
**Semi-Annual Water Quality Monitoring Report
with Corrective Action Update**

Prepared for

Greene County Active C&D over Closed Unlined Landfill
Walstonburg, North Carolina

March 2014

Permit Number: 40-02

MESCO Project Number: G13010.0

Submittal: June 12, 2014

P.O. Box 97
Garner, NC 27529
License No. C-0281



Municipal Engineering Services Company, P.A.
Garner and Boone, North Carolina

DENR USE ONLY

Paper Report Electronic Data - Email CD (data loaded: Yes / No)

Doc/Event #:

NC DENR

Environmental Monitoring Reporting Form

Division of Waste Management - Solid Waste

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):

Municipal Engineering Services Co., PA

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

Name: Jonathan Pfohl

Phone: (919)772-5393

E-mail: jpfohl@mesco.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Greene County Active C&D and Closed MSWLF	105 Landfill Road Walstonburg, NC 27888	40-02	.1600	March 13, 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) MNA Paramaters MW-1R & MW-4
 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.

Steven R. Gandy, Ph.D., P.E.

Senior Project Manager

(919) 772-5393

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

Signature

6/12/14
Date

Affix NC Licensed/Professional Geologist Seal

P.O. Box 97, Garner, NC 27529

Facility Representative Address

C-0281

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

Revised 6/2009

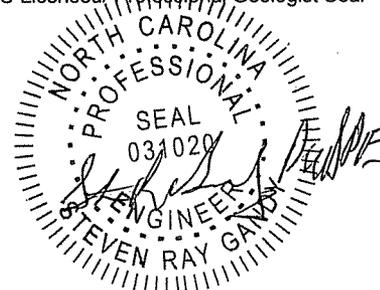


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June 12, 2014

Ms. Jaclynne Drummond
 Solid Waste Section (SWS)
 NCDENR Division of Waste Management
 217 West Jones Street
 Raleigh, NC 27603

Subject: ***Semi-Annual Water Quality Monitoring Report with Corrective Action Update***
 Greene County Active C&D and Closed Unlined Landfill
 Event Date: March 14, 2014
 Permit No. 40-02
 MESCO Project No. G13010.0

Dear Ms. Drummond:

Introduction

On behalf of Greene County, Municipal Engineering Services Company, P.A. (MESCO) is pleased to present this *Semi-Annual Water Quality Report with Corrective Action Update* for spring 2013 at the Active Construction and Demolition (C&D) Landfill and Closed Unlined Sanitary Landfill. NCDENR Solid Waste Rules 15ANCAC13B.1630 through .1637 requires that Greene County provide this report to the SWS on a semi-annual basis. This report documents the quality of the ground and surface waters during this monitoring event performed on March 14, 2014. A brief corrective action update and qualitative evaluation comparing current and historical data is also presented. During this event the only constituents attributed to landfill activities in concentrations above North Carolina Groundwater Standards (2L) was benzene and vinyl chloride in sample MW-4 and vinyl chloride in sample MW-5.

Background

The Greene County Active Construction and Demolition (C&D) Landfill and Closed Unlined Sanitary Landfill is located off Fire Tower Road (SR 1239), Walstonburg, Greene County, North Carolina and operates under permit #40-02. A topographic map showing the facility location is included as **Figure 1**.

Prior to operating as a C&D landfill, the site operated as an approximate 13-acre unlined sanitary landfill which stopped receiving waste prior to January 1, 1998 in accordance with the *Greene County Transition Plan*. The C&D landfill is operating on a portion of the top of the MSW unit which are monitored together.

Water quality has been monitored at this facility on at least a semi-annual basis since 1994. MESCO submitted an *Assessment and Corrective Action (ACM)* [DIN:8776] report dated August 30, 2007. MESCO then developed a *Corrective Action Plan (CAP)* which was revised on February 12, 2010 (*CAP-Rev. 5*) [DIN:9670] and subsequently approved on February 16, 2010 [DIN:671]. Groundwater remediation using monitored natural attenuation (MNA) was initiated on March 30, 2010 and has continued on a semi-annual basis since. A *Corrective Action Evaluation Report (CAER)* was submitted to the SWS on October 16, 2012 (DIN:17502) which was reviewed by the SWS and responded to on December 6, 2012 (DIN:17837).

As specified within rule 15A NCAC 13B.1632(i) and the SWS Environmental Monitoring Report Form, this report contains sampling procedures, field and laboratory results, corrective action update, groundwater and surface water characterization, and findings. Detections compared to Standards tables, hydrogeologic properties table, MNA parameters table, histograms of historical detections, potentiometric map, field parameters, and laboratory analytical reports with chains-of-custody (C-O-C) and quality assurance/quality control data.

Sampling Procedures

Environment 1 (E1) of Greenville, NC, reportedly performed this monitoring event utilizing portable monitoring methodology in accordance with the approved Sampling & Analysis Plan (SAP) contained in the *CAP-Rev.5*. E1 reportedly collected groundwater samples from all locations designated in the SAP which includes five downgradient groundwater monitoring wells (MW-4, MW-5, MW-6, MW-7 and MW-8), one background well (MW-1R) and both surface water points (Upstream and Downstream). Quality control measures included submittal and analysis of an equipment blank (EB), field blank (FB) and trip blank (TB). Surface water and groundwater monitoring locations are depicted on **Figure 1** and **Figure 2** respectively.

Static water levels in each well were measured electronically prior to purging. Samples were transported under C-O-C protocol and analyzed within the hold times specified for each method.

Field Parameter Data

E1 quantified the field parameters pH, specific conductance, temperature, turbidity, oxidation reduction potential (ORP) and dissolved oxygen (DO) which is presented in the laboratory analysis report in **Appendix A**.

Laboratory Results

E1 performed analysis of water samples for the VOC constituents listed in Appendix I of 40 CFR 258. Total and dissolved metals listed in Appendix II of 40 CFR 258 were reported as requested by the SWS in the *CAER* response (DIN 17837). In addition, samples from MW-4 and background well MW-1, were analyzed for the full suite of MNA performance parameters as part of corrective action. MNA analysis was conducted for volatile fatty acids, methane, ethane, ethene, and dissolved hydrogen by Microseeps Inc. of Pittsburgh, PA. A sampling and analysis table summarizing the locations, constituents, and methods is presented on **Table 1**. Laboratory results and C-O-Cs are contained in **Appendix A**.

Water samples were analyzed to the laboratory-established Method Detection Limits (MDL), which are at or below current Solid Waste Section Limits (SWSL). **Table 2** summarizes Appendix I contaminant constituents detected in groundwater and surface water samples above the current SWSL, Groundwater Protection Standards (GWP), North Carolina Groundwater Standards (2L) or the applicable Class C North Carolina Surface Water Standards (2B). **Table 3** summarizes Appendix II exclusive detections (defined in this report as not also listed in Appendix I) above the MDL.

Quality Control Samples

Five of the seventeen (29%) targeted total metals were detected in low non-quantifiable (“j” qualified) concentrations in the EB. Tin and vanadium were detected in the EB and most of the other water samples at comparable levels. Therefore, it is likely the reported levels of tin and vanadium are either false positives or high bias attributed to lab or field induced artifact contamination.

Groundwater Samples

Metals were not detected in any sample above 2L Standards.

VOCs benzene and vinyl chloride have consistently been detected in concentrations above their respective 2L Standards in samples collected from MW-4 since the detection levels were reduced in March 2007. VOCs remain absent from samples collected from MW-7 and MW-8, delineation wells located east of MW-4.

Sample MW-5 contained a concentration of vinyl chloride at 1.2 µg/L which is above the 2L Standard (0.03 µg/L).

Targeted Appendix II exclusive parameters were not detected in levels above the SWSL nor established applicable Standards.

A site map spatially depicting contaminants detected in excess of the 2L Standard during this event is presented on **Figure 2**.

Surface Water Samples

The only constituent detected in excess of the applicable 2B Standard was dissolved mercury ("j-qualified") in the surface water sample collected from an unnamed tributary of Sandy Run upstream of the facility. Dissolved tin was also detected in a non-quantifiable ("j-qualified") concentration in the sample collected upstream from the facility.

Groundwater Characterization

A single-day potentiometric map of the uppermost aquifer is presented on **Figure 2**, using ground water elevation data reported by E1 for this event. Reported groundwater elevations were all within their respective historically identified range. Groundwater flow direction and rates were calculated based on reported data and are included in **Table 4**. Estimated flow flow rates during this event, quantified through modified Darcy's equation, ranged from about 3 ft/yr (MW-4) to 97 ft/yr (MW-7) for a site-wide average of approximately 37 ft/yr.

Corrective Action Update

Groundwater remediation measures utilizing MNA per *CAP-Rev. 5* continues to be implemented at the facility. This is the ninth consecutive semi-annual event that MNA monitoring has been performed at MW-4 and background well MW-1R. MNA data presented in **Table 5** continues to indicate that favorable geochemical conditions exist for continued natural attenuation.

Findings

The laboratory results indicate the surficial aquifer near MW-4 and MW-5 have been impacted by low level dissolved phase Appendix I VOC(s) in concentrations above the 2L Standard. Quantitative evaluations reveal concentrations of constituents detected above the 2L Standard during this event remain within their own respective historically identified range and an increasing trend is not evident (**Figure 3**).

MW-4 has exhibited a reduction of total VOCs (-29%), increase of benzene (+28%) and an increase of vinyl chloride (+21%) compared to its respective baseline averages established during the initial four corrective action events (**Figure 4**). The horizontal plume extent beyond MW-4 is likely defined within the review boundary as evidenced by the continued lack of detections in sentinel wells MW-7 and MW-8.

MW-5, located 85 feet from the edge of waste and near the center of Greene County owned property, contained a detectable concentration of vinyl chloride for the first time in four years.

The detection of the low level ("j-qualified") constituents tin, mercury and vanadium are not attributed to landfill activities but rather natural or field/lab induced artifact contamination as evidenced by comparable levels reported in upgradient background well MW-1R, surface water point located upstream of the facility and quality control blank EB.

Generally consistent with the findings of the *CAER*, targeted contaminant concentrations are not increasing and there is adequate evidence that natural attenuation is occurring in the groundwater at the facility.

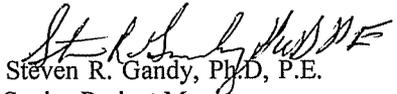
Closing

Semi-annual water quality and MNA monitoring is planned to continue at the facility with the next event scheduled for September 2014. If you have any questions or comments regarding this report, please contact us at (919) 772-5393 or by email at jpfohl@mesco.com or sgandy@mesco.com.

Sincerely,

MUNICIPAL ENGINEERING SERVICES CO., P.A.


Jonathan Pfohl
Environmental Specialist


Steven R. Gandy, Ph.D., P.E.
Senior Project Manager

Enclosures

cc: Mr. David Jones (Greene County)
Ms. Christine Ritter (NC Solid Waste Section)

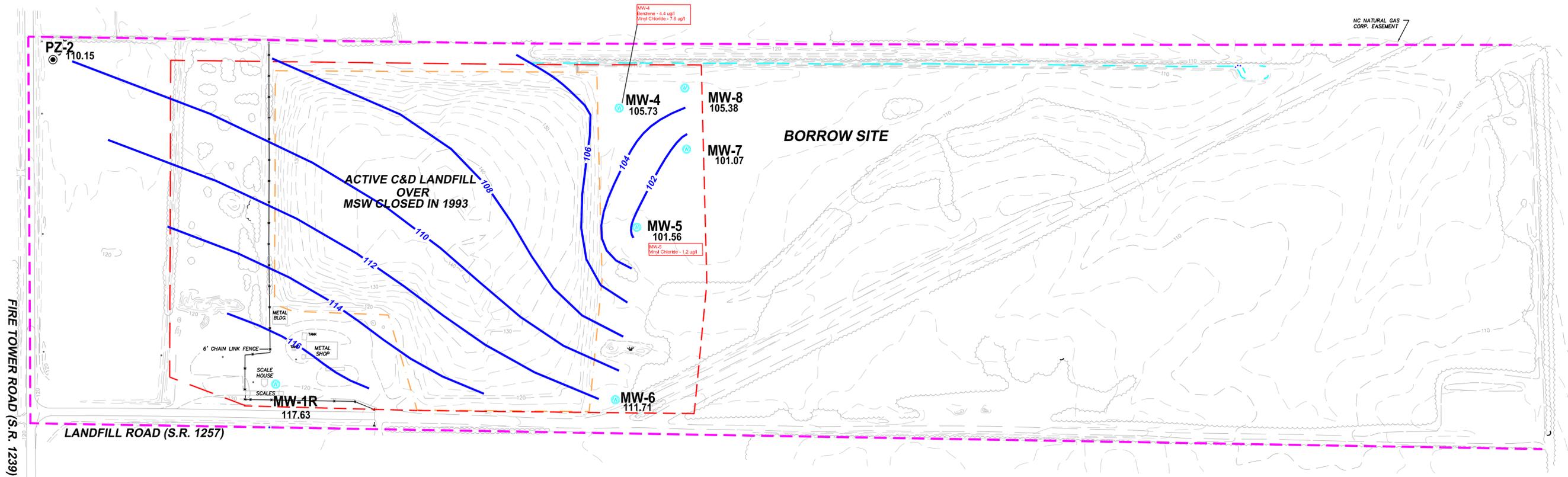
Figures

- LEGEND**
- 250' FROM WASTE OR 50' FROM PROPERTY LINE
 - EXISTING EROSION CONTROL DIVERSION DITCH
 - 120 — EXISTING TOPOGRAPHIC CONTOURS
 - PROPERTY LINE
 - WASTE LIMIT OF UNLINED MSWLF
 - MW-1R ● MONITORING WELL
 - PZ-2 ● PIEZOMETER
 - 99.54 GROUNDWATER POTENTIOMETRIC ELEVATION
 - 112 — GROUNDWATER CONTOUR

NOTES

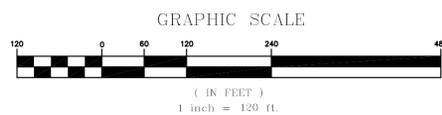
THIS MAP WAS GENERATED FROM AERIAL PHOTOS
 FLOWN ON 2-22-94 BY TRIANGLE AERIAL MAPPING,
 SUPPLEMENTED WITH SURVEYS BY MUNICIPAL ENGINEERING
 SERVICES CO., PA.

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 LICENSE NUMBER: C-0281



Groundwater Levels & VOCs Detected Above 2L Standards
 March 13, 2014

WELL #	TOP OF CASING ELEVATION	DEPTH TO WATER	GROUNDWATER POTENTIOMETRIC ELEVATION	BENZENE (ug/l)	VCM (ug/l)	
15A NCAC 2L Groundwater Quality Standard					1.0	0.03
MW-1R	121.78	4.15	117.63			
MW-4	117.89	12.16	105.73	4.4	7.6	
MW-5	115.76	14.2	101.56		1.2	
MW-6	117.41	5.7	111.71			
MW-7	110.48	9.41	101.07			
MW-8	111.36	5.98	105.38			
PZ-2	119.59	9.44	110.15			



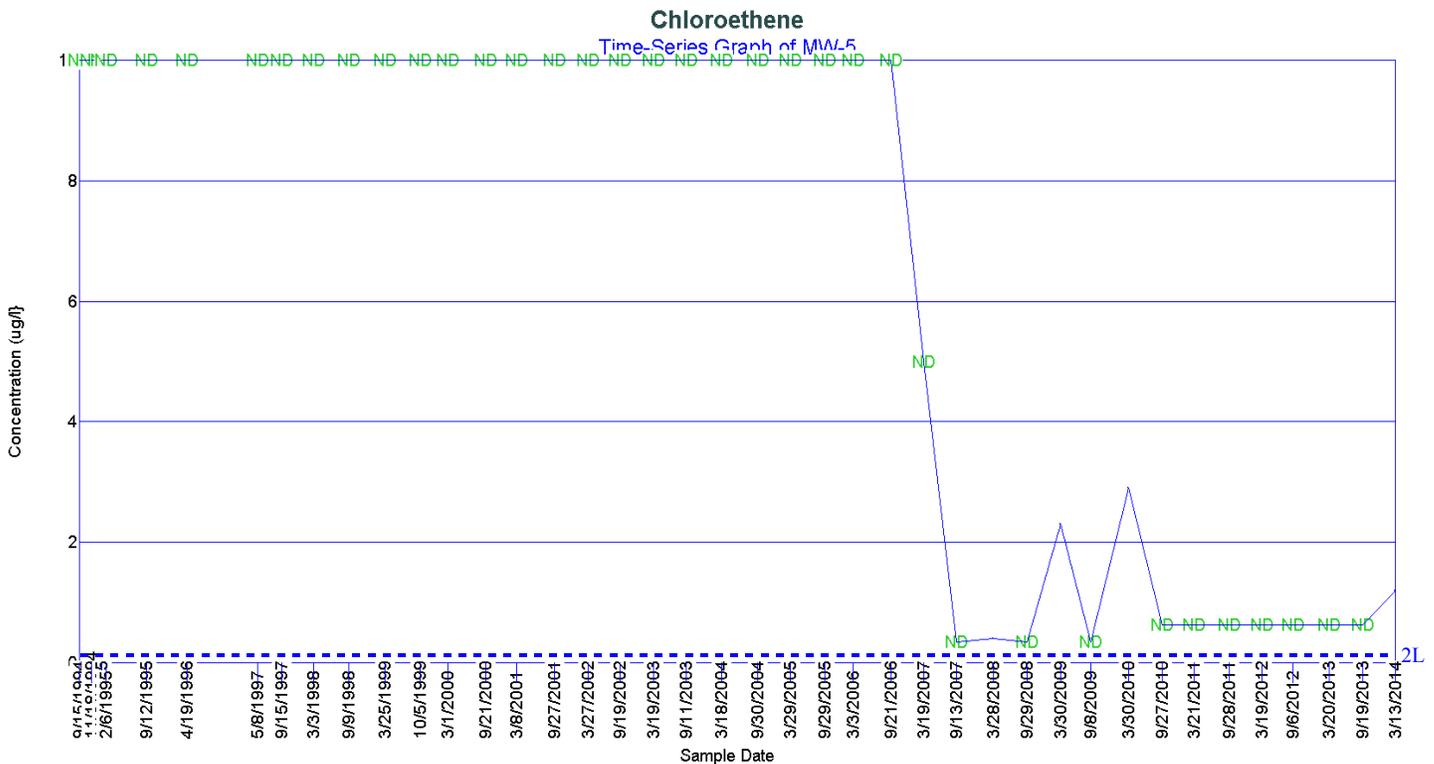
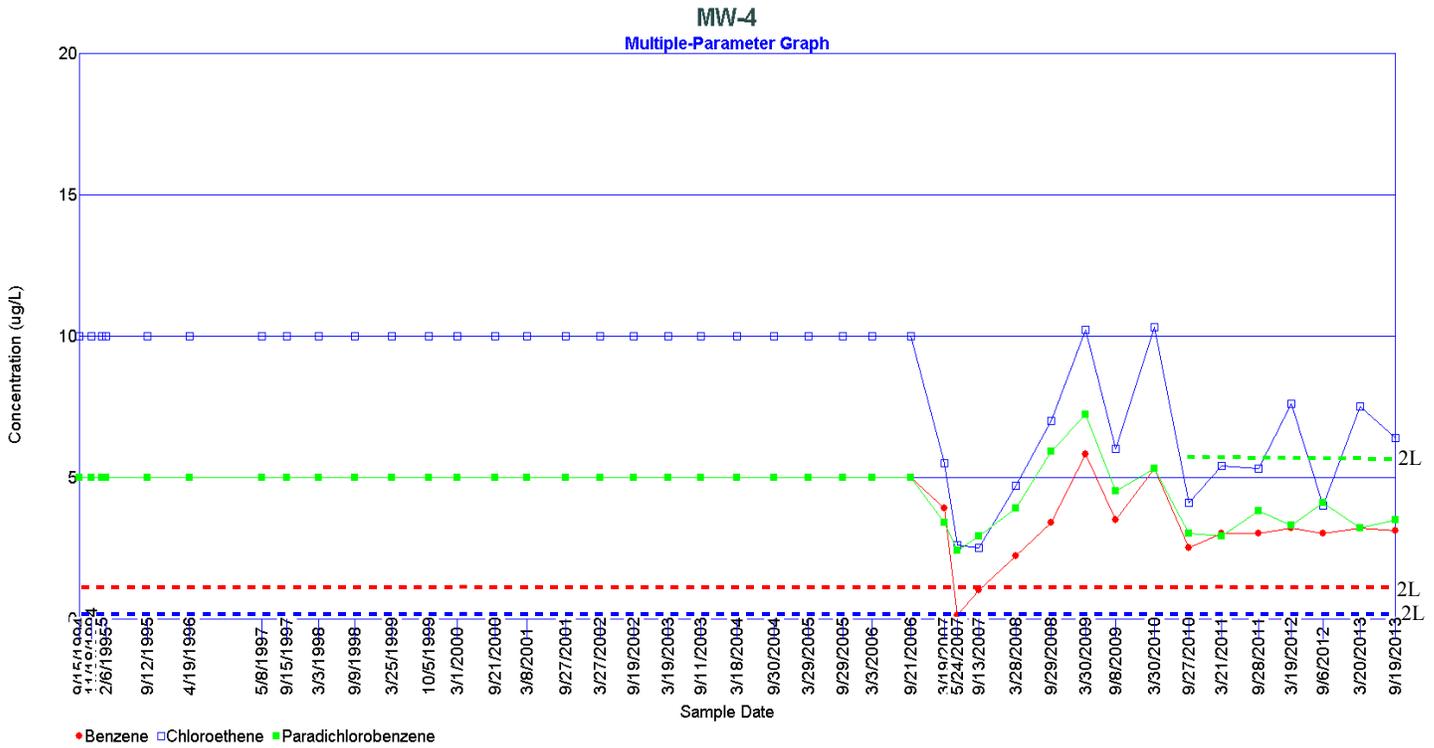
**ACTIVE C&D OVER CLOSED UNLINED
 LANDFILL FACILITY
 GREENE COUNTY
 NORTH CAROLINA**

POTENTIOMETRIC MAP OF UPPERMOST AQUIFER
 WITH DETECTIONS ABOVE 2L STANDARDS

SCALE:	SEE SCALEBAR
DATE:	5/12/14
DRWN. BY:	J. PFOHL
CHKD. BY:	S. CANDY
PROJECT NUMBER:	G13010.0
DRAWING NO.:	FIGURE 2
SHEET NO.:	1 OF 1

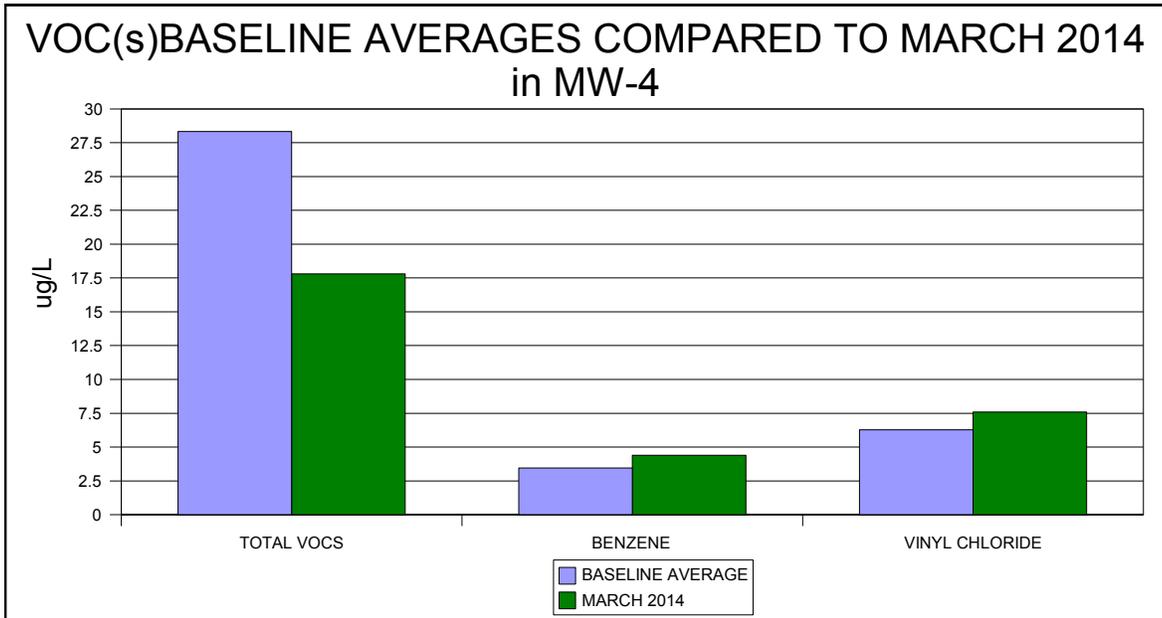
FIGURE 2

Figure 3
Time-Series Graphs of Select Constituents
March 14, 2014



Non-Detects Represented at Detection Limit

Figure 4
Histograms of VOC Concentrations in MW-4
(March 30, 2010-September 28, 2011) Compared to March 13, 2014



	TOTAL VOCS (ug/l)	BENZENE (ug/l)	VINYL CHLORIDE (ug/l)
BASELINE			
MARCH 2010	59.30	5.30	10.30
SEPT. 2010	17.40	2.50	4.10
MARCH 2011	17.50	3.00	5.40
SEPT. 2011	19.10	3.00	5.30
BASELINE AVERAGE	28.33	3.45	6.28

	TOTAL VOCS (ug/l)	BENZENE (ug/l)	VINYL CHLORIDE (ug/l)
CURRENT			
MARCH 2014	17.80	4.40	7.60

	TOTAL VOCS (ug/l)	BENZENE (ug/l)	VINYL CHLORIDE (ug/l)
COMPARISON			
DIFFERENCE (ug/l)	-10.53	+0.95	+1.33
DIFFERENCE (%)	-29	+28	+21

Tables

**Table 1
Sampling and Analysis Summary
March 14, 2014**

	Reason Not Sampled	App. I		App. II		MNA																Field Parameter				
		VOCs	Metals, Total	Total Metals (App II)	Metals, Total Dissolved (App II)	VFA	Hydrogen	Methane/Ethene/Ethane	Dissolved CO2	Alkalinity	Sulfate	Sulfide	Chloride	TOC	COD	BOD	Iron, total	Iron, total dissolved	Iron, Ferrous	Nitrate	Turbidity	Dissolved Oxygen (DO)	Oxidation Reduction Potential (ORP)	Temperature	Conductivity	pH
		Lab EPA 8260B	Lab EPA200.8	Lab EPA 6000/7000	Lab EPA200.8	Lab AM23G	Lab AM20GAX	Lab AM20GAX	Lab SM4500CO2C	Lab SM2320B	Lab SM426C	Lab SM18 4500-S2D	Lab SM4500-CLB	Lab SM 5310C	Lab HACH8000	Lab SM5210B	Lab SM3111B	Lab 3111B-99	Lab SM3111B	Lab EPA353.2	Lab SM2130B	Field Meter	Field Meter	Field Meter	Field Meter	Field Meter
MW-1R		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MW-4		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MW-5		x		x	x																					
MW-6		x		x	x																					
MW-7		x		x	x																					
MW-8		x		x	x																					
Downstream		x	x		x																					
Upstream		x	x		x																					
EB		x		x																						
TB		x																								
FB		x	x	x																						

App I & II = Appendix Lists from current 40 CFR 258

Table 2
Detections in Water Samples Above SWSL, GWP, 2L, or 2B (Appendix I)
March 13, 2014

Sample ID	Parameter Name ¹	Sample Date	Result	Unit	MDL ²	SWSL ³	2L ⁴	2B ⁵	GWP ⁶	Exceedance Amount	Preliminary Cause ⁷
MW-1R	Barium, total dissolved	03/13/14	135	ug/L	0.06	100	700				
MW-1R	Barium, total	03/13/14	148	ug/L	0.06	100	700				
MW-4	Vinyl Chloride	03/13/14	7.6	ug/l	0.63	1	0.03			7.57	L &/or LFG
MW-4	Benzene	03/13/14	4.4	ug/l	0.24	1	1			3.4	L &/or LFG
MW-4	Ethylbenzene	03/13/14	1.5	ug/l	0.21	1	550				
MW-4	1,4-Dichlorobenzene	03/13/14	4.3	ug/l	0.39	1	6				
MW-5	Vinyl Chloride	03/13/14	1.2	ug/l	0.63	1	0.03			1.17	L &/or LFG
Downstream	Zinc, total	03/13/14	16	ug/l	0.47	10		50			
Downstream	Zinc, total dissolved	03/13/14	13.8	ug/l	0.47	10		50			

¹ MDL = Method Detection Limit

² SWSL = Solid Waste Section Reporting Limit

³ 2L = North Carolina 15A NCAC 2L Groundwater Quality Standard

⁴ 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for the Applicable Stream Classification

⁵ GWP = Groundwater Protection Standard

⁷ Preliminary Cause = Refers to a preliminary analysis of the cause and/or source of a detection over the respective 2L/2B Standard.

A definitive source of the detection was not determined as part of this report.

j = Defined by laboratory as Between MDL and SWSL

NE = Not Established

L = Leachate

LFG = Landfill Gas

BOLD = Concentration > 2L, or 2B Standard

Table 3
Detections in Water Samples Above MDL (Appendix II Exclusive)
March 13, 2014

Sample ID	Parameter Name	Sample Date	Result	Unit	MDL ¹	SWSL ²	2L ³	2B ⁴	GWP ⁵	Exceedance
MW-1R	Mercury, total dissolved	03/13/14	0.01j	ug/l	0.01	0.2	1			
MW-5	Tin, total	03/13/14	0.19j	ug/l	0.06	100	NE		2000	
MW-5	Tin, total Dissolved	03/13/14	0.25j	ug/l	0.06	100	NE		2000	
MW-5	Mercury, total dissolved	03/13/14	0.03j	ug/l	0.01	0.2	1			
MW-6	Tin, total Dissolved	03/13/14	0.23j	ug/l	0.06	100	NE		2000	
MW-6	Mercury, total dissolved	03/13/14	0.02j	ug/l	0.01	0.2	1			
MW-7	Mercury, total dissolved	03/13/14	0.03j	ug/l	0.01	0.2	1			
MW-7	Tin, total Dissolved	03/13/14	0.11j	ug/l	0.06	100	NE		2000	
MW-8	Mercury, total dissolved	03/13/14	0.01j	ug/l	0.01	0.2	1			
Upstream	Mercury, total dissolved	03/13/14	0.03j	ug/l	0.01	0.2		0.012		
Upstream	Tin, total Dissolved	03/13/14	0.29j	ug/l	0.06	100		NE		
Downstream	Mercury, total dissolved	03/13/14	0.01j	ug/l	0.01	0.2		0.012		
Downstream	Tin, total Dissolved	03/13/14	0.35j	ug/l	0.06	100		NE		
EB	Tin, total	03/13/14	0.18 j	ug/l	0.06	100	NE		2000	
FB	Tin, total	03/13/14	0.24 j	ug/l	0.06	100	NE		2000	

¹ MDL = Method Detection Limit

² SWSL = Solid Waste Section Reporting Limit

³ 2L = North Carolina 15A NCAC 2L Groundwater Quality Standard

⁴ 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for the Applicable Stream Classification

⁵ GWP = Groundwater Protection Standard

j =Defined by laboratory as Between MDL and SWSL

BOLD = Concentration >2L, or 2B Standard

Table 4
Hydrologic Properties at Monitoring Well Locations
March 13, 2014

Monitoring Well	Hydraulic Conductivity (cm/sec)	Effective Porosity (%)	Hydraulic Gradient (ft/ft)	Linear Velocity (ft/yr)	Flow Direction	Depth to Groundwater (ft btoc)	Groundwater Potentiometric Elevation (ft amsl)
MW-1R	1.20E-04	15	0.015	13	N36E	4.15	117.63
MW-4	1.10E-04	15	0.003	3	N76E	12.16	105.73
MW-5	1.40E-04	15	0.037	35	S75E	14.2	101.56
MW-6	1.90E-04	15	0.022	29	N26E	5.70	111.71
MW-7	1.98E-04	7	0.033	97	S52E	9.41	101.07
MW-8	1.14E-03	7	0.003	45	N74E	5.98	105.38
PZ-2	na	na	2.150	na	N19E	9.44	110.15
Minimum	1.10E-04	7	0.003	3	-	4.15	101.07
Average	3.16E-04	12	0.019	37	-	8.72	107.60
Maximum	1.14E-03	15	0.037	97	-	14.2	117.63

NOTE: Data for hydraulic conductivities for wells except MW-7 & MW-8 obtained from GAI Consultants' *Water Quality Modifications* (October, 1994)
 Data for hydraulic conductivities for MW-7 & MW-8 obtained from slug tests performed by MESCO (June, 2007)
 Hydrologic gradient from water level elevations reportedly taken on March 13, 2014
 Flow rate (Q) is defined by modified Darcy's equation:

where

$$Q = -\frac{K}{n_e} \cdot \frac{dh}{dl}$$

K = hydraulic conductivity

n_e = effective porosity

dh = head difference

dl = horizontal distance

Table 5
MNA Parameters at Monitoring Well Locations Summary
March 13, 2014

Parameters	Method	mdl*	Units	MW-1R	MW-4
				03/13/14	03/13/14
VFA – Acetic Acid	AM23G	5	ug/l	360	200
VFA – Butyric Acid	AM23G	11	ug/l	71	56
VFA – Hexanoic Acid	AM23G	220	ug/l	220j	<220
VFA – i-Hexanoic Acid	AM23G	29	ug/l	<29	<29
VFA – i-Pentanoic Acid	AM23G	9	ug/l	<9	<9
VFA – Lactic Acid	AM23G	13	ug/l	38j	57j
VFA – Pentaonic Acid	AM23G	11	ug/l	<11	<11
VFA – Propionic Acid	AM23G	8	ug/l	360	320
VFA – Pyruvic Acid	AM23G	14	ug/l	<14	<14
Hydrogen	AM20GAX	0.05	nM	0.73	0.7
Methane	AM20GAX	0	ug/l	360	9600
Ethene	AM20GAX	0.01	ug/l	<0.012	<0.012
Ethane	AM20GAX	0	ug/l	<0.004	<0.004
CO2-Dissolved	4500CO2C	1000	ug/l	74000	825000
Alkalinity	2320B-97	1000	ug/l	7000	259000
Sulfate	4500SO42E97	5000	ug/l	12200j	24700j
Sulfide	4500S2D-00	100	ug/l	<100	<100
Chloride	4500CLB-97	5000	ug/l	115000	5000
TOC	5310C-00	300	ug/l	<300	9220
COD	H8000-79	20000	ug/l	<20000	73000
BOD	5210B-01	2000	ug/l	2700	<2000
Iron, Total	3111B-99	13.6	ug/l	941	109125
Iron, Ferrous	3500FEB-97	50	ug/l	<50	106210
Nitrate	353.2 R2-93	30	ug/l	4030j	<30
Temperature	2550B-00	0.10	C	11	14
ORP	2580B	0.0	mV	224.5	-4.4
DO	4500OG-01	100	mg/l	790	660
pH	4500HB-00	0.10	SU	5.1	5.8
Specific Conductance	2510B-97	1	Umhos/cm	650	519
Turbidity	2130B-01	1	NTU	2.03	11.8

Notes:

VFA = Volatile Fatty Acids

mdl* = Lowest Method Detection Limit for Lab Parameters or Lowest Field Measurement Possible

Appendix A
Laboratory Analysis Report
Field Analysis Report
Chains of Custody

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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/22/14

REVIEWED BY: 

PARAMETERS	MDL	Upstream		Downstream		Well	Well	Well	Analysis Date	Method Code
		SWSL				#4	#5	#6		
PH (field measurement), Units			6.0	6.1	5.8	4.5	4.7		03/13/14BF	4500HB-00
BOD, mg/l	2.0	2.0			---	U			03/13/14TRB	5210B-01
COD, mg/l	20.0	20.0			73				03/18/14TRB	H8000-79
Nitrate Nitrogen as N, mg/l	0.03	10.0			---	U			03/14/14ANO	353.2 R2-93
Total Organic Carbon, mg/l	0.30	1.0			9.22				03/17/14SEJ	5310C-00
Total Alkalinity (to pH 4.5), mg/l	1.0	1.0			259				03/13/14TRB	2320B-97
Chloride, mg/l	5.0	5.0			5				03/17/14CMC	4500CLB-97
Sulfate, mg/l	5.0	250.0			24.7 J				03/17/14TRB	4500SO42E97
Antimony, ug/l	0.02	6.0	0.10 J	0.13 J	0.04 J		0.37 J		03/31/14LFJ	EPA200.8
Antimony, ug/l	0.02	6.0				0.06 J			04/01/14LFJ	EPA200.8
Arsenic, ug/l	0.05	10.0	0.53 J	0.89 J	2.4 J	0.24 J	---	U	03/31/14LFJ	EPA200.8
Barium, ug/l	0.06	100.0	14.8 J	31.6 J	47.7 J	27.1 J	13.5 J		03/31/14LFJ	EPA200.8
Beryllium, ug/l	0.03	1.0	---	U	0.06 J	---	U		03/31/14LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	---	U	---	U	0.09 J	0.06 J	---	U
Cobalt, ug/l	0.02	10.0	0.32 J	0.39 J	1.7 J	0.48 J	---	U	03/31/14LFJ	EPA200.8
Copper, ug/l	0.06	10.0	0.23 J	3.4 J	0.13 J	0.36 J	---	U	03/31/14LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.91 J	3.4 J	0.46 J	0.28 J	---	U	03/31/14LFJ	EPA200.8
Iron, ug/l	13.6	300.0			109125				03/24/14MTM	3111B-99
Lead, ug/l	0.02	10.0	0.41 J	2.5 J	0.22 J	0.35 J	0.07 J		03/31/14LFJ	EPA200.8
Mercury, ug/l	0.01	0.20			---	U	---	U	03/28/14MTM	245.1 R3-94
Nickel, ug/l	0.45	50.0	0.59 J	1.6 J	1.1 J	0.69 J	---	U	03/31/14LFJ	EPA200.8
Selenium, ug/l	0.06	10.0	0.19 J	0.26 J	0.65 J	0.19 J	---	U	03/31/14LFJ	EPA200.8
Silver, ug/l	0.03	10.0	---	U	---	U	---	U	03/31/14LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	---	U	0.03 J	0.03 J	---	U	03/31/14LFJ	EPA200.8
Tin, ug/l	0.06	100.0			---	U	0.19 J	---	U	03/31/14LFJ
Vanadium, ug/l	0.07	25.0	0.78 J	5.0 J	1.1 J	---	U	---	U	03/31/14LFJ
Zinc, ug/l	0.47	10.0	7.3 J						04/16/14LFJ	EPA200.8
Zinc, ug/l	0.47	10.0		16	3.8 J	5.2 J	7.7 J		03/31/14LFJ	EPA200.8
Sulfide, ug/l	100	1000			---	U			03/20/14LFJ	4500S2D-00
Conductivity (at 25c), uMhos/cm	1.0	1.0	131	151	519	66	47		03/13/14BF	2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	1.80	9.26	0.66	0.96	2.21		03/13/14BF	4500OG-01
Temperature, °C			7	8	14	15	11		03/13/14BF	2550B-00
Iron, Ferrous, ug/l	50.00	300.0			106210				03/14/14SEJ	3500FEB-97
Static Water Level, feet					12.16	14.20	5.70		03/13/14BF	
Well Depth, feet					26.16	28.34	26.87		03/13/14BF	
Carbon Dioxide, mg/l	1.0	1.0			825				03/13/14TRB	4500CO2C
ORP, mv			+26.5	+129.9	-4.4	+239.1	+325.1		03/13/14BF	2580B
Turbidity (Field), NTU	1.0	1.0	4.97	70.9	11.8	10.6	1.61		03/13/14BF	2130B-01

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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/22/14

REVIEWED BY: 

PARAMETERS	MDL	Well		Well #1R	Piezometer #2	Equipment Blank	Analysis		Method Code		
		SWSL	#7				#8	Date		Analyst	
PH (field measurement), Units			5.1	6.9	5.1			03/13/14BF	4500HB-00		
BOD, mg/l	2.0	2.0			2.7			03/13/14TRB	5210B-01		
COD, mg/l	20.0	20.0			---	U		03/18/14TRB	H8000-79		
Nitrate Nitrogen as N, mg/l	0.03	10.0			4.03	J		03/14/14ANO	353.2 R2-93		
Total Organic Carbon, mg/l	0.30	1.0			---	U		03/17/14SEJ	5310C-00		
Total Alkalinity (to pH 4.5), mg/l	1.0	1.0			7			03/13/14TRB	2320B-97		
Chloride, mg/l	5.0	5.0			115			03/17/14CMC	4500CLB-97		
Sulfate, mg/l	5.0	250.0			12.2	J		03/17/14TRB	4500SO42E97		
Antimony, ug/l	0.02	6.0	0.17	J	0.07	J		03/31/14LFJ	EPA200.8		
Antimony, ug/l	0.02	6.0					---	U	04/01/14LFJ	EPA200.8	
Arsenic, ug/l	0.05	10.0	---	U	---	U	---	U	03/31/14LFJ	EPA200.8	
Arsenic, ug/l	0.05	10.0					0.22	J	04/01/14LFJ	EPA200.8	
Barium, ug/l	0.06	100.0	29.3	J	28.0	J	148		03/31/14LFJ	EPA200.8	
Barium, ug/l	0.06	100.0						0.14	J	04/01/14LFJ	EPA200.8
Beryllium, ug/l	0.03	1.0	0.08	J	0.03	J	0.09	J	03/31/14LFJ	EPA200.8	
Beryllium, ug/l	0.03	1.0						---	U	04/01/14LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0	---	U	---	U	0.11	J	03/31/14LFJ	EPA200.8	
Cadmium, ug/l	0.05	1.0						---	U	04/01/14LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.43	J	0.26	J	0.34	J	03/31/14LFJ	EPA200.8	
Cobalt, ug/l	0.02	10.0						---	U	04/01/14LFJ	EPA200.8
Copper, ug/l	0.06	10.0	0.23	J	0.10	J	0.78	J	03/31/14LFJ	EPA200.8	
Copper, ug/l	0.06	10.0						---	U	04/01/14LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	1.2	J	0.16	J	0.19	J	03/31/14LFJ	EPA200.8	
Total Chromium, ug/l	0.04	10.0						---	U	04/01/14LFJ	EPA200.8
Iron, ug/l	13.6	300.0			941				03/24/14MTM	3111B-99	
Lead, ug/l	0.02	10.0	1.1	J	0.35	J	0.58	J	03/31/14LFJ	EPA200.8	
Lead, ug/l	0.02	10.0						0.02	J	04/01/14LFJ	EPA200.8
Mercury, ug/l	0.01	0.20	---	U	---	U	---	U	03/28/14MTM	245.1 R3-94	
Nickel, ug/l	0.45	50.0	0.58	J	---	U	1.0	J	03/31/14LFJ	EPA200.8	
Nickel, ug/l	0.45	50.0						---	U	04/01/14LFJ	EPA200.8
Selenium, ug/l	0.06	10.0	---	U	---	U	0.12	J	03/31/14LFJ	EPA200.8	
Selenium, ug/l	0.06	10.0						---	U	04/01/14LFJ	EPA200.8
Silver, ug/l	0.03	10.0	---	U	---	U	---	U	03/31/14LFJ	EPA200.8	
Silver, ug/l	0.03	10.0						---	U	04/01/14LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.02	J	---	U	0.13	J	03/31/14LFJ	EPA200.8	
Thallium, ug/l	0.02	5.5						---	U	04/01/14LFJ	EPA200.8
Tin, ug/l	0.06	100.0						---	U	03/31/14LFJ	EPA200.8
Tin, ug/l	0.06	100.0						0.18	J	04/01/14LFJ	EPA200.8
Vanadium, ug/l	0.07	25.0	1.2	J	---	U	---	U	03/31/14LFJ	EPA200.8	
Vanadium, ug/l	0.07	25.0						0.60	J	04/01/14LFJ	EPA200.8
Zinc, ug/l	0.47	10.0	5.6	J	2.9	J	6.8	J	03/31/14LFJ	EPA200.8	
Zinc, ug/l	0.47	10.0						---	U	04/16/14LFJ	EPA200.8

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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/22/14

REVIEWED BY: 

PARAMETERS	MDL	Well		Well #1R	Piezometer #2	Equipment Blank	Analysis	
		SWSL #7	#8				Date	Analyst Code
Sulfide, ug/l	100	1000			---	U	03/20/14LFPJ	4500S2D-00
Conductivity (at 25c), uMhos/cm	1.0	1.0	45	29	650		03/13/14BF	2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	3.52	7.52	0.79		03/13/14BF	4500OG-01
Temperature, °C			16	15	11		03/13/14BF	2550B-00
Iron, Ferrous, ug/l	50.00	300.0			---	U	03/14/14SEJ	3500FRB-97
Static Water Level, feet			9.41	5.98	4.15	9.44	03/13/14BF	
Well Depth, feet			21.38	20.24	19.51		03/13/14BF	
Carbon Dioxide, mg/l	1.0	1.0			74		03/13/14TRB	4500CO2C
ORP, mv			+257.7	+271.1	+224.5		03/13/14BF	2580B
Turbidity (Field), NTU	1.0	1.0	29.3	---	U	2.03	03/13/14BF	2130B-01

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

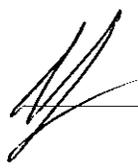
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

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

ID#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/22/14

REVIEWED BY: 

PARAMETERS	MDL	Trip		Field	Analysis		Method	
		SWSL	Blank		Blank	Date		Analyst
Antimony, ug/l	0.02	6.0			---	U	04/01/14LFJ	EPA200.8
Arsenic, ug/l	0.05	10.0			0.20	J	04/01/14LFJ	EPA200.8
Barium, ug/l	0.06	100.0			0.14	J	04/01/14LFJ	EPA200.8
Beryllium, ug/l	0.03	1.0			---	U	04/01/14LFJ	EPA200.8
Cadmium, ug/l	0.05	1.0			---	U	04/01/14LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0			---	U	04/01/14LFJ	EPA200.8
Copper, ug/l	0.06	10.0			---	U	04/01/14LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0			---	U	04/01/14LFJ	EPA200.8
Lead, ug/l	0.02	10.0			0.04	J	04/01/14LFJ	EPA200.8
Mercury, ug/l	0.01	0.20			---	U	03/28/14MTM	245.1 R3-94
Nickel, ug/l	0.45	50.0			---	U	04/01/14LFJ	EPA200.8
Selenium, ug/l	0.06	10.0			0.08	J	04/01/14LFJ	EPA200.8
Silver, ug/l	0.03	10.0			---	U	04/01/14LFJ	EPA200.8
Thallium, ug/l	0.02	5.5			---	U	04/01/14LFJ	EPA200.8
Tin, ug/l	0.06	100.0			0.24	J	04/01/14LFJ	EPA200.8
Vanadium, ug/l	0.07	25.0			0.77	J	04/01/14LFJ	EPA200.8
Zinc, ug/l	0.47	10.0			---	U	04/16/14LFJ	EPA200.8

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
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CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/13/14
DATE ANALYZED: 03/26/14
DATE REPORTED: 04/22/14

Page: 1

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	Upstream	Downstream	Well #4	Well #5	Well #6
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	7.60	1.20	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	8.90 J	1.40 J	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	1.00 J	0.40 J	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	4.50 J	1.50 J	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	4.40	0.40 J	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	0.40 J	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	0.40 J	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	1.70 J	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	1.50	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	4.30	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

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

CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/13/14
DATE ANALYZED: 03/26/14
DATE REPORTED: 04/22/14

Page: 2

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	Well #7	Well #8	Well #1R	Equipment Blank	Trip Blank
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	0.40 J	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,1-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

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

CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/13/14
DATE ANALYZED: 03/26/14
DATE REPORTED: 04/22/14

Page: 3

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1 (96)

PARAMETERS, ug/l	MDL	SWSL	Field Blank
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	--- U
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	--- U
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U
15. 2-Butanone	2.21	100.0	--- U
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	--- U
37. Xylenes	0.68	5.0	--- U
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	--- U
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

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

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

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

CLIENT: 6005 Week: 13

GREENE CO. LANDELL
 DAVID JONES
 P.O. BOX 543
 SNOW HILL NC 28580

(252) 747-5720

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	BOD	COD	Nitrate	TOC	Alkalinity	Chloride	Sulfate	Metals	Sulfide	Conductivity	DO	Temperature	Ferrous Iron	Field Parameter	EPA 8260B	PARAMETERS
	DATE	TIME				CHLORINE	UV																	
Upstream	3-13-14	1215		1	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A	A	C	A	C	A	A	A	A	A	A	A	A	A	E	E	A-NONE D-NAOH B-HNO ₃ E-HCL C-H ₂ SO ₄ F-ZINC ACETATE/NAOH G-NA THIOSULFATE
Downstream	3-13-14	1225		8	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	G	CONTAINER TYPE, P/G
Well #4	3-13-14	1116		14	14	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	CHLORINE NEUTRALIZED AT COLLECTION
Well #5	3-13-14	0955		14	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	pH CHECK (LAB)
Well #6	3-13-14	1020		11	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	CHLORINE NEUTRALIZED AT COLLECTION
Well #7	3-13-14	0915		14	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	pH CHECK (LAB)
Well #8	3-13-14	0848		15	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	CHLORINE NEUTRALIZED AT COLLECTION
Well #1R	3-13-14	1158		11	8, 15	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	pH CHECK (LAB)
Piezometer #2	3-13-14	1200			1	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	CHLORINE NEUTRALIZED AT COLLECTION
Equipment Blank	3-13-14	0930			3	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	pH CHECK (LAB)
Trip Blank	3-13-14				2	<input checked="" type="checkbox"/>	<input type="checkbox"/>																	CHLORINE NEUTRALIZED AT COLLECTION
REINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:																		
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.																		

CLASSIFICATION:
 WASTEWATER (NPDES)
 DRINKING WATER
 DMO/GW
 SOLID WASTE SECTION

SAMPLES COLLECTED BY:
 (Please Print)
 Rabbby/Tom

SAMPLES RECEIVED IN LAB AT 0600 °C

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

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

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

CLIENT: 6005 Week: 13

GREENE CO. LANDFILL
 DAVID JONES
 P.O. BOX 543
 SNOW HILL NC 28580

(252) 747-5720

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	BOD	COD	Nitrate	TOC	Alkalinity	Chloride	Sulfate	Metals	Sulfide	Conductivity	DO	Temperature	Ferrous Iron	Field Parameter	EPA 8260B	PARAMETERS	CHLORINE NEUTRALIZED AT COLLECTION	
	DATE	TIME				<input type="checkbox"/> CHLORINE	<input type="checkbox"/> UV	<input type="checkbox"/> NONE																			
Field Blank	3-13-14	7:52			3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	A	C	A	C	A	A	A	A	F	A	A	A	E		E			
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.)	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.)	DATE/TIME
Bobby Lee	3-13-14 11:24	[Signature]	3/13/14 1:25	[Signature]																							
REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME	REINQUISHED BY (SIG.)	DATE/TIME

FORM #5

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.

NO. 273223

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

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
 N

SAMPLES COLLECTED BY: (Please Print)
 Bobby Lee

SAMPLES RECEIVED IN LAB AT: G.C.C.

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#: 6005 A

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/21/14

REVIEWED BY: 

PARAMETERS	MDL	Upstream	Downstream	Well	Well	Well	Analysis		Method		
		SWSL		#4	#5	#6	Date	Analyst	Code		
Antimony, Total Dissolved, ug/l	0.02	6.0	0.1 J	0.12 J	0.03 J	---	U	0.48 J	03/31/14LFJ	EPA200.8	
Arsenic, Total Dissolved, ug/l	0.05	10.0	0.34 J	0.41 J	1.7 J	---	U	---	03/31/14LFJ	EPA200.8	
Barium, Total Dissolved, ug/l	0.06	100.0	13.8 J	24.7 J	45.8 J	25.9 J		12.7 J	03/31/14LFJ	EPA200.8	
Beryllium, Total Dissolved, ug/l	0.03	1.0	---	U	---	U		0.07 J	03/31/14LFJ	EPA200.8	
Cadmium, Total Dissolved, ug/l	0.05	1.0	---	U	---	U		0.05 J	03/31/14LFJ	EPA200.8	
Cobalt, Total Dissolved, ug/l	0.02	10.0	0.29 J	0.30 J	1.5 J	0.45 J		---	03/31/14LFJ	EPA200.8	
Copper, Total Dissolved, ug/l	0.06	10.0	0.32 J	2.70 J	---	U		0.09 J	03/31/14LFJ	EPA200.8	
Chromium, Total Dissolved, ug/l	0.04	10.0	0.77 J	1.80 J	0.35 J	0.17 J		---	03/31/14LFJ	EPA200.8	
Lead, Total Dissolved, ug/l	0.02	10.0	0.27 J	1.20 J	0.022 J	0.15 J		0.07 J	03/31/14LFJ	EPA200.8	
Mercury, Total Dissolved, ug/l	0.01	0.20	0.03 J	0.01 J	---	U		0.03 J	04/15/14MTM	245.1 R3	
Nickel, Total Dissolved, ug/l	0.45	50.0	0.63 J	1.20 J	0.98 J	0.63 J		---	03/31/14LFJ	EPA200.8	
Selenium, Total Dissolved, ug/l	0.06	10.0	0.10 J	0.24 J	0.39 J	0.08 J		---	03/31/14LFJ	EPA200.8	
Silver, Total Dissolved, ug/l	0.03	10.0	---	U	---	U		---	03/31/14LFJ	EPA200.8	
Thallium, Total Dissolved, ug/l	0.02	5.5	---	U	---	U		---	03/31/14LFJ	EPA200.8	
Tin, Total Dissolved, ug/l	0.06	100.0	0.29 J	0.35 J	---	U		0.25 J	03/31/14LFJ	EPA200.8	
Vanadium, Total Dissolved, ug/l	0.07	25.0	0.10 J	2.00 J	---	U		---	03/31/14LFJ	EPA200.8	
Zinc, Total Dissolved, ug/l	0.47	10.0	7.7 J		2.0 J			---	04/16/14LFJ	EPA200.8	
Zinc, Total Dissolved, ug/l	0.47	10.0		13.80				4.1 J	5.5 J	03/31/14LFJ	EPA200.8

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#: 6005 A

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

DATE COLLECTED: 03/13/14
DATE REPORTED : 04/21/14

REVIEWED BY: 

PARAMETERS	MDL	Well		Well #1R	Analysis Date	Method
		SWSL #7	#8			
Antimony, Total Dissolved, ug/l	0.02	6.0	0.14 J	0.07 J	0.36 J 03/31/14LFJ	EPA200.8
Arsenic, Total Dissolved, ug/l	0.05	10.0	--- U	--- U	--- U 03/31/14LFJ	EPA200.8
Barium, Total Dissolved, ug/l	0.06	100.0	24.9 J	25.5 J	135 03/31/14LFJ	EPA200.8
Beryllium, Total Dissolved, ug/l	0.03	1.0	0.05 J	0.04 J	0.07 J 03/31/14LFJ	EPA200.8
Cadmium, Total Dissolved, ug/l	0.05	1.0	--- U	--- U	0.10 J 03/31/14LFJ	EPA200.8
Cobalt, Total Dissolved, ug/l	0.02	10.0	0.37 J	0.24 J	0.34 J 03/31/14LFJ	EPA200.8
Copper, Total Dissolved, ug/l	0.06	10.0	0.10 J	0.10 J	0.70 J 03/31/14LFJ	EPA200.8
Chromium, Total Dissolved, ug/l	0.04	10.0	0.45 J	0.19 J	0.20 J 03/31/14LFJ	EPA200.8
Lead, Total Dissolved, ug/l	0.02	10.0	0.32 J	0.31 J	0.50 J 03/31/14LFJ	EPA200.8
Mercury, Total Dissolved, ug/l	0.01	0.20	0.03 J	0.01 J	0.01 J 04/15/14MTM	245.1 R3
Nickel, Total Dissolved, ug/l	0.45	50.0	0.51 J	--- U	1.0 J 03/31/14LFJ	EPA200.8
Selenium, Total Dissolved, ug/l	0.06	10.0	--- U	--- U	0.16 J 03/31/14LFJ	EPA200.8
Silver, Total Dissolved, ug/l	0.03	10.0	--- U	--- U	--- U 03/31/14LFJ	EPA200.8
Thallium, Total Dissolved, ug/l	0.02	5.5	--- U	--- U	0.12 J 03/31/14LFJ	EPA200.8
Tin, Total Dissolved, ug/l	0.06	100.0	0.11 J	--- U	--- U 03/31/14LFJ	EPA200.8
Vanadium, Total Dissolved, ug/l	0.07	25.0	--- U	--- U	--- U 03/31/14LFJ	EPA200.8
Zinc, Total Dissolved, ug/l	0.47	10.0	5.7 J		03/31/14LFJ	EPA200.8
Zinc, Total Dissolved, ug/l	0.47	10.0		1.1 J	5.7 J 04/16/14LFJ	EPA200.8

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

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

CLIENT: 6005 A Week: 13

GREENE CO. LANDFILL
 DAVID JONES
 P.O. BOX 543
 SNOW HILL, NC 28580

(252) 747-5720

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals (Dis.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:	PARAMETERS	
	DATE	TIME										
Upstream	3-13-14	1215		4	1							
Downstream	3-13-14	1225		8	1							
Well #4	3-13-14	1110		14	1							
Well #5	3-13-14	0925		15	1							
Well #6	3-13-14	1030		11	1							
Well #7	3-13-14	0915		14	1							
Well #8	3-13-14	0845		15	1							
Well #1R	3-13-14	1155		11	1							
RELINQUISHED BY (SIG.)	DATE/TIME	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	DATE/TIME	COMMENTS:	PARAMETERS	CHLORINE NEUTRALIZED AT COLLECTION pH CHECK (LAB) CONTAINER TYPE/P/G CHEMICAL PRESERVATION A - NONE D - NaOH B - HNO ₃ E - HCL C - H ₂ SO ₄ F - ZINC ACETATE/NaOH G - Na THIOSULFATE CLASSIFICATION: <input type="checkbox"/> WASTEWATER (NPDES) <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> DWO/GW <input checked="" type="checkbox"/> SOLID WASTE SECTION CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY SAMPLES COLLECTED BY: <i>Robby from</i> (Please Print) SAMPLES RECEIVED IN LAB AT 6.7 °C				
<i>Robby from</i>	3-13-14 1124		<i>[Signature]</i>	3/13/14 1250pm								
RELINQUISHED BY (SIG.)	DATE/TIME	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	DATE/TIME	COMMENTS:	PARAMETERS					

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. **N: 276220**



Microseeps/Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

March 27, 2014

Steve Jones
Environment 1, Inc.
PO Box 7085
114 Oakmont Drive
Greenville, NC 27835

RE: **GREENE CO. / 6005**

Microseeps Workorder: 11623

Dear Steve Jones:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, March 14, 2014. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Robbin Robl 03/27/2014
rrobl@microseeps.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 15

Report ID: 11623 - 501364

Page 1 of 13



CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Microseeps/Pace Analytical Energy Services, LLC.



Microseeps/Pace Analytical Energy Services, LLC
 220 William Pitt Way
 Pittsburgh, PA 15238
 Phone: (412) 826-5245
 Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories	
Accreditation ID:	02-00538	
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste	
Accreditor:	NELAP: State of Florida, Department of Health, Bureau of Laboratories	
Accreditation ID:	E87832	
Scope:	Clean Water Act (CWA)	Resource Conservation and Recovery Act (RCRA)
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification	
Accreditation ID:	89009003	
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)	
Accreditor:	NELAP: State of Louisiana, Department of Environmental Quality	
Accreditation ID:	04104	
Scope:	Solid and Chemical Materials; Non-Potable Water	
Accreditor:	NELAP: New Jersey, Department of Environmental Protection	
Accreditation ID:	PA026	
Scope:	Non-Potable Water; Solid and Chemical Materials	
Accreditor:	NELAP: New York, Department of Health Wadsworth Center	
Accreditation ID:	11815	
Scope:	Non-Potable Water; Solid and Hazardous Waste	
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health	
Accreditation ID:	PH-0263	
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)	
Accreditor:	NELAP: Texas, Commission on Environmental Quality	
Accreditation ID:	T104704453-09-TX	
Scope:	Non-Potable Water	
Accreditor:	State of New Hampshire	
Accreditation ID:	299409	
Scope:	Non-potable water	
Accreditor:	State of Georgia	
Accreditation ID:	Chapter 391-3-26	
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, Microseeps is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).	



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Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 11623 GREENE CO. / 6005

Lab ID	Sample ID	Matrix	Date Collected	Date Received
116230001	WL1R	Water	3/13/2014 11:55	3/14/2014 11:16
116230002	WL1R	Bubble Strip	3/13/2014 11:55	3/14/2014 11:15
116230003	WEL4	Water	3/13/2014 11:10	3/14/2014 11:15
116230004	WEL4	Bubble Strip	3/13/2014 11:10	3/14/2014 11:15



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ANALYTICAL RESULTS

Workorder: 11623 GREENE CO. / 6005

Lab ID: 116230001
 Sample ID: WL1R

Date Received: 3/14/2014 11:15 Matrix: Water
 Date Collected: 3/13/2014 11:55

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
EDonors - MICR										
Analysis Desc: AM23G Analytical Method: AM23G										
Lactic Acid	0.038J	mg/l	0.10	0.013	1			3/19/2014 00:24	KB	
Acetic Acid	0.36	mg/l	0.070	0.0050	1			3/19/2014 00:24	KB	
Propionic Acid	0.36	mg/l	0.050	0.0080	1			3/19/2014 00:24	KB	
Butyric Acid	0.071	mg/l	0.050	0.011	1			3/19/2014 00:24	KB	
Pyruvic Acid	0.014U	mg/l	0.15	0.014	1			3/19/2014 00:24	KB	
i-Pentanoic Acid	0.0090U	mg/l	0.15	0.0090	1			3/19/2014 00:24	KB	
Pentanoic Acid	0.011U	mg/l	0.070	0.011	1			3/19/2014 00:24	KB	
i-Hexanoic Acid	0.029U	mg/l	0.10	0.029	1			3/19/2014 00:24	KB	
Hexanoic Acid	0.22J	mg/l	0.50	0.22	1			3/19/2014 00:24	KB	



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ANALYTICAL RESULTS

Workorder: 11623 GREENE CO. / 6005

Lab ID: 116230002 Date Received: 3/14/2014 11:15 Matrix: Bubble Strip
 Sample ID: WL1R Date Collected: 3/13/2014 11:55

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
RISK - MICR										
Analysis Desc: AM20GAX			Analytical Method: AM20GAX							
Methane	360	ug/l	0.030	0.0040	2			3/26/2014 10:40		GT
Ethane	0.0040U	ug/l	0.020	0.0040	2			3/26/2014 10:40		GT
Ethene	0.012U	ug/l	0.020	0.012	2			3/28/2014 10:40		GT
Hydrogen	0.73	nM	0.60	0.049	1			3/23/2014 15:10		GT



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ANALYTICAL RESULTS

Workorder: 11623 GREENE CO. / 6005

Lab ID: 116230003 Date Received: 3/14/2014 11:15 Matrix: Water
 Sample ID: WEL4 Date Collected: 3/13/2014 11:10

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
EDonors - MICR										
Analysis Desc: AM23G Analytical Method: AM23G										
Lactic Acid	0.067J	mg/l	0.10	0.013	1			3/19/2014 02:42	KB	
Acetic Acid	0.20	mg/l	0.070	0.0050	1			3/19/2014 02:42	KB	
Propionic Acid	0.32	mg/l	0.050	0.0080	1			3/19/2014 02:42	KB	
Butyric Acid	0.056	mg/l	0.050	0.011	1			3/19/2014 02:42	KB	
Pyruvic Acid	0.014U	mg/l	0.15	0.014	1			3/19/2014 02:42	KB	
I-Pentanoic Acid	0.0090U	mg/l	0.15	0.0090	1			3/19/2014 02:42	KB	
Pentanoic Acid	0.011U	mg/l	0.070	0.011	1			3/19/2014 02:42	KB	
I-Hexanoic Acid	0.029U	mg/l	0.10	0.029	1			3/19/2014 02:42	KB	
Hexanoic Acid	0.22U	mg/l	0.50	0.22	1			3/19/2014 02:42	KB	



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ANALYTICAL RESULTS

Workorder: 11623 GREENE CO. / 6005

Lab ID: 116230004 Date Received: 3/14/2014 11:15 Matrix: Bubble Strip
 Sample ID: WEL4 Date Collected: 3/13/2014 11:10

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
RISK - MICR										
Analysis Desc: AM20GAX			Analytical Method: AM20GAX							
Methane	9600	ug/l	0.030	0.0040	2			3/26/2014 10:54		GT
Ethane	0.0040U	ug/l	0.020	0.0040	2			3/26/2014 10:54		GT
Ethene	0.012U	ug/l	0.020	0.012	2			3/26/2014 10:54		GT
Hydrogen	0.70	nM	0.60	0.049	1			3/23/2014 15:23		GT



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 11623 GREENE CO. / 6005

DEFINITIONS/QUALIFIERS

Disclaimer: The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20GAX, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL** Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL** Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND** Not detected at or above reporting limit.
- DF** Dilution Factor.
- S** Surrogate.
- RPD** Relative Percent Difference.
- % Rec** Percent Recovery.
- U** Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J** Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).



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QUALITY CONTROL DATA

Workorder: 11623 GREENE CO. / 6005

QC Batch: EDON/2044 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 116230001, 116230003

METHOD BLANK: 26417

Parameter	Units	Blank Result	Reporting Limit Qualifiers
EDonors			
Lactic Acid	mg/l	0.013U	0.013
Acetic Acid	mg/l	0.0050U	0.0050
Propionic Acid	mg/l	0.0080U	0.0080
Butyric Acid	mg/l	0.011U	0.011
Pyruvic Acid	mg/l	0.014U	0.014
i-Pentanoic Acid	mg/l	0.0090U	0.0090
Pentanoic Acid	mg/l	0.011U	0.011
i-Hexanoic Acid	mg/l	0.029U	0.029
Hexanoic Acid	mg/l	0.22U	0.22

LABORATORY CONTROL SAMPLE: 26418

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits Qualifiers
EDonors					
Lactic Acid	mg/l	2	2.0	103	70-130
Acetic Acid	mg/l	2	2.1	105	70-130
Propionic Acid	mg/l	2	2.0	102	70-130
Butyric Acid	mg/l	2	2.1	107	70-130
Pyruvic Acid	mg/l	2	2.0	101	70-130
i-Pentanoic Acid	mg/l	2	2.0	101	70-130
Pentanoic Acid	mg/l	2	2.0	99	70-130
i-Hexanoic Acid	mg/l	2	2.1	107	70-130
Hexanoic Acid	mg/l	2	2.1	104	70-130

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26419 26420 Original: 116230001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0.038	2	2.1	2.1	103	105	70-130	1.9	30	
Acetic Acid	mg/l	0.38	2	2.4	2.5	103	109	70-130	5.7	30	
Propionic Acid	mg/l	0.36	2	2.5	2.5	107	106	70-130	0.94	30	



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QUALITY CONTROL DATA

Workorder: 11623 GREENE CO. / 6005

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 26419 26420 Original: 116230001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Butyric Acid	mg/l	0.071	2	2.4	2.4	116	116	70-130	0	30	
Pyruvic Acid	mg/l	0	2	2.1	2.1	105	104	70-130	0.96	30	
l-Pentanoic Acid	mg/l	0	2	2.1	2.0	104	100	70-130	3.9	30	
Pentanoic Acid	mg/l	0	2	2.0	2.0	101	102	70-130	0.99	30	
l-Hexanoic Acid	mg/l	0	2	2.5	2.4	124	122	70-130	1.6	30	
Hexanoic Acid	mg/l	0.22	2	2.3	2.4	104	109	70-130	4.7	30	



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QUALITY CONTROL DATA

Workorder: 11623 GREENE CO. / 6005

QC Batch: DISG/3646 Analysis Method: AM20GAX
 QC Batch Method: AM20GAX
 Associated Lab Samples: 116230002, 116230004

METHOD BLANK: 26524

Parameter	Units	Blank Result	Reporting Limit Qualifiers
RISK Hydrogen	nM	0.049U	0.049

LABORATORY CONTROL SAMPLE & LCSD: 26527 26530

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD Qualifiers
RISK Hydrogen	nM	24	24	25	98	101	80-120	3	20



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QUALITY CONTROL DATA

Workorder: 11623 GREENE CO. / 6005

QC Batch: DISG/3649 Analysis Method: AM20GAX
 QC Batch Method: AM20GAX
 Associated Lab Samples: 116230002, 116230004

METHOD BLANK: 26573

Parameter	Units	Blank Result	Reporting Limit Qualifiers
RISK			
Methane	ug/l	0.0020U	0.0020
Ethane	ug/l	0.0020U	0.0020
Ethene	ug/l	0.0080U	0.0080

LABORATORY CONTROL SAMPLE & LCSD: 26576 26579

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD Qualifiers
RISK									
Methane	ug/l	8.3	8.4	8.4	101	101	80-120	0	20
Ethane	ug/l	6.5	6.5	6.5	101	101	80-120	0	20
Ethene	ug/l	16	16	16	100	100	80-120	0	20



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 11623 GREENE CO. / 6005

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
116230001	WL1R			AM23G	EDON/2044
116230003	WEL4			AM23G	EDON/2044
116230002	WL1R			AM20GAX	DISG/3646
116230004	WEL4			AM20GAX	DISG/3646
116230002	WL1R			AM20GAX	DISG/3649
116230004	WEL4			AM20GAX	DISG/3649



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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1
 001719

REGULATORY AGENCY
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER _____

Site Location: NC
 STATE: _____

Section A
 Required Client Information:
 Company: ENVIRONMENTAL
 Address: 114 OAKWOOD DR
GREENVILLE, NC 28617
 Email To: _____
 Phone: _____
 Fax: _____
 Requested Due Date/TAT: _____

Section B
 Required Project Information:
 Report To: STONE JONES
 Copy To: _____
 Purchase Order No.: _____
 Project Name: GREENWOOD
 Project Number: 6003

Section C
 Invoice Information:
 Attention: Same
 Company Name: _____
 Address: _____
 Pace Order Reference: _____
 Pace Project Manager: _____
 Pace Profile #: _____

ITEM #	Section D Required Client Information	Matrix Codes MATRIX CODE (see vial codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)	Temp in °C	Received on Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
				COMPOSITE START	COMPOSITE END/GRAB									
1	WZLR	DW WT WW P SL OL WP AK TS OT	AR/MTG	DATE: 3/13/14	TIME: 12:50	3/13/14	5	Unpreserved			3/13/14			
2	WZL4		AR/MTG	DATE: 3/13/14	TIME: 12:50	3/13/14	5	H ₂ SO ₄ HNO ₃ HCl TSP BAK Zink Acetate & NaOH			3/13/14			
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

ADDITIONAL COMMENTS:
 PACILITY ID# 4002
 Relinquished By: Bobby Fry - E-1
 Date: 3/13/14
 Time: 12:50
 Accepted By: E-1
 Date: 3/13/14
 Time: 1:25
 Signature: Bobby Fry
 Date Signed: 3/13/14

ORIGINAL
 SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Bobby Fry
 SIGNATURE of SAMPLER: Bobby Fry
 DATE Signed (MM/DD/YYYY): 3/13/14

Cooler Receipt Form

Client Name: Environment 1 Project: Greene Co. / 6005 Lab Work Order: 11623

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 172037050164890107

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 1°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
Microseeps containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 3.14.14

Project Manager Review: JA Date: 3/17/14