

DENR USE ONLY:

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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	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.

Madeline German, PG

Geologist

919-828-0577 x 222

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

Signature

Date

Affix NC Licensed Professional Geologist Seal

14 N. Boylan Avenue, Raleigh, NC 27603

Facility Representative Address

C0828

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



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February 2014 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



April 2014

Prepared by:

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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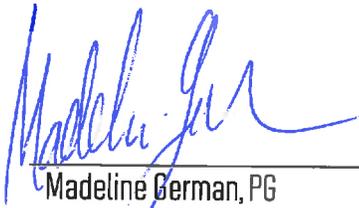
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February 2014 Groundwater Monitoring Report

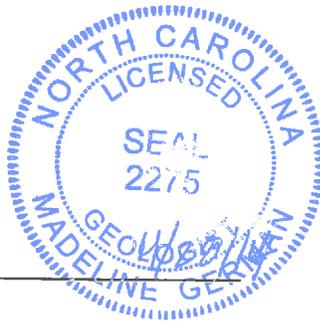
**Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04**

Prepared For:
**Halifax County
Halifax, North Carolina**

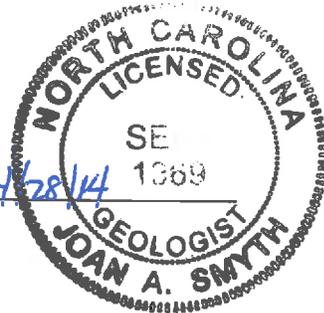
S+G Project No. Halifax-8



Madeline German, PG
Project Geologist



Joan Smyth, PG
Senior Hydrogeologist



April 2014

SMITH + GARDNER

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

February 2014 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 February 24, 2014.

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 February 24, 2014 was conducted in accordance with the approved site Water Quality Monitoring Plan¹. Sampling methods followed the protocol outlined in the Solid Waste Section Guidelines for Groundwater, Soil and Surface Water Sampling². 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). 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, turbidity 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 Summit Environmental Technologies, Inc (NC Certification ID #39705 and #631) located in Cuyahoga Falls, OH. 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. Barium (MW-9), cadmium (MW-11), copper (MW-17) and zinc (MW-9, MW-10, MW-11, MW-12, MW-17 and Basin #1) were detected at or above their SWSL. No metals were detected above their 2L Standards. Most inorganic concentrations were reported as "J-qualified" indicating they are a non-quantifiable value that falls between the method limit and the SWSL. Turbidity levels were high for this event; in MW-9, MW-10, MW-11, MW-12 and MW-17 were reported at 210, 170, 180, 95 and 200 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. There were no detections in the sediment samples (upstream and downstream). Zinc was reported above the SWSL in the sample from Basin #1; additionally concentrations of indicator parameters chloride and sulfate were reported above their SWSL.

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 0.0138 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 August 2014. An event report will be submitted after receipt and review of sampling results.

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FIGURES

**February 2014 - 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

MW-8
TOC=308.43
DTW=7.44
GWE=300.99

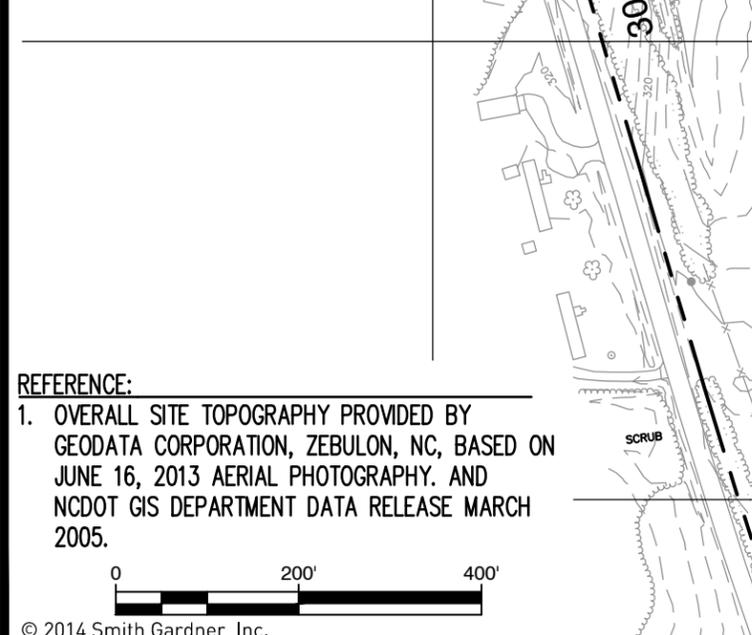
MW-17
TOC=294.38
DTW=17.42
GWE=276.96

MW-11
TOC=265.93
DTW=4.69
GWE=261.24

MW-10
TOC=258.72
DTW=3.24
GWE=255.48

MW-9
TOC=277.26
DTW=9.67
GWE=267.59

MW-12
TOC=329.33
DTW=40.42
GWE=288.91



REFERENCE:
1. OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, ZEBULON, NC, BASED ON JUNE 16, 2013 AERIAL PHOTOGRAPHY. AND NCDOT GIS DEPARTMENT DATA RELEASE MARCH 2005.

<p>PREPARED BY: NC LIC. NO. C-0828 (ENGINEERING)</p> <h1 style="margin: 0;">SMITH+GARDNER</h1> <p style="font-size: small; margin: 0;">14 N. Boylan Avenue, Raleigh NC 27603 919.828.0577</p>	
<p>FIGURE NO. 1</p>	<p>SCALE: AS SHOWN</p>
<p>APPROVED: J.A.L.</p>	<p>PROJECT NO.: HALIFAX-8</p>
<p>DRAWN: J.A.L.</p>	<p>DATE: Apr 2014</p>
<p>GROUNDWATER POTENTIOMETRIC MAP HALIFAX COAL ASH LANDFILL FEBRUARY 2014</p>	

G:\CAD\Halifax\Halifax-8\sheets\HALI-B0276.dwg - 4/22/2014 11:13 AM

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TABLES

**February 2014 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04**

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**Table 1
Ground Water Elevations & Velocities
Halifax County Coal Ash Landfill
February 24, 2014**

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	7.44	300.99	0.047	0.2	0.0330	0.0078
MW-9	958597.68	2349614.73	277.26	21.92	9.67	267.59	0.047	0.2	0.0422	0.0099
MW-10	958257.68	2350009.33	258.72	16.14	3.24	255.48	0.047	0.2	0.0603	0.0142
MW-11	958149.07	2350403.19	265.93	21.72	4.69	261.24	0.047	0.2	0.0827	0.0194
MW-12	958645.55	2351227.97	329.33	51.34	40.42	288.91	0.047	0.2	0.0636	0.0150
MW-17	958790.40	2350356.85	294.38	26.88	17.42	276.96	0.047	0.2	0.0696	0.0164

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

Table 2
Field Parameters
Halifax County Coal Ash Landfill
February 24, 2014

Monitoring Location	pH (std units)	Specific Conductivity (umhos/cm)	Temperature degrees C)	Turbidity (NTU)
MW-8	4.6	81	10	32
MW-9	5.0	32	16	210
MW-10	5.4	43	12	170
MW-11	6.2	101	12	180
MW-12	4.6	32	15	95
MW-17	5	27	16	200
SW-1	6.9	86	9	13
Basin 1	7.5	7278	11	9

NOTE:

1. NA = Not Applicable
2. <MDL

Table 3
Inorganic Constituents Detected in Water Samples
Halifax County Coal Ash Landfill
February 24, 2014

Monitoring Location	MDL	SWSL	2L Standard	MW-8	MW-9	MW-10	MW-11	MW-12	MW-17	SW-1	Basin #1
Total Organic Carbon	300	NE	NE	1600	<300	<300	<300	<300	<300	19800	<300
Chloride	5000	--	250000	<5000	<5000	<5000	<5000	6000	<5000	500	1870000
Sulfate	5000	250000	250000	24600 J	39200 J	24200 J	10300 J	<5000	<5000	7600 J	2191000
Arsenic	0.05	10	10	0.45 J	0.75 J	0.46 J	1.5 J	0.44 J	0.16 J	<0.05	6.7 J
Barium	0.06	100	700	83.8 J	100	60.2 J	44.7 J	65.3 J	74.7 J	16.1 J	60.3 J
Cadmium	0.05	1	2	0.22 J	0.44 J	0.56 J	1	0.48 J	0.29 J	<0.05	0.26 J
Chromium, total	0.04	10	10	1.2 J	1.7 J	0.24 J	1.4 J	1.2 J	3.2 J	0.27 J	7.2 J
Copper	0.06	10	1000	1.3 J	3.4 J	2.3 J	7.8 J	4.0 J	11	0.35 J	1.3 J
Lead	0.02	10	15	2.0 J	3.6 J	3.6 J	2.0 J	2.0 J	2.6 J	0.08 J	0.10 J
Selenium	0.06	10	20	0.55 J	0.92 J	1.2 J	0.54 J	0.39 J	0.32 J	<0.06	1.9 J
Silver	0.03	10	20	<0.03	0.03 J	0.08 J	0.20 J	0.09 J	0.07 J	<0.03	0.04 J
Zinc	0.47	10	1000	4.5 J	43	17	21	23	21	2.3 J	28

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 04/01/2014 Environment 1, Incorporated Laboratory Report Client ID#6042.

Table 4
Inorganic Constituents Detected in Sediment
Halifax County Coal Ash Landfill
February 24, 2014

Monitoring Location	LOQ/CL	SWSL	2L Standard	Sediment #1 Upstream	Sediment #2 Downstream
Arsenic	500	10	10	<500	<500
Barium	5000	100	700	56000	<5000
Cadmium	100	1	2	<100	<100
Chromium, total	200	10	10	<200	<200
Lead	500	10	15	<500	<500
Mercury	2	0.2	1	<2	<2
Selenium	500	10	20	<500	<500
Silver	500	10	20	<500	<500

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 from TCLP analysis presented in ug/l unless otherwise noted.
Results from Summit Environmental Technologies, Inc. Report #14030134.

Appendix A

Laboratory Analytical Report

**February 2014 - 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: 02/24/14
DATE REPORTED : 04/01/14

REVIEWED BY: 

PARAMETERS	MDL	Well		Well		Well		Well		Well		Analysis		Method	
		SWSL	#8	#9	#10	#11	#12	Date	Analyst	Code					
PH (field measurement), Units			4.6	5.0	5.4	6.2	4.6	02/24/14BF		4500HB-00					
Total Organic Carbon, mg/l	0.30	1.0	1.60	---	U	---	U	---	U	---	U	02/24/14SEJ		5310C-00	
Chloride, mg/l	5.0	5.0	---	U	---	U	---	U	---	U	6	03/03/14CMC		4500CLB-97	
Sulfate, mg/l	5.0	250.0	24.6 J	39.2 J	24.2 J	10.3 J	---	U	03/03/14TRB		4500SO42B97				
Arsenic, ug/l	0.05	10.0	0.45 J	0.75 J	0.46 J	1.5 J	0.44 J	03/10/14LFJ		EPA200.8					
Barium, ug/l	0.06	100.0	83.8 J	100	60.2 J	44.7 J	65.3 J	03/10/14LFJ		EPA200.8					
Cadmium, ug/l	0.05	1.0	0.22 J	0.44 J	0.56 J	1	0.48 J	03/10/14LFJ		EPA200.8					
Copper, ug/l	0.06	10.0	1.3 J	3.4 J	2.3 J	7.8 J	4.0 J	03/10/14LFJ		EPA200.8					
Total Chromium, ug/l	0.04	10.0	1.2 J	1.7 J	0.24 J	1.4 J	1.2 J	03/10/14LFJ		EPA200.8					
Lead, ug/l	0.02	10.0	2.0 J	3.6 J	3.6 J	2.0 J	2.0 J	03/10/14LFJ		EPA200.8					
Mercury, ug/l	0.01	0.20	---	U	---	U	---	U	03/10/14ADD		245.1 R3-94				
Selenium, ug/l	0.06	10.0	0.55 J	0.92 J	1.2 J	0.54 J	0.39 J	03/10/14LFJ		EPA200.8					
Silver, ug/l	0.03	10.0	---	U	0.03 J	0.08 J	0.20 J	0.09 J	03/12/14LFJ		EPA200.8				
Zinc, ug/l	0.47	10.0	4.5 J	43	17	21	23	03/25/14LFJ		EPA200.8					
Turbidity, NTU	1.0	1.0	32.0	210	170	180	95.0	02/24/14LW		2130B-01					
Conductivity (at 25c), uMhos/cm	1.0	1.0	81	32	43	101	32	02/24/14BF		2510B-97					
Temperature, °C			10	16	12	12	15	02/24/14BF		2550B-00					
Static Water Level, feet			7.44	9.67	3.24	4.69	40.42	02/24/14BF							
Well Depth, feet			23.38	21.92	16.14	21.72	51.34	02/24/14BF							

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: 02/24/14
DATE REPORTED : 04/01/14

REVIEWED BY: 

PARAMETERS	MDL	Well		Analysis		Method Code
		SWSL	#17	Date	Analyst	
PH (field measurement), Units				5.0	02/24/14BF	4500HB-00
Total Organic Carbon, mg/l	0.30	1.0		--- U	02/28/14SEJ	5310C-00
Chloride, mg/l	5.0	5.0		--- U	03/03/14CMC	4500CLB-97
Sulfate, mg/l	5.0	250.0		--- U	03/03/14TRB	4500SO42E97
Arsenic, ug/l	0.05	10.0		0.16 J	03/25/14LFFJ	EPA200.8
Barium, ug/l	0.06	100.0		74.7 J	03/27/14LFFJ	EPA200.8
Cadmium, ug/l	0.05	1.0		0.29 J	03/14/14LFFJ	EPA200.8
Copper, ug/l	0.06	10.0		11	03/31/14MEL	EPA200.8
Total Chromium, ug/l	0.04	10.0		3.2 J	03/31/14MEL	EPA200.8
Lead, ug/l	0.02	10.0		2.6 J	03/27/14LFFJ	EPA200.8
Mercury, ug/l	0.01	0.20		--- U	03/10/14ADD	245.1 R3-94
Selenium, ug/l	0.06	10.0		0.32 J	03/25/14LFFJ	EPA200.8
Silver, ug/l	0.03	10.0		0.07 J	03/14/14LFFJ	EPA200.8
Zinc, ug/l	0.47	10.0		21	03/31/14MEL	EPA200.8
Turbidity, NTU	1.0	1.0		200	02/24/14LW	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0		27	02/24/14BF	2510B-97
Temperature, °C				16	02/24/14BF	2550B-00
Static Water Level, feet				17.42	02/24/14BF	
Well Depth, feet				26.88	02/24/14BF	

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: 02/24/14
DATE REPORTED : 04/11/14

REVIEWED BY: 

PARAMETERS	MDL	SW-1		Basin #1		Analysis		Method	
		SWSL				Date	Analyst	Code	
PH (field measurement), Units			6.9		7.5	02/24/14BF		4500HB-00	
Total Organic Carbon, mg/l	0.30	1.0	1.98		---	U 02/24/14SEJ		5310C-00	
Chloride, mg/l	5.0	5.0	5		1870	03/03/14CMC		4500CLB-97	
Sulfate, mg/l	5.0	250.0	7.6 J		2191	03/03/14TRB		4500SO42E97	
Arsenic, ug/l	0.50	10.0	---		U	03/25/14LFJ		EPA200.8	
Arsenic, ug/l	0.50	10.0			6.7 J	04/01/14MEL		3113B-04	
Barium, ug/l	0.06	100.0	16.1 J		60.3 J	03/27/14LFJ		EPA200.8	
Cadmium, ug/l	0.05	1.0	---		U	0.26 J	03/14/14LFJ	EPA200.8	
Copper, ug/l	0.06	10.0	0.35 J		1.3 J	03/31/14MEL		EPA200.8	
Total Chromium, ug/l	0.04	10.0	0.27 J		7.2 J	03/31/14MEL		EPA200.8	
Lead, ug/l	0.02	10.0	0.08 J		0.10 J	03/27/14LFJ		EPA200.8	
Mercury, ug/l	0.01	0.20	---		U	---	U 03/10/14ADD	245.1 R3-94	
Selenium, ug/l	0.52	10.0	---		U	03/25/14LFJ		EPA200.8	
Selenium, ug/l	0.52	10.0			1.9 J	04/01/14MEL		3113B-04	
Silver, ug/l	0.03	10.0	---		U	0.04 J	03/14/14LFJ	EPA200.8	
Zinc, ug/l	0.47	10.0	2.3 J		28	03/31/14MEL		EPA200.8	
Turbidity, NTU	1.0	1.0	13.0		9.0	02/24/14LW		2130B-01	
Conductivity (at 25c), uMhos/cm	1.0	1.0	86		7278	02/24/14BF		2510B-97	
Temperature, °C			9		11	02/24/14BF		2550B-00	



Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: <http://www.settek.com>

March 10, 2014

Deedee Woolard
Environment 1, Inc.
114 Oakmont Dr
P.O. Box 7085
Greenville, NC 27858
TEL: (252) 756-6208
FAX: (252) 756-0633

RE: Halifax Co. (Coal Ash Landfill)

Order No.: 14030134

Dear Deedee Woolard:

Summit Environmental Technologies, Inc. received 2 sample(s) on 3/4/2014 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except where noted.

If you have any questions regarding these tests results, please feel free to call the laboratory.

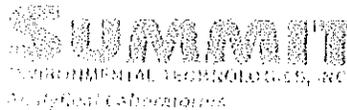
Sincerely,

Dr. Mo Osman

Project Manager

3310 Win St.
Cuyahoga Falls, Ohio 44223

A2LA 0724.01, Alabama 41600, Arkansas 88-0735, California 07256CA, Colorado, Connecticut PH-0105, Delaware, Florida NELAC E87688, Georgia E87688 and 943, Idaho OH00923, Illinois 200061 and Reg.5, Indiana C-OH-13, Kansas E-10347, Kentucky (underground Storage Tank) 3, Kentucky 90146, Louisiana 04061 and LA12004, Maine 2012015, Maryland 339, Massachusetts M-OPH923, Minnesota 409711, Montana CERT0099, New Hampshire 2996, New Jersey OH006, New York 11777, North Carolina 39705 and 631, Ohio 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas TI04704466-11-5, Region 8 8TMS-L, USDA/APHIS P330-11-00244, Utah OH009232011-1, Vermont VT-87688, Virginia 00440 and 1581, Washington C891, West Virginia 248 and 9957C and E87688, Wisconsin 399013010



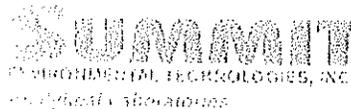
Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: <http://www.settek.com>

Workorder Sample Summary

WO#: 14030134
10-Mar-14

CLIENT: Environment 1, Inc.
Project: Halifax Co. (Coal Ash Landfill)

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
14030134-001	Sediment Sample #1		2/24/2014 9:45:00 AM	3/4/2014 9:55:00 AM	Solid
14030134-002	Sediment Sample #2		2/24/2014 11:30:00 AM	3/4/2014 9:55:00 AM	Solid



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Cuyahoga Falls, Ohio 44223
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Case Narrative

WO#: 14030134
Date: 3/10/2014

CLIENT: Environment I, Inc.
Project: Halifax Co. (Coal Ash Landfill)

This report in its entirety consists of the documents listed below. All documents contain the Summit Environmental Technologies, Inc. Work Order Number assigned to this report.

Paginated Report including: Cover Letter, Case Narrative, Analytical Results, Applicable Quality Control Summary Reports and copies of the Chain of Custody Documents supplied with this sample set.

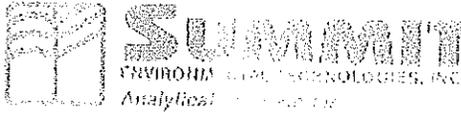
Concentrations reported with a J flag in the Qual field are values below the Limit of Quantitation (LOQ) but greater than the established Limit of Detection (LOD). There is greater uncertainty associated with these results and data should be considered as estimated.

Method numbers, unless specified as SM (Standard Methods) or ASTM, are EPA methods.

Estimated uncertainty values are available upon request.

Any comments or problems with the analytical events associated with this report are noted below.

Original



Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

WO#: 14030134
 Date Reported: 3/10/2014
 Company: Environment 1, Inc.
 Address: 114 Oakmont Dr
 Greenville NC 27858
 Received: 3/4/2014
 Project#: Halifax Co. (Coa)

TCLP Metals Analysis (6010)

Client ID#	Lab ID#	Collected Analyte	Rep Lmt	Result	Units	Matrix	Method	DF	RegLvl	Run	Analyst
Sediment Sample #1	001	2/24/2014 TCLP Arsenic(As)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Barium(Ba)	5.0	56	mg/L	Solid	EPA 6010 C	1	100	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Cadmium(Cd)	0.10	ND	mg/L	Solid	EPA 6010 C	1	1.0	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Chromium(Cr)	0.20	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Lead(Pb)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Selenium(Se)	0.50	ND	mg/L	Solid	EPA 6010 C	1	1.0	3/7/2014	VVK
Sediment Sample #1	001	2/24/2014 TCLP Silver(Ag)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK

TCLP Mercury Analysis (1311/7470)

Client ID#	Lab ID#	Collected Analyte	Rep Lmt	Result	Units	Matrix	Method	DF	RegLvl	Run	Analyst
Sediment Sample #1	001	2/24/2014 TCLP Mercury	0.0020	ND	mg/L	Solid	EPA 7470 A	1	0.20	3/7/2014	ALJ

TCLP Metals Analysis (6010)

Client ID#	Lab ID#	Collected Analyte	Rep Lmt	Result	Units	Matrix	Method	DF	RegLvl	Run	Analyst
Sediment Sample #2	002	2/24/2014 TCLP Arsenic(As)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Barium(Ba)	5.0	ND	mg/L	Solid	EPA 6010 C	1	100	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Cadmium(Cd)	0.10	ND	mg/L	Solid	EPA 6010 C	1	1.0	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Chromium(Cr)	0.20	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Lead(Pb)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Selenium(Se)	0.50	ND	mg/L	Solid	EPA 6010 C	1	1.0	3/7/2014	VVK
Sediment Sample #2	002	2/24/2014 TCLP Silver(Ag)	0.50	ND	mg/L	Solid	EPA 6010 C	1	5.0	3/7/2014	VVK

TCLP Mercury Analysis (1311/7470)

Client ID#	Lab ID#	Collected Analyte	Rep Lmt	Result	Units	Matrix	Method	DF	RegLvl	Run	Analyst
Sediment Sample #2	002	2/24/2014 TCLP Mercury	0.0020	ND	mg/L	Solid	EPA 7470 A	1	0.20	3/7/2014	ALJ

Environment, Inc.
 P.O. Box 7688, 114 Oakmont Dr.
 Greenville, NC 27838

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

CLIF N #: 6042 A Week: 9

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

(252) 583-1807

CHAIN OF CUSTODY RECORD

Page 1 of 1

SAMPLE LOCATION	COLLECTION		TOTAL QUANTITY OF CONTAINERS	TEMPERATURE AT COLLECTION	# OF CONTAINERS	P	PC	Chloride	Sulfate	Mercury	Cadmium	Lead	Copper	Zinc	Manganese	Nickel	Selenium	Silver	Vanadium	Temperature	TSP Meqals	PARAMETERS	CHEMICAL PRESERVATION	CLASSIFICATION	CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT VERY	SAMPLES COLLECTED BY (PRINT NAME)	SAMPLES RECEIVED IN LAB AT			
	DATE	TIME																												
Water	0-24-14	0905	6		6																									
Reservoir	0-24-14	0930	6		6																									
Sediment Sample #1	0-24-14	0945	1		1																									
Sediment Sample #2	3-24-14	1150	1		1																									
<p>14030134-001-002</p>																														
RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)		DATE/TIME		RECEIVED BY (SIG.)			
Bobby Ford	03/24/14 13:15		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958	
Bobby Ford	2/28/14 0800		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958	
Bobby Ford	2/28/14 0800		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958		Bobby Ford		3-24-14 0958	

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 boxes above for each parameter requested

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

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

CLIENT: 6042 Week: 9

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

(252) 583-1807

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION			Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	Field Parameter	PARAMETERS	CLASSIFICATION:
	DATE	TIME				CHLORINE	UV	NONE											
Well #8	2-24-14	1010		10	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A	A	A	A
Well #9	2-24-14	1136		16	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	P	A	A	A	A	A	A	A	A	A
Well #10	2-24-14	0930		19	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	P	A	A	A	A	A	A	A	A	A
Well #11	2-24-14	0945		12	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	P	A	A	A	A	A	A	A	A	A
Well #12	2-24-14	1600		15	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	P	A	A	A	A	A	A	A	A	A
Well #17	2-24-14	0940		27	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	P	A	A	A	A	A	A	A	A	A
REINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:													
<i>Bobby Tom</i>	2-24-14 13:15	<i>[Signature]</i>	2-24-14 13:15	<i>[Signature]</i>	2-24-14 13:15	SAMPLER MUST BE PLACED IN A "C" FOR COMPOSITE SAMPLE OR A "G" FOR GRAB SAMPLE IN THE BLOCKS ABOVE FOR EACH PARAMETER REQUESTED.													
REINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	SAMPLER MUST BE PLACED IN A "C" FOR COMPOSITE SAMPLE OR A "G" FOR GRAB SAMPLE IN THE BLOCKS ABOVE FOR EACH PARAMETER REQUESTED.													
REINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	SAMPLER MUST BE PLACED IN A "C" FOR COMPOSITE SAMPLE OR A "G" FOR GRAB SAMPLE IN THE BLOCKS ABOVE FOR EACH PARAMETER REQUESTED.													

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

SAMPLER MUST BE PLACED IN A "C" FOR COMPOSITE SAMPLE OR A "G" FOR GRAB SAMPLE IN THE BLOCKS ABOVE FOR EACH PARAMETER REQUESTED.

NO 273702