DENR USE ONLY: ☐ Paper Report ☐ Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

S&ME, Inc. (Consultant)

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Larry Armstrong, P.E. Phone: 864-574-2360

E-mail: larmstrong@smeinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Duke Energy Marshall Steam Station FGD Landfill	8320 East Hwy 150 Terrell, Catawba County, NC	18-09	.0500	March 16, 2010

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Larry Armstrong, P.E. | Senior Engineer | 864-574-2360

Facility Representative Name (Print) | Title | (Area Code) Telephone Number

Signature | June 4, 2010 Date

Affix NC Licensed/ Professional Geologist Seal

301 Zima Park Drive, Spartanburg, South Carolina 29301

Facility Representative Address

F-0176

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009

DUKE ENERGY
MARSHALL STEAM STATION
FLUE GAS DESULFURIZATION (FGD) LANDFILL
PERMIT #18-09
GROUNDWATER MONITORING REPORT
MARCH 2010 SAMPLING EVENT

S&ME Project No. 1411-09-047

Prepared For:

Duke Energy®

Prepared By:

S&ME

S&ME, Inc.
44 Buck Shoals Road Suite C-3
Arden, North Carolina 28704

June 4, 2010

June 4, 2010

Ms. Jackie Drummond
North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Reference: **Semi-Annual Groundwater Monitoring Report**
Duke Energy Carolinas – Marshall Steam Station
Flue Gas Desulfurization (FGD) Landfill
Permit # 18-09
S&M# Project 1411-09-047

Dear Ms. Drummond:

On behalf of Duke Energy, attached is the groundwater monitoring report for the Marshall Steam Station FGD Landfill (Permit # 18-09). Groundwater sampling for the landfill was performed on March 16, 2010. This work was performed for Duke Energy in accordance with S&ME Proposal ENV-069-09, dated May 1, 2009.

The Groundwater Monitoring Report for the sampling event includes a summary of the analytical results, a figure showing groundwater contours at the landfill and a preliminary evaluation of values in excess of the NCAC 2L groundwater standards. Also attached is the Environmental Monitoring Reporting Form. An EXCEL file containing the laboratory results in the Electronic Data Deliverable format will be sent to you by e-mail.

If you have questions or require additional information, please contact us at 828-687-9080.

Sincerely,

S&ME, Inc.

Scott Spinner MS
Scott Spinner
Staff Professional

Larry Armstrong, P.E.
Senior Engineer

NORTH CAROLINA PROFESSIONAL SEAL 17093 ENGINEER LARRY T. ARMSTRONG

North Carolina Professional Engineering Firm License No. F-0176

Ashnc1\share\2009 PROJECTS\1411\ENVIRONMENTAL PROJECTS\11 09 047 Duke Energy Landfills - GW Reports\Marshall FGD Landfill\Groundwater Monitoring\March 2010 GW Report\Working\MSS FGD LF Report – FINAL (June 4, 2010).doc

cc:

Duke Energy
Marshall Steam Station
8320 East Highway 150
Terrell, NC 28682
Attn: Donna Burrell, Environmental Coordinator

Duke Energy
526 South Church Street
Charlotte, North Carolina 28201
Attn: Ed Sullivan, P.E. Mail Code EC13K

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Chain of Custody Forms

1. PROJECT INFORMATION

Marshall Steam Station is located in Catawba County, North Carolina, on Highway NC 150, just west of Lake Norman. The station is owned and operated by Duke Energy Carolinas (Duke). The Marshall plant generates 2090 MW of electric power by combustion of coal.

The plant is located in the Piedmont physiographic region. The subsurface conditions in the plant area consist of residual soils and partially weathered rock which have been formed by the in-place weathering of the parent rock.

The FGD landfill is located northwest of the power plant and west of the onsite ash basin. Only Cell 1 of the landfill is in operation and is approximately 18 acres in area. The location of the permitted landfill areas and the associated groundwater monitoring wells is shown on **Figure 1**. In general, the topography of the site slopes from the west-northwest to the east towards the Marshall Ash Basin

The landfill is permitted to receive FGD residue (gypsum) and clarifier sludge. The clarifier sludge is generated from the FGD wastewater treatment system.

2. SCOPE OF WORK

S&ME completed the following tasks on Duke's behalf:

- Received information provided by Duke on field sampling and measurement of groundwater elevations for monitoring wells MS-8, MS-9, MS-10, MS-11, MS-12, MS-13, MS-14, MS-15, and MS-16. Received information provided by Duke on field sampling at surface water sample location SW-1. This sampling was conducted on March 16, 2010.
- Reviewed laboratory analytical results for samples. These analyses were performed by a North Carolina certified laboratory, using State approved methods. These results were provided in both in paper format and in an EXCEL file. The EXCEL file was manipulated to conform to the format requirements of the NCDENR Electronic Data Deliverable template.
- Developed a groundwater surface contour map using map data and groundwater elevation data supplied by Duke.
- Provided a preliminary evaluation of the cause and significance of values exceeding NCAC 2L groundwater standards.
- Prepared and submitted this Groundwater Monitoring Report to Duke and to NCDENR.

3. RESULTS

3.1 Site Groundwater Flow

Groundwater contours for the site are shown on **Figure 1**. These contours were developed using groundwater elevations at the wells measured during sampling and the approximate surface water elevation for the Marshall Ash Basin.

Groundwater flow in the area of the landfill is generally from areas of higher topography in the northwest to the southeast and east towards the Marshall Ash Basin. To a lesser extent, some component of groundwater flow is expected toward the surface water drainage feature containing surface water sample location SW-1.

Well MS-8 is located northwest of the landfill, at a higher topographic elevation than the landfill and remaining wells, and is considered to represent background groundwater conditions for the project.

3.2 Analytical Results

A summary of the field data is presented in **Table 1.** The results of the laboratory analyses for the groundwater and surface water samples are summarized in **Table 2.**

Results from the monitoring wells and surface water sample were below the corresponding NCAC 2L groundwater quality standards with the exceptions noted below. Preliminary comments to the cause and/or significance of these exceptions are included.

- pH[1] (6.5 – 8.5 standard units) – Field measured pH values below 6.5 were measured in monitoring wells MS-8, MS-10, MS-11, MS-12, MS-13, MS-14, MS-16, and in surface water sample location SW-1. Field measured pH values below 6.5 ranged from 5.1 in MS-12 to 6.2 in MS-8, MW-14, and MS-16. A pH value of 9.3 was measured in monitoring well MS-15.

  Monitoring well MS-8 is considered to be the project background well and should not be impacted by effects from the landfill. Monitoring well MS-11 is located hydraulically upgradient of the landfill and should not be impacted by effects from the landfill.

  The pH values measured at locations MS-12, MS-13, MS-14, MS-16, and SW-1 fall within, or slightly below, the pH range observed in wells MS-8 and MS-11. The lowest pH value observed was at well MS-12, with a pH of 5.1. The pH values at this well have ranged from a high of 5.1 measured in March 2010 to a low of 4.5 measured in March of 2008. Based on this information, the pH values detected at these locations are believed to be reflective of the natural groundwater pH in the area.

  The field pH value measured at MS-15 was 9.3. The historic values measured at

[1] All pH measurements are field measured values.

this are presented below:

Sample Date	MS-15 pH Value (S.U.)
9/25/2006	7.0
3/6/2007	7.9
9/10/2007	6.9
3/3/2008	6.5
9/10/2008	9.8
3/16/2009	9.2
9/8/2009	7.6
3/16/2010	9.3

The review of the other constituents in Table 2 for MS-15 does not indicate an impact to groundwater at this location. The results at this location should continue to be monitored.

- Chromium (2L = 10 µg/L[2]) – Concentrations in excess of the NCAC 2L groundwater quality standard for chromium were measured at MS-8 (12.2 µg/L) and MS-15 (16.4 µg/L). Prior to the revision of the chromium standard, no concentrations in excess of the NCAC 2L groundwater quality standard were observed in these wells. The historic results for chromium at these wells are as follows:

Sample Date	MS-15 Chromium (µg/L)	MS-8 Chromium (µg/L)
9/25/2006	19.27	25.65
3/6/2007	11.50	6.87
9/10/2007	15.64	26.64
3/3/2008	20.50	47.20
9/10/2008	12.90	82.00
3/16/2009	12.80	24.40
9/8/2009	16.40	8.00
3/16/2010	16.40	12.20

The initial placement of waste in the landfill occurred in January 2007. As shown in the table, the March 2010 chromium values for MS-15 are less than the September 2006 values. The September 2006 sampling occurred prior to waste placement.

Monitoring well MS-8 should not be impacted by effects from the landfill. The detected chromium concentration at MS-8 and MS-15 are believed to be reflective

[2] Prior to this sampling event the NCAC 2L groundwater quality standard for chromium was 50 µg/L. In January 2010, the NCAC 2L groundwater quality standard was revised to 10 µg/L.

of the natural chromium concentrations in the groundwater.

- Iron (2L = 300 µg/L) – Concentrations in excess of the NCAC 2L groundwater quality standard for iron were measured at MS-8 (2120 µg/L), MS-10 (597 µg/L), MS-16 (3740 µg/L) and SW-1 (2680 µg/L). Monitoring well MS-8 should not be impacted by effects from the landfill, and should thus be reflective of the natural iron concentration in the groundwater. Considering that (1) the concentrations of iron in MS-10, MS-16, and SW-1 are on the same order of magnitude as that at MS-8 and (2) the iron concentrations at these wells are within the range of historical values observed for these locations, it appears the exhibited iron concentrations are naturally occurring.

  Another factor that may be influencing the iron concentration at the above locations is sample turbidity. The turbidity in the above four samples ranged from 21.3 to 56.8 Nephelometric Turbidity Units (NTUs), compared to a turbidity range from 3.1 to 9.8 in the remaining six wells. When sampling for contaminants that may be biased by the presence of turbidity, US EPA recommends that the turbidity reading stabilize at a value below 10 NTUs[3]. Considering the turbidity measured in wells MS-8, MS-10, MS-16, and SW-1 relative to the remaining wells and the US EPA recommendation, it is probable that these observed iron concentrations are biased due to the presence of the turbidity.

- Manganese (2L = 50 µg/L) – Concentrations in excess of the NCAC 2L groundwater quality standard for manganese were measured in monitoring well MS-16 (62.4 µg/L) and in surface water sample location SW-1 (70.3 µg/L). The measured manganese concentration in MS-16 has been relatively constant during the last four sampling events with previously measured values of 57.8 µg/L (September 2008), 51.5 µg/L (March 2009), and 56.4 µg/L (September 2009). The manganese concentrations at this location have been on a downward trend from an initial high of 775 µg/L measured in September 2006.

  The manganese concentration measured at SW-1 was 70.3 µg/L, which represents a decrease over the previously measured values of 271 µg/L measured in September 2009. The measured manganese concentration falls between the 22.1 µg/L concentration measured in March 2009 and the 105 µg/L concentration measured in September 2008.

  Considering the above trends and the turbidity concentrations in samples MS-16 and SW-1 (see turbidity discussion in the Iron section above), it is likely that the observed manganese concentrations are reflective of natural groundwater conditions and biased by turbidity.

In addition to the sample locations, compounds, and concentrations listed and discussed

[3] Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers, Ground Water Forum Issue Paper, EPA 542-S-02-001, May 2002, Yeskis and Zavala.

above, the groundwater analytical results for the compounds at the following sample locations were equal to or above the corresponding Solid Waste Section Limits (SWSL):

- Barium in excess of the SWSL of 100 µg/L was measured in wells MS-10, MS-13, and MS-16.
- Zinc in excess of the SWSL of 10 µg/L was measured in MS-16.

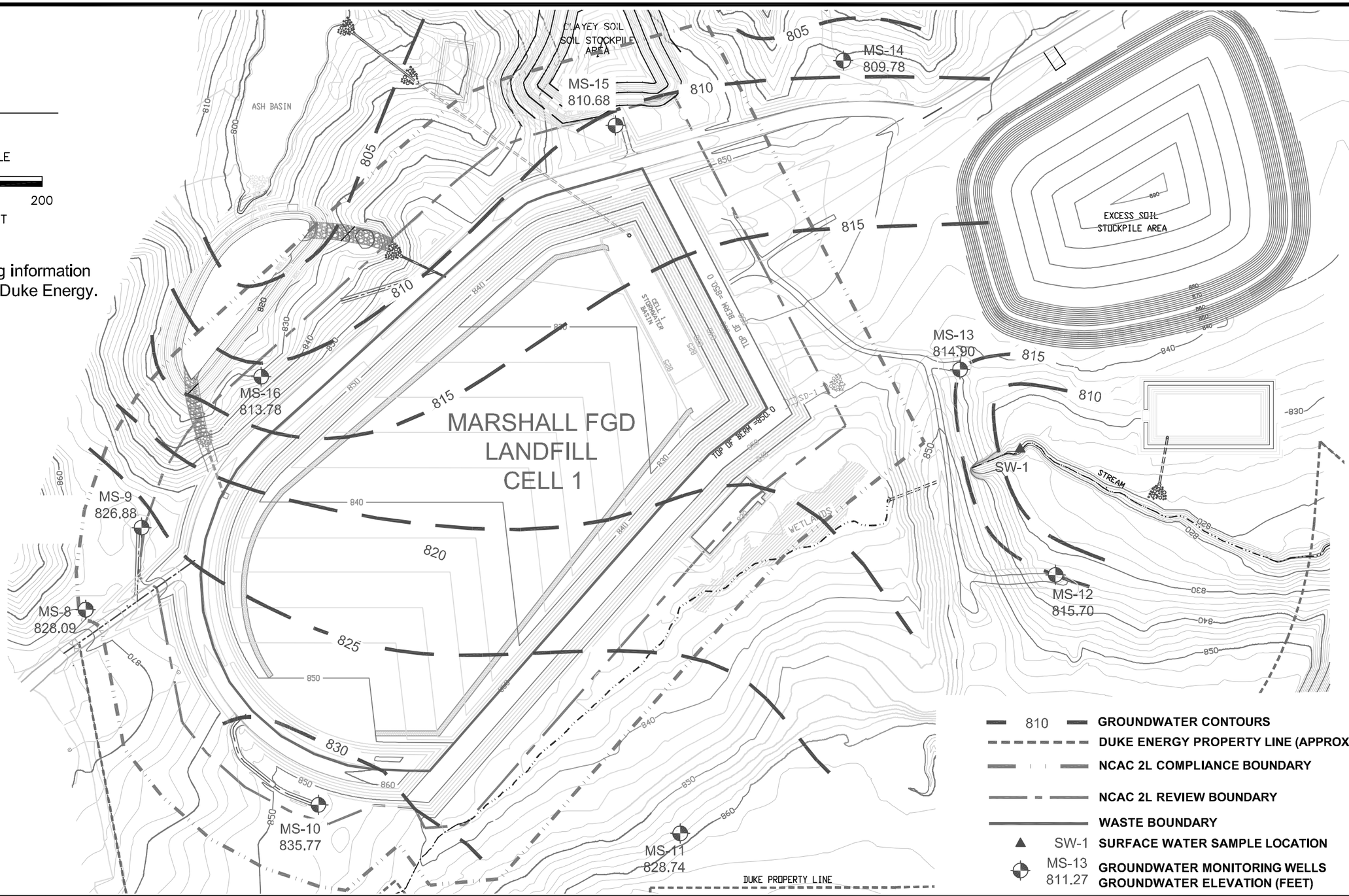
N

SCALE

0 200

FEET

Note:Mapping information provided by Duke Energy.



810 GROUNDWATER CONTOURS

DUKE ENERGY PROPERTY LINE (APPROX)

NCAC 2L COMPLIANCE BOUNDARY

NCAC 2L REVIEW BOUNDARY

WASTE BOUNDARY

SW-1 SURFACE WATER SAMPLE LOCATION

MS-13 811.27 GROUNDWATER MONITORING WELLS GROUNDWATER ELEVATION (FEET)

SCALE: AS SHOWN	DATE: June 2, 2010
PROJECT NO. 1411-09-047	DRAWN BY: W.Miller
	CHECKED BY: L.Armstrong

S&ME
44 Buck Shoals Rd Suite C-3
Arden, NC 29704
PH. (828) 687-9080
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WWW.SMEINC.COM

DUKE ENERGY MARSHALL STEAM STATION
FLUE GAS DESUPHURIZATION (FGD) LANDFILL - PERMIT #18-09
GROUNDWATER CONTOURS
MARCH 2010

FIGURE NO. 1

TABLE 1 - FIELD DATA PARAMETERS
DUKE ENERGY MARSHALL STEAM STATION
FGD LANDFILL - PERMIT #18-09
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

DATE	WELL NO.	WELL DEPTH (feet)	DEPTH TO WATER (feet)	WATER ELEV. (feet)	DEPTH TO PRODUCT (feet)	ODOR	Purge Method	AVG * PMP RATE (ml/min)	WELL VOL (gal)	EVAC VOL (gal)	EVAC (yes/no)	TEMP (deg C)	SPECIFIC CONDUCTANCE (umho/cm)	pH (units)	TURBIDITY (NTU)	ORP (mV-NHE)	DO (mg/l)
3/16/2010	MS-8	51.58	44.25	828.09	N/A	NA	CP	N/A	1.20	3.60	NO	15.0	44	6.2	56.8	N/A	N/A
3/16/2010	MS-9	53.00	41.16	826.88	N/A	NA	CP	N/A	1.93	10.00	NO	15.3	133	7.0	5.0	N/A	N/A
3/16/2010	MS-10	23.34	15.52	835.77	N/A	NA	CP	N/A	1.28	4.50	NO	14.3	23	5.2	21.3	N/A	N/A
3/16/2010	MS-11	42.72	31.04	828.74	N/A	NA	CP	N/A	1.91	10.00	NO	14.3	51	5.3	9.8	N/A	N/A
3/16/2010	MS-12	31.09	19.96	815.70	N/A	NA	CP	N/A	1.82	6.00	NO	14.0	27	5.1	4.3	N/A	N/A
3/16/2010	MS-13	41.52	27.00	814.90	N/A	NA	CP	N/A	2.37	7.50	NO	13.7	104	5.4	4.6	N/A	N/A
3/16/2010	MS-14	44.38	34.29	809.78	N/A	NA	CP	N/A	1.65	5.25	NO	14.2	51	6.2	7.2	N/A	N/A
3/16/2010	MS-15	63.08	50.79	810.68	N/A	NA	CP	N/A	2.00	8.00	NO	14.7	136	9.3	3.1	N/A	N/A
3/16/2010	MS-16	37.46	23.20	813.78	N/A	NA	CP	N/A	2.33	5.00	YES	15.8	108	6.2	52.1	N/A	N/A
3/16/2010	SW-1	N/A	N/A	N/A	N/A	NA	NP	NA	N/A	NA	NA	8.5	51	6.0	43.4	NA	NA

Sampling Performed by Duke Energy

Purge Methods
LF = Low Flow
CP = Coventional Purge (3 to 5 well vol)
BP = No Purge (HydraSleeve)

TABLE 2 - FIELD AND ANALYTICAL RESULTS
DUKE ENERGY MARSHALL STEAM STATION
FGD LANDFILL - PERMIT #18-09
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

June 4, 2010

Facility: Marshall Steam Station FGD Landfill #18-09

Sample Date: March 16, 2010 (Field and Geochemistry Data)

Field sampling performed by Duke Energy

Laboratory Certificate Codes:
Duke Power Field #5193
Pace Lab #40

Parameter	SW ID	Units	Certificate Codes	Monitoring Well Identification						SWSL	15A NCAC 2L*
				1809-MS-8	1809-MS-9	1809-MS-10	1809-MS-11	1809-MS-12	1809-MS-13		
Field pH	320	Std. Units	5193	**6.2**	7.0	**5.2**	**5.3**	**5.1**	**5.4**		**6.5-8.5**
Field Spec. Conductance	323	umho/cm	5193	44	133	23	51	27	104		
Temperature	325	C	5193	15.0	15.3	14.3	14.3	14.0	13.7		
Top Casing	328	msl-feet		872.34	868.04	851.29	859.78	835.66	841.90		
Depth to Water	318	feet		44.25	41.16	15.52	31.04	19.96	27.00		
Water Elevation	319	msl-feet		828.09	826.88	835.77	828.74	815.70	814.90		
Well Depth	41	feet		51.58	53.00	23.34	42.72	31.09	41.52		
Arsenic	14	ug/L	40	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	**10**	**10**
Barium	15	ug/L	40	62.3 J	47.6 J	147	88.6 J	76.8 J	106	**100**	**700**
Boron	NE	ug/L	40	56.4	48.8	42.7	37.7	36.4	36.1	**NE**	**700**
Cadmium	34	ug/L	40	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**1.0**	**2**
Chloride	301	ug/L	40	5000 U	5000 U	5000 U	5740	5000 U	5000 U	**NE**	**250000**
Chromium	51	ug/L	40	**12.2**	1.9 J	1.0 J	3.0 J	0.83 J	0.40 J	**10**	**10**
Copper	54	ug/L	40	2.4 J	0.30 U	2.6 J	0.30 U	0.30 U	0.30 U	**10**	**1000**
Fluoride	312	ug/L	40	100 U	100 U	100 U	100 U	100 U	110 J	**2000**	**2000**
Iron	340	ug/L	40	**2120**	239 J	**597**	217 J	18.2 J	63.2 J	**300**	**300**
Lead	131	ug/L	40	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**10**	**15**
Manganese	342	ug/L	40	24.5 J	13.0 J	38.8 J	13.7 J	15.6 J	12.3 J	**50**	**50**
Mercury	132	ug/L	40	0.070 U	0.070 U	0.070 U	0.070 U	0.070 U	0.070 U	**0.20**	**1**
Nickel	152	ug/L	40	5.6 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	**50**	**100**
Nitrate (as Nitrogen)	303	ug-N/L	40	100 U	204 J	1020 J	100 U	181 J	3170 J	**10000**	**10000**
Selenium	183	ug/L	40	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	**10**	**20**
Silver	184	ug/L	40	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**10**	**20**
Sulfate	315	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	**250000**	**250000**
Total Dissolved Solids	311	ug/L	40	52000	96000	24000	20000 U	20000 U	72000	**NE**	**500000**
Zinc	213	ug/L	40	5.7 J	1.3 J	8.9 J	5.5 J	5.4 J	3.1 J	**10**	**1000**

Notes:

*15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater

NC SWSL = North Carolina Solid Waste Section Limit

Bold Values indicate a value that attains or exceeds the 15A NCAC 2L Groundwater Quality Standard

NE = Not established

Values in gray highlighted cells indicate a value that equals or exceeds the SWSL but is less than the 15A NCAC 2L Groundwater Quality Standard

J = Parameters are values greater than Method Detection Limit (MDL) but less than the SWSL

U = Not detected above the method detection limit, for reporting purposes concentrations have been set equal to the method detection limit

TABLE 2 - FIELD AND ANALYTICAL RESULTS
DUKE ENERGY MARSHALL STEAM STATION
FGD LANDFILL - PERMIT #18-09
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

June 4, 2010

Facility: Marshall Steam Station FGD Landfill #18-09

Sample Date: March 16, 2010 (Field and Geochemistry Data)

Field sampling performed by Duke Energy

Laboratory Certificate Codes:
Duke Power Field #5193
Pace Lab #40

Parameter	SW ID	Units	Certificate Codes	Monitoring Well Identification				FIELD BLANK	SWSL	15A NCAC 2L*
				1809-MS-14	1809-MS-15	1809-MS-16	1809-SW-1			
Field pH	320	Std. Units	5193	**6.2**	**9.3**	**6.2**	**6.0**			**6.5-8.5**
Field Spec. Conductance	323	umho/cm	5193	51	136	108	51			
Temperature	325	C	5193	14.2	14.7	15.8	8.5			
Top Casing	328	msl-feet		844.07	861.47	836.98				
Depth to Water	318	feet		34.29	50.79	23.20				
Water Elevation	319	msl-feet		809.78	810.68	813.78				
Well Depth	41	feet		44.38	63.08	37.46				
Arsenic	14	ug/L	40	2.7 U	2.7 U	3.6 J	2.7 U	2.7 U	**10**	**10**
Barium	15	ug/L	40	39.5 J	68.6 J	127	65.6 J	0.64 J	**100**	**700**
Boron	NE	ug/L	40	34.9	34.9	30.7	38.3	23.4	**NE**	**700**
Cadmium	34	ug/L	40	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**1.0**	**2**
Chloride	301	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	**NE**	**250000**
Chromium	51	ug/L	40	0.47 J	**16.4**	5.8 J	1.3 J	0.40 U	**10**	**10**
Copper	54	ug/L	40	0.30 U	0.30 U	2.0 J	1.1 J	0.30 U	**10**	**1000**
Fluoride	312	ug/L	40	120 J	120 J	210 J	100 U	100 U	**2000**	**2000**
Iron	340	ug/L	40	153 J	69.0 J	**3740**	**2680**	14.0 U	**300**	**300**
Lead	131	ug/L	40	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**10**	**15**
Manganese	342	ug/L	40	2.5 J	1.2 J	**62.4**	**70.3**	0.30 U	**50**	**50**
Mercury	132	ug/L	40	0.14 J	0.070 U	0.10 J	0.083 J	0.070 U	**0.20**	**1**
Nickel	152	ug/L	40	1.7 U	1.7 U	3.3 J	1.7 U	1.7 U	**50**	**100**
Nitrate (as Nitrogen)	303	ug-N/L	40	100 U	574 J	386 J	100 U	100 U	**10000**	**10000**
Selenium	183	ug/L	40	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	**10**	**20**
Silver	184	ug/L	40	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**10**	**20**
Sulfate	315	ug/L	40	5000 U	5000 U	5000 U	6280 J	5000 U	**250000**	**250000**
Total Dissolved Solids	311	ug/L	40	56000	266000	120000	80000		**NE**	**500000**
Zinc	213	ug/L	40	1.8 J	0.40 U	12.2	9.3 J	2.4 J	**10**	**1000**

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater

NC SWSL = North Carolina Solid Waste Section Limit

Bold Values indicate a value that attains or exceeds the 15A NCAC 2L Groundwater Quality Standard

NE = Not established

Values in gray highlighted cells indicate a value that equals or exceeds the SWSL but is less than the 15A NCAC 2L Groundwater Quality Standard

J = Parameters are values greater than Method Detection Limit (MDL) but less than the SWSL

U = Not detected above the method detection limit, for reporting purposes concentrations have been set equal to the method detection limit

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy

For Detailed Instructions, see:
http://dewww/essenv/coc/

Duke Energy Analytical Lab Services
Mail Code MGO3A2 (Building 7485)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-5038

Analytical Laboratory Use Only

LIMS # 10-MAR-0042 | Sample Class GWATER | Samples Originating From NC ✓ SC
Logged By EBC | Date & Time 03-01-10 11:15 | SAMPLE PROGRAM Ground Water ✓ NPDES Drinking Water UST RCRA Waste
VENDOR PACE | Cooler Temp (C) <1°C
PO # ISW01.1942 | Preserv.: 1=HCl 2=H2SO4 3=HNO3 4=Ice 5=None
MR #

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DISTRIBUTION ORIGINAL to LAB, COPY to CLIENT
9265393

Customer must Complete

1)Project Name MARSHALL FGD LANDFILL		2)Phone No: 875-5257
3)Client LDC / TSH / Ed Sullivan		4)Fax No:875-4349
5)Business Unit: 20035	6)Process:	7)Resp. To: MS00
8)Project ID: BENVWS	9)Activity ID:	10)Mail Code: MGO3A3

Customer to complete all appropriate NON-SHADED areas.

Customer to complete appropriate columns to right

LAB USE ONLY 11 Lab ID	12 Chem Desktop No.	13 Sample Description or ID	14 Collection Information Date	Time	Signature	17 Comp.	18 Grab	Alk, SO4, NO3, Cl, Fluoride (4)	Hg (3)	METALS (Ag, As, B, Ba, Ca, Cd, Cr, K, Mg, Na, Ni, Pb, Se, Cu, Fe, Mn, Zn) (3)	TDS (4)	20 Total # of Containers
30003482	001	MS-8	3/16/10	0945	[signature]		X	1	1	1	1	4
30003483	002	MS-9	3/16/10	0915	[signature]		X	1	1	1	1	4
30003484	003	MS-10	3/16/10	1025	[signature]		X	1	1	1	1	4
30003485	004	MS-11	3/16/10	0915	[signature]		X	1	1	1	1	4
30003486	005	MS-12	3/16/10	0830	[signature]		X	1	1	1	1	4
30003487	006	MS-13	3/16/10	0745	[signature]		X	1	1	1	1	4
30003488	007	MS-14	3/16/10	0830	[signature]		X	1	1	1	1	4
30003489	008	MS-15	3/16/10	0750	[signature]		X	1	1	1	1	4
30003490	009	MS-16	3/16/10	1025	[signature]		X	1	1	1	1	4
30003491	010	SW-1	3/16/10	0935	[signature]		X	1	1	1	1	4
30003492	011	FIELD BLANK	3/16/10	1105	[signature]		X	1	1	1		3

Customer to sign & date below

21)Relinquished By [signature]	Date/Time 3-16-10 1245	Accepted By: EB Calder	Date/Time 3-16-10 1245
Relinquished By EB Calder	Date/Time 3-16-10 1329	Accepted By: [signature] pace clt	Date/Time 3-16-10 1329
Relinquished By [signature] pace clt	Date/Time 3-16-10 1347	Accepted By: [signature] pace clt	Date/Time 3-16-10 1347
23)Seal/Locked By EB Calder	Date/Time 3-16-10 1258	Sealed/Lock Opened By	Date/Time

24)Comments

Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required

Customer, important please indicate desired turnaround

22 Requested Turnaround
3/26/10

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy℠

For Detailed Instructions, see:
http://dewww/essenv/coc/

Duke Energy Analytical Lab Services
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-5038

Analytical Laboratory Use Only

LIMS # 10-MAR-0042 | Sample Class: GWATER | Samples Originating From: NC √ SC ___

Logged By: EBC | Date & Time: 03-01-10 11:15 | SAMPLE PROGRAM: Ground Water √ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

VENDOR: PACE | Cooler Temp (C): 4.1°C

PO # ISW01.1942

MR #

[19]Page 1 of 1

DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: MARSHALL FGD LANDFILL		2)Phone No: 875-5257
3)Client: LDC / TSH / Ed Sullivan		4)Fax No:875-4349
5)Business Unit: 20035	6)Process:	7)Resp. To: MS00
8)Project ID: BENVWS	9)Activity ID:	10)Mail Code: MGO3A3

[15]Preserv.:1=HCl, 2=H_2SO_4, 3=HNO_3, 4=Ice, 5=None

Customer to complete all appropriate NON-SHADED areas.

Customer to complete appropriate columns to right

LAB USE ONLY [11]Lab ID	[12]Chem Desktop No.	[13]Sample Description or ID	[14]Collection Information Date	Time	Signature	[17]Comp.	[18]Grab	[16]Analyses Required: Alk, SO4, NO3, Cl, Fluoride		Hg	METALS (Ag, As, B, Ba, Ca, Cd, Cr, K, Mg, Na, Ni, Pb, Se, Cu, Fe, Mn, Zn)					TDS		[20]Total # of Containers
								4		3	3					4		
30003482		MS-8	3/16/10	0945			X	1		1	1					1		4
30003483		MS-9	3/16/10	0915			X	1		1	1					1		4
30003484		MS-10	3/16/10	1025			X	1		1	1					1		4
30003485		MS-11	3/16/10	0915			X	1		1	1					1		4
30003486		MS-12	3/16/10	0830			X	1		1	1					1		4
30003487		MS-13	3/16/10	0745			X	1		1	1					1		4
30003488		MS-14	3/16/10	0830			X	1		1	1					1		4
30003489		MS-15	3/16/10	0750			X	1		1	1					1		4
30003490		MS-16	3/16/10	1025			X	1		1	1					1		4
30003491		SW-1	3/16/10	0935			X	1		1	1					1		4
30003492		FIELD BLANK	3/16/10	1105			X	1		1	1							3

Customer to sign & date below

21)Relinquished By:	Date/Time: 3-16-10 1245	Accepted By: EB Calder	Date/Time: 3-16-10 1245
Relinquished By: EB Calder 3-16-10	Date/Time: 1329	Accepted By: Pace JT	Date/Time: 3-16-10 1329
Relinquished By:	Date/Time:	Accepted By:	Date/Time:
23)Seal/Locked By: EB Calder 3-16-10	Date/Time: 1258	Sealed/Lock Opened By:	Date/Time:

24)Comments

Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required

Customer, important please indicate desired turnaround

[22]Requested Turnaround

14 Days √ 3/30
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply