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):

Smith Gardner, Inc.

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

Name: Madeline German, PG Phone: 919-828-0577 x 222

E-mail: madeline@smithgardnerinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Halifax Coal Ash Landfill	921 Liles Rd, Aurellan Springs, NC	42-04	.0500	August 28, 2013

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.

Madeline German, PG — Geologist — 919-828-0577 x 222

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

Signature — Date: 9-25-13

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN 9-25-13

14 N. Boylan Avenue, Raleigh, NC 27603

Facility Representative Address

C0828

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

Revised 6/2009

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August 2013 Semi-Annual Groundwater Monitoring Report

Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

Prepared for:

Halifax County Solid Waste Department
P.O. Box 70
Halifax, North Carolina 27839

September 2013

Prepared by:

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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Groundwater Monitoring Report

Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

Prepared For:
Halifax County
Halifax, North Carolina

S+G Project No. Halifax-8

Madeline German, PG
Project Geologist

Joan Smyth, PG
Senior Hydrogeologist

September 2013

SMITH+GARDNER

14 N. Boylan Avenue. Raleigh NC 27603 | 919.828.0577

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Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

August 2013 Semi-Annual Groundwater Monitoring Report

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1.0 INTRODUCTION

Smith Gardner, Inc (S+G) is pleased to submit this semi-annual sampling report on behalf of the Halifax County Coal Ash Landfill, operating under Solid Waste Permit #42-04, in accordance with Solid Waste Section Rule 15A NCAC 13B. This report presents semi-annual monitoring results for the event performed August 28, 2013.

The Halifax County Coal Ash Landfill is a monofill landfill that only accepts coal ash from power generation. The ground water monitoring network includes six wells located around the landfill perimeter, a surface water sampling point, a sedimentation basin discharge location and two sediment sampling locations in the stream immediately upgradient and downgradient of the sedimentation basin discharge. This report includes a field procedure summary, laboratory analyses, summary tables and ground water characterization.

2.0 SITE HYDROGEOLOGY

The *1985 North Carolina Geological Map* and *Ground Water in the Halifax Area, North Carolina* (Dept. of Conservation and Development Bulletin #51, 1946) indicates the Halifax County Coal Ash Landfill is situated on the eastern edge of the Eastern Piedmont Physiographic Province, just west of the Coastal Plain overlap. Western Halifax County is underlain by an assemblage of felsic to intermediate crystalline igneous and metamorphic rocks of early to late Paleozoic age. Eastern piedmont rocks exhibit a northeast strike and locally dip gently eastward as a result of regional metamorphism and folding that produced a broad plunging anticline. The area was simultaneously intruded by a number of felsic (granite) plutons. The rock formation underlying the subject site is a granitic pluton identified as the Butterwood Creek intrusive.

Depths to ground water generally range from near surface in lowland areas along Brewer's Creek and its tributary to around 45 ft. below grade in the MW-12 area. Ground water generally flows to the south.

3.0 SAMPLING LOCATIONS AND PROCEDURES

The sampling event, performed by Environment 1, Inc., on August 28, 2013 was conducted in accordance with the approved site Water Quality Monitoring Plan[1]. Sampling methods followed the protocol outlined in the Solid Waste Section Guidelines for Groundwater, Soil and Surface Water Sampling[2]. The depth to water in each well was gauged prior to purging and sampling. Field measurements for pH, specific conductivity, turbidity and temperature were recorded at each well.

The monitoring network at the Halifax Coal Ash Landfill currently includes six ground water wells (MW-8, MW-9, MW-10, MW-11, MW-12 and MW-17), a surface water location (SW-1) one sample collected from Sediment Basin 1 (Basin 1) and two sediment samples collected

1 Halifax County Landfill, Water Quality Monitoring Plan, November 2012 by Smith Gardner, Inc.
2 Solid Waste Section Guidelines for Groundwater, Soil and surface Water Sampling, NCDENR, DWM, April 2008.

upstream and downstream of the sedimentation basin discharge point (Sediment 1 and Sediment 2). A sample was not collected from Basin 1 this event becasuse it was dry. Sampling location details are presented in **Table 1**.

Samples were collected by Environment 1, Inc. personnel in laboratory prepared containers for the specified analytical procedures. Ground water samples were properly preserved, placed on ice and transported to the laboratory facility within the specified hold times for each analysis.

Sampling locations are shown on **Figure 1**.

4.0 FIELD AND LABORATORY RESULTS

4.1 Field Results

Temperature, pH and specific conductance were measured in the field prior to sampling via direct read instruments. The field parameter results are summarized in **Table 2** and have remained consistent with previously reported sampling events.

4.2 Laboratory Analysis

The samples were transported under proper chain of custody, in a cooler with ice to Environment 1, Inc., a North Carolina certified laboratory (NC Wastewater ID #10) located in Greenville, NC. Ground and surface water samples were analyzed for Appendix I metals plus mercury, total organic carbon (TOC), chloride and sulfate via the SWS approved test methods specified in the laboratory report. Sediment samples were analyzed by Environmental Chemists, Inc. (NC Certification ID #94) located in Wilmington, NC. Samples were analyzed for specific metals detailed in the laboratory report using approved TCLP methods. Parameters were reported at NC Solid Waste Section Practical Quantitation Limits (SWSLs).

The laboratory analytical report is included as **Appendix A.**

4.3 Laboratory Results

The laboratory analysis were compared with the 15A NCAC 2L 0200 Groundwater Standard (2L Standard) and SWSL. Inorganic results remain generally consistent with historically reported detections. Zinc (MW-9, MW-11, MW-12 and MW-17) was detected above the SWSL. No metals were detected above the 2L Standard. Most inorganic levels were reported as "J-qualified" indicating they are a non-quantifiable value that falls between the method limit and the SWSL. Turbidity levels for this event in MW-10, MW-11 and MW-17 were reported at 95, 140 and 120 nephelometric turbidity units (NTU) respectively. High turbidity levels, indicating increased sediment in the samples, may have contributed to elevated metal concentrations for this event.

No metals were identified in the surface water sample, SW-1. No sample was collected from basin 1 for this event because it was dry. There were no detections in the sediment samples.

Detected inorganic constituents from ground or surface water samples are presented in **Table 3**. Sediment sample results are shown in **Table 4.**

5.0 GROUND WATER CHARACTERIZATION

The depth to water data indicates that ground water is flowing generally south towards the unnamed tributary to Brewer's Creek; which is consistent with historic ground water flow patterns. Average groundwater velocity for the site is 0.0099 ft/day. The ground water flow map is included as **Figure 1**.

6.0 CONCLUSIONS

Current and historic analytical data indicate no ground water impact at this site. The turbidity levels may have "biased high" inorganic results due to their natural occurrence in local soil. The next semi-annual event is scheduled for February 2013. An event report will be submitted after receipt and analysis of sampling results.

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FIGURES

February 2013 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

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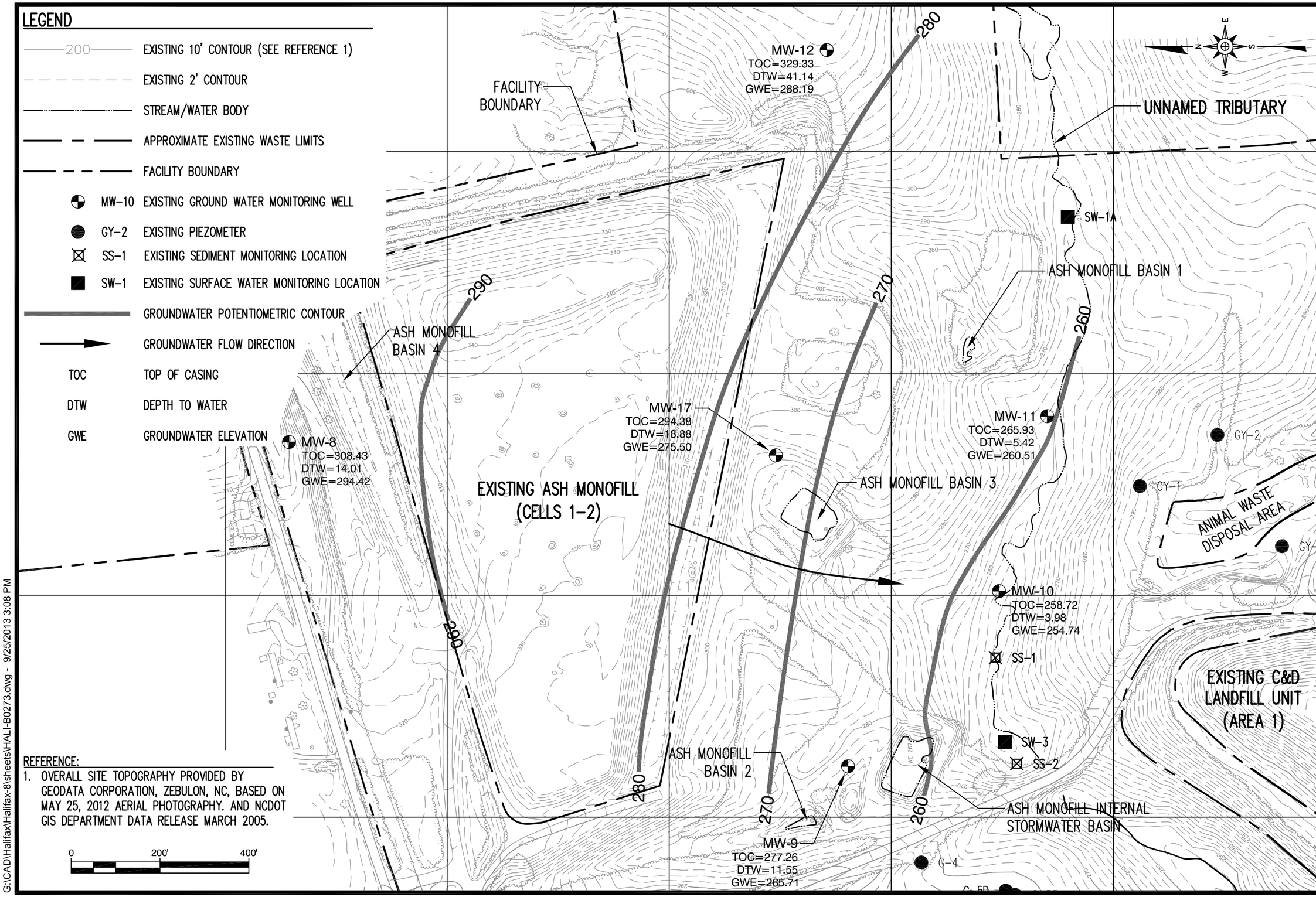
LEGEND

- 200 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- STREAM/WATER BODY
- APPROXIMATE EXISTING WASTE LIMITS
- FACILITY BOUNDARY
- MW-10 EXISTING GROUND WATER MONITORING WELL
- GY-2 EXISTING PIEZOMETER
- SS-1 EXISTING SEDIMENT MONITORING LOCATION
- SW-1 EXISTING SURFACE WATER MONITORING LOCATION
- GROUNDWATER POTENTIOMETRIC CONTOUR
- GROUNDWATER FLOW DIRECTION
- TOC TOP OF CASING
- DTW DEPTH TO WATER
- GWE GROUNDWATER ELEVATION



REFERENCE:

1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, ZEBULON, NC, BASED ON MAY 25, 2012 AERIAL PHOTOGRAPHY. AND NCDOT GIS DEPARTMENT DATA RELEASE MARCH 2005.

0 200' 400'

PREPARED BY:

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PREPARED FOR:

GROUNDWATER POTENTIOMETRIC MAP
HALIFAX COAL ASH LANDFILL
AUGUST 2013

FIGURE NO.	1
FILENAME:	HALI-B0273
SCALE:	AS SHOWN
PROJECT NO:	HALIFAX-8
APPROVED:	M.M.G.
DATE:	Sep 2013
DRAWN:	K.C.B.

G:\CAD\Halifax\Halifax-8\sheets\HALI-B0273.dwg - 9/25/2013 3:08 PM

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TABLES

February 2013 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

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SMITH+GARDNER

By: MG
Date: 9/25/2013

Table 1
Ground Water Elevations & Velocities
Halifax County Coal Ash Landfill
August 28, 2013

Monitoring Location	Northing	Easting	TOC Elevation (ft)	Well Depth (ft)	Depth to Water (ft)	Water Table Elevation (ft)	Hydraulic Conductivity (ft/day)	Porosity	Hydraulic Gradient (ft/ft)	Ground Water Velocity (ft/day)
MW-8	959780.42	2350290.39	308.43	23.38	14.01	294.42	0.047	0.2	0.0152	0.0036
MW-9	958597.68	2349614.73	277.26	21.92	11.55	265.71	0.047	0.2	0.0317	0.0075
MW-10	958257.68	2350009.33	258.72	16.14	3.98	254.74	0.047	0.2	0.0658	0.0155
MW-11	958149.07	2350403.19	265.93	21.72	5.42	260.51	0.047	0.2	0.0255	0.0060
MW-12	958645.55	2351227.97	329.33	51.34	41.14	288.19	0.047	0.2	0.0585	0.0137
MW-17	958790.40	2350356.85	294.38	26.88	18.88	275.50	0.047	0.2	0.0550	0.0129

NOTE:
Hydraulic Conductivity averaged from Closed MSW well data
Porosity values assumed from Groundwater & Wells (Driscoll)
Velocity Calculated from V=K*i/n

V = velocity
K = Hydraulic Conductivity
i = Gradient
n = Porosity

SMITH+GARDNER

By: MG
Date: 9/24/2013

Table 2
Field Parameters
Halifax County Coal Ash Landfill
August 28, 2013

Monitoring Location	pH (std units)	Specific Conductivity (umhos/cm)	Temperature degrees C)	Turbididy (NTU)
MW-8	5	68	17	12
MW-9	3.9	31	18	15
MW-10	5.5	41	18	95
MW-11	6.5	106	19	140
MW-12	1.6	31	15	16
MW-17	5	28	17	120
SW-1	6.8	122	19	3.3
Basin 1	NA	NA	NA	NA

NOTE:
1. NA = Not Applicable
2. <MDL

SMITH+GARDNER

By: MG
Date: 9/24/2013

Table 3
Inorganic Constituents Detected in Water Samples
Halifax County Coal Ash Landfill
August 28, 2013

Monitoring Location	MDL	SWSL	2L Standard	MW-8	MW-9	MW-10	MW-11	MW-12	MW-17	SW-1
Total Organic Carbon	300	NE	NE	1910	<300	<300	<300	<300	<300	1580
Chloride	5000	--	250000	6000	25000	<5000	8000	7000	5000	6000
Sulfate	5000	250000	250000	11500 J	5300 J	<5000	<5000	<5000	5300 J	<5000
Arsenic	0.05	10	10	0.26 J	0.34 J	0.20 J	0.72 J	0.17 J	0.24 J	0.34 J
Barium	0.06	100	700	60.2 J	69.5 J	43.3 J	27.8 J	28.8 J	43 J	11.7 J
Cadmium	0.05	1	2	0.20 J	1	0.44 J	0.09 J	0.17 J	0.17 J	0.08 J
Chromium, total	0.04	10	10	0.41 J	0.67 J	0.16 J	0.85 J	0.61 J	1.5 J	<0.04
Copper	0.06	10	1000	1.4 J	3.1 J	1.6 J	4.6 J	1.6 J	6.5 J	0.47 J
Lead	0.02	10	15	1.4 J	2.2 J	2.3 J	1.1 J	0.61 J	0.76 J	0.09 J
Selenium	0.06	10	20	0.08 J	0.11 J	0.43 J	<0.06	0.07 J	<0.06	<0.06
Zinc	0.47	10	1000	4.3 J	**24**	10	**14**	**11**	**13**	3.3 J

NOTE:

MDL	-	Method Detection Limit
SWSL	-	Solid Waste Section Quantitation Limit
2L	-	Groundwater Standard (15A NCAC 2L 0200)
< MDL	-	Not detected at or above the MDL
Shading	-	Levels above 2L Standard
Bold Letters	-	Constituent detected above SWSL
J	-	"J-qualified" reported from laboratory as data between the MDL and SWSL

Results are presented in ug/l.
Data from 09/12/2013 Environment 1, Incorporated Laboratory Report #6042.

SMITH+GARDNER

By: MG
Date: 9/24/2013

Table 4
Inorganic Constituents Detected in Sediment
Halifax County Coal Ash Landfill
August 28, 2013

Monitoring Location	LOQ/CL	SWSL	2L Standard	Sediment #1 Upstream	Sediment #2 Downstream
Arsenic	100	10	10	<100	<100
Barium	100	100	700	<100	<100
Cadmium	100	1	2	<100	<100
Chromium, total	100	10	10	<100	<100
Lead	100	10	15	<100	<100
Mercury	2	0.2	1	<2	<2
Selenium	100	10	20	<100	<100
Silver	100	10	20	<100	<100

NOTE:

LOQ/CL	-	Reporting Limit/Control Limit for the parameter recovery result
SWSL	-	Solid Waste Section Quantitation Limit
2L	-	Groundwater Standard (15A NCAC 2L 0200)
< LOQ/CL	-	Not detected at or above the LOQ/CL
Shading	-	Levels above 2L Standard
Bold Letters	-	Constituent detected above SWSL
J	-	"J-qualified" reported from laboratory as data between the MDL and SWSL

Results are presented in ug/l unless otherwise noted.
Results from envirochem report #2013-10568.

Appendix A

Laboratory Analytical Report

February 2013 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

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Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6042

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/28/13
DATE REPORTED : 09/12/13

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #8	Well #9	Well #10	Well #11	Well #12	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.0	3.9	5.5	6.5	1.6	08/28/13	BF	4500HB-00
Total Organic Carbon, mg/l	0.30	1.0	1.91	--- U	--- U	--- U	--- U	09/04/13	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	6	25	--- U	8	7	08/29/13	HMB	4500CLB-97
Sulfate, mg/l	5.0	250.0	11.5 J	5.3 J	--- U	--- U	--- U	09/03/13	TRB	4500SO42E97
Arsenic, ug/l	0.05	10.0	0.26 J	0.34 J	0.20 J	0.72 J	0.17 J	09/09/13	LFJ	EPA200.8
Barium, ug/l	0.06	100.0	60.2 J	69.5 J	43.3 J	27.8 J	28.8 J	09/09/13	LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	0.20 J	1	0.44 J	0.09 J	0.17 J	09/09/13	LFJ	EPA200.8
Copper, ug/l	0.06	10.0	1.4 J	3.1 J	1.6 J	4.6 J	1.6 J	09/09/13	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.41 J	0.67 J	0.16 J	0.85 J	0.61 J	09/09/13	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	1.4 J	2.2 J	2.3 J	1.1 J	0.61 J	09/09/13	LFJ	EPA200.8
Mercury, ug/l	0.01	0.20	--- U	--- U	--- U	--- U	--- U	09/09/13	ADD	245.1 R3-94
Selenium, ug/l	0.06	10.0	0.08 J	0.11 J	0.43 J	--- U	0.07 J	09/09/13	LFJ	EPA200.8
Silver, ug/l	0.03	10.0	--- U	--- U	--- U	--- U	--- U	09/09/13	LFJ	EPA200.8
Zinc, ug/l	0.47	10.0	4.3 J	24	10	14	11	09/09/13	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	12	15	95	140	16	08/28/13	HMB	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	68	31	41	106	31	08/28/13	BF	2510B-97
Temperature, °C			17	18	18	19	15	08/28/13	BF	2550B-00
Static Water Level, feet			14.01	11.55	3.98	5.42	41.14	08/28/13	BF	
Well Depth, feet			23.43	21.64	16.16	21.62	51.35	08/28/13	BF	

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6042

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/28/13
DATE REPORTED : 09/12/13

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #17	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.0	08/28/13	BF	4500HB-00
Total Organic Carbon, mg/l	0.30	1.0	--- U	09/04/13	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	5	08/29/13	HMB	4500CLB-97
Sulfate, mg/l	5.0	250.0	5.3 J	09/03/13	TRB	4500SO42E97
Arsenic, ug/l	0.05	10.0	0.24 J	09/09/13	LFJ	EPA200.8
Barium, ug/l	0.06	100.0	43.0 J	09/09/13	LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	0.17 J	09/09/13	LFJ	EPA200.8
Copper, ug/l	0.06	10.0	6.5 J	09/09/13	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	1.5 J	09/09/13	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	0.76 J	09/09/13	LFJ	EPA200.8
Mercury, ug/l	0.01	0.20	--- U	09/09/13	ADD	245.1 R3-94
Selenium, ug/l	0.06	10.0	--- U	09/09/13	LFJ	EPA200.8
Silver, ug/l	0.03	10.0	--- U	09/09/13	LFJ	EPA200.8
Zinc, ug/l	0.47	10.0	13	09/09/13	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	120	08/28/13	HMB	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	28	08/28/13	BF	2510B-97
Temperature, °C			17	08/28/13	BF	2550B-00
Static Water Level, feet			18.88	08/28/13	BF	
Well Depth, feet			26.89	08/28/13	BF	

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208
FAX (252) 756-0633

ID#: 6042 A

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/27/13
DATE REPORTED : 09/20/13

REVIEWED BY:

PARAMETERS	MDL	SWSL	SW-1	Basin #1	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.8	Missing	08/27/13	BF	4500HB-00
Total Organic Carbon, mg/l	0.30	1.0	1.58	Missing	09/04/13	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	6	Missing	08/29/13	HMB	4500CLB-97
Sulfate, mg/l	5.0	250.0	--- U	Missing	09/03/13	TRB	4500SO42E97
Arsenic, ug/l	0.05	10.0	0.34 J	Missing	09/03/13	LFJ	EPA200.8
Barium, ug/l	0.06	100.0	11.7 J	Missing	09/03/13	LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	0.08 J	Missing	09/03/13	LFJ	EPA200.8
Copper, ug/l	0.06	10.0	0.47 J	Missing	09/03/13	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	--- U	Missing	09/03/13	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	0.09 J	Missing	09/03/13	LFJ	EPA200.8
Mercury, ug/l	0.01	0.20	--- U	Missing	09/09/13	ADD	245.1 R3-94
Selenium, ug/l	0.06	10.0	--- U	Missing	09/03/13	LFJ	EPA200.8
Silver, ug/l	0.03	10.0	--- U	Missing	09/03/13	LFJ	EPA200.8
Zinc, ug/l	0.47	10.0	3.3 J	Missing	09/03/13	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	3.3	Missing	08/27/13	HMB	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	122	Missing	08/27/13	BF	2510B-97
Temperature, °C			19	Missing	08/27/13	BF	2550B-00

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

envirochem

ANALYTICAL & CONSULTING CHEMISTS

Environmental Chemists, Inc.

6602 Windmill Way • Wilmington, NC 28405
(910) 392-0223 (Lab) • (910) 392-4424 (Fax)

710 Bowsertown Road • Manteo, NC 27954
(252) 473-5702

NCDENR: DWQ CERTIFICATE #94. DLS CERTIFICATE #37729

Environment - 1
Post Office Box 7085
Greenville NC 27858
Attention: Deedee Woolard

Date of Report: Sep 17, 2013
Customer PO #:
Report #: 2013-10568
Report to: Deedee Woolard
Project ID: Halifax Co. (Coal Ash Landfill)

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
13-25725	**Site:** Sediment # 1	8/27/2013 10:30 AM	Solid/Sludge	Bobby/Tom

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	71.5 %	09/10/2013
TCLP Metals			
Arsenic	EPA 200.7	<0.100 mg/L	09/16/2013
Barium	EPA 200.7	<0.100 mg/L	09/16/2013
Cadmium	EPA 200.7	<0.100 mg/L	09/16/2013
Chromium	EPA 200.7	<0.100 mg/L	09/16/2013
Lead	EPA 200.7	<0.100 mg/L	09/16/2013
Selenium	EPA 200.7	<0.100 mg/L	09/16/2013
Silver	EPA 200.7	<0.100 mg/L	09/16/2013
Mercury	EPA 245.1	<0.002 mg/L	09/14/2013

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
13-25726	**Site:** Sediment # 2	8/27/2013 10:45 AM	Solid/Sludge	Bobby/Tom

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	79.4 %	09/10/2013
TCLP Metals			
Arsenic	EPA 200.7	<0.100 mg/L	09/16/2013
Barium	EPA 200.7	<0.100 mg/L	09/16/2013
Cadmium	EPA 200.7	<0.100 mg/L	09/16/2013
Chromium	EPA 200.7	<0.100 mg/L	09/16/2013
Lead	EPA 200.7	<0.100 mg/L	09/16/2013
Selenium	EPA 200.7	<0.100 mg/L	09/16/2013
Silver	EPA 200.7	<0.100 mg/L	09/16/2013
Mercury	EPA 245.1	<0.002 mg/L	09/14/2013

Comment:
Reviewed by: Mariola Olyara Jim Pierce

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858

Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6042 A **Week:** 35

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

CHLORINE NEUTRALIZED AT COLLECTION																		
pH CHECK (LAB)																		
CONTAINER TYPE, P/G	P	P	P	P	P	P	P	P	G									
CHEMICAL PRESERVATION	A	C	A	A	A	A	A	A	A									
PARAMETERS	~~Water pH~~	~~TOC~~	~~Chloride~~	~~Surfac~~	~~Metals~~	~~Turbidity~~	~~Conductivity~~	~~Temperature~~	TCLP Metals									

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE/NAOH
G - NA THIOSULFATE

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS															
SW-1	8-27-13	0945 ~~0935~~ BF		19	6														25725	
Basin #1					6														3	
Sediment Sample #1	8-27-13	1030		19	1								G						25727	
Sediment Sample #2	8-27-13	1045	~~19~~ BF	19	1								G						25726	
																			13-10568	

CLASSIFICATION:
☐ WASTEWATER (NPDES)
☐ DRINKING WATER
☐ DWQ/GW
☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) Bobby / Tom

SAMPLES RECEIVED IN LAB AT 1.7 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby Tom	8-27-13 1510	B	8/27/13 315
B	8/30/13 8am		
[illegible]	08-30 10:18	[illegible]	8/30 10:18

COMMENTS: Basin 1 Dry

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

FORM #5

№ 262633

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858

Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6042 A **Week:** 35

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

CHLORINE NEUTRALIZED AT COLLECTION																				
pH CHECK (LAB)		K2		L2																
CONTAINER TYPE, P/G	P	P	P	P	P	P	P	P	G											
CHEMICAL PRESERVATION	A	C	A	A	A	A	A	A	A											
PARAMETERS	Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	TCLP Metals											

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE/NAOH
G - NA THIOSULFATE

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	TCLP Metals
SW-1	8-27-13	0945 ~~0935~~ 8F		19	6	G	G	G	G	G	G	G	G	
Basin #1					6									
Sediment Sample #1	8-27-13	1030		19	1									G
Sediment Sample #2	8-27-13	1045	~~19~~ 8F	19	1									G

CLASSIFICATION:
☐ WASTEWATER (NPDES)
☐ DRINKING WATER
☐ DWQ/GW
☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) Bobby / Tom

SAMPLES RECEIVED IN LAB AT 1.7 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby / Tom	8-27-13 1510	[signature]	8/27/13 315
[signature]	8/30/13 800		

COMMENTS: Basin 1 Dry

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

№ 262633

FORM #5

Environment 1, Inc.
P.O. Box 7005, 114 Oakmont Dr.
Greenville, NC 27858

Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6042 **Week: 35**

HALIFAX CO. (COAL ASH LANDFILL)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION
- [ ] CHLORINE
- [ ] UV
- [ ] NONE
- [ ] _____

																					CHLORINE NEUTRALIZED AT COLLECTION
							<2			<2											pH CHECK (LAB)
						P	P	P	P	P	P	P	P								CONTAINER TYPE, P/G
						A	C	A	A	A	A	A	A								CHEMICAL PRESERVATION
SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	Field Parameter							PARAMETERS
Well #8	8-28-13	0905		17	6	G	G	G	G	G	G	G	G	G							
Well #9	8-28-13	1005		18	6	G	G	G	G	G	G	G	G	G							
Well #10	8-28-13	0950		18	6	G	G	G	G	G	G	G	G	G							
Well #11	8-28-13	0945		19	6	G	G	G	G	G	G	G	G	G							
Well #12	8-28-13	0935		15	6	G	G	G	G	G	G	G	G	G							
Well #17	8-28-13	0955		17	6	G	G	G	G	G	G	G	G	G							

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE/NAOH
G - NA THIOSULFATE

CLASSIFICATION:
- [ ] WASTEWATER (NPDES)
- [ ] DRINKING WATER
- [ ] DWQ/GW
- [X] SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
Y N

SAMPLES COLLECTED BY: (Please Print)
Bobby / Tom

SAMPLES RECEIVED IN LAB AT 1-2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby Fox	8-28-13 1410	[signature]	8/28/13 214
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

№ 262634

FORM #5