



526 South Church St.
Charlotte, NC 28202

P.O. Box 1006
Mail Code EC13K
Charlotte, NC 28201-1006
336-215-4576
704-382-6240 fax

May 7, 2015

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

Subject: Semi-annual Leachate Sampling Results
 Duke Energy Carolinas, LLC
 Marshall Steam Station
 Industrial Landfill No. 1, Phase 1, Cells 1 and 2, Permit #1812

Dear Ms. Werner:

In accordance with the landfill Operations Plan, Duke Energy is providing the results of semi-annual leachate sampling for the Marshall Steam Station Industrial Landfill No. 1, located in Terrell, North Carolina.

On February 11, 2015 leachate samples were collected from the leachate collection system. The samples were collected by Duke Energy personnel. A summary of sampling results can be found in Table 1. As noted in the table, 15 NCAC 2L .0202 standards are provided for reference only. The parameters tested are not bound by state groundwater or surface water standards. The leachate is conveyed to the station's ash impoundment, which discharges via a NPDES permitted outfall. All laboratory analytical and field results are provided as Attachments 1 and 2, respectively.

Duke Energy personnel sample landfill leachate at Marshall Steam Station's Industrial Landfill No. 1 semi-annually during August and February. The next landfill leachate sampling event will occur August 2015 with documentation to follow.

If you have any questions or concerns, please contact me at 336-215-4576 or at kim.hutchinson@duke-energy.com

Sincerely,

A handwritten signature in blue ink that reads 'Kimberlee Hutchinson'.

Kimberlee Hutchinson, PE
Environmental Services

Cc: Mr. Scott LaSalla – Duke Energy
 Ed Sullivan - Duke Energy

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):

Duke Energy Carolinas, LLC

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

Name: Kimberlee Hutchinson

Phone: (336) 215-4576

E-mail: kim.hutchinson@duke-energy.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Duke Energy Carolinas, LLC Marshall Steam Station Industrial Landfill No. 1 Phase I, Cells 1 and 2	8320 East NC Highway 150 Terrell, NC 28682	1812	.0500	February 11, 2015

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

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.

Kimberlee Hutchinson, PE

Engineer

(336) 215-4576

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

Kimberlee Hutchinson
Signature

5/7/2015

Affix NC licensed/ Professional Geologist Seal

Duke Energy Corporation, Mail Code EC13K, P.O. Box 1006, Charlotte, NC 28201-1006

Facility Representative Address

#F-0566

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

Revised 6/2009

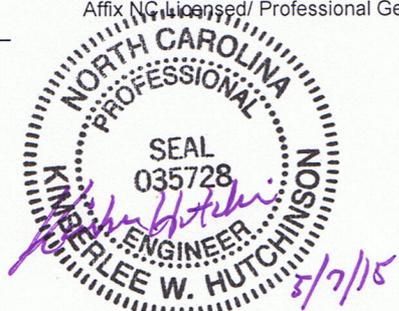


Table 1
 Marshall Steam Station
 Industrial Landfill No. 1 (Permit No. 1812)
 Leachate Analytical Data

Constituent	15A NCAC 2L .0202 Standard	Analytical Result (ug/L)	
	(ug/L)	2/11/15	
		Cell 1	Cell 2
Arsenic	10	46.2	44.2
Barium	700	49	52
Boron	700	45,100	33,600
Cadmium	2	< 10	< 10
Chloride	250 mg/L	30 mg/L	31 mg/L
Chromium	10	< 5	< 5
Copper	1 mg/L	0.015 mg/L	0.032 mg/L
Fluoride	2 mg/L	3.2 mg/L	2.7 mg/L
Iron	300	91	105
Lead	15	< 10	< 10
Manganese	50	39,700	32,200
Mercury	1	< 0.05	< 0.05
Nickel	100	181	231
Nitrate as N	10 mg/L	15 mg/L	23 mg/L
pH	6.5-8.5	4.20	4.0
Selenium	20	94.4	106
Silver	20	< 5	< 5
Sulfate	250 mg/L	2000 mg/L	1800 mg/L
Temperature (°C)	n/a	16.34	16.47
TDS	500 mg/L	2900 mg/L	2400 mg/L
Zinc	1 mg/L	0.400 mg/L	0.378 mg/L

NOTE: 15A NCAC 2L .0202 Standards are provided only for reference. Analytical results are for landfill leachate, which is **NOT** bound by state groundwater or surface water standards. Landfill leachate is conveyed to the station's ash impoundment, which discharges via a NPDES permitted outfall.

Attachment 1

Marshall Industrial Landfill No. 1

Semi-Annual Monitoring Event

Leachate Analytical Results

February 11, 2015



Analytical Laboratory

13339 Hagers Ferry Road
Huntersville, NC 28078-7929
McGuire Nuclear Complex - MG03A2
Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number: J15020009
Project Name: MARSHALL GROUNDWATER INDUSTRIAL LANDFILL #1
Customer Name(s): IDC, TSH, Sean DeNeale
Customer Address: 8320 NC Hwy 150 East
Mail Code: Marshall Steam Station
Terrell, NC 28682

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By:  **Date:** 3/2/2015
(Signature) _____
Jason C Perkins

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2015002459	MARSHALL	11-Feb-15 9:20 AM	C Campbell	CELL 1 LEACHATE
2015002460	MARSHALL	11-Feb-15 9:00 AM	C Campbell	CELL 2 LEACHATE
2015002461	MARSHALL	11-Feb-15 9:40 AM	C Campbell	FIELD BLANK
3 Total Samples				

Technical Validation Review

Checklist:

- COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures). Yes No
- All Results are less than the laboratory reporting limits. Yes No
- All laboratory QA/QC requirements are acceptable. Yes No

Report Sections Included:

- Job Summary Report
- Sample Identification
- Technical Validation of Data Package
- Analytical Laboratory Certificate of Analysis
- Analytical Laboratory QC Report
- Sub-contracted Laboratory Results
- Customer Specific Data Sheets, Reports, & Documentation
- Customer Database Entries
- Chain of Custody
- Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: DBA Account

Date: 3/2/2015

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J15020009

Site: CELL 1 LEACHATE

Sample #: 2015002459

Collection Date: 11-Feb-15 9:20 AM

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	< 5	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	30	mg/L		1	10	EPA 300.0	02/11/2015 16:38	JAHERMA
Fluoride	3.2	mg/L		1	10	EPA 300.0	02/11/2015 16:38	JAHERMA
Nitrate	68	mg/L		1	10	EPA 300.0	02/11/2015 16:38	JAHERMA
Nitrate as N	15	mg-N/L		0.023	1	EPA 300.0	02/11/2015 16:38	JAHERMA
Sulfate	2000	mg/L		50	500	EPA 300.0	02/11/2015 16:38	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/21/2015 10:13	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.049	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
Boron (B)	45.1	mg/L		1	20	SW 6010C	02/19/2015 10:35	MHH7131
Calcium (Ca)	294	mg/L	B2	0.2	20	SW 6010C	02/19/2015 10:35	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
Copper (Cu)	0.015	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
Iron (Fe)	0.091	mg/L		0.01	1	SW 6010C	02/19/2015 10:35	MHH7131
Magnesium (Mg)	95.0	mg/L		0.1	20	SW 6010C	02/19/2015 10:35	MHH7131
Manganese (Mn)	39.7	mg/L		0.1	20	SW 6010C	02/19/2015 10:35	MHH7131
Nickel (Ni)	0.181	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
Potassium (K)	110	mg/L		2	20	SW 6010C	02/19/2015 10:35	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
Sodium (Na)	234	mg/L		1	20	SW 6010C	02/19/2015 10:35	MHH7131
Zinc (Zn)	0.400	mg/L		0.005	1	SW 6010C	02/19/2015 10:35	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	46.2	ug/L		10	10	SW 6020A	02/19/2015 14:57	JAHERMA
Cadmium (Cd)	< 10	ug/L		10	10	SW 6020A	02/19/2015 14:57	JAHERMA
Lead (Pb)	< 10	ug/L		10	10	SW 6020A	02/19/2015 14:57	JAHERMA
Selenium (Se)	94.4	ug/L		10	10	SW 6020A	02/19/2015 14:57	JAHERMA
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	2900	mg/L		125	1	SM2540C	02/16/2015 15:22	GHUTCHI

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J15020009

Site: CELL 2 LEACHATE

Collection Date: 11-Feb-15 9:00 AM

Sample #: 2015002460

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	< 5	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	31	mg/L		1	10	EPA 300.0	02/12/2015 09:35	JAHERMA
Fluoride	2.7	mg/L		1	10	EPA 300.0	02/12/2015 09:35	JAHERMA
Nitrate	100	mg/L		2	20	EPA 300.0	02/12/2015 09:35	JAHERMA
Nitrate as N	23	mg-N/L		0.023	1	EPA 300.0	02/12/2015 09:35	JAHERMA
Sulfate	1800	mg/L		50	500	EPA 300.0	02/12/2015 09:35	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/21/2015 10:16	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.052	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
Boron (B)	33.6	mg/L		1	20	SW 6010C	02/19/2015 10:39	MHH7131
Calcium (Ca)	252	mg/L	B2	0.2	20	SW 6010C	02/19/2015 10:39	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
Copper (Cu)	0.032	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
Iron (Fe)	0.105	mg/L		0.01	1	SW 6010C	02/19/2015 10:39	MHH7131
Magnesium (Mg)	107	mg/L		0.1	20	SW 6010C	02/19/2015 10:39	MHH7131
Manganese (Mn)	32.2	mg/L		0.1	20	SW 6010C	02/19/2015 10:39	MHH7131
Nickel (Ni)	0.231	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
Potassium (K)	59.0	mg/L		2	20	SW 6010C	02/19/2015 10:39	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
Sodium (Na)	166	mg/L		1	20	SW 6010C	02/19/2015 10:39	MHH7131
Zinc (Zn)	0.378	mg/L		0.005	1	SW 6010C	02/19/2015 10:39	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	44.2	ug/L		10	10	SW 6020A	02/19/2015 15:03	JAHERMA
Cadmium (Cd)	< 10	ug/L		10	10	SW 6020A	02/19/2015 15:03	JAHERMA
Lead (Pb)	< 10	ug/L		10	10	SW 6020A	02/19/2015 15:03	JAHERMA
Selenium (Se)	106	ug/L		10	10	SW 6020A	02/19/2015 15:03	JAHERMA
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	2400	mg/L		125	1	SM2540C	02/16/2015 15:22	GHUTCHI

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J15020009

Site: FIELD BLANK

Collection Date: 11-Feb-15 9:40 AM

Sample #: **2015002461**

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	< 5	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	< 0.1	mg/L		0.1	1	EPA 300.0	02/11/2015 14:43	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/11/2015 14:43	JAHERMA
Nitrate	< 0.1	mg/L		0.1	1	EPA 300.0	02/11/2015 14:43	JAHERMA
Nitrate as N	< 0.023	mg-N/L		0.023	1	EPA 300.0	02/11/2015 14:43	JAHERMA
Sulfate	< 0.1	mg/L		0.1	1	EPA 300.0	02/11/2015 14:43	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/21/2015 10:18	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	SW 6010C	02/19/2015 10:31	MHH7131
Calcium (Ca)	0.010	mg/L	B2	0.01	1	SW 6010C	02/19/2015 10:31	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Iron (Fe)	< 0.01	mg/L		0.01	1	SW 6010C	02/19/2015 10:31	MHH7131
Magnesium (Mg)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Manganese (Mn)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Potassium (K)	< 0.1	mg/L		0.1	1	SW 6010C	02/19/2015 10:31	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
Sodium (Na)	< 0.05	mg/L		0.05	1	SW 6010C	02/19/2015 10:31	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	SW 6010C	02/19/2015 10:31	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	SW 6020A	02/19/2015 15:09	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	SW 6020A	02/19/2015 15:09	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	SW 6020A	02/19/2015 15:09	JAHERMA
Selenium (Se)	< 1	ug/L		1	1	SW 6020A	02/19/2015 15:09	JAHERMA

Qualifiers:

B2 Target analyte was detected in blank(s) at a concentration greater than ½ the reporting limit but less than the reporting limit. Analyte concentration in sample is valid and may be used for compliance purposes.

Attachment 2

Marshall Industrial Landfill No. 1

Semi-Annual Monitoring Event

Leachate Field Results

February 11, 2015



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR NO PURGE SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-12	SITE ID	N/A
PROJECT NAME	INDUSTRIAL LANDFILL 1	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 11-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	CELL 1 LEACHATE		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)		TOC ELEV (ft msl)		MIDDLE OF WETTED SCREEN (ft toc)	
WELL DEPTH (ft TOC)		GS ELEV (ft msl)		PUMP INTAKE DEPTH (ft TOC)	
SCREEN LENGTH (ft)		ELEV REF		SCREEN INTERVAL (ft TOC)	0.00 TO 0.00

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	N/A	SAMPLING EQUIPMENT	GRAB	PURGE METHOD	
		TUBING DIAMETER (in)		No Purge	
PUMP CONTROLLER SETTINGS					
PRESSURE	(psi)	RECHARGE	(sec)	DISCHARGE	(sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	N/A	WATER COLUMN (ft)	N/A	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	N/A	WELL VOLUME (gal)	N/A		
DETECTED ODOR	None	CONVERSION FACTOR	N/A		
APPEARANCE	Normal				

HYDRASLEEVE LENGTH (inches)	DEPLOYED DEPTH (top) (ft TOC)	DATE DEPLOYED	TEMP (deg C)	SPECIFIC COND. (umho/cm)	pH (SU)	TURBIDITY (NTU)	ORP (mV-NHE)	DISSOLVED OXYGEN (mg/L)	
N/A	N/A	N/A	16.34	3352	4.15	2.4	479	3.47	N/A

Deployed Top Weight	Water Column In Screen Above Top Of Hydrasleeve			NO PURGE SAMPLE				CHLORINE (mg/l)
	(ft)	=	(in)	SAMPLE COLLECTED BY		DATE	TIME	
				LDC		2/11/2015	@ 0920	N/A

QC By: WDC 2/11/15

WELL CONDITION	ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	
WELL PAD	
WELL CASING	
WELL TAG	

SAMPLING NOTES
Allow system to flush for several minutes prior to sampling - watch for low level alarm during pumping.



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR NO PURGE SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-12	SITE ID	N/A
PROJECT NAME	INDUSTRIAL LANDFILL 1	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 11-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	CELL 2 LEACHATE		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)		TOC ELEV (ft msl)		MIDDLE OF WETTED SCREEN (ft toc)	
WELL DEPTH (ft TOC)		GS ELEV (ft msl)		PUMP INTAKE DEPTH (ft TOC)	
SCREEN LENGTH (ft)		ELEV REF		SCREEN INTERVAL (ft TOC)	0.00 TO 0.00

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	N/A	SAMPLING EQUIPMENT	GRAB	PURGE METHOD	
		TUBING DIAMETER (in)		No Purge	
PUMP CONTROLLER SETTINGS					
PRESSURE	(psi)	RECHARGE	(sec)	DISCHARGE	(sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	N/A	WATER COLUMN (ft)	N/A	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	N/A	WELL VOLUME (gal)	N/A		
DETECTED ODOR	None	CONVERSION FACTOR	N/A		
APPEARANCE	Normal				

HYDRASLEEVE LENGTH (inches)	DEPLOYED DEPTH (top) (ft TOC)	DATE DEPLOYED	TEMP (deg C)	SPECIFIC COND. (umho/cm)	pH (SU)	TURBIDITY (NTU)	ORP (mV-NHE)	DISSOLVED OXYGEN (mg/L)	
N/A	N/A	N/A	16.47	2769	3.99	2.1	414	4.43	N/A

Deployed Top Weight		Water Column In Screen Above Top Of Hydrasleeve		NO PURGE SAMPLE			CHLORINE (mg/l)
		(ft) = (in)		SAMPLE COLLECTED BY	DATE	TIME	
				LDC	2/11/2015	@ 0900	N/A

QC By: LDC 2/11/15

WELL CONDITION	ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	
WELL PAD	
WELL CASING	
WELL TAG	

SAMPLING NOTES

Allow system to flush for several minutes prior to sampling - watch for low level alarm during pumping.

**MARSHALL STEAM STATION
INDUSTRIAL LANDFILL 1
GROUNDWATER MONITORING FIELD DATA
PERMIT # 18-12**

DATE	WELL NO.	WELL DEPTH (feet-toc)	DEPTH TO WATER (feet-toc)	WATER ELEV. (feet)	APPEARANCE	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)
2/11/2015	CELL 1 LEACHATE	0.00	N/A	N/A	Normal	None	NP	N/A		N/A	N/A	16.34	3352	4.2	2.4	479	3.47
2/11/2015	CELL 2 LEACHATE	0.00	N/A	N/A	Normal	None	NP	N/A		N/A	N/A	16.47	2769	4.0	2.1	414	4.43

Purge Methods

LF = Low Flow
 LF(M) = Low Flow (Mod.)
 C = Conventional
 NP = No Purge
 EOP = Equip. Only Purge
 LO = Level Only

* = Applicable to LF & LF(M) Purging Only