

Permit No.	Date	DIN
85-03	July 14, 2010	11132



RECEIVED

**July 13, 2010**

Solid Waste Section  
Asheville Regional Office

July 13, 2010

North Carolina Department of Environment and Natural Resources  
Solid Waste Section, Division of Waste Management  
Asheville Regional Office  
2090 US Highway 70  
Swannanoa, NC 28778

Attention: Mr. Larry Frost  
Larry.Frost@ncmail.net

Reference: **Temporary Piezometer Installation**  
Duke Energy - Pine Hall Road Ash Landfill  
Permit No. 85-03 (Closed)  
Stokes County, North Carolina  
S&ME Project No. 1356-07-017 Phase 04

Dear Mr. Frost:

This letter is being provided to document S&ME's installation of three temporary piezometers through the landfill cover system at Duke Energy's Pine Hall Road Ash Landfill. A tentative sequence of events following piezometer installation is also presented. The purpose for installing the piezometers is described as follows.

Settlement of the landfill cover in the vicinity of the landfill perimeter at several locations has been observed, and two ash/soil boils have emerged at the perimeter. Visual observations indicate that material has been transported from underneath the cover system geosynthetics and emerged at the boil locations. It is most likely that this is caused by water underneath the geosynthetic cover system.

Three (3) Type II piezometers were installed between the dates of June 14 and June 17, 2010 at the approximate locations shown on Figures 1 and 2. The piezometers were installed by advancing borings via hollow-stem augers through the cover soil and geosynthetics.

Upon termination of boring, each piezometer was installed with a screened interval of approximately fifteen feet within the ash fill. The distance between the bottom of the screen and the bottom of the boring, if any, was backfilled with bentonite. The piezometers were generally installed as shown in Figure 3. The piezometers were sealed

at the cover system geosynthetics by a bentonite plug. Well construction records are attached. Water levels measured after well completion indicate the presence of water within the ash.

Following completion of data collection, S&ME will abandon the piezometers by over-drilling and backfilling with bentonite and/or grout to the elevation of the cover system geosynthetics. The geosynthetics will then be permanently repaired. The repairs will be conducted by a qualified geosynthetic installer, monitored, and documented. The soil cover will then be restored and reseeded.

Generally, S&ME anticipates the following path forward:

1. S&ME will collect water level measurements from the temporary piezometers at an intermittent frequency over a period of approximately three months.
2. In parallel with monitoring, S&ME will develop a retrofit design assuming the presence of water beneath the geosynthetic cover system.
3. S&ME will then monitor implementation of the retrofit design. Construction for retrofit measures is tentatively scheduled for the fall of 2010.
4. S&ME will abandon the temporary piezometers and observe geosynthetics repairs, as previously described.

S&ME appreciates the opportunity to describe the temporary piezometer installation at the Pine Hall Road Ash Landfill facility. Please contact us if you have questions, comments, or would like more information.

Sincerely,

**S&ME, Inc.**



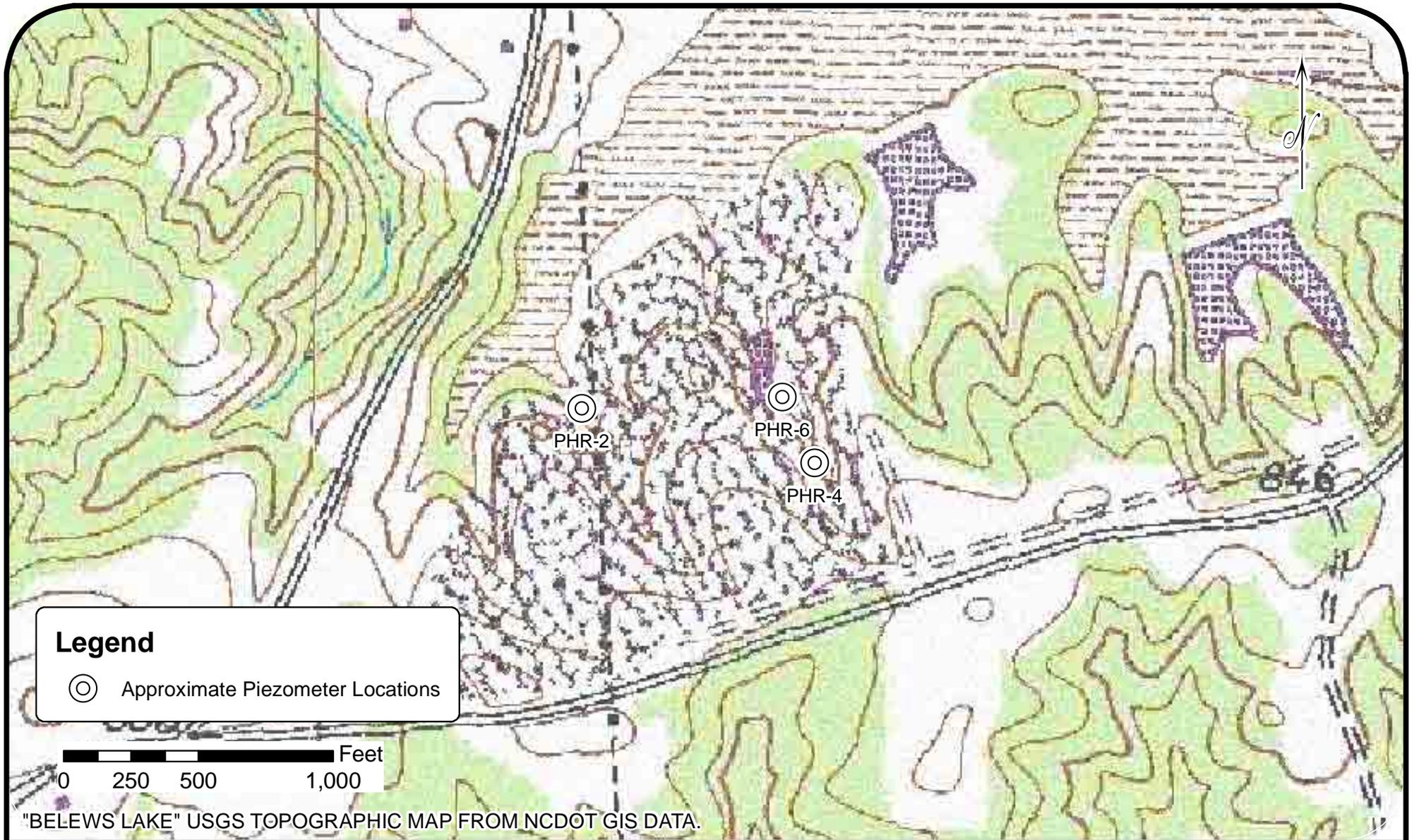
Cedric Ruhl, P.E.  
Project Engineer



Kenneth R. Daly, P.E.  
Senior Project Engineer

Attachments: Figure 1: Piezometer Locations (USGS Topographic Map)  
Figure 2: Approximate Temporary Piezometer Locations (As-Built Topographic Map)  
Figure 3: Piezometer Installation and Abandonment Details  
Well Construction Records (PHR-2, PHR-4, PHR-6)

Cc: Ms. Elizabeth Werner, NCDENR  
Mr. John Patrone, NCDENR  
Mr. Ed Sullivan, Duke Energy  
Mr. L. Mike Cook, Duke Energy  
Ms. Melonie Martin, Duke Energy  
Mr. Thomas Wiest, Duke Energy



SCALE:  
1" = 500'

DATE:  
06/23/10

PROJECT NO:  
1356-07-017

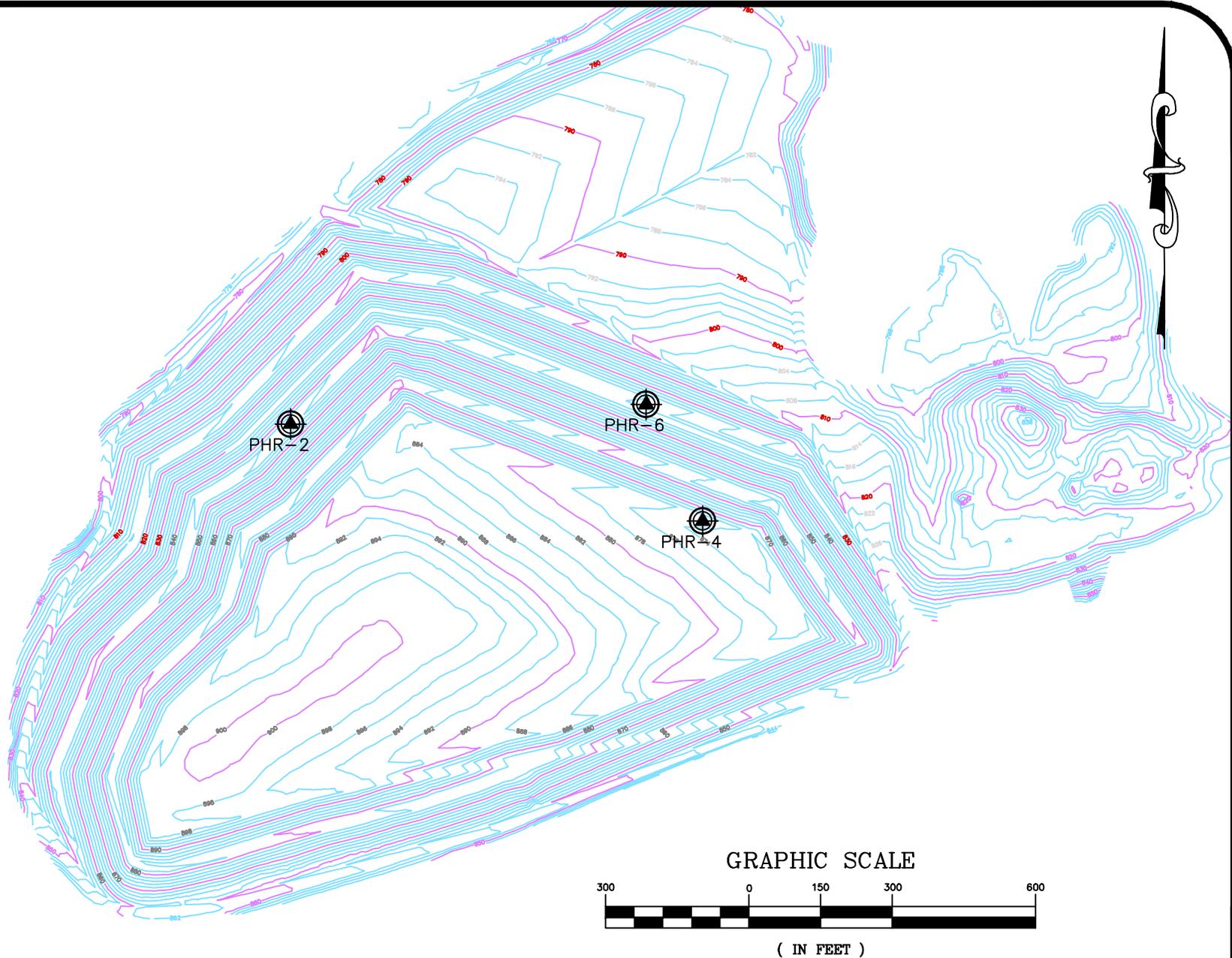
DRAWN BY:  
CHR

CHECKED BY:



PIEZOMETER LOCATIONS  
PHR ASH LANDFILL  
DUKE ENERGY  
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.  
1

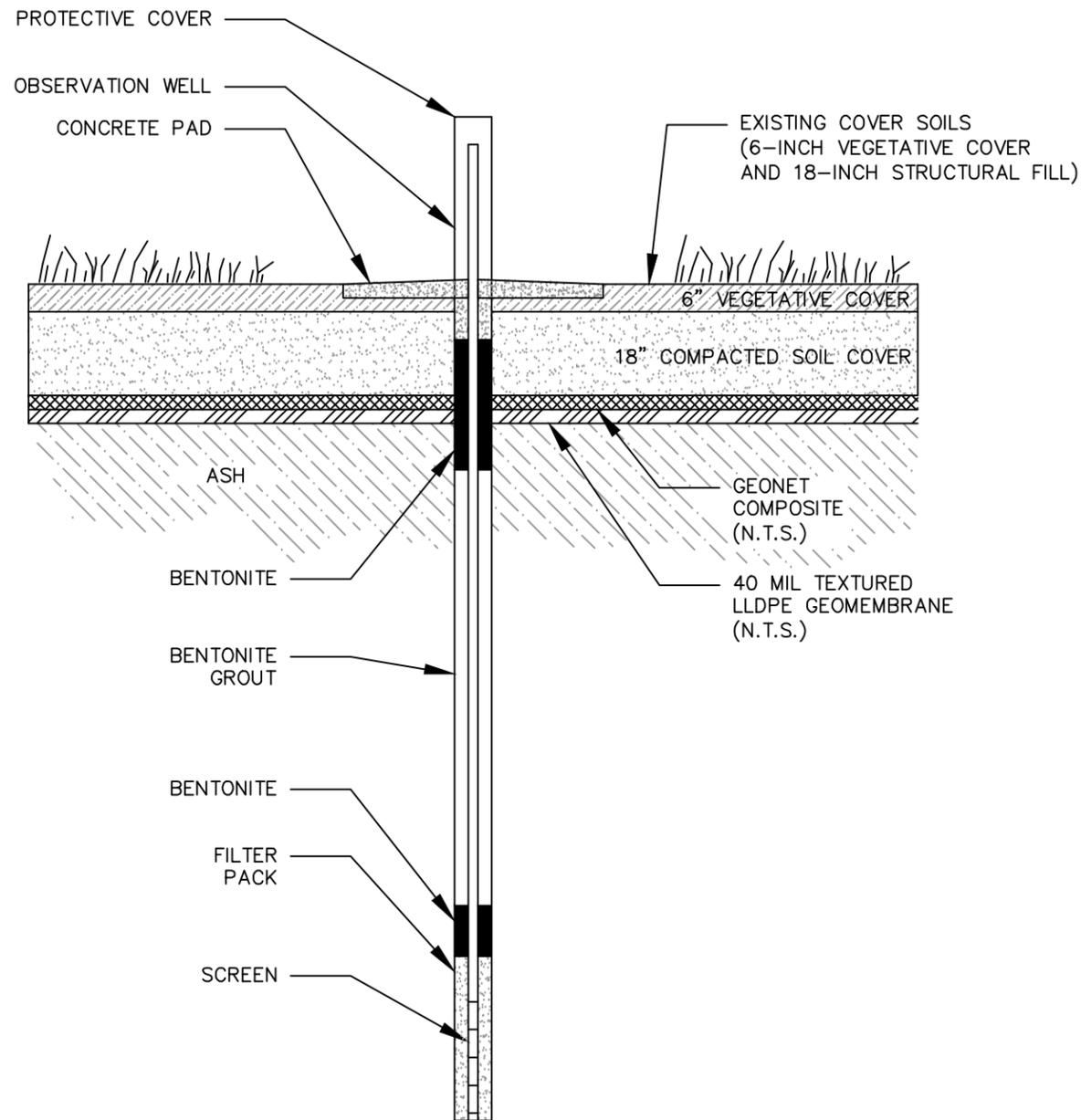


SCALE: 1" = 300'	DATE: 06/24/10
PROJECT NO. 1356-07-017	DRAWN BY: CHR
	CHECKED BY:

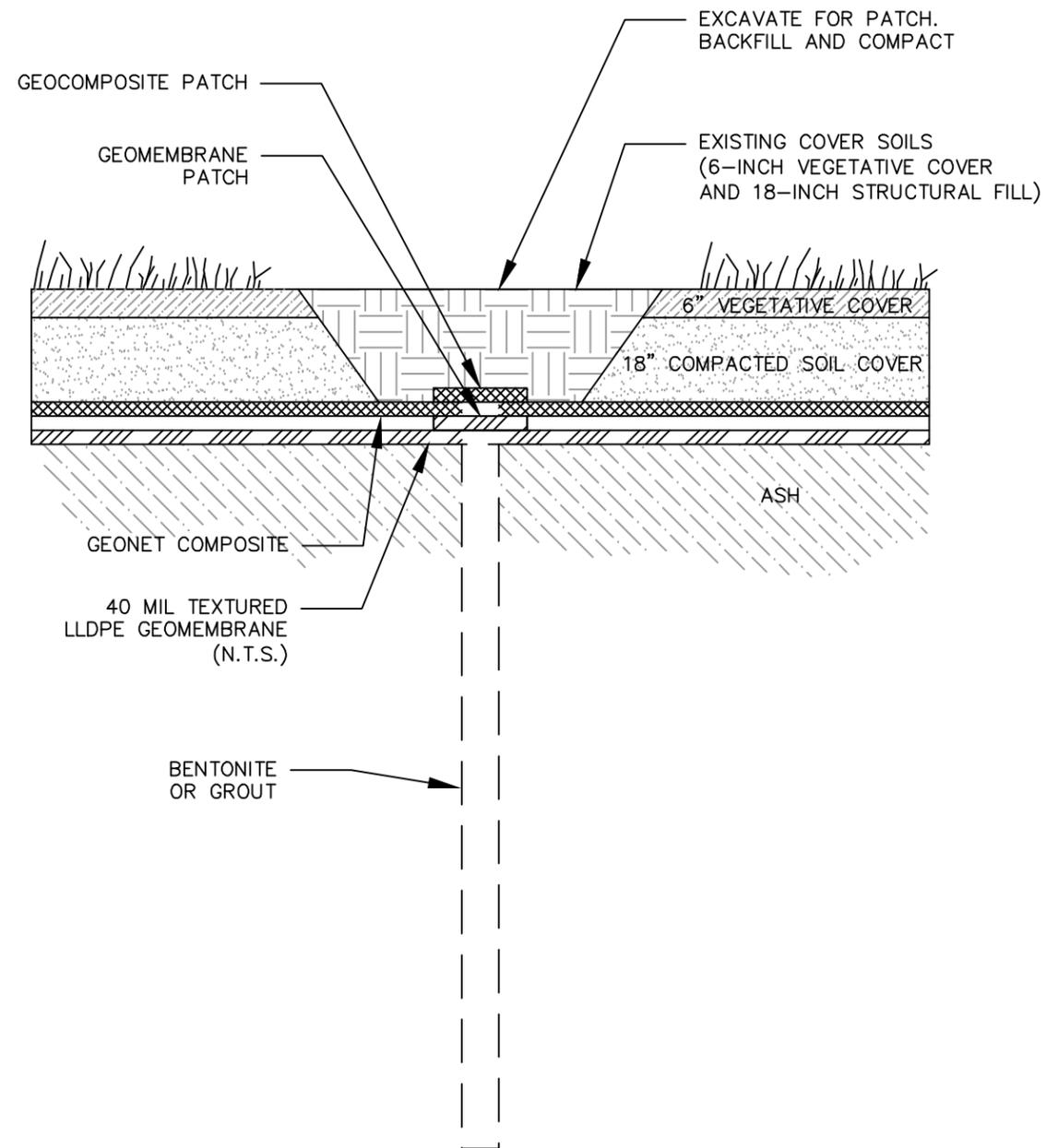


**APPROXIMATE TEMPORARY  
PIEZOMETER LOCATIONS**  
PINE HALL ROAD ASH LANDFILL CLOSURE  
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.  
**2**

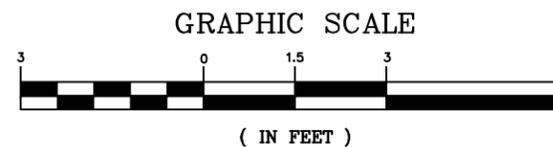


**TEMPORARY PIEZOMETER**



**PIEZOMETER REMOVAL AND PATCH**

NOTES:  
1. PIEZOMETER DEPTHS VARY.



DATE: 06/24/10

DRAWN BY: CHR

CHECKED BY:

SCALE: 1" = 3'

PROJECT NO.

1356-07-017

ENGINEERING LICENSE NO:

F-0176

9751 SOUTHERN PINE BLVD.  
CHARLOTTE, N.C. 28273

(704)523-4726



WWW.SMEINC.COM

**PIEZOMETER INSTALLATION AND  
ABANDONMENT DETAILS**

PINE HALL ROAD ASH LANDFILL CLOSURE  
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.

**3**



# NON RESIDENTIAL WELL CONSTRUCTION RECORD

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

WELL CONTRACTOR CERTIFICATION # 2717A

### 1. WELL CONTRACTOR:

Jay Little

Well Contractor (Individual) Name

S&ME, Inc.

Well Contractor Company Name

STREET ADDRESS 9751 Southern Pine Blvd

Charlotte, NC 28273

City or Town State Zip Code

(704) 523-4726

Area code- Phone number

### 2. WELL INFORMATION:

SITE WELL ID #(if applicable) PHR - 2

STATE WELL PERMIT #(if applicable)

DWQ or OTHER PERMIT #(if applicable)

WELL USE (Check Applicable Box) Monitoring  Municipal/Public

Industrial/Commercial  Agricultural  Recovery  Injection

Irrigation  Other  (list use) Observation Well - Water Levels

DATE DRILLED June 15, 2010

TIME COMPLETED 1:00 AM  PM

### 3. WELL LOCATION:

CITY: Belevs Creek COUNTY: Stokes

Pine Hall Road Landfill, Belevs Creek Steam Station

(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

Slope  Valley  Flat  Ridge  Other Landfill

(check appropriate box)

LATITUDE 36.280

LONGITUDE -80.080

May be in degrees, minutes, seconds or in a decimal format

Latitude/longitude source:  GPS  Topographic map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. FACILITY - is the name of the business where the well is located.

FACILITY ID #(if applicable)

NAME OF FACILITY Belevs Creek Steam Station

STREET ADDRESS 3195 Pine Hall Road

Belevs Creek, NC 27009

City or Town State Zip Code

CONTACT PERSON Mike Cook

MAILING ADDRESS Same as Above

City or Town State Zip Code

(336) 445-0325

Area code - Phone number

### 5. WELL DETAILS:

a. TOTAL DEPTH: 75.5

b. DOES WELL REPLACE EXISTING WELL? YES  NO

c. WATER LEVEL Below Top of Casing: 75.9 FT.  
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS ~3 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):

From To From To

From To From To

From To From To

### 6. CASING:

Depth Diameter Thickness/Weight Material

From 0 To 65 Ft. 2-inch Sch. 40 PVC

From To Ft. Sch. Material

From To Ft. Sch. Material

### 7. GROUT:

Depth Material Method

From 0 To 4 Ft. Bentonite Pour

From 4 To 60 Ft. Neat Cement Pour

From 60 To 63 Ft. Bentonite Pour

### 8. SCREEN:

Depth Diameter Slot Size Material

From 65 To 75 Ft. 2-inch in. 0.01 in. PVC

From To Ft. in. in.

From To Ft. in. in.

### 9. SAND/GRAVEL PACK:

Depth Size Material

From 63 To 75.5 Ft. #2 Filter Sand

From To Ft. Material

From To Ft. Material

### 10. DRILLING LOG

From	To	Formation Description
0	2	Sandy Silt (Cover System and Fill)
2	74	Ash (Landfill)
74	75.5	Residual - Partially Weathered Rock
75.5		Refusal

### 11. 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.

Jay A. Little 6-22-10  
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

JAY A. LITTLE  
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days. Attn: Information Mgt., 1617 Mail Service Center - Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Form GW-1b Rev. 7/05



