

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 17, 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 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

Steven R. Gandy Ph.D. P.E. 2119116
 Signature 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)



**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 2015

Permit Number: 40-02

MESCO Project Number: G15010.0

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



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

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CIVIL/SANITARY/ENVIRONMENTAL ENGINEERS

SOLID WASTE MANAGEMENT

**Municipal
Services**

**Engineering
Company, P.A.**

SITE PLANNING/SUBDIVISIONS

SUBSURFACE UTILITY ENGINEERING (SUE)

February 19, 2016

Ms. Jaclynne Drummond
Solid Waste Section (SWS)
NCDEQ 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 17, 2015
Permit No. 40-02
MESCO Project No. G15010.0

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 2015 at the Active Construction and Demolition (C&D) Landfill and Closed Unlined Sanitary Landfill. NCDEQ 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 17, 2015. A brief corrective action update and qualitative evaluation comparing current and historical data is also presented. Constituents detected in concentrations above North Carolina Groundwater Standards (2L) were 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), the SWS Environmental Monitoring Report Form, and a recent SWS memorandum this report contains sampling procedures, field and laboratory results, corrective action update, groundwater and surface water characterization, and findings. Well construction summary table, sampling and analysis summary table, detections compared to Standards tables, a groundwater flow directions/rates table, potentiometric map, quality assurance/quality control data, and field/laboratory analytical data results are enclosed herein.

Surface Water Samples

No constituents were detected in either of the surface waters in concentrations in excess of applicable 2B Standard.

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 5**. Estimated flow flow rates during this event, quantified through modified Darcy's equation, ranged from about 1 ft/yr (MW-1R) to 659 ft/yr (MW-8) for a site-wide average of approximately 141 ft/yr.

Corrective Action Update

Semi-annual MNA monitoring of MW-4 was initiated on March 30, 2010 and has consistently been performed for the full suite of SWS recommended parameters for 11 consecutive semi-annual events. The most recent MNA data is presented in **Table 5**. The March 2015 data for MW-4 was entered into the Biochlor natural attenuation screening protocol matrix. The screening matrix score was 18 which is interpreted as adequate evidence of anaerobic biodegradation of chlorinated organics at MW-4 (**Figure 3**).

Findings

The laboratory results indicate the surficial aquifer near MW-4 continue to be 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 4**).

MW-4 has exhibited a reduction of total VOCs (-47%), decrease of benzene (-4%) and an increase of vinyl chloride (32%) compared to its respective baseline averages established during the initial four corrective action events (**Figure 5**). The most recent Biochlor natural attenuation screening model score is interpreted as adequate evidence of anaerobic biodegradation of chlorinated hydrocarbons. The horizontal plume extent beyond MW-4 is likely confined within the review boundary as evidenced by the continued lack of detections in sentinel wells MW-7 and MW-8.

Vinyl chloride was detected in MW-5 during this and four of the previous 7 March events. Vinyl chloride has never been detected in MW-5 in excess of the "Federal Primary Drinking Water Standards".

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 continued at the facility and was sampled again on September 16, 2015. 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

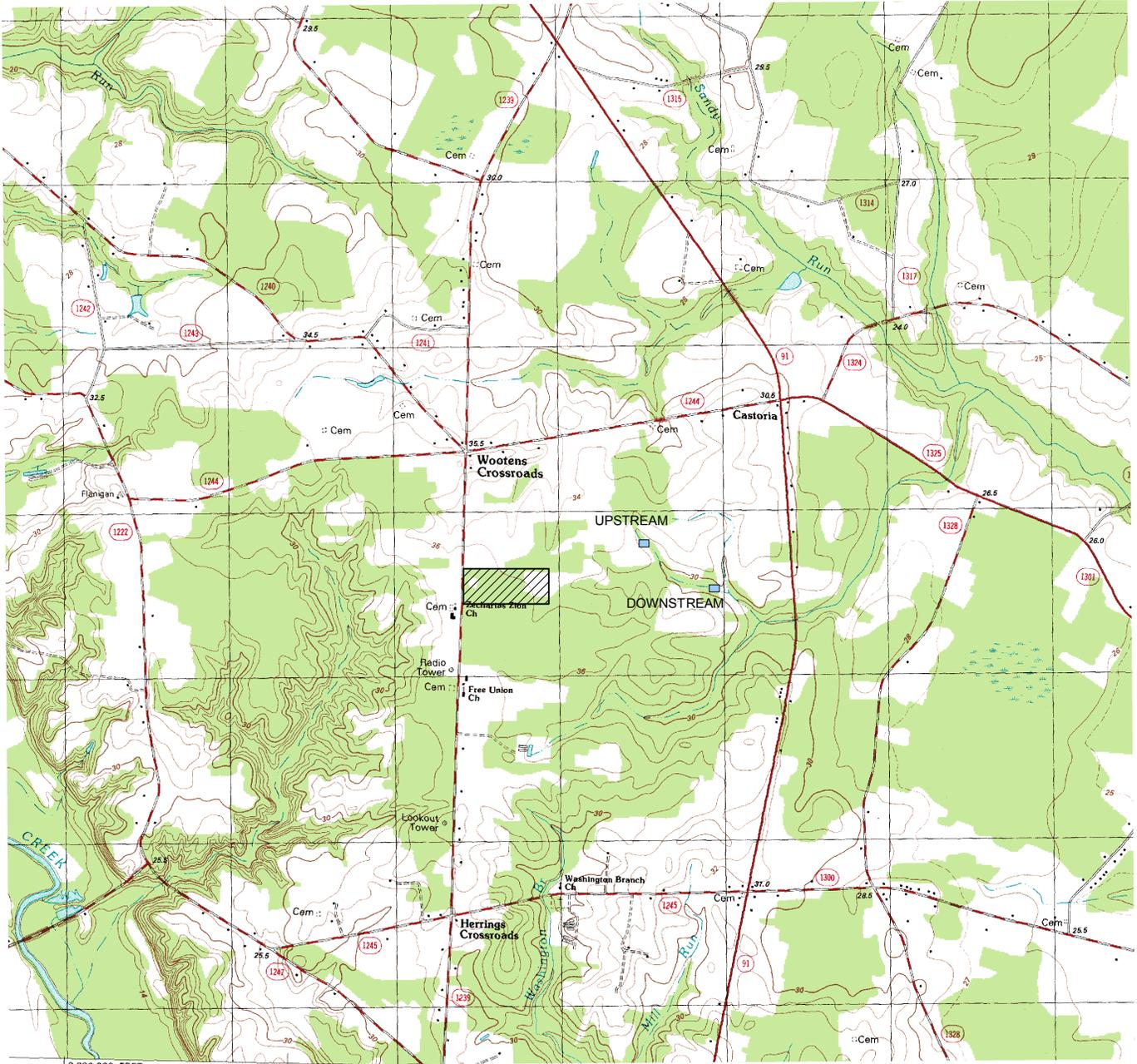
Enclosures

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

Figures

Topographic Map with Site Location

Greene County Active C&D over Closed MSWLF



QUADRANGLE LEGEND

ROAD CLASSIFICATION

- | | | | |
|------------------------------------|------------------|--|-------------|
| Primary highway,
hard surface | | Light-duty road, hard or
improved surface | |
| Secondary highway,
hard surface | | Unimproved road | |
| | Interstate Route | | U. S. Route |
| | State Route | | |

NOTE: Topographical map assembled from corresponding USGS 7.5-min. quadrangles of the subject region.

105 Landfill Road (SR1257)
Walstonburg, NC
Lat:35-31-29.7520
Long:-77-41-49.4325
Northing:648520.2533
Easting:2387660.4409

0 ————— 3,334'

FIGURE 1

Natural Attenuation Screening Protocol <small>The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.</small>	Interpretation		Score	Score: 18 <i>Scroll to End of Table</i>
	Inadequate evidence for anaerobic biodegradation* of chlorinated organics		0 to 5	
	Limited evidence for anaerobic biodegradation* of chlorinated organics		6 to 14	
	Adequate evidence for anaerobic biodegradation* of chlorinated organics		15 to 20	
		Strong evidence for anaerobic biodegradation* of chlorinated organics	>20	

Analysis	Concentration in Most Contam. Zone	Interpretation	* reductive dechlorination		Points Awarded
			Yes	No	
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	<input type="radio"/>	<input checked="" type="radio"/>	0
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	<input type="radio"/>	<input checked="" type="radio"/>	0
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	<input checked="" type="radio"/>	<input type="radio"/>	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	<input checked="" type="radio"/>	<input type="radio"/>	3
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	<input checked="" type="radio"/>	<input type="radio"/>	2
Sulfide*	>1 mg/L	Reductive pathway possible	<input type="radio"/>	<input checked="" type="radio"/>	0
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	<input checked="" type="radio"/>	<input type="radio"/>	3
Oxidation Reduction Potential* (ORP)	<50 millivolts (mV)	Reductive pathway possible	<input checked="" type="radio"/>	<input type="radio"/>	1
	<-100mV	Reductive pathway likely	<input type="radio"/>	<input checked="" type="radio"/>	0
pH*	5 < pH < 9	Optimal range for reductive pathway	<input checked="" type="radio"/>	<input type="radio"/>	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	<input type="radio"/>	<input checked="" type="radio"/>	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	<input type="radio"/>	<input checked="" type="radio"/>	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	<input checked="" type="radio"/>	<input type="radio"/>	1
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	<input checked="" type="radio"/>	<input type="radio"/>	1
Chloride*	>2x background	Daughter product of organic chlorine	<input type="radio"/>	<input checked="" type="radio"/>	0
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	<input checked="" type="radio"/>	<input type="radio"/>	3
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	<input type="radio"/>	<input checked="" type="radio"/>	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	<input type="radio"/>	<input checked="" type="radio"/>	0
PCE*		Material released	<input type="radio"/>	<input checked="" type="radio"/>	0
TCE*		Daughter product of PCE ^{a/}	<input type="radio"/>	<input checked="" type="radio"/>	0
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE ^{a/} ; 1,1-DCE can be a chem. reaction product of TCA	<input type="radio"/>	<input checked="" type="radio"/>	0
VC*		Daughter product of DCE ^{a/}	<input checked="" type="radio"/>	<input type="radio"/>	2
1,1,1-Trichloroethane*		Material released	<input type="radio"/>	<input checked="" type="radio"/>	0
DCA		Daughter product of TCA under reducing conditions	<input type="radio"/>	<input checked="" type="radio"/>	0
Carbon Tetrachloride		Material released	<input type="radio"/>	<input checked="" type="radio"/>	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	<input type="radio"/>	<input checked="" type="radio"/>	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	<input type="radio"/>	<input checked="" type="radio"/>	0
	>0.1 mg/L	Daughter product of VC/ethene	<input type="radio"/>	<input checked="" type="radio"/>	0
Chloroform		Daughter product of Carbon Tetrachloride	<input type="radio"/>	<input checked="" type="radio"/>	0
Dichloromethane		Daughter product of Chloroform	<input type="radio"/>	<input checked="" type="radio"/>	0

* required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product (i.e., not a constituent of the source NAPL).

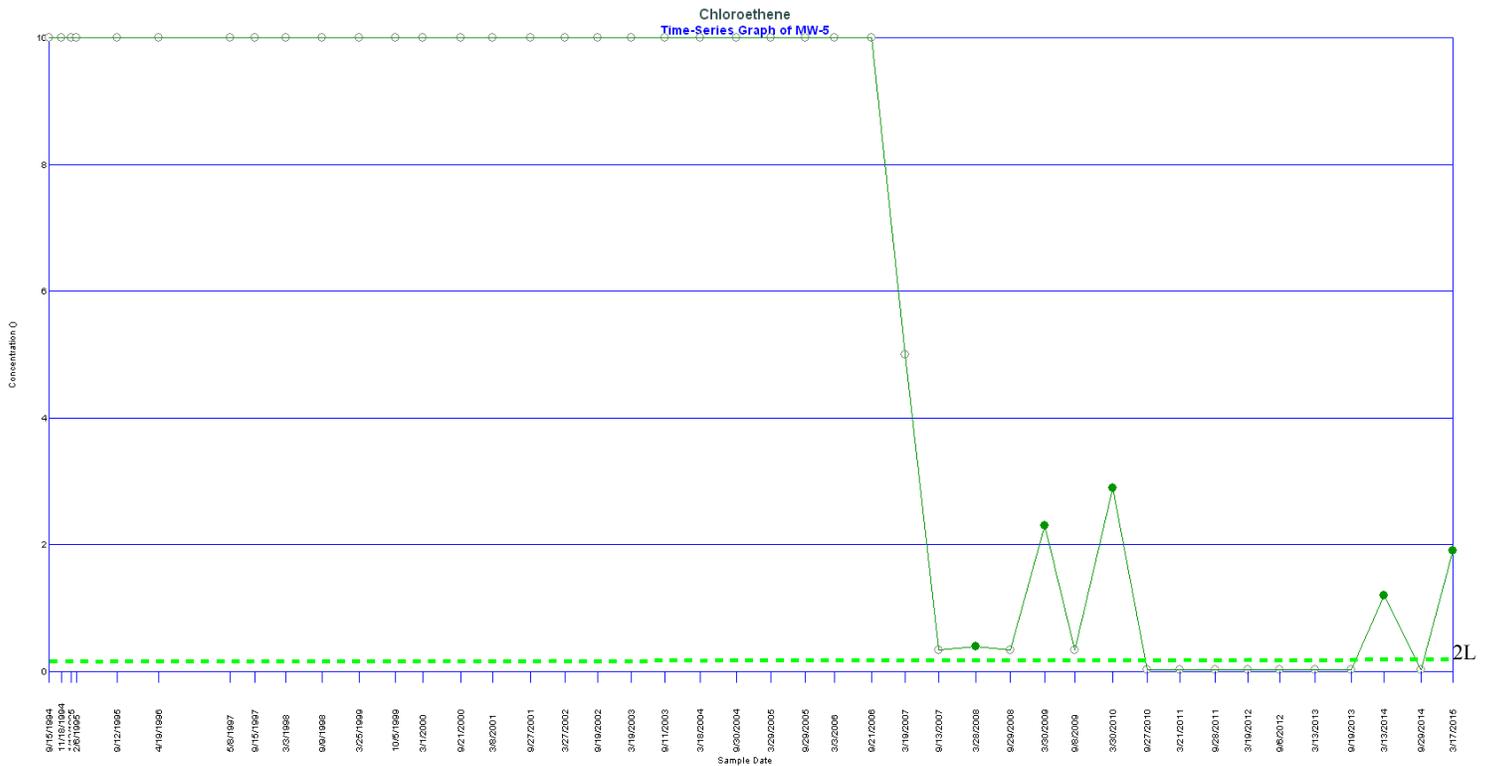
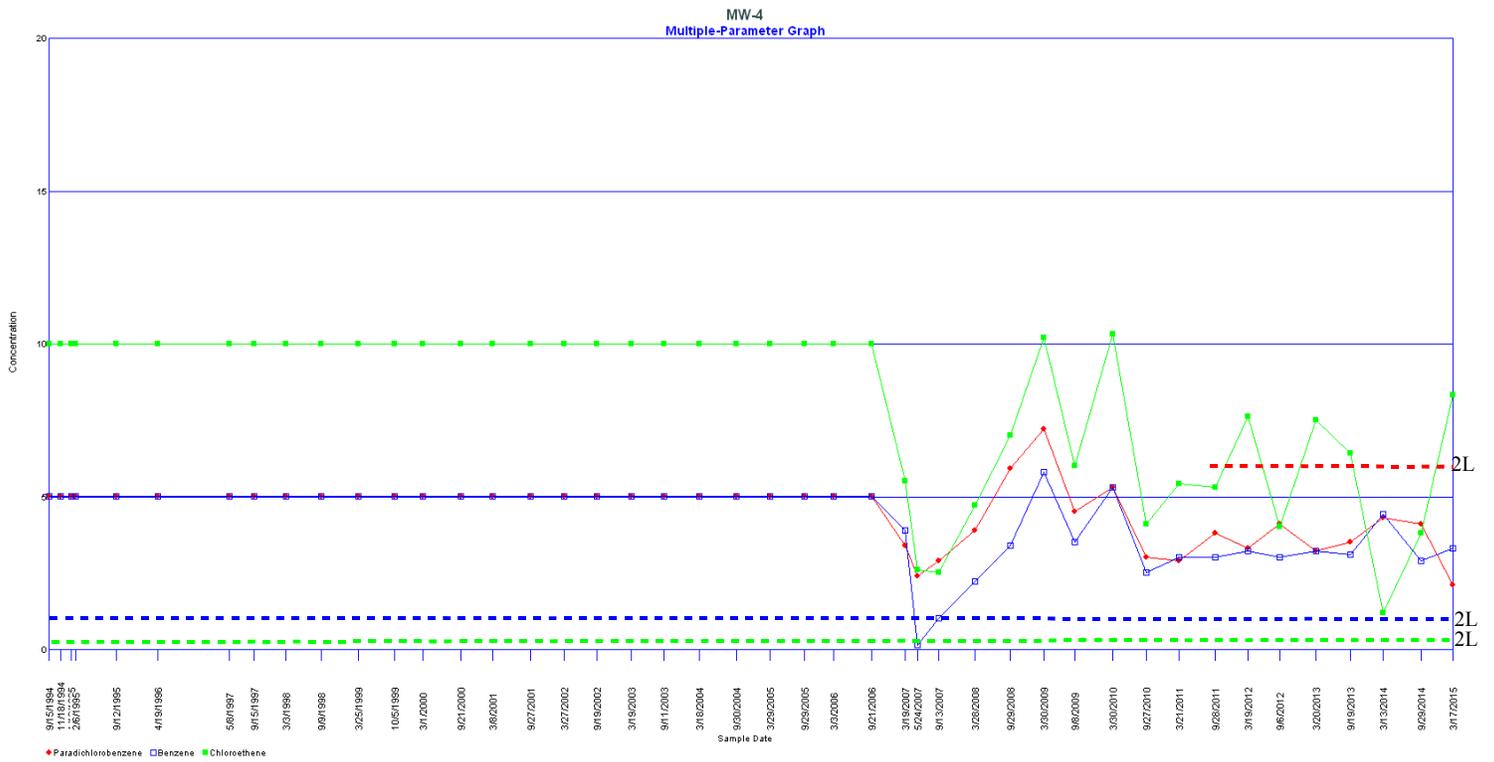
SCORE

Reset

End of Form

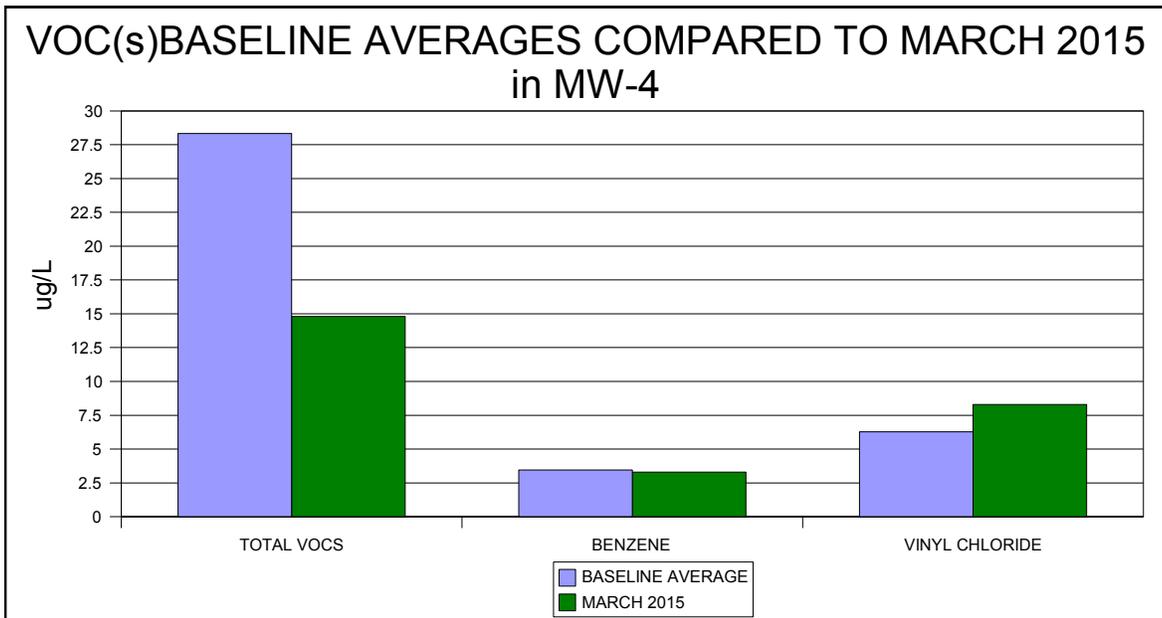
FIGURE 3

Figure 4
Time-Series Graphs of Select Constituents
March 17, 2015



Non-Detects Represented at Detection Limit

Figure 5
Histograms of VOC Concentrations in MW-4
(March 30, 2010-September 28, 2011) Compared to March 17, 2015



	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 2015	14.80	3.30	8.30

	TOTAL VOCS	BENZENE	VINYL CHLORIDE
COMPARISON			
DIFFERENCE (ug/l)	-13.53	-0.15	2.03
DIFFERENCE (%)	-47	-4	+32

Tables

Table 1
Groundwater Monitoring Well Construction Table
March 17, 2015

Monitoring Well	Date Installed	Well Diameter (inches)	Total Well Depth (ft bgs)	Top of Screen Depth (ft bgs)	Screen Length (ft)	Geology of Screened Interval	Top of Casing Elevation (ft amsl)	Ground Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Depth to Water (ft btoc)	Latitude	Longitude
MW-1R	11/19/1981	2	18.20	3.20	15	Soil	121.78	119.79	118.02	3.76	35.525139	-77.695158
MW-4	8/26/1994	2	24.10	9.10	15	Soil	117.89	115.14	108.65	9.24	35.526914	-77.692369
MW-5	8/26/1994	2	29.00	14.00	15	Soil	115.76	113.16	104.11	11.65	35.526133	-77.692242
MW-6	8/28/1994	2	28.80	13.80	15	Soil	117.41	114.54	113.70	3.71	35.525008	-77.692431
MW-7	8/29/1994	2	18.50	6.50	12	Soil	110.48	107.75	103.48	7.00	35.526639	-77.691833
MW-8	6/21/2007	2	17.98	6.98	11	Soil	111.36	108.71	107.10	4.26	35.527039	-77.691842
PZ-2	11/19/1981	2	20.00	10.00	10	Soil	119.59	116.58	112.61	6.98	35.527278	-77.696911

NOTE:
bgs = below ground surface
amsl= above mean sea level
btoc = below top casing (PVC well casing)

Table 2
Sampling and Analysis Summary
March 17, 2015

	Reason Not Sampled	App. I	App. II	MNA														Field Parameter										
		VOCs	Metals, Total Dissolved	Metals, Total	Metals, Total Dissolved	Metals, Total	VFA	Hydrogen	Methane/Ethane/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 EPA200.8	Lab EPA200.8	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																						
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
MW-5		x			x	x																	x	x	x	x	x	x
MW-6		x			x	x																x	x	x	x	x	x	x
MW-7		x			x	x																x	x	x	x	x	x	x
MW-8		x			x	x																x	x	x	x	x	x	x
Downstream		x			x	x																x	x	x	x	x	x	x
Upstream		x			x	x																x	x	x	x	x	x	x
EB		x				x																						
TB		x				x																						
FB		x				x																						

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

Table 3
Detections in Water Samples Above SWSL, GWP, 2L, or 2B (Appendix I)
March 17, 2015

Sample ID	Parameter Name ¹	Sample Date	Result	Unit	MDL ²	SWSL ³	2L ⁴	2B ⁵	GWP ⁶	MCL ⁷	Preliminary Cause ⁸
MW-1R	Barium, total	3/17/15	223	ug/l	0.12	100	700			1300	
MW-1R	Barium, Total Dissolved	3/17/15	211	ug/l	0.06	100	700			1300	
MW-4	Vinyl Chloride	3/17/15	8.3	ug/l	0.63	1	0.03			5	L &/or LFG
MW-4	Benzene	3/17/15	3.3	ug/l	0.24	1	1			5	L &/or LFG
MW-4	1,4-Dichlorobenzene	3/17/15	2.1	ug/l	0.39	1	6			75	
MW-4	Ethylbenzene	3/17/15	1.1	ug/l	0.21	1	550			700	
MW-5	Vinyl Chloride	3/17/15	1.9	ug/l	0.63	1	0.03			5	L &/or LFG
Upstream	Zinc, Total Dissolved	3/17/15	12	ug/l	0.47	10		50		5000	
Upstream	Zinc, total	3/17/15	14	ug/l	0.53	10		50		5000	

¹ Table contains constituents detected at or above SWSL, GWP, 2L, or 2B

² MDL = Method Detection Limit

³ SWSL = Solid Waste Section Reporting Limit

⁴ 2L = North Carolina 15A NCAC 2L Groundwater Quality Standard

⁵ 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for this Specific Stream Classification

⁶ GWP = Groundwater Protection Standard

⁷ MCL = Primary Drinking Water Standard (not currently applicable for regulatory comparisons)

⁸ 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 =The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable

L = Leachate

LFG = Landfill Gas

NE = Not Established

BOLD = Concentration > 2L, 2B, GWP or MCL Standard

Table 4
Detections in Water Samples Above MDL (Appendix II Exclusive)
March 17, 2015

Sample ID	Parameter Name ¹	Sample Date	Result	Unit	MDL ²	SWSL ³	2L ⁴	2B ⁵	GWP ⁶	MCL ⁷	Preliminary Cause ⁸
MW-5	Tin, total	3/17/15	0.08 j	ug/l	0.05	100	NE	NE	2000	NE	
MW-8	Tin, total	3/17/15	0.08 j	ug/l	0.05	100	NE	NE	2000	NE	

¹ Table contains constituents detected at or above SWSL, GWP, 2L, or 2B

² MDL = Method Detection Limit

³ SWSL = Solid Waste Section Reporting Limit

⁴ 2L = North Carolina 15A NCAC 2L Groundwater Quality Standard

⁵ 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for this Specific Stream Classification

⁶ GWP = Groundwater Protection Standard

⁷ MCL = Primary Drinking Water Standard (not currently applicable for regulatory comparisons)

⁸ 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 =The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL),

adjusted for actual sample preparation data and moisture content, where applicable

NE = Not Established

BOLD = Concentration > 2L, 2B, GWP or MCL Standard

Table 5
Hydrologic Properties at Monitoring Well Locations
March 17, 2015

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	0.001	1	N32E	3.76	118.02
MW-4	1.10E-04	15	0.043	33	S58E	9.24	108.65
MW-5	1.40E-04	15	0.004	4	S88E	11.65	104.11
MW-6	1.90E-04	15	0.025	33	N17E	3.71	113.7
MW-7	1.98E-04	7	0.040	117	S55E	7.00	103.48
MW-8	1.14E-03	7	0.039	659	S22E	4.26	107.1
PZ-2	na	na	0.012	na	N22E	6.98	112.61
Minimum	1.10E-04	7	0.001	1	-	3.71	103.48
Average	3.16E-04	12	0.025	141	-	6.66	109.67
Maximum	1.14E-03	15	0.043	659	-	11.65	118.02

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 17, 2015
 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 6
MNA Parameters at Monitoring Well Locations Summary
March 17, 2015

Parameters	Method	mdl*	Units	MW-1R	MW-4
				03/17/15	03/17/15
VFA – Acetic Acid	AM23G	2	ug/l	21j	23j
VFA – Butyric Acid	AM23G	1	ug/l	3.5j	2.5j
VFA – Hexanoic Acid	AM23G	8	ug/l	<8	<8
VFA – i-Hexanoic Acid	AM23G	8	ug/l	<8	<8
VFA – i-Pentanoic Acid	AM23G	3	ug/l	<3	<3
VFA – Lactic Acid	AM23G	2	ug/l	10j	5.5j
VFA – Pentaonic Acid	AM23G	4	ug/l	<4	<4
VFA – Propionic Acid	AM23G	1	ug/l	1.6j	1.1j
VFA – Pyruvic Acid	AM23G	2	ug/l	<2	<2
Hydrogen	AM20GAX	0.13	nM	1	1.1
Methane	AM20GAX	0.01	ug/l	0.08	2900
Ethene	AM20GAX	0.01	ug/l	0.0015	0.039
Ethane	AM20GAX	0.001	ug/l	0.0015j	0.001
CO2-Dissolved	4500CO2C	1000	ug/l	55000	578000
Alkalinity	2320B-97	1000	ug/l	2000	224000
Sulfate	4500SO42E97	5000	ug/l	<5000	23400j
Sulfide	4500S2D-00	100	ug/l	<100	<100
Chloride	4500CLB-97	5000	ug/l	191000	18000
TOC	5310C-00	46	ug/l	<46	8940
COD	H8000-79	20000	ug/l	<20000	31000
BOD	5210B-01	2000	ug/l	<2000	<2000
Iron, Total	3111B-99	16	ug/l	118j	97750
Iron, Ferrous	3500FEB-97	50	ug/l	<50	91340
Nitrate	353.2 R2-93	40	ug/l	2600j	<40
Temperature	2550B-00	0.01	C	12	13
ORP	2580B	0	mV	218	-19
DO	4500OG-01	0.1	mg/l	2.92	1.26
pH	4500HB-00	0	SU	5.1	5.8
Specific Conductance	2510B-97	1	Umhos/cm	758	510
Turbidity	2130B-01	1	NTU	1.14	1.14

Notes:

VFA = Volatile Fatty Acids

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

j = Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

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: 03/17/15
DATE REPORTED : 04/13/15

REVIEWED BY: 

PARAMETERS	MDL	Upstream SWSL	Downstream	Well #4	Well #5	Well #6	Analysis		Method Code		
							Date	Analyst			
PH (field measurement), Units			6.0	6.4	5.8	5.0	5.0	03/17/15 BF	4500HB-00		
BOD, mg/l	2.0	2.0			---	U		03/17/15 TRB	5210B-01		
COD, mg/l	20.0	20.0			31			03/23/15 TRB	H8000-79		
Nitrate Nitrogen as N, mg/l	0.04	10.0			---	U		03/18/15 KDB	353.2 R2-9		
Total Organic Carbon, mg/l	0.046	1.0			8.94			03/18/15 SEJ	5310C-00		
Total Alkalinity (to pH 4.5), mg/l	1.0	1.0			224			03/17/15 TRB	2320B-97		
Chloride, mg/l	5.0	5.0			18			03/23/15 KKF	4500CLB-97		
Sulfate, mg/l	5.0	250.0			23.4 J			03/18/15 TRB	4500SO42E9		
Antimony, ug/l	0.12	6.0	---	U	---	U	---	U	03/26/15 LfJ	EPA200.8	
Arsenic, ug/l	0.10	10.0	1.2 J	1.7 J	3.4 J	0.59 J	0.50 J	03/26/15 LfJ	EPA200.8		
Barium, ug/l	0.12	100.0	24.5 J	41.7 J	50.2 J	21.9 J	14.3 J	03/26/15 LfJ	EPA200.8		
Beryllium, ug/l	0.04	1.0	---	U	0.07 J	---	U	0.05 J	03/26/15 LfJ	EPA200.8	
Cadmium, ug/l	0.04	1.0	---	U	0.04 J	0.10 J	0.05 J	0.27 J	03/26/15 LfJ	EPA200.8	
Cobalt, ug/l	0.12	10.0	0.39 J	0.44 J	1.8 J	0.53 J	---	U	03/26/15 LfJ	EPA200.8	
Copper, ug/l	0.10	10.0	0.55 J	2.5 J	0.28 J	0.29 J	0.52 J	03/30/15 LfJ	EPA200.8		
Total Chromium, ug/l	0.14	10.0	0.39 J	1.2 J	---	U	---	U	03/26/15 LfJ	EPA200.8	
Iron, ug/l	16.0	300.0			97750			04/10/15 JMN	3111B-99		
Lead, ug/l	0.13	10.0	0.64 J	1.4 J	---	U	0.13 J	---	U	03/26/15 LfJ	EPA200.8
Mercury, ug/l	0.06	0.20	---	U	---	U	---	U	04/07/15 MTM	245.1 R3-9	
Nickel, ug/l	0.12	50.0	0.81 J	1.6 J	1.2 J	0.86 J	0.61 J	03/26/15 LfJ	EPA200.8		
Selenium, ug/l	0.16	10.0	0.40 J	0.43 J	0.52 J	0.52 J	0.25 J	03/26/15 LfJ	EPA200.8		
Silver, ug/l	0.04	10.0	---	U	---	U	---	U	03/30/15 LfJ	EPA200.8	
Thallium, ug/l	0.13	5.5	---	U	---	U	---	U	03/30/15 LfJ	EPA200.8	
Tin, ug/l	0.05	100.0			---	U	0.08 J	---	U	03/30/15 LfJ	EPA200.8
Vanadium, ug/l	0.06	25.0	2.7 J	3.3 J	1.6 J	1.3 J	1.0 J	03/26/15 LfJ	EPA200.8		
Zinc, ug/l	0.53	10.0	14	8.1 J	1.3 J	4.3 J	5.1 J	03/30/15 LfJ	EPA200.8		
Sulfide, ug/l	100	1000			---	U		03/23/15 LfJ	4500S2D-00		
Conductivity (at 25c), uMhos/cm	1.0	1.0	117	163	510	100	55	03/17/15 BF	2510B-97		
Dissolved Oxygen, mg/l	0.1	0.1	4.39	9.40	1.26	0.98	7.14	03/17/15 BF	4500OG-01		
Temperature, °C			14	15	13	17	15	03/17/15 BF	2550B-00		
Iron, Ferrous, ug/l	50.00	300.0			91340			03/17/15 SEJ	3500FEB-97		
Static Water Level, feet					9.24	11.65	3.71	03/17/15 BF			
Well Depth, feet					26.16	28.34	26.87	03/17/15 BF			
Carbon Dioxide, mg/l	1.0	1.0			578			03/17/15 TRB	4500CO2C		
ORP, mv			+29	+122	-19	+179	+288	03/17/15 BF	2580B		
Turbidity (Field), NTU	1.0	1.0	12.9	16.9	1.14	3.39	1.04	03/17/15 BF	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: 03/17/15
DATE REPORTED : 04/13/15

REVIEWED BY: 

PARAMETERS	MDL	Well		Well #1R	Piezometer #2	Equipment Blank	Analysis		Method Code
		SWSL #7	#8				Date	Analyst	
PH (field measurement), Units			4.9	4.8	5.1		03/17/15	BF	4500HB-00
BOD, mg/l	2.0	2.0			--- U		03/17/15	TRB	5210B-01
COD, mg/l	20.0	20.0			--- U		03/23/15	TRB	H8000-79
Nitrate Nitrogen as N, mg/l	0.04	10.0			2.60 J		03/18/15	KDB	353.2 R2-9
Total Organic Carbon, mg/l	0.046	1.0			--- U		03/18/15	SEJ	5310C-00
Total Alkalinity (to pH 4.5), mg/l	1.0	1.0			2		03/17/15	TRB	2320B-97
Chloride, mg/l	5.0	5.0			191		03/23/15	KKF	4500CLB-97
Sulfate, mg/l	5.0	250.0			--- U		03/18/15	TRB	4500SO42R9
Antimony, ug/l	0.12	6.0	--- U	--- U	--- U		03/26/15	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.72 J	0.28 J	0.41 J	0.35 J	03/26/15	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	38.7 J	29.4 J	223	---	03/26/15	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.09 J	0.04 J	0.15 J	---	03/26/15	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.04 J	0.09 J	0.08 J	---	03/26/15	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	0.66 J	0.30 J	0.42 J	---	03/26/15	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	0.62 J	0.21 J	1.5 J	---	03/30/15	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	1.2 J	---	---	---	03/26/15	LFJ	EPA200.8
Iron, ug/l	16.0	300.0			118 J		04/10/15	JMN	3111B-99
Lead, ug/l	0.13	10.0	1.5 J	0.32 J	0.82 J	---	03/26/15	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	---	---	---	---	04/07/15	MTM	245.1 R3-9
Nickel, ug/l	0.12	50.0	1.3 J	0.80 J	1.5 J	---	03/26/15	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	0.19 J	---	0.40 J	---	03/26/15	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	---	---	---	---	03/30/15	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	---	---	---	---	03/30/15	LFJ	EPA200.8
Tin, ug/l	0.05	100.0		0.08 J	---	---	03/30/15	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	3.3 J	0.77 J	0.69 J	0.68 J	03/26/15	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	5.1 J	2.0 J	4.5 J	1.2 J	03/30/15	LFJ	EPA200.8
Sulfide, ug/l	100	1000			---	---	03/23/15	LFJ	4500S2D-00
Conductivity (at 25c), uMhos/cm	1.0	1.0	54	32	758		03/17/15	BF	2510B-97
Dissolved Oxygen, mg/l	0.1	0.1	7.04	6.93	2.92		03/17/15	BF	4500OG-01
Temperature, °C			15	16	12		03/17/15	BF	2550B-00
Iron, Ferrous, ug/l	50.00	300.0			---	---	03/17/15	SEJ	3500FEB-97
Static Water Level, feet			7.00	4.26	3.76	6.98	03/17/15	BF	
Well Depth, feet			21.38	20.24	19.51		03/17/15	BF	
Carbon Dioxide, mg/l	1.0	1.0			55		03/17/15	TRB	4500CO2C
ORP, mv			+226	+187	+218		03/17/15	BF	2580B
Turbidity (Field), NTU	1.0	1.0	29.8	1.13	1.14		03/17/15	BF	2130B-01

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

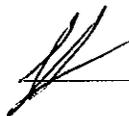
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

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: 03/17/15
DATE REPORTED : 04/13/15

REVIEWED BY: 

PARAMETERS	MDL	Trip SWSL Blank	Field Blank	Analysis Date	Method Analyst	Code
Antimony, ug/l	0.12	6.0		--- U 03/26/15	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.14	J 03/26/15	LFJ	EPA200.8
Barium, ug/l	0.12	100.0		--- U 03/26/15	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0		--- U 03/26/15	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0		--- U 03/26/15	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0		--- U 03/26/15	LFJ	EPA200.8
Copper, ug/l	0.10	10.0		--- U 03/30/15	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0		--- U 03/26/15	LFJ	EPA200.8
Lead, ug/l	0.13	10.0		--- U 03/26/15	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20		--- U 04/07/15	MTM	245.1 R3-94
Nickel, ug/l	0.12	50.0		--- U 03/26/15	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	0.17	J 03/26/15	LFJ	EPA200.8
Silver, ug/l	0.04	10.0		--- U 03/30/15	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5		--- U 03/30/15	LFJ	EPA200.8
Tin, ug/l	0.05	100.0		--- U 03/30/15	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	0.79	J 03/26/15	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	0.67	J 03/30/15	LFJ	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

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

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/17/15
DATE ANALYZED: 03/20/15
DATE REPORTED: 04/13/15

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	8.30	1.90	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	9.00 J	3.10 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	0.80 J	0.80 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	3.70 J	1.70 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	3.30	0.50 J	--- 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	0.30 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	1.30 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	1.10	--- 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	2.10	--- 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: 03/17/15
DATE ANALYZED: 03/20/15
DATE REPORTED: 04/13/15

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	0.30 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. 1,1,2-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	--- 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: 03/17/15
DATE ANALYZED: 03/20/15
DATE REPORTED: 04/13/15

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 I, Inc.
 P.O. Box 7085, 114 Oakmont Dr.
 Greenville, NC 27838
 environment1inc.com
 Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6005 Week: 13

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

(252) 747-5720

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/TESTS		
	DATE	TIME				CHLORINE	UV																			
Upstream	3-17-15	11:55		14	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Downstream	3-17-15	11:45		15	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #4	3-17-15	09:40		13	14	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #5	3-17-15	10:45		17	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #6	3-17-15	11:05		15	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #7	3-17-15	10:20		15	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #8	3-17-15	10:00		16	4	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Well #1R	3-17-15	08:25		12	15	<input type="checkbox"/>	<input type="checkbox"/>	A																	A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Piezometer #2	3-17-15	11:30			1	<input type="checkbox"/>	<input type="checkbox"/>																		A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Equipment Blank	3-17-15	05:10			3	<input type="checkbox"/>	<input type="checkbox"/>																		A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
Trip Blank	3-17-15				2	<input type="checkbox"/>	<input type="checkbox"/>																		A - NONE B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCL F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	
RELINQUISHED 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.)
COMMENTS: Bobb Fc / Tom Baskley SAMPLES RECEIVED IN LAB AT 0.2 °C																										

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. 281162**

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

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
 Y
 N

SAMPLES COLLECTED BY: (Please Print)
 Bobb Fc / Tom Baskley

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: 6005 Week: 13

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

(252) 747-5720

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION			8260 Dup. 1	8260 Dup. 2	CO2	ORP	Field Parameter	PARAMETERS/TESTS
	DATE	TIME				CHLORINE	UV	NONE						
Upstream	3-17-15	11:25			4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						A - NONE D - NaOH B - HNO ₃ E - HCL C - H ₂ SO ₄ F - ZINC ACETATE/NaOH G - NATHIOSULFATE
Downstream	3-17-15	11:45			4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #4	3-17-15	09:40		13	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #5	3-17-15	10:45		17	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #6	3-17-15	11:05		15	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #7	3-17-15	10:20		15	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #8	3-17-15	10:00		16	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Well #1R	3-17-15	08:25		12	15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Piezometer #2	3-17-15	11:30			1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Equipment Blank	3-17-15	05:10			3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Trip Blank	3-17-15				2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:								
RELINQUISHED BY (SIG.)	3-17-15 11:54	RECEIVED BY (SIG.)	3-17-15 11:54	RECEIVED BY (SIG.)	3/17/15 1:58	SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY								
RELINQUISHED BY (SIG.)		RECEIVED BY (SIG.)		RECEIVED BY (SIG.)		SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY								
RELINQUISHED BY (SIG.)		RECEIVED BY (SIG.)		RECEIVED BY (SIG.)		SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY								

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 281160

CLASSIFICATION:
 WASTEWATER (NPDES)
 DRINKING WATER
 DW/OGW
 SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY

SAMPLES COLLECTED BY: N

SAMPLES RECEIVED IN LAB AT 0.2 °C

Bobbi Fox / Tom Beckley

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

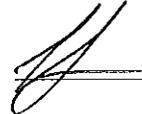
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

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: 03/17/15
DATE REPORTED : 04/14/15

REVIEWED BY: 

PARAMETERS	MDL	Upstream SWSL	Downstream	Well #4	Well #5	Well #6	Analysis		Method Code	
							Date	Analyst		
Antimony, Total Dissolved, ug/l	0.02	6.0	--- U	--- U	--- U	--- U	03/26/15	LFJ	EPA200.8	
Arsenic, Total Dissolved, ug/l	0.05	10.0	1.0 J	1.6 J	2.9 J	0.57 J	0.40 J	03/26/15	LFJ	EPA200.8
Barium, Total Dissolved, ug/l	0.06	100.0	20.9 J	38.4 J		20.7 J		03/26/15	LFJ	EPA200.8
Barium, Total Dissolved, ug/l	0.06	100.0			45.5 J		13.3 J	03/30/15	LFJ	EPA200.8
Beryllium, Total Dissolved, ug/l	0.03	1.0	--- U	0.06 J	--- U	0.05 J	0.09 J	03/26/15	LFJ	EPA200.8
Cadmium, Total Dissolved, ug/l	0.05	1.0	--- U	0.05 J	--- U	0.05 J	0.12 J	03/26/15	LFJ	EPA200.8
Cobalt, Total Dissolved, ug/l	0.02	10.0	0.33 J	0.37 J	1.8 J	0.47 J	---	03/26/15	LFJ	EPA200.8
Copper, Total Dissolved, ug/l	0.06	10.0	0.46 J	2.1 J	---	0.26 J	0.46 J	03/30/15	LFJ	EPA200.8
Chromium, Total Dissolved, ug/l	0.04	10.0	---	0.15 J	---	---	---	03/26/15	LFJ	EPA200.8
Lead, Total Dissolved, ug/l	0.02	10.0	0.16 J	0.6 J	---	---	---	03/31/15	LFJ	EPA200.8
Mercury, Total Dissolved, ug/l	0.01	0.20	---	---	---	---	---	04/07/15	MTM	245.1 R3
Nickel, Total Dissolved, ug/l	0.45	50.0	0.76 J	1.6 J	1.1 J	0.84 J	---	03/26/15	LFJ	EPA200.8
Selenium, Total Dissolved, ug/l	0.06	10.0	0.28 J	0.61 J	0.66 J	0.33 J	0.18 J	03/26/15	LFJ	EPA200.8
Silver, Total Dissolved, ug/l	0.03	10.0	---	---	---	---	---	03/30/15	LFJ	EPA200.8
Thallium, Total Dissolved, ug/l	0.02	5.5	---	---	---	---	---	03/30/15	LFJ	EPA200.8
Tin, Total Dissolved, ug/l	0.06	100.0	---	---	---	---	---	03/30/15	LFJ	EPA200.8
Vanadium, Total Dissolved, ug/l	0.07	25.0	0.72 J	2.9 J	1.2 J	1.0 J	1.1 J	03/26/15	LFJ	EPA200.8
Zinc, Total Dissolved, ug/l	0.47	10.0	12	6.5 J	2 J	2.3 J	4.9 J	03/31/15	LFJ	EPA200.8

Environment 1, Incorporated

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

Drinking Water ID: 37715

Wastewater ID: 10

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: 03/17/15

DATE REPORTED : 04/14/15

REVIEWED BY: 

PARAMETERS	MDL	Well		Well #1R	Analysis		Method
		SWSL #7	#8		Date	Analyst	
Antimony, Total Dissolved, ug/l	0.02	6.0	--- U	--- U	--- U	03/26/15 Lfj	EPA200.8
Arsenic, Total Dissolved, ug/l	0.05	10.0	0.42 J	0.34 J	0.41 J	03/26/15 Lfj	EPA200.8
Barium, Total Dissolved, ug/l	0.06	100.0	33.6 J	29.6 J	211	03/26/15 Lfj	EPA200.8
Beryllium, Total Dissolved, ug/l	0.03	1.0	0.08 J	--- U	0.14 J	03/26/15 Lfj	EPA200.8
Cadmium, Total Dissolved, ug/l	0.05	1.0	--- U	0.08 J	0.05 J	03/26/15 Lfj	EPA200.8
Cobalt, Total Dissolved, ug/l	0.02	10.0	0.57 J	0.28 J	0.41 J	03/26/15 Lfj	EPA200.8
Copper, Total Dissolved, ug/l	0.06	10.0	0.28 J	0.15 J	1.3 J	03/30/15 Lfj	EPA200.8
Chromium, Total Dissolved, ug/l	0.04	10.0	--- U	--- U	--- U	03/26/15 Lfj	EPA200.8
Lead, Total Dissolved, ug/l	0.02	10.0	--- U	--- U	0.76 J	03/31/15 Lfj	EPA200.8
Mercury, Total Dissolved, ug/l	0.01	0.20	--- U	--- U	--- U	04/07/15 MTM	245.1 R3
Nickel, Total Dissolved, ug/l	0.45	50.0	0.83 J	0.86 J	1.4 J	03/26/15 Lfj	EPA200.8
Selenium, Total Dissolved, ug/l	0.06	10.0	0.25 J	0.18 J	0.38 J	03/26/15 Lfj	EPA200.8
Silver, Total Dissolved, ug/l	0.03	10.0	--- U	--- U	--- U	03/30/15 Lfj	EPA200.8
Thallium, Total Dissolved, ug/l	0.02	5.5	--- U	--- U	--- U	03/30/15 Lfj	EPA200.8
Tin, Total Dissolved, ug/l	0.06	100.0	--- U	--- U	--- U	03/30/15 Lfj	EPA200.8
Vanadium, Total Dissolved, ug/l	0.07	25.0	1.4 J	0.89 J	1.1 J	03/26/15 Lfj	EPA200.8
Zinc, Total Dissolved, ug/l	0.47	10.0	2.7 J	1.6 J	5.1 J	03/31/15 Lfj	EPA200.8

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: 6005 A Week: 13

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

(252) 747-5720

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals (Dis.)	DISINFECTION	CHLORINE NEUTRALIZED AT COLLECTION
	DATE	TIME						
Upstream	3-17-15	1125		14	1		CHLORINE	
Downstream	3-17-15	1145		15	1		UV	
Well #4	3-17-15	0940		13	1		NONE	
Well #5	3-17-15	1645		17	1			
Well #6	3-17-15	1105		15	1			
Well #7	3-17-15	1030		15	1			
Well #8	3-17-15	1000		16	1			
Well #1R	3-17-15	0825		12	1			
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:	PARAMETERS/TESTS	CLASSIFICATION:
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME		A - NONE D - NaOH B - HNO ₃ E - HCL C - H ₂ SO ₄ F - ZINC ACETATE/NaOH G - NaTHIOSULFATE	<input type="checkbox"/> WASTEWATER (NPDES) <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> DWQ/GW <input checked="" type="checkbox"/> SOLID WASTE SECTION CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY SAMPLES COLLECTED BY: <i>(Signature)</i> (Please Print) N. SAMPLES RECEIVED IN LAB AT 0.2°C <i>Bobbs For Tom Bousley</i>
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME			

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. 281158



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

March 25, 2015

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

RE: **GREENE CO. / 6005**

Microseeps Workorder: 14945

Dear Steve Jones:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, March 18, 2015. 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
rrobl@microseeps.com

03/25/2015

RW
3/27/15

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: 14945 - 634702

Page 1 of 13



CERTIFICATE OF ANALYSIS

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without the written consent of Microseeps/Pace Analytical Energy Services, LLC.



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:	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: 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, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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SAMPLE SUMMARY

Workorder: 14945 GREENE CO. / 6005

Lab ID	Sample ID	Matrix	Date Collected	Date Received
149450001	WL1R	Water	3/17/2015 08:25	3/18/2015 10:30
149450002	WL1R	Bubble Strip	3/17/2015 08:25	3/18/2015 10:30
149450003	WEL4	Water	3/17/2015 09:40	3/18/2015 10:30
149450004	WEL4	Bubble Strip	3/17/2015 09:40	3/18/2015 10:30



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ANALYTICAL RESULTS

Workorder: 14945 GREENE CO. / 6005

Lab ID: 149450001 Date Received: 3/18/2015 10:30 Matrix: Water
 Sample ID: WL1R Date Collected: 3/17/2015 08:25

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
EDonors - MICR										
Analysis Desc: AM23G			Analytical Method: AM23G							
Lactic Acid	0.010J	mg/l	0.10	0.0020	1			3/24/2015 04:55	KB	
Acetic Acid	0.021J	mg/l	0.070	0.0020	1			3/24/2015 04:55	KB	
Propionic Acid	0.0016J	mg/l	0.050	0.0010	1			3/24/2015 04:55	KB	
Butyric Acid	0.0035J	mg/l	0.050	0.0010	1			3/24/2015 04:55	KB	
Pyruvic Acid	0.15 U	mg/l	0.15	0.0020	1			3/24/2015 04:55	KB	
i-Pentanoic Acid	0.15 U	mg/l	0.15	0.0030	1			3/24/2015 04:55	KB	
Pentanoic Acid	0.070 U	mg/l	0.070	0.0040	1			3/24/2015 04:55	KB	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.0080	1			3/24/2015 04:55	KB	
Hexanoic Acid	0.50 U	mg/l	0.50	0.0080	1			3/24/2015 04:55	KB	



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ANALYTICAL RESULTS

Workorder: 14945 GREENE CO. / 6005

Lab ID: 149450002 Date Received: 3/18/2015 10:30 Matrix: Bubble Strip
 Sample ID: WL1R Date Collected: 3/17/2015 08:25

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
RISK - MICR										
Analysis Desc: AM20GAX			Analytical Method: AM20GAX							
Methane	0.083	ug/l	0.015	0.0060	1			3/21/2015 13:37	TD	n
Ethane	0.0015J	ug/l	0.010	0.0010	1			3/21/2015 13:37	TD	n
Ethene	0.0080U	ug/l	0.010	0.0080	1			3/21/2015 13:37	TD	n
Hydrogen	1.0	nM	0.60	0.13	1			3/21/2015 13:37	TD	n



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ANALYTICAL RESULTS

Workorder: 14945 GREENE CO. / 6005

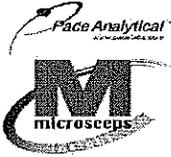
Lab ID: 149450003 Date Received: 3/18/2015 10:30 Matrix: Water
 Sample ID: WEL4 Date Collected: 3/17/2015 09:40

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
EDonors - MICR										
Analysis Desc: AM23G			Analytical Method: AM23G							
Lactic Acid	0.0055J	mg/l	0.10	0.0020	1			3/24/2015 05:44	KB	
Acetic Acid	0.023J	mg/l	0.070	0.0020	1			3/24/2015 05:44	KB	
Propionic Acid	0.0011J	mg/l	0.050	0.0010	1			3/24/2015 05:44	KB	
Butyric Acid	0.0025J	mg/l	0.050	0.0010	1			3/24/2015 05:44	KB	
Pyruvic Acid	0.15 U	mg/l	0.15	0.0020	1			3/24/2015 05:44	KB	
i-Pentanoic Acid	0.15 U	mg/l	0.15	0.0030	1			3/24/2015 05:44	KB	
Pentanoic Acid	0.070 U	mg/l	0.070	0.0040	1			3/24/2015 05:44	KB	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.0080	1			3/24/2015 05:44	KB	
Hexanoic Acid	0.50 U	mg/l	0.50	0.0080	1			3/24/2015 05:44	KB	



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ANALYTICAL RESULTS

Workorder: 14945 GREENE CO. / 6005

Lab ID: 149450004 Date Received: 3/18/2015 10:30 Matrix: Bubble Strip
 Sample ID: WEL4 Date Collected: 3/17/2015 09:40

Parameters	Results	Units	PQL	MDL	DF	Prepared	By	Analyzed	By	Qual
RISK - MICR										
Analysis Desc: AM20GAX			Analytical Method: AM20GAX							
Methane	2900	ug/l	0.015	0.0060	1			3/21/2015 13:24	TD	n
Ethane	0.0010U	ug/l	0.010	0.0010	1			3/21/2015 13:24	TD	n
Ethene	0.039	ug/l	0.010	0.0080	1			3/21/2015 13:24	TD	n
Hydrogen	1.1	nM	0.60	0.13	1			3/21/2015 13:24	TD	n



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 14945 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).

- n The laboratory does not hold NELAP/TNI accreditation for this method or analyte.



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QUALITY CONTROL DATA

Workorder: 14945 GREENE CO. / 6005

QC Batch: DISG/4439 Analysis Method: AM20GAX
 QC Batch Method: AM20GAX
 Associated Lab Samples: 149450002, 149450004

METHOD BLANK: 33814

Parameter	Units	Blank Result	Reporting Limit Qualifiers
RISK Methane	ug/l	0.0060U	0.0060 n
Ethane	ug/l	0.0010U	0.0010 n
Ethene	ug/l	0.0080U	0.0080 n

METHOD BLANK: 33815

Parameter	Units	Blank Result	Reporting Limit Qualifiers
RISK Hydrogen	nM	0.13U	0.13 n

LABORATORY CONTROL SAMPLE & LCSD: 33816 33820

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD Qualifiers
RISK Methane	ug/l	8.3	8.9	8.5	107	103	80-120	3.8	20 n
Ethane	ug/l	6.5	6.9	6.6	107	102	80-120	4.8	20 n
Ethene	ug/l	16	17	16	105	100	80-120	4.9	20 n

LABORATORY CONTROL SAMPLE & LCSD: 33817 33822

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD Qualifiers
RISK Hydrogen	nM	24	20	20	82	80	80-120	2.5	20 n



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QUALITY CONTROL DATA

Workorder: 14945 GREENE CO. / 6005

QC Batch: EDON/2451 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 149450001, 149450003

METHOD BLANK: 33847

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	0.10 U	0.10	
Acetic Acid	mg/l	0.019J	0.070	
Propionic Acid	mg/l	0.050 U	0.050	
Butyric Acid	mg/l	0.050 U	0.050	
Pyruvic Acid	mg/l	0.15 U	0.15	
i-Pentanoic Acid	mg/l	0.15 U	0.15	
Pentanoic Acid	mg/l	0.070 U	0.070	
i-Hexanoic Acid	mg/l	0.20 U	0.20	
Hexanoic Acid	mg/l	0.50 U	0.50	

LABORATORY CONTROL SAMPLE: 33848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.0	102	70-130	
Acetic Acid	mg/l	2	2.0	102	70-130	
Propionic Acid	mg/l	2	2.0	102	70-130	
Butyric Acid	mg/l	2	2.0	101	70-130	
Pyruvic Acid	mg/l	2	2.0	100	70-130	
i-Pentanoic Acid	mg/l	2	2.0	101	70-130	
Pentanoic Acid	mg/l	2	2.0	102	70-130	
i-Hexanoic Acid	mg/l	2	2.0	101	70-130	
Hexanoic Acid	mg/l	2	1.9	97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 33849 33850 Original: 148980001

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	0.091	2	2.2	2.2	106	105	70-130	0.95	30	
Acetic Acid	mg/l	4.1	2	6.2	6.1	104	101	70-130	2.9	30	
Propionic Acid	mg/l	0.38	2	2.6	2.5	109	107	70-130	1.9	30	



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QUALITY CONTROL DATA

Workorder: 14945 GREENE CO. / 6005

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 33849 33850 Original: 148980001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Butyric Acid	mg/l	1	2	3.2	3.1	108	107	70-130	0.93	30	
Pyruvic Acid	mg/l	0.044	2	2.1	2.1	104	102	70-130	1.9	30	
i-Pentanoic Acid	mg/l	0.04	2	2.1	2.1	105	103	70-130	1.9	30	
Pentanoic Acid	mg/l	0	2	2.1	2.1	105	104	70-130	0.96	30	
i-Hexanoic Acid	mg/l	0	2	2.2	2.1	109	105	70-130	3.7	30	
Hexanoic Acid	mg/l	0	2	2.0	2.0	103	102	70-130	0.98	30	



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 14945 GREENE CO. / 6005

QUALITY CONTROL PARAMETER QUALIFIERS

- n The laboratory does not hold NELAP/TNI accreditation for this method or analyte.



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 14945 GREENE CO. / 6005

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
149450002	WL1R			AM20GAX	DISG/4439
149450004	WEL4			AM20GAX	DISG/4439
149450001	WL1R			AM23G	EDON/2451
149450003	WEL4			AM23G	EDON/2451



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Cooler Receipt Form

Client Name: Environment 1 Project: Greene Co./ Lab Work Order: 14945

6005

A. Shipping/Container Information (circle appropriate response)

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

Tracking Number: 1X 203 705 0176901340

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: 2°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	✓			
PAES 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: WJ Date: 3.18.15

Project Manager Review: RL Date: 3/18/15