



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

April 1, 2014

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 24, 2014 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 2014 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. George Tolbert – Marshall Steam Station

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 24, 2014

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

Signature

Date

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

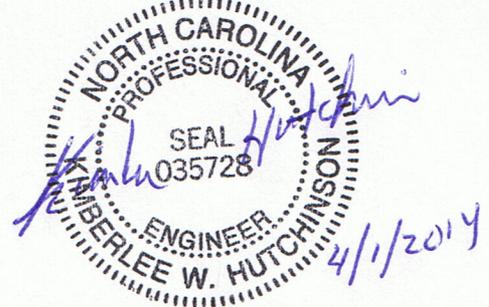


Table 1
 Marshall Steam Station
 Industrial Landfill No. 1 (Permit No. 1812)
 Leachate Analytical Data

	15A NCAC 2L .0202 Standard	Analytical Result (ug/L)	
Constituent	(ug/L)	2/24/2014	
		Cell 1	Cell 2
Arsenic	10	98.3	83.2
Barium	700	70	74
Boron	700	26,400	15,900
Cadmium	2	< 10	< 10
Chloride	250 mg/L	19 mg/L	18 mg/L
Chromium	10	< 5	< 5
Copper	1 mg/L	0.005 mg/L	0.014 mg/L
Fluoride	2 mg/L	2.1 mg/L	1.8 mg/L
Iron	300	30	21
Lead	15	< 10	< 10
Manganese	50	24,000	14,700
Mercury	1	< 0.05	< 0.05
Nickel	100	156	163
Nitrate as N	10 mg/L	11 mg/L	13 mg/L
pH	6.5-8.5	4.20	4.18
Selenium	20	83.8	66.9
Silver	20	< 5	< 5
Sulfate	250 mg/L	1,400 mg/L	1,000 mg/L
Temperature (°C)	n/a	18.07	17.85
TDS	500 mg/L	2,100 mg/L	1,400 mg/L
Zinc	1 mg/L	0.280 mg/L	0.228 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 24, 2014



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: J14010275

Project Name: MARSHALL GROUNDWATER INDUSTRIAL LANDFILL #1

Customer Name(s): LDC, TSH, A. Stowe

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:** 3/20/2014
(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
2014001459	MARSHALL	24-Feb-14 2:10 PM	PSP	CELL 1 LEACHATE
2014001460	MARSHALL	24-Feb-14 1:50 PM	PSP	CELL 2 LEACHATE
2014001461	MARSHALL	24-Feb-14 2:25 PM	PSP	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:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Job Summary Report | <input checked="" type="checkbox"/> Sub-contracted Laboratory Results |
| <input checked="" type="checkbox"/> Sample Identification | <input type="checkbox"/> Customer Specific Data Sheets, Reports, & Documentation |
| <input checked="" type="checkbox"/> Technical Validation of Data Package | <input type="checkbox"/> Customer Database Entries |
| <input checked="" type="checkbox"/> Analytical Laboratory Certificate of Analysis | <input checked="" type="checkbox"/> Chain of Custody |
| <input type="checkbox"/> Analytical Laboratory QC Report | <input checked="" type="checkbox"/> Electronic Data Deliverable (EDD) Sent Separatel |

Reviewed By: DBA Account

Date: 3/20/2014

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J14010275

Site: CELL 1 LEACHATE

Sample #: 2014001459

Collection Date: 24-Feb-14 2:10 PM

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>ALKALINITY (FIXED END POINT 4.5)</u>								
Alkalinity (mg/L CaCO ₃)	< 0.1	mg/L (CaCO ₃)		0.1	1	SM2320B	02/26/2014 08:45	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	19	mg/L		1	10	EPA 300.0	02/25/2014 17:39	BGN9034
Fluoride	2.1	mg/L		1	10	EPA 300.0	02/25/2014 17:39	BGN9034
Nitrate	47	mg/L		1	10	EPA 300.0	02/25/2014 17:39	BGN9034
Nitrate as N	11	mg-N/L		0.023	1	EPA 300.0	02/25/2014 17:39	BGN9034
Sulfate	1400	mg/L		50	500	EPA 300.0	02/25/2014 17:39	BGN9034
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	03/11/2014 10:05	DKJOHN2
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.070	mg/L		0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
Boron (B)	26.4	mg/L		1	20	SW 6010C	03/18/2014 12:07	MHH7131
Calcium (Ca)	254	mg/L	B1	0.2	20	SW 6010C	03/18/2014 12:07	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
Copper (Cu)	0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
Iron (Fe)	0.030	mg/L		0.01	1	SW 6010C	03/18/2014 12:07	MHH7131
Magnesium (Mg)	67.6	mg/L		0.1	20	SW 6010C	03/18/2014 12:07	MHH7131
Manganese (Mn)	24.0	mg/L		0.1	20	SW 6010C	03/18/2014 12:07	MHH7131
Nickel (Ni)	0.156	mg/L		0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
Potassium (K)	76.9	mg/L		2	20	SW 6010C	03/18/2014 12:07	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
Sodium (Na)	127	mg/L		1	20	SW 6010C	03/18/2014 12:07	MHH7131
Zinc (Zn)	0.280	mg/L	B2	0.005	1	SW 6010C	03/18/2014 12:07	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	98.3	ug/L		10	10	SW 6020A	03/17/2014 13:24	LIMS_ID
Cadmium (Cd)	< 10	ug/L		10	10	SW 6020A	03/17/2014 13:24	LIMS_ID
Lead (Pb)	< 10	ug/L		10	10	SW 6020A	03/17/2014 13:24	LIMS_ID
Selenium (Se)	83.8	ug/L		10	10	SW 6020A	03/17/2014 13:24	LIMS_ID
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	2100	mg/L		25	1	SM2540C	02/26/2014 14:56	DSBAKE1

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J14010275

Site: CELL 2 LEACHATE

Collection Date: 24-Feb-14 1:50 PM

Sample #: 2014001460

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>ALKALINITY (FIXED END POINT 4.5)</u>								
Alkalinity (mg/L CaCO ₃)	< 0.1	mg/L (CaCO ₃)		0.1	1	SM2320B	02/26/2014 08:45	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	18	mg/L		1	10	EPA 300.0	02/25/2014 17:57	BGN9034
Fluoride	1.8	mg/L		1	10	EPA 300.0	02/25/2014 17:57	BGN9034
Nitrate	57	mg/L		1	10	EPA 300.0	02/25/2014 17:57	BGN9034
Nitrate as N	13	mg-N/L		0.023	1	EPA 300.0	02/25/2014 17:57	BGN9034
Sulfate	1000	mg/L		50	500	EPA 300.0	02/25/2014 17:57	BGN9034
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	03/07/2014 10:21	DKJOHN2
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.074	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Boron (B)	15.9	mg/L		0.05	1	SW 6010C	03/18/2014 12:11	MHH7131
Calcium (Ca)	170	mg/L	B1	0.1	10	SW 6010C	03/18/2014 12:11	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Copper (Cu)	0.014	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Iron (Fe)	0.021	mg/L		0.01	1	SW 6010C	03/18/2014 12:11	MHH7131
Magnesium (Mg)	56.2	mg/L		0.05	10	SW 6010C	03/18/2014 12:11	MHH7131
Manganese (Mn)	14.7	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Nickel (Ni)	0.163	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Potassium (K)	31.7	mg/L		1	10	SW 6010C	03/18/2014 12:11	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
Sodium (Na)	76.3	mg/L		0.5	10	SW 6010C	03/18/2014 12:11	MHH7131
Zinc (Zn)	0.228	mg/L	B2	0.005	1	SW 6010C	03/18/2014 12:11	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	83.2	ug/L		10	10	SW 6020A	03/17/2014 13:27	LIMS_ID
Cadmium (Cd)	< 10	ug/L		10	10	SW 6020A	03/17/2014 13:27	LIMS_ID
Lead (Pb)	< 10	ug/L		10	10	SW 6020A	03/17/2014 13:27	LIMS_ID
Selenium (Se)	66.9	ug/L		10	10	SW 6020A	03/17/2014 13:27	LIMS_ID
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	1400	mg/L		25	1	SM2540C	02/26/2014 14:56	DSBAKE1

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J14010275

Site: FIELD BLANK

Collection Date: 24-Feb-14 2:25 PM

Sample #: 2014001461

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>ALKALINITY (FIXED END POINT 4.5)</u>								
Alkalinity (mg/L CaCO ₃)	< 0.1	mg/L (CaCO ₃)		0.1	1	SM2320B	02/26/2014 08:45	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	< 0.1	mg/L		0.1	1	EPA 300.0	02/25/2014 12:09	BGN9034
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/25/2014 12:09	BGN9034
Nitrate	< 0.1	mg/L		0.1	1	EPA 300.0	02/25/2014 12:09	BGN9034
Nitrate as N	< 0.023	mg-N/L		0.023	1	EPA 300.0	02/25/2014 12:09	BGN9034
Sulfate	< 0.1	mg/L		0.1	1	EPA 300.0	02/25/2014 12:09	BGN9034
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	03/07/2014 10:18	DKJOHN2
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	SW 6010C	03/18/2014 12:03	MHH7131
Calcium (Ca)	0.020	mg/L	B1	0.01	1	SW 6010C	03/18/2014 12:03	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Iron (Fe)	< 0.01	mg/L		0.01	1	SW 6010C	03/18/2014 12:03	MHH7131
Magnesium (Mg)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Manganese (Mn)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Potassium (K)	< 0.1	mg/L		0.1	1	SW 6010C	03/18/2014 12:03	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
Sodium (Na)	< 0.05	mg/L		0.05	1	SW 6010C	03/18/2014 12:03	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	SW 6010C	03/18/2014 12:03	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	SW 6020A	03/17/2014 13:20	LIMS_ID
Cadmium (Cd)	< 1	ug/L		1	1	SW 6020A	03/17/2014 13:20	LIMS_ID
Lead (Pb)	< 1	ug/L		1	1	SW 6020A	03/17/2014 13:20	LIMS_ID
Selenium (Se)	< 1	ug/L		1	1	SW 6020A	03/17/2014 13:20	LIMS_ID

Qualifiers:

- B1** Target analyte detected in method blank at or above the reporting limit. Target analyte concentration in sample was greater than 10X the concentration of the target analyte detected in the method blank. Analyte concentration in sample is not affected by contamination.
- 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 24, 2014

FIELD SAMPLING CALIBRATION FORM

STUDY:	MARSHALL STEAM STATION - INDUSTRIAL WASTE LANDFILL 1 GROUNDWATER MONITORING		
DATE (s):	February 24, 2014	SURFACE UNIT READER:	PSP
COLLECTORS:	LDC, PSP	SURFACE UNIT SERIAL #:	3858
ANALYZER MODEL#:	MS5	ANALYZER SERIAL #:	60901
OTHER EQUIPMENT:	TURBIDIMETER NO.1 - 3260.2	WEATHER CONDITIONS:	Sunny, breezy, 45 - 60 deg F

PROCEDURE #: HYDROLAB 3210.5 VALIDATED BY:

WDC 2/27/14

Calibration Date / Time		DATE:	24-Feb-14	TIME:	530	DATE:	24-Feb-14	TIME:	1620
		BP (mmHg)				BP (mmHg)			
		742.9				742.9			
Parameter	Calibration Standard	Instrument Value		Standard Value	Calibration Results	Instrument Value		Standard Value	Calibration Results
SPEC. COND. (uS/cm)	SS	0.0	→/→	0.0	Instrument Zeroed	0.0	→/→	0.0	Zero Pass
	SS	351.5	→	350	Calibration Accepted	346.2	→/→	350	Calibration Pass
	SS	73.5	→/→	75	Calibration Accepted	73.2	→/→	75	Calibration Pass
pH (units)	B (7.00)	7.06	→	7.02	Calibration Accepted	7.08	→/→	7.02	Calibration Pass
	B (4.00)	3.99	→	4.00	Calibration Accepted	4.06	→/→	4.00	Calibration Pass
	B (10.00)	10.11	→/→	10.04	Calibration Accepted	10.13	→/→	10.04	Calibration Pass
		Buffer Temp.			21.25		Buffer Temp.		21.11
Mid-Day Ck	B (7.00)		→						
Time:				Buffer Temp.					
<input checked="" type="checkbox"/> ORP (mV)	SS (7.00)	N/A	→	285		302	→/→	293	Calibration Pass
	SS (4.00)	N/A	→/→	462		N/A	→/→	468	
		ORP Temp.		25.00		ORP Temp.		21.20	
<input checked="" type="checkbox"/> DO (mg/L)	W							8.80	
	W							8.70	
	AW	N/A	→			8.58	→/→	8.75	Calibration Pass
<input checked="" type="checkbox"/> TURB (ntu)	SS	51.6	→/→	54.2	Calibration Accepted	52.2	→/→	54.2	Calibration Accepted
Temp Cert Device #									
TEMP (deg C)	NIST	N/A	→/→	N/A	Adjustment Not Available	N/A	→/→	N/A	Adjustment Not Available
AMMONIUM (mg/L)	SS	N/A	→/→	N/A		N/A	→/→	N/A	
	SS	N/A	→/→	N/A		N/A	→/→	N/A	

INSTRUMENT MAINTENANCE	DATE / TIME
<i>Conductance Subsystem</i>	<i>pH Subsystem</i>
<input type="checkbox"/> Cleaned Electrodes <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrodes <input type="checkbox"/> Replaced ref Electrode KCL <input type="checkbox"/> Replaced Ref. Electrode Tip <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
<i>Dissolved Oxygen Subsystem</i>	<i>Ammonium Subsystem</i>
<input type="checkbox"/> Replaced Teflon Membrane <input type="checkbox"/> Replaced DO electrolyte <input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrode Tip <input type="checkbox"/> Installed New Electrode <input type="checkbox"/> Removed Electrode / Installed Plug <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
<i>Oxidation Reduction Subsystem</i>	<i>Turbidity Subsystem</i>
<input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrode & Wiper <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
<i>Temperature Subsystem</i>	<i>Depth Subsystem</i>
<input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Reset / Calibrated <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes

KEY: B = Buffer W = Winkler → = Adjusted To N/A = Not Applicable
 SS = Standard solution AW = Average Winkler →/→ = Not Adjusted To

NOTES:



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR NO PURGE SAMPLING

PROCEDURE NO	3175.1
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-12	SITE ID	N/A
PROJECT NAME	INDUSTRIAL LANDFILL 1	FIELD CREW	LDC, PSP		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 24-Feb-2014 <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> <i>(Conversion factor dependent on well diameter and selected well volume units)</i>	
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	18.07	2431	4.20	15.8	467	0.00	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 / PSP	2/24/2014	@ 14:10	N/A	

QC By: JDC 2/27/14

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. Purged 1 gallon.



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR NO PURGE SAMPLING

PROCEDURE NO	3175.1
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-12	SITE ID	N/A
PROJECT NAME	INDUSTRIAL LANDFILL 1	FIELD CREW	LDC, PSP		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 24-Feb-2014 <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	<input type="checkbox"/>	TEMP (deg C)	<input type="checkbox"/>	SPECIFIC COND. (umho/cm)	<input type="checkbox"/>	pH (SU)	<input type="checkbox"/>	TURBIDITY (NTU)	<input type="checkbox"/>	ORP (mV-NHE)	<input type="checkbox"/>	DISSOLVED OXYGEN (mg/L)	<input type="checkbox"/>
N/A	N/A	N/A		17.85		1686		4.18		1.6		463		6.38	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 / PSP	2/24/2014	@ 13:50	N/A	

QC By: LDC 2/27/14

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. 3 gallon purge

**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)
2/24/2014	CELL 1 LEACHATE	0.00	N/A	N/A	Normal	None	NP	N/A		N/A	N/A	18.07	2431	4.2	15.8	467	0.00
2/24/2014	CELL 2 LEACHATE	0.00	N/A	N/A	Normal	None	NP	N/A		N/A	N/A	17.85	1686	4.2	1.6	463	6.38

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