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Appendix C
Boring Logs

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Meir Assoc Inc
DRILLER REGISTRATION NUMBER 446

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
LV Sutton Plant
(Road, Community, or Subdivision and Lot No.)

County: New Hanover

2. OWNER Carolina Power & Light
ADDRESS _____ (Street or Route No.)
City or Town State Zip Code

3. DATE DRILLED 12/4/84 USE OF WELL _____
4. TOTAL DEPTH 17' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 11' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 10'

CHLORINATION: Type _____ Amount None

CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
From	0	12 Ft.	2"	Sch 40	PVC
From	0	10 Ft.			
From		Ft.			

11. GROUT:

	Depth From	To	Material	Method
From	0	10 Ft.	Cement/Lime	
From		Ft.		

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
From	12	17 Ft.	2" in.	.0010 in.	PVC
From		Ft.	in.	in.	
From		Ft.	in.	in.	

13. GRAVEL PACK: *

	Depth From	To	Size	Material
From		Ft.		
From		Ft.		

14. REMARKS: [illegible]

DRILLING LOG

Depth From	To	Formation Description
0	12"	Top soil
12"	17'	Med to coarse Sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 1A

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

[illegible]

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Legend for Soil Classification Symbols

Pattern	Description
	SP – poorly graded sands
	SW – well graded sands
	GP – poorly graded gravels
	GW – well graded gravels
	SM – silty sands
	MH – elastic silts
	ML – inorganic silts with slight plasticity
	SC – clayey sands
	CL – lean clays
	CH – fat clays
	Unconsolidated Weathered Rock
	Consolidated Weathered Rock
	Roadbed Material
	Bentonite
	Grout
	Well Screen
	PVC

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Geosyntec consultants
1300 South Mint Street
Suite 110
Charlotte, NC 28203

BORING LOG

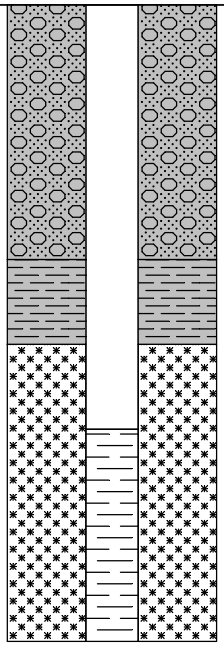
BOREHOLE ID: *GWPZ1A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected because location is paired w/ GWPZ1B. See soil profile for GWPZ1B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ1B*

GENERAL INFORMATION

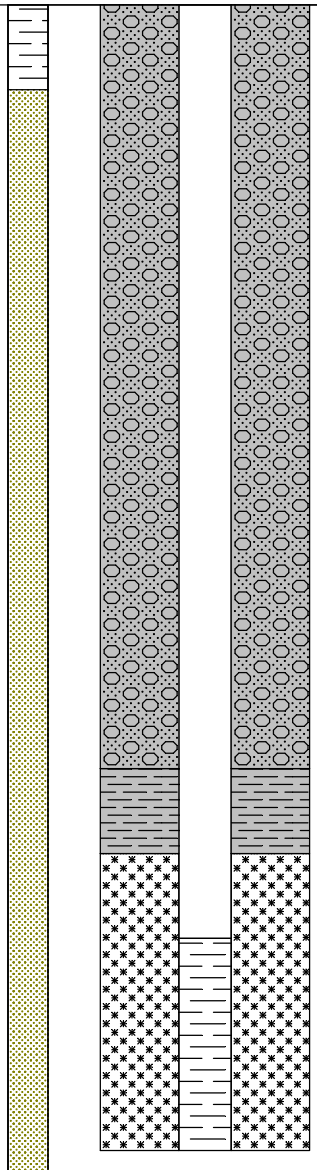
PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Recovery	Comments
0	0	topsoil (OL) w/ vegetation and organics		
		orange to brown fine SAND (SP)	100%	
-5	-5	tan fine SAND (SP)	70%	
		light tan fine SAND (SP)	75%	
		tan to brown fine SAND (SP)	100%	
-10	-10	tan to brown fine SAND (SP) w/ trace specks of mica	100%	
		tan to brown fine SAND (SP) w/ trace specks of mica	100%	
-15	-15	tan to brown fine SAND (SP) w/ trace specks of mica	90%	
		tan fine SAND (SP)	75%	
		tan medium SAND (SP)	50%	bentonite chips allowed to hydrate for 1 hour
-20	-20	tan medium to coarse SAND (SP)	90%	
		tan medium to coarse SAND (SP) w/ trace specks of mica	60%	
-25	-25	tan medium to coarse SAND (SP) w/ trace specks of mica		
		tan medium to coarse SAND (SP) w/ trace specks of mica, orange plastic CLAY (CH) @ 28'	75%	

Pattern / Well Construction Details



All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

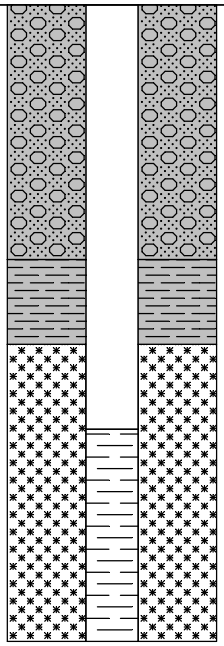
BOREHOLE ID: *GWPZ2A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ2B. See soil profile for GWPZ2B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ2B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ organics (roots, shells)			100%	
		orange fine SAND (SP)				
-5	-5	tan fine SAND (SP) w/ trace black staining			75%	
		tan fine SAND (SP) w/ trace black staining, saturated			60%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			65%	
-10	-10	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			100%	
-15	-15	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			80%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			70%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	bentonite chips allowed to hydrate for 1 hour
-20	-20	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	
		tan medium SAND (SP) w/ trace pebbles, saturated			75%	
-25	-25	tan medium SAND (SP) w/ increasing pebble content, saturated			75%	
		tan medium SAND (SP) w/ increasing pebble content, saturated			50%	

All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

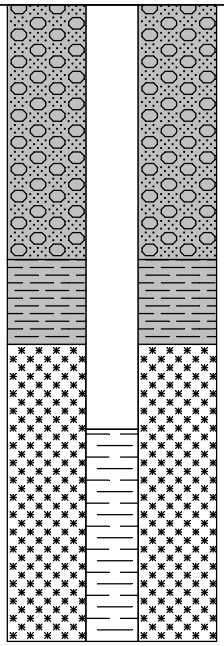
BOREHOLE ID: *GWPZ3A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ3B. See soil profile for GWPZ3B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.
Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ3B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *DPT & Hollow Stem Auger*
RIG TYPE: *Power Probe 9500-VTR & Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *DPT & Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ vegetation			75%	Used geoprobe to 12', then switched to split spoon samples. See photos.
		fine brown SAND (SP) w/ some black staining				
-5	-5	fine orange SAND w/ some black staining			75%	
		fine tan SAND (SP), saturated			75%	
-10	-10					
		fine tan SAND (SP) w/ trace specks of mica, saturated			100%	
-15	-15	fine tan SAND (SP) w/ trace specks of mica, becoming lighter with depth, saturated			75%	
		dark brown fine SAND (SP) w/ trace specks of mica and black staining, saturated			100%	
		very light tan fine SAND (SP) transitioning to a gray SAND (SP) w/ trace pebbles @ 19', saturated			100%	bentonite chips allowed to hydrate for 1 hour
-20	-20	gray SAND (SP) w/ trace pebbles, saturated			100%	
		gray to light tan medium SAND (SP) w/ trace pebbles, saturated			100%	
-25	-25	no recovery			0%	
		gray to light tan medium SAND (SP) w/ trace pebbles, saturated			60%	

All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

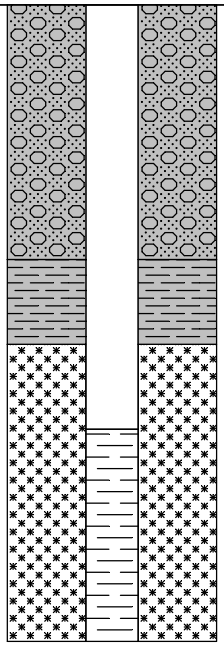
BOREHOLE ID: *GWPZ4A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ4B. See soil profile for GWPZ4B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ4B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ vegetation			100%	
		orange to tan fine SAND (SP) w/ some black staining				
-5	-5	orange to tan fine SAND (SP) w/ some black staining			50%	
		orange to tan fine SAND (SP) w/ some black staining, saturated			50%	
-10	-10	tan fine SAND (SP), saturated			85%	
		tan very fine SAND (SP), saturated			25%	
-15	-15	tan very fine SAND (SP) w/ trace specks of mica, saturated			75%	
		tan very fine SAND (SP), saturated			60%	bentonite chips allowed to hydrate for 1 hour
		tan very fine SAND (SP), saturated			60%	
-20	-20	tan very fine SAND (SP) w/ trace specks of mica, saturated			20%	
		tan very fine SAND (SP), saturated			50%	
-25	-25	tan very fine SAND (SP), saturated			25%	
		no recovery, 6 small pebbles in core			0%	

All depths referenced to ground surface.

Total Depth: 28

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1300 South Mint Street
Suite 110
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *MW27C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	tan to brown fine SAND (SP)			100%	
-5	-5	medium to dark brown fine SAND (SP) w/ some silt			75%	
-10	-10	medium to dark brown fine SAND (SP) w/ some silt tan fine SAND (SP)			90%	
-15	-15	brown fine SAND (SP)			100%	
-20	-20	fine brown SAND (SP) w/ trace specks of mica			100%	
-25	-25	fine brown SAND (SP) w/ trace specks of mica and some pebbles mottled orange SAND (SP)			75%	

All depths referenced to ground surface.
Total Depth: 46

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BORING LOG

BOREHOLE ID: *MW27C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	mottled orange SAND (SP)			75%	
		mottled gray and purplish brown plastic CLAY (CH), orange at end of core				
-35	-35	mottled gray and purplish brown plastic CLAY (CH) w/ layers of orange sand			100%	bentonite chips allowed to hydrate for 1 hour
		white medium SAND (SP)				
-40	-40	mottled orange and tan medium SAND (SC) w/ tan soft clay			100%	
-45	-45	mottled orange and tan medium SAND (SC) w/ tan soft clay			50%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

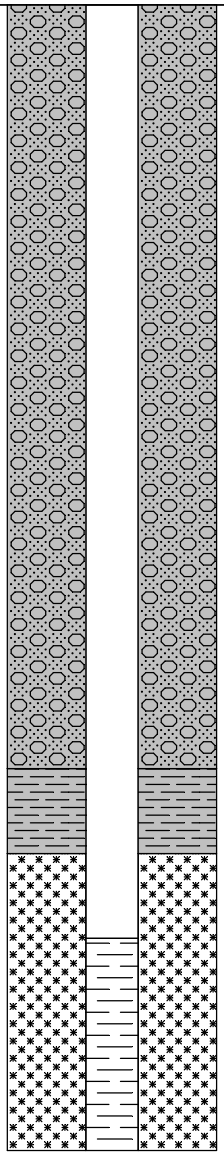
BOREHOLE ID: *MW34B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores collected beacuse location is paired with MW34C. See soil profile for MW34C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.
Total Depth: 28

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Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *MW34C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	gray and white fine SAND (SP) w/ organics			100%	
-5	-5	gray and white fine SAND (SP) w/ organics orange to tan fine SAND (SP)			90%	collected SS-MW34C (4-6) 20140513 @ 0845
-10	-10	gray fine SAND (SP) w/ some silt white fine SAND (SP), saturated			90%	
-15	-15	tan to brown fine SAND (SP), saturated			75%	
-20	-20	tan to brown fine SAND (SP), saturated			60%	
-25	-25	tan fine SAND (SP) w/ some gravel and trace specks of mica, saturated			50%	

All depths referenced to ground surface.
Total Depth: 46

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1300 South Mint Street
Suite 110
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *MW34C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	orange CLAY (CL), firm, saturated			80%	
		gray CLAY (CL), firm, saturated				
-35	-35	orange CLAY (CL), firm, saturated			50%	
		gray clayey SAND (SC), saturated				bentonite chips allowed to hydrate for 1 hour
-40	-40	orange to tan medium SAND (SP) w/ some gray clay, saturated			100%	
		orange coarse SAND (SP), saturated				
-45	-45	orange to tan medium to coarse SAND (SP) w/ trace clay, saturated			75%	

All depths referenced to ground surface.

Total Depth: 46

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Geosyntec consultants
1300 South Mint Street
Suite 110
Charlotte, NC 28203

BORING LOG

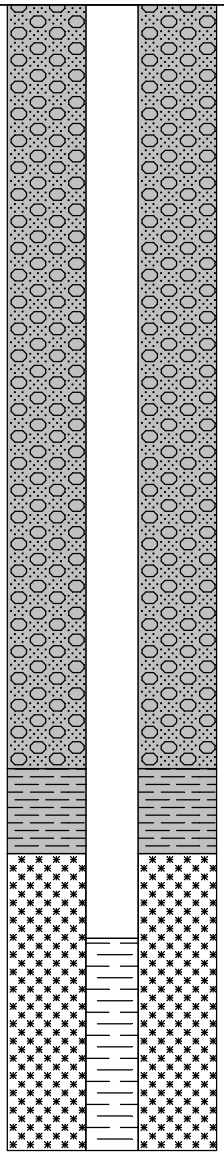
BOREHOLE ID: *MW35B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores collected beacuse location is paired with MW35C. See soil profile for MW35C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.
Total Depth: 28

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Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *MW35C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	gray and white fine SAND (SP) w/ vegetation			100%	
-5	-5	orange to tan fine SAND (SP)			100%	
-10	-10	tan to orange fine SAND (SP), saturated			75%	
-15	-15	tan to white fine SAND (SP), saturated			50%	
-20	-20	tan fine to medium SAND (SP), saturated, specks of mica			75%	
-25	-25	tan fine to medium SAND (SP), saturated, specks of mica			100%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

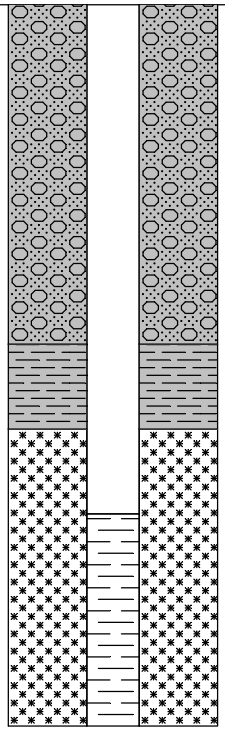
BOREHOLE ID: *MW35C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	mottled tan and orange fine to medium SAND (SP), saturated			75%	
-35	-35	mottled tan and orange fine to medium SAND (SP) w/ trace pebbles, saturated			100%	bentonite chips allowed to hydrate for 1 hour
-40	-40	1.5" of dark brown SAND (SP) w/ silt white fine SAND (SP) w/ some very thin layers of clay, saturated			100%	
-45	-45	light gray fine to medium SAND (SP) w/ trace pebbles, saturated			100%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

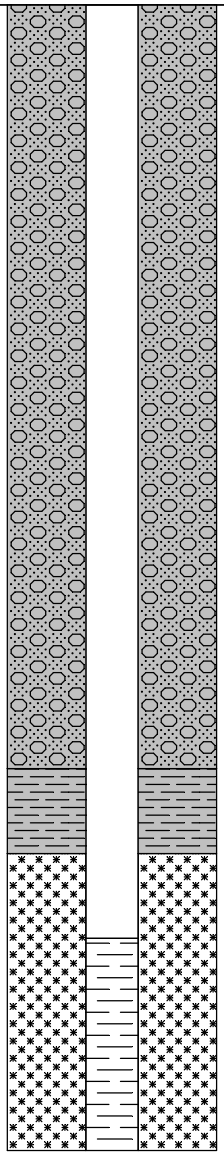
BOREHOLE ID: *MW36B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were pulled because well is paired w/ MW36C. See soil profile for MW36C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.
Total Depth: 28

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Suite 110
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *MW36C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	brown fine SAND (SP) w/ organics (roots)			100%	2' split spoons were pulled every 5'
-5	-5	orange to tan fine SAND (SP), moist @ 6'			75%	collected soil sample SS-MW36C (4-6) 20140509
-10	-10	tan fine SAND (SP), saturated, trace specks of mica			75%	
-15	-15	tan to white fine SAND (SP) w/ orange sand at very bottom of core			100%	
-20	-20	tan to white fine SAND (SP)			75%	
-25	-25	tan to white fine SAND (SP)			40%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

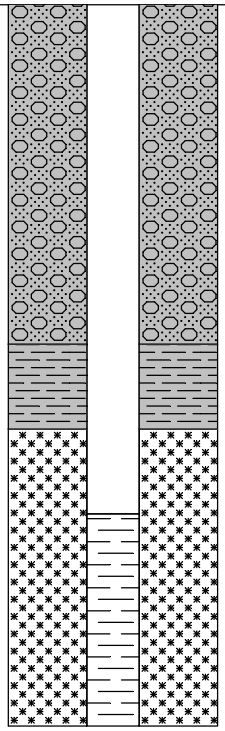
BOREHOLE ID: *MW36C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	fine to medium orange to tan SAND (SP)			25%	
-35	-35	coarse orange to tan SAND (SP) w/ gray solid rock at bottom in core catcher			25%	bentonite chips allowed to hydrate for 1 hour
-40	-40	coarse orange to tan SAND (SP) w/ broken up gray rock peices @ 40'; very fine gray SAND (SP) at 41'			75%	
-45	-45	coarse orange to tan SAND (SP) w/ some pebbles; very thin layer of orange clay @ 45.5'			100%	

All depths referenced to ground surface.

Total Depth: 46

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH, N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Mar Assoc Inc.
DRILLER REGISTRATION NUMBER 446
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
L.V. SUTTON PLANT
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER
2. OWNER CAROLINA POWER & LIGHT
ADDRESS _____ (Street or Route No.)
City or Town _____ State _____ Zip Code _____
3. DATE DRILLED 12-12-84 USE OF WELL _____
4. TOTAL DEPTH 27' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 10' FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 9'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 22' Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 15' Ft.	CEMENT/LIME	
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	22'	To 27' Ft.	2"	in. .010 in.	SCH 40
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK: *

	Depth		Size	Material
From		To Ft.		
From		To Ft.		

14. REMARKS: * NATIVE SAND ALLOWED TO COLLAPSE AROUND THE SCREEN

Depth From	Depth To	DRILLING LOG Formation Description
0	12"	TOP SOIL
12"	27'	MED TO COURSE SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 1B

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
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Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. ___

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Meir Assoc Inc.
DRILLER REGISTRATION NUMBER 496
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
L.V. Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER Carolina Power & Light
ADDRESS _____ (Street or Route No.)
City or Town State Zip Code
3. DATE DRILLED 12-5-84 USE OF WELL _____
4. TOTAL DEPTH 17' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 11' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 10'
CHLORINATION: Type _____ Amount None
CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 12' Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 10' Ft.	Cement/Lime	
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	12'	To 17' Ft.	2"	in. .010 in.	PVC
From		To Ft.		in. in.	
From		To Ft.		in. in.	

13. GRAVEL PACK: *

	Depth		Size	Material
From		To Ft.		
From		To Ft.		

14. REMARKS: * Native Sand allowed to collapse around the screen

Depth From	Depth To	DRILLING LOG Formation Description
0	12"	Topsoil
12"	17'	Med to course sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 2A

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR Ezra Mar Assoc Inc.
DRILLER REGISTRATION NUMBER 446

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
L.V. Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER Carolina Power & Light
ADDRESS _____ (Street or Route No.)
City or Town State Zip Code
3. DATE DRILLED 12-12-84 USE OF WELL _____
4. TOTAL DEPTH 27' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 11' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 10'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	22' Ft.	2"	Sch 40	PVC
		Ft.			
		Ft.			

11. GROUT:

	Depth From	To	Material	Method
	0	15 Ft.	Cement/Lime	
		Ft.		

12. SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	22'	27' Ft.	2" in.	.010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

13. GRAVEL PACK:*

	Depth From	To	Size	Material
		Ft.		
		Ft.		

14. REMARKS: * NATIVE SAND ALLOWED TO COLLAPSE AROUND THE SCREEN

DRILLING LOG

Depth From	To	Formation Description
0	12"	Topsoil
12"	27'	MED TO COARSE SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 2B

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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2C

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DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

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Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 639
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-02

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton PSant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER CP+L
ADDRESS hwy 421 (Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code
3. DATE DRILLED 12-13-86 USE OF WELL monitor
4. TOTAL DEPTH 45 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL 14' 8" FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' 2" FT. ABOVE LAND SURFACE.
7. YIELD (gpm): 50 METHOD OF TEST gas pump
8. WATER ZONES (depth): _____
9. [redacted]INATION: Type _____ Amount _____
10. CASING:

	Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
	0	40		2	SCH40	PVC

GROUT:

	Depth From	To	Ft.	Material	Method
	0	38		NEAT	Pump

SCREEN:

	Depth From	To	Ft.	Diameter	Slot Size	Material
	40	45		2 in.	010 in.	PVC
				in.	in.	
				in.	in.	

AVEL PACK:

	Depth From	To	Ft.	Size	Material
	39	45		MEDIUM	SAND

DRILLING LOG

Depth From	To	Formation Description
0	45	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
attached

CI 04 02 0046

[redacted] HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

Revised 11/84

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Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Meir Assoc Inc.
DRILLER REGISTRATION NUMBER 446
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
(Road, Community, or Subdivision and Lot No.)
County: _____
2. OWNER CAROLINA POWER & LIGHT
ADDRESS _____
(Street or Route No.)
City or Town State Zip Code
3. DATE DRILLED 12-10-84 USE OF WELL _____
4. TOTAL DEPTH 17' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 6' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 5'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 12'	Ft.	2"	SCH 40	PVC
From _____	To _____	Ft.			
From _____	To _____	Ft.			

11. GROUT:

	Depth		Material	Method
From 0	To 10'	Ft.	CEMENT/LIME	
From _____	To _____	Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size		Material
From 12'	To 17'	Ft.	2"	in. .010	in.	PVC
From _____	To _____	Ft.		in.	in.	
From _____	To _____	Ft.		in.	in.	

13. GRAVEL PACK:*

	Depth		Size	Material
From _____	To _____	Ft.		
From _____	To _____	Ft.		

14. REMARKS: [illegible] THE SCREEN

Depth From	Depth To	DRILLING LOG Formation Description
0	12"	TOPSOIL
12"	17'	MED TO COURSE SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 3A

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

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DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Meir Assoc. Inc.
DRILLER REGISTRATION NUMBER 496
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER Carolina Power & Light
ADDRESS _____ (Street or Route No.)
City or Town. State Zip Code
3. DATE DRILLED 12-11-84 USE OF WELL _____
4. TOTAL DEPTH 27' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 6' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): n/a METHOD OF TEST _____
8. WATER ZONES (depth): 5'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 22' Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 15' Ft.	CEMENT/LIME	
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	22'	To 27' Ft.	2"	in. 0010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:*

	Depth		Size	Material
From		To Ft.		
From		To Ft.		

14. REMARKS: NATIVE SAND ALLOWED TO COLLAPSE AROUND THE SCREEN.

Depth From	To	DRILLING LOG Formation Description
0	12"	TOPSOIL
12"	27'	MED TO COARSE SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 3B

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management and copy to the well owner

OFFICIAL COPY
Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Ezra Well Svc Inc
DRILLER REGISTRATION NUMBER 496
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Willington's
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER Carolina's Power & Light
ADDRESS _____ (Street or Route No.)
City or Town State Zip Code
3. DATE DRILLED 12-13-94 USE OF WELL _____
4. TOTAL DEPTH 27' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 9' FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/a METHOD OF TEST _____
8. WATER ZONES (depth): 8'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 22' Ft.	2"	Sch 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 15' Ft.	Cement/Lime	
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	22	To 27' Ft.	2"	in. .010 in.	PVC
From		To Ft.		in. in.	
From		To Ft.		in. in.	

13. GRAVEL PACK: ✳

	Depth		Size	Material
From		To Ft.		
From		To Ft.		

14. REMARKS: [illegible] AROUND THE SCREEN

DRILLING LOG

Depth From	Depth To	Formation Description
0	12"	Topsoil
12"	27'	med to coarse sand

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 4

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management [illegible]

4A

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Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-02 2

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover

2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code

3. DATE DRILLED 12-13-86 USE OF WELL monitor
4. TOTAL DEPTH 17 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 8 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 0 FT. ABOVE LAND SURFACE.
7. YIELD (gpm): 55 METHOD OF TEST gas pump
8. WATER ZONES (depth): _____
_____
9. CHLORINATION: Type _____ Amount _____

DRILLING LOG

Depth From	Depth To	Formation Description
0	17	FINE TO MEDIUM SAND

If additional space is needed use back of form.

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	12 Ft.	2	SCH40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth From	Depth To	Material	Method
	0	10 Ft.	NEAT	Pump
From		To Ft.		

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	12	17 Ft.	2 in.	010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	11	17 Ft.	MEDIUM	SAND
From		To Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
attached

CI 04 02 0050

I HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Revised 11/84

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Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-022

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington (City or Town) NC (State) 28401 (Zip Code)
3. DATE DRILLED 12-12-86 USE OF WELL monitor
4. TOTAL DEPTH 45 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 10'8" FT. ☐ above ☑ below TOP OF CASING.
TOP OF CASING IS 10" ~~FT~~. ABOVE LAND SURFACE.
7. YIELD (gpm): 10 METHOD OF TEST GAS PUMP
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	40 Ft.	2	SCH40	PVC
		Ft.			
		Ft.			

GROUT:

	Depth From	To	Material	Method
	0	38 Ft.	NEAT	PUMP
		Ft.		

SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	40	45 Ft.	2 in.	010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

GRAVEL PACK:

	Depth From	To	Size	Material
	39	45 Ft.	MEDIUM	SAND
		Ft.		

REMARKS: _____

Depth From	To	DRILLING LOG Formation Description
0	45	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
attached

CI 04 02 0051

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

Revised 11/84

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[illegible] DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR DALE TODD WELL DRILLING
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-022

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
SUTTON PLANT
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CP&L
ADDRESS HWY 421 (Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code

3. DATE DRILLED 12-16-86 USE OF WELL MONITOR
4. TOTAL DEPTH 17 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 4'8" FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 5" FT. ABOVE LAND SURFACE.
7. YIELD (gpm): — METHOD OF TEST —
8. WATER ZONES (depth):

[illegible]RINATION: Type — Amount —

10. [illegible]ING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 12 Ft.	2	SCH40	PVC
From		To Ft.			
From		To Ft.			

GROUT:

	Depth		Material	Method
From	0	To 10 Ft.	NEAT	PUMP
From		To Ft.		

SCREEN:

	Depth		Diameter	Slot Size	Material
From	12	To 17 Ft.	2 in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

RAVEL PACK:

	Depth		Size	Material
From	11	To 17 Ft.	MEDIUM	SAND
From		To Ft.		

RKS

DRILLING LOG

Depth From	Depth To	Formation Description
0	17	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

ATTACHED

CI 04 02 0040

[illegible] HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION [illegible]NDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to D[illegible]

[illegible] 11-84

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

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Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-0229

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover

2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code

3. DATE DRILLED 12-15-86 USE OF WELL monitor
4. TOTAL DEPTH 27 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 5'6" FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 0" FT. ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
WATER ZONES (depth): _____
8. CHLORINATION: Type — Amount —
9. CASING:

	Depth From	To	Ft.	Diameter	Wall Thickness or Weight/Ft.	Material
	0	22		2	SCH40	PVC

10. GROUT:

	Depth From	To	Ft.	Material	Method
	0	20		NEAT	Pump

11. SCREEN:

	Depth From	To	Ft.	Diameter	Slot Size	Material
	22	27		2 in.	.010 in.	PVC
				in.	in.	
				in.	in.	

12. GRAVEL PACK:

	Depth From	To	Ft.	Size	Material
	21	27		MEDIUM	SAND

13: _____

Depth From	To	DRILLING LOG Formation Description
0	27	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0041

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Revised 11/84

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NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-022

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover

2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code

3. DATE DRILLED 12-15-86 USE OF WELL monitor
4. TOTAL DEPTH 45 SPTS ~~CUTTINGS~~ COLLECTED ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 5 FT. ☐ above ☑ below TOP OF CASING,
TOP OF CASING IS 2" ~~±~~ ABOVE LAND SURFACE.
7. YIELD (gpm): _____ METHOD OF TEST _____
8. WATER ZONES (depth): _____
_____
9. ~~NATION~~: Type — Amount —
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	40 Ft.	2	SCH40	PVC
		Ft.			
		Ft.			

GROUT:

	Depth From	To	Material	Method
	0	38 Ft.	NEAT	PUMP
		Ft.		

CREEN:

	Depth From	To	Diameter	Slot Size	Material
	40	45 Ft.	2 in.	010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

RAVEL PACK:

	Depth From	To	Size	Material
	39	45 Ft.	MEDIUM	SAND
		Ft.		

DRILLING LOG

Depth From	To	Formation Description
		ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0042

I HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit

evised 11/84

FILE COI

DALE TODD WELL DRILLING
319 KEATON AVENUE
WILMINGTON, N.C. 28401
919-763-1261

TEST BORING FIELD REPORT 830-21-D

CD PROJECT CP&L - SUTTON PLANT

CD PROJECT # _____ BORING # S-C DATE 12-[illegible]-[illegible]

CLIENT PROJECT # _____ SURFACE ELEVATION _____

DRILLER G. BRIDGER CREW R. FOWLER

DEPTH FROM	DEPTH TO	SOIL STRATA — SOIL DESCRIPTION AND REMARKS	USCS	NO.	DEPTH FROM	DEPTH TO	BLOWS 2"	BLOWS 4"	BLOWS 6"	REC.
0	42	LOOSE TO FIRM TAN AND GRAY FINE TO MEDIUM SAND, MOIST TO WET	SP	1	3.5	5	3	3	4	
			SP	2	8.5	10	5	8	12	
42	45	DENSE GRAY FINE SAND - TRACE OF SILT, WET	SP	3	13.5	15	4	13	13	
			SP	4	18.5	20	5	7	9	
			SP	5	23.5	25	3	3	4	
			SP	6	28.5	30	9	12	12	
			SP	7	33.5	35	4	6	12	
			SP	8	38.5	40	8	9	12	
			SP-SM	9	43.5	45	17	18	20	

CI 04 02 0037

DRILLING TIME (Hrs.) _____ REMARKS: _____

LAYOUT _____ MOVING _____

EARING _____ STANDBY _____

:R LEVEL: @ _____ DATE _____ TIME _____

@ DATE _____ TIME _____

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A DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
I OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

LL CONSTRUCTION RECORD

NTRACTOR Dale Todd Well Drilling
GISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-0229

TION: (Show sketch of the location below)
n: Wilmington
Sutton Plant
unity, or Subdivision and Lot No.)
CP+L
Hwy 421
(Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code
D 12-16-86 USE OF WELL monitor
H 17 CUTTINGS COLLECTED ☐ Yes ☒ No
REPLACE EXISTING WELL? ☐ Yes ☒ No
ER LEVEL: 6'6" FT. ☐ above ☒ below TOP OF CASING,
CASING IS 8" FT. ABOVE LAND SURFACE.
60 METHOD OF TEST GGS pump
h): _____
N: Type — Amount —

County: New Hanover

Depth From	Depth To	DRILLING LOG Formation Description
0	17	FINE TO MEDIUM SAND

If additional space is needed use back of form.

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
0	To 12	Ft.	2	SCH40	PVC
	To	Ft.			
	To	Ft.			

	Depth		Material	Method
0	To 10	Ft.	NEAT	PUMP
	To	Ft.		

	Depth		Diameter		Slot Size		Material
12	To 17	Ft.	2	in.	010	in.	PVC
	To	Ft.		in.		in.	
	To	Ft.		in.		in.	

K:

	Depth		Size	Material
11	To 17	Ft.	MEDIUM	SAND
	To	Ft.		

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0043

HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION DARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

...Division of Environmental Management and copy to well owner

6B

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Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-0229

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington (City or Town) NC (State) 28401 (Zip Code)
3. DATE DRILLED 12-16-86 USE OF WELL monitor
4. TOTAL DEPTH 27 CUTTINGS COLLECTED ☐ Yes ☒ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 6' 2" FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 4" FT. ABOVE LAND SURFACE.
7. YIELD (gpm): 50 METHOD OF TEST gas pump
8. WATER ZONES (depth): _____
9. CHLORINATION: Type — Amount —
10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	22 Ft.	2	SCH40	PVC
		Ft.			
		Ft.			

GROUT:

	Depth From	Depth To	Material	Method
	0	20 Ft.	NEAT	Pump
		Ft.		

SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	22	27 Ft.	2 in.	010 in.	PVC
		Ft.	in.	in.	
		Ft.	in.	in.	

RAVEL PACK:

	Depth From	Depth To	Size	Material
	21	27 Ft.	MEDIUM	SAND
		Ft.		

REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
0	27	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)
attached

CI 04 02 0044

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

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DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-022

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington (City or Town) NC (State) 28401 (Zip Code)
DATE DRILLED 12-16-86 USE OF WELL monitor
TOTAL DEPTH 45 ~~CUTTINGS~~ SPLITS COLLECTED ☒ Yes ☐ No
DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
STATIC WATER LEVEL: 5'7" FT. ☐ above ☐ below TOP OF CASING,
TOP OF CASING IS 0 FT. ABOVE LAND SURFACE.
YIELD (gpm): 20 METHOD OF TEST gas pump
WATER ZONES (depth): _____
_____
GRAVEL PACK: Type — Amount —

CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	40	2	SCH40	PVC

GROUT:

	Depth From	Depth To	Material	Method
	0	38	NEAT	Pump

SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	40	45	2 in.	.010 in.	PVC
			in.	in.	
			in.	in.	

GRAVEL PACK:

	Depth From	Depth To	Size	Material
	39	45	MEDIUM	SAND

Depth From	Depth To	DRILLING LOG Formation Description
		ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0045

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

Revised 11/84

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Oct 30 2019

DALE TODD WELL DRILLING
219 KEATON AVENUE
WILMINGTON, N.C. 28401
919-763-1261

TEST BORING FIELD REPORT

CD PROJECT CP&L - SUTTON PLANT
CD PROJECT # _____ BORING # 6-C DATE 12-16-9
CLIENT PROJECT # _____ SURFACE ELEVATION _____
DRILLER G. BRIDGER CREW R. FOWLER

DEPTH FROM	DEPTH TO	SOIL STRATA / SOIL DESCRIPTION AND REMARKS	USCS	NO	DEPTH FROM	DEPTH TO	FIRST 6"	2ND 6"	3RD 6"	REC
0	27	LOOSE TO FIRM TAN AND GRAY FINE TO MEDIUM SAND, MOIST TO WET	SP	1	3.5	5	1	2	3	
			SP	2	8.5	10	8	13	15	
27	32	LOOSE BROWN FINE TO MEDIUM SAND- SOME CLAY AND ORGANICS, WET	SP	3	13.5	15	7	13	16	
			SP	4	18.5	20	5	14	16	
32	37	STIFF DARK GRAY CLAY - SOME SAND, MOIST	SP	5	23.5	25	5	11	12	
37	45	LOOSE TO FIRM TAN FINE TO MEDIUM SAND, WET	SC	6	28.5	30	3	3	6	
			CH	7	33.5	35	5	6	7	
			SP	8	38.5	40	3	4	6	
			SP	9	43.5	45	12	13	14	

CI 04 02 0038

DRILLING TIME (Hrs.) _____ REMARKS: _____
LAYOUT _____ MOVING _____
RING _____ STANDBY _____
LEVEL: @ _____ DATE _____ TIME _____
@ _____ DATE _____ TIME _____

7A

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Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-0229

WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover
OWNER CP+L
ADDRESS ~~West~~ Hwy 421
(Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code
DATE DRILLED 12-19-86 USE OF WELL monitor
TOTAL DEPTH 17 CUTTINGS COLLECTED ☐ Yes ☒ No
DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
STATIC WATER LEVEL: 8'4" FT. ☐ above ☐ below TOP OF CASING,
TOP OF CASING IS 1" FT. ABOVE LAND SURFACE.
YIELD (gpm): 60 METHOD OF TEST gas pump
WATER ZONES (depth): _____
_____
CONSOLIDATION: Type — Amount —

CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	12 Ft.	2	SCH40	PVC
From		To Ft.			
From		To Ft.			

GROUT:

	Depth From	Depth To	Material	Method
	0	10 Ft.	NEAT	PUMP
From		To Ft.		

SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	12	17 Ft.	2 in.	010 in.	PVC.
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

GRAVEL PACK:

	Depth From	Depth To	Size	Material
From	11	17 Ft.	MEDIUM	SAND
		To Ft.		

DRILLING LOG

Depth From	Depth To	Formation Description
0	17	FINE TO MEDIUM SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0047

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

OFFICIAL COPY
Oct 30 2019

7B

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-WM-0229

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover

2. OWNER CP+L
ADDRESS Hwy 421
(Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code

DATE DRILLED 12-15-86 USE OF WELL monitor
TOTAL DEPTH 27 CUTTINGS COLLECTED ☐ Yes ☒ No
DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
STATIC WATER LEVEL: 8' 3" FT. ☐ above ☐ below TOP OF CASING,
TOP OF CASING IS 1" FT. ABOVE LAND SURFACE.
YIELD (gpm): 60 METHOD OF TEST GGS Pump
WATER ZONES (depth): _____
_____
TREATMENT: Type _____ Amount _____

CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 22 Ft.	2	SCH40	PVC
From		To Ft.			
From		To Ft.			

GROUT:

	Depth		Material	Method
From	0	To 20 Ft.	NEAT	Pump
From		To Ft.		

SCREEN:

	Depth		Diameter	Slot Size	Material
From	22	To 27 Ft.	2 in.	010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

GRAVEL PACK:

	Depth		Size	Material
From	21	To 27 Ft.	MEDIUM	SAND
From		To Ft.		

DRILLING LOG

Depth From	To	Formation Description

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0048

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

ed 11/84

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Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH,N.C. 27611, PHONE (919) 733-5083

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Dale Todd Well Drilling
DRILLER REGISTRATION NUMBER 039
STATE WELL CONSTRUCTION PERMIT NUMBER: 64-0036-wm-022

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Wilmington
Sutton Plant
(Road, Community, or Subdivision and Lot No.)
County: New Hanover

2. OWNER CP+L
ADDRESS Hwy 421 (Street or Route No.)
Wilmington NC 28401
City or Town State Zip Code

3. DATE DRILLED 12-14-86 USE OF WELL monitor
4. TOTAL DEPTH 45 SPT'S CUTTINGS COLLECTED ☒ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 8' FT. ☐ above ☐ below TOP OF CASING,
TOP OF CASING IS 1'2" FT. ABOVE LAND SURFACE.
7. YIELD (gpm): 10 METHOD OF TEST GGS pump
8. WATER ZONES (depth): _____
9. CHLORINATION: Type _____ Amount _____
10. CASING:

	Depth From	To	Diameter	Wall Thickness or Weight/Ft.	Material
	0	40 Ft.	2	SCH40	PVC
From		To Ft.			
From		To Ft.			

GROUT:

	Depth From	To	Material	Method
	0	38 Ft.	NEAT	Pump
From		To Ft.		

SCREEN:

	Depth From	To	Diameter	Slot Size	Material
	40	45 Ft.	2 in.	010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

GRAVEL PACK:

	Depth From	To	Size	Material
	39	45 Ft.	MEDIUM	SAND
From		To Ft.		

REMARKS: _____

Depth From	To	DRILLING LOG Formation Description
		ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

attached

CI 04 02 0049

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT

OFFICIAL COPY
Oct 30 2019

DALE TODD WELL DRILLING
219 KEATON AVENUE
WILMINGTON, N.C. 28401
919-763-1261

TEST BORING FIELD REPORT

CO PROJECT CP&L - SUTTON PLANT
CD PROJECT # _____ BORING # 7-C DATE 12-14
CLIENT PROJECT # _____ SURFACE ELEVATION _____
DRILLER G. BRIDGER CREW R. FOWLER

DEPTH FROM	DEPTH TO	SOIL STRATA SOIL DESCRIPTION AND REMARKS	USCS	NO.	DEPTH FROM	DEPTH TO	FIRST 6"	2ND 6"	3rd 6"	REC
0	45	LOOSE TO FIRM DARK GRAY, GRAY	SP	1	3.5	5	4	4	6	
		AND TAN FINE TO MEDIUM SAND,								
		MOIST TO WET	SP	2	8.5	10	4	8	13	
			SP	3	13.5	15	1	5	12	
			SP	4	18.5	20	8	14	16	
			SP	5	23.5	25	3	4	5	
			SP	6	28.5	30	4	5	6	
			SP	7	33.5	35	5	3	4	
			SP	8	38.5	40	6	7	9	
			SP	9	43.5	45	3	6	9	

CI 04 02 0039

DRILLING TIME (Hrs.) _____ REMARKS: _____
LAYOUT _____ MOVING _____
EARING _____ STANDBY _____
ER LEVEL: @ _____ DATE _____ TIME _____
@ _____ DATE _____ TIME _____

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Oct 30 2019

...MENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL #8

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR RICHARD CATLIN & ASSOCIATES, INC.

DRILLER REGISTRATION NUMBER 1142

STATE WELL CONSTRUCTION * PERMIT NUMBER: 64-0036-WM-0368

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: WILMINGTON
801 SUTTON STEAM PLANT ROAD
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CAROLINA POWER AND LIGHT

ADDRESS P. O. BOX 327 (Street or Route No.)

NEW HILL, (City or Town) NC (State) 27562 (Zip Code)

3. DATE DRILLED 2/8/90 USE OF WELL MONITORING

4. TOTAL DEPTH 50' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: ±10.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth): SURFICIAL AQUIFER

CHLORINATION: Type N/A Amount _____

9. CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	+2.5	To	40 Ft.	2"	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

10. GROUT:

	Depth			Material	Method
From	0	To	35.5 Ft.	NEAT	IN PLACE
From		To	Ft.		

11. SCREEN

	Depth			Diameter	Slot Size	Material
From	40	To	50 Ft.	2 in.	.010 in.	PVC
From		To	Ft.	in.	in.	
From		To	Ft.	in.	in.	

GRAVEL PACK:

	Depth			Size	Material
From	37	To	50 Ft.	COARSE	SAND
From		To	Ft.		

REMARKS _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Revised 11/84

Submit original to Division of Environmental Management and copy to well owner.

OFFICIAL COPY
Oct 30 2019

BORING LOG

BORING NUMBER WELL #8 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE

TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY R. GARRETT

DRILLING DATE 2/8/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
0	5"	SAND - Tan, orange yellow, very fine grained to fine grained, subrounded, subangular, moderately well sorted (no sample).		
5.0	7.0	SAND - Tan, organge yellow, very fine grained to fine grained, subrounded, subangular, moderately well sorted. Saturated at 6'.		2,2,2,3
10.0	12.0	SAND - tan, medium grained, well sorted, subrounded unconsolidated, wet.		2,2,3,6
13.5	15.5	SAND - medium grained to coarse grained, poor to moderately sorted, subrounded, wet.		10,14,16,14
18.5	20.5	SAND - tan/orange yellow; well sorted, fine grained SAND with 1/2 to 1" stringers; coarse grained to very coarse grained subangular SAND. Wet.		2,4,4,6
23.5	25.5	SAND - tan, fine grained, very well sorted; wet.		10,7,10,12
28.5	30.5	SAND - tan with yellow orange fragments, medium grained, moderately well sorted, friable, subangular, wet.		10,8,10,10
33.5	35.5	SAND - tan changing to yellow orange with depth, fine grained to medium grained, moderately sorted, occasional 1/4 gravel fragment and some CLAY in sample shoe, wet.		
38.5	40.5	SAND - tan, pea gravel, very coarse grained SAND in upper 4", change to medium grained SAND with occasional 1/4 gravel fragemnt.		10,8,8,8

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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Oct 30 2019

BORING LOG

BORING NUMBER WELL #8
TOTAL DEPTH 50'

SITE LOCATION CP&L SUTTON
WILMINGTON, NORTH CAROLINA

DRILLED BY M. SAGE
LOGGED BY R. GARRETT
DRILLING DATE 2/8/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
43.5	45.5	SILT - very fine grained SAND - dark grey soft-firm wet.		2,2,4,6
50.0	52.0	SILT - very fine grained SAND, dark grey. Soft, firm, wet.		12,10,10,22

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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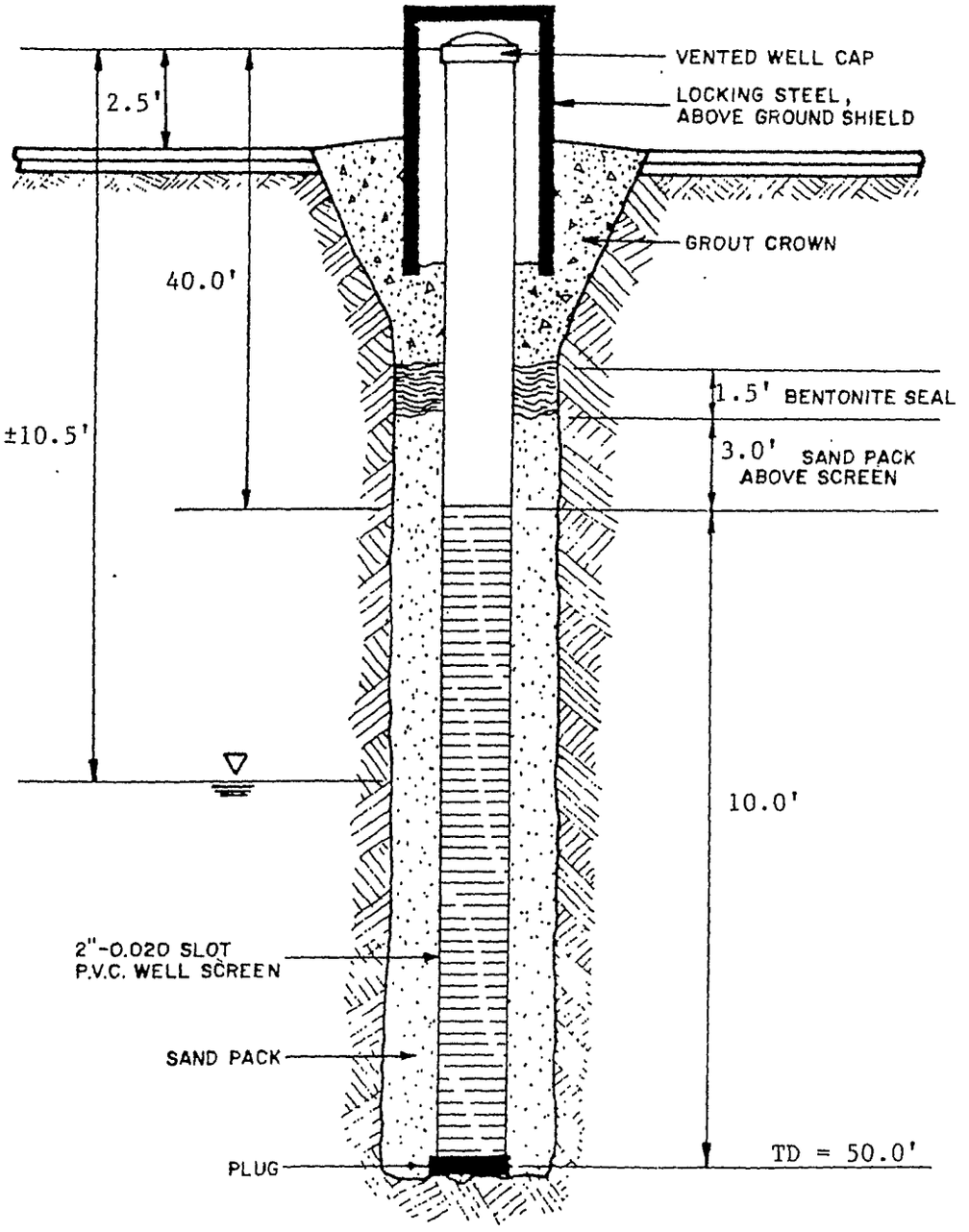
Oct 30 2019

AS BUILT
WELL DETAIL

WELL #8



NOT TO SCALE

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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Oct 30 2019

...RTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL #9

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR RICHARD CATLIN & ASSOCIATES, INC.

DRILLER REGISTRATION NUMBER 1142

STATE WELL CONSTRUCTION * PERMIT NUMBER: 64-0036-WM-0368

1. WELL LOCATION. (Show sketch of the location below)

Nearest Town: WILMINGTON
801 SUTTON STEAM PLANT ROAD
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CAROLINA POWER AND LIGHT

ADDRESS P. O. BOX 327 (Street or Route No.)

NEW HILL, (City or Town) NC (State) 27562 (Zip Code)

3. DATE DRILLED 2/7/90 USE OF WELL MONITORING

4. TOTAL DEPTH 50' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: ±18.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth): SURFICIAL AQUIFER

CHLORINATION: Type N/A Amount _____

CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	+2.5	To	40 Ft.	2"	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

11. GROUT:

	Depth			Material	Method
From	0	To	36.5 Ft.	NEAT	IN PLACE
From		To	Ft.		

12 SCREEN

	Depth			Diameter		Slot Size		Material
From	40	To	50 Ft.	2	in.	.010	in.	PVC
From		To	Ft.		in.		in.	
From		To	Ft.		in.		in.	

GRAVEL PACK:

	Depth			Size	Material
From	38	To	50 Ft.	COARSE	SAND
From		To	Ft.		

REMARKS _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

Submit original to Division of Environmental Management and copy to well owner.

OFFICIAL COPY
Oct 30 2019

BORING LOG

BORING NUMBER WELL #9 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE
TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY J. CORNETTE
DRILLING DATE 2/6/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
5.0	7.0	Well sorted and rounded, medium grained SAND. Low water content. Tan.		2,4,6,12
10.0	12.0	Well sorted and rounded, medium grained clean quartz SAND. Low water content. Tan.		3,4,4,6
15.0	17.0	Well sorted and rounded, medium grained SAND. Ground water table ± 16'		6,8,10,8
20.0	22.0	Medium grained, well rounded and sorted SAND. High water content.		4,6,12,18
23.5	25.5	Medium to fine grained, moderately sorted, well rounded SAND. Some iron staining. High water content. Light tan.		18,14,16,18
29.0	31.0	Fine to coarse grained, subrounded, poorly sorted SAND. Iron staining throughout sample. High water content. Tan.		8,6,6,4
34.0	36.0	Top 12" of sample fine to medium grained, moderately sorted, subrounded tan SAND. Coarsens downward to a meduim to coarse grained, subrounded SAND. Iron staining. High water content.		2,6,14,13
39.0	41.0	Fine grained, well sorted and rounded SAND. Sandy clay lense °6" up from bottom. High water content. Tan.		3,17,17,14
44.0	46.0	Dark grey, very fine grained, high plasticity CLAY in upper 12" of sample. Sharp contact with a coarse grained, poorly sorted SAND in lower 12". Sub-rounded. Tan. High water content.		WOR-18

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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Oct 30 2019

BORING LOG

BORING NUMBER WELL #9 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE
TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY J. CORNETTE
DRILLING DATE 2/6/90

SAMPLE DEPTH(ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
49.0	51.0	Very coarse, poorly sorted, gravely, tan SAND.		8,12,14,12
		High water content.		

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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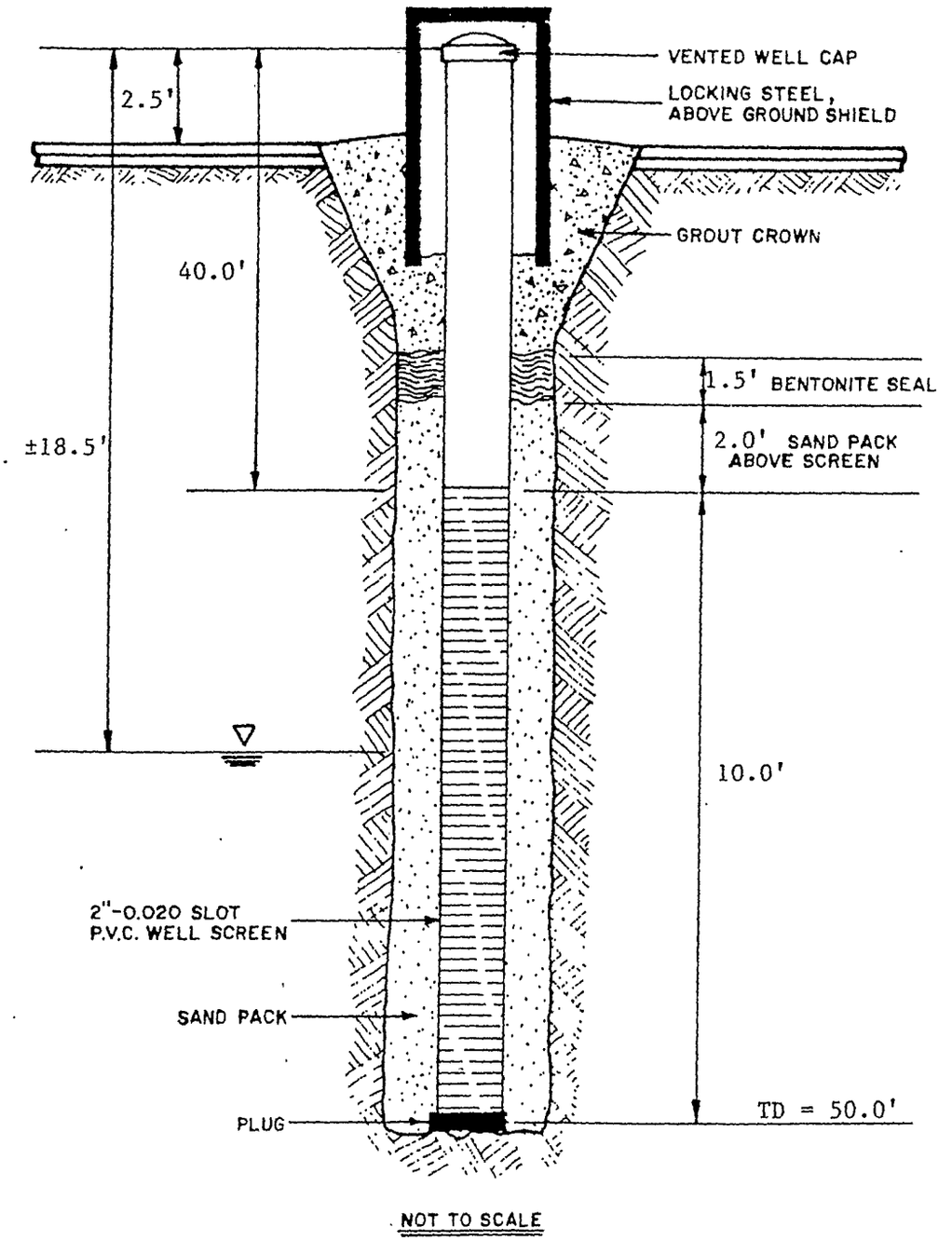
Oct 30 2019

AS BUILT
WELL DETAIL

WELL #9



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DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL #10

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR RICHARD CATLIN & ASSOCIATES, INC.

DRILLER REGISTRATION NUMBER 1142

STATE WELL CONSTRUCTION * PERMIT NUMBER: 64-0036-WM-0368

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
801 SUTTON STEAM PLANT ROAD
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CAROLINA POWER AND LIGHT
ADDRESS P. O. BOX 327 (Street or Route No.)
NEW HILL, (City or Town) NC (State) 27562 (Zip Code)

3. DATE DRILLED 2/8/90 USE OF WELL MONITORING

4. TOTAL DEPTH 50' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: ±15.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth): SURFICIAL AQUIFER

CHLORINATION: Type N/A Amount _____

CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	+2.5	To	40 Ft.	2"	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

11. GROUT:

	Depth			Material	Method
From	0	To	35.5 Ft.	NEAT	IN PLACE
From		To	Ft.		

12. SCREEN:

	Depth			Diameter	Slot Size	Material
From	40	To	50 Ft.	2 in.	.010 in.	PVC
From		To	Ft.	in.	in.	
From		To	Ft.	in.	in.	

GRAVEL PACK:

	Depth			Size	Material
From	37	To	50 Ft.	COARSE	SAND
From		To	Ft.		

REMARKS: _____

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

GW-1 Revised 11/84

Submit original to Division of Environmental Management and copy to well owner

OFFICIAL COPY
Oct 30 2019

BORING LOG

BORING NUMBER WELL #10 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE

TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY R. GARRETT

DRILLING DATE 2/8/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
5.0	7.0	SAND - tan, fine grained, well sorted, unconsolidated, dry.		2,2,2,2
10.0	12.0	SAND - tan, fine grained, well sorted, unconsolidated, dry.		4,4,6,6
15.0	17.0	SAND, yellow orange grading to light tan, very fine grained, well sorted, wet.		8,12,12,14
20.0	22.0	SAND - tan, fine grained, well sorted, friable, water saturated.		6,8,12,14
23.5	25.5	SAND - tan very fine grained to fine grained, well sorted, wet.		12,18,18,26
28.5	30.5	SAND, tan, fine grained to coarse grained in upper 5", poorly sorted grading to well sorted, very fine grained SAND, wet.		6,6,6,6
33.5	35.5	SAND - tan, fine grained to medium grained, with occasional pea size grained fragments and iron stained band. Friable, wet.		5,6,7,5
38.5	40.5	CLAY - medium grey, soft-firm, high plasticity, greasy, some SILT in lower 3" of sample.		
43.5	45.5	SAND - tan-yellow, orange medium grained, grading to very gine grained, well sorted, friable, wet.		3,3,2,6
50.0	52.0	SAND - grey brown grading to tan, medium grained to coarse grained with occasional subrounded 1/4" fragments, friable CLAY plug in upper 2-3" of sample, orange, slightly sandy. Soft.		6,10,12,16

REMARKS

PAGE ___ OF ___

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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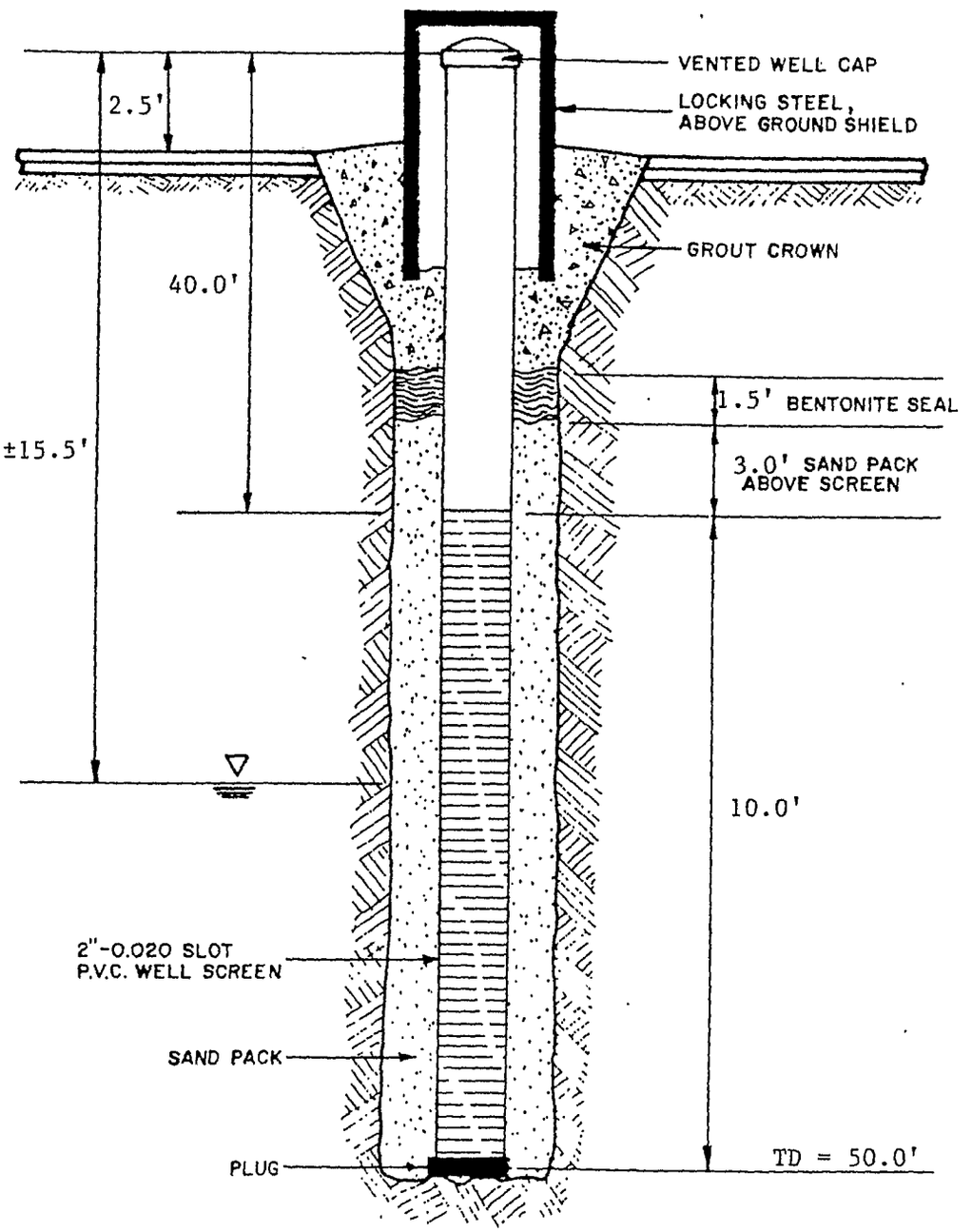
Oct 30 2019

AS BUILT
WELL DETAIL

WELL #10



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...DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL #11

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR RICHARD CATLIN & ASSOCIATES, INC.

DRILLER REGISTRATION NUMBER 1142

STATE WELL CONSTRUCTION * PERMIT NUMBER: 64-0036-WM-0368

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
801 SUTTON STEAM PLANT ROAD
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER

2. OWNER CAROLINA POWER AND LIGHT
ADDRESS P. O. BOX 327 (Street or Route No.)
NEW HILL, NC 27562
City or Town State Zip Code

3. DATE DRILLED 2/6/90 USE OF WELL MONITORING

4. TOTAL DEPTH 50' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: ±12.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth): SURFICIAL AQUIFER

CHLORINATION: Type N/A Amount _____

10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	+2.5	To 40 Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 36 Ft.	NEAT	IN PLACE
From		To Ft.		

SCREEN

	Depth		Diameter	Slot Size	Material
From	40	To 50 Ft.	2 in.	.010 in.	PVC
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

GRAVEL PACK:

	Depth		Size	Material
From	37	To 50 Ft.	COARSE	SAND
From		To Ft.		

REMARKS _____

DRILLING LOG

From	To	Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management and copy to well owner

Revised 11/84

OFFICIAL COPY
Oct 30 2019

BORING LOG

BORING NUMBER WELL #11 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE
TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY J. CORNETTE
DRILLING DATE 2/6/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
5.0	7.0	Medium to fine, well sorted, brown SAND. Low water content.		3,3,2,2
10.0	12.0	Medium to fine, well sorted, subrounded, brown SAND. Moderate water content.		6,5,5,6
15.0	17.0	Fine to medium grained tan SAND. High water content. Well sorted and rounded.		6,12,16,18
20.0	22.0	Medium grained, well sorted, well rounded SAND. Tan. High water content.		8,12,18,26
25.0	27.0	Fine grained, well rounded, well sorted, tan SAND. High water content.		4,16,16,24
30.0	32.0	Medium to coarse grained, subrounded, moderately sorted SAND. High water content.		8,8,8,12
33.5	35.5	Fine grained, well sorted and rounded, light tan, SAND. High water content.		6,8,12,14
38.5	40.5	Medium grained, well rounded and sorted, light grey SAND. High water content.		12,14,16,14
43.5	45.5	Medium grained, well rounded, moderately sorted, slightly silty SAND. Light grey. Center 6" of sample brownish grey sandy, clayey, SILT. High water content.		WD 12,12,16
50.0	52.0	Very poorly sorted silty SAND. SAND is subrounded and ranges from very fine grained to very coarse grained. Brown. High water content.		12,16,17,22

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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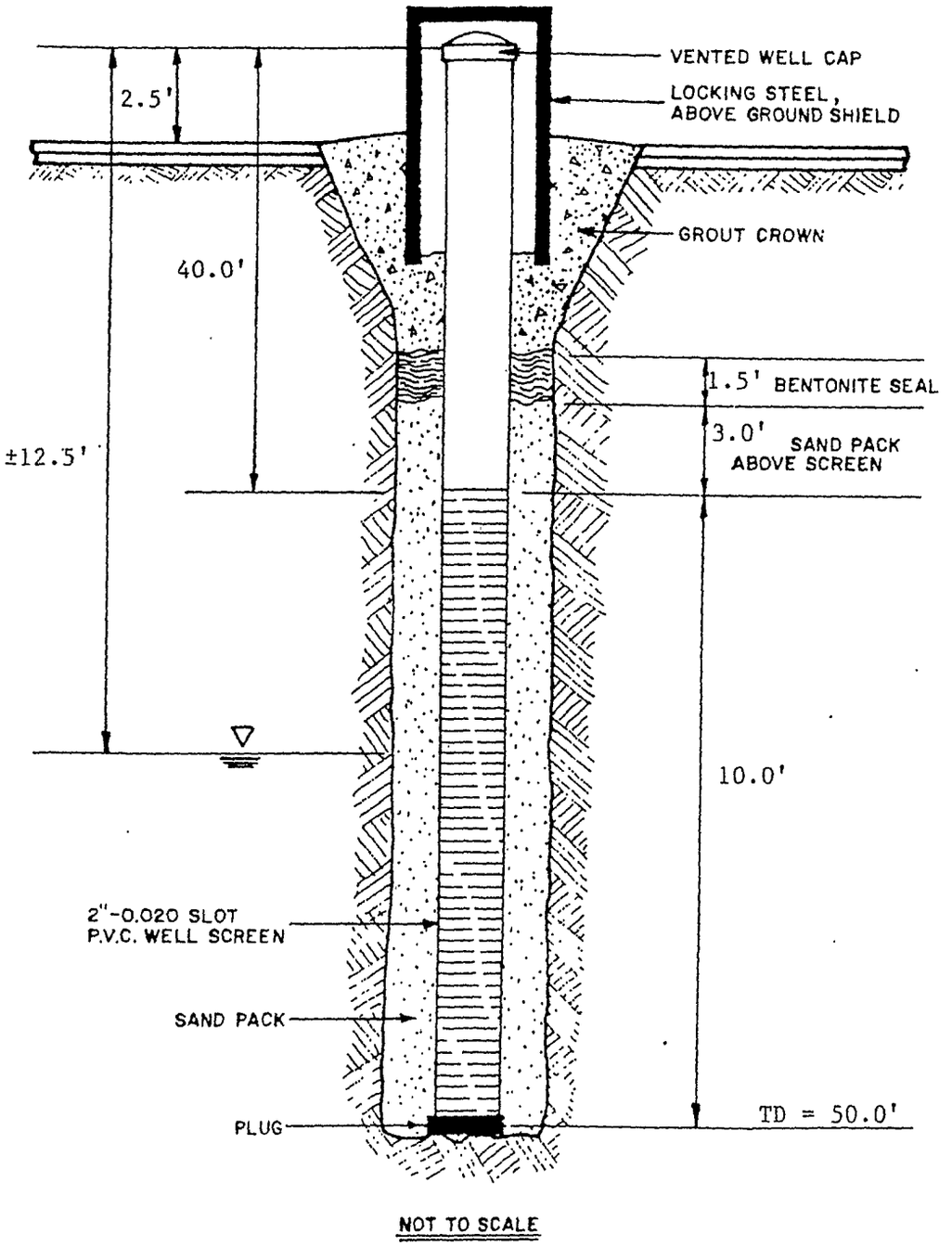
Oct 30 2019

AS BUILT
WELL DETAIL

WELL #11



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...CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH,N.C. 27611, PHONE (919) 733-5083

WELL #12

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long _____ Pc ___
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR RICHARD CATLIN & ASSOCIATES, INC.

DRILLER REGISTRATION NUMBER 1142

STATE WELL CONSTRUCTION * PERMIT NUMBER: 64-0036-WM-0368

1. WELL LOCATION. (Show sketch of the location below)

Nearest Town: WILMINGTON

801 SUTTON STEAM PLANT ROAD
(Road, Community, or Subdivision and Lot No.)

County: NEW HANOVER

2. OWNER CAROLINA POWER AND LIGHT

ADDRESS P. O. BOX 327 (Street or Route No.)

NEW HILL, (City or Town) NC (State) 27562 (Zip Code)

3. DATE DRILLED 2/6/90 USE OF WELL MONITORING

4. TOTAL DEPTH 50' CUTTINGS COLLECTED ☒ Yes ☐ No

5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No

6. STATIC WATER LEVEL: ±10.5 FT. ☐ above ☒ below TOP OF CASING,
TOP OF CASING IS 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST _____

8. WATER ZONES (depth): SURFICIAL AQUIFER

_____

CHLORINATION: Type N/A Amount _____

CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	±2.5	To	40 Ft.	2"	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

GROUT:

	Depth			Material	Method
From	0	To	35.5 Ft.	NEAT	IN PLACE
From		To	Ft.		

SCREEN

	Depth			Diameter	Slot Size		Material
From	40	To	50 Ft.	2	.010	in.	PVC
From		To	Ft.			in.	
From		To	Ft.			in.	

GRAVEL PACK:

	Depth			Size	Material
From	37	To	50 Ft.	COARSE	SAND
From		To	Ft.		

REMARKS _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management and copy to well owner

Revised 11/84

Depth From	Depth To	DRILLING LOG Formation Description
		SEE ATTACHED

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

SEE ATTACHED

OFFICIAL COPY
Oct 30 2019

BORING LOG

BORING NUMBER WELL #12 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE
TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY J. CORNETTE
DRILLING DATE 2/6/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
5.0	7.0	Moderately sorted, subrounded, slightly silty medium grained SAND. Moist. Light tan. No odor.	-	3,4,4,4
10.0	12.0	Moderately sorted, subrounded, medium grained SAND. Light grey. High water content.		6,8,10,12
15.0	17.0	Upper one-half of spoon moderately sorted, medium grained, subrounded SAND. Clayey lense separates finer grained, subrounded, moderately sorted, SAND. High water content.		4,10,14,8
20.0	22.0	Medium to fine grained subrounded SAND. 6" from top, 3" zone of coarse grained, subrounded, moderately sorted SAND. High water content. Light tan to light grey.		8,12,18,20
25.0	27.0	Medium to coarse grained SAND. Subrounded, poorly sorted. High water content. Iron staining in upper 3" of sample. Light tan.		4,4,8,12
30.0	32.0	Medium grained, moderately sorted SAND. Tends to fine downward. High water content. Light tan to to light grey.		8,4,4,6
35.0	37.0	Fine to medium grained, well rounded SAND! Tan. High water content.		6,12,18,20
40.0	42.0	Coarse to very coarse, subrounded, moderately sorted SAND. High water content. Tan		2,2,1,2
45.0	47.0	Coarse, subrounded, moderately sorted SAND. Tends to fine downward. Tan. High water content. Bottom 1" of sample clayey SAND with trace of gravel. Some orange staining.		2,2,WH

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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Oct 30 2019

BORING LOG

BORING NUMBER WELL #12 SITE LOCATION CP&L SUTTON DRILLED BY M. SAGE

TOTAL DEPTH 50' WILMINGTON, NORTH CAROLINA LOGGED BY J. CORNETTE

DRILLING DATE 2/6/90

SAMPLE DEPTH (ft.) FROM	TO	SAMPLE DESCRIPTION	P.I.D. SURVEY	BLOW COUNT
50.0	52.0	Top 10" of sample represented by a very coarse subrounded, poorly sorted, gravelly, tan SAND. Sample fines downward to a medium to fine grained, moderately sorted, subrounded, clayey, grey, SAND. High water content throughout entire sample.		3,6,7,9

REMARKS

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS AND HYDROGEOLOGISTS
RC&A

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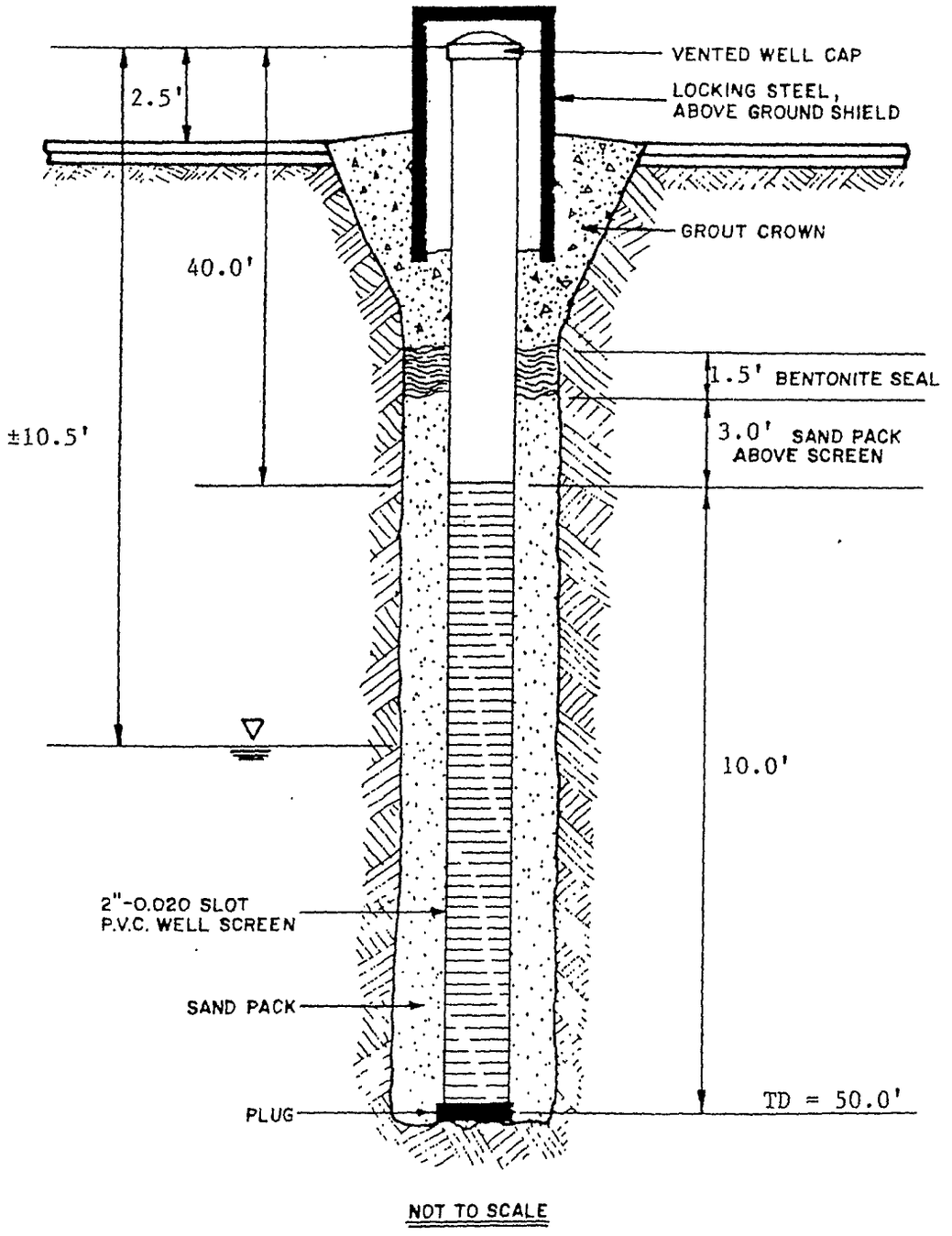
Oct 30 2019

AS BUILT
WELL DETAIL

WELL #12



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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina – Department of Environmental and Natural Resources – Division of Water Quality – Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) MIKE MCCONAHEY CERTIFICATION # 2402

WELL CONTRACTOR COMPANY NAME GEOLOGIC EXPLORATION, INC. PHONE # (704) 872-7686

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, list Use _____

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
HWY 421/801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐ GPS ☐ Topographic map
(check box)

3. OWNER: PROGRESS ENERGY CAROLINAS, INC.
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
( )
Area Code – Phone Number

4. DATE DRILLED 05/25/04
5. TOTAL DEPTH: 13.0 FEET
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 2.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A
11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft.	Material
From	0.0	To 3.0	Ft	2 INCH	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

13. Grout:

	Depth			Material	Method
From	0.0	To 1.0	Ft.	Portland Bentonite	Slurry
From		To	Ft.		

14. SCREEN:

	Depth			Diameter	Slot Size	Material
From	3.0	To 13.0	Ft.	2.0 in.	.010 in	PVC
From		To	Ft.	in.	in	

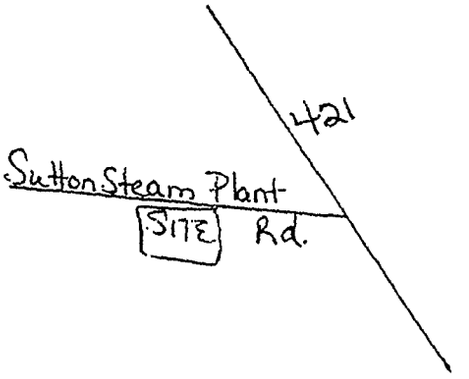
15. SAND/GRAVEL PACK:

	Depth			Size	Material
From	2.0	To 13.0	Ft.	20-40	FINE SILICA SAND
From		To	Ft.		

DRILLING LOG

DEPTH From	To	Formation Description
0.0	1.0	WEEDS/TOPSOIL
1.0	5.0	BROWN/BLACK SILTY SAND
5.0	13.0	WHITE/TAN SILTY SAND

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads, inculed the road numbers and common road names.



16. REMARKS: MW-13 BENTONITE SEAL FROM 1.0 TO 2.0 FEET

I DO HEARBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Mike McConahey 5/31/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center – Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Oct 30 2019

Drilling Company: Geologic Exploration
Driller's Name: Mike McConahey
Drilling Method: HSA
Bit Size: NA
Auger Size: 4.25-inch I.D.
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 197948.14
Easting: 2305008.16
Casing Elevation: 18.21 ft

Borehole Depth: 13 ft bls
Surface Elevation: 15.09 ft

Logged by: Daniel C.H. Peterman

Well/Boring ID: MW-13 (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
0	15								Topsoil, trace coarse gravel, low organic content, dry to slightly damp, no odors.
						0.0			SAND and ASH, dark grey, silt to fine grained, very loose, slightly damp to damp, no odor.
						0.0			
			19	2 2 1 3	3	0.0			SAND and ASH, dark grey, silt to fine grained, very loose, slightly damp to damp, no odor.
5	10								clayey SAND (SC), dark grey, fine grained, low plasticity, very soft, wet, no odor.
10	5		24	3 1 4 5	5	0.0			clayey SAND (SC), dark grey, fine grained, low plasticity, medium soft, wet, no odor.
									SAND (SM), grey, mottled tan, fine grained, loose, wet, no odor.
			19	5 4 5 4	9	0.0			SAND (SM), dark brown, fine grained, loose, saturated, organic sulphur odor.
									Boring terminated at 13.0 ft bls

Well/Boring Construction

- protective above ground steel casing (+3.0'-0.0')
- Cement pad (2'x2')
- Bentonite grout (1.0'-0.0')
- Bentonite chips (2.0'-1.0')
- 2-inch SCH 40 PVC riser (3.0' - +3.0')
- 8.25-inch nominal borehole (13.0'-0.0')
- Well Gravel Pack No. 2 (13.0' - 2.0')
- 2-inch 0.010 slot PVC screen (13.0' - 3.0')

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
NA: Not Applicable
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photolonization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
6/22/04	8.96	9.25

Depth measured from top of casing

Project: 04010
Data File:MW-13

Template:boring_wellWL2003.ldf
Date: 06/01/04

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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) ARNOLD CHAPEL CERTIFICATION # 2487

WELL CONTRACTOR COMPANY NAME PARRATT-WOLFF, INC. PHONE # (919) 644-2814

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
N34 16.99'/W77 58.98'
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☒Topographic map
(check box)

3. OWNER: PROGRESS ENERGY
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
( )-
Area code- Phone number

4. DATE DRILLED 1/27-1/28/05
5. TOTAL DEPTH: 43.0'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 5.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0	14.0'	Black/brown, moist, medium dense, fine/coarse SAND; trace fine/coarse gravel

11. DISINFECTION: Type N/A Amount N/A
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 33.5	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 27	Ft.	PORTLAND	TREMIE
From 27	To 30	Ft.	BENTONITE	TREMIE

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 33.5	To 38.5	Ft.	2	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 30	To 43	Ft.	#1	SAND
From	To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: MW-13D SEE MAP ON BACK

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Arnold L. Chapel 2/18/05
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days. GW-1 REV. 07/2001

OFFICIAL COPY
Oct 30 2019

Drilling Company: Parratt Wolffe
Driller's Name: Arnold Chapel
Drilling Method: Mud Rotary
Bit Size: 5.87-inch roller-bit
Auger Size:
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 197965.38
Easting: 2305017.45
Casing Elevation: 18.16

Borehole Depth: 42 ft bgs
Surface Elevation: 15.53

Logged by: Brian Lovgren

Well/Boring ID: MW-13D (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	15							Topsoil, trace coarse gravel, low organic content, dry to slightly damp, no odors.	protective above ground steel casing (+2.63'-0.0')
								SAND and ASH, dark grey, silt to fine grained, very loose, slightly damp to damp, no odor.	Cement pad (2'x2')
									2-inch SCH 40 PVC riser (33.0' - +2.6')
			0.8'	2 2 1 3	3	0.0		SAND and ASH, dark grey, silt to fine grained, very loose, slightly damp to damp, no odor.	Bentonite grout (27.0 - 0.0')
5	10							clayey SAND (SC), dark grey, fine grained, low plasticity, very soft, wet, no odor.	
10	5		2.0'	3 1 4 5	5	0.0		clayey SAND (SC), dark grey, fine grained, low plasticity, medium soft, wet, no odor.	6-inch nominal borehole (42.0'-0.0')
			0.8'	5 4 5 4	9	0.0		SAND (SM), grey, mottled tan, fine grained, loose, wet, no odor.	
								SAND (SM), dark brown, fine grained, loose, saturated, organic sulphur odor.	
			1.0'	2 3 3 7	6	0.0		SAND (SM), brown to dark brown, fine to medium grained, loose, wet, no odor.	
15	0								
			1.0'	6 7 7 9	14	0.0		SAND (SM), tan, fine to medium grained, medium dense, wet, no odor.	
20	-5								

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Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector

Water Level Data

Date	Depth	Elev.
2/4/05	7.81	10.35

Depth measured from top of casing*

Project: 04015
Data File:MW-13D

Template:boring_wellWL2005.ldf
Date: 3/16/05

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Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-13D (FADA)

Borehole Depth: 42 ft bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
25 / -10			1.0'	4 11 20 20	31	0.0			SAND (SM), tan, fine to medium grained, dense, wet, no odor.
30 / -15			1.0'	8 10 12 13	22	0.0			SAND (SM), tan, fine to medium grained, medium dense, wet, no odor.
35 / -20			1.0'	9 6 4 6	10	0.0			SAND (SM), tan to light gray, fine to medium grained, medium dense, wet, no odor.
			2.0'	3 2 4 4	6	0.0			clayey SAND (SC), brown, mottled orange, low plasticity, medium dense, wet, no odor.
40 / -25									clayey SAND (SC), gray, low plasticity, medium dense, wet, no odor.
									CLAY (CL) observed on roller bit upon completion of drilling activities.

Well/Boring Construction

- Bentonite chips (31.0'-27.0')
- Well Gravel Pack No. 1 (42.0' - 31.0')
- 2-inch 0.010 slot PVC screen (38.0' - 33.0')

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Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector

Water Level Data

Date	Depth	Elev.
2/4/05	7.81	10.35

Depth measured from top of casing*

Project: 04015
Data File:MW-13D

Template:boring_wellWL2005.ldf
Date: 3/16/05

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina – Department of Environmental and Natural Resources – Division of Water Quality – Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) MIKE MCCONAHEY CERTIFICATION # 2402

WELL CONTRACTOR COMPANY NAME GEOLOGIC EXPLORATION, INC. PHONE # (704) 872-7686

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, list Use _____

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
HWY 421/801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐ GPS ☐ Topographic map
(check box)

3. OWNER: PROGRESS ENERGY CAROLINAS, INC.
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
( )
Area Code – Phone Number

4. DATE DRILLED 05/25/04
5. TOTAL DEPTH: 11.0 FEET
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 2.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0.0	1.0	GRASS/TOPSOIL
1.0	5.0	GREY/BLACK SILTY SAND
5.0	11.0	GREY/TAN SILTY SAND

11. DISINFECTION: Type N/A Amount _____
12. CASING:

	Depth From	To		Diameter	Wall Thickness or Weight/Ft.	Material
From	0.0	To 1.0	Ft	2 INCH	SCH 40	PVC
From		To	Ft.			
From		To	Ft.			

13. Grout:

	Depth From	To		Material	Method
From		To	Ft.	Portland Bentonite	Slurry
From		To	Ft.		

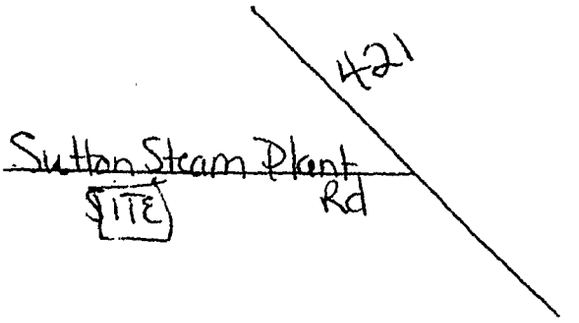
14. SCREEN:

	Depth From	To		Diameter		Slot Size		Material
From	1.0	To 11.0	Ft.	2.0	in.	.010	in	PVC
From		To	Ft.		in.		in	

15. SAND/GRAVEL PACK:

	Depth From	To		Size	Material
From	0.5	To 11.0	Ft.	20-40	FINE SILICA SAND
From		To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads, inculed the road numbers and common road names.



16. REMARKS: MW-14 BENTONITE SEAL FROM 0.0 TO 0.5 FEET

I DO HEARBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Mike McConahey 5/31/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center – Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Drilling Company: Geologic Exploration
Driller's Name: Mike McConahey
Drilling Method: HSA
Bit Size: NA
Auger Size: 4.25-inch I.D.
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 19725217
Easting: 230617843
Casing Elevation: 14.15 ft

Borehole Depth: 11.0 ft bls
Surface Elevation: 10.96 ft

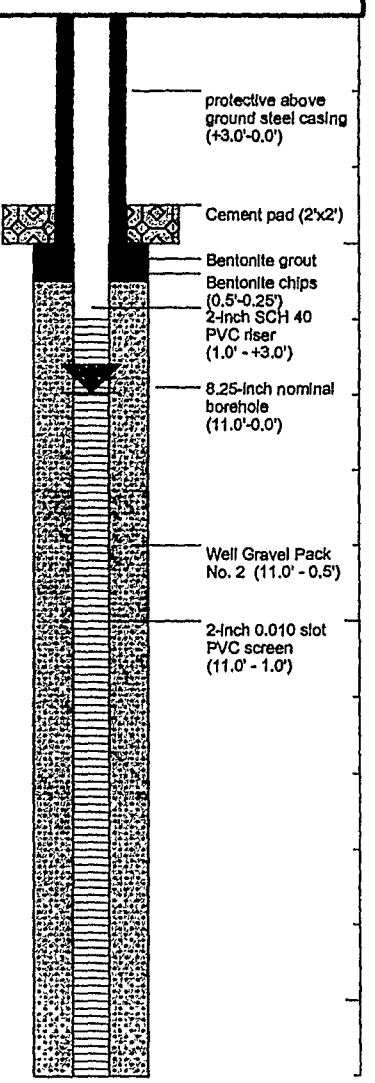
Logged by: Daniel C.H. Peterman

Well/Boring ID: MW-14 (FADA)
Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
0									Topsoil, high organic content, damp, no odor.
	10					0.0			SAND (SM), gray, mottled white, fine grained, loose, damp, no odor.
						0.0			SAND (SM), gray, mottled white, fine grained, loose, wet, no odor.
5			21	4 5 4 4	9	0.0			SAND (SM), light gray, mottled white, fine to medium grained, loose, wet, no odor.
	5								SAND (SM), light gray, mottled white, fine to medium grained, loose, wet, no odor.
			24	5 4 6 4	10	0.0			SAND (SM), dark brown, fine to medium grained, medium dense, saturated, no odor.
10									Boring terminated at 11.0 ft bls
	0								

Well/Boring Construction



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Remarks:
HSA: Hollow Stem Auger
NA: Not Applicable
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
6/22/04	5.16 ft	8.99

Depth measured from top of casing

Project: 04010
Data File:MW-14
Template:boring_wellWL2003.ldf
Date: 06/01/04

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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina – Department of Environmental and Natural Resources – Division of Water Quality – Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) MIKE MCCONAHEY CERTIFICATION # 2402

WELL CONTRACTOR COMPANY NAME GEOLOGIC EXPLORATION, INC. PHONE # (704) 872-7686

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, list Use _____

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
HWY 421/801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐ GPS ☐ Topographic map
(check box)

3. OWNER: PROGRESS ENERGY CAROLINAS, INC.
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
( )
Area Code – Phone Number

4. DATE DRILLED 05/25/04
5. TOTAL DEPTH: 11.0 FEET
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 2.0 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A
11. DISINFECTION: Type N/A Amount _____

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0.0	1.0	GRASS/TOPSOIL
1.0	5.0	GREY/BLACK SILTY SAND
5.0	11.0	GREY/TAN SILTY SAND

12. CASING:

	Depth From	To	Ft	Diameter	Wall Thickness or Weight/Ft.	Material
	0.0	1.0	Ft	2 INCH	SCH 40	PVC
			Ft.			
			Ft.			

13. Grout:

	Depth From	To	Ft.	Material	Method
			Ft.	Portland Bentonite	Slurry
			Ft.		

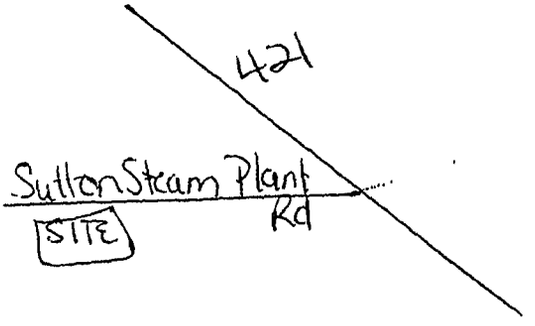
14. SCREEN:

	Depth From	To	Ft.	Diameter	Slot Size	Material
	1.0	11.0	Ft.	2.0 in.	.010 in	PVC
			Ft.	in.	in	

15. SAND/GRAVEL PACK:

	Depth From	To	Ft.	Size	Material
	0.5	11.0	Ft.	20-40	FINE SILICA SAND
			Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads, inculed the road numbers and common road names.



16. REMARKS: MW-15 BENTONITE SEAL FROM 0.0 TO 0.5 FEET

I DO HEARBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Mike McConahey 5/31/04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center – Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

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Date Started/Finish: 5/25/04
Drilling Company: Geologic Exploration
Driller's Name: Mike McConahey
Drilling Method: HSA
Bit Size: NA
Auger Size: 4.25 I.D.
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 19647565
Easting: 230604401
Casing Elevation: 11.47 ft

Borehole Depth: 11.0 ft bls
Surface Elevation: 8.53 ft

Logged by: Daniel C.H. Peterman

Well/Boring ID: MW-15 (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
	10								
0									Topsoil, high organic content, slightly damp to damp, no odor.
						0.0			SAND (SM), gray, fine to medium grained, loose, moist to wet, no odor.
						0.0			SAND (SM), gray, fine to medium grained, loose, saturated, no odor.
5			24	5 2 4 5	6	0.0			SAND (SM), light gray, mottled white, fine to medium grained, loose, saturated, no odor.
									SAND (SM), dark brown, fine grained, loose, saturated, no odor.
0			24	4 3 4 5	7	0.0			
10									SAND (SM), tan, fine grained, loose, saturated, no odor.
									Boring terminated at 12.0 ft bls

Well/Boring Construction

- protective above ground steel casing (3.0'-0.0')
- Cement pad (2'x2')
- Bentonite grout
- Bentonite chips (0.5'-0.25')
- 2-inch SCH 40 PVC riser (1.0' - +3.0')
- 8.25-inch nominal borehole (11.0'-0.0')
- Well Gravel Pack No. 2 (11.0' - 0.5')
- 2-inch 0.010 slot PVC screen (11.0' - 1.0')

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Remarks:
HSA: Hollow Stem Auger
NA: Not Applicable
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
6/22/04	2.94	8.53

Depth measured from top of casing

Project: 04010
Data File:MW-15
Template:boring_wellWL2003.ldf
Date: 06/01/04

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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) ARNOLD CHAPEL CERTIFICATION # 2487

WELL CONTRACTOR COMPANY NAME PARRATT-WOLFF, INC. PHONE # (919) 644-2814

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
   Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use

2. WELL LOCATION:
   Nearest Town: WILMINGTON County NEW HANOVER
   801 SUTTON STEAM PLANT ROAD
   (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

   Topographic/Land setting
   ☐Ridge ☐Slope ☐Valley ☐Flat
   (check appropriate box)
   Latitude/longitude of well location
   N34 16.99'/W77 58.98'
   (degrees/minutes/seconds)
   Latitude/longitude source: ☐GPS ☒Topographic map
   (check box)

3. OWNER: PROGRESS ENERGY
   Address 801 SUTTON STEAM PLANT ROAD
   (Street or Route No.)
   WILMINGTON NC 28401
   City or Town State Zip Code
   (___)-
   Area code- Phone number

4. DATE DRILLED 1/31/05
5. TOTAL DEPTH: 47.5'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 2.0 FT.
   (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface*
   ***Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.**
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0	13.0'	White/brown/gray, wet, very loose/dense, fine/coarse SAND; trace silt
13.0	47.5	Green/gray, moist, hard SILT and fine SAND; trace clay

11. DISINFECTION: Type N/A Amount N/A
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 40	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 35.5	Ft.	PORTLAND	TREMIE
From 35.5	To 37.5	Ft.	BENTONITE	TREMIE

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 40	To 45	Ft.	2	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 37.5	To 47.5	Ft.	#1	SAND
From	To	Ft.		

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: MW-15D SEE MAP ON BACK

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Arnold Chapel — 2/18/05

SIGNATURE OF PERSON CONSTRUCTING THE WELL — DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Oct 30 2019

Drilling Company: Parratt Wolffe
Driller's Name: Arnold Chapel
Drilling Method: Mud Rotary
Bit Size: 5.87-inch roller-bit
Auger Size:
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 196476.98
Easting: 2306061.06
Casing Elevation: 11.21

Borehole Depth: 48 ft bgs
Surface Elevation: 8.61

Logged by: Brian Lovgren

Well/Boring ID: MW-15D (PADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10								protective above ground steel casing (+2.6'-0.0')
	0								Cement pad (2'x2')
								Topsoil, high organic content, slightly damp to damp, no odor.	
								SAND (SM), gray, fine to medium grained, loose, moist to wet, no odor.	2-inch SCH 40 PVC riser (40.0' - +2.5')
	5							SAND (SM), gray, fine to medium grained, loose, wet, no odor.	
			2.0'	5 2 4 5	6	0.0		SAND (SM), light gray, mottled white, fine to medium grained, loose, wet, no odor.	Bentonite grout (35.5' - 0.0')
	0							SAND (SM), dark brown, fine grained, loose, wet, no odor.	
			2.0'	4 3 4 5	7	0.0			6-inch nominal borehole (45.0'-0.0')
								SAND (SM), tan, fine grained, loose, wet, no odor.	
	-5		1.0'	2 1 1 2	2	0.0		SAND (SM), tan, fine to medium grained, very loose, wet, no odor.	
	-10		1.2'	9 12 13 13	25	0.0		SAND (SM), tan, fine to medium grained, medium dense, wet, no odor.	2-inch SCH 40 PVC riser (40.0' - +2.5')
	-15		0.8'	4 3 3 3	6	0.0		SAND (SM), tan, fine to coarse grained, loose, wet, no odor.	

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Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photolonization Detector
NR: No Recovery

Water Level Data

Date	Depth	Elev.
2/4/05	3.13	8.08

Depth measured from top of casing*

Project: 04015
Data File:MW-15D

Template:boring_wellWL2005.ldf
Date: 3/16/05

OFFICIAL COPY
Oct 30 2019

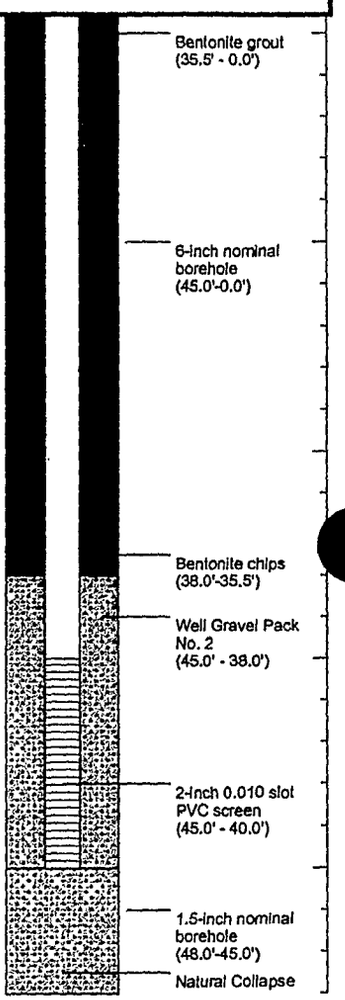
Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-15D (FADA)

Borehole Depth: 48 ft bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
25 / -20			0.8'	3 3 3 4	6	0.0			
30 / -25			1.0'	5 8 11 13	19	0.0			SAND (SM), tan, fine to coarse grained, medium dense, wet, no odor.
35 / -30			1.0'	10 11 14 15	15	0.0			SAND (SM). brown, mottled orange, fine to coarse grained, medium dense, wet, no odor.
40 / -35			1.2'	3 2 4 3	6	0.0			SAND (SM). brown, fine to coarse grained, medium dense, wet, no odor. SAND (SM). brown, mottled orange, fine to coarse grained, loose, wet, no odor.
45			1.2'	24 45 34 NR	79	0.0			SAND (SM). dark gray, silt to fine fine grained, very dense, wet, no odor.



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Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photolonization Detector
NR: No Recovery

Water Level Data

Date	Depth	Elev.
2/4/05	3.13	8.08

Depth measured from top of casing*

Project: 04015
Data File:MW-15D

Template:boring_wellWL2005.ldf
Date: 3/16/05

SAEDACCO

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Rich Lemire CERTIFICATION # 2593

WELL CONTRACTOR COMPANY NAME SAEDACCO PHONE # (803) 548-2180

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Wilmington County Brunswick
801 Sutton Electric Steam Plant Road
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☒Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☐Topographic map
(check box)

3. OWNER: Sutton Steam Plant
Address 801 Sutton Electric Steam Plant
(Street or Route No.)
Wilmington NC
City or Town State Zip Code
(___)-_____
Area code- Phone number

4. DATE DRILLED 6-7-2004
5. TOTAL DEPTH: 12
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 7.6' FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS ~3' FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. DISINFECTION: Type _____ Amount _____

DEPTH From	To	DRILLING LOG Formation Description
0	12	Tan Sand

12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 2	Ft.	2"	Sch 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0.5	To 0	Ft.	Portland Cement	Poured
From	To	Ft.		

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 2	To 12	Ft.	2"	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 1.0	To 12	Ft.	#2	Sand
From	To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: Bentonite Seal fro 1.0' to 0.5' MW-16

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Rich Lemire 6-7-04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Oct 30 2019

Drilling Company: SAEDACCO
Driller's Name: Rich Lemire
Drilling Method: HSA
Bit Size: NA
Auger Size: 4.25-inch I.D.
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 1969793
Easting: 230675316
Casing Elevation: 16.91 ft

Borehole Depth: 12.0 ft bls
Surface Elevation: 14.11 ft

Logged by: Daniel C.H. Peterman

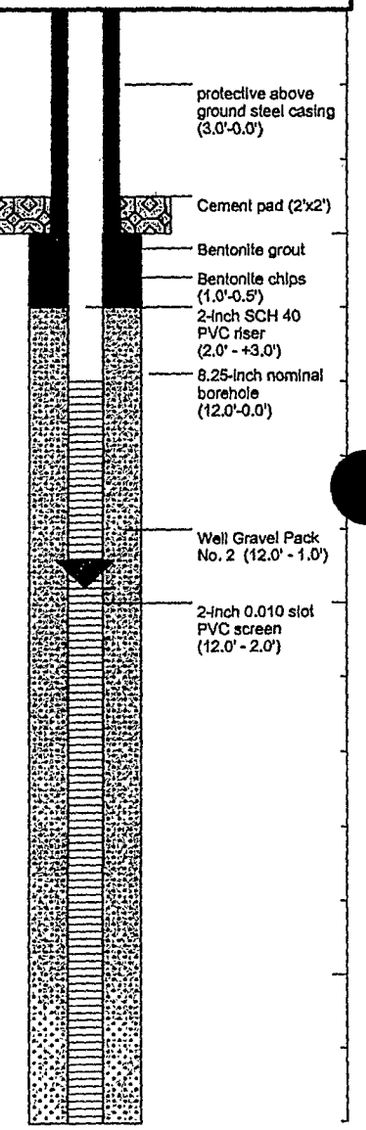
Well/Boring ID: MW-16 (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
						2.9			SAND (SM), brown, fine grained, very loose, trace organics, dry, no odor.
						0.0			SAND (SM), white, mottled tan, fine, very loose, dry, no odor.
10	5		24	1 2 2 1	4	0.0			SAND (SM), white, mottled tan, fine, very loose, wet to saturated, no odor.
			24	1 6 6 7	12	0.0			SAND (SM), light gray, mottled white, fine to medium grained, medium dense, saturated, no odor.
15	0								Boring terminated at 12.0 ft bls
	5								
	10								

Well/Boring Construction



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Remarks:
HSA: Hollow Stem Auger
NA: Not Applicable
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photolonization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	7.60	9.31 ft

Depth measured from top of casing

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WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) ARNOLD CHAPEL CERTIFICATION # 2487

WELL CONTRACTOR COMPANY NAME PARRATT-WOLFF, INC. PHONE # (919) 644-2814

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
N34 16.99'/W77 58.98'
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☒Topographic map
(check box)

3. OWNER: PROGRESS ENERGY
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
(___)-
Area code- Phone number

4. DATE DRILLED 1/26-1/27/05
5. TOTAL DEPTH: 50.5'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 4.5 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A
11. DISINFECTION: Type N/A Amount N/A
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 42	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 36	Ft.	PORTLAND	TREMIE
From 36	To 40	Ft.	BENTONITE	TREMIE

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 42	To 47	Ft.	2	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 40	To 50.5	Ft.	#1	SAND
From	To	Ft.		

DEPTH From	To	DRILLING LOG Formation Description
0	16.0'	White/brown/gray, wet, loose/ medium dense, fine/coarse SAND; some fine gravel; trace silt
16.0	49.0	Green, wet, very dense fine/ medium SAND; trace silt

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: MW-16D SEE MAP ON BACK

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Arnold M. Chapel 2/18/05
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Date Start/Finish: 1/26/05
Drilling Company: Parratt Wolffe
Driller's Name: Arnold Chapel
Drilling Method: Mud Rotary
Bit Size: 5.87-inch roller-bit
Auger Size:
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 196962.70
Easting: 2306758.11
Casing Elevation: 16.43
Borehole Depth: 47 ft bgs
Surface Elevation: 14.00
Logged by: Brian Lovgren

Well/Boring ID: MW-16D (FADA)
Client: Progress Energy Carolinas Inc.
Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 inches	N - Value	PID (ppm)	Geologic Column	Stratigraphic Description
0	15					2.9		SAND (SM), brown, fine grained, very loose, trace organics, dry, no odor.
						0.0		SAND (SM), white, mottled tan, fine, very loose, dry, no odor.
5	10		2.0'	1 2 2 1	4	0.0		SAND (SM), white, mottled tan, fine, very loose, wet , no odor.
10	5		2.0'	1 6 6 7	12	0.0		SAND (SM), light gray, mottled white, fine to medium grained, medium dense, wet, no odor.
15	0		1.0'	4 10 16 13	26	0.0		
20	-5		1.0'	5 5 4 4	9	0.0		SAND (SM), tan, fine, loose, wet, no odor.
	-10		1.2'	5 5 4	9	0.0		SAND (SM), tan, fine to coarse grained, loose, wet, no odor.

Well/Boring Construction:
- protective above ground steel casing (+2.43'-0.0')
- Cement pad (2'x2')
- 2-inch SCH 40 PVC riser (42.0' - +2.5')
- Bentonite grout (36.0 - 0.0')
- 6-inch nominal borehole (47.0'-0.0')

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engineers, scientists, economists

Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector

Water Level Data

Date	Depth	Elev.
2/4/05	6.38	10.05

Depth measured from top of casing*

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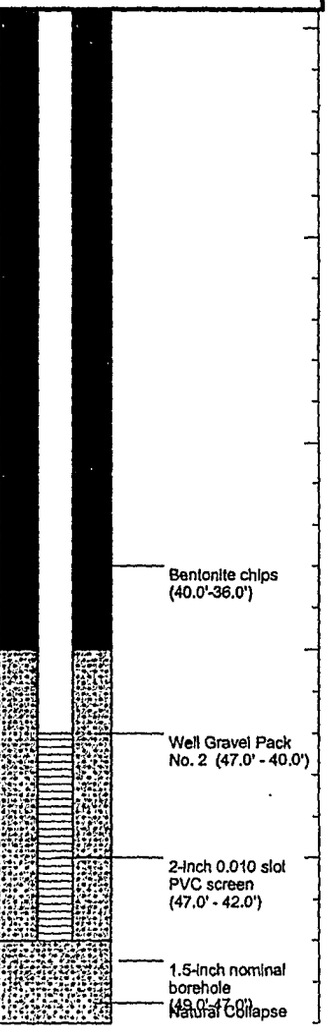
Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-16D (FADA)

Borehole Depth: 47 ft bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
25				8					
-15 / 30			1.0'	2 1 2 2	3	0.0			
-20 / 35			1.0'	2 2 3 2	5	0.0			
-25 / 40			1.0'	1 2 3 3	5	0.0			SAND (SM), tan, mottled orange, fine to coarse grained, loose, wet, no odor.
-30 / 45			1.0'	9 11 8 6	19	0.0			
-35			1.5'	10 19 16 24	35	0.0			SAND (SM), gray, fine, dense, wet, no odor. Boring terminated at 49.0 ft bls



Well/Boring Construction

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Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector

Water Level Data

Date	Depth	Elev.
2/4/05	6.38	10.05

Depth measured from top of casing*

Project: 04015
Data File:MW-16D

Template:boring_wellWL2005.ldf
Date: 3/15/05

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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Robert Miller CERTIFICATION # 2675

WELL CONTRACTOR COMPANY NAME SAEDACCO, Inc. PHONE # (803) 548-2180

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: WILMINGTON County BRUNSWICK
801 SUTTON STEAM PLANT RD.
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☒Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☐Topographic map
(check box)

3. OWNER: Progress Energy / Sutton Electric Steam Plant
Address 801 Sutton Steam Plant RD.
(Street or Route No.)
WILMINGTON NC
City or Town State Zip Code
( )- _____
Area code- Phone number

4. DATE DRILLED 6-14-04
5. TOTAL DEPTH: 50'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: [redacted] 20'
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3' FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____

DEPTH From	To	DRILLING LOG Formation Description
0	50'	TN medium TO FINE SAND

11. DISINFECTION: Type _____ Amount _____
12. CASING:

	Depth To	Diameter Ft.	Wall Thickness or Weight/Ft.	Material
From 0	45'	2"	SCH 40	PVC
From				
From				

13. GROUT:

	Depth To	Material	Method
From 0	41'	PORTLAND	Trimi
From			

14. SCREEN:

	Depth To	Diameter Ft.	Slot Size	Material
From 45'	50'	2" in.	.010 in.	PVC
From		in.	in.	

15. SAND/GRAVEL PACK:

	Depth To	Size	Material
From 43'	50'	20/30	SILICA SAND
From			

16. REMARKS: 2' Bentonite seal 41' to 43'

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

See site MAP MW-17

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Robert L. Miller 6-16-04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

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Well/Boring ID: MW-17D (OAP)

Driller's Name: Rich Lemire/Robert Miller
Drilling Method: HSA and Mud Rotary
Bit Size: 5.87-inch
Auger Size: 4.25-inch I.D.
Rig Type: Diedrich D-50 Track Mounted Rig
Sampling Method: 24-inch splitspoon

Easting: 230671803
Casing Elevation: 30.76 ft

Borehole Depth: 50 ft bls
Surface Elevation: 27.94 ft

Logged by: Daniel C.H. Peterman

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH / ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
0					0.0			SAND (SM), brown, mottled tan, fine grained, very loose, dry, no odor.
					0.0			SAND (SM), tan, mottled gray, fine grained, very loose, dry, no odor.
5		19	3 3 3 5	6	0.0			SAND (SM), tan, mottled white, fine grained, loose, dry, no odor.
		20	2 3 3 4	6	0.0			
20		19	2 4 5 5	9	0.0			

Well/Boring Construction:
- protective above ground steel casing (+3.0' - 0.5')
- Cement pad (2'x2')
- 2-inch SCH 40 PVC riser (45' - +3')

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engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.30	10.46

Depth measured from top of casing*

Project: 04010
Data File:MW-17 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Oct 30 2019

Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-17 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
			15	4 5 4 5	9	0.0			SAND (SM), brown, fine grained, loose, moist, no odor.	5.87-inch nominal borehole (50.0' - 0.0')
			18	4 5 5 6	10	0.0			SAND (SM), tan, mottled brown, fine grained, loose, moist, no odor.	
15			24	3 5 6 5	11	27.4			SAND (SM), brown, mottled white, fine grained, loose, moist, no odor.	
15			19	4 4 5 5	9	0.0			SAND (SM), tan, mottled white, fine grained, loose, moist to wet, no odor.	Bentonite grout (41' - 0')
10			24	3 4 6 6	10	1.6				
20			10	2 4 5 5	9	0.0				
			19	5 10 10 15	20	0.0				
5										

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.30	10.46

Depth measured from top of casing*

Project: 04010
Data File:MW-17 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

OFFICIAL COPY
Oct 30 2019

Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-17 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
			16	9 6 12 11	18	0.0			SAND (SM), tan to white, fine grained, medium dense, saturated, no odor.	
25										
			19	15 15 17 21	32	0.0			SAND (SM), tan, mottled white, fine to medium grained, dense, saturated, no odor.	
0			23	14 14 18 17	32	2.2			SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (90%), trace fine gravel (10%), dense, saturated, no odor.	
30			16	10 13 20 20	33	1.5			SAND and GRAVEL (GM), tan, fine grained (50%), fine gravel (50%), dense, saturated, no odor.	
									SAND (SM), light gray, silt to fine grained, medium dense, saturated, no odor.	
			12	5 10 14 15	24	0.0				
-5									SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (50%), fine gravel (50%), medium dense, saturated, no odor.	
			16	7 10 9 9	19	0.0			SAND and GRAVEL (GM), white, mottled tan, fine to medium grained (90%), fine gravel (10%), medium dense, saturated, no odor.	
35										
			15	9 15 15 14	30	0.0			SAND (SM), light gray, fine grained, trace coarse grains (10%), medium dense to dense, saturated, no odor.	

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Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.30	10.46

Depth measured from top of casing*

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Oct 30 2019

Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-17 (OAP)

Borehole Depth: 50 ft bls

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
-10			14	6 6 5 6	11	0.0			SAND and GRAVEL (GM), light gray, fine to coarse grained (95%), trace fine gravel (5%), medium dense, saturated, no odor.	
40			11	4 6 12 12	18	0.0				
			13	6 10 10 14	20	0.0			SAND, GRAVEL and CLAY (GC), light gray, mottled white, fine to coarse grained (70%), fine gravel (29%), medium dense, saturated, no odor.	Bentonite chips (43' - 41')
-15									CLAY stringer (CL) (43.1' - 43.2'), gray, silty, medium plasticity, very soft, wet, no odor.	
			11	7 9 12 12	21	0.0			SAND, GRAVEL, and CLAY (GC), light gray, mottled white, fine to medium grained (89%), fine gravel (10%), medium dense, trace clay, saturated, no odor.	Well Gravel Pack No. 2 (50.0' - 43.0')
45			12	7 9 11 6	20	0.0			SAND and GRAVEL (GM), light gray, mottled white, fine to medium grained (95%), trace fine gravel (5%), medium dense, wet, no odor.	
-20			12	11 13 13 14	26	0.0			SAND (SM), light gray, fine to medium grained, medium dense, saturated, no odor.	2-inch 0.010 slot PVC screen (45.0' - 50.0')
									Boring terminated at 50.0 ft bls	
50										

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.30	10.46

Depth measured from top of casing*

Project: 04010
Data File:MW-17 (OAP)

Template:boring_wellWL2003.ldf
Date: 07/01/04

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Rich Lemire CERTIFICATION # 2593

WELL CONTRACTOR COMPANY NAME SAEDACCO PHONE # (803) 548-2180

STATE WELL CONSTRUCTION PERMIT# (if applicable) _____ ASSOCIATED WQ PERMIT# (if applicable) _____

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Wilmington County Brunswick
801 Sutton Electric Steam Plant Road
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☒Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
_____
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☐Topographic map
(check box)

3. OWNER: Sutton Steam Plant
Address 801 Sutton Electric Steam Plant
(Street or Route No.)
Wilmington NC
City or Town State Zip Code
(___)-_____
Area code- Phone number

4. DATE DRILLED 6-10-2004
5. TOTAL DEPTH: 50'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 10.6' FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3' FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): _____ METHOD OF TEST _____
10. WATER ZONES (depth): _____
11. DISINFECTION: Type _____ Amount _____

DEPTH From	To	DRILLING LOG Formation Description
0	50	Tan Sand w/Quartz Stone Mix

12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 45	Ft.	2"	Sch 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 39	Ft.	Portland Cement	Trammie
From	To	Ft.		

14. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2" in.	.010 in.	PVC
From	To	Ft.	in.	in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	# 2	Sand
From	To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: Bentonite Seal fro 43' to 39' MW-18

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Richy Lemire 6-10-04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

OFFICIAL COPY
Oct 30 2019

Driller's Name: Rich Lemire
Drilling Method: HSA and Mud Rotary
Bit Size: 2.87-inch & 5.87-inch
Auger Size: 4.25-inch I.D.
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Easting: 230658818
Casing Elevation: 22.01 ft
Borehole Depth: 50 ft bls
Surface Elevation: 19.27 ft
Logged by: Daniel C.H. Peterman

Well/Boring ID: MW-18 (OAP)
Client: Progress Energy Carolinas Inc.
Location: Progress Energy L.V. Sutton Steam Electric Plant, Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
0	20					1.1			SAND (SM), gray, mottled brown, fine grained, very loose, dry, no odor.
						1.8			SAND (SM), white, mottled gray, fine grained, very loose, dry, no odor.
5	15		17	3 3 4 5	7	1.1			SAND (SM), brown, mottled white, fine grained, loose, damp, no odor.
			14	3 4 4 5	8	3.4			SAND (SM), tan, fine grained, loose, damp to wet, no odor.
			15	3 4 5 5	9	1.9			
10	10								

Well/Boring Construction:
- protective above ground steel casing (+3.0' - 0.5')
- Cement pad (2'x2')
- 2-inch SCH 40 PVC riser (45' - +3')

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	10.64	11.37

Depth measured from top of casing*

Project: 04010
Data File:MW-18 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-18 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
			15	4 8 15 20	23	3.6			SAND (SM), tan, fine grained, medium dense, wet, no odor.	5.87-inch nominal borehole (50.0' - 0.0')
			20	5 15 24 25	39	4.8			SAND (SM), tan, mottled white, fine grained, dense, wet, no odor.	
5			15	1 5 10 14	15	3.7			SAND (SM), tan, mottled white, fine grained, medium dense, wet, no odor.	
15										Bentonite grout (39' - 0')
			18	8 21 25 29	46	0.0			SAND (SM), light gray, fine to medium grained, dense, wet, no odor.	
			12	9 12 23 30	35	3.1			SAND (SM), tan, fine to medium grained, dense, wet, no odor.	
0										
20			12	17 19 24 22	43	0.5			SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (50%), fine gravel (50%), dense, wet, no odor.	
			13	8 10 12 10	22	0.0			SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (80%), fine gravel (20%), medium dense, wet, no odor.	

BBL
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engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	10.64	11.37

Depth measured from top of casing*

OFFICIAL COPY
Oct 30 2019

Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-18 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
-5 / 25			11	5 7 7 8	14	2.5			SAND (SM), tan, mottled white, fine to medium grained, medium dense, wet, no odor.	
			8	7 6 6 4	12	2.8			SAND and GRAVEL (GM), light gray, mottled white, fine to medium grained (95%), trace fine gravel (5%), medium dense, visibe iron staining at 28', wet, no odor.	
-10 / 30			0	1 1 2 1	3	1.8			SAND and GRAVEL (GM), white, mottled tan, fine to medium grained (90%), fine gravel (10%), very loose , black staining at 30', saturated, no odor.	
			0						No recovery due to apparent void. Continuous spoon drop and significant lose of drilling fluids from 30' to 38'.	
			0							
-15 / 35			0							
			0							

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	10.64	11.37

Depth measured from top of casing*

Project: 04010
Data File:MW-18 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Oct 30 2019

Progress Energy Carolinas Inc.

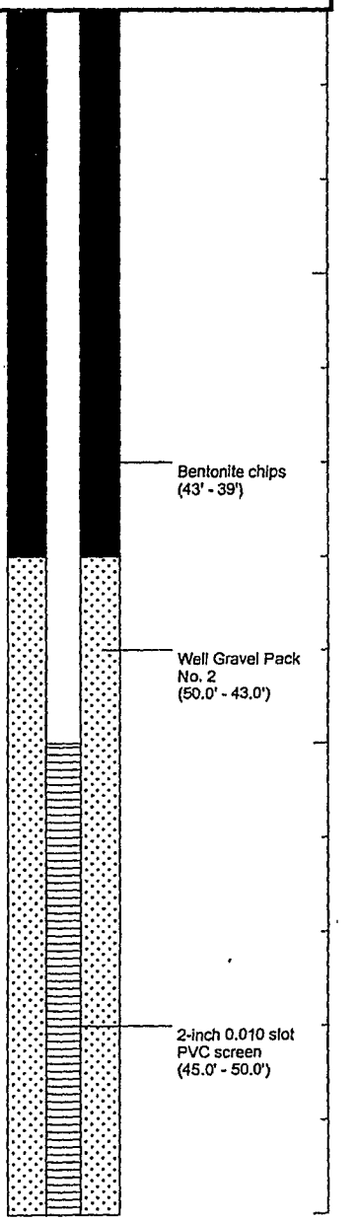
Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-18 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
			20	2 7 7 2	14	2.6			SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (50%), fine gravel (50%), medium dense, saturated, no odor.
									CLAY stringer (CL), gray, mottled reddish brown, silty, medium plasticity, very soft, wet, no odor, 39.1' to 39.3'.
-20									SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (40%), fine gravel (60%), medium dense to dense, visible iron staining, saturated, no odor.
40			15	9 13 18 19	31	0.2			
									SAND (SM), white, fine grained, dense, wet, no odor.
			2	5 10 16 13	26	0.0			SAND and GRAVEL (GM), white, fine to medium grained (95%), fine gravel (5%), medium dense, wet, no odor.
-25									
45			12	3 5 6 14	13	0.0			SAND and GRAVEL (GM), white, fine to coarse grained (90%), fine gravel (10%), medium dense, visible iron staining, wet, no odor.
			16	10 13 17 9	30	0.0			SAND and GRAVEL (GM), reddish brown, mottled white, fine to medium grained (80%), fine gravel (20%), dense, wet, no odor.
-30									Boring terminated at 50.0 ft bls
50									

Well/Boring Construction



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	10.64	11.37

Depth measured from top of casing*

Project: 04010
Data File:MW-18 (OAP)

Template:boring_wellWL2003.ldf
Date: 07/01/04

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Robert Miller CERTIFICATION # 2675

WELL CONTRACTOR COMPANY NAME SAEDACCO PHONE # (803) 548-2180

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use

2. WELL LOCATION:
Nearest Town: Wilmington County Brunswick
801 Sutton Electric Steam Plant Road
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☐Topographic map
(check box)

3. OWNER: Sutton Steam Plant
Address 801 Sutton Electric Steam Plant
(Street or Route No.)
Wilmington NC
City or Town State Zip Code
(___)-
Area code- Phone number

4. DATE DRILLED 6-15-2004
5. TOTAL DEPTH: 50'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 20.6' FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 3' FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): _____ METHOD OF TEST
10. WATER ZONES (depth):
11. DISINFECTION: Type Amount
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 45	Ft.	2"	Sch 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 41	Ft.	Portland Cement	Tremmie
From	To	Ft.		

14. SCREEN:

	Depth		Diameter	Slot Size	Material
From 45	To 50	Ft.	2" in.	.010 in.	PVC
From	To	Ft.	in.	in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 43	To 50	Ft.	#2	Sand
From	To	Ft.		

DEPTH From	To	DRILLING LOG Formation Description
0	32	Sand (Fine to Medium)
32'	50'	Sand / Gravel

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.
See site map MW-19

16. REMARKS: Bentonite Seal fro 41' to 43' MW-19

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Robert L. Miller 6-16-04
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Drilling Company: SAEDACCO
Driller's Name: Robert Miller
Drilling Method: Mud Rotary
Bit Size: 2.87-inch & 5.87-inch
Auger Size: NA
Rig Type: Diedrich D-50 Track Mounted Rig
Sampling Method: 24-inch splitspoon

Easting: 230704138
Casing Elevation: 31.50 ft

Borehole Depth: 50 ft bls
Surface Elevation: 28.73 ft

Logged by: Daniel C.H. Peterman

Well/Boring ID: MW-19 (OAP)
Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
						0.0			SAND (SM), light gray to dark brown, fine grained, very loose, dry, no odor.
						0.0			SAND (SM), tan, mottled brown, fine grained, very loose, dry, no odor.
			17	1 1 2 4	3	0.0			
			18	2 2 2 3	4	0.0			SAND (SM), tan, fine grained, very loose, dry, no odor.
			10	3 5 6 0	11	0.0			SAND (SM), tan, fine grained, medium dense, damp to moist, no odor.

30
0
25
5
20
-10

Well/Boring Construction:
- protective above ground steel casing (+3.0' - 0.5')
- Cement pad (2'x2')
- 2-inch SCH 40 PVC riser (45' - +3')

BBL
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engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photolonization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.62	10.88

Depth measured from top of casing

Project: 04010
Data File:MW-19 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Oct 30 2019

Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-19 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
			12	5 6 10 11	16	0.0			SAND (SM), tan, fine grained, medium dense, damp to moist, no odor.
			15	8 12 15 15	27	0.0			
15			15	8 10 11 12	21	0.0			
15			14	4 6 6 8	12	0.0			SAND (SM), tan, mottled white, fine grained, dense, moist, no odor.
			16	6 7 10 12	17	0.0			SAND (SM), tan, mottled brown, fine to medium grained, medium dense, moist, no odor.
10									
20			17	2 4 7 11	11	0.0			Clayey SAND (SC), tan, fine to medium grained, medium dense, visible iron staining, wet, no odor.
			17	7 10 12 12	22	0.0			

Well/Boring Construction

5.87-inch nominal borehole (50.0' - 0.0')

Bentonite grout (41' - 0')

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.62	10.88

Depth measured from top of casing*

Project: 04010
Data File:MW-19 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

OFFICIAL COPY
Oct 30 2019

Client: Progress Energy Carolinas Inc.

Site Location: Progress Energy L.V. Sutton Steam Electric Plant

Well/Boring ID: MW-19 (OAP)

Borehole Depth: 50 ft bls

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description	Well/Boring Construction
5			15	12 17 20 27	37	0.0			SAND (SM), tan, mottled white, fine to medium grained, dense, wet, no odor.	
25			16	14 18 20 22	38	0.0				
			16	13 18 19 20	37	0.0			SAND (SM), tan, mottled white, fine to medium grained, dense, wet, no odor.	
0										
0			15	11 18 24 22	42	0.0				
									SAND (SM), light gray, mottled white, fine grained, dense, wet, no odor.	
			13	12 14 12 14	26	0.0			SAND and GRAVEL (GM), tan, mottled white, fine to medium grained (98%), trace fine gravel (2%), medium dense, visibe iron staining, wet, no odor.	
-5			15	11 15 12 11	27	0.0			SAND and GRAVEL (GM), light gray, mottled tan, fine to medium grained (90%), fine gravel (10%), medium dense, visibe iron staining, wet, no odor.	
35									Clayey SAND (SC), light gray, low plasticity, very soft, fine grained, wet, no odor.	
			16	8 9 10 14	19	0.0			SAND and GRAVEL (GM), light gray, mottled tan and white, fine to medium grained (95%), trace fine gravel (5%), medium dense, wet, no odor.	

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.62	10.88

Depth measured from top of casing*

Project: 04010
Data File:MW-19 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Oct 30 2019

Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-19 (OAP)

Borehole Depth: 50 ft bls

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
-10			16	11 12 14 14	26	0.0			SAND and GRAVEL (GM), tan, mottled light gray, medium grained (95%), trace fine sand and gravel (5%), medium dense, saturated, no odor.
40			15	7 7 6 8	13	0.0			
			15	8 9 8 7	17	0.0			
-15			12	2 4 5 10	9	0.0			SAND and GRAVEL (GM), light gray, mottled tan, coarse grained (90%), fine gravel (10%), loose, saturated, no odor.
45			15	9 11 12 10	23	0.0			SAND (SM), light gray to tan, fine to medium grained, medium dense, visible iron staining, wet, no odor.
-20			15	10 12 12 11	24	0.0			SAND (SM), light grey to tan, fine grained, medium dense, wet, no odor.
50									Boring terminated at 50.0 ft bls

Well/Boring Construction

- Bentonite Slurry (42' - 41')
- Bentonite chips (43' - 42')
- Well Gravel Pack No. 2 (50.0' - 43.0')
- 2-inch 0.010 slot PVC screen (45.0' - 50.0')

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
HSA: Hollow Stem Auger
ft bls: feet below land surface
Air Monitoring Equipment: PID, V-RAE, and PDR-1000
PID: Photoionization Detector
V-RAE: Multi-Gas meter
PDR-1000: Particulate meter

Water Level Data

Date	Depth	Elev.
06/22/04	20.62	10.88

Depth measured from top of casing*

Project: 04010
Data File:MW-19 (OAP)
Template:boring_wellWL2003.ldf
Date: 07/01/04

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Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) ARNOLD CHAPEL CERTIFICATION # 2487

WELL CONTRACTOR COMPANY NAME PARRATT-WOLFF, INC. PHONE # (919) 644-2814

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
N34 16.99'/W77 58.98'
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☒Topographic map
(check box)

3. OWNER: PROGRESS ENERGY
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
(___)-
Area code- Phone number

4. DATE DRILLED 2/2/05
5. TOTAL DEPTH: 14.0'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 5.5 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A

DEPTH From	DEPTH To	DRILLING LOG Formation Description
NO SAMPLES TAKEN		

11. DISINFECTION: Type N/A Amount N/A
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 4	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 1	Ft.	PORTLAND	TREMIE
From 1	To 3	Ft.	BENTONITE	TREMIE

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 4	To 14	Ft.	2	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 3	To 14	Ft.	#1	SAND
From	To	Ft.		

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

16. REMARKS: MW-20 SEE MAP ON BACK

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Arnold L. Chapel 2/18/05
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days. GW-1 REV. 07/2001

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Oct 30 2019

Date Start/Finish: 2/2/05
Drilling Company: Parratt Wolffe
Driller's Name: Arnold Chapel
Drilling Method: HSA
Bit Size: NA
Auger Size: 3.25-inch (ID)
Rig Type: B-61 Mobile Rig
Sampling Method:

Northing: 196257.98
Easting: 2305318.10
Casing Elevation: 13.70

Borehole Depth: 14 ft bgs
Surface Elevation: 10.78

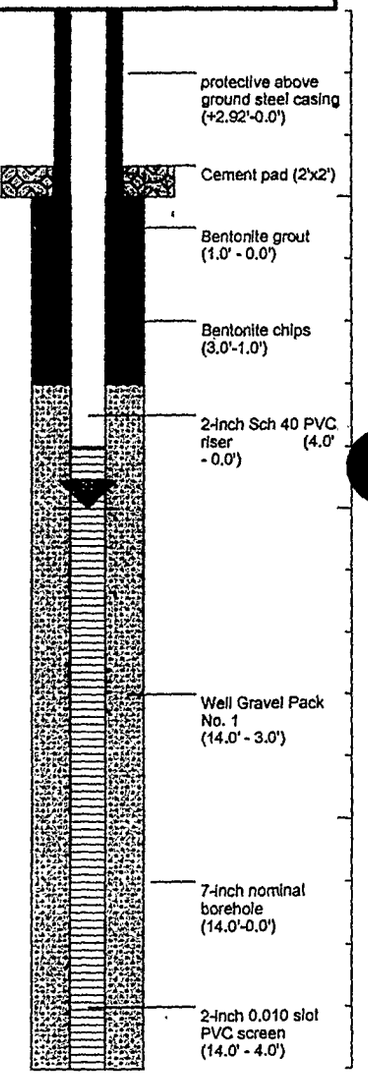
Logged by: Brian Lovgren

Well/Boring ID: MW-20 (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 inches	N - Value	PID (ppm)	Geologic Column	Stratigraphic Description
0	10		1.0'	3 2 3 2	5	0.0		SAND (SM), black, fine to medium grained, loose, damp, no odor.
5								SAND (SM), brown, mottled orange, fine to medium grained, loose, wet, no odor.
10	0		1.0'	5 5 5 7	10	0.0		SAND (SM), brown to light gray, fine to medium grained, loose to medium dense, wet, no odor.



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engineers, scientists, economists

Remarks:
HSA: Hollow-Stem Auger
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector

Water Level Data

Date	Depth	Elev.
2/4/05	7.92	5.78

Depth measured from top of casing*

Project: 04015
Data File:MW-20
Template:boring_wellWL2005.ldf
Date: 3/16/05

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) ARNOLD CHAPEL CERTIFICATION # 2487

WELL CONTRACTOR COMPANY NAME PARRATT-WOLFF, INC. PHONE # (919) 644-2814

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐ Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use

2. WELL LOCATION:
Nearest Town: WILMINGTON County NEW HANOVER
801 SUTTON STEAM PLANT ROAD
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
☐Ridge ☐Slope ☐Valley ☐Flat
(check appropriate box)
Latitude/longitude of well location
N34 16.99'/W77 58.98'
(degrees/minutes/seconds)
Latitude/longitude source: ☐GPS ☒Topographic map
(check box)

3. OWNER: PROGRESS ENERGY
Address 801 SUTTON STEAM PLANT ROAD
(Street or Route No.)
WILMINGTON NC 28401
City or Town State Zip Code
(___)-
Area code- Phone number

4. DATE DRILLED 2/1/05
5. TOTAL DEPTH: 52.0'
6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
7. STATIC WATER LEVEL Below Top of Casing: 5.5 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface*
*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): N/A METHOD OF TEST N/A
10. WATER ZONES (depth): N/A

DEPTH From	DEPTH To	DRILLING LOG Formation Description
0	5.0'	Black/brown, wet, dense/loose, fine/coarse SAND; trace fine/coarse gravel and silt
5.0	25.0	Gray, wet, dense/loose, fine/coarse SAND
25.0	42.0	Gray, wet, very loose, fine SAND
42.0	52.0	Green, wet, very dense, fine SAND; trace clay and silt

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type N/A Amount N/A
12. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 0	To 43	Ft.	2"	SCH 40	PVC
From	To	Ft.			
From	To	Ft.			

13. GROUT:

	Depth		Material	Method
From 0	To 37	Ft.	PORTLAND	TREMIE
From 37	To 41	Ft.	BENTONITE	TREMIE

14. SCREEN:

	Depth		Diameter		Slot Size		Material
From 43	To 48	Ft.	2	in.	.010	in.	PVC
From	To	Ft.		in.		in.	

15. SAND/GRAVEL PACK:

	Depth		Size	Material
From 41	To 52	Ft.	#1	SAND
From	To	Ft.		

16. REMARKS: MW-20D SEE MAP ON BACK

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Arnold L. Chapel 2/18/05
SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 7699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV. 07/2001

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Oct 30 2019

Drilling Company: Parratt Wolffe
Driller's Name: Arnold Chapel
Drilling Method: Mud Rotary
Bit Size: 5.87-inch roller-bit
Auger Size:
Rig Type: B-61 Mobile Rig
Sampling Method: 24-inch splitspoon

Northing: 196256.89
Easting: 2305326.09
Casing Elevation: 13.66

Borehole Depth: 52 ft bgs
Surface Elevation: 10.73

Logged by: Brian Lovgren

Well/Boring ID: MW-20D (FADA)

Client: Progress Energy Carolinas Inc.

Location: Progress Energy L.V. Sutton Steam Electric Plant
Wilmington, NC

DEPTH	ELEVATION	Samp. Interval (ft bgs)	Recovery (inches)	Blows / 6 inches	N - Value	PID (ppm)	Geologic Column	Stratigraphic Description
0	10							
5	5		1.0'	3 2 3 2	5	0.0		SAND (SM), black, fine to medium grained, loose, damp, no odor.
								SAND (SM), brown, mottled orange, fine to medium grained, loose, wet, no odor.
10	0		1.0'	5 5 5 7	10	0.0		SAND (SM), brown to light gray, fine to medium grained, loose to medium dense, wet, no odor.
15	-5		1.0'	6 7 8 6	15	0.0		SAND (SM), brown to tan, fine to medium grained, medium dense, wet, no odor.
20	-10		1.5'	13 17 17 18	34	0.0		SAND (SM), tan, fine to medium grained, dense, wet, no odor.

Well/Boring Construction:
- protective above ground steel casing (+2.93'-0.0')
- Cement pad (2'x2')
- 2-inch SCH 40 PVC riser (43.0' - +2.9')
- Bentonite grout (37.0' - 0.0')
- 6-inch nominal borehole (48.0'-0.0')
- 2-inch SCH 40 PVC riser (43.0' - +2.9')

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photolonization Detector
NR: No Recovery

Water Level Data

Date	Depth	Elev.
2/4/05	7.90	5.76

Depth measured from top of casing

OFFICIAL COPY
Oct 30 2019

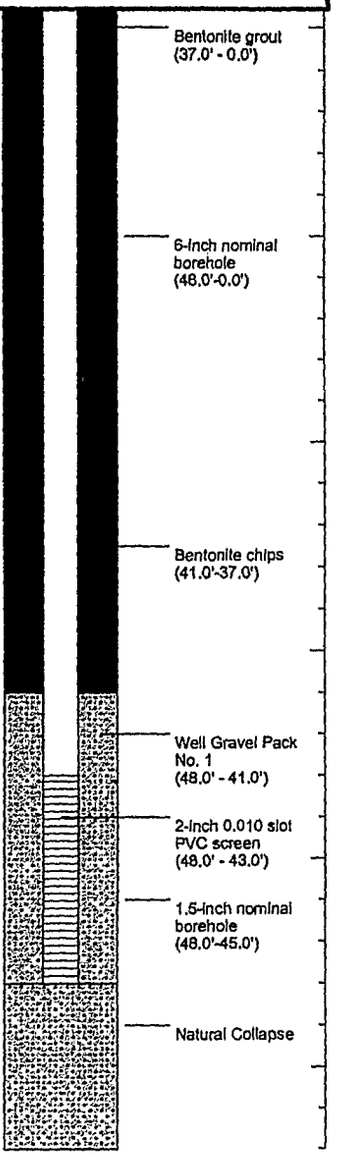
Client:
Progress Energy Carolinas Inc.

Site Location:
Progress Energy
L.V. Sutton Steam
Electric Plant

Well/Boring ID: MW-20D (FADA)

Borehole Depth: 52 ft bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Iron Staining	Geologic Column	Stratigraphic Description
25 / -15			1.5'	4 10 8 13	18	0.0			SAND (SM), tan, fine to medium grained, medium dense, wet, no odor.
30 / -20			1.0'	3 3 3 4	6	0.0			SAND (SM), tan, fine to medium grained, loose, wet, no odor.
35 / -25			1.0'	1 1 1 1	2	0.0			SAND (SM), dark brown, fine to medium grained, very loose, wet, no odor.
40 / -30			1.0'	1 1 1 1	2	0.0			
45 / -35			0.8'	4 7 7 8	14	0.0			SAND (SM), dark brown, fine to medium grained, medium dense, wet, no odor.
50 / -40			1.5'	14 26 24 19	50	0.0			SAND (SM), green to dark gray, silt to fine grained, very dense, wet, no odor. Boring terminated at 52.0 ft bls



BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Remarks:
NA: Not Applicable
ft bgs: feet below ground surface
PID: Photoionization Detector
NR: No Recovery

Water Level Data

Date	Depth	Elev.
2/4/05	7.90	5.76

Depth measured from top of casing*

Project: 04015
Data File:MW-20D

Template:boring_wellWL2005.ldf
Date: 3/16/05

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW21C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 16, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Wilmington COUNTY: New Hanover

TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other: _____

LATITUDE: 34.289077111 DD
LONGITUDE: -77.983949564 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 45
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 22.78 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.50 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0116.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom 40	Ft.	2	in.	Sch. 40	PVC
Top	Bottom	Ft.		in.		
Top	Bottom	Ft.		in.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 32	Bottom 38	Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 40	Bottom 45	Ft.	2	in.	Slot .010	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 38	Bottom 45	Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for [signature] 10-11-11
SIGNATURE OF CERTIFIED WELL CONTRACTOR | DATE
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW21C
		DRILLER: John E. Wood, III	
NORTHING: 197771.8	EASTING: 2306915.3	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Next to power lines, former TMW03 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: >25.0	TOTAL DEPTH: 45.0
START DATE: 9/16/11	FINISH DATE: 9/16/11	24 HOUR DTW: 22.8	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	3.5
3.0	3	3	3	3			M		3.0	(SM) - Dk brown, Silty SAND. High organic content. No odor.	
									3.5	(SP) - Dk brown grading to orange-brown, f. SAND. Abundant organic staining. No odor.	
									5.0		
8.0	3	4	5	6			M		8.0	(SP) - Orange-brown, f. to vf. SAND. Poorly graded. No odor.	
									10.0		
13.0	5	7	6	8			M		13.0	(SP) - S.A.A. Tan. Massive. No odor.	
									15.0		
18.0	5	9	11	13			Sat.		18.0	(SP) - Grayish-brown, vf. SAND. Poorly graded. No odor.	2" Sch. 40 PVC
									20.0		
23.0	8	13	14	18			Sat.		23.0	(SP) - S.A.A. No odor.	
									25.0		

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

WELL LOG

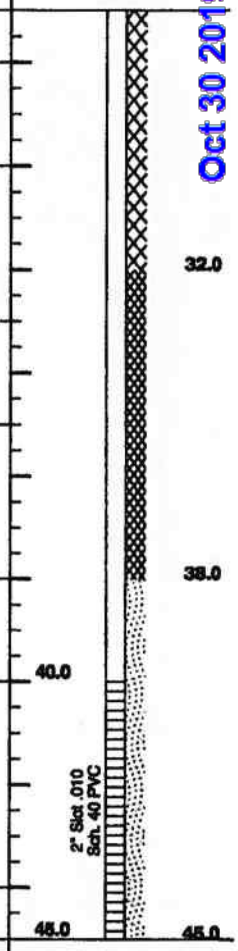
CATLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW21C
		DRILLER: John E. Wood, III	
NORTHING: 197771.8	EASTING: 2306915.3	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Next to power lines, former TMW03 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: >25.0	TOTAL DEPTH: 45.0
START DATE: 9/16/11	FINISH DATE: 9/16/11	24 HOUR DTW: 22.8	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION
28.0									28.0
	11	16	21	22			Sat.		(SP) - Tan, f. to med. SAND interlayered w/ same as above. Tr. to little med. grained sand. Slight sulfur odor.
									30.0
33.0									33.0
	6	8	10	8			Sat.		(SP) - S.A.A.
									35.0
38.0									38.0
	6	10	11	13			Sat.		(SM) - Grayish-tan, Silty SAND. No odor.
40.0									40.0
	6	7	7	8		5lbs soil sample from screen interval	Sat.		(SP) - Tan, f. to med. SAND w/ tr. coarse SAND interlayered. Mod. grading. No odor.
42.0									42.0
	3	3	4	4		5lbs soil sample from screen interval	Sat.		(SP) - S.A.A. No odor.
									44.0
									Boring Terminated at Depth 45.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 40 ft.

WELL DETAIL



Bentonite Grout | Bentonite Pellets | #2 Medium Sand

OFFICIAL COPY
Oct 30 2019

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW22B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use):

DATE DRILLED: September 15, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other:
LATITUDE: 34.290673455 DD
LONGITUDE: -77.983564881 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 27
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 8.67 FT.
(Use "+" If Above Top of Casing)

d. TOP OF CASING IS 3.20 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top ____ Bottom ____ Top ____ Bottom ____
Top ____ Bottom ____ Top ____ Bottom ____
Top ____ Bottom ____ Top ____ Bottom ____

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom	23 Ft.	2	in.	Sch. 40	PVC
Top	Bottom	Ft.		in.		
Top	Bottom	Ft.		in.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 17	Bottom	20 Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 23	Bottom	27 Ft.	2	in.	Slot .010	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 20	Bottom	27 Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW22B
		DRILLER: John E. Wood, III	
NORTHING: 198353.9	EASTING: 2307025.6	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Along sandy access road, former TMW04 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 27.0
START DATE: 9/15/11	FINISH DATE: 9/15/11	24 HOUR DTW: 8.7	WELL DEPTH: 27.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	3.2
3.0	4	6	7	8			M		3.0	(SP) - Tan, f. to vf. SAND. No odor.	
									5.0		
8.0	4	5	6	8			Sat.		8.0	(SP) - S.A.A. Poorly graded. No odor.	
									10.0		
13.0	7	8	8	11			Sat.		13.0	(SP) - S.A.A. No odor.	
									15.0		
18.0	8	12	10	8			Sat.		18.0	(SP) - Tan, f. to vf. SAND w/ tr. to little med. to cse. sand. Mod. grading. No odor.	
									20.0		
23.0	7	10	12	13		5lbs soil sample from screen interval	Sat.		23.0	(SW) - Tan, interlayered f. to cse SAND. Tr. iron-staining in more cse-grained layering. No odor.	23.0
25.0	2	3	5	6		5lbs soil sample from screen interval	Sat.		25.0	(SW) - S.A.A. Med. dense. No odor.	
									27.0		27.0
										Boring Terminated at Depth 27.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 23 ft.	

2" Sch. 40 PVC
17.0
20.0
2" Sch. 010 Sch. 40 PVC

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW22C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 15, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.290673455 DD
LONGITUDE: -77.983564881 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 44.5
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 9.99 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 39.5 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 33	Bottom 37 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 39.5	Bottom 44.5 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 37	Bottom 44.5 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11

for John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub 1219
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WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Tom Stetler	DRILLER: John E. Wood, III	WELL ID: MW22C
NORTHING: 198353.9	EASTING: 2307025.6	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Along sandy access road, former TMW04 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 10.1	TOTAL DEPTH: 45.0
START DATE: 9/15/11	FINISH DATE: 9/15/11	24 HOUR DTW: 10.0	WELL DEPTH: 44.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	3.0
3.0	4	6	7	8			M		3.0	(SP) - Tan, f. to vf. SAND. No odor.	
									5.0		
8.0	4	5	6	8			Sat.		8.0	(SP) - S.A.A. Poorly graded. No odor.	
									10.0		
13.0	7	8	8	11			Sat.		13.0	(SP) - S.A.A. No odor.	
									15.0		
18.0	8	12	10	8			Sat.		18.0	(SP) - Tan, f. vf. SAND w/ tr. to little cse. sand. Mod. grading. No odor.	2" Sch. 40 PVC
									20.0		
23.0	3	5	4	5			Sat.		23.0	(SW) - Tan, interlayered f. to cse. SAND. Tr. white quartzite gravels. Well-graded. No odor.	
									25.0		

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

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Oct 30 2019

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 2 OF

OFFICIAL COPY
Oct 30 2019

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW22C
		DRILLER: John E. Wood, III	
NORTHING: 198353.9	EASTING: 2307025.6	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Along sandy access road, former TMW04 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 10.1	TOTAL DEPTH: 45.0
START DATE: 9/15/11	FINISH DATE: 9/15/11	24 HOUR DTW: 10.0	WELL DEPTH: 44.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
28.0									28.0	
	3	5	5	6			Sat.		(SP) - S.A.A. but w/ mod. grading. No odor.	
									30.0	
33.0									33.0	33.0
	4	5	7	8			Sat.		(SP) - Tan to gray, vf. SAND. Poorly graded. No odor.	
									35.0	
										37.0
38.0									38.0	
	4	5	5	6			Sat.		(SP) - S.A.A. No odor.	39.5
40.0									40.0	
	1	0	1	6			Sat.		(SP) - Tan, f. SAND. Tr. med. sand. Uniform. V. loose to loose. No odor.	2" Sch. 40 PVC Sch. 40 .010
42.0									42.0	
	5	12	15	16			Sat.		(SP) - S.A.A. No odor.	
									44.0	44.5
									Boring Terminated at Depth 45.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 40 ft.	44.5

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW23B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use):

DATE DRILLED: September 6, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other:
LATITUDE: 34.292360533 DD
LONGITUDE: -77.983973927 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 26.5
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 7.3 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top ____ Bottom ____ Top ____ Bottom ____
Top ____ Bottom ____ Top ____ Bottom ____
Top ____ Bottom ____ Top ____ Bottom ____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 21.5 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 17	Bottom 19 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 21.5	Bottom 26.5 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 19	Bottom 26.5 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for
SIGNATURE OF CERTIFIED WELL CONTRACTOR | DATE
10-14-11
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub. 1219
Page 108 of 163

WELL LOG

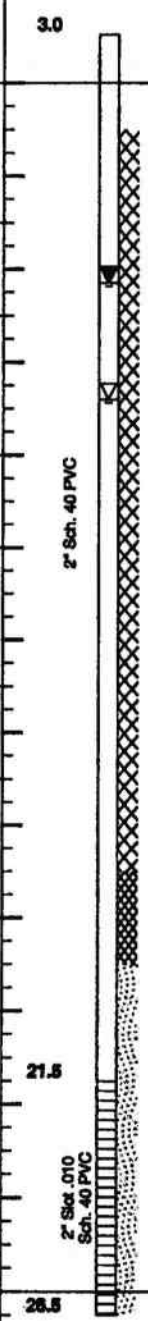
CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Justin Heter	DRILLER: John E. Wood, III	WELL ID: MW23B
NORTHING: 198966.6	EASTING: 2306895.7	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Near bend in Sutton Lake Rd, former TMW05 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 9.8	TOTAL DEPTH: 26.0
START DATE: 9/6/11	FINISH DATE: 9/6/11	24 HOUR DTW: 7.3	WELL DEPTH: 26.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION
									0.0 LAND SURFACE
3.0	5	6	7	8			Sat.		3.0 (SP) - Tan, f. to vf. SAND. Uniform. No odor. 5.0
8.0	1	1	3	4			Sat.		8.0 (SP) - Tan to lt. brown, f. SAND. Grades to brown color w/ depth. Tr. silt at base. No odor. 10.0
13.0	5	8	9	10			Sat.		13.0 (SP) - Tan, f. to med. SAND. Tr.cse. sand along moderately graded layering. No odor. 15.0
18.0	3	5	4	4			Sat.		18.0 (SW) - Tan, cse. to f. SAND. Mod. to well graded. No odor. 20.0
22.0	2	2	3	3		5lbs soil sample from screen interval	Sat.		22.0 (SP) - Brown f. SAND. Uniform. Loose. 24.0
24.0	2	3	2	3		5lbs soil sample from screen interval	Sat.		(SP) - S.A.A. No odor 26.0
									Boring Terminated at Depth 26.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 22 ft.

WELL DETAIL



Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW23C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use):

DATE DRILLED: September 7, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other:
LATITUDE: 34.292360533 DD
LONGITUDE: -77.983973927 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 45
b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☒
c. **WATER LEVEL Below Top of Casing:** 7 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.50 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. **YIELD (gpm):** N/A **METHOD OF TEST:** N/A
f. **DISINFECTION: Type** N/A **Amount:** N/A
g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

	Depth		Diameter	Thickness/ Weight	Material
Top 0	Bottom	40 Ft.	2 in.	Sch. 40	PVC
Top	Bottom	Ft.	in.		
Top	Bottom	Ft.	in.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 36	Bottom	38 Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter	Slot Size	Material
Top 40	Bottom	45 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 38	Bottom	45 Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

For SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10-11-11
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Justin Heter	WELL ID: MW23C
		DRILLER: John E. Wood, III	
NORTHING: 198966.6	EASTING: 2306895.7	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Near bend in Sutton Lake Rd, former TMW05 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 8.1	TOTAL DEPTH: 46.0
START DATE: 9/7/11	FINISH DATE: 9/7/11	24 HOUR DTW: 7.0	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	3.5
3.0	5	6	7	8			Sat.		3.0	(SP) - Tan, f. to vf. SAND. Uniform. No odor.	
									5.0		
8.0	1	1	3	4			Sat.		8.0	(SP) - Tan to lt. brown, f. SAND. Grades to a brown color w/ depth. Tr. silt at base. No odor.	
									10.0		
13.0	5	8	9	10			Sat.		13.0	(SP) - Tan, f. to med. SAND. Tr. cse. sand along moderately graded layering. No odor.	
									15.0		
18.0	3	5	4	4			Sat.		18.0	(SP) - Tan, cse. to f. SAND. Mod.to well-graded. No odor.	2" Sch. 40 PVC
									20.0		
23.0	5	5	6	7			Sat.		23.0	(SP) - Tan, vf. SAND. Uniform. No odor.	
									25.0		

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

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WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Justin Heter	WELL ID: MW23C
		DRILLER: John E. Wood, III	
NORTHING: 198966.6	EASTING: 2306895.7	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Near bend in Sutton Lake Rd, former TMW05 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 8.1	TOTAL DEPTH: 46.0
START DATE: 9/7/11	FINISH DATE: 9/7/11	24 HOUR DTW: 7.0	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
28.0									28.0	
	4	7	7	8			Sat.		(SP) - S.A.A. Tan to gray. No odor. 30.0	
33.0									33.0	
	2	5	8	8		*Iron-oxide Sample	Sat.		(SP) - Brown, f. SAND. Uniform. Loose. Tr. iron-oxide staining. Tr. gravels. No odor. 35.0	
									38.0	36.0
									(SP) - Orange-brown to tan, f. to med. SAND. Tr. cse. sand and white quarzite gravels. Mod. grading. No odor. 40.0	38.0
									42.0	40.0
42.0	2	2	6	7		5lbs soil sample from screen interval	Sat.		(SP) - Brown, f. SAND. Tr. gravels. Uniform. Med. dense. No odor. 44.0	2" Slot .010 Sch. 40 PVC
44.0	3	6	7	7		5lbs soil sample from screen interval	Sat.		(SW) - S.A.A. Some Gravel. 46.0	45.0 45.0
									Boring Terminated at Depth 46.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 33 ft.	

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

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Oct 30 2019

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW24B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 9, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.297131597 DD
LONGITUDE: -77.986068382 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 27
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 4.59 FT.
(Use "+" If Above Top of Casing)

d. TOP OF CASING IS 3.80 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 23 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 19	Bottom 21 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 23	Bottom 27 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 21	Bottom 27 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10/6-11

John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

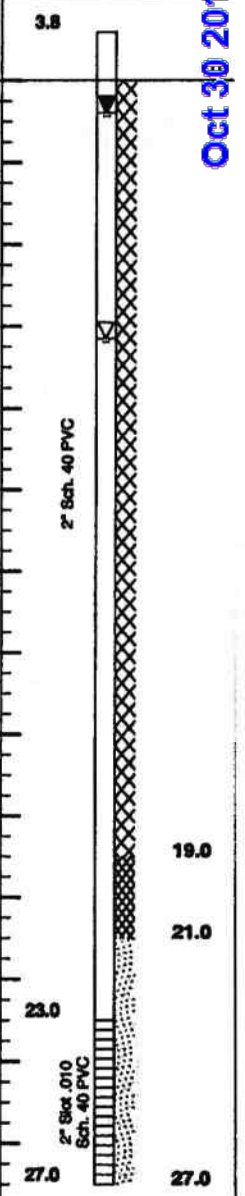
CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Justin Heter		WELL ID: MW24B
	DRILLER: John E. Wood, III		
NORTHING: 200696.4	EASTING: 2306245.4	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: E. of ash pond 500' boundary, TMW06 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 10.1	TOTAL DEPTH: 30.0
START DATE: 9/9/11	FINISH DATE: 9/9/11	24 HOUR DTW: 4.6	WELL DEPTH: 27.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION
									DEPTH
									0.0 LAND SURFACE
0.0	0	2	2	2			M		0.5 (SM) - Dk. brown, organic debris.
2.0									(SP) - Gray, f. SAND. Uniform. No odor.
	1	2	2	1			Sat.		2.5 (SM) - Dk. brown to brown, Silty SAND w/ organic silts and tr. wood fragments. Lightens in color w/ depth.
4.0									4.5
	1	2	3	2			Sat.		
6.0	2	2	4	5			Sat.		
8.0	2	3	7	8			Sat.		(SP) - Tan, f. to vf. SAND w/ tr. wood fragments between 8-10' BLS. No odor.
10.0	5	7	8	8			Sat.		
12.0									12.0
	3	6	8	10			Sat.		
14.0	5	10	13	13			Sat.		(SP) - Tan, f. to med. SAND. Larger grain size than above. Tr. cse sand. No odor.
16.0	6	8	8	8			Sat.		
18.0									18.0
	4	5	6	7			Sat.		(SW) - Tan, f. SAND w/ abundant interlayered well-graded, med. to cse. SAND. No odor.
20.0									20.0
	3	3	4	5			Sat.		(SP) - Tan, f. SAND w/ tr. to little interlayered med. to cse. sand. Loose. No odor.
22.0	3	5	8	13		5lbs soil sample from screen interval	Sat.		
24.0									24.0
	4	5	5	8		5lbs soil sample from screen interval	Sat.		(SP) - Tan, f. to vf. SAND. Uniform. No odor.
									28.0
									(SW) - Tan, cse. to f. SAND. Mod. to well-graded. No odor.
									30.0
									Boring Terminated at Depth 30.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 22 ft.

WELL DETAIL



Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW24C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 13, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other: _____
LATITUDE: 34.297131597 DD
LONGITUDE: -77.986068382 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 45
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 3.66 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom 40	Ft.	2	in.	Sch. 40	PVC
Top	Bottom	Ft.		in.		
Top	Bottom	Ft.		in.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 24	Bottom 38	Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 40	Bottom 45	Ft.	2	in.	Slot .010	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 38	Bottom 45	Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for John E. Wood, III — 10-11-11
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-7, Sub 1219
Page 115 of 161

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Rick Garrett	DRILLER: John E. Wood, III	WELL ID: MW24C
NORTHING: 200696.4	EASTING: 2306245.4	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: E. of ash pond 500' boundary, TMW06 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 45.0
START DATE: 9/12/11	FINISH DATE: 9/13/11	24 HOUR DTW: 3.7	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	3.0
0.0	0	2	2	2			M		0.5 (SM) - Dark brown, organi debris.	
2.0	1	2	2	1			Sat.		(SP) - Gray, f. SAND. Uniform. No odor. 2.5	
4.0	1	2	3	2			Sat.		(SM) - Dk. brown to brown, Silty SAND w/ organic silts, and tr. wood fragments. Lightens in color w/ depth. 4.5	
6.0	2	2	4	5			Sat.			
8.0	2	3	7	8			Sat.		(SP) - Tan, f. to vf. SAND w/ tr. wood fragments between 8-10' BLS. No odor.	
10.0	5	7	8	8			Sat.			
12.0	3	6	8	10			Sat.		12.0	
14.0	5	10	13	13			Sat.		(SP) - Tan, f. to med. SAND. Larger grain-size than above. Tr. cse. sand. No odor.	
16.0	6	8	8	8			Sat.			
18.0	4	5	6	7			Sat.		18.0 (SW) - Tan, f. SAND w/ abundant interlayered well-graded, med. to cse. SAND. No odor. 20.0	
20.0	3	3	4	5			Sat.			
22.0	2	3	3	3			Sat.		(SP) - Tan, f. SAND w/ tr. to little interlayered med. to cse. sand. Loose. No odor. 24.0	24.0

2" Sch. 40 PVC

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Rick Garrett	WELL ID: MW24C
		DRILLER: John E. Wood, III	
NORTHING: 200696.4	EASTING: 2306245.4	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: E. of ash pond 500' boundary, TMW06 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 45.0
START DATE: 9/12/11	FINISH DATE: 9/13/11	24 HOUR DTW: 3.7	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
24.0										
	2	2	3	3			Sat.		(SP) - Tan, f. to vf. SAND. Uniform. No odor.	
26.0										
	1	2	3	3			Sat.			
28.0									28.0	
	2	2	2	2			Sat.		(SW) - Tan, cse. to f. SAND. Mod. to well-graded. No odor.	
30.0									30.0	
	2	1	2	1			Sat.		(SP) - S.A.A. Mod. grading. Tr. sub-rounded, gravel-sized quartzite grains. Loose.	
32.0										
	1	0	1	0			Sat.			
34.0										
	1	3	3	3			Sat.		35.0	
36.0										
	2	3	5	6			Sat.			
38.0										38.0
	7	7	8	6			Sat.		(SP) - Gray, f. to med. SAND. Sub-rounded. Uniform. Tr. wood fragments and tr. clay.	
40.0										40.0
	3	5	6	8		5lbs soil sample from screen interval	Sat.			
42.0									42.5	
	5	5	7	7		5lbs soil sample from screen interval	Sat.		(SW) - Gray, med. SAND. Sub-rounded. Tr. sub-rounded gravel ~1/4". Well-graded. No odor.	
									45.0	45.0
									Boring Terminated at Depth 45.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 40 ft.	

2" Slot .010 Sch. 40 PVC

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

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Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW27B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 8, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.302359737 DD
LONGITUDE: -77.991192727 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 27
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 7.1 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom	22 Ft.	2	In.	Sch. 40	PVC
Top	Bottom	Ft.		In.		
Top	Bottom	Ft.		In.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 18	Bottom	20 Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 22	Bottom	27 Ft.	2	In.	Slot .010	In.	PVC
Top	Bottom	Ft.		In.		In.	
Top	Bottom	Ft.		In.		In.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 20	Bottom	27 Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10-11-11
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub 1219
Page 118 of 153

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Justin Heter	WELL ID: MW27B
		DRILLER: John E. Wood, III	
NORTHING: 202583.3	EASTING: 2304678.4	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Along gravel road, former TMW07 cluster		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 7.1	TOTAL DEPTH: 30.0
START DATE: 9/8/11	FINISH DATE: 9/8/11	24 HOUR DTW:	WELL DEPTH: 27.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	3.0
3.0	2	2	2	3			Sat.		3.0 (SP) - Tan, f. to med. SAND. No odor. 5.0	
8.0	3	5	6	7			Sat.		8.0 (SP) - Tan, vf. to f. SAND. Tr. greenish-tan horizons w/ silt. Uniform. No HCO odor. 10.0	2" Sch. 40 PVC
13.0	3	3	5	6			Sat.		13.0 (SP) - Tan, f. to med. SAND. Tr. cse. grains. Mod. grading. No odor. 15.0	
18.0	3	4	5	5			Sat.		18.0 (SP) - S.A.A. Mod. grading. No odor. 20.0	18.0 20.0
22.0	3	5	8	15		5lbs soil sample from screen interval	Sat.		22.0 23.0 (SW) - Tan to orange-brown, f. to cse. SAND. Sub-angular. Well-graded. Iron-oxide staining.	22.0
24.0	3	4	5	6		5lbs soil sample from screen interval	Sat.		24.5 Mostly med. grains. 25.0 (SP) - Tan, vf. to f. SAND. Uniform.	2" Slot .010 Sch. 40 PVC
									28.0 (SP) - Lt. tan, f. to vf. SAND w/ tr. silt at top of interval. Uniform. No odor. 30.0	27.0 27.0
									Boring Terminated at Depth 30.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 22 ft.	

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

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Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW28B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 28, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.288575356 DD
LONGITUDE: -77.981918844 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 30
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 16.21 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 2.80 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 25 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 9	Bottom 21 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 25	Bottom 30 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 21	Bottom 30 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

for
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11
John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF 1

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW28B
		DRILLER: John E. Wood, III	
NORTHING: 197595.4	EASTING: 2307530.6	CREW: Josh O'Connell	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Hill above solar farmr		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 16.2	TOTAL DEPTH: 30.0
START DATE: 9/28/11	FINISH DATE: 9/28/11	24 HOUR DTW:	WELL DEPTH: 30.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	2.8
3.0	2	2	3	3			M		3.0	(SP) - Lt. oragne-brown, f. SAND. Uniform. Loose. No odor.	
8.0	3	4	5	7			M		5.0	(SP) - S.A.A. Loose to med. dense. No odor.	9.0
13.0	9	12	13	13			M		10.0	(SP) - Tan, f. SAND. Med. dense. Uniform. Slight sulfur odor.	2" Sch. 40 PVC
18.0	6	7	7	8			Sat.		15.0	(SP) - S.A.A. No odor.	
23.0	9	16	22	25			Sat.		20.0	(SP) - Tan, f. to vf. SAND. Uniform. Slight sulfur odor. More fine-grained than above.	21.0
26.0	9	30	41	50		5lbs soil sample from screen interval	Sat.		25.0	(SP) - Tan, f. SAND. Tr. vf. and med. sand. No odor.	25.0
28.0	13	17	24	30		5lbs soil sample from screen interval	Sat.		28.0	(SP) - S.A.A.	2" Slot .010 Sch. 40 PVC
									30.0	Boring Terminated at Depth 30.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 26 ft.	30.0

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW28C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 21, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.288575356 DD
LONGITUDE: -77.981918844 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 45
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: NM FT.
(Use "+" If Above Top of Casing)

d. TOP OF CASING IS 2.80 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom	40 Ft.	2	In.	Sch. 40	PVC
Top	Bottom	Ft.		In.		
Top	Bottom	Ft.		In.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 35	Bottom	38 Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 40	Bottom	45 Ft.	2	In.	Slot .010	In.	PVC
Top	Bottom	Ft.		In.		In.	
Top	Bottom	Ft.		In.		In.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 38	Bottom	45 Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11
for John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF 2

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW28C
		DRILLER: John E. Wood, III	
NORTHING: 197595.4	EASTING: 2307530.6	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Hill above solar farm		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 46.
START DATE: 9/21/11	FINISH DATE: 9/21/11	24 HOUR DTW:	WELL DEPTH: 45.

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	2.8
3.0	2	2	3	3			M		3.0 (SP) - Lt. orange-brown, f. SAND. Uniform. Loose. No odor. 5.0	
8.0	3	4	5	7			M		8.0 (SP) - S.A.A. Loose to med. dense. Uniform. No odor. 10.0	
13.0	9	12	13	13			M		13.0 (SP) - Tan, f. SAND. Med. dense. Uniform. Slight sulfur odor. 15.0	
18.0	6	7	7	8			Sat.		18.0 (SP) - S.A.A. No odor. 20.0	2" Sch. 40 PVC
23.0	9	16	22	25			Sat.		23.0 (SP) - Tan, f. to vf. SAND. Uniform. Slight sulfur odor. More fine-grained than above. 25.0	

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

Bednarcik Exhibit 11
Sutton SARP Appendix C
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WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW28C
		DRILLER: John E. Wood, III	
NORTHING: 197595.4	EASTING: 2307530.6	CREW: Roger Caulder	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Hill above solar farm		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 46.0
START DATE: 9/21/11	FINISH DATE: 9/21/11	24 HOUR DTW:	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	8in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
28.0									28.0	
	9	11	15	17			Sat.		(SP) - S.A.A. No odor.	
									30.0	
									33.0	
33.0	8	10	12	15			Sat.		(SP) - S.A.A. No odor.	
									35.0	35.0
										38.0
										40.0
42.0									42.0	
	2	3	4	6		5lbs soil sample from screen interval	Sat.		(SP) - Tan, interlayered f. to vf. SAND. Med. dense. No odor.	
44.0									44.0	
	3	4	3	4		5lbs soil sample from screen interval	Sat.		(SP) - Tan, f. SAND. Loose. No odor.	45.0 45.0
									46.0	
									Boring Terminated at Depth 46.0 ft	

2" Slot .010 Sch. 40 PVC

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW28T

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 27, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.288575356 DD
LONGITUDE: -77.981918844 DD
Latitude/longitude source: ☒ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 60
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 22.58 FT.
(Use "+" If Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth		Diameter		Thickness/ Weight	Material
Top 0	Bottom 55	Ft.	2	in.	Sch. 40	PVC
Top 0	Bottom 46	Ft.	4	in.	Sch. 40	
Top	Bottom	Ft.		in.		

8. GROUT:

	Depth		Material	Method
Top	Bottom	Ft.		
Top 44	Bottom 50	Ft.	Bent. Pellets	Surface Pour
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 55	Bottom 60	Ft.	2	in.	Slot .010	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 50	Bottom 60	Ft.	#2 Medium	Torpedo Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11

for John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub. 1219
Page 125 of 163

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Justin Heter	WELL ID: MW28T
		DRILLER: John E. Wood, III	
NORTHING: 197595.4	EASTING: 2307530.6	CREW: Josh O'Connell	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Hill above solar farm		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: Mud Rotary	0 HOUR DTW:	TOTAL DEPTH: 60.0
START DATE: 9/22/11	FINISH DATE: 9/27/11	24 HOUR DTW: 22.6	WELL DEPTH: 60.0

DEPTH	BLOW COUNT 6in	6in	8in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	3.0
3.0	2	2	3	3			M		3.0	(SP) - Lt. orange-brown, f. SAND. Uniform. Loose. No odor.	
									5.0		
8.0	3	4	5	7			M		8.0	(SP) - S.A.A. Loose to med. dense. Uniform. No odor.	
									10.0		
13.0	9	12	13	13			M		13.0	(SP) - Tan, f. SAND. Med. dense. Uniform. Slight sulfur odor.	
									15.0		
18.0	6	7	7	8			Sat.		18.0	(SP) - S.A.A. No odor.	
									20.0		
23.0	9	16	22	25			Sat.		23.0	(SP) - Tan, vf. to f. SAND. Uniform. Slight sulfur odor. More fine-grained then above.	
									25.0		
28.0	9	11	15	17			Sat.		28.0	(SP) - S.A.A. No odor.	
									30.0		

2" Sch. 40 PVC

4" Sch. 40

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Justin Heter	WELL ID: MW28T
		DRILLER: John E. Wood, III	
NORTHING: 197595.4	EASTING: 2307530.6	CREW: Josh O'Connell	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Hill above solar farm		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: Mud Rotary	0 HOUR DTW:	TOTAL DEPTH: 60.0
START DATE: 9/22/11	FINISH DATE: 9/27/11	24 HOUR DTW: 22.6	WELL DEPTH: 60.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
33.0									33.0	
	8	10	12	15			Sat.		(SP) - S.A.A. No odor. 35.0	
									42.0	
									(SP) - Tan, interlayered vf. to f. SAND. Med. dense. No odor. 44.0	
44.0	3	4	3	4			Sat.		(SP) - Tan, f. SAND. Loose. No odor. 46.0	44.0
										46.0
										50.0
										55.0
56.0	11	14	14	13		5lbs soil sample from screen interval	Sat.		(SP) - Brown, f. SAND. Uniform. Med. dense. 58.0	2" Sch. 40 PVC Slot .010
58.0	6	5	4	3		5lbs soil sample from screen interval	Sat.		(SP) - S.A.A. w/ some med. grains. 60.0	60.0
									Boring Terminated at Depth 60.0 ft Lithology and SPT data from previous temporary monitoring well to depth of 56 ft.	60.0

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG_209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW31B

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 13, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.297253 DD
LONGITUDE: -77.985077 DD
Latitude/longitude source: ☐GPS ☐Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 27
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 8.4 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 22 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 18	Bottom 20 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 22	Bottom 27 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 20	Bottom 27 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-11-11

For John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

OFFICIAL COPY
Oct 30 2019

WELL LOG

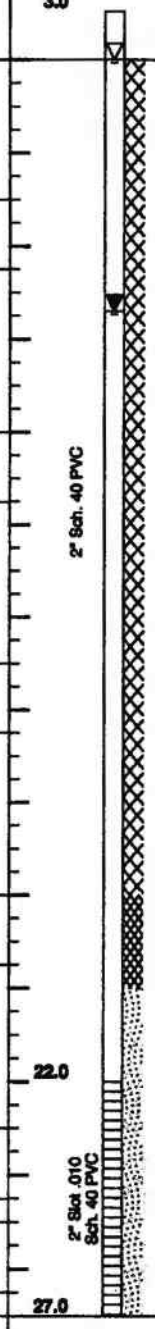
CATLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Justin Heter		WELL ID: MW31B
	DRILLER: John E. Wood, III		
NORTHING:	EASTING:	CREW: Roger Caulder	
SYSTEM:	BORING LOCATION: Near NE property line		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: NM	TOTAL DEPTH: 27.0
START DATE: 9/13/11	FINISH DATE: 9/13/11	24 HOUR DTW: 8.4	WELL DEPTH: 27.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION
									0.0	LAND SURFACE
3.0	1	2	3				Sat.		3.0	(SP) - Brown, f. SAND. Uniform. Loose. Tr. Iron-oxide staining.
									4.5	
8.0	3	4	4				Sat.		8.0	(SP) - S.A.A. No Iron-oxide staining.
									9.5	
13.0	5	10	14				Sat.		13.0	(SP) - S.A.A.
									14.5	
18.0	4	4	5				Sat.		18.0	(SP) - S.A.A. w/ some med. grains and gravels. Quartz grains.
									19.5	
23.0	2	5	5			5lbs soil sample from screen interval	Sat.		23.0	(SP) - S.A.A. Tr. med. grains. No gravels.
									24.5	
25.0	5	5	4			5lbs soil sample from screen interval	Sat.		25.0	(SP) - S.A.A.
									26.5	
										Boring Terminated at Depth 27.0 ft

WELL DETAIL



Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PSOGBESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799-A

1. WELL CONTRACTOR:
John E. Wood, III
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) MW31C

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 14, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐ Slope ☐ Valley ☒ Flat ☐ Ridge ☐ Other: _____
LATITUDE: 34.297253 DD
LONGITUDE: -77.985077 DD
Latitude/longitude source: ☐ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 45
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 7.65 FT.
(Use "+" If Above Top of Casing)

d. TOP OF CASING IS 2.70 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 40 Ft.	2 in.	Sch. 40	PVC
Top	Bottom Ft.	in.		
Top	Bottom Ft.	in.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 33	Bottom 37 Ft.	Bent. Pellets	Surface Pour
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 40	Bottom 45 Ft.	2 in.	Slot .010 in.	PVC
Top	Bottom Ft.	in.	in.	
Top	Bottom Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 37	Bottom 45 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10-11-11
for John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub. 1219
Page 130 of 163

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 1 OF 2

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW31C
		DRILLER: John E. Wood, III	
NORTHING:	EASTING:	CREW: Roger Caulder	
SYSTEM:	BORING LOCATION: Near NE property line		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 8.0	TOTAL DEPTH: 46.0
START DATE: 9/14/11	FINISH DATE: 9/14/11	24 HOUR DTW: 7.7	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	2.7
3.0	1	2	3				Sat.		3.0	(SP) - Brown, f. SAND. Uniform. Loose. Tr. Iron-oxide staining.	
									4.5		
8.0	3	4	4				Sat.		8.0	(SP) - S.A.A. No iron-staining.	
									9.5		
13.0	5	10	14				Sat.		13.0	(SP) - S.A.A.	
									14.5		
18.0	4	4	5				Sat.		18.0	(SP) - S.A.A. w/ some med. grains and gravels. Quartz grains.	
									19.5		
23.0	2	5	5				Sat.		23.0	(SP) - S.A.A. Tr. med. grains. No gravels.	
									24.5		
									28.0		

2" Sch. 40 PVC

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

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Oct 30 2019

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub. 1219
Page 131 of 163

WELL LOG

CATLIN Engineers and Scientists

209-100 SHEET 2 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: MW31C
		DRILLER: John E. Wood, III	
NORTHING:	EASTING:	CREW: Roger Caulder	
SYSTEM:	BORING LOCATION: Near NE property line		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: Mud Rotary	0 HOUR DTW: 8.0	TOTAL DEPTH: 46.0
START DATE: 9/14/11	FINISH DATE: 9/14/11	24 HOUR DTW: 7.7	WELL DEPTH: 45.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
28.0	1	3	5	5			Sat.		(SP) - Lt. brown to tan, f. to med. SAND. Tr. cse. sand and shell fragments. Mod. grading. No odor.	
30.0										
33.0										33.0
	4	5	6	8			Sat.		(SP) - Tan, f. to med. SAND. Uniform. No odor.	
35.0										
37.0										
38.0	6	7	12	15			W		(SW) - Tan, f. to cse. SAND. Tr. silt to clay. Well-graded.	
40.0										40.0
42.0	3	2	4	12		5lbs soil sample from screen interval	W		(SM) - Gray, interlayered f. SAND and Silty SAND. No odor.	2" Slot .010 Sch. 40 PVC
44.0	2	7	8	10		5lbs soil sample from screen interval	W		(SM) - Gray, f. to med. SAND w. tr. silt. No odor. Uniform.	45.0
46.0									Boring Terminated at Depth 46.0 ft	45.0

Bentonite Grout | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CATLIN.GDT 10/7/11

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2927-A

1. WELL CONTRACTOR:
William J. Miller
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION
WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) OAP-1

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 26, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY: New Hanover
TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____
LATITUDE: 34.293459 DD
LONGITUDE: -77.992179 DD
Latitude/longitude source: ☐ GPS ☐ Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 15
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 11.1 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 5 Ft.	2 In.	Sch. 40	PVC
Top	Bottom Ft.	In.		
Top	Bottom Ft.	In.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 0	Bottom 2 Ft.		
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 5	Bottom 15 Ft.	2 In.	Slot .010 In.	PVC
Top	Bottom Ft.	In.	In.	
Top	Bottom Ft.	In.	In.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 2	Bottom 15 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 10-14-11

for William J. Miller
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant		LOGGED BY: Tom Stetler	WELL ID: OAP-1
		DRILLER: William J. Miller	
NORTHING:	EASTING:	CREW: Josh O'Connell	
SYSTEM:	BORING LOCATION: Edge of ash pond berm		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: H.S. Augers	0 HOUR DTW: 11.1	TOTAL DEPTH: 15.0
START DATE: 9/26/11	FINISH DATE: 9/26/11	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	3.0
1.0									1.0	
	2	2	1	2		OAP-1 (1-5') Dry Sample	M		(SM) - Ash (FILL). Gray SILT. Soft. No odor. 3.0	2" Sch. 40 PVC 2.0
3.0	1	1	1	1			M		(SM) - S.A.A. No odor. 5.0	5.0
5.0	2	3	4	3			M		(SM) - S.A.A. Soft to med. stiff. Slightly more fine-grained than above. 7.0	
7.0	1	1	1	2			W		(SM) - S.A.A. V. soft. No odor. 9.0	#2
9.0	2	2	2	2		OAP-1 (9-15') Wet Sample	W		(SM) - S.A.A. No odor. 11.0	2" Slot .010 Sch. 40 PVC
11.0	woh	1	0	0			Sat.		(SM) - S.A.A. V. soft. 13.0	
13.0	woh	0	0	0			Sat.		(SM) - S.A.A. 15.0	15.0 15.0
									Boring Terminated at Depth 15.0 ft	

Bentonite Pellets #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

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Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2927-A

1. WELL CONTRACTOR:
William J. Miller
Well Contractor (Individual) Name
CATLIN Engineers and Scientists
Well Contractor Company Name
220 Old Dairy Road
Street Address
Wilmington | North Carolina | 28405
City or Town | State | Zip Code
(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION

WELL CONSTRUCTION PERMIT #: N/A
OTHER ASSOCIATED PERMIT # (if applicable): N/A
SITE WELL ID # (if applicable) OAP-2

3. WELL USE (Check One Box): Monitoring ☒ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use): _____

DATE DRILLED: September 26, 2011

4. WELL LOCATION:
801 Sutton Steam Plant Road, 28401
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Wilmington COUNTY: New Hanover

TOPOGRAPHIC / LAND SETTING (check appropriate box)
☐Slope ☐Valley ☒Flat ☐Ridge ☐Other: _____

LATITUDE: 34.293459 DD
LONGITUDE: -77.992179 DD
Latitude/longitude source: ☐GPS ☐Topo. map
(Location of well must be shown on a USGS topo map and attached to this form if not using a GPS.)

5. FACILITY (Name of the business where the well is located.)
LV Sutton Electric Plant | N/A
Facility Name | Facility ID # (if applicable)
801 Sutton Steam Plant Road
Street Address
Wilmington | NC | 28401
City or Town | State | Zip Code
John Topher, P.E.
Contact Name
410 South Wilmington Street
Mailing Address
Raleigh | NC | 27601
City or Town | State | Zip Code
(919)- 546-4505
Area code - Phone number

6. WELL DETAILS:
a. TOTAL DEPTH: 14
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 11.02 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 3.00 FT. Above Land Surface*
* Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C.0118.
e. YIELD (gpm): N/A METHOD OF TEST: N/A
f. DISINFECTION: Type N/A Amount: N/A
g. WATER ZONES (depth):
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth	Diameter	Thickness/ Weight	Material
Top 0	Bottom 4 Ft.	2 In.	Sch. 40	PVC
Top	Bottom Ft.	In.		
Top	Bottom Ft.	In.		

8. GROUT:

	Depth	Material	Method
Top	Bottom Ft.		
Top 0	Bottom 1.5 Ft.		
Top	Bottom Ft.		

9. SCREEN:

	Depth	Diameter	Slot Size	Material
Top 4	Bottom 14 Ft.	2 In.	Slot .010 In.	PVC
Top	Bottom Ft.	In.	In.	
Top	Bottom Ft.	In.	In.	

10. SAND/GRAVEL PACK:

	Depth	Size	Material
Top 1.5	Bottom 14 Ft.	#2 Medium	Torpedo Sand
Top	Bottom Ft.		
Top	Bottom Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
		SEE ATTACHED

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE: 10-1-11

for William J. Miller
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-1617, Phone No. (919) 807-6300

Modified from Form GW-1b Rev. 2/09

WELL LOG

CAITLIN Engineers and Scientists

209-100 SHEET 1 OF

PROJECT NO.: 209-100	STATE: NC	COUNTY: New Hanover	LOCATION: Wilmington
PROJECT NAME: LV Sutton Electric Plant	LOGGED BY: Tom Stetler		WELL ID: OAP-2
	DRILLER: William J. Miller		
NORTHING:	EASTING:	CREW: Josh O'Connell	
SYSTEM:	BORING LOCATION: Edge of ash pond berm		T.O.C. ELEV.:
DRILL MACHINE: CME 45B ATV	METHOD: H.S. Augers	0 HOUR DTW: 11.0	TOTAL DEPTH: 14.0
START DATE: 9/26/11	FINISH DATE: 9/26/11	24 HOUR DTW:	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	MOIS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	3.0
0.0	1	2	2	2		OAP-2 (0-6') Dry Sample	M		0.5 (SM) - Topsoil. Organic silt.	
									(SM) - Ash (FILL). Gray SILT. Tr. clay. No odor.	2" Sch. 40 PVC
2.0	1	1	2	1			M		2.0 (SM) - S.A.A. Soft to v. soft. No odor.	1.5
4.0	1	2	1	2			M		4.0 (SM) - S.A.A.	4.0
6.0	woh	0	0	0			M		6.0 (SM) - S.A.A.	
8.0	woh	0	0	0		OAP-2 (8-14') Wet Sample	Sat.		8.0 (SP/SM) - Gray, Silty SAND w/ Interlayered Silt. V. soft/v. loose.	2" Sch. 40 PVC
10.0	woh	0	0	0			Sat.		10.0 (SP/SM) - S.A.A.	
12.0	wor	0	0	0			Sat.		12.0 (SP/SM) - S.A.A.	
									14.0 Boring Terminated at Depth 14.0 ft	14.0 14.0

Bentonite Pellets #2 Medium Sand

CAITLIN BORING LOG 209-100 PROGRESS ENERGY LV SUTTON PLANT.GPJ CAITLIN.GDT 10/7/11

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Oct 30 2019

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Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3576-A

1. WELL CONTRACTOR:
Stefan Smith
Well Contractor (Individual) Name
SAEDACCO Inc
Well Contractor Company Name
9088 Northfield Drive
Street Address
Fort Mill SC 29707
City or Town State Zip Code
( ) (803)548-2180
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT#
OTHER ASSOCIATED PERMIT#(if applicable)
SITE WELL ID #(if applicable) MW 32 C

3. WELL USE (Check One Box) Monitoring [X] Municipal/Public [ ]
Industrial/Commercial [ ] Agricultural [ ] Recovery [ ] Injection [ ]
Irrigation [ ] Other [ ] (list use)
DATE DRILLED 11-14-13

4. WELL LOCATION:
801 Sutton Lake Road Wilmington
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY BRUNSWICK
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
[ ] Slope [ ] Valley [X] Flat [ ] Ridge [ ] Other
LATITUDE 34.284032 " DMS **OR** 3x.xxxxxxxx DD
LONGITUDE -77.983792 " DMS **OR** 7x.xxxxxxxx DD
Latitude/longitude source: [X] GPS [ ] Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
DUKE ENERGY - SUTTON PLANT
Facility Name Facility ID# (if applicable)
801 Sutton Lake Rd.
Street Address
Wilmington NC 28401
City or Town State Zip Code
KATHY WEBB
Contact Name
148 RIVER ST,
Mailing Address
GREENVILLE SC 29601
City or Town State Zip Code
(864) 421-9999
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 50
b. **DOES WELL REPLACE EXISTING WELL?** YES [ ] NO [X]
c. **WATER LEVEL** Below Top of Casing: 22.16 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.09 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** **METHOD OF TEST**
f. **DISINFECTION: Type** **Amount**
g. **WATER ZONES** (depth):
Top Bottom Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:

Depth			Diameter	Thickness/ Weight	Material
Top 0	Bottom 45	Ft.	2"	SHC 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:

Depth			Material	Method
Top 0	Bottom 41	Ft.	PORTLAND/Bentonite	TREMIE
Top	Bottom	Ft.		
Top	Bottom	Ft.		

9. SCREEN:

Depth			Diameter		Slot Size		Material
Top 45'	Bottom 50	Ft.	2"	in.	10	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

Depth			Size	Material
Top 43	Bottom 50	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	50	Sand, tan, medium grain

12. REMARKS:
2 foot bentonite seal from 41' to 43''

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Stefan Smith — 12/5/2013
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

Stefan Smith
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

OFFICIAL COPY
Oct 30 2019

PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-32C**
PROJECT NO:	1026.08.06	STARTED:	11/14/13
		COMPLETED:	11/14/13
DRILLING COMPANY:	SAEDACCO	NORTHING:	197686.22
		EASTING:	2307879.04
DRILLING METHOD:	Hollow Stem Augers	ELEVATION	33.48 ft
		M.P. ELEV:	35.57 ft
BOREHOLE DIAMETER:	8.5 IN	WATER:	22.16 ft TOC
		TOTAL DEPTH:	50.0 ft BGS
NOTES:		LOGGED BY:	K. Webb
		CHECKED BY:	A. Yonkofski

DEPTH (ft)	USCS	DESCRIPTION
0	SW	SAND. yellow/brown
5	SW	SAND. yellow/brown
10	SW	SAND. yellow/brown
15	SW	SAND. tan, medium grain
20	SW	SAND. tan, medium grain
25	SW	SAND. tan, medium grain
30	SW	SAND. tan, medium grain
35	SW	SAND. tan, medium grain, dark organic fines
40	SW	SAND. tan, medium grain, dark organic fines
45	SC	SAND, CLAYEY. gray
	SW	SAND. tan, clean, wet
50		

WELL CONSTRUCTION:
- Cement grout. 0'-41' bgs
- 2" PVC Riser
- Bentonite pellets. 41'-43' bgs
- Sand. 43'-50' bgs
- 2" PVC Screen

SynTerra
148 River Street, Suite 220
Phone: 864-421-9999
Fax: 864-679-3711

CLIENT: Duke Energy Progress
PROJECT LOCATION: Wilmington, NC

LOG A EWNN04 PROGRESS ENERGY SUTTON.GPJ GINT US LAB.GDT 12/4/13

OFFICIAL COPY
Oct 30 2019

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3351-A

1. WELL CONTRACTOR:
Michael Wilson
Well Contractor (Individual) Name
SAEDACCO Inc
Well Contractor Company Name
9088 Northfield Drive
Street Address
Fort Mill SC 29707
City or Town State Zip Code
( ) (803)548-2180
Area code Phone number

2. WELL INFORMATION:
WELL CONSTRUCTION PERMIT#
OTHER ASSOCIATED PERMIT#(if applicable)
SITE WELL ID #(if applicable) MW 33C

3. WELL USE (Check One Box) Monitoring [X] Municipal/Public [ ]
Industrial/Commercial [ ] Agricultural [ ] Recovery [ ] Injection [ ]
Irrigation [ ] Other [ ] (list use)
DATE DRILLED 11-13 13

4. WELL LOCATION:
801 Sutton Steam Plant Road Wilmington
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)
CITY: Wilmington COUNTY BRUNSWICK
TOPOGRAPHIC / LAND SETTING: (check appropriate box)
[ ] Slope [ ] Valley [X] Flat [ ] Ridge [ ] Other
LATITUDE 34.284032 " DMS **OR** 3x.xxxxxxxx DD
LONGITUDE -77.983792 " DMS **OR** 7x.xxxxxxxx DD
Latitude/longitude source: [X] GPS [ ] Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)
DUKE ENERGY - SUTTON PLANT
Facility Name Facility ID# (if applicable)
801 SUTTON STRAM PLANT RD.
Street Address
Wilmington NC 28401
City or Town State Zip Code
KATHY WEBB
Contact Name
148 RIVER ST,
Mailing Address
GREENVILLE SC 29601
City or Town State Zip Code
(864) 421-9999
Area code Phone number

6. WELL DETAILS:
a. **TOTAL DEPTH:** 45'
b. **DOES WELL REPLACE EXISTING WELL?** YES [ ] NO [X]
c. **WATER LEVEL** Below Top of Casing: 16.34 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 3.17 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.
e. **YIELD (gpm):** **METHOD OF TEST**
f. **DISINFECTION: Type** **Amount**
g. **WATER ZONES** (depth):
Top Bottom Top Bottom
Top Bottom Top Bottom
Top Bottom Top Bottom

7. CASING:

	Depth		Diameter	Thickness/ Weight	Material
Top 40'	Bottom 0	Ft.	2"	SHC 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:

	Depth		Material	Method
Top 36'	Bottom 0	Ft.	PORTLAND	TREMIE
Top	Bottom	Ft.		
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 45'	Bottom 40'	Ft.	2"	in.	10	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 45'	Bottom 38'	Ft.	#2	SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0	5'	BROWN SILT
5'	45'	TAN /BROWN MEDIUM GRAIN SANDY
	45'	

12. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Michael Wilson 11/13/2013
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

MICHEAL WILSON
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09

OFFICIAL COPY
Oct 30 2019

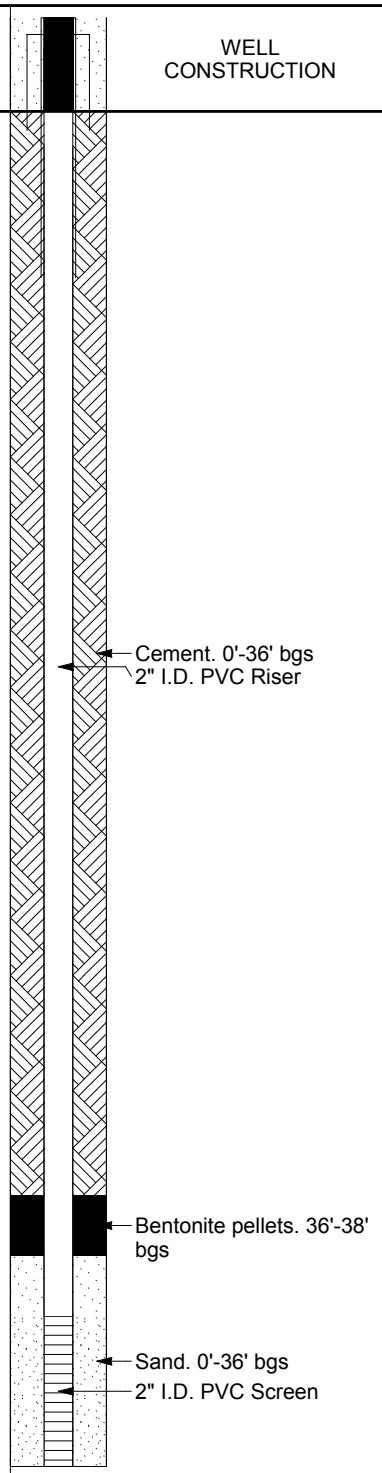
PROJECT:	Sutton Plant	WELL / BORING NO:	MW-33C
PROJECT NO:	1026.08.06	STARTED:	11/13/13
DRILLING COMPANY:	SAEDACCO	NORTHING:	197598.34
DRILLING METHOD:	Hollow Stem Augers	ELEVATION	22.28 ft
BOREHOLE DIAMETER:	8.5 IN	WATER:	16.34 ft TOC
NOTES:		LOGGED BY:	K. Webb

COMPLETED:	11/13/13		
EASTING:	2308275.7		
M.P. ELEV:	25.45 ft		
TOTAL DEPTH:	45.0 ft BGS		
CHECKED BY:	A. Yonkofski		

DEPTH (ft)	USCS	DESCRIPTION
0	ML	SILT. brown, medium grain
5	SW	SAND. yellow/brown, medium grain
10	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
15	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
20	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
25	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
30	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
35	SW	SAND. tan/brown, medium grain, very clean, with iron and quartz
40	SW	
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



SynTerra
148 River Street, Suite 220
Phone: 864-421-9999
Fax: 864-679-3711

CLIENT: Duke Energy Progress
PROJECT LOCATION: Wilmington, NC

LOG A EWNN04 PROGRESS ENERGY SUTTON.GPJ GINT US LAB.GDT 12/4/13

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Oct 30 2019

RECORD OF BOREHOLE PZ-1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 20.0 ft
LOCATION: Wilmington, NC

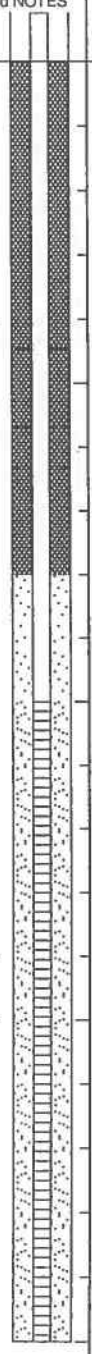
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/24/08
DATE COMPLETED: 11/24/08

NORTHING: 204,376.7
EASTING: 2,305,047.6
GS ELEVATION: 21.6 ft
TOC ELEVATION: 24.0 ft

DATE W.L.: 11/24/08
TIME W.L.: 5:00 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Medium Sand mixed w/ Organic fines (Silt & Clay), Poorly Sorted, Color: Salt & Pepper, Very Loose, Low Plasticity, Moist	SM		21.3 0.3					
	20	0.3 - 2.0 Medium SAND, Well Sorted, Brownish Gray to Brownish Yellow, Very Loose, Moist	SP		19.6		SS	1-1-1-2	2	1.9/2.0
		2.0 - 3.0 Medium SAND, Well Sorted, Brownish Yellow, Very Loose, Moist	SP		2.0 18.6		SS	4-2-1-3	3	1.9/2.0
		3.0 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellow, Very Loose, Wet	SW		3.0 17.6					
5		4.0 - 6.0 Medium SAND, Well Sorted, Yellow & Gray Interbedded w/ 1" organic layer - Medium SAND w/ Organic fines (Silt & Clay), Black, Poorly Sorted, Very Loose, Wet	SW-SM		4.0 15.6		SS	3-1-2-3	3	1.6/2.0
	15	6.0 - 8.0 Medium SAND, Well Sorted, Yellow, Loose, Wet	SP		6.0 13.6		SS	3-2-3-5	5	1.4/2.0
		8.0 - 10.0 Medium SAND w/ Trace Fine sand, Poorly Sorted, Yellow, Loose, Wet, NOTE: Some small black convex layers (possibly manganese redox features)	SW		8.0 11.6		SS	7-4-4-8	8	1.1/2.0
10		10.0 - 12.0 Medium SAND w/ Little Fine sand, Poorly Sorted, Yellow w/ Brownish Yellow Redox Features, Medium Dense, Wet	SW		10.0 9.6		SS	1-7-9-13	16	1.7/2.0
	10	12.0 - 14.0 Medium SAND w/ Little Fine sand, Poorly Sorted, Yellow w/ Brownish Yellow Redox Features, Loose, Wet	SW		12.0 7.6		SS	5-2-4-7	6	1.4/2.0
		14.0 - 16.0 Medium SAND w/ Little Fine SAND, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated	SW		14.0 5.6		SS	5-6-10-16	16	1.6/2.0
15	5	16.0 - 20.0 Discontinued split spoons due to sand infiltrating into the augers			16.0					
20	0	20.0: Terminated Boring Boring completed at 20.0 ft			1.6					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 10'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 10' - 20'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 8' - 20'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 8'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 8'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/21/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 20.0 ft
LOCATION: Wilmington, NC

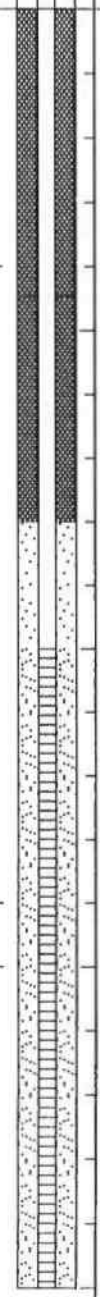
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/24/08
DATE COMPLETED: 11/24/08

NORTHING: 204,027.3
EASTING: 2,304,959.6
GS ELEVATION: 20.7 ft
TOC ELEVATION: 23.4 ft

SHEET 1 OF 1
DEPTH W.L.: 14.1 ft
DATE W.L.: 11/24/08
TIME W.L.: 2:20 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	20	0.0 - 0.3 ORGANIC LAYER - Organic FINES (Silt & Clay) w/ Some Medium SAND, Poorly Sorted, Color: Salt & Pepper, Soft, Low Plasticity, Moist	OL		20.4 / 0.3					
		0.3 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		18.7 / 2.0		SS	1-1-2-2	3	1.7/2.0
		2.0 - 3.5 Medium SAND, Well Sorted, Light Gray, Loose, Moist	SP		17.2 / 3.5		SS	3-3-2-5	5	1.4/2.0
5	15	3.5 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Moist	SW		16.7 / 4.0					
		4.0 - 5.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Gray, Loose, Moist	SW		15.7 / 5.0		SS	5-2-3-4	5	1.4/2.0
		5.0 - 6.0 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Dark Yellowish Brown w/ Black Organic Material, Moist	SM		14.7 / 6.0					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		12.7 / 8.0		SS	4-3-4-8	7	1.4/2.0
		8.0 - 8.5 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Moist	SW		12.2 / 8.5					
10	10	8.5 - 10.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Light Gray, Loose, Moist	SW		10.7 / 10.0		SS	9-6-3-9	9	1.1/2.0
		10.0 - 12.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Wet	SW		8.7 / 12.0		SS	6-6-7-9	13	1.4/2.0
		12.0 - 14.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Loose to Medium Dense, Saturated	SW		6.7 / 14.0		SS	6-4-6-10	10	1.0/2.0
15	5	14.0 - 20.0 Discontinued split spoons due to sand infiltrating into the augers								
20	0	20.0: Terminated Boring Boring completed at 20.0 ft			0.7					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 10'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 10' - 20'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 8' - 20'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 8'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 8'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2, Sub. 1219
Page 142 of 163

RECORD OF BOREHOLE PZ-3

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 204,240.1
EASTING: 2,305,348.6
GS ELEVATION: 18.3 ft
TOC ELEVATION: 20.5 ft

SHEET 1 OF 1
DEPTH W.L.: 11.6 ft
DATE W.L.: 11/25/08
TIME W.L.: 8:55 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.7 Medium SAND w/ Some Organic FINES (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		17.6 0.7							
		0.7 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		16.3 2.0		SS	1-1-2-3	3	1.9/2.0	3/8" Bentonite Chips	
		2.0 - 3.0 Medium SAND, Well Sorted, Light Gray, Loose, Moist	SP		15.3 3.0		SS	3-3-2-4	5	1.8/2.0		
15		3.0 - 4.0 Medium SAND w/ Little Fine Sand and Organic Fines (Silt & Clay), Poorly Sorted, Brownish Yellow w/ Black Organic Material, Loose, Low Plasticity, Wet	SM		14.3 4.0							
		4.0 - 5.5 4.0'-5.5' - Medium Sand, Well Sorted, Light Gray, Loose, Wet	SP		12.8 5.5		SS	5-3-3-4	6	1.2/2.0		
5		5.5 - 6.0 Medium SAND w/ Little Fine Sand and Organic Fines (Silt & Clay), Light Gray w/ Black Organic Material, Firm, Low Plasticity, Wet	SM		12.3 6.0							
			SP-SM		11.8 6.5							
		6.0 - 6.5 Fine SAND, Well Sorted, Light Gray interbedded w/ Organic FINES, Stiff, Low Plasticity, Wet	SM		10.3 8.0		SS	4-4-6-10	10	2.0/2.0		
10		6.5 - 8.0 Medium SAND w/ Some Fine Sand & Organic Fines (Silt & Clay), Poorly Sorted, Dark Yellowish Brown, Stiff, Low Plasticity, Wet	SM		8.3 10.0		SS	6-4-5-7	9	1.1/2.0	#2 Sand	
		8.0 - 10.0 Medium SAND w/ Little Fine Sand & Organic Fines (Silt & Clay), Poorly Sorted, Yellowish Brown, Stiff, Low Plasticity, Saturated @ 9'	SM		7.3 11.0		SS	5-4-7-11	11	2.0/2.0	0.010" Screen	
		10.0 - 11.0 Medium SAND w/ Little Fine Sand & Organic Fines (Silt & Clay), Poorly Sorted, Yellowish Brown, Stiff, Low Plasticity, Saturated	SW		6.3 12.0							
15		11.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Light Brownish Gray, Medium Dense, Saturated 12.0 - 16.0 Discontinued split spoons due to sand infiltrating into the augers			2.3							
		16.0: Terminated Boring Boring completed at 16.0 ft										

WELL CASING
Interval: 0' - 6'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 6' - 16'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 3' - 16'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 3'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 3'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-4

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 21.0 ft
LOCATION: Wilmington, NC

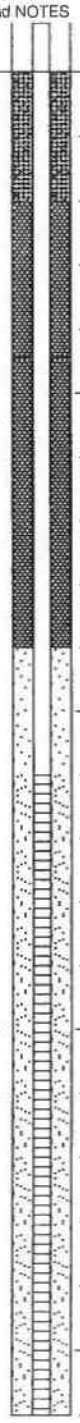
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 11/24/08
DATE COMPLETED: 11/24/08

NORTHING: 203,718.8
EASTING: 2,304,896.2
GS ELEVATION: 22.8 ft
TOC ELEVATION: 24.5 ft

SCREEN TOP
DEPTH W.L.: 15.1 ft
DATE W.L.: 11/24/08
TIME W.L.: 5:05 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3	SM		22.5					
		Medium SAND w/ Trace Fine Sand & Little Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SW		0.3		SS	1-1-1-1	2	1.6/2.0
		0.3 - 2.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown to Yellow, Very Loose, Moist			20.8 / 2.0					
	20	2.0 - 4.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		18.8		SS	2-2-2-3	4	1.3/2.0
		4.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Moist	SW		4.0 / 16.8		SS	2-2-3-4	5	1.2/2.0
5		6.0 - 8.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		6.0 / 14.8		SS	4-4-4-7	8	1.6/2.0
	15	8.0 - 10.0 Medium SAND, Well Sorted, Yellow, Medium Dense, Moist to 9', Then Becomes Wet	SP		8.0 / 12.8		SS	6-6-6-7	12	1.8/2.0
10		10.0 - 12.0 Medium SAND, Well Sorted, Yellow to Light Yellowish Brown to 12' then Brownish Yellow, Medium Dense, Wet	SP		10.0 / 10.8		SS	6-6-6-7	12	1.5/2.0
	10	12.0 - 14.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Saturated @ 13'	SW		12.0 / 8.8		SS	8-4-5-7	9	0.8/2.0
		14.0 - 16.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Saturated	SW		14.0 / 6.8		SS			1.2/2.0
15		16.0 - 21.0 Discontinued split spoons due to sand infiltrating into the augers			16.0 / 1.8					
	5	21.0: Terminated Boring Boring completed at 21.0 ft								
20										
	0									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 11'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 11' - 21'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 9' - 21'
Type: #2 Sand

FILTER PACK SEAL
Interval: 2' - 9'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-5

SHEET 1 OF 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/24/08
DATE COMPLETED: 11/24/08

NORTHING: 203,983.4
EASTING: 2,305,236.7
GS ELEVATION: 27.2 ft
TOC ELEVATION: 30.1 ft

DEPTH W.L.: 20.9 ft
DATE W.L.: 11/24/08
TIME W.L.: 4:00 PM

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.3 Medium SAND w/ Some Organic FINES (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		26.9							
		0.3 - 2.0 Medium SAND, Well Sorted, White, Very Loose, Moist	SP		0.3 25.2		SS	1-1-2-2	3	1.8/2.0		
25		2.0 - 3.5 2.0'-3.0' - Medium SAND, Well Sorted, Grayish Brown to Light Gray, Loose, Wet with Thin Saturated Layer	SP		2.0 23.7		SS	3-3-2-5	5	1.8/2.0		
		3.5 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Wet	SW		3.5 23.2							
		4.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Wet	SW		4.0 21.2		SS	4-2-3-4	5	1.5/2.0		
5		6.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Wet NOTE: 1" ORGANIC LAYER, Very Dark Brown, above a 1" Medium Sand Layer, White @ 6.5'	SW		6.0 17.2		SS	5-4-4-6	8	1.5/2.0	3/8" Bentonite Chips	
							SH			1.5/2.0		
20		10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Light Yellowish Brown, Loose, Wet	SW		10.0 15.2		SS	3-3-3-5	6	1.5/2.0		
		12.0 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Wet	SW		12.0 13.2		SS	6-3-6-6	9	1.5/2.0		
15		14.0 - 16.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Wet	SW		14.0 11.2		SS	6-6-5-8	11	1.5/2.0		
		16.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers			16.0						#2 Sand 0.010" Screen	
10												
5												
20												

Log continued on next page

WELL CASING
Interval: 0' - 15'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 15' - 25'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 13' - 25'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-5

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/24/08
DATE COMPLETED: 11/24/08

NORTHING: 203,983.4
EASTING: 2,305,236.7
GS ELEVATION: 27.2 ft
TOC ELEVATION: 30.1 ft

DATE W.L.: 1/6/09
TIME W.L.: 4:00 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25	0	16.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			2.2							**WELL CASING** Interval: 0' - 15' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 15' - 25' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 13' - 25' Type: #2 Sand **FILTER PACK SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 4.25-Inch ID HSA Rock Drill: N/A
30	-5	25.0: Terminated Boring Boring completed at 25.0 ft										
35	-10											
40	-15											
45	-20											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

RECORD OF BOREHOLE PZ-6D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/4/08
DATE COMPLETED: 12/6/08

NORTHING: 204,200.0
EASTING: 2,305,620.4
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.5 ft

SHEET 1 OF 5
DEPTH W.L.: 29.7 ft
DATE W.L.: 12/15/08
TIME W.L.: 1:35 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 ORGANIC LAYER - Organic FINES (Silt & Clay) w/ Some Medium Sand, Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	OL		28.2 / 0.3					
		0.3 - 2.0 Medium SAND w/ Little Fine SAND, Poorly Sorted, Light Gray to Dark Yellowish Brown, Very Loose, Moist	SW		26.5 / 2.0					
		2.0 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Moist	SW		24.5 / 4.0					
5		4.0 - 6.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		22.5 / 6.0					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		20.5 / 8.0					
10		8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Wet	SW		18.5 / 10.0					
		10.0 - 12.0 Medium SAND, Well Sorted, Brownish Yellow, Medium Dense, Wet	SP		16.5 / 12.0					
		12.0 - 13.0 Medium SAND, Well Sorted, Brownish Yellow, Loose, Wet	SP		15.5 / 13.0					
15		13.0 - 14.0 Fine SAND, Well Sorted, Yellowish Brown, Loose, Wet	SP		14.5 / 14.0					
		14.0 - 15.0 Fine SAND, Well Sorted, Yellowish Brown, Medium Dense, Wet	SP		13.5 / 15.0					
		15.0 - 16.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Wet	SW		12.5 / 16.0					
		16.0 - 20.0 Medium SAND w/ Fine Sand Layers, Well Sorted, Yellow, Medium Dense, Wet NOTE: Some redox mottling present; mottles Yellowish Brown.	SP		8.5 / 20.0					
20		20.0 - 23.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated	SW		5.5 / 23.0					
		23.0 - 28.0 Medium SAND, Well Sorted, Very Pale Brown, Very Dense, Saturated	SP				SS	15-29-34-47	>50	1.6/2.0
		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 74' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 70' - 74'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 70'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-Inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-6D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/4/08
DATE COMPLETED: 12/6/08

NORTHING: 204,200.0
EASTING: 2,305,620.4
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.5 ft

DEPTH W.L.: 20.7 ft
DATE W.L.: 12/6/08
TIME W.L.: 1:35 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		23.0 - 28.0 Medium SAND, Well Sorted, Very Pale Brown, Very Dense, Saturated *(Continued)*	SP		0.5		SS	15-29-34-47	>50	1.6/2.0		
30	0	28.0 - 33.0 Medium SAND w/ Trace Coarse Sand, Poorly Sorted, Very Pale Brown w/ Yellowish Brown Coarse Grains, Very Dense, Saturated	SW		28.0 -4.5		SS	18-20-38-39	>50	2.0/2.0		
35	-5	33.0 - 38.0 Medium SAND w/ Coarse Sand Layers, Well Sorted, Very Pale Brown w/ Brownish Yellow Coarse Grains, Medium Dense, Saturated NOTE: Approximately 5 Coarse Layers Approximately 2" Thick	SP		33.0 -9.5		SS	9-9-13-20	22	1.7/2.0	Portland Cement	
40	-10	38.0 - 43.0 Medium SAND w/ Coarse Sand Layers, Well Sorted, Very Pale Brown w/ Brownish Yellow Coarse Grains, Medium Dense, Saturated NOTE: Approximately 3 Coarse Layers Approximately 1" Thick	SP		38.0 -14.5		SS	9-9-10-15	19	1.0/2.0		
	-15	43.0 - 44.0 Medium SAND, Well Sorted, Yellow, Medium Dense, Saturated	SP		43.0 -15.5		SS	9-11-13-19	24	1.4/2.0		
45		44.0 - 48.0 Medium SAND, w/ Little Fine Sand, Poorly Sorted, White, Saturated	SW		44.0 -19.5							

Log continued on next page

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 74' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 70' - 74'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 70'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-6D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/4/08
DATE COMPLETED: 12/6/08

NORTHING: 204,200.0
EASTING: 2,305,620.4
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.5 ft

SHEET 1 of 5
NEPTUNE: 12/16/08
DATE W.L.: 12/16/08
TIME W.L.: 1:35 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
	-20	48.0 - 53.0 Fat Clay, Light Gray, Soft, High Plasticity, Saturated	CH		48.0 / -24.5		SS	WR-2-1-5	3	1.6/2.0
50										
	-25	53.0 - 54.0 Medium SAND, Well Sorted, Light Gray, Medium Dense, Saturated	SP		53.0 / -25.5		SS	13-13-15-21	28	1.0/2.0
55		54.0 - 58.0 Medium SAND w/ Some Coarse Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Saturated	SW		54.0 / -29.5					
	-30	58.0 - 59.5 Medium SAND w/ Some Coarse Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Saturated	SW		58.0 / -31.0		SS	9-9-11-17	20	1.0/2.0
60		59.5 - 63.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Gray, Medium Dense, Saturated	SW		59.5 / -34.5					
	-35	63.0 - 68.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Well Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		63.0 / -39.5		SS	WR-11-20-30	31	1.4/2.0
65										
	-40	68.0 - 73.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		68.0		SS	13-25-50/4.5	75.5	1.0/2.0
70										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

3/8"

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 74' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 70' - 74'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 70'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-inch Tricone; Mud Rotary
Rock Drill: N/A

Log continued on next page

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub. 1219
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RECORD OF BOREHOLE PZ-6D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/4/08
DATE COMPLETED: 12/6/08

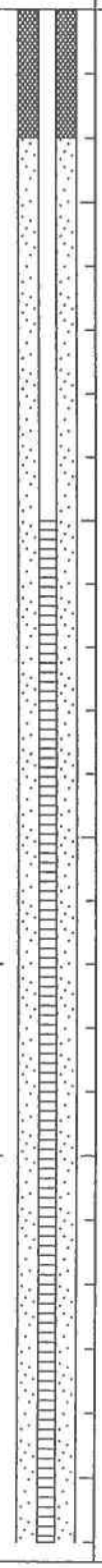
NORTHING: 204,200.0
EASTING: 2,305,620.4
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.5 ft

SHEET 4 OF 5
DEPTH W.L.: 20.7 ft
DATE W.L.: 12/16/08
TIME W.L.: 1:35 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
			SM		-44.5					
	-45	73.0 - 78.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated			73.0		SS	20-26-41-50/3	>50	1.5/2.0
75			SM		-49.5					
	-50	78.0 - 83.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated			78.0		SS	18-24-35-50/4.5	>50	1.8/2.0
80			SM		-54.5					
	-55	83.0 - 88.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Well Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated			83.0		SS	7-16-39-48	>50	1.8/2.0
85			SM		-59.5					
	-60	88.0 - 93.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Well Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated			88.0		SS	11-13-25-50/4.5	38	2.0/2.0
90			SM		-64.5					
	-65	93.0 - 100.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated			93.0		SS	21-30-50	>50	2.0/2.0
95			SM							

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 74' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 70' - 74'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 70'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-6D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/4/08
DATE COMPLETED: 12/6/08

NORTHING: 204,200.0
EASTING: 2,305,620.4
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.5 ft

SHEET 5 of 5
DATE W.L.: 12/16/08
TIME W.L.: 1:35 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		93.0 - 100.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated *(Continued)*	SM		-71.5							
100	-70	100.0 - 102.0 Silty SAND, Fine w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Very Stiff, Low Plasticity, Saturated	SM		100.0 -73.5		SS	10-9-19-50/5	28	2.0/2.0	Collapsed Material	
	-75	102.0: Terminated Boring Boring completed at 102.0 ft										
105												
	-80											
110												
	-85											
115												
	-90											
120												

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 74' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 70' - 74'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 70'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

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Oct 30 2019

RECORD OF BOREHOLE PZ-6S

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 26.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

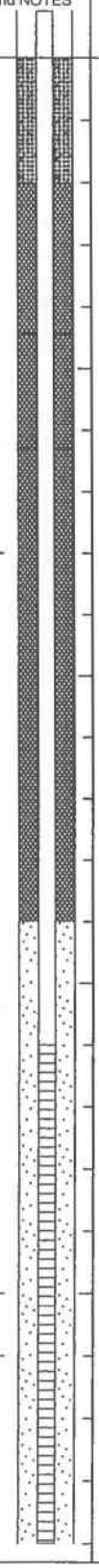
NORTHING: 204,191.3
EASTING: 2,305,618.6
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.8 ft

DEPTH W.L.: 21.2 ft
DATE W.L.: 8/24/09
TIME W.L.: 12:30 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3	OL		28.2					
		ORGANIC LAYER - Organic FINES (Silt & Clay) w/ Some Medium Sand, Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SW		0.3		SS	1-1-1-2	2	1.9/2.0
		0.3 - 2.0 Medium SAND w/ Little Fine SAND, Poorly Sorted, Light Gray to Dark Yellowish Brown, Very Loose, Moist			26.5					
		2.0 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Moist	SW		2.0		SS	3-3-3-4	6	1.4/2.0
25					24.5					
		4.0 - 6.0 Modium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		4.0		SS	2-2-3-3	5	1.6/2.0
5					22.5					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		6.0		SS	3-4-3-6	7	1.6/2.0
					20.5					
20		8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Wet	SW		8.0		SS	6-3-2-6	5	1.6/2.0
					18.5					
10		10.0 - 12.0 Medium SAND, Well Sorted, Brownish Yellow, Medium Dense, Wet	SP		10.0		SS	7-6-6-9	12	1.6/2.0
					16.5					
		12.0 - 13.0 Medium SAND, Well Sorted, Brownish Yellow, Loose, Wet	SP		12.0		SS	5-4-4-5	8	1.4/2.0
					15.5					
15		13.0 - 14.0 Fine SAND, Well Sorted, Yellowish Brown, Loose, Wet	SP		13.0					
					14.5					
		14.0 - 15.0 Fine SAND, Well Sorted, Yellowish Brown, Medium Dense, Wet	SP		14.0					
					13.5		SS	5-5-6-9	11	1.4/2.0
15		15.0 - 16.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Wet	SW		15.0					
					12.5					
		16.0 - 20.0 Medium SAND w/ Fine Sand Layers, Well Sorted, Yellow, Medium Dense, Wet NOTE: Some redox mottling present; mottles Yellowish Brown.	SP		16.0		SS	9-5-6-10	11	1.6/2.0
10							SH			1.0/2.0
					8.5					
20		20.0 - 22.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated	SW		20.0		SS	8-10-15-22	25	–/2.0
					6.5					
		22.0 - 26.0 Discontinued split spoons due to sand infiltrating into the augers			22.0					
5										

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 16'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 16' - 26'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 14' - 26'
Type: #2 Sand

FILTER PACK SEAL
Interval: 2' - 14'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

RECORD OF BOREHOLE PZ-6S

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 26.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 204,191.3
EASTING: 2,305,618.6
GS ELEVATION: 28.5 ft
TOC ELEVATION: 30.8 ft

SHEET 2 of 2
DATE W.L.: 11/25/08
TIME W.L.: 12:30 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		22.0 - 26.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			2.5							
		26.0: Terminated Boring Boring completed at 26.0 ft										
30	0											
35	-5											
40	-10											
45	-15											

WELL CASING
Interval: 0' - 16'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 16' - 26'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 14' - 26'
Type: #2 Sand

FILTER PACK SEAL
Interval: 2' - 14'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-7

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 19.0 ft
LOCATION: Wilmington, NC

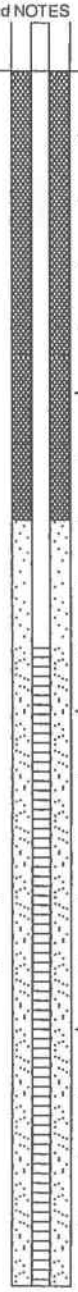
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/21/08
DATE COMPLETED: 11/21/08

NORTHING: 203,633.6
EASTING: 2,305,138.6
GS ELEVATION: 21.5 ft
TOC ELEVATION: 23.0 ft

SHEET 1 of 1
DEPTH W.L.: 13.6 ft
DATE W.L.: 11/21/08
TIME W.L.: 11:50 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.5 Medium SAND w/ Trace Fine Sand & Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper transitions to Gray, Very Soft, Low Plasticity, Moist	SM		21.0 / 0.5					
	20	0.5 - 2.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		19.5 / 2.0		SS	1-WR-1-2	0	1.4/2.0
		2.0 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Very Loose, Moist NOTE: Redox Features Present, Yellowish Brown	SW		17.5 / 4.0		SS	2-1-2-2	3	1.3/2.0
5		4.0 - 6.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Very Loose, Moist	SW		15.5 / 6.0		SS	3-2-2-3	4	1.3/2.0
	15	6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Wet	SW		13.5 / 8.0		SS	3-3-3-4	6	1.5/2.0
		8.0 - 10.0 Medium SAND, Well Sorted, Top: Brownish Yellow; Middle: Brownish Yellow (Lighter); Bottom: Very Pale Brown, Loose, Wet	SP		11.5 / 10.0		SS	6-3-3-7	6	1.4/2.0
10		10.0 - 12.0 Medium SAND, Well Sorted, Yellow, Medium Dense, Saturated @ 11.5'	SP		9.5 / 12.0		SS	7-7-8-9	15	1.5/2.0
	10	12.0 - 14.0 Medium SAND, Well Sorted, Yellow, Loose, Saturated	SP		7.5 / 14.0		SS	5-3-5-10	8	0.9/2.0
		14.0 - 19.0 Discontinued split spoons due to sand infiltrating into the augers			2.5					
15	5	19.0: Terminated Boring Boring completed at 19.0 ft								
20	0									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 9'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 9' - 19'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 7' - 19'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 7'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 7'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

RECORD OF BOREHOLE PZ-8

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 30.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

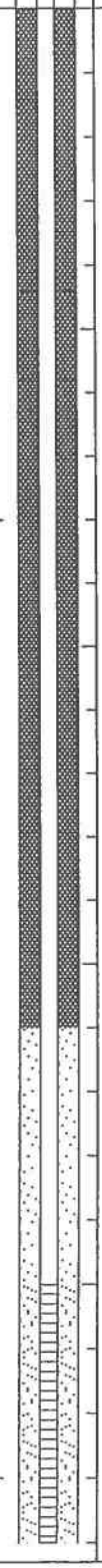
NORTHING: 203,942.5
EASTING: 2,305,532.2
GS ELEVATION: 32.8 ft
TOC ELEVATION: 36.0 ft

SHEET 1 of 2
DATE W.L.: 12/15/08
TIME W.L.: 2:22 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		32.6					
		0.3 - 2.0 Medium SAND, Well Sorted, Gray and White, Very Loose, Moist	SP		0.3 30.8		SS	1-1-1-2	2	2.0/2.0
	30	2.0 - 4.0 Medium SAND, Well Sorted, White, Very Loose, Moist NOTE: Thin Organic Layer present @ 3', approximately 1" thick	SP		2.0 28.8		SS	2-2-2-4	4	1.3/2.0
		4.0 - 5.0 Medium SAND, Well Sorted, Gray, Loose, Moist	SP		4.0 27.8		SS	4-3-3-5	6	1.8/2.0
5		5.0 - 6.0 Medium SAND w/ Little Fine Sand & Some Organic Fines (Silt & Clay) @ Approximately 5' (Thins Out), Poorly Sorted, Yellowish Brown, Firm, Low Plasticity, Moist	SM		5.0 26.8					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Wet	SW		6.0 24.8		SS	4-5-3-7	8	1.8/2.0
	25	8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Wet	SW		8.0 22.8		SS	7-4-4-6	8	1.0/2.0
10		10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Olive Brown to Yellowish Brown @ Bottom, Loose, Wet	SW		10.0 20.8		SS	6-4-6-5	10	1.9/2.0
		12.0 - 13.0 Medium SAND w/ Little Fine Sand w/ Some Organic fines (Silt & Clay), Poorly Sorted, Dark Yellowish Brown, Stiff, Low Plasticity, Wet	SM		12.0 19.8		SS	8-4-5-10	9	1.4/2.0
	20	13.0 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellow, Loose, Wet	SW		13.0 18.8					
		14.0 - 30.0 Discontinued split spoons due to sand infiltrating into the augers			14.0					
15										
	15									
20										
	10									

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 20'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 20' - 30'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 16' - 30'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 16'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 16'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-8

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 30.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 203,942.5
EASTING: 2,305,532.2
GS ELEVATION: 32.8 ft
TOC ELEVATION: 36.0 ft

SHEET 2 OF 2
DEPTH W.L.: 26.1 ft
DATE W.L.: 11/25/08
TIME W.L.: 2:22 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		14.0 - 30.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*									0.010" Screen	**WELL CASING** Interval: 0' - 20' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 20' - 30' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 16' - 30' Type: #2 Sand **FILTER PACK SEAL** Interval: 0' - 16' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 16' Type: 3/8" Bentonite Chips **WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
30					2.8							
		30.0: Terminated Boring Boring completed at 30.0 ft										
35												
40												
45												

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-9

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/21/08
DATE COMPLETED: 11/21/08

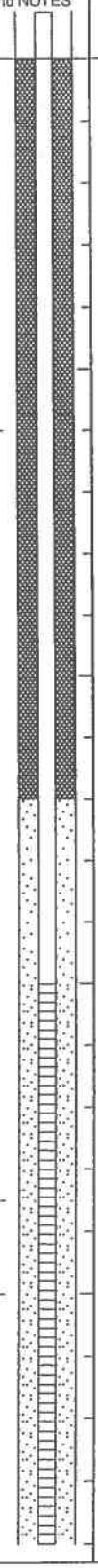
NORTHING: 203,533.8
EASTING: 2,305,359.5
GS ELEVATION: 32.2 ft
TOC ELEVATION: 35.1 ft

DATE W.L.: 11/24/08
TIME W.L.: 10:48 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	30	0.0 - 0.2 Medium SAND w/ Little Fine Sand & Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		0.2		SS	1-1-2-2	3	1.4/2.0
		0.2 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		30.2					
		2.0 - 4.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		2.0 28.2		SS	3-2-2-4	4	1.2/2.0
5	25	4.0 - 5.0 Medium SAND, Well Sorted, Light Gray, Loose, Moist	SP		4.0 27.2		SS	4-2-3-4	5	1.6/2.0
		5.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Moist	SW		5.0 26.2					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Moist	SW		6.0 24.2		SS	4-3-5-7	8	1.4/2.0
10	20	8.0 - 10.0 Medium SAND, Well Sorted, Brownish Yellow, Loose, Moist	SP		8.0 22.2		SS	3-3-6-10	9	1.1/2.0
		10.0 - 12.0 Medium SAND, Well Sorted, Very Pale Brown, Medium Dense, Moist NOTE: Redox Features present Dark Yellowish Brown	SP		10.0 20.2		SS	6-6-7-10	13	1.2/2.0
15	15	12.0 - 13.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Dark Brown, Loose, Moist	SW		12.0 19.2		SS	5-3-4-7	7	1.3/2.0
		13.0 - 14.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Light Yellowish Brown, Loose, Moist	SW		13.0 18.2					
		14.0 - 16.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown, Medium Dense, Moist	SW		14.0 16.2		SS	7-6-7-8	13	1.7/2.0
		16.0 - 17.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Very Dark Brown, Loose, Wet	SW		16.0 15.2		SS	10-3-5-13	8	1.3/2.0
20	10	17.0 - 18.0 Medium SAND, Well Sorted, Very Pale Brown, Loose, Wet	SP		17.0 14.2					
		18.0 - 18.3 Medium SAND w/ Some Fine Sand, Poorly Sorted, Olive Gray, Medium Dense, Wet NOTE: Thin Lenses present, Very Dark Brown, Possible Manganese Staining	SW		13.9 18.3		SS	12-11-14-17	25	1.6/2.0
		18.3 - 20.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow w/ Redox Brownish Yellow, Medium Dense, Wet NOTE: Thin Lenses present, Very Dark Brown, Possible Manganese Staining	SW		12.2 20.0					
		20.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers								

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 15'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 15' - 25'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 12' - 25'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 12'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 12'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

RECORD OF BOREHOLE PZ-9

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/21/08
DATE COMPLETED: 11/21/08

NORTHING: 203,533.8
EASTING: 2,305,359.5
GS ELEVATION: 32.2 ft
TOC ELEVATION: 35.1 ft

SHEET 2 OF 2
DEPTH W.L.: 23.1 ft
DATE W.L.: 12/1/08
TIME W.L.: 10:48 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		20.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			7.2							**WELL CASING** Interval: 0' - 15' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 15' - 25' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 12' - 25' Type: #2 Sand **FILTER PACK SEAL** Interval: 0' - 12' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 12' Type: 3/8" Bentonite Chips **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
	5	25.0: Terminated Boring Boring completed at 25.0 ft										
30	0											
35	-5											
40	-10											
45	-15											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-10

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

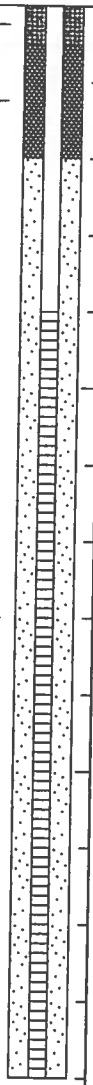
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/20/07

NORTHING: 194,122.6
EASTING: 2,308,842.1
GS ELEVATION: 12.8 ft
TOC ELEVATION: 15.5 ft

DEPTH W.L.: 6.8 ft
ELEVATION W.L.: 8.7 ft
DATE W.L.: 2/21/07
TIME W.L.: 8:58 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.8		SPT	1-1-2-3	3	1.8/2.0
		2.0 - 4.0 Very loose, white, medium sand, slightly moist to moist.	SP		8.8		SPT	2-2-3-4	5	1.2/2.0
5		4.0 - 6.0 Loose, white, medium sand, moist.	SP		6.8		SPT	2-3-3-5	6	1.0/2.0
		6.0 - 8.0 Loose to compact, brown to white, medium sand, moist to saturated.	SP		4.8		SPT	3-3-6-13	9	2.0/2.0
10		8.0 - 10.0 Loose, brown, medium sand, saturated.	SP		2.8		SPT	3-3-5-7	8	2.0/2.0
		10.0 - 12.0 Loose to compact, brown medium sand, saturated.	SP		0.8		SPT	3-5-12-17	17	1.8/2.0
15		12.0 - 14.0 No Recovery.	SP		-1.3		SPT			0.0/2.0
20		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

RECORD OF BOREHOLE PZ-10D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/2/08
DATE COMPLETED: 12/3/08

NORTHING: 203,124.8
EASTING: 2,305,120.6
GS ELEVATION: 23.9 ft
TOC ELEVATION: 26.2 ft

SHEET 4 OF 5
DATE W.L.: 12/3/08
TIME W.L.: 3:05 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Fine SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		23.7 / 0.3					
		0.3 - 2.0 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Gray and Brownish Yellow, Very Loose, Low Plasticity, Moist	SW		21.9 / 2.0					
		2.0 - 4.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Yellow, Loose, Moist	SW		19.9 / 4.0					
5		4.0 - 6.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Moist NOTE: Some Redox Features Present as well as Organic Staining	SW		17.9 / 6.0					
		6.0 - 8.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		15.9 / 8.0					
10		8.0 - 10.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow to Yellow, Loose, Wet	SW		13.9 / 10.0					
		10.0 - 12.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Yellow w/ Redox Yellowish Brown, Medium Dense, Wet NOTE: Redox Features present @ 11.5'	SW		11.9 / 12.0					
15		12.0 - 18.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Brownish Yellow transitions to Ligh Gray @ 13', Medium Dense, Wet to Saturated @ 14'	SW		5.9 / 18.0					
20		18.0 - 23.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated	SW		0.9 / 23.0		SS	10-11-14-19	25	1.4 / 2.0
		23.0 - 28.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Dense, Saturated	SW				SS	15-16-21-23	37	1.5 / 2.0

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 77' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 69' - 77'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 69'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-Inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-10D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/2/08
DATE COMPLETED: 12/3/08

NORTHING: 203,124.8
EASTING: 2,305,120.6
GS ELEVATION: 23.9 ft
TOC ELEVATION: 26.2 ft

SHEET 2 of 3
DEPTH W.L.: 6.6 ft
DATE W.L.: 12/3/08
TIME W.L.: 3:05 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		23.0 - 28.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Dense, Saturated *(Continued)*	SW		-4.1		SS	15-16-21-23	37	1.5/2.0		**WELL CASING** Interval: 0' - 80' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 80' - 100' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 77' - 100' Type: #2 Sand **FILTER PACK SEAL** Interval: 69' - 77' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 69' Type: Portland Cement **WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 6.25-inch Tricone; Mud Rotary Rock Drill: N/A
-5		28.0 - 33.0 Medium SAND w/ Trace Fine Sand and Trace Coarse Sand, Poorly Sorted, Very Pale Brown (Matrix) w/ Trace Brownish Yellow (Coarse Grained) SAND, Medium Dense, Saturated	SW		28.0 -9.1		SS	10-11-16-24	27	1.5/2.0		
30		33.0 - 34.0 Medium SAND w/ Trace Fine Sand and Trace Coarse Sand, Poorly Sorted, Very Pale Brown (Matrix) w/ Trace Brownish Yellow (Coarse Grained) SAND, Medium Dense, Saturated	SW		33.0 -10.1		SS	7-7-6-11	13	1.5/2.0	Portland Cement	
-10		34.0 - 38.0 Medium SAND w/ Little Coarse Sand, Poorly Sorted, Very Pale Brown (Matrix) w/ Trace Brownish Yellow (Coarse Grained) Sand, Medium Dense, Saturated	SW		34.0 -14.1							
35		38.0 - 43.0 Fat CLAY, Light Gray, Firm, High Plasticity, Wet	CH		38.0 -19.1		SS	WR-4-3-3	7	2.0/2.0		
-15												
40		43.0 - 48.0 Medium SAND, Well Sorted, Yellowish Brown, Medium Dense, Saturated	SP		43.0 -24.1		SS	4-6-8-16	14	1.3/2.0		
-20												
45												

Log continued on next page

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-10D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/2/08
DATE COMPLETED: 12/3/08

NORTHING: 203,124.8
EASTING: 2,305,120.6
GS ELEVATION: 23.9 ft
TOC ELEVATION: 26.2 ft

DATE W.L.: 12/3/08
TIME W.L.: 3:05 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		48.0 - 53.0 Medium SAND w/ Trace Coarse Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated	SW		48.0		SS	9-11-17-22	28	1.3/2.0		**WELL CASING** Interval: 0' - 80' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 80' - 100' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 77' - 100' Type: #2 Sand **FILTER PACK SEAL** Interval: 69' - 77' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 69' Type: Portland Cement **WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 6.25-inch Tricone; Mud Rotary Rock Drill: N/A
-25					-29.1							
50		53.0 - 54.5 Medium SAND w/ Trace Coarse Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated	SW		53.0		SS	17-12-16-16	28	1.0/2.0		
-30					-30.6							
		54.5 - 58.0 Coarse SAND w/ Little Medium Sand, Poorly Sorted, Yellowish Brown, Medium Dense, Saturated	SW		54.5							
55					-34.1							
		58.0 - 63.0 Silty SAND, Fine Sand w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Very Stiff, Low Plasticity, Wet	SM		58.0		SS	5-8-11-19	19	1.6/2.0		
-35					-39.1							
60		63.0 - 68.0 Silty SAND, Fine Sand w/ Some ines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Wet	SM		63.0		SS	19-27-37-50/5.5"	>50	1.6/2.0		
-40					67.0							
65		67.0 - 68.0 Silty SAND, Fine Sand w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		-44.1							
		68.0 - 67.0 Lost Some Fluid (Drilling Mud); Possible Coarse Sand Layer					SS	17-27-33-50/5.0"	>50	1.7/2.0		
-45												
70												

Log continued on next page

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-10D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/2/08
DATE COMPLETED: 12/3/08

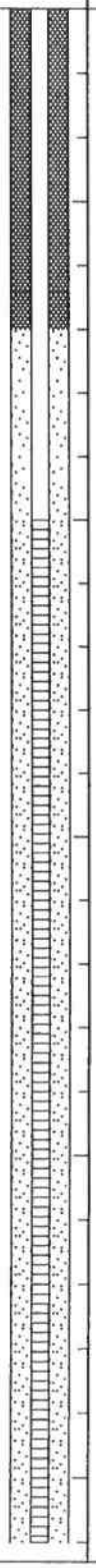
NORTHING: 203,124.8
EASTING: 2,305,120.6
GS ELEVATION: 23.9 ft
TOC ELEVATION: 26.2 ft

SHEET 4 of 5
DEPTH W.L.: 6.5 ft
DATE W.L.: 12/3/08
TIME W.L.: 3:05 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
75	-50	73.0 - 78.0 Lean CLAY w/ Little Fine Sand, Very Dark Greenish Gray, Stiff, Moderate Plasticity, Saturated	CL		-54.1		SS	3-9-3-33	12	1.6/2.0
80	-55	78.0 - 83.0 Silty SAND, Fine Sand w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		78.0 -59.1		SS	17-20-23-34	43	1.6/2.0
85	-60	83.0 - 88.0 Silty SAND, Fine Sand w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		83.0 -64.1		SS	27-50/6.0"	50/6.0"	1.0/2.0
90	-65	88.0 - 93.0 Silty SAND, Fine Sand w/ Some Fines (Silt & Clay), Poorly Sorted, Very Dark Greenish Gray, Hard, Low Plasticity, Saturated	SM		88.0 -69.1		SS	10-15-27-50/5.0"	42	1.6/2.0
95	-70	93.0 - 100.0 Lean CLAY w/ Little Fine Sand, Poorly Sorted, Very Dark Greenish Gray, Hard, Moderate Plasticity, Saturated	CL		93.0		SS	15-19-31-50/3.0"	50	1.6/2.0

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 77' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 69' - 77'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 69'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-Inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-10D

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 102.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/2/08
DATE COMPLETED: 12/3/08

NORTHING: 203,124.8
EASTING: 2,305,120.6
GS ELEVATION: 23.9 ft
TOC ELEVATION: 26.2 ft

DATE W.L.: 12/6/08
TIME W.L.: 3:05 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
100	-75	93.0 - 100.0 Lean CLAY w/ Little Fine Sand, Poorly Sorted, Very Dark Greenish Gray, Hard, Moderate Plasticity, Saturated *(Continued)*	CL		-76.1							
		100.0 - 102.0 Lean CLAY w/ Little Fine Sand, Poorly Sorted, Very Dark Greenish Gray, Hard, Moderate Plasticity, Saturated	CL		100.0 -78.1		SS	9-15-28-50/3.0"	43	1.6/2.0	Collapsed Material	
105	-80	102.0: Terminated Boring Boring completed at 102.0 ft										
110	-85											
115	-90											
120	-95											

WELL CASING
Interval: 0' - 80'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 80' - 100'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 77' - 100'
Type: #2 Sand

FILTER PACK SEAL
Interval: 69' - 77'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 69'
Type: Portland Cement

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 6.25-inch Tricone; Mud Rotary
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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I/A

Appendix A
CSA and CAP Reports and Groundwater Modeling

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Reports are presented herein in electronic format on the enclosed CD

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Appendix B
Water Supply Well Survey Report of Findings

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TABLE B-2
NC DENR WATER SUPPLY WELL TRACKING
THROUGH JULY 28, 2015
L.V. SUTTON ENERGY COMPLEX
DUKE ENERGY PROGRESS, INC., WILMINGTON, NORTH CAROLINA

Receptor Survey Map Well ID	Property Address	County	Public Water Supply ID	Public or Private	DWR Mailing				Post Card Response				
					NCDENR Sample ID	DWR Letter Sent (Date)	DWR Letter Received (Date)	Post Card Received (Date)	Sample (Y/N)	Lab Preference (Y/N)	Lab Selected by Well Owner	Lab Assigned by DWR	Well Owner Contact Adress (if different)/ Notes
DW-1	4600 421 Highway N Wilmington, NC 28401	New Hanover	NC0465520	Public	S1	12/17/2014	1/5/2015	1/20/2015	YES	NO	N/A	Element One, Inc.	PO Box 327 Wilmington, NC 28402-0327
DW-6	230 Sutton Lake Road Wilmington, NC 28401	New Hanover	NC7065045	1 Public & 1 Private	S2	12/17/2014	12/22/2014	1/5/2015	YES	YES	Environmental Chemists, Inc.	N/A	PO Box 2408 Wilson, NC 27894
DW-9	235 Sutton Lake Road Wilmington, NC 28401	New Hanover		Private	S3	12/17/2014	12/20/2014	12/29/2014	YES	YES	Environmental Chemists, Inc.	N/A	PO Box 67 Harrells NC 28444
DW-10	221 Sutton Lake Road Wilmington, NC 28401	New Hanover		Private	S4	12/17/2014	1/28/2015	2/19/2015	YES	NO	N/A	Environmental Chemists, Inc.	11500 Iron Bridge Road Chester, VA 23831
DW-11	363 Metro Circle Wilmington, NC 28401	New Hanover		Private	S5	12/17/2014	1/16/2015						1938 Live Oak Parkway Wilmington, NC 28403
DW-12	331 Metro Circle Wilmington, NC 28401	New Hanover		Private	S6	12/17/2014	12/22/2014	12/30/2014	YES	NO	N/A	Element One, Inc.	331 Metro Cir Wilmington, NC 28401
DW-13	212 Transcom Court Wilmington, NC 28401	New Hanover		Private	S7	12/17/2014	1/24/2015	2/20/2015	YES	NO	N/A	Element One, Inc.	5115 Partha Lane Wilmington, NC 28409
DW-14 & DW-15 (PRW-1)	3881 421 Highway N Wilmington, NC 28401	New Hanover	NC7065038 and NC7065055	Public	S8	12/17/2014	12/19/2014	2/2/2015	YES	NO	N/A	Environmental Chemists, Inc.	C/O Conners International 702 Oberlin Road Suite 400 Raleigh, NC 27605
DW-16	3535 Fredrickson Road Wilmington, NC 28401	New Hanover		Private	S9	12/17/2014	12/22/2014	1/14/2015	NO				PO Box 310 Autryville NC 28318 No well on this property
NHC-SW1 NHC-SW2 NHC-SW3 NHC-SW4	3405 Fredrickson Road Wilmington, NC 28401	New Hanover	NC0465191	Public	S10	12/17/2014	12/22/2014	2/25/2015	NO	YES	Pace Analytical Services, Inc.	N/A	Sweeny Water Treatment Plant, 1833 North 5th Avenure, Wilmington, NC 28412 NHC has been performing monthly testing. Does not wish to have wells sampled.
	~~3405 Fredrickson Road Wilmington, NC 28401~~	~~New Hanover~~		~~Public~~	~~S11~~								This is a duplicate of S10
PRW-2	3857 421 Highway N Wilmington, NC 28401	New Hanover	NC7065023	Public	S12	12/17/2014	12/22/2014	3/12/2015	YES	YES	N/A	Element One, Inc.	3857 HWY 421 N Wilmington, NC 28401
PRW-3	3773 Fredrickson Road Wilmington, NC 28401	New Hanover		Private	S13	12/17/2014	12/22/2014	2/12/2015	NO				PO Box 1886 Wilmington, NC 28402
PRW-4	3601 Fredrickson Road Wilmington, NC 28401	New Hanover		Private	S14	12/17/2014	1/28/2015	2/2/2015	YES	NO	N/A	Element One, Inc.	1701 Fall Hill Avenue Fredericksburg, VA 22401 There are no wells on the property.
PRW-5	347 Metro Circle Wilmington, NC 28401	New Hanover		Private	S15	12/17/2014	12/22/2014	N/A					PO Box 1035 Wrightsville Beach, NC 28480 Site is vacant. No well was observed.
PRW-6	307 Metro Circle Wilmington, NC 28401	New Hanover		Private	S16	12/17/2014	12/26/2014						PO Box S New Bern NC 28560
PRW-7	218 Roymac Drive Wilmington, NC 28401	New Hanover		Private	S17	12/17/2014	12/23/2014	1/7/2015	YES	YES	Microbac, Inc.		309 Riley St Bolivia NC 28422
Not Included. Well is beyond 1/2-mile radius of Receptor Survey.	136 Roymac Drive Wilmington, NC 28401	New Hanover	NC7065046	Public	S18	5/4/2015	5/6/2015	5/11/2015	YES	NO	N/A	Element One, Inc.	136 Roymac Drive Wilmington, NC 28401

Source: "WSW Sample Tracking as of 7-28-15.xlsx" provided by Duke Energy

Wells In Progress	
RED	Does not want well sampled/no response/no wells
BLUE	Submitted to laboratory for sampling
GREEN	Sampling complete - waiting on results or HRE
DARK GREEN	HRE Received from DHHS and Sent to Homeowner for Initial sampling. May be in the process of resampling.
ORANGE	Several attempts made to contact including site visit. See notes.
WHITE	At least 2 attempts made with letters. No site visit. No response.

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TABLE B-3
PUBLIC AND PRIVATE WATER SUPPLY WELLS - JULY 2015
WITHIN 0.5 MILE RADIUS OF ASH BASIN COMPLIANCE BOUNDARY
L.V. SUTTON ENERGY COMPLEX
DUKE ENERGY PROGRESS, INC., WILMINGTON, NORTH CAROLINA

MAP WELL ID		PROPERTY OWNER	PROPERTY ADDRESS (WELL LOCATION)	PARCEL ID NUMBER	SOURCE OF DRINKING WATER			WELL USE						APPROXIMATE DISTANCE FROM COMPLIANCE BOUNDARY (FEET)	WELL DEPTH (FEET)	WELL CASING OR OPEN HOLE DEPTH (FEET)	SCREEN INTERVAL (FEET)
					MUNICIPAL	WELL	OTHER	DRINKING	IRRIGATION	LIVESTOCK	SWIMMING POOL	NOT IN USE	OTHER				
DW-1	NA	S T WOOTEN CORPORATION	4600 421 HWY	R02400-001-040-000										1590			
DW-2	PWS: 0465520 Invista Well OH-2	S T WOOTEN CORPORATION	4600 421 HWY	R02400-001-040-000										1220			
DW-3	NA	S T WOOTEN CORPORATION	4600 421 HWY	R02400-001-040-000										940			
DW-4	PWS: 0465520 Invista Well G	S T WOOTEN CORPORATION	4600 421 HWY	R02400-001-040-000										910			
DW-5	NA	S T WOOTEN CORPORATION	4600 421 HWY	R02400-001-040-000										940			
DW-6	NA	S T WOOTEN CORP	230 SUTTON LAKE RD	R02400-001-004-000										1190			
DW-7	NA	S T WOOTEN CORP	230 SUTTON LAKE RD	R02400-001-004-000										1880			
DW-8	NA	S T WOOTEN CORP	230 SUTTON LAKE RD	R02400-001-004-000										2050			
DW-9	NA	EZZELL TRUCKING INC	235 (233) SUTTON LAKE RD	R03200-002-001-007		Y		X						1400	UNK	UNK	UNK
DW-10	NA	L C H HOLDINGS LLC	221 SUTTON LAKE RD	R03200-002-001-026										1900			
DW-11	NA	ROYMAC PARTNERSHIP	363 METRO CIR	R03200-002-028-000		Y		X	X					1850			
DW-12	NA	ABSOLUTE PROPERTIES OF THE CAROLINAS LLC	331 METRO CIR	R03200-002-025-000		Y		X	X				X	1650			
DW-13	NA	PEVONKA, SUSAN	212 TRANSCOM CT	R03200-002-023-000		Y		X	X				X	2510			
DW-14	PWS: 7065038 HWY 421 PROPERIES LLC A	WIL FERGIE LLC	3881 421 HWY N	R03200-001-035-000		Y		X					X	2510			
DW-15 (PRW-1)	PWS: 7065038 HWY 421 PROPERIES LLC B	WIL FERGIE LLC	3881 421 HWY N	R03200-001-035-000		Y		X					X	2530			
DW-16	NA	TERRY, ALFRED SPELL OR PAMELA SUTTON	3535 10 FREDRICKSON RD	R03200-002-033-000		Y								2160			
NHC-SW 1	NA	NEW HAN CNTY	3405 FREDRICKSON RD	R03200-002-001-011										2570			
NHC-SW 2	NA	NEW HAN CNTY	3405 FREDRICKSON RD	R03200-002-001-011										1560			
NHC-SW 3	PWS: 0465191 CFPUA Well #3	NEW HAN CNTY	3405 FREDRICKSON RD	R03200-002-001-011										2260			
NHC-SW 4	PWS: 0465191 CFPUA Well #4	NEW HAN CNTY	3405 FREDRICKSON RD	R03200-002-001-011										1960			
PRW-2	PWS: 7065023 MASTEC	MASTEC NORTH AMERICA INC	3857 421 HWY N	R03200-001-038-000										2720			
PRW-3	NA	SOUTH ATLANTIC SERV INC	3773 FREDRICKSON RD	R03200-002-001-003										2810			
PRW-4	NA	QUARLES PETROLEUM INC	3601 FREDRICKSON RD	R03200-002-029-000										1970			
PRW-5	NA	SAUNDERS & SAUNDERS LLC	347 METRO CIR	R03200-002-027-000										1530			
PRW-6	NA	MAOLA MILK & ICE CREAM CO	307 METRO CIR	R03200-002-015-000										2080			
PRW-7	NA	PORTERFIELD, J C JUDY C	218 ROYMAC DR	R03200-002-013-000										2780			
S18	NA	SOUTHERN INDUSTRIAL CONSTRUCTORS	136 ROYMAC DR	R03200-001-029-000										3220			

NOTES

Prepared By: RBI Checked By: HJF

Last Revised: July 27, 2015

Municipal includes County, City, or other municipal water source(s).

UNK - Unknown NA - Not available

Parcel ID, owner and well location address information were obtained from the New Hanover County North Carolina website (http://www.nhcgov.com/Pages/GISData.aspx).

- Possible water supply well.
- Reported/Observed water supply well.
- Water supply well or spring reported by property owner.

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TABLE B-4
PARCEL OWNERSHIP INFORMATION WITHIN SURVEY RADIUS
L.V. SUTTON ENERGY COMPLEX
DUKE ENERGY PROGRESS, INC., WILMINGTON, NORTH CAROLINA

PARCEL ID NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	OWNER ADDRESS
R02400-001-001-000	INVISTA S.A.R.L.	4600 421 HWY N	PO BOX 327, WILMINGTON, NC 28402-0327
R02400-001-004-000	S T WOOTEN CORP	230 SUTTON LAKE RD	PO BOX 2408 WILSON, NC 27894
R03200-001-035-000	WIL FERGIE LLC	3881 421 HWY N	702OBERLIN RD, SUITE 400, RALEIGH, NC 27065
R03200-001-034-000	WIL FERGIE LLC	3881 421 HWY N	702 OBERLIN RD, SUITE 400, RALEIGH, NC 27065
R03200-001-033-000	HWY 421 PROPERTIES LLC	3871 421 HWY N	3807 PEACHTREE AVE WILMINGTON, NC 28403
R03200-001-040-000	CAPE FEAR INVESTMENT & DEV LLC	3875 421 HWY N	1611 CASTLE HAYNE RD WILMINGTON, NC 28401
R03200-001-038-000	MASTEC NORTH AMERICA INC	3857 421 HWY N	3857 421 HWY N, WILMINGTON, NC 28401
R03200-001-017-000	HOECHST CELANESE POLYESTER INT	3829 421 HWY N	PO BOX 2936 WICHITA, KS 67201
R03200-001-036-000	OLD NORTH STATE PROPERTIES LLC	3813 421 HWY N	3807 PEACHTREE AVE WILMINGTON, NC 28403
R03200-002-001-006	ROBERT E MASON & ASSOCIATES INC	207 SUTTON LAKE RD	PO BOX 33424 CHARLOTTE, NC 28233
R03200-002-001-026	L C H HOLDINGS LLC	221 SUTTON LAKE RD	11500 IRON BRIDGE RD, CHESTER VA 23832
R03200-002-022-000	PAUL P CLEMMONS	3782 FREDRICKSON RD	522 GLEN CANNON DR PISGAH FOREST, NC 28768
R03200-002-001-003	SOUTH ATLANTIC SERV INC	3773 FREDRICKSON RD	PO BOX 1886 WILMINGTON, NC 28402
R03200-002-001-007	EZZELL TRUCKING INC	233 SUTTON LAKE RD	PO BOX 67 HARRELLS, NC 28444
R03200-002-029-000	QUARLES PETROLEUM INC	3601 FREDRICKSON RD	1701 FALL HILL AVE FREDERICKSBURG, VA 22401
R03200-002-028-000	ROYMAC PARTNERSHIP	363 METRO CIR	1938 LIVE OAK PKY WILMINGTON, NC 28403
R03200-002-027-000	SAUNDERS & SAUNDERS LLC	347 METRO CIR	PO BOX 1035 WRIGHTSVILLE BEACH, NC 28480
R03200-002-026-000	HURRICANE PROPERTIES LLC	339 METRO CIR	612 FRONT ST WILMINGTON, NC 28402
R03200-002-025-000	ABSOLUTE PROPERTIES OF THE CAROLINAS LLC	331 METRO CIR	331 METRO CIR WILMINGTON, NC 28401
R03200-002-034-000	ROYMAC BUSINESS PARK COMMUNITY ASSN INC	323 METRO CIR	PO BOX 209 WILMINGTON, NC 28402
R03200-002-024-000	ROYMAC PARTNERSHIP	315 METRO CIR	1938 LIVE OAK PKY WILMINGTON, NC 28403
R03200-002-015-000	MAOLA MILK & ICE CREAM CO	307 METRO CIR	PO BOX S NEW BERN, NC 28560
R03200-002-014-000	MATTHEWS HANSEN STONE GERTRUDE	3506 FREDRICKSON RD	321 WINDEMERE RD WILMINGTON, NC 28405
R03200-002-033-000	TERRY ALFRED SPELL OR PAMELA SUTTON	3535 FREDRICKSON RD	PO BOX 310 AUTRYVILLE, NC 28318
R03200-002-032-000	ROYMAC PARTNERSHIP	310 METRO CIR	1938 LIVE OAK PKY WILMINGTON, NC 28403
R03200-002-031-000	ROYMAC PARTNERSHIP	340 METRO CIR	1938 LIVE OAK PKY WILMINGTON, NC 28403
R03200-002-030-000	ROYMAC PARTNERSHIP	364 METRO CIR	1938 LIVE OAK PKY WILMINGTON, NC 28403
R03200-002-023-000	PEVONKA, SUSAN	212 TRANSCOM CT	5115 PARTHA LN, WILMINGTON, NC 28409
R03200-002-001-011	NEW HAN CNTY	3405 FREDRICKSON RD	230 GOVERNMENT CENTER DR WILMINGTON, NC 28403
R03200-002-001-008	OLD DOMINION FREIGHT LINE INC	3327 FREDRICKSON RD	500 OLD DOMINION WAY THOMASVILLE, NC 27360
R03200-001-029-000	SOUTHERN INDUSTRIAL CONSTRUCTORS	136 ROYMAC DR	136 ROYMAC DR, WILMINGTON, NC 28401
R03200-002-013-000	PORTERFIELD J C JUDY C	218 ROYMAC DR	309 RILEY ST, BOLIVIA, NC 28422
R02400-001-040-000	S T WOOTEN CORPORATION	4101 421 HWY	PO BOX 2408, WILSON, NC 27894

Notes: Prepared by: RBI Checked by: HJF

Parcel ID, owner and address information were obtained from the New Hanover County North Carolina website (http://www.nhcgov.com/Pages/GISData.aspx).

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LEGEND

- MW-4B — BACKGROUND MONITORING WELL (SURVEYED)
- MW-27B — COMPLINACE MONITORING WELL (SURVEYED)
- MW-32C — MONITORING WELL (SURVEYED)
- PRW-1 — POSSIBLE WATER SUPPLY WELL
- DW-1 — REPORTED/OBSERVED WATER SUPPLY WELL
- DW-1 — WATER SUPPLY WELL OR SPRING REPORTED BY PROPERTY OWNER
- EDR 3 — EDR REPORTED SUPPLY WELL (APPROXIMATE)
- PE-SW2 — DUKE ENERGY PROGRESS PRODUCTION WELL (APPROXIMATE)
- PE-SW2 — DUKE ENERGY PROGRESS PRODUCTION WELL (SURVEYED)
- NHC-SW4 — CFPUA PRODUCTION WELL (APPROXIMATE)
- OH2 — INVISTA REPORTED PRODUCTION WELL LOCATION
- HALF MILE SURVEY BOUNDARY
- DUKE ENERGY PROGRESS SUTTON PLANT
- 500 ft COMPLIANCE BOUNDARY
- WASTE BOUNDARY
- 20 — 2007 LIDAR CONTOUR MAJOR
- 2007 LIDAR CONTOUR MINOR
- PARCEL LINE (NEW HANOVER CO GIS)
- NEW HANOVER COUNTY WATERLINE (APPROXIMATE)
- POTENTIAL AREA OF INTEREST (APPROXIMATE)
- GENERALIZED GROUNDWATER FLOW DIRECTION
  - SUPPORTED BY GROUNDWATER ELEVATION DATA OR TOPOGRAPHIC DATA
- S18 — WATER SUPPLY WELL SAMPLED AT OWNER'S REQUEST

SOURCES:

1. 2014 AERIAL PHOTOGRAPH WAS OBTAINED FROM WSP FLOWN ON APRIL 17, 2014
2. 2013 AERIAL PHOTOGRAPH WAS OBTAINED FROM THE NRCS GEOSPATIAL DATA GATEWAY AT *http://datagateway.nrcs.usda.gov/*
3. DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD 83).
4. PARCEL DATA WAS OBTAINED FROM THE NORTH CAROLINA STATE LIBRARIES AT *http://www.lib.ncsu.edu/gis/counties.html* FOR NEW HANOVER COUNTY.
5. 2ft CONTOUR INTERVALS FROM NCDOT LIDAR DATED 2007 *https://connect.ncdot.gov/resources/gis/pages/cont-elev_v2.aspx*
6. WELL LOCATIONS AND MEASURING POINTS WERE BASED ON A SURVEY BY JAMES L. HAINES & ASSOCIATES FOR ISH, INC. DATED DECEMBER 23, 2008. ISH DRAWING IS TITLED "POTENTIAL LOCATIONS FOR PROPOSED GEOPROBE AND WELL INSTALLATIONS", DATED FEBRUARY 25, 2009 WITH A CAD FILE NAME FIGURE 22.DWG
7. NEW WELL LOCATIONS AND MEASURING POINTS WERE BASED ON A TABLE BY PARAMOUNTE ENGINEERING, WILMINGTON NC DATED 2012-03-05 SUPPLIED BY PROGRESS ENERGY. HORIZONTAL DATUM IS NAD83(NSRS2007) AND THE VERTICAL DATUM IS NGVD29.
8. THE PROPERTY BOUNDARY FOR THE L.V. SUTTON STEAM ELECTRIC PLANT WAS BASED ON A COMPOSITE MAP PREPARED BY DAVIS-MARTIN-POWELL & ASSOC., INC. THE DRAWINGS ARE DATED JUNE, 1995 WITH REVISION NOTE FOR MARCH 4, 2004. FILE NAME IS L-D-9022-7.DWG. HORIZONTAL DATUM IS NAD83 AND THE VERTICAL DATUM IS NGV 29.
9. THE LOCATION OF THE FORMER ASH DISPOSAL AREAS WAS BASED ON A FIGURE 2-2 PREPARED BY BLASLAND, BOUCK & LEE, INC. THE FIGURE IS TITLED "HORIZONTAL EXTENT OF THE ASH WITHIN THE FORMER DISPOSAL AREA".

NOTE:

1. CONTOUR LINES ARE USED FOR REPRESENTATIVE PURPOSES ONLY AND ARE NOT TO BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.
2. DISPLAYED WATER SUPPLY WELL OR SPRING LOCATIONS ARE APPROXIMATE.

GRAPHIC SCALE
800 0 400 800 1600
(IN FEET)

synTerra
148 River Street, Suite 220
Greenville, South Carolina 29601
864-421-9999
www.synterracorp.com

DRAWN BY:	J. CHASTAIN	DATE:	2014-11-06
CHECKED BY:	H. FRANK	DATE:	2014-11-06
PROJECT MANAGER:	KATHY WEBB		
LAYOUT NAME:	FIG 1 (D WATER SUPPLY WELL & REC SURVEY)		

DUKE ENERGY® PROGRESS

L.V. SUTTON ENERGY COMPLEX
801 SUTTON STEAM PLANT RD
WILMINGTON, NORTH CAROLINA

FIGURE B1
DRINKING WATER WELL AND RECEPTOR SURVEY
UPDATED JULY 2015

9/2/2015 3:02 PM P:\Duke Energy Progress 1026\108 Sutton Ash Basin GW Assessment Rev\11-11 CSA Reporting\FIGURES\SUTTON FIGURE B-1 DRINKING WATER SUPPLY.dwg

Bednarcik Exhibit 11
Sutton SARP Appendix C
Docket No. E-2 Sub.1219
Page 1 of 2

RECORD OF BOREHOLE PZ-10S

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 23.0 ft
LOCATION: Wilmington, NC

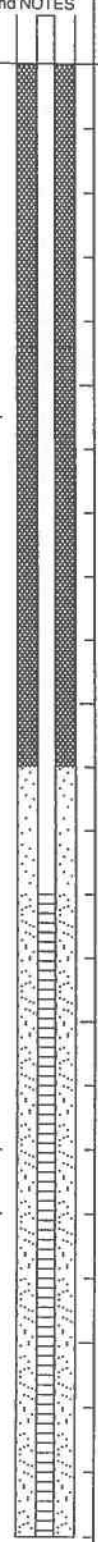
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/21/08
DATE COMPLETED: 11/21/08

NORTHING: 203,140.1
EASTING: 2,305,116.4
GS ELEVATION: 24.8 ft
TOC ELEVATION: 26.4 ft

DEPTH W.L.: 16.9 ft
DATE W.L.: 11/21/08
TIME W.L.: 9:31 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Fine SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		24.6 / 0.3					
		0.3 - 2.0 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Gray and Brownish Yellow, Very Loose, Low Plasticity, Moist	SW		22.8 / 2.0		SS	2-1-1-3	2	1.5/2.0
		2.0 - 4.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Yellow, Loose, Moist	SW		20.8 / 4.0		SS	3-2-3-3	5	1.2/2.0
5	20	4.0 - 6.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Moist NOTE: Some Redox Features Present as well as Organic Staining	SW		18.8 / 6.0		SS	2-3-3-4	6	1.4/2.0
		6.0 - 8.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		16.8 / 8.0		SS	4-4-4-5	8	1.6/2.0
		8.0 - 10.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow to Yellow, Loose, Wet	SW		14.8 / 10.0		SS	11-4-6-6	10	1.4/2.0
10	15	10.0 - 12.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Yellow w/ Redox Yellowish Brown, Medium Dense, Wet NOTE: Redox Features present @ 11.5'	SW		12.8 / 12.0		SS	6-5-6-8	11	1.3/2.0
		12.0 - 14.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Brownish Yellow transitions to Ligh Gray @ 13', Medium Dense, Wet to Saturated @ 14'	SW		10.8 / 14.0		SS	7-5-6-9	11	1.5/2.0
15	10	14.0 - 23.0 Discontinued split spoons due to sand infiltrating into the augers								
20	5	23.0: Terminated Boring Boring completed at 23.0 ft			1.8					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 13'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 13' - 23'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 11' - 23'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 11'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 11'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-11

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 19.0 ft
LOCATION: Wilmington, NC

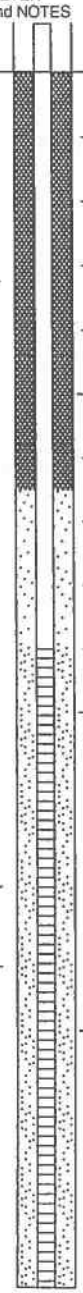
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 203,258.9
EASTING: 2,305,266.0
GS ELEVATION: 20.8 ft
TOC ELEVATION: 23.7 ft

DEPTH W.L.: 12.0 ft
DATE W.L.: 11/20/08
TIME W.L.: 4:00 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Fine SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper transitions to Light Brownish Gray, Very Soft, Low Plasticity, Moist	SM		20.5					
	20	0.3 - 2.0 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		0.3 18.8		SS	1-1-1-1	2	1.3/2.0
		2.0 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		2.0 16.8		SS	2-2-1-2	3	1.0/2.0
5		4.0 - 6.0 Medium SAND w/ Trace Fine SandD, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		4.0 14.8		SS	3-2-2-3	4	0.8/2.0
	15	6.0 - 8.0 Fine SAND transitioning to Medium SAND, Well Sorted, Yellow, Loose, Wet	SP		6.0 12.8		SS	3-3-5-6	8	1.2/2.0
		8.0 - 10.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Wet	SW		8.0 10.8		SS	5-3-5-11	8	1.6/2.0
10		10.0 - 12.0 Fine SAND, Well Sorted, Light Gray, Medium Dense, Saturated @ 11'	SP		10.0 8.8		SS	6-8-9-15	17	1.8/2.0
	10	12.0 - 19.0 Discontinued split spoons due to sand infiltrating into the augers			12.0 1.8					
15		19.0: Terminated Boring Boring completed at 19.0 ft								
	5									
20										
	0									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 9'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 9' - 19'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 6.5' - 19'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 6.5'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 6.5'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ11D

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/21/07
DATE COMPLETED: 2/22/07

NORTHING: 194,181.6
EASTING: 2,309,531.7
GS ELEVATION: 12.4 ft
TOC ELEVATION: 15.2 ft

SHEET 1 of 3
DEPTH W.L.: 1.3 ft
ELEVATION W.L.: 14.0 ft
DATE W.L.: 2/23/07
TIME W.L.: 7:07 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.4 / 2.0					
	10	2.0 - 4.0 Very loose, white to brown, medium sand.	SP		8.4 / 4.0					
5		4.0 - 6.0 Loose, white to brown, medium sand, moist to saturated.	SP		6.4 / 6.0					
	5	6.0 - 8.0 Loose, dark brown, medium sand, moist to saturated.	SP		4.4 / 8.0					
10		8.0 - 10.0 Loose, brown to tan, medium sand, moist to saturated.	SP		2.4 / 10.0					
	0	10.0 - 12.0 Loose, tannish brown, medium sand, saturated.	SP		0.4 / 12.0					
15		12.0 - 19.0 Loose to compact, tannish brown, medium sand, saturated.	SP		-6.6 / 19.0					
	-5	19.0 - 24.0 Loose, brown to tan, medium sand, saturated.	SP			SPT		6-7-8-10	15	1.0 / 2.0
20		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.9-44 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 44-54 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 42-54 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 36-42 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-36 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC...J SUTTON LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ11D

SHEET 2 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/21/07
DATE COMPLETED: 2/22/07

NORTHING: 194,181.6
EASTING: 2,309,531.7
GS ELEVATION: 12.4 ft
TOC ELEVATION: 15.2 ft

DEPTH W.L.: 1.3 ft
ELEVATION W.L.: 14.0 ft
DATE W.L.: 2/23/07
TIME W.L.: 7:07 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
20		19.0 - 24.0 Loose, brown to tan, medium sand, saturated. *(Continued)*	SP				SPT	6-7-8-10	15	1.0/2.0
	-10				-11.6					
		24.0 - 29.0 Loose, tannish brown, medium sand, little coarse sand, saturated.			24.0		SPT	4-4-4-5	8	1.0/2.0
25			SP							
	-15				-16.6					
		29.0 - 34.0 Loose to compact, brown, medium silty sand, root fragments, some clay, little coarse sand, saturated.			29.0		SPT	4-2-3-7	5	1.8/2.0
30			SM							
	-20				-21.6					
		34.0 - 39.0 Compact, gray, fine to medium sand, saturated.			34.0		SPT	15-17-22-27	39	1.8/2.0
35			SM							
	-25				-26.6					
		39.0 - 44.0 Compact, brown to grayish green, fine to medium sand, little coarse sand, saturated.	SM		39.0		SPT	9-14-27-42	41	1.8/2.0
40		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

Bentonite

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.9-44 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 44-54 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 42-54 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 36-42 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-36 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC...D SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ11D

SHEET 3 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/21/07
DATE COMPLETED: 2/22/07

NORTHING: 194,181.6
EASTING: 2,309,531.7
GS ELEVATION: 12.4 ft
TOC ELEVATION: 15.2 ft

DEPTH W.L.: 1.3 ft
ELEVATION W.L.: 14.0 ft
DATE W.L.: 2/23/07
TIME W.L.: 7:07 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
40		39.0 - 44.0 Compact, brown to grayish green, fine to medium sand, little coarse sand, saturated. *(Continued)*	SM		-31.6		SPT	9-14-27-42	41	1.8/2.0		
	-30				44.0							
		44.0 - 49.0 Compact, grayish green, fine sand, little coarse sand, saturated.	SM		-36.6		SPT	9-11-18-20	29	1.5/2.0		
45					49.0							
	-35										#2 Sand	
		49.0 - 54.0 Loose to compact, grayish green, fine sand, saturated.	SM		-41.6		SPT	14-6-10-13	16	1.5/2.0	.010 Slotted PVC	
50					54.0							
	-40											
		54.0 - 56.0 Loose, gray , fine sand, little coarse sand, saturated.	SM		-43.6		SPT	4-3-3-5	6	1.5/2.0		
55		Boring completed at 56.0 ft										
	-45											
60												

WELL CASING
Interval: -2.9-44 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 44-54 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 42-54 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 36-42 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-36 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-11S

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

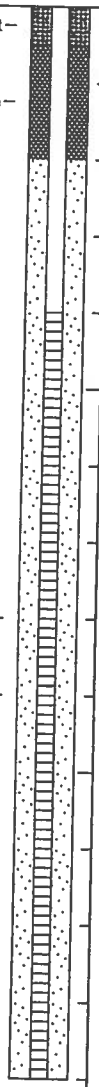
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/19/07
DATE COMPLETED: 2/19/07

NORTHING: 194,172.3
EASTING: 230,526.8
GS ELEVATION: 12.9 ft
TOC ELEVATION: 15.7 ft

SHEET 1 of 1
DEPTH W.L.: 6.5 ft
ELEVATION W.L.: 9.3 ft
DATE W.L.: 2/20/07
TIME W.L.: 6:50 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.9		SPT	1-1-1-2	2	1.8/2.0
		2.0 - 4.0 Loose, white to brown, medium sand.	SP		2.0 8.9		SPT	2-2-3-4	5	1.8/2.0
5		4.0 - 6.0 Loose, white to brown, medium sand, moist to saturated.	SP		4.0 6.9		SPT	4-4-3-4	7	1.5/2.0
		6.0 - 8.0 Loose, white to dark brown, medium sand, moist to saturated.	SP		6.0 4.9		SPT	4-3-2-5	5	1.8/2.0
10		8.0 - 10.0 Loose, brown to tan, medium sand, moist to saturated.	SP		8.0 2.9		SPT	8-6-3-4	9	2.0/2.0
		10.0 - 12.0 Loose, tannish brown, medium sand, saturated.	SP		10.0 0.9		SPT	5-4-5-8	9	2.0/2.0
15		12.0 - 14.0 Loose to compact, tannish brown, medium sand, saturated.	SP		12.0 -1.1		SPT	3-5-7-12	12	2.0/2.0
		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ12

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

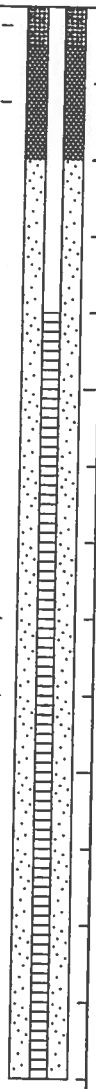
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/20/07

NORTHING: 193,675.1
EASTING: 2,308,423.0
GS ELEVATION: 12.1 ft
TOC ELEVATION: 14.8 ft

DEPTH W.L.: 7.1 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/21/07
TIME W.L.: 12:57 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.1		SPT	1-1-1-3	2	1.5/2.0
	10	2.0 - 4.0 Loose to very loose, brown to white, medium sand, slightly moist.	SP		2.0 8.1		SPT	3-3-4-3	7	1.8/2.0
		4.0 - 8.0 Loose, brown to white, medium sand, moist.	SP		4.0 4.1		SPT	6-6-3-3	9	1.8/2.0
5							SH			0.0/2.0
	5	8.0 - 10.0 Loose to compact, brown, medium sand, saturated.	SP		8.0 2.1		SPT	7-5-2-3	7	2.0/2.0
10		10.0 - 14.0 Loose to compact, brown, medium sand, saturated.	SP		10.0 -1.9		SPT	4-5-7-5	12	2.0/2.0
	0						SPT			0.0/2.0
		Boring completed at 14.0 ft								
15	-5									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORDS SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-12

SHEET 1 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 203,476.9
EASTING: 2,305,691.6
GS ELEVATION: 29.1 ft
TOC ELEVATION: 31.4 ft

DEPTH W.L.: 22.0 ft
DATE W.L.: 11/25/08
TIME W.L.: 1:18 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		0.2		SS	1-1-1-1	2	1.8/2.0		**WELL CASING** Interval: 0' - 15' Material: PVC Diameter: 2" Joint Type: Threaded
		0.2 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		27.1							**WELL SCREEN** Interval: 15' - 25' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC
		2.0 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		2.0 25.1		SS	3-2-3-4	5	1.4/2.0		**FILTER PACK** Interval: 13' - 25' Type: #2 Sand
5	25	4.0 - 5.0 Medium SAND, Well Sorted, Light Gray, Loose, Moist	SP		4.0 24.1		SS	7-3-4-4	7	1.4/2.0		**FILTER PACK SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips
		5.0 - 5.5 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Dark Yellowish Brown, Firm, Low Plasticity, Moist	SM / SW		5.0 23.6 / 5.5 23.1							**ANNULUS SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips
		5.5 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		6.0 21.1		SS	3-4-3-7	7	1.7/2.0	3/8" Bentonite Chip Seal	**WELL COMPLETION** Pad: N/A Protective Casing: N/A
		6.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Moist										**DRILLING METHODS** Soil Drill: 4.25-Inch ID HSA Rock Drill: N/A
		8.0 - 12.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Wet			8.0		SS	6-3-4-7	7	1.4/2.0		
10	20		SW				SH			2.0/2.0		
		12.0 - 14.0 Fine SAND, Well Sorted, Yellow, Loose, Wet	SP		12.0 15.1		SS	5-4-5-11	9	1.5/2.0		
15	15	14.0 - 16.0 Fine SAND, Well Sorted, Yellow transitions to Brownish Yellow, Medium Dense, Wet	SP		14.0 13.1		SS	8-5-6-8	11	1.5/2.0		
		16.0 - 18.0 Fine SAND, Well Sorted, Yellow, Medium Dense, Wet	SP		16.0 11.1		SS	5-5-8-12	13	1.5/2.0		
20	10	18.0 - 20.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, White, Medium Dense, Saturated @ 18'	SW		18.0 9.1		SS	9-9-12-27	21	1.6/2.0	#2 Sand — 0.010" Screen	
		20.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers			20.0							

Log continued on next page

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-12

SHEET 2 OF 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 203,476.9
EASTING: 2,305,691.6
GS ELEVATION: 29.1 ft
TOC ELEVATION: 31.4 ft

DEPTH W.L.: 22.0 ft
DATE W.L.: 11/25/08
TIME W.L.: 1:18 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25	5	20.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			4.1							
		25.0: Terminated Boring Boring completed at 25.0 ft										
30	0											
35	-5											
40	-10											
45	-15											

WELL CASING
Interval: 0' - 15'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 15' - 25'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 13' - 25'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-13

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

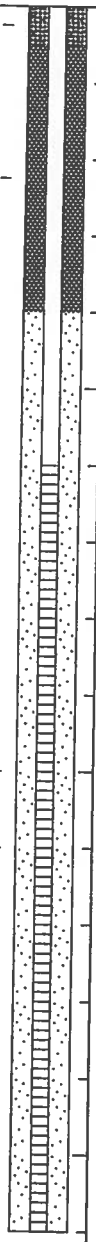
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/19/07
DATE COMPLETED: 2/19/07

NORTHING: 193,712.8
EASTING: 2,309,270.9
GS ELEVATION: 15.7 ft
TOC ELEVATION: 18.1 ft

DEPTH W.L.: 9.3 ft
ELEVATION W.L.: 8.7 ft
DATE W.L.: 2/20/07
TIME W.L.: 6:56 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Very loose, white, medium sand.	SP		13.7		SPT	1-1-2-3	3	1.5/2.0
		2.0 - 4.0 Loose, brown to white, medium sand.	SP		2.0 11.7		SPT	4-3-4-5	7	1.8/2.0
5	10	4.0 - 6.0 Loose to compact, brown to white, medium sand, slightly moist.	SP		4.0 9.7		SPT	8-10-9-10	19	1.5/2.0
		6.0 - 10.0 Loose, brown, medium sand, moist.	SP		6.0 5.7		SPT	5-5-6-8	11	2.0/2.0
							SH			0.0/2.0
10	5	10.0 - 12.0 Very loose, brown medium sand, moist to saturated.	SP		10.0 3.7		SPT	0-0-0-0	0	2.0/2.0
		12.0 - 14.0 Compact, brown, medium sand, moist to saturated.	SP		12.0 1.7		SPT	5-8-11-17	19	2.0/2.0
15	0	14.0 - 16.0 Loose to compact, brown medium sand.	SP		14.0 -0.3		SPT	3-5-7-7	12	2.0/2.0
		Boring compleled al 16.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.4-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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Sutton SARP Appendix C
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RECORD OF BOREHOLE PZ-13

SHEET 1 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

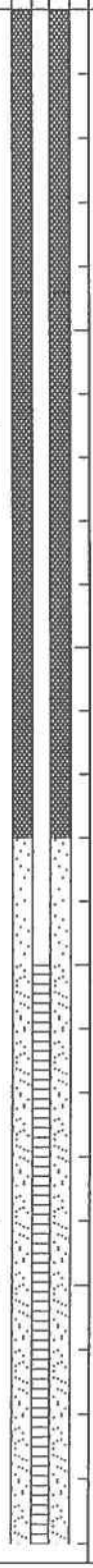
NORTHING: 202,946.0
EASTING: 2,305,558.8
GS ELEVATION: 27.0 ft
TOC ELEVATION: 29.5 ft

DEPTH W.L.: 17.8 ft
DATE W.L.: 11/20/08
TIME W.L.: 2:45 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.8 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Black (Coated Sand Grains) transitions to Brown, Very Loose, Low Plasticity, Moist	SM		26.2 0.8		SS	1-2-2-2	4	1.8/2.0
	25	0.8 - 2.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown, Very Loose, Moist	SW		25.0 2.0					
		2.0 - 4.0 Medium SAND w/ Trace Fine SandD, Poorly Sorted, Yellow, Loose, Moist	SW		23.0		SS	3-3-2-3	5	1.3/2.0
		4.0 - 4.5 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Moist	SW		4.0 22.5					
5		4.5 - 6.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Yellow (Matrix) w/ Dark Grayish Brown (Redox Features), Loose, Moist	SW		4.5 21.0		SS	2-2-2-4	4	1.4/2.0
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellow, Loose, Wet	SW		6.0 19.0		SS	3-4-4-5	8	1.4/2.0
	20	8.0 - 10.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Wet	SW		8.0 17.0		SS	5-2-4-5	6	1.3/2.0
10		10.0 - 12.0 Medium SAND, Well Sorted, Very Pale Brown, Medium Dense, Wet	SP		10.0 15.0		SS	5-5-6-7	11	1.5/2.0
	15	12.0 - 13.5 Medium SAND, Well Sorted, Very Pale Brown, Loose, Wet	SP		12.0 13.5		SS	5-3-4-4	7	1.4/2.0
		13.5 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Wet	SW		13.5 13.0					
		14.0 - 15.5 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellowish Brown, Medium Dense, Wet	SW		14.0 11.5		SS	5-6-5-10	11	1.6/2.0
15		15.5 - 16.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Wet	SW		15.5 11.0					
		16.0 - 18.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated @ 17'	SW		16.0 9.0		SS	6-5-10-19	15	0.9/2.0
	10	18.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers			18.0					
20										
	5									

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 15'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 15' - 25'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 13' - 25'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 13'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-13

SHEET 2 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 25.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 202,946.0
EASTING: 2,305,558.8
GS ELEVATION: 27.0 ft
TOC ELEVATION: 29.5 ft

DEPTH W.L.: 17.6 ft
DATE W.L.: 11/20/08
TIME W.L.: 2:45 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25	0	18.0 - 25.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			2.0							**WELL CASING** Interval: 0' - 15' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 15' - 25' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 13' - 25' Type: #2 Sand **FILTER PACK SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 13' Type: 3/8" Bentonite Chips **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
30	-5	25.0: Terminated Boring Boring completed at 25.0 ft										
35	-10											
40	-15											
45	-20											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-14

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

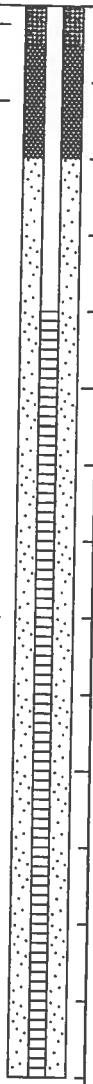
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/19/07
DATE COMPLETED: 2/19/07

NORTHING: 193,505.2
EASTING: 2,309,687.7
GS ELEVATION: 12.7 ft
TOC ELEVATION: 15.5 ft

DEPTH W.L.: 6.7 ft
ELEVATION W.L.: 8.7 ft
DATE W.L.: 2/20/07
TIME W.L.: 6:54 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose to loose, white, medium sand.	SP		10.7		SPT	1-1-4-6	5	2.0/2.0
		2.0 - 4.0 Loose, brown, medium sand, moist.	SP		2.0 / 8.7		SPT	4-4-4-4	8	1.8/2.0
5		4.0 - 6.0 Loose to very loose, brown to white, medium sand, moist to saturated.	SP		4.0 / 6.7		SPT	4-4-2-3	6	1.8/2.0
		6.0 - 8.0 Loose to very loose, brown, medium sand, moist to saturated.	SP		6.0 / 4.7		SPT	4-2-1-3	3	1.5/2.0
10		8.0 - 10.0 Loose to compact, brown, medium sand, moist to saturated.	SP		8.0 / 2.7		SPT	2-3-5-11	8	2.0/2.0
		10.0 - 12.0 Loose to compact, brown, medium sand, moist to saturated.	SP		10.0 / 0.7		SPT	5-11-15-16	26	2.0/2.0
15		12.0 - 14.0 Loose to compact, brown medium sand, saturated.	SP		12.0 / -1.3		SPT	3-8-10-15	18	1.0/2.0
		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-14

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 18.0 ft
LOCATION: Wilmington, NC

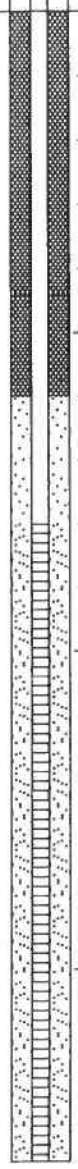
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 203,358.7
EASTING: 2,305,963.3
GS ELEVATION: 18.3 ft
TOC ELEVATION: 20.5 ft

DEPTH W.L.: 11.2 ft
DATE W.L.: 11/25/08
TIME W.L.: 3:00 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.4 ORGANIC LAYER - Organic Fines (Silt & Clay) w/ Some Medium Sand, Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	OL		17.9 / 0.4		SS	1-1-1-2	2	1.6/2.0
		0.4 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		16.3 / 2.0		SS	2-1-2-3	3	1.6/2.0
	15	2.0 - 4.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		14.3 / 4.0		SS	2-2-2-5	4	1.6/2.0
5		4.0 - 5.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		13.3 / 5.0		SS	3-3-4-5	7	1.6/2.0
		5.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Dark Yellowish Brown, Very Loose, Moist	SW		12.3 / 6.0		SS	4-4-5-8	9	1.4/2.0
	10	6.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown, Loose, Wet	SW		10.3 / 8.0		SS	4-4-8-20	12	2.0/2.0
		8.0 - 9.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Very Dark Brown, Loose, Wet	SW		9.3 / 9.0					
10		9.0 - 10.0 Fine SAND, Well Sorted, Pale Brown, Loose, Saturated @ 10'	SP		8.3 / 10.0					
		10.0 - 12.0 Fine SAND, Well Sorted, Pale Brown, Medium Dense, Saturated	SP		6.3 / 12.0					
	5	12.0 - 18.0 Discontinued split spoons due to sand infiltrating into the augers			0.3					
15		18.0: Terminated Boring Boring completed at 18.0 ft								
	0									
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 8'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 8' - 18'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 6' - 18'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 6'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 6'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-15

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 19.0 ft
LOCATION: Wilmington, NC

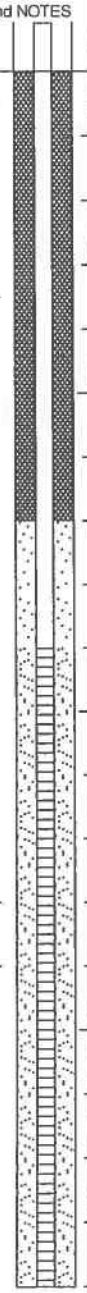
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 202,702.7
EASTING: 2,305,482.1
GS ELEVATION: 20.2 ft
TOC ELEVATION: 21.9 ft

DEPTH W.L.: 12.5 ft
DATE W.L.: 11/20/08
TIME W.L.: 12:00 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	20	0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		0.2					
		0.2 - 2.0 Medium SAND, Well Sorted, Grey and Brownish Yellow, Very Loose, Moist	SP		18.2		SS	1-1-2-3	3	1.5/2.0
		2.0 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		2.0 / 16.2		SS	2-2-2-4	4	1.7/2.0
5	15	4.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Moist	SW		4.0 / 14.2		SS	3-2-3-4	5	1.0/2.0
		6.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Moist	SW		6.0 / 12.2		SS	3-4-4-7	8	1.5/2.0
		8.0 - 8.5 Medium SAND w/ Little Fine Sand, Poorly Sorted, Brownish Yellow, Loose, Moist	SW		8.0 / 11.7					
		8.5 - 10.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Light Gray, Loose, Moist	SW		8.5 / 10.2		SS	9-3-5-6	8	1.2/2.0
10	10	10.0 - 12.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Light Gray, Medium Dense, Wet	SW		10.0 / 8.2		SS	6-6-10-11	16	1.4/2.0
		12.0 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated @ 12'	SW		12.0 / 6.2		SS	9-5-5-8	10	1.4/2.0
15	5	14.0 - 19.0 Discontinued split spoons due to sand infiltrating into the augers			14.0 / 1.2					
		19.0: Terminated Boring Boring completed at 19.0 ft								
20	0									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 9'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 9' - 19'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 7' - 19'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 7'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 7'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-15D

SHEET 1 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/22/07
DATE COMPLETED: 2/23/07

NORTHING: 193,065.3
EASTING: 2,308,847.7
GS ELEVATION: 11.5 ft
TOC ELEVATION: 15.1 ft

DEPTH W.L.: 7.9 ft
ELEVATION W.L.: 7.2 ft
DATE W.L.: 2/26/07
TIME W.L.: 9:57 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		9.5 2.0					
	10	2.0 - 4.0 Loose, white to brown, medium sand, moist.	SP		7.5 4.0					
5		4.0 - 6.0 Loose, brown to white, medium sand, moist.	SP		5.5 6.0					
	5	6.0 - 8.0 Loose, brown, medium sand, saturated.	SP		3.5 8.0					
		8.0 - 10.0 Loose to very loose, brown to gray, fine to medium sand, moist to saturated.	SP		1.5 10.0					
10	0	10.0 - 12.0 Loose to very loose, tannish brown to gray, medium sand, some fine sand, saturated.	SP		-0.5 12.0					
		12.0 - 19.0 Loose, brown, medium sand, little fine sand, saturated.	SP		-7.5 19.0					
15	-5									
		19.0 - 24.0 Loose, brown, medium sand, little coarse sand, saturated.	SP				SPT	0-0-5-7	5	0.8/2.0
20		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES

Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.6-44 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 44-54 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 42-54 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 36-42 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-36 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-15D

SHEET 2 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/22/07
DATE COMPLETED: 2/23/07

NORTHING: 193,065.3
EASTING: 2,308,847.7
GS ELEVATION: 11.5 ft
TOC ELEVATION: 15.1 ft

DEPTH W.L.: 7.9 ft
ELEVATION W.L.: 7.2 ft
DATE W.L.: 2/26/07
TIME W.L.: 9:57 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
20		19.0 - 24.0 Loose, brown, medium sand, little coarse sand, saturated. *(Continued)*	SP				SPT	0-0-5-7	5	0.8/2.0		**WELL CASING** Interval: -3.6-44 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 44-54 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 42-54 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 36-42 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-36 ft Type: Portland/Bentonite mix **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: Mud Rotary with 6-inch bit Rock Drill: N/A
-10					-12.5							
25		24.0 - 29.0 Loose to compact, tannish brown, medium sand, saturated.	SP		24.0		SPT	5-7-11-13	18	1.2/2.0		
-15					-17.5							
30		29.0 - 34.0 Loose to compact, tannish brown, medium sand, root fragments, little coarse sand, saturated.	SP		29.0		SPT	8-8-8-15	16	1.5/2.0		
-20					-22.5							
35		34.0 - 39.0 Loose to compact, grayish green, fine sand, little medium to coarse sand, saturated.	SM		34.0		SPT	8-15-20-35	35	1.5/2.0		
-25					-27.5							
40		39.0 - 44.0 Compact to dense, grayish green, fine sand, trace coarse sand, saturated.	SM		39.0		SPT	10-20-25-42	45	2.0/2.0	Bentonite	

Log continued on next page

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-15D

SHEET 3 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 56.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/22/07
DATE COMPLETED: 2/23/07

NORTHING: 193,065.3
EASTING: 2,308,847.7
GS ELEVATION: 11.5 ft
TOC ELEVATION: 15.1 ft

DEPTH W.L.: 7.9 ft
ELEVATION W.L.: 7.2 ft
DATE W.L.: 2/26/07
TIME W.L.: 9:57 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
40		39.0 - 44.0 Compact to dense, grayish green, fine sand, trace coarse sand, saturated. *(Continued)*	SM				SPT	10-20-25-42	45	2.0/2.0		
	-30				-32.5							
		44.0 - 49.0 Loose to compact, grayish green, fine sand, little coarse sand.			44.0		SPT	0-6-8-12	14	1.5/2.0		
45	-35		SM		-37.5							
		49.0 - 54.0 Compact, greenish gray, fine sand, little medium to coarse sand, saturated.			49.0		SPT	0-17-23-33	40	2.0/2.0	#2 Sand .010 Slotted PVC	
50	-40		SM		-42.5							
		54.0 - 56.0 Compact to dense, grayish green, fine sand, little medium to coarse sand, saturated.			54.0		SPT	0-22-33-36	>50	1.8/2.0		
55	-45	Boring completed at 56.0 ft	SM		-44.5							
60												

WELL CASING
Interval: -3.6-44 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 44-54 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 42-54 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 36-42 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-36 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-15S

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

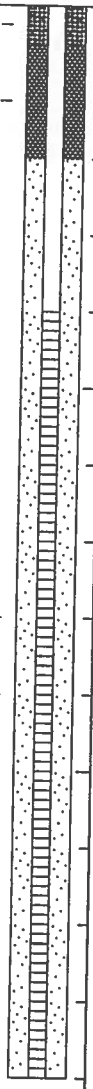
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/20/07

NORTHING: 193,067.4
EASTING: 2,308,856.0
GS ELEVATION: 12.1 ft
TOC ELEVATION: 14.8 ft

DEPTH W.L.: 7.2 ft
ELEVATION W.L.: 7.6 ft
DATE W.L.: 2/21/07
TIME W.L.: 6:57 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.1		SPT	1-1-2-3	3	1.8/2.0
	10	2.0 - 4.0 Loose, brown to white, medium sand, moist.	SP		2.0 / 8.1		SPT	2-3-3-5	6	1.5/2.0
		4.0 - 6.0 Loose, brown to white, medium sand, moist.	SP		4.0 / 6.1		SPT	5-3-3-5	6	1.8/2.0
5		6.0 - 8.0 Loose, brown, medium sand, moist.	SP		6.0 / 4.1		SPT	4-4-4-7	8	2.0/2.0
	5	8.0 - 10.0 Loose to very loose, brown to gray, medium sand, saturated.	SP		8.0 / 2.1		SPT	4-1-1-3	2	2.0/2.0
		10.0 - 12.0 Loose to very loose, brown to gray, medium sand, some fine sand, saturated.	SP		10.0 / 0.1		SPT	0-5-6-7	11	2.0/2.0
10	0	12.0 - 14.0 Loose, brown, medium sand, little fine sand, saturated.	SP		12.0 / -1.9		SPT	3-2-2-6	4	1.8/2.0
		Boring completed at 14.0 ft								
	-5									
15										
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

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RECORD OF BOREHOLE PZ-16

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

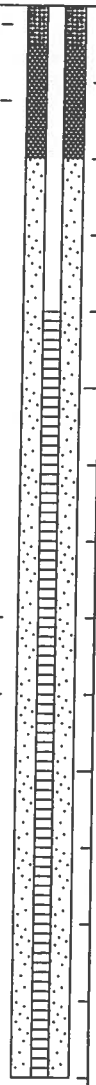
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,761.5
EASTING: 2,309,725.3
GS ELEVATION: 14.7 ft
TOC ELEVATION: 17.6 ft

DEPTH W.L.: 9.5 ft
ELEVATION W.L.: 8.1 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:48 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		12.7		SPT	1-1-1-3	2	2.0/2.0
		2.0 - 4.0 Very loose, white, medium sand.	SP		10.7		SPT	4-2-3-4	5	2.0/2.0
5	10	4.0 - 6.0 Loose, white, medium sand.	SP		8.7		SPT	7-7-7-6	14	1.5/2.0
		6.0 - 8.0 Loose, brown, medium sand, slightly moist.	SP		6.7		SPT	5-4-5-7	9	1.5/2.0
10	5	8.0 - 10.0 Loose, brown to white, medium sand, saturated.	SP		4.7		SPT	5-4-4-10	8	2.0/2.0
		10.0 - 12.0 Loose to compact, brown medium sand, saturated.	SP		2.7		SPT	7-8-10-17	18	2.0/2.0
15	0	12.0 - 14.0 Loose to compact, brown, medium sand, saturated.	SP		0.7		SPT	0-0-6-8	6	2.0/2.0
		Boring completed at 14.0 ft								
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-16

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 17.0 ft
LOCATION: Wilmington, NC

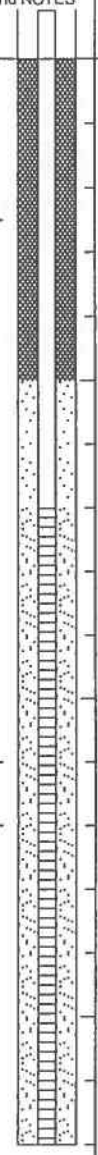
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 202,898.0
EASTING: 2,305,907.6
GS ELEVATION: 15.8 ft
TOC ELEVATION: 18.0 ft

DEPTH W.L.: 8.5 ft
DATE W.L.: 11/25/08
TIME W.L.: 5:15 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		0.2		SS	1-1-1-2	2	1.6/2.0
		0.2 - 2.0 Medium SAND, Well Sorted, Light Gray and Brownish Yellow, Very Loose, Moist	SP		13.8					
		2.0 - 4.0 Medium SAND, Well Sorted, Brownish Yellow, Very Loose, Moist	SP		2.0 11.8		SS	2-1-3-3	4	1.6/2.0
5	10	4.0 - 5.0 Medium SAND, Well Sorted, Brown, Loose, Moist	SP		4.0 10.8		SS	2-2-3-5	5	1.7/2.0
		NOTE: Thin ORGANIC LAYER (Silt & Clay) @ 5.0', Approximately 1" Thick			5.0					
		5.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Wet	SW		7.8		SH			1.5/2.0
		8.0 - 10.0 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Saturated @ 9'	SW		8.0 5.8		SS	1-1-4-6	5	1.6/2.0
10	5	10.0 - 17.0 Discontinued split spoons due to sand infiltrating into the augers			10.0					
15	0									
		17.0: Terminated Boring Boring completed at 17.0 ft			-1.2					
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 7'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 7' - 17'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 5' - 17'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 5'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 5'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-17

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

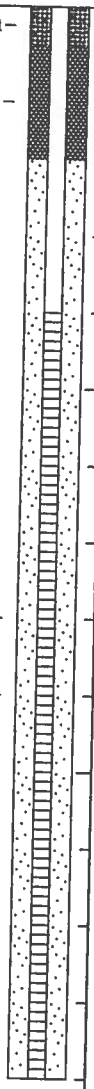
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/16/07
DATE COMPLETED: 2/16/07

NORTHING: 192,649.0
EASTING: 2,309,057.9
GS ELEVATION: 12.2 ft
TOC ELEVATION: 14.9 ft

DEPTH W.L.: 7.6 ft
ELEVATION W.L.: 7.3 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:37 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.2		SPT	1-1-1-2	2	1.2/2.0
	10	2.0 - 4.0 Very loose to loose, brown to white, medium sand, slightly moist.	SP		2.0 / 8.2		SPT	2-2-2-5	4	1.5/2.0
		4.0 - 6.0 Loose, white to brown, medium sand, slightly moist to moist.	SP		4.0 / 6.2		SPT	6-7-8-10	15	1.2/2.0
5		6.0 - 8.0 Loose, brown, medium sand, moist to saturated.	SP		6.0 / 4.2		SPT	4-5-6-6	11	2.0/2.0
	5	8.0 - 10.0 Loose to compact, brown to tan, medium sand, saturated.	SP		8.0 / 2.2		SPT	7-4-7-11	11	2.0/2.0
		10.0 - 14.0 Loose to compact, brown to tan, medium sand, saturated.	SP		10.0 / -1.8		SPT	4-7-9-8	16	2.0/2.0
10	0						SPT			0.0/2.0
		Boring completed at 14.0 ft								
15										
	-5									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

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RECORD OF BOREHOLE PZ-17

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

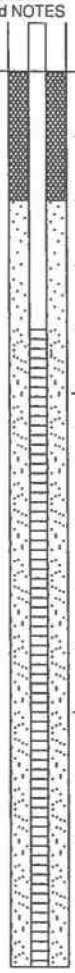
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 202,570.2
EASTING: 2,305,697.4
GS ELEVATION: 15.2 ft
TOC ELEVATION: 18.2 ft

DEPTH W.L.: 6.0 ft
DATE W.L.: 11/20/08
TIME W.L.: 12:05 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 0.3 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		15.0 0.3					
		0.3 - 2.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Gray, Very Loose, Moist	SW		13.2		SS	2-1-2-3	3	1.3/2.0
		2.0 - 3.0 Medium SAND w/ Little Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		2.0 12.2		SS	3-2-2-3	4	1.8/2.0
		3.0 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Dark Yellowish Brown, Very Loose, Moist	SW		3.0 11.2					
5	10	4.0 - 6.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Light Yellowish Brown (Matrix) w/ Yellowish Brown (Redox Features), Loose, Wet	SW		4.0 9.2		SS	5-2-3-5	5	0.8/2.0
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Pale Brown, Medium Dense, Saturated @ 6'	SW		6.0 7.2		SS	5-5-7-8	12	1.2/2.0
		8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Pale Brown, Loose, Saturated	SW		8.0 5.2		SS	5-3-5-9	8	1.4/2.0
10	5	10.0 - 14.0 Discontinued split spoons due to sand infiltrating into the augers			10.0 1.2					
		14.0: Terminated Boring Boring completed at 14.0 ft								
15	0									
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 4'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 4' - 14'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 2' - 14'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-Inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-18

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,616.1
EASTING: 2,309,937.2
GS ELEVATION: 11.7 ft
TOC ELEVATION: 14.5 ft

DEPTH W.L.: 6.4 ft
ELEVATION W.L.: 8.1 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:38 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	10	0.0 - 2.0 Very loose, white, medium sand.	SP		9.7 / 2.0		SPT	1-1-1-3	2	1.2/2.0	Grout Bentonite	**WELL CASING** Interval: -2.8-4 ft Material: PVC Diameter: 2-inch Joint Type: Threaded
		2.0 - 4.0 Very loose to loose, brown to white, medium sand, moist.	SP		7.7 / 4.0		SPT	3-2-3-8	5	1.8/2.0		**WELL SCREEN** Interval: 4-14 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded
5	5	4.0 - 6.0 Loose, white to brown, medium sand, moist.	SP		5.7 / 6.0		SPT	7-8-6-8	14	1.2/2.0		**FILTER PACK** Interval: 2-14 ft Type: #2 Sand
		6.0 - 8.0 Loose, brown, medium sand, moist to saturated.	SP		3.7 / 8.0		SPT	5-5-6-8	11	2.0/2.0		**FILTER PACK SEAL** Interval: 0.5-2 ft Type: 3/8 Bentonite chip
10	0	8.0 - 10.0 Loose, brown, medium sand, saturated.	SP		1.7 / 10.0		SPT	6-4-3-5	7	1.2/2.0	#2 Sand .010 Slotted PVC	**ANNULUS SEAL** Interval: 0-0.5 ft Type: Portland/Bentonite mix
		10.0 - 12.0 Loose to compact, brown medium sand, saturated.	SP		-0.3 / 12.0		SPT	5-5-9-15	14	2.0/2.0		**WELL COMPLETION** Pad: N/A Protective Casing: N/A
15	-5	12.0 - 14.0 Loose to compact, brown medium sand, saturated.	SP		-2.3 / 14.0		SPT	0-7-9-13	16	2.0/2.0		**DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
		Boring completed at 14.0 ft										
20												

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-18

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 18.0 ft
LOCATION: Wilmington, NC

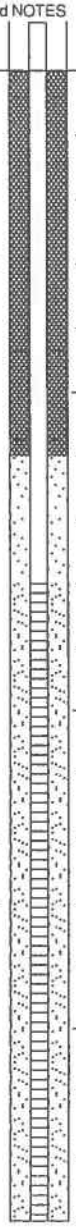
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/25/08
DATE COMPLETED: 11/25/08

NORTHING: 202,605.9
EASTING: 2,306,030.8
GS ELEVATION: 17.3 ft
TOC ELEVATION: 19.5 ft

DEPTH W.L.: 10.1 ft
DATE W.L.: 11/25/08
TIME W.L.: 4:30 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 ORGANIC LAYER - Organic Fines (Silt & Clay) w/ Some Medium Sand, Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	OL		17.0 / 0.3					
		0.3 - 2.0 Medium SAND, Well Sorted, White, Very Loose, Moist	SP		15.3		SS	1-1-1-2	2	1.7/2.0
15		2.0 - 3.0 Medium SAND w/ Mutiple ORGANIC LAYERS - Containing Organic Fines (Silt & Clay), Well Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SP-SM		2.0 / 14.3		SS	2-2-2-4	4	1.7/2.0
		3.0 - 4.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Brownish Yellow, Very Loose, Moist	SW		3.0 / 13.3					
5		4.0 - 6.0 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Wet	SW		4.0 / 11.3		SS	3-3-2-4	5	1.7/2.0
		6.0 - 8.0 Fine SAND w/ Little Organic Fines (Silt & Clay), Poorly Sorted, Brownish Yellow, Loose, Wet	SM		6.0 / 9.3		SS	4-4-6-7	10	1.0/2.0
10		8.0 - 10.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow, Loose, Saturated @ 9'	SW		8.0 / 7.3		SS	3-4-5-8	9	2.0/2.0
		10.0 - 12.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Brownish Yellow, Medium Dense, Saturated	SW		10.0 / 5.3		SS	5-6-8-17	14	2.0/2.0
5		12.0 - 18.0 Discontinued split spoons due to sand infiltrating into the augers			12.0 / -0.7					
0		18.0: Terminated Boring Boring completed at 18.0 ft								
15										
-5										
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 8'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 8' - 18'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 6' - 18'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 6'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 6'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

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RECORD OF BOREHOLE PZ-19

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/12/07
DATE COMPLETED: 2/12/07

NORTHING: 192,640.5
EASTING: 2,310,124.2
GS ELEVATION: 12.8 ft
TOC ELEVATION: 15.8 ft

DEPTH W.L.: 7.6 ft
ELEVATION W.L.: 8.2 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:24 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, brownish white, fine to medium sand.	SP		10.8		SPT	1-2-2-4	4	2.0/2.0
		2.0 - 4.0 Loose, white to light brown, medium sand, some brown staining at 3 ft, moist.	SP		2.0 / 8.8		SPT	2-3-3-5	6	2.0/2.0
5		4.0 - 6.0 Loose, white to brown, medium sand, moist to saturated.	SP		4.0 / 6.8		SPT	3-1-3-3	4	1.8/2.0
		6.0 - 8.0 Loose, brown to white, medium sand, saturated.	SP		6.0 / 4.8		SPT	2-1-1-3	2	1.8/2.0
10		8.0 - 10.0 Loose, brown, medium sand, saturated.	SP		8.0 / 2.8		SPT	4-6-9-11	15	1.5/2.0
		10.0 - 12.0 Loose, dark brown medium sand, saturated.	SP		10.0 / 0.8		SPT	4-6-7-12	13	2.0/2.0
15		12.0 - 14.0 Loose to compact, dark brown, medium sand, saturated.	SP		12.0 / -1.2		SPT	20-15-10-11	25	1.5/2.0
20		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.0-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-19

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 17.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 202,207.8
EASTING: 2,305,730.0
GS ELEVATION: 14.9 ft
TOC ELEVATION: 17.5 ft

DEPTH W.L.: Flush
DATE W.L.: 11/20/08
TIME W.L.: 12:07 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.3 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Very Dark Gray, Soft, Low Plasticity, Moist	SM		14.7							
		0.3 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		0.3 / 12.9		SS	1-1-2-3	3	1.8/2.0		
		2.0 - 3.0 Medium SAND, Well Sorted, Light Gray, Loose, Moist	SP		2.0 / 11.9		SS	2-3-2-3	5	1.3/2.0	3/8" Bentonite Chip Seal	
		3.0 - 4.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown transitions to Yellowish Brown, Loose, Moist	SW		3.0 / 10.9							
5	10	4.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown transitions to Light Gray, Loose, Wet NOTE: More Fine Sand in Darker Material @ 4.0'	SW		4.0 / 6.9		SS	3-2-3-4	5	0.9/2.0		
							SH			1.0/2.0		
		8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Saturated	SW		8.0 / 4.9		SS	6-5-4-9	9	1.5/2.0		
10	5	10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Medium Dense, Saturated	SW		10.0 / 2.9		SS	6-7-11-14	18	2.0/2.0	#2 Sand — 0.010" Screen	
		12.0 - 17.0 Discontinued split spoons due to sand infiltrating into the augers			12.0 / -2.1							
15	0											
		17.0: Terminated Boring Boring completed at 17.0 ft										
20	-5											

WELL CASING
Interval: 0' - 7'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 7' - 17'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 5' - 17'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 5'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 5'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-Inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-20

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

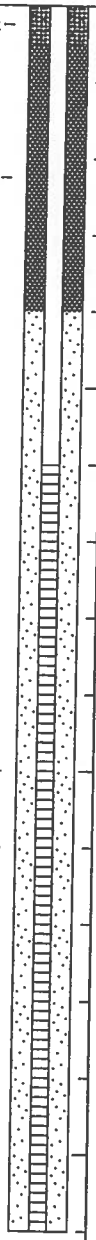
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/16/07
DATE COMPLETED: 2/16/07

NORTHING: 192,958.2
EASTING: 2,310,017.9
GS ELEVATION: 14.3 ft
TOC ELEVATION: 16.5 ft

DEPTH W.L.: 8.2 ft
ELEVATION W.L.: 8.3 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:20 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, brown to white, medium sand, some black sand.	SP		12.3		SPT	1-1-3-6	4	1.2/2.0
		2.0 - 4.0 Loose, white, medium sand.	SP		2.0 / 10.3		SPT	5-4-4-5	8	1.5/2.0
5	10	4.0 - 6.0 Loose, brown to white, medium sand, slightly moist.	SP		4.0 / 8.3		SPT	7-6-3-4	9	1.8/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist.	SP		6.0 / 6.3		SPT	3-3-4-7	7	1.8/2.0
10	5	8.0 - 10.0 Loose to compact, brown to tan, medium sand, moist.	SP		8.0 / 4.3		SPT	3-3-6-10	9	2.0/2.0
		10.0 - 12.0 Loose to compact, brown to tan, medium sand, moist to saturated.	SP		10.0 / 2.3		SPT	4-6-8-12	14	2.0/2.0
15	0	12.0 - 16.0 Loose to compact, brown to tan, medium sand, saturated.	SP		12.0 / -1.7		SPT	6-3-4-10	7	2.0/2.0
		Boring completed at 16.0 ft								
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.2-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-20

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 20.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/20/08
DATE COMPLETED: 11/20/08

NORTHING: 201,925.0
EASTING: 2,305,525.4
GS ELEVATION: 21.2 ft
TOC ELEVATION: 23.4 ft

DEPTH W.L.: 11.6 ft
DATE W.L.: 11/20/08
TIME W.L.: 8:51 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Dark Gray, Firm, Low Plasticity, Moist	SM		0.2		SS	1-3-3-4	6	1.4/2.0	Concrete	**WELL CASING** Interval: 0' - 10' Material: PVC Diameter: 2" Joint Type: Threaded
	20	0.2 - 2.0 Medium SAND, Well Sorted, Gray, Loose, Moist	SP		19.2							
		2.0 - 2.5 Medium SAND, Well Sorted, Gray, Loose, Moist	SP		2.0 18.7							**WELL SCREEN** Interval: 10' - 20' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC
		2.5 - 4.0 Medium SAND, Well Sorted, Dark Yellowish Brown (Matrix) w/ Very Dark Brown (Redox Features), Loose, Moist	SP		2.5 17.2		SS	3-2-2-3	4	1.5/2.0		
5		4.0 - 6.0 Medium SAND, Well Sorted, Brownish Yellow, Loose, Moist	SP		4.0 15.2		SS	2-2-5-2	7	0.9/2.0	3/8" Bentonite Chips	**FILTER PACK** Interval: 7' - 20' Type: #2 Sand **FILTER PACK SEAL** Interval: 2' - 7' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 2' Type: Concrete
	15	6.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow, Loose, Moist	SW		6.0 13.2		SS	4-4-5-7	9	1.4/2.0		
		8.0 - 9.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellow (Matrix) w/ Dark Yellowish Brown (Redox Features), Loose, Moist	SW		8.0 12.2		SS	5-3-4-5	7	1.0/2.0		**WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
		9.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Grayish Brown, Loose, Moist	SW		9.0 11.2							
10		10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown (Matrix) w/ Dark Grayish Brown (Redox Features), Medium Dense, Saturated @ 12'	SW		10.0 9.2		SS	8-6-6-9	12	0.7/2.0		
	10	12.0 - 20.0 Discontinued split spoons due to sand infiltrating into the augers			12.0						#2 Sand	
15											0.010" Screen	
	5											
20		20.0: Terminated Boring Boring completed at 20.0 ft			1.2							
	0											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

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RECORD OF BOREHOLE PZ-21

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 192,408.7
EASTING: 2,309,470.0
GS ELEVATION: 14.3 ft
TOC ELEVATION: 17.1 ft

DEPTH W.L.: 9.5 ft
ELEVATION W.L.: 7.6 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:21 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		12.3		SPT	1-1-1-3	2	1.5/2.0
		2.0 - 4.0 Loose to very loose, white, medium sand.	SP		2.0 / 10.3		SPT	2-3-3-6	6	1.5/2.0
5	10	4.0 - 6.0 Loose, white to brown, medium sand, slightly moist.	SP		4.0 / 8.3		SPT	5-7-3-7	10	1.8/2.0
		6.0 - 8.0 Loose to compact, brown, medium sand, moist.	SP		6.0 / 6.3		SPT	7-7-7-12	14	1.8/2.0
10	5	8.0 - 10.0 Loose, brown, medium sand, moist.	SP		8.0 / 4.3		SPT	6-4-5-6	9	1.5/2.0
		10.0 - 12.0 Loose to compact, brown medium sand, moist to saturated.	SP		10.0 / 2.3		SPT	5-5-10-15	15	2.0/2.0
15	0	12.0 - 14.0 Loose, brown medium sand, saturated.	SP		12.0 / 0.3		SPT	5-2-3-5	5	2.0/2.0
		14.0 - 16.0 Loose to compact, brown, medium sand, saturated.	SP		14.0 / -1.7		SPT	0-5-7-14	12	2.0/2.0
20	-5	Boring completed at 16.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-21

SHEET 1 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 24.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/1/08
DATE COMPLETED: 12/1/08

NORTHING: 202,152.6
EASTING: 2,306,342.4
GS ELEVATION: 26.5 ft
TOC ELEVATION: 28.6 ft

DEPTH W.L.: 14 ft
DATE W.L.: 12/1/08
TIME W.L.: 12:00 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.3 Fine SAND w/ Trace Medium Sand, Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		26.3 / 0.3							
	25	0.3 - 2.0 Fine SAND w/ Trace Medium Sand, Well Sorted, Yellowish Brown, Very Loose, Moist	SP		24.5 / 2.0		SS	1-1-1-2	2	1.5/2.0	Concrete	WELL CASING Interval: 0' - 14' Material: PVC Diameter: 2" Joint Type: Threaded
		2.0 - 4.0 Fine SAND w/ Trace Medium Sand, Well Sorted, Yellowish Brown, Very Loose, Moist	SP		22.5 / 4.0		SS	2-1-2-2	3	1.6/2.0		WELL SCREEN Interval: 14' - 24' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC
5		4.0 - 6.0 Fine SAND w/ Trace Medium Sand, Well Sorted, Yellowish Brown, Loose, Moist	SP		20.5 / 6.0		SS	2-2-3-3	5	1.6/2.0		FILTER PACK Interval: 12' - 24' Type: #2 Sand
	20	6.0 - 8.0 Medium SAND, Well Sorted, Yellow, Loose, Wet	SP		18.5 / 8.0		SS	4-3-3-4	6	1.7/2.0	3/8" Bentonite Chips	FILTER PACK SEAL Interval: 2' - 12' Type: 3/8" Bentonite Chips
		8.0 - 10.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Yellowish Brown and Yellow, Loose, Wet	SW		16.5 / 10.0		SS	9-6-3-6	9	1.7/2.0		ANNULUS SEAL Interval: 0' - 2' Type: Concrete
10		10.0 - 12.0 Fine SAND w/ Some Medium Sand, Poorly Sorted, Yellowish Brown and Yellow, Loose, Wet	SW		14.5 / 12.0		SS	7-2-4-7	6	1.7/2.0		WELL COMPLETION Pad: 3'x3' Concrete Pad Protective Casing: Aluminum
	15	12.0 - 14.0 Fine SAND, Well Sorted, Very Pale Brown, Medium Dense, Wet	SP		12.5 / 14.0		SS	7-4-8-9	12	1.6/2.0		DRILLING METHODS Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
		14.0 - 15.0 Fine SAND w/ Interbedded Organic Fines (Silt & Clay), Well Sorted, Very Pale Brown (Matrix) w/ Black (Organic Layers), Medium Dense, Wet	SP-SM		11.5 / 15.0		SS	8-9-12-12	21	1.5/2.0		
15		15.0 - 16.0 Fine SAND, Well Sorted, Light Gray, Medium Dense, Wet	SP		10.5 / 16.0							
	10	16.0 - 18.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Saturated @ 16'	SW		8.5 / 18.0		SS	4-3-5-7	8	1.5/2.0		
		18.0 - 24.0 Discontinued split spoons due to sand infiltrating into the augers									#2 Sand 0.010" Screen	
20	5				2.5							

Log continued on next page

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

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RECORD OF BOREHOLE PZ-21

SHEET 2 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 24.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 12/1/08
DATE COMPLETED: 12/1/08

NORTHING: 202,152.6
EASTING: 2,306,342.4
GS ELEVATION: 26.5 ft
TOC ELEVATION: 28.6 ft

DEPTH W.L.: 18.9 ft
DATE W.L.: 12/1/08
TIME W.L.: 12:00 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25	0	24.0: Terminated Boring Boring completed at 24.0 ft										**WELL CASING** Interval: 0' - 14' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 14' - 24' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 12' - 24' Type: #2 Sand **FILTER PACK SEAL** Interval: 2' - 12' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 2' Type: Concrete **WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum **DRILLING METHODS** Soil Drill: 4.25-Inch ID HSA Rock Drill: N/A
30	-5											
35	-10											
40	-15											
45	-20											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

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RECORD OF BOREHOLE PZ-22

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 192,438.1
EASTING: 2,309,693.7
GS ELEVATION: 14.1 ft
TOC ELEVATION: 16.2 ft

SHEET 1 of 1
DEPTH W.L.: 8.4 ft
ELEVATION W.L.: 7.8 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:15 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white, medium sand.	SP		12.1		SPT	1-1-1-3	2	1.2/2.0
		2.0 - 6.0 Loose, brown to white, medium sand, moist.	SP		2.0		SPT	2-2-2-5	4	1.5/2.0
5	10						SH			1.5/2.0
		6.0 - 8.0 Loose, brown to white, medium sand, moist to saturated.	SP		8.1 6.0		SPT	3-3-3-6	6	2.0/2.0
10	5	8.0 - 10.0 Loose to compact, brown medium sand, saturated.	SP		6.1 8.0		SPT	4-4-6-10	10	2.0/2.0
		10.0 - 12.0 Loose, brown to white, medium sand, saturated.	SP		4.1 10.0		SPT	0-0-4-6	4	2.0/2.0
15	0	12.0 - 14.0 Loose, brown, medium sand, saturated.	SP		2.1 12.0		SPT	2-3-5-8	8	2.0/2.0
		Boring completed at 14.0 ft			0.1					
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.1-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-22

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/19/08
DATE COMPLETED: 11/19/08

NORTHING: 201,073.4
EASTING: 2,305,978.0
GS ELEVATION: 15.3 ft
TOC ELEVATION: 19.1 ft

DEPTH W.L.: 1.0 ft
DATE W.L.: 11/19/08
TIME W.L.: 11:10 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL / PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	15	0.0 - 0.5 Fine to Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Soft, Low Plasticity, Moist	SM		14.8							
			SP		0.5 / 14.3		SS	1-WR-1-2	0	1.5/2.0	3/8" Bentonite Chip Seal	
		0.5 - 1.0 Medium SAND, Well Sorted, Gray, Very Loose, Moist	SM		1.0 / 13.3							
		1.0 - 2.0 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Very Loose, Moist	SP		2.0		SS	2-WR-2-1	0	1.7/2.0		
		2.0 - 4.0 Medium SAND, Well Sorted, Light Yellowish Brown, Very Loose, Moist			11.3							
5	10	4.0 - 6.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Yellow, Very Loose, Moist	SW		4.0 / 9.3		SS	2-1-2-1	3	1.7/2.0		
		6.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Dark Grayish Brown, Very Loose, Saturated @ 6'			6.0		SS	2-1-1-2	2	1.5/2.0		
			SW				SH			0.8/2.0	#2 Sand / 0.010" Screen	
10	5	10.0 - 14.0 Discontinued split spoons due to sand infiltrating into the augers			5.3 / 10.0							
					1.3							
15	0	14.0: Terminated Boring Boring completed at 14.0 ft										
20	-5											

WELL CASING
Interval: 0' - 4'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 4' - 14'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 2' - 14'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-Inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-23

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 13.0 ft
LOCATION: Wilmington, NC

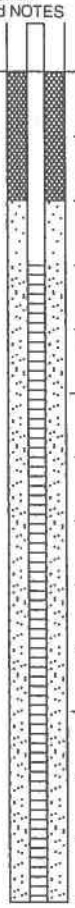
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/26/08
DATE COMPLETED: 11/26/08

NORTHING: 201,410.8
EASTING: 2,306,536.9
GS ELEVATION: 13.5 ft
TOC ELEVATION: 15.1 ft

DEPTH W.L.: 5.4 ft
DATE W.L.: 11/26/08
TIME W.L.: 11:00 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		13.2 / 0.3					
		0.3 - 2.0 Medium SAND, Well Sorted, Light Gray, Very Loose, Moist	SP		11.5		SS	1-2-2-3	4	1.7/2.0
		2.0 - 2.8 Medium SAND, Well Sorted, Light Gray, Very Loose, Wet	SP		2.0 / 10.7					
		2.8 - 3.0 Fine SAND w/ Some Organic Fines (Silt & Clay), Well Sorted, Black, Soft, Low Plasticity, Wet	SM / SP		-3.0 / 9.5		SS	3-1-3-2	4	1.8/2.0
10		3.0 - 4.0 Medium SAND, Well Sorted, Very Pale Brown, Very Loose, Wet	SM		4.0 / 9.0					
		4.0 - 4.5 Fine SAND w/ Some Organic Fines (Silt & Clay), Well Sorted, Black, Soft, Low Plasticity, Wet	SW		4.5 / 7.5		SS	1-1-2-3	3	1.4/2.0
5		4.5 - 6.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Very Loose, Saturated @ 5'	SW		6.0					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Very Loose, Saturated	SW		5.5		SS	1-1-1-2	2	1.7/2.0
		8.0 - 9.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated	SW		8.0 / 4.5		SS	WR-5-6-7	11	2.0/2.0
		9.0 - 10.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Dark Yellowish Brown, Medium Dense, Saturated	SW		9.0 / 3.5					
10		10.0 - 12.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Dark Yellowish Brown, Medium Dense, Saturated	SW		10.0 / 1.5		SS	4-6-11-18	17	2.0/2.0
		12.0 - 13.0 Discontinued split spoons due to sand infiltrating into the augers			12.0 / 0.5					
		13.0: Terminated Boring Boring completed at 13.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 3'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 3' - 13'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 2' - 13'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-23D

SHEET 1 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 48.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/27/07
DATE COMPLETED: 2/28/07

NORTHING: 192,422.3
EASTING: 2,309,914.3
GS ELEVATION: 9.3 ft
TOC ELEVATION: 11.6 ft

DEPTH W.L.: 4.9 ft
ELEVATION W.L.: 6.7 ft
DATE W.L.: 3/1/07
TIME W.L.: 7:05 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand, slightly moist.	SP		7.3 / 2.0					
		2.0 - 4.0 Very loose, white, medium sand, moist.	SP		5.3 / 4.0					
5	5	4.0 - 6.0 Loose, white to brown, medium sand, moist to saturated.	SP		3.3 / 6.0					
		6.0 - 8.0 Loose, dark brown, medium sand, moist to saturated.	SP		1.3 / 8.0					
10	0	8.0 - 10.0 Loose, brown to dark brown, medium sand, saturated.	SP		-0.7 / 10.0					
	-5	10.0 - 19.0 Loose, brown, medium sand, saturated.	SP		-9.7 / 19.0					
15										
	-10	19.0 - 24.0 Loose, brown, fine to medium sand, trace coarse sand, saturated.	SM				SPT	0-0-4-6	4	1.0 / 2.0
20		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.3-38 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 38-48 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 36-48 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 30-36 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-30 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-23D

SHEET 2 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 48.0 ft
LOCATION: Wilmington, NC

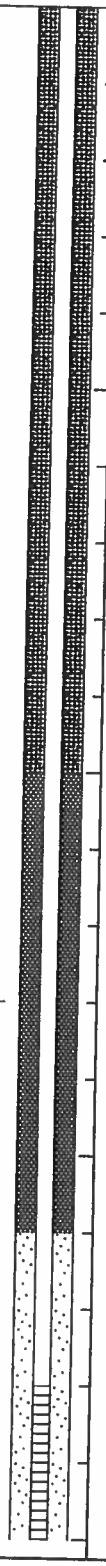
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/27/07
DATE COMPLETED: 2/28/07

NORTHING: 192,422.3
EASTING: 2,309,914.3
GS ELEVATION: 9.3 ft
TOC ELEVATION: 11.6 ft

DEPTH W.L.: 4.9 ft
ELEVATION W.L.: 6.7 ft
DATE W.L.: 3/1/07
TIME W.L.: 7:05 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
20		19.0 - 24.0 Loose, brown, fine to medium sand, trace coarse sand, saturated. *(Continued)*	SM				SPT	0-0-4-6	4	1.0/2.0
	-15	24.0 - 29.0 Loose, tannish brown, fine to medium sand, trace coarse sand, saturated.	SM		-14.7 / 24.0		SPT	0-5-6-7	11	0.8/2.0
25										
	-20	29.0 - 34.0 Loose, tannish brown, fine to medium sand, trace coarse sand, saturated.	SM		-19.7 / 29.0		SPT	0-5-6-7	11	1.0/2.0
30										
	-25	34.0 - 39.0 Loose to compact, brown to green, fine to medium sand, little coarse sand, saturated.	SM		-24.7 / 34.0		SPT	0-8-12-23	20	1.2/2.0
35										
	-30	39.0 - 44.0 Loose to compact, greenish gray, fine to medium sand, trace coarse gravel.	SM		-29.7 / 39.0		SPT	0-0-12-15	12	1.0/2.0
40		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.3-38 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 38-48 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 36-48 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 30-36 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-30 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-23D

SHEET 3 of 3

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 48.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/27/07
DATE COMPLETED: 2/28/07

NORTHING: 192,422.3
EASTING: 2,309,914.3
GS ELEVATION: 9.3 ft
TOC ELEVATION: 11.6 ft

DEPTH W.L.: 4.9 ft
ELEVATION W.L.: 6.7 ft
DATE W.L.: 3/1/07
TIME W.L.: 7:05 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
40		39.0 - 44.0 Loose to compact, greenish gray, fine to medium sand, trace coarse gravel. *(Continued)*	SM		-34.7		SPT	0-0-12-15	12	1.0/2.0	#2 Sand .010 Slotted PVC	**WELL CASING** Interval: -2.3-38 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 38-48 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 36-48 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 30-36 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-30 ft Type: Portland/Bentonite mix **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: Mud Rotary with 6-inch bit Rock Drill: N/A
	-35	44.0 - 48.0 Compact to dense, greenish gray, fine sand, little medium to coarse sand, saturated.			44.0							
45			SM				SPT	0-12-30-25	42	1.5/2.0		
		48.0: Drill bit refusal at 48 feet. Boring completed at 48.0 ft			-38.7							
	-40											
50												
	-45											
55												
	-50											
60												

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-23S

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

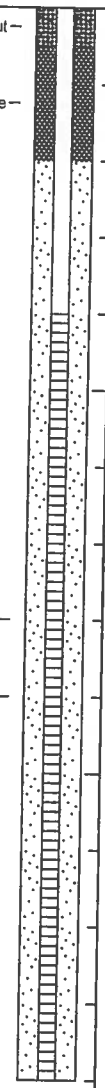
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,421.2
EASTING: 2,309,905.9
GS ELEVATION: 9.7 ft
TOC ELEVATION: 12.4 ft

DEPTH W.L.: 4.5 ft
ELEVATION W.L.: 7.9 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:43 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand, slightly moist.	SP		7.7		SPT	1-1-1-2	2	2.0/2.0
		2.0 - 4.0 Very loose, white, medium sand, moist.	SP		2.0 / 5.7		SPT	2-2-3-5	5	2.0/2.0
5	5	4.0 - 6.0 Loose, white to brown, medium sand, moist to saturated.	SP		4.0 / 3.7		SPT	5-5-4-11	9	2.0/2.0
		6.0 - 8.0 Loose, dark brown, medium sand, moist to saturated.	SP		6.0 / 1.7		SPT	5-6-7-10	13	2.0/2.0
10	0	8.0 - 10.0 Loose, brown to dark brown, medium sand, saturated.	SP		8.0 / -0.3		SPT	4-4-2-3	6	2.0/2.0
		10.0 - 14.0 Loose, brown, medium sand, saturated.	SP		10.0 / -4.3		SPT	5-6-6-7	12	2.0/2.0
							SH			0.0/2.0
15	-5	Boring completed at 14.0 ft								
20	-10									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

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RECORD OF BOREHOLE PZ-24

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

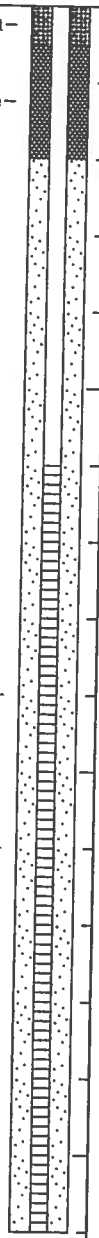
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/12/07
DATE COMPLETED: 2/12/07

NORTHING: 192,425.8
EASTING: 2,310,093.1
GS ELEVATION: 14.7 ft
TOC ELEVATION: 17.9 ft

DEPTH W.L.: 9.9 ft
ELEVATION W.L.: 8.0 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:25 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white to brown, medium sand.	SP		12.7		SPT	1-1-2-4	3	2.0/2.0
		2.0 - 4.0 Loose, white, medium sand, some brown staining at 3.5 to 4 ft.	SP		2.0 / 10.7		SPT	2-2-3-5	5	1.8/2.0
5	10	4.0 - 6.0 Loose, white, medium sand, some brown staining at 5.5 to 6 ft.	SP		4.0 / 8.7		SPT	7-5-3-2	8	2.0/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist.	SP		6.0 / 6.7		SPT	5-6-5-6	11	2.0/2.0
		8.0 - 10.0 Loose, brown, medium sand, moist to saturated.	SP		8.0 / 4.7		SPT	6-2-6-11	8	1.5/2.0
10	5	10.0 - 12.0 Loose to compact, brown medium sand, saturated.	SP		10.0 / 2.7		SPT	5-7-12-15	19	2.0/2.0
		12.0 - 16.0 Loose to very loose, tannish brown, medium sand, saturated.	SP		12.0		SPT	2-1-4-6	5	1.5/2.0
15	0						SPT			0.0/2.0
		Boring completed at 16.0 ft			-1.3					
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.2-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-24

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 23.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/19/08
DATE COMPLETED: 11/19/08

NORTHING: 200,735.4
EASTING: 2,305,940.7
GS ELEVATION: 24.1 ft
TOC ELEVATION: 26.4 ft

DEPTH W.L.: 19.6 ft
DATE W.L.: 11/19/08
TIME W.L.: 12:35 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Firm, Low Plasticity, Moist	SM		0.2					
		0.2 - 2.0 Medium SAND, Well Sorted, Brownish Yellow to Yellowish Brown, Loose, Moist	SP		22.1		SS	2-2-3-3	5	1.8/2.0
		2.0 - 4.0 Medium SAND, Well Sorted, Yellowish Brown to Brownish Yellow, Loose, Moist	SP		2.0 / 20.1		SS	3-2-3-4	5	1.7/2.0
	20	4.0 - 4.5 Medium SAND, Well Sorted, Brownish Yellow, Loose, Moist	SP		4.0 / 19.6					
5		4.5 - 6.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Yellow, Loose, Moist	SW		4.5 / 18.1		SS	5-3-4-6	7	1.4/2.0
		6.0 - 8.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Yellow, Medium Dense, Moist	SW		6.0 / 16.1		SS	6-5-7-8	12	1.4/2.0
	15	8.0 - 10.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Moist	SW		8.0 / 14.1		SS	11-4-6-6	10	1.4/2.0
10		10.0 - 12.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Light Gray, Loose, Wet	SW		10.0 / 12.1		SS	5-4-4-6	8	1.4/2.0
		12.0 - 14.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Brown (Matrix) w/ Dark Brown (Redox Features), Medium Dense, Wet	SW		12.0 / 10.1		SS	10-5-6-10	11	1.6/2.0
	10	14.0 - 16.0 Fine SAND, Well Sorted, Light Gray, Medium Dense, Saturated @ 15'	SP		14.0 / 8.1		SS	9-9-11-18	20	1.5/2.0
15		16.0 - 23.0 Discontinued split spoons due to sand infiltrating into the augers			16.0 / 1.1					
	5	23.0: Terminated Boring Boring completed at 23.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Concrete; 3/8" Bentonite Chips; #2 Sand; 0.010" Screen

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 13'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 13' - 23'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 10' - 23'
Type: #2 Sand

FILTER PACK SEAL
Interval: 2' - 10'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 2'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

OFFICIAL COPY Oct 30 2019

RECORD OF BOREHOLE PZ-25

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 192,295.6
EASTING: 2,309,242.8
GS ELEVATION: 12.8 ft
TOC ELEVATION: 15.3 ft

SHEET 1 of 1
DEPTH W.L.: 8.1 ft
ELEVATION W.L.: 7.2 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:18 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.8		SPT	1-1-1-3	2	1.5/2.0
		2.0 - 4.0 Loose, white, medium sand.	SP		8.8		SPT	3-3-3-6	6	1.5/2.0
5		4.0 - 6.0 Loose, white to brown, medium sand, slightly moist.	SP		6.8		SPT	6-5-3-5	8	1.8/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist.	SP		4.8		SPT	4-3-5-6	8	1.8/2.0
10	5	8.0 - 10.0 Loose, brown, medium sand, moist.	SP		2.8		SPT	9-8-9-14	17	1.0/2.0
		10.0 - 12.0 Loose to compact, brown medium sand, moist.	SP		0.8		SPT	7-9-10-15	19	2.0/2.0
15	0	12.0 - 16.0 Loose to compact, brown medium sand, saturated.	SP		-3.2		SPT	6-7-8-12	15	2.0/2.0
		Boring completed at 16.0 ft								
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.5-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

Bednarcik Exhibit 11
Sutton SARP Appendix C
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Oct 30 2019

RECORD OF BOREHOLE PZ-25

SHEET 1 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 27.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/26/08
DATE COMPLETED: 11/26/08

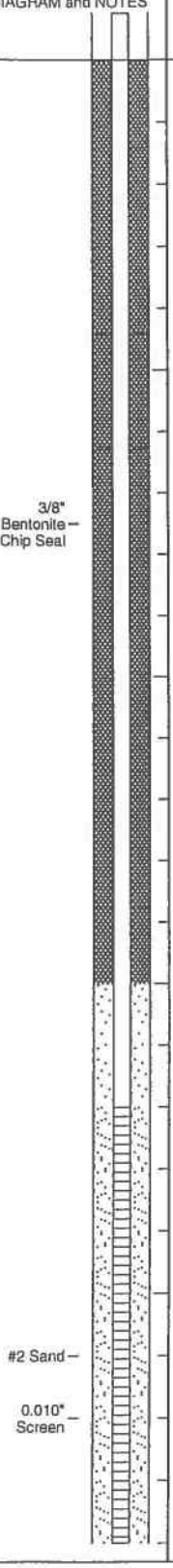
NORTHING: 200,416.5
EASTING: 2,306,852.9
GS ELEVATION: 28.6 ft
TOC ELEVATION: 31.1 ft

DEPTH W.L.: 21.4 ft
DATE W.L.: 11/26/08
TIME W.L.: 10:03 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.3 Fine SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Salt & Pepper, Soft, Low Plasticity, Moist	SM		28.3					
		0.3 - 2.0 Medium SAND, Well Sorted, Brownish Yellow, Very Loose, Moist	SP		0.3 / 26.6		SS	1-1-2-2	3	1.8/2.0
		2.0 - 4.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		2.0 / 24.6		SS	2-2-3-2	5	1.7/2.0
5	25	4.0 - 6.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		4.0 / 22.6		SS	4-2-2-2	4	1.7/2.0
		6.0 - 8.0 Fine SAND w/ Little Medium Sand, Poorly Sorted, Yellow, Loose, Moist	SW		6.0 / 20.6		SS	3-2-2-2	4	1.7/2.0
10	20	8.0 - 12.0 Fine SAND, Well Sorted, Yellow, Loose, Wet	SP		8.0 / 16.6		SS	6-2-2-2	4	1.6/2.0
							SH			2.0/2.0
15	15	12.0 - 14.0 Fine SAND, Well Sorted, Very Pale Brown, Loose, Wet	SP		12.0 / 14.6		SS	2-2-4-4	6	1.5/2.0
		14.0 - 16.0 Fine SAND, Well Sorted, Very Pale Brown, Loose, Wet	SP		14.0 / 12.6		SS	6-2-4-8	6	1.5/2.0
		16.0 - 18.0 Fine SAND, Well Sorted, Very Pale Brown, Medium Dense, Wet	SP		16.0 / 10.6		SS	6-7-9-11	16	1.7/2.0
20	10	18.0 - 20.0 Fine SAND, Well Sorted, Very Pale Brown and white, Medium Dense, Wet, Saturated @ 19' NOTE: Manganese Staining Present	SP		18.0 / 8.6		SS	10-7-11-17	18	1.6/2.0
		20.0 - 27.0 Discontinued split spoons due to sand infiltrating into the augers			20.0					
	5									

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 17'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 17' - 27'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 15' - 27'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 15'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 15'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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Oct 30 2019

RECORD OF BOREHOLE PZ-25

SHEET 2 of 2

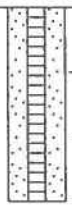
PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 27.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/26/08
DATE COMPLETED: 11/26/08

NORTHING: 200,416.5
EASTING: 2,306,852.9
GS ELEVATION: 28.6 ft
TOC ELEVATION: 31.1 ft

DEPTH W.L.: [illegible]
DATE W.L.: 11/26/08
TIME W.L.: 10:03 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		20.0 - 27.0 Discontinued split spoons due to sand infiltrating into the augers *(Continued)*			1.6							
	0	27.0: Terminated Boring Boring completed at 27.0 ft										
30												
	-5											
35												
	-10											
40												
	-15											
45												



WELL CASING
Interval: 0' - 17'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 17' - 27'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 15' - 27'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 15'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 15'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-26

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 192,248.2
EASTING: 2,309,479.0
GS ELEVATION: 12.7 ft
TOC ELEVATION: 15.5 ft

DEPTH W.L.: 8.1 ft
ELEVATION W.L.: 7.4 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:17 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white, medium sand.	SP		10.7		SPT	1-1-2-3	3	1.5/2.0
		2.0 - 4.0 Loose, brown to white, medium sand, slightly moist.	SP		2.0 / 8.7		SPT	2-3-5-7	8	1.5/2.0
5		4.0 - 6.0 Loose, brown to white, medium sand, moist.	SP		4.0 / 6.7		SPT	7-5-5-6	10	1.5/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist to saturated.	SP		6.0 / 4.7		SPT	5-6-6-8	12	1.8/2.0
10		8.0 - 10.0 Loose, brown, medium sand, saturated.	SP		8.0 / 2.7		SPT	6-5-4-7	9	1.8/2.0
		10.0 - 14.0 Loose, brown, medium sand, saturated.	SP		10.0 / -1.3		SPT	7-7-12-12	19	2.0/2.0
							SPT			0.0/2.0
		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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Sutton SARP Appendix C
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Oct 30 2019

RECORD OF BOREHOLE PZ-26

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

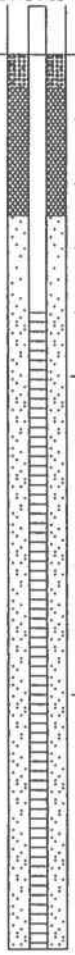
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/19/08
DATE COMPLETED: 11/19/08

NORTHING: 199,799.6
EASTING: 2,306,415.2
GS ELEVATION: 15.3 ft
TOC ELEVATION: 17.9 ft

DEPTH W.L.: 7.9 ft
DATE W.L.: 11/19/08
TIME W.L.: 11:07 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 1.0 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Black (Coated Sand), Firm, Low Plasticity, Moist	SM		14.3		SS	2-2-5-8	7	1.6/2.0
		1.0 - 2.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		1.0 / 13.3					
		2.0 - 4.0 Medium SAND, Well Sorted, Yellow and Very Pale Brown, Medium Dense, Moist to 2.5' then Wet	SP		2.0 / 11.3		SS	9-7-7-9	14	1.7/2.0
5	10	4.0 - 4.5 Medium SAND w/ Some Fine Sand, Poorly Sorted, Brown, Loose, Wet	SW		4.0 / 10.8					
		4.5 - 6.0 Medium SAND, Well Sorted, Very Pale Brown, Loose, Saturated @ 5'	SP		4.5 / 9.3		SS	9-4-4-6	8	1.4/2.0
		6.0 - 8.0 Medium SAND, Well Sorted, Very Pale Brown, Medium Dense, Saturated	SP		6.0 / 7.3		SS	6-5-6-8	11	1.8/2.0
10	5	8.0 - 10.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Saturated	SW		8.0 / 5.3		SS	7-4-4-4	8	1.4/2.0
		10.0 - 12.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Very Pale Brown, Very Loose, Saturated	SW		10.0 / 3.3		SS	4-2-WR-2	0	1.5/2.0
		12.0 - 14.0 Discontinued split spoons due to sand infiltrating into the augers			12.0 / 1.3					
15	0	14.0: Terminated Boring Boring completed at 14.0 ft								
20	-5									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 4'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 4' - 14'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 2.5' - 14'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5' - 2.5'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 0.5'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-27

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 192,200.1
EASTING: 2,309,706.9
GS ELEVATION: 12.6 ft
TOC ELEVATION: 15.5 ft

SHEET 1 of 1
DEPTH W.L.: 7.9 ft
ELEVATION W.L.: 7.6 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:13 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white, medium sand.	SP		10.6		SPT	1-1-2-4	3	1.5/2.0
		2.0 - 4.0 Loose, white, medium sand, slightly moist.	SP		8.6		SPT	3-3-3-5	6	1.2/2.0
5		4.0 - 6.0 Loose, brown to white, medium sand, moist.	SP		6.6		SPT	8-6-4-5	10	1.2/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist to saturated.	SP		4.6		SPT	3-3-4-7	7	2.0/2.0
10		8.0 - 10.0 Loose, white to brown, medium sand, moist to saturated.	SP		2.6		SPT	9-4-4-6	8	1.8/2.0
		10.0 - 12.0 Loose, brown, medium sand, saturated.	SP		0.6		SPT	8-4-6-5	10	2.0/2.0
15		12.0 - 14.0 Loose to compact, brown medium sand, saturated.	SP		-1.4		SPT	5-4-5-12	9	2.0/2.0
20		Boring completed at 14.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

OFFICIAL COPY
Oct 30 2019

RECORD OF BOREHOLE PZ-27

SHEET 1 of 2

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 30.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/19/08
DATE COMPLETED: 11/19/08

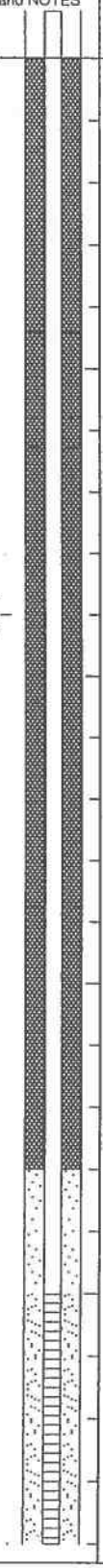
NORTHING: 199,451.7
EASTING: 2,306,844.8
GS ELEVATION: 33.3 ft
TOC ELEVATION: 36.2 ft

DEPTH W.L.: 25.4 ft
DATE W.L.: 11/19/08
TIME W.L.: 11:01 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 0.2 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Black (Coated Sand), Soft, Low Plasticity, Moist	SM		0.2		SS	1-2-2-2	4	1.0/2.0
		0.2 - 2.0 Medium SAND, Well Sorted, Yellow, Very Loose, Moist	SP		31.3					
		2.0 - 4.0 Medium SAND, Well Sorted, Yellow, Very Loose, Moist	SP		2.0 / 29.3		SS	2-2-2-2	4	1.2/2.0
30		4.0 - 5.0 Medium SAND, Well Sorted, Dark Yellowish Brown (Matrix) w/ Black (Redox Features), Very Loose, Moist	SP		4.0 / 28.3		SS	3-1-3-3	4	1.0/2.0
5		5.0 - 6.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Very Loose, Moist	SW		5.0 / 27.3					
		6.0 - 8.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Moist	SW		6.0 / 25.3		SS	3-3-3-5	6	1.2/2.0
25		8.0 - 10.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Moist	SW		8.0 / 23.3		SS	9-3-4-7	7	1.8/2.0
10		10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Loose, Wet	SW		10.0 / 21.3		SS	4-4-6-6	10	1.4/2.0
		12.0 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown (Matrix) w/ Yellowish Brown (Stained Quartz), Loose, Wet	SW		12.0 / 19.3		SS	8-3-5-8	8	1.3/2.0
20		14.0 - 16.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown to 15' then White Transitioning to Dark Yellowish Brown, Loose, Wet	SW		14.0 / 17.3		SS	6-5-5-7	10	1.3/2.0
		16.0 - 18.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Loose, Wet	SW		16.0 / 15.3		SS	8-6-3-7	9	0.8/2.0
15		18.0 - 19.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Dark Yellowish Brown, Medium Dense, Wet	SW		18.0 / 14.3		SS	6-6-7-10	13	1.4/2.0
		19.0 - 20.0 Fine SAND, Well Sorted, Very Pale Brown, Medium Dense, Wet	SP		19.0 / 13.3					
20		20.0 - 21.0 Fine SAND, Well Sorted, Very Pale Brown, Medium Dense, Wet	SP		20.0 / 12.3		SS	4-5-7-9	12	1.2/2.0
		21.0 - 22.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Wet	SW		21.0 / 11.3					
		22.0 - 24.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Wet to 23', then Saturated	SW		22.0 / 9.3		SS	8-6-7-8	13	1.6/2.0

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 20'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 20' - 30'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 18' - 30'
Type: #2 Sand

FILTER PACK SEAL
Interval: 0' - 18'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 18'
Type: 3/8" Bentonite Chips

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-27

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 30.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/19/08
DATE COMPLETED: 11/19/08

NORTHING: 199,451.7
EASTING: 2,306,844.8
GS ELEVATION: 33.3 ft
TOC ELEVATION: 36.2 ft

DEPTH W.L.: 26.4 ft
DATE W.L.: 11/19/08
TIME W.L.: 11:01 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
25		24.0 - 26.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, White, Medium Dense, Saturated	SW		24.0 7.3		SS	6-7-10-13	17	1.6/2.0	#2 Sand 0.010" Screen	**WELL CASING** Interval: 0' - 20' Material: PVC Diameter: 2" Joint Type: Threaded **WELL SCREEN** Interval: 20' - 30' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 18' - 30' Type: #2 Sand **FILTER PACK SEAL** Interval: 0' - 18' Type: 3/8" Bentonite Chips **ANNULUS SEAL** Interval: 0' - 18' Type: 3/8" Bentonite Chips **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
		26.0 - 28.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Light Gray, Medium Dense, Saturated	SW		26.0 5.3		SS	5-9-16-25	25	2.0/2.0		
30	5	28.0 - 30.0 Discontinued split spoons due to sand infiltrating into the augers			28.0 3.3							
		30.0: Terminated Boring Boring completed at 30.0 ft										
35	0											
40	-5											
45	-10											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

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BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-28

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

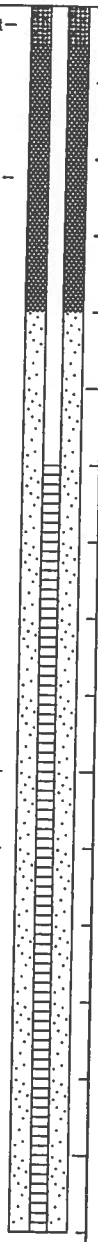
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,210.6
EASTING: 2,309,922.4
GS ELEVATION: 15.5 ft
TOC ELEVATION: 18.6 ft

DEPTH W.L.: 10.8 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:44 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Very loose, white, medium sand.	SP		13.5		SPT	1-1-1-2	2	1.5/2.0
		2.0 - 4.0 Very loose, white, medium sand.	SP		2.0 / 11.5		SPT	2-2-3-4	5	1.4/2.0
5	10	4.0 - 6.0 Loose, white, medium sand.	SP		4.0 / 9.5		SPT	6-5-4-3	9	2.0/2.0
		6.0 - 8.0 Loose, white to brown, medium sand, slightly moist.	SP		6.0 / 7.5		SPT	6-5-6-8	11	1.8/2.0
10	5	8.0 - 10.0 Loose, brown, medium sand, moist.	SP		8.0 / 5.5		SPT	5-4-5-6	9	2.0/2.0
		10.0 - 12.0 Loose, brown, medium sand, moist.	SP		10.0 / 3.5		SPT	3-5-7-13	12	2.0/2.0
		12.0 - 14.0 Loose to compact, brown, medium sand, saturated.	SP		12.0 / 1.5		SPT	0-0-5-10	5	2.0/2.0
15	0	14.0 - 16.0 Loose to compact, brown to tan, medium sand, saturated.	SP		14.0 / -0.6		SPT	6-5-6-10	11	2.0/2.0
		Boring completed at 16.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.1-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECO... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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Oct 30 2019

RECORD OF BOREHOLE PZ-28

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 17.0 ft
LOCATION: Wilmington, NC

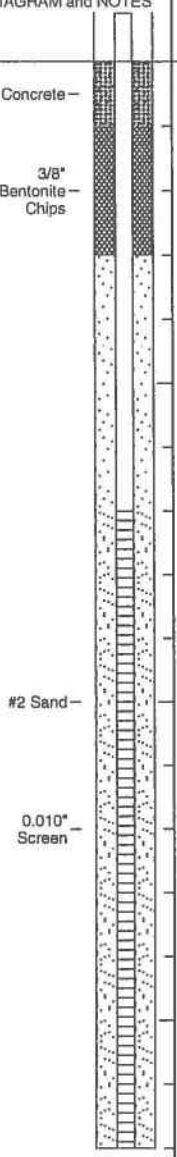
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/18/08
DATE COMPLETED: 11/18/08

NORTHING: 199,049.4
EASTING: 2,306,560.4
GS ELEVATION: 17.4 ft
TOC ELEVATION: 20.0 ft

DEPTH W.L.: [illegible]
DATE W.L.: 11/18/08
TIME W.L.: 1:42 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Medium SAND, Well Sorted, Light Gray and Yellow, Medium Dense, Moist	SP		15.4		SS	1-4-8-9	12	1.0/2.0
		2.0 - 4.0 Medium SAND, Well Sorted, Yellow transitions to Dark Yellowish Brown, Medium Dense, Moist	SP		2.0 13.4		SS	6-6-9-7	15	1.0/2.0
5	10	4.0 - 6.0 Medium SAND, Well Sorted, Yellow, Loose, Moist	SP		4.0 11.4		SS	6-2-4-6	6	0.6/2.0
		6.0 - 8.0 Medium SAND, Well Sorted, Pale Brown, Loose, Moist NOTE: Layers of Dark Yellowish Brown Sand @ 7'	SP		6.0 9.4		SS	3-4-5-9	9	1.2/2.0
		8.0 - 10.0 Medium SAND, Well Sorted, Pale Brown, Loose, Saturated @ 9.5'	SP		8.0 7.4		SS	4-1-4-6	5	1.0/2.0
10	5	10.0 - 12.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Yellow and Very Pale Brown, Loose, Saturated	SW		10.0 5.4		SS	6-5-6-8	11	1.8/2.0
		12.0 - 14.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Gray, Loose, Saturated	SW		12.0 3.4		SS	8-5-3-3	8	1.7/2.0
15	0	14.0 - 16.0 Medium SAND w/ Some Fine Sand, Poorly Sorted, Gray, Medium Dense, Saturated	SW		14.0 1.4		SS	9-11-12-14	23	1.4/2.0
		16.0 - 17.0 Discontinued split spoons due to sand infiltrating into the augers			16.0 0.4					
20	-5	17.0: Terminated Boring Boring completed at 17.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0' - 7'
Material: PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 7' - 17'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 3' - 17'
Type: #2 Sand

FILTER PACK SEAL
Interval: 1' - 3'
Type: 3/8" Bentonite Chips

ANNULUS SEAL
Interval: 0' - 1'
Type: Concrete

WELL COMPLETION
Pad: 3'x3' Concrete Pad
Protective Casing: Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-29

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

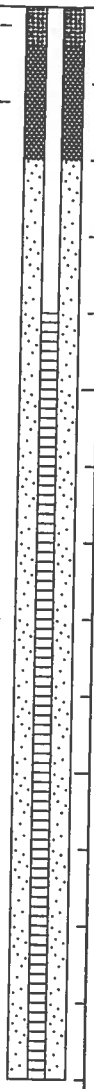
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 192,198.5
EASTING: 2,310,135.6
GS ELEVATION: 10.5 ft
TOC ELEVATION: 13.1 ft

DEPTH W.L.: 5.1 ft
ELEVATION W.L.: 8.0 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:26 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	10	0.0 - 2.0 Loose, white to brown, medium sand.	SP		8.5		SPT	2-1-2-4	3	1.4/2.0
		2.0 - 4.0 Loose, white to brown, medium sand, moist to saturated.	SP		2.0 6.5		SPT	2-2-3-5	5	1.5/2.0
5	5	4.0 - 6.0 Loose, white to tannish brown, medium sand, moist to saturated.	SP		4.0 4.5		SPT	6-7-3-5	10	1.3/2.0
		6.0 - 8.0 Loose, light brown, medium sand, moist to saturated.	SP		6.0 2.5		SPT	3-3-6-8	9	2.0/2.0
		8.0 - 10.0 Loose, light brown, medium sand, saturated.	SP		8.0 0.5		SPT	3-3-5-11	8	2.0/2.0
10	0	10.0 - 12.0 Loose, white to tan, medium sand, saturated.	SP		10.0 -1.5		SPT	2-3-6-6	9	2.0/2.0
		12.0 - 14.0 Loose, tannish brown to white, medium sand, saturated.	SP		12.0 -3.5		SPT	11-1-6-13	7	1.3/2.0
15	-5	Boring completed at 14.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.5-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-29

SHEET 1 of 1

PROJECT: Progress Energy - Sutton
PROJECT NUMBER: 063-6562006.202
DRILLED DEPTH: 22.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 11/18/08
DATE COMPLETED: 11/18/08

NORTHING: 198,828.8
EASTING: 2,307,625.6
GS ELEVATION: 23.3 ft
TOC ELEVATION: 25.8 ft

DEPTH W.L.: 16.4 ft
DATE W.L.: 11/18/08
TIME W.L.: 3:25 pm

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 0.7 Medium SAND w/ Some Organic Fines (Silt & Clay), Poorly Sorted, Dark Brown, Soft, Low Plasticity, Moist	SM		22.6 / 0.7		SS	1-1-2-3	3	2.0/2.0	Concrete	**WELL CASING** Interval: 0' - 12' Material: PVC Diameter: 2" Joint Type: Threaded
		0.7 - 2.0 Medium SAND, Well Sorted, Yellow (Matrix) w/ Black (Organic Streaking), Very Loose, Moist	SP		21.3 / 2.0							
	20	2.0 - 4.0 Medium SAND, Well Sorted, Yellow (Matrix) w/ Black (Organic Streaking), Loose, Moist	SP		19.3 / 4.0		SS	3-3-2-4	5	2.0/2.0		**WELL SCREEN** Interval: 12' - 22' Material: PVC Diameter: 2" Slot Size: 0.010" End Cap: PVC
5		4.0 - 6.0 Medium SAND, Well Sorted, Yellow (Matrix) w/ Black (Organic Streaking), Loose, Moist	SP		17.3 / 6.0		SS	3-2-3-5	5	1.2/2.0	3/8" Bentonite Chips	**FILTER PACK** Interval: 9' - 22' Type: #2 Sand
		6.0 - 8.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Pale Brown, Medium Dense, Moist	SW		15.3 / 8.0		SS	2-5-8-9	13	1.7/2.0		**FILTER PACK SEAL** Interval: 2' - 9' Type: 3/8" Bentonite Chips
	15	8.0 - 10.0 Medium SAND w/ Trace Fine Sand, Poorly Sorted, Pale Brown, Medium Dense, Moist	SW		13.3 / 10.0		SS	6-7-7-9	14	1.7/2.0		**ANNULUS SEAL** Interval: 0' - 2' Type: Concrete
10		10.0 - 12.0 Medium SAND, Well Sorted, Pale Brown, Very Loose, Moist	SP		11.3 / 12.0		SS	7-1-2-4	3	0.7/2.0		**WELL COMPLETION** Pad: 3'x3' Concrete Pad Protective Casing: Aluminum
	10	12.0 - 14.0 Medium SAND, Well Sorted, Pale Brown, Medium Dense, Moist	SP		9.3 / 14.0		SS	8-7-8-9	15	1.0/2.0		**DRILLING METHODS** Soil Drill: 4.25-Inch ID HSA Rock Drill: N/A
15		14.0 - 16.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated @ 15'	SW		7.3 / 16.0		SS	12-7-10-11	17	1.7/2.0	#2 Sand	
		16.0 - 18.0 Medium SAND w/ Little Fine Sand, Poorly Sorted, Very Pale Brown, Medium Dense, Saturated	SW		5.3 / 18.0		SS	8-10-15-18	25	1.8/2.0	0.010" Screen	
	5	18.0 - 22.0 Discontinued split spoons due to sand infiltrating into the augers										
20					1.3							
		22.0: Terminated Boring Boring completed at 22.0 ft										
	0											

LOG SCALE: 1 in = 3 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Ben Draper
CHECKED BY: David Reedy, P.G.
DATE: 8/24/09

Golder Associates

BOREHOLE RECORD SUTTON_LOGS_SITE_2.GPJ PIEDMONT.GDT 8/25/09

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RECORD OF BOREHOLE PZ-30D

SHEET 1 of 4

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 61.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/21/07

NORTHING: 192,187.9
EASTING: 2,310,488.3
GS ELEVATION: 18.6 ft
TOC ELEVATION: 20.9 ft

DEPTH W.L.: 13.2 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/22/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 2.0 Very loose, white to brown, medium sand.	SP		16.6 2.0							**WELL CASING** Interval: -2.3-49 ft Material: PVC Diameter: 2-inch Joint Type: Threaded
		2.0 - 4.0 Loose, white, gray to brown, medium sand.	SP		14.6 4.0							**WELL SCREEN** Interval: 49-59 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded
5	15	4.0 - 6.0 Loose, white to brown, medium sand.	SP		12.6 6.0							**FILTER PACK** Interval: 46-59 ft Type: #2 Sand
		6.0 - 8.0 Loose, light brown to tan, medium sand, slightly moist.	SP		10.6 8.0							**FILTER PACK SEAL** Interval: 40-46 ft Type: 3/8 Bentonite chip
10	10	8.0 - 10.0 Loose, white to dark brown, medium sand, moist.	SP		8.6 10.0							**ANNULUS SEAL** Interval: 0-40 ft Type: Portland/Bentonite mix
		10.0 - 12.0 Loose, brown, medium sand, moist.	SP		6.6 12.0							**WELL COMPLETION** Pad: 3x3x0.5 ft concrete Protective Casing: 4-inch Aluminum
15	5	12.0 - 14.0 Loose to compact, tan to brown, medium sand, moist to saturated.	SP		4.6 14.0							**DRILLING METHODS** Soil Drill: Mud Rotary with 6-inch bit Rock Drill: N/A
		14.0 - 16.0 Loose to compact, tan to brown, medium sand, saturated.	SP		2.6 16.0							
20	0	16.0 - 19.0 Compact, tan to brown, medium sand, saturated.	SP		-0.4 19.0							
		19.0 - 24.0 Loose to compact, tannish brown, medium sand, saturated.	SP				SPT	0-0-9-10	9	1.0/2.0		

Log continued on next page

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORDS SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-30D

SHEET 2 of 4

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 61.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/21/07

NORTHING: 192,187.9
EASTING: 2,310,488.3
GS ELEVATION: 18.6 ft
TOC ELEVATION: 20.9 ft

DEPTH W.L.: 13.2 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/22/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
20		19.0 - 24.0 Loose to compact, tannish brown, medium sand, saturated. *(Continued)*	SP				SPT	0-0-9-10	9	1.0/2.0
	-5				-5.4					
		24.0 - 29.0 Loose to compact, brown to tan, medium sand, saturated.			24.0		SPT	0-0-9-12	9	1.0/2.0
25			SP							
	-10				-10.4					
		29.0 - 34.0 Loose to compact, brown, fine to medium sand, little coarse sand, saturated.			29.0		SPT	0-5-7-11	12	1.0/2.0
30			SM							
	-15				-15.4					
		34.0 - 39.0 Loose, tannish brown, medium sand, saturated.			34.0		SPT	0-7-8-7	15	0.8/2.0
35			SP							
	-20				-20.4					
		39.0 - 44.0 Loose to compact, tannish brown, medium sand, saturated.	SP		39.0		SPT	0-5-7-11	12	1.0/2.0
40		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.3-49 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 49-59 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 46-59 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 40-46 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-40 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-30D

SHEET 3 of 4

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 61.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/21/07

NORTHING: 192,187.9
EASTING: 2,310,488.3
GS ELEVATION: 18.6 ft
TOC ELEVATION: 20.9 ft

DEPTH W.L.: 13.2 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/22/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
40		39.0 - 44.0 Loose to compact, tannish brown, medium sand, saturated. *(Continued)*	SP				SPT	0-5-7-11	12	1.0/2.0
	-25				-25.4					
		44.0 - 49.0 Loose to compact, brown to gray, fine to medium sand, saturated.	SM		44.0		SPT	0-0-8-10	8	1.0/2.0
45										
	-30				-30.4					
		49.0 - 54.0 Compact, gray, fine to medium sand, little coarse sand, saturated.	SM		49.0		SPT	0-16-16-24	32	1.5/2.0
50										
	-35				-35.4					
		54.0 - 59.0 Compact to dense, gray, fine to medium sand, saturated.	SM		54.0		SPT	25-33-50/0.5	>50	1.5/2.0
55										
	-40				-40.4					
		59.0 - 61.0 Dense, gray, fine to medium sand, saturated.	SM		59.0		SPT	0-23-25-34	48	1.5/2.0
60		Log continued on next page								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.3-49 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 49-59 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 46-59 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 40-46 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-40 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-30D

SHEET 4 of 4

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 61.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/20/07
DATE COMPLETED: 2/21/07

NORTHING: 192,187.9
EASTING: 2,310,488.3
GS ELEVATION: 18.6 ft
TOC ELEVATION: 20.9 ft

DEPTH W.L.: 13.2 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/22/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
60		59.0 - 61.0 Dense, gray, fine to medium sand, saturated. *(Continued)*	SM		-42.4		SPT	0-23-25-34	48	1.5/2.0		
		Boring completed at 61.0 ft										
	-45											
65												
	-50											
70												
	-55											
75												
	-60											
80												

WELL CASING
Interval: -2.3-49 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 49-59 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 46-59 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 40-46 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-40 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: Mud Rotary with 6-inch bit
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-30S

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 18.0 ft
LOCATION: Wilmington, NC

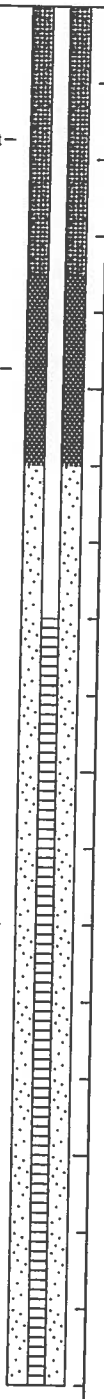
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/19/07
DATE COMPLETED: 2/19/07

NORTHING: 192,183.6
EASTING: 2,310,486.2
GS ELEVATION: 18.4 ft
TOC ELEVATION: 20.1 ft

DEPTH W.L.: 11.8 ft
ELEVATION W.L.: 8.2 ft
DATE W.L.: 2/20/07
TIME W.L.: 7:02 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white to brown, medium sand.	SP		16.4		SPT	1-1-2-4	3	1.2/2.0
		2.0 - 4.0 Loose, white, gray to brown, medium sand.	SP		2.0 / 14.4		SPT	4-5-6-8	11	2.0/2.0
5	15	4.0 - 6.0 Loose, white to brown, medium sand.	SP		4.0 / 12.4		SPT	5-3-3-4	6	1.8/2.0
		6.0 - 8.0 Loose, light brown to tan, medium sand, slightly moist.	SP		6.0 / 10.4		SPT	4-2-4-5	6	1.8/2.0
10	10	8.0 - 10.0 Loose, white to dark brown, medium sand, moist.	SP		8.0 / 8.4		SPT	5-4-3-6	7	2.0/2.0
		10.0 - 12.0 Loose, brown, medium sand, moist.	SP		10.0 / 6.4		SPT	4-5-5-7	10	1.8/2.0
		12.0 - 14.0 Loose to compact, tan to brown, medium sand, moist to saturated.	SP		12.0 / 4.4		SPT	4-3-4-10	7	1.8/2.0
15	5	14.0 - 16.0 Loose to compact, tan to brown, medium sand, saturated.	SP		14.0 / 2.4		SPT	4-8-8-13	16	2.0/2.0
		16.0 - 18.0 Compact, tan to brown, medium sand, saturated.	SP		16.0 / 0.4		SPT	8-10-15-14	25	2.0/2.0
20	0	Boring completed at 18.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -1.7-8 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 8-18 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 6-18 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 3.5-6 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-3.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-31/MW-3

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 18.0 ft
LOCATION: Wilmington, NC

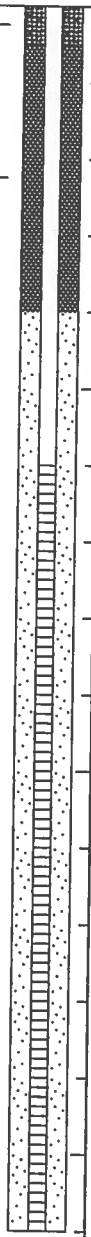
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 192,049.2
EASTING: 2,310,134.9
GS ELEVATION: 17.2 ft
TOC ELEVATION: 20.0 ft

DEPTH W.L.: 12.2 ft
ELEVATION W.L.: 7.8 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:25 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white, medium sand.	SP		15.2		SPT	1-1-2-3	3	1.5/2.0
	15	2.0 - 4.0 Loose, white to brown, medium sand.	SP		2.0 13.2		SPT	3-2-3-4	5	1.5/2.0
		4.0 - 6.0 Loose, white, medium sand.	SP		4.0 11.2		SPT	7-6-5-4	11	1.4/2.0
5		6.0 - 10.0 Loose, brown to white, medium sand, moist.	SP		6.0 7.2		SPT	4-4-9-7	13	1.5/2.0
	10						SH			1.0/2.0
10		10.0 - 12.0 Loose, brown, medium sand, moist to saturated.	SP		10.0 5.2		SPT	8-4-3-6	7	1.8/2.0
	5	12.0 - 14.0 Loose, brown, medium sand, saturated.	SP		12.0 3.2		SPT	3-5-7-10	12	1.8/2.0
		14.0 - 16.0 Loose, brown, medium sand, saturated.	SP		14.0 1.2		SPT	4-6-6-7	12	1.8/2.0
15					16.0					
	0	Boring completed at 18.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.8-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 7/2/07

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RECORD OF BOREHOLE PZ-32

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 27.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/28/07

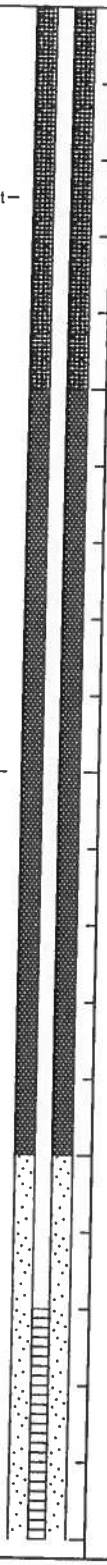
NORTHING: 192,029.9
EASTING: 2,310,323.5
GS ELEVATION: 26.3 ft
TOC ELEVATION: 29.3 ft

SHEET 1 of 2
DEPTH W.L.: 21.6 ft
ELEVATION W.L.: 7.8 ft
DATE W.L.: 3/1/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, brown, medium sand.	SP		24.3		SPT	1-1-1-2	2	1.5/2.0
	25	2.0 - 4.0 Loose, light brown, medium sand, slightly moist.	SP		2.0 / 22.3		SPT	2-2-2-4	4	1.8/2.0
5		4.0 - 6.0 Loose, light brown to tan, medium sand, slightly moist.	SP		4.0 / 20.3		SPT	7-9-4-4	13	1.2/2.0
	20	6.0 - 8.0 Loose, tan to brown, medium sand, slightly moist.	SP		6.0 / 18.3		SPT	5-5-6-9	11	1.5/2.0
		8.0 - 10.0 Loose, tan to brown, medium sand, slightly moist.	SP		8.0 / 16.3		SPT	7-5-4-4	9	1.8/2.0
10		10.0 - 12.0 Loose, tan to brown, medium sand, moist.	SP		10.0 / 14.3		SPT	5-3-4-4	7	1.8/2.0
	15	12.0 - 14.0 Loose, tan to brown, medium sand, moist.	SP		12.0 / 12.3		SPT	7-7-3-5	10	1.5/2.0
		14.0 - 16.0 Loose, tan, medium sand, moist.	SP		14.0 / 10.3		SPT	6-3-4-7	7	1.8/2.0
15		16.0 - 27.0 Loose, tan to brown, medium sand, moist.	SP		16.0		SPT	7-4-3-4	7	1.5/2.0
	10									
20										

Log continued on next page

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.0-17 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 17-27 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 15-27 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 5-15 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-32

SHEET 2 of 2

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 27.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/28/07

NORTHING: 192,029.9
EASTING: 2,310,323.5
GS ELEVATION: 26.3 ft
TOC ELEVATION: 29.3 ft

DEPTH W.L.: 21.6 ft
ELEVATION W.L.: 7.8 ft
DATE W.L.: 3/1/07
TIME W.L.: 7:10 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
20		16.0 - 27.0 Loose, tan to brown, medium sand, moist. *(Continued)*	SP								#2 Sand .010 Slotted PVC	**WELL CASING** Interval: -3.0-17 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 17-27 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 15-27 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 5-15 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-5 ft Type: Portland/Bentonite mix **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 4.25-inch ID HSA Rock Drill: N/A
25	5											
	0				-0.7							
		Boring completed at 27.0 ft										
30	-5											
35	-10											
40												

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-33/MW-4

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

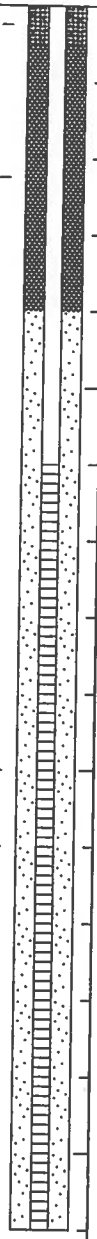
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/14/07
DATE COMPLETED: 2/14/07

NORTHING: 191,952.5
EASTING: 2,309,738.5
GS ELEVATION: 16.1 ft
TOC ELEVATION: 17.9 ft

DEPTH W.L.: 10.6 ft
ELEVATION W.L.: 7.3 ft
DATE W.L.: 2/15/07
TIME W.L.: 12:11 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Loose, white, medium sand.	SP		14.1		SPT	1-1-2-3	3	1.8/2.0
		2.0 - 4.0 Loose, white to brown, medium sand, slightly moist.	SP		12.1		SPT	2-2-3-4	5	1.5/2.0
5	10	4.0 - 6.0 Loose, white to brown, medium sand, slightly moist.	SP		10.1		SPT	7-2-4-5	6	1.8/2.0
		6.0 - 8.0 Loose, brown, medium sand, slightly moist.	SP		8.1		SPT	5-5-6-7	11	2.0/2.0
10	5	8.0 - 10.0 Loose, brown to white, medium sand, saturated.	SP		6.1		SPT	4-3-5-7	8	2.0/2.0
		10.0 - 12.0 Loose, brown, medium sand, moist.	SP		4.1		SPT	4-3-4-7	7	2.0/2.0
15	0	12.0 - 14.0 Loose, tan to brown, medium sand, saturated.	SP		2.1		SPT	0-4-4-9	8	2.0/2.0
		14.0 - 16.0 Loose, white to brown, medium sand, saturated.	SP		0.1		SPT	3-7-10-15	17	2.0/2.0
20		Boring completed at 16.0 ft								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -1.8-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 7/2/07

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RECORD OF BOREHOLE PZ-34

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 191,773.4
EASTING: 2,309,037.9
GS ELEVATION: 8.6 ft
TOC ELEVATION: 11.1 ft

SHEET 1 of 1
DEPTH W.L.: 5.8 ft
ELEVATION W.L.: 5.3 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:16 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, white, medium sand.	SP		6.6		SPT	1-2-2-3	4	1.4/2.0
		2.0 - 6.0 Loose, brown to white, medium sand.	SP		2.0		SPT	3-2-2-4	4	1.5/2.0
5	5						SH			0.0/2.0
		6.0 - 10.0 Loose, brown, medium sand, saturated.	SP		2.6 6.0		SPT	2-2-3-4	5	2.0/2.0
10	0	10.0 - 14.0 Loose, brown, medium sand, saturated.	SP		-1.4 10.0		SPT	5-3-4-5	7	2.0/2.0
	-5				-5.4		SPT			0.0/2.0
15	-10	Boring completed at 14.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Grout; Bentonite; #2 Sand; .010 Slotted PVC

WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.5-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-35

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

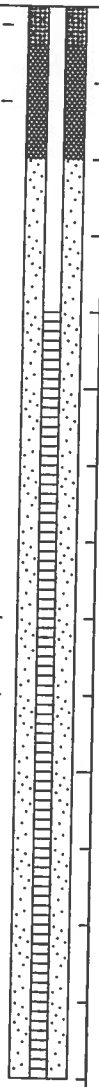
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 191,818.3
EASTING: 2,310,198.1
GS ELEVATION: 10.9 ft
TOC ELEVATION: 13.3 ft

DEPTH W.L.: 5.7 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:21 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	10	0.0 - 2.0 Loose, white, medium sand.	SP		8.9		SPT	1-2-2-4	4	1.2/2.0
		2.0 - 4.0 Loose, white to brown, medium sand, moist.	SP		6.9		SPT	2-2-4-5	6	1.2/2.0
5	5	4.0 - 6.0 Loose, whitish gray to brown, medium sand, moist.	SP		4.9		SPT	4-5-4-8	9	1.8/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist to saturated.	SP		2.9		SPT	4-5-7-10	12	2.0/2.0
		8.0 - 10.0 Loose, brown to light brown, medium sand, saturated.	SP		0.9		SPT	7-5-4-8	9	1.8/2.0
10	0	10.0 - 14.0 Loose, brown, medium sand, saturated.	SP		-3.1		SPT	6-5-3-4	8	2.0/2.0
							SPT			0.0/2.0
		Boring completed at 14.0 ft								
15	-5									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.4-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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Oct 30 2019

RECORD OF BOREHOLE PZ-36

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

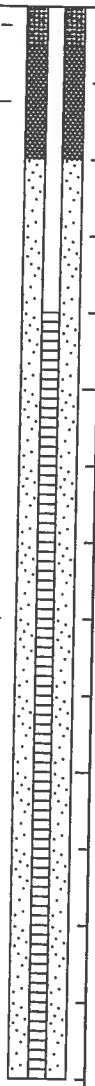
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 191,420.9
EASTING: 2,310,673.1
GS ELEVATION: 15.1 ft
TOC ELEVATION: 16.7 ft

DEPTH W.L.: 9.0 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:03 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Loose, white to slightly brown, medium sand, slightly moist.	SP		13.1		SPT	2-1-3-4	4	1.5/2.0
		2.0 - 4.0 Loose, white, medium sand, some brown sand at 3-4'.	SP		2.0 11.1		SPT	3-3-4-5	7	1.5/2.0
5	10	4.0 - 6.0 Loose, white to brown, medium sand, slightly moist.	SP		4.0 9.1		SPT	7-6-3-6	9	1.5/2.0
		6.0 - 8.0 Loose, brown, medium sand, moist.	SP		6.0 7.1		SPT	6-4-5-7	9	1.8/2.0
		8.0 - 10.0 Loose, brown to white, medium sand, moist.	SP		8.0 5.1		SPT	16-10-9-12	19	1.8/2.0
10	5	10.0 - 12.0 Loose, brown, medium sand, saturated.	SP		10.0 3.1		SPT	7-7-9-12	16	2.0/2.0
		12.0 - 14.0 Loose, brown to tan, medium sand, saturated.	SP		12.0 1.1		SPT	4-2-2-6	4	2.0/2.0
		Boring completed at 14.0 ft								
15	0									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -1.6-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-37

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

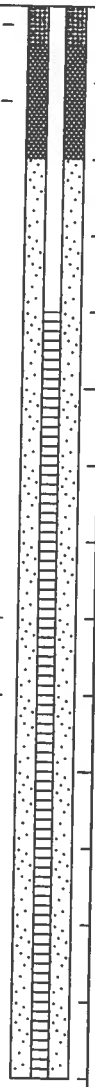
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/13/07
DATE COMPLETED: 2/13/07

NORTHING: 191,190.9
EASTING: 2,309,751.2
GS ELEVATION: 9.4 ft
TOC ELEVATION: 12.1 ft

DEPTH W.L.: 6.2 ft
ELEVATION W.L.: 5.9 ft
DATE W.L.: 2/14/07
TIME W.L.: 12:08 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Loose, brown to white, medium sand, slightly moist.	SP		7.4		SPT	1-1-1-3	2	1.5/2.0
		2.0 - 6.0 Loose, brown, medium sand, moist to saturated.	SP		2.0		SPT	2-3-3-7	6	1.8/2.0
5	5						SH			0.0/2.0
		6.0 - 8.0 Loose, brown to white, medium sand, saturated.	SP		3.4 / 6.0		SPT	8-7-3-6	10	2.0/2.0
	0	8.0 - 10.0 Loose, brown to dark brown, medium sand, saturated.	SP		1.4 / 8.0		SPT	6-4-4-3	8	2.0/2.0
10		10.0 - 12.0 Loose, brown to dark brown, medium sand, saturated.	SP		-0.6 / 10.0		SPT	4-4-6-9	10	2.0/2.0
	-5	12.0 - 14.0 Loose, brown, medium sand, saturated.	SP		-2.6 / 12.0		SPT	5-6-7-7	13	2.0/2.0
15		Boring completed at 14.0 ft			-4.6					
	-10									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.7-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECO... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-38

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

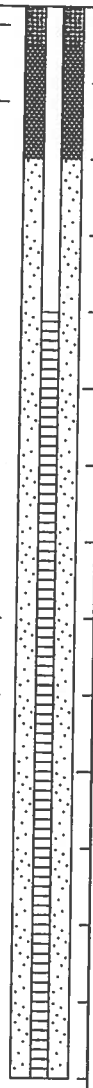
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/16/07
DATE COMPLETED: 2/16/07

NORTHING: 192,837.1
EASTING: 2,309,365.4
GS ELEVATION: 12.2 ft
TOC ELEVATION: 15.2 ft

DEPTH W.L.: 7.3 ft
ELEVATION W.L.: 7.9 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:35 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.2		SPT	1-1-2-3	3	1.5/2.0
	10	2.0 - 4.0 Loose to very loose, brown to white, medium sand, slightly moist.	SP		2.0 / 8.2		SPT	4-3-2-3	5	1.5/2.0
5		4.0 - 6.0 Loose to compact, brown to white, medium sand, slightly moist to moist.	SP		4.0 / 6.2		SPT	8-3-3-3	6	1.5/2.0
	5	6.0 - 8.0 Loose to very loose, brown, medium sand, moist to saturated.	SP		6.0 / 4.2		SPT	2-2-1-2	3	2.0/2.0
		8.0 - 10.0 Loose, brown to white, medium sand, moist to saturated.	SP		8.0 / 2.2		SPT	7-2-3-5	5	2.0/2.0
10		10.0 - 12.0 Loose, brown to tan, medium sand, moist to saturated.	SP		10.0 / 0.2		SPT	0-0-5-7	5	2.0/2.0
	0	12.0 - 14.0 Loose, brown to tan, medium sand, saturated.	SP		12.0 / -1.8		SPT	5-4-2-4	6	2.0/2.0
		Boring completed at 14.0 ft								
15										
	-5									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.0-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-Inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD - SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-39

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

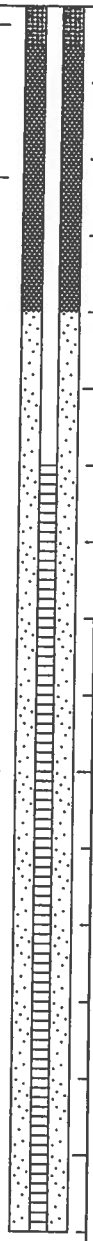
DRILL RIG: Deldrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,958.2
EASTING: 2,310,017.9
GS ELEVATION: 15.8 ft
TOC ELEVATION: 18.9 ft

DEPTH W.L.: 10.5 ft
ELEVATION W.L.: 8.4 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:36 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Very loose, white to brown, medium sand.	SP		13.8		SPT	1-1-2-2	3	1.5/2.0
		2.0 - 4.0 Very loose to loose, white to brown, medium sand.	SP		2.0 11.8		SPT	2-3-3-4	6	1.5/2.0
5	10	4.0 - 6.0 Loose, white to brown, medium sand, slightly moist.	SP		4.0 9.8		SPT	13-7-7-10	14	1.8/2.0
		6.0 - 8.0 Loose, brown, medium sand, slightly moist.	SP		6.0 7.8		SPT	7-7-8-11	15	1.8/2.0
10	5	8.0 - 10.0 Loose to compact, white to brown, medium sand, slightly moist.	SP		8.0 5.8		SPT	12-10-5-8	15	1.8/2.0
		10.0 - 12.0 Loose, brown, medium sand, moist.	SP		10.0 3.8		SPT	5-6-6-10	12	2.0/2.0
		12.0 - 14.0 Loose, brown to dark brown, medium sand, moist to saturated.	SP		12.0 1.8		SPT	4-3-2-4	5	1.8/2.0
15	0	14.0 - 16.0 Loose to compact, brown to tan, medium sand, saturated.	SP		14.0 -0.3		SPT	7-9-10-9	19	2.0/2.0
		Boring completed at 16.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.1-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-40/MW-2

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

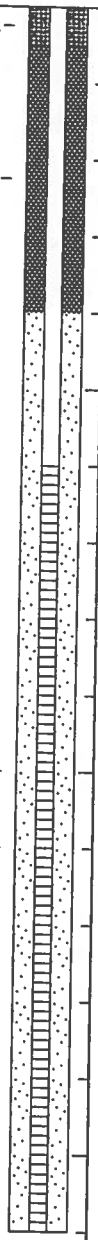
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,995.0
EASTING: 2,310,167.3
GS ELEVATION: 17.6 ft
TOC ELEVATION: 20.1 ft

SHEET 1 of 1
DEPTH W.L.: 11.7 ft
ELEVATION W.L.: 8.4 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:48 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, tannish brown, medium sand.	SP		15.6		SPT	1-2-4-7	6	1.8/2.0
	15	2.0 - 4.0 Loose, brown, medium sand.	SP		2.0 13.6		SPT	3-4-6-9	10	1.5/2.0
5		4.0 - 6.0 Loose to compact, brown, medium sand.	SP		4.0 11.6		SPT	10-5-6-6	11	1.5/2.0
	10	6.0 - 8.0 Loose, brown, medium sand, slightly moist.	SP		6.0 9.6		SPT	4-4-4-5	8	1.8/2.0
10		8.0 - 10.0 Loose to compact, brown, medium sand, moist.	SP		8.0 7.6		SPT	7-3-6-11	9	2.0/2.0
	5	10.0 - 12.0 Loose to compact, brown, medium sand, moist to saturated.	SP		10.0 5.6		SPT	4-8-12-15	20	2.0/2.0
		12.0 - 14.0 Loose to compact, brown to tan, medium sand, moist to saturated.	SP		12.0 3.6		SPT	7-11-15-17	26	2.0/2.0
15	0	14.0 - 16.0 Loose to compact, tannish brown, medium sand, saturated.	SP		14.0 1.6		SPT	0-1-3-11	4	2.0/2.0
		Boring completed at 16.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.6-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: 3x3x0.5 ft concrete
Protective Casing: 4-inch Aluminum

DRILLING METHODS
Soil Drill: 4.25-Inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 7/2/07

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RECORD OF BOREHOLE PZ-41

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 14.0 ft
LOCATION: Wilmington, NC

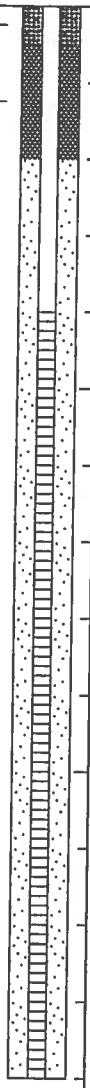
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/16/07
DATE COMPLETED: 2/16/07

NORTHING: 192,645.8
EASTING: 2,309,514.8
GS ELEVATION: 12.4 ft
TOC ELEVATION: 14.9 ft

DEPTH W.L.: 7.2 ft
ELEVATION W.L.: 7.7 ft
DATE W.L.: 2/19/07
TIME W.L.: 9:32 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 2.0 Very loose, white, medium sand.	SP		10.4		SPT	1-1-1-3	2	1.5/2.0
	10	2.0 - 4.0 Loose, white to brown, medium sand, slightly moist.	SP		2.0 8.4		SPT	3-3-4-7	7	1.5/2.0
5		4.0 - 6.0 Loose to compact, brown to white, medium sand, slightly moist.	SP		4.0 6.4		SPT	8-4-5-8	9	1.8/2.0
	5	6.0 - 8.0 Loose, brown, medium sand, moist.	SP		6.0 4.4		SPT	3-3-4-6	7	1.8/2.0
		8.0 - 10.0 Loose to compact, brown to tan, medium sand, moist to saturated.	SP		8.0 2.4		SPT	6-3-4-6	7	1.8/2.0
10		10.0 - 12.0 Loose, brown to tan, medium sand, saturated.	SP		10.0 0.4		SPT	3-3-5-7	8	2.0/2.0
	0	12.0 - 14.0 Loose, brown to tan, medium sand, saturated.	SP		12.0 -1.6		SPT	3-2-4-3	6	2.0/2.0
		Boring completed at 14.0 ft								
15										
	-5									
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -2.5-4 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 4-14 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 2-14 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-2 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

Golder Associates

BOREHOLE RECORD SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

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RECORD OF BOREHOLE PZ-42

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 16.0 ft
LOCATION: Wilmington, NC

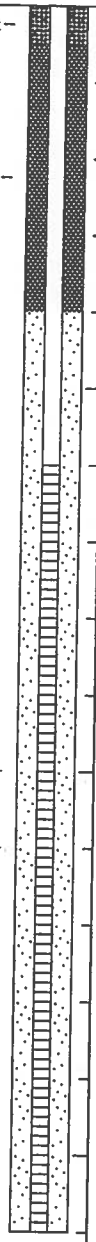
DRILL RIG: Deidrich D-50 Turbo
DATE STARTED: 2/15/07
DATE COMPLETED: 2/15/07

NORTHING: 192,808.1
EASTING: 2,309,947.0
GS ELEVATION: 15.5 ft
TOC ELEVATION: 18.7 ft

DEPTH W.L.: 10.4 ft
ELEVATION W.L.: 8.3 ft
DATE W.L.: 2/16/07
TIME W.L.: 12:34 pm

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	15	0.0 - 2.0 Very loose, brown to white, medium sand.	SP		13.5		SPT	1-0-1-1	1	1.0/2.0
		2.0 - 4.0 Loose to very loose, brown, medium sand.	SP		11.5		SPT	2-3-3-5	6	1.2/2.0
5	10	4.0 - 6.0 Loose, brown to white, medium sand, slightly moist.	SP		9.5		SPT	7-4-5-6	9	1.8/2.0
		6.0 - 10.0 Loose, brown, medium sand, slightly moist to moist.	SP		5.5		SPT	4-5-7-9	12	1.8/2.0
							SH			0.0/2.0
10	5	10.0 - 12.0 Loose to compact, brown, medium sand, moist.	SP		3.5		SPT	10-8-6-10	14	2.0/2.0
		12.0 - 16.0 Loose to compact, brown, medium sand, saturated.	SP		-0.5		SPT	9-5-5-8	10	2.0/2.0
15	0						SPT			0.0/2.0
		Boring completed at 16.0 ft								
20										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: -3.2-6 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 6-16 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Threaded

FILTER PACK
Interval: 4-16 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0.5-4 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: Portland/Bentonite mix

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 4.25-inch ID HSA
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Mike McConahey

GA INSPECTOR: Mike Kovacs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-43

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 3.6 ft
LOCATION: Wilmington, NC

DRILL RIG: N/A
DATE STARTED: 5/9/07
DATE COMPLETED: 5/9/07

NORTHING: 190,823.1
EASTING: 2,309,025.2
GS ELEVATION: 2.8 ft
TOC ELEVATION: 6.1 ft

DEPTH W.L.: 3.5 ft
ELEVATION W.L.: 2.6 ft
DATE W.L.: 5/10/07
TIME W.L.: 11:24 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	0	0.0 - 3.6 Loose, white, medium sand.	SP						Bentonite #2 Sand .010 Slotted PVC	**WELL CASING** Interval: -3.3-1.6 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 1.6-3.6 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 1-3.6 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 0-1 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-1 ft Type: 3/8 Bentonite chip **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 3-inch Hand Auger Rock Drill: N/A
		Boring completed at 3.6 ft			-0.8					
5	-5									
10	-10									
15	-15									
20										

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: N/A
DRILLER: N/A

GA INSPECTOR: Whitney Jappe & Kyle Higgs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-44

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 4.0 ft
LOCATION: Wilmington, NC

DRILL RIG: N/A
DATE STARTED: 5/9/07
DATE COMPLETED: 5/9/07

NORTHING: 190,743.6
EASTING: 2,309,719.6
GS ELEVATION: 4.1 ft
TOC ELEVATION: 7.2 ft

DEPTH W.L.: 3.3 ft
ELEVATION W.L.: 3.9 ft
DATE W.L.: 5/10/07
TIME W.L.: 11:12 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	4	0.0 - 4.0 Loose, white, medium sand.	SP						Bentonite #2 Sand .010 Slotted PVC	**WELL CASING** Interval: -3.1-1 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 1-4 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 0.5-4 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 0-0.5 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-0.5 ft Type: 3/8 Bentonite chip **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 3-inch Hand Auger Rock Drill: N/A
	0	Boring completed at 4.0 ft			0.1					
5	-5									
10	-10									
15	-15									
20										

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: N/A
DRILLER: N/A

GA INSPECTOR: Whitney Jappe & Kyle Higgs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-45

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 3.5 ft
LOCATION: Wilmington, NC

DRILL RIG: N/A
DATE STARTED: 5/9/07
DATE COMPLETED: 5/9/07

NORTHING: 190,480.1
EASTING: 2,310,294.4
GS ELEVATION: 5.2 ft
TOC ELEVATION: 8.4 ft

DEPTH W.L.: 4.2 ft
ELEVATION W.L.: 4.2 ft
DATE W.L.: 5/10/07
TIME W.L.: 10:31 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	5	0.0 - 3.5 Loose, white, medium sand.	SP						Bentonite #2 Sand .010 Slotted PVC	
					1.7					
		Boring completed at 3.5 ft								
5	0									
10	-5									
15	-10									
20										

WELL CASING
Interval: -3.1-1 ft
Material: PVC
Diameter: 2-inch
Joint Type: Threaded

WELL SCREEN
Interval: 1-3.5 ft
Material: PVC
Diameter: 2-inch
Slot Size: 0.010-inch
End Cap: Slip-on

FILTER PACK
Interval: 0.5-3.5 ft
Type: #2 Sand

FILTER PACK SEAL
Interval: 0-0.5 ft
Type: 3/8 Bentonite chip

ANNULUS SEAL
Interval: 0-0.5 ft
Type: 3/8 Bentonite chip

WELL COMPLETION
Pad: N/A
Protective Casing: N/A

DRILLING METHODS
Soil Drill: 3-inch Hand Auger
Rock Drill: N/A

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: N/A
DRILLER: N/A

GA INSPECTOR: Whitney Jappe & Kyle Higgs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-47

SHEET 1 of 1

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 3.5 ft
LOCATION: Wilmington, NC

DRILL RIG: N/A
DATE STARTED: 5/9/07
DATE COMPLETED: 5/9/07

NORTHING: 190,425.1
EASTING: 2,309,911.9
GS ELEVATION: 4.1 ft
TOC ELEVATION: 7.3 ft

DEPTH W.L.: 4.0 ft
ELEVATION W.L.: 3.3 ft
DATE W.L.: 5/10/07
TIME W.L.: 10:37 am

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	0	0.0 - 3.5 Loose, white, medium sand.	SP		0.6				Bentonite #2 Sand .010 Slotted PVC	**WELL CASING** Interval: -3.2-1.5 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 1.5-3.5 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Slip-on **FILTER PACK** Interval: 1-3.5 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 0-1 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-1 ft Type: 3/8 Bentonite chip **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 3-inch Hand Auger Rock Drill: N/A
		Boring completed at 3.5 ft								
5	-5									
10	-10									
15	-15									
20										

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: N/A
DRILLER: N/A

GA INSPECTOR: Whitney Jappe & Kyle Higgs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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RECORD OF BOREHOLE PZ-48

PROJECT: Progress Energy, Sutton
PROJECT NUMBER: 063-6562.006
DRILLED DEPTH: 3.6 ft
LOCATION: Wilmington, NC

DRILL RIG: N/A
DATE STARTED: 5/9/07
DATE COMPLETED: 5/9/07

NORTHING: 190,046.8
EASTING: 2,310,821.5
GS ELEVATION: 4.1 ft
TOC ELEVATION: 8.1 ft

SHEET 1 of 1
DEPTH W.L.: 4.3 ft
ELEVATION W.L.: 3.7 ft
DATE W.L.: 5/10/07
TIME W.L.: 10:25 am

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	NUMBER	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	0	0.0 - 3.6 Loose, white, medium sand.	SP						Bentonite #2 Sand .010 Slotted PVC	**WELL CASING** Interval: -4.0-1.1 ft Material: PVC Diameter: 2-inch Joint Type: Threaded **WELL SCREEN** Interval: 1.1-3.6 ft Material: PVC Diameter: 2-inch Slot Size: 0.010-inch End Cap: Threaded **FILTER PACK** Interval: 0.5-3.6 ft Type: #2 Sand **FILTER PACK SEAL** Interval: 0-0.5 ft Type: 3/8 Bentonite chip **ANNULUS SEAL** Interval: 0-0.5 ft Type: 3/8 Bentonite chip **WELL COMPLETION** Pad: N/A Protective Casing: N/A **DRILLING METHODS** Soil Drill: 3-inch Hand Auger Rock Drill: N/A
		Boring completed at 3.6 ft			0.5					
5	0									
10	-5									
15	-10									
20	-15									

LOG SCALE: 1 in = 2.5 ft
DRILLING COMPANY: N/A
DRILLER: N/A

GA INSPECTOR: Whitney Jappe & Kyle Higgs
CHECKED BY: David Reedy, P.G.
DATE: 6/12/07

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BOREHOLE REC... SUTTON_LOGS.GPJ PIEDMONT.GDT 6/29/07

SynTerra
148 River Street, Suite 220
Greenville, SC 29601
864-421-9999
864-421-9909

KEY TO SYMBOLS

CLIENT co **PROJECT NAME** Sutton Plant

PROJECT NUMBER 1026.108 **PROJECT LOCATION** Wilmington, NC

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- ASH-COAL: Coal Ash
- CLAY_TTC: TTC Clay
- SAND_TTC: TTC Sand
- SANDST_TTC: TTC Silty Sand
- SILT_TTC: TTC Silt
- SP: USCS Poorly-graded Sand
- SW: USCS Well-graded Sand

SAMPLER SYMBOLS

- Grab Sample
- Split Spoon
- Shelby Tube

WELL CONSTRUCTION SYMBOLS

- Bentonite Seal
- Cement Seal
- Filter Pack
- Well Casing
- Well Screen

ABBREVIATIONS

BGS - BELOW GROUND SURFACE
G.S. - GROUND SURFACE
M.P. - MEASURING POINT
TOC - TOP OF CASING
USCS - UNIFIED SOIL CLASSIFICATION SYSTEM
ft - FEET
IN - INCHES

PID - PHOTOIONIZATION DETECTOR
ppm - PARTS PER MILLION
-
-

- Water Level at Time Drilling, or as Shown
- Water Level at End of Drilling, or as Shown
- Water Level After 24 Hours, or as Shown

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01D**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198964.17	EASTING: 2305386.78
DRILLING METHOD:	Sonic	G.S. ELEV: 45.71 ft	M.P. ELEV: 45.71 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			FLYASH, very fine grained, very dense, moist, dark gray (GLEY1 4/1).					Protective casing with locking cap.
10			Same as above, denser with increased moisture to 14' then dry-moist with wood fragments and lighter coloration.					2" Sch. 40 threaded PVC Riser
20			FLYASH, black, gray and white mottle becoming laminated at 23', trace wood fragments, wet to 24' then dry to moist.					
30			FLYASH, very fine grained to silt-size, wet to saturated, dark gray, occasionally black and white mottling soft to 35', then dense, laminated.					Grout
40			Same as above, wet-saturated, soft, slightly dense, dense last 2'.					
50			No recovery.					

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Phone: 864-421-9999

CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01D**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198964.17	EASTING: 2305386.78
DRILLING METHOD:	Sonic	G.S. ELEV: 45.71 ft	M.P. ELEV: 45.71 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55			No recovery. *(continued)*					
60			Same as above, saturated, soupy.					
65								
70			No recovery.					Bentonite seal
75								
80			FLYASH for ~1' (same as above) with coal fragments mixed with sand then silty sand, medium- fine to coarse grained, medium dense, moderate to poorly sorted, wet, light brownish grey (2.5Y 6/2) (79-82') then silty sand, fine grained, well sorted, dense, wet, dark greenish grey sand (GLEY 1 4/1), consolidated lense (1") at 85'.					
85								
90		SM	Same as above, silty, fine sand/sandy silt with rock (highly weathered), dark greenish grey, dense, saturated, well sorted.					Sand Pack
95								2" pre-packed well screen
100								

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PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01S**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198968.22	EASTING: 2305388.87
DRILLING METHOD:	Sonic	G.S. ELEV: 45.75 ft	M.P. ELEV: 45.75 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 76.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			FLYASH, very fine grained, very dense, moist, dark gray (GLEY1 4/1).					Protective casing with locking cap.
10			Same as above, denser with increased moisture to 14' then dry-moist with wood fragments and lighter coloration.					2" Sch. 40 threaded PVC Riser
15								
20			FLYASH, black, gray and white mottle becoming laminated at 23', trace wood fragments, wet to 24' then dry to moist.					
25								
30			FLYASH, very fine grained to silt-size, wet to saturated, dark gray, occasionally black and white mottling soft to 35', then dense, laminated.					Grout
35								
40			Same as above, wet-saturated, soft, slightly dense, dense last 2'.					
45								
50			No recovery.					

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01S**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198968.22	EASTING: 2305388.87
DRILLING METHOD:	Sonic	G.S. ELEV: 45.75 ft	M.P. ELEV: 45.75 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 76.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55			No recovery. *(continued)*					
60			Same as above, saturated, soupy.					
65								Bentonite seal
70			No recovery.					Sand Pack 2" pre-packed well screen
75								
80								
85								
90								
95								
100								

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02D**
PROJECT NO:	1026.108	STARTED: 3/26/15	COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197177.19	EASTING: 2305583.43
DRILLING METHOD:	Sonic	G.S. ELEV: 10.10 ft	M.P. ELEV: 10.10 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 63.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5		FLYASH, wet, medium density, very dark gray (2.5 Y 3/1), fine-grained to silt-size, becoming saturated and loose at 3'.
10	SP	SAND, silty, well sorted, dense, wet, light yellowish brown (2.5 Y 6/4), ash/soil contact is at ~8' bls.
15		
20	SP SW	SAND, silty, medium-fine grained, medium density, well sorted, becoming coarse and less sorted at ~25', wet, light brown, gray (10 Y5 6/2).
25		
30	SP SW	Same as above, increased grain size.
35		
40	SW	SAND, silty, medium-fine to coarse grained, medium density, poorly sorted, light gray (2.5Y 7/2) becoming brownish yellow (10 TR 6/6) at 47', trace gravel at base.
45		SAND, silty, fine grained, dense, well-sorted for last 6", dark greenish gray (GLEY1 3/1)
50		No recovery.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02D**
PROJECT NO:	1026.108	STARTED:	3/26/15 COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197177.19 EASTING: 2305583.43
DRILLING METHOD:	Sonic	G.S. ELEV:	10.10 ft M.P. ELEV: 10.10 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 63.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
			No recovery. *(continued)*					
55		SW	Same as above.					
60								
			Boring terminated at 63', backfilled with bentonite to 46' to set well.					
65								
70								
75								
80								
85								
90								
95								
100								

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02S**
PROJECT NO:	1026.108	STARTED:	3/26/15 COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197177.71 EASTING: 2305589.13
DRILLING METHOD:	Sonic	G.S. ELEV:	9.98 ft M.P. ELEV: 9.98 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 8.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			FLYASH, wet, medium density, very dark gray (2.5 Y 3/1), fine-grained to silt-size, becoming saturated and loose at 3'.					Protective casing with locking cap. Cement Pad Bentonite seal 2" Sch. 40 threaded PVC Riser Sand Pack 2" pre-packed well screen
10								
15								
20								
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-01B**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203061.57	EASTING: 2306091.71
DRILLING METHOD:	Sonic	G.S. ELEV: 16.61 ft	M.P. ELEV: 16.61 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium fine grained, well sorted, loose, light reddish-brown and gray becoming black at 3', moist.					Protective casing with locking cap.
10		SP	SAND, silty, well sorted, moderate density, light brown to tan, wet.					Grout; 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	SAND, silty, with quartz pebbles, medium to fine-grained, moderately dense, poorly sorted, light tan with reddish quartz pebbles, wet to saturated.					Sand Pack; 2" pre-packed well screen
25								
30		SW	Same as above.					
35		SP	SAND, silty, well sorted, medium to fine grain, dense, light tan - gray, wet.					
40		SW	SAND, medium to coarse grained, moderately dense with trace of quartz gravel, poorly sorted, light to medium gray, wet.					
45								
50								

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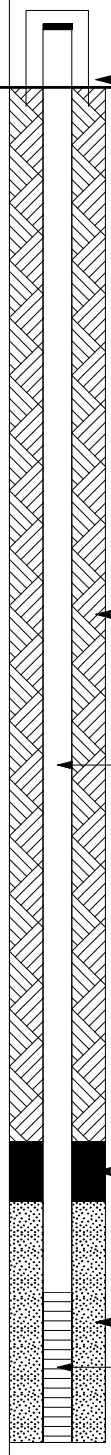
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-01C**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203064.2	EASTING: 2306090.72
DRILLING METHOD:	Sonic	G.S. ELEV: 16.55 ft	M.P. ELEV: 16.55 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium fine grained, well sorted, loose, light reddish-brown and gray becoming black at 3', moist.
10	SP	SAND, silty, well sorted, moderate density, light brown to tan, wet.
15		
20	SW	SAND, silty, with quartz pebbles, medium to fine-grained, moderately dense, poorly sorted, light tan with reddish quartz pebbles, wet to saturated.
25		
30	SW	Same as above.
35	SP	SAND, silty, well sorted, medium to fine grained, dense, light tan - gray, wet.
40	SW	SAND, medium to coarse grained, moderately dense with trace of quartz gravel, poorly sorted, light to medium gray, wet.
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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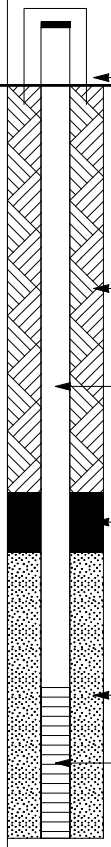
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02B**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202156.49	EASTING: 2306450.12
DRILLING METHOD:	Sonic	G.S. ELEV: 27.08 ft	M.P. ELEV: 27.08 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.
5	SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.
10	SP	SAND, medium-fine grained, well sorted, light tan to white, loose.
15	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.
20	SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.
25		
30		
35		
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02C**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202160.58	EASTING: 2306445.96
DRILLING METHOD:	Sonic	G.S. ELEV: 27.20 ft	M.P. ELEV: 27.20 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.
5	SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.
10	SP	SAND, medium-fine grained, well sorted, light tan to white, loose.
15	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.
20	SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.
25	SW	SAND, medium fine to course grained, poorly sorted, light tan white, loose, wet.
30	SW	Same as above, 1" recovery.
35	SW	Same as above.
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02D**
PROJECT NO:	1026.108	STARTED: 5/10/15	COMPLETED: 5/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202147.28	EASTING: 2306457.78
DRILLING METHOD:	Sonic	G.S. ELEV: 26.62 ft	M.P. ELEV: 26.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
	SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.					Protective casing with locking cap.
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.					
5	SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.					
10	SP	SAND, medium-fine grained, well sorted, light tan to white, loose.					
15							
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.					
	SP						
20		SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.					
	SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.					2" Sch. 40 threaded PVC Riser
	SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.					
25	SW	SAND, medium fine to course grained, poorly sorted, light tan white, loose, wet.					
30	SW	Same as above, 1" recovery.					
35							
40	SW	Same as above.					Grout
45							
50	SW SP	SAND, silty, medium-fine grained, dense, well sorted to poorly sorted, gravel and coarse sand for last 3', white orange silt lens at 54' (3"), wet.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02D**
PROJECT NO:	1026.108	STARTED: 5/10/15	COMPLETED: 5/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202147.28	EASTING: 2306457.78
DRILLING METHOD:	Sonic	G.S. ELEV: 26.62 ft	M.P. ELEV: 26.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW SP	SAND, silty, medium-fine grained, dense, well sorted to poorly sorted, gravel and coarse sand for last 3', white orange silt lens at 54' (3"), wet. *(continued)*					
60								
65		SP SW	SAND, silty, fine grained, dense, well sorted with trace shell, dark greenish grey, semi consolidated lens at ~66' (2"). (Pee Dee Formation)					
70								
75								
80			No recovery.					
85								Bentonite seal
90								
95								Sand Pack 2" pre-packed well screen
100			No recovery.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-03B**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201583.66	EASTING: 2306678.86
DRILLING METHOD:	Sonic	G.S. ELEV: 18.23 ft	M.P. ELEV: 18.23 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, well sorted, tan, wet at 7'.					Protective casing with locking cap.
5								Grout
10		SP	SAND, silty, well sorted, white, loose.					2" Sch. 40 threaded PVC Riser Bentonite seal
15		SP	SAND, well sorted, white, loose.					
20		SW	SAND, poorly sorted.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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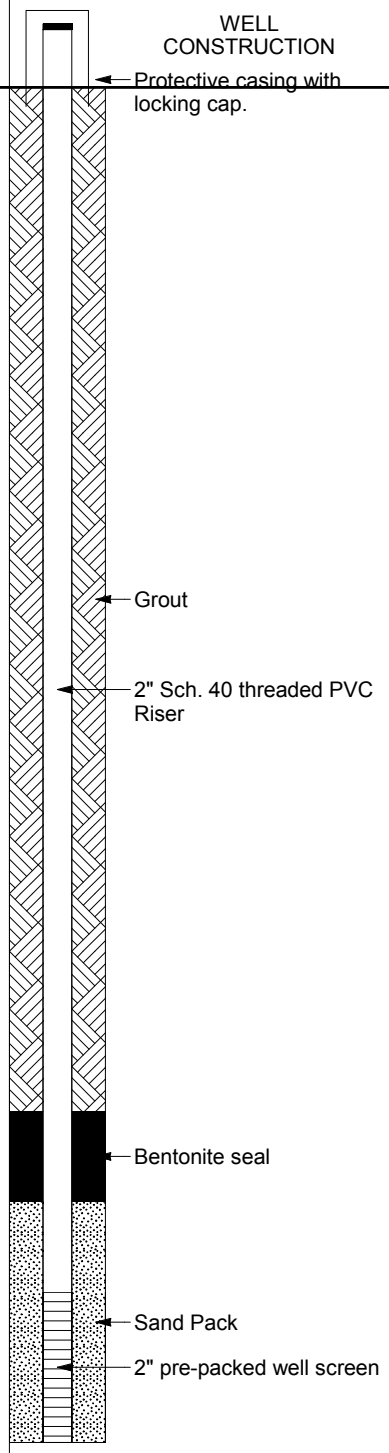
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-03C**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201584.81	EASTING: 2306673.94
DRILLING METHOD:	Sonic	G.S. ELEV: 18.20 ft	M.P. ELEV: 18.20 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, well sorted, tan, wet at 7'.
10	SP	SAND, silty, well sorted, white, loose.
15	SP	SAND, well sorted, white, loose.
20	SW	SAND, poorly sorted.
25		
30	SW	Same as above.
35		
40	SW	Same as above.
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-04B**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/30/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198812.83	EASTING: 2307820.78
DRILLING METHOD:	Sonic	G.S. ELEV: 18.62 ft	M.P. ELEV: 18.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, medium to fine grained, well sorted, tan (NYR 7/8) to white (GLEY1 8/N), loose, moist at 7'.					Protective casing with locking cap.
5								Grout
10		SP	SAND, fine to medium grained, well sorted, light tan (25Y 8/2) to grey white (N 8/N) , loose, wet.					2" Sch. 40 threaded PVC Riser Bentonite seal
15								
20		SP	Same as above.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-04C**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198803.25	EASTING: 2307818.27
DRILLING METHOD:	Sonic	G.S. ELEV: 18.43 ft	M.P. ELEV: 18.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, medium to fine grained, well sorted, tan (NYR 7/8) to white (GLEY1 8/N), loose, moist at 7'.					Protective casing with locking cap.
10		SP	SAND, fine to medium grained, well sorted, light tan (25Y 8/2) to grey white (N 8/N) , loose, wet.					
15								Grout
20		SP	Same as above.					
25		SW	SAND, medium to course grained, poorly sorted, light tan (25Y 8/2), loose, wet.					2" Sch. 40 threaded PVC Riser
30		SW	SAND, fine to course grained , poorly sorted, white with tan, course grains, loose, wet.					
35		SP	SAND, fine grained, well sorted, grey white, loose, wet.					Bentonite seal
40		SC	Same as above.					Sand Pack
45								2" pre-packed well screen
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05B**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198021.26	EASTING: 2308134.95
DRILLING METHOD:	Sonic	G.S. ELEV: 23.70 ft	M.P. ELEV: 23.70 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
5								
10		SP	Same as above, medium brown, wet.					Grout; 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SP	Same as above.					Sand Pack; 2" pre-packed well screen
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30								
35								
40								
45								
50								

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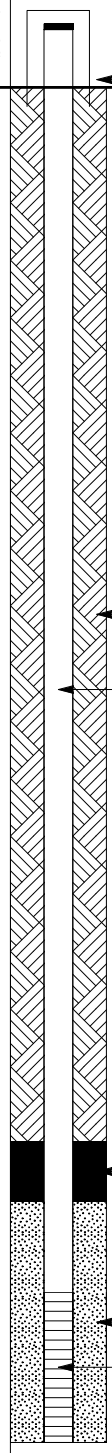
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05C**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.46	EASTING: 2308133.35
DRILLING METHOD:	Sonic	G.S. ELEV: 23.69 ft	M.P. ELEV: 23.69 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 47.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.
10	SP	Same as above, medium brown, wet.
15		
20	SP	Same as above.
25	SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.
30	SW	Same as above with abundant quartz pebbles at 31-32'.
35		
40	SW	Same as above.
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05D**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 6/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.76	EASTING: 2308125.18
DRILLING METHOD:	Sonic	G.S. ELEV: 23.78 ft	M.P. ELEV: 23.78 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 100.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
10		SP	Same as above, medium brown, wet.					
15								
20		SP	Same as above.					2" Sch. 40 threaded PVC Riser
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30		SW	Same as above with abundant quartz pebbles at 31-32'.					
35								
40		SW	Same as above.					Grout
45								
50		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'.					

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05D**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 6/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.76	EASTING: 2308125.18
DRILLING METHOD:	Sonic	G.S. ELEV: 23.78 ft	M.P. ELEV: 23.78 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 100.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'. *(continued)*					
60		SW SM	SAND, silty, medium-fine grained with trace quartz gravel, poorly sorted, dense, wet, light - medium gray, 9" lens of coarse sand from 60-60.9' then silty sand, medium-fine grained, well-sorted, dense, wet light green then silty sand/sand-with-silt very dense, well-sorted, saturated with large shells (>3") at 64', trace shell to 77'.					
65								
70								
75								
80		SM	Same as above with 3' lens of sandstone/semiconsolidated sand at 82' and very dense sand lens (1') at 92'.					
85								Bentonite seal
90								
95								Sand Pack 2" pre-packed well screen
100		SM	Same as above increased fines with depth, slightly plastic at base.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
10		SP	Same as above, medium brown, wet.					
15								
20		SP	Same as above.					2" Sch. 40 threaded PVC Riser
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30		SW	Same as above with abundant quartz pebbles at 31-32'.					
35								
40		SW	Same as above.					
45								
50		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'. *(continued)*					
60		SW SM	SAND, silty, medium-fine grained with trace quartz gravel, poorly sorted, dense, wet, light - medium gray, 9" lens of coarse sand from 60-60.9' then silty sand, medium-fine grained, well-sorted, dense, wet light green then silty sand/sand-with-silt very dense, well-sorted, saturated with large shells (>3") at 64', trace shell to 77'.					Grout
65								
70								
75								
80		SM	Same as above with 3' lens of sandstone/semiconsolidated sand at 82' and very dense sand lens (1') at 92'.					
85								
90								
95								
100		SM	Same as above increased fines with depth, slightly plastic at base.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM	Same as above increased fines with depth, slightly plastic at base. *(continued)*					
110								
115								
120		SM ML	Same as above, grading to a silty clayey sand/sandy clayey silt, low plasticity, very dense.					
125								
130								
135								Bentonite seal
140		SM ML	Same as above, sandy, clayey, silt/silty clayey sand.					Sand Pack
145								2" pre-packed well screen
150			Boring terminated at 150'.					

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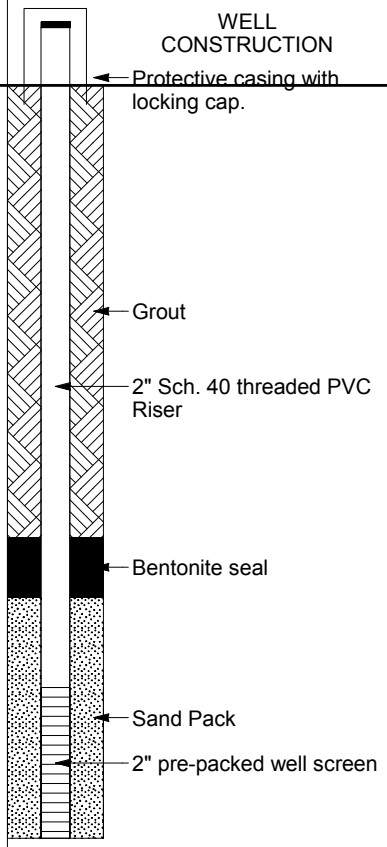
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06B**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/30/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199639.95	EASTING: 2307503.39
DRILLING METHOD:	Sonic	G.S. ELEV: 17.34 ft	M.P. ELEV: 17.34 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
	SP	SAND, silty, medium fine grained, well sorted, light brown to gray.
5	SP	Same as above, light reddish brown, moist to wet.
10	SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.
15		
20	SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.
25		
30		
35		
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	SAND, silty, medium fine grained, well sorted, light brown to gray.					Protective casing with locking cap.
5		SP	Same as above, light reddish brown, moist to wet.					
10		SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.					
15								
20		SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.					
25								
30		SP	Same as above, increasing silt, silt lens at 30' and 6" gravel lens as 33'.					
35								
40		SW	SAND, silty, medium to fine grained, medium density, poorly to moderately sorted, light gray, tan, wet.					
45		SW SP	SAND, coarse grained with small gravel, light grey to reddish brown, loose to slightly dense, saturated. Poorly sorted.					Grout
		SW	SAND, coarse with fine gravel and silt, light orange-red, for 1', then grading to dark gray, dense, wet, poorly sorted.					2" Sch. 40 threaded PVC Riser
50		SM						

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, very fine-grained with some clay, well sorted, dense, wet to saturated, increasing fines with depth. *(continued)*					
60		ML	SILT, sandy and silty, stiff to very stiff occasionally consolidated, dark green, wet to saturated. (6" dry lens at 65').					
65								
70		ML	Same as above, wet to saturated.					
75								
80		ML	Same as above, wet.					
85								
90		ML	Same as above, becoming clayey at 95'.					
95								← Bentonite seal
100		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell. *(continued)*					Sand Pack
110		ML	Same as above, increasing stiffness.					2" pre-packed well screen
115		SC	Semi-consolidated, hard 2' lens, silty fine sand, dry.					
120		ML	SILT, sandy, clayey, low plasticity, moderately stiff, dark green, moist to wet.					
125								
			Boring terminated. Backfill boring with cuttings to 108' to set well.					
130								
135								
140								
145								
150								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	SAND, silty, medium fine grained, well sorted, light brown to gray.					← Protective casing with locking cap.
5		SP	Same as above, light reddish brown, moist to wet.					
10		SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.					
15								
20		SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.					
25								
30		SP	Same as above, increasing silt, silt lens at 30' and 6" gravel lens as 33'.					
35								
40		SW	SAND, silty, medium to fine grained, medium density, poorly to moderately sorted, light gray, tan, wet.					
45		SW SP	SAND, coarse grained with small gravel, light grey to reddish brown, loose to slightly dense, saturated. Poorly sorted.					← Grout
		SW	SAND, coarse with fine gravel and silt, light orange-red, for 1', then grading to dark gray, dense, wet, poorly sorted.					← 2" Sch. 40 threaded PVC Riser
50		SM						

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, very fine-grained with some clay, well sorted, dense, wet to saturated, increasing fines with depth. *(continued)*					
60		ML	SILT, sandy and silty, stiff to very stiff occasionally consolidated, dark green, wet to saturated. (6" dry lens at 65').					
65								
70		ML	Same as above, wet to saturated.					
75								
80		ML	Same as above, wet.					
85								
90		ML	Same as above, becoming clayey at 95'.					
95								
100		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
105	ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell. *(continued)*
110	ML	Same as above, increasing stiffness.
115	SC	Semi-consolidated, hard 2' lens, silty fine sand, dry.
120	ML	SILT, sandy, clayey, low plasticity, moderately stiff, dark green, moist to wet.
125		
130	ML	Same as above.
135		
140	ML	Same as above.
145		
		No samples collected.
150		Boring terminated at 150'.

WELL CONSTRUCTION

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-07D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201037.19	EASTING: 2306853.91
DRILLING METHOD:	Sonic	G.S. ELEV: 14.80 ft	M.P. ELEV: 14.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 98.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
	SP	SAND, silty, well sorted, medium to fine grained, red-brown, loose, moist.
5	SP	SAND, silty, well sorted, medium to fine grained, gray-light brown, moderate dense, moist to wet.
10	SP	Same as above, medium to light gray, saturated at 15'.
15		
20	SP	Same as above with lenses of coarse sand and pebbles at 19' (18") and 22' (6"), poorly sorted within lenses, wet.
25		
30	SW	SAND, silty, medium to coarse grained, some pebbles, poorly sorted, light gray, moderate density, saturated.
35		
40	SW	Same as above with abundant quartz pebbles 37-40'.
45	SM	SAND, silty, fine grained, well sorted, dense, dark green, wet. Pee Dee formation sharp contact.
50	SM	SAND, silty, fine grained, well sorted, dense, dark green, wet-saturated.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION
- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-07D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201037.19	EASTING: 2306853.91
DRILLING METHOD:	Sonic	G.S. ELEV: 14.80 ft	M.P. ELEV: 14.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 98.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, fine grained, well sorted, dense, dark green, wet-saturated. *(continued)*					
60		SM	Same as above, massive bedding.					
65								
70		SM	Same as above.					
75								
80		SM	Same as above.					
85								
90		SM	Same as above.					Bentonite seal
95		SM	SAND, silty, fine grained, well sorted, massive bedded, very dense to hard, medium dark green, moist.					Sand Pack 2" pre-packed well screen
100			Boring terminated at 98'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-08B**
PROJECT NO:	1026.108	STARTED: 2/5/15	COMPLETED: 2/5/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203420	EASTING: 2304212.85
DRILLING METHOD:	Sonic	G.S. ELEV: 13.47 ft	M.P. ELEV: 13.47 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, well sorted, tan, wet at 5'.					Protective casing with locking cap.
5								
10		SP	Same as above.					Grout; 2" Sch. 40 threaded PVC Riser
15		SP	Same as above, poorly sorted.					Bentonite seal
20		SP	Same as above.					Sand Pack; 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-08C**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203419.38	EASTING: 2304205.34
DRILLING METHOD:	Sonic	G.S. ELEV: 13.40 ft	M.P. ELEV: 13.40 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, well sorted, tan, wet at 5'.
10	SP	Same as above.
15	SP	Same as above, poorly sorted.
20	SP	Same as above.
25	SP	Same as above.
30	SP	Same as above.
35	SP	Same as above.
40	SP	Same as above.
45	SP	SAND, silty fine-grained, (Pee Dee Formation).
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09B**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/3/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196083.31	EASTING: 2307795.83
DRILLING METHOD:	Sonic	G.S. ELEV: 14.13 ft	M.P. ELEV: 14.26 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, well sorted, moderate density, light gray, moist.					Protective casing with locking cap.
5		SP	Same as above, reddish-brown, wet.					Grout
10		SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.					2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09C**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/3/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196081.45	EASTING: 2307793.85
DRILLING METHOD:	Sonic	G.S. ELEV: 14.26 ft	M.P. ELEV: 17.36 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, well sorted, moderate density, light gray, moist.
5	SP	Same as above, reddish-brown, wet.
10	SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.
15		
20	SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.
25		
30	SW	Same as above with 4" clay lens at 34'.
35	SP SM	SAND, silty, loose, medium to fine grained with thin clay laminae, well sorted, very dense, light greenish gray, wet.
40	SW	SAND, silty, medium-fine to coarse grained, poorly sorted, dense, light gray-light brown, wet to saturated.
45		
50		

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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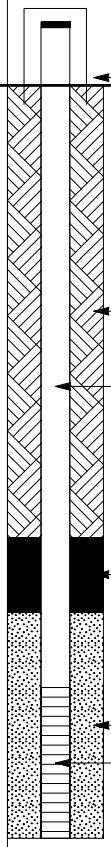
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09D**
PROJECT NO:	1026.108	STARTED: 5/7/15	COMPLETED: 5/7/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196076.31	EASTING: 2307788.1
DRILLING METHOD:	Sonic	G.S. ELEV: 14.59 ft	M.P. ELEV: 14.59 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, well sorted, moderate density, light gray, moist.
5	SP	Same as above, reddish-brown, wet.
10	SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.
15		
20	SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.
25		
30	SW	Same as above with 4" clay lens at 34'.
35	SP SM	SAND, silty, loose, medium to fine grained with thin clay laminae, well sorted, very dense, light greenish gray, wet.
40	SW	SAND, silty, medium-fine to coarse grained, poorly sorted, dense, light gray-light brown, wet to saturated.
45	SW	Same as above, becoming reddish-orange.
50	SM	

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09D**
PROJECT NO:	1026.108	STARTED:	5/7/15 COMPLETED: 5/7/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	196076.31 EASTING: 2307788.1
DRILLING METHOD:	Sonic	G.S. ELEV:	14.59 ft M.P. ELEV: 14.59 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, medium-fine to coarse grained with trace gravel (quartz), dense, poorly sorted, wet, reddish-yellow (7.5 YR 6/8) for ~2.5' then silty fine sand (Pee Dee formation), very dense, well sorted, wet, dark greenish gray (GLEY1 4/y) with cobble at ~50', quartz stones at 47' and some trace shell and coquina at 53'. *(continued)*					
60		SM	Same as above.					
65								
70		SM	Same as above.					
75								
80		SM	Same as above, increased fines, increased stiffness/density.					
85								
90		SM	Same as above with 1' lens of very dense, dry sand at 90'.					
95								
100			Boring terminated at 97'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198979.66	EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV: 13.79 ft	M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, medium density, well sorted, wet at ~7', white to 15' then silty SAND, medium-fine grained, dense, well-moderately sorted, brown with some coarse grains (red-orange).					Protective casing with locking cap.
10								
15								
20		SW	Same as above to 21' then silty medium-fine to coarse grained SAND, dense, saturated, poorly sorted, light reddish gray to light gray, very coarse with fine gravel 21-24'. Alternating beds of medium-fine grained and coarse sand, coarse at base with orange stain.					2" Sch. 40 threaded PVC Riser
25								
30								
35								
40		SW	Same as above to 45', very coarse from 40-45' then fine silty SAND, saturated, medium density, well-sorted with coarse sand layer from 49-50'. Cobbles with green fine sand in bottom 5'.					
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198979.66	EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV: 13.79 ft	M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	Same as above to 45', very coarse from 40-45' then fine silty SAND, saturated, medium density, well-sorted with coarse sand layer from 49-50'. Cobbles with green fine sand in bottom 5'. *(continued)*					
60								
65		SM SP	Same as above, increased fines with depth.					Grout
70								
75								
80								
85		SM SP	Same as above.					
90								
95								
100		SM SP	Same as above, increased fines, plasticity from 110-117'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198979.66	EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV: 13.79 ft	M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM SP	Same as above, increased fines, plasticity from 110-117'. *(continued)*					
110								
115								
120		SM SP	Same as above.					
125								
130								
135								Bentonite seal
140		SM SP	Same as above.					
145								Sand Pack 2" pre-packed well screen
150								

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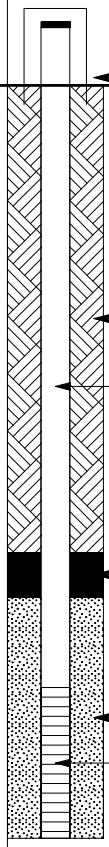
PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-37B**
PROJECT NO:	1026.108	STARTED: 2/4/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 193820.03	EASTING: 2308956.68
DRILLING METHOD:	Sonic	G.S. ELEV: 20.88 ft	M.P. ELEV: 20.88 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium to fine grained, loose, light gray for 2' then red-brown for 1'.
	SW	SAND, silty, medium fine grained to coarse grained, dense, dark brown with oxides and some slight consolidation, wet.
5	SW	SAND, silty, medium fine to coarse grained, medium density, poorly sorted, light brown-gray, wet.
10	SW	Same as above, saturated with abundant quartz layer at 7-8'.
15		
20	SW	Same as above with a 9" silt, lens, stiff, low plasticity, dark brown at 19', abundant quartz grains (to pebble size) at 25' (1' thick).
25		
30		
35		
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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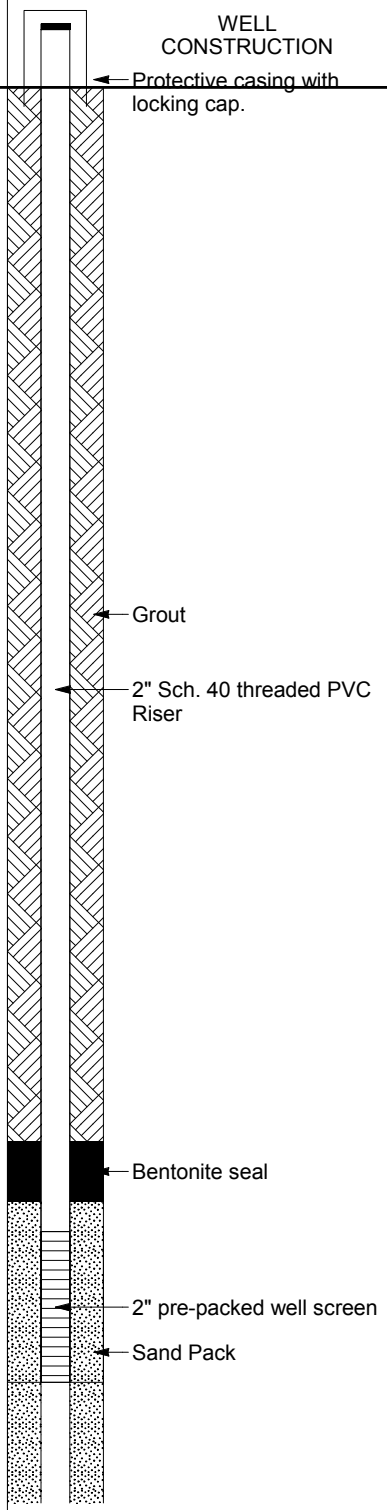
PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-37C**
PROJECT NO:	1026.108	STARTED: 2/4/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 193819.39	EASTING: 2308959.44
DRILLING METHOD:	Sonic	G.S. ELEV: 20.94 ft	M.P. ELEV: 20.94 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 47.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium to fine grained, loose, light gray for 2' then red-brown for 1'.
	SW	SAND, silty, medium fine grained to coarse grained, dense, dark brown with oxides and some slight consolidation, wet.
5	SW	SAND, silty, medium fine to coarse grained, medium density, poorly sorted, light brown-gray, wet.
10	SW	Same as above, saturated with abundant quartz layer at 7-8'.
15		
20	SW	Same as above with a 9" silt, lens, (stiff, low plasticity, dark brown at 19'), abundant quartz grains (to pebble size) at 25' (1' thick).
25		
30	SW	Same as above with quartz pebble (orange) lenses at 29' (6"), 31' (3"), and 35' (6"). Silty sand lens (12") at 36'
35		
40	SW	Same as above with coarse grained orange quartz lens at 39' (1') and 2" clay lens at 38.5.
45	SM	Sharp contact at 43',)Pee Dee formation), above material underlain by silty SAND, fine grained, very dense, well sorted with glauconite (trace), light green, wet.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-01B**
PROJECT NO:	1026.108	STARTED: 4/14/15	COMPLETED: 4/14/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199292.01	EASTING: 2308712.96
DRILLING METHOD:	Sonic	G.S. ELEV: 13.91 ft	M.P. ELEV: 13.91 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 23.9 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, saturated, (perched water zone 3-5'), dense, well sorted, light gray (70 YR 7/12) followed by silty sand, medium fine grained, saturated at 7', dense, well sorted, pale yellow (2.5 YR 8/2).					Protective casing with locking cap.
10		SP	Same as above to 15' then becoming coarser grained with red sand grains, wet.					Grout 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	SAND, silty, medium-fine to coarse grained with some fine gravel, moderately dense, poorly sorted, very pale yellow (10 YR 7/3) with reddish yellow coarse grains.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-01C**
PROJECT NO:	1026.108	STARTED: 4/14/15	COMPLETED: 4/14/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199295.12	EASTING: 2308717.75
DRILLING METHOD:	Sonic	G.S. ELEV: 13.99 ft	M.P. ELEV: 13.99 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium-fine grained, saturated, (perched water zone 3-5'), dense, well sorted, light gray (70 YR 7/12) followed by silty sand, medium fine grained, saturated at 7', dense, well sorted, pale yellow (2.5 YR 8/2).
10	SP	Same as above to 15' then becoming coarser grained with red sand grains, wet.
15		
20	SW	SAND, silty, medium-fine to coarse grained with some fine gravel, moderately dense, poorly sorted, very pale yellow (10 YR 7/3) with reddish yellow coarse grains.
25		
30	SW	Same as above with trace fine gravel, 2" silt lens at 33' and 3" silt lens at 34.5'. Weathered sandstone fragments (conglomerate) at 35', becoming reddish-yellow (7.5 YR 6/8) at 34'.
35		
40	SW	Same as above to 45' with coarse sand/fine gravel layer at 41-42', 2" silt lenses at 42 and 43' becoming greenish gray (GLEY1 6/1) at 39' then silty fine SAND (Pee Dee), dense, well sorted, wet, dark greenish grey (GLEY-1 4/y), trace large gravel at 45'.
45	SM	
		Boring terminated at 48'.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-02B**
PROJECT NO:	1026.108	STARTED: 3/24/15	COMPLETED: 3/24/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198396.18	EASTING: 2308908.42
DRILLING METHOD:	Sonic	G.S. ELEV: 17.38 ft	M.P. ELEV: 17.38 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, medium fine grained, medium dense, well sorted, moist (wet at 5'), then light brown with heavy organic staining at 5'.					Protective casing with locking cap.
5								Grout
10		SW SP	Same as above, becoming coarser-grained with depth to 14' then silty SAND, medium-fine to coarse grained with occasional red staining, light grey-brown, medium density, moderate to poorly sorted, wet.					2" Sch. 40 threaded PVC Riser
15								2" pre-packed well screen
20		SW SP	Same as above with coarse sand lens from 21-23' and 24-26'.					Bentonite seal
25								Sand Pack
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-02C**
PROJECT NO:	1026.108	STARTED: 3/24/15	COMPLETED: 3/24/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198403.45	EASTING: 2308904.84
DRILLING METHOD:	Sonic	G.S. ELEV: 17.50 ft	M.P. ELEV: 17.5 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium fine grained, medium dense, well sorted, moist (wet at 5'), then light brown with heavy organic staining at 5'.					Protective casing with locking cap.
10		SW SP	Same as above, becoming coarser-grained with depth to 14' then silty SAND, medium-fine to coarse grained with occasional red staining, light grey-brown, medium density, moderate to poorly sorted, wet.					
15								Grout
20		SW SP	Same as above with coarse sand lens from 21-23' and 24-26'.					2" Sch. 40 threaded PVC Riser
25								
30		SW SP	Same as above with coarse sand and small pebbles from 28-33' and 34-37'.					
35								Bentonite seal
40		SP	Same as above with coarse grained sand to 45' then silty SAND (Pee Dee), medium fine grained with 2" silt lens at 46', medium dense, moderate to poorly sorted, medium grayish brown to dark gray, wet.					Sand Pack
45								2" pre-packed well screen
50			Boring terminated at 48'.					

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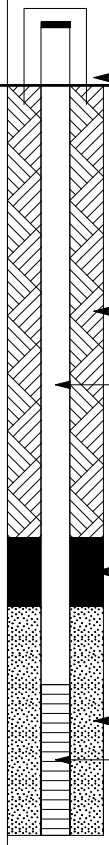
PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03B**
PROJECT NO:	1026.108	STARTED: 3/25/15	COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197748.56	EASTING: 2309459.02
DRILLING METHOD:	Sonic	G.S. ELEV: 15.43 ft	M.P. ELEV: 15.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.9 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, moderately dense, well sorted, moist to 6' then wet, light brown to dark brown for 4' then medium-yellowish brown to tan to 8'.
10	SW	
	SM SP	SAND, silty, medium fine to coarse grained, dense, poorly sorted, wet, light reddish brown to 10' then silty sand, medium fine grained, very dense for 2', dark brown to medium brown, well sorted, wet to 15', then poorly sorted sand.
15	SW	
20	SW	SAND, silty, medium to coarse grained with abundant red coarse grains, dense, saturated, poorly sorted.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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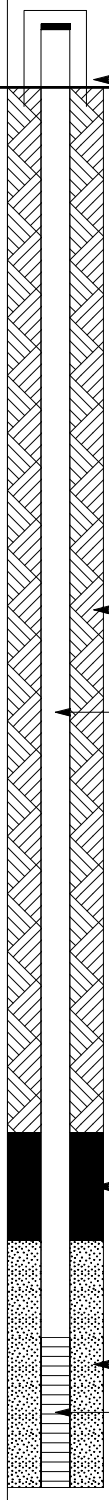
PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03C**
PROJECT NO:	1026.108	STARTED: 3/25/15	COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197745.03	EASTING: 2309453.18
DRILLING METHOD:	Sonic	G.S. ELEV: 15.33 ft	M.P. ELEV: 15.33 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 53.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium-fine grained, moderately dense, well sorted, moist to 6' then wet, light brown to dark brown for 4' then medium-yellowish brown to tan to 8'.
10	SW	
15	SM SP	SAND, silty, medium fine to coarse grained, dense, poorly sorted, wet, light reddish brown to 10' then silty sand, medium fine grained, very dense for 2', dark brown to medium brown, well sorted, wet to 15', then poorly sorted sand.
20	SW	
25	SW	SAND, silty, medium to coarse grained with abundant red coarse grains, dense, saturated, poorly sorted, trace glauconite 27-28', light grey brown with red grains.
30	SW	Same as above, very coarse for 5', 4" silt lens, (very stiff) at 34' and fine sand lens (6") at 37'.
35		
40	SP	Same as above with wood layer from 43-45'.
45		
50	SP	Same as above.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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CLIENT: co
PROJECT LOCATION: Wilmington, NC

LOG A EWNN04 DEP SUTTON.GPJ GINT STD A4 ASTM LAB.GDT 7/29/15

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03C**
PROJECT NO:	1026.108	STARTED:	3/25/15 COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197745.03 EASTING: 2309453.18
DRILLING METHOD:	Sonic	G.S. ELEV:	15.33 ft M.P. ELEV: 15.33 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 53.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	Same as above. *(continued)*					
			Boring terminated at 53', backfill to 47'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-04B**
PROJECT NO:	1026.108	STARTED: 4/14/15	COMPLETED: 4/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202569.12	EASTING: 2307663.93
DRILLING METHOD:	Sonic	G.S. ELEV: 13.03 ft	M.P. ELEV: 16.34 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, loose, moderately dense, well sorted, wet at 2', light gray (2.5Y 7/2).					Protective casing with locking cap.
5								Grout
10		SP	Same as above with 8" silt lens at 11' becoming medium fine to coarse grained at 15'.					2" Sch. 40 threaded PVC Riser
15		SW						Bentonite seal
20		SW	Same as above with some fine gravel from 18-20'.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT LOCATION: Wilmington, NC

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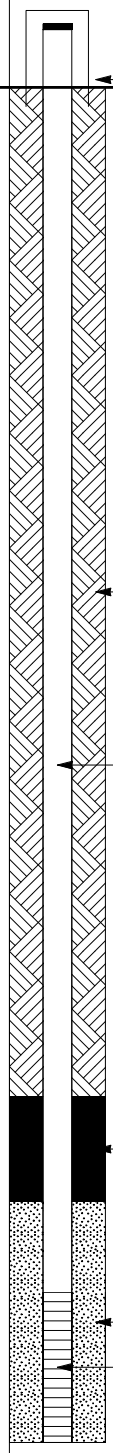
PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-04C**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202565.07	EASTING: 2307665.57
DRILLING METHOD:	Sonic	G.S. ELEV: 12.69 ft	M.P. ELEV: 13.03 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, loose, moderately dense, well sorted, wet at 2', light gray (2.5Y 7/2).
10	SP	Same as above with 8" silt lens at 11' becoming medium fine to coarse grained at 15'.
15	SW	
20	SW	Same as above with some fine gravel from 18-20' and coarse sand layer from 26-28'.
25		
30	SP	SAND, silty, medium-fine grained, dense, well sorted, wet, white (10YR 8/1).
35		
40	SW	SAND, fine to coarse grained with some fine gravel, dense, poorly sorted, wet, reddish-yellow (7.5 YR 6/8) to 41'. SAND, silty, coarse grained with trace of fine gravel, dense, moderate to poorly sorted, wet, reddish-yellow (7.5 YR 6/8) to 45'.
45	SM	SAND, silty, fine grained, dense, well sorted, wet, dark, greenish gray (GLEY01 4/1) to 48'
50		Boring terminated at 48'.

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-05B**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201027.58	EASTING: 2308551.36
DRILLING METHOD:	Sonic	G.S. ELEV: 13.63 ft	M.P. ELEV: 12.69 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.8 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, medium-fine grained, loose to moderately dense, well sorted, moist to 9' then wet, heavy organic staining and roots from 2-4' then light brownish gray (2.5 Y 6/2).					Protective casing with locking cap.
5								Grout
10		SP	Same as above, olive brown (2.5 Y 4/4), from 8-10' then light brownish gray (2.5 YR 6/2).					2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SP SW	SAND, silty, medium to coarse grained, moderately dense, moderate to poorly sorted, wet - saturated, light yellowish brown (2.5 Y 6/3) with red/yellow flecks.					Sand Pack
25								2" pre-packed well screen
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-05C**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201027.18	EASTING: 2308554.63
DRILLING METHOD:	Sonic	G.S. ELEV: 13.49 ft	M.P. ELEV: 13.49 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 43.8 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, loose to moderately dense, well sorted, moist to 9' then wet, heavy organic staining and roots from 2-4' then light brownish gray (2.5 Y 6/2).
10	SP	Same as above, olive brown (2.5 Y 4/4), from 8-10' then light brownish gray (2.5 YR 6/2).
20	SP SW	SAND, silty, medium to coarse grained, moderately dense, moderate to poorly sorted, wet - saturated, light yellowish brown (2.5 Y 6/3) with red/yellow flecks.
30	SP SW	Same as above, very coarse sand from 28-32', 1" clay lens at 33'.
40	SW	SAND, coarse grained to 43', medium density, poorly sorted, wet, reddish-yellow (7.5YR 6/8) with quartz pebbles at 42-43' then fine silty SAND (Pee Dee), dense, well sorted, wet, dark-greenish gray (GLEY1 4/1).
45	SM	Set well at 43.8'.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06B**
PROJECT NO:	1026.108	STARTED: 4/10/15	COMPLETED: 4/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200222.83	EASTING: 2309008.69
DRILLING METHOD:	Sonic	G.S. ELEV: 13.87 ft	M.P. ELEV: 13.87 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.4 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.					Protective casing with locking cap.
10		SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.					Grout; 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).					Sand Pack; 2" pre-packed well screen
25		ML						
30								
35								
40								
45								
50								

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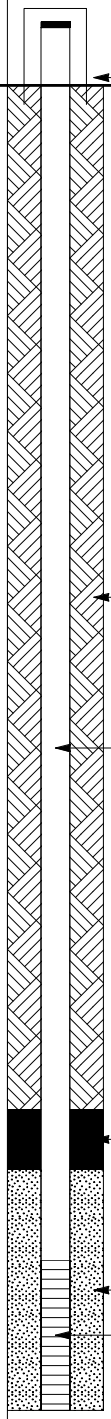
PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06C**
PROJECT NO:	1026.108	STARTED: 4/10/15	COMPLETED: 4/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200222.29	EASTING: 2309012.8
DRILLING METHOD:	Sonic	G.S. ELEV: 13.03 ft	M.P. ELEV: 13.03 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 44.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.
10	SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.
15		
20	SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).
	ML	
25	SP	
30	SP	SAND, Same as above.
35		
40	SW	SAND, silty, medium-coarse grained, dense, poorly sorted, wet, reddish-yellow (5YR 6/6) to 40' then same as above with quartz pebbles, grey (GLEY-1) to 43'
	SM	Sharp contact with silty fine SAND (Pee Dee), medium fine grained, dense, well sorted, wet with 2"-3" conglomerate and quartz gravel (TRACE), dark gray (GLEY 4/1).
45		
50		

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.					← Protective casing with locking cap.
10		SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.					
15								
20		SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).					
		ML						
25		SP						
30		SP	SAND, Same as above.					
35								
40		SW	SAND, silty, medium-coarse grained, dense, poorly sorted, wet, reddish-yellow (5YR 6/6) to 40' then same as above with quartz pebbles, grey (GLEY-1) to 43'					
45		SM	Sharp contact with silty fine SAND (Pee Dee), medium fine grained, dense, well sorted, wet with 2"-3" conglomerate and quartz gravel (TRACE), dark gray (GLEY 4/1).					← Grout
50		SM	SAND, silty, fine, same as above, saturated.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, fine, same as above, saturated. *(continued)*					2" Sch. 40 threaded PVC Riser
60		SM	Same as above, increased fines.					
65								
70		SM	Same as above.					
75								
80			No recovery.					
85								
90			No recovery.					
95								
100		SM	Same as above with semi consolidated layer (1') at base.					Bentonite seal

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM	Same as above with semi consolidated layer (1') at base. *(continued)*					Sand Pack 2" pre-packed well screen
			Boring terminated at 108'.					
110								
115								
120								
125								
130								
135								
140								
145								
150								

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BORING LOG

BOREHOLE ID: *SPT-09 (in 2006 Containment Area)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Electric Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/2014*
GEOSYNTEC REPRESENTATIVE: *Weston Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *Jeffrey Stewart*

TECHNICAL INFORMATION

DRILLING METHOD: *Continuous SPT*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *4.5"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200420.50*
EASTING: *2304536.30*
GROUND ELEVATION: *39.86 ft (NAVD88)*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
	0	SILT with fine sand (ML) (ash); gray; moist; very loose; scattered leaves		1/12"-1/12"		1.3'	
		SILT (ML) (ash); gray; moist (bottom 0.4' wet); very loose; scattered leaves		WOH		0.7'	73.7% MC
35	-5	SILT (ML) (ash); gray; wet; very loose		WOH		1.5'	
		SILT (ML) (ash); gray; wet; very loose		WOH		1.6'	NP
		SILT (ML) (ash); gray (occasionally dark tan); wet; very loose		WOH		1.7'	97.0% FC Shelby Tube (10.0 to 12.0 ft bgs)
30	-10					2.0'	54.8% MC; 6.0% Sand, 88.0% Silt, 6.0% Clay; NP; DD=61.6 pcf; SG=2.268
		SILT (ML) (ash); gray/black; wet; very loose		WOH		1.8'	92.8% FC Environmental Sample: SS-SPT9 (12 to 14)-20140507
25	-15	SILT (ML) (ash); gray; wet; very loose		WOH-1-1-2		1.5'	45.8% MC; NP
		SILT (bottom 0.3' sandier) (ML) (ash); gray; wet; very loose		2-2-1-1		1.7'	Boring terminated at 18' bgs Piezometer PZ-INT installed after completion of boring. Screened depth from 13.0 - 18.0 ft bgs

All depths referenced to ground surface.
Total Depth: 18 ft bgs

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BORING LOG

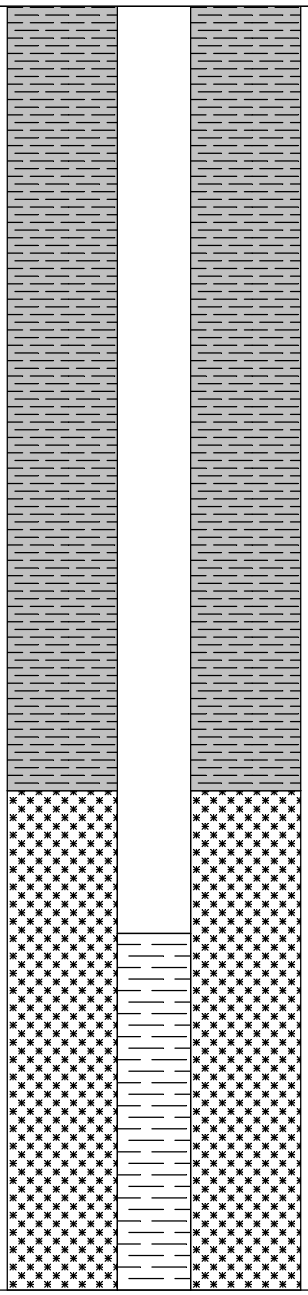
BOREHOLE ID: *PZ-INT (in 2006 Containment Area)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/2014*
GEOSYNTEC REPRESENTATIVE: *Weston Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *Jeffery Stewart*

TECHNICAL INFORMATION

DRILLING METHOD: *Continuous SPTs/Rotary Wash*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *4"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200,420.5*
EASTING: *2,304,536.3*
GROUND ELEVATION: *39.9*

Elev. (ft NAVD88)	Depth (ft)	Lithologic Description	Well Construction Details	Comments
	0	PZ-INT is co-located with SPT-9. See SPT-9 log for lithologic description.		A stickup protective outer casing extends to approximately 3 ft above ground surface.
35	-5			
30	-10			
25	-15			

All depths referenced to ground surface.

Total Depth: 18

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BORING LOG

BOREHOLE ID: *SPT-03 (within the 1971 Pond)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Electric Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/09/2014*
GEOSYNTEC REPRESENTATIVE: *Weston Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *Jeffrey Stewart*

TECHNICAL INFORMATION

DRILLING METHOD: *Continuous SPT / Rotary Wash*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *3.5"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198480.27*
EASTING: *2305994.51*
GROUND ELEVATION: *45.15 ft (NAVD88)*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
45	0	sandy SILT (ML) (ash); gray; moist; loose		2-4-6-5		1.5'	
		silty fine to medium SAND (SM) (ash); gray; moist; loose		4-4-5-6		1.7'	
40	-5	SILT with fine to medium sand (ML) (ash); gray; moist; medium dense		5-5-6-7		1.7'	26.8% MC; 52.0% FC
		silty fine to medium SAND (SM) (ash); gray; moist; loose		4-4-5-4		1.6'	
		silty fine to medium SAND (SM) (ash); gray; moist; very loose		3-2-2-2		1.7'	
35	-10	SILT with fine to medium sand (ML) (ash); gray; moist; very loose		2-1-1-1		1.5'	28.5% MC; 50.2% FC Environmental Sample: SS-SPT3 (10.0-12.0)-20140509
		silty SAND (SM) (ash); gray; moist; very loose		1-2-2-2		1.2'	
30	-15	silty SAND (SM) (ash); gray; moist; very loose; occasionally iron-oxidized		2-2-2-2		1.5'	9.9% Gravel, 62.4% Sand, 24.3% Silt, 3.4% Clay
		SILT with sand (ML) (ash); gray; moist; very loose		1-1-1-2		1.5'	
		SILT with sand (ML) (ash); trace clay; gray; moist; very loose		2-2-1-3		1.6'	
25	-20	SILT with sand (ML) (ash); gray; moist (wet at tip); loose		1-2-3-2		1.7'	
		SILT (ML) (ash); gray; wet (top 0.2' moist); very loose; scattered brown matter and leaves		WOH/18" -1		1.5'	88.2% FC, NP
20	-25	SILT (ML) (ash); gray (occasionally dark tan); wet; very loose; abundant roots		WOH/12" -1/12"		1.8'	84.7% FC
		Top 1.8': SILT (ML) (ash); gray/dark tan; wet; very loose; Bottom 0.2': fine to medium SAND (SP) (soil); gray; wet; very loose		1/12"-1-1		2.0'	Top: 46.1% MC
		Top 0.5': fine to medium SAND (SP) (soil); gray; wet; very loose; potential cave-in; Bottom 1.5': SILT (ML) (ash); gray/dark tan; wet; very loose		1-1-1-1		2.0'	
15	-30	Top 1': poorly graded fine to medium SAND (SP)		1-1-1-1		2.0'	Drilling using a 3" bit with water

All depths referenced to ground surface.

Total Depth: 49 ft bgs

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BORING LOG

BOREHOLE ID: *SPT-03 (within the 1971 Pond)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Electric Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/09/2014*
GEOSYNTEC REPRESENTATIVE: *Weston Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *Jeffrey Stewart*

TECHNICAL INFORMATION

DRILLING METHOD: *Continuous SPT / Rotary Wash*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *3.5"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198480.27*
EASTING: *2305994.51*
GROUND ELEVATION: *45.15 ft (NAVD88)*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
		(soil); trace silt; gray; wet; very loose Bottom 1': SILT (ML) (ash); gray; wet; very loose					Bottom: 92.4% FC
		Top 1': SILT (ML) (ash); gray/dark tan; wet; very loose; Bottom 1': silty SAND (SM) (soil); gray; wet; very loose		1/18"-1		2.0'	Top: 43.4% MC; SG=2.343 Bottom: 1.2% Gravel, 82.5% Sand, 16.3% FC
10	-35	SILT (ML) (ash); gray; wet; very loose; scattered leaves		1-1-1-3		1.4'	0.2% Gravel, 8.8% Sand, 80.5% Silt, 10.5% Clay; NP
		silty fine to medium SAND (SM) (soil); gray; wet; very loose		4-2-1-1		1.8'	24.5% FC
		Top 1': poorly graded fine to medium SAND with silt (SP-SM) (soil); gray; wet; very loose; black ash particles		1-1/30"		2.1'	Bottom: 77.3% FC The last blow drives the split spoon by 2.5'
5	-40	Bottom 2': SILT with sand (ML) (ash); gray/black; wet; very loose silty SAND (SM) (ash & soil); gray; wet; very loose		1-2-1-2		2.0'	1.3% Gravel, 64.9% Sand, 32.2% Silt, 1.6% Clay
		SILT with sand (ML) (ash); gray; wet; very loose		2-1-2-1		1.4'	44.9% FC
0	-45	silty SAND (SM) (ash); gray; wet; very loose		2-1-1-1		1.5'	47'-49': NP Boring terminated at 49.0' bgs
		SILT with sand (ML) (ash); gray; wet; very loose		1-1-1-2		2.0'	PZ-1971 installed after completion of boring; Screened from 17.0 - 22.0 ft bgs

All depths referenced to ground surface.

Total Depth: 49 ft bgs

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BORING LOG

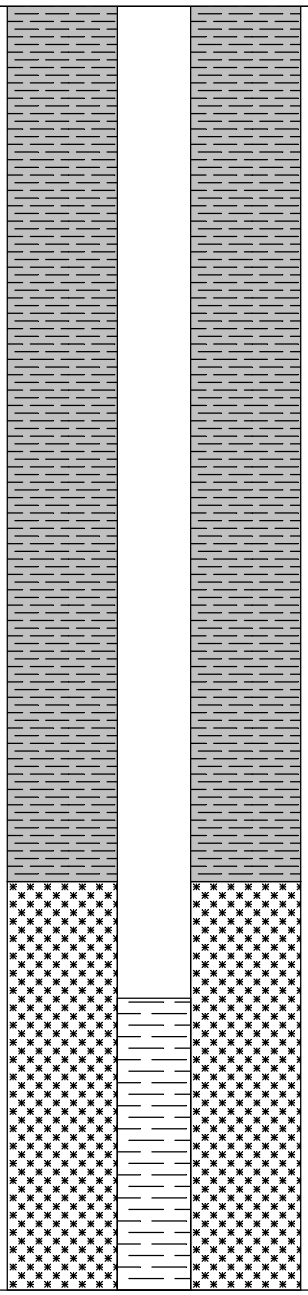
BOREHOLE ID: *PZ-1971 (within the 1971 Pond)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/09/2014*
GEOSYNTEC REPRESENTATIVE: *Weston Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *Jeffery Stewart*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *4"*
SAMPLING METHOD: *Not Sampled*
NORTHING: *198,492.4*
EASTING: *2,305,987.6*
GROUND ELEVATION: *45.3*

Elev. (ft NAVD88)	Depth (ft)	Lithologic Description	Well Construction Details	Comments
45	0	PZ-1971 was installed approximately 15 ft from SPT-3. See SPT-3 for lithologic description.		A stickup protective outer casing extends to approximately 3 ft above ground surface.
40	-5			
35	-10			
30	-15			
25	-20			

All depths referenced to ground surface.

Total Depth: 22

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Legend for Classification Symbols

Pattern	Description
	SP – poorly graded sands
	SW – well graded sands
	GP – poorly graded gravels
	GW – well graded gravels
	SM – silty sands
	SP-SM – poorly graded sand with silty sand
	SP-SC – poorly graded sand with clayey sand
	MH – elastic silts
	ML – inorganic silts with slight plasticity
	SC – clayey sands
	CL – lean clays
	CH – fat clays
	OH – organic clays
	Ash

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BORING LOG

BOREHOLE ID: *PZ-101 (on the 2006 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/29/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B (SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200,675.44*
EASTING: *2,204,779.79*
GROUND ELEVATION: *42.0*

Elev. (ft)	Depth (ft)	Lithologic Description	SPT Blows	Recovery	Comments
42	0	Top 0.4' SAND (SW)(soil); grey; moist; medium dense Bottom 0.8' fine sandy SILT (ML) (ash); grey; moist; medium dense; wood chips	6-8-9	1.2'	Start using Drilling Mud
40	-5	SILT with fine sand (ML) (ash); grey; wet; medium dense	7-6-6	1.0'	
35	-10	SILT with fine sand (ML) (ash); grey; wet; medium dense	6-6-8	1.0'	
		SILT with fine sand (ML) (ash); grey; wet; loose	4-3-5	1.1'	
30		SILT with fine sand (ML) (ash); grey; wet; medium dense; occasional organic matter	4-6-7-8	1.4'	
		SILT with fine sand (ML) (ash); grey; wet; medium dense	6-9-10-12	1.5'	
	-15	fine sandy SILT (ML) (ash); grey/ black; wet; loose	4-3-3-2	1.4'	Water level at least 24 hours after piezomenter development: El. 27.9 ft. (NAVD88)
25		SILT with fine sand (ML) (ash); grey/black; wet; very loose	WOH-1-1/12"	1.9'	
	-20				
20		SILT (ML) (ash); trace fine sand; grey; wet; very loose	WOH	1.4'	Boring Terminated at 22.0' BGS
	-25				
15					
	-30				

N-Value: 0 10 20 30 40 50

All depths referenced to ground surface.
Total Depth: 22.0

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BORING LOG

BOREHOLE ID: *PZ-102 (on the 2006 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/29/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B (SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200,868.15*
EASTING: *2,305,186.86*
GROUND ELEVATION: *41.4*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
40	0	Top 1.0' SAND (SW)(possible soil); grey; moist; medium dense Bottom 0.5' SILT with fine sand (ML) (ash); grey; moist; medium dense; wood chips		3-5-7		1.5'	Start using Drilling Mud Wood debris was observed in the return fluid between 2'-3' BGS
	-5	SILT with fine sand (ML) (ash); grey; wet; loose		2-3-4		0.9'	
35		SILT with fine sand (ML) (ash); grey; wet; loose		2-2-6		1.1'	
	-10	SILT with fine sand (ML) (ash); grey; wet; medium dense		5-5-8		1.0'	
30		SILT with fine sand (ML) (ash); grey; wet; medium dense		3-7-6-4		1.25'	
▽		SILT with fine sand (ML) (ash); grey; wet; loose		2-5-5-11		1.8'	Water level at least 24 hours after piezometer development: El. 28.5 ft. (NAVD88)
	-15	SILT with fine sand (ML) (ash); grey; wet; medium dense		7-7-5-4		1.1'	
25		SILT (ML) (ash); trace fine sand; black; wet; very loose		1/12"-1/12"		2.0'	
	-20						
20		SILT (ML) (ash); grey; wet; very loose		WOH		2.2'	Boring Terminated at 22.0' BGS
	-25						
15							
	-30						

All depths referenced to ground surface.
Total Depth: 22.0

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BORING LOG

BOREHOLE ID: *NEWHA-005-PZ-103 (on the 1984 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/30/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B (SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200,329.16*
EASTING: *2,205,784.76*
GROUND ELEVATION: *34.3*

Elev. (ft)	Depth (ft)	Lithologic Description	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
30	0	SAND (SW) (dike fill); brown/white; moist; medium dense	9-6-7		1.4'	Start using Drilling Mud
	-5	fine to medium SAND (SP) (dike fill); brown; wet; medium dense	7-13-16		1.0'	
		fine to medium SAND (SP) (dike fill); brown; wet; medium dense	9-12-15		1.0'	
25	-10	fine to medium SAND (SP) (dike fill); brown; wet; medium dense	5-8-9		1.0'	
20	-15	fine to medium SAND (SP) (dike fill); brown; wet; dense	5-15-27		0.8'	
15	-20	fine to medium SAND (SP) (foundation soil); brown; wet; medium dense	4-6-8		0.9'	
▽ 10	-25	fine to medium SAND (SP) (foundation soil); brown; wet; loose	4-5-5		0.6'	Water level at least 24 hours after piezometer development: El. 10.5 ft. (NAVD88)
5	-30	fine to medium SAND (SP) (foundation soil); brown; wet; medium dense	9-9-11		0.8'	Boring Terminated at 30.0; BGS

All depths referenced to ground surface.
Total Depth: 30.0

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BORING LOG

BOREHOLE ID: *NEWHA-005-PZ-104 (on the 1984 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *11/4/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B (SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *200,008.41*
EASTING: *2,304,134.25*
GROUND ELEVATION: *32.9*

Elev. (ft)	Depth (ft)	Lithologic Description	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
30	0	fine to medium SAND (SP) (dike fill); brown; moist; loose	4-3-5		1.3'	Start using Drilling Mud
	-5	fine to medium SAND (SP) (dike fill); brown; wet; medium dense; organic material	8-11-15		1.0'	
25		fine to medium SAND (SP) (dike fill); brown/grey; wet; medium dense	11-14-15		0.8'	
	-10	fine to medium SAND (SP) (dike fill); grey; wet; very loose	5-2-2		1.1'	
20		fine to medium SAND (SP) (dike fill); brown; wet; dense	11-17-29		1.0'	
	-15					
15		fine to medium SAND (SP) (dike fill); brown; wet; very dense; trace organic material	13-23-34		1.1'	N=57
	-20					
10		fine to medium SAND (SP) (possible dike fill); brown/grey; wet; dense	14-20-22		0.8'	Water level at least 24 hours after piezometer development: El. 8.5 ft. (NAVD88)
	-25					
5		fine to medium SAND (SP) (foundation soil); dark brown; wet; medium dense	4-7-10		0.9'	
	-30					Boring Terminated at 30.0' BGS

All depths referenced to ground surface.
Total Depth: 30.0

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BORING LOG

BOREHOLE ID: *NEWHA-004-PZ-105 (on the 1971 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *11/3/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B(SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198,085.02*
EASTING: *2,305,518.66*
GROUND ELEVATION: *27.7*

Elev. (ft)	Depth (ft)	Lithologic Description	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
25	0	fine to medium SAND (SP) (dike fill); brown; moist; medium dense	3-5-7		1.2'	Start using Drilling Mud
	-5	fine to medium SAND (SP) (dike fill); trace silt (possible ash); grey; wet; medium dense	12-13-15		1.3'	
20		fine to medium SAND (SP) (dike fill); grey; wet; medium dense	5-6-5		1.1'	
	-10	fine to medium SAND with silt (SP-SM) (soil and possble ash); grey; wet; loose	3-2-3		0.7'	
15		fine to medium SAND with silt (SP-SM) (soil and possble ash); grey; wet; loose	2-2-3		0.9'	
	-15	fine to medium SAND with silt (SP-SM) (soil and possble ash); brown/grey; wet; loose	2-2-3		0.7'	
10		SILT with fine to medium sand (ML) (soil and ash); grey; wet; loose	2-3-3		1.5'	
▽	-20	SILT (ML) (soil and ash); trace fine sand; grey; wet; very loose	1-1-2		1.0'	Water level at least 24 hours after piezometer development: El. 8.5 ft. (NAVD88)
5		Top 0.4' SILT (ML) (soil and ash); trace fine sand; grey; wet; loose Bottom 0.6' fine to medium SAND (SP) (foundation soil); brown; wet; loose	1-2-4		1.0'	
	-25	fine to medium SAND (SP) (foundation soil); brown, wet; medium dense	6-8-9		0.8'	Boring Terminated at 25.0' BGS
0	-30					

All depths referenced to ground surface.
Total Depth: 25.0

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BORING LOG

BOREHOLE ID: *NEWHA-004-PZ-106 (on the 1971 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *11/3/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B(SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198,414.87*
EASTING: *2,304,821.39*
GROUND ELEVATION: *27.3*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
25	0	fine to medium SAND (SP) (dike fill); brown/black; moist; medium dense; large piece of gravel		4-4-7		0.4'	Start using Drilling Mud
	-5	fine to medium SAND (SP) (dike fill); brown/black; wet; medium dense		6-7-13		1.0'	
20		fine to medium SAND (SP) (dike fill); brown/white; wet; medium dense		8-11-14		0.9'	
	-10	Top 1.3' fine to medium SAND (SP) (dike fill); brown; wet; medium dense Bottom 0.2' SILT with fine to medium sand (ML) (soil and ash); grey; wet; medium dense		7-9-12		1.5'	
15		SILT (ML) (soil and ash); trace fine sand; grey; wet; loose		3-3-3		0.8'	
	-15	silty fine to medium SAND (SM) (soil and ash); grey/brown; wet; very loose		2-2-2		1.0'	
10		SILT (ML) (soil and ash); grey; wet; very loose		1-1-1		0.7'	
	-20	SILT with fine sand (ML) (ash); grey; wet; very loose; gravel size debris		1-1-1		1.1'	Water level at least 24 hours after piezometer development: El. 8.6 ft. (NAVD88)
5		SILT with fine sand (ML) (ash); grey; wet; very loose; gravel size debris		1/9"-1/9"		0.3'	
	-25	Top 1.1' SILT with fine sand (ML) (ash); grey; wet; very loose Bottom 0.4' fine to medium SAND (SP) (foundation soil); brown/black; wet; very loose; trace organic matter		1/12"-3		1.5'	Boring Terminated at 25.0' BGS
0							
	-30						

All depths referenced to ground surface.
Total Depth: 25.0

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BORING LOG

BOREHOLE ID: *NEWHA-004-PZ-107 (on the 1971 Dike)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/31/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B(SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198,966.56*
EASTING: *2,304,088.68*
GROUND ELEVATION: *27.0*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
25	0	fine to medium SAND (SP) (dike fill); grey/brown; moist; loose		5-5-5		1.1'	Start using Drilling Mud Wood chips were observed in the return fluid from 2.5' to 3.5' BGS
	-5	fine to medium SAND (SP) (dike fill); brown; wet; medium dense		9-12-17		0.9'	
20		fine to medium SAND (SP) (dike fill); brown; wet; dense; small piece of coal		11-16-20		0.9'	
	-10	fine to medium SAND (SP) (dike fill); brown; wet; dense		11-14-20		1.0'	Wood chips were observed in the return fluid from 10' to 13' BGS
15		fine to medium SAND (SP) (dike fill); brown/grey; wet; very dense		12-23-35		1.0'	N=58
	-15						
10 ▽		fine to medium SAND (SP) (possible foundation soil); trace silt (possible ash); grey; wet; medium dense		9-11-17		1.1'	Water level at least 24 hours after piezometer development: El. 9.1 ft. (NAVD88)
	-20						
5		fine to medium SAND (SP) (foundation soil); white/brown; wet; loose		4-4-6		0.9'	Boring Terminated at 25.0' BGS
	-25						
0							
	-30						

All depths referenced to ground surface.
Total Depth: 25.0

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BORING LOG

BOREHOLE ID: *PZ-108S (within the 1971 Ash Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/28/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B(SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198,487.71*
EASTING: *2,304,871.17*
GROUND ELEVATION: *33.8*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
33.8	0	sandy SILT (ML) (ash); grey; moist; medium dense		2-5-7		0.8'	Start using Drilling Mud
30	-5	sandy SILT (ML) (ash); grey; wet; loose		4-5-4		0.6'	
		sandy SILT (ML) (ash); grey; wet; very loose		2-2-2		1.2'	
25	-10	sandy SILT (ML) (ash); black; wet; very loose		2-2-2		1.0'	
20	-15	sandy SILT (ML) (ash); grey/black; wet; very loose		2-1-1		0.6'	
		sandy SILT (ML) (ash); grey; wet; very loose		1/18"		1.4'	
15	-20						Boring Terminated at 18.0' BGS. Piezometer was dry at least 24 hours after development.
10	-25						
5	-30						

All depths referenced to ground surface.
Total Depth: 18.0

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BORING LOG

BOREHOLE ID: *PZ-108D (within the 1971 Ash Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Dewatering Design
PROJECT NO: *GC5650*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *10/28/2014*
GEOSYNTEC REPRESENTATIVE: *M. Martin, W. Shin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Rotary Wash*
RIG TYPE: *CME 45B(SN 221904)*
BOREHOLE DIA: *4.0"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198,492.19*
EASTING: *2,304,861.07*
GROUND ELEVATION: *33.8*

Elev. (ft)	Depth (ft)	Lithologic Description	Pattern	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery	Comments
33.8	0						Start using Drilling Mud See Log for PZ-108S for 0' to 18' BGS
15	18.8	fine to medium sandy SILT (ML) (ash); grey; wet; very loose		1/12"-1		0.6'	
10	23.8	fine to medium sandy SILT (ML) (ash); grey; wet; very loose; organic material		1-1-1		1.5'	Water level at least 24 hours after piezometer development: El. 9.1 ft. (NAVD88)
5	28.8	Top 1.8' fine sandy SILT (ML) (ash); grey; wet; very loose; organic material Bottom 0.2' organic CLAY (OH); brown; wet; very soft		1-1-1		2.0'	
3.8	30.0						Boring Terminated at 30.0' BGS

All depths referenced to ground surface.
Total Depth: 30.0

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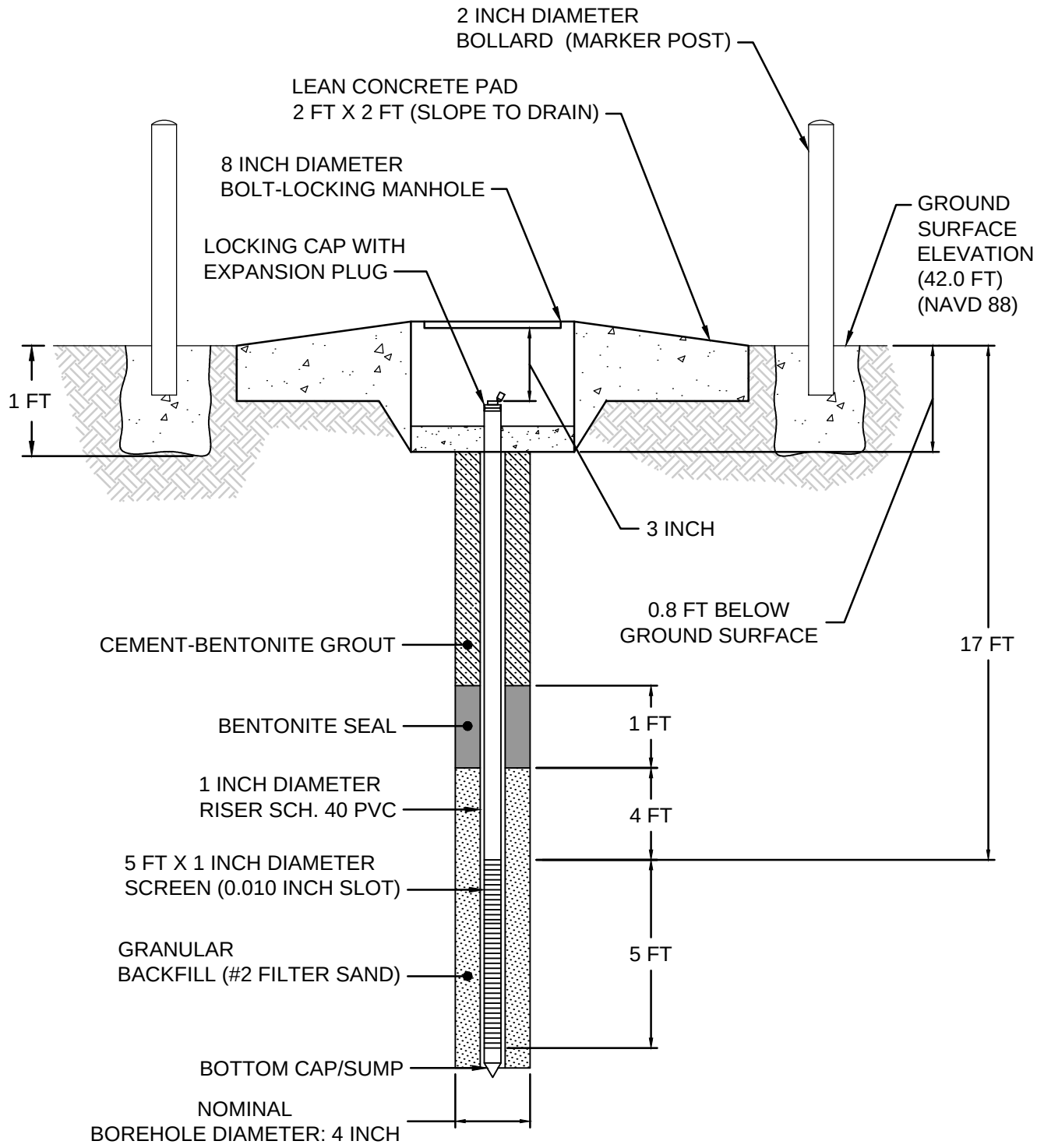

NOT TO SCALE

NOTE:

1. THE PIEZOMETER WAS INSTALLED ON THE 2006 DIKE.

PZ-101
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.1

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F029 PIEZOMETER DETAIL

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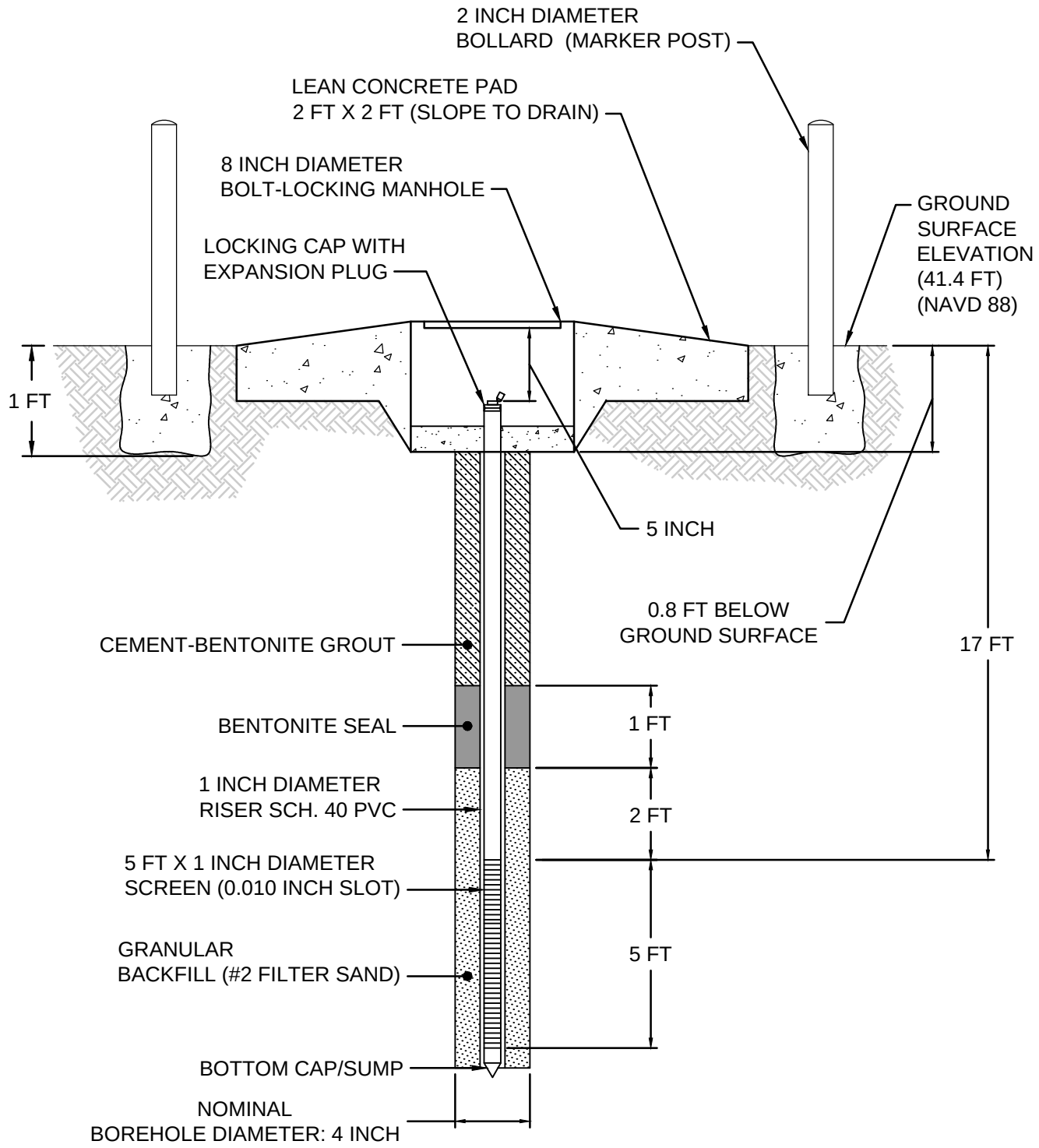

NOT TO SCALE

NOTE:

1. THE PIEZOMETER WAS INSTALLED ON THE 2006 DIKE.

PZ-102
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.2

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F030 PIEZOMETER DETAIL

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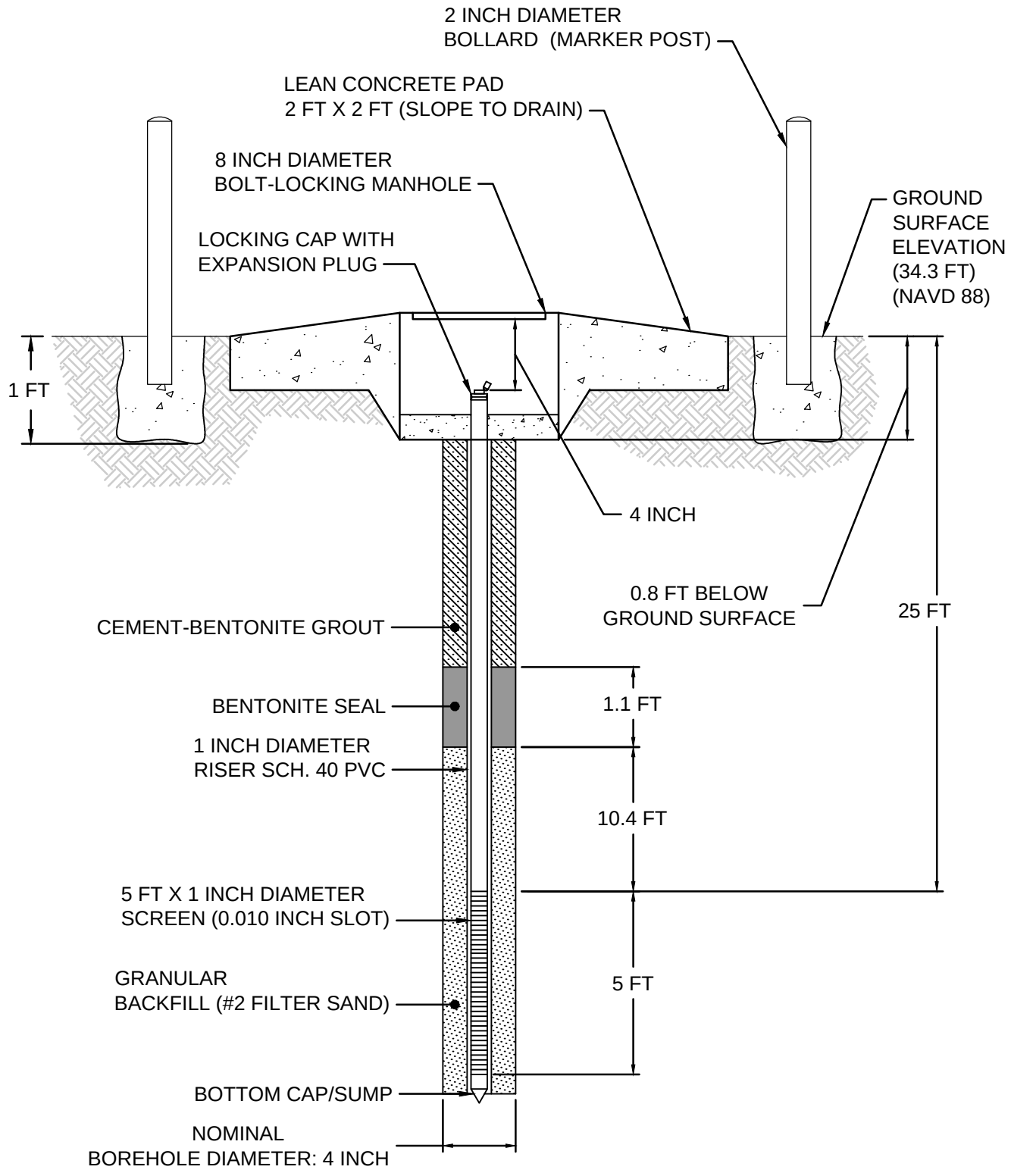

NOT TO SCALE

NOTE:

1. THE PIEZOMETER WAS INSTALLED IN GENERAL ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE APPROVAL OF INSTALLATION OF INSTRUMENTATION GRANTED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES DATED ON 1 OCTOBER 2014.

NEWHA-005-PZ-103
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.3

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F036 PIEZOMETER DETAIL

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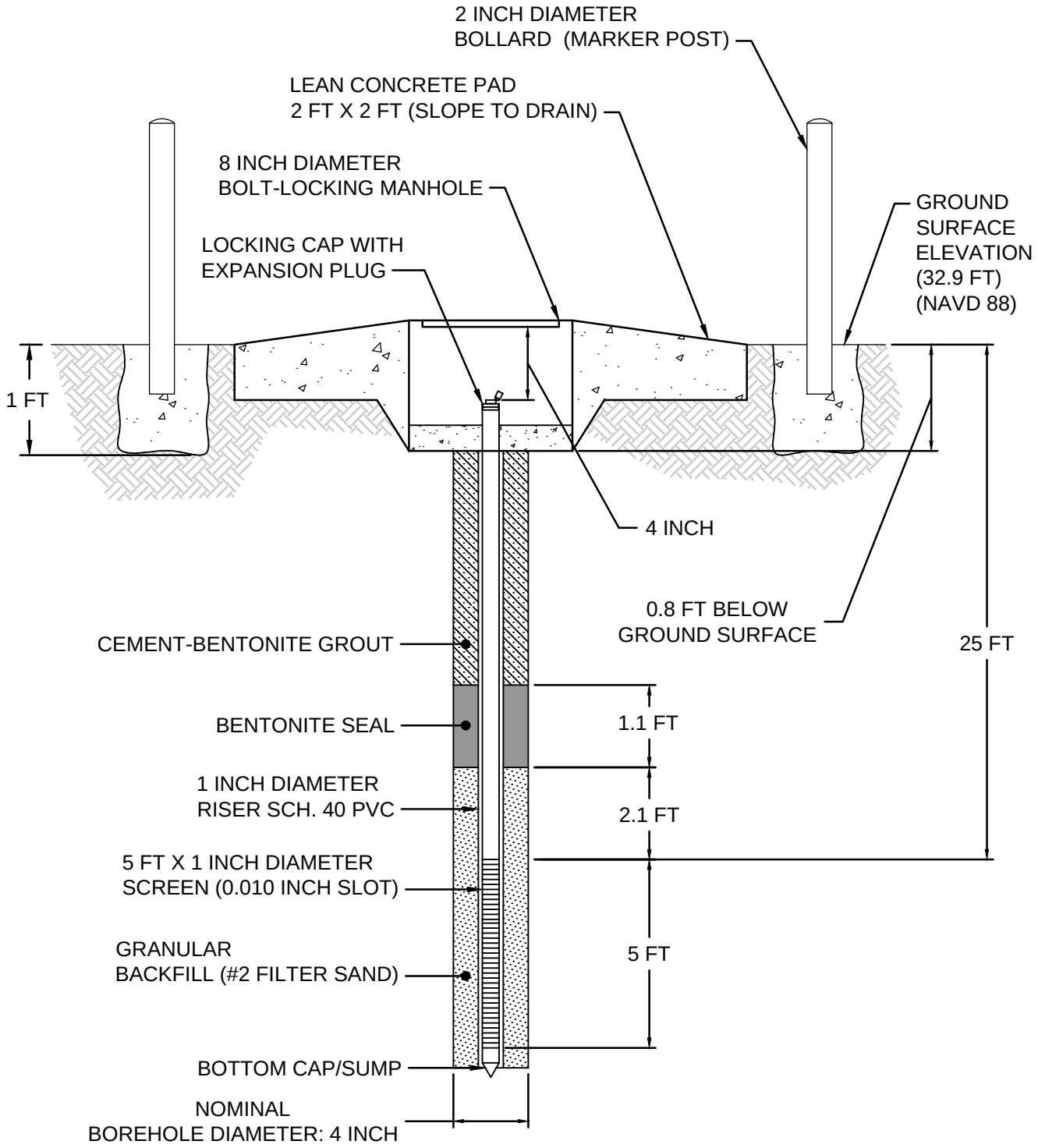

NOT TO SCALE

NOTE:

1. THE PIEZOMETER WAS INSTALLED IN GENERAL ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE APPROVAL OF INSTALLATION OF INSTRUMENTATION GRANTED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES DATED ON 1 OCTOBER 2014.

NEWHA-005-PZ-104
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.4

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F037 PIEZOMETER DETAIL

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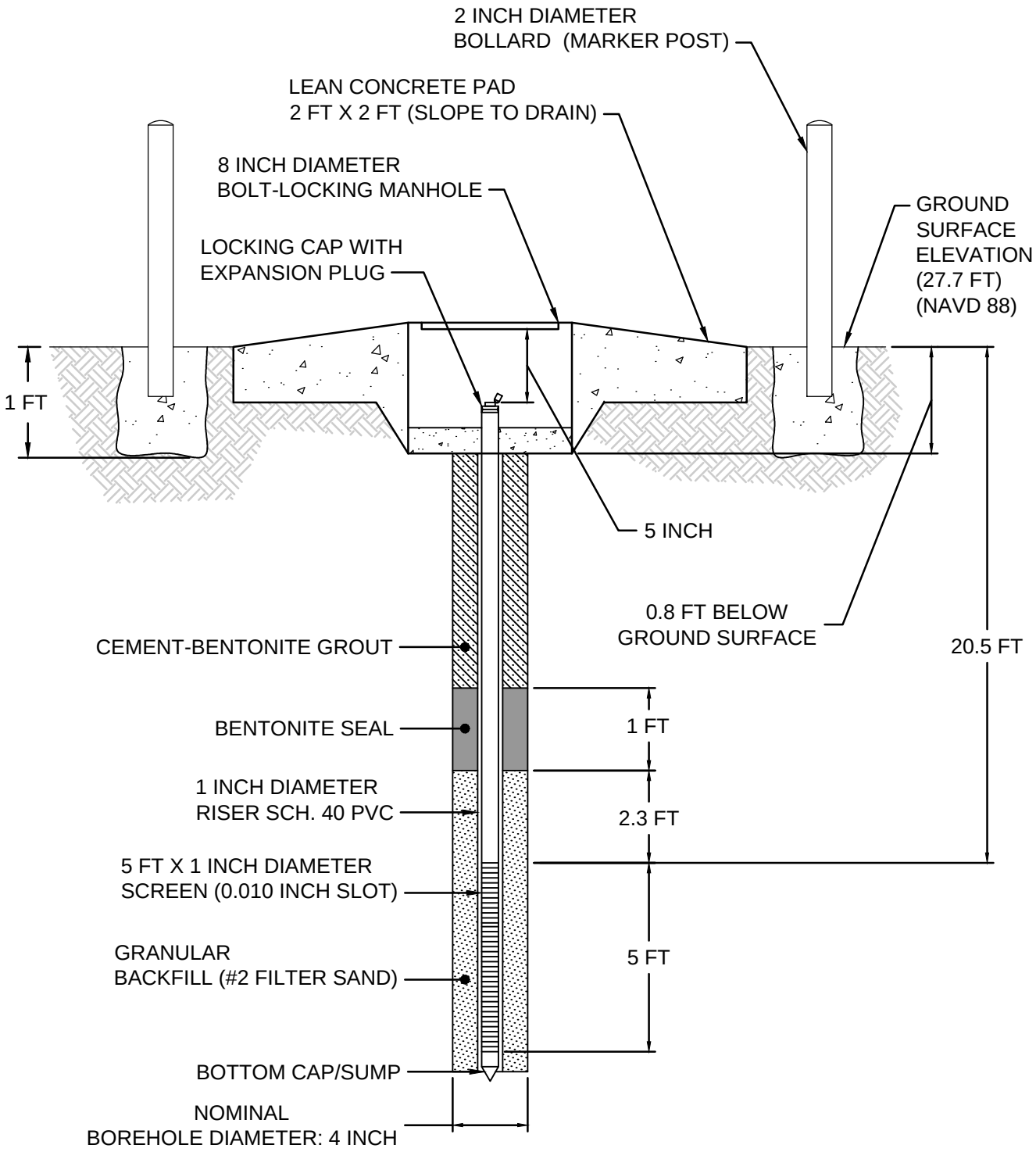

NOT TO SCALE

NEWHA-004-PZ-105
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.5

PROJECT NO: GC5650 | NOVEMBER 2014

M: \D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F031 PIEZOMETER DETAIL

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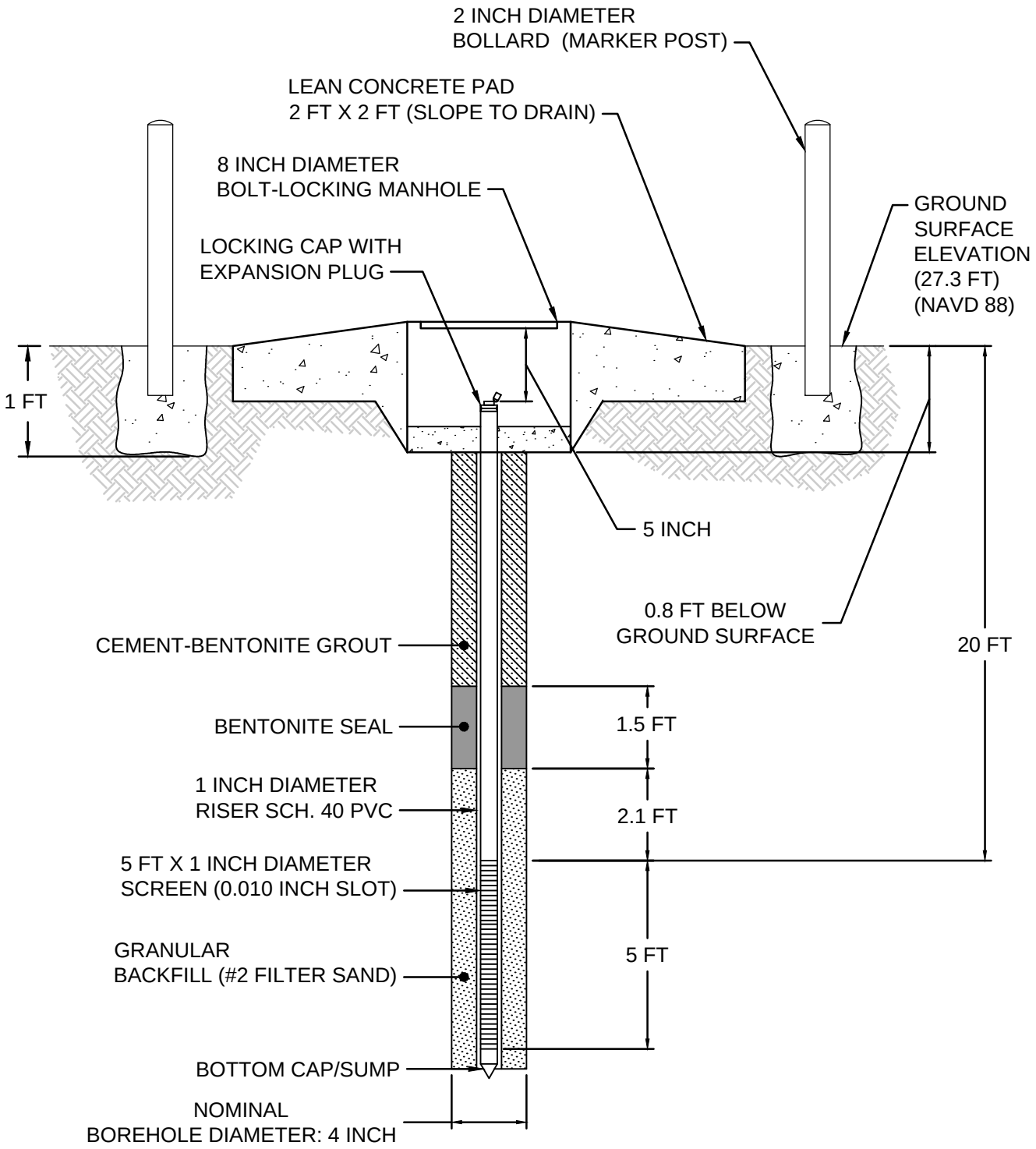

NOT TO SCALE

NEWHA-004-PZ-106
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.6

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F032 PIEZOMETER DETAIL

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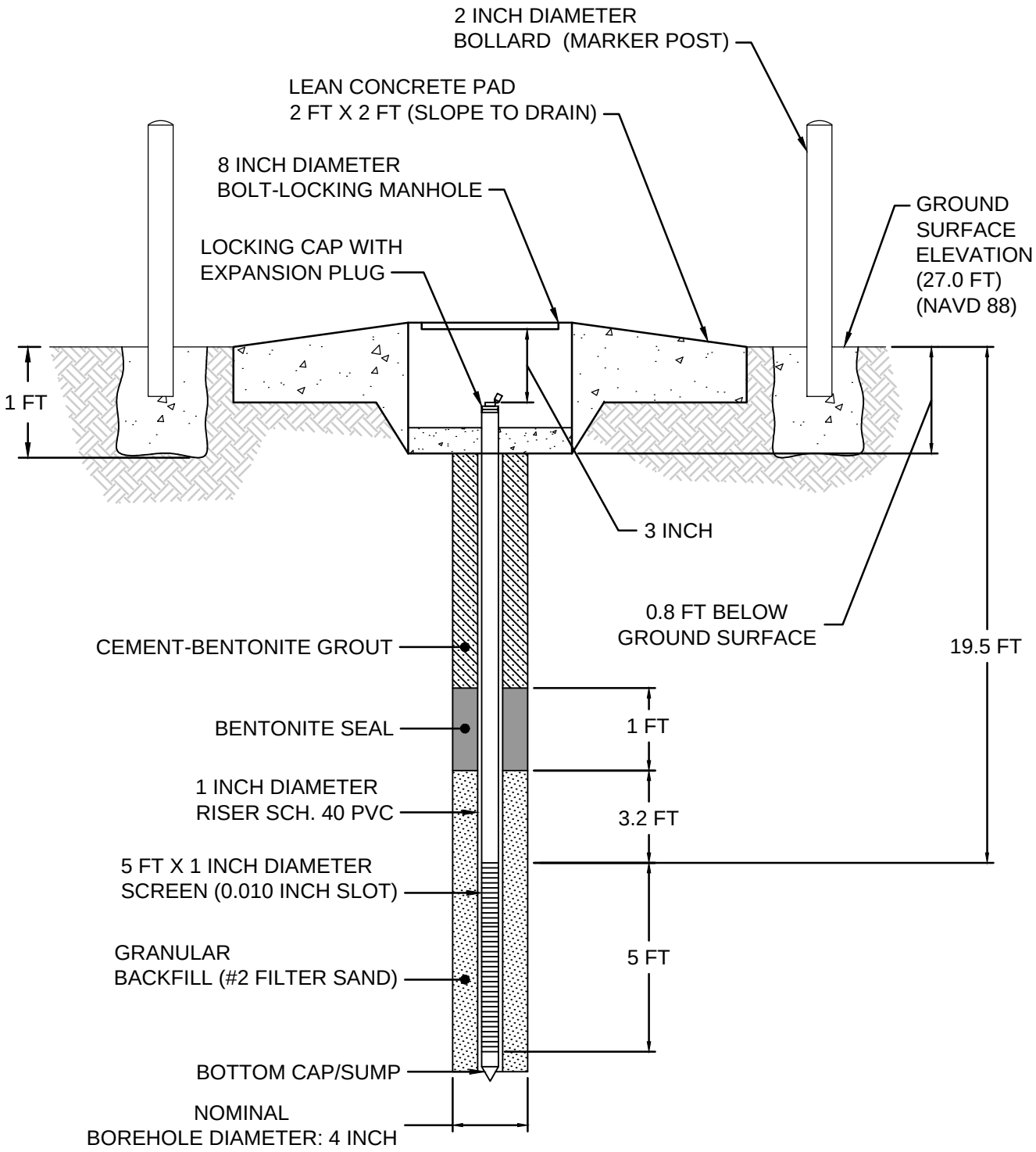

NOT TO SCALE

NEWHA-004-PZ-107
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.7

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F033 PIEZOMETER DETAIL

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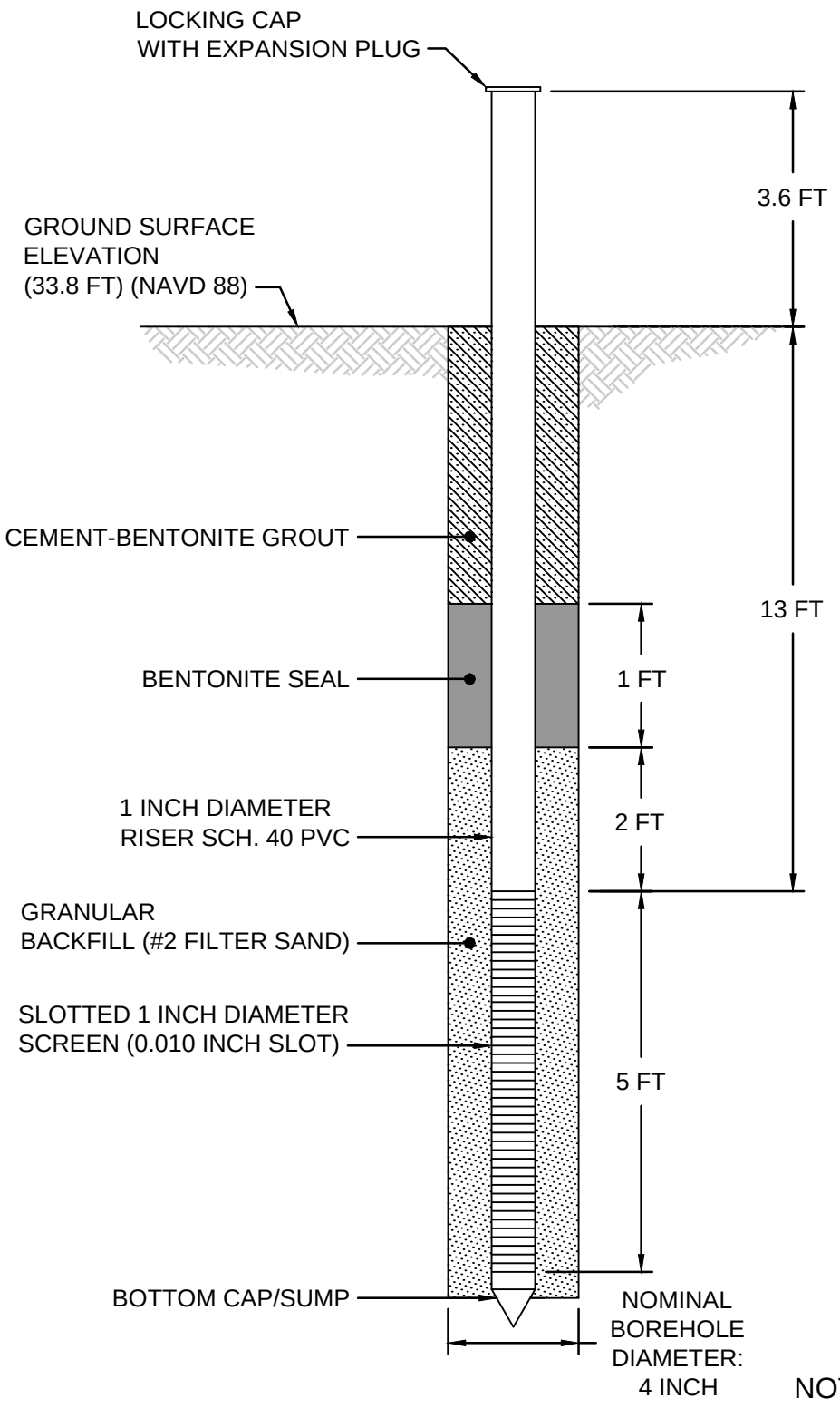

NOT TO SCALE

NOTES:

1. THE PIEZOMETER WAS INSTALLED ON THE INTERNAL ASH BERM OF THE 1971 ASH BASIN.
2. DUE TO TEMPORARY NATURE, THE PIEZOMETER WAS NOT COMPLETED WITHIN A CONCRETE PAD AND/OR PROTECTIVE CASING.

PZ-108S
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.8

PROJECT NO: GC5650 | NOVEMBER 2014

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F034 PIEZOMETER DETAIL

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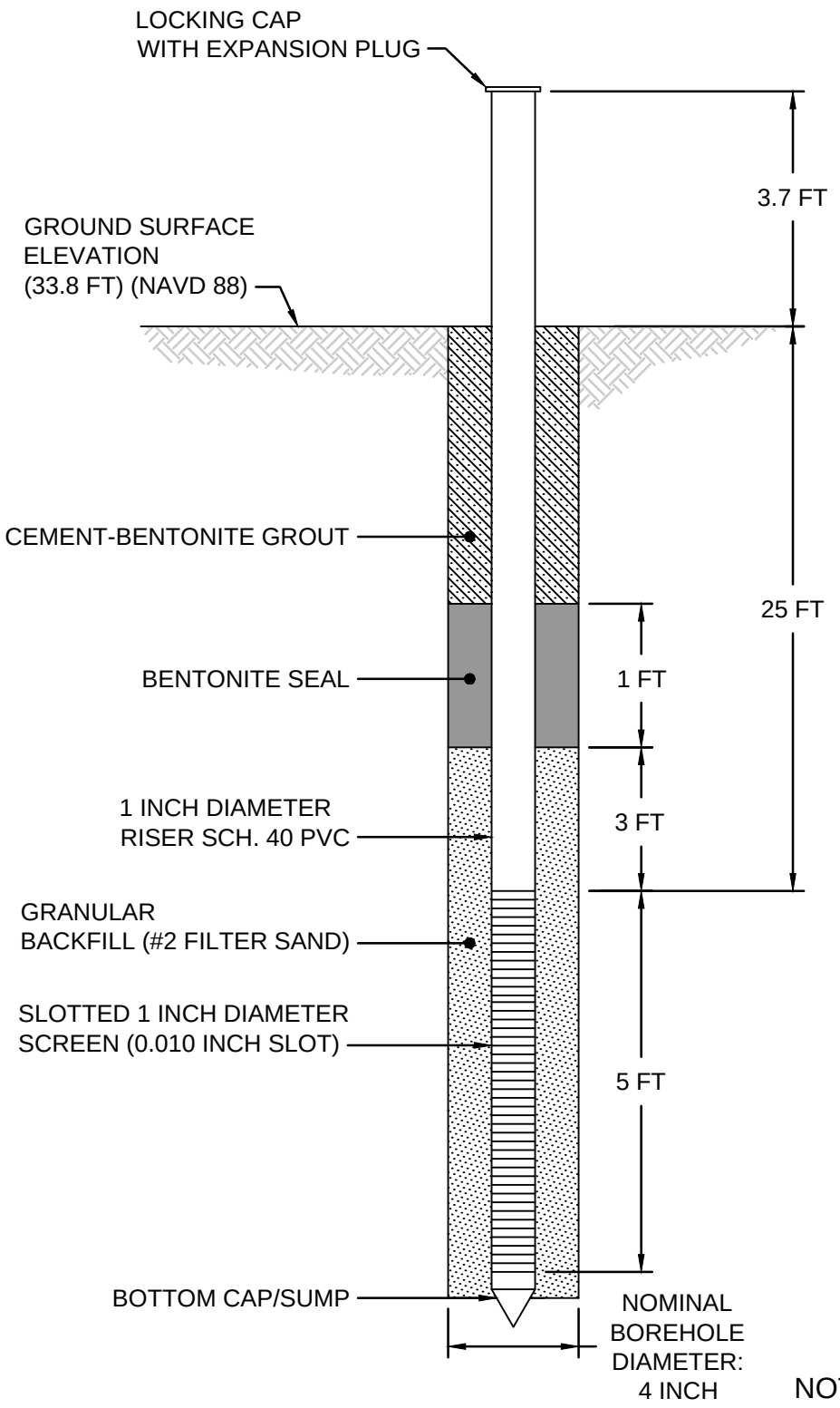

NOT TO SCALE

NOTES:

1. THE PIEZOMETER WAS INSTALLED ON THE INTERNAL ASH BERM OF THE 1971 ASH BASIN.
2. DUE TO TEMPORARY NATURE, THE PIEZOMETER WAS NOT COMPLETED WITHIN A CONCRETE PAD AND/OR PROTECTIVE CASING.

PZ-108D
AS-BUILT CONSTRUCTION DETAIL
L.V. SUTTON PLANT, WILMINGTON, NC

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FIGURE
D.9

PROJECT NO: GC5650 | NOVEMBER 2014

M: \D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON DE-WATERING-GC5650\FIGURES\5650F035 PIEZOMETER DETAIL

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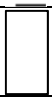
Legend for Soil Classification Symbols

Pattern	Description
	SP – poorly graded sands
	SW – well graded sands
	GP – poorly graded gravels
	GW – well graded gravels
	SM – silty sands
	MH – elastic silts
	ML – inorganic silts with slight plasticity
	SC – clayey sands
	CL – lean clays
	CH – fat clays
	Unconsolidated Weathered Rock
	Consolidated Weathered Rock
	Roadbed Material
	Bentonite
	Grout
	Well Screen
	PVC

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BORING LOG

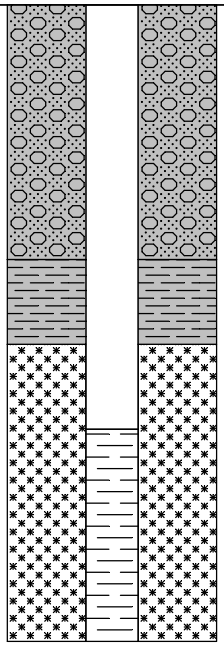
BOREHOLE ID: *GWPZ1A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected because location is paired w/ GWPZ1B. See soil profile for GWPZ1B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ1B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Recovery	Comments
0	0	topsoil (OL) w/ vegetation and organics		
		orange to brown fine SAND (SP)	100%	
-5	-5	tan fine SAND (SP)	70%	
		light tan fine SAND (SP)	75%	
		tan to brown fine SAND (SP)	100%	
-10	-10	tan to brown fine SAND (SP) w/ trace specks of mica	100%	
		tan to brown fine SAND (SP) w/ trace specks of mica	100%	
-15	-15	tan to brown fine SAND (SP) w/ trace specks of mica	90%	
		tan fine SAND (SP)	75%	
		tan medium SAND (SP)	50%	bentonite chips allowed to hydrate for 1 hour
-20	-20	tan medium to coarse SAND (SP)	90%	
		tan medium to coarse SAND (SP) w/ trace specks of mica	60%	
-25	-25	tan medium to coarse SAND (SP) w/ trace specks of mica		
		tan medium to coarse SAND (SP) w/ trace specks of mica, orange plastic CLAY (CH) @ 28'	75%	

All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

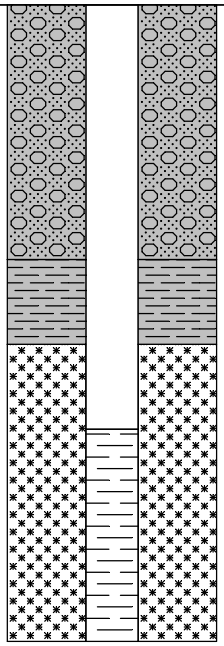
BOREHOLE ID: *GWPZ2A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ2B. See soil profile for GWPZ2B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ2B*

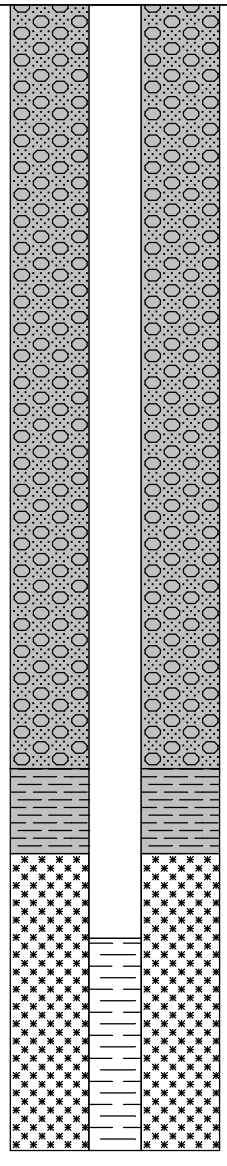
GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ organics (roots, shells)			100%	
		orange fine SAND (SP)				
-5	-5	tan fine SAND (SP) w/ trace black staining			75%	
		tan fine SAND (SP) w/ trace black staining, saturated			60%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			65%	
-10	-10	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			100%	
-15	-15	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			80%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			70%	
		tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	bentonite chips allowed to hydrate for 1 hour
-20	-20	tan fine SAND (SP) w/ trace black staining and some black specs of mica, saturated			75%	
		tan medium SAND (SP) w/ trace pebbles, saturated			75%	
-25	-25	tan medium SAND (SP) w/ increasing pebble content, saturated			75%	
		tan medium SAND (SP) w/ increasing pebble content, saturated			50%	



All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

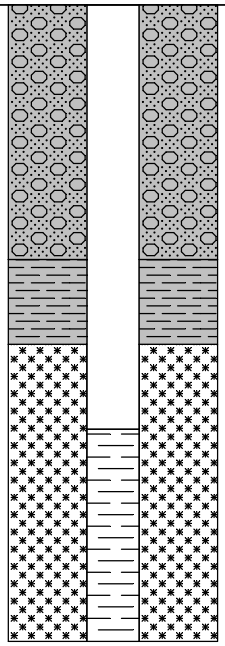
BOREHOLE ID: *GWPZ3A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ3B. See soil profile for GWPZ3B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ3B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *DPT & Hollow Stem Auger*
RIG TYPE: *Power Probe 9500-VTR & Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *DPT & Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ vegetation			75%	Used geoprobe to 12', then switched to split spoon samples. See photos.
		fine brown SAND (SP) w/ some black staining				
-5	-5	fine orange SAND w/ some black staining			75%	
		fine tan SAND (SP), saturated			75%	
-10	-10					
		fine tan SAND (SP) w/ trace specks of mica, saturated			100%	
-15	-15	fine tan SAND (SP) w/ trace specks of mica, becoming lighter with depth, saturated			75%	
		dark brown fine SAND (SP) w/ trace specks of mica and black staining, saturated			100%	
		very light tan fine SAND (SP) transitioning to a gray SAND (SP) w/ trace pebbles @ 19', saturated			100%	bentonite chips allowed to hydrate for 1 hour
-20	-20	gray SAND (SP) w/ trace pebbles, saturated			100%	
		gray to light tan medium SAND (SP) w/ trace pebbles, saturated			100%	
-25	-25	no recovery			0%	
		gray to light tan medium SAND (SP) w/ trace pebbles, saturated			60%	

All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

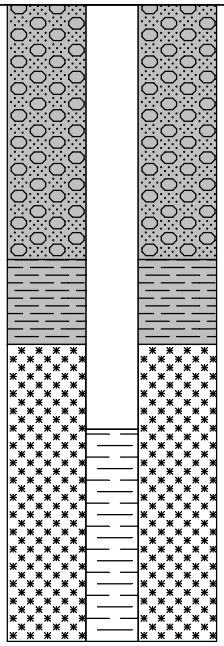
BOREHOLE ID: *GWPZ4A*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were collected beacuse location is paired w/ GWPZ4B. See soil profile for GWPZ4B.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					

All depths referenced to ground surface.

Total Depth: 16

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BORING LOG

BOREHOLE ID: *GWPZ4B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/07/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	topsoil (OL) w/ vegetation			100%	
		orange to tan fine SAND (SP) w/ some black staining				
-5	-5	orange to tan fine SAND (SP) w/ some black staining			50%	
		orange to tan fine SAND (SP) w/ some black staining, saturated			50%	
-10	-10	tan fine SAND (SP), saturated			85%	
		tan very fine SAND (SP), saturated			25%	
-15	-15	tan very fine SAND (SP) w/ trace specks of mica, saturated			75%	
		tan very fine SAND (SP), saturated			60%	bentonite chips allowed to hydrate for 1 hour
		tan very fine SAND (SP), saturated			60%	
-20	-20	tan very fine SAND (SP) w/ trace specks of mica, saturated			20%	
		tan very fine SAND (SP), saturated			50%	
-25	-25	tan very fine SAND (SP), saturated			25%	
		no recovery, 6 small pebbles in core			0%	

All depths referenced to ground surface.

Total Depth: 28

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1300 South Mint Street
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BORING LOG

BOREHOLE ID: *MW27C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	tan to brown fine SAND (SP)			100%	
-5	-5	medium to dark brown fine SAND (SP) w/ some silt			75%	
-10	-10	medium to dark brown fine SAND (SP) w/ some silt tan fine SAND (SP)			90%	
-15	-15	brown fine SAND (SP)			100%	
-20	-20	fine brown SAND (SP) w/ trace specks of mica			100%	
-25	-25	fine brown SAND (SP) w/ trace specks of mica and some pebbles mottled orange SAND (SP)			75%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

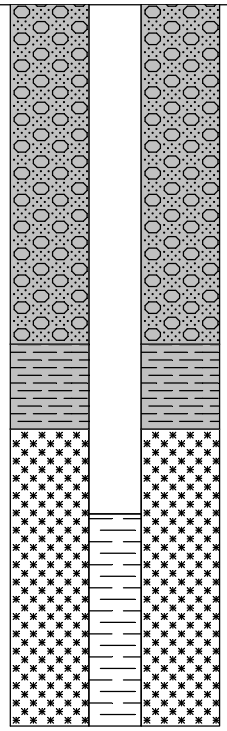
BOREHOLE ID: *MW27C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	mottled orange SAND (SP) mottled gray and purplish brown plastic CLAY (CH), orange at end of core			75%	
-35	-35	mottled gray and purplish brown plastic CLAY (CH) w/ layers of orange sand white medium SAND (SP)			100%	bentonite chips allowed to hydrate for 1 hour
-40	-40	mottled orange and tan medium SAND (SC) w/ tan soft clay			100%	
-45	-45	mottled orange and tan medium SAND (SC) w/ tan soft clay			50%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

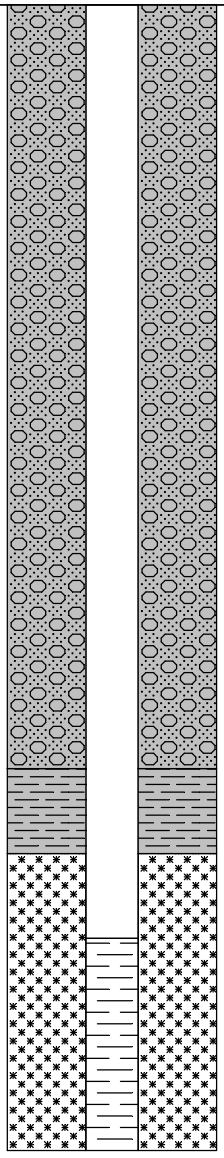
BOREHOLE ID: *MW34B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/12/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores collected beacuse location is paired with MW34C. See soil profile for MW34C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.
Total Depth: 28

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BORING LOG

BOREHOLE ID: *MW34C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	gray and white fine SAND (SP) w/ organics			100%	
-5	-5	gray and white fine SAND (SP) w/ organics orange to tan fine SAND (SP)			90%	collected SS-MW34C (4-6) 20140513 @ 0845
-10	-10	gray fine SAND (SP) w/ some silt white fine SAND (SP), saturated			90%	
-15	-15	tan to brown fine SAND (SP), saturated			75%	
-20	-20	tan to brown fine SAND (SP), saturated			60%	
-25	-25	tan fine SAND (SP) w/ some gravel and trace specks of mica, saturated			50%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

BOREHOLE ID: *MW34C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	orange CLAY (CL), firm, saturated gray CLAY (CL), firm, saturated			80%	
-35	-35	orange CLAY (CL), firm, saturated gray clayey SAND (SC), saturated			50%	bentonite chips allowed to hydrate for 1 hour
-40	-40	orange to tan medium SAND (SP) w/ some gray clay, saturated orange coarse SAND (SP), saturated			100%	
-45	-45	orange to tan medium to coarse SAND (SP) w/ trace clay, saturated			75%	

All depths referenced to ground surface.
Total Depth: 46

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BORING LOG

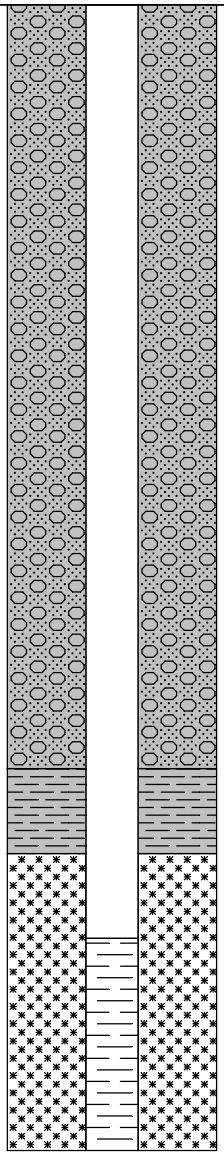
BOREHOLE ID: *MW35B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores collected beacuse location is paired with MW35C. See soil profile for MW35C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.

Total Depth: 28

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BORING LOG

BOREHOLE ID: *MW35C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	gray and white fine SAND (SP) w/ vegetation			100%	
-5	-5	orange to tan fine SAND (SP)			100%	
-10	-10	tan to orange fine SAND (SP), saturated			75%	
-15	-15	tan to white fine SAND (SP), saturated			50%	
-20	-20	tan fine to medium SAND (SP), saturated, specks of mica			75%	
-25	-25	tan fine to medium SAND (SP), saturated, specks of mica			100%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

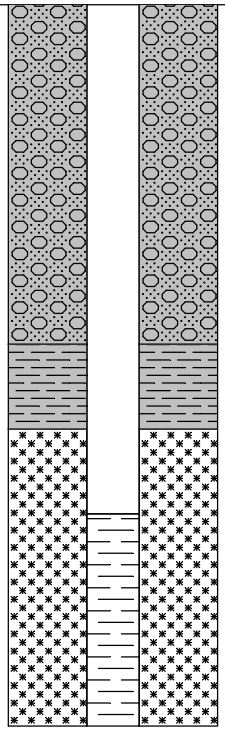
BOREHOLE ID: *MW35C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/13/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	mottled tan and orange fine to medium SAND (SP), saturated			75%	
-35	-35	mottled tan and orange fine to medium SAND (SP) w/ trace pebbles, saturated			100%	bentonite chips allowed to hydrate for 1 hour
-40	-40	1.5" of dark brown SAND (SP) w/ silt white fine SAND (SP) w/ some very thin layers of clay, saturated			100%	
-45	-45	light gray fine to medium SAND (SP) w/ trace pebbles, saturated			100%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

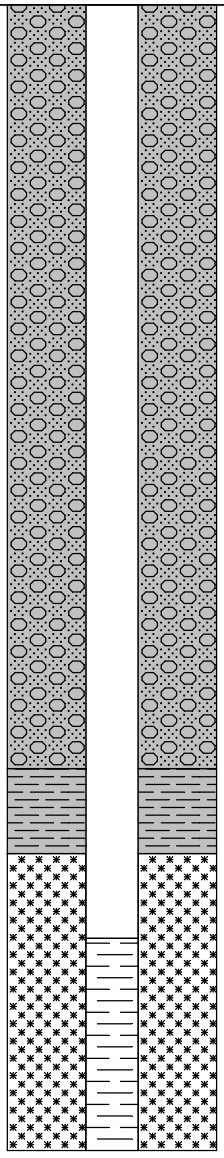
BOREHOLE ID: *MW36B*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	No soil cores were pulled because well is paired w/ MW36C. See soil profile for MW36C.				bentonite chips allowed to hydrate for 1 hour
-5	-5					
-10	-10					
-15	-15					
-20	-20					
-25	-25					

All depths referenced to ground surface.
Total Depth: 28

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BORING LOG

BOREHOLE ID: *MW36C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
0	0	brown fine SAND (SP) w/ organics (roots)			100%	2' split spoons were pulled every 5'
-5	-5	orange to tan fine SAND (SP), moist @ 6'			75%	collected soil sample SS-MW36C (4-6) 20140509
-10	-10	tan fine SAND (SP), saturated, trace specks of mica			75%	
-15	-15	tan to white fine SAND (SP) w/ orange sand at very bottom of core			100%	
-20	-20	tan to white fine SAND (SP)			75%	
-25	-25	tan to white fine SAND (SP)			40%	

All depths referenced to ground surface.

Total Depth: 46

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BORING LOG

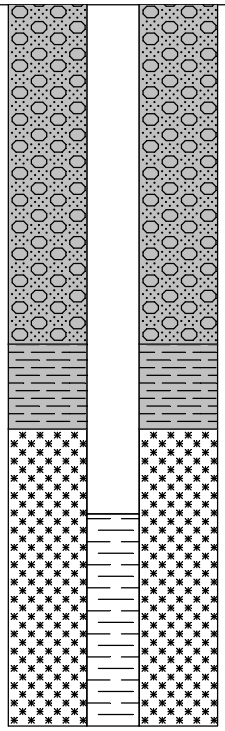
BOREHOLE ID: *MW36C*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Steam Plant
PROJECT NO: *GC5592*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *05/08/14*
GEOSYNTEC REPRESENTATIVE: *Rachel Donahue*
DRILLING CONTRACTOR: *SAEDACCO*
DRILLER NAME: *Richy Lemire*

TECHNICAL INFORMATION

DRILLING METHOD: *Hollow Stem Auger*
RIG TYPE: *Diedrich D-50*
BOREHOLE DIA: *8"*
SAMPLING METHOD: *Split Spoon*
NORTHING:
EASTING:
GROUND ELEVATION:

Elev. (ft msl)	Depth (ft)	Lithologic Description	Pattern	Well Construction Details	Recovery	Comments
-30	-30	fine to medium orange to tan SAND (SP)			25%	
-35	-35	coarse orange to tan SAND (SP) w/ gray solid rock at bottom in core catcher			25%	bentonite chips allowed to hydrate for 1 hour
-40	-40	coarse orange to tan SAND (SP) w/ broken up gray rock peices @ 40'; very fine gray SAND (SP) at 41'			75%	
-45	-45	coarse orange to tan SAND (SP) w/ some pebbles; very thin layer of orange clay @ 45.5'			100%	

All depths referenced to ground surface.

Total Depth: 46

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KEY TO SYMBOLS

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CLIENT co
PROJECT NAME Sutton Plant
PROJECT NUMBER 1026.108
PROJECT LOCATION Wilmington, NC

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- ASH-COAL: Coal Ash
- CLAY_TTC: TTC Clay
- SAND_TTC: TTC Sand
- SANDST_TTC: TTC Silty Sand
- SILT_TTC: TTC Silt
- SP: USCS Poorly-graded Sand
- SW: USCS Well-graded Sand

SAMPLER SYMBOLS

- Grab Sample
- Split Spoon
- Shelby Tube

WELL CONSTRUCTION SYMBOLS

- Bentonite Seal
- Cement Seal
- Filter Pack
- Well Casing
- Well Screen

ABBREVIATIONS

BGS - BELOW GROUND SURFACE
G.S. - GROUND SURFACE
M.P. - MEASURING POINT
TOC - TOP OF CASING
USCS - UNIFIED SOIL CLASSIFICATION SYSTEM
ft - FEET
IN - INCHES

PID - PHOTOIONIZATION DETECTOR
ppm - PARTS PER MILLION
-
-

Water Level at Time Drilling, or as Shown
Water Level at End of Drilling, or as Shown
Water Level After 24 Hours, or as Shown

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01D**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198964.17	EASTING: 2305386.78
DRILLING METHOD:	Sonic	G.S. ELEV: 45.71 ft	M.P. ELEV: 45.71 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			FLYASH, very fine grained, very dense, moist, dark gray (GLEY1 4/1).					Protective casing with locking cap.
10			Same as above, denser with increased moisture to 14' then dry-moist with wood fragments and lighter coloration.					2" Sch. 40 threaded PVC Riser
15								
20			FLYASH, black, gray and white mottle becoming laminated at 23', trace wood fragments, wet to 24' then dry to moist.					
25								
30			FLYASH, very fine grained to silt-size, wet to saturated, dark gray, occasionally black and white mottling soft to 35', then dense, laminated.					Grout
35								
40			Same as above, wet-saturated, soft, slightly dense, dense last 2'.					
45								
50			No recovery.					

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Phone: 864-421-9999

CLIENT: co
PROJECT LOCATION: Wilmington, NC

LOG A EWNN04 DEP SUTTON.GPJ GINT STD A4 ASTM LAB.GDT 7/29/15

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01D**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198964.17	EASTING: 2305386.78
DRILLING METHOD:	Sonic	G.S. ELEV: 45.71 ft	M.P. ELEV: 45.71 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55			No recovery. *(continued)*					
60			Same as above, saturated, soupy.					
65								
70			No recovery.					Bentonite seal
75								
80			FLYASH for ~1' (same as above) with coal fragments mixed with sand then silty sand, medium- fine to coarse grained, medium dense, moderate to poorly sorted, wet, light brownish grey (2.5Y 6/2) (79-82') then silty sand, fine grained, well sorted, dense, wet, dark greenish grey sand (GLEY 1 4/1), consolidated lense (1") at 85'.					
85								
90		SM	Same as above, silty, fine sand/sandy silt with rock (highly weathered), dark greenish grey, dense, saturated, well sorted.					Sand Pack 2" pre-packed well screen
95								
100								

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PROJECT LOCATION: Wilmington, NC

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01S**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198968.22	EASTING: 2305388.87
DRILLING METHOD:	Sonic	G.S. ELEV: 45.75 ft	M.P. ELEV: 45.75 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 76.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			FLYASH, very fine grained, very dense, moist, dark gray (GLEY1 4/1).					Protective casing with locking cap.
10			Same as above, denser with increased moisture to 14' then dry-moist with wood fragments and lighter coloration.					2" Sch. 40 threaded PVC Riser
15								
20			FLYASH, black, gray and white mottle becoming laminated at 23', trace wood fragments, wet to 24' then dry to moist.					
25								
30			FLYASH, very fine grained to silt-size, wet to saturated, dark gray, occasionally black and white mottling soft to 35', then dense, laminated.					Grout
35								
40			Same as above, wet-saturated, soft, slightly dense, dense last 2'.					
45								
50			No recovery.					

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CLIENT: co
PROJECT LOCATION: Wilmington, NC

LOG A EWNN04 DEP SUTTON.GPJ GINT STD A4 ASTM LAB.GDT 7/29/15

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-01S**
PROJECT NO:	1026.108	STARTED: 3/28/15	COMPLETED: 3/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198968.22	EASTING: 2305388.87
DRILLING METHOD:	Sonic	G.S. ELEV: 45.75 ft	M.P. ELEV: 45.75 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 76.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55			No recovery. *(continued)*					
60			Same as above, saturated, soupy.					
65								Bentonite seal
70			No recovery.					Sand Pack 2" pre-packed well screen
75								
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02D**
PROJECT NO:	1026.108	STARTED: 3/26/15	COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197177.19	EASTING: 2305583.43
DRILLING METHOD:	Sonic	G.S. ELEV: 10.10 ft	M.P. ELEV: 10.10 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 63.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5		FLYASH, wet, medium density, very dark gray (2.5 Y 3/1), fine-grained to silt-size, becoming saturated and loose at 3'.
10	SP	SAND, silty, well sorted, dense, wet, light yellowish brown (2.5 Y 6/4), ash/soil contact is at ~8' bls.
15		
20	SP SW	SAND, silty, medium-fine grained, medium density, well sorted, becoming coarse and less sorted at ~25', wet, light brown, gray (10 Y5 6/2).
25		
30	SP SW	Same as above, increased grain size.
35		
40	SW	SAND, silty, medium-fine to coarse grained, medium density, poorly sorted, light gray (2.5Y 7/2) becoming brownish yellow (10 TR 6/6) at 47', trace gravel at base.
45		SAND, silty, fine grained, dense, well-sorted for last 6", dark greenish gray (GLEY1 3/1)
50		No recovery.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02D**
PROJECT NO:	1026.108	STARTED:	3/26/15 COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197177.19 EASTING: 2305583.43
DRILLING METHOD:	Sonic	G.S. ELEV:	10.10 ft M.P. ELEV: 10.10 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 63.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
			No recovery. *(continued)*					
55		SW	Same as above.					
60								
			Boring terminated at 63', backfilled with bentonite to 46' to set well.					
65								
70								
75								
80								
85								
90								
95								
100								

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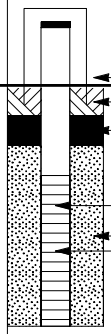
PROJECT:	Sutton Plant	WELL / BORING NO:	**ABMW-02S**
PROJECT NO:	1026.108	STARTED:	3/26/15 COMPLETED: 3/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197177.71 EASTING: 2305589.13
DRILLING METHOD:	Sonic	G.S. ELEV:	9.98 ft M.P. ELEV: 9.98 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 8.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0			FLYASH, wet, medium density, very dark gray (2.5 Y 3/1), fine-grained to silt-size, becoming saturated and loose at 3'.					Protective casing with locking cap. Cement Pad Bentonite seal 2" Sch. 40 threaded PVC Riser Sand Pack 2" pre-packed well screen



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-01B**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203061.57	EASTING: 2306091.71
DRILLING METHOD:	Sonic	G.S. ELEV: 16.61 ft	M.P. ELEV: 16.61 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium fine grained, well sorted, loose, light reddish-brown and gray becoming black at 3', moist.					Protective casing with locking cap.
10		SP	SAND, silty, well sorted, moderate density, light brown to tan, wet.					Grout; 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	SAND, silty, with quartz pebbles, medium to fine-grained, moderately dense, poorly sorted, light tan with reddish quartz pebbles, wet to saturated.					Sand Pack; 2" pre-packed well screen
25								
30		SW	Same as above.					
35		SP	SAND, silty, well sorted, medium to fine grain, dense, light tan - gray, wet.					
40		SW	SAND, medium to coarse grained, moderately dense with trace of quartz gravel, poorly sorted, light to medium gray, wet.					
45								
50								

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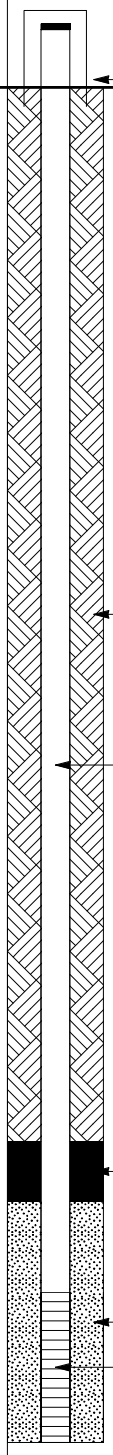
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-01C**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203064.2	EASTING: 2306090.72
DRILLING METHOD:	Sonic	G.S. ELEV: 16.55 ft	M.P. ELEV: 16.55 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium fine grained, well sorted, loose, light reddish-brown and gray becoming black at 3', moist.
10	SP	SAND, silty, well sorted, moderate density, light brown to tan, wet.
15		
20	SW	SAND, silty, with quartz pebbles, medium to fine-grained, moderately dense, poorly sorted, light tan with reddish quartz pebbles, wet to saturated.
25		
30	SW	Same as above.
35	SP	SAND, silty, well sorted, medium to fine grained, dense, light tan - gray, wet.
40	SW	SAND, medium to coarse grained, moderately dense with trace of quartz gravel, poorly sorted, light to medium gray, wet.
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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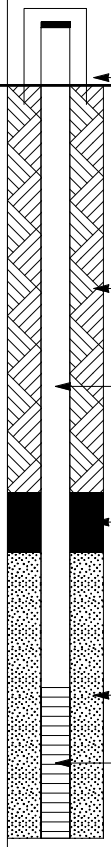
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02B**
PROJECT NO:	1026.108	STARTED: 1/31/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202156.49	EASTING: 2306450.12
DRILLING METHOD:	Sonic	G.S. ELEV: 27.08 ft	M.P. ELEV: 27.08 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.
5	SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.
10	SP	SAND, medium-fine grained, well sorted, light tan to white, loose.
15	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.
20	SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.
25	SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.
30		
35		
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02C**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202160.58	EASTING: 2306445.96
DRILLING METHOD:	Sonic	G.S. ELEV: 27.20 ft	M.P. ELEV: 27.20 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.
	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.
5	SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.
10	SP	SAND, medium-fine grained, well sorted, light tan to white, loose.
15	SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.
20	SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.
	SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.
25	SW	SAND, medium fine to course grained, poorly sorted, light tan white, loose, wet.
30	SW	Same as above, 1" recovery.
35	SW	Same as above.
40		
45		
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02D**
PROJECT NO:	1026.108	STARTED: 5/10/15	COMPLETED: 5/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202147.28	EASTING: 2306457.78
DRILLING METHOD:	Sonic	G.S. ELEV: 26.62 ft	M.P. ELEV: 26.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	SAND, silty, medium-fine grained, well sorted, black to tan, loose, dry.					Protective casing with locking cap.
		SP	SAND, silty, medium-fine grained, well sorted, tan, loose, moist.					
5		SP	SAND, medium to fine grained, well sorted, tan to light tan, loose, moist.					
10		SP	SAND, medium-fine grained, well sorted, light tan to white, loose.					
15								
		SP	SAND, silty, medium-fine grained, well sorted, tan, loose, wet.					
		SP	SAND, silty, medium-fine grained, well sorted, tan brown, dense, wet.					
20		SP	SAND, medium-fine grained, well sorted, light tan, loose, wet.					2" Sch. 40 threaded PVC Riser
		SP	SAND, silty, medium-fine grained, well sorted, brown, sense, wet.					
25		SW	SAND, medium fine to course grained, poorly sorted, light tan white, loose, wet.					
30		SW	Same as above, 1" recovery.					
35								
40		SW	Same as above.					Grout
45								
50		SW SP	SAND, silty, medium-fine grained, dense, well sorted to poorly sorted, gravel and coarse sand for last 3', white orange silt lens at 54' (3"), wet.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-02D**
PROJECT NO:	1026.108	STARTED: 5/10/15	COMPLETED: 5/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202147.28	EASTING: 2306457.78
DRILLING METHOD:	Sonic	G.S. ELEV: 26.62 ft	M.P. ELEV: 26.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW SP	SAND, silty, medium-fine grained, dense, well sorted to poorly sorted, gravel and coarse sand for last 3', white orange silt lens at 54' (3"), wet. *(continued)*					
60								
65		SP SW	SAND, silty, fine grained, dense, well sorted with trace shell, dark greenish grey, semi consolidated lens at ~66' (2"). (Pee Dee Formation)					
70								
75								
80								
85			No recovery.					Bentonite seal
90								
95								Sand Pack 2" pre-packed well screen
100			No recovery.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-03B**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201583.66	EASTING: 2306678.86
DRILLING METHOD:	Sonic	G.S. ELEV: 18.23 ft	M.P. ELEV: 18.23 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, well sorted, tan, wet at 7'.					Protective casing with locking cap.
10		SP	SAND, silty, well sorted, white, loose.					Grout
15		SP	SAND, well sorted, white, loose.					2" Sch. 40 threaded PVC Riser
20		SW	SAND, poorly sorted.					Bentonite seal
25								Sand Pack
30								2" pre-packed well screen
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-03C**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201584.81	EASTING: 2306673.94
DRILLING METHOD:	Sonic	G.S. ELEV: 18.20 ft	M.P. ELEV: 18.20 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, well sorted, tan, wet at 7'.
10	SP	SAND, silty, well sorted, white, loose.
15	SP	SAND, well sorted, white, loose.
20	SW	SAND, poorly sorted.
30	SW	Same as above.
40	SW	Same as above.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-04B**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/30/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198812.83	EASTING: 2307820.78
DRILLING METHOD:	Sonic	G.S. ELEV: 18.62 ft	M.P. ELEV: 18.62 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, medium to fine grained, well sorted, tan (NYR 7/8) to white (GLEY1 8/N), loose, moist at 7'.					Protective casing with locking cap. Grout
10		SP	SAND, fine to medium grained, well sorted, light tan (25Y 8/2) to grey white (N 8/N) , loose, wet.					2" Sch. 40 threaded PVC Riser Bentonite seal
20		SP	Same as above.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-04C**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/29/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198803.25	EASTING: 2307818.27
DRILLING METHOD:	Sonic	G.S. ELEV: 18.43 ft	M.P. ELEV: 18.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, medium to fine grained, well sorted, tan (NYR 7/8) to white (GLEY1 8/N), loose, moist at 7'.					Protective casing with locking cap.
10		SP	SAND, fine to medium grained, well sorted, light tan (25Y 8/2) to grey white (N 8/N) , loose, wet.					
15								Grout
20		SP	Same as above.					2" Sch. 40 threaded PVC Riser
25		SW	SAND, medium to course grained, poorly sorted, light tan (25Y 8/2), loose, wet.					
30		SW	SAND, fine to course grained , poorly sorted, white with tan, course grains, loose, wet.					
35		SP	SAND, fine grained, well sorted, grey white, loose, wet.					Bentonite seal
40		SC	Same as above.					Sand Pack
45								2" pre-packed well screen
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05B**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198021.26	EASTING: 2308134.95
DRILLING METHOD:	Sonic	G.S. ELEV: 23.70 ft	M.P. ELEV: 23.70 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
10		SP	Same as above, medium brown, wet.					Grout; 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SP	Same as above.					Sand Pack; 2" pre-packed well screen
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05C**
PROJECT NO:	1026.108	STARTED: 2/2/15	COMPLETED: 2/2/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.46	EASTING: 2308133.35
DRILLING METHOD:	Sonic	G.S. ELEV: 23.69 ft	M.P. ELEV: 23.69 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 47.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.
10	SP	Same as above, medium brown, wet.
20	SP	Same as above.
25	SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.
30	SW	Same as above with abundant quartz pebbles at 31-32'.
40	SW	Same as above.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION
- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05D**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 6/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.76	EASTING: 2308125.18
DRILLING METHOD:	Sonic	G.S. ELEV: 23.78 ft	M.P. ELEV: 23.78 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 100.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
10		SP	Same as above, medium brown, wet.					
15								
20		SP	Same as above.					2" Sch. 40 threaded PVC Riser
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30		SW	Same as above with abundant quartz pebbles at 31-32'.					
35								
40		SW	Same as above.					Grout
45								
50		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05D**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 6/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198024.76	EASTING: 2308125.18
DRILLING METHOD:	Sonic	G.S. ELEV: 23.78 ft	M.P. ELEV: 23.78 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 100.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'. *(continued)*					
60		SW SM	SAND, silty, medium-fine grained with trace quartz gravel, poorly sorted, dense, wet, light - medium gray, 9" lens of coarse sand from 60-60.9' then silty sand, medium-fine grained, well-sorted, dense, wet light green then silty sand/sand-with-silt very dense, well-sorted, saturated with large shells (>3") at 64', trace shell to 77'.					
65								
70								
75								
80		SM	Same as above with 3' lens of sandstone/semiconsolidated sand at 82' and very dense sand lens (1') at 92'.					
85								Bentonite seal
90								
95								Sand Pack 2" pre-packed well screen
100		SM	Same as above increased fines with depth, slightly plastic at base.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium to fine grained, well-sorted, medium density, light red-brown, moist.					Protective casing with locking cap.
10		SP	Same as above, medium brown, wet.					
15								
20		SP	Same as above.					2" Sch. 40 threaded PVC Riser
25		SW	SAND silty with quartz pebbles, coarse to medium fine grain, poorly sorted, medium density, light brown-gray with red quartz, wet.					
30		SW	Same as above with abundant quartz pebbles at 31-32'.					
35								
40		SW	Same as above.					
45								
50		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	SAND, silty, medium-fine grained, dense, wet, moderately-sorted, white, 2" silt/clay lens at 52' becoming reddish-yellow and coarse grained at 56'. *(continued)*					
60		SW SM	SAND, silty, medium-fine grained with trace quartz gravel, poorly sorted, dense, wet, light - medium gray, 9" lens of coarse sand from 60-60.9' then silty sand, medium-fine grained, well-sorted, dense, wet light green then silty sand/sand-with-silt very dense, well-sorted, saturated with large shells (>3") at 64', trace shell to 77'.					Grout
70								
75								
80		SM	Same as above with 3' lens of sandstone/semiconsolidated sand at 82' and very dense sand lens (1') at 92'.					
85								
90								
95								
100		SM	Same as above increased fines with depth, slightly plastic at base.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-05E**
PROJECT NO:	1026.108	STARTED: 5/8/15	COMPLETED: 5/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198018.09	EASTING: 2308127.63
DRILLING METHOD:	Sonic	G.S. ELEV: 23.50 ft	M.P. ELEV: 23.50 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM	Same as above increased fines with depth, slightly plastic at base. *(continued)*					
110								
115								
120		SM ML	Same as above, grading to a silty clayey sand/sandy clayey silt, low plasticity, very dense.					
125								
130								
135								Bentonite seal
140		SM ML	Same as above, sandy, clayey, silt/silty clayey sand.					Sand Pack
145								2" pre-packed well screen
150			Boring terminated at 150'.					

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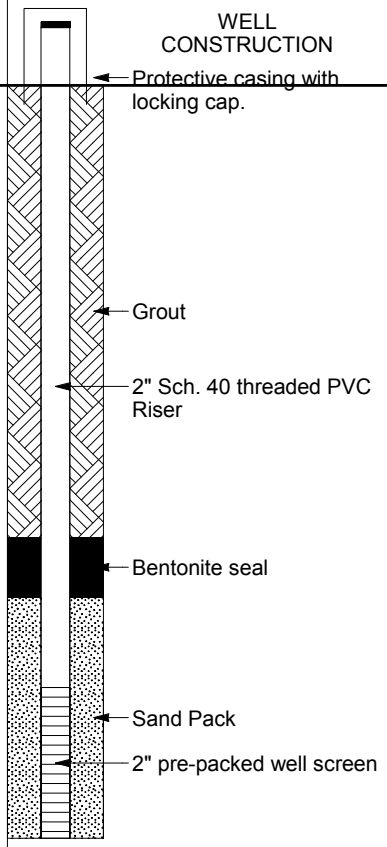
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06B**
PROJECT NO:	1026.108	STARTED: 1/30/15	COMPLETED: 1/30/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199639.95	EASTING: 2307503.39
DRILLING METHOD:	Sonic	G.S. ELEV: 17.34 ft	M.P. ELEV: 17.34 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
	SP	SAND, silty, medium fine grained, well sorted, light brown to gray.
5	SP	Same as above, light reddish brown, moist to wet.
10	SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.
15		
20	SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.
25		
30		
35		
40		
45		
50		



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	SAND, silty, medium fine grained, well sorted, light brown to gray.					Protective casing with locking cap.
5		SP	Same as above, light reddish brown, moist to wet.					
10		SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.					
15								
20		SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.					
25								
30		SP	Same as above, increasing silt, silt lens at 30' and 6" gravel lens as 33'.					
35								
40		SW	SAND, silty, medium to fine grained, medium density, poorly to moderately sorted, light gray, tan, wet.					
45		SW SP	SAND, coarse grained with small gravel, light grey to reddish brown, loose to slightly dense, saturated. Poorly sorted.					Grout
		SW	SAND, coarse with fine gravel and silt, light orange-red, for 1', then grading to dark gray, dense, wet, poorly sorted.					2" Sch. 40 threaded PVC Riser
50		SM						

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, very fine-grained with some clay, well sorted, dense, wet to saturated, increasing fines with depth. *(continued)*					
60		ML	SILT, sandy and silty, stiff to very stiff occasionally consolidated, dark green, wet to saturated. (6" dry lens at 65').					
65								
70		ML	Same as above, wet to saturated.					
75								
80		ML	Same as above, wet.					
85								
90		ML	Same as above, becoming clayey at 95'.					
95								← Bentonite seal
100		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199642.47	EASTING: 2307502.47
DRILLING METHOD:	Sonic	G.S. ELEV: 17.48 ft	M.P. ELEV: 17.48 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 127.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell. *(continued)*					Sand Pack
110		ML	Same as above, increasing stiffness.					2" pre-packed well screen
115		SC	Semi-consolidated, hard 2' lens, silty fine sand, dry.					
120		ML	SILT, sandy, clayey, low plasticity, moderately stiff, dark green, moist to wet.					
125								
			Boring terminated. Backfill boring with cuttings to 108' to set well.					
130								
135								
140								
145								
150								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	SAND, silty, medium fine grained, well sorted, light brown to gray.					← Protective casing with locking cap.
5		SP	Same as above, light reddish brown, moist to wet.					
10		SP	SAND, silty, medium to fine grained, well sorted, light brown to tan, dense, wet.					
15								
20		SP	Same as above with quartz grains (pebble) and small gravel seam at 19'.					
25								
30		SP	Same as above, increasing silt, silt lens at 30' and 6" gravel lens as 33'.					
35								
40		SW	SAND, silty, medium to fine grained, medium density, poorly to moderately sorted, light gray, tan, wet.					
45		SW SP	SAND, coarse grained with small gravel, light grey to reddish brown, loose to slightly dense, saturated. Poorly sorted.					← Grout
		SW	SAND, coarse with fine gravel and silt, light orange-red, for 1', then grading to dark gray, dense, wet, poorly sorted.					← 2" Sch. 40 threaded PVC Riser
50		SM						

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, very fine-grained with some clay, well sorted, dense, wet to saturated, increasing fines with depth. *(continued)*					
60		ML	SILT, sandy and silty, stiff to very stiff occasionally consolidated, dark green, wet to saturated. (6" dry lens at 65').					
65								
70		ML	Same as above, wet to saturated.					
75								
80		ML	Same as above, wet.					
85								
90		ML	Same as above, becoming clayey at 95'.					
95								
100		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-06E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199648.93	EASTING: 2307507.34
DRILLING METHOD:	Sonic	G.S. ELEV: 17.43 ft	M.P. ELEV: 17.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 150.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		ML	Same as above, increased fines, increased stiffness, decreased moisture, trace shell. *(continued)*					
110		ML	Same as above, increasing stiffness.					
115		SC	Semi-consolidated, hard 2' lens, silty fine sand, dry.					Bentonite seal
120		ML	SILT, sandy, clayey, low plasticity, moderately stiff, dark green, moist to wet.					
125								
130		ML	Same as above.					
135								
140		ML	Same as above.					
145								Sand Pack 2" pre-packed well screen
			No samples collected.					
150			Boring terminated at 150'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-07D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201037.19	EASTING: 2306853.91
DRILLING METHOD:	Sonic	G.S. ELEV: 14.80 ft	M.P. ELEV: 14.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 98.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
	SP	SAND, silty, well sorted, medium to fine grained, red-brown, loose, moist.
5	SP	SAND, silty, well sorted, medium to fine grained, gray-light brown, moderate dense, moist to wet.
10	SP	Same as above, medium to light gray, saturated at 15'.
15		
20	SP	Same as above with lenses of coarse sand and pebbles at 19' (18") and 22' (6"), poorly sorted within lenses, wet.
25		
30	SW	SAND, silty, medium to coarse grained, some pebbles, poorly sorted, light gray, moderate density, saturated.
35		
40	SW	Same as above with abundant quartz pebbles 37-40'.
45	SM	SAND, silty, fine grained, well sorted, dense, dark green, wet. Pee Dee formation sharp contact.
50	SM	SAND, silty, fine grained, well sorted, dense, dark green, wet-saturated.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-07D**
PROJECT NO:	1026.108	STARTED: 1/29/15	COMPLETED: 1/31/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201037.19	EASTING: 2306853.91
DRILLING METHOD:	Sonic	G.S. ELEV: 14.80 ft	M.P. ELEV: 14.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 98.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, fine grained, well sorted, dense, dark green, wet-saturated. *(continued)*					
60		SM	Same as above, massive bedding.					
65								
70		SM	Same as above.					
75								
80		SM	Same as above.					
85								
90		SM	Same as above.					Bentonite seal
95		SM	SAND, silty, fine grained, well sorted, massive bedded, very dense to hard, medium dark green, moist.					Sand Pack 2" pre-packed well screen
			Boring terminated at 98'.					
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-08B**
PROJECT NO:	1026.108	STARTED: 2/5/15	COMPLETED: 2/5/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203420	EASTING: 2304212.85
DRILLING METHOD:	Sonic	G.S. ELEV: 13.47 ft	M.P. ELEV: 13.47 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, well sorted, tan, wet at 5'.					Protective casing with locking cap.
5								
10		SP	Same as above.					Grout 2" Sch. 40 threaded PVC Riser
15		SP	Same as above, poorly sorted.					Bentonite seal
20		SP	Same as above.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-08C**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 203419.38	EASTING: 2304205.34
DRILLING METHOD:	Sonic	G.S. ELEV: 13.40 ft	M.P. ELEV: 13.40 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, well sorted, tan, wet at 5'.
10	SP	Same as above.
15	SP	Same as above, poorly sorted.
20	SP	Same as above.
25	SP	Same as above.
30	SP	Same as above.
35	SP	Same as above.
40	SP	Same as above.
45	SP	SAND, silty fine-grained, (Pee Dee Formation).
50		

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09B**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/3/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196083.31	EASTING: 2307795.83
DRILLING METHOD:	Sonic	G.S. ELEV: 14.13 ft	M.P. ELEV: 14.26 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, well sorted, moderate density, light gray, moist.					Protective casing with locking cap.
5		SP	Same as above, reddish-brown, wet.					Grout
10		SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.					2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09C**
PROJECT NO:	1026.108	STARTED: 2/3/15	COMPLETED: 2/3/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196081.45	EASTING: 2307793.85
DRILLING METHOD:	Sonic	G.S. ELEV: 14.26 ft	M.P. ELEV: 17.36 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, well sorted, moderate density, light gray, moist.
5	SP	Same as above, reddish-brown, wet.
10	SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.
15		
20	SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.
25		
30	SW	Same as above with 4" clay lens at 34'.
35	SP SM	SAND, silty, loose, medium to fine grained with thin clay laminae, well sorted, very dense, light greenish gray, wet.
40	SW	SAND, silty, medium-fine to coarse grained, poorly sorted, dense, light gray-light brown, wet to saturated.
45		
50		

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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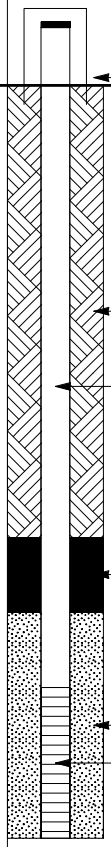
PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09D**
PROJECT NO:	1026.108	STARTED: 5/7/15	COMPLETED: 5/7/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196076.31	EASTING: 2307788.1
DRILLING METHOD:	Sonic	G.S. ELEV: 14.59 ft	M.P. ELEV: 14.59 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, well sorted, moderate density, light gray, moist.
5	SP	Same as above, reddish-brown, wet.
10	SW	SAND, silty, poorly sorted, medium-fine grained to coarse grained with large quartz grains (red), dense, light gray-brown, wet.
15		
20	SW	Same as above with abundant quartz pebbles, coarse sand and pebble layer 1' thick at 24-25'.
25		
30	SW	Same as above with 4" clay lens at 34'.
35	SP SM	SAND, silty, loose, medium to fine grained with thin clay laminae, well sorted, very dense, light greenish gray, wet.
40	SW	SAND, silty, medium-fine to coarse grained, poorly sorted, dense, light gray-light brown, wet to saturated.
45	SW	Same as above, becoming reddish-orange.
50	SM	

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**AW-09D**
PROJECT NO:	1026.108	STARTED: 5/7/15	COMPLETED: 5/7/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 196076.31	EASTING: 2307788.1
DRILLING METHOD:	Sonic	G.S. ELEV: 14.59 ft	M.P. ELEV: 14.59 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 97.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, medium-fine to coarse grained with trace gravel (quartz), dense, poorly sorted, wet, reddish-yellow (7.5 YR 6/8) for ~2.5' then silty fine sand (Pee Dee formation), very dense, well sorted, wet, dark greenish gray (GLEY1 4/y) with cobble at ~50', quartz stones at 47' and some trace shell and coquina at 53'. *(continued)*					
60		SM	Same as above.					
65								
70		SM	Same as above.					
75								
80		SM	Same as above, increased fines, increased stiffness/density.					
85								
90		SM	Same as above with 1' lens of very dense, dry sand at 90'.					
95								
			Boring terminated at 97'.					
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-01**
PROJECT NO:	1026.108	STARTED: 5/15/15	COMPLETED: 5/15/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 57.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No sample collected above 32'.					
10								
15								
20								
25								
30								
35		SW	SAND, silty, medium fine grained with gravel-cobble size stone (trace), dense, poorly sorted, wet, light greenish brown, sharp contact at 35' (Pee Dee) with ~5" cobble (cemented sand and shell) at contact.					
		SM	SAND, silty, fine grained with lenses of silty sand, light greenish grey, dense, moist, well sorted.					
40								
45		SM	Same as above with large shell and semi-consolidated cobble, shell/gravel layer (1') at 46'.					
50								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-01**
STARTED: 5/15/15 COMPLETED: 5/15/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 57.0 ft BGS
LOGGED BY: P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	Same as above with large shell and semi-consolidated cobble, shell/gravel layer (1') at 46'. *(continued)*					
			Boring terminated at 57'.					
60								
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-02**
PROJECT NO:	1026.108	STARTED: 5/15/15	COMPLETED: 5/15/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 77.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No sampling.					
10								
15								
20								
25								
30								
35								
40		SW SP	SAND, silty, medium fine grained with occasional thin silty, well sorted laminae, white-light gray, saturated, dense, wood fragments at 5-7'.					
45								
50								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-02**
STARTED: 5/15/15 COMPLETED: 5/15/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 77.0 ft BGS
LOGGED BY: P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW SP	SAND, silty, medium fine grained with occasional thin silty, well sorted laminae, white-light gray, saturated, dense, wood fragments at 5-7'. *(continued)*					
			Boring terminated at 57'.					
60								
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-03**
STARTED: 5/16/15 COMPLETED: 5/16/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 57.0 ft BGS
LOGGED BY: P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0–35			No samples.					
35–40		SW	SAND, silty, coarse grained with some fine gravel, wet, poorly sorted, light reddish yellow, 2" silt lens at 38-39'.					
40–50		SM	SAND, silty, fine grained, very dense-dense, saturated, well sorted, light green, increased fines with depth, dark greenish grey at 50'.					

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-03**
STARTED: 5/16/15 COMPLETED: 5/16/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 57.0 ft BGS
LOGGED BY: P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, fine grained, very dense-dense, saturated, well sorted, light green, increased fines with depth, dark greenish grey at 50'. *(continued)*					
			Boring terminated at 57'.					
60								
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-05**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 5/9/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 40.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0–35			No sampling.					
35–50		SW SP	SAND, silty, medium fine grained, well-sorted with occasional thin silt, well sorted laminae, white-light gray, saturated, dense, wood fragments at 57'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-05**
PROJECT NO:	1026.108	STARTED: 5/9/15	COMPLETED: 5/9/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 40.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW SP	SAND, silty, medium fine grained, well-sorted with occasional thin silt, well sorted laminae, white-light gray, saturated, dense, wood fragments at 57'. *(continued)*					
		SW SP						
60		SM	SAND, silty, medium fine to coarse grained with trace fine gravel to 59' then, SAND, silty, fine grained, (Pee Dee), light green, well sorted, dense, wet, becoming dark green at 62'.					
65								
70								
75								
			Boring terminated at 77'.					
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-06**
PROJECT NO:	1026.108	STARTED: 5/15/15	COMPLETED: 5/15/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 57.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No samples to 37'.					
10								
15								
20								
25								
30								
35								
40		SW SP	SAND, silty, medium fine-coarse grain with coarse sand layer and gravel at 48-50', saturated, dense, poorly sorted, reddish yellow and light tan. Then sharp contact at 51', silty fine sand, dense-very dense, saturated, dark greenish grey, well sorted.					
45								
50								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-06**
STARTED: 5/15/15 COMPLETED: 5/15/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 57.0 ft BGS
LOGGED BY: P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW SP	SAND, silty, medium fine-coarse grain with coarse sand layer and gravel at 48-50', saturated, dense, poorly sorted, reddish yellow and light tan. Then sharp contact at 51', silty fine sand, dense-very dense, saturated, dark greenish grey, well sorted. *(continued)*					
60			Boring terminated at 57'.					
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-07**
PROJECT NO:	1026.108	STARTED: 5/16/15	COMPLETED: 5/16/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 50.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No samples collected.					
10								
15								
20								
25								
30		SP	SAND, medium to fine, poorly sorted, brown, sorted with woody layer at 31'.					
35		SW	SAND, coarse to fine grained, poorly sorted, loose, light gray.					
40		SP	SAND, silty, fine grained, medium stiff, gray green. Contact at 40' (Pee Dee).					
45								
50			Boring terminated at 50'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-08**
PROJECT NO:	1026.108	STARTED: 5/16/15	COMPLETED: 5/16/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 60.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No samples collected.					
10								
15								
20								
25								
30								
35								
		SW	SAND, silty, medium to coarse grained, poorly sorted, loose.					
40		ML	Sharp contact (Pee Dee).					
		SW	SILT, sandy, gray green, dense, non plastic.					
		CL	SAND, silty, very fine, gray, green.					
		SW	CLAY, silty, medium stiff, plastic, gray green.					
		CL	SAND, silty, medium to fine, poorly sorted, loose, gray green.					
		ML	CLAY, silty, sandy, medium stiff, plastic, gray green.					
45			SILT, sandy, soft, non plastic.					
		CL	CLAY, silty, medium stiff, plastic, gray green.					
		SW	SAND, silty, coarse to fine grained, poorly sorted, loose, gray green.					
		CL	CLAY, silty sandy, moderately stiff, plastic, gray green.					
50		SP	SAND, very fine, sorted, light gray green.					
		SP						

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-08**
PROJECT NO:	1026.108	STARTED: 5/16/15	COMPLETED: 5/16/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 60.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SP	SAND, silty, very fine grained, sorted, medium loose, 6" layer of sandstone and shell from 55.5-56'. *(continued)*					
60			Boring terminated at 60'.					
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-09**
STARTED: 5/17/15 COMPLETED: 5/17/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 60.0 ft BGS
LOGGED BY: R. Jacobs CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5			No sample collected.					
10								
15								
20								
25								
30								
35								
40		SW	SAND, silty, tan, fine to medium grained. Contact at 48' (Pee Dee).					
45		SW	SAND, silty, fine grained, gray green.					
50		SW						

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-09**
STARTED: 5/17/15 COMPLETED: 5/17/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 60.0 ft BGS
LOGGED BY: R. Jacobs CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	SAND, silty, fine grained, gray green, sandstone/rock layers at 51, 53, 55, 56, and 58'. *(continued)*					
60			Boring terminated at 60'.					
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**CUB-10**
PROJECT NO:	1026.108	STARTED: 5/16/15	COMPLETED: 5/16/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	EASTING:
DRILLING METHOD:	Sonic	G.S. ELEV: ft	M.P. ELEV: ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 60.0 ft BGS
NOTES:		LOGGED BY: R. Jacobs	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5								
10								
15								
20								
25			No samples collected.					
30								
35								
40								
45								
50		SP						

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-10**
STARTED: 5/16/15 COMPLETED: 5/16/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 60.0 ft BGS
LOGGED BY: R. Jacobs CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SP	SAND, tan, fine, loose, sorted, sharp contact at 56' (Pee Dee). *(continued)*					
		SW	SAND, silty, fine, greenish gray, loose, sorted.					
60			Boring terminated at 60'.					
65								
70								
75								
80								
85								
90								
95								
100								

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PROJECT: Sutton Plant
PROJECT NO: 1026.108

WELL / BORING NO: **CUB-12**
STARTED: 5/17/15 COMPLETED: 5/17/15

DRILLING COMPANY: Cascade Drilling
DRILLING METHOD: Sonic
BOREHOLE DIAMETER: 6 IN
NOTES:

NORTHING: EASTING:
G.S. ELEV: ft M.P. ELEV: ft
DEPTH TO WATER: ft TOC TOTAL DEPTH: 50.0 ft BGS
LOGGED BY: R. Jacobs CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0–40			No sample collected.					
40–48		SW	SAND, silty, tan, sandstone at 40', medium to fine grained, sorted, contact at 48' (Pee Dee).					
48–50		SW	SAND, silty, fine grained, sorted, gray green.					
50			Boring terminated at 50'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198979.66	EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV: 13.79 ft	M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, medium density, well sorted, wet at ~7', white to 15' then silty SAND, medium-fine grained, dense, well-moderately sorted, brown with some coarse grains (red-orange).					Protective casing with locking cap.
10								
15								
20		SW	Same as above to 21' then silty medium-fine to coarse grained SAND, dense, saturated, poorly sorted, light reddish gray to light gray, very coarse with fine gravel 21-24'. Alternating beds of medium-fine grained and coarse sand, coarse at base with orange stain.					2" Sch. 40 threaded PVC Riser
25								
30								
35								
40		SW	Same as above to 45', very coarse from 40-45' then fine silty SAND, saturated, medium density, well-sorted with coarse sand layer from 49-50'. Cobbles with green fine sand in bottom 5'.					
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED: 5/12/15	COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198979.66	EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV: 13.79 ft	M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SW	Same as above to 45', very coarse from 40-45' then fine silty SAND, saturated, medium density, well-sorted with coarse sand layer from 49-50'. Cobbles with green fine sand in bottom 5'. *(continued)*					
60								
65		SM SP	Same as above, increased fines with depth.					Grout
70								
75								
80		SM SP	Same as above.					
85								
90								
95								
100		SM SP	Same as above, increased fines, plasticity from 110-117'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-23E**
PROJECT NO:	1026.108	STARTED:	5/12/15 COMPLETED: 5/12/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	198979.66 EASTING: 2306894.64
DRILLING METHOD:	Sonic	G.S. ELEV:	13.79 ft M.P. ELEV: 13.79 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 137.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM SP	Same as above, increased fines, plasticity from 110-117'. *(continued)*					
110								
115								
120		SM SP	Same as above.					
125								
130								
135								Bentonite seal
140		SM SP	Same as above.					
145								Sand Pack 2" pre-packed well screen
150								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-37B**
PROJECT NO:	1026.108	STARTED: 2/4/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 193820.03	EASTING: 2308956.68
DRILLING METHOD:	Sonic	G.S. ELEV: 20.88 ft	M.P. ELEV: 20.88 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 27.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, medium to fine grained, loose, light gray for 2' then red-brown for 1'.					Protective casing with locking cap.
		SW	SAND, silty, medium fine grained to coarse grained, dense, dark brown with oxides and some slight consolidation, wet.					
5		SW	SAND, silty, medium fine to coarse grained, medium density, poorly sorted, light brown-gray, wet.					Grout
10		SW	Same as above, saturated with abundant quartz layer at 7-8'.					2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	Same as above with a 9" silt, lens, stiff, low plasticity, dark brown at 19', abundant quartz grains (to pebble size) at 25' (1' thick).					Sand Pack
25								2" pre-packed well screen
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**MW-37C**
PROJECT NO:	1026.108	STARTED: 2/4/15	COMPLETED: 2/4/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 193819.39	EASTING: 2308959.44
DRILLING METHOD:	Sonic	G.S. ELEV: 20.94 ft	M.P. ELEV: 20.94 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 47.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium to fine grained, loose, light gray for 2' then red-brown for 1'.
	SW	SAND, silty, medium fine grained to coarse grained, dense, dark brown with oxides and some slight consolidation, wet.
5	SW	SAND, silty, medium fine to coarse grained, medium density, poorly sorted, light brown-gray, wet.
10	SW	Same as above, saturated with abundant quartz layer at 7-8'.
15		
20	SW	Same as above with a 9" silt, lens, (stiff, low plasticity, dark brown at 19'), abundant quartz grains (to pebble size) at 25' (1' thick).
25		
30	SW	Same as above with quartz pebble (orange) lenses at 29' (6"), 31' (3"), and 35' (6"). Silty sand lens (12") at 36'
35		
40	SW	Same as above with coarse grained orange quartz lens at 39' (1') and 2" clay lens at 38.5.
45	SM	Sharp contact at 43',)Pee Dee formation), above material underlain by silty SAND, fine grained, very dense, well sorted with glauconite (trace), light green, wet.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- 2" pre-packed well screen
- Sand Pack

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-01B**
PROJECT NO:	1026.108	STARTED: 4/14/15	COMPLETED: 4/14/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199292.01	EASTING: 2308712.96
DRILLING METHOD:	Sonic	G.S. ELEV: 13.91 ft	M.P. ELEV: 13.91 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 23.9 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, saturated, (perched water zone 3-5'), dense, well sorted, light gray (70 YR 7/12) followed by silty sand, medium fine grained, saturated at 7', dense, well sorted, pale yellow (2.5 YR 8/2).					Protective casing with locking cap.
10		SP	Same as above to 15' then becoming coarser grained with red sand grains, wet.					Grout 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW	SAND, silty, medium-fine to coarse grained with some fine gravel, moderately dense, poorly sorted, very pale yellow (10 YR 7/3) with reddish yellow coarse grains.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-01C**
PROJECT NO:	1026.108	STARTED: 4/14/15	COMPLETED: 4/14/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 199295.12	EASTING: 2308717.75
DRILLING METHOD:	Sonic	G.S. ELEV: 13.99 ft	M.P. ELEV: 13.99 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, saturated, (perched water zone 3-5'), dense, well sorted, light gray (70 YR 7/12) followed by silty sand, medium fine grained, saturated at 7', dense, well sorted, pale yellow (2.5 YR 8/2).					Protective casing with locking cap.
10		SP	Same as above to 15' then becoming coarser grained with red sand grains, wet.					
15								
20		SW	SAND, silty, medium-fine to coarse grained with some fine gravel, moderately dense, poorly sorted, very pale yellow (10 YR 7/3) with reddish yellow coarse grains.					Grout 2" Sch. 40 threaded PVC Riser
25								
30		SW	Same as above with trace fine gravel, 2" silt lens at 33' and 3" silt lens at 34.5'. Weathered sandstone fragments (conglomerate) at 35', becoming reddish-yellow (7.5 YR 6/8) at 34'.					
35								Bentonite seal
40		SW	Same as above to 45' with coarse sand/fine gravel layer at 41-42', 2" silt lenses at 42 and 43' becoming greenish gray (GLEY1 6/1) at 39' then silty fine SAND (Pee Dee), dense, well sorted, wet, dark greenish grey (GLEY-1 4/y), trace large gravel at 45'.					Sand Pack 2" pre-packed well screen
45		SM						
50			Boring terminated at 48'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-02B**
PROJECT NO:	1026.108	STARTED: 3/24/15	COMPLETED: 3/24/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198396.18	EASTING: 2308908.42
DRILLING METHOD:	Sonic	G.S. ELEV: 17.38 ft	M.P. ELEV: 17.38 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 25.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, medium fine grained, medium dense, well sorted, moist (wet at 5'), then light brown with heavy organic staining at 5'.					Protective casing with locking cap.
5								Grout
10		SW SP	Same as above, becoming coarser-grained with depth to 14' then silty SAND, medium-fine to coarse grained with occasional red staining, light grey-brown, medium density, moderate to poorly sorted, wet.					2" Sch. 40 threaded PVC Riser
15								2" pre-packed well screen
20		SW SP	Same as above with coarse sand lens from 21-23' and 24-26'.					Bentonite seal
25								Sand Pack
30								
35								
40								
45								
50								

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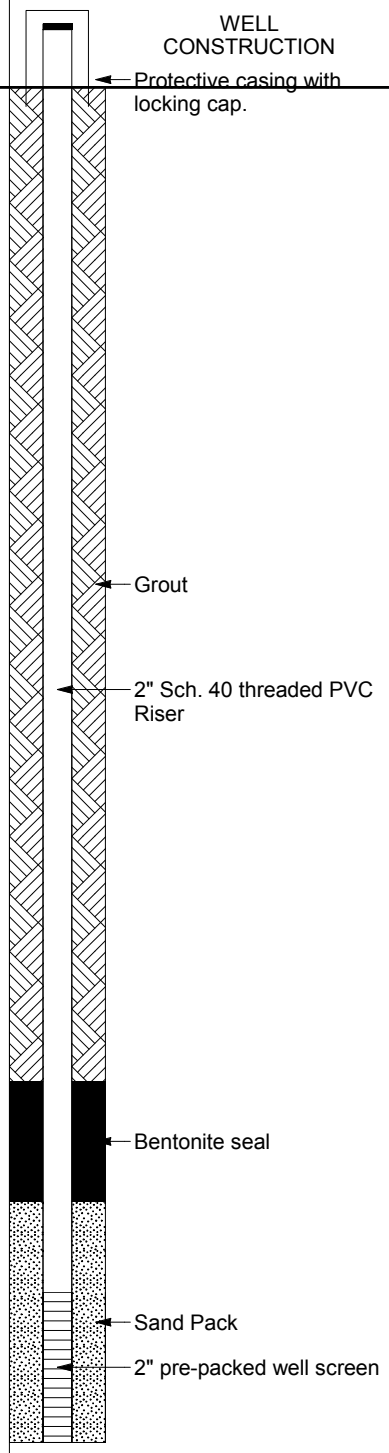
PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-02C**
PROJECT NO:	1026.108	STARTED: 3/24/15	COMPLETED: 3/24/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 198403.45	EASTING: 2308904.84
DRILLING METHOD:	Sonic	G.S. ELEV: 17.50 ft	M.P. ELEV: 17.5 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 48.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, medium fine grained, medium dense, well sorted, moist (wet at 5'), then light brown with heavy organic staining at 5'.
10	SW SP	Same as above, becoming coarser-grained with depth to 14' then silty SAND, medium-fine to coarse grained with occasional red staining, light grey-brown, medium density, moderate to poorly sorted, wet.
20	SW SP	Same as above with coarse sand lens from 21-23' and 24-26'.
30	SW SP	Same as above with coarse sand and small pebbles from 28-33' and 34-37'.
40	SP	Same as above with coarse grained sand to 45' then silty SAND (Pee Dee), medium fine grained with 2" silt lens at 46', medium dense, moderate to poorly sorted, medium grayish brown to dark gray, wet.
50		Boring terminated at 48'.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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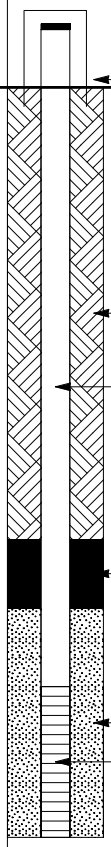
PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03B**
PROJECT NO:	1026.108	STARTED: 3/25/15	COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197748.56	EASTING: 2309459.02
DRILLING METHOD:	Sonic	G.S. ELEV: 15.43 ft	M.P. ELEV: 15.43 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.9 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, moderately dense, well sorted, moist to 6' then wet, light brown to dark brown for 4' then medium-yellowish brown to tan to 8'.
10	SW	
	SM SP	SAND, silty, medium fine to coarse grained, dense, poorly sorted, wet, light reddish brown to 10' then silty sand, medium fine grained, very dense for 2', dark brown to medium brown, well sorted, wet to 15', then poorly sorted sand.
15	SW	
20	SW	SAND, silty, medium to coarse grained with abundant red coarse grains, dense, saturated, poorly sorted.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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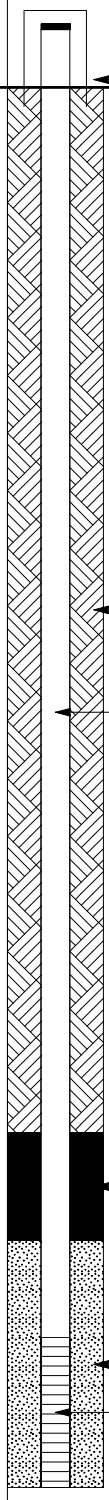
PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03C**
PROJECT NO:	1026.108	STARTED: 3/25/15	COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 197745.03	EASTING: 2309453.18
DRILLING METHOD:	Sonic	G.S. ELEV: 15.33 ft	M.P. ELEV: 15.33 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 53.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, moderately dense, well sorted, moist to 6' then wet, light brown to dark brown for 4' then medium-yellowish brown to tan to 8'.
8	SW	
10	SM SP	SAND, silty, medium fine to coarse grained, dense, poorly sorted, wet, light reddish brown to 10' then silty sand, medium fine grained, very dense for 2', dark brown to medium brown, well sorted, wet to 15', then poorly sorted sand.
15	SW	
20	SW	SAND, silty, medium to coarse grained with abundant red coarse grains, dense, saturated, poorly sorted, trace glauconite 27-28', light grey brown with red grains.
30	SW	Same as above, very coarse for 5', 4" silt lens, (very stiff) at 34' and fine sand lens (6") at 37'.
40	SP	Same as above with wood layer from 43-45'.
50	SP	Same as above.

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SW-03C**
PROJECT NO:	1026.108	STARTED:	3/25/15 COMPLETED: 3/25/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	197745.03 EASTING: 2309453.18
DRILLING METHOD:	Sonic	G.S. ELEV:	15.33 ft M.P. ELEV: 15.33 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 53.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
		SP	Same as above. *(continued)*					
			Boring terminated at 53', backfill to 47'.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-04B**
PROJECT NO:	1026.108	STARTED:	4/14/15 COMPLETED: 4/27/15
DRILLING COMPANY:	Cascade Drilling	NORTHING:	202569.12 EASTING: 2307663.93
DRILLING METHOD:	Sonic	G.S. ELEV:	13.03 ft M.P. ELEV: 16.34 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER:	ft TOC TOTAL DEPTH: 24.0 ft BGS
NOTES:		LOGGED BY:	P. Waldrep CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SP	SAND, silty, loose, moderately dense, well sorted, wet at 2', light gray (2.5Y 7/2).					Protective casing with locking cap.
5								Grout
10		SP	Same as above with 8" silt lens at 11' becoming medium fine to coarse grained at 15'.					2" Sch. 40 threaded PVC Riser
15		SW						Bentonite seal
20		SW	Same as above with some fine gravel from 18-20'.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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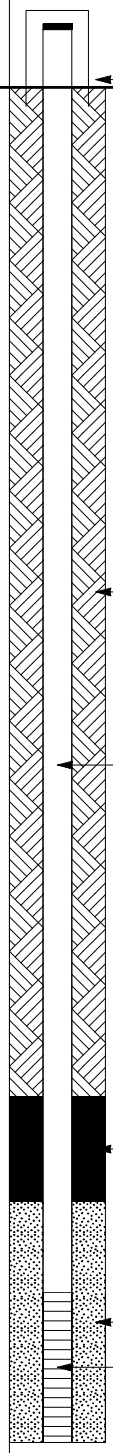
PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-04C**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 202565.07	EASTING: 2307665.57
DRILLING METHOD:	Sonic	G.S. ELEV: 12.69 ft	M.P. ELEV: 13.03 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 45.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
5	SP	SAND, silty, loose, moderately dense, well sorted, wet at 2', light gray (2.5Y 7/2).
10	SP	Same as above with 8" silt lens at 11' becoming medium fine to coarse grained at 15'.
15	SW	
20	SW	Same as above with some fine gravel from 18-20' and coarse sand layer from 26-28'.
25		
30	SP	SAND, silty, medium-fine grained, dense, well sorted, wet, white (10YR 8/1).
35		
40	SW	SAND, fine to coarse grained with some fine gravel, dense, poorly sorted, wet, reddish-yellow (7.5 YR 6/8) to 41'. SAND, silty, coarse grained with trace of fine gravel, dense, moderate to poorly sorted, wet, reddish-yellow (7.5 YR 6/8) to 45'.
45	SM	SAND, silty, fine grained, dense, well sorted, wet, dark, greenish gray (GLEY01 4/1) to 48'
50		Boring terminated at 48'.

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-05B**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201027.58	EASTING: 2308551.36
DRILLING METHOD:	Sonic	G.S. ELEV: 13.63 ft	M.P. ELEV: 12.69 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.8 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SP	SAND, silty, medium-fine grained, loose to moderately dense, well sorted, moist to 9' then wet, heavy organic staining and roots from 2-4' then light brownish gray (2.5 Y 6/2).					Protective casing with locking cap.
10		SP	Same as above, olive brown (2.5 Y 4/4), from 8-10' then light brownish gray (2.5 YR 6/2).					Grout 2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SP SW	SAND, silty, medium to coarse grained, moderately dense, moderate to poorly sorted, wet - saturated, light yellowish brown (2.5 Y 6/3) with red/yellow flecks.					Sand Pack 2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-05C**
PROJECT NO:	1026.108	STARTED: 4/13/15	COMPLETED: 4/13/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 201027.18	EASTING: 2308554.63
DRILLING METHOD:	Sonic	G.S. ELEV: 13.49 ft	M.P. ELEV: 13.49 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 43.8 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION
0	SP	SAND, silty, medium-fine grained, loose to moderately dense, well sorted, moist to 9' then wet, heavy organic staining and roots from 2-4' then light brownish gray (2.5 Y 6/2).
10	SP	Same as above, olive brown (2.5 Y 4/4), from 8-10' then light brownish gray (2.5 YR 6/2).
20	SP SW	SAND, silty, medium to coarse grained, moderately dense, moderate to poorly sorted, wet - saturated, light yellowish brown (2.5 Y 6/3) with red/yellow flecks.
30	SP SW	Same as above, very coarse sand from 28-32', 1" clay lens at 33'.
40	SW	SAND, coarse grained to 43', medium density, poorly sorted, wet, reddish-yellow (7.5YR 6/8) with quartz pebbles at 42-43' then fine silty SAND (Pee Dee), dense, well sorted, wet, dark-greenish gray (GLEY1 4/1).
45	SM	Set well at 43.8'.
50		

SAMPLE | RECOV. (%) | BLOW COUNTS | PID (ppm)

WELL CONSTRUCTION

- Protective casing with locking cap.
- Grout
- 2" Sch. 40 threaded PVC Riser
- Bentonite seal
- Sand Pack
- 2" pre-packed well screen

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06B**
PROJECT NO:	1026.108	STARTED: 4/10/15	COMPLETED: 4/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200222.83	EASTING: 2309008.69
DRILLING METHOD:	Sonic	G.S. ELEV: 13.87 ft	M.P. ELEV: 13.87 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 24.4 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
0		SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.					Protective casing with locking cap.
5								Grout
10		SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.					2" Sch. 40 threaded PVC Riser
15								Bentonite seal
20		SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).					Sand Pack
		ML						2" pre-packed well screen
25								
30								
35								
40								
45								
50								

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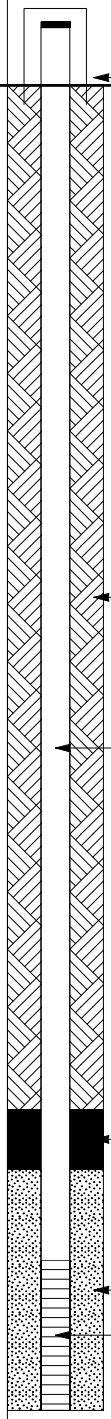
PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06C**
PROJECT NO:	1026.108	STARTED: 4/10/15	COMPLETED: 4/10/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200222.29	EASTING: 2309012.8
DRILLING METHOD:	Sonic	G.S. ELEV: 13.03 ft	M.P. ELEV: 13.03 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 44.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)
5	SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.				
10	SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.				
15						
20	SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).				
	ML					
25	SP					
30	SP	SAND, Same as above.				
35						
40	SW	SAND, silty, medium-coarse grained, dense, poorly sorted, wet, reddish-yellow (5YR 6/6) to 40' then same as above with quartz pebbles, grey (GLEY-1) to 43'				
	SM	Sharp contact with silty fine SAND (Pee Dee), medium fine grained, dense, well sorted, wet with 2"-3" conglomerate and quartz gravel (TRACE), dark gray (GLEY 4/1).				
45						
50						

WELL CONSTRUCTION



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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
5		SW SP	SAND, silty, medium-fine grained, moderate to poorly sorted, dense, moist, wet at 4', light gray (2.5Y 7/2) with red flecks and some coarse grains, becoming darker in color at 7'.					← Protective casing with locking cap.
10		SW SP	Same as above with coarse grain zone from 16-17' and increased fines 17-18'.					
15								
20		SW SP	Same as above to 22' then clayey SILT lens of 2' thickness, low plasticity, slight orange, stiff, light brownish gray (10 YR 6/2), then silty SAND, medium fine grained, well sorted, white (10YR 5/1).					
		ML						
25		SP						
30		SP	SAND, Same as above.					
35								
40		SW	SAND, silty, medium-coarse grained, dense, poorly sorted, wet, reddish-yellow (5YR 6/6) to 40' then same as above with quartz pebbles, grey (GLEY-1) to 43'					
45		SM	Sharp contact with silty fine SAND (Pee Dee), medium fine grained, dense, well sorted, wet with 2"-3" conglomerate and quartz gravel (TRACE), dark gray (GLEY 4/1).					← Grout
50		SM	SAND, silty, fine, same as above, saturated.					

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
55		SM	SAND, silty, fine, same as above, saturated. *(continued)*					2" Sch. 40 threaded PVC Riser
60		SM	Same as above, increased fines.					
65								
70		SM	Same as above.					
75								
80			No recovery.					
85								
90			No recovery.					
95								
100		SM	Same as above with semi consolidated layer (1') at base.					Bentonite seal

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PROJECT:	Sutton Plant	WELL / BORING NO:	**SMW-06D**
PROJECT NO:	1026.108	STARTED: 4/6/15	COMPLETED: 4/8/15
DRILLING COMPANY:	Cascade Drilling	NORTHING: 200221.2	EASTING: 2309017.66
DRILLING METHOD:	Sonic	G.S. ELEV: 12.80 ft	M.P. ELEV: 12.80 ft
BOREHOLE DIAMETER:	6 IN	DEPTH TO WATER: ft TOC	TOTAL DEPTH: 108.0 ft BGS
NOTES:		LOGGED BY: P. Waldrep	CHECKED BY: K. Fox

DEPTH (ft)	GRAPHIC LOG	USCS	DESCRIPTION	SAMPLE	RECOV. (%)	BLOW COUNTS	PID (ppm)	WELL CONSTRUCTION
105		SM	Same as above with semi consolidated layer (1') at base. *(continued)*					Sand Pack 2" pre-packed well screen
			Boring terminated at 108'.					
110								
115								
120								
125								
130								
135								
140								
145								
150								

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