

**SCS ENGINEERS**January 25, 2007  
File No. 02199312.01Jackie Drummond  
NCDENR  
1646 Mail Service Center  
Raleigh, North Carolina 27699-1646Subject: Landfill Gas Monitoring Well Abandonment  
North Wake Landfill – Wake County, North Carolina

Dear Ms. Drummond:

On behalf of Wake County, SCS Engineers, PC (SCS) is pleased to submit to the North Carolina Department of Environment and Natural Resources (NCDENR) a record of Landfill Gas (LFG) monitoring well abandonment at the North Wake Landfill (Solid Waste Permit No. 92-09) in Wake County, North Carolina. This documentation is being submitted to NCDENR within 30 days of the completion of the abandonment in accordance with page 7 of the Proposed Landfill Gas Monitoring Network Report, revised 4/11/06. NCDENR approved these abandonment efforts via correspondence to Wake County dated 10/25/06.

A total of 104 temporary LFG monitoring wells (G-1 through G-58 and G-66 through G-107) were abandoned between January 10 and 12, 2007 by SCS personnel in accordance with 15A NCAC 2C.0113 and the Report, dated 4/11/06. The temporary wells were initially installed as part of a field investigation regarding LFG migration along the compliance boundary surrounding the north, west, and east sides of the Closed Cell. Nine permanent LFG monitoring wells (M-19 through M-26 and replacement well M-6R) were drilled and installed along the compliance boundary on January 10 and 11, 2007 to replace the temporary LFG wells. The documentation for these new LFG monitoring wells is being submitted under separate cover.

To abandon each temporary well, the abovegrade portion of the well riser pipe was removed at its base, filled with bentonite (either TD-16 granulated or 3/8-inch holeplug), and then hydrated. Minor grading was then performed to backfill soil cover over the bentonite-filled pipe.

A typical Well Abandonment Record, a typical well abandonment log diagram, a LFG monitoring probe abandonment table, and a site plan depicting the surveyed locations of the abandoned monitoring wells are attached. Please note that the LFG monitoring wells were installed adjacent to buried refuse, and hence, no disinfection was performed during well abandonment.



Ms. Jackie Drummond

January 25, 2007

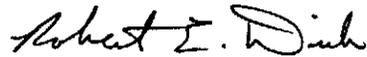
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If you have questions or require additional information, please feel free to contact either of the undersigned.

Sincerely,



D. Brandon King  
Associate Staff Scientist



Robert E. Dick, PE  
Project Director  
SCS ENGINEERS, PC

DBK/RED:asd

Attachments

cc: Dan LaMontagne, Wake County  
Johnny Beal, Wake County  
Jeff Daniel, WGP



**WELL ABANDONMENT RECORD**

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

**WELL CONTRACTOR CERTIFICATION #**

**1. WELL CONTRACTOR:**

Brandon King / Greg Wade  
Well Contractor (Individual) Name  
SCS Engineers, PC  
Well Contractor Company Name  
STREET ADDRESS 3229 Anderson Hwy, Suite 100  
Powhatan VA 23139  
City or Town State Zip Code  
(804) - 598-9480  
Area code - Phone number

**2. WELL INFORMATION:**

SITE WELL ID # (if applicable) refer to attached table  
STATE WELL PERMIT # (if applicable) \_\_\_\_\_  
COUNTY WELL PERMIT # (if applicable) \_\_\_\_\_  
DWQ or OTHER PERMIT # (if applicable) \_\_\_\_\_  
WELL USE (Check applicable use):  Monitoring  Residential  
 Municipal/Public  Industrial/Commercial  Agricultural  
 Recovery  Injection  Irrigation  
 Other (list use) \_\_\_\_\_

**3. WELL LOCATION:**

COUNTY Wake QUADRANGLE NAME Wake Forest  
NEAREST TOWN: Intersection of Deponie Drive and  
Durant Road  
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)  
TOPOGRAPHIC / LAND SETTING:  
 Slope  Valley  Flat  Ridge  Other \_\_\_\_\_  
(Check appropriate setting)

LATITUDE varies  
LONGITUDE varies

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.)

**4a. FACILITY:** The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) Solid Waste Permit # 92-09  
NAME OF FACILITY North Wake County Landfill  
STREET ADDRESS 904 Deponie Drive  
Raleigh NC 27615  
City or Town State Zip Code

**4b. CONTACT PERSON/WELL OWNER:**

NAME Johnny Beal / Wake County  
STREET ADDRESS 904 Deponie Drive

**5. WELL DETAILS:**

a. Total Depth: varies ft. Diameter: 1 in.  
b. Water Level (Below Measuring Point): varies ft.  
Measuring point is 0 ft. above land surface.

**6. CASING:** Length Diameter

a. Casing Depth (if known): varies ft. 1 in.  
b. Casing Removed: varies ft. 1 in.

**7. DISINFECTION:** none

(Amount of 65%-75% calcium hypochlorite used)

**8. SEALING MATERIAL:**

**Neat Cement** **Sand Cement**  
Cement \_\_\_\_\_ lb. Cement \_\_\_\_\_ lb.  
Water \_\_\_\_\_ gal. Water \_\_\_\_\_ gal.

**Bentonite**  
Bentonite \_\_\_\_\_ lb.  
Type:  Slurry  Pellets  
Water 0.1-0.3 gal.

**Other**  
Type material \_\_\_\_\_  
Amount \_\_\_\_\_

**9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:**

Bentonite was poured into the well casing and periodically hydrated multiple times to provide for a continuous seal throughout the entire well depth

**10. WELL DIAGRAM:** Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

**11. DATE WELL ABANDONED** varies - refer to table

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

D. Brandon King / Greg Wade  
SIGNATURE OF CERTIFIED WELL CONTRACTOR

1-25-07  
DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE  
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .9113.)

D. Brandon King / Greg Wade  
PRINTED NAME OF PERSON ABANDONING THE WELL

# SCS ENGINEERS

Environmental Consultants  
 3229 Anderson Highway  
 Suite 100  
 Powhatan, VA 23139  
 804 598-9480 FAX 804 598-9485

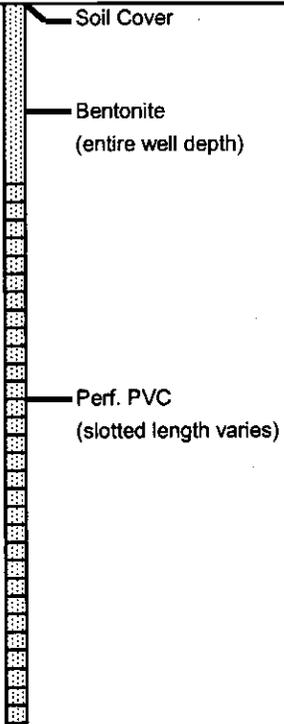
## NORTH WAKE LANDFILL RALEIGH, NC

Project No. 02199312.01

Location:  
**TYPICAL**

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Depth in Feet	ABANDONMENT LOG					DESCRIPTION	REMARKS
	SAMPLES	RECOVERED	PID	GRAPHIC	Groundwater		
+1							
0							
-1							
2							
3						Well abandonment completed with TD-16 granulated or 3/8" holeplug pellet, hydrated bentonite	
4							
5							
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34							
35							



Company Performing Abandonment: **SCS ENGINEERS**  
 Logged By: **B. King**

Date Started: 1/10/07  
 Date Ended: 1/12/07  
 Boring Diameter: NA  
 Well Diameter: 1.0-inch  
 Casing Material: SCH 40 PVC

Time Started: NA  
 Time Ended: NA  
 Elevation: NA  
 Total Depth: varies - refer to Table

**TEMPORARY LANDFILL GAS MONITORING PROBE ABANDONMENT TABLE**

**NORTH WAKE COUNTY LANDFILL  
RALEIGH, NORTH CAROLINA**

Probe	Date	Easting	Northing	Probe Depth	Depth to Water	Bentonite
G-1	1/10/07	2125719.06	787254.90	30	Dry	TD-16
G-2	1/10/07	2125719.06	787254.90	20	Dry	TD-16
G-3	1/10/07	2125719.06	787254.90	10	Dry	TD-16
G-4	1/10/07	2125719.06	787254.90	5	Dry	TD-16
G-5	1/10/07	2125693.27	787200.59	26	Dry	TD-16
G-6	1/10/07	2125719.60	787200.25	8	Dry	TD-16
G-7	1/10/07	2125704.01	787137.07	25	Dry	TD-16
G-8	1/10/07	2125722.37	787136.36	5	Dry	TD-16
G-9	1/10/07	2125791.57	786960.02	20	Destroyed	TD-16
G-10	1/10/07	2125791.57	786960.02	5	Dry	TD-16
G-11	1/10/07	2125727.75	787347.35	35	Dry	TD-16
G-12	1/10/07	2125727.75	787347.35	8	Dry	TD-16
G-13	1/10/07	2125577.80	787196.15	28	Destroyed	TD-16
G-14	1/10/07	2125622.20	787006.94	16	Dry	TD-16
G-15	1/10/07	2125591.08	787046.09	14	Dry	TD-16
G-16	1/10/07	2125566.60	787093.97	20	Dry	TD-16
G-17A (G-17)	1/10/07	2125731.38	787522.36	44	Dry	TD-16
G-17B	1/10/07	2125731.38	787522.36	30	Dry	TD-16
G-18A	1/10/07	2125734.05	787655.95	40	Dry	TD-16
G-18B	1/10/07	2125734.05	787655.95	24	Dry	TD-16
G-19	1/11/07	2125723.86	787922.23	28	Dry	TD-16
G-20	1/11/07	2125728.82	788078.61	32	Dry	TD-16
G-21A	1/11/07	2125881.50	788236.45	29	Dry	TD-16
G-21B	1/11/07	2125893.55	788255.22	23	Dry	TD-16
G-22	1/11/07	2125931.56	788378.43	33	Dry	TD-16
G-23	1/11/07	2125729.58	787703.08	26	Dry	TD-16
G-24A	1/11/07	2125704.01	787769.48	38	Dry	TD-16
G-24B	1/11/07	2125719.51	787769.21	24	Dry	TD-16
G-25	1/11/07	2125707.11	787841.26	36	Dry	TD-16
G-26	1/11/07	2125719.52	787982.49	30	Dry	TD-16
G-27	1/11/07	2125960.32	788500.29	27	Dry	TD-16
G-28	1/11/07	2125988.06	788588.70	24	23.2	TD-16
G-29	1/12/07	2126830.32	787116.51	12	5.4	3/8" holeplug
G-30	1/12/07	2126818.93	787078.54	12	7.5	3/8" holeplug
G-31	1/12/07	2126804.97	787026.20	12	Dry	3/8" holeplug
G-32	1/12/07	2126856.56	787014.51	12	5.3	3/8" holeplug
G-33	1/12/07	2126876.21	787055.45	12	Dry	3/8" holeplug
G-34	1/12/07	2126893.61	787094.04	12	Dry	3/8" holeplug
G-35	1/12/07	2126913.87	787135.49	12	Dry	3/8" holeplug
G-36	1/12/07	2126947.77	787278.02	12	Dry	3/8" holeplug
G-37	1/12/07	2126861.06	787207.44	16	Dry	3/8" holeplug
G-38	1/11/07	2126876.55	787256.13	16	Dry	3/8" holeplug
G-39	1/12/07	2126905.99	787208.08	16	Dry	3/8" holeplug
G-40	1/12/07	2126877.79	787123.15	12	2.3	3/8" holeplug
G-41	1/11/07	2126924.64	787400.62	16	Dry	3/8" holeplug
G-42	1/11/07	2126905.34	787346.31	16	Dry	3/8" holeplug
G-43	1/11/07	2126890.80	787307.41	12	Destroyed	3/8" holeplug
G-44	1/11/07	2126922.45	787253.95	16	3.5	3/8" holeplug
G-45	1/11/07	2126931.63	787299.19	16	1.7	3/8" holeplug
G-46	1/11/07	2126940.19	787334.61	16	Dry	3/8" holeplug
G-47	1/11/07	2126960.51	787381.24	16	Dry	3/8" holeplug
G-48	1/11/07	2126942.30	787452.67	18	Dry	3/8" holeplug
G-49	1/11/07	2126959.74	787500.36	18	Dry	3/8" holeplug
G-50	1/11/07	2126978.01	787549.67	16	Dry	3/8" holeplug
G-51	1/11/07	2126997.59	787594.38	20	Dry	3/8" holeplug
G-52	1/11/07	2127033.49	787672.58	18	Dry	3/8" holeplug
G-53	1/11/07	2127050.15	787768.24	20	Dry	3/8" holeplug
G-54	1/11/07	2127011.60	787837.31	20	Dry	3/8" holeplug
G-55	1/12/07	2126764.04	786931.98	16	Dry	3/8" holeplug

Probe	Date	Easting	Northing	Probe Depth	Depth to Water	Bentonite
G-56	1/12/07	2126733.48	786836.58	16	Dry	3/8" holeplug
G-57	1/12/07	2126701.84	786741.18	12	Dry	3/8" holeplug
G-58	1/12/07	2126691.12	786660.25	12	3.4	3/8" holeplug
G-66	1/11/07	2126144.35	788490.84	24	Dry	TD-16
G-67	1/11/07	2126223.72	788444.50	24	Dry	TD-16
G-68	1/11/07	2126349.48	788386.62	23	Dry	TD-16
G-69	1/11/07	2126462.10	788294.99	28	Dry	TD-16
G-70	1/11/07	2126631.12	788187.22	24	Dry	TD-16
G-71	1/11/07	2126715.66	788132.43	24	Dry	TD-16
G-72/G-72R	1/11/07	2127011.60	787901.51	16	Dry	TD-16
G-73	1/11/07	2127016.72	787475.78	20	Dry	3/8" holeplug
G-74	1/11/07	2127031.97	787545.30	20	Dry	3/8" holeplug
G-75	1/11/07	2127068.37	787596.36	20	Dry	3/8" holeplug
G-76	1/11/07	2127097.14	787699.07	20	Dry	3/8" holeplug
G-77	1/11/07	2126981.30	787306.77	20	16.2	3/8" holeplug
G-78	1/11/07	2126963.59	787245.41	18	Dry	3/8" holeplug
G-79	1/10/07	2125708.50	787080.83	15	Dry	TD-16
G-80	1/10/07	2125725.40	787448.90	34	Dry	TD-16
G-81	1/11/07	2125726.34	787881.70	30	Dry	TD-16
G-82	1/11/07	2125702.31	787883.14	22	Dry	TD-16
G-83	1/11/07	2125700.60	787922.66	22	Dry	TD-16
G-84	1/11/07	2125699.84	787952.00	39	Dry	TD-16
G-85	1/11/07	2125728.54	787954.28	18	Dry	TD-16
G-86	1/11/07	2125699.38	787989.04	39	37.5	TD-16
G-87	1/11/07	2125717.96	788018.03	24	Dry	TD-16
G-88	1/11/07	2125859.55	788212.96	28	Dry	TD-16
G-89	1/11/07	2125846.52	788199.92	25	Dry	TD-16
G-90	1/11/07	2125905.24	788284.64	21	Dry	TD-16
G-91	1/11/07	2125916.46	788316.46	28	Dry	TD-16
G-92	1/11/07	2125923.25	788340.58	29	28.5	TD-16
G-93	1/11/07	2126315.13	788386.62	28	Dry	TD-16
G-94	1/11/07	2126267.68	788411.98	28	Dry	TD-16
G-95	1/11/07	2126403.62	788334.02	30	Dry	TD-16
G-96	1/11/07	2126506.09	788273.02	18	Dry	TD-16
G-97	1/11/07	2126571.68	788225.11	15	Dry	TD-16
G-98	1/11/07	2126681.07	788160.62	28	Dry	TD-16
G-99	1/11/07	2126773.63	788106.52	20	Dry	TD-16
G-100	1/11/07	2125814.65	788171.52	30	24.15	TD-16
G-101	1/11/07	2125780.97	788159.42	24	Dry	TD-16
G-102	1/11/07	2125756.80	788149.51	17	Dry	TD-16
G-103	1/11/07	2125704.01	788082.45	18	Dry	TD-16
G-104	1/11/07	2125718.71	788116.23	24	Dry	TD-16
G-105	1/11/07	2125946.36	788433.26	28	Dry	TD-16
G-106	1/11/07	2126829.62	788055.29	32	20.3	TD-16
G-107	1/11/07	2126906.79	787979.66	26	19.5	TD-16

Depth to Water as measured from ground surface