DUKE ENERGY CORPORATION
526 South Church St.
Charlotte, NC 28202

Mailing Address:
PO Box 1006
Charlotte, NC 28201-1006

April 11, 2008

Mr. Donald Herndon
North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, N.C. 27699-1646

Subject: Duke Energy Carolinas – Marshall Steam Station
Solid Waste Flue Gas Desulfurization (FGD) Landfill
Permit # 18-09
Semi-Annual Groundwater Monitoring Report

Dear Mr. Herndon:

Attached is the groundwater monitoring report for Marshall Steam Station's FGD landfill (Permit # 18-09). Groundwater sampling for the landfill occurred on March 3, 2008.

Groundwater contours are shown in Figure 1 and show groundwater flow generally to the east-southeast toward the station's ash basin. Groundwater elevations, pH, specific conductance, temperature and laboratory results are tabled in the Groundwater Monitoring Report. The Groundwater Monitoring Report (Table 1) has been revised to comply with guidelines outlined in the February 23, 2007 NCDENR memorandum.

In general, groundwater analytical results were similar to those previously reported. All parameters, except for pH (MS-8: 5.2 SU, MS-9: 9.3 SU, MS-10: 4.5 SU, MS-11: 5.1 SU, MS-12: 4.5 SU, MS-13: 4.9 SU, MS-14: 5.5 SU, and MS-16: 6.0 SU), iron (MS-8: 12,600 ug/l, MS-10: 363 ug/l, MS-11: 544 ug/l, MS-13: 386 ug/l, and MS-16: 5370 ug/l), and manganese (MS-8: 142 ug/l and MS-16: 73 ug/l) were within limits set forth in the NCAC 2L groundwater standards. The elevated iron and manganese and low pH values are not uncommon in Piedmont area soils and are widely distributed over the landfill monitoring area. As previously reported, the high pH value at MS-9 is thought to be due to a loss of bentonite seal material to the well sand pack material. Again for this event, no surface water was present for collection from location SW-1.

In addition to iron and manganese, a continued elevated concentration of chromium was detected in well MS-8. The concentration of 47 ug/l is the highest detected to date but is slightly less than the 2L standard for chromium of 50 ug/l. Well MS-8 also exhibited a nickel concentration of 31 ug/l (2L standard of 100 ug/l). Well MS-8 is a side-gradient well that will continue to be monitored for elevated metals' concentrations.

Also included with this report is a copy of the chain of custody and a sealed copy of the Environmental Monitoring Reporting Form. An electronic copy of this report will also be submitted along with an excel file of the laboratory data in the EDD format. The next sampling event scheduled for this landfill will be in September 2008. If there are any questions regarding this report, please contact me at (980) 373-7892.

Sincerely,

Christopher D. Hallman

Christopher D. Hallman
Waste and Remediation Management
Duke Energy Corporate EHS

Attachments

bc w/att: D.L. Burrell
J.A. Stowe

Record Number: 497585

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).
- In accordance with NC General Statutes Chapter 89C and 89E and NC Solid Waste Management Rules 15A NCAC 13B, be sure to affix a seal to the bottom of this page, when applicable.
- 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):

Duke Energy (facility owner)

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

Name: Tim Hunsucker Phone: 704-875-5228

E-mail: tshunsuc@duke-energy.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Marshall Steam Station FGD Residue Landfill	8320 East Hwy 150 Catawba County, NC	18-09	.0500	March 3, 2008

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.

Christopher D. Hallman — Senior Engineer — (980) 373-7892

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

Christopher D. Hallman — 4/11/08

Signature — Date

Affix NC Licensed Professional Geologist/Engineer Seal here:

NORTH CAROLINA PROFESSIONAL SEAL 12584 ENGINEER CHRISTOPHER D. HALLMAN

Revised 01/2007

DUKE ENERGY
GROUNDWATER MONITORING REPORT

Facility: Marshall Steam Station FGD Residue Landfill # 18-09
Sample Date: March 3, 2008 (Field and Geochemistry Data)

Certificate Codes:

Duke Power Lab #248
Duke Power Field #5193
Pace Analytical #12

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	5.2	9.3	4.5	5.1	4.5	4.9		6.5-8.5
Field Spec. Conductance	323	umho/cm	5193	44	156	24	40	24	84		
Temperature	325	C	5193	14	15	16	14	14	14		
Top Casing	328	msl-feet		872.34	868.04	851.29	859.78	835.66	841.90		
Depth to Water	318	feet		46.30	43.44	18.83	34.78	25.15	32.91		
Water Elevation	319	msl-feet		826.04	824.60	832.46	825.00	810.51	808.99		
Well Depth	41	feet		51.58	53.00	23.34	42.72	31.09	41.52		
Arsenic	14	ug/L	248	3.9 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10	50
Barium	15	ug/L	248	190	35	161	68	91	129	100	2000
Boron	NE	ug/L	248	14	9 J	7 J	9 J	8 J	5 J	NE	315
Cadmium	34	ug/L	248	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.0	1.75
Chloride	301	ug/L	248	5000 U	5000 U	5000 U	5000 U	5000 U	5110	NE	250000
Chromium	51	ug/L	248	47	1.5 J	1.0 J	4.0 J	1.5 J	0.9 J	10	50
Copper	54	ug/L	248	14.0	5.0 U	5.0 U	0.3 J	0.6 J	0.4 J	10	1000
Fluoride	312	ug/L	248	230	150	100 U	100 U	100 U	100 U	2000	2000
Iron	340	ug/L	248	12600	61	363	544	270	386	300	300
Lead	131	ug/L	248	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	10	15
Manganese	342	ug/L	248	142	8.5	49	18	36	18	50	50
Mercury	132	ug/L	248	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20	1.05
Nickel	152	ug/L	248	31	5.0 U	2.0 J	5.0 U	5.0 U	5.0 U	50	100
Nitrate (as Nitrogen)	303	ug-N/L	248	104	132	1370	100 U	100 U	2850	1000	10000
Selenium	183	ug/L	248	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10	50
Silver	184	ug/L	248	5.00 U	0.30 J	5.00 U	5.00 U	5.00 U	0.67 J	10	17.5
Sulfate	315	ug/L	248	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	250000	250000
Total Dissolved Solids	311	ug/L	248	80000	124000	42000	48000	1000 U	98000	NE	500000
Zinc	213	ug/L	248	36	5.2 J	14.9	17.6	10.3	9.6 J	10	1050

*** Maximum Contaminant Level (MCL)**
J- Value between MDL and Laboratory Reporting Limit
U - Value below Laboratory Reporting Limit
NE - Not Established

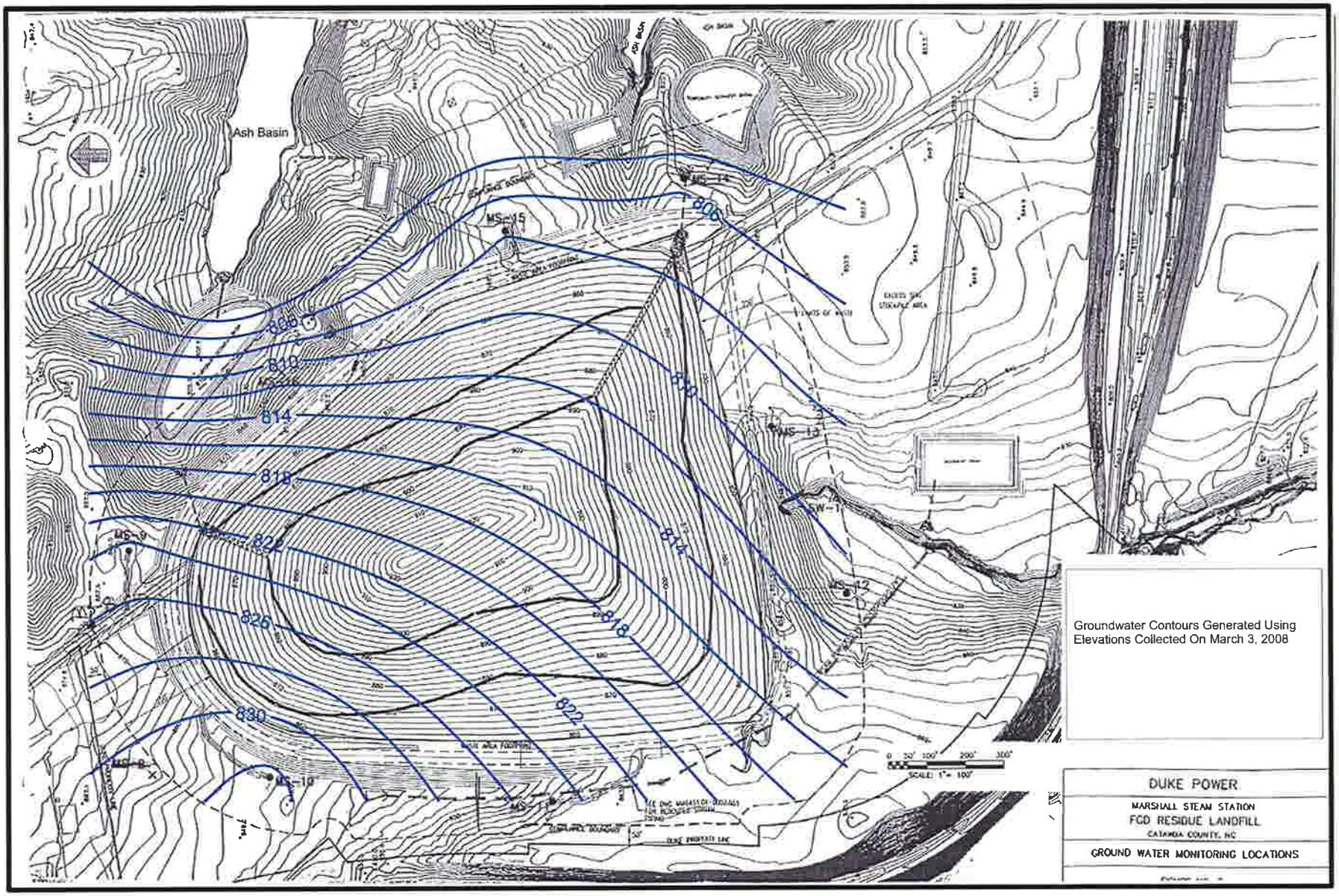
Facility: Marshall Steam Station FGD Residue Landfill # 18-09
Sample Date: March 3, 2008 (Field and Geochemistry Data)

Certificate Codes:

Duke Power Lab #248
Duke Power Field #5193
Pace Analytical #12

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	5.5	6.5	6.0	**			6.5-8.5
Field Spec. Conductance	323	umho/cm	5193	45	135	70	**			
Temperature	325	C	5193	15	16	16	**			
Top Casing	328	msl-feet		844.07	861.47	836.98				
Depth to Water	318	feet		38.41	53.60	25.98				
Water Elevation	319	msl-feet		805.66	807.87	811.00				
Well Depth	41	feet		44.38	63.08	37.46				
Arsenic	14	ug/L	248	5.0 U	5.0 U	5.0 U	**	5.0 U	10	50
Barium	15	ug/L	248	38	79	106	**	0.3 J	100	2000
Boron	NE	ug/L	248	8 J	7 J	8 J	**	7 J	NE	315
Cadmium	34	ug/L	248	1.00 U	1.00 U	1.00 U	**	1.00 U	1.0	1.75
Chloride	301	ug/L	248	5000 U	5000 U	5000 U	**	5000 U	NE	250000
Chromium	51	ug/L	248	5.0 U	21	3.8 J	**	5.0 U	10	50
Copper	54	ug/L	248	5.0 U	5.0 U	2.6 J	**	5.0 U	10	1000
Fluoride	312	ug/L	248	120	100	240	**	100 U	2000	2000
Iron	340	ug/L	248	127	124	5370	**	50 U	300	300
Lead	131	ug/L	248	5.0 U	5.0 U	5.0 U	**	5.0 U	10	15
Manganese	342	ug/L	248	2.8 J	2.1 J	73	**	5.0 U	50	50
Mercury	132	ug/L	248	0.20 U	0.20 U	0.20 U	**	0.20 U	0.20	1.05
Nickel	152	ug/L	248	5.0 U	5.0 U	3.4 J	**	5.0 U	50	100
Nitrate (as Nitrogen)	303	ug-N/L	248	100 U	544	421	**	100 U	1000	10000
Selenium	183	ug/L	248	10.0 U	10.0 U	10.0 U	**	10.0 U	10	50
Silver	184	ug/L	248	0.40 J	0.37 J	0.17 J	**	5.00 U	10	17.5
Sulfate	315	ug/L	248	5000 U	5000 U	5000 U	**	5000 U	250000	250000
Total Dissolved Solids	311	ug/L	248	100000	132000	122000	**		NE	500000
Zinc	213	ug/L	248	5.6 J	5.6 J	20	**	7.8 J	10	1050

*** Maximum Contaminant Level (MCL)**
J- Value between MDL and Laboratory Reporting Limit
U - Value below Laboratory Reporting Limit
NE - Not Established
** Dry location - sample not collected



Groundwater Contours Generated Using Elevations Collected On March 3, 2008

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 # 08-FEB-0488	Sample Class GWATER	Samples Originating From NC ✓ SC ___
Logged By VS	Date & Time 2/27/08 10:11	SAMPLE PROGRAM: Ground Water ✓, NPDES ___, Drinking Water ___, UST ___, RCRA Waste ___
VENDOR PACE *	Cooler Temp (C) < 2°C	

PACE PO# ISWO10000000341

[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 / Chris Hallman		4)Fax No:875-5032
5)Business Unit: 20035	6)Process:	7)Resp. To: MS00
8)Project ID: C423LFL	9)Activity ID: C	10)Mail Code: MGO3A3

Customer to complete all appropriate NON-SHADED areas.

Customer to complete appropriate columns to right

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

LAB USE ONLY [11]Lab ID	[12]Chem Desktop No.	[13]Sample Description or ID	[14]Collection Information Date	Time	Signature	[17]Comp.	[16]Grab	Alk, SO4, NO3, Cl, Fluoride - (V) 4		Hg - (V) 3	METALS (Ag, As, B, Ba, Ca, Cd, Cr, K, Mg, Na, Ni, Pb, Se, Cu, Fe, Mn, Zn)-(V) 3				TDS - (V) 4		[20]Total # of Containers
28005137		MS-8 92145910001	3/3/08	0845	[signature]		X	1		1	1				1		4
28005138		MS-9 002	3/3/08	1000	[signature]		X	1		1	1				1		4
28005139		MS-10 003	3/3/08	1130	LD CLH		X	1		1	1				1		4
28005140		MS-11 004	3/3/08	0950	LD CLH		X	1		1	1				1		4
28005141		MS-12 005	3/3/08	0915	LD CLH		X	1		1	1				1		4
28005142		MS-13 006	3/3/08	0845	LD CLH		X	1		1	1				1		4
28005143		MS-14 007	3/3/08	1145	[signature]		X	1		1	1				1		4
28005144		MS-15 008	3/3/08	1105	[signature]		X	1		1	1				1		4
28005145		MS-16 009	3/3/08	1040	LD CLH		X	1		1	1				1		4
28005146		SW-1 — NO SAMPLE COLLECTED - DC					X	1		1	1				1		4
28005147		FIELD BLANK 010	3/3/08	1200	LD CLH		X	1		1	1						3

Customer to sign & date below

21)Relinquished By: [signature]	Date/Time 3/3/08 1350	Accepted By: EB Calder	Date/Time 3/3/08 1350
Relinquished By: EB Calder 3/3/08	Date/Time 15:00	Accepted By: George Moody Jr	Date/Time 3-3-08 15:00
Relinquished By: George Moody 3-3-08	Date/Time 15:20	Accepted By: [signature]	Date/Time 3/3/08 15:20
23)Seal/Locked By	Date/Time	Sealed/Lock Opened By	Date/Time

24)Comments: * Please complete report in EDD format as required by State of NC

Customer, important please indicate desired turnaround

[22]Requested Turnaround: 3-17

*14 Days ✓ ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

1-4