Semi-Annual Water Quality Monitoring Report

Prepared for

Lenoir County Subtitle D Lined MSWLF
LaGrange, North Carolina

July 2014

Permit Number: 54-09
MESCO Project Number: G14029.0

Submitted on October 14, 2014

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

Municipal Services Garner, NC
Engineering Company, P.A. Boone, NC
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
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

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)
Lenoir County Subtitle D Lined MSWLF, Phase 1	2949 Hodges Farm Road LaGrange, NC 28501	54-09	.1600	July 1-3 & 8, 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
☐ Groundwater monitoring data from private water supply wells
☒ Leachate monitoring data
☐ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

Notification attached?

☒ No. No groundwater or surface water standards were exceeded.
☐ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Steven R. Gandy, Ph.D., P.E. Senior Project Manager (919) 772-5393

Facility Representative Name (Print) Title (Area Code) Telephone Number

Signature 10/14/14 Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA PROFESSIONAL SEAL 031020 ENGINEER STEVEN R. GANDY

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

TABLE OF CONTENTS

SECTION

Introduction ..... Page 1
Background ..... Page 1
Sampling Procedure ..... Page 2
Field Parameter Data ..... Page 2
Laboratory Results ..... Page 2
Quality Control Samples ..... Page 2
Groundwater Samples ..... Page 2
Surfacewater Samples ..... Page 2
Leachate Samples ..... Page 2
Groundwater and Surfacewater Characterization ..... Page 2
Findings ..... Page 3
Closing ..... Page 3

TABLES

Sampling and Analysis Summary ..... Table 1
Detections in Leachate Samples above SWSL, GWP, 2L, or 2B ..... Table 2
Hydrogeologic Properties at Monitoring Well Locations ..... Table 3

FIGURES

Topographic Map with Site Location ..... Figure 1
Potentiometric Map of Uppermost Aquifer ..... Figure 2

APPENDICIES

Laboratory and Field Analysis Reports and Chains of Custody ..... Appendix A

License No. C-0281

CIVIL/SANITARY/ENVIRONMENTAL ENGINEERS

SOLID WASTE MANAGEMENT

Municipal Services

Engineering Company, P.A.

SITE PLANNING/SUBDIVISIONS

SUBSURFACE UTILITY ENGINEERING (SUE)

October 13, 2014

Ms. Jaclynne Drummond
Solid Waste Section
NC DENR Division of Waste Management
217 West Jones Street
Raleigh, NC 27605

Re: ***Semi-Annual Water Quality Monitoring Report***
Lenoir County Subtitle D Lined Landfill, Phase 1
Permit No. 54-09
MESCO Project No. G14029.0
Event Date(s): July 1-3 & 8, 2014

Dear Ms. Drummond:

Introduction

On behalf of Lenoir County, Municipal Engineering Services Company, P.A. (MESCO) is pleased to present this *Semi-Annual Water Quality Report* for the summer 2014 event performed at the Lenoir County Subtitle D Lined Municipal Solid Waste Landfill (MSWLF), Phase 1. NCDENR Solid Waste Rules 15A NCAC 13B.1632 requires that Lenoir County provide this report to the SWS on a semi-annual basis. This report documents the quality of the groundwater, surface waters and leachate during this monitoring event performed on July 1-3 & 8, 2014. Laboratory analytical results of this event indicate that total lead was detected in excess of the North Carolina Groundwater Standards (2L) but the preliminary source is believed to not be anthropogenic.

Background

The Lenoir County Subtitle D lined MSWLF, permit #54-09, is located at 2949 Hodges Farm Road, LaGrange, North Carolina. The site location topographic map is depicted in the attached **Figure 1**. The lined MSWLF is not currently accepting waste.

Water quality at this facility has been monitored at least semi-annually since prior to operation in 2003 with all historical analytical data available for trend comparison.

As specified within 15A NCAC 13B.1632(j) and the SWS Environmental Monitoring Report Form this report contains sampling procedures, field and laboratory results, groundwater and surface water characterization. Detections compared to Standards tables, a groundwater flow directions/rates table, a field observations table, a field data results table, potentiometric map, quality assurance/quality control data, and laboratory analytical data results are also enclosed.

As specified in rule 15A NCAC 13B.1632(i) and the SWS Environmental Monitoring Report Form, this report contains sampling procedures, field and laboratory results, groundwater and surface water characterization, and findings. Detections compared to Standards tables, hydrologic properties table, a potentiometric map, and field and laboratory analytical results with chains of custody (C-O-C) are enclosed.

PO Box 97, Garner, North Carolina 27529 (919) 772-5393 PO Box 349, Boone, NC 28607 (828) 262-1767

Sampling Procedure

Environment 1 (E1) of Greenville, NC reportedly performed this sampling event utilizing portable monitoring methodology in accordance with the approved Sampling & Analysis Plan (SAP) contained in the Lenoir County Landfill, Phase 1 *Design Hydrogeologic Study* dated August 19, 2002. E1 reportedly collected water samples from four downgradient groundwater monitoring wells (MW-14 through MW-17), two hydraulically upgradient background wells (MW-13 and MW-18), and the the leachate lagoon (LAGOON). Quality control measures instituted during this event included submittal and analysis of an equipment blank (EB), field blank (FB) and trip blank (TB). Additional static water level readings were recorded from eleven supplementary piezometers (P-3A, P1-4, P1-14, P-14, P-17, P-22, P2-4, P2-9, P2-10, MW-19S and MW-19D) to improve potentiometric map coverage. The lone designated surface water sample point SW-3 was reported to be dry. Monitoring locations are shown in **Figure 2**.

Field Parameter Data

E1 reported the field parameters (pH, static water levels, specific conductance, temperature and turbidity) in the laboratory analysis report (**Appendix A)**.

Laboratory Results

Samples collected from monitoring wells contained in the SAP and blanks (EB,FB) were analyzed for the VOC constituents listed in Appendix II and metals listed in Appendix I of 40 CFR Part 258. TB was analyzed for the VOCs listed in Appendix II. The lined leachate lagoon (LAGOON) samples were tested for the SWS required leachate specific parameters (Appendix I VOCs and metals, nitrate, phosphorus, chemical oxygen demand, biological oxygen demand, pH, and sulfate). E1 documentation indicates samples were transported under C-O-C protocols and analyzed within the specified hold times for each method. Water samples were analyzed to the laboratory-established Method Detection Limits (MDL), which are at or below the current Solid Waste Section Limits (SWSL). A sampling and analysis table summarizing the locations, target parameters and laboratory methods is presented as **Table 1**. Laboratory results and COC are presented in **Appendix A**.

Quality Control Samples

A low "j-qualified" concentration of total lead was the only parameter detected in the blanks (EB and FB). Although the field and/or laboratory induced artifact contamination was identified it is unlikely the data set for the lined landfill has been influenced by false positives or high bias.

Groundwater Samples

Constituents were not detected in any groundwater sample in concentrations exceeding the SWSL, 2L or GWP Standards during this event.

Surfacewater Samples

Surfacewater monitoring point SW-3 was dry; thus, no surface water information was reported for this event.

Leachate Samples

None of the targeted contaminate constituents were detected in a quantifiable concentration in the leachate sample (LAGOON).

Groundwater and Surface Water Characterization

A single-day potentiometric map of the surficial aquifer created from groundwater elevation data recorded during this event is presented as **Figure 2.** Groundwater flow rates and directions were calculated based on this data and are included in **Table 4.** Groundwater flow was in a general northeasterly direction towards the designated wetlands and rates calculated by modified Darcy's equation ranged from approximately 4 feet/year (MW-13) to 775 feet/year (MW-14) with an average of 273 feet/year for all wells. Surfacewater sampling location SW-3 has reportedly been dry during each monitoring event since July 2007. Flow directions and gradients are generally consistent with historical observations.

Findings

Laboratory data results continue to indicate that groundwater around the MSWLF and leachate lagoon remain unimpacted.

Closing

Detection monitoring will continue and the next semi-annual sampling event is tentatively scheduled for December 2014. Please contact us by phone at (919) 772-5393 or by email at jpfohl@mesco.com or sgandy@mesco.com.

Sincerely,
MUNICIPAL ENGINEERING SERVICES CO., P.A.

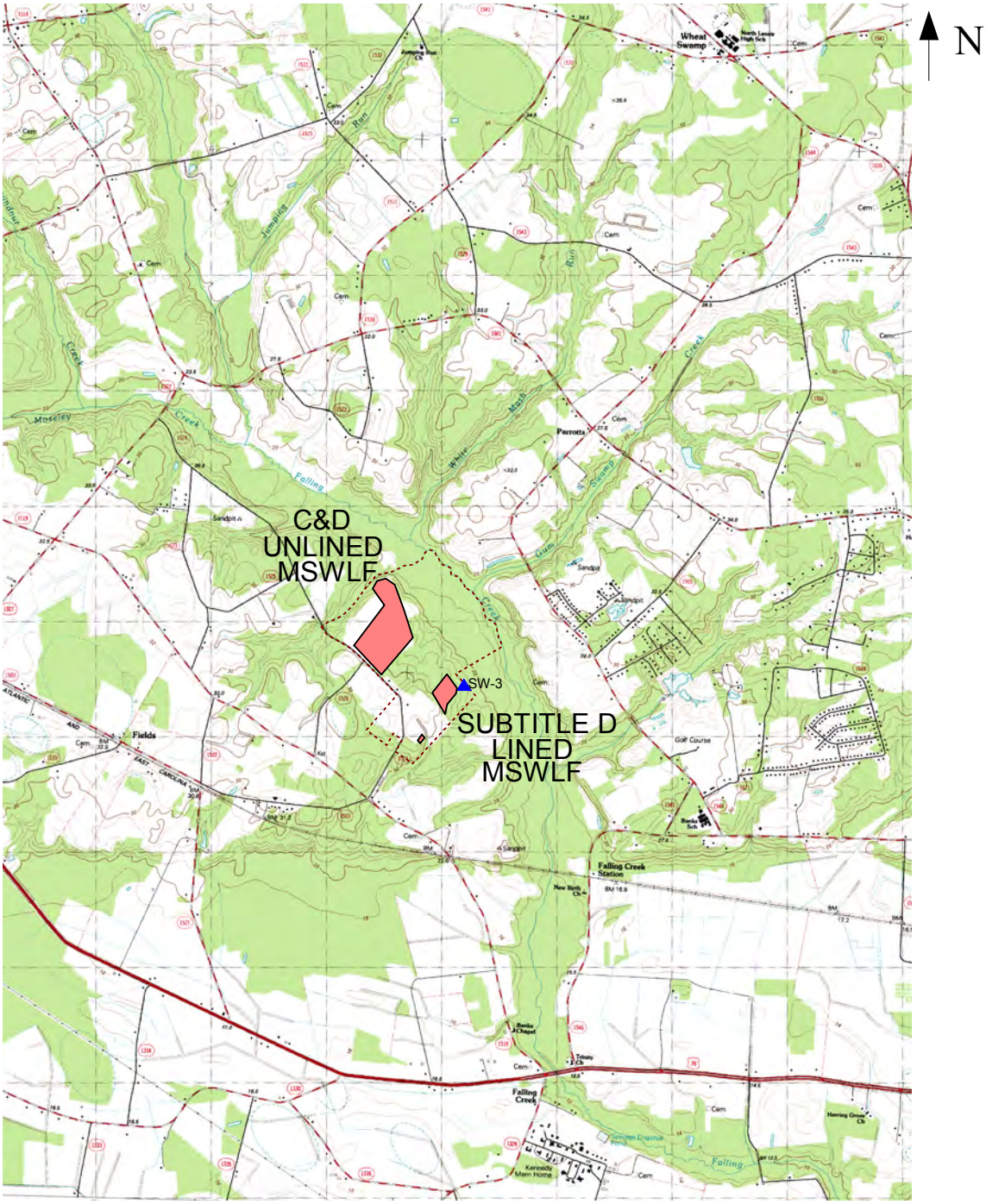
Jonathan Pfohl
Environmental Specialist

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

Enclosures
cc: Mr. Tom Miller
Lenoir County

Figures

Topographic Map with Site Location
Lenoir County Landfill Facility



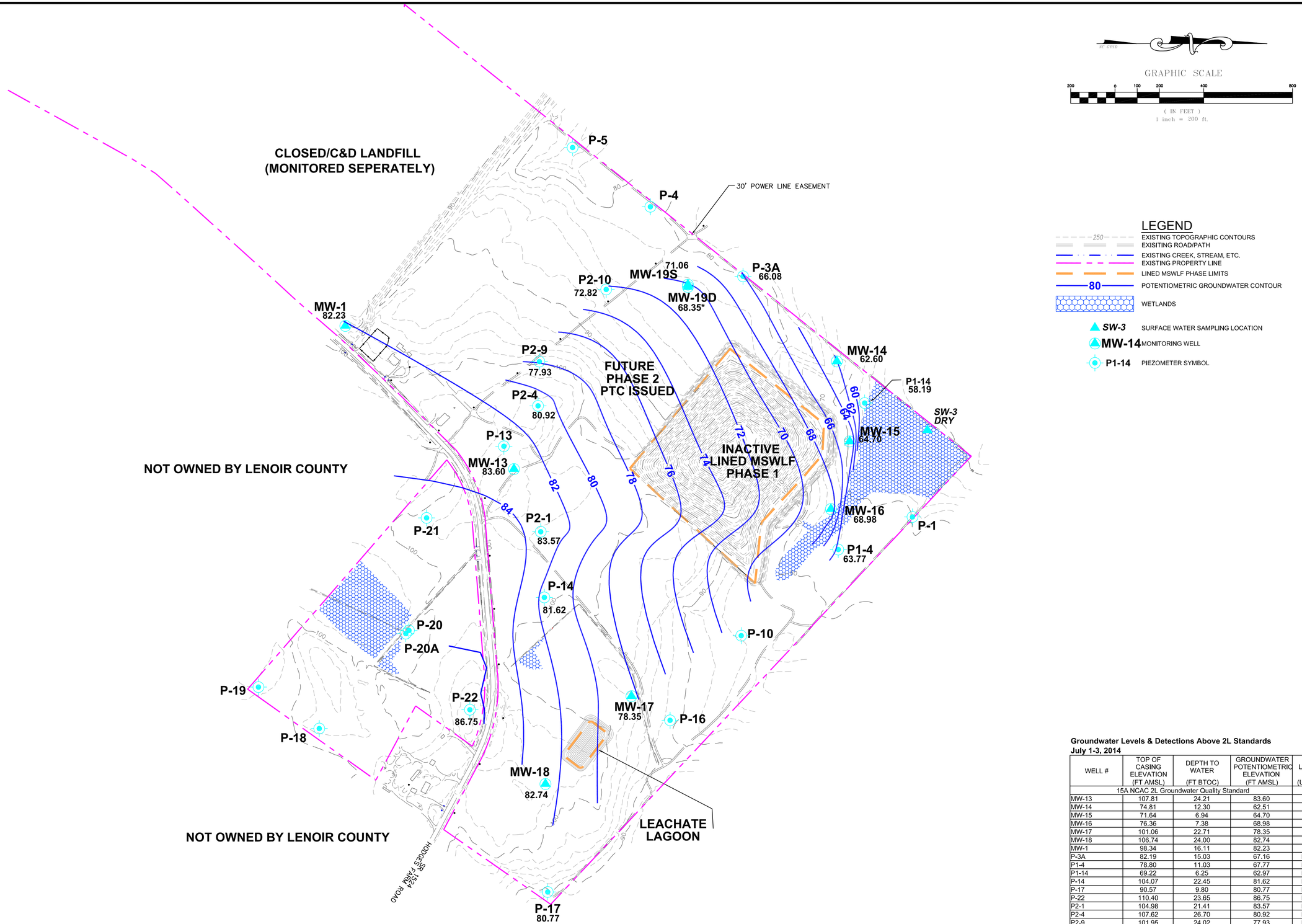
2949 Hodges Farm Rd (SR1524)
LaGrange, NC 28501
Lat:35-17-07.4269
Long:-77-42-32.7453
Northing:561295.59
Easting:2385220.32

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

FIGURE 1



Groundwater Levels & Detections Above 2L Standards
July 1-3, 2014

WELL #	TOP OF CASING ELEVATION (FT AMSL)	DEPTH TO WATER (FT BTOC)	GROUNDWATER POTENTIOMETRIC ELEVATION (FT AMSL)	Lead (Ug/L)
15A NCAC 2L Groundwater Quality Standard				15
MW-13	107.81	24.21	83.60	
MW-14	74.81	12.30	62.51	16
MW-15	71.64	6.94	64.70	
MW-16	76.36	7.38	68.98	
MW-17	101.06	22.71	78.35	
MW-18	106.74	24.00	82.74	
MW-1	98.34	16.11	82.23	
P-3A	82.19	15.03	67.16	NS
P1-4	78.80	11.03	67.77	NS
P1-14	69.22	6.25	62.97	NS
P-14	104.07	22.45	81.62	NS
P-17	90.57	9.80	80.77	NS
P-22	110.40	23.65	86.75	NS
P2-1	104.98	21.41	83.57	NS
P2-4	107.62	26.70	80.92	NS
P2-9	101.95	24.02	77.93	NS
P2-10	88.14	15.32	72.82	NS
MW-19S	85.76	14.70	71.06	NS
MW-19D	85.87	17.52	68.35	NS

All data collected by Environment I Incorporated personnel
NS = Not Sampled since not required

FIGURE 2

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
LICENSE NUMBER: C-0281

SUBTITLE D LINED MSW LANDFILL FACALITY
LENOIR COUNTY NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

POTENTIOMETRIC MAP OF UPPERMOST AQUIFER

SCALE: SEE BAR SCALE
DATE: 9/26/14
DRWN. BY: J. PFOHL
CHKD. BY: S. GANDY
PROJECT NUMBER G14029.0
DRAWING NO. FIGURE 2
SHEET NO. 1 OF 1

Tables

Table 1
Sampling and Analysis Summary
July 3, 2014

		App. I		App II		Field Parameter					Leachate					
	Reason Not Sampled	VOCs	Total Metals	VOCs	Mercury, Total	Static Depth to Water	Temperature	Conductivity	pH	Turbidity	Sulfate	pH	Phosphorus	BOD, 5 day	COD	Nitrate
		Lab EPA 8260B	Lab EPA200.8	Lab EPA 8260B	Lab EPA200.8		SM2550B	SM2510B	SM4500HB	SM2130-B	SM426C	Lab SM4500HB	Lab EPA365.4	Lab SM5210B	Lab HACH8000	Lab EPA 353.2
MW-13		x	x			x	x	x	x	x						
MW-14		x	x			x	x	x	x	x						
MW-15		x	x			x	x	x	x	x						
MW-16		x	x			x	x	x	x	x						
MW-17		x	x			x	x	x	x	x						
MW-18		x	x			x	x	x	x	x						
SW-3	Dry															
LAGOON		x	x				x	x	x	x	x	x	x	x	x	x
EB			x	x	x											
FB			x	x												
TB				x												

App I & II = Lists from current 40 CFR 258

Table 2
Detections in Leachate Samples above SWSL, GWP, 2L, or 2B
July 8, 2014

Sample ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance
LAGOON	COD	7/8/14	28000	ug/L	1000000	20000	NE	NE	NE	

[1] Table contains only constituents detected 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 Qualtity Standard

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

[6] GWP = Groundwater Protection Standard (Current as of Sampling Event)

NE = Not Established

BOLD = Concentration > 2L, or 2B Standard

Table 3
Hydrologic Properties at Monitoring Well Locations
July 1-3, 2014

Monitoring Well	Hydraulic Conductivity (cm/sec)	Effective Porosity (%)	Hydraulic Gradient (ft/ft)	Groundwater Velocity Rate (ft/yr)	Flow Direction	Depth To Water (ft btoc)	Water Table Elevation (ft amsl)	Screened Interval Lithology
MW-13	7.69E-05	23	0.012	4	N58E	24.21	83.60	Silty Sand
MW-14	3.38E-03	23	0.051	775	N72E	12.30	62.51	Silty Sand
MW-15	2.89E-03	23	0.037	479	N89E	6.94	64.70	Silty Sand
MW-16	9.72E-04	23	0.070	306	S84E	7.38	68.98	Silty Sand
MW-17	1.13E-03	23	0.013	69	N76E	22.71	78.35	Silty Sand
MW-18	1.25E-04	23	0.013	7	N85E	24.00	82.74	Silty Clayey Sand
Minimum	7.69E-05	23	0.01	4	-	6.94	62.51	-
Average	1.43E-03	23	0.03	273	-	16.26	73.48	-
Maximum	3.38E-03	23	0.07	775	-	24.21	83.6	-

NOTE: 1.Hydraulic conductivity (K) values based on slug test results, performed by MESCO in December 2005.
2. Effective Porosity (ne) values obtained from the MESCO Ph. 1 design hydrogeologic report completed in August 2002.
3.Static water levels recorded by Environment 1, Inc. on July 1-3, 2014.
Linear velocity rate (Q) is defined by modified Darcy's equation:

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

K = hydraulic conductivity
ne = effective porosity
dh = head difference
dl = horizontal distance

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#: 6053

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 07/03/14
DATE REPORTED : 08/08/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-13	MW-14	MW-15	MW-16	MW-17	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.3	4.2	4.5	4.4	4.2	07/03/14	BF	4500HB-00
Antimony, ug/l	0.12	6.0	--- U	--- U	--- U	--- U	--- U	07/17/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	--- U	0.29 J	0.19 J	--- U	--- U	07/17/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	30.7 J	45.9 J	82.6 J	24.1 J	25.2 J	07/18/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	0.08 J	0.10 J	0.07 J	0.07 J	0.05 J	07/17/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.06 J	0.38 J	--- U	--- U	--- U	07/17/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	0.58 J	0.83 J	1.3 J	0.43 J	0.33 J	07/17/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	0.42 J	0.25 J	0.98 J	0.20 J	0.28 J	07/17/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	0.33 J	--- U	0.15 J	--- U	--- U	07/17/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	0.28 J	0.16 J	--- U	--- U	0.63 J	07/17/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	0.99 J	1.1 J	1.4 J	0.72 J	0.67 J	07/17/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	0.53 J	1.1 J	0.34 J	--- U	0.80 J	07/17/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	0.09 J	--- U	--- U	--- U	07/21/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	--- U	--- U	--- U	--- U	07/17/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	0.53 J	--- U	0.24 J	--- U	--- U	07/17/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	1.9 J	0.72 J	1.5 J	0.67 J	0.86 J	07/17/14	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	53	85	426	37	96	07/03/14	BF	2510B-97
Temperature, °C			22	21	20	21	21	07/03/14	BF	2550B-00
Static Water Level, feet			24.21	12.30	6.94	7.38	22.71	07/03/14	BF	
Well Depth, feet			31.59	23.56	18.26	24.11	30.91	07/03/14	BF	
Turbidity (Field), NTU	1.0	1.0	1.12	--- U	4.95	--- U	2.69	07/03/14	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#: 6053

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 07/03/14
DATE REPORTED : 08/08/14

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-18	SW-3	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.7	Missing	07/03/14	BF	4500HB-00
Antimony, ug/l	0.12	6.0	--- U	Missing	07/17/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.15 J	Missing	07/17/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	8.2 J	Missing	07/18/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	--- U	Missing	07/17/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.09 J	Missing	07/17/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	0.20 J	Missing	07/17/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	0.18 J	Missing	07/17/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	0.20 J	Missing	07/17/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	0.31 J	Missing	07/17/14	LFJ	EPA200.8
Nickel, ug/l	0.12	50.0	0.32 J	Missing	07/17/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	--- U	Missing	07/17/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	Missing	07/21/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U	Missing	07/17/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	0.25 J	Missing	07/17/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	0.67 J	Missing	07/17/14	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	21	Missing	07/03/14	BF	2510B-97
Temperature, °C			18	Missing	07/03/14	BF	2550B-00
Static Water Level, feet			24.00		07/03/14	BF	
Well Depth, feet			33.99		07/03/14	BF	
Turbidity (Field), NTU	1.0	1.0	15.6	Missing	07/03/14	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

CLIENT: LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6053

ANALYST: MAO
DATE COLLECTED: 07/03/14
DATE ANALYZED: 07/11/14
DATE REPORTED: 08/08/14

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-13	MW-14	MW-15	MW-16	MW-17
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	--- 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	--- 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: LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6053

ANALYST: MAO
DATE COLLECTED: 07/03/14
DATE ANALYZED: 07/11/14
DATE REPORTED: 08/08/14

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-18
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
environment1inc.com
Phone (252) 756-6208 • Fax (252) 756-0633

CHAIN OF CUSTODY RECORD

CLIENT: 6053 Week: 33

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON NC 28502

(252) 566-4194

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2	Field Parmeter
CHLORINE NEUTRALIZED AT COLLECTION														
pH CHECK (LAB)							12				12	12	12	
CONTAINER TYPE, P/G						P	P	P	P		G	G	G	P
CHEMICAL PRESERVATION						A	A	A	A		E	E	E	A
MW-13	7-3-14	0905		22	5	G	G	G	G	G	G	G	G	G
MW-14	7-3-14	0940		21	4	G	G	G	G	G	G	G		G
MW-15	7-3-14	1005		20	4	G	G	G	G	G	G	G		G
MW-16	7-3-14	0806		21	4	G	G	G	G	G	G	G		G
MW-17	7-3-14	0850		21	4	G	G	G	G	G	G	G		G
MW-18	7-3-14	0828		18	4	G	G	G	G	G	G	G		G
SW-3	7-3-14				4									

PARAMETERS/TESTS

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 F - ZINC ACETATE/NAOH
G - NATHIOSULFATE

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

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) Bobby / Tom

SAMPLES RECEIVED IN LAB AT 12 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Tom Beasley	7-3-14 1235	[signature]	7/3/14 1235
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS: SW-3 – DRY, could NOT sample

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 280639

FORM #5

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#: 6010 A

LENOIR CO. LANDFILL (BLANKS)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 07/02/14
DATE REPORTED : 08/08/14

REVIEWED BY:

PARAMETERS	MDL	Equipment SWSL	Equipment Blank	Trip Blank	Field Blank	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.12	6.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	--- U		--- U	07/18/14	LFJ	EPA200.8
Beryllium, ug/l	0.04	1.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Cobalt, ug/l	0.12	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Copper, ug/l	0.10	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	--- U			07/09/14	MTM	245.1 R3-94
Nickel, ug/l	0.12	50.0	0.66 J		0.17 J	07/17/14	LFJ	EPA200.8
Selenium, ug/l	0.16	10.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U		--- U	07/21/14	LFJ	EPA200.8
Thallium, ug/l	0.13	5.5	--- U		--- U	07/17/14	LFJ	EPA200.8
Vanadium, ug/l	0.06	25.0	--- U		--- U	07/17/14	LFJ	EPA200.8
Zinc, ug/l	0.53	10.0	--- U		--- U	07/17/14	LFJ	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

CLIENT: LENOIR CO. LANDFILL (BLANKS)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6010 A

ANALYST: MAO
DATE COLLECTED: 07/02/14
DATE ANALYZED: 07/09/14
DATE REPORTED: 08/08/14

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	Equipment Blank	Trip Blank	Field Blank
1. Chloromethane	0.77	1.0	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.21	1.0	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U
48. Acrolein	40.57	53.0	--- 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: LENOIR CO. LANDFILL (BLANKS)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6010 A

ANALYST: MAO
DATE COLLECTED: 07/02/14
DATE ANALYZED: 07/09/14
DATE REPORTED: 08/08/14

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	Equipment Blank	Trip Blank	Field Blank
49. Allyl Chloride	0.20	10.0	--- U	--- U	--- U
50. Chloroprene	0.21	20.0	--- U	--- U	--- U
51. 1,3-Dichlorobenzene	0.41	5.0	--- U	--- U	--- U
52. Dichlorodifluoromethane	0.51	5.0	--- U	--- U	--- U
53. 1,3-Dichloropropane	0.28	1.0	--- U	--- U	--- U
54. 2,2-Dichloropropane	0.17	15.0	--- U	--- U	--- U
55. 1,1-Dichloropropene	0.22	5.0	--- U	--- U	--- U
56. Ethyl Methacrylate	0.16	10.0	--- U	--- U	--- U
57. Hexachlorobutadiene	0.57	10.0	--- U	--- U	--- U
58. Isobutyl Alcohol	12.80	100.0	--- U	--- U	--- U
59. Methacrylonitrile	1.93	100.0	--- U	--- U	--- U
60. Methyl Methacrylate	0.25	30.0	--- U	--- U	--- U
61. Naphthalene	0.47	10.0	--- U	--- U	--- U
62. Propionitrile	3.26	150.0	--- U	--- U	--- U
63. 1,2,4-Trichlorobenzene	0.50	10.0	--- U	--- U	--- U
64. Acetonitrile	36.29	55.0	--- U	--- U	--- U

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: 6010 A **Week: 31**

LENOIR CO. LANDFILL (BLANKS)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON NC 28502

(252) 566-4194

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

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB): 12 12 12

CONTAINER TYPE, P/G: P G G

CHEMICAL PRESERVATION: A E E

PARAMETERS/TESTS: A - NONE; B - HNO_3; C - H_2SO_4; D - NAOH; E - HCL; F - ZINC ACETATE/NAOH; G - NA THIOSULFATE

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals	8260B App. II	8260 App. II 1
Equipment Blank	7-2-14	0720			3	G	G	G
Trip Blank	7-2-14				2		G	G
Field Blank	7-2-14	0720			3	G	G	G

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

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) Bobby / Tom

SAMPLES RECEIVED IN LAB AT 0-2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bobby Tom	7-2-14 2:14	[signature]	7/2/14 2:41
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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

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

Nº 277452

FORM #5