

May 24, 2013

Ms. Christine Ritter
NCDENR DWM Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

**RE: Landfill Gas Well Installation
Caswell County Closed MSW Landfill
Yanceyville, North Carolina**

Dear Ms. Ritter:

Smith Gardner, Inc. (S+G) was recently contracted by Caswell County to install landfill gas monitoring wells at the Caswell County Closed MSW Landfill. The installation of two landfill gas monitoring wells was completed on April 22, 2013.

Geologic Explorations, Inc. performed the landfill gas monitoring well installation with oversight provided by S+G personnel. Two landfill gas monitoring wells (LFG-1 and LFG-2) were installed near the facility boundary. Both wells were drilled to auger refusal and no water was encountered during drilling. Well construction is summarized below:

<u>Well No.</u>	<u>Total Depth</u>	<u>Screened Interval</u>
LFG-1	14 feet	5' to 14'
LFG-2	24 feet	6' to 24'

Both wells were completed with solid PVC riser pipe to approximately 3 feet above grade. Each was outfitted with locking steel outer casings and landfill gas monitoring well caps. Well tags and large identifying numbers were affixed to the outer casing of each well. Well boring logs and construction detail sheets are **attached** for your review and records. The approximate well locations are shown on the attached **Figure 1**.

S+G previously submitted the results from the May 2013 monitoring event which indicated that the newly installed landfill gas monitoring wells, as well as groundwater monitoring well (MW-1) on-site had no detectable concentrations of methane.

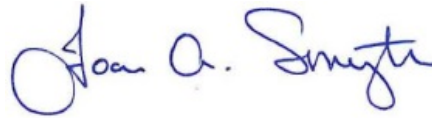
If you have any questions or require any additional information, please contact us at 919-828-0577 or by e-mail (below).

Ms. Christine Ritter
May 24, 2013
Page 2 of 2

Sincerely,
SMITH GARDNER, INC.



Madeline M. German, P.G.
Project Geologist
madeline@smithgardnerinc.com



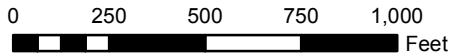
Joan A. Smyth, P.G.
Senior Hydrogeologist
joan@smithgardnerinc.com

Attachments: Figure 1
LFG-1 and LFG2 construction records and boring logs

Cc: Kevin Howard, Caswell County
Tim Smith, Caswell County
File



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LFG WELL LOCATIONS ARE APPROXIMATE.
NOTE: LFG WELL LOCATIONS ARE APPROXIMATE.
APPROXIMATE TO THIS FIGURE.

LANDFILL GAS MONITORING LOCATIONS
CASWELL COUNTY LANDFILL
YANCEYVILLE, NORTH CAROLINA

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN: C.T.J.	APPROVED: J.A.S.	SCALE: AS SHOWN	DATE: May. 2013	PROJECT NO.: CASWELL 13-1	FIGURE NO.: 1
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NON RESIDENTIAL WELL CONSTRUCTION RECORD

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

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS

Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC

Well Contractor Company Name

176 COMMERCE BLVD

Street Address

STATESVILLE

NC

28625

City or Town

State

Zip Code

(704) 872-7686

Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# _____

OTHER ASSOCIATED PERMIT#(if applicable) _____

SITE WELL ID #(if applicable) LSG-1

3. WELL USE (Check One Box) Monitoring Municipal/Public

Industrial/Commercial Agricultural Recovery Injection

Irrigation Other (list use) LANDFILL GAS

DATE DRILLED 04/22/13

4. WELL LOCATION:

162 LANDFILL ROAD 27379

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

CITY: YANCEYVILLE COUNTY CASWELL

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

Slope Valley Flat Ridge Other _____

LATITUDE 36 ° 26 ' 20.8400 " DMS OR _____ DD

LONGITUDE 79 ° 21 ' 52.4600 " DMS OR _____ DD

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)

5. FACILITY (Name of the business where the well is located.)

CASWELL COUNTY LANDFILL

N/A

Facility Name

Facility ID# (if applicable)

162 LANDFILL ROAD

Street Address

YANCEYVILLE

NC

27379

City or Town

State

Zip Code

CASWELL COUNTY

Contact Name

PO BOX 98

Mailing Address

YANCEYVILLE

NC

27379

City or Town

State

Zip Code

(_____) _____

Area code Phone number

6. WELL DETAILS:

a. TOTAL DEPTH: 24.0 FEET

b. DOES WELL REPLACE EXISTING WELL? YES NO

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

d. TOP OF CASING IS 2.5 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 0.0 Bottom 6.0 Ft. 2 INCH SCH 40 PVC

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

8. GROUT: Depth Material Method

Top 0.0 Bottom 3.0 Ft. PORTLAND BENTONITE SLURRY

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

9. SCREEN: Depth Diameter Slot Size Material

Top 6.0 Bottom 24.0 Ft. 2.0 in. .010 in. PVC

Top _____ Bottom _____ Ft. _____ in. _____ in. _____

Top _____ Bottom _____ Ft. _____ in. _____ in. _____

10. SAND/GRAVEL PACK: Depth Size Material

Top 4.0 Bottom 24.0 Ft. 20-40 FINE SILICA SAND

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

11. DRILLING LOG Top Bottom Formation Description

Top Bottom Formation Description

0.0 / 6.0 RED SILTY CLAY

6.0 / 18.0 BROWN SILTY SAND

18.0 / 24.0 TAN SILTY SAND

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

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_____/_____/_____

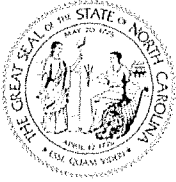
12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

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.

Brian Thomas 04/30/13
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL



NON RESIDENTIAL WELL CONSTRUCTION RECORD

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

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS

Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC

Well Contractor Company Name

176 COMMERCE BLVD

Street Address

STATESVILLE

NC

28625

City or Town

State

Zip Code

(704) 872-7686

Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# _____

OTHER ASSOCIATED PERMIT#(if applicable) _____

SITE WELL ID #(if applicable) LSG-2

3. WELL USE (Check One Box) Monitoring Municipal/Public

Industrial/Commercial Agricultural Recovery Injection

Irrigation Other (list use) LANDFILL GAS

DATE DRILLED 04/22/13

4. WELL LOCATION:

162 LANDFILL ROAD 27379

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

CITY: YANCEYVILLE COUNTY CASWELL

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

Slope Valley Flat Ridge Other _____

LATITUDE 36 ° 26 ' 32.4300 " DMS OR _____ DD

LONGITUDE 79 ° 22 ' 10.5000 " DMS OR _____ DD

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)

5. FACILITY (Name of the business where the well is located.)

CASWELL COUNTY LANDFILL N/A

Facility Name Facility ID# (if applicable)

162 LANDFILL ROAD

Street Address

YANCEYVILLE

NC

27379

City or Town

State

Zip Code

CASWELL COUNTY

Contact Name

PO BOX 98

Mailing Address

YANCEYVILLE

NC

27379

City or Town

State

Zip Code

(_____)

Area code Phone number

6. WELL DETAILS:

a. TOTAL DEPTH: 14.0 FEET

b. DOES WELL REPLACE EXISTING WELL? YES NO

c. WATER LEVEL Below Top of Casing: DRY FT.

(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 2.5 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 0.0 Bottom 5.0 Ft. 2 INCH SCH 40 PVC

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

8. GROUT: Depth Material Method

Top 0.0 Bottom 3.0 Ft. PORTLAND BENTONITE SLURRY

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

9. SCREEN: Depth Diameter Slot Size Material

Top 5.0 Bottom 14.0 Ft. 2.0 in. .010 in. PVC

Top _____ Bottom _____ Ft. _____ in. _____ in. _____

Top _____ Bottom _____ Ft. _____ in. _____ in. _____

10. SAND/GRAVEL PACK: Depth Size Material

Top 4.0 Bottom 14.0 Ft. 20-40 FINE SILICA SAND

Top _____ Bottom _____ Ft. _____ _____ _____

Top _____ Bottom _____ Ft. _____ _____ _____

11. DRILLING LOG

Top Bottom Formation Description

0.0 / 5.0 BROWN SILTY SAND

5.0 / 14.0 PARTIALLY WEATHERED ROCK

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

_____/_____/_____

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

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.

Brian Thomas 04/30/13

SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS

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

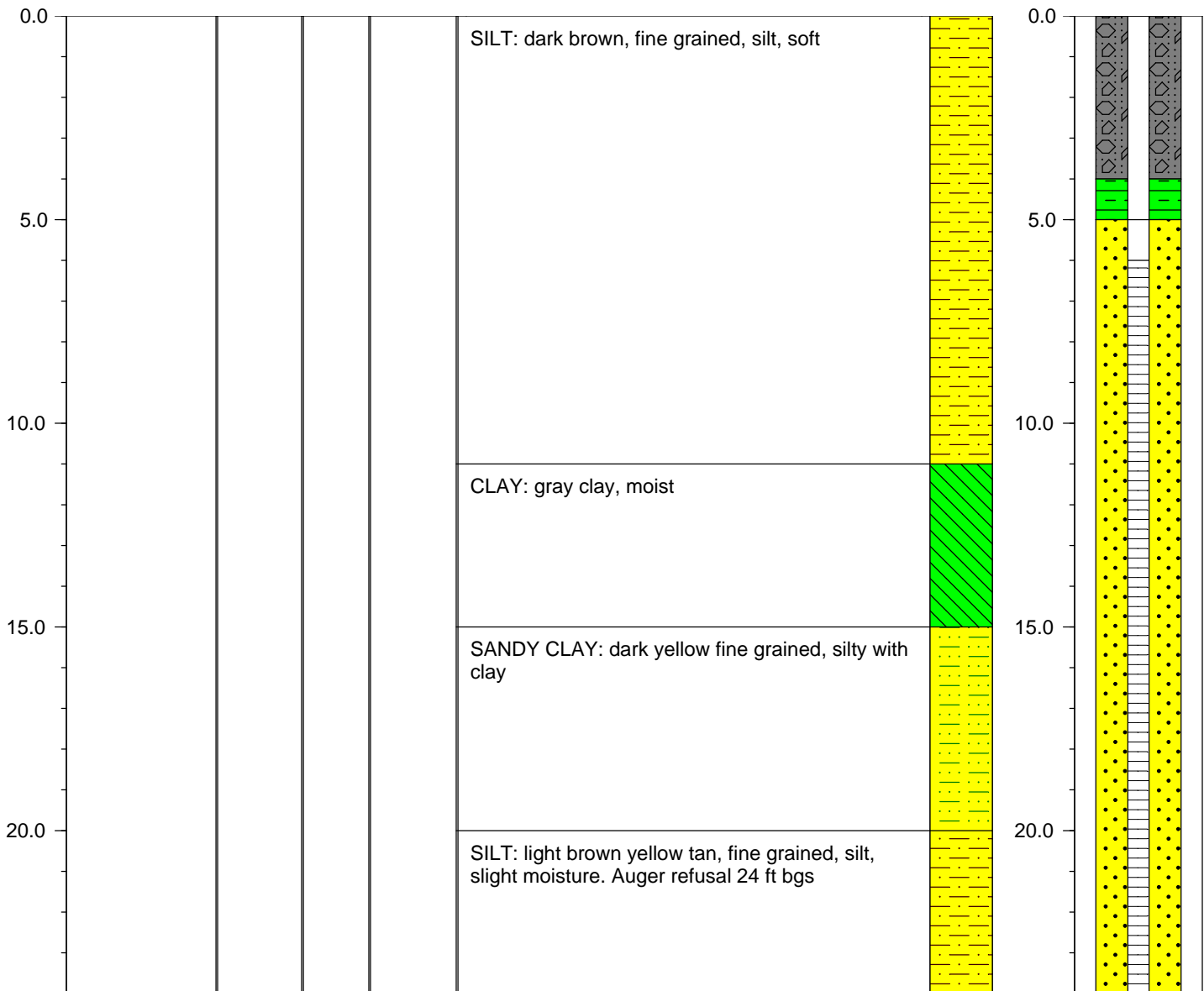
Form GW-1b Rev. 2/09

PROJECT NAME: **Caswell County Closed MSW**
 LOCATION: **Yancyville, NC**
 DRILLING CO: **Geologic Explorations**
 DRILLING METHOD: **HOLLOW STEM AUGER**
 FIELD PARTY: **B. Thomas**
 GEOLOGIST: **M. German**
 DATE BEGUN: **4/22/13** COMPLETED: **4/22/13**

TOTAL DEPTH: **24**
 TOP OF CASING ELEV.: GROUND ELEV.:
 NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (from TOC)		
Depth (ft)	Not Encountered	
Time		
Date		

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
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Smith Gardner, Inc.
 14 North Boylan Avenue, Raleigh NC 27603
 (919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **LFG-2** Page 1 of 1

PROJECT NAME: **Caswell County Closed MSW**
 LOCATION: **Yancyville, NC**
 DRILLING CO: **Geologic Explorations**
 DRILLING METHOD: **HOLLOW STEM AUGER**
 FIELD PARTY: **B. Thomas**
 GEOLOGIST: **M. German**
 DATE BEGUN: **4/22/13** COMPLETED: **4/22/13**

TOTAL DEPTH: **14**
 TOP OF CASING ELEV.: GROUND ELEV.:
 NORTHING: **0** EASTING: **0**

STATIC WATER LEVEL (from TOC)		
Depth (ft)	Not Encountered	
Time		
Date		

DEPTH Feet	BLOW COUNT Per 6"	SAMPLING METHOD	RECOVERY Inches	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH Feet	WELL INSTALLATION
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