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):

Richardson Smith Gardner and Associates, 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@rsgengineers.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 23 & 24, 2011

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 — 1/19/2012 Date — Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 1/19/2012 GEOLOGIST MADELINE GERMAN

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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Halifax County Coal Ash Landfill

Ground Water Monitoring Report

Fall 2011 Semi-annual Monitoring Event

Halifax County Landfill
Halifax County, North Carolina
NC Solid Waste Permit # 42-04

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

January 2012

RICHARDSON SMITH GARDNER
& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES

Halifax County Coal Ash Landfill

Semi-Annual Ground Water Monitoring Report
Fall 2011 Monitoring Event

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1.0 Introduction

Richardson Smith Gardner and Associates (RSG) 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 23 & 24, 2011.

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 and 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 up to 45 ft. below grade in the area of MW-12. Ground water generally flows to the south.

3.0 Sampling Locations and Procedures

The sampling event, performed by Environment 1, Inc., on August 23 & 24, 2011 was conducted in accordance with the approved site Water Quality Monitoring Plan. Sampling methods followed the protocol outlined in the Solid Waste Section Guidelines for Groundwater, Soil and Surface Water Sampling[1]. 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 upstream and downstream of the sedimentation basin discharge point (Sediment 1 and Sediment 2). MW-8 and Basin 1 were unable to be sampled for this event.

Samples were collected by Environment 1, Inc. personnel in laboratory prepared containers for the specified analytical procedures. Sampling equipment (bailers) was cleaned at the laboratory and

1 Solid Waste Section Guidelines for Groundwater, Soil and surface Water Sampling, NCDENR, DWM, April 2008.

transported to the site in aluminum foil. 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**. Field parameter results are provided in **Table 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, chloride and sulfate via the SWS approved test methods specified in the laboratory report. Sediment samples were analyzed by SGS North America (NC Certification ID #481) 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. Four inorganic constituents barium (MW-12 and MW-17), copper (MW-17), lead (MW-12) and zinc (MW-9, MW-12 and MW-17) were detected above the SWSL. Lead in MW-12 was detected above its 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. The high turbidity levels for this sampling event may have contributed to increased metals detections due to increased sediment in the samples.

No contaminants were identified in the surface water samples.

No contaminants were identified in the sediment samples.

The field parameter results are provided in **Table 1.** Detected inorganic constituents from ground or surface water samples are presented in **Table 2**. Sediment sample results are shown in **Table 3.**

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. 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. Lead (MW-12) was detected above the 2L Standard; however, it has historically been detected in samples during events with elevated turbidity. Turbidity in MW-12 for this event was recorded at 110 nephelometric turbidity units (NTU), indicating elevated turbidity that can yield "biased high" results. The landfill is not likely the contamination source. The next semi-annual event is scheduled for February 2012. A report will be submitted after receipt and analysis of that events sampling results.

Figures

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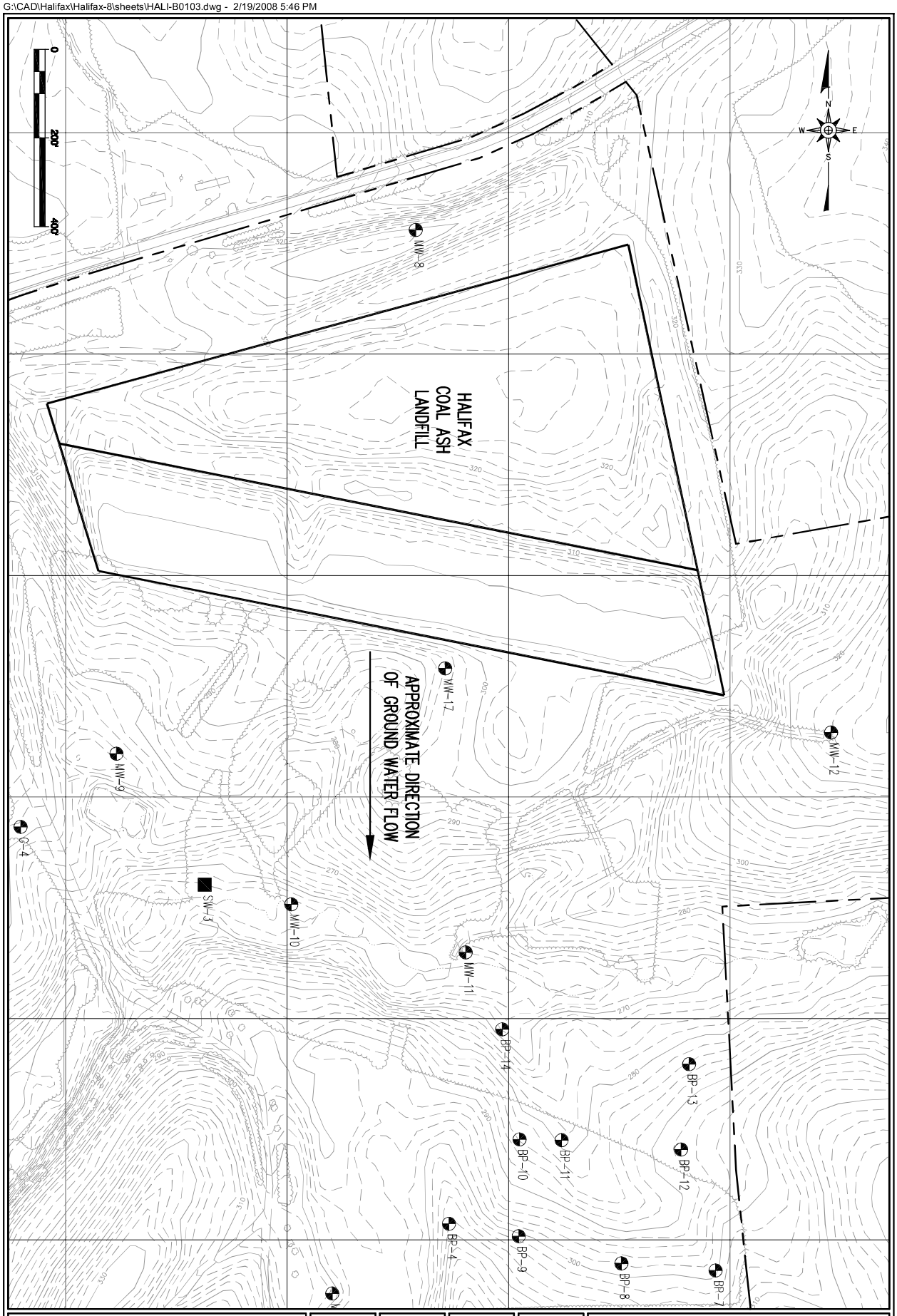

TITLE:	DRAWN BY:	CHECKED BY:	SCALE:	FIGURE NO.
DIRECTION OF GROUND WATER FLOW HALIFAX COAL ASH LANDFILL AURELIAN SPRINGS, NC	C.T.J.	J.A.S.	AS SHOWN	1
	DATE:	PROJECT NO.	FILE NAME	
	Feb. 2008	HALIFAX-8	HALI-B0103	

RICHARDSON SMITH GARDNER & ASSOCIATES
14 N. Boylan Ave.
Raleigh, N.C. 27603
www.rsgengineers.com
ph: 919-828-0577
fax: 919-828-3899

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Tables

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By: MG
Date: 1/18/2012

Table 1
Halifax County Coal Ash Landfill
Field Parameters
August 23 & 24, 2011

Monitoring Location	pH (std units)	Static Water Level (feet)	Specific Conductivity (umhos/cm)	Temperature (degrees C)	Turbididy (NTU)
MW-8	NS	NS	NS	NS	NS
MW-9	5.0	23.00	28	20	300
MW-10	5.2	15.35	40	20	3.8
MW-11	6.0	6.01	97	20	50
MW-12	4.5	46.93	29	17	110
MW-17	5.1	22.93	36	19	145
SW-1	6.7	N/A	108	22	4.4
Basin 1	NS	NS	NS	NS	NS

NS = Not Sampled

By: MG
Date: 1/19/2012

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Table 2
Halifax County Coal Ash Landfill
Inorganic Constituents Detected in Water Samples
August 23 & 24, 2011

Monitoring Location	MDL	SWSL	2L Standard	MW-9	MW-10	MW-11	MW-12	MW-17	SW-1
Total Organic Carbon	300	NE	NE	<300	<300	**12350**	**1280**	<300	**2210**
Chloride	5000	--	250000	<5000	<5000	<5000	**5000**	**5000**	<5000
Sulfate	5000	250000	250000	24300 J	14100 J	<5000	7400 J	<5000	8000 J
Arsenic	0.10	10	10	0.52 J	0.22 J	0.67 J	1.6 J	0.63 J	0.54 J
Barium	0.02	100	700	96.8 J	22.2 J	19.6 J	**394**	**146**	12.2 J
Cadmium	0.02	1	2	0.29 J	0.07 J	0.12 J	0.99 J	0.52 J	0.04 J
Chromium, total	0.04	10	10	1.1 J	<0.02	0.46 J	4.3 J	5 J	<0.04
Copper	0.02	10	1000	5.1 J	0.61 J	3.3 J	9.4 J	**20**	0.39 J
Lead	0.02	10	15	5.6 J	0.54 J	0.72 J	**16**	4.2 J	0.16 J
Mercury	0.05	0.2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	0.20	10	20	0.49 J	<0.20	<0.20	1.2 J	0.76 J	<0.20
Silver	0.02	10	20	<0.02	0.04 J	<0.02	0.05 J	0.08 J	<0.02
Zinc	0.24	10	1000	**42**	2.4 J	9.4 J	**112**	**46**	3.5 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

By: MG
Date: 1/19/2012

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Table 3
Halifax County Coal Ash Landfill
Inorganic Constituents Detected in Sediment
August 23 & 24, 2011

Monitoring Location	LOQ/CL	SWSL	2L Standard	Sediment #1 Upstream	Sediment #2 Downstream
Arsenic	100	10	10	<100	<100
Barium	1000	100	700	<1000	<1000
Cadmium	50	1	2	<50	<50
Chromium, total	100	10	10	<100	<100
Lead	100	10	15	<100	<100
Mercury	0.3	0.2	1	<0.3	<0.3
Selenium	200	10	20	<200	<200
Silver	100	10	20	<100	<100

NOTE:

LOQ/CL	-	Reporting Limit/Control Limit for the recovery result of a p
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

Results are presented in ug/l unless otherwise noted.
Results by SW-846 7470A TCLP and SW-846 6010C TCLP, as reported by SGS report #:

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Appendix A

Laboratory Analytical Report

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: 08/24/11
DATE REPORTED : 09/02/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #8	Well #9	Well #10	Well #11	Well #12	Analysis Date	Analyst	Method Code
PH (field measurement), Units			Missing	5.0	5.2	6.0	4.5	08/24/11	RJH	SM4500HB
Total Organic Carbon, mg/l	0.30	1.0	Missing	--- U	--- U	12.35	1.28	08/30/11	SEJ	SM5310C
Chloride, mg/l	5.0	5.0	Missing	--- U	--- U	--- U	5	08/30/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	Missing	24.3 J	14.1 J	--- U	7.4 J	08/29/11	TRB	SM426C
Arsenic, ug/l	0.10	10.0	Missing	0.52 J	0.22 J	0.67 J	1.6 J	08/31/11	CMF	EPA200.8
Barium, ug/l	0.02	100.0	Missing	96.8 J	22.2 J	19.6 J	394	08/31/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	Missing	0.29 J	0.07 J	0.12 J	0.99 J	08/31/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	Missing	5.1 J	0.61 J	3.3 J	9.4 J	08/31/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	Missing	1.1 J	--- U	0.46 J	4.3 J	08/31/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	Missing	5.6 J	0.54 J	0.72 J	16	08/31/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20	Missing	--- U	--- U	--- U	--- U	08/31/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	Missing	0.49 J	--- U	--- U	1.2 J	08/31/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	Missing	--- U	0.04 J	--- U	0.05 J	08/31/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	Missing	42	2.4 J	9.4 J	112	08/31/11	CMF	EPA200.8
Turbidity, NTU	1.0	1.0	Missing	310	3.8	50	110	08/24/11	MEL	SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	Missing	28	40	97	29	08/24/11	RJH	SM2510B
Temperature, °C			Missing	20	20	20	17	08/24/11	RJH	SM2550B
Static Water Level, feet			Missing	23.00	15.35	6.01	46.93	08/24/11	RJH	
Well Depth, feet			Missing	24.97	16.22	21.71	51.02	08/24/11	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation 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: 08/24/11
DATE REPORTED : 09/02/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #17	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.1	08/24/11	RJH	SM4500HB
Total Organic Carbon, mg/l	0.30	1.0	--- U	08/30/11	SEJ	SM5310C
Chloride, mg/l	5.0	5.0	5	08/30/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	--- U	08/29/11	TRB	SM426C
Arsenic, ug/l	0.10	10.0	0.63 J	09/01/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	146	09/01/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.52 J	09/01/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	20	09/01/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	5.0 J	09/01/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	4.2 J	09/01/11	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	--- U	09/01/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	0.76 J	09/01/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	0.08 J	09/01/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	46	09/01/11	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	145	08/24/11	MEL	SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	36	08/24/11	RJH	SM2510B
Temperature, °C			19	08/24/11	RJH	SM2550B
Static Water Level, feet			22.93	08/24/11	RJH	
Well Depth, feet			26.81	08/24/11	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation 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: 08/23/11
DATE REPORTED : 09/02/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	SW-1	Basin #1	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.7	Missing	08/23/11	RJH	SM4500HB
Total Organic Carbon, mg/l	0.30	1.0	2.21	Missing	08/30/11	SEJ	SM5310C
Chloride, mg/l	5.0	5.0	--- U	Missing	08/24/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	8.0 J	Missing	08/29/11	TRB	SM426C
Arsenic, ug/l	0.10	10.0	0.54 J	Missing	08/31/11	CMF	EPA200.8
Barium, ug/l	0.02	100.0	12.2 J	Missing	08/31/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.04 J	Missing	08/31/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	0.39 J	Missing	08/31/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	--- U	Missing	08/31/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	0.16 J	Missing	08/31/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20	--- U	Missing	08/31/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	Missing	08/31/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	--- U	Missing	08/31/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	3.5 J	Missing	08/31/11	CMF	EPA200.8
Turbidity, NTU	1.0	1.0	4.4	Missing	08/23/11	MEL	SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	108	Missing	08/23/11	RJH	SM2510B
Temperature, °C			22	Missing	08/23/11	RJH	SM2550B

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

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 **Week:** 33

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					6																
Well #9	08 24 11	0930		20	6	G	G	G	G	G	G	G	G	G							
Well #10	08 24 11	0920		20	6	G	G	G	G	G	G	G	G	G							
Well #11	08 24 11	0905		20	6	G	G	G	G	G	G	G	G	G							
Well #12	08 24 11	0855		17	6	G	G	G	G	G	G	G	G	G							
Well #17	08 24 11	0915		19	6	G	G	G	G	G	G	G	G	G							

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
F - ZINC ACETATE
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) [signature]

SAMPLES RECEIVED IN LAB AT <2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	08 24 11	[signature]	8/24 213
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:
WELL 8 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.

№ 225574

FORM #5

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:** 33

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)		CL			CL													
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, B - HNO_3, C - H_2SO_4, D - NAOH, E - HCL, F - ZINC ACETATE, 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	08 23 11	0925		22	6	G	G	G	G	G	G	G	G	
~~Basin #1~~					6									
Sediment Sample #1	08 23 11	0950		21	1									G
Sediment Sample #2	08 23 11	1000		21	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) [illegible]

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[illegible]	08 23 11	[illegible]	8/23 323
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS: BASIN 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.

№ 225573

FORM #5

SGS

Laboratory Report of Analysis

To: Dee Dee Woolard
ENVIRONMENT 1, INC.
P.O. Box 7085
Greenville, NC 27835

Report Number: **31102302**

Client Project: **6042A Halifax Co(Coal Ash LF)**

Dear Dee Dee Woolard,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Michael D. Page at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Digitally signed by Michael Page
DN: CN = Michael Page, C = US, OU = SGS Environmental
Date: 2011.09.01 14:53:16 -04'00'

Michael D. Page
Project Manager
michael.page@sgs.com

Date

Print Date: 09/01/2011

N.C. Certification # 481

SGS

Laboratory Qualifiers

Report Definitions

DL	Method, Instrument, or Estimated Detection Limit per Analytical Method
CL	Control Limits for the recovery result of a parameter
LOQ	Reporting Limit
DF	Dilution Factor
RPD	Relative Percent Difference
LCS(D)	Laboratory Control Spike (Duplicate)
MS(D)	Matrix Spike (Duplicate)
MB	Method Blank

Qualifier Definitions

*	Recovery or RPD outside of control limits
B	Analyte was detected in the Lab Method Blank at a level above the LOQ
U	Undetected (Reported as ND or < LOD)
V	Recovery is below quality control limit. The data has been validated based on a favorable signal-to-noise and detection limit
A	Amount detected is less than the Lower Method Calibration Limit
J	Amount detected is between the Method Detection Limit and the Lower Calibration Limit
O	The recovery of this analyte in the OPR is above the Method QC Limits and the reported concentration in the sample may be biased high
E	Amount detected is greater than the Upper Calibration Limit
S	The amount of analyte present has saturated the detector. This situation results in an underestimation of the affected analyte(s)
Q	Indicates the presence of a quantitative interference. This situation may result in an underestimation of the affected analyte(s)
I	Indicates the presence of a qualitative interference that could cause a false positive or an overestimation of the affected analyte(s)
DPE	Indicates the presence of a peak in the polychlorinated diphenylether channel that could cause a false positive or an overestimation of the affected analyte(s)
TIC	Tentatively Identified Compound
EMC	Estimated Maximum possible Concentration due to ion ratio failure
ND	Not Detected
K	Result is estimated due to ion ratio failure in High Resolution PCB Analysis
P	RPD > 40% between results of dual columns
D	Spike or surrogate was diluted out in order to achieve a parameter result within instrument calibration range
M1	Mis-identified peak
M2	Software did not integrate peak
M3	Incorrect baseline construction (i.e. not all of peak included; two peaks integrated as one)
M4	Pattern integration required (i.e. DRO, GRO, PCB, Toxaphene and Technical Chlordane)
M5	Other - Explained in case narrative

Note Results pages that include a value for "Solids (%)" have been adjusted for moisture content.

SGS North America Inc.

5500 Business Drive, Wilmington, NC 28405
t 910.350.1903 f 910.350.1557 www.us.sgs.com

Member of SGS Group

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
Sediment Sample #1	31102302001	08/23/2011 09:50	08/26/2011 10:43	Soil-Solid as re
Sediment Sample #2	31102302002	08/23/2011 10:00	08/26/2011 10:43	Soil-Solid as re

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Member of SGS Group

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Results of Sediment Sample #1

Client Sample ID: **Sediment Sample #1**
Client Project ID: **6042A Halifax Co(Coal Ash LF)**
Lab Sample ID: 31102302001-A
Lab Project ID: 31102302

Collection Date: 08/23/2011 09:50
Received Date: 08/26/2011 10:43
Matrix: Soil-Solid as received
Solids (%):

Results by SW-846 6010C -TCLP

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Arsenic	ND		0.100	mg/L	1	09/1/2011 11:58
Selenium	ND		0.200	mg/L	1	09/1/2011 11:58
Cadmium	ND		0.0500	mg/L	1	09/1/2011 11:58
Lead	ND		0.100	mg/L	1	09/1/2011 11:58
Barium	ND		1.00	mg/L	1	09/1/2011 11:58
Chromium	ND		0.100	mg/L	1	09/1/2011 11:58
Silver	ND		0.100	mg/L	1	09/1/2011 11:58

Batch Information

Analytical Batch: **MIP1226**
Analytical Method: **SW-846 6010C -TCLP**
Instrument: **ICP1**
Analyst: **NTM**
Analytical Date/Time: **09/01/2011 11:58**

Prep Batch: **MXX1477**
Prep Method: **SW-846 3010A TCLP**
Prep Date/Time: **08/31/2011 17:27**
Prep Initial Wt./Vol.: **5 mL**
Prep Extract Vol: **50 mL**

Print Date: 09/01/2011

N.C. Certification # 481

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Results of **Sediment Sample #1**

Client Sample ID: **Sediment Sample #1**
Client Project ID: **6042A Halifax Co(Coal Ash LF)**
Lab Sample ID: 31102302001-A
Lab Project ID: 31102302

Collection Date: 08/23/2011 09:50
Received Date: 08/26/2011 10:43
Matrix: Soil-Solid as received
Solids (%):

Results by **SW-846 7470A-TCLP**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Mercury	ND		0.000300	mg/L	1	08/31/2011 16:18

Batch Information

Analytical Batch: **MHG1122**
Analytical Method: **SW-846 7470A-TCLP**
Instrument: **HG2**
Analyst: **NTM**
Analytical Date/Time: **08/31/2011 16:18**

Prep Batch: **MXX1475**
Prep Method: **SW-846 7470A PREP TCLP**
Prep Date/Time: **08/31/2011 11:44**
Prep Initial Wt./Vol.: **20 mL**
Prep Extract Vol: **57 mL**

Print Date: 09/01/2011

N.C. Certification # 481

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Results of Sediment Sample #2

Client Sample ID: **Sediment Sample #2**
Client Project ID: **6042A Halifax Co(Coal Ash LF)**
Lab Sample ID: 31102302002-A
Lab Project ID: 31102302

Collection Date: 08/23/2011 10:00
Received Date: 08/26/2011 10:43
Matrix: Soil-Solid as received
Solids (%):

Results by SW-846 6010C -TCLP

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Arsenic	ND		0.100	mg/L	1	09/1/2011 12:07
Selenium	ND		0.200	mg/L	1	09/1/2011 12:07
Cadmium	ND		0.0500	mg/L	1	09/1/2011 12:07
Lead	ND		0.100	mg/L	1	09/1/2011 12:07
Barium	ND		1.00	mg/L	1	09/1/2011 12:07
Chromium	ND		0.100	mg/L	1	09/1/2011 12:07
Silver	ND		0.100	mg/L	1	09/1/2011 12:07

Batch Information

Analytical Batch: **MIP1226**
Analytical Method: **SW-846 6010C -TCLP**
Instrument: **ICP1**
Analyst: **NTM**
Analytical Date/Time: **09/01/2011 12:07**

Prep Batch: **MXX1477**
Prep Method: **SW-846 3010A TCLP**
Prep Date/Time: **08/31/2011 17:27**
Prep Initial Wt./Vol.: **5 mL**
Prep Extract Vol: **50 mL**

Print Date: 09/01/2011

N.C. Certification # 481

SGS

Results of Sediment Sample #2

Client Sample ID: **Sediment Sample #2**
Client Project ID: **6042A Halifax Co(Coal Ash LF)**
Lab Sample ID: 31102302002-A
Lab Project ID: 31102302

Collection Date: 08/23/2011 10:00
Received Date: 08/26/2011 10:43
Matrix: Soil-Solid as received
Solids (%):

Results by SW-846 7470A-TCLP

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Mercury	ND		0.000300	mg/L	1	08/31/2011 16:26

Batch Information

Analytical Batch: **MHG1122**
Analytical Method: **SW-846 7470A-TCLP**
Instrument: **HG2**
Analyst: **NTM**
Analytical Date/Time: **08/31/2011 16:26**

Prep Batch: **MXX1475**
Prep Method: **SW-846 7470A PREP TCLP**
Prep Date/Time: **08/31/2011 11:44**
Prep Initial Wt./Vol.: **20 mL**
Prep Extract Vol: **57 mL**

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

31102302

~~CLIENT: 6042-A~~ ~~Week: 33~~

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

(252) 583-1807

DISINFECTION
- ☐ CHLORINE
- ☐ UV
- ☐ NONE
- ☐ _____

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	Alkalinity	Acidity	Conductivity	Temperature	TCLP Metals
						P	P	P	P	P	P	P	P	G
						A	C	A	A	A	A	A	A	A
SW-1	08/23/11	0925		22	6									
~~Basin #1~~					6									
Sediment Sample #1	08/23/11	0950		21	1									G
Sediment Sample #2	08/23/11	1000		21	1									G

PARAMETERS

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

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB)

CONTAINER TYPE, P/G

CHEMICAL PRESERVATION

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

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
Y N

SAMPLES COLLECTED BY: (Please Print)

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
	08/23/11		8/23 323
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
	8/26 800		
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
	08-29 1043		8/26/11 1043

COMMENTS: BASIN DRY

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

0.2°C
N = Seal

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

FORM #5

№ 225573

SGS North America Inc.

Sample Receipt Checklist (SRC)

Client: **Environment 1** Work Order No.: **31102302**

1. ___ Shipped
   X Hand Delivered

2. X COC Present on Receipt
   ___ No COC
   ___ Additional Transmittal Forms

3. ___ Custody Tape on Container
   X No Custody Tape

4. X Samples Intact
   ___ Samples Broken / Leaking

5. X Chilled on Receipt Actual Temp.(s) in °C: 0.2
   ___ Ambient on Receipt
   X Walk-In on Ice; Coming down to temp.
   ___ Received Outside of Temperature Specifications

6. X Sufficient Sample Submitted
   ___ Insufficient Sample Submitted

7. ___ Chlorine absent
   ___ HNO3 < 2
   ___ HCL < 2
   ___ Additional Preservatives verified (see notes)

8. X Received Within Holding Time
   ___ Not Received Within Holding Time

9. X No Discrepancies Noted
   ___ Discrepancies Noted

10. ___ No Headspace present in VOC vials
    ___ Headspace present in VOC vials >6mm

Notes:

Comments:

Inspected and Logged in by: JJ

Date: Fri-8/26/11 00:00

MI_11.5