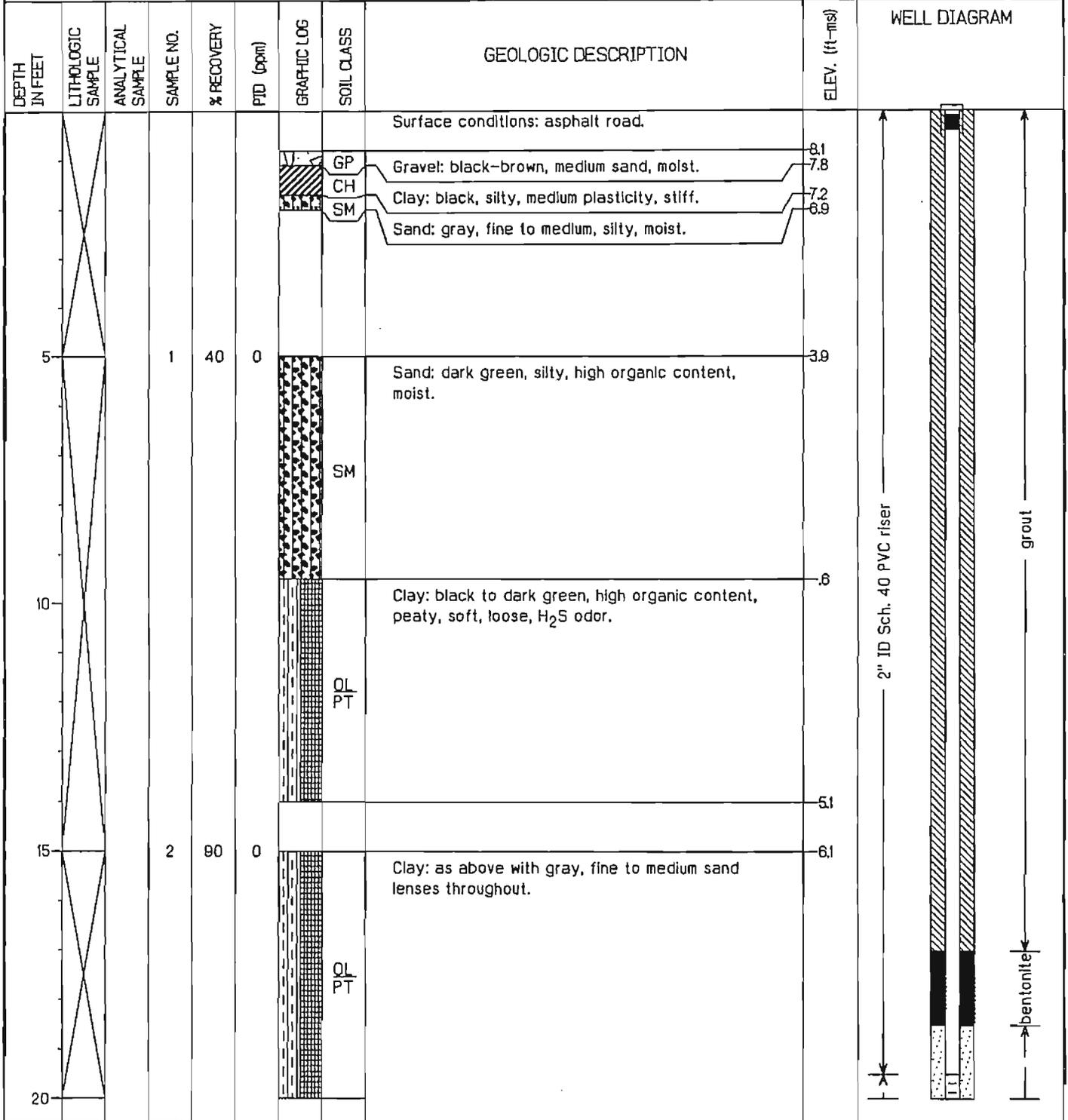
Groundwater Elevation: 0.65 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 29.5 feet bgs

Geologist: B. Blythe

Well Screen: 19.5 to 29.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE10D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318801.0 E, 375332.76 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1535 on 1-22-96

TOC Elevation: 8.53 feet msl

Completed at 1645 on 1-22-96

Depth to Groundwater: 7.88 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

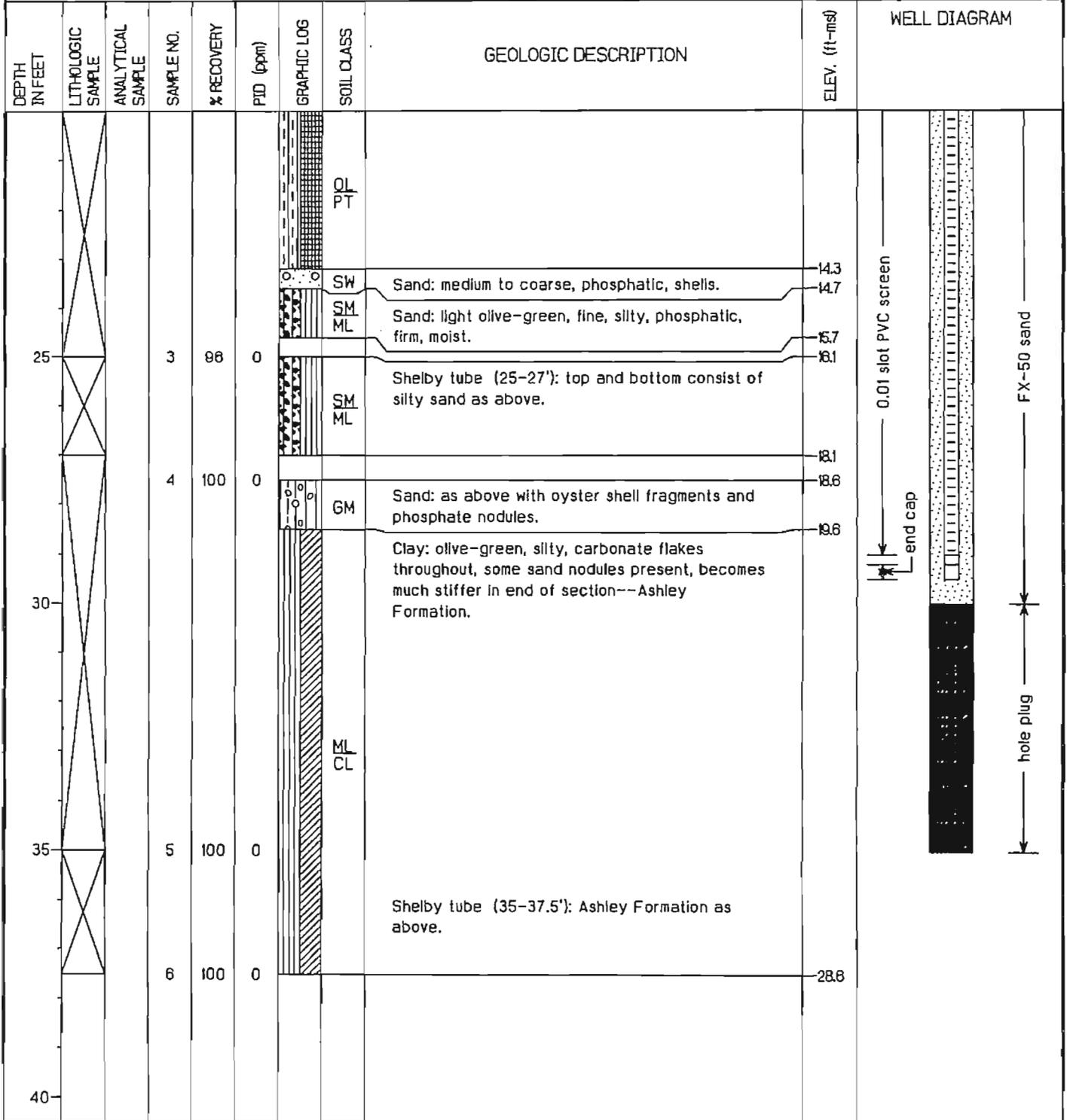
Groundwater Elevation: 0.65 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 29.5 feet bgs

Geologist: B. Blythe

Well Screen: 19.5 to 29.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE011

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2319062.63 E, 375326.88 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.8 feet msl</i>
Started at <i>1445 on 1-16-96</i>	TOC Elevation: <i>8.73 feet msl</i>
Completed at <i>1600 on 1-16-96</i>	Depth to Groundwater: <i>6.08 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.65 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>14.2 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>4.2 to 13.2 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road		
5								Shallow lithologic data obtained from split spoon samples taken for chemical analyses: black sandy clay in upper 5' with a Diesel fuel odor.		
8			1	50	0	FILL		Fill: orange sand with yellow clay and some rock fragments.	8.8	
10						OH		Clay: black, high organic content, fat.	8.1	
12									7.2	
15			2	100	0	OL		Clay: black, fat, high organic content, low plasticity, moist, H ₂ S and Diesel fuel odor--marsh clay.	2.2	
20									4.2	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE11D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319078.85 E, 375304.90 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1530 on 1-19-96

TOC Elevation: 8.97 feet msl

Completed at 0915 on 1-20-96

Depth to Groundwater: 7.04 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

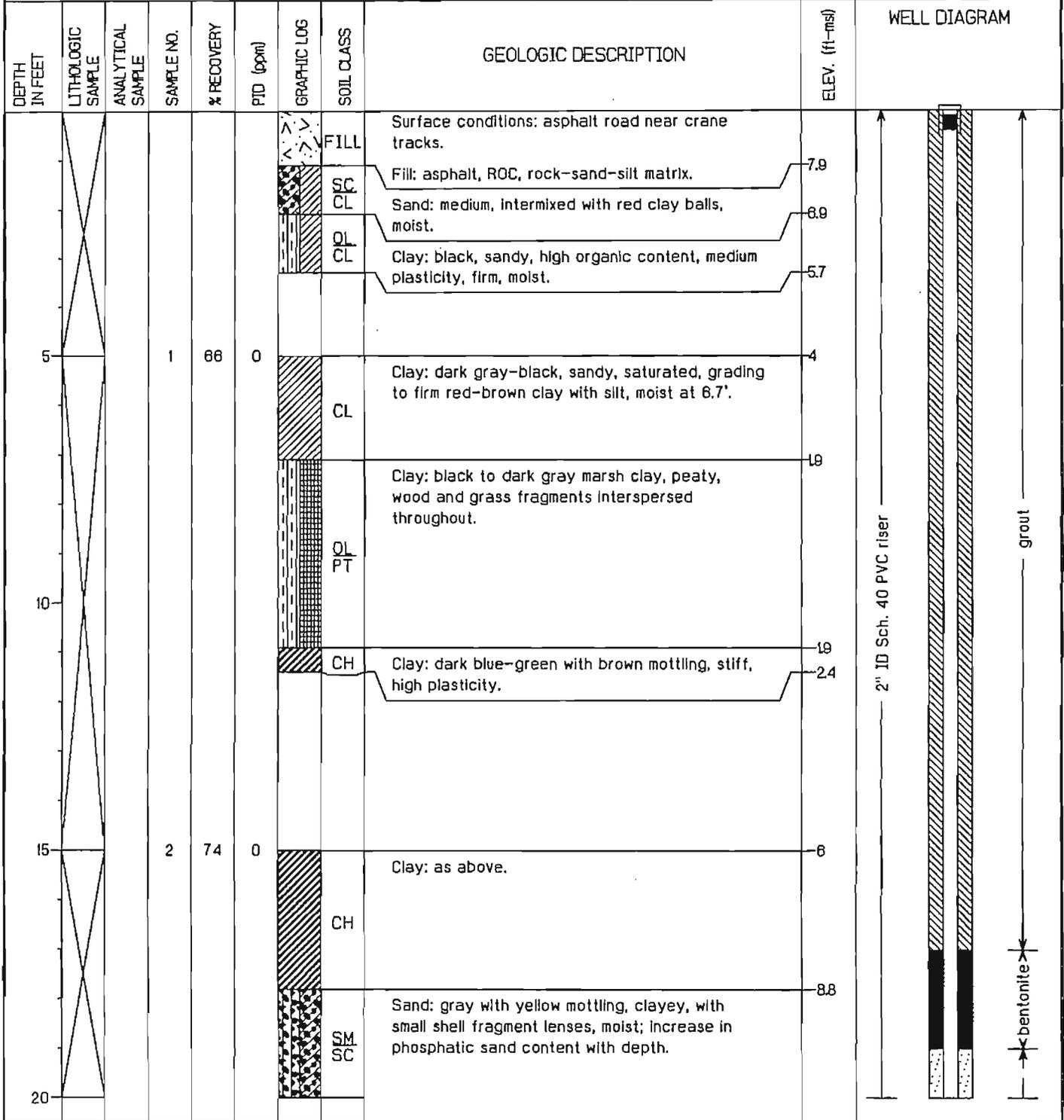
Groundwater Elevation: 1.93 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.0 feet bgs

Geologist: B. Blythe

Well Screen: 21.0 to 30.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE11D

Project: ZONE E - Naval Base Charleston

Coordinates: 2319078.85 E, 375304.90 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1530 on 1-19-96

TOC Elevation: 8.97 feet msl

Completed at 0915 on 1-20-96

Depth to Groundwater: 7.04 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

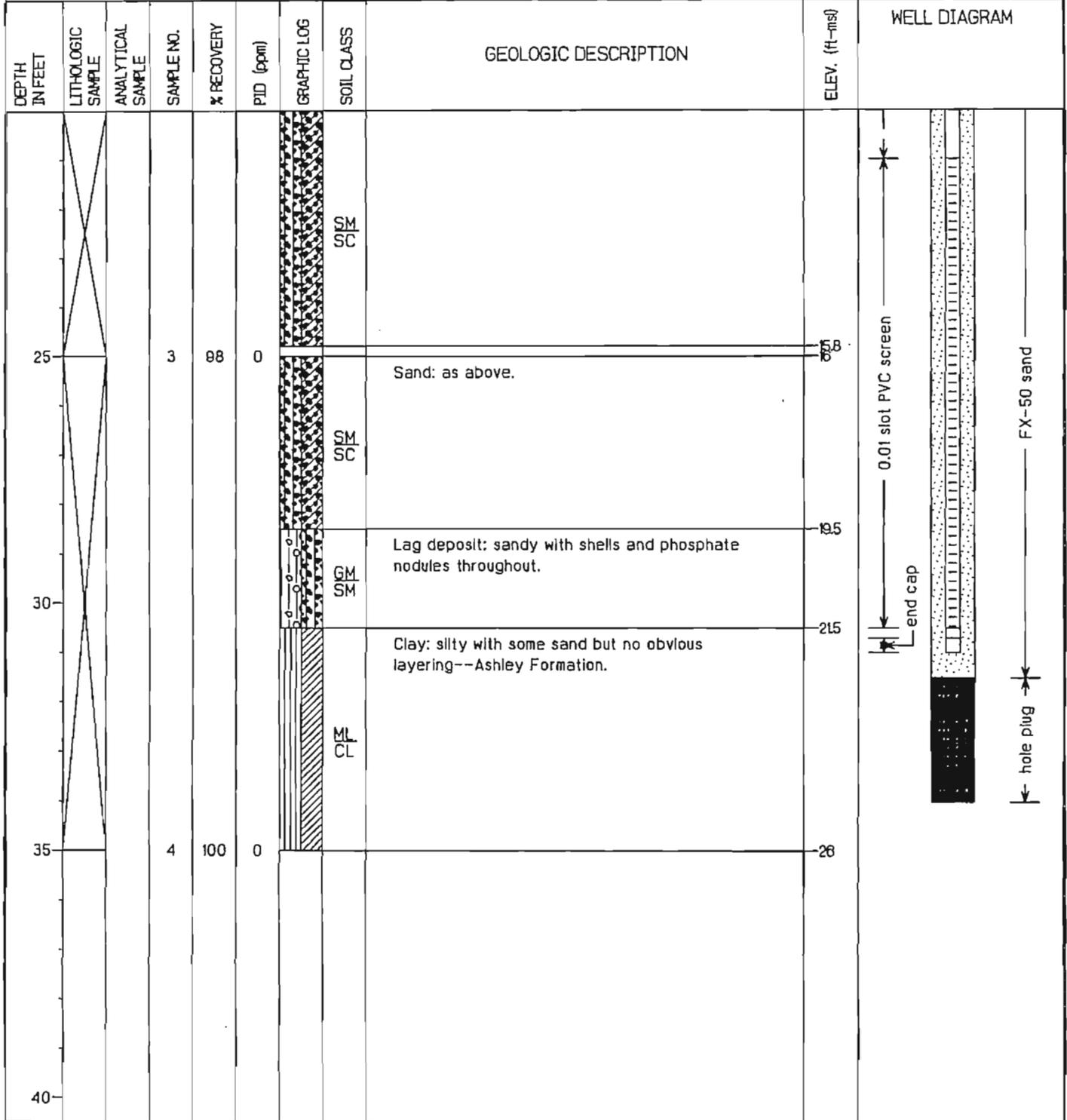
Groundwater Elevation: 1.93 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 31.0 feet bgs

Geologist: B. Blythe

Well Screen: 21.0 to 30.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE012

Project: ZONE E - Naval Base Charleston	Coordinates: 2318519.82 E, 375916.46 N
Location: Charleston, SC	Surface Elevation: 8.5 feet msl
Started at 1345 on 9-29-95	TOC Elevation: 8.41 feet msl
Completed at 1620 on 9-29-95	Depth to Groundwater: 7.98 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 0.43 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 15 feet bgs
Geologist: J. Williams	Well Screen: 5 to 14 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt		<p>2" ID Sch. 40 PVC Riser</p> <p>0.01 slot PVC screen</p> <p>#2 sand filter</p> <p>end cap</p> <p>grout</p> <p>bentonite seal</p>
5			1	100	0	SP	Sand: orange-red, oxidized, with some coarse gravel, grading to well-sorted gray sand.	4		
10			2	100	0	SP	Sand: white with brown oxidized stains throughout, saturated from 9.5-10.5'.	2		
15			3	100	0	SP	Sand: light tan, saturated grading to dark gray in color.	1		
20									3	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE12D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318510.15 E, 375917.02 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1100 on 1-12-96

TOC Elevation: 8.27 feet msl

Completed at 1345 on 1-12-96

Depth to Groundwater: 7.94 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

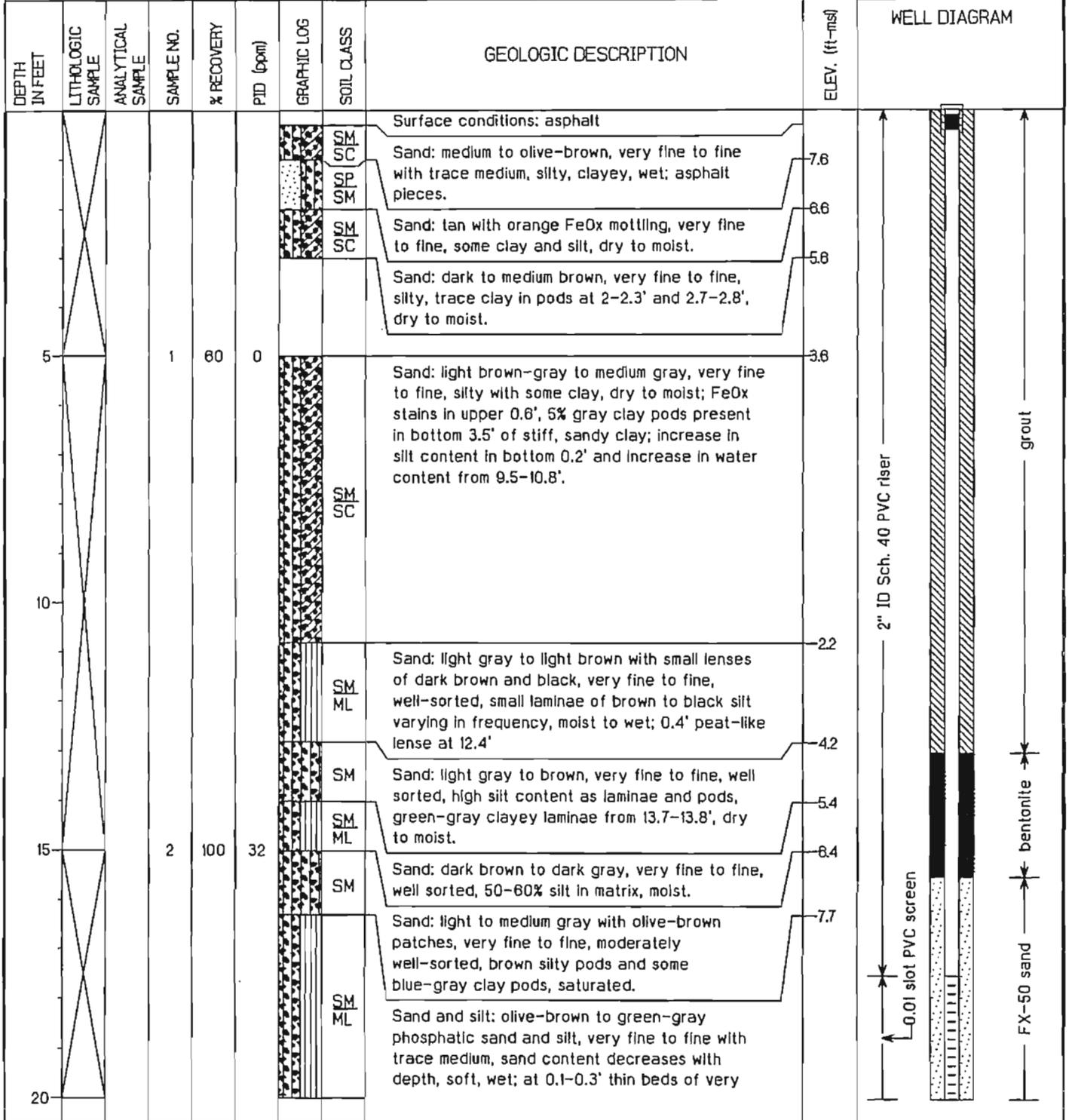
Groundwater Elevation: 0.33 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 27.5 feet bgs

Geologist: T. Kafka

Well Screen: 17.5 to 27.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE12D

Project: ZONE E - Naval Base Charleston

Coordinates: 2318510.15 E, 375917.02 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1100 on 1-12-96

TOC Elevation: 8.27 feet msl

Completed at 1345 on 1-12-96

Depth to Groundwater: 7.94 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 0.33 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 27.5 feet bgs

Geologist: T. Kafka

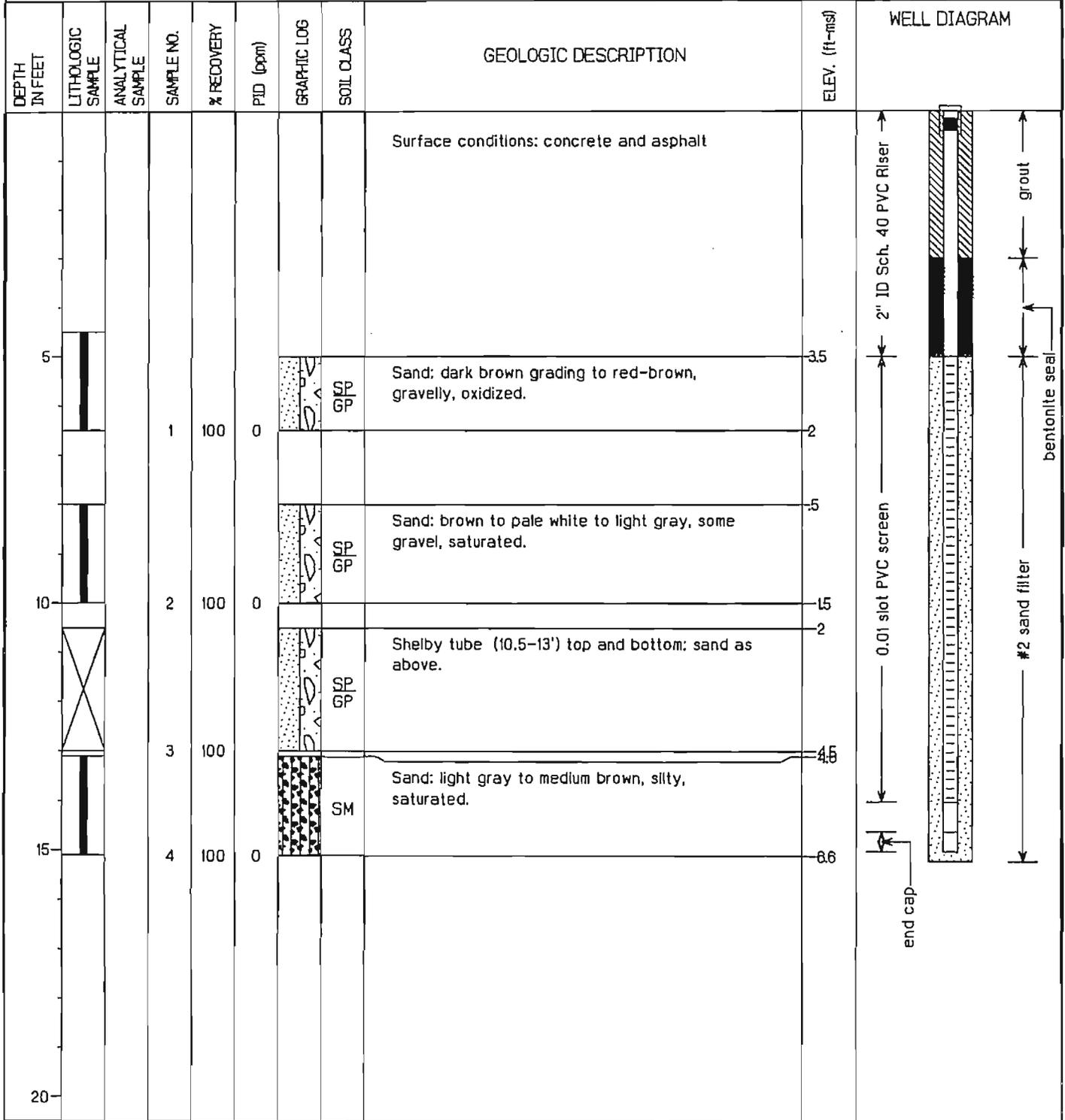
Well Screen: 17.5 to 27.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		SM ML	<p>fine to medium sand and shell hash at 17', 17.2', 17.5', 18.2', and 18.8'.</p> <p>Sand and silt: olive-brown, 50-60% phosphatic sand, some clay, soft, cohesive, moist to wet; occasional shells from 22.5-23.5'; more uniform than above.</p>		<p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>hole plug</p>
30							CL	<p>Sand and silt: as above, grading into lag deposit at 26-27.1' of 20% 1-2" oyster shell fragments and 5% pebble-size PO₄ nodules, moist to wet.</p>	18.5	
35			4	100	0			<p>Silt: olive-brown, clayey, firm to stiff, occasional phosphatic sandy plts at 27.1-28', 31', and 31.5' -- Ashley Formation.</p>	26.4	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE013

Project: ZONE E - Naval Base Charleston	Coordinates: 2317989.16 E, 375711.11 N
Location: Charleston, SC	Surface Elevation: 8.5 feet msl
Started at 0930 on 10-2-95	TOC Elevation: 8.35 feet msl
Completed at 1225 on 10-2-95	Depth to Groundwater: 6.70 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 1.65 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 15 feet bgs
Geologist: J. Williams	Well Screen: 5 to 14 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE13D

Project: ZONE E - Naval Base Charleston

Coordinates: 231802.93 E, 375698.40 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1345 on 1-18-96

TOC Elevation: 8.32 feet msl

Completed at 1415 on 1-18-96

Depth to Groundwater: 6.72 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

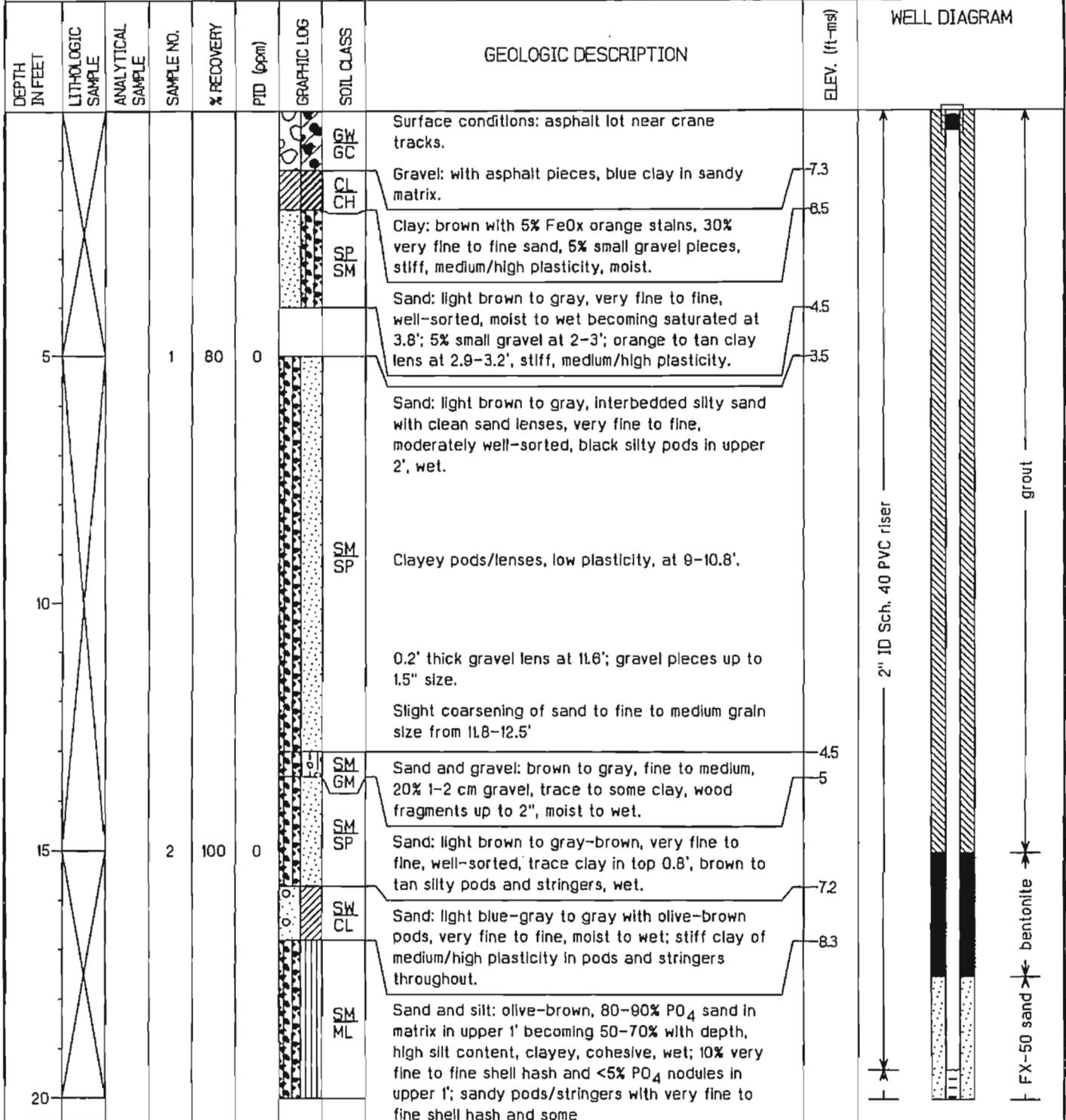
Groundwater Elevation: 1.60 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 29.4 feet bgs

Geologist: T. Kafka

Well Screen: 19.4 to 28.9 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE13D

Project: ZONE E - Naval Base Charleston

Coordinates: 231802.93 E, 375698.40 N

Location: Charleston, SC

Surface Elevation: 8.5 feet msl

Started at 1345 on 1-18-96

TOC Elevation: 8.32 feet msl

Completed at 1415 on 1-18-96

Depth to Groundwater: 6.72 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.60 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 29.4 feet bgs

Geologist: T. Kafka

Well Screen: 19.4 to 28.9 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0		SM ML	<p>PO₄ nodules at 18.8-19', 20.5-20.6', and 21.2-21.3'.</p> <p>Sand and silt: as above in general with 50-60% PO₄ sand, small lag deposit at 28-28.8' marked with 5% fine to medium oyster shells and <5% PO₄ nodules.</p>		<p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>hole plug</p>
30							CL	<p>Silt: olive-brown, firm to stiff, moist to wet; 20-30% PO₄ sand pods at 29-29.7', <5% sand in remainder, occasional shell fragments--Ashley Formation.</p>	20.3	
35			4	100	0				26.5	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE014

Project: ZONE E - Naval Base Charleston

Coordinates: 2316450.89 E, 375953.27 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1310 on 11-15-95

TOC Elevation: 8.74 feet msl

Completed at 1500 on 11-15-95

Depth to Groundwater: 7.29 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

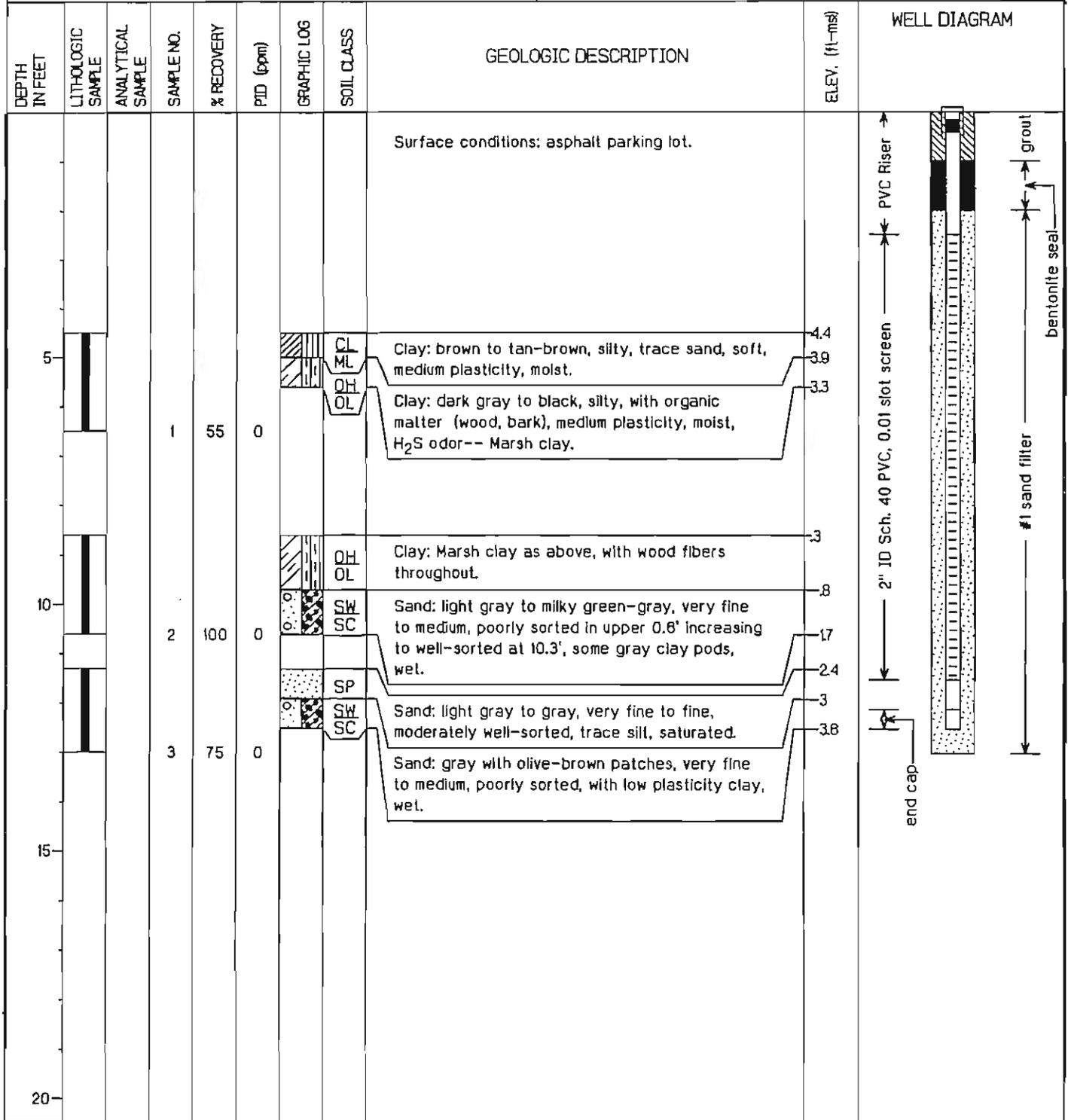
Groundwater Elevation: 1.45 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE14D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316453.08 E, 375947.94 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1420 on 1-21-96

TOC Elevation: 8.82 feet msl

Completed at 1530 on 1-21-96

Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

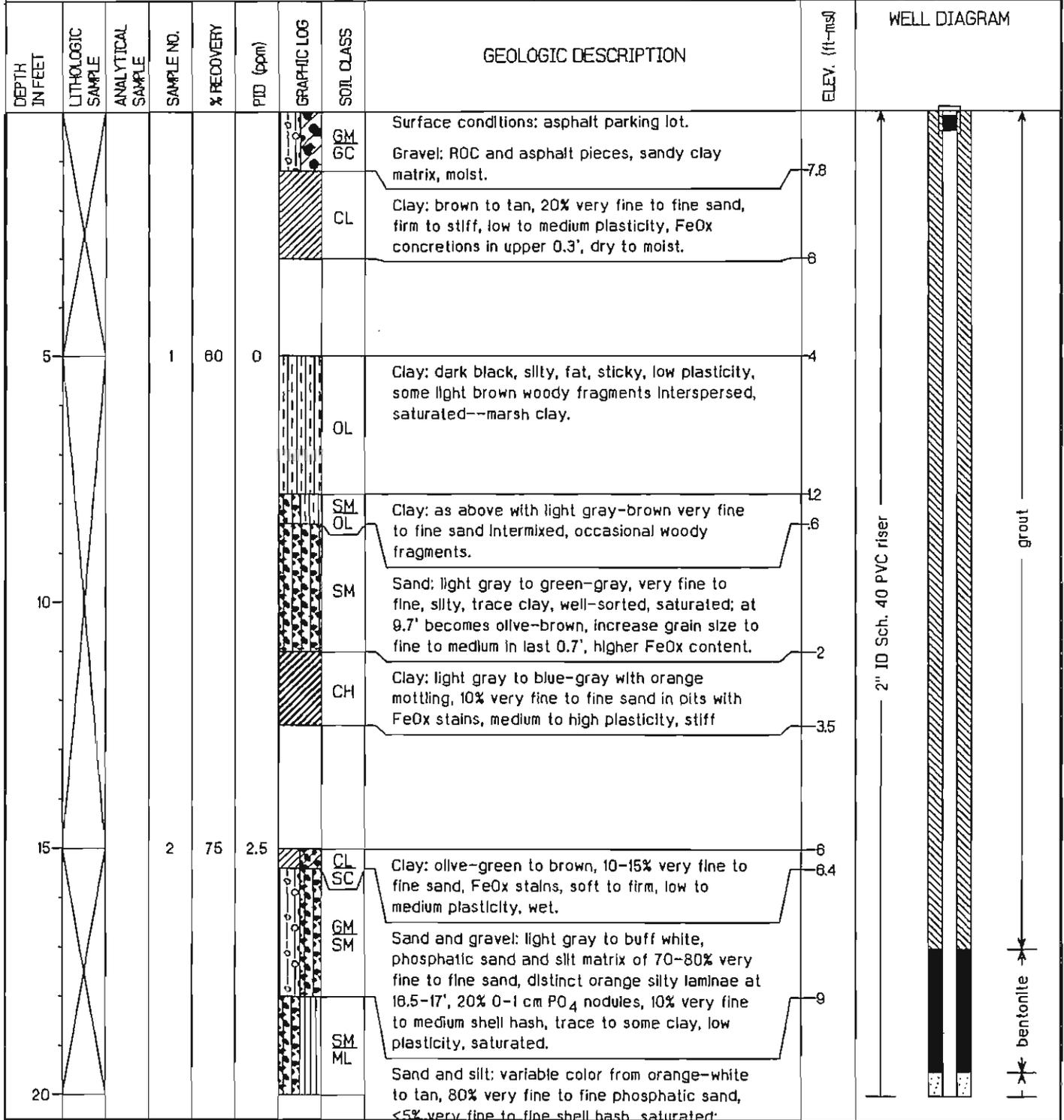
Groundwater Elevation: 155 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 26.8 feet bgs

Geologist: T. Kafka

Well Screen: 22.0 to 26.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE14D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316453.08 E, 375947.94 N

Location: Charleston, SC

Surface Elevation: 9.0 feet msl

Started at 1420 on 1-21-96

TOC Elevation: 8.82 feet msl

Completed at 1530 on 1-21-96

Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

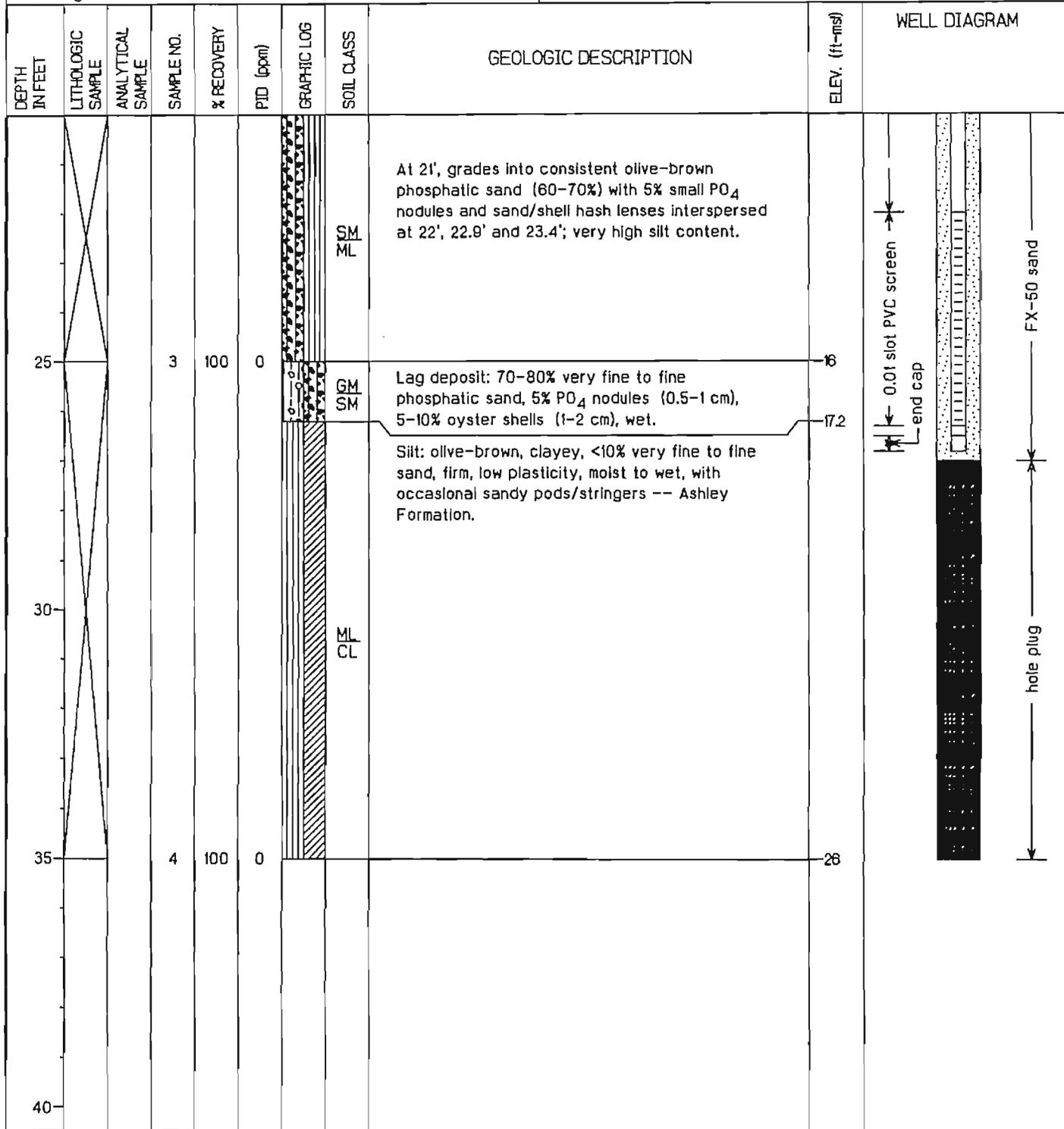
Groundwater Elevation: 1.55 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 26.8 feet bgs

Geologist: T. Kafka

Well Screen: 22.0 to 26.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE015

Project: ZONE E - Naval Base Charleston

Coordinates: 2316404.48 E, 376190.09 N

Location: Charleston, SC

Surface Elevation: 10.1 feet msl

Started at 1015 on 11-15-95

TOC Elevation: 9.93 feet msl

Completed at 1130 on 11-15-95

Depth to Groundwater: 6.93 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

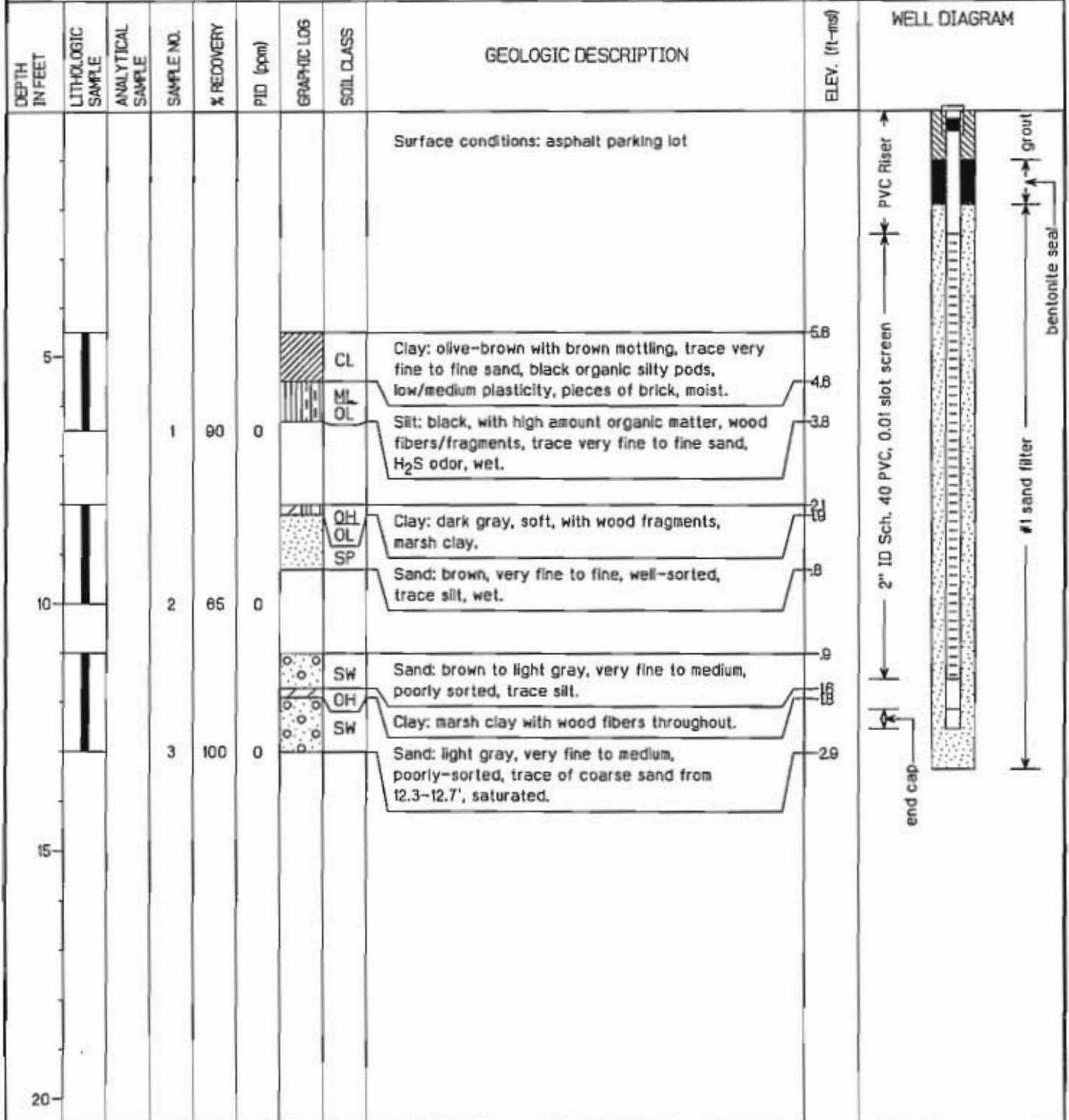
Groundwater Elevation: 3.00 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: T. Kafka

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE15D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316369.24 E, 376177.17 N

Location: Charleston, SC

Surface Elevation: 9.8 feet msl

Started at 1455 on 1-7-96

TOC Elevation: 9.74 feet msl

Completed at 1645 on 1-7-96

Depth to Groundwater: 8.93 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

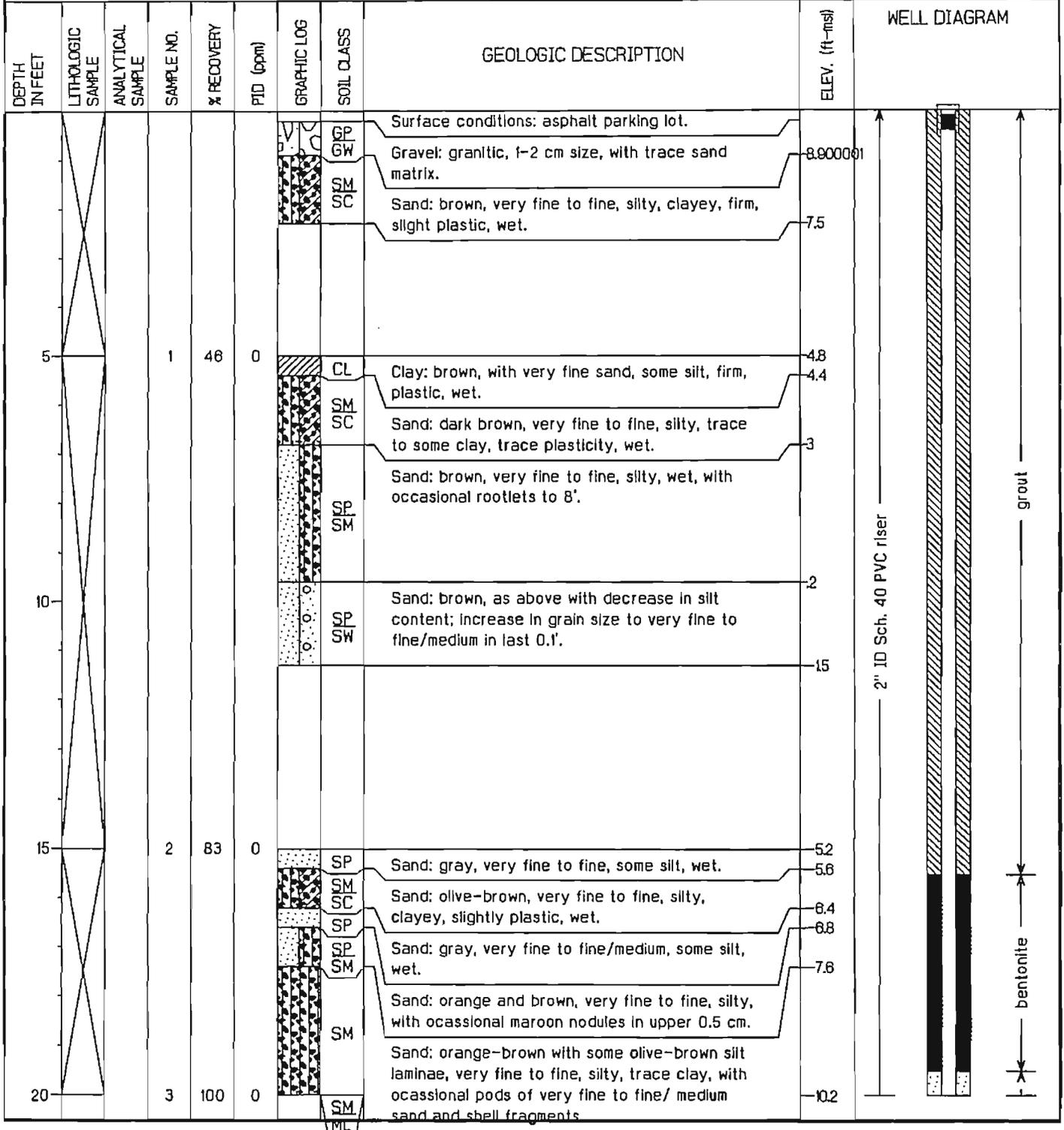
Groundwater Elevation: 0.81 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 26.6 feet bgs

Geologist: P. Bayley

Well Screen: 21.7 to 26.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE15D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316369.24 E, 376177.17 N

Location: Charleston, SC

Surface Elevation: 9.8 feet msl

Started at 1455 on 1-7-96

TOC Elevation: 9.74 feet msl

Completed at 1645 on 1-7-96

Depth to Groundwater: 8.93 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

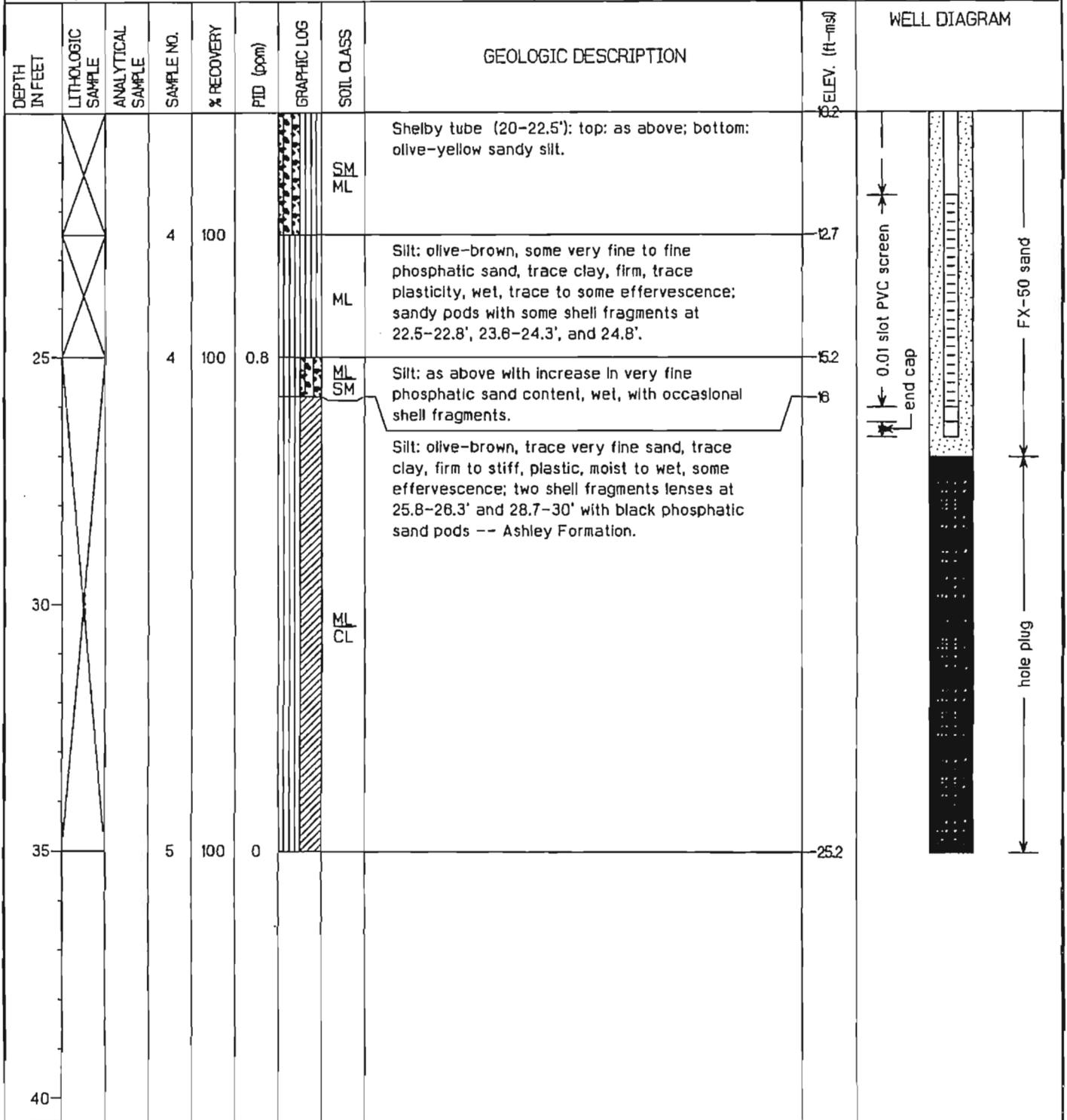
Groundwater Elevation: 0.81 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 26.6 feet bgs

Geologist: P. Bayley

Well Screen: 21.7 to 26.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE016

Project: ZONE E - Naval Base Charleston

Coordinates: 2316768.79 E, 376072.81 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1445 on 1-3-96

TOC Elevation: 8.58 feet msl

Completed at 1630 on 1-3-96

Depth to Groundwater: 5.36 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

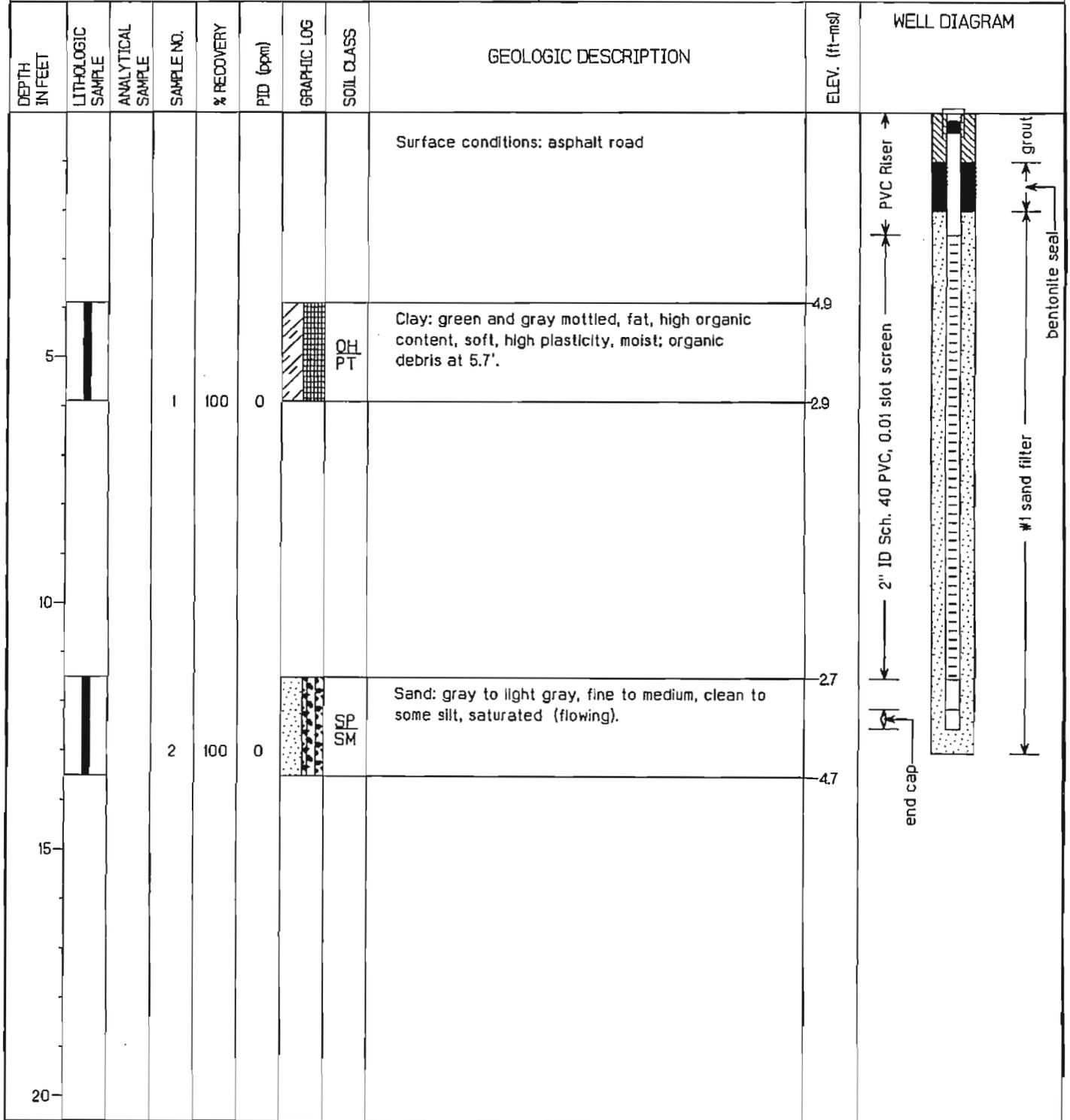
Groundwater Elevation: 3.22 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE16D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316760.01 E, 376097.65 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1245 on 1-03-96

TOC Elevation: 8.66 feet msl

Completed at 1415 on 1-03-96

Depth to Groundwater: 7.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

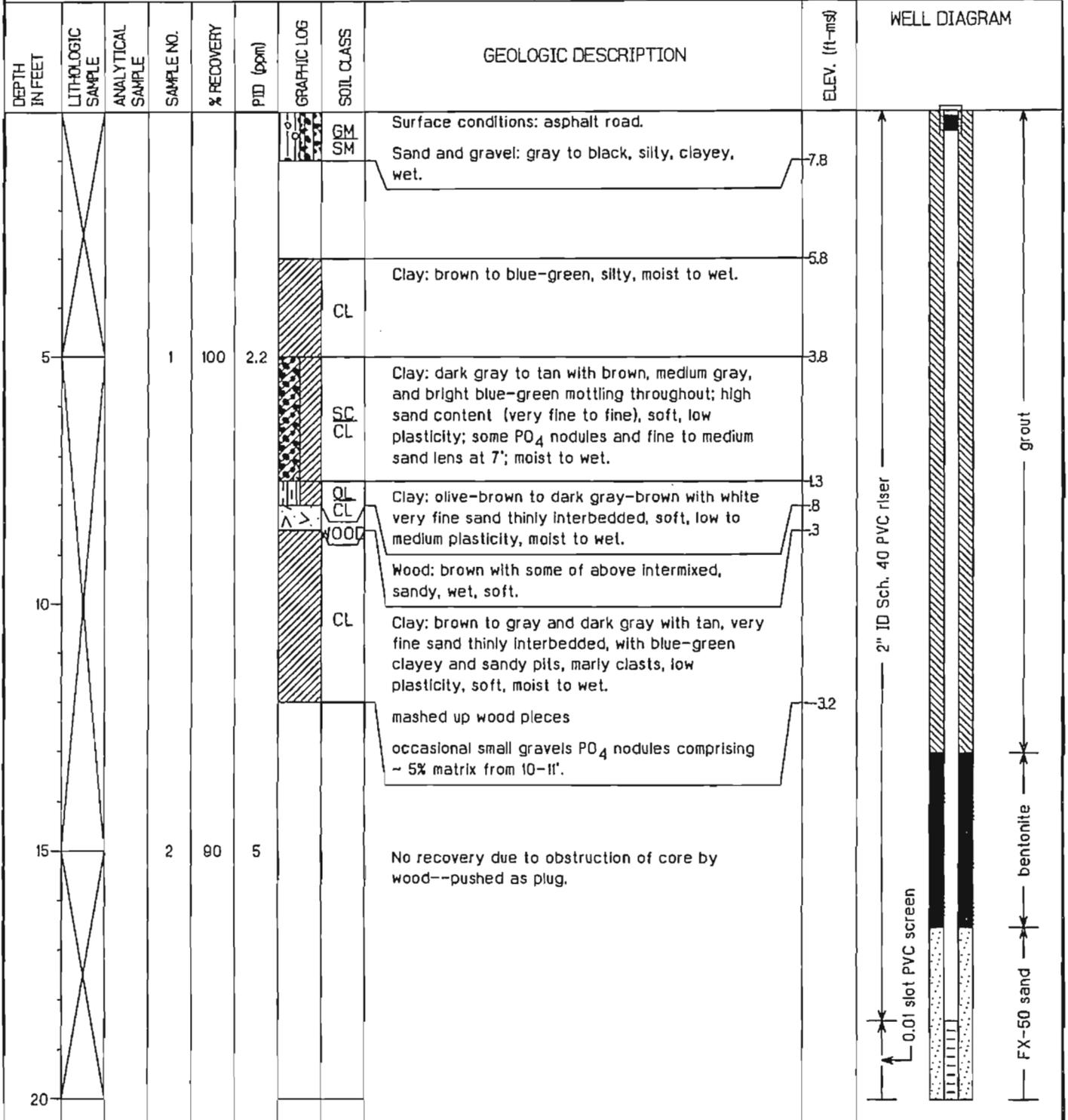
Groundwater Elevation: 1.59 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 28.3 feet bgs

Geologist: T. Kafka

Well Screen: 18.4 to 27.8 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE16D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316760.01 E, 376097.65 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1245 on 1-03-96

TOC Elevation: 8.66 feet msl

Completed at 1415 on 1-03-96

Depth to Groundwater: 7.07 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.59 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 28.3 feet bgs

Geologist: T. Kafka

Well Screen: 18.4 to 27.8 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	0			SM	Silt: olive-brown with black phosphatic sand throughout (~20%), soft, calcareous, occasional PO ₄ nodules (~5%), moist to wet; sand lens from 27-28'.	82	<p>0.01 slot PVC screen</p> <p>end cap</p> <p>FX-50 sand</p> <p>hole plug</p>
30							CL	Silt: olive-brown, occasional black phosphatic sand pods/stringers to 33', soft to firm, calcareous, moist to wet; sand content decreases rapidly at 33' to depth, dense, moist -- Ashley Formation.	82	
35			4	100	0.8				262	
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE017

Project: ZONE E - Naval Base Charleston

Coordinates: 2317237.69 E, 376502.67 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 0920 on 1-11-96

TOC Elevation: 8.50 feet msl

Completed at 1130 on 1-11-96

Depth to Groundwater: 4.89 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 3.61 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.0 feet bgs

Geologist: B. Blythe

Well Screen: 2.0 to 11.0 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: asphalt road near crane tracks		
5			1	75	0	SP SC	Sand: dark gray with black mottling, medium, very wet (flowing), with 3 cm clasts of gray fat clay in upper 0.5'; Petroleum odor.	5.3 3.8		
10			2	50	0	SC CL	Sand: green to gray-green, medium, high clay content of low plasticity, firm, moist; clay absent in last 0.1'; Petroleum odor.	8 2		
15			3	100	0	SC CL	Clay: green-gray with red FeOx mottling throughout, sandy, firm to stiff, low to medium plasticity, moist.	22 42		
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE17D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317249.30 E, 376507.94 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1240 on 1-11-96

TOC Elevation: 8.51 feet msl

Completed at 1415 on 1-11-96

Depth to Groundwater: 5.83 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

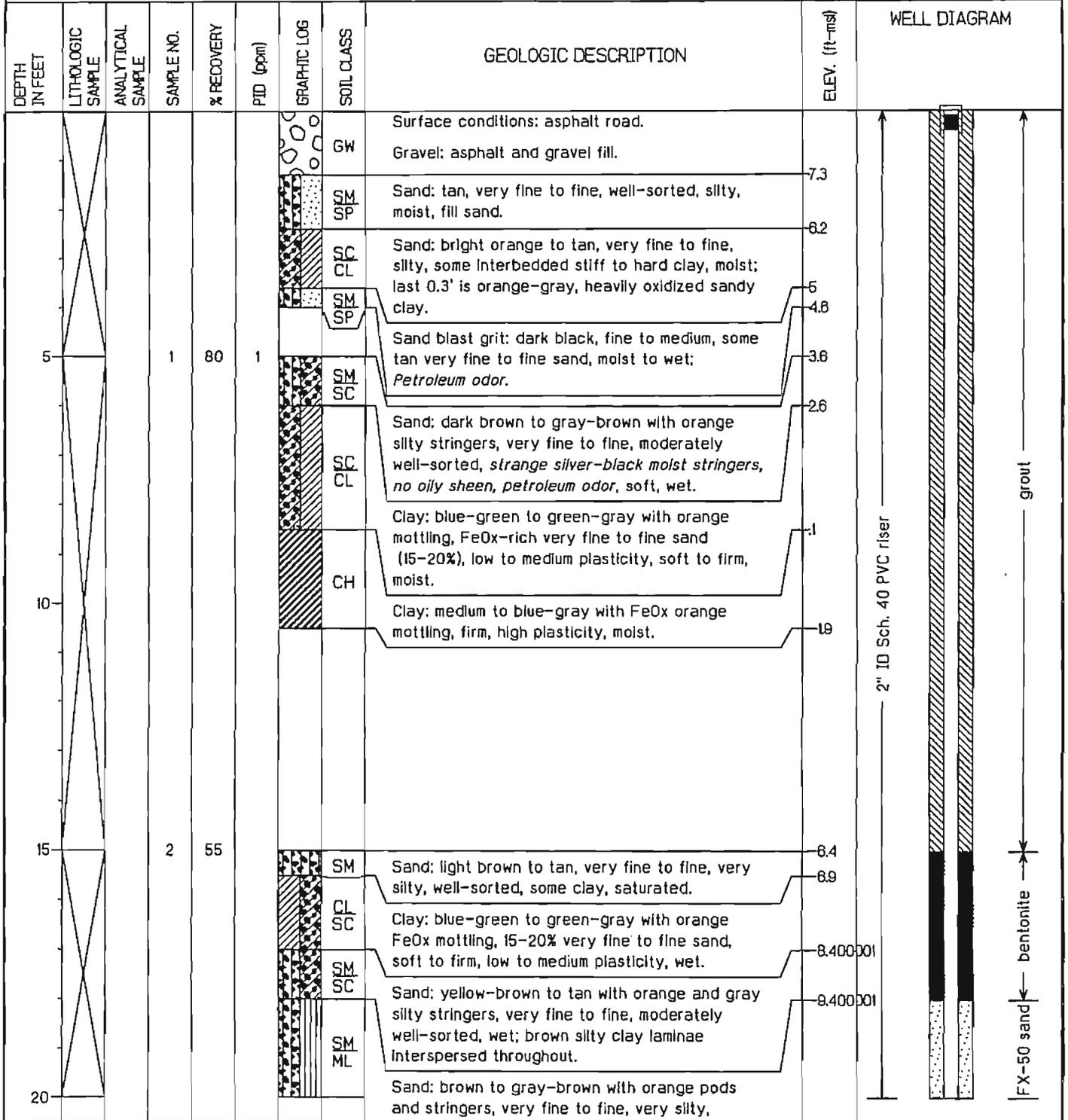
Groundwater Elevation: 2.68 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 26.1 feet bgs

Geologist: T. Kafka

Well Screen: 21.2 to 25.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE17D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317249.30 E, 376507.94 N

Location: Charleston, SC

Surface Elevation: 8.6 feet msl

Started at 1240 on 1-11-96

TOC Elevation: 8.51 feet msl

Completed at 1415 on 1-11-96

Depth to Groundwater: 5.83 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

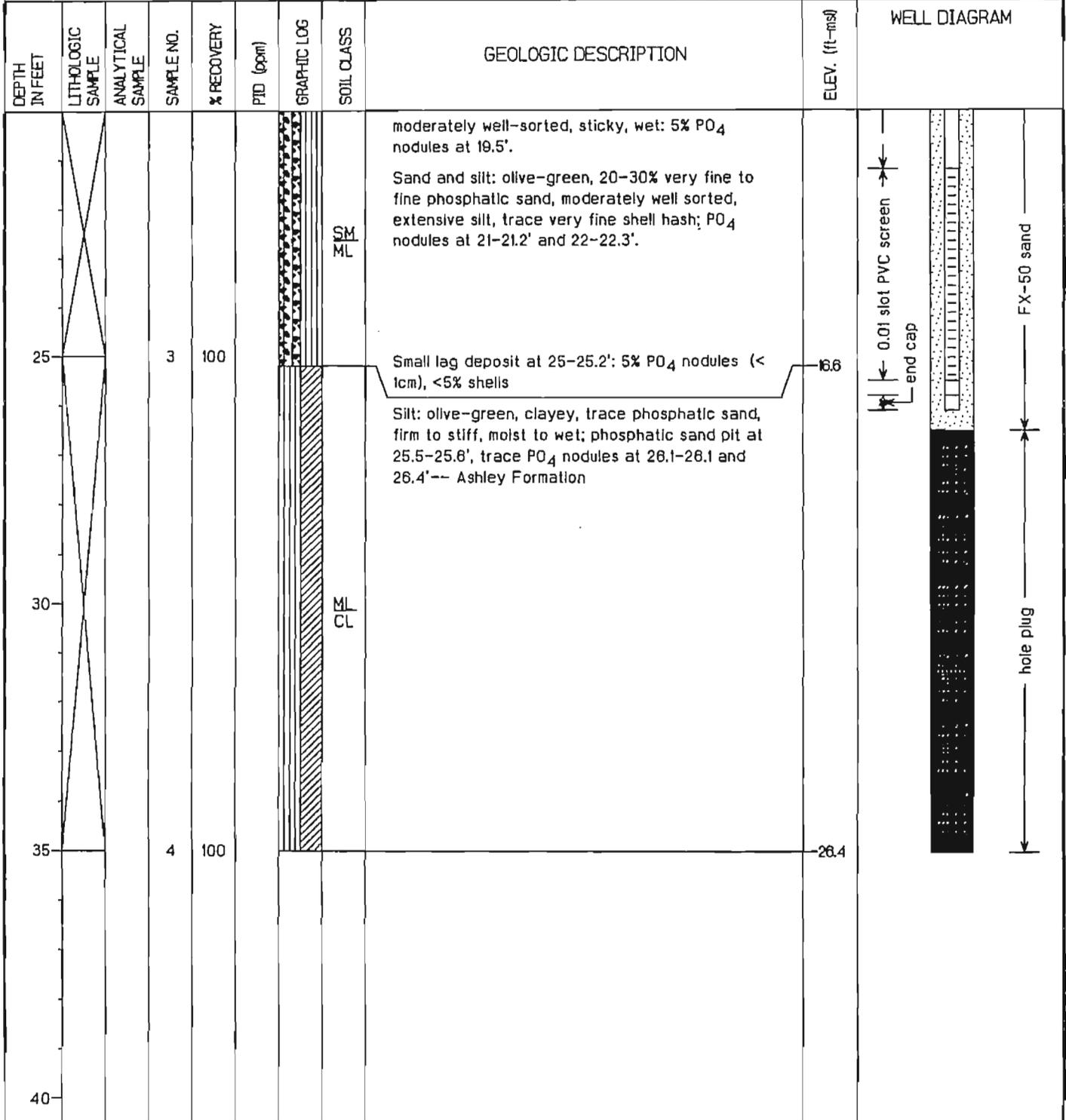
Groundwater Elevation: 2.68 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 26.1 feet bgs

Geologist: T. Kafka

Well Screen: 21.2 to 25.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE018

Project: ZONE E - Naval Base Charleston	Coordinates: 2316409.61 E, 377236.87 N
Location: Charleston, SC	Surface Elevation: 7.3 feet msl
Started at 1030 on 11-6-95	TOC Elevation: 7.10 feet msl
Completed at 1210 on 11-6-95	Depth to Groundwater: 4.59 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.51 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: T. Kafka	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt road		
4.3			1	0	0			Wood blocked spoon from 4.3-8.3'.		
5.3			2	0	0			No recovery 5.3-7.3'; inside and outside of spoon coated with silty sand and wood, saturated.	3	
7			3	20	0		SP SM	Auger cuttings 7-13': Sand: gray to brown-gray, very fine to fine, silty, trace clay, with wood fragments and organic pieces, saturated. No recovery in shelly tube from 8-10' bgs.	5.8	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE18D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316394.89 E, 377232.18 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 0945 on 11-20-95

TOC Elevation: 7.12 feet msl

Completed at 1350 on 11-20-95

Depth to Groundwater: 4.58 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

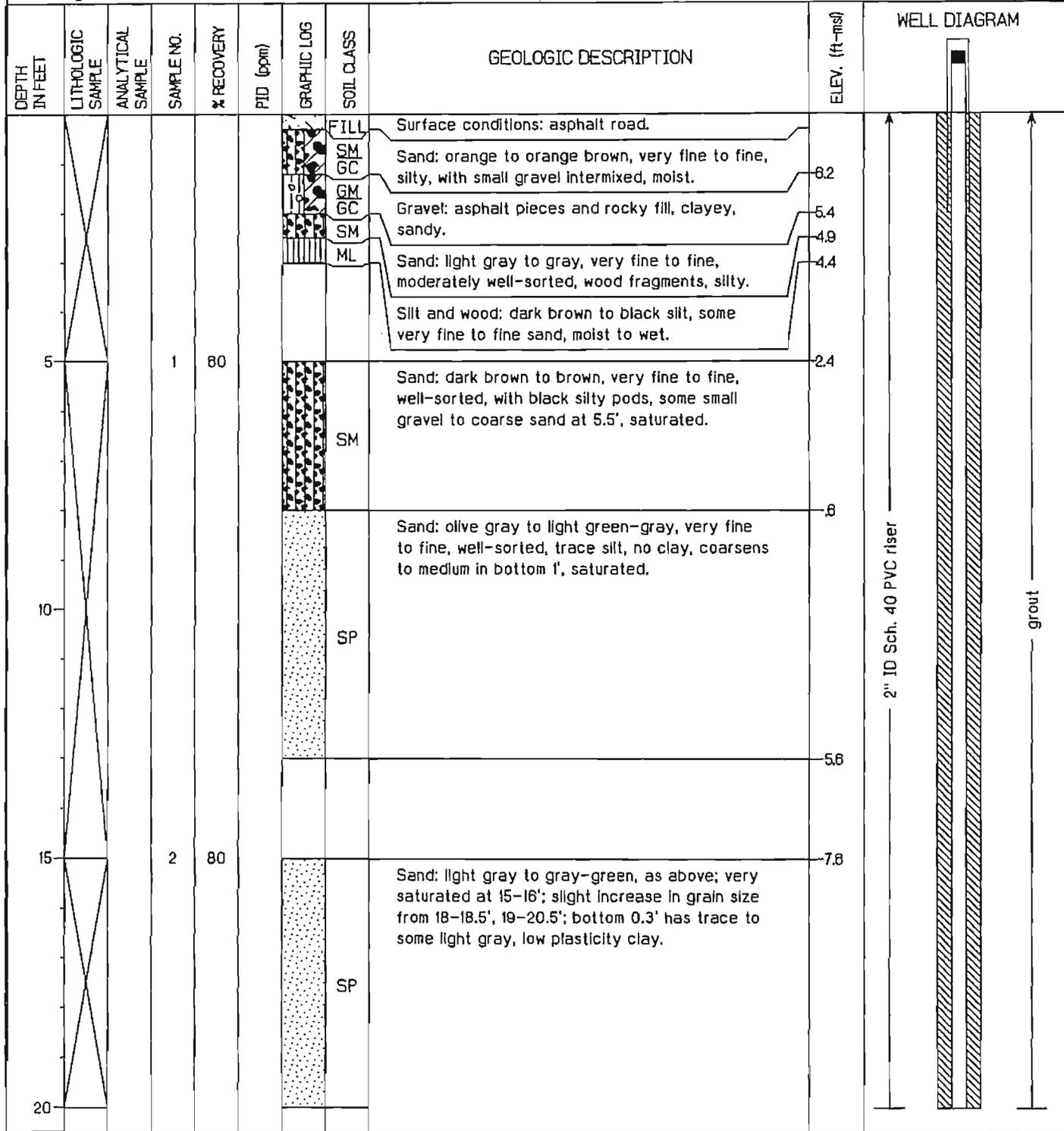
Groundwater Elevation: 2.54 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39 feet bgs

Geologist: T. Kafka

Well Screen: 29.1 to 38.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE18D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316394.89 E, 377232.18 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 0945 on 11-20-95

TOC Elevation: 7.12 feet msl

Completed at 1350 on 11-20-95

Depth to Groundwater: 4.58 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

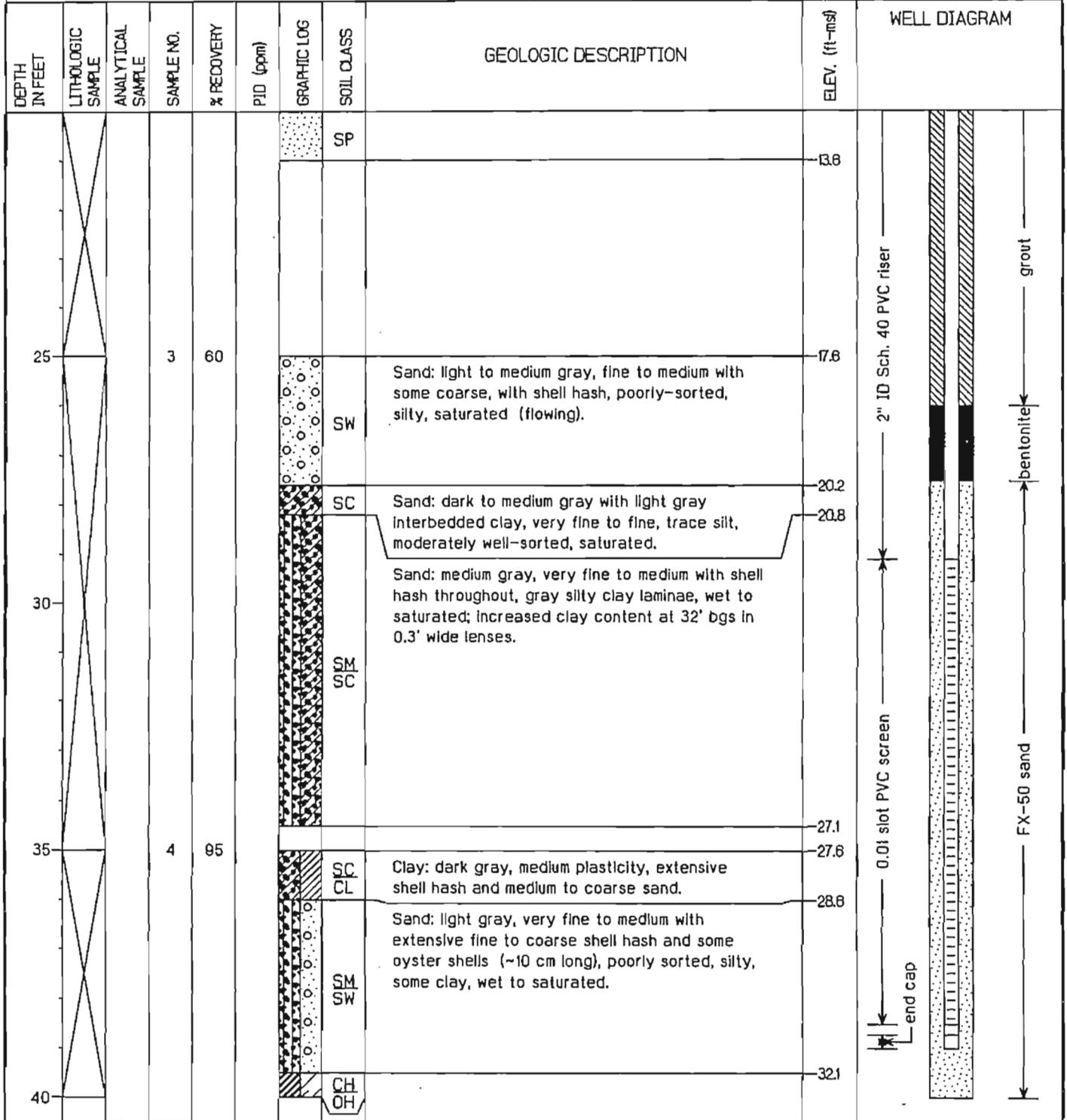
Groundwater Elevation: 2.54 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39 feet bgs

Geologist: T. Kafka

Well Screen: 29.1 to 38.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE18D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316394.89 E, 377232.18 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 0945 on 11-20-95

TOC Elevation: 7.12 feet msl

Completed at 1350 on 11-20-95

Depth to Groundwater: 4.58 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.54 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39 feet bgs

Geologist: T. Kafka

Well Screen: 29.1 to 39.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
							CH OH	Clay: dark gray, medium to high plasticity, with silty fine to medium sand and shell hash lens from 40.8-41.2', poorly sorted, wet.	34.1	<p>hole plug</p>
45			5	65			Clay: as above with fine to medium sand and shell hash lenses, 0.3' wide at 46', 48.7', 48.5', and 51'; trace to some fine to medium shell hash throughout remainder of core.	37.6		
50							CH OH			
55			6	100			CH	Clay: dark green to gray-green, firm to hard, fat (3.5' expansion into rod from core barrel), with black silty stringers, slightly calcareous, wet -- dewatered marsh clay.	47.6	
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE18D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316394.89 E, 377232.18 N

Location: Charleston, SC

Surface Elevation: 7.4 feet msl

Started at 0945 on 11-20-95

TOC Elevation: 7.12 feet msl

Completed at 1350 on 11-20-95

Depth to Groundwater: 4.58 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

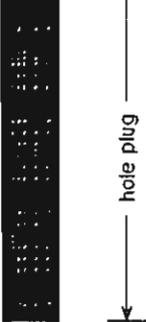
Groundwater Elevation: 2.54 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 39 feet bgs

Geologist: T. Kafka

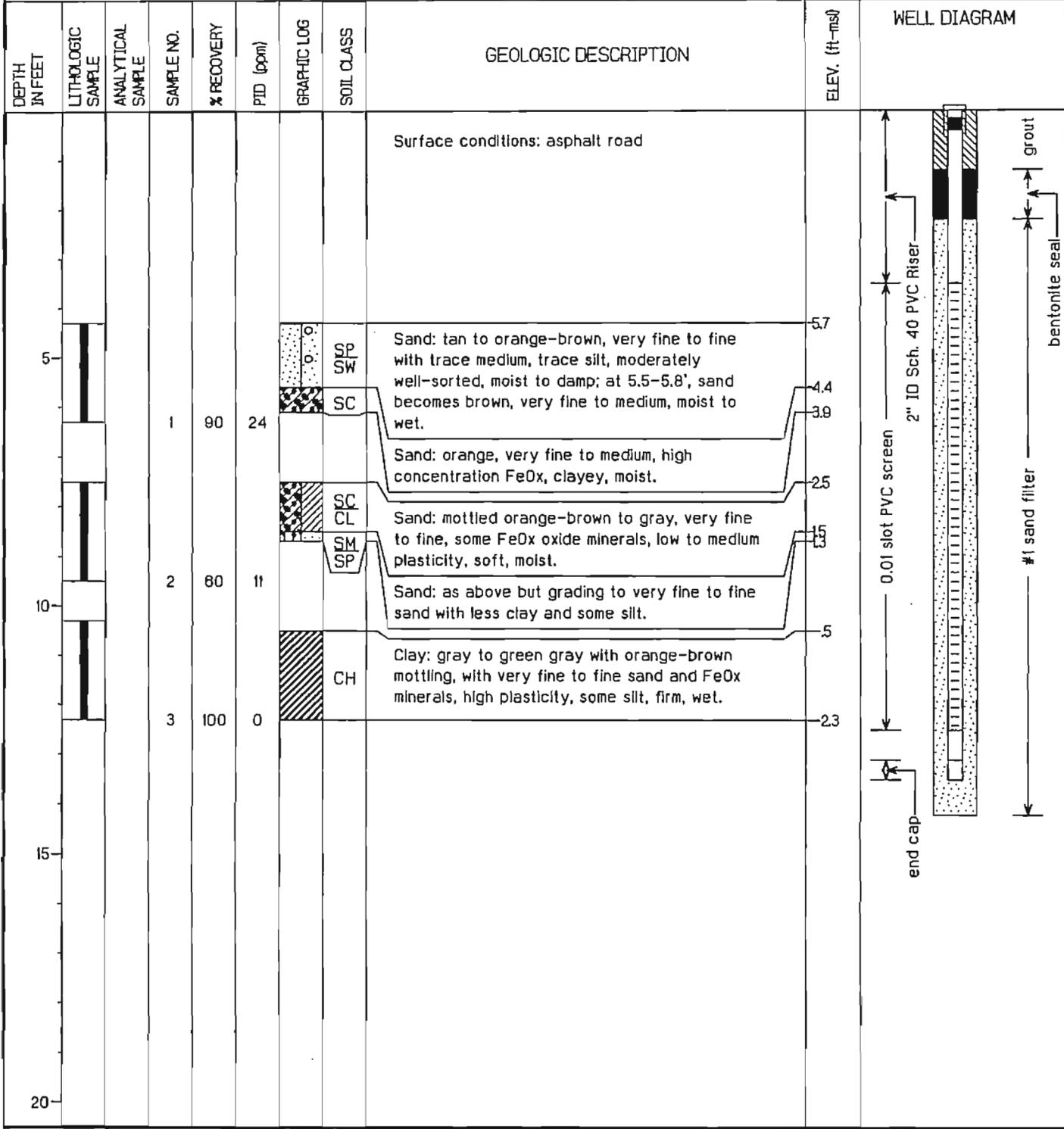
Well Screen: 29.1 to 38.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
65			7	100			CH		57.8	
70										
75										
80										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE019

Project: ZONE E - Naval Base Charleston	Coordinates: 2316940.80 E, 377552.79 N
Location: Charleston, SC	Surface Elevation: 10.0 feet msl
Started at 1545 on 10-30-95	TOC Elevation: 9.84 feet msl
Completed at 1715 on 10-30-95	Depth to Groundwater: 7.09 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 2.75 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.5 feet bgs
Geologist: T. Kafka	Well Screen: 3.5 to 12.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE19D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316958.91 E, 377556.23 N

Location: Charleston, SC

Surface Elevation: 10.1 feet msl

Started at 1620 on 12-04-95

TOC Elevation: 9.90 feet msl

Completed at 1130 on 12-05-95

Depth to Groundwater: 7.59 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

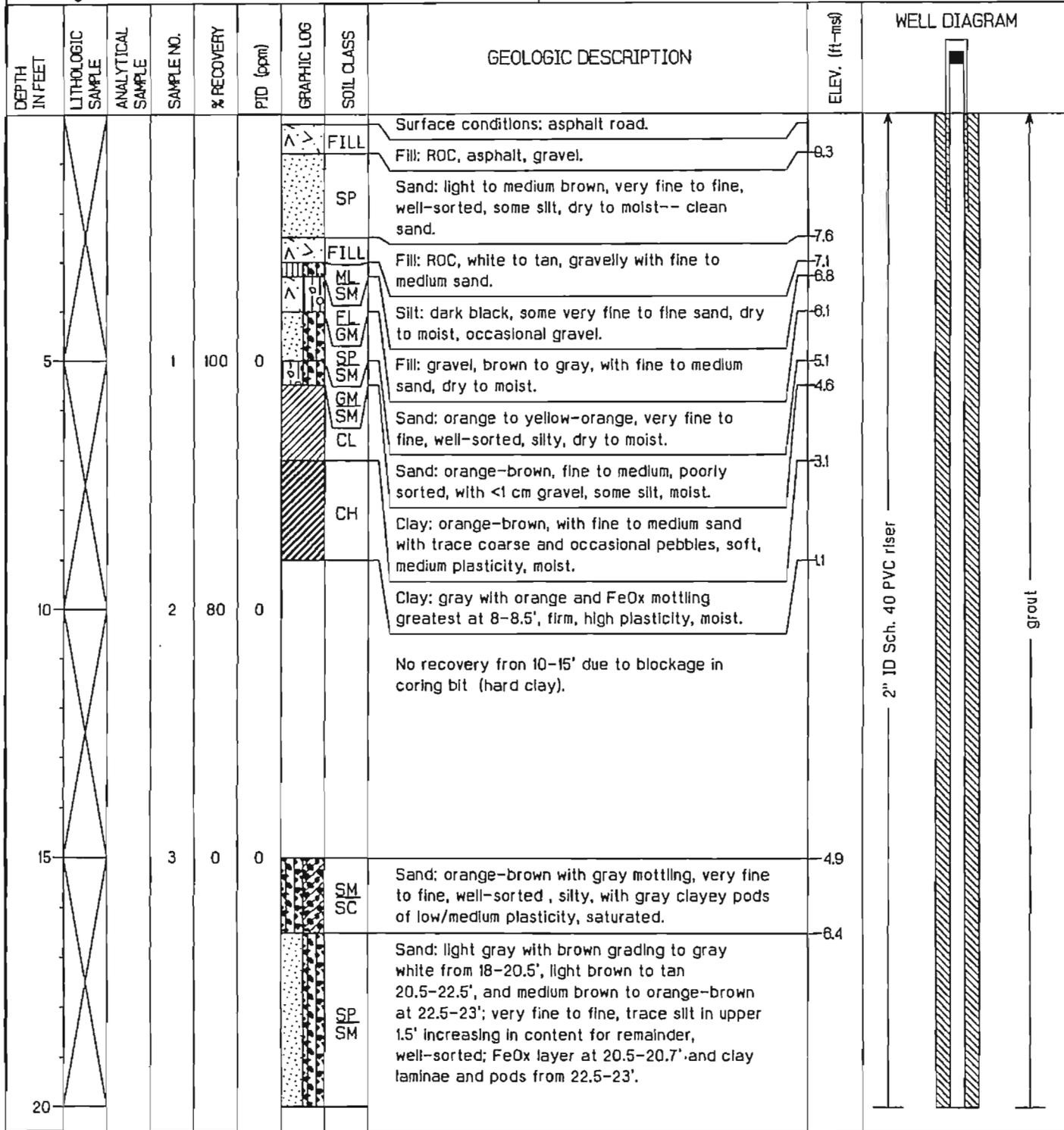
Groundwater Elevation: 2.31 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 55.8 feet bgs

Geologist: T. Kafka

Well Screen: 45.9 to 55.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE19D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316958.91 E, 377556.23 N

Location: Charleston, SC

Surface Elevation: 10.1 feet msl

Started at 1620 on 12-04-95

TOC Elevation: 9.90 feet msl

Completed at 1130 on 12-05-95

Depth to Groundwater: 7.59 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

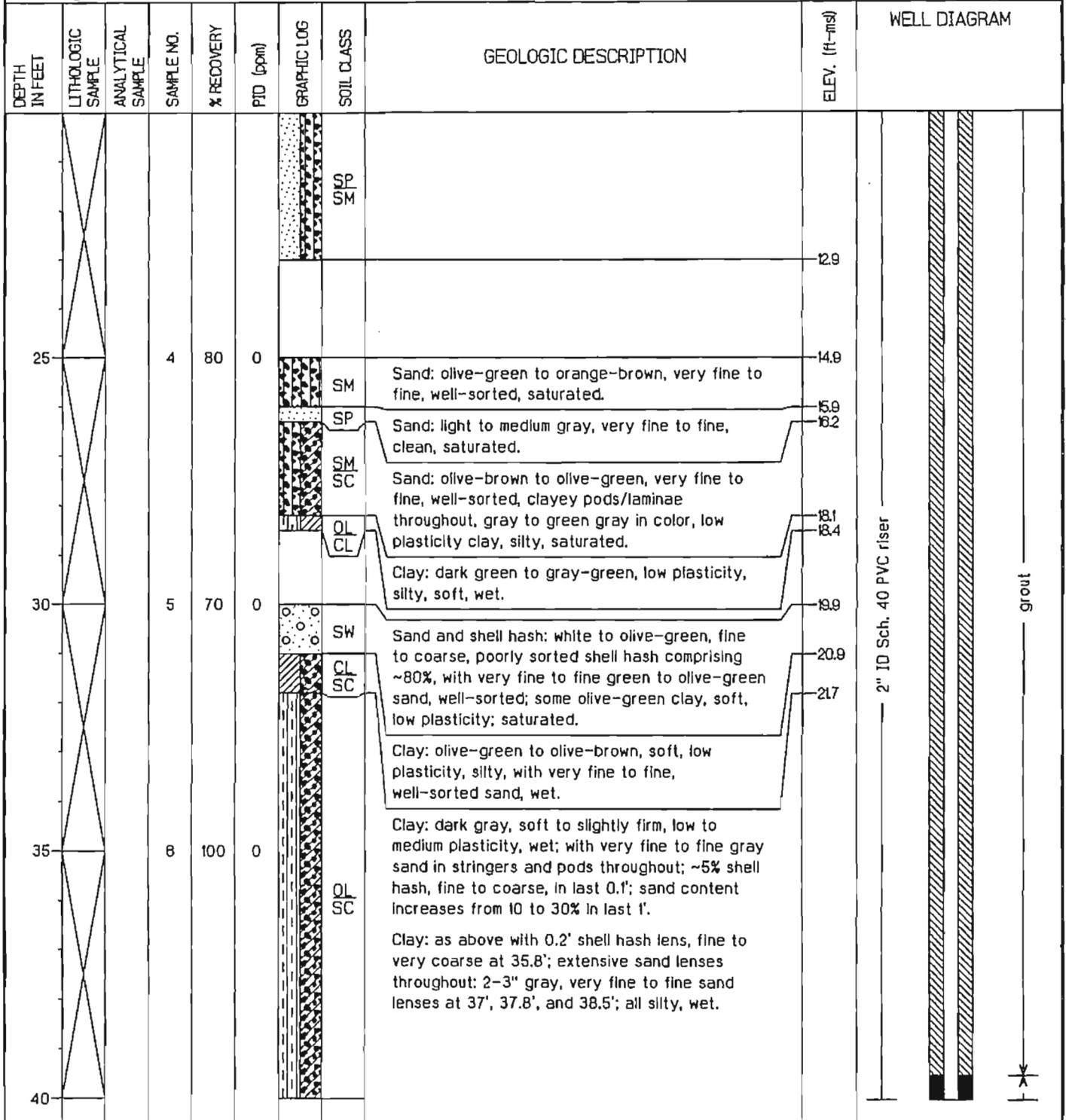
Groundwater Elevation: 2.31 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 55.8 feet bgs

Geologist: T. Kafka

Well Screen: 45.9 to 55.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE19D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316958.91 E, 377556.23 N

Location: Charleston, SC

Surface Elevation: 10.1 feet msl

Started at 1620 on 12-04-95

TOC Elevation: 9.90 feet msl

Completed at 1130 on 12-05-95

Depth to Groundwater: 7.59 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

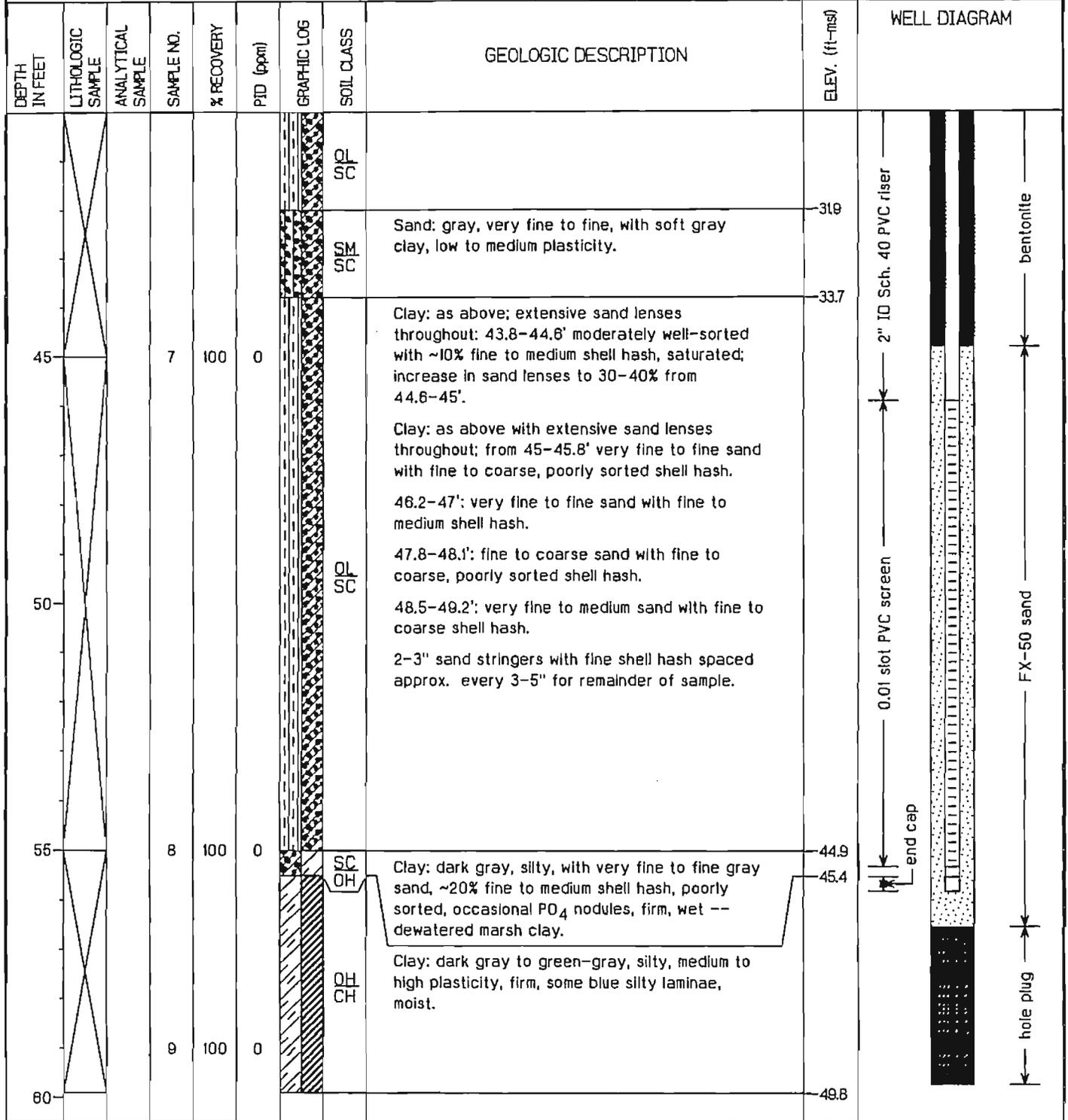
Groundwater Elevation: 2.31 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 55.8 feet bgs

Geologist: T. Kafka

Well Screen: 45.9 to 55.3 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE020

Project: ZONE E - Naval Base Charleston	Coordinates: 2317271.09 E, 377338.86 N
Location: Charleston, SC	Surface Elevation: 9.4 feet msl
Started at 1340 on 11-17-95	TOC Elevation: 9.26 feet msl
Completed at 1450 on 11-17-95	Depth to Groundwater: 4.43 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 4.83 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 12.5 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: concrete		
5			1	100	0		GC SC	Sand: black, gravelly with clayey matrix--fill.	5.1 4.6	
							SP SM	Sand: brown to red, fine to medium, clayey, moist to saturated.	3.1	
10			2	100	0		SP SM	Sand: as above.	1.4 -6	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE20D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317286.73 E, 377343.56 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0900 on 1-9-96

TOC Elevation: 9.46 feet msl

Completed at 1630 on 1-9-96

Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

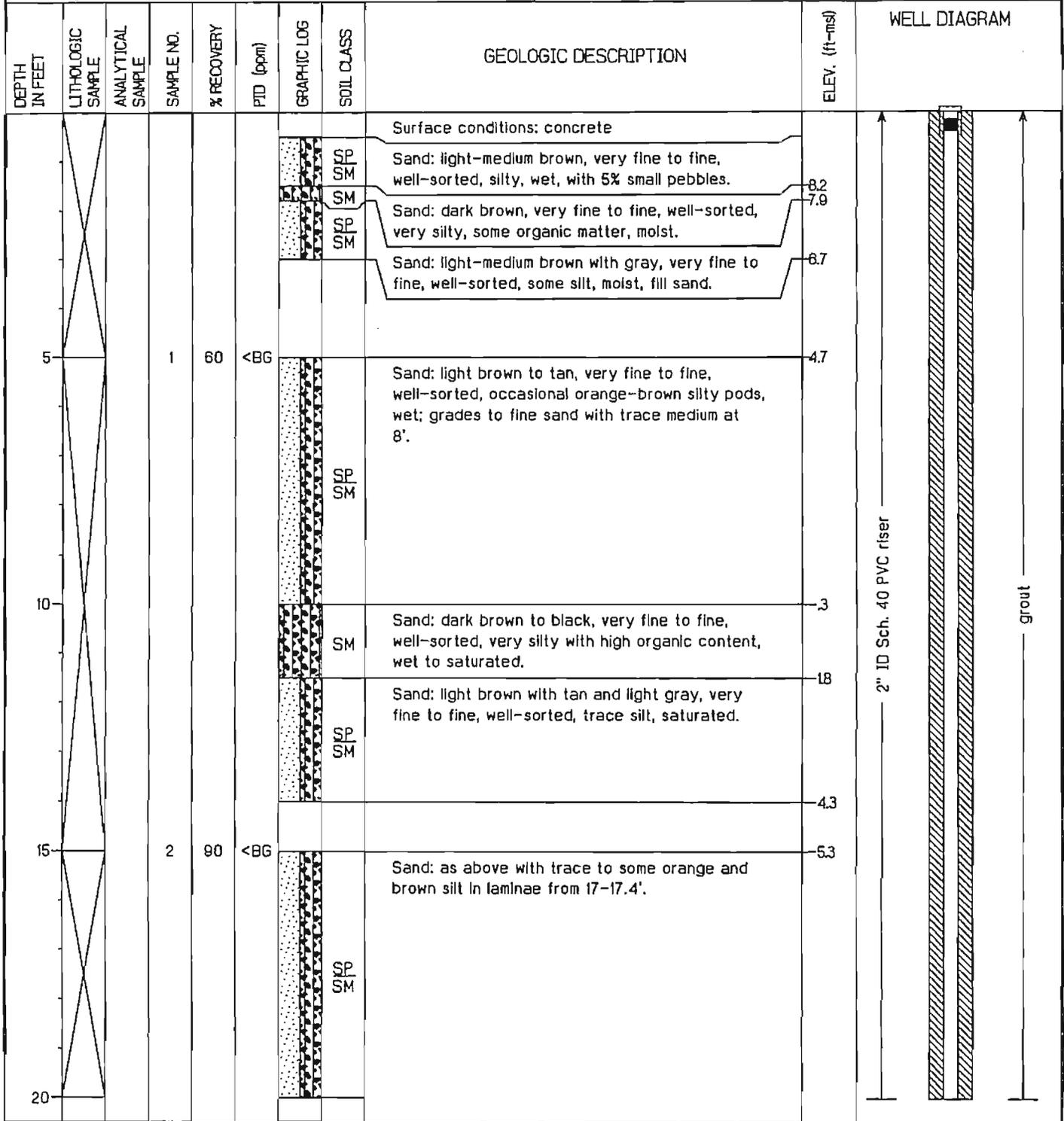
Groundwater Elevation: 2.19 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 60.9 feet bgs

Geologist: T. Kafka

Well Screen: 51 to 60.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE20D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317286.73 E, 377343.56 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0900 on 1-9-96

TOC Elevation: 9.46 feet msl

Completed at 1630 on 1-9-96

Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

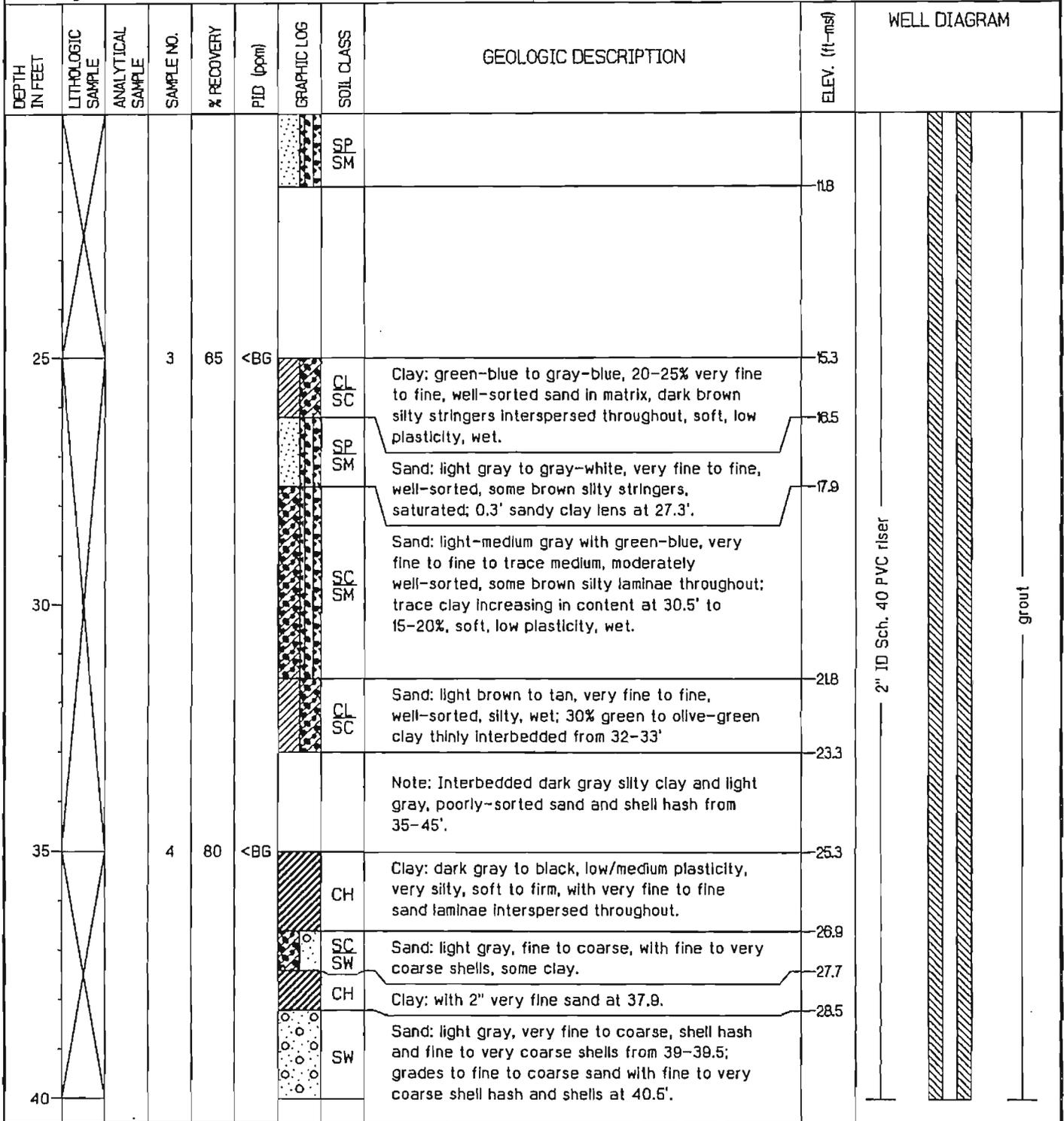
Groundwater Elevation: 2.19 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 60.9 feet bgs

Geologist: T. Kafka

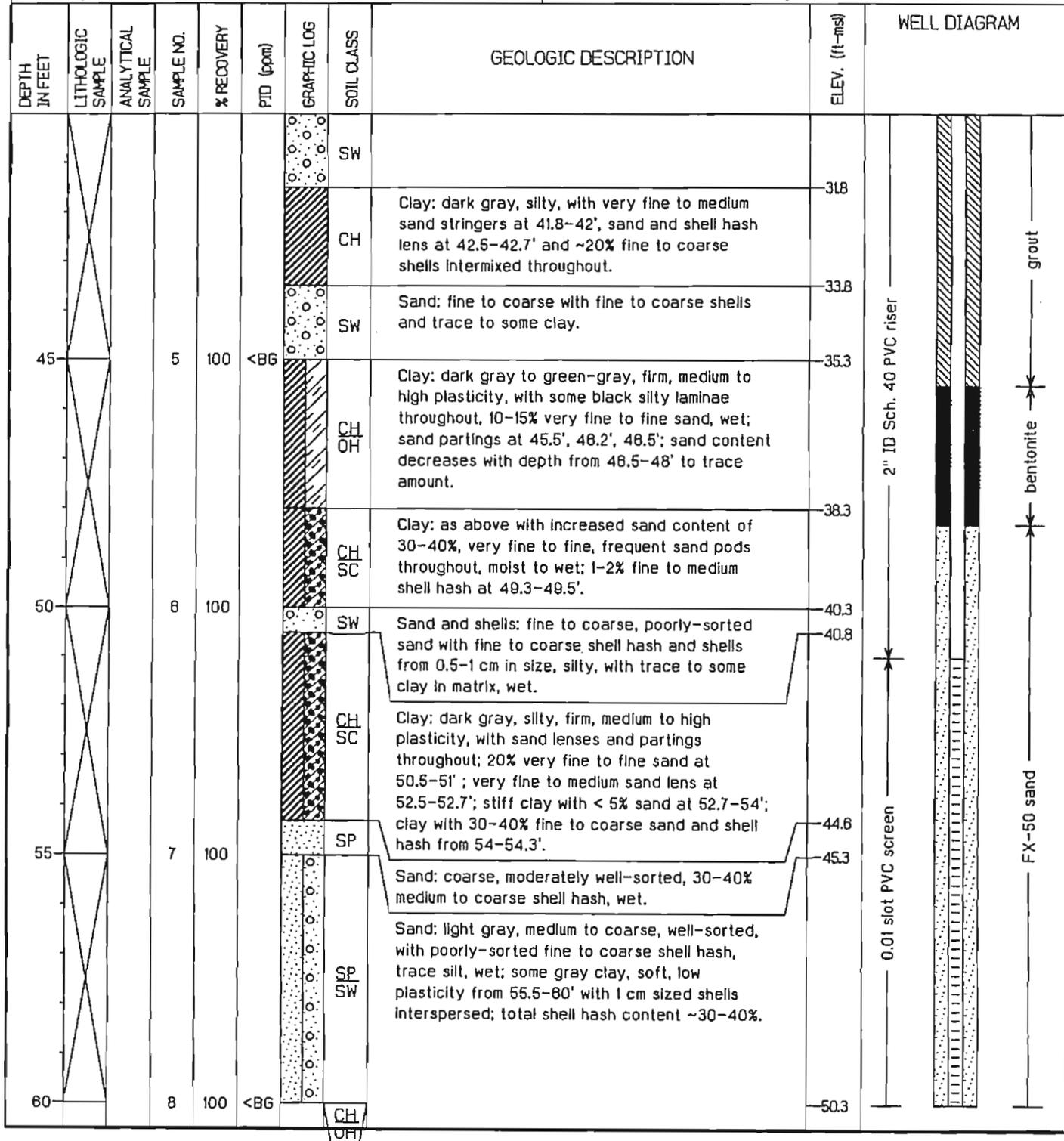
Well Screen: 51 to 60.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE20D

Project: ZONE E - Naval Base Charleston	Coordinates: 2317286.73 E, 377343.56 N
Location: Charleston, SC	Surface Elevation: 9.7 feet msl
Started at 0900 on 1-9-96	TOC Elevation: 9.46 feet msl
Completed at 1630 on 1-9-96	Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 2.19 feet msl
Drilling Company: Alliance Environmental (SC Cert #889)	Total Well Depth: 60.9 feet bgs
Geologist: T. Kafka	Well Screen: 51 to 60.4 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE20D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317286.73 E, 377343.56 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0900 on 1-9-96

TOC Elevation: 9.46 feet msl

Completed at 1630 on 1-9-96

Depth to Groundwater: 7.27 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 2.19 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 60.9 feet bgs

Geologist: T. Kafka

Well Screen: 51 to 60.4 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	SOIL ELEV. (ft-msl)	WELL DIAGRAM
65								Clay: dark gray-green with occasional black silty laminae throughout, silty, firm to stiff, high plasticity, no effervescence with HCl -- dewatered marsh clay.	63.3	
70			9	100	<BG		Shelby tube (70-72.5'): top and bottom: dark gray-green silty clay as above.	62.8		
75										
80										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE021

Project: ZONE E - Naval Base Charleston

Coordinates: 2317579.14 E, 37751109 N

Location: Charleston, SC

Surface Elevation: 8.2 feet msl

Started at 1350 on 11-6-95

TOC Elevation: 8.22 feet msl

Completed at 1455 on 11-6-95

Depth to Groundwater: 6.30 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

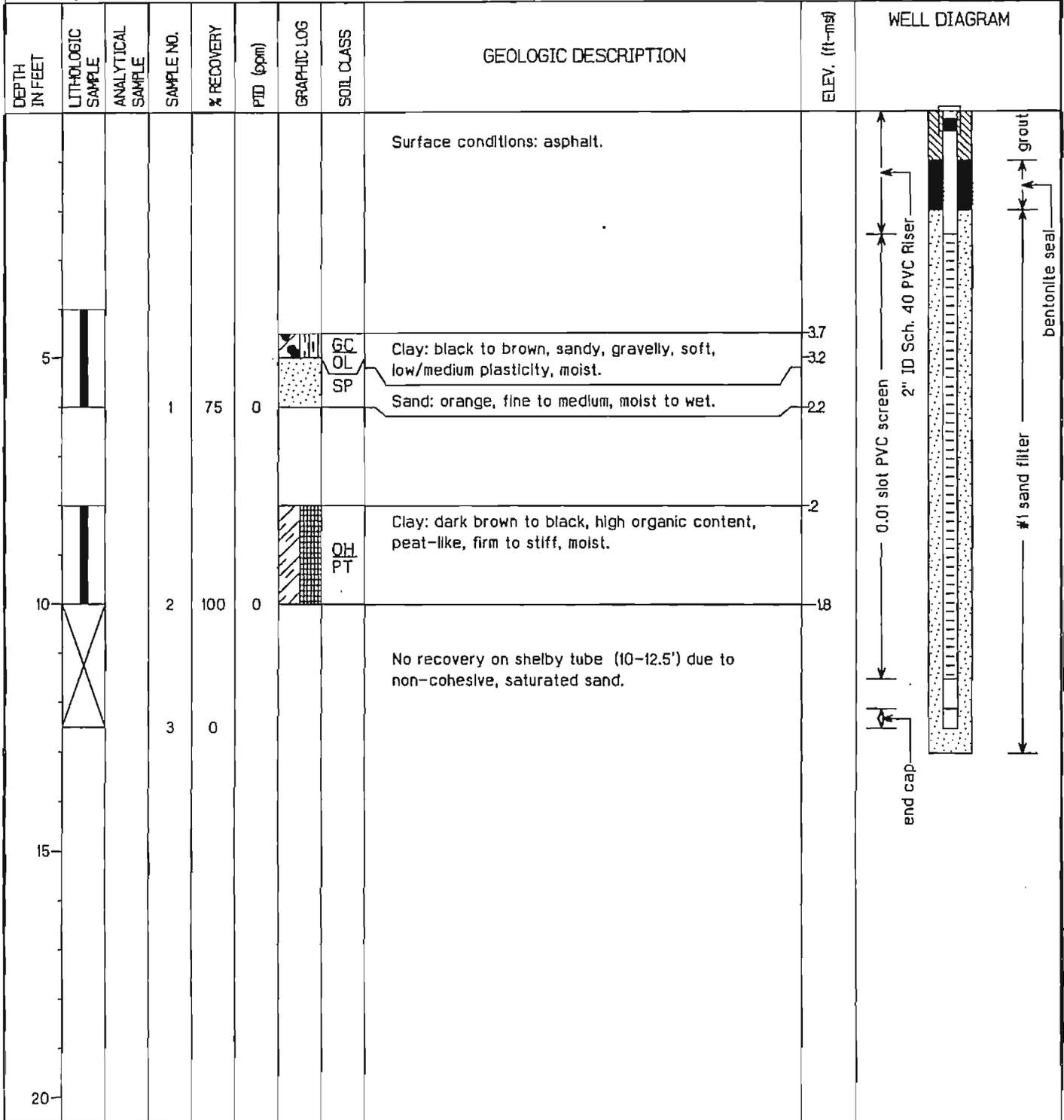
Groundwater Elevation: 1.92 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 12.5 feet bgs

Geologist: B. Blythe

Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE21D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317589.18 E, 377513.91 N

Location: Charleston, SC

Surface Elevation: 8.2 feet msl

Started at 0935 on 12-15-95

TOC Elevation: 8.12 feet msl

Completed at 1110 on 12-15-95

Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

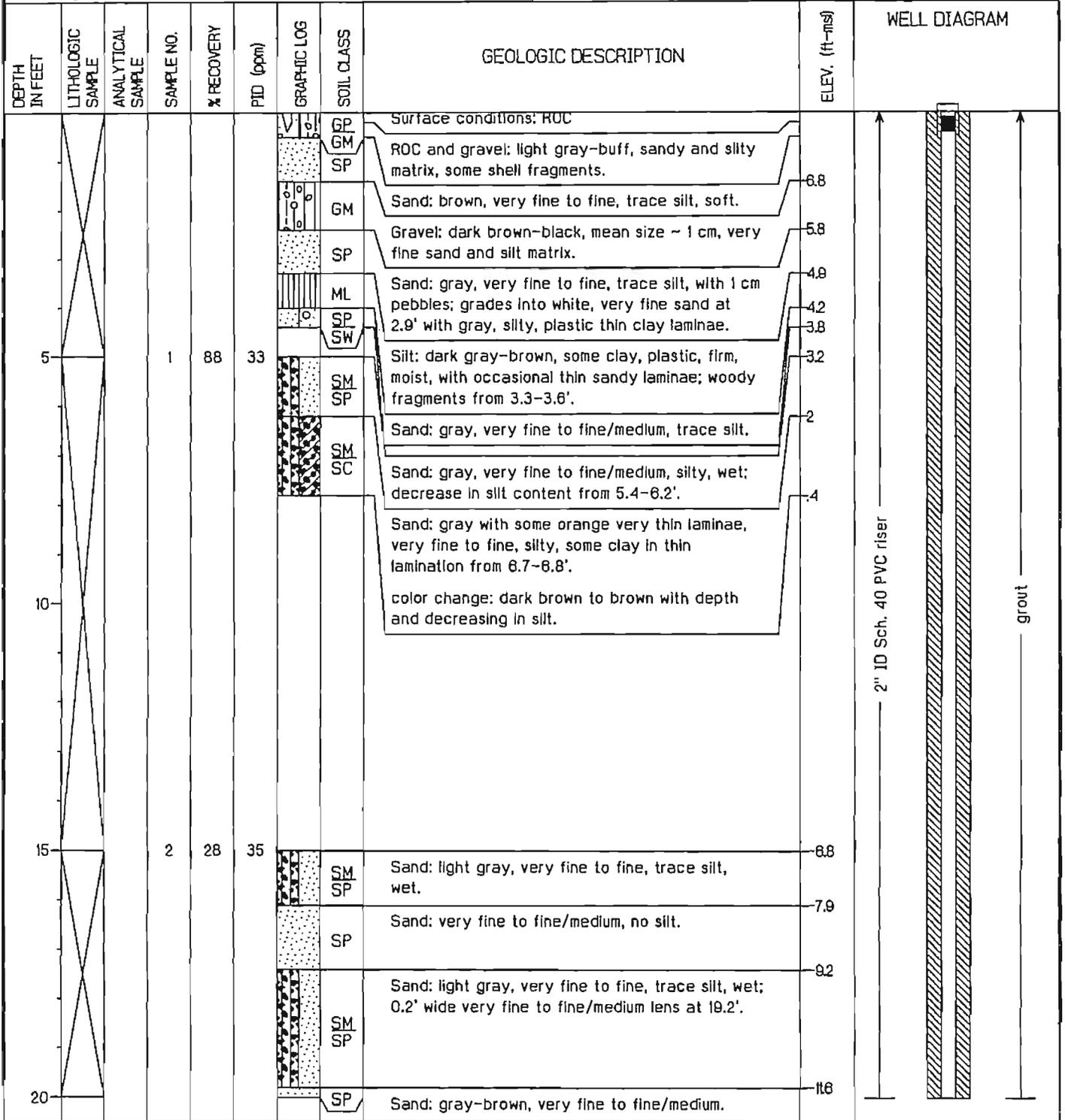
Groundwater Elevation: 1.51 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 45.6 feet bgs

Geologist: P. Bayley

Well Screen: 35.7 to 45.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE21D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317589.18 E, 377513.91 N

Location: Charleston, SC

Surface Elevation: 8.2 feet msl

Started at 0835 on 12-15-95

TOC Elevation: 8.12 feet msl

Completed at 1110 on 12-15-95

Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

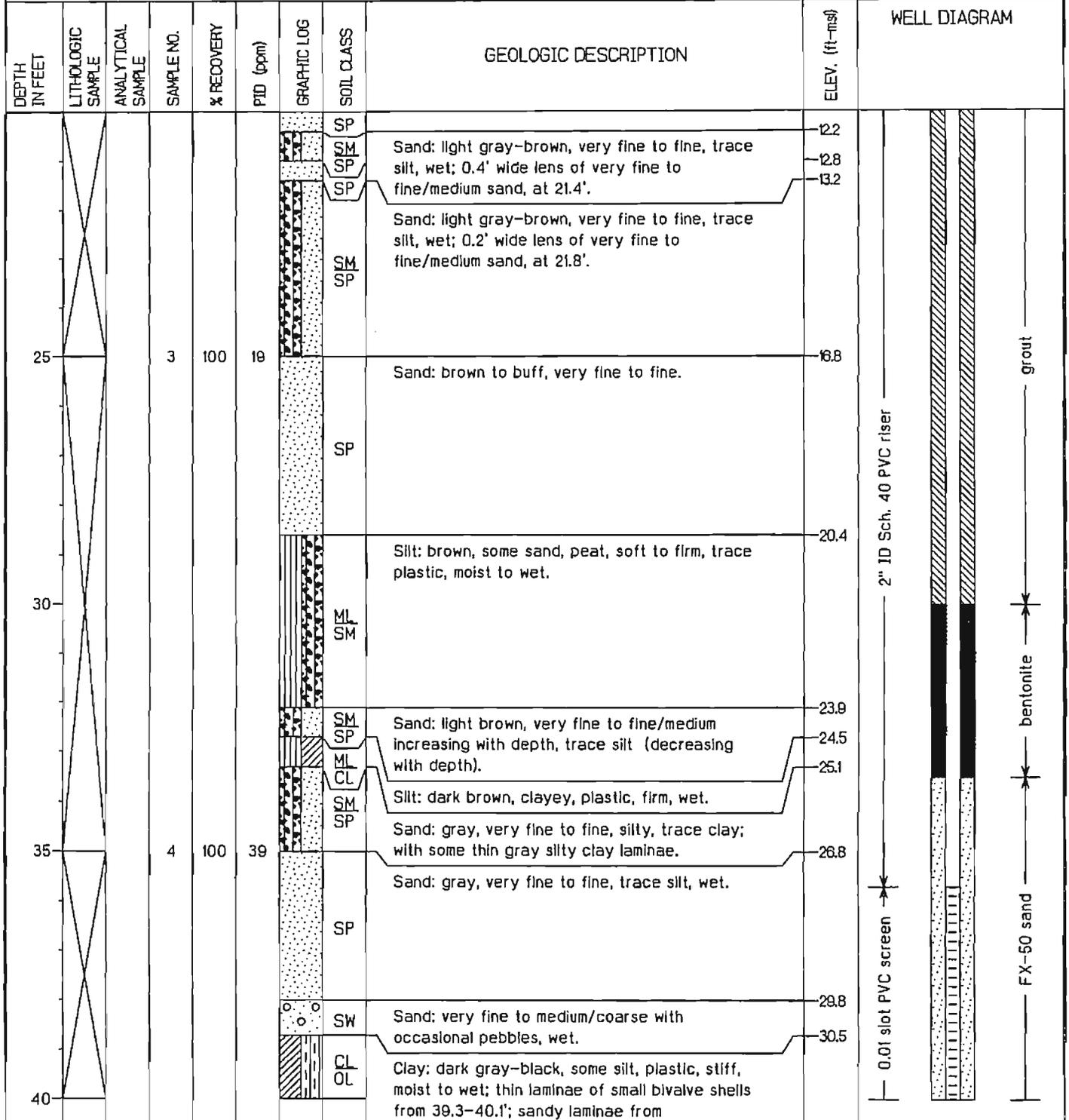
Groundwater Elevation: 1.51 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 45.6 feet bgs

Geologist: P. Bayley

Well Screen: 35.7 to 45.1 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE21D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317589.18 E, 377513.91 N

Location: Charleston, SC

Surface Elevation: 8.2 feet msl

Started at 0835 on 12-15-95

TOC Elevation: 8.12 feet msl

Completed at 1110 on 12-15-95

Depth to Groundwater: 6.61 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.51 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 45.6 feet bgs

Geologist: P. Bayley

Well Screen: 35.7 to 45.1 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
40.5-40.8'							OL	40.5-40.8' and 40.8-41.1', very fine to fine, silty, with shell fragments.	32.9	<p>0.01 slot PVC screen end cap FX-50 sand hole plug</p>
							SP	Sand: gray, very fine to fine, trace silt, with thin gray, clay laminae, silty, plastic.	35.7	
45			6	89	3		OL	Clay: olive gray-green, some silt, plastic, very stiff, moist; with sand pits from 45-46.4', very fine to fine, silty, clayey -- dewatered marsh clay.	38.8	
							CH			
55			8	100	0		CH	Shelby tube 55-57.5': top and bottom: olive-gray-green clay.		
			7	100			CH		49.3	
80										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE022

Project: ZONE E - Naval Base Charleston

Coordinates: 2317644.08 E, 377346.69 N

Location: Charleston, SC

Surface Elevation: 7.1 feet msl

Started at 1350 on 10-26-95

TOC Elevation: 6.85 feet msl

Completed at 1540 on 10-26-95

Depth to Groundwater: 5.64 feet TOC Measured: 3/13/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 121 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 13 feet bgs

Geologist: P. Bayley

Well Screen: 3 to 12 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
0								Surface conditions: asphalt road		
0-13						FILL		Auger cuttings from 0-13': gravel with silty clay matrix; no split spoons possible.		
13-14.7							OH	Auger cuttings from 13-14.7': marsh clay.	5.8	
14.7-15									7.6	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE22D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317662.34 E, 377353.27 N

Location: Charleston, SC

Surface Elevation: 7.3 feet msl

Started at 1415 on 12-13-95

TOC Elevation: 7.04 feet msl

Completed at 1615 on 12-13-95

Depth to Groundwater: 5.69 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

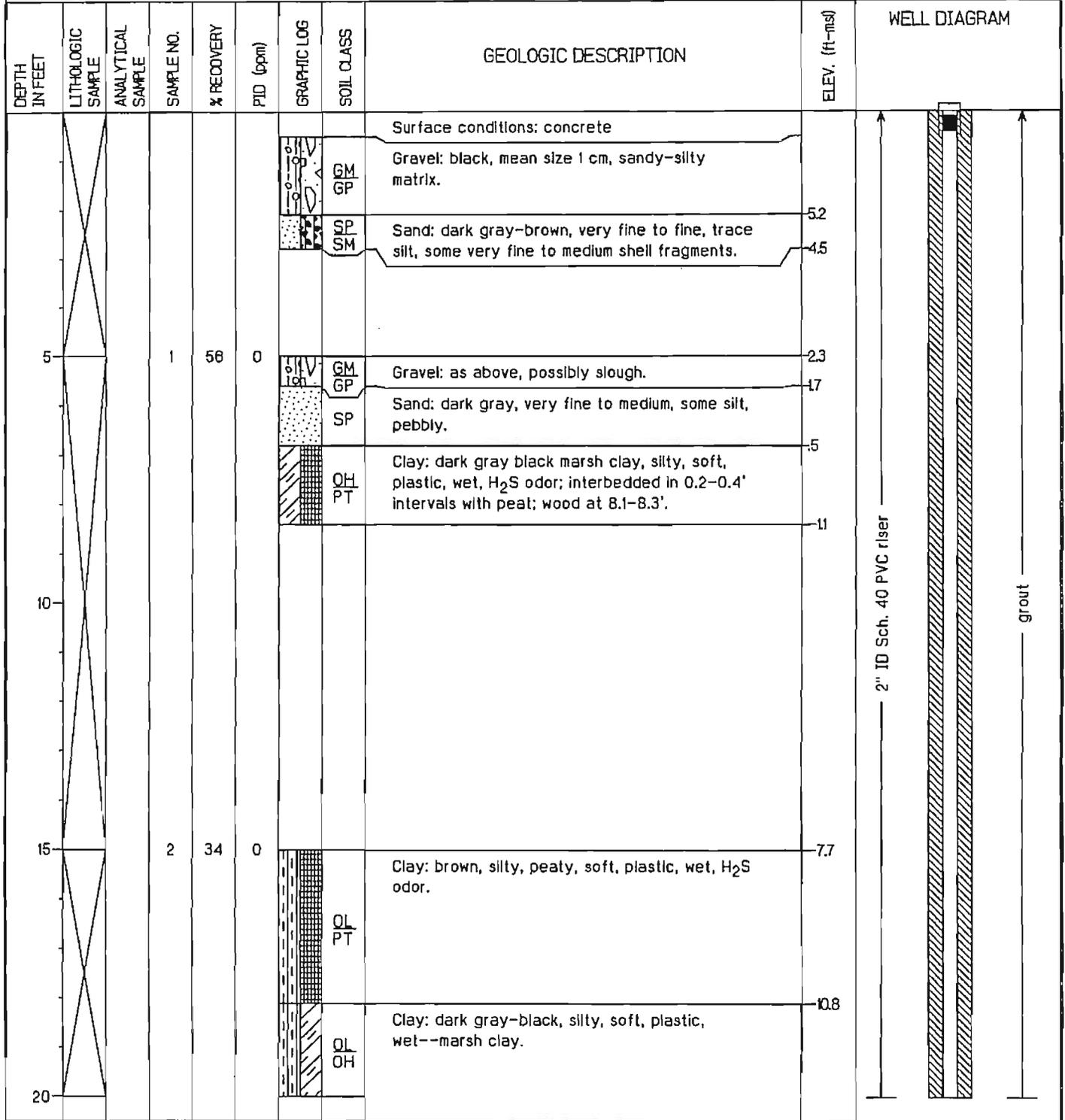
Groundwater Elevation: 1.35 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

Well Screen: 28.1 to 37.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE22D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317662.34 E, 377353.27 N

Location: Charleston, SC

Surface Elevation: 7.3 feet msl

Started at 1415 on 12-13-95

TOC Elevation: 7.04 feet msl

Completed at 1615 on 12-13-95

Depth to Groundwater: 5.69 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

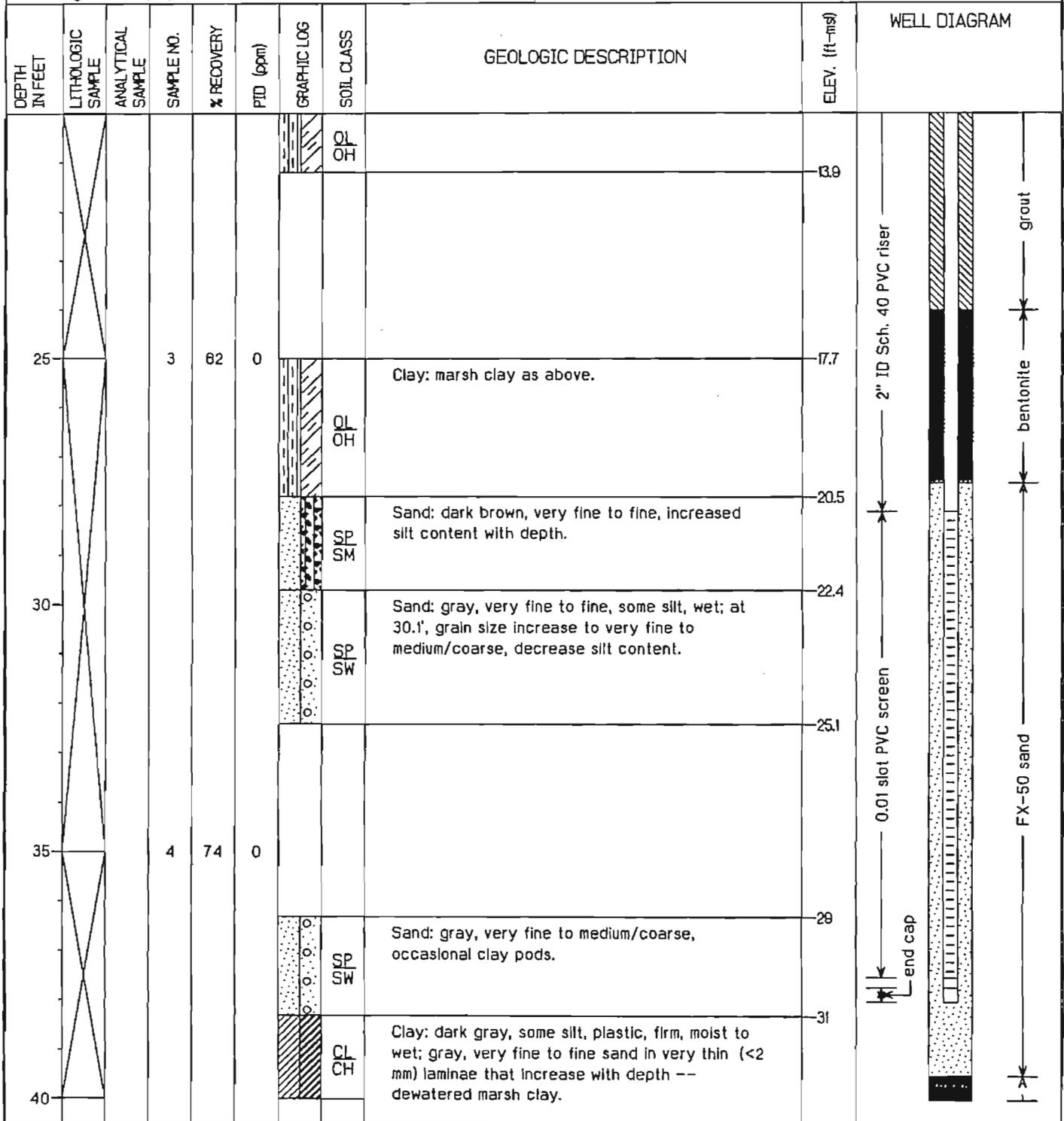
Groundwater Elevation: 1.35 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

Well Screen: 28.1 to 37.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE22D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317662.34 E, 377353.27 N

Location: Charleston, SC

Surface Elevation: 7.3 feet msl

Started at 1415 on 12-13-95

TOC Elevation: 7.04 feet msl

Completed at 1615 on 12-13-95

Depth to Groundwater: 5.69 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 1.35 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

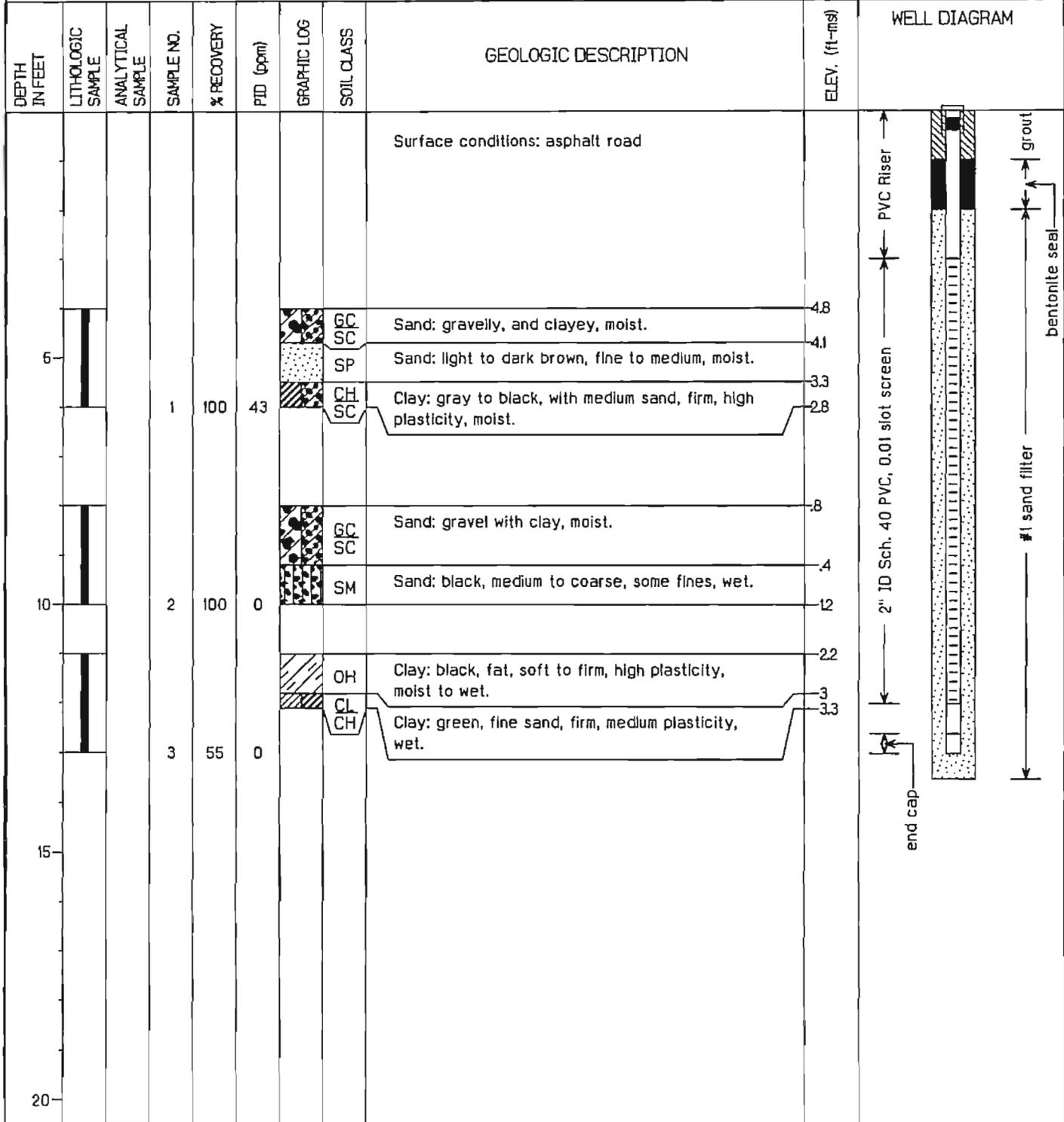
Well Screen: 28.1 to 37.5 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	87	0		CH	43-43.9': sand lens, gray, very fine to fine with some medium, silty.	36.8	
							SM SC	Sand: gray, very fine to fine, some silt, some clay, shell fragments.	37.7	
							CH	Clay: dark green-gray, some silt, firm to stiff, moist to wet; thinly interbedded gray, very fine to fine sand in upper 3'--dewatered marsh clay.		
55			8	100	0		CH	Clay: dewatered marsh clay as above with very thin, 1-2 cm sandy pits, very stiff.	47.7	
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE023

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2317939.02 E, 377187.70 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>8.8 feet msl</i>
Started at <i>1315 on 1-11-96</i>	TOC Elevation: <i>8.58 feet msl</i>
Completed at <i>1430 on 1-11-96</i>	Depth to Groundwater: <i>9.97 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>-1.39 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.0 feet bgs</i>
Geologist: <i>B. Blythe</i>	Well Screen: <i>3.0 to 12.0 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE23D

Project: ZONE E - Naval Base Charleston

Coordinates: 231792L36 E, 37718L40 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1510 on 1-11-96

TOC Elevation: 8.57 feet msl

Completed at 0900 on 1-12-96

Depth to Groundwater: 8.37 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

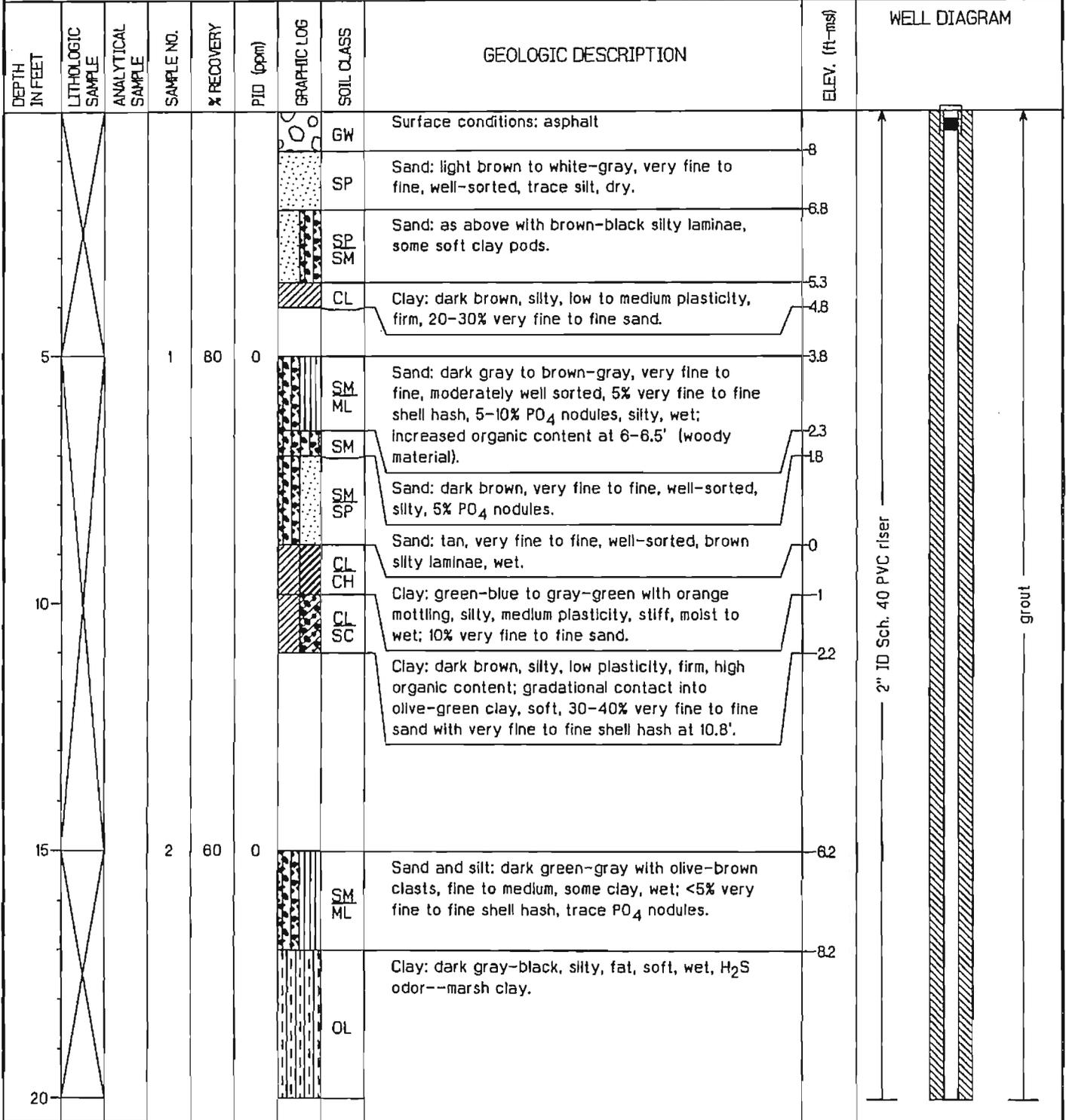
Groundwater Elevation: 0.20 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 42.0 feet bgs

Geologist: T. Kafka

Well Screen: 32.0 to 41.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE23D

Project: ZONE E - Naval Base Charleston

Coordinates: 231792L36 E, 37718L40 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1510 on 1-11-96

TOC Elevation: 8.57 feet msl

Completed at 0900 on 1-12-96

Depth to Groundwater: 8.37 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

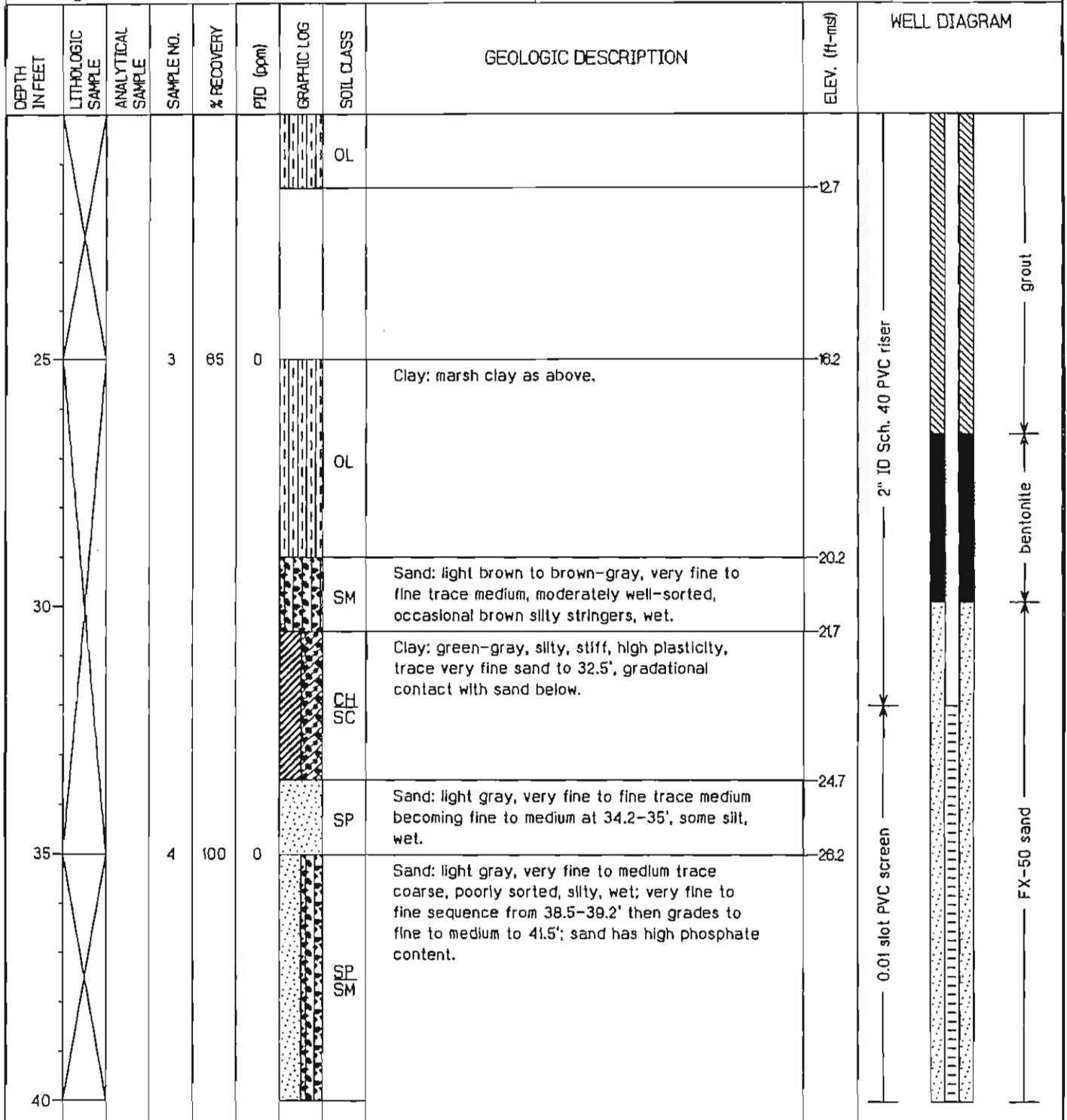
Groundwater Elevation: 0.20 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 42.0 feet bgs

Geologist: T. Kafka

Well Screen: 32.0 to 41.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE23D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317921.36 E, 377131.40 N

Location: Charleston, SC

Surface Elevation: 8.8 feet msl

Started at 1510 on 1-11-96

TOC Elevation: 8.57 feet msl

Completed at 0900 on 1-12-96

Depth to Groundwater: 8.37 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

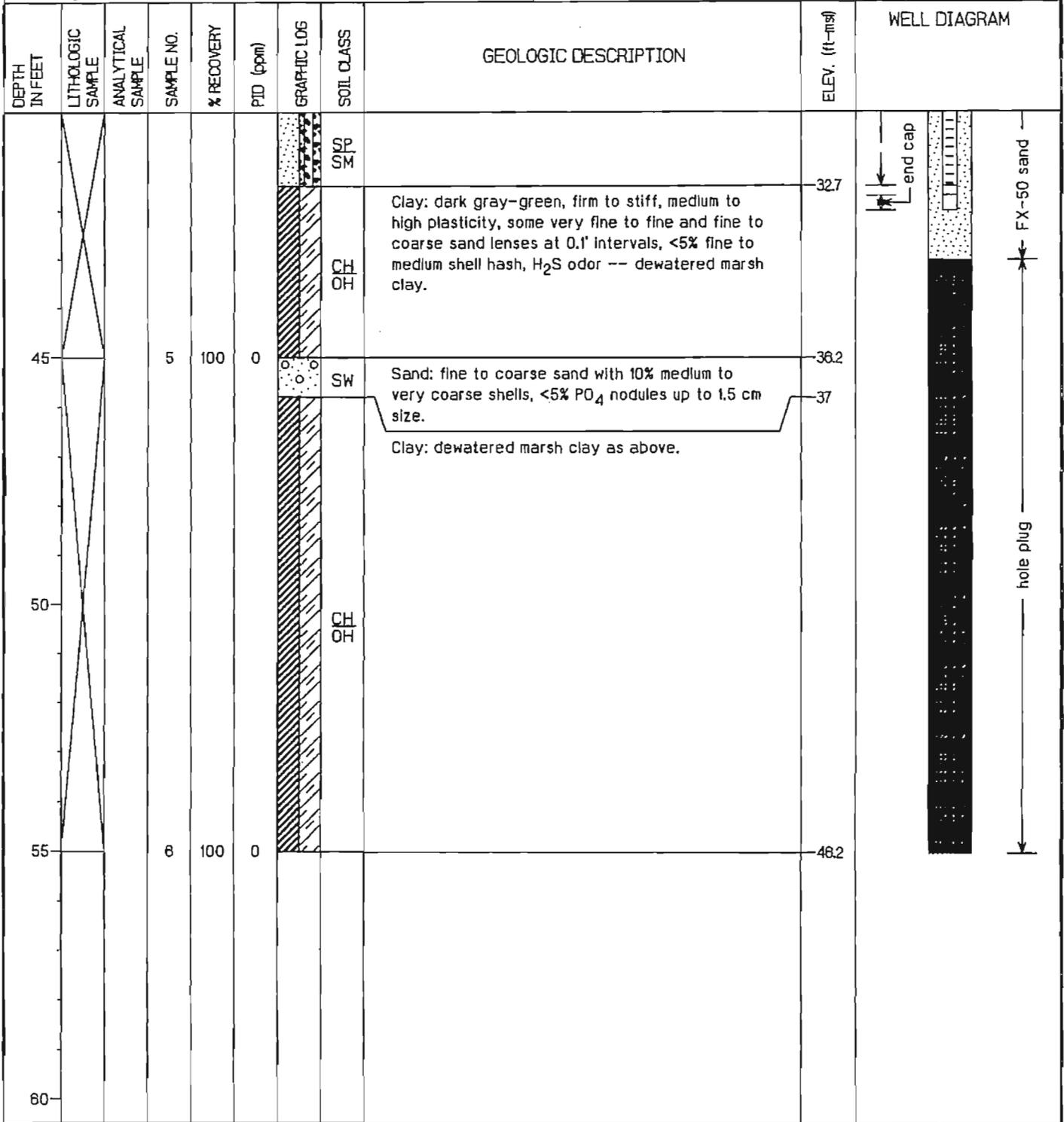
Groundwater Elevation: 0.20 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 42.0 feet bgs

Geologist: T. Kafka

Well Screen: 32.0 to 41.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE024

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>231790.171 E, 377590.09 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>7.4 feet msl</i>
Started at <i>0935 on 10-30-95</i>	TOC Elevation: <i>7.03 feet msl</i>
Completed at <i>1500 on 10-30-95</i>	Depth to Groundwater: <i>5.16 feet TOC</i> Measured: <i>3/13/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>187 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>125 feet bgs</i>
Geologist: <i>T. Kafka</i>	Well Screen: <i>25 to 115 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: gravel and dirt		
								Offset due to concrete obstruction at 4.5' bgs. Refusal on 4.5-6.5' split spoon runs 3 times at both locations.		
5			1	45		FILL		Fill: black to brown, very fine to fine sand with silt, clay and gravel pieces, moist to wet.	2.4 1.5	
10			2	15				Shelby tube (8-10'): Sand: dark brown to black, silty, clayey; rock fragments limited recovery.		
			3	30		SM GM		Sand: tan to brown, with 10% shell hash, poorly sorted, silty, wet. Sand and gravel: dark gray to black, gravel 2-4 mm diameter, 20% shell hash.	2.8 3.2	
15										
20										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE24D

Project: ZONE E - Naval Base Charleston

Coordinates: 231791L34 E, 377559.65 N

Location: Charleston, SC

Surface Elevation: 7.5 feet msl

Started at 1210 on 12-14-95

TOC Elevation: 7.45 feet msl

Completed at 1500 on 12-14-95

Depth to Groundwater: 6.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

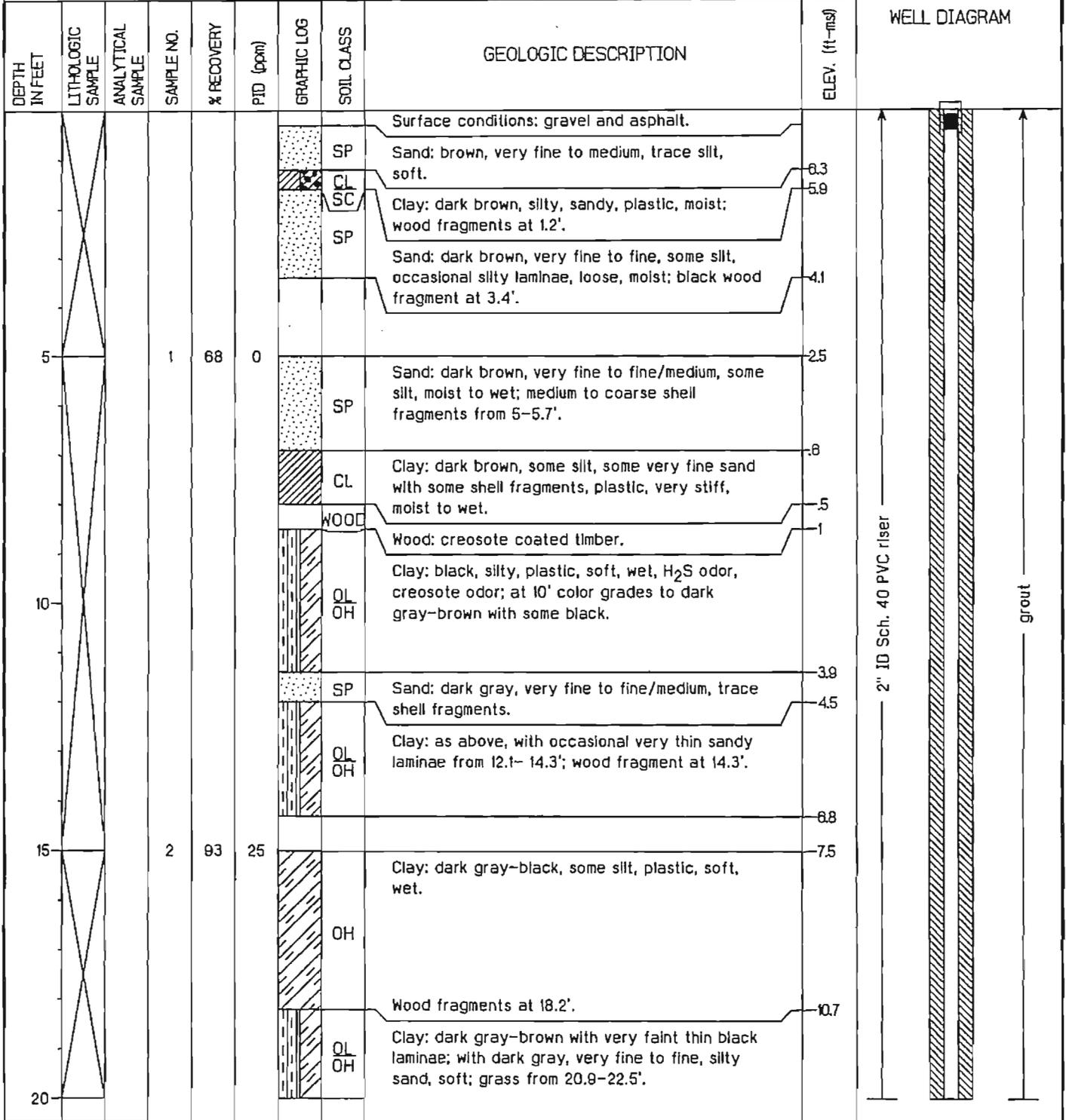
Groundwater Elevation: 103 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 52.0 feet bgs

Geologist: P. Bayley

Well Screen: 42.1 to 51.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE24D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317911.34 E, 377559.65 N

Location: Charleston, SC

Surface Elevation: 7.5 feet msl

Started at 1210 on 12-14-95

TOC Elevation: 7.45 feet msl

Completed at 1500 on 12-14-95

Depth to Groundwater: 6.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

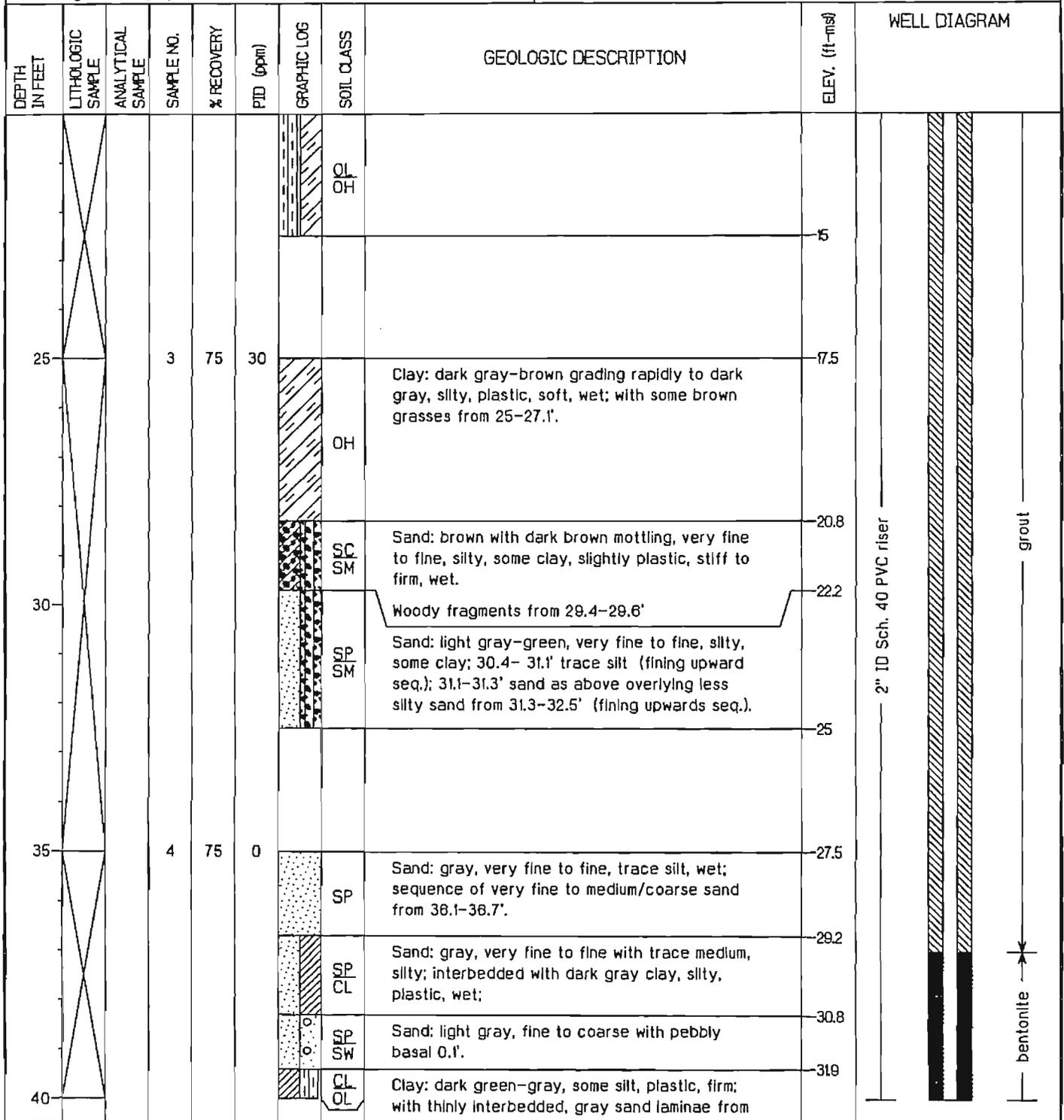
Groundwater Elevation: 1.03 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 52.0 feet bgs

Geologist: P. Bayley

Well Screen: 42.1 to 51.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE24D

Project: ZONE E - Naval Base Charleston

Coordinates: 231791.34 E, 377559.65 N

Location: Charleston, SC

Surface Elevation: 7.5 feet msl

Started at 1210 on 12-14-95

TOC Elevation: 7.45 feet msl

Completed at 1500 on 12-14-95

Depth to Groundwater: 6.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

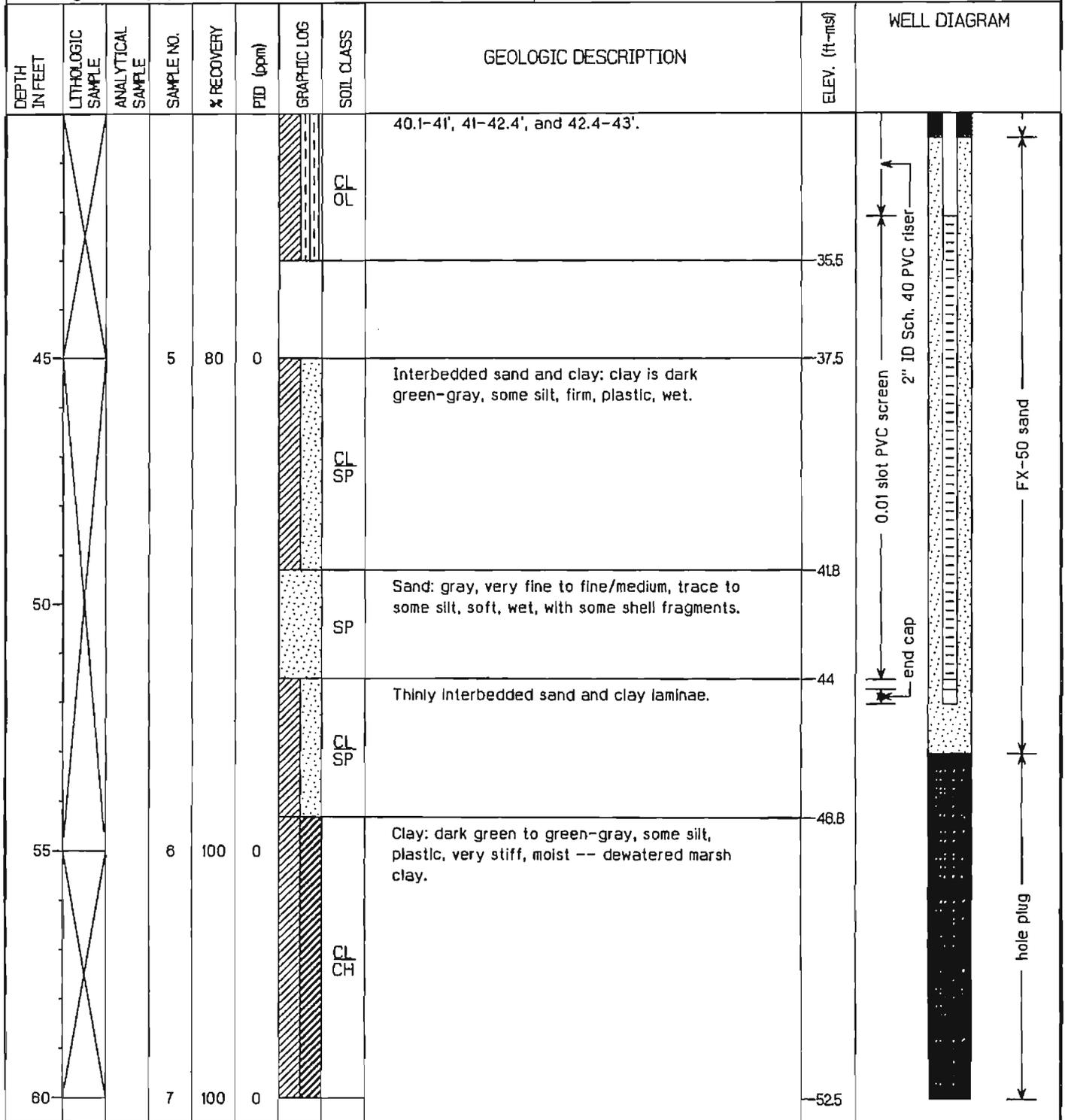
Groundwater Elevation: 103 feet msl

Drilling Company: Alliance Environmental (SC Cert #889)

Total Well Depth: 52.0 feet bgs

Geologist: P. Bayley

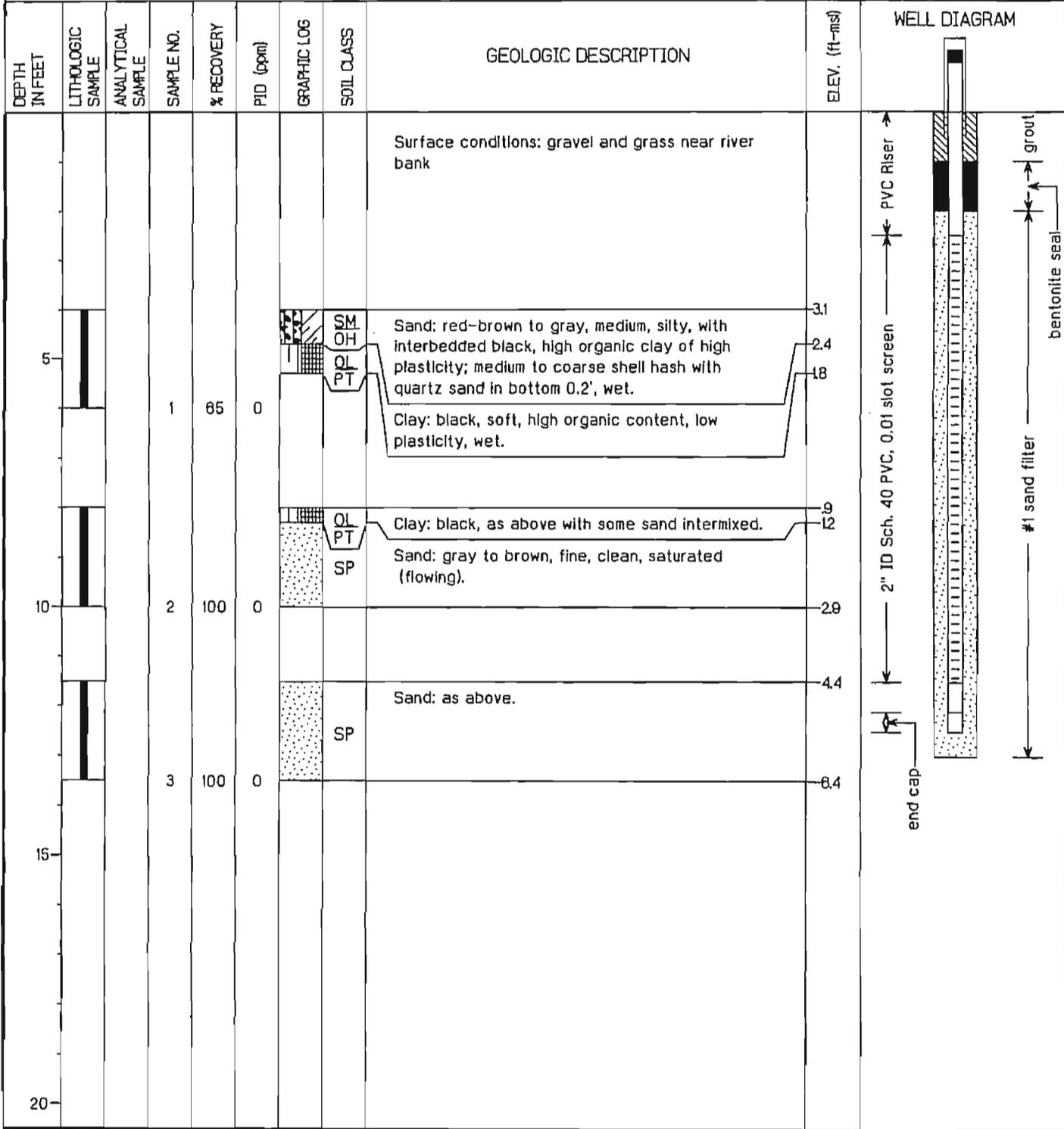
Well Screen: 42.1 to 51.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE025

Project: ZONE E - Naval Base Charleston	Coordinates: 2317707.83 E, 377929.04 N
Location: Charleston, SC	Surface Elevation: 7.1 feet msl
Started at 1140 on 1-4-96	TOC Elevation: 9.55 feet msl
Completed at 1250 on 1-4-96	Depth to Groundwater: 8.71 feet TOC Measured: 3/13/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 0.84 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 125 feet bgs
Geologist: B. Blythe	Well Screen: 2.5 to 11.5 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE25D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317692.22 E, 37791186 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 0850 on 1-04-96

TOC Elevation: 10.09 feet msl

Completed at 1630 on 1-04-96

Depth to Groundwater: 8.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

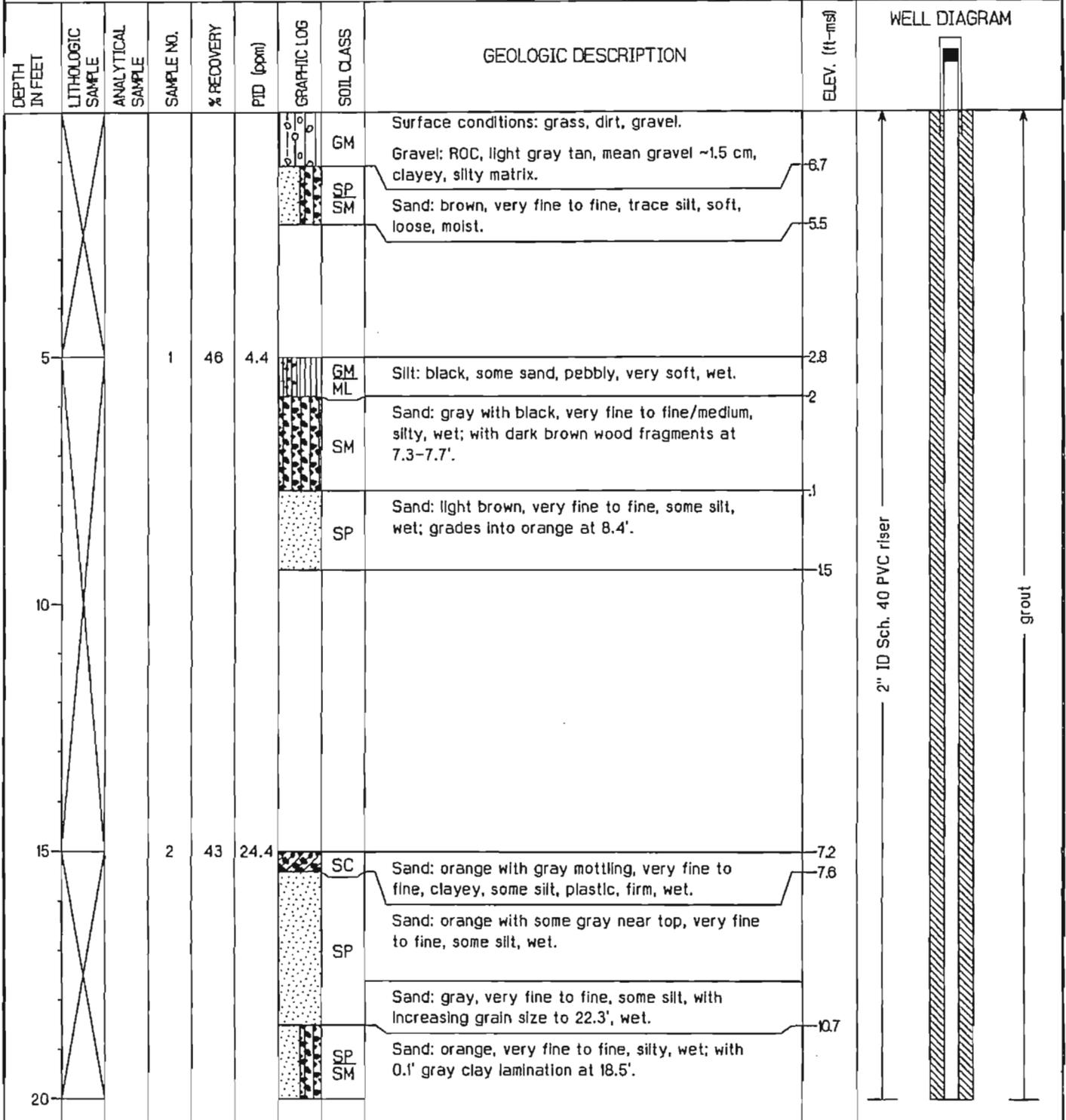
Groundwater Elevation: 1.67 feet msl

Drilling Company: Alliance Environmental (SC cert #989)

Total Well Depth: 45.5 feet bgs

Geologist: P. Bayley

Well Screen: 35.6 to 45.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE25D

Project: ZONE E - Naval Base Charleston

Coordinates: 237692.22 E, 377911.86 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 0850 on 1-04-96

TOC Elevation: 10.09 feet msl

Completed at 1630 on 1-04-96

Depth to Groundwater: 8.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

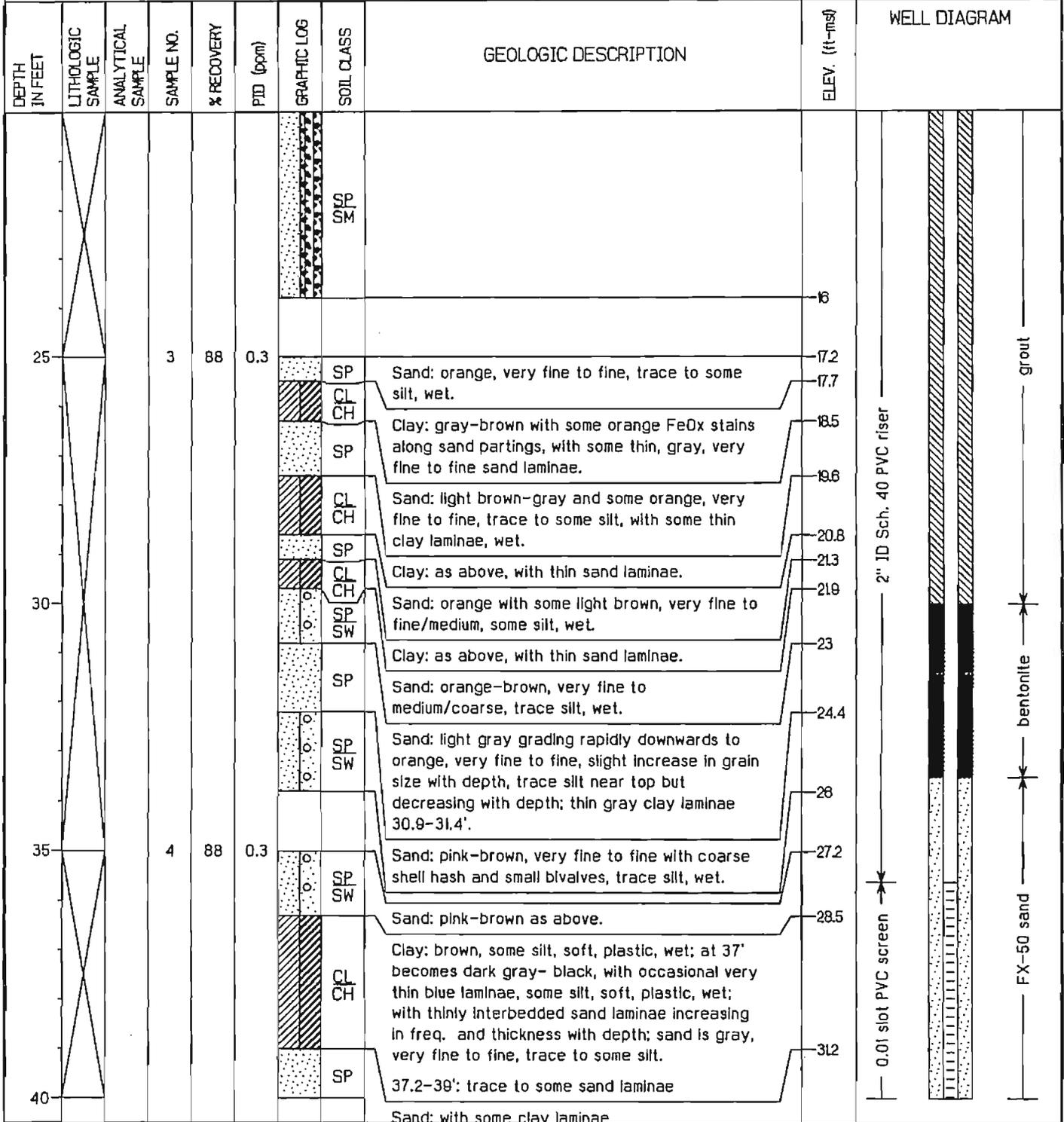
Groundwater Elevation: 167 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 45.5 feet bgs

Geologist: P. Bayley

Well Screen: 35.6 to 45.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE25D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317692.22 E, 377911.86 N

Location: Charleston, SC

Surface Elevation: 7.8 feet msl

Started at 0850 on 1-04-96

TOC Elevation: 10.09 feet msl

Completed at 1630 on 1-04-96

Depth to Groundwater: 8.42 feet TOC Measured: 3/13/96

Drilling Method: Rotasonic (7.5" OD casing, 3.8" ID coring bit)

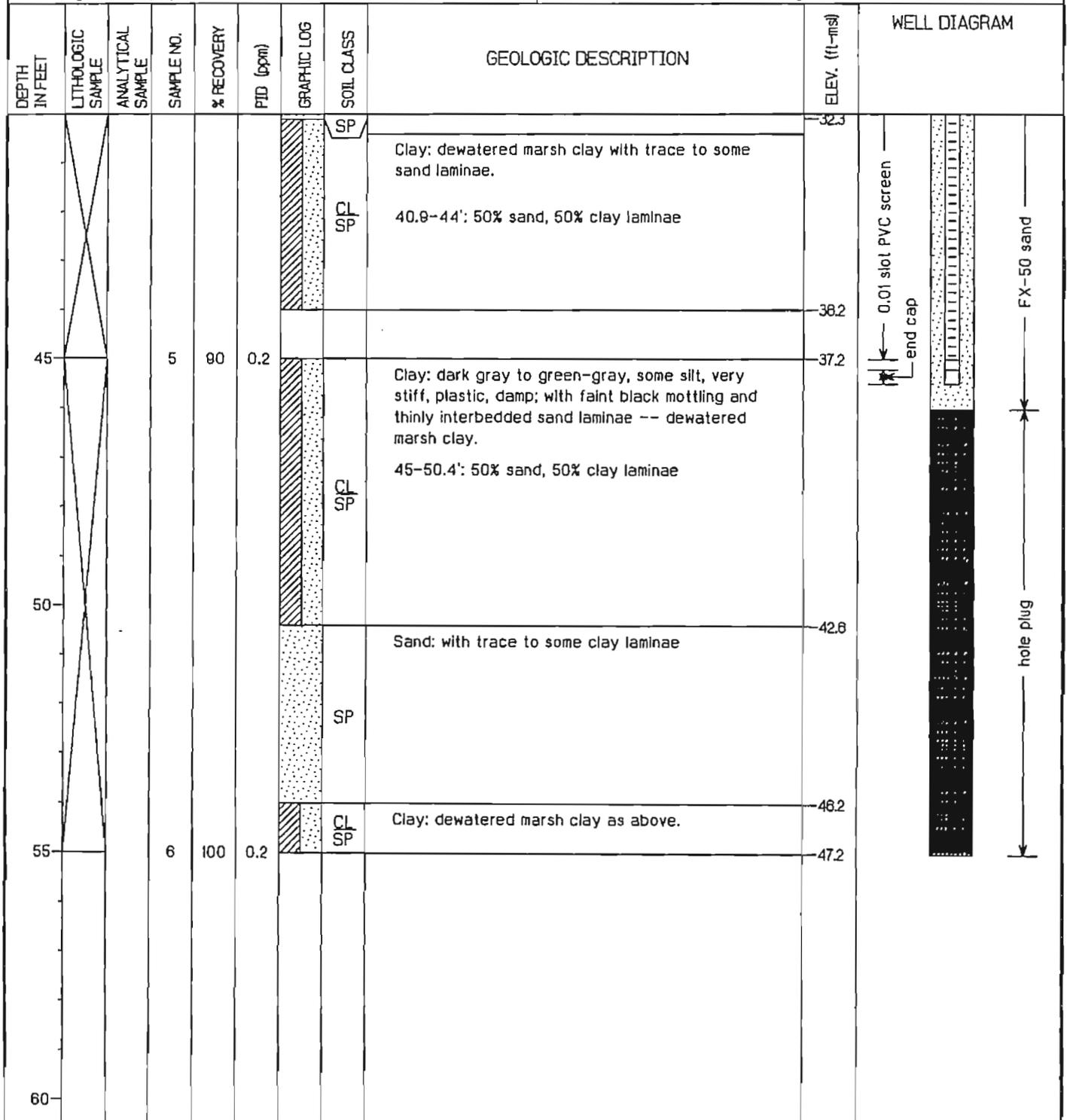
Groundwater Elevation: 167 feet msl

Drilling Company: Alliance Environmental (SC cert #889)

Total Well Depth: 45.5 feet bgs

Geologist: P. Bayley

Well Screen: 35.6 to 45.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE026

Project: ZONE E - Naval Base Charleston

Coordinates: 237118.23 E, 376747.57 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1001 on 9-10-96

TOC Elevation: 8.77 feet msl

Completed at 1140 on 9-10-96

Depth to Groundwater: 5.09 feet TOC Measured: 10/16/96

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

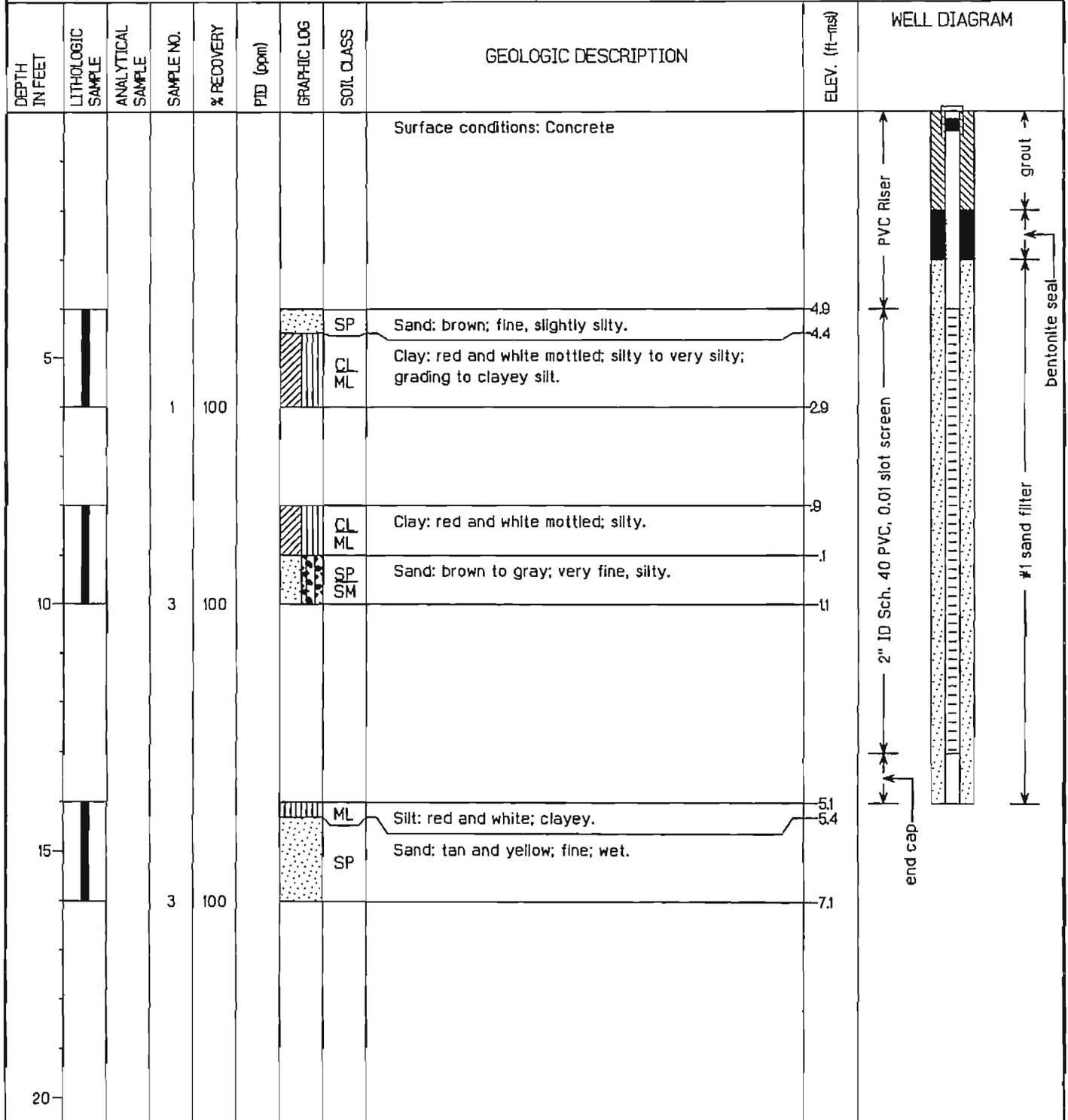
Groundwater Elevation: 3.68 feet msl

Drilling Company: Atlantic Drilling (SC cert #1210)

Total Well Depth: 14.0 feet bgs

Geologist: J. Cooley

Well Screen: 4.0 to 13.0 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE26D

Project: ZONE E - Naval Base Charleston

Coordinates: 231715.66 E, 376758.32 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1430 on 9-13-96

TOC Elevation: 8.53 feet msl

Completed at 1750 on 9-13-96

Depth to Groundwater: 5.13 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

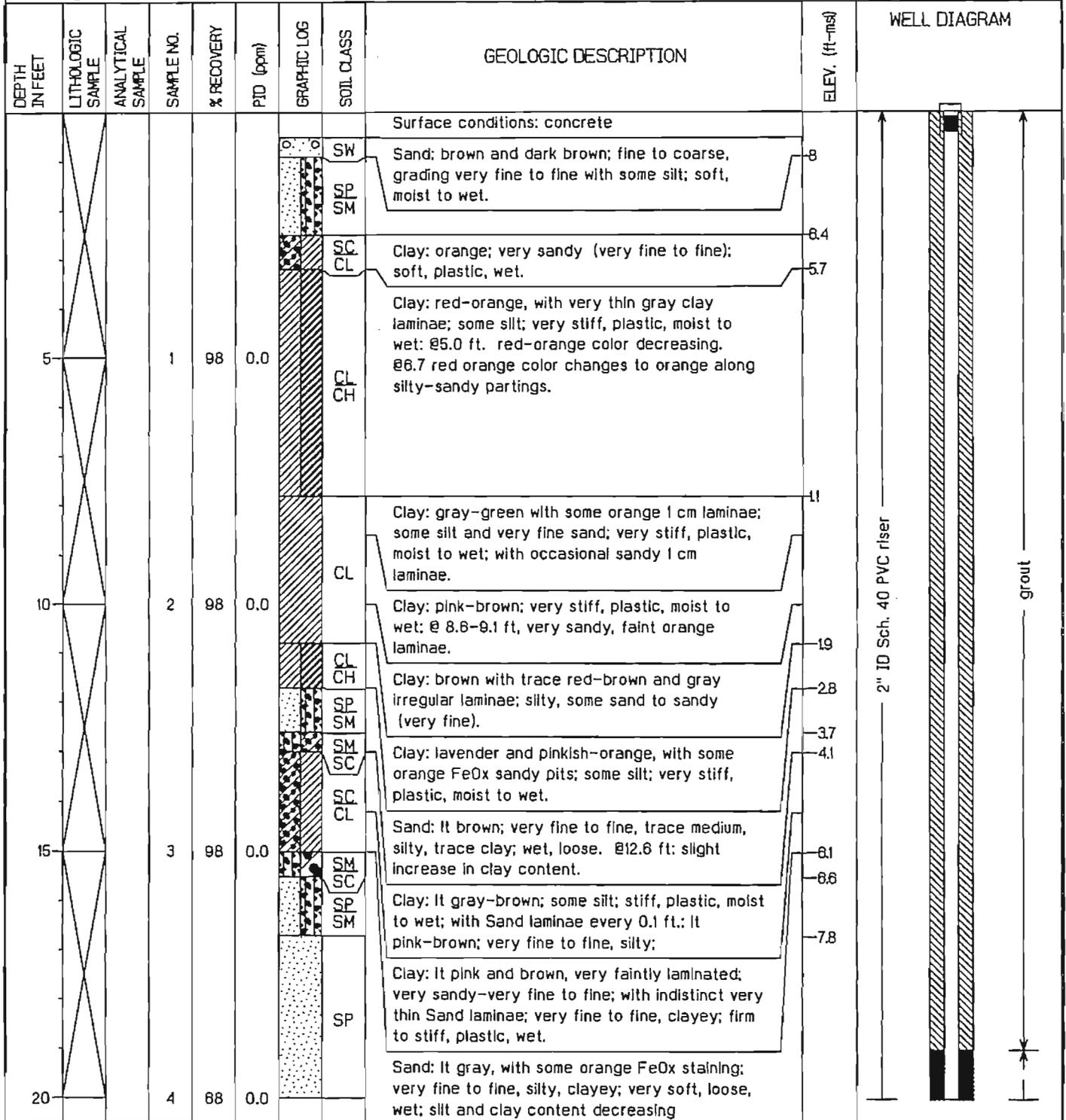
Groundwater Elevation: 3.40 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 36.5 feet bgs

Geologist: P. Bayley

Well Screen: 26.7 to 35.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE26D

Project: ZONE E - Naval Base Charleston

Coordinates: 237115.66 E, 376758.32 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1430 on 9-13-96

TOC Elevation: 8.53 feet msl

Completed at 1750 on 9-13-96

Depth to Groundwater: 5.13 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

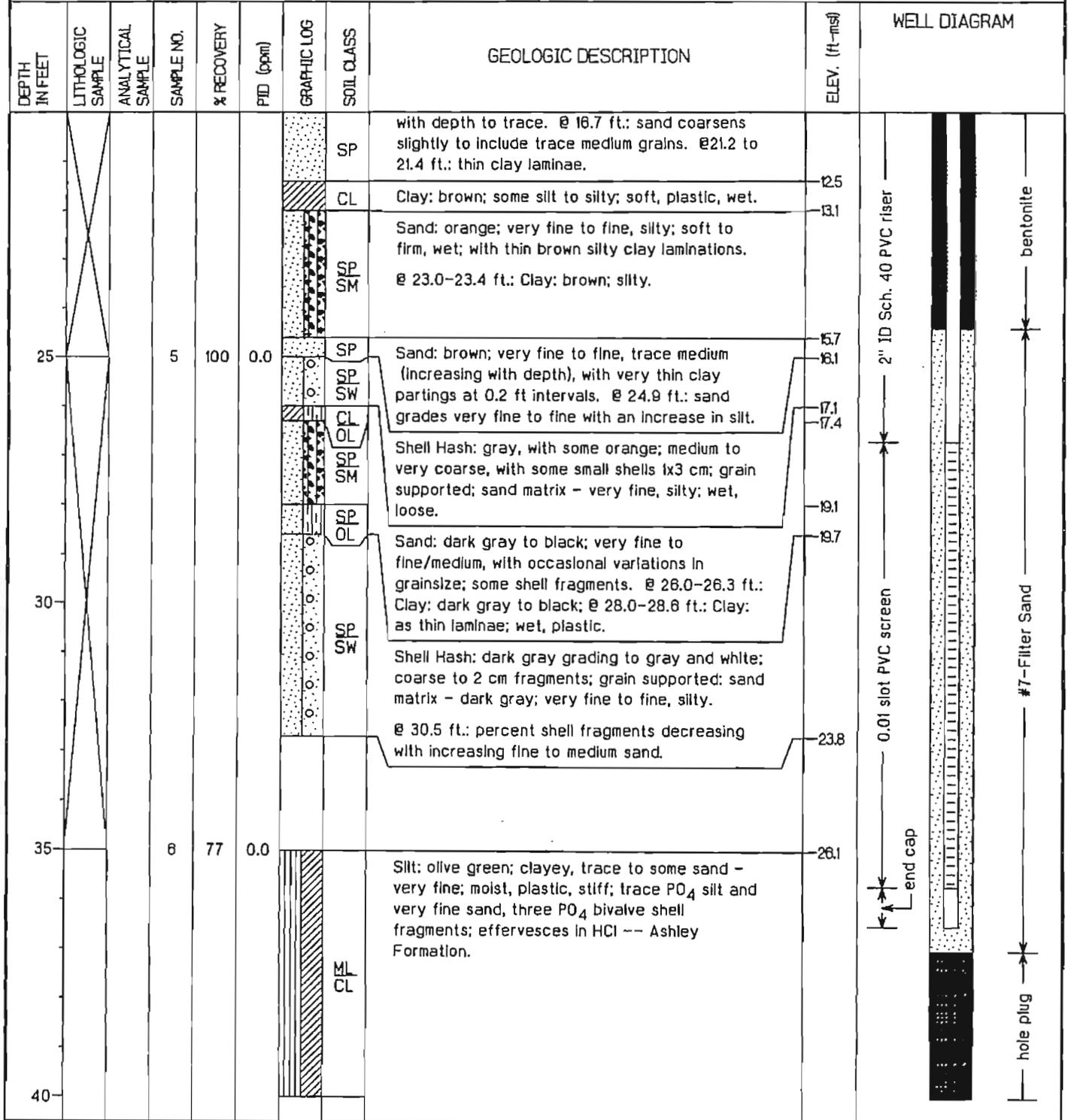
Groundwater Elevation: 3.40 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 36.5 feet bgs

Geologist: P. Bayley

Well Screenshot: 26.7 to 35.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE26D

Project: ZONE E - Naval Base Charleston

Coordinates: 2317115.66 E, 376758.32 N

Location: Charleston, SC

Surface Elevation: 8.9 feet msl

Started at 1430 on 9-13-96

TOC Elevation: 8.53 feet msl

Completed at 1750 on 9-13-96

Depth to Groundwater: 5.13 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

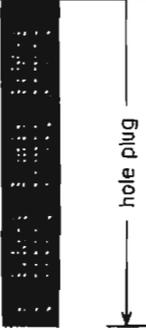
Groundwater Elevation: 3.40 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 36.5 feet bgs

Geologist: P. Bayley

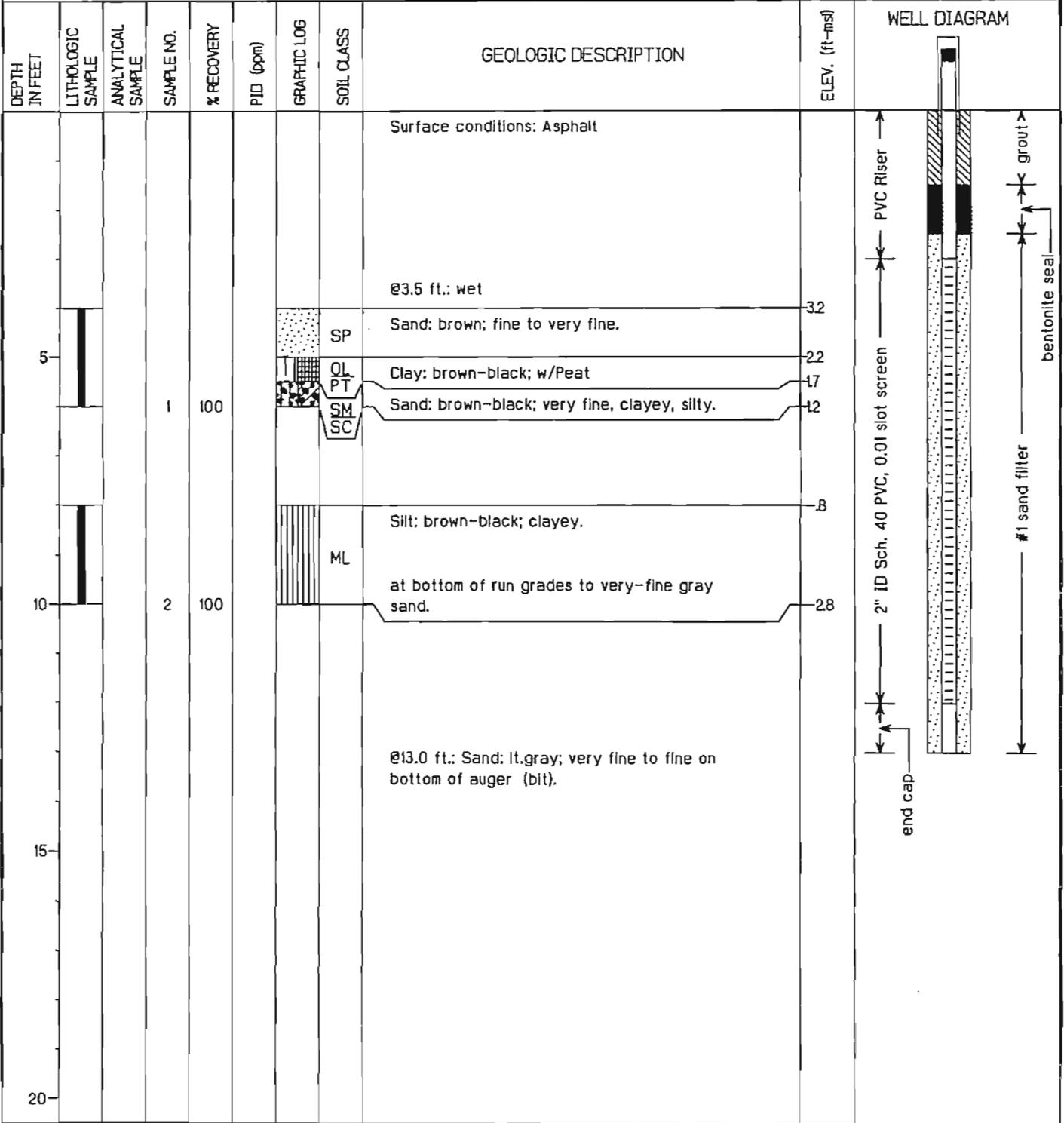
Well Screen: 26.7 to 35.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			7	98	0.0		CLF	@ 43.0-44.0 ft.: a few shell fragments	38.1	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE027

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316280.29 E, 37697120 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>7.2 feet msl</i>
Started at <i>1427 on 9-9-96</i>	TOC Elevation: <i>10.19 feet msl</i>
Completed at <i>1630 on 9-11-96</i>	Depth to Groundwater: <i>6.98 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>3.21 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.0 feet bgs</i>
Geologist: <i>J. Cooley</i>	Well Screen: <i>3.0 to 12.0 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE27D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316280.73 E, 376998.77 N

Location: Charleston, SC

Surface Elevation: 7.2 feet msl

Started at 1315 on 9-12-96

TOC Elevation: 9.79 feet msl

Completed at 1630 on 9-12-96

Depth to Groundwater: 6.59 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

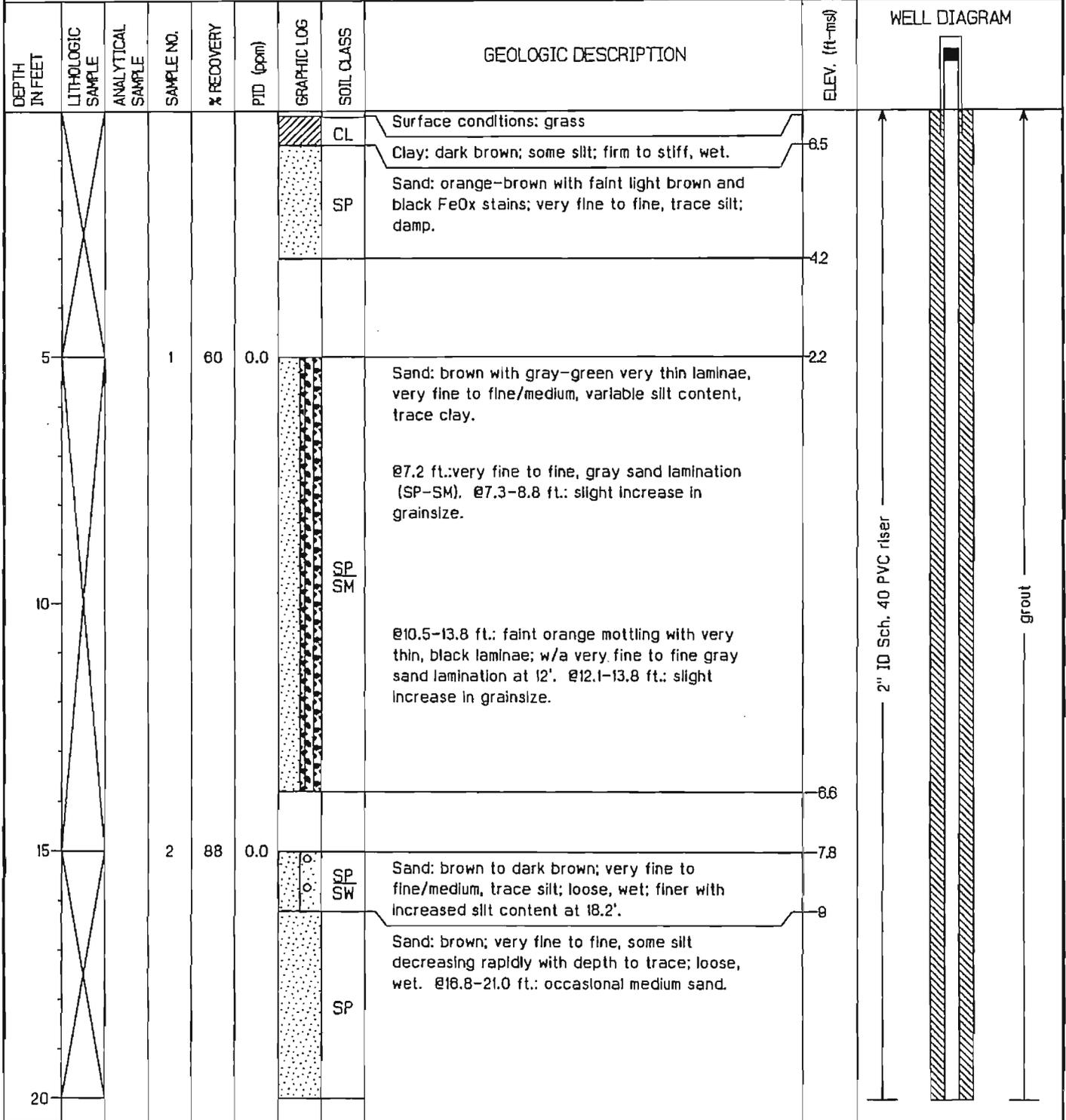
Groundwater Elevation: 3.20 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

Well Screen: 28.2 to 37.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE27D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316280.73 E, 376998.77 N

Location: Charleston, SC

Surface Elevation: 7.2 feet msl

Started at 1315 on 9-12-96

TOC Elevation: 9.79 feet msl

Completed at 1630 on 9-12-96

Depth to Groundwater: 6.59 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

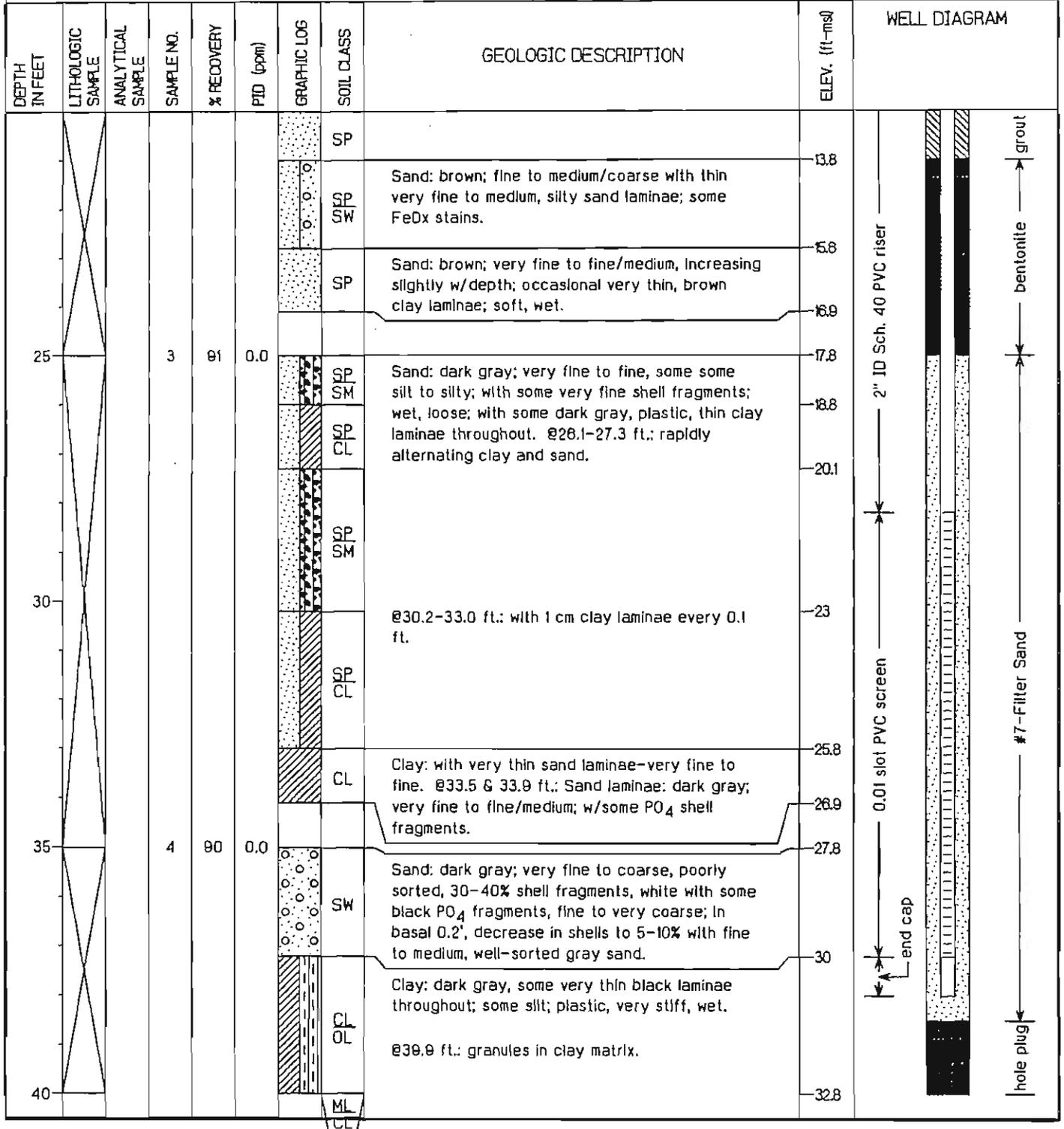
Groundwater Elevation: 3.20 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

Well Screen: 28.2 to 37.2 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE27D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316280.73 E, 376998.77 N

Location: Charleston, SC

Surface Elevation: 7.2 feet msl

Started at 1315 on 9-12-96

TOC Elevation: 9.79 feet msl

Completed at 1630 on 9-12-96

Depth to Groundwater: 6.59 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

Groundwater Elevation: 3.20 feet msl

Drilling Company: Boart-Longyear (SC cert #1232)

Total Well Depth: 38.0 feet bgs

Geologist: P. Bayley

Well Screen: 28.2 to 37.2 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
45			5	100	0.0		CLF	Silt; olive-brown; very clayey; plastic, very stiff, occasional very thin white shell fragments, moist to wet -- Ashley Formation.	37.8	
50										
55										
60										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE028

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316131.48 E, 376488.88 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>9.7 feet msl</i>
Started at <i>0850 on 9-13-96</i>	TOC Elevation: <i>9.62 feet msl</i>
Completed at <i>1000 on 9-13-96</i>	Depth to Groundwater: <i>7.02 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>2.60 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>13.8 feet bgs</i>
Geologist: <i>J. Cooley</i>	Well Screen: <i>3.8 to 12.8 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Asphalt		<p>WELL DIAGRAM</p> <p>Labels in diagram: PVC Riser, 2" ID Sch. 40 PVC, 0.01 slot screen, end cap, #1 sand filter, bentonite seal, grout.</p>
5			1	100		[Dotted pattern]	SP	Sand: yellow to tan; fine.	5.7	
								Sand: black-brown; fine.	3.7	
10			2	100		[Vertical lines pattern]	ML	Silt: gray.	12	
						[Dotted pattern]	SP	Sand: gray; fine.	17	
								Sand: gray-white; fine.	13	
15			3	100		[Dotted pattern]	SP	Sand: lt. gray; fine.	4.3	
20									6.3	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE28D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316134.65 E, 376479.51 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0840 on 9-11-96

TOC Elevation: 9.52 feet msl

Completed at 1145 on 9-11-96

Depth to Groundwater: 6.79 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

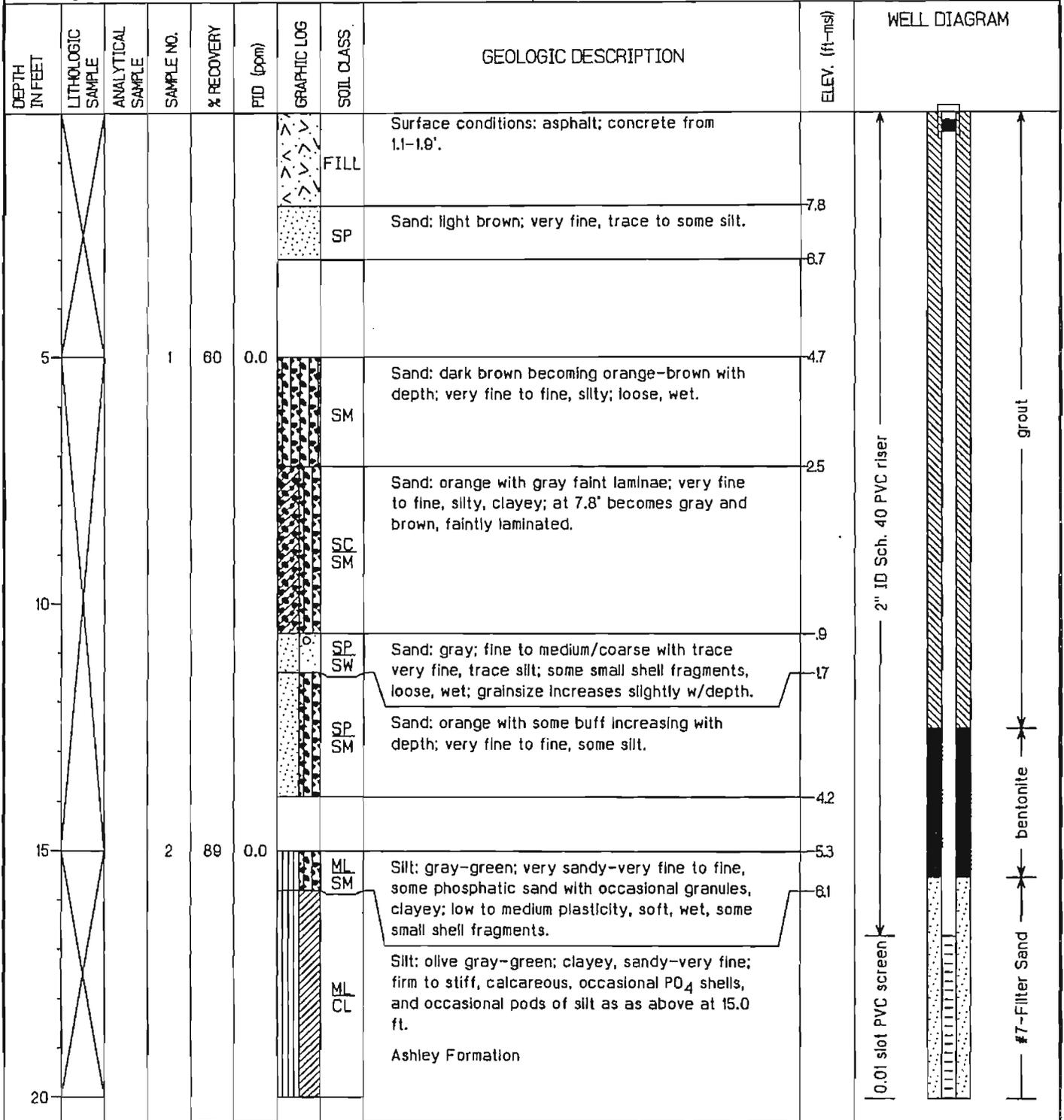
Groundwater Elevation: 2.73 feet msl

Drilling Company: Boart-Longyear (SC Cert #1232)

Total Well Depth: 215 feet bgs

Geologist: P. Bayley

Well Screen: 16.7 to 20.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE28D

Project: ZONE E - Naval Base Charleston

Coordinates: 2316134.65 E, 376479.51 N

Location: Charleston, SC

Surface Elevation: 9.7 feet msl

Started at 0840 on 9-11-96

TOC Elevation: 9.52 feet msl

Completed at 1145 on 9-11-96

Depth to Groundwater: 6.79 feet TOC Measured: 10/16/96

Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)

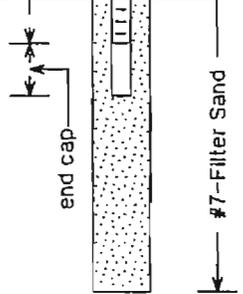
Groundwater Elevation: 2.73 feet msl

Drilling Company: Boart-Longyear (SC Cert #1232)

Total Well Depth: 215 feet bgs

Geologist: P. Bayley

Well Screen: 16.7 to 20.7 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	92	0.0		CF		14.5	
30										
35										
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE029

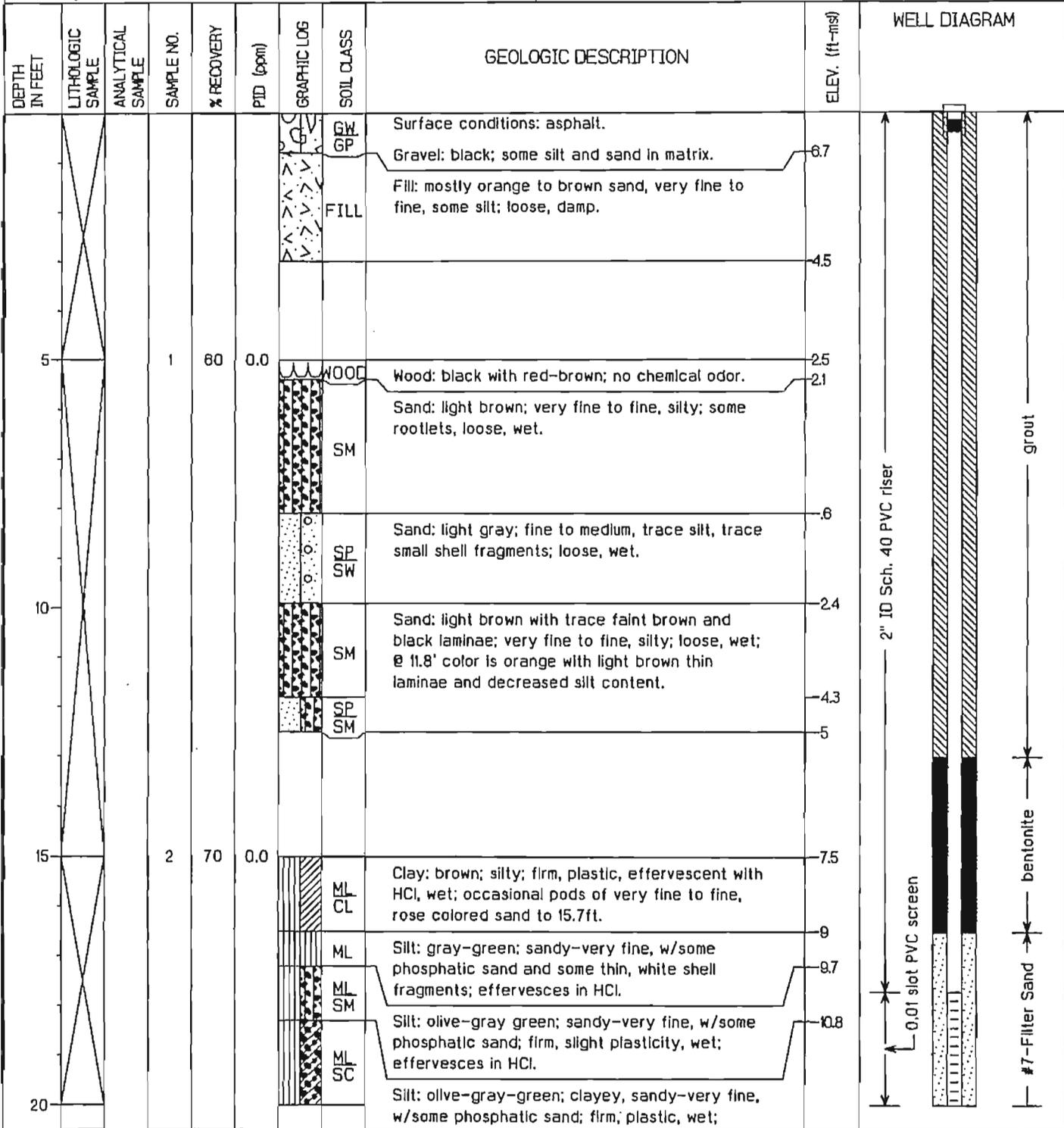
Project: ZONE E - Naval Base Charleston	Coordinates: 2316214.28 E, 375987.35 N
Location: Charleston, SC	Surface Elevation: 7.5 feet msl
Started at 1230 on 9-3-96	TOC Elevation: 7.32 feet msl
Completed at 1400 on 9-3-96	Depth to Groundwater: 4.24 feet TOC Measured: 10/16/96
Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon	Groundwater Elevation: 3.08 feet msl
Drilling Company: Atlantic Drilling (SC cert #1210)	Total Well Depth: 13.3 feet bgs
Geologist: J. Albert	Well Screen: 3.3 to 12.3 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: Asphalt		
5			1	98	0	[Stippled pattern]	SP	Sand: brown; fine, w/some black laminae; fine; moist to saturated. @5.5 ft.: saturated.	3	
10			2	100	0	[Stippled pattern]	SP	Sand: light gray to gray brown; fine; moist to very moist.	1	
15			3	75	2.3	[Stippled pattern]	SP	Sand: gray brown to yellow gray; fine, slightly silty; saturated.	5	
20									8.5	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE29D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316209.75 E, 375997.14 N
Location: Charleston, SC	Surface Elevation: 7.5 feet msl
Started at 1430 on 9-11-96	TOC Elevation: 7.36 feet msl
Completed at 1700 on 9-11-96	Depth to Groundwater: 4.20 feet TOC Measured: 10/16/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 3.16 feet msl
Drilling Company: Boart-Longyear (SC Cert #1232)	Total Well Depth: 22.5 feet bgs
Geologist: P. Bayley	Well Screen: 17.7 to 21.7 feet bgs



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE29D

Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316209.75 E, 375997.14 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>7.5 feet msl</i>
Started at <i>1430 on 9-11-96</i>	TOC Elevation: <i>7.36 feet msl</i>
Completed at <i>1700 on 9-11-96</i>	Depth to Groundwater: <i>4.20 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>3.16 feet msl</i>
Drilling Company: <i>Boart-Longyear (SC Cert #1232)</i>	Total Well Depth: <i>22.5 feet bgs</i>
Geologist: <i>P. Bayley</i>	Well Screen: <i>17.7 to 21.7 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PTD (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
25			3	100	0.0		ML SC	effervesces in HCl. @18.3-18.9 ft.; pods of Silt; gray and black "pepper" w/shell fragments.	17.5	
30							ML CL	Silt; olive-green; clayey, trace sand-very fine; wet, stiff, plastic; effervesces in HCl -- Ashley Formation.	27.5	
35			4	100	0.0					
40										

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE030

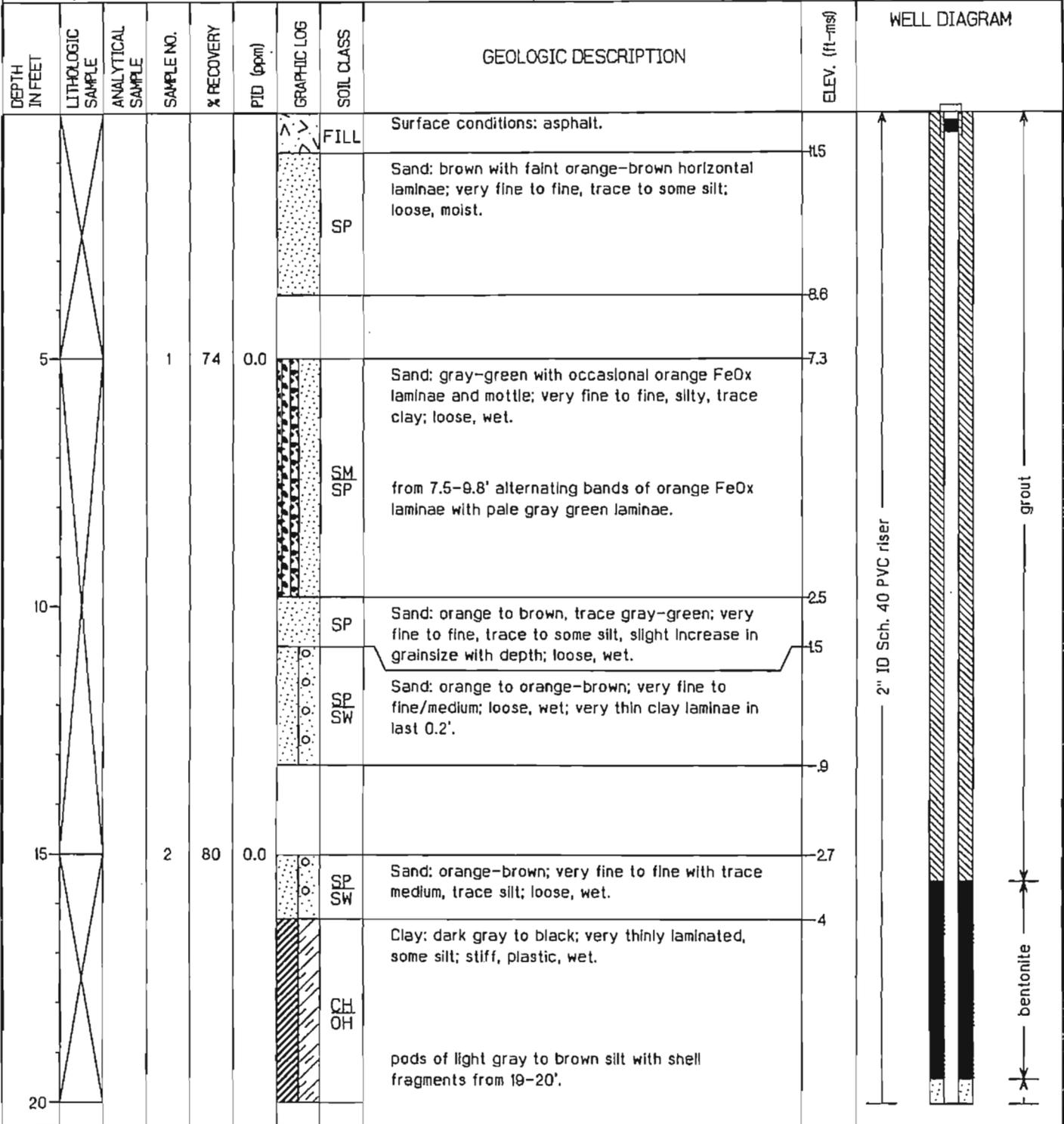
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316491.06 E, 375213.00 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>12.3 feet msl</i>
Started at <i>0800 on 9-4-96</i>	TOC Elevation: <i>12.10 feet msl</i>
Completed at <i>0940 on 9-4-96</i>	Depth to Groundwater: <i>4.43 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>4.25" ID (7.5" OD) HSA with split spoon</i>	Groundwater Elevation: <i>7.67 feet msl</i>
Drilling Company: <i>Atlantic Drilling (SC cert #1210)</i>	Total Well Depth: <i>12.0 feet bgs</i>
Geologist: <i>J. Albert</i>	Well Screen: <i>2.0 to 11.0 feet bgs</i>

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-MSL)	WELL DIAGRAM
								Surface conditions: Asphalt		<p>WELL DIAGRAM</p> <p>PVC Riser</p> <p>2" ID Sch. 40 PVC, 0.01 slot screen</p> <p>#1 sand filter</p> <p>bentonite seal</p> <p>end cap</p>
5			1	75	0	[Stippled pattern]	SP	Sand: light brown, grades to light olive grey; fine; loose, saturated.	8.3	
10			2	70	0	[Stippled pattern]	SP	Sand: beige grading to tan; fine, trace silt; loose, saturated.	4.3	
15			3	100	0	[Stippled pattern]	SP	Sand: tan to reddish tan; fine, trace silt; loose, saturated.	3	
20									17	

EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE30D

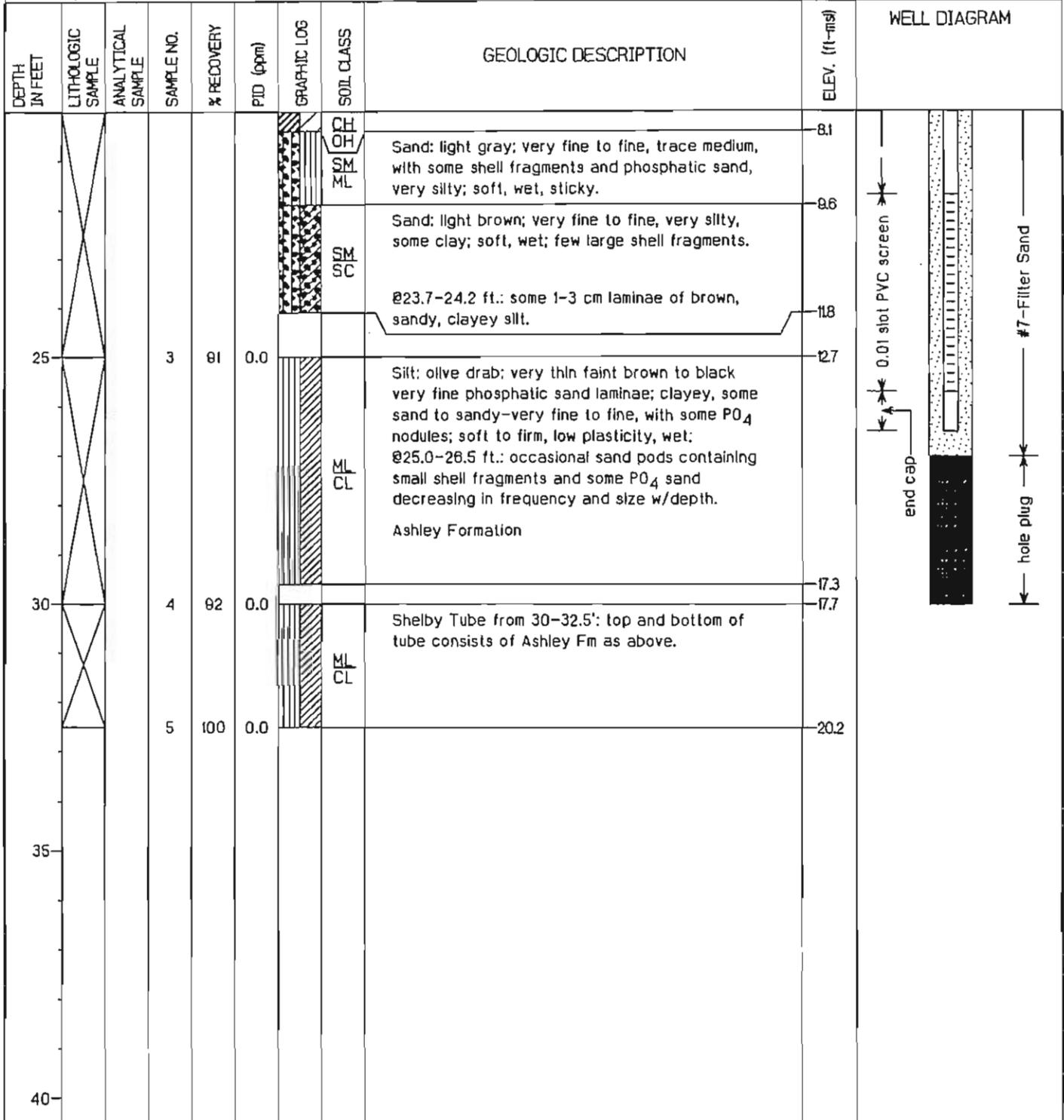
Project: <i>ZONE E - Naval Base Charleston</i>	Coordinates: <i>2316498.94 E, 375208.44 N</i>
Location: <i>Charleston, SC</i>	Surface Elevation: <i>12.3 feet msl</i>
Started at <i>1435 on 9-10-96</i>	TOC Elevation: <i>12.34 feet msl</i>
Completed at <i>1700 on 9-10-96</i>	Depth to Groundwater: <i>4.69 feet TOC</i> Measured: <i>10/16/96</i>
Drilling Method: <i>Rotasonic (6.5" OD casing, 3.8" ID coring bit)</i>	Groundwater Elevation: <i>7.65 feet msl</i>
Drilling Company: <i>Boart-Longyear (SC Cert #1232)</i>	Total Well Depth: <i>26.5 feet bgs</i>
Geologist: <i>P. Bayley</i>	Well Screen: <i>21.7 to 25.7 feet bgs</i>



EnSafe/Allen & Hoshall

Monitoring Well NBCEGDE30D

Project: ZONE E - Naval Base Charleston	Coordinates: 2316498.94 E, 375208.44 N
Location: Charleston, SC	Surface Elevation: 12.3 feet msl
Started at 1435 on 9-10-96	TOC Elevation: 12.34 feet msl
Completed at 1700 on 9-10-96	Depth to Groundwater: 4.69 feet TOC Measured: 10/16/96
Drilling Method: Rotasonic (6.5" OD casing, 3.8" ID coring bit)	Groundwater Elevation: 7.65 feet msl
Drilling Company: Boart-Longyear (SC Cert #1232)	Total Well Depth: 26.5 feet bgs
Geologist: P. Bayley	Well Screen: 21.7 to 25.7 feet bgs



Appendix B
Geotechnical Data

March 8 1996

EnSafe / Allen and Hoshall
Mr. Peter Bailey
935 Houston Northcut Boulevard, Ste 113
Mount Pleasant, South Carolina, 29464

Reference: Contract N62467-89-D-0318
Lab results for Zones A,B, & E

Attn: Mr. Bailey:

Coastal Engineering and Testing Company (CETCO) is pleased to provide you with the Shelby tube lab analysis results for Zones A and B. Per your request, we have attached summary sheets on each of the samples tested, as well as, a summary table of all the samples in zone A and B. Each Shelby tube was analyzed for percent moisture (ASTM D-2216), bulk density, porosity, grain size (ASTM D-422), specific gravity (ASTM D-854), and permeability (ASTM D-5084). Due to the length of the results for the grain size analysis, they were not included in the summary table attached. However, the grain size results are included in the attached summary sheets for each sample.

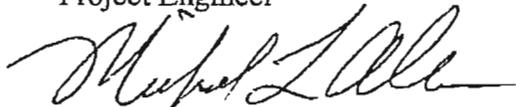
We appreciate the confidence you have placed in CETCO by allowing us to provide you with these services for your project. If you have any questions regarding our procedures, please contact our office at your convenience.

Sincerely,

COASTAL ENGINEERING AND TESTING COMPANY, INC.



Clayton Baldwin
Project Engineer



Michael L. Allen, P.E.
Chief Engineer
President

CB/s

Table III - Summary Data for Zone E

Sample Number	CETCO Sample #	Permeability (k)	Specific Gravity (Gs)	Unit Weight (lbs/cu. ft)	Percent Moisture	Void Ratio (e)	Porosity (n)
NBCE 55904D	7	1.47E-04	2.68	125.7	25.6	0.672	0.402
NBCE 580001	8	2.10E-06	2.69	125.5	9.9	0.472	0.321
NBCE 596004	9	1.55E-06	2.71	127.9	25.6	0.662	0.398
NBCE 018002	10	4.05E-06	2.69	110.4	11.1	0.692	0.409
NBCE 599001	11	7.28E-07	2.69	110.5	12.4	0.708	0.414
NBCE 566001	12	7.95E-08	2.69	135.9	35.1	0.669	0.401
NBCE 097001	13	4.72E-07	2.67	87.9	102.4	2.838	0.739
NBCE 574002	14	2.86E-06	2.69	106.8	65.3	1.598	0.615
NBCE 538001	15	1.42E-03	2.65	125.3	19.2	0.575	0.365
NBCE 569002	16	1.95E-03	2.61	119.7	17.9	0.602	0.376
NBCE 100001	17	1.21E-06	2.66	134.5	93.4	1.389	0.581
NBCE 559004	18	1.18E-03	2.63	131.2	12.2	0.404	0.288
NBCE GDE008	19	1.22E-06	2.67	113.4	104.9	2.014	0.668
NBCE 55904D	20	1.11E-03	2.65	125.7	35.1	0.778	0.438
NBCE GDE20D	21	1.21E-06	2.67	110.0	74.8	1.649	0.623
NBCE 53002D	22	1.52E-06	2.69	123.7	37.4	0.866	0.464
NBCE GDE21D	23	4.41E-06	2.69	131.1	61.3	1.067	0.516
NBCE 56601D	24	2.87E-06	2.69	121.5	25.9	0.741	0.426
NBCE GDE15D	25	5.39E-06	2.71	133.8	20.1	0.520	0.342
NBCE 52601D	26	2.68E-06	2.67	102.0	48.6	1.429	0.588
NBCE 06504D	27	2.67E-05	2.65	110.0	39.7	1.101	0.524
NBCE 55102D	28	2.97E-04	2.65	116.2	38.4	0.970	0.492
NBCE GDE10D-1	29	4.11E-04	2.65	120.5	30.2	0.787	0.440
NBCE 57003D	30	5.31E-05	2.57	109.8	26.3	0.846	0.458
NBCE 58001D	31	4.74E-05	2.55	115.1	30.2	0.803	0.445
NBCE 59604D	32	2.61E-06	2.71	118.1	42.2	1.038	0.509
NBCE GDE10D	33	1.62E-05	2.69	119.3	33.0	0.872	0.466

Test Data For Sample NBCE GDE008

Sample Date 10/03/95
Sample Depth 10.5'-13.0'

Page 1 of 3

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 76.4 cm
t = 86400 s

k = 1.22E-06 cm/s

Specific Gravity Test Data

Wp = 157.5 g
Wpw = 655.9 g
Ti = 20 Degrees C
Wpws = 677.81 g
Tx = 20 Degrees C
Ws = 35 g

K = $\frac{Wp}{Wpws}$
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.9

Gs = 2.6737968 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1008 g
 Wt Tube = 285.4 g
 Wt Soil = 722.6 g

Unit Weight = 113.44199 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 244 g
 W_w = 256 g

%M = 104.91803

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.40	59.60	99.3333
#40	0.30	59.30	98.8333
#50	0.40	58.90	98.1667
#100	1.10	57.80	96.3333
#200	1.30	56.50	94.1667
Pan	56.50	0.00	0.0000

total 60 g

Test Data For Sample NBCE GDE008 Cont..

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.035	0	1.035	20	7	0.01365	ERR	62.681153
2	1.033	0	1.033	20	7.1	0.01365	0.0242288	59.099373
5	1.031	0	1.031	20	8.1	0.01365	0.0110565	55.517593
15	1.028	0	1.028	20	8.9	0.01365	0.0040495	50.144923
30	1.026	0	1.026	20	9.4	0.01365	0.0021385	46.563143
60	1.024	0	1.024	20	10	0.01365	0.0011375	42.981362
250	1.02	0	1.02	20	11	0.01365	0.0003003	35.817802
1440	1.012	0	1.012	20	13.1	0.01365	6.21E-05	21.490681

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 113.44199 lbs/cu ft

Percent Moisture = 104.91803 %

Dry Unit Weight = 55.359689 lbs/cu ft

Gs = 2.6737968

Volume Solids = 0.3318033 cu cm

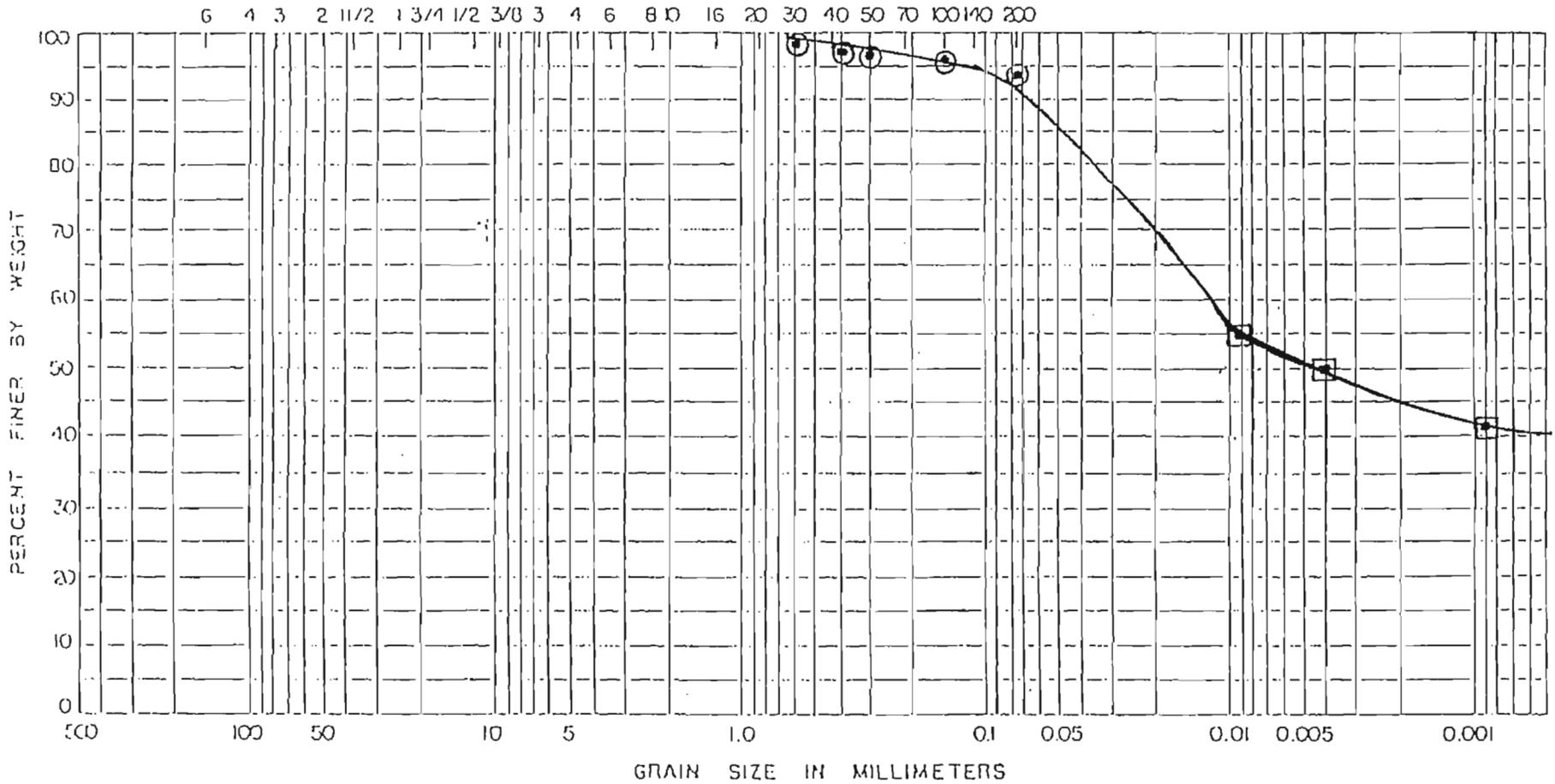
Volume Voids = 0.6681967 cu cm

Void Ratio = 2.0138341

Porosity Test Data

Porosity= 0.6681967

US STANDARD SIEVE SIZES



SOIL CLASSIFICATION	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO. NRCE 6DE008	ELEV. OR DEPTH	NAT WGT	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-24
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Test Data For Sample NBCE GDE10D

Page 1 of 3

Sample Date 1/22/96

Sample Depth 35'-37.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 38 cm
t = 25600 s

k = 1.62E-05 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.5 g
Ti = 21 Degrees C
Wpws = 678.5 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656.5

Gs = 2.6917692 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1044.5 g
 Wt Tube = 285.4 g
 Wt Soil = 759.1 g

Unit Weight = 119.2897 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 376 g
 Ww = 124 g
 %M = 32.978723

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.80	59.20	98.6667
#40	0.30	58.90	98.1667
#50	0.40	58.50	97.5000
#100	1.90	56.60	94.3333
#200	13.10	43.50	72.5000
Pan	43.50	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.022	0	1.022	22	10.5	0.01332	ERR	39.399582
2	1.02	0	1.02	22	11	0.01332	0.03663	35.817802
5	1.019	0	1.019	22	11.3	0.01332	0.0150516	34.026912
15	1.018	0	1.018	22	11.5	0.01332	0.005106	32.236022
30	1.017	0	1.017	22	11.8	0.01332	0.0026196	30.445132
60	1.016	0	1.016	22	12.1	0.01332	0.0013431	28.654242
250	1.013	0	1.013	22	12.9	0.01332	0.0003437	23.281571
1440	1.009	0	1.009	22	13.9	0.01332	6.43E-05	16.118011

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 119.2897 lbs/cu ft

Percent Moisture = 32.978723 %

Dry Unit Weight = 89.705854 lbs/cu ft

Gs = 2.6917692

Volume Solids = 0.5340702 cu cm

Volume Voids = 0.4659298 cu cm

Void Ratio = 0.8724129

Porosity Test Data

Porosity= 0.4659298

Test Data For Sample NBCE GDE10D-1

Sample Date 1/22/96

Page 1 of 3

Sample Depth 25'-27.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 58 cm
t = 556 s

k = 4.11E-04 cm/s

Specific Gravity Test Data

Wp = 158.2 g
Wpw = 657.2 g
Ti = 20 Degrees C
Wpws = 679 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 657.2

Gs = 2.6515152 g/cc

Test Data For Sample NBCE GDE10D-1 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1052.5 g
 Wt Tube = 285.4 g
 Wt Soil = 767.1 g

Unit Weight = 120.54687 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 384 g
 W_w = 116 g
 %M = 30.208333

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.20	59.80	99.6667
#30	0.30	59.50	99.1667
#40	0.20	59.30	98.8333
#50	0.40	58.90	98.1667
#100	14.40	44.50	74.1667
#200	24.10	20.40	34.0000
Pan	20.40	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.008	0	1.008	22	14.2	0.01332	ERR	14.327121
2	1.0077	0	1.0077	22	14.4	0.01332	0.047952	13.789854
5	1.0075	0	1.0075	22	14.5	0.01332	0.019314	13.431676
15	1.007	0	1.007	22	14.4	0.01332	0.0063936	12.536231
30	1.007	0	1.007	22	14.4	0.01332	0.0031968	12.536231
60	1.006	0	1.006	22	14.7	0.01332	0.0016317	10.745341
250	1.0055	0	1.0055	22	14.85	0.01332	0.0003956	9.8498955
1440	1.005	0	1.005	22	15	0.01332	6.94E-05	8.9544505

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 120.54687 lbs/cu ft

Percent Moisture = 30.208333 %

Dry Unit Weight = 92.579995 lbs/cu ft

Gs = 2.6515152

Volume Solids = 0.5595494 cu cm

Volume Voids = 0.4404506 cu cm

Void Ratio = 0.7871522

Porosity Test Data

Porosity= 0.4404506

Test Data For Sample NBCE GDE15D

Sample Date 1/07/96
Sample Depth 20'-22.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 38 cm
t = 75600 s

k = 5.39E-06 cm/s

Specific Gravity Test Data

Wp = 157.2 g
Wpw = 655.9 g
Ti = 21 Degrees C
Wpws = 678 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998
Wtr @Tx = 0.9980233
Wtr @Ti = 0.9980233

Wpw(@Tx) = 655.9

Gs = 2.7126357 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1138 g
 Wt Tube = 286 g
 Wt Soil = 852 g

Unit Weight = 133.75667 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 416.3 g
 W_w = 83.7 g

%M = 20.105693

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.20	59.80	99.6667
#30	1.80	58.00	96.6667
#40	2.00	56.00	93.3333
#50	3.90	52.10	86.8333
#100	36.20	15.90	26.5000
#200	7.70	8.20	13.6667
Pan	8.20	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.002	0	1.002	20	15.8	0.01344	ERR	3.5817802
2	1.0015	0	1.0015	20	15.9	0.01344	0.053424	2.6863351
5	1.001	0	1.001	20	16	0.01344	0.021504	1.7908901
15	1.001	0	1.001	20	16	0.01344	0.007168	1.7908901
30	1.001	0	1.001	20	16	0.01344	0.003584	1.7908901
60	1.001	0	1.001	20	16	0.01344	0.001792	1.7908901
250	1.001	0	1.001	20	16	0.01344	0.0004301	1.7908901
1440	1.001	0	1.001	20	16	0.01344	7.47E-05	1.7908901

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 133.75667 lbs/cu ft

Percent Moisture = 20.105693 %

Dry Unit Weight = 111.36581 lbs/cu ft

Gs = 2.7126357

Volume Solids = 0.6579241 cu cm

Volume Voids = 0.3420759 cu cm

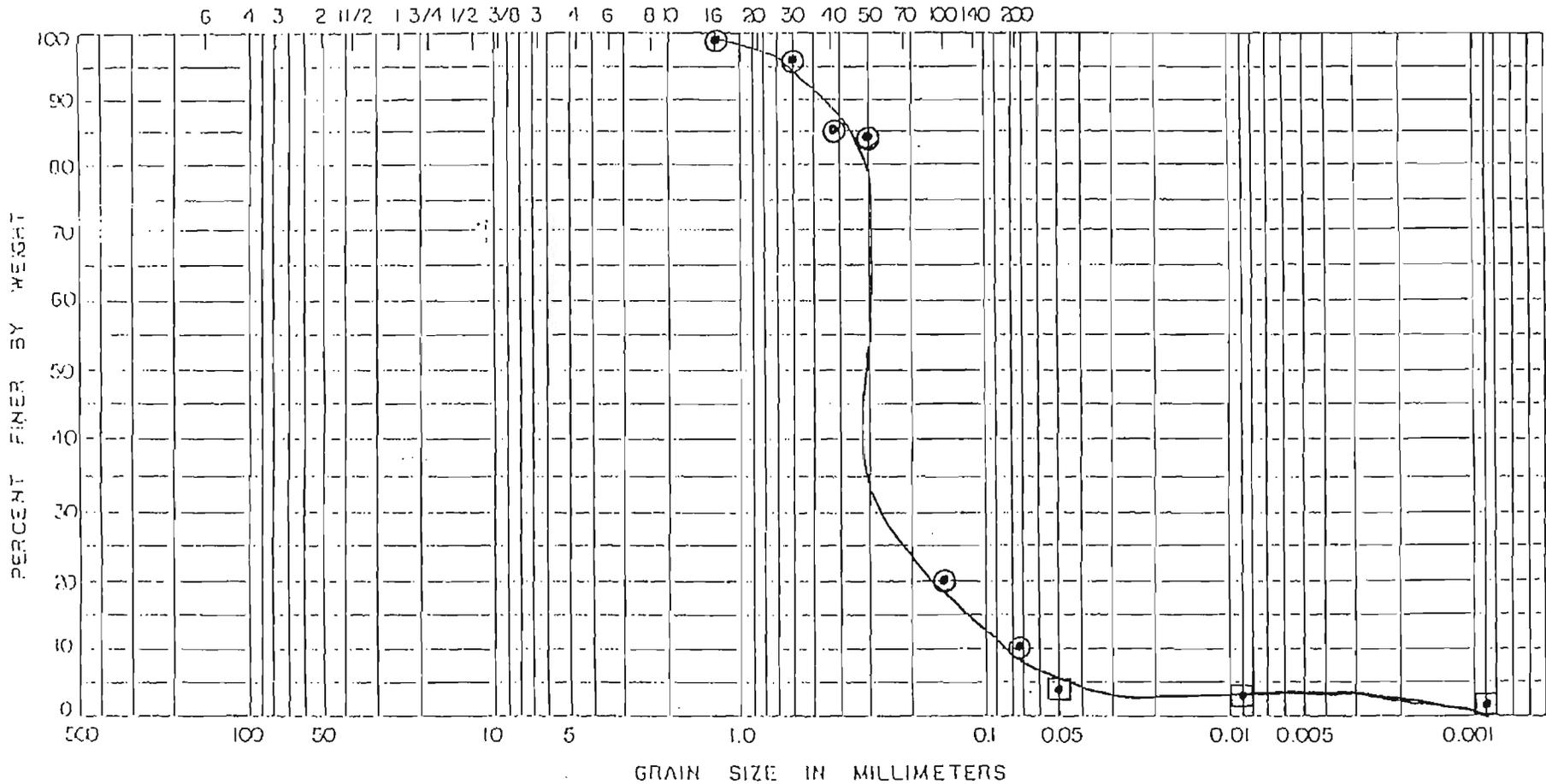
Void Ratio = 0.5199321

Porosity Test Data

Porosity= 0.3420759

π (A)

U.S. STANDARD SIEVE SIZES



CUL ERS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

DRILLING NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. <u>95-03-124</u>
NBCE GDE 15D	20-225'						



Test Data For Sample NBCE GDE20D

Sample Date 1/09/96
Sample Depth 70'-72:5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 76.5 cm
t = 86400 s

k = 1.21E-06 cm/s

Specific Gravity Test Data

Wp = 157.3 g
Wpw = 655.9 g
Ti = 21 Degrees C
Wpws = 677.8 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998
Wtr @Tx = 0.9980233
Wtr @Ti = 0.9980233

Wpw(@Tx) = 655.9

Gs = 2.6712214 g/cc

Test Data For Sample NBCE GDE20D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 986 g
 Wt Tube = 285.3 g
 Wt Soil = 700.7 g

Unit Weight = 110.00387 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 286 g
 Ww = 214 g

%M = 74.825175

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.20	59.80	99.6667
#100	1.20	58.60	97.6667
#200	0.40	58.20	97.0000
Pan	58.20	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.017	0	1.017	20	11.8	0.01365	ERR	30.445132
2	1.016	0	1.016	20	12.1	0.01365	0.0412913	28.654242
5	1.016	0	1.016	20	12.1	0.01365	0.0165165	28.654242
15	1.0152	0	1.0152	20	12.2	0.01365	0.005551	27.221529
30	1.015	0	1.015	20	12.3	0.01365	0.0027983	26.863351
60	1.014	0	1.014	20	12.6	0.01365	0.0014333	25.072461
250	1.014	0	1.014	20	12.6	0.01365	0.000344	25.072461
1440	1.013	0	1.013	20	12.9	0.01365	6.11E-05	23.281571

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 110.00387 lbs/cu ft

Percent Moisture = 74.825175 %

Dry Unit Weight = 62.922216 lbs/cu ft

Gs = 2.6712214

Volume Solids = 0.3774936 cu cm

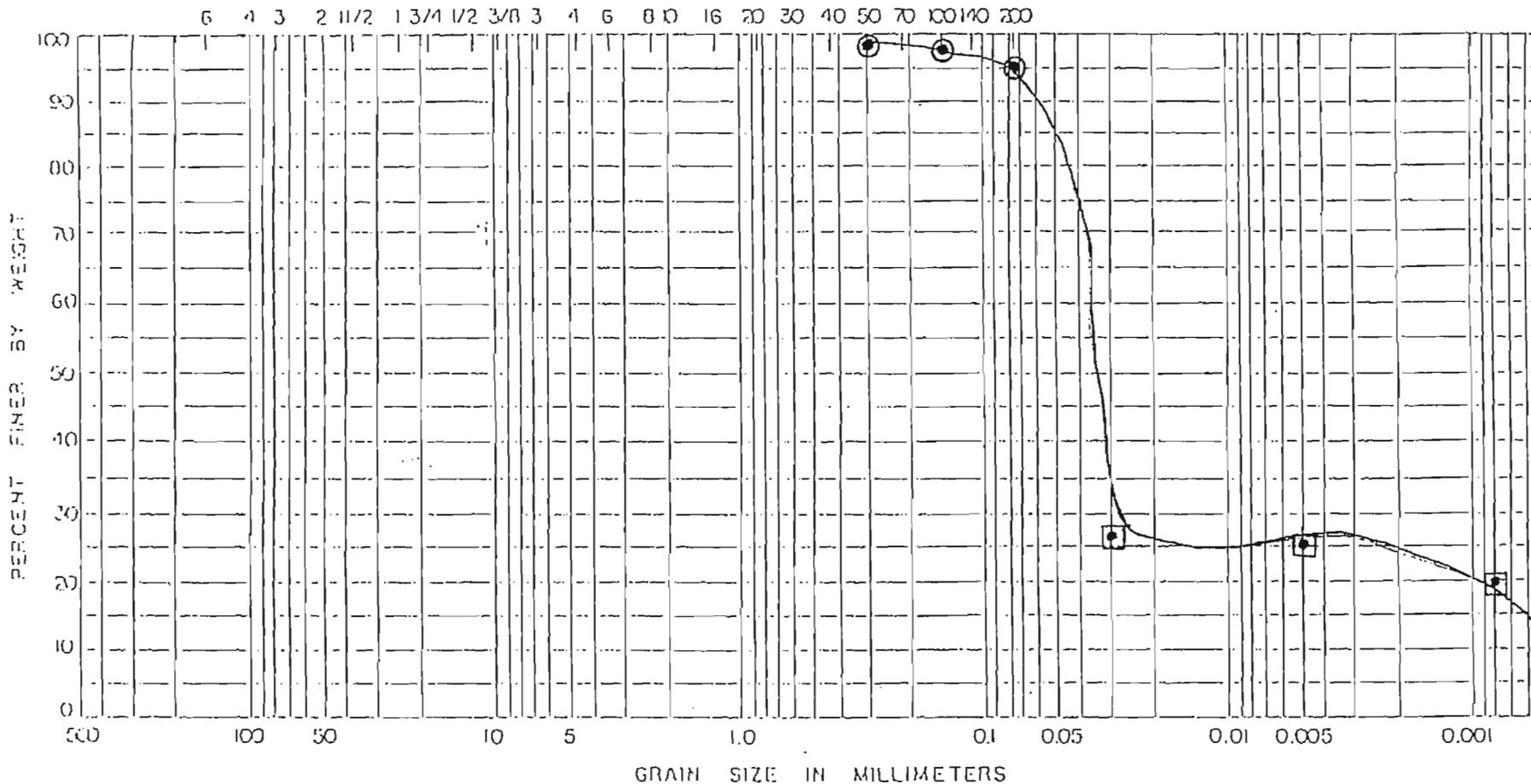
Volume Voids = 0.6225064 cu cm

Void Ratio = 1.6490519

Porosity Test Data

Porosity= 0.6225064

US STANDARD SIEVE SIZES



EXCL. CL. BRG.	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

DRILLING NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE GDE 20D	70-72.5'						JOB NO. 95-03-124



Test Data For Sample NBCE GDE21D

Sample Date 12/15/95
Sample Depth 55'-57.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 42 cm
t = 82560 s

k = 4.41E-06 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 655.9 g
Ti = 20 Degrees C
Wpws = 677.9 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.9

Gs = 2.6923077 g/cc

Test Data For Sample NBCE GDE21D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1125 g
 Wt Tube = 290 g
 Wt Soil = 835 g

Unit Weight = 131.08782 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 310 g
 W_w = 190 g

%M = 61.290323

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.00	60.00	100.0000
#100	0.10	59.90	99.8333
#200	2.20	57.70	96.1667
Pan	57.70	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.014	0	1.014	20	12.6	0.01344	ERR	25.072461
2	1.0135	0	1.0135	20	12.7	0.01344	0.042672	24.177016
5	1.0135	0	1.0135	20	12.7	0.01344	0.0170688	24.177016
15	1.012	0	1.012	20	13.1	0.01344	0.0058688	21.490681
30	1.011	0	1.011	20	13.4	0.01344	0.0030016	19.699791
60	1.0105	0	1.0105	20	13.5	0.01344	0.001512	18.804346
250	1.0105	0	1.0105	20	13.5	0.01344	0.0003629	18.804346
1440	1.004	0	1.004	20	15.2	0.01344	7.09E-05	7.1635604

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 131.08782 lbs/cu ft

Percent Moisture = 61.290323 %

Dry Unit Weight = 81.274448 lbs/cu ft

Gs = 2.6923077

Volume Solids = 0.4837765 cu cm

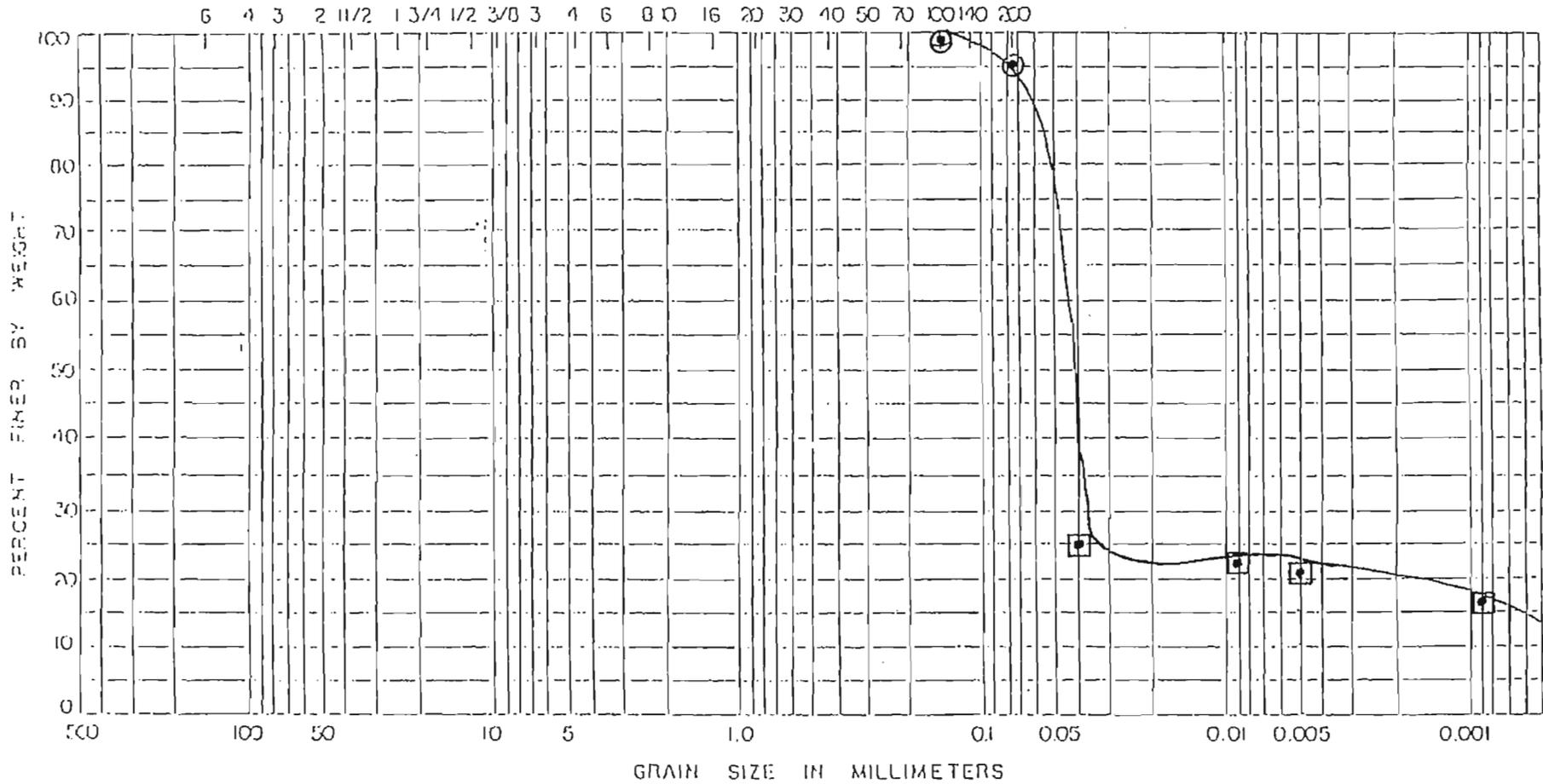
Volume Voids = 0.5162235 cu cm

Void Ratio = 1.0670703

Porosity Test Data

Porosity= 0.5162235

US STANDARD SIEVE SIZES



CU CLASS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

DRILLING NO.	ELEV. (METERS)	HAZ. WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. <u>95-03-12A</u>
NBCE GDE 21D	55-57.5'						



Test Data For Sample NBCE 018002

Sample Date 10/16/95

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Sample Depth 10'-12.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 44 cm
t = 86400 s

k = 4.05E-06 cm/s

Specific Gravity Test Data

Wp = 157.5 g
Wpw = 655.3 g
Ti = 19 Degrees C
Wpws = 677.3 g
Tx = 19 Degrees C
Ws = 35 g

K = 1.0002

Wtr @Tx = 0.9984347

Wtr @Ti = 0.9984347

Wpw(@Tx) = 655.3

Gs = 2.6928462 g/cc

Test Data For Sample NBCE 018002 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 989.6 g
 Wt Tube = 287.3 g
 Wt Soil = 702.3 g

Unit Weight = 110.36379 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 450 g
 W_w = 50 g

%M = 11.111111

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	65.00	100.0000
1 1/2"	0.00	65.00	100.0000
3/4"	0.00	65.00	100.0000
3/8"	0.00	65.00	100.0000
#4	0.00	65.00	100.0000
#8	0.00	65.00	100.0000
#16	0.00	65.00	100.0000
#30	0.00	65.00	100.0000
#40	1.00	64.00	98.4615
#50	1.30	62.70	96.4615
#100	1.80	60.90	93.6923
#200	16.00	44.90	69.0769
Pan	44.90	0.00	0.0000

total 65 g

Test Data For Sample NBCE 018002 Cont...

Hydrometer Test Data

W(grams)= 65

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.016	0	1.016	20		0.1382	ERR	28.654242
2	1.015	0	1.015	20	12.3	0.1382	0.424965	26.863351
5	1.015	0	1.015	20	12.3	0.1382	0.169986	26.863351
15	1.0145	0	1.0145	20	12.45	0.1382	0.057353	25.967906
30	1.013	0	1.013	20	12.9	0.1382	0.029713	23.281571
60	1.012	0	1.012	20	13.1	0.1382	0.0150868	21.490681
250	1.01	0	1.01	20	13.7	0.1382	0.0037867	17.908901
1440	1.009	0	1.009	20	13.9	0.1382	0.000667	16.118011

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 110.36379 lbs/cu ft

Percent Moisture = 11.111111 %

Dry Unit Weight = 99.327414 lbs/cu ft

Gs = 2.6928462

Volume Solids = 0.5911164 cu cm

Volume Voids = 0.4088836 cu cm

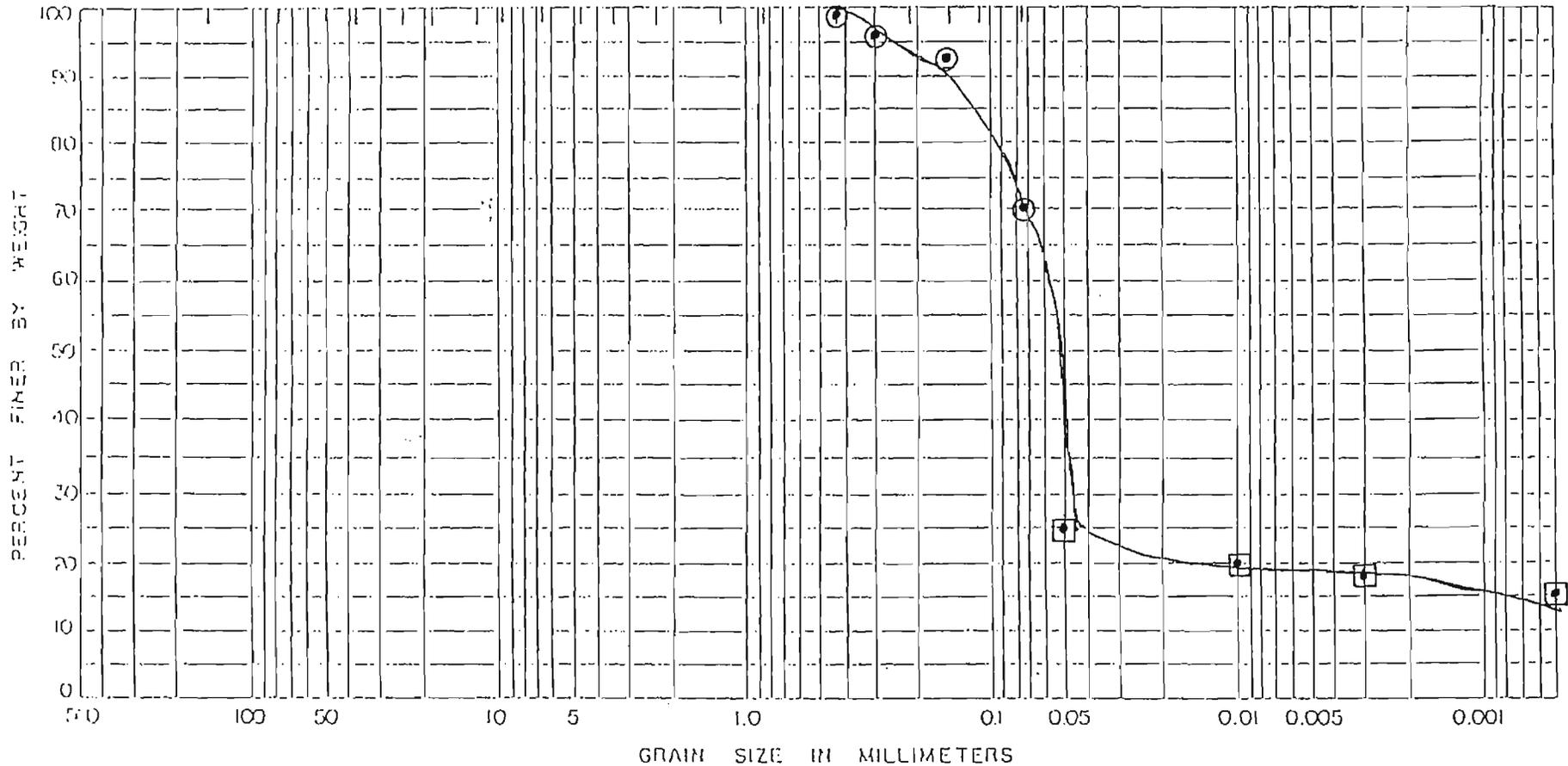
Void Ratio = 0.6917142

Porosity Test Data

Porosity= 0.4088836

U S STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3/4 6 8 10 16 20 30 40 50 70 100 140 200



COBBLES	GRAVEL		SAND			FINES		
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO.	ELEV. OR DEPTH	NAT WGT	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. <u>95-03-12A</u>
NBCE 018 002	10-12.5'						



Test Data For Sample NBCE 06504D

Sample Date 1/19/96

Page 1 of 3

Sample Depth 45-47.5

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 50 cm
t = 11000 s

k = 2.67E-05 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656 g
Ti = 21 Degrees C
Wpws = 677.8 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656

Gs = 2.6509848 g/cc

Test Data For Sample NBCE 538001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 990 g
 Wt Tube = 290.2 g
 Wt Soil = 699.8 g

Unit Weight = 109.97093 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 358 g
 W_w = 142 g
 %M = 39.664804

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.20	59.80	99.6667
#40	0.10	59.70	99.5000
#50	0.30	59.40	99.0000
#100	11.60	47.80	79.6667
#200	13.00	34.80	58.0000
Pan	34.80	0.00	0.0000

total 60 g

Test Data For Sample NBCB 538001 Cont...

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.015	0	1.015	22	12.3	0.01332	ERR	26.863351
2	1.014	0	1.014	22	12.6	0.01332	0.041958	25.072461
5	1.013	0	1.013	22	12.9	0.01332	0.0171828	23.281571
15	1.011	0	1.011	22	13.4	0.01332	0.0059496	19.699791
30	1.0105	0	1.0105	22	13.7	0.01332	0.0030414	18.804346
60	1.01	0	1.01	22	13.7	0.01332	0.0015207	17.908901
250	1.008	0	1.008	22	14.2	0.01332	0.0003783	14.327121
1440	1.006	0	1.006	22	14.7	0.01332	6.8E-05	10.745341

- L - Effective Depth Of Hydrometer (cm)
- K - Value taken From Table
- D - Diameter of Soil Particle (mm)
- P - Soil in Suspension (%)
(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 109.97093 lbs/cu ft

Percent Moisture = 39.664804 %

Dry Unit Weight = 78.739184 lbs/cu ft

Gs = 2.6509848

Volume Solids = 0.4759914 cu cm

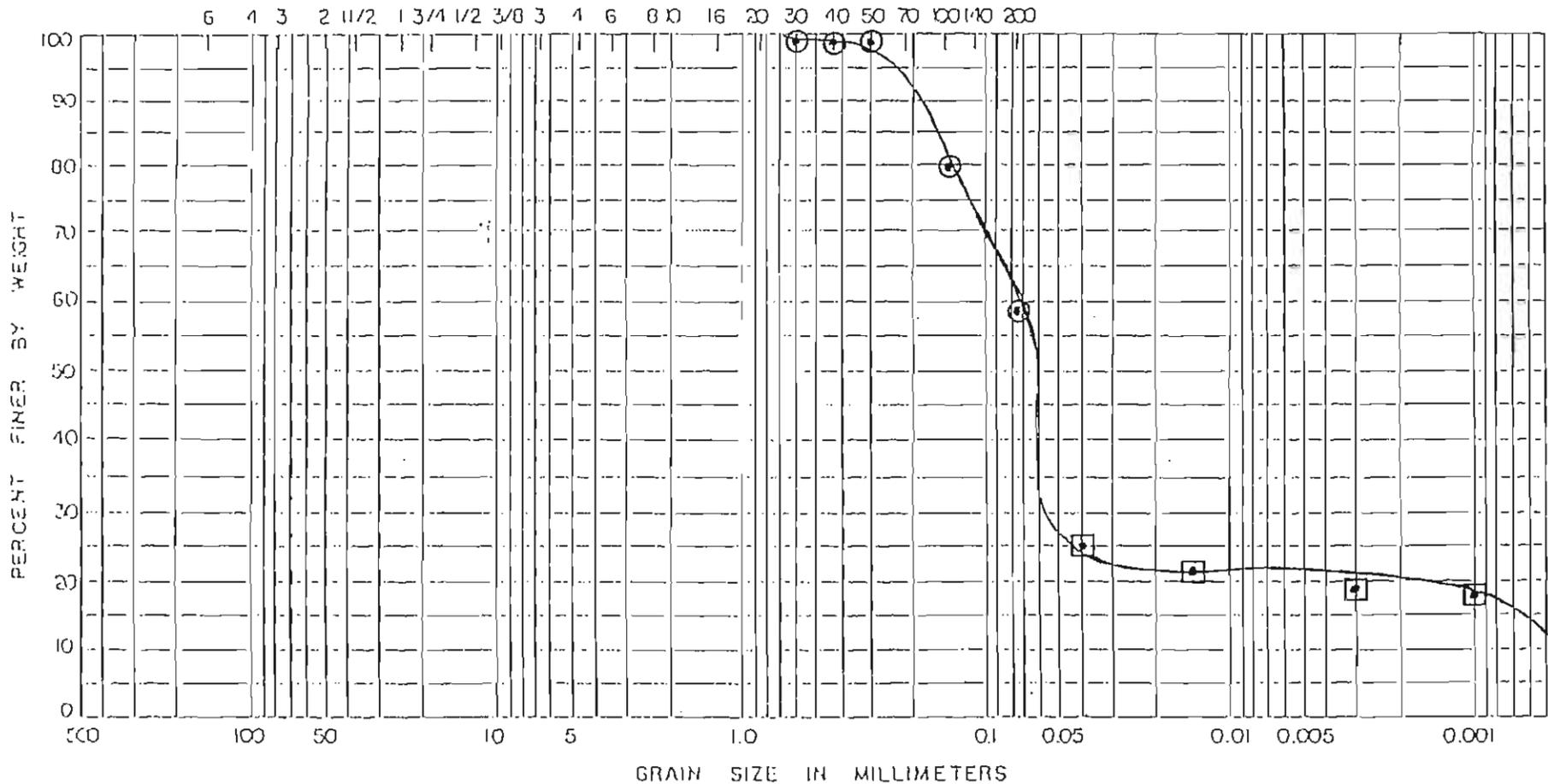
Volume Voids = 0.5240086 cu cm

Void Ratio = 1.1008784

Porosity Test Data

Porosity= 0.5240086

US STANDARD SIEVE SIZES



SOIL CLASSIFICATION	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

EXCAVATION NO.	ELEV. OR DEPTH	NAT W/C	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 065 OAD	45-47.5'						JOB NO. 95-03-12A



Test Data For Sample NBCE 097001

Sample Date 10/11/95

Page 1 of 3

Sample Depth 10'-12.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 80.99 cm
t = 172800 s

k = 4.72E-07 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.8 g
Ti = 22 Degrees C
Wpws = 678.7 g
Tx = 22 Degrees C
Ws = 35 g

K = 0.9996

Wtr @Tx = 0.9978019

Wtr @Ti = 0.9978019

Wpw(@Tx) = 656.8

Gs = 2.670687 g/cc

Test Data For Sample NBCE 574002 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 849.5 g
 Wt Tube = 290.2 g
 Wt Soil = 559.3 g

Unit Weight = 87.891883 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 247 g
 W_w = 253 g

%M = 102.42915

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.00	60.00	100.0000
#100	0.50	59.50	99.1667
#200	1.00	58.50	97.5000
Pan	58.50	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.024	0	1.024	21	10	0.01348	ERR	42.981362
2	1.024	0	1.024	21	10	0.01348	0.0337	42.981362
5	1.023	0	1.023	21	10.2	0.01348	0.0137496	41.190472
15	1.0225	0	1.0225	21	10.3	0.01348	0.0046281	40.295027
30	1.021	0	1.021	21	10.7	0.01348	0.0024039	37.608692
60	1.021	0	1.021	21	10.7	0.01348	0.001202	37.608692
250	1.021	0	1.021	21	10.7	0.01348	0.0002885	37.608692
1440	1.019	0	1.019	21	11.3	0.01348	5.29E-05	34.026912

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 87.891883 lbs/cu ft

Percent Moisture = 102.42915 %

Dry Unit Weight = 43.41859 lbs/cu ft

Gs = 2.670687

Volume Solids = 0.2605362 cu cm

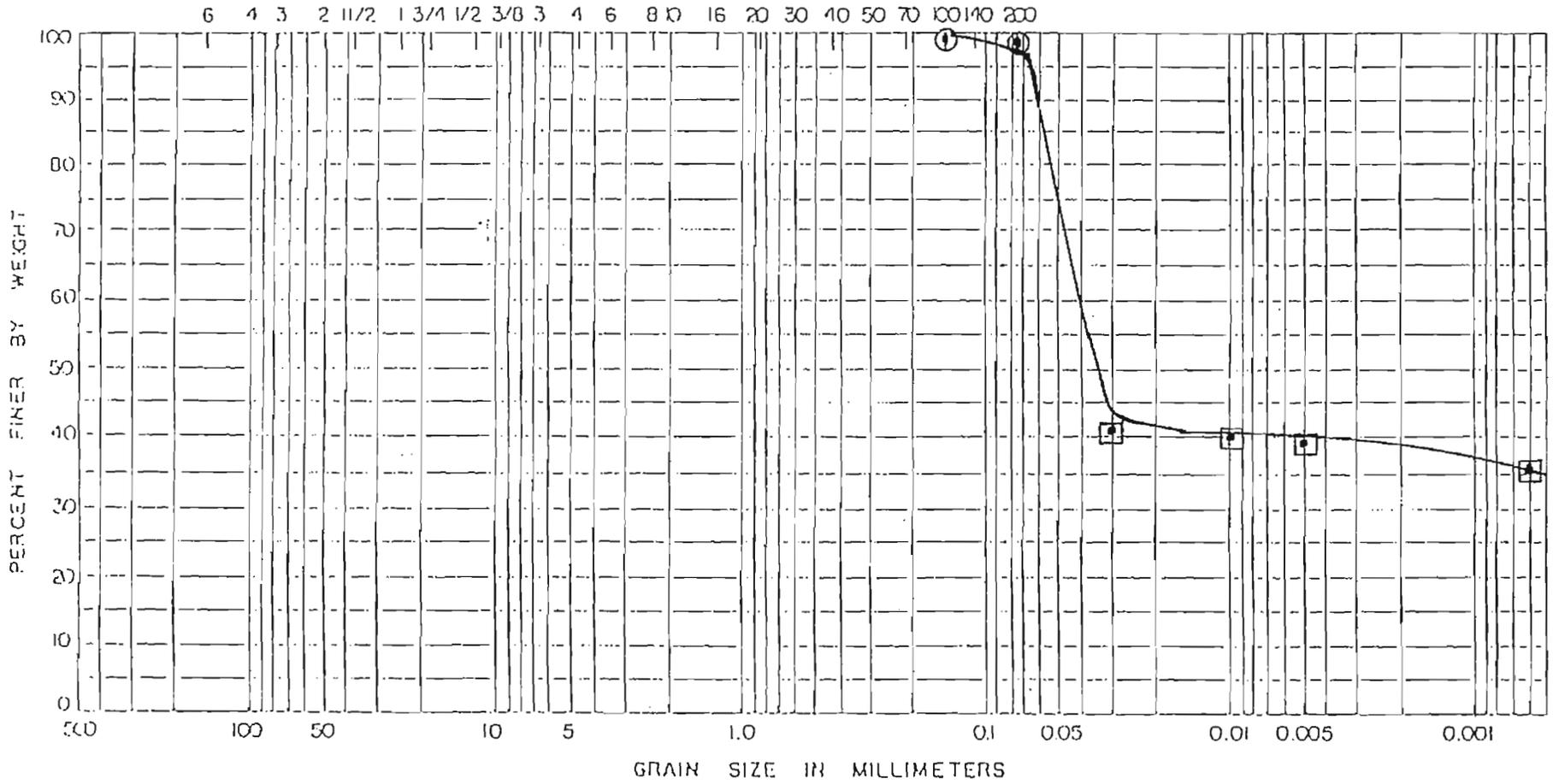
Volume Voids = 0.7394638 cu cm

Void Ratio = 2.8382377

Porosity Test Data

Porosity= 0.7394638

U.S. STANDARD SIEVE SIZES



NO. OF TESTS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES		CLAY SIZES

BOXING NO.	ELEV. OR DEPTH	HAI WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-124
NBCE 097 001	10-12.5'						



Test Data For Sample NBCE 100001

Sample Date 10/12/95

Page 1 of 3

Sample Depth 9.8'-12.3'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 76.5 cm
t = 86400 s

k = 1.21E-06 cm/s

Specific Gravity Test Data

Wp = 157.6 g
Wpw = 655.9 g
Ti = 20 Degrees C
Wpws = 677.75 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.9

Gs = 2.661597 g/cc

Test Data For Sample NBCE 100001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1142 g
 Wt Tube = 285.5 g
 Wt Soil = 856.5 g

Unit Weight = 134.46313 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 258.5 g
 W_w = 241.5 g

%M = 93.423598

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.10	59.90	99.8333
#40	0.10	59.80	99.6667
#50	0.10	59.70	99.5000
#100	0.50	59.20	98.6667
#200	0.30	58.90	98.1667
Pan	58.90	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.037	0	1.037	20	6.5	0.01386	ERR	66.262934
2	1.035	0	1.035	20	7	0.01386	0.024255	62.681153
5	1.033	0	1.033	20	7.6	0.01386	0.0105336	59.099373
15	1.031	0	1.031	20	8.1	0.01386	0.0037422	55.517593
30	1.029	0	1.029	20	8.6	0.01386	0.0019866	51.935813
60	1.028	0	1.028	20	8.9	0.01386	0.001028	50.144923
250	1.028	0	1.028	20	8.9	0.01386	0.0002467	50.144923
1440	1.02	0	1.02	20	11	0.01386	5.29E-05	35.817802

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 134.46313 lbs/cu ft

Percent Moisture = 93.423598 %

Dry Unit Weight = 69.517441 lbs/cu ft

Gs = 2.661597

Volume Solids = 0.4185688 cu cm

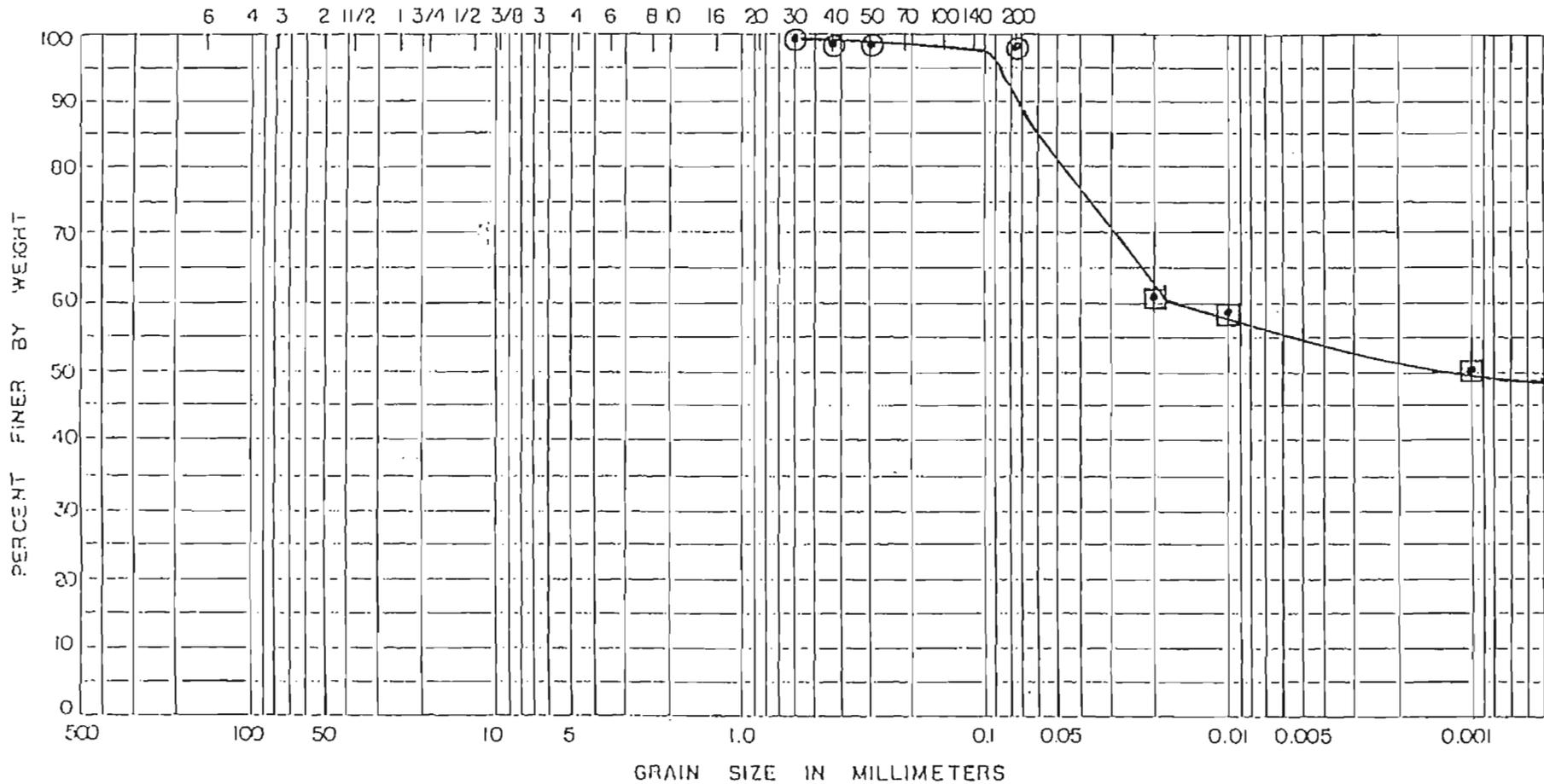
Volume Voids = 0.5814312 cu cm

Void Ratio = 1.3890933

Porosity Test Data

Porosity= 0.5814312

U.S. STANDARD SIEVE SIZES



SUCUL BERS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

BOXING NO.	ELEV. OR DEPTH	NAT W.C.	LL	PL	PI	CLASSIFICATION
NBCE 100 001	9.8 - 12.3'					

GRAIN SIZE DISTRIBUTION
JOB NO. 95-03-124



Test Data For Sample NBCE 52601D

Sample Date 1/04/96

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Sample Depth 60'-62.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 35 cm
t = 168000 s

k = 2.68E-06 cm/s

Specific Gravity Test Data

Wp = 157.9 g
Wpw = 656.3 g
Ti = 21 Degrees C
Wpws = 678.2 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656.3

Gs = 2.6712214 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 938.5 g
 Wt Tube = 289.7 g
 Wt Soil = 648.8 g

Unit Weight = 101.95647 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 336.5 g
 Ww = 163.5 g
 %M = 48.58841

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.10	59.90	99.8333
#100	0.60	59.30	98.8333
#200	3.90	55.40	92.3333
Pan	55.40	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.023	0	1.023	20	10.2	0.01365	ERR	41.190472
2	1.021	0	1.021	20	10.7	0.01365	0.0365138	37.608692
5	1.02	0	1.02	20	11	0.01365	0.015015	35.817802
15	1.018	0	1.018	20	11.5	0.01365	0.0052325	32.236022
30	1.017	0	1.017	20	11.8	0.01365	0.0026845	30.445132
60	1.015	0	1.015	20	12.3	0.01365	0.0013991	26.863351
250	1.013	0	1.013	20	12.9	0.01365	0.0003522	23.281571
1440	1.01	0	1.01	20	13.7	0.01365	6.49E-05	17.908901

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 101.95647 lbs/cu ft

Percent Moisture = 48.58841 %

Dry Unit Weight = 68.616705 lbs/cu ft

Gs = 2.6712214

Volume Solids = 0.4116569 cu cm

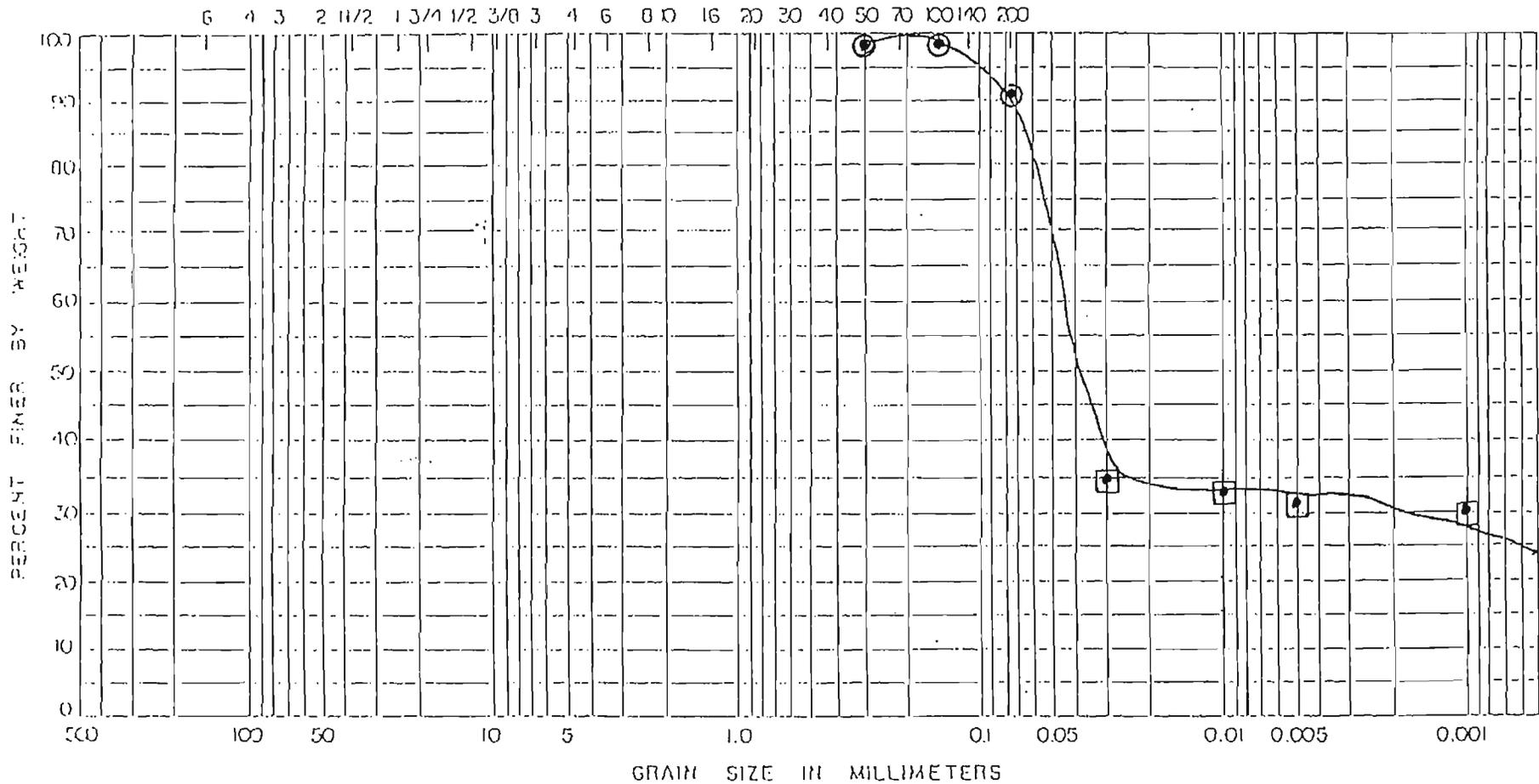
Volume Voids = 0.5883431 cu cm

Void Ratio = 1.4292075

Porosity Test Data

Porosity= 0.5883431

U.S. STANDARD SIEVE SIZES



CUL ERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

TESTING NO. NBCE 526 01D	ELEV OR DPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-12A
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Test Data For Sample NBCE 53002D

Sample Date 10/12/95

Page 1 of 3

Sample Depth 55'-57.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 72 cm
t = 86400 s

k = 1.52E-06 cm/s

Specific Gravity Test Data

Wp = 157.4 g
Wpw = 655.9 g
Ti = 19 Degrees C
Wpws = 677.9 g
Tx = 19 Degrees C
Ws = 35 g

K = 1.0002
Wtr @Tx = 0.9984347
Wtr @Ti = 0.9984347

Wpw(@Tx) = 655.9

Gs = 2.6928462 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1078 g
 Wt Tube = 289.9 g
 Wt Soil = 788.1 g

Unit Weight = 123.72492 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 364 g
 W_w = 136 g
 %M = 37.362637

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.00	60.00	100.0000
#100	0.10	59.90	99.8333
#200	2.20	57.70	96.1667
Pan	57.70	0.00	0.0000

total 60 g

Test Data For Sample NBCE 53002D Cont..

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.013	0	1.013	21	12.9	0.01328	ERR	23.281571
2	1.0125	0	1.0125	21	13	0.01328	0.04316	22.386126
5	1.0125	0	1.0125	21	13	0.01328	0.017264	22.386126
15	1.011	0	1.011	21	13.4	0.01328	0.0059317	19.699791
30	1.0105	0	1.0105	21	13.5	0.01328	0.002988	18.804346
60	1.01	0	1.01	21	13.7	0.01328	0.0015161	17.908901
250	1.009	0	1.009	21	16.3	0.01328	0.0004329	16.118011
1440	1.008	0	1.008	21	14.2	0.01328	6.55E-05	14.327121

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 123.72492 lbs/cu ft

Percent Moisture = 37.362637 %

Dry Unit Weight = 90.071744 lbs/cu ft

Gs = 2.6928462

Volume Solids = 0.5360341 cu cm

Volume Voids = 0.4639659 cu cm

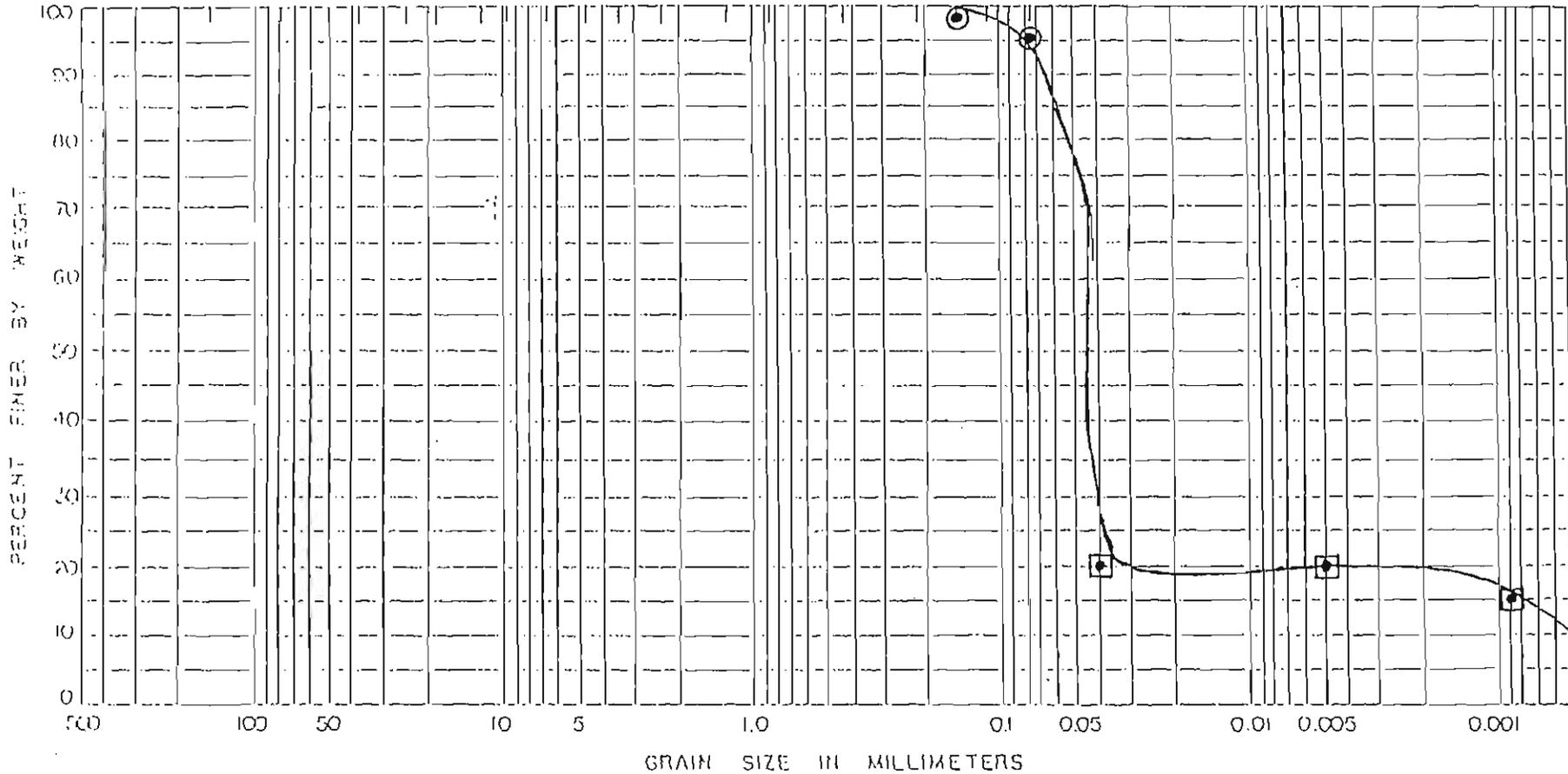
Void Ratio = 0.8655529

Porosity Test Data^c

Porosity= 0.4639659

U.S. STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3/4 1/2 1/4 6 8 10 16 20 30 40 50 70 100 140 200



NO. OF TESTS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO.	ELEV. OR E.P.H.	HAT WGT.	LL	PL	PI	CLASSIFICATION
NBCE 53002D	55-57.5'					

GRAIN SIZE DISTRIBUTION

JOB NO. 95-03-12A



Test Data For Sample NBCE 538001

Sample Date 11/09/95

Page 1 of 3

Sample Depth 7.5'-9.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 45 cm
t = 240 s

k = 1.42E-03 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.5 g
Ti = 21 Degrees C
Wpws = 678.3 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656.5

Gs = 2.6509848 g/cc

Test Data For Sample NBCE 538001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1082.5 g
 Wt Tube = 285.4 g
 Wt Soil = 797.1 g

Unit Weight = 125.26126 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 419.3 g
 W_w = 80.7 g

%M = 19.246363

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.30	59.70	99.5000
#50	0.90	58.80	98.0000
#100	42.40	16.40	27.3333
#200	9.40	7.00	11.6667
Pan	7.00	0.00	0.0000

total 60 g

Test Data For Sample NBCE 538001 Cont...

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.002	0	1.002	22	15.8	0.01332	ERR	3.5817802
2	1.002	0	1.002	22	15.8	0.01332	0.052614	3.5817802
5	1.0015	0	1.0015	22	15.9	0.01332	0.0211788	2.6863351
15	1.0013	0	1.0013	22	15.9	0.01332	0.0070596	2.3281571
30	1.0012	0	1.0012	22	15.9	0.01332	0.0035298	2.1490681
60	1.0012	0	1.0012	22	15.9	0.01332	0.0017649	2.1490681
250	1.0012	0	1.0012	22	15.9	0.01332	0.0004236	2.1490681
1440	1.0012	0	1.0012	22	15.9	0.01332	7.35E-05	2.1490681

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 125.26126 lbs/cu ft

Percent Moisture = 19.246363 %

Dry Unit Weight = 105.04409 lbs/cu ft

Gs = 2.6509848

Volume Solids = 0.6350089 cu cm

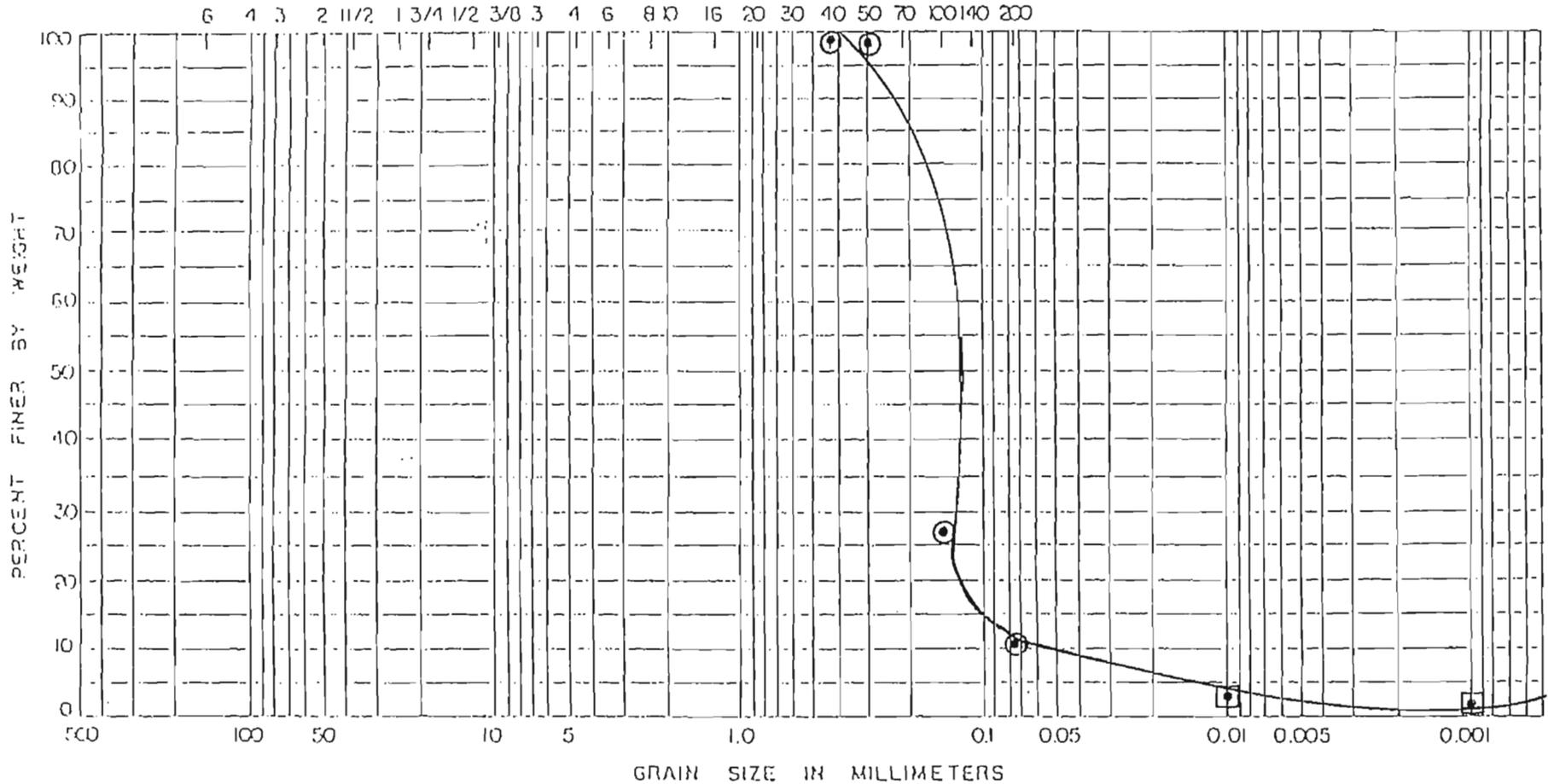
Volume Voids = 0.3649911 cu cm

Void Ratio = 0.5747812

Porosity Test Data

Porosity= 0.3649911

U S STANDARD SIEVE SIZES



SCALES	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BOREHOLE NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 538 001	7.5-9.5'						JOB NO. 95-03-124



Test Data For Sample NBCE 55102D

Sample Date 12/15/95

Page 1 of 3

Sample Depth 35'-37.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 51 cm
t = 960 s

k = 2.97E-04 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.5 g
Ti = 21 Degrees C
Wpws = 678.3 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx = 656.5

Gs = 2.6509848 g/cc

Test Data For Sample NBCE 55102D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1026 g
 Wt Tube = 286.5 g
 Wt Soil = 739.5 g

Unit Weight = 116.20963 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 361.3 g
 W_w = 138.7 g
 %M = 38.38915

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.60	59.40	99.0000
#30	0.20	59.20	98.6667
#40	0.10	59.10	98.5000
#50	0.20	58.90	98.1667
#100	2.80	56.10	93.5000
#200	19.70	36.40	60.6667
Pan	36.40	0.00	0.0000

total 60 g

Test Data For Sample NBCB 55102D Cont...

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.013	0	1.013	22	12.9	0.01332	ERR	23.281571
2	1.0125	0	1.0125	22	13	0.01332	0.04329	22.386126
5	1.012	0	1.012	22	13.1	0.01332	0.0174492	21.490681
15	1.011	0	1.011	22	13.4	0.01332	0.0059496	19.699791
30	1.01	0	1.01	22	13.7	0.01332	0.0030414	17.908901
60	1.009	0	1.009	22	13.9	0.01332	0.0015429	16.118011
250	1.007	0	1.007	22	14.4	0.01332	0.0003836	12.536231
1440	1.005	0	1.005	22	15	0.01332	6.94E-05	8.9544505

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 116.20963 lbs/cu ft

Percent Moisture = 38.38915 %

Dry Unit Weight = 83.973081 lbs/cu ft

Gs = 2.6509848

Volume Solids = 0.5076311 cu cm

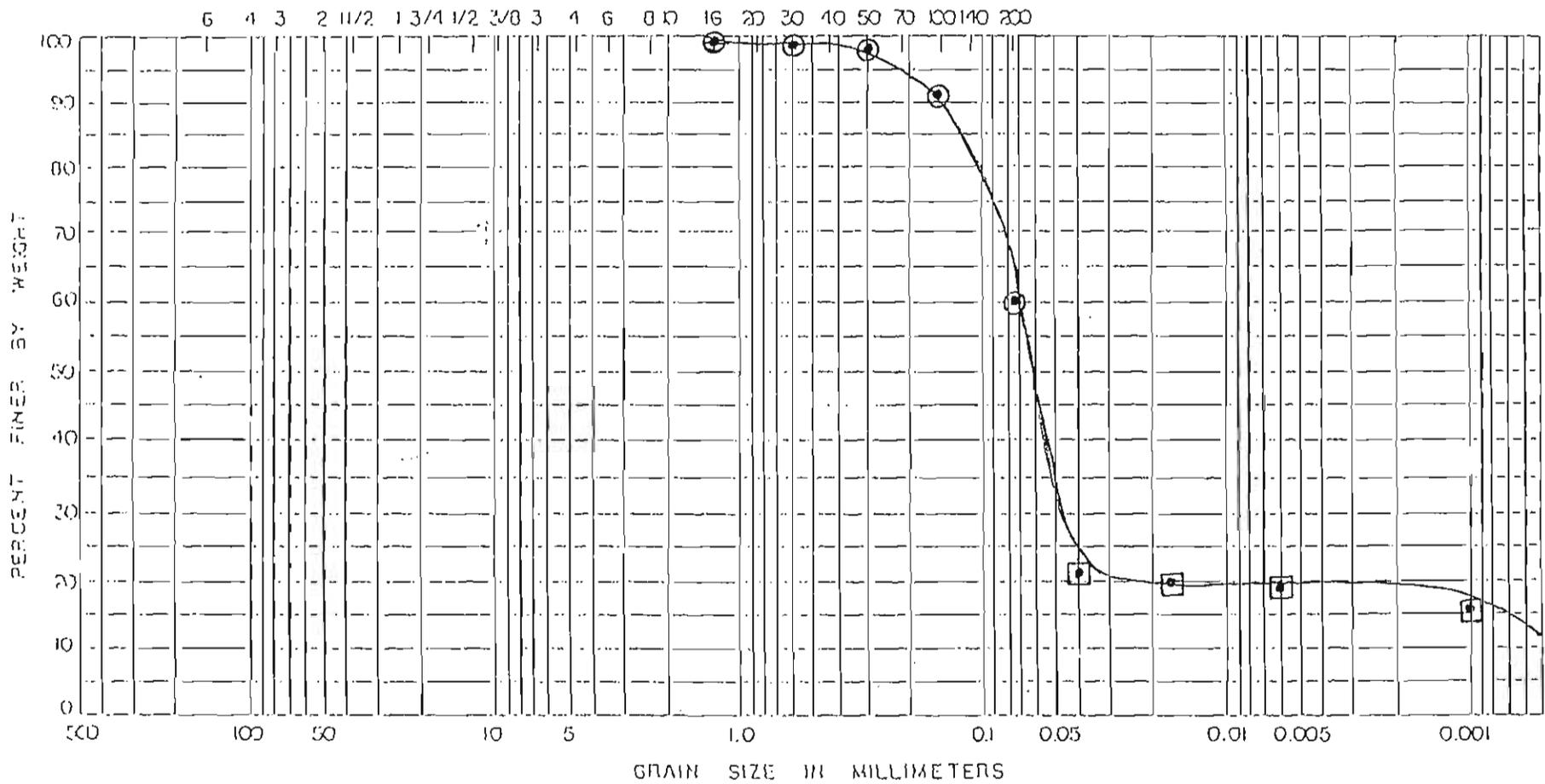
Volume Voids = 0.4923689 cu cm

Void Ratio = 0.9699343

Porosity Test Data

Porosity= 0.4923689

U.S. STANDARD SIEVE SIZES



PERCENT FINER	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

TESTING NO.	ELEV. OR DEPTH	HAT W/C	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE SSI 02D	35-37.5'						JOB NO. 95-03-12A



Test Data For Sample NBCE 559004

Sample Date 11/13/95

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Sample Depth 9.5'-11.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 36.54 cm
t = 360 s

k = 1.18E-03 cm/s

Specific Gravity Test Data

Wp = 157.4 g
Wpw = 655.9 g
Ti = 21 Degrees C
Wpws = 677.6 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 655.9

Gs = 2.6310526 g/cc

Test Data For Sample NBCE 559004 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1121 g
 Wt Tube = 285.3 g
 Wt Soil = 835.7 g

Unit Weight = 131.19771 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 445.5 g
 W_w = 54.5 g

%M = 12.233446

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	1.80	58.20	97.0000
#30	7.20	51.00	85.0000
#40	4.50	46.50	77.5000
#50	7.10	39.40	65.6667
#100	19.50	19.90	33.1667
#200	3.20	16.70	27.8333
Pan	16.70	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.009	0	1.009	21	13.9	0.01348	ERR	16.118011
2	1.0085	0	1.0085	21	14	0.01348	0.04718	15.222566
5	1.0084	0	1.0084	21	14.1	0.01348	0.0190068	15.043477
15	1.0084	0	1.0084	21	14.1	0.01348	0.0063356	15.043477
30	1.008	0	1.008	21	14.2	0.01348	0.0031903	14.327121
60	1.008	0	1.008	21	14.2	0.01348	0.0015951	14.327121
250	1.007	0	1.007	21	14.4	0.01348	0.0003882	12.536231
1440	1.007	0	1.007	21	14.4	0.01348	6.74E-05	12.536231

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 131.19771 lbs/cu ft

Percent Moisture = 12.233446 %

Dry Unit Weight = 116.89716 lbs/cu ft

Gs = 2.6310526

Volume Solids = 0.7120162 cu cm

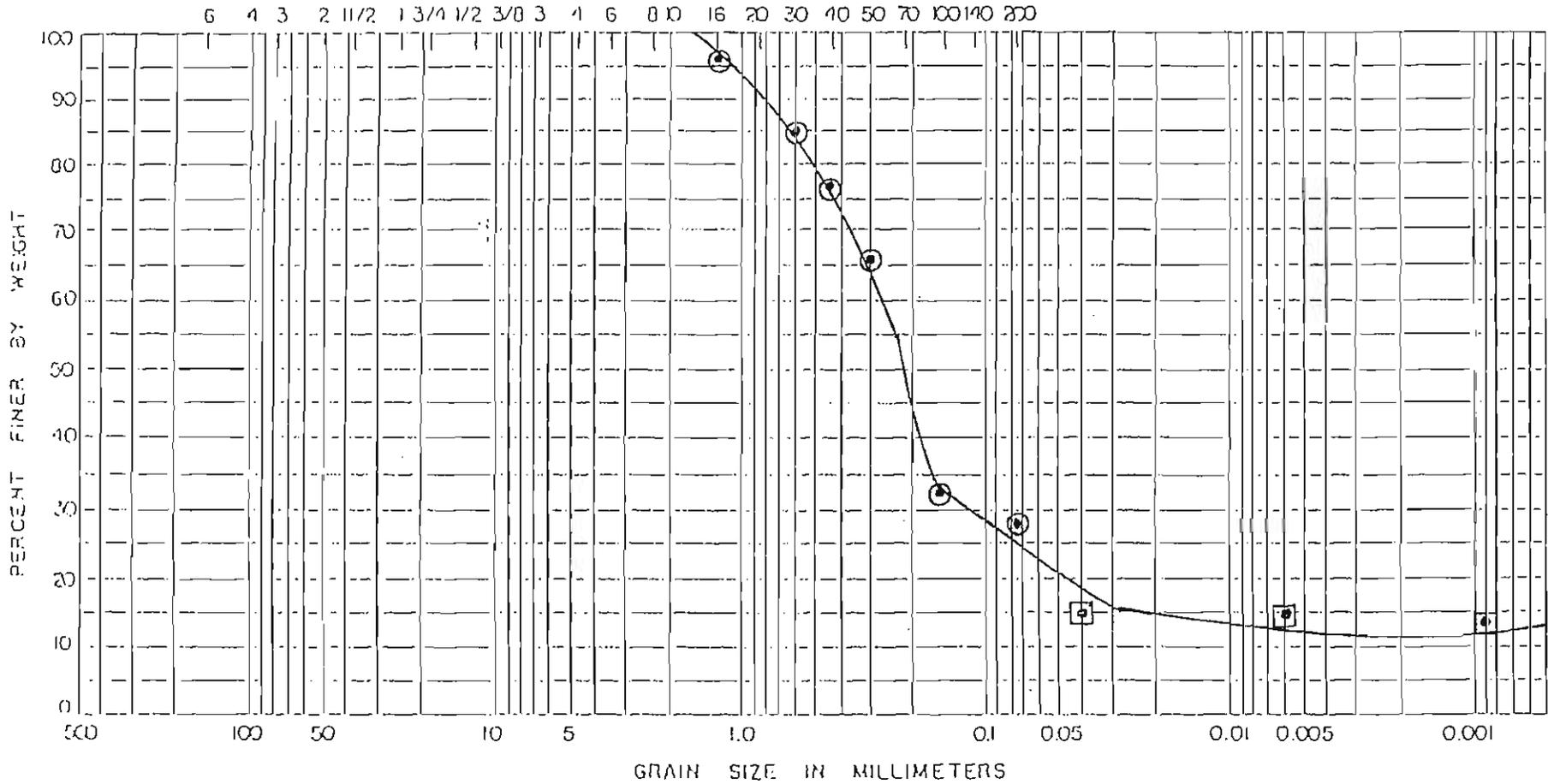
Volume Voids = 0.2879838 cu cm

Void Ratio = 0.4044625

Porosity Test Data

Porosity= 0.2879838

U.S. STANDARD SIEVE SIZES



CUL ERS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

EXAMING NO. NBCE 559 004	ELEV. OR DEPTH 95-11.5'	NAT W.C.	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-124
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Test Data For Sample NBCE 55904D

Sample Date 12/04/95
Sample Depth 22.5'-25'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 64 cm
t = 1256 s

k = 1.47E-04 cm/s

Specific Gravity Test Data

Wp = 157.4 g
Wpw = 655.9 g
Ti = 18.5 Degrees C
Wpws = 677.8 g
Tx = 19.1 Degrees C
Ws = 35 g

K = 1.0002
Wtr @Tx = 0.9984347
Wtr @Ti = 0.9985233

Wpw(@Tx) 655.85577

Gs= 2.6813437 g/cc

Test Data For Sample NBCE 55904D Cont..

Unit Weight (Bulk Density) Test Data

Area = 39.16 sq cm
 Height = 10.32 cm
 Volume = 404.1312 cu cm

Wt Soil & Tube = 1100.1 g
 Wt Tube = 285.9 g
 Wt Soil = 814.2 g

Unit Weight = 125.7168 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 398 g
 W_w = 102 g

Moisture = 25.628141

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
4"	0.00	90.00	100.0000
4"	0.00	90.00	100.0000
4"	0.00	90.00	100.0000
8"	0.00	90.00	100.0000
16"	0.00	90.00	100.0000
30"	0.00	90.00	100.0000
60"	0.00	90.00	100.0000
100"	3.25	86.75	96.3889
200"	5.25	81.50	90.5556
400"	8.20	73.30	81.4444
600"	10.60	62.70	69.6667
pan	62.70	0.00	0.0000

total 90 g

Test Data For Sample NBCE 55904D

Sample Date 12/04/95

Sample Depth 29'-31.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm

L = 10.15 cm

A = 39.16 sq cm

h1 = 97.5 cm

h2 = 36.7 cm

t = 380 s

k = 1.11E-03 cm/s

Specific Gravity Test Data

Wp = 157.5 g

Wpw = 655.9 g

Ti 22 Degrees C

Wpws 677.7 g

Tx 22 Degrees C

Ws 35 g

K = 0.9996

Wtr @Tx = 0.9978019

Wtr @Ti = 0.9978019

Wpw(@Tx 655.9

Gs = 2.6504545 g/cc

Test Data For Sample NBCE 55904D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1086 g
 Wt Tube = 285.5 g
 Wt Soil = 800.5 g

Unit Weight = 125.67162 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 370 g
 W_w = 130 g
 %M = 35.135135

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.20	59.80	99.6667
#40	0.10	59.70	99.5000
#50	0.20	59.50	99.1667
#100	1.60	57.90	96.5000
#200	9.10	48.80	81.3333
Pan	48.80	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.02	0	1.02	22	11	0.01332	ERR	35.817802
2	1.018	0	1.018	22	11.5	0.01332	0.038295	32.236022
5	1.017	0	1.017	22	11.8	0.01332	0.0157176	30.445132
15	1.015	0	1.015	22	12.3	0.01332	0.0054612	26.863351
30	1.014	0	1.014	22	12.6	0.01332	0.0027972	25.072461
60	1.012	0	1.012	22	13.1	0.01332	0.0014541	21.490681
250	1.01	0	1.01	22	13.7	0.01332	0.000365	17.908901
1440	1.007	0	1.007	22	14.4	0.01332	6.66E-05	12.536231

- L - Effective Depth Of Hydrometer (cm)
- K - Value taken From Table
- D - Diameter of Soil Particle (mm)
- P - Soil in Suspension (%)
(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 125.67162 lbs/cu ft

Percent Moisture = 35.135135 %

Dry Unit Weight = 92.996996 lbs/cu ft

Gs = 2.6504545

Volume Solids = 0.5622947 cu cm

Volume Voids = 0.4377053 cu cm

Void Ratio = 0.7784269

Porosity Test Data

Porosity= 0.4377053

Test Data For Sample NBCE 566001

Sample Date 10/06/95
Sample Depth 10.2'-12.7'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 94.5 cm
t = 172800 s

k = 7.95E-08 cm/s

Specific Gravity Test Data

Wp = 158.2 g
Wpw = 656.1 g
Ti = 22 Degrees C
Wpws = 678.1 g
Tx = 22 Degrees C
Ws = 35 g

K = 0.9996
Wtr @Tx = 0.9978019
Wtr @Ti = 0.9978019

Wpw(@Tx = 656.1

Gs = 2.6912308 g/cc

Test Data For Sample NBCE 566001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1155.2 g
 Wt Tube = 290.2 g
 Wt Soil = 865 g

Unit Weight = 135.93148 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 370 g
 Ww = 130 g
 %M = 35.135135

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	65.00	100.0000
1 1/2"	0.00	65.00	100.0000
3/4"	0.00	65.00	100.0000
3/8"	0.00	65.00	100.0000
#4	0.00	65.00	100.0000
#8	0.00	65.00	100.0000
#16	0.00	65.00	100.0000
#30	0.00	65.00	100.0000
#40	0.00	65.00	100.0000
#50	0.00	65.00	100.0000
#100	0.00	65.00	100.0000
#200	1.00	64.00	98.4615
Pan	64.00	0.00	0.0000

total 65 g

Test Data For Sample NBCE 566001 Cont...

Hydrometer Test Data

W(grams)= 65

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.03	0	1.03	19	8.4	0.1382	ERR	53.726703
2	1.029	0	1.029	19	8.6	0.1382	0.29713	51.935813
5	1.029	0	1.029	19	8.6	0.1382	0.118852	51.935813
15	1.028	0	1.028	19	8.9	0.1382	0.0409993	50.144923
30	1.02	0	1.02	19	11	0.1382	0.0253367	35.817802
60	1.018	0	1.018	19	11.5	0.1382	0.0132442	32.236022
250	1.016	0	1.016	19	12.1	0.1382	0.0033444	28.654242
1440	1.01	0	1.01	19	13.4	0.1382	0.000643	17.908901

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 135.93148 lbs/cu ft

Percent Moisture = 35.135135 %

Dry Unit Weight = 100.5893 lbs/cu ft

Gs = 2.6912308

Volume Solids = 0.5989854 cu cm

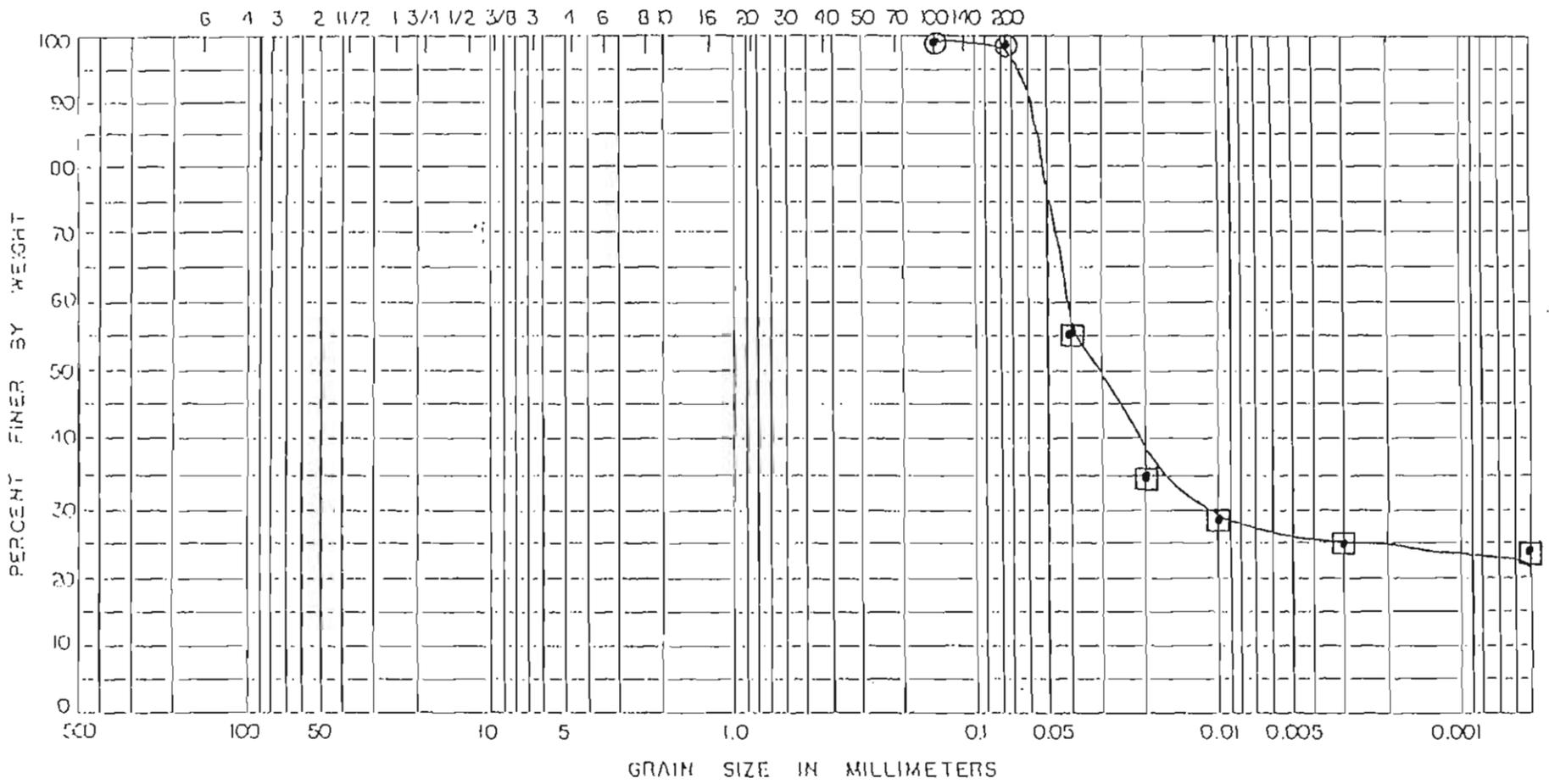
Volume Voids = 0.4010146 cu cm

Void Ratio = 0.6694897

Porosity Test Data

Porosity= 0.4010146

US STANDARD SIEVE SIZES



CUL. EIG.	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

TESTING NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. <u>95-03-124</u>
NBCE 566 001	10.2-12.7'						



Test Data For Sample NBCE 56601D

Sample Date 12/16/97
Sample Depth 25'-27.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 55 cm
t = 86400 s

k = 2.87E-06 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 655.9 g
Ti = 20 Degrees C
Wpws = 677.9 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.9

Gs = 2.6923077 g/cc

Test Data For Sample NBCE 56601D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1064 g
 Wt Tube = 289.9 g
 Wt Soil = 774.1 g

Unit Weight = 121.52704 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 397 g
 W_w = 103 g

%M = 25.944584

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.30	59.70	99.5000
#40	0.30	59.40	99.0000
#50	0.90	58.50	97.5000
#100	13.90	44.60	74.3333
#200	23.20	21.40	35.6667
Pan	21.40	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.003	0	1.003	20	15.5	0.01365	ERR	5.3726703
2	1.003	0	1.003	20	15.5	0.01365	0.0528938	5.3726703
5	1.003	0	1.003	20	15.5	0.01365	0.0211575	5.3726703
15	1.002	0	1.002	20	15.8	0.01365	0.007189	3.5817802
30	1.0015	0	1.0015	20	15.9	0.01365	0.0036173	2.6863351
60	1.0015	0	1.0015	20	15.9	0.01365	0.0018086	2.6863351
250	1.001	0	1.001	20	16	0.01365	0.0004368	1.7908901
1440	1.001	0	1.001	20	16	0.01365	7.58E-05	1.7908901

- L - Effective Depth Of Hydrometer (cm)
- K - Value taken From Table
- D - Diameter of Soil Particle (mm)
- P - Soil in Suspension (%)
(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 121.52704 lbs/cu ft

Percent Moisture = 25.944584 %

Dry Unit Weight = 96.492472 lbs/cu ft

Gs = 2.6923077

Volume Solids = 0.57436 cu cm

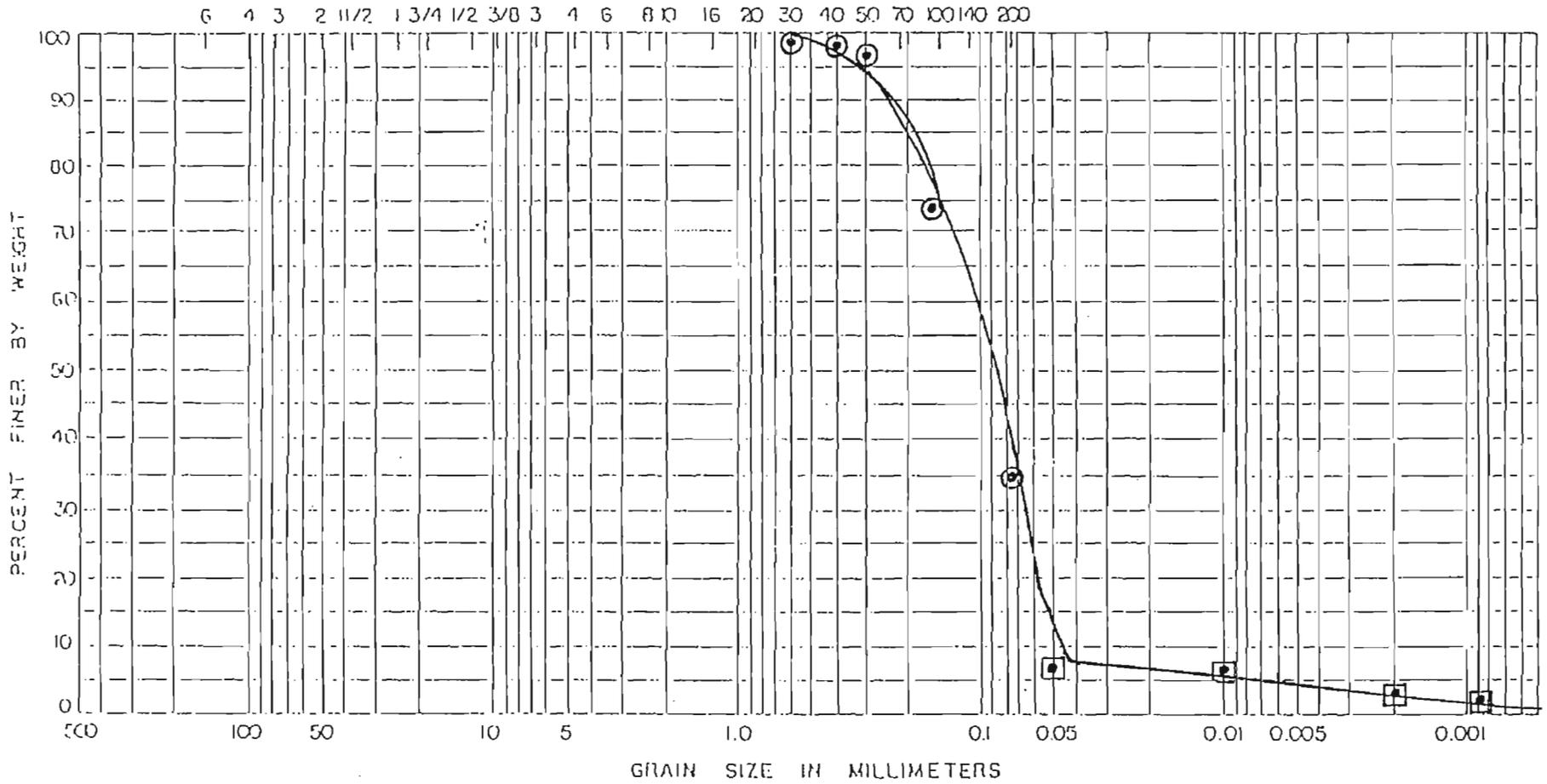
Volume Voids = 0.42564 cu cm

Void Ratio = 0.7410685

Porosity Test Data

Porosity= 0.42564

U S STANDARD SIEVE SIZES



PERCENTS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

BOUNDS NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 566 O/D	25-275'						JOB NO. 95-03-124



Test Data For Sample NBCE 569002

Sample Date 11/09/95

Sample Depth 7.5'-9.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.15 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 25 cm
t = 302 s

k = 1.95E-03 cm/s

Specific Gravity Test Data

Wp = 157.6 g
Wpw = 655.2 g
Ti = 20 Degrees C
Wpws = 676.77 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.2

Gs = 2.6061057 g/cc

Test Data For Sample NBCE 569002 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.15 cm
 Volume = 397.474 cu cm

Wt Soil & Tube = 1050 g
 Wt Tube = 287.6 g
 Wt Soil = 762.4 g

Unit Weight = 119.69024 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 424 g
 Ww = 76 g

%M = 17.924528

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.30	59.70	99.5000
#30	2.30	57.40	95.6667
#40	2.00	55.40	92.3333
#50	3.40	52.00	86.6667
#100	43.50	8.50	14.1667
#200	5.20	3.30	5.5000
Pan	3.30	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.003	0	1.003	22	15.5	0.01353	ERR	5.3726703
2	1.003	0	1.003	22	15.5	0.01353	0.0524288	5.3726703
5	1.003	0	1.003	22	15.5	0.01353	0.0209715	5.3726703
15	1.003	0	1.003	22	15.5	0.01353	0.0069905	5.3726703
30	1.0029	0	1.0029	22	15.55	0.01353	0.0035065	5.1935813
60	1.0025	0	1.0025	22	15.65	0.01353	0.0017645	4.4772252
250	1.0024	0	1.0024	22	15.66	0.01353	0.0004238	4.2981362
1440	1.0023	0	1.0023	22	15.67	0.01353	7.36E-05	4.1190472

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 119.69024 lbs/cu ft

Percent Moisture = 17.924528 %

Dry Unit Weight = 101.49733 lbs/cu ft

Gs = 2.6061057

Volume Solids = 0.6241342 cu cm

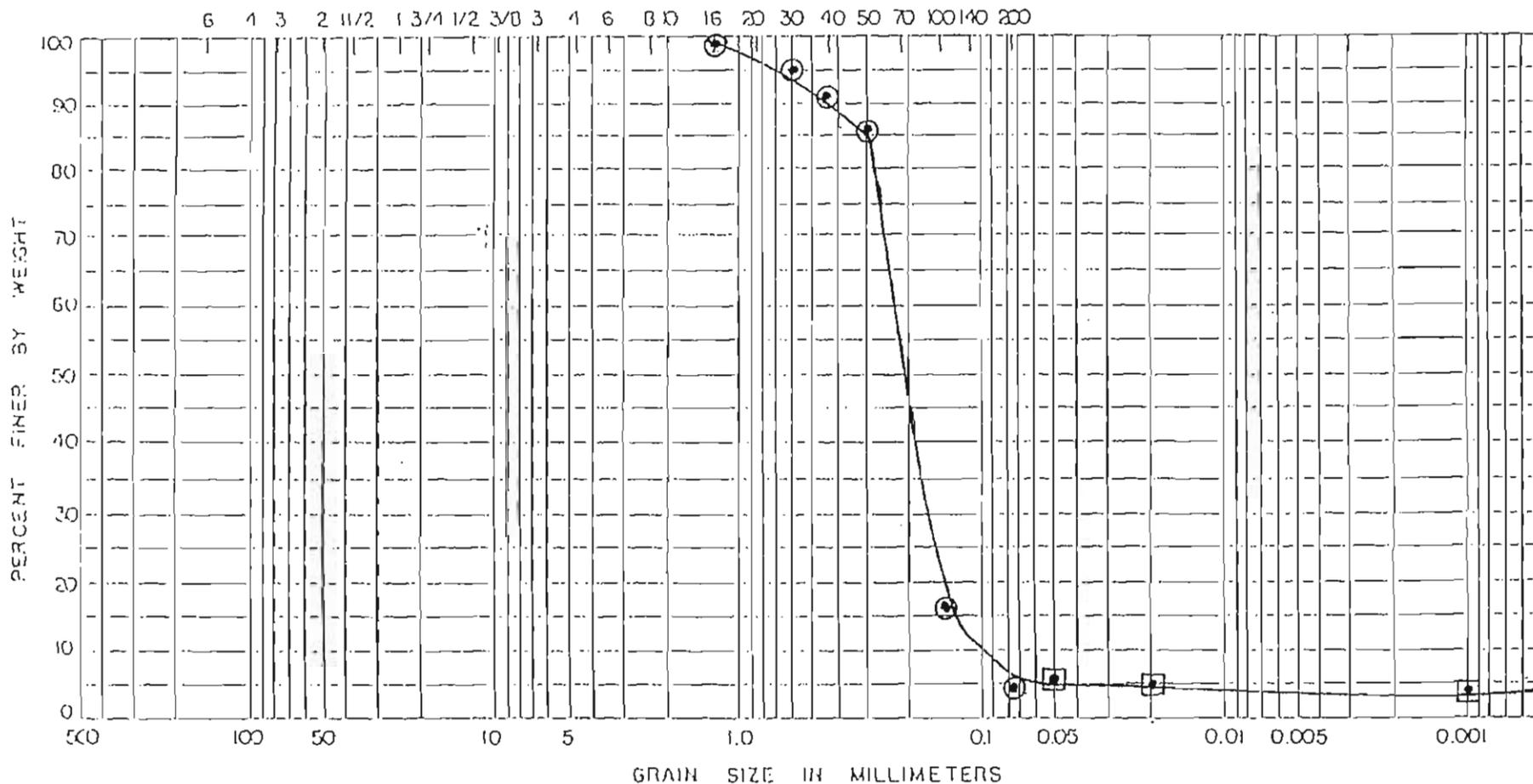
Volume Voids = 0.3758658 cu cm

Void Ratio = 0.6022195

Porosity Test Data

Porosity= 0.3758658

U.S. STANDARD SIEVE SIZES



COBBLES	GRAVEL		SAND			FINES		
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO.	ELEV. OR DEPTH	NAT W/C	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 569 002	75-9.5'						JOB NO. 95-03-124



Test Data For Sample NBCE 57003D

Sample Date 1/20/96

Sample Depth 25'-27'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 38 cm
t = 7800 s

k = 5.31E-05 cm/s

Specific Gravity Test Data

Wp = 158.2 g
Wpw = 656.8 g
Ti = 21 Degrees C
Wpws = 678.2 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656.8

Gs = 2.5730147 g/cc

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 990 g
 Wt Tube = 291 g
 Wt Soil = 699 g

Unit Weight = 109.84521 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 396 g
 W_w = 104 g

%M = 26.262626

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	1.00	59.00	98.3333
#100	9.40	49.60	82.6667
#200	24.10	25.50	42.5000
Pan	25.50	0.00	0.0000

total 60 g

Test Data For Sample NBCB 538001 Cont...

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.011	0	1.011	22	13.4	0.01332	ERR	19.699791
2	1.01	0	1.01	22	13.7	0.01332	0.045621	17.908901
5	1.009	0	1.009	22	13.9	0.01332	0.0185148	16.118011
15	1.008	0	1.008	22	14.2	0.01332	0.0063048	14.327121
30	1.0075	0	1.0075	22	14.3	0.01332	0.0031746	13.431676
60	1.007	0	1.007	22	14.4	0.01332	0.0015984	12.536231
250	1.006	0	1.006	22	14.7	0.01332	0.0003916	10.745341
1440	1.003	0	1.003	22	15.5	0.01332	7.17E-05	5.3726703

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 109.84521 lbs/cu ft

Percent Moisture = 26.262626 %

Dry Unit Weight = 86.997407 lbs/cu ft

Gs = 2.5730147

Volume Solids = 0.5418505 cu cm

Volume Voids = 0.4581495 cu cm

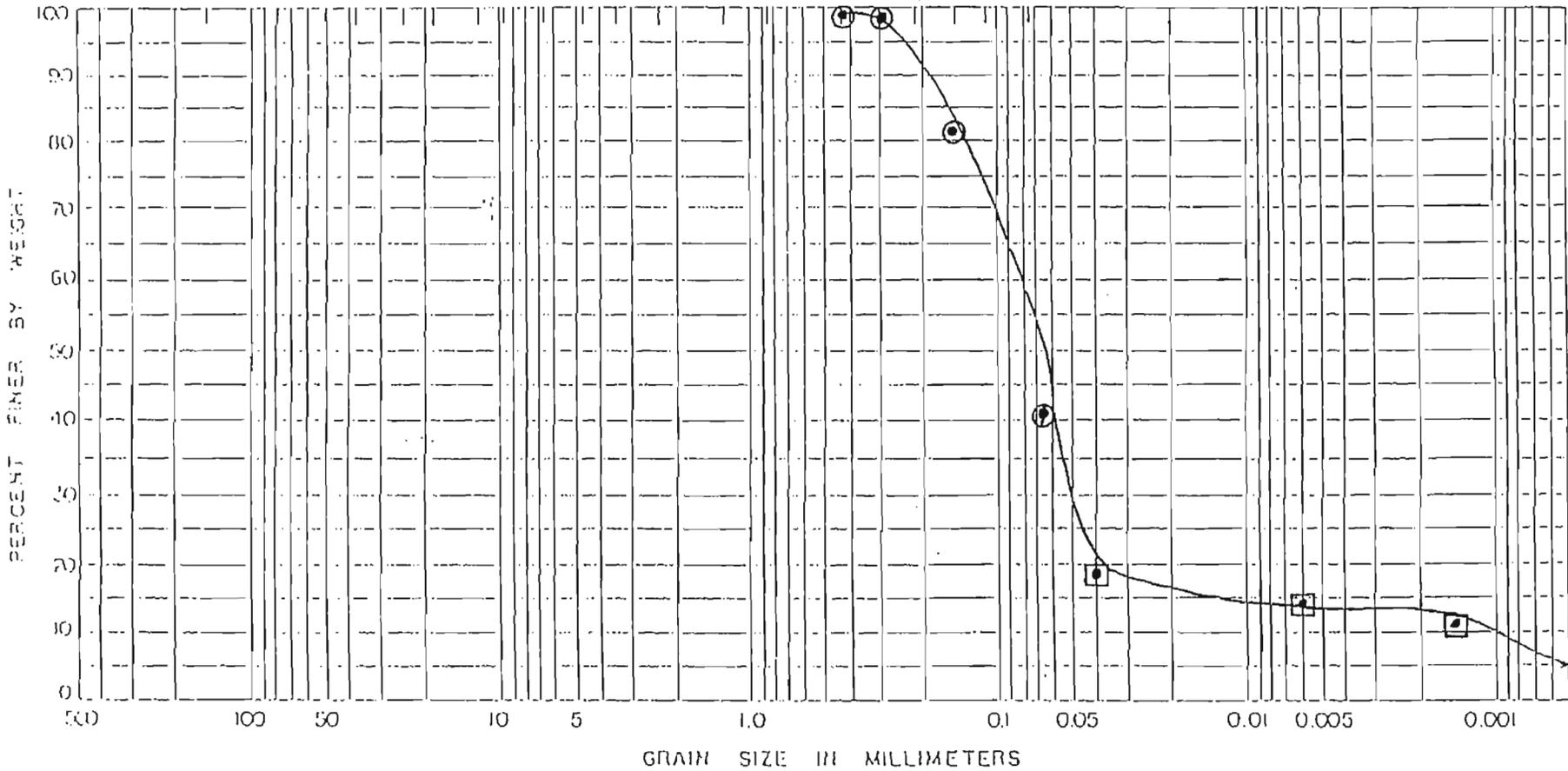
Void Ratio = 0.8455276

Porosity Test Data

Porosity= 0.4581495

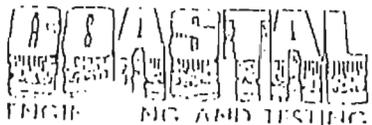
U.S. STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3 4 6 8 10 16 20 30 40 50 70 100 140 200



COULS	GRAVEL		SAND			FINES		
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

DRILLING NO.	ELEV. (METERS)	DATE	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-124
NBCE 570 03D	25-27						



Test Data For Sample NBCE 574002

Sample Date 12/04/95

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Sample Depth 2.6'-5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 56.86 cm
t = 82800 s

k = 2.86E-06 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.4 g
Ti = 22 Degrees C
Wpws = 678.4 g
Tx = 22 Degrees C
Ws = 35 g

K = 0.9996
Wtr @Tx = 0.9978019
Wtr @Ti = 0.9978019

Wpw(@Tx) = 656.4

Gs = 2.6912308 g/cc

Test Data For Sample NBCE 574002 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 970 g
 Wt Tube = 290.2 g
 Wt Soil = 679.8 g

Unit Weight = 106.828 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 302.5 g
 W_w = 197.5 g

%M = 65.289256

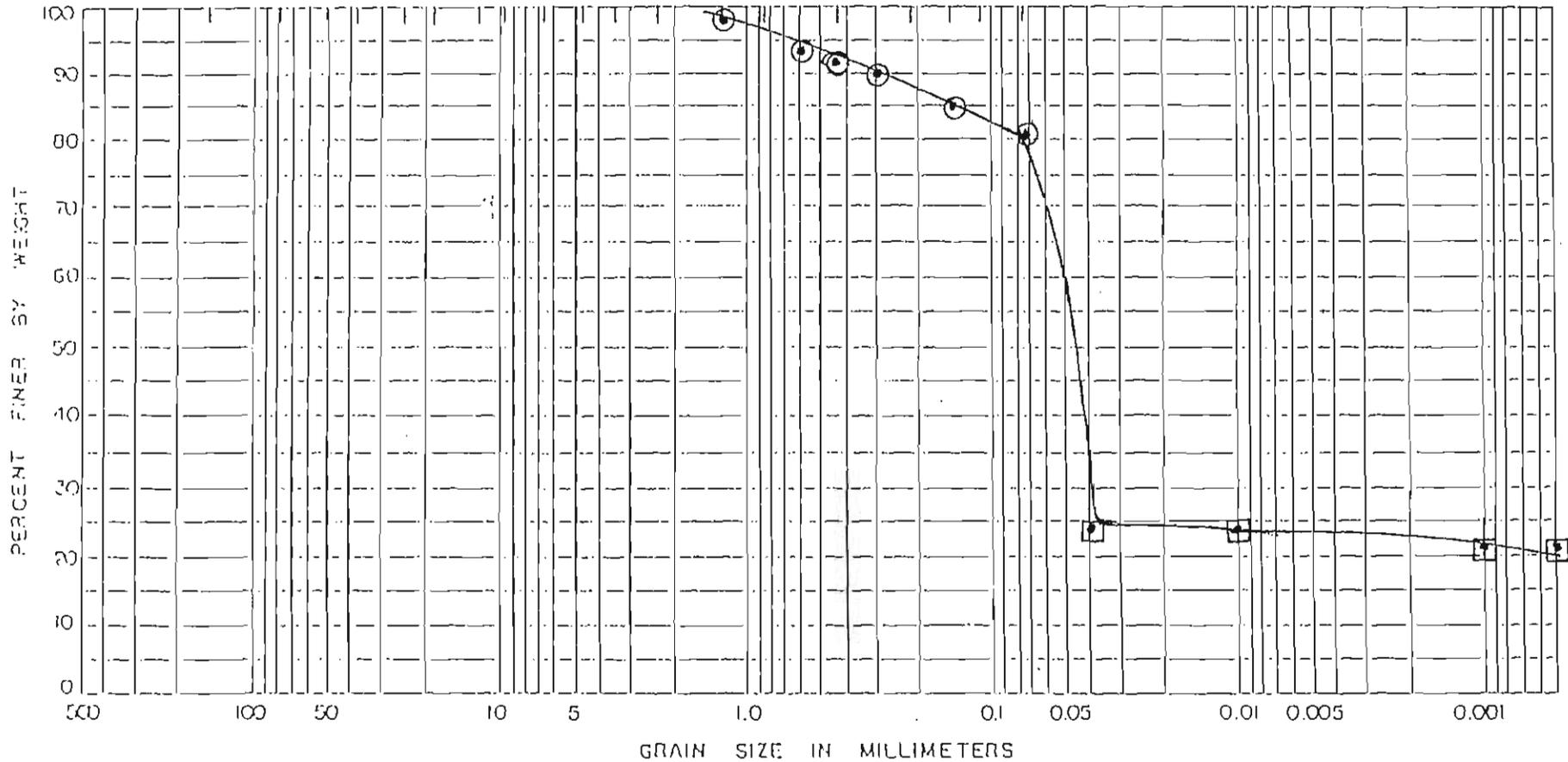
Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	1.50	58.50	97.5000
#30	2.40	56.10	93.5000
#40	0.90	55.20	92.0000
#50	0.80	54.40	90.6667
#100	3.20	51.20	85.3333
#200	2.30	48.90	81.5000
Pan	48.90	0.00	0.0000

total 60 g

US STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3/4 4 6 8 10 16 20 30 40 50 70 100 140 200



COBBLES	GRAVEL		SAND			FINES		
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO.	ELEV. OR LEPTH	RAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-124
NBCE 574-002	2.5-5.0'						



Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.0135	0	1.0135	21	12.75	0.01348	ERR	24.177016
2	1.013	0	1.013	21	12.9	0.01348	0.043473	23.281571
5	1.013	0	1.013	21	12.9	0.01348	0.0173892	23.281571
15	1.013	0	1.013	21	12.9	0.01348	0.0057964	23.281571
30	1.012	0	1.012	21	13.1	0.01348	0.0029431	21.490681
60	1.012	0	1.012	21	13.1	0.01348	0.0014716	21.490681
250	1.012	0	1.012	21	13.1	0.01348	0.0003532	21.490681
1440	1.012	0	1.012	21	13.1	0.01348	6.13E-05	21.490681

- L - Effective Depth Of Hydrometer (cm)
- K - Value taken From Table
- D - Diameter of Soil Particle (mm)
- P - Soil in Suspension (%)
(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 106.828 lbs/cu ft
 Percent Moisture = 65.289256 %
 Dry Unit Weight = 64.630942 lbs/cu ft
 Gs = 2.6912308
 Volume Solids = 0.3848619 cu cm
 Volume Voids = 0.6151381 cu cm
 Void Ratio = 1.5983344

Porosity Test Data

Porosity= 0.6151381

Test Data For Sample NBCE 580001

Sample Date 10/09/95

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Sample Depth 10'-12.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.14 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 64 cm
t = 86700 s

k = 2.10E-06 cm/s

Specific Gravity Test Data

Wp = 158.5 g
Wpw = 655.5 g
Ti = 20 Degrees C
Wpws = 677.7 g
Tx = 18.3 Degrees C
Ws = 35 g

K = 1.0004

Wtr @Tx = 0.9986244

Wtr @Ti = 0.9982343

Wpw(@Tx) = 655.69422

Gs = 2.6945821

Test Data For Sample NBCE 580001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1082.5 g
 Wt Tube = 283.6 g
 Wt Soil = 798.9 g

Unit Weight = 125.54412 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 455 g
 W_w = 45 g

%M = 9.8901099

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	90.00	100.0000
1 1/2"	0.00	90.00	100.0000
3/4"	0.00	90.00	100.0000
3/8"	0.00	90.00	100.0000
#4	0.00	90.00	100.0000
#8	0.00	90.00	100.0000
#16	0.00	90.00	100.0000
#30	0.00	90.00	100.0000
#40	1.20	88.80	98.6667
#50	3.50	85.30	94.7778
#100	4.56	80.74	89.7111
#200	8.63	72.11	80.1222
Pan	72.11	0.00	0.0000

total 90 g

Test Data For Sample NBCE 580001 Cont...

Hydrometer Test Data

W(grams)= 90

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.031	0	1.031	22	8.1	0.01332	ERR	55.517593
2	1.029	0	1.029	22	8.6	0.01332	0.028638	51.935813
5	1.028	0	1.028	22	8.9	0.01322	0.0117658	50.144923
15	1.027	0	1.027	22	9.2	0.01322	0.0040541	48.354033
30	1.026	0	1.026	22	9.4	0.01322	0.0020711	46.563143
60	1.025	0	1.025	22	9.7	0.01322	0.0010686	44.772252
120	1.023	0	1.023	22	10.2	0.01322	0.0005619	41.190472
230	1.022	0	1.022	22	10.5	0.01322	0.0003018	39.399582
1440	1.02	0	1.02	22	11	0.01322	5.05E-05	35.817802

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 125.54412 lbs/cu ft

Percent Moisture = 9.8901099 %

Dry Unit Weight = 114.24515 lbs/cu ft

Gs = 2.6945821

Volume Solids = 0.6794566 cu cm

Volume Voids = 0.3205434 cu cm

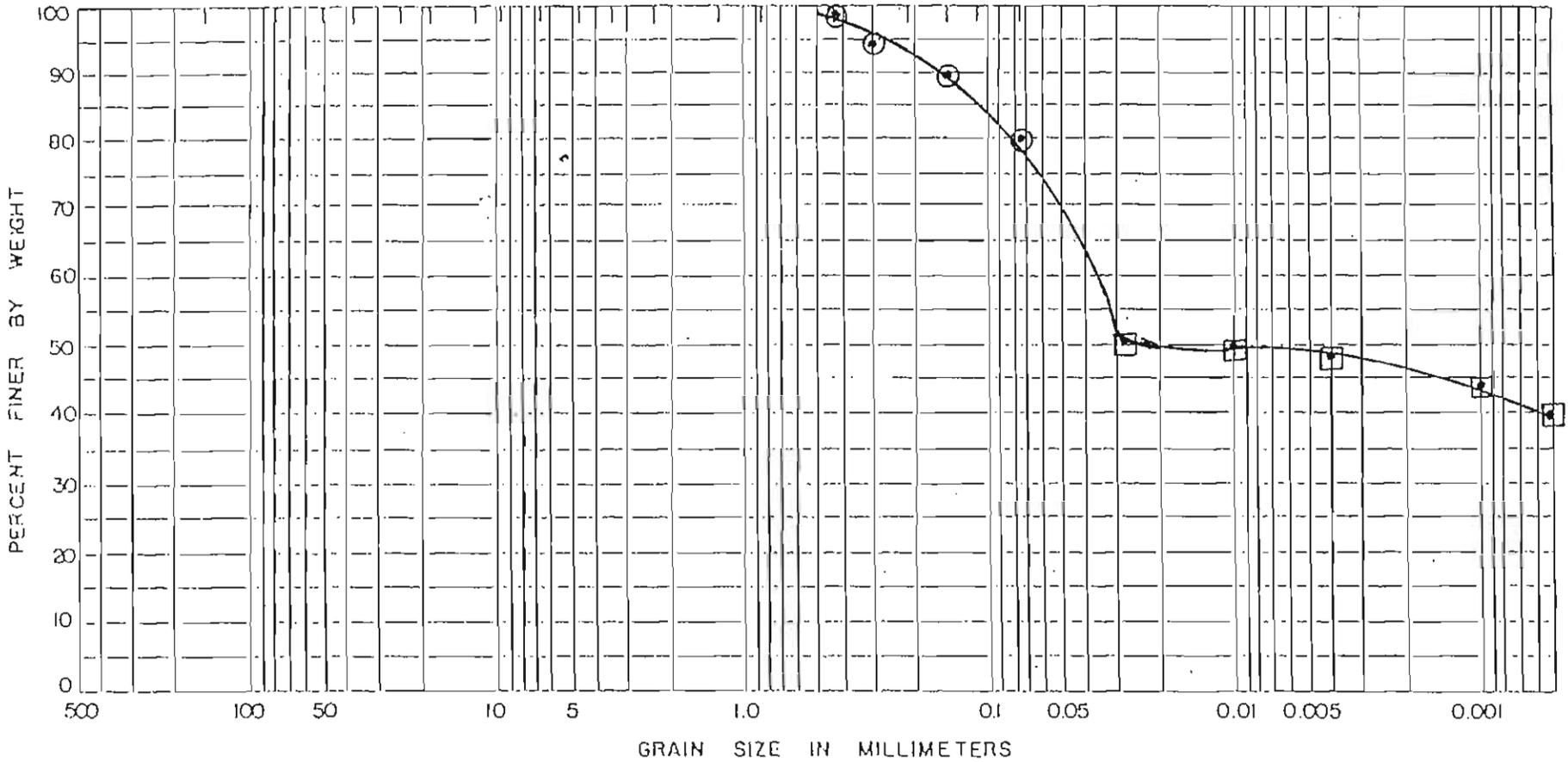
Void Ratio = 0.4717642

Porosity Test Data

Porosity= 0.3205434

US STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3/4 4 6 8 10 16 20 30 40 50 70 100 140 200



SCUL TERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	NAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 580 001	10'-12.5'						JOB NO. 95-03-124



Test Data For Sample NBCE 58001D

Sample Date 1/21/96

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Sample Depth 35'-37.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 35 cm
t = 9500 s

k = 4.74E-05 cm/s

Specific Gravity Test Data

Wp = 157.6 g
Wpw = 655.2 g
Ti = 21 Degrees C
Wpws = 676.5 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 655.2

Gs = 2.5542336 g/cc

Test Data For Sample NBCE 58001D Cont..

Page 2 of 3

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
L = 10.14 cm
Volume = 397.0824 cu cm

Wt Soil & Tube = 1021 g
Wt Tube = 288.4 g
Wt Soil = 732.6 g

Unit Weight = 115.12532 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
W_s = 384 g
W_w = 116 g

%M = 30.208333

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.40	59.60	99.3333
#100	1.70	57.90	96.5000
#200	10.50	47.40	79.0000
Pan	47.40	0.00	0.0000

total 60 g

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.021	0	1.021	22	10.7	0.01332	ERR	37.608692
2	1.02	0	1.02	22	11	0.01332	0.03663	35.817802
5	1.019	0	1.019	22	11.3	0.01332	0.0150516	34.026912
15	1.017	0	1.017	22	11.8	0.01332	0.0052392	30.445132
30	1.016	0	1.016	22	12.1	0.01332	0.0026862	28.654242
60	1.014	0	1.014	22	12.6	0.01332	0.0013986	25.072461
250	1.011	0	1.011	22	13.4	0.01332	0.000357	19.699791
1440	1.006	0	1.006	22	14.7	0.01332	6.8E-05	10.745341

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 115.12532 lbs/cu ft

Percent Moisture = 30.208333 %

Dry Unit Weight = 88.416249 lbs/cu ft

Gs = 2.5542336

Volume Solids = 0.5547367 cu cm

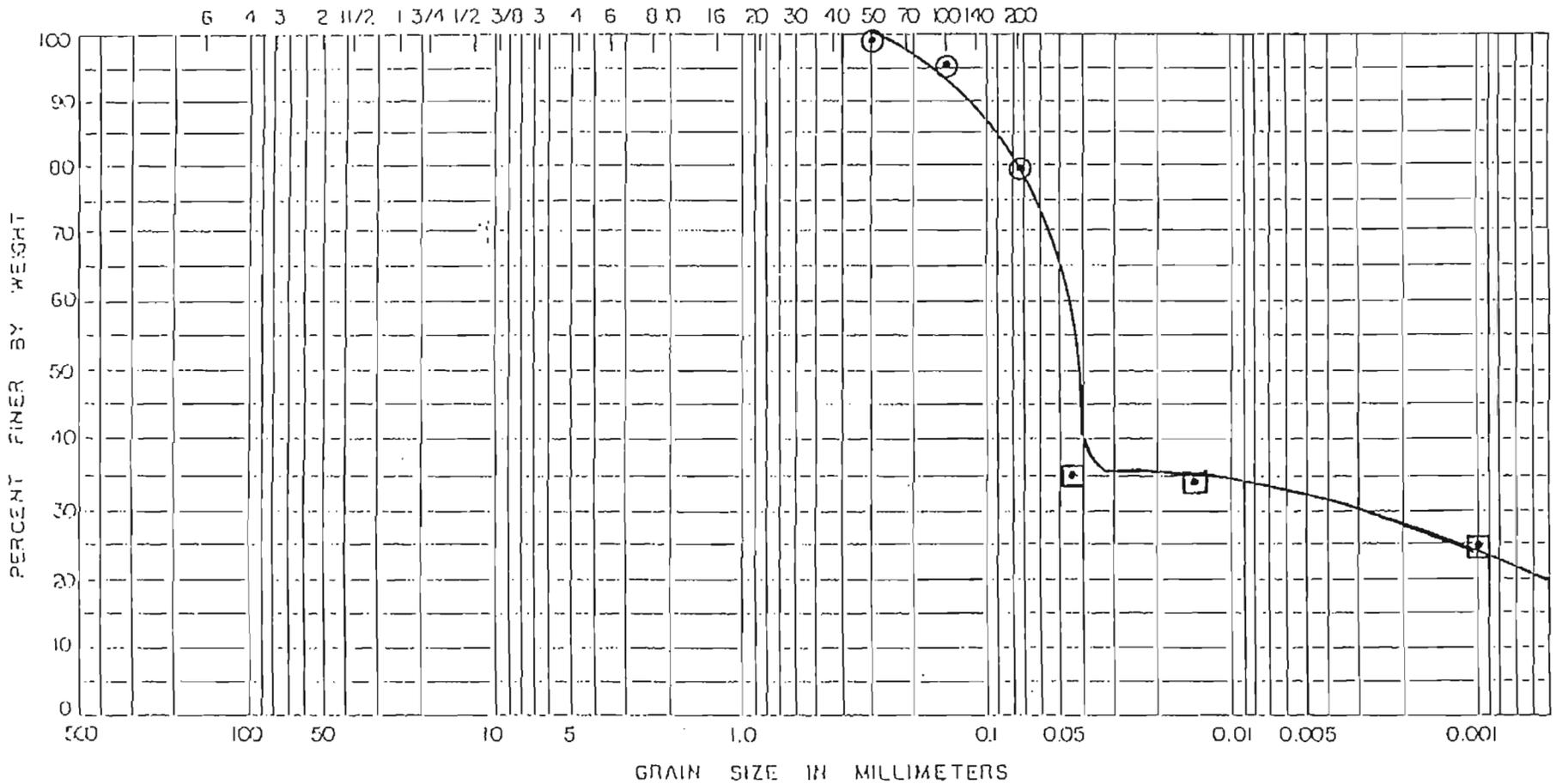
Volume Voids = 0.4452633 cu cm

Void Ratio = 0.8026571

Porosity Test Data

Porosity= 0.4452633

US STANDARD SIEVE SIZES



CUL. ERG	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

TESTING NO.	ELEV. OR DEPTH	HAI WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. <u>95-03-124</u>
NBCE 580 01D	35-375'						



Test Data For Sample NBCE 596004

Sample Date 10/30/95
Sample Depth 10'-12.5'

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Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)
a = cross sectional area of burette (sq cm)
L = length of specimen (cm)
A = cross sectional area of specimen
h1 = head at beginning of test (cm)
h2 = head at end of test (cm)
t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 72 cm
t = 86000 s

k = 1.55E-06 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.5 g
Ti = 19.2 Degrees C
Wpws = 678.5 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9984347

Wpw(@Tx) = 656.3999

Gs = 2.7131985 g/cc

Test Data For Sample NBCE 596004 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 1100.1 g
 Wt Tube = 285.9 g
 Wt Soil = 814.2 g

Unit Weight = 127.94846 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

W_{sw} = 500 g
 W_s = 398 g
 W_w = 102 g

%M = 25.628141

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	65.00	100.0000
1 1/2"	0.00	65.00	100.0000
3/4"	0.00	65.00	100.0000
3/8"	0.00	65.00	100.0000
#4	0.00	65.00	100.0000
#8	0.00	65.00	100.0000
#16	0.00	65.00	100.0000
#30	0.00	65.00	100.0000
#40	3.00	62.00	95.3846
#50	2.50	59.50	91.5385
#100	3.16	56.34	86.6769
#200	20.50	35.84	55.1385
Pan	35.84	0.00	0.0000

total 65 g

Test Data For Sample NBCE 596004 Cont...

Hydrometer Test Data

W(grams)= 65

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.0215	0	1.0215	21		0.01348	ERR	38.504137
2	1.02	0	1.02	21	11	0.01348	0.03707	35.817802
5	1.0195	0	1.0195	21	11.3	0.01348	0.0152324	34.922357
15	1.018	0	1.018	21	11.5	0.01348	0.0051673	32.236022
30	1.017	0	1.017	21	11.8	0.01348	0.0026511	30.445132
60	1.017	0	1.017	21	11.8	0.01348	0.0013255	30.445132
250	1.013	0	1.013	21	12.9	0.01348	0.0003478	23.281571
1440	1.01	0	1.01	21	13.7	0.01348	6.41E-05	17.908901

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 127.94846 lbs/cu ft

Percent Moisture = 25.628141 %

Dry Unit Weight = 101.84697 lbs/cu ft

Gs = 2.7131985

Volume Solids = 0.6015642 cu cm

Volume Voids = 0.3984358 cu cm

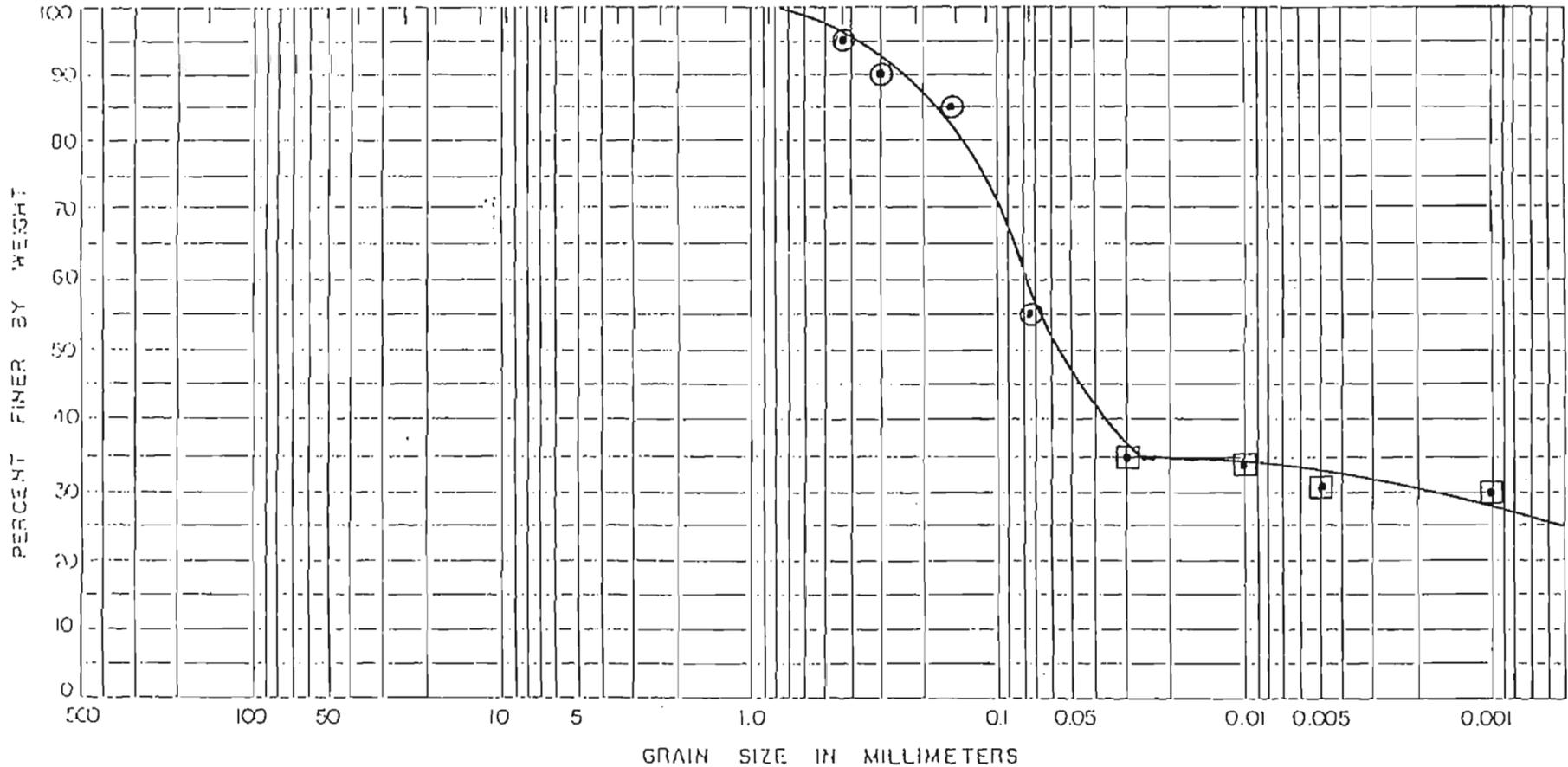
Void Ratio = 0.6623331

Porosity Test Data

Porosity= 0.3984358

U S STANDARD SIEVE SIZES

6 4 3 2 1 1/2 1 3/4 1/2 3/8 3/4 1/2 6 8 10 16 20 30 40 50 70 100 140 200



COBBLES	GRAVEL		SAND			FINES		
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES	

EXC. NO.	ELEV. AT DEPTH	NAT. WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION JOB NO. 95-03-124
NBCE 596 004	10-12.5'						



Test Data For Sample NBCE 59604D

Sample Date 12/16/95

Page 1 of 3

Sample Depth 35'-37.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 35 cm
t = 172800 s

k = 2.61E-06 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.5 g
Ti = 21 Degrees C
Wpws = 678.6 g
Tx = 21 Degrees C
Ws = 35 g

K = 0.9998

Wtr @Tx = 0.9980233

Wtr @Ti = 0.9980233

Wpw(@Tx) = 656.5

Gs = 2.7126357 g/cc

Test Data For Sample NBCE 59604D Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
L = 10.14 cm
Volume = 397.0824 cu cm

Wt Soil & Tube = 1037 g
Wt Tube = 285.3 g
Wt Soil = 751.7 g

Unit Weight = 118.12682 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
Ws = 351.5 g
Ww = 148.5 g

%M = 42.247511

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	60.00	100.0000
1 1/2"	0.00	60.00	100.0000
3/4"	0.00	60.00	100.0000
3/8"	0.00	60.00	100.0000
#4	0.00	60.00	100.0000
#8	0.00	60.00	100.0000
#16	0.00	60.00	100.0000
#30	0.00	60.00	100.0000
#40	0.00	60.00	100.0000
#50	0.40	59.60	99.3333
#100	1.60	58.00	96.6667
#200	8.50	49.50	82.5000
Pan	49.50	0.00	0.0000

total 60 g

Test Data For Sample NBCB 59604D Cont...

Hydrometer Test Data

W(grams)= 60

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.023	0	1.023	22	10.2	0.01332	ERR	41.190472
2	1.021	0	1.021	22	10.7	0.01332	0.035631	37.608692
5	1.02	0	1.02	22	11	0.01332	0.014652	35.817802
15	1.019	0	1.019	22	11.3	0.01332	0.0050172	34.026912
30	1.0185	0	1.0185	22	11.4	0.01332	0.0025308	33.131467
60	1.018	0	1.018	22	11.5	0.01332	0.0012765	32.236022
250	1.016	0	1.016	22	12.1	0.01332	0.0003223	28.654242
1440	1.01	0	1.01	22	13.4	0.01332	6.2E-05	17.908901

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 118.12682 lbs/cu ft

Percent Moisture = 42.247511 %

Dry Unit Weight = 83.043152 lbs/cu ft

Gs = 2.7126357

Volume Solids = 0.4906003 cu cm

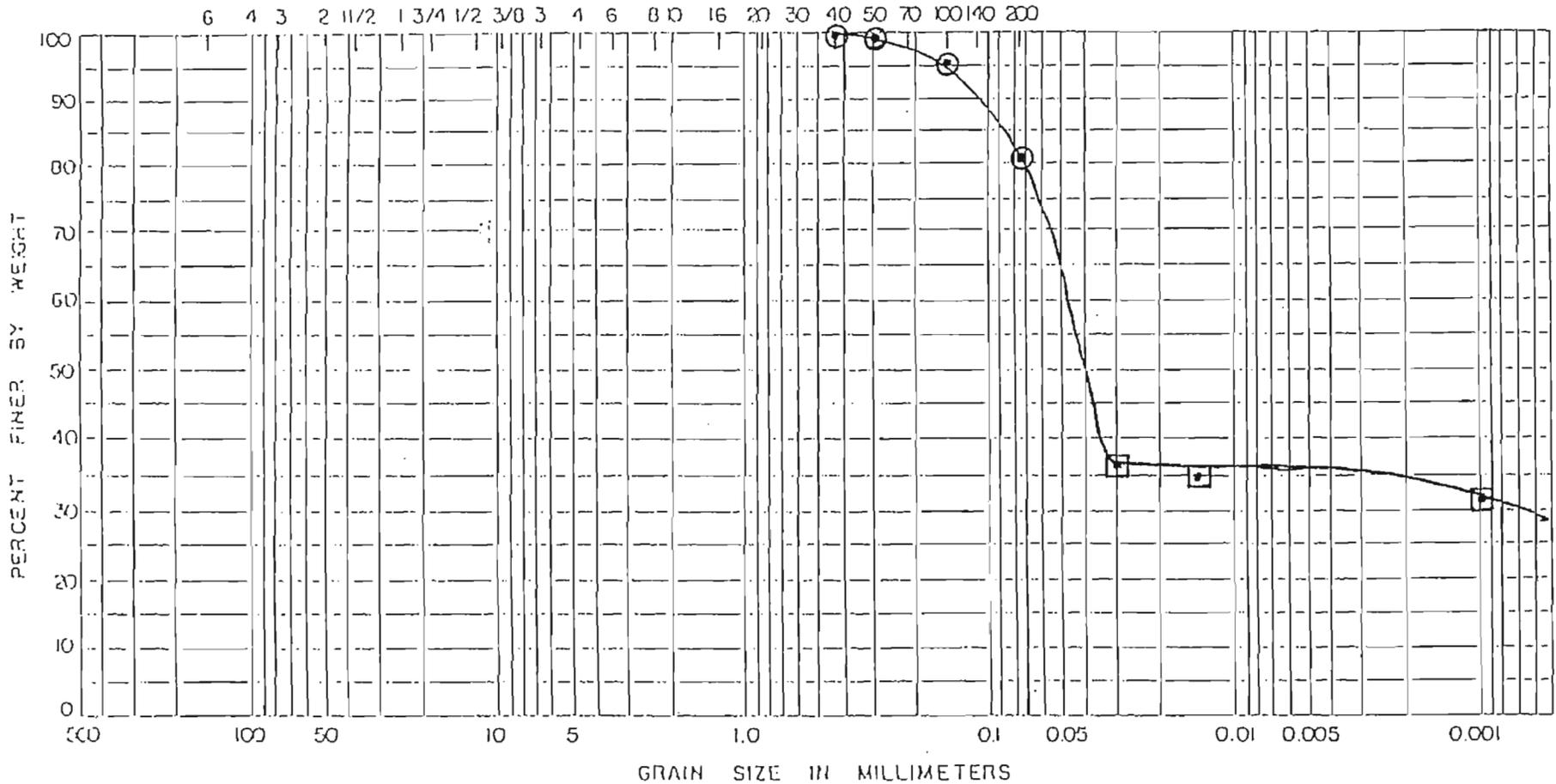
Volume Voids = 0.5093997 cu cm

Void Ratio = 1.0383194

Porosity Test Data

Porosity= 0.5093997

U.S. STANDARD SIEVE SIZES



SCALERS	COBBLES	GRAVEL		SAND			FINES		
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES		CLAY SIZES

BOUNING NO.	ELEV. OR DEPTH	HAT WC	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 596 OAD	35-37.5'						JOB NO. 95-03-12A

Test Data For Sample NBCE 599001

Sample Date 10/12/95

Page 1 of 3

Sample Depth 10'-12.5'

Sample Test Data

Permeability Test Data

k = coefficient of permeability (cm/s)

a = cross sectional area of burette (sq cm)

L = length of specimen (cm)

A = cross sectional area of specimen

h1 = head at beginning of test (cm)

h2 = head at end of test (cm)

t = time from h1 to h2 (s)

a = 1.67 sq cm
L = 10.32 cm
A = 39.16 sq cm
h1 = 97.5 cm
h2 = 84.5 cm
t = 86400 s

k = 7.28E-07 cm/s

Specific Gravity Test Data

Wp = 157.8 g
Wpw = 656.9 g
Ti = 19 Degrees C
Wpws = 678.8 g
Tx = 20 Degrees C
Ws = 35 g

K = 1
Wtr @Tx = 0.9982343
Wtr @Ti = 0.9984347

Wpw(@Tx) 656.79982

Gs = 2.6923442 g/cc

Test Data For Sample NBCE 599001 Cont..

Unit Weight (Bulk Density) Test Data

A = 39.16 sq cm
 L = 10.14 cm
 Volume = 397.0824 cu cm

Wt Soil & Tube = 989.3 g
 Wt Tube = 285.9 g
 Wt Soil = 703.4 g

Unit Weight = 110.53665 lbs/cu ft

Percent Moisture (Moisture Content) Test Data

Wsw = 500 g
 Ws = 445 g
 Ww = 55 g
 %M = 12.359551

Sieve Analysis Test Data

Sieve	Wt Ret (grams)	Wt Pass (grams)	% Pass
3"	0.00	65.00	100.0000
1 1/2"	0.00	65.00	100.0000
3/4"	0.00	65.00	100.0000
3/8"	0.00	65.00	100.0000
#4	0.00	65.00	100.0000
#8	0.00	65.00	100.0000
#16	0.00	65.00	100.0000
#30	0.00	65.00	100.0000
#40	0.00	65.00	100.0000
#50	2.20	62.80	96.6154
#100	1.50	61.30	94.3077
#200	16.90	44.40	68.3077
Pan	44.40	0.00	0.0000

total 65 g

Test Data For Sample NBCE 599001 Cont...

Hydrometer Test Data

W(grams)= 65

Time (minutes)	Actual Reading	Correct Factor	Corrected Reading	Temp Celcius	L	K	D	P
0	1.03	0	1.03	22		0.1382	ERR	53.726703
2	1.03	0	1.03	22	14.7	0.1382	0.507885	53.726703
5	1.029	0	1.029	22	14.8	0.1365	0.20202	51.935813
15	1.028	0	1.028	22	14.95	0.1365	0.0680225	50.144923
30	1.028	0	1.028	22	15	0.1348	0.0337	50.144923
60	1.02	0	1.02	22	15	0.1348	0.01685	35.817802
120	1.018	0	1.018	22	15	0.1348	0.008425	32.236022
250	1.015	0	1.015	22	15	0.1348	0.004044	26.863351
1440	1.013	0	1.013	22	15	0.1348	0.0007021	23.281571

L - Effective Depth Of Hydrometer (cm)

K - Value taken From Table

D - Diameter of Soil Particle (mm)

P - Soil in Suspension (%)

(i.e., % of Soil Finer)

Void Ratio Test Data

Wet Unit Weight = 110.53665 lbs/cu ft

Percent Moisture = 12.359551 %

Dry Unit Weight = 98.377622 lbs/cu ft

Gs = 2.6923442

Volume Solids = 0.5855731 cu cm

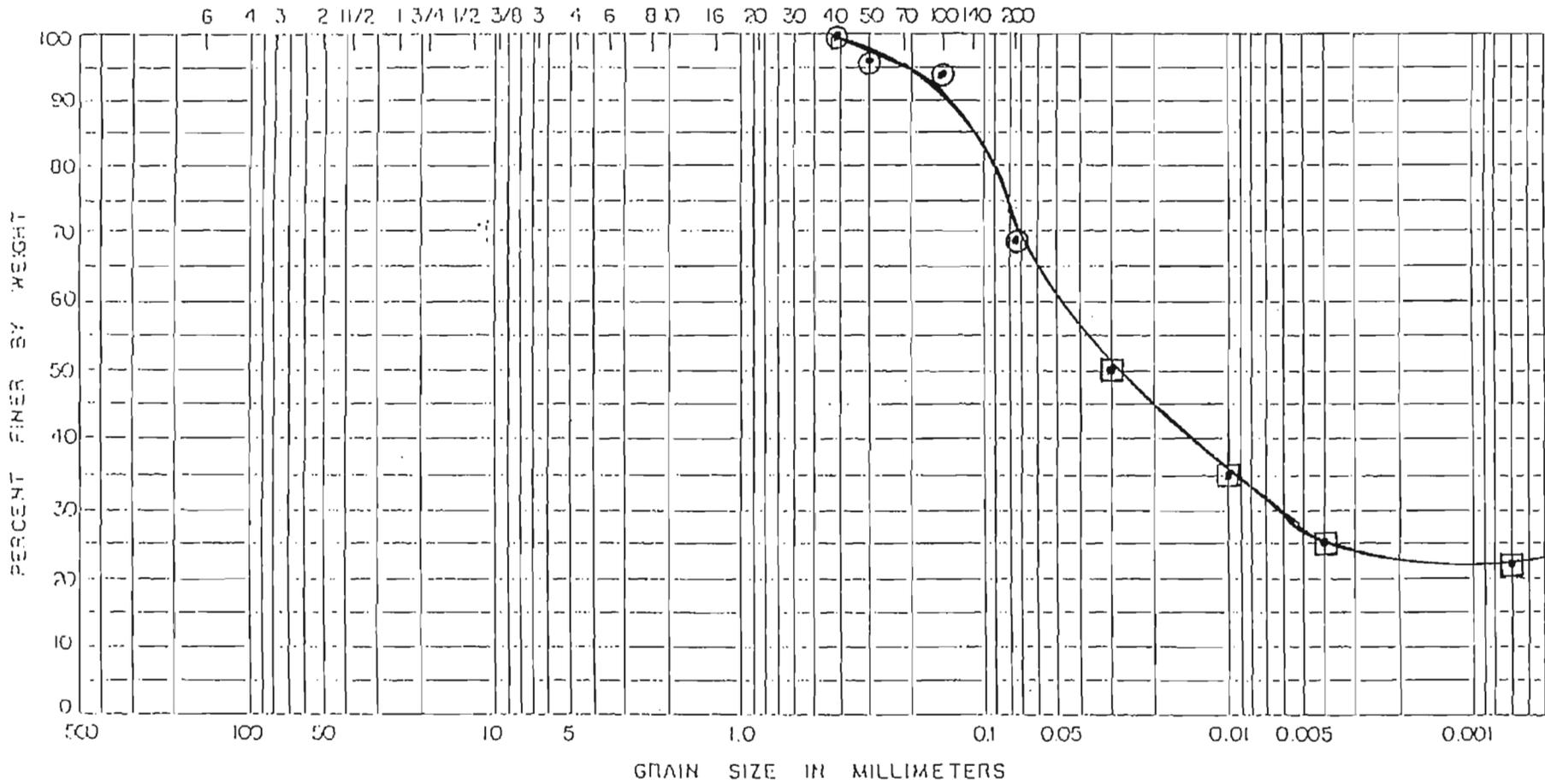
Volume Voids = 0.4144269 cu cm

Void Ratio = 0.7077286

Porosity Test Data

Porosity= 0.4144269

U.S. STANDARD SIEVE SIZES



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BOXING NO.	ELEV. OR DEPTH	HAI WG	LL	PL	PI	CLASSIFICATION	GRAIN SIZE DISTRIBUTION
NBCE 599 001	10-12.5'						JOB NO. 95-03-124

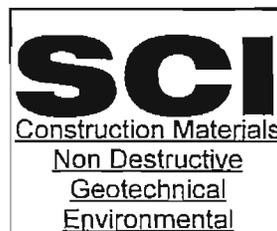


Geotechnical Subsurface Investigation

*Naval Base Charleston, SC
Zone E Investigation
E/A&H P.O. #587*

Laboratory Tests Conducted BY:

SOIL CONSULTANTS, INC.
ENGINEERS & GEOLOGISTS
SINCE 1951



Materials
Testing Report

SOIL CONSULTANTS, INC.

Tabulated
Data Sheet

Project And State

Naval Base Charleston, South Carolina
Zone 'E' Investigation
Ensafe/Allen & Hoshall P.O. #587

Date: 3-10-97

Results of Falling Head Permeability Test (Army Corps of Engineers)
Specific Gravity (ASTM D 854), & Porosity (ISM:GE, by Sowers)

Sample: NBCE/054ST00310

Depth : 10' - 12' (Black & gray fine sand w/slight organic clay content)

Porosity %	57.6
Moisture Content %	38.4%
Wet Unit Weight	113.1 lb/cu.ft.
Specific Gravity	2.63
Permeability (cm/sec)	6.9×10^{-4}

Sample: NBCE/GDEST01310

Depth : 10.5' - 13' (Whitish tan & gray fine sand)

Porosity %	42.9
Moisture Content %	12.1%
Wet Unit Weight	106.7 lb/cu.ft.
Specific Gravity	2.63
Permeability (cm/sec)	2.0×10^{-3}

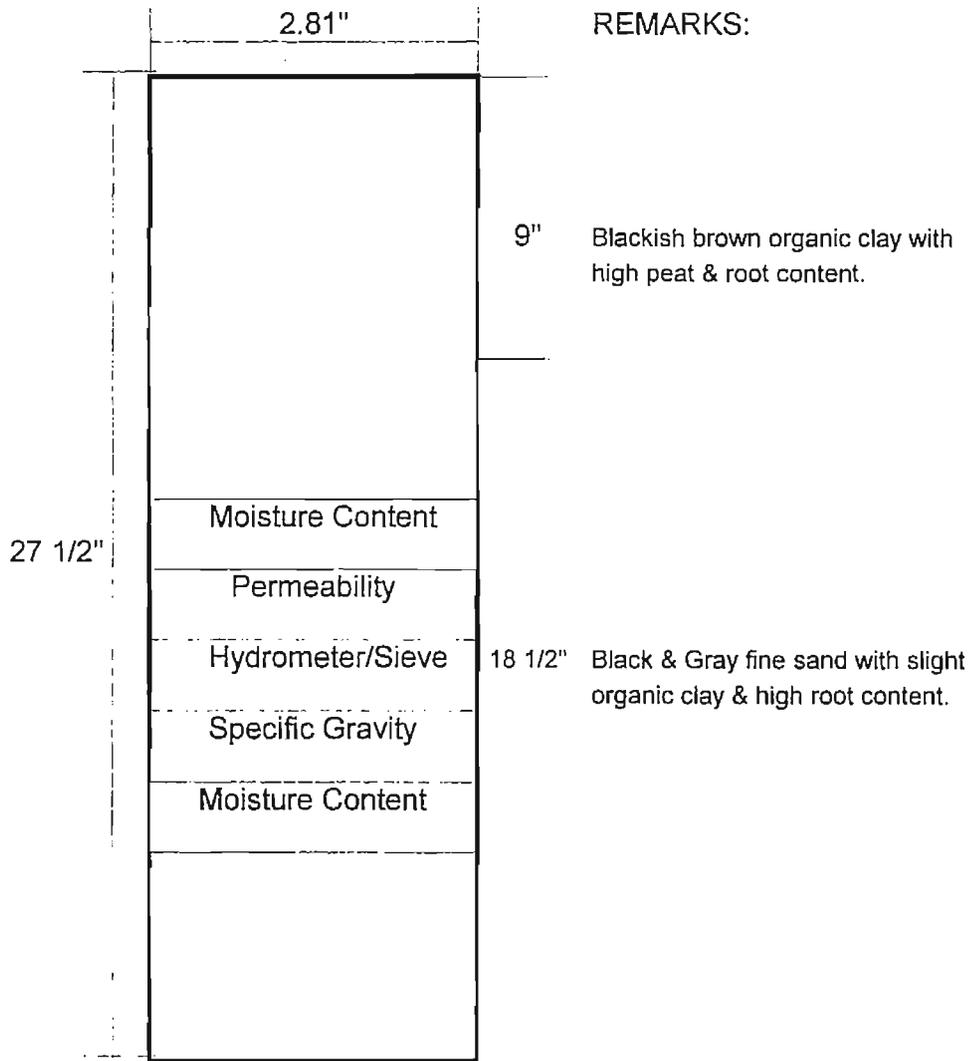
Materials Testing Report	SOIL CONSULTANTS, INC.	HYDRAULIC CONDUCTIVITY TEST
Project And Location:	Naval Base Charleston, Zone E Investigation Charleston, SC E/A&H P.O.#587	ASTM - D 5084
SCI Project	97-458	Date: 3-10-97

SAMPLE IDENTIFICATION	559ST00506 6.5'-8.5' (claye sand)	GDEST30D30 30'-32' (locally called marl)		
INITIAL CONDITIONS				
Sample Length, cm	4.8895	5.08		
Sample Diameter, cm	5.08	5.08		
Moisture Content, %	21.2	43.5		
Unit Wet Weight, pcf	122.7	111.5		
Unit Dry Weight, pcf	101.2	77.6		
Specific Gravity	2.64	2.68		
Porosity %	38.5	53.4		
Saturation, %	89.3	101.3		
FINAL CONDITIONS				
Sample Length, cm	4.8895	5.08		
Sample Diameter, cm	5.08	5.08		
Moisture Content, %	22.1	43.9		
Unit Wet Weight, pcf	123.2	111.6		
Unit Dry Weight, pcf	100.9	77.5		
Saturation, %	92.2	102		
TEST CONDITIONS				
Permeant	Potable Water	Potable Water		
Cell Pressure, psi	30	30		
Back Pressure, psi	27-25	27-25		
B-value	0.97	0.100		
Average Gradient	28.6	27.6		
Hydraulic Conductivity, cm/sec @ 20 deg. C	2.304×10^{-6}	1.619×10^{-6}		

SOIL CONSULTANTS, INC.

Materials	SOIL CONSULTANTS, INC.		UNDISTURBED
Testing Report			SAMPLE CHARACTERISTICS
Project And	Naval Base Charleston, SC - Zone E Investigation		
Location:			
Sample	054ST	Sample No. 00310	Depth: 10'-12'
Location:			Type of Sample: Pushed
SCI Project No. 97-458		Date: 3-10-97	

Color	Black & Gray	Texture	Sand & Clay
Relative Moisture	Damp	Pocket Penetrometer (TSF)	N/A
Consistency	Solid	Visual Classification (USCS)	SM-SP & OH
Porosity or Structure	Banded	Moisture Content % (composite)	28.9 (bottom 18 1/2" only)
		Wet Unit Weight (lb/cu.ft)	88.6

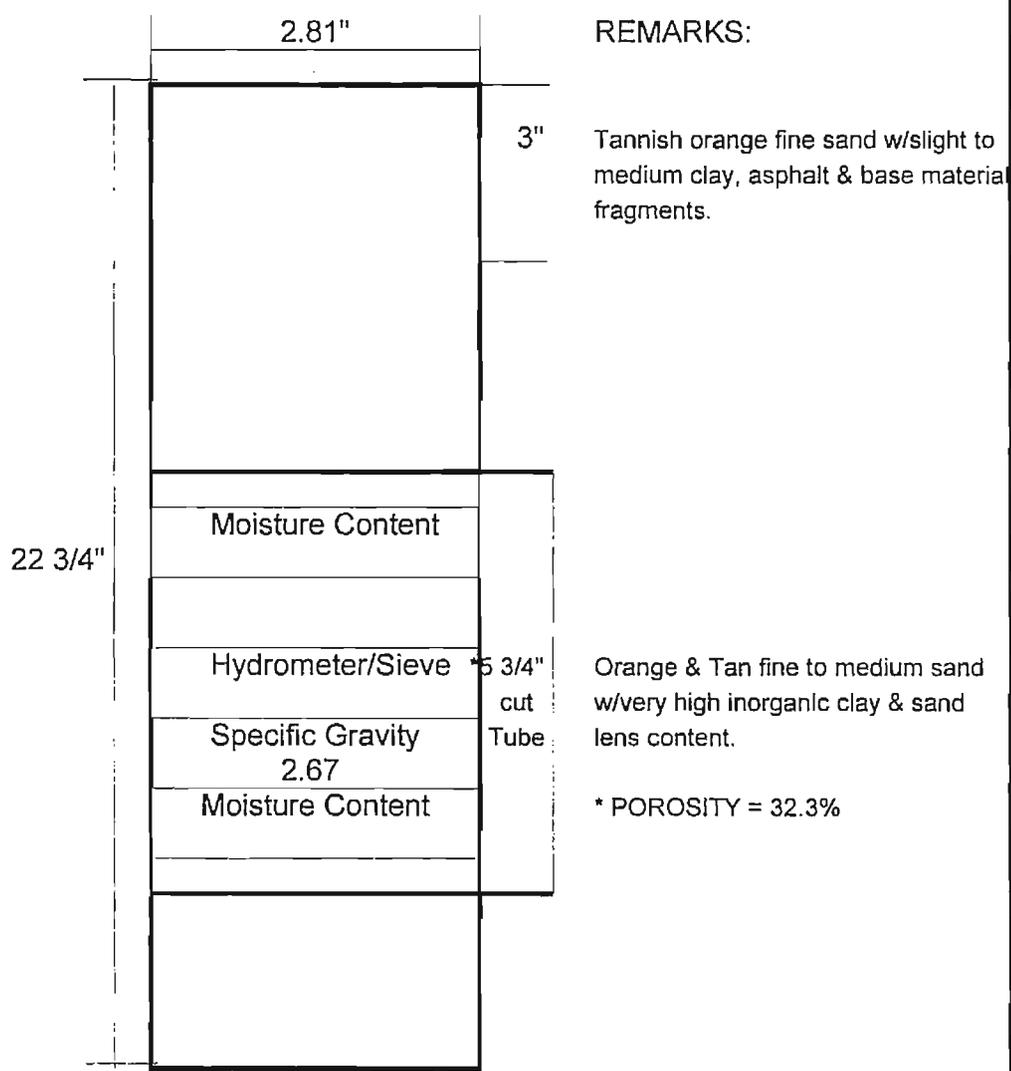


pp= N/A tsf

Tested bottom 18 1/2", as directed.

Materials	SOIL CONSULTANTS, INC.		UNDISTURBED
Testing Report	Project And Naval Base Charleston, SC - Zone E Investigation		SAMPLE CHARACTERISTICS
Location:			
Sample 084ST	Sample No. 00106	Depth: 6'-8.5'	Type of Sample: Pushed
Location:			
SCI Project No. 97-458		Date: 3-10-97	

Color	Orange & Tan	Texture	Sand w/Clay
Relative Moisture	Damp	Pocket Penetrometer (TSF)	N/A
Consistency	Solid	Visual Classification (USCS)	SC
Porosity or Structure	Banded	Moisture Content % (composite)	17.1
		Wet Unit Weight (lb/cu.ft)	* 136.1



REMARKS:

Tannish orange fine sand w/slight to medium clay, asphalt & base material fragments.

Orange & Tan fine to medium sand w/very high inorganic clay & sand lens content.

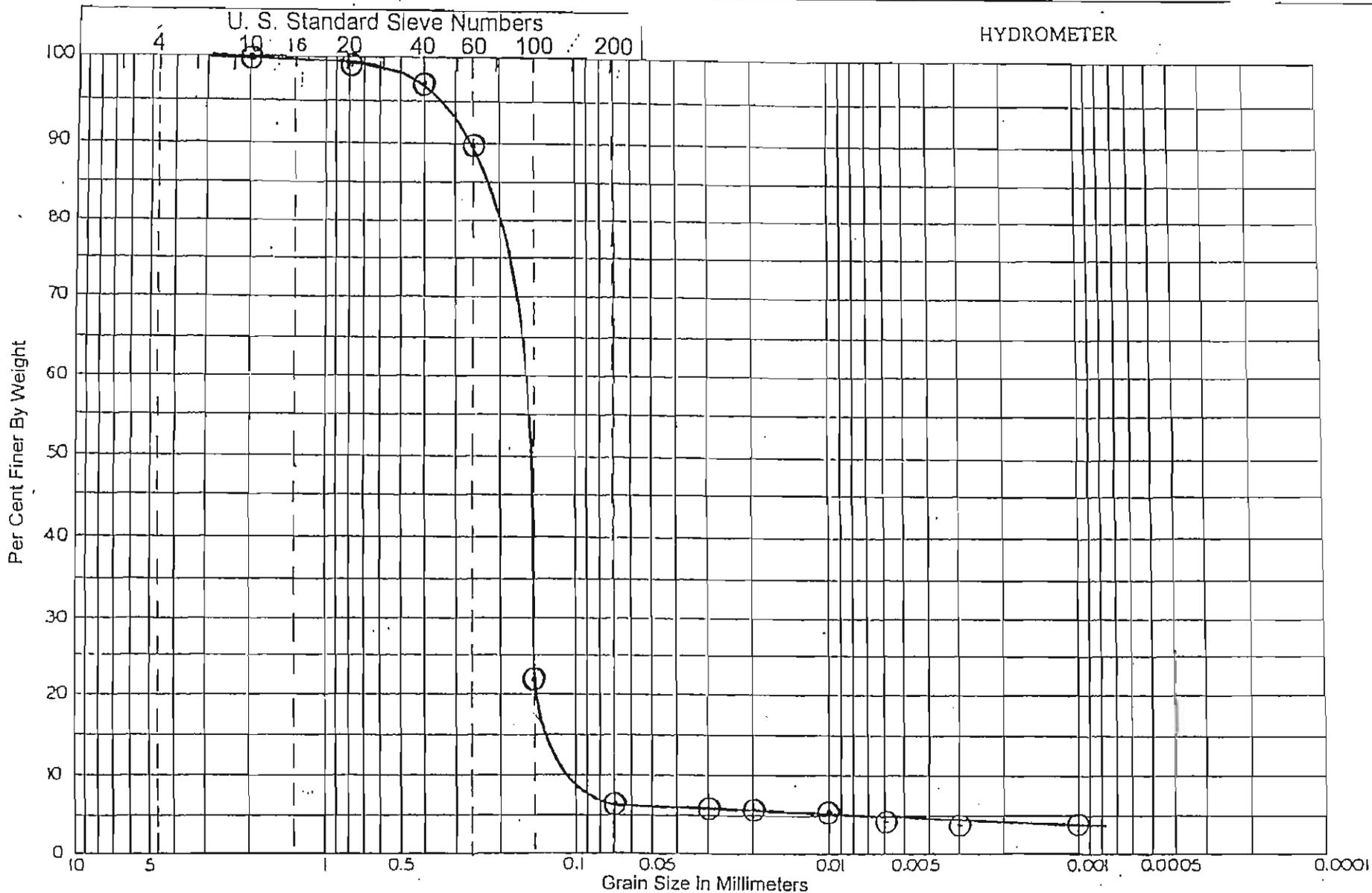
* POROSITY = 32.3%

pp= N/A tsf

Materials		SOIL CONSULTANTS, INC.		UNDISTURBED	
Testing Report				SAMPLE CHARACTERISTICS	
Project And Location: Naval Base Charleston, SC - Zone E Investigation					
Sample Location: 559ST	Sample No. 00506	Depth: 6.5'-8.5'	Type of Sample: Pushed		
SCI Project No. 97-458				Date: 3-10-97	
Color	Orangish Tan	Texture	Sand w/Clay		
Relative Moisture	Damp	Pocket Penetrometer (TSF)	N/A		
Consistency	Solid	Visual Classification (USCS)	SC & SM		
Porosity or Structure	Banded	Moisture Content (composite)	18.9%		
		Wet Unit Weight (lb/cu.ft)	124.9		
28"		2.81"		REMARKS:	
				3"	Dark Brown fine sand
		Moisture Content		23"	Orangish Tan fine sand with very high inorganic clay content.
		Permeability			
		Hydrometer/Sieve			
		Specific Gravity			
		Moisture Content			
				2"	Tannish gray fine sand w/ slight clay content.
pp= N/A tsf					

Materials	SOIL CONSULTANTS, INC.		UNDISTURBED SAMPLE CHARACTERISTICS
Testing Report	Project And Naval Base Charleston, SC - Zone E Investigation		
Location:	Sample GDEST	Sample No. 01310	Depth: 10.5'-13'
Location:			Type of Sample: Pushed
SCI Project No. 97-458		Date: 3-10-97	
Color	Whitish Tan & Gray	Texture	Sand
Relative Moisture	Damp	Pocket Penetrometer (TSF)	N/A
Consistency	Semi-solid	Visual Classification (USCS)	SM-SP
Porosity or Structure	Uniform	Moisture Content % (composite)	17.5
		Wet Unit Weight (lb/cu.ft)	121.3
2.81"		REMARKS:	
27 1/2"	Moisture Content	Whitish Tan & Gray fine sand.	
	Moisture Content		
	Permeability		
	Hydrometer/Sieve		
	Specific Gravity		
	Moisture Content		
pp= N/A tsf			

Materials	SOIL CONSULTANTS, INC.		UNDISTURBED
Testing Report			SAMPLE CHARACTERISTICS
Project And Location: Naval Base Charleston, SC - Zone E Investigation			
Sample GDEST	Sample No. 30D30	Depth: 30'-32'	Type of Sample: Pushed
SCI Project No. 97-458		Date: 3-10-97	
Color	Brownish green	Texture	Clay silt
Relative Moisture	Moist	Pocket Penetrometer (TSF)	N/A
Consistency	Solid	Visual Classification (USCS)	MH
Porosity or Structure	Uniform	Moisture Content (composite)	48.5%
		Wet Unit Weight (lb/cu.ft)	109.6
2.81"		REMARKS:	
28"	Moisture Content	<p>* Brownish green calcareous clay silt with slight sand content.</p>	
	Moisture Content		
	Permeability		
	Hydrometer/Sieve		
	Specific Gravity		
Moisture Content			
pp= N/A tsf		* Locally called Marl	



Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay
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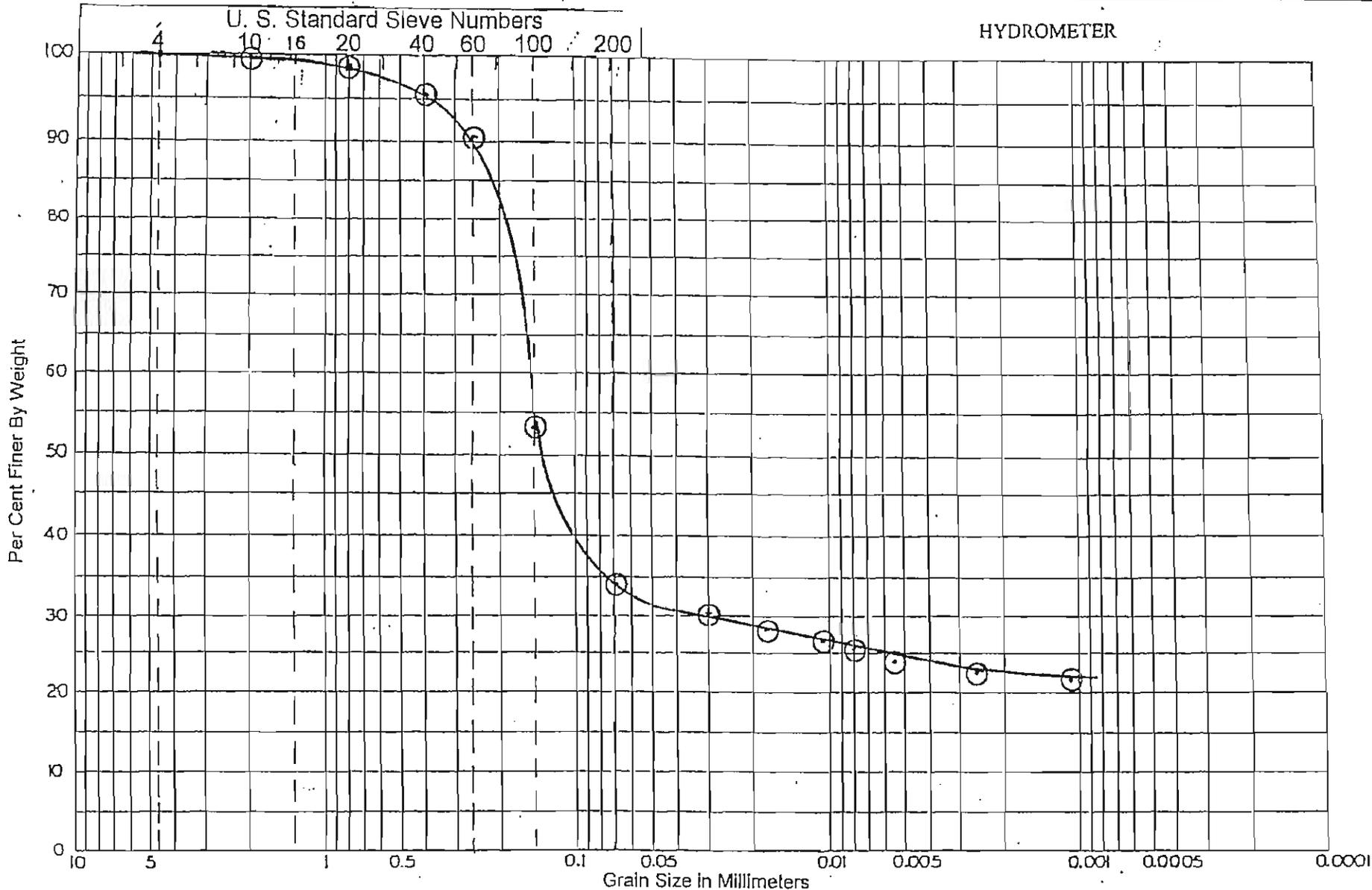
UNIFIED SOIL CLASSIFICATION SYSTEM

Project NAVAL BASE CHARLESTON, S.C.
ZONE E INVESTIGATION, E/A&H P.O. #587

Boring No. _____
 Sample No. NBCE/0548T 00310

Depth 10' - 12' Elevation _____ Remarks _____

Grain Size Distribution Diagram
 Hydrometer/Sieve - ASTM D422



Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay
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UNIFIED SOIL CLASSIFICATION SYSTEM

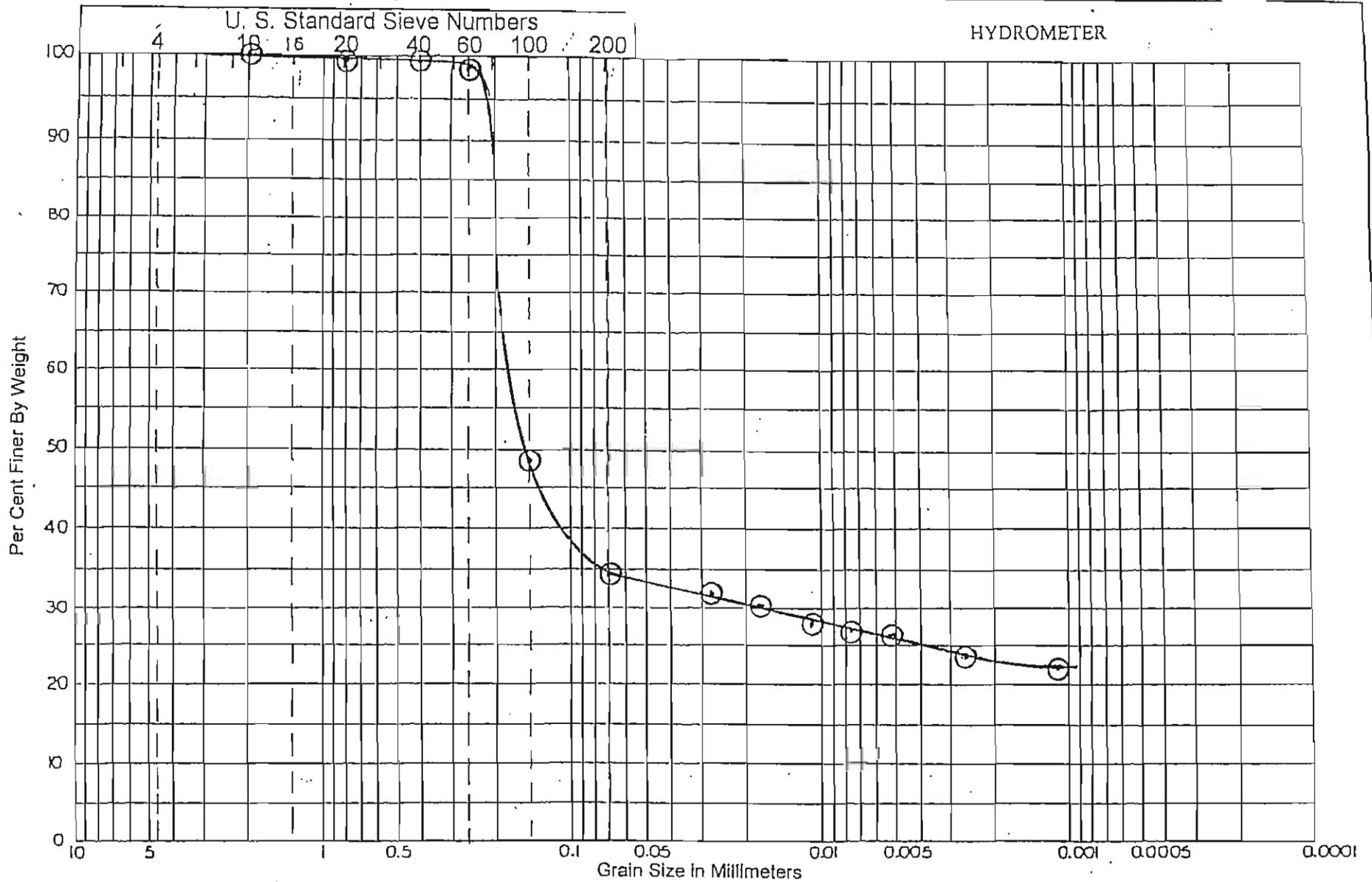
Project NAVAL BASE CHARLESTON, S.C.

Boring No. _____ Sample No. NBCE/084ST 00106

ZONE E INVESTIGATION, E/A&H P.O. #587

Depth 6' - 8.5' Elevation _____ Remarks _____

Grain Size Distribution Diagram
Hydrometer/Sieve - ASTM D422



Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay
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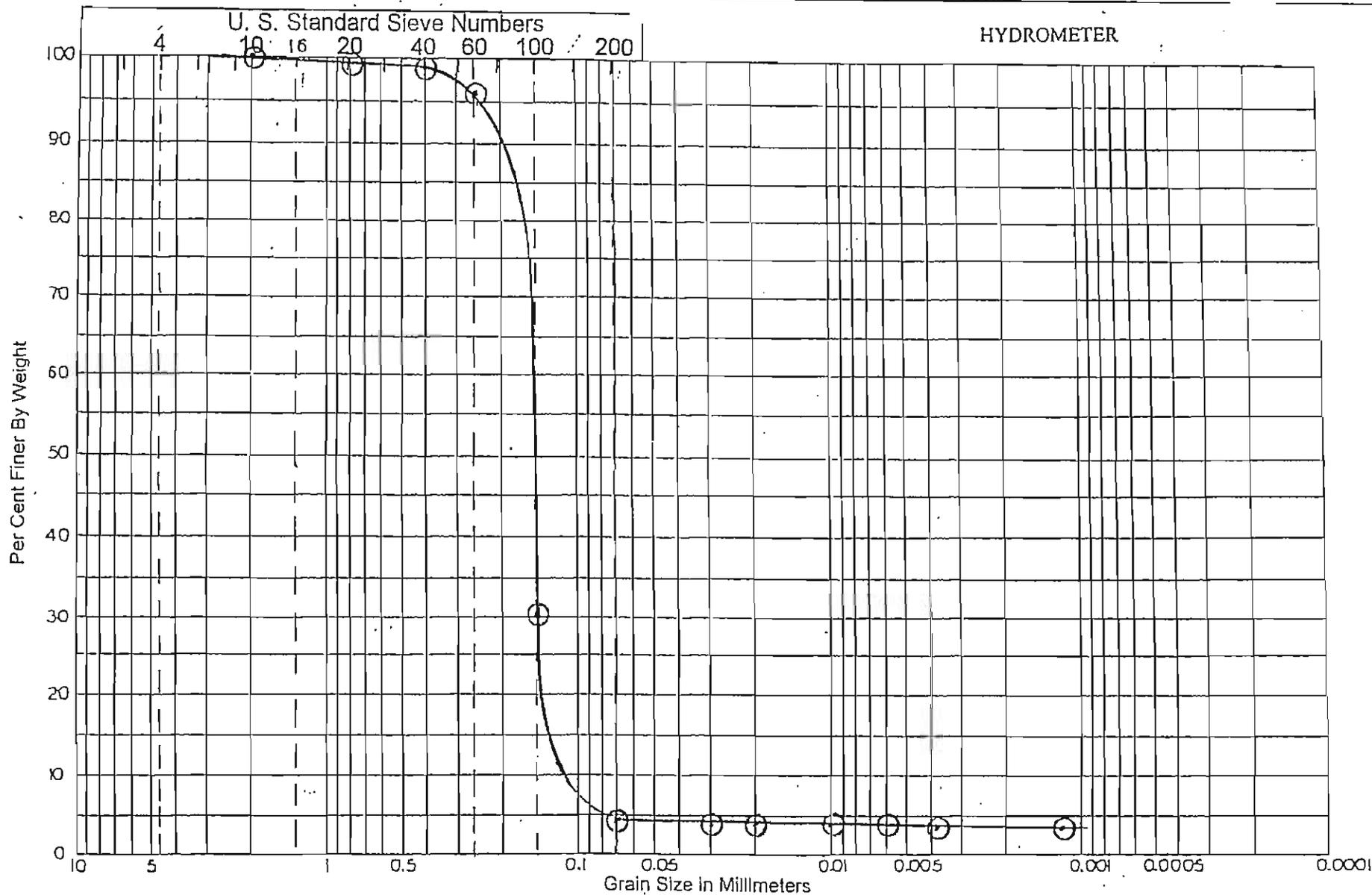
UNIFIED SOIL CLASSIFICATION SYSTEM

Project NAVAL BASE CHARLESTON, S.C.
ZONE E INVESTIGATION, E/A&H P.O. #587

Boring No. _____ Sample No. NBCE/559ST 00506

Depth 6.5' - 8.5' Elevation _____ Remarks _____

Grain Size Distribution Diagram
 Hydrometer/Sieve - ASTM D422



Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay
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UNIFIED SOIL CLASSIFICATION SYSTEM

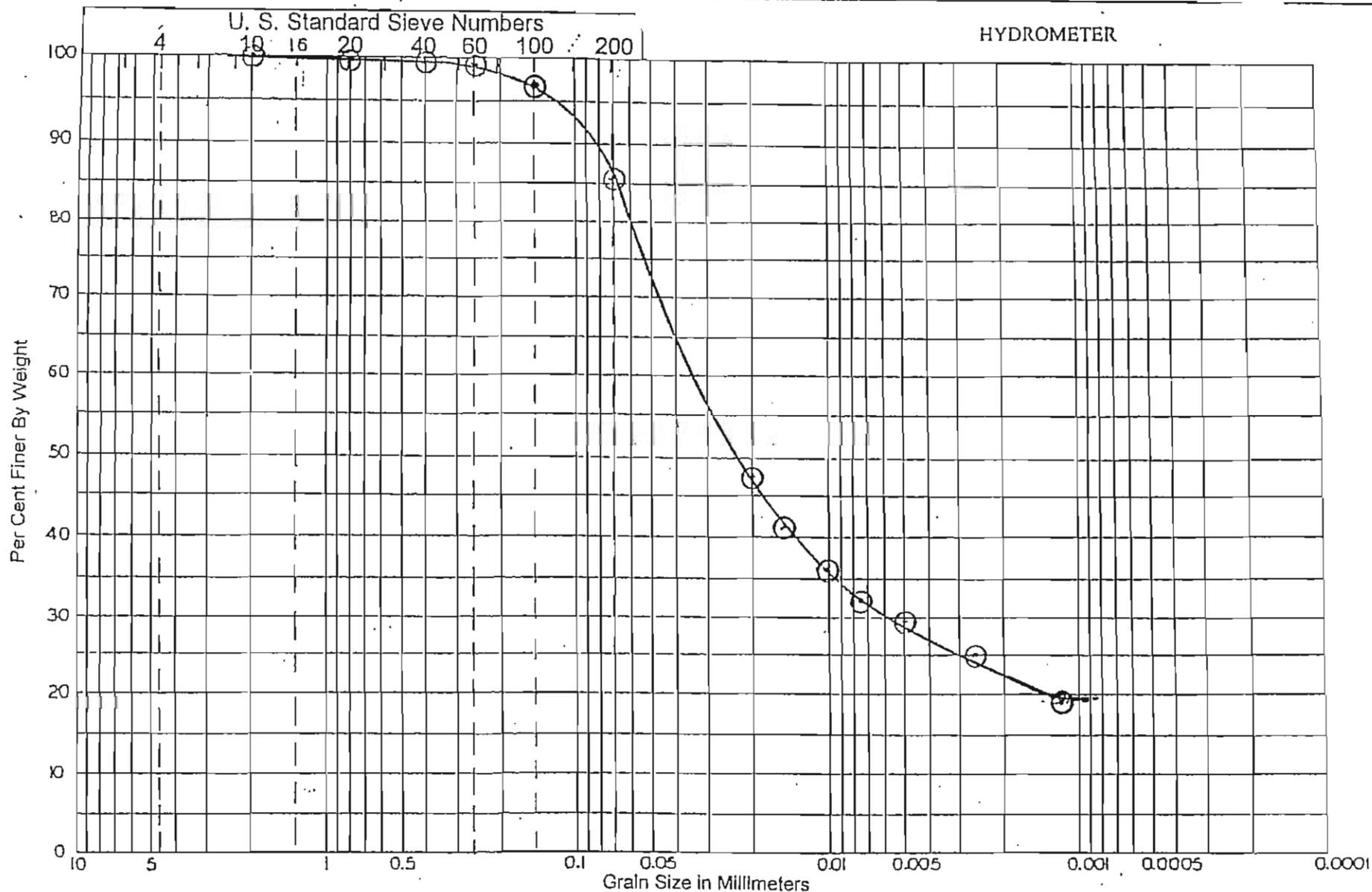
Project NAVAL BASE CHARLESTON, S.C.

Boring No. Sample No. NBCE/GDEST 01310

ZONE E INVESTIGATION, E/A&H P.O. #587

Depth 10.5' - 13' Elevation Remarks

Grain Size Distribution Diagram
Hydrometer/Sieve - ASTM D422



Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay
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UNIFIED SOIL CLASSIFICATION SYSTEM

Project NAVAL BASE CHARLESTON, S.C.

Boring No. NBCE/GDEST 30D30
Sample No. _____

ZONE E INVESTIGATION, E/A&H P.O. #587

Depth 30' - 32' Elevation _____ Remarks _____

Grain Size Distribution Diagram
Hydrometer/Sieve - ASTM D422

Soil Consultants, Inc.

Project: Geotechnical Testing at Naval Base Charleston, S.C.

SCI No. 97-458

Sieve Analysis (ASTM D422)

% Finer Than

Sample No.		#4	#10	#20	#40	#60	#100	#200
054ST00310			100	99.5	97.1	89.9	22.3	6.7
10'-12'								
084ST00106		100	99.9	98.3	95.6	90.6	53.4	34.3
6'-8.5'								
559ST00506			100	99.9	99.7	98.5	48.8	34.8
6.5'-8.5'								
GDEST-1310			100	99.7	99.2	96.2	30.1	4.4
10.5'-13'								
GDEST30D30			100	99.9	99.7	99.3	97.1	85.5
30'-32'								
U.S Standard Sieve Numbers								