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	February 9-10, 2015

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ 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: 4/9/15

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN 4/9/15

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 2015 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 2015

Prepared by:

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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February 2015 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

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN

4/23/15

Madeline German, P.G.
Project Geologist

Joan Smyth, P.G.
Senior Hydrogeologist

April 2015

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

February 2015 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 Lined 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 9-10, 2015.

The Halifax County Lined Coal Ash Landfill is a monofill landfill that only accepts coal ash from power generation. This report includes a field procedure summary, laboratory analyses, summary tables and groundwater characterization.

2.0 SITE HYDROGEOLOGY

The *1985 North Carolina Geological Map* and *Groundwater in the Halifax Area, North Carolina* (Dept. of Conservation and Development Bulletin #51, 1946) indicates the Halifax County Lined 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 groundwater 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. Groundwater generally flows to the south.

3.0 SAMPLING LOCATIONS AND PROCEDURES

The sampling event, performed by Environment 1, Inc., on February 9-10, 2015 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.

The monitoring network at the Halifax Coal Ash Landfill currently includes six groundwater wells (MW-8, MW-9, MW-10, MW-11, MW-12 and MW-17), a surface water location (SW-3[3]) 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). Sampling location details are presented in **Table 1**.

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.
3 The SW-3 location has been erroneously referred to as SW-1 in past semi-annual groundwater reports.

Samples were collected by Environment 1, Inc. personnel in laboratory prepared containers for the specified analytical procedures. Groundwater 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 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

Analytical results were compared to the NC DWM Solid Waste Section Quantitation Limits (SWSLs) and 15A NCAC 2L.0200 (2LStandard) or SWS determined groundwater protection standard (GWP). Surface water and basin results were compared with the NCAC 2B Standard for Class C waters (2B Standards).

No metals were detected at concentrations above their 2L Standards this event, which is consistent with historically reported results. Most inorganic concentrations were reported as "J-qualified" indicating they are a non-quantifiable value that falls between the method limit and the SWSL.

Detectable concentrations of the indicator parameter total organic carbon were reported for MW-8, MW-17; however, no SWSL, MCL or 2L Standard is established for this parameter.

No constituents were identified in the sample from SW-3 above the 2B Standard.

In Basin #1 chloride was reported at concentrations above its 2B Standard. Additionally sulfate was reported as detected above MDL. No 2B Standard has been established for sulfate. February basin samples are consistent with historic sample results.

There were no detections in the sediment samples (upstream and downstream).

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

5.0 GROUNDWATER CHARACTERIZATION

The depth to water data indicates that groundwater is flowing generally south towards the unnamed tributary to Brewer's Creek; which is consistent with historic groundwater flow patterns. Average groundwater velocity for the site is 0.0083 ft/day. Calculated groundwater velocities are presented in **Table 5**. The groundwater flow map is included as **Figure 1**.

6.0 CONCLUSIONS

Current and historic analytical data indicate no groundwater impact at this site. The next semi-annual event is scheduled for August 2015. An event report will be submitted to NCDENR following receipt and review of sampling results.

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FIGURES

February 2015 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

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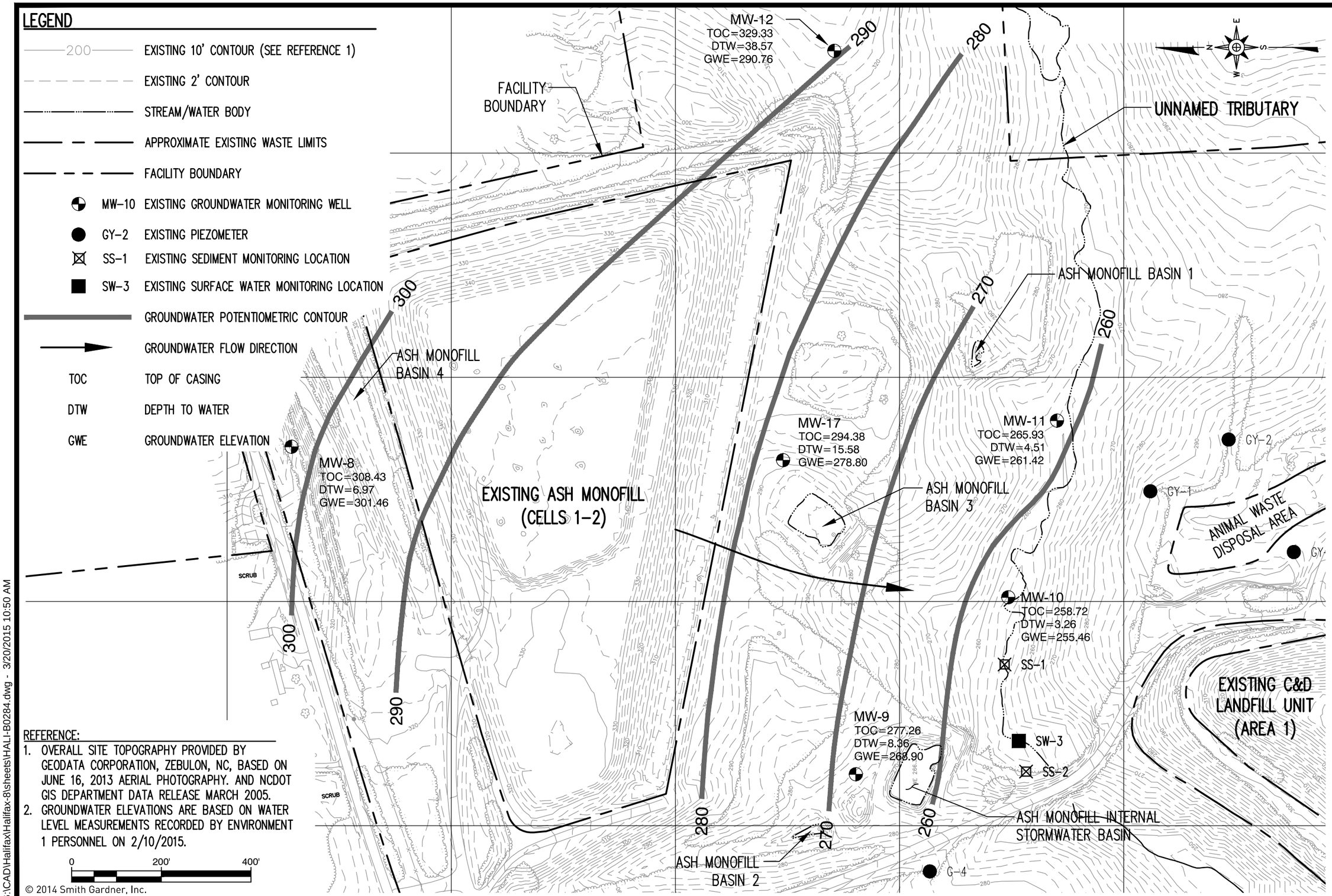
LEGEND

- 200 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- STREAM/WATER BODY
- APPROXIMATE EXISTING WASTE LIMITS
- FACILITY BOUNDARY
- MW-10 EXISTING GROUNDWATER MONITORING WELL
- GY-2 EXISTING PIEZOMETER
- SS-1 EXISTING SEDIMENT MONITORING LOCATION
- SW-3 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 JUNE 16, 2013 AERIAL PHOTOGRAPHY. AND NCDOT GIS DEPARTMENT DATA RELEASE MARCH 2005.
2. GROUNDWATER ELEVATIONS ARE BASED ON WATER LEVEL MEASUREMENTS RECORDED BY ENVIRONMENT 1 PERSONNEL ON 2/10/2015.

0 200' 400'

© 2014 Smith Gardner, Inc.

G:\CAD\Halifax\Halifax-8\sheets\HALI-B0284.dwg - 3/20/2015 10:50 AM

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
FEBRUARY 2015

FIGURE NO.	1
FILENAME:	HALI-B0284
SCALE:	AS SHOWN
PROJECT NO:	HALIFAX-8
APPROVED:	M.M.G.
DRAWN:	T.R.S.
DATE:	Mar 2015

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TABLES

February 2015 - Groundwater Monitoring Report
Halifax County Coal Ash Landfill
NC Solid Waste Permit #42-04

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SMITH+GARDNER

Table 1
Groundwater Elevation
Halifax County Coal Ash Landfill
February 9-10, 2015

By: LMH
Date: 3/12/15

Well	Well Installation Date	Latitiude	Longitude	Well Diameter (inches)	Total Well Depth (ft. bgs)	Ground Surface Elevation (ft. amsl)	TOC Elevation (ft)	Well Depth (ft)	Depth to Water (ft)	Water Table Elevation (ft)	Screen Interval (ft. bgs)	Screen Geology
MW-8	3/5/1992	36.38141717	77.80995961	2	20	311.12	308.43	23.38	6.97	301.46	5 - 20	NA
MW-9	1/5/1994	36.37798483	77.81249147	2	25	275.51	277.26	21.92	8.36	268.90	10 - 25	PWR
MW-10	1/10/1994	36.37703808	77.81116511	2	16.5	255.87	258.72	16.14	3.26	255.46	5 - 15	PWR
MW-11	1/7/1994	36.37672683	77.80983186	2	20	262.04	265.93	21.72	4.51	261.42	4 - 19	clayey silt/sand
MW-12	1/7/1994	36.37806319	77.80701042	2	50	325.67	329.33	51.34	38.57	290.76	34.5 - 49.5	sand
MW-17	1/7/1999	36.37840783	77.81010639	2	25	291.14	294.38	26.88	15.58	278.80	15 - 25	saprolite

SMITH+GARDNER

By: LMH
Date: 3/13/2015

Table 2
Field Parameters
Halifax County Coal Ash Landfill
February 9-10, 2015

Monitoring Location	pH (std units)	Specific Conductivity (umhos/cm)	Temperature degrees C)	Turbidity (NTU)
MW-8	5	88	10	27.0
MW-9	5.2	36	13	65.0
MW-10	5.6	45	11	5.4
MW-11	6.2	110	10	7.3
MW-12	4.7	25	14	12.0
MW-17	5.2	26	14	80.0
SW-1	6.9	842	11	4.6
Basin 1	6.8	10.82	11	2.8

Data from 02/25/15 Environment 1, Incorporated Laboratory Report Client ID#6042.

SMITH+GARDNER

By: LMH
Date: 2/25/2015

Table 3
Inorganic Constituents - Groundwater Samples
Halifax County Coal Ash Landfill
February 9-10, 2015

Parameter	MDL	SWSL	2L Standard	MCL	2B Standard	MW-8	MW-9	MW-10	MW-11	MW-12	MW-17	SW-3	Basin #1
Total Organic Carbon	46	NE	NE	NE	NE	2,230	<46	<46	<46	<46	1,030	<46	<46
Chloride	5,000	NE	250,000	250,000	230,000	<5000	<5000	<5000	<5000	6,000	<5000	106,000	**3,250,000**
Sulfate	5,000	250,000	250,000	250,000	NE	18,500 J	10,400 J	19,700 J	13,100 J	11,200 J	11,000 J	52,300 J	**1,217,000**
Arsenic	0.10	10	10	10	10	0.40 J	0.28 J	0.25 J	0.37 J	0.23 J	0.52 J	1.8 J	4.0 J
Barium	0.12	100	700	2,000	2,000,000	87.9 J	90.4 J	28.1 J	12.8 J	24.2 J	48.4 J	25.6 J	96.8 J
Cadmium	0.04	1	2	5	2	0.22 J	0.26 J	0.17 J	0.29 J	0.08 J	0.66 J	0.28 J	0.29 J
Chromium, total	0.14	10	10	100	50	0.89 J	0.50 J	0.17 J	<0.14	0.49 J	2.2 J	<0.14	2.4 J
Copper	0.10	10	1,000	1,300	7	1.3 J	3.5 J	0.41 J	1.1 J	0.90 J	7.1 J	0.39 J	1.7 J
Lead	0.13	10	15	15	25	1.8 J	2.2 J	0.41 J	0.22 J	0.41 J	1.3 J	<0.13	0.21 J
Selenium	0.16	10	20	50	5	0.31 J	0.37 J	<0.16	0.40 J	0.22 J	0.58 J	6.8 J	2.9 J
Zinc	0.53	10	1,000	5000*	50	9.2 J	23	5.4 J	4.9 J	8.6 J	21	16	18

NOTES:

MDL	-	Method Detection Limit
SWSL	-	Solid Waste Section Quantitation Limit
2L	-	Groundwater Standard (15A NCAC 2L 0200)
MCL	-	Maximum Contaminant Limit
2B	-	NCAC 2B Standard for Class C waters
< MDL	-	Not detected at or above the MDL
Shading	-	Concentration above 2L or 2B Standard
Bold Letters	-	Constituent detected above SWSL
J	-	"J-qualified" reported from laboratory data between the MDL and the SWSL
NE	-	Standard Not Established
*	-	National Secondary Drinking Water Standard

Results are presented in ug/l.
Data from 2/25/2015 Environment 1, Incorporated Laboratory Report Client ID#6042.

SMITH+GARDNER

By: LMH
Date: 03/13/2015

Table 4
Inorganic Constituents - Sediment Samples
Halifax County Coal Ash Landfill
February 9-10, 2015

	LOQ/CL	SWSL	Sediment #1 Upstream	Sediment #2 Downstream
Arsenic	500	10	<500	<500
Barium	5000	100	<5000	<5000
Cadmium	100	1	<100	<100
Chromium, total	200	10	<200	<200
Lead	500	10	<500	<500
Mercury	2	0.2	<2	<2
Selenium	500	10	<500	<500
Silver	500	10	<500	<500

NOTE:

LOQ/CL	-	Reporting Limit/Control Limit for the parameter recovery result
SWSL	-	Solid Waste Section Quantitation Limit
< LOQ/CL	-	Not detected at or above the LOQ/CL
Bold Letters	-	Constituent detected above SWSL

Results are from TCLP analysis presented in ug/l unless otherwise noted.
Results from Summit Environmental Technologies, Inc. on 2/17/2014 - WO#15020877.

SMITH+GARDNER

By: LMH
Date: 3/12/2015

Table 5
Calculated Groundwater Velocities
Halifax County Coal Ash Landfill
February 9-10, 2015

Well	Hydraulic Conductivity (ft/day)	Porosity	Hydraulic Gradient (ft/ft)	Ground Water Velocity (ft/day)
MW-8	0.047	0.2	0.0292	0.0069
MW-9	0.047	0.2	0.0220	0.0052
MW-10	0.047	0.2	0.0568	0.0133
MW-11	0.047	0.2	0.0355	0.0083
MW-12	0.047	0.2	0.0458	0.0108
MW-17	0.047	0.2	0.0218	0.0051

NOTE:
Hydraulic Conductivity averaged from Closed MSW well data
Porosity values assumed from Groundwater & Wells (Driscoll)
Hydraulic Gradient based on February 2015 groundwater elevations
Velocity Calculated from V=K*i/n

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

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Appendix A

Laboratory Analytical Report

February 2015 - 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)
MR. GREG GRIFFIN
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 02/10/15
DATE REPORTED : 02/25/15

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	5.2	5.6	6.2	4.7	02/10/15	BF	4500HB-00
Total Organic Carbon, mg/l	0.046	1.0	2.23	--- U	--- U	--- U	--- U	02/12/15	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	--- U	--- U	--- U	--- U	6	02/16/15	LW	4500CLB-97
Sulfate, mg/l	5.0	250.0	18.5 J	10.4 J	19.7 J	13.1 J	11.2 J	02/12/15	TRB	4500SO42E9
Arsenic, ug/l	0.10	10.0	0.40 J	0.28 J	0.25 J	0.37 J	0.23 J	02/17/15	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	87.9 J	90.4 J	28.1 J	12.8 J	24.2 J	02/17/15	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.22 J	0.26 J	0.17 J	0.29 J	0.08 J	02/17/15	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	1.3 J	3.5 J	0.41 J	1.1 J	0.90 J	02/17/15	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	0.89 J	0.50 J	0.17 J	--- U	0.49 J	02/17/15	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	1.8 J	2.2 J	0.41 J	0.22 J	0.41 J	02/17/15	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	--- U	--- U	--- U	--- U	--- U	02/16/15	MTM	245.1 R3-9
Selenium, ug/l	0.16	10.0	0.31 J	0.37 J	--- U	0.40 J	0.22 J	02/17/15	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	--- U	--- U	02/17/15	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	9.2 J	23	5.4 J	4.9 J	8.6 J	02/17/15	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	27.0	65.0	5.4	7.3	12.0	02/10/15	SDB	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	88	36	45	110	25	02/10/15	BF	2510B-97
Temperature, °C			10	13	11	10	14	02/10/15	BF	2550B-00
Static Water Level, feet			6.97	8.36	3.26	4.51	38.57	02/10/15	BF	
Well Depth, feet			23.38	21.92	16.14	21.72	51.34	02/10/15	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)
MR. GREG GRIFFIN
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 02/10/15
DATE REPORTED : 02/25/15

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #17	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.2	02/10/15	BF	4500HB-00
Total Organic Carbon, mg/l	0.046	1.0	1.03	02/12/15	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	--- U	02/16/15	LW	4500CLB-97
Sulfate, mg/l	5.0	250.0	11.0 J	02/12/15	TRB	4500SO42E97
Arsenic, ug/l	0.10	10.0	0.52 J	02/17/15	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	48.4 J	02/17/15	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.66 J	02/17/15	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	7.1 J	02/17/15	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	2.2 J	02/17/15	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	1.3 J	02/17/15	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	--- U	02/16/15	MTM	245.1 R3-94
Selenium, ug/l	0.16	10.0	0.58 J	02/17/15	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	02/17/15	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	21	02/17/15	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	80.0	02/10/15	SDB	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	26	02/10/15	BF	2510B-97
Temperature, °C			14	02/10/15	BF	2550B-00
Static Water Level, feet			15.58	02/10/15	BF	
Well Depth, feet			26.88	02/10/15	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)
MR. GREG GRIFFIN
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 02/09/15
DATE REPORTED : 02/26/15

REVIEWED BY:

PARAMETERS	MDL	SWSL	SW-3	Basin #1	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.9	6.8	02/09/15	BF	4500HB-00
Total Organic Carbon, mg/l	0.046	1.0	--- U	--- U	02/12/15	SEJ	5310C-00
Chloride, mg/l	5.0	5.0	106	3250	02/16/15	LW	4500CLB-97
Sulfate, mg/l	5.0	250.0	52.3 J	1217	02/12/15	TRB	4500SO42E97
Arsenic, ug/l	0.63	10.0	1.8 J		02/17/15	LFJ	EPA200.8
Arsenic, ug/l	0.63	10.0		4.0 J	02/19/15	MTM	3113B-04
Barium, ug/l	0.12	100.0	25.6 J	96.8 J	02/17/15	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.28 J	0.29 J	02/17/15	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	0.39 J	1.7 J	02/17/15	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	--- U	2.4 J	02/17/15	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	--- U	0.21 J	02/17/15	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	--- U	--- U	02/16/15	MTM	245.1 R3-94
Selenium, ug/l	0.44	10.0	6.8 J		02/17/15	LFJ	EPA200.8
Selenium, ug/l	0.44	10.0		2.9 J	02/25/15	MTM	3113B-04
Silver, ug/l	0.04	10.0	--- U	--- U	02/17/15	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	16	18	02/17/15	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	4.6	2.8	02/09/15	KKF	2130B-01
Conductivity (at 25c), uMhos/cm	1.0	1.0	842	10.820	02/09/15	BF	2510B-97
Temperature, °C			11	11	02/09/15	BF	2550B-00

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

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC-27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6042 A **Week:** 9

HALIFAX CO. (COAL ASH LANDFILL)
MR. GREG GRIFFIN
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

CHLORINE NEUTRALIZED AT COLLECTION																		
pH CHECK (LAB)		<2			12													
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/TESTS	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-3	2-9-15	0955		11	6	G	G	G	G	G	G	G	G	
Basin #1	2-9-15	0940		11	6	G	G	G	G	G	G	G	G	
Sediment Sample #1	2-9-15	0905		9	1									G
Sediment Sample #2	2-9-15	0945		10	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 Fox / Tom Beasley

SAMPLES RECEIVED IN LAB AT 16 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby Fox	2-9-15 2:04	[signature]	2/9/15 2:10
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.

FORM #5

№ 291690

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6042 **Week:** 9

HALIFAX CO. (COAL ASH LANDFILL)
MR. GREG GRIFFIN
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											
CHEMICAL PRESERVATION	A	C	A	A	A	A	A	A											
PARAMETERS/TESTS	Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	Field Parameter										

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	Field Parameter
Well #8	2-10-15	0840		10	6	G	G	G	G	G	G	G	G	G
Well #9	2-10-15	0940		13	6	G	G	G	G	G	G	G	G	G
Well #10	2-10-15	0925		11	6	G	G	G	G	G	G	G	G	G
Well #11	2-10-15	0915		10	6	G	G	G	G	G	G	G	G	G
Well #12	2-10-15	0905		14	6	G	G	G	G	G	G	G	G	G
Well #17	2-10-15	0930		14	6	G	G	G	G	G	G	G	G	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 Fox / Tom Beasley

SAMPLES RECEIVED IN LAB AT 0-2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Tom Beasley	2-10-15 1335	[signature]	2/10/15 1350
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.

FORM #5

№ 291091

SUMMIT
ENVIRONMENTAL TECHNOLOGIES, INC
Analytical Laboratories

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

February 17, 2015

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

RE:

Dear Deedee Woolard: Order No.: 15020877

Summit Environmental Technologies, Inc. received 2 sample(s) on 2/10/2015 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, Arizona AZ0788, 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 Drinking Water 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas T104704466-11-5, 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
Analytical Laboratories

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#: **15020877**
17-Feb-15

CLIENT: Environment 1, Inc.
Project:

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
15020877-001	Sediment Sample #1		2/9/2015 9:05:00 AM	2/10/2015 10:05:00 AM	Solid
15020877-002	Sediment Sample #2		2/9/2015 9:45:00 AM	2/10/2015 10:05:00 AM	Solid

SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.
Analytical Laboratories

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Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: http://www.settek.com

Case Narrative

WO#: **15020877**
Date: **2/17/2015**

CLIENT: Environment 1, Inc.
Project:

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 are supplied with this sample set.

Concentrations reported with a J-Flag in the Qualifier Field are values below the Limit of Quantitation (LOQ) but greater than the established Method Detection Limit (MDL).

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

Estimated uncertainty values are available upon request.

All results for Solid Samples are reported on an "as received" or "wet weight" basis unless indicated as "dry weight" using the "-dry" designation on the reporting units.

Summit Environmental Technologies, Inc., holds the accreditations/certifications listed at the bottom of the cover letter that may or may not pertain to this report.

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

SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC
Analytical Laboratories

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#: **15020877**
Date Reported: **2/17/2015**
Company: Environment 1, Inc.
Address: 114 Oakmont Dr
Greenville NC 27858
Received: 2/10/2015
Project#:

TCLP Metals Analysis (6010)

Client ID#	Lab ID#	Collected	Analyte	Rep Lmt	Result	Units	Matrix	Method	DF	RegLvl	Run	Analyst
Sediment Sample #1	001	2/9/2015	TCLP Arsenic(As)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Barium(Ba)	5.00	ND	mg/L	Solid	EPA 6010 C	1	100	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Cadmium(Cd)	0.100	ND	mg/L	Solid	EPA 6010 C	1	1.00	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Chromium(Cr)	0.200	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Lead(Pb)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Selenium(Se)	0.500	ND	mg/L	Solid	EPA 6010 C	1	1.00	2/16/2015	VVK
Sediment Sample #1	001	2/9/2015	TCLP Silver(Ag)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/16/2015	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	2/9/2015	TCLP Mercury	0.00200	ND	mg/L	Solid	EPA 7470 A	1	0.200	2/13/2015	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	2/9/2015	TCLP Arsenic(As)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Barium(Ba)	5.00	ND	mg/L	Solid	EPA 6010 C	1	100	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Cadmium(Cd)	0.100	ND	mg/L	Solid	EPA 6010 C	1	1.00	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Chromium(Cr)	0.200	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Lead(Pb)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Selenium(Se)	0.500	ND	mg/L	Solid	EPA 6010 C	1	1.00	2/17/2015	VVK
Sediment Sample #2	002	2/9/2015	TCLP Silver(Ag)	0.500	ND	mg/L	Solid	EPA 6010 C	1	5.00	2/17/2015	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	2/9/2015	TCLP Mercury	0.00200	ND	mg/L	Solid	EPA 7470 A	1	0.200	2/13/2015	ALJ

Environment 1, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0653

CHAIN OF CUSTODY RECORD

Page 1 of 1

CLIENT: 6042 A Week: 9

HALIFAX CO. (COAL ASH LANDFILL)
MR. GREG GRIFFIN
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

CHEMICAL PRESERVATION

PARAMETERS/TESTS

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 GRAB AT COLLECTION	TEMPERATURE °C AT COLLECTION	# OF CONTAINERS	~~Field pH~~	~~Fe~~	~~Chloride~~	~~Sulfate~~	~~Sodium~~	~~Turbidity~~	~~Conductivity~~	~~Temperature~~	TCLP Metals
~~SW-3~~	2-9-15	0955		11										
~~Basin #4~~	2-9-15	0940		6										
Sediment Sample #1	2-9-15	0905		9	1									G
Sediment Sample #2	2-9-15	0945		10	1									G

G
A

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 Fox / Tom Beasley

SAMPLES RECEIVED IN LAB AT 1.6 °C

1502077-001
002

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby Fox	2-9-15 12:04	[signature]	2/15 2:10
RELINQUISHED BY (SIG.) [signature]	DATE/TIME 2/15 1:30	RECEIVED BY (SIG.) [signature]	DATE/TIME 2/15 1:30
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.

FORM #5

№ 291090