DENR USE ONLY: ☐Paper Report ☐Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

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

Instructions:

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

Solid Waste Monitoring Data Submittal Information

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

Richardson Smith Gardner and Associates, Inc.

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

Name: Madeline German Phone: 919-828-0577 x222

E-mail: madeline@rsgengineers.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Halifax County Closed MSW Landfill	921 Liles Rd, Aurelian Springs, NC	42-04	.0500	August 23-25, 2011

Environmental Status: (Check all that apply)

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

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☒ Corrective action data (specify) MNA Parameters
☐ Other(specify)

Notification attached?

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

Certification

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

Madeline German, PG	Geologist	919-828-0577 x 222
Facility Representative Name (Print)	Title	(Area Code) Telephone Number

Signature 1/19/2012 Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN

14 N. Boylan Avenue, Raleigh, NC 27603

Facility Representative Address

C0828

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

Revised 6/2009

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Halifax County Landfill
Ground Water Monitoring Report

Fall 2011 Semi-annual
Monitoring Event

Halifax County Landfill

Halifax County, North Carolina

NC Solid Waste Permit # 42-04

Prepared for:

Halifax County Solid Waste Department

P. O. Box 70

Halifax, North Carolina 27839

January 2012

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

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Halifax County Landfill

Semi-annual Ground Water Monitoring Report

Fall 2011 Monitoring Event

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1.0 Introduction

The Halifax County Landfill, operating under Solid Waste Permit #42-04, is required to submit semi-annual ground water monitoring reports (15A NCAC 13B .0544) for assessment monitoring. This report presents the results from the semi-annual monitoring event conducted August 23-25, 2011.

The Halifax County Landfill is currently accepting C&D waste over the closed municipal solid waste (MSW) landfill. In December 1997 the landfill stopped accepting MSW; and is currently transferring off-site to a lined landfill. The old landfill was closed per Solid Waste Regulations and the certification report was submitted to the Solid Waste Section (SWS) in September 1998. In 2007 the landfill was assessed to determine if groundwater issues warranted a remediation plan. The Corrective Action Plan (CAP) was approved June 8, 2009. **Section 7.0** of this report is an update regarding the current corrective action situation for this facility.

This report includes a field procedure summary, laboratory analyses, statistical analyses and ground water characterization. Summary tables and graphs, laboratory analytical reports and statistical results are also provided.

2.0 Site Hydrogeology

According to the *1985 North Carolina Geological Map* and *Ground Water in the Halifax Area, North Carolina* (Dept. of Conservation and Development Bulletin #51, 1946) the landfill is situated on the eastern edge of the Eastern Piedmont Physiographic Province; slightly west of the Coastal Plain overlap. Generally, Western Halifax County is underlain by felsic to intermediate, crystalline igneous and metamorphic rocks of early to late Paleozoic age. Eastern Piedmont rocks generally exhibit a northeastern strike and locally dip gently eastward due to regional metamorphism and folding that produced a broad plunging anticline. The area was simultaneously intruded by a number of felsic (granite) plutons. The granitic pluton underlying the landfill is the Butterwood Creek intrusion.

Ground water depths generally range from near surface level in the lowland areas along Brewer's Creek and its tributary up to 45 ft. below grade along the ridge east of the landfill. Ground water at the site flows generally west towards Brewer's Creek and its tributary. There are minor seasonal variations in the flow pattern, but overall flow direction is consistent.

3.0 Sampling Locations

The sampling event performed by Environment 1, Inc. utilized the ground water monitoring network that includes thirteen wells (MW-1, MW-2A, MW-2AD, MW-3AS, MW-3D, MW-6D, MW-7D, MW-15R, MW-16A, MW-17, MW-18S, G-13 and G-13D) located around the landfill perimeter and three surface water sampling points (SW-1, SW-2 and SW-3) up and downstream of the landfill. Trip and Equipment Blanks were also analyzed for quality control.

Figure 1 illustrates sampling locations. Boring logs for the groundwater monitoring wells are included in **Appendix A**.

4.0 Sampling Procedures

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (DENR, DWM) and the approved site Water Quality Monitoring Plan[1]. Each well was gauged to determine ground water depth and then purged three to five well volumes or until dry. Field measurements for pH, specific conductivity and temperature were recorded at each well. Water table elevations and field parameter results are included in **Tables 1 and 2,** respectively.

Samples were collected by Environment 1 personnel in laboratory prepared containers for the specified analytical procedures. Ground water samples were properly preserved, placed on ice and transported to the laboratory facility within the specified hold times for each analysis.

5.0 Field & Laboratory Results

5.1 Field Results

The parameters of temperature, pH, and specific conductance were measured in the field at the time of sampling via direct read instruments. The field parameter results are summarized in **Table 2** and have remained consistent with previously reported sampling events.

5.2 Laboratory Analysis

Samples were transported to Environment 1, Inc., a North Carolina certified laboratory (NC Wastewater ID #10). Laboratory analysis included metals via EPA Test Method 200.8, Appendix II Volatile Organic Compounds (VOCs) via EPA Test Method 8260B, pesticides and PCBs via EPA Test Method 8081B and 8151A, semi-volatile organics via EPA Test Method 8270C. Mercury was analyzed via Test Method 245.1 on wells MW-15R, MW-16A and MW17. The following designated wells (MW-2A, MW-2AD, MW-3D, MW-3AS, MW-6D, MW-17, MW-18S and G-13) were also analyzed for MNA and indicator parameters by Solid Waste Section approved methods as reported on the laboratory report included in **Appendix B** and summarized in **Table 5**. Parameters were reported to the established Solid Waste Section Reporting Limits (SWSLs).

5.3 Laboratory Results

Analytical results were compared to the NC DWM Solid Waste Section Quantitation Limits (SWSLs) and 15A NCAC 2L.0200 (2LStandard).

1 Water Quality Monitoring Plan, Halifax County Landfill, Richardson Smith Gardner & Associates, May 2009.

5.3.1 Inorganic Constituents

Four inorganic constituents barium (MW-2A, MW-2AD and MW-6D), iron (MW-2A, MW-2AD, MW-3AS, MW-6D, MW-17, MW-18S and G-13), mercury (MW-15r and MW-16A), and zinc (MW-17, G-13 and G-13D) were detected above their respective SWSL standards. One inorganic constituent was detected above the 2L or GWP Standard:

- iron (MW-2A, MW-2AD, MW-3AS, MW-6D, MW-17, MW-18S and G-13).

The remaining inorganic constituents were either below the 2L/GWP standard or were "J-values" which were detected below the SWSL.

No inorganic constituents were detected in the surface water samples above their 2B Standards.

5.3.2 Organic Constituents

The following constituents: 1,1-dichloroethane, 1,4-dichlorobenzene, bis(2-ethylhexyl)phthalate, dichlorofluoromethane, cis-1,2–dichloroethene, benzene, chlorobenzene, methylene chloride, tetrachloroethene, trichloroethene and vinyl chloride were detected above their respective SWSL. The following constituents were found at concentrations above their respective 2L Standards:

- Benzene (MW-6D & MW-16A);
- 1,1-Dichloroethane (MW-2AD, MW-3AS, MW-3D, MW-15R & MW-16A);
- Bis(2-ethylhexyl)phthalate (MW-15R);
- Tetrachloroethene (MW-3D, MW-15R, MW-16A & MW-17);
- Trichloroethene (MW-16A); and
- Vinyl Chloride (MW-2A, MW-2AD, MW-3AS & MW-16A).

Constituent concentrations reported between the MDL and MRL are estimated values and are denoted with a "J" qualifier. Inorganic and Organic detections are provided on **Tables 3 & 4**, respectively. Time versus concentration graphs are included in **Appendix C**.

6.0 Ground Water Characterization

A potentiometric surface map was prepared from ground water elevation data for this sampling event. The data indicates that ground water is flowing generally to the west towards Brewer's Creek. This is consistent with ground water flow patterns previously reported for the site. The potentiometric surface map is attached as **Figure 1**.

Ground water flow velocities during the sampling event were calculated for several monitoring wells using the equation: $V = KI/n$

where: K = hydraulic conductivity

I = ground water gradient

n = porosity

Ground water flow velocities ranged from 0.043 ft/day (MW-16a) to 0.156 ft/day (MW-2a). These calculated flow velocities are included in **Table 1**.

7.0 Corrective Action Update

The Halifax County Landfill is currently operating under a Corrective Action Plan[2] approved June 8, 2009. The CAP prescribed Monitored Natural Attenuation (MNA) with an active landfill gas (LFG) blower system. In accordance with SWS regulation regarding MNA baseline sampling wells MW-2A, MW-2AD, MW-3D, MW-3AS, MW-6D, MW-17, MW-18S and G-13 were analyzed for the SWS MNA indicator parameter list in accordance with the CAP. MNA sampling has been conducted semi-annually since the August 2009 event. MNA indicator results from this event are summarized in **Table 5**, and will be utilized for future site geochemistry and remedial strategy evaluation.

An approximately 350 foot long passive trench, used to vent LFG, is located between the landfill and MW-15R. Four passive vents are associated with this trench; two of which were utilized for the blower assisted solar flares installed in August 2010.

8.0 Conclusions

In general, the detected VOC constituent concentrations in groundwater have slightly decreased. More "j-qualified" metals were reported but this slight increase is more likely due to sample trybidity. Detection levels of metals and VOCs in MW-16A continue to fluctuate. The next groundwater monitoring event is scheduled for February 2012. A groundwater monitoring report will be submitted to NCDENR after receipt of analytical data and completion of statistical analyses.

2 Corrective Action Plan Halifax County Landfill, Richardson Smith Gardner & Associates, May 2009.

Figures

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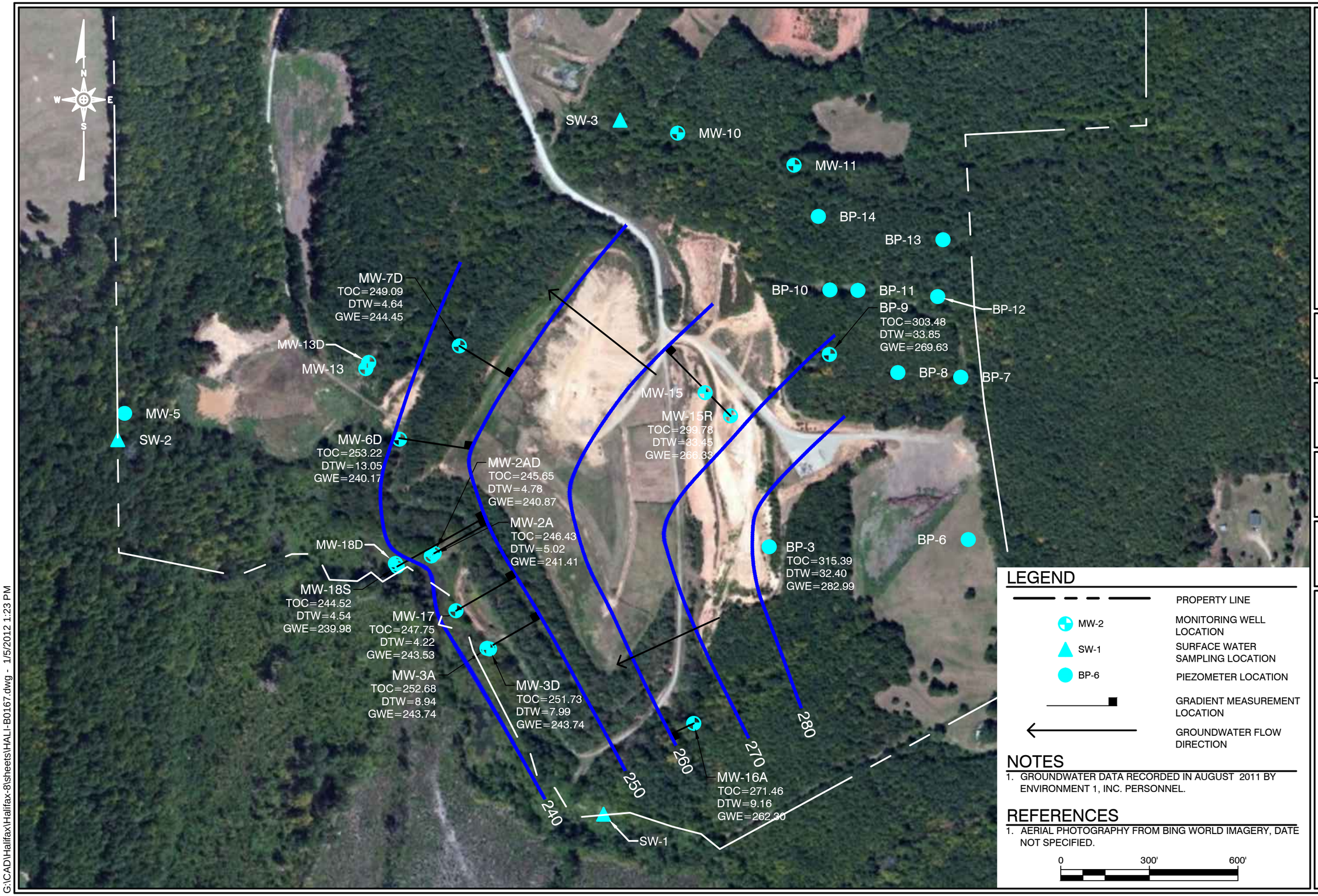

LEGEND

- PROPERTY LINE
- MW-2 — MONITORING WELL LOCATION
- SW-1 — SURFACE WATER SAMPLING LOCATION
- BP-6 — PIEZOMETER LOCATION
- GRADIENT MEASUREMENT LOCATION
- GROUNDWATER FLOW DIRECTION

NOTES

1. GROUNDWATER DATA RECORDED IN AUGUST 2011 BY ENVIRONMENT 1, INC. PERSONNEL.

REFERENCES

1. AERIAL PHOTOGRAPHY FROM BING WORLD IMAGERY, DATE NOT SPECIFIED.

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FIGURE NO.	1
FILE NAME	HALI-B0167
SCALE:	AS SHOWN
PROJECT NO.	HALIFAX 8
CHECKED BY:	
DRAWN BY:	J.A.L.
DATE:	Jan. 2012

TITLE:

HALIFAX COUNTY CLOSED MSW LANDFILL POTENTIOMETRIC SURFACE MAP FALL 2011

G:\CAD\Halifax\Halifax-8\sheets\HALI-B0167.dwg - 1/5/2012 1:23 PM

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Tables

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ENGINEERING & GEOLOGICAL SERVICES

By: MG
Date: 11/30/2011

Table 1
Halifax County Closed Landfill
Ground Water Elevations & Velocities
August 24 & 25, 2011

Monitoring Location	TOC Elevation (ft)	Depth to Water (ft)	Water Table Elevation (ft)	Hydraulic Conductivity (ft/day)	Assumed Porosity	Hydraulic Gradient (ft/ft)	Ground Water Velocity (ft/day)
MW-1	--	36.02	--	--	--	--	--
MW-2A	246.43	5.02	241.41	1.835	0.2	0.017	0.156
MW-2AD	245.65	4.78	240.87	--	--	--	--
MW-3AS	--	8.64	--	--	--	--	--
MW-3D	251.73	7.99	243.74	--	--	--	--
MW-6D	253.22	13.05	240.17	--	--	--	--
MW-7D	249.09	4.64	244.45	--	--	--	--
MW-15R	299.78	33.45	266.33	--	0.2	--	--
MW-16A	271.46	9.16	262.30	0.057	0.2	0.152	0.043
MW-17	247.75	4.22	243.53	--	--	--	--
MW-18S	244.52	4.54	239.98	--	--	--	--
BP-3	315.39	32.40	282.99	--	--	--	--
BP-9	303.48	33.85	269.63	--	--	--	--
G-13	--	12.83	--	--	--	--	--
G13D	--	12.88	--	--	--	--	--

MW-1 is not used in the ground water characterization calculations due to its remote location from the landfill
Hydraulic Conductivity data from slug tests performed by G.N. Richardson and Associates in 1997.
Porosity values assumed from Groundwater & Wells (Driscoll)
Velocity Calculated from V=K*I/n

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

Deep wells not used in velocity calculations

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

By: MG
Date: 11/30/2011

Table 2
Halifax County Closed Landfill
Field Parameters
August 24 & 25, 2011

Monitoring Location	pH (std units)	Specific Conductivity (umhos/cm)	Temperature (degrees C)	static water level (feet)
MW-1	5.2	37	18	36.02
MW-2A	6.07	237	21.43	5.02
MW-2AD	6.13	427	16.85	4.78
MW-3AS	6.4	378	20.2	8.64
MW-3D	5.82	166	18.25	7.99
MW-6D	5.7	533	16.21	13.05
MW-7D	5.5	41	20	4.64
MW-15R	4.6	62	19	33.45
MW-16A	5.4	130	19	9.16
MW-17	5.76	142	19.8	4.22
MW-18S	6.58	221	16	4.54
G-13	5.67	127	17.82	12.83
G13D	5.7	71	17.00	12.88
SW-1	6.7	83	23	-
SW-2	6.5	188	24	-
SW-3	6.2	871	21	-

Note: Field data collected by Environment 1 personnel.

By: MG
Date: 12/1/2011

RICHARDSON SMITH GARDNER & ASSOCIATES
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Table 3
Halifax County Closed Landfill
Detected Inorganic Constituents
August 24 & 25, 2011

Monitoring Location	SWSL	2L or GWP Standard	2B Standard	MW-1	MW-2A	MW-2AD	MW-3AS	MW-3D	MW-6D	MW-7D	MW-15R	MW-16A	MW-17	MW-18S	G-13	G-13D	SW-1	SW-2	SW-3
Antimony	6	1 [§]	640	0.25 J	ND	ND	0.24 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	10	10	10	0.258 J	2.4 J	2.1 J	2.0 J	ND	0.21 J	0.20 J	0.21 J	0.26 J	ND	3.5 J	1.3 J	ND	2.1 J	1.0 J	0.83 J
Barium	100	700	2000000	36.1 J	**109**	**111**	33.3 J	56.8	**529**	59.6 J	62.6 J	83.7 J	64.7 J	84.1 J	53.9 J	41.6 J	46.9 J	56.4 J	42.6 J
Beryllium	1	4 [§]	6.5	0.30 J	0.40 J	0.11 J	0.12 J	0.14 J	0.36 J	0.25 J	0.17 J	0.47 J	0.81 J	0.21 J	**1**	0.22 J	0.08 J	ND	1
Cadmium	1	2	2	0.08 J	0.09 J	0.07 J	0.09 J	0.05 J	0.14 J	0.29 J	0.40 J	0.20 J	0.14 J	0.08 J	0.10 J	0.07 J	0.05 J	ND	0.47 J
Cobalt	10	1 [§]	270	1.2 J	4.7 J	7.4 J	3.2 J	0.04 J	3.8 J	0.43 J	0.44 J	0.67 J	0.97 J	5.6 J	2.3 J	0.13 J	1.5 J	0.59 J	1.7 J
Copper	10	1000	7	2.3 J	0.61 J	0.67 J	0.82 J	0.73 J	0.90 J	1.1 J	1.6 J	0.53 J	1.9 J	1.1 J	1.3 J	2.5 J	1.2 J	0.33 J	0.70 J
Chromium, total	10	10	50	0.41 J	0.37 J	ND	0.11 J	ND	ND	ND	ND	ND	0.66 J	0.75 J	0.26 J	ND	0.54 J	ND	ND
Iron	300	300	1000	NS	**26225**	**3686**	**72450**	96 J	**796**	NS	NS	NS	**45140**	**26950**	**5104**	272 J	NS	NS	NS
Lead	10	15	25	1.4 J	0.46 J	0.09 J	0.63 J	0.04 J	0.05 J	1.7 J	0.20 J	0.26 J	3.4 J	1.1 J	1.8 J	0.20 J	1.2 J	0.14 J	0.16 J
Mercury	0.2	1	0.012	NS	ND	ND	ND	ND	ND	ND	**0.30**	**0.22**	ND	ND	NS	NS	NS	NS	NS
Nickel	50	100	88	0.55 J	0.48 J	1.1 J	0.35 J	0.43 J	1.6 J	0.20 J	0.16 J	0.17 J	1.2 J	1.4 J	0.93 J	0.53 J	0.68 J	0.74 J	1.6 J
Selenium	10	20	5	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	ND	ND	ND	ND	ND	0.50 J	3.4 J
Silver	10	20	0.06	ND	ND	0.05 J	0.04 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	5.5	0.28 [§]	0.47	0.09 J	0.10 J	0.20 J	0.05 J	0.06 J	0.04 J	0.07 J	0.18 J	ND	0.06 J	0.04 J	0.05 J	ND	0.04 J	ND	ND
Tin	100	2000 [§]	NE	NS	0.22 J	0.27 J	0.33 J	0.20 J	0.32 J	0.50 J	0.29 J	0.49 J	0.52 J	0.46 J	NS	NS	NS	NS	NS
Vanadium	25	0.3 [§]	NE	1.8 J	3.0 J	0.66 J	1.5 J	0.64 J	0.32 J	1.5 J	0.33 J	0.75 J	4.4 J	4.4 J	4.1 J	0.62 J	6.5 J	1.2 J	2.7 J
Zinc	10	1000	50	7.1 J	7.0 J	3.1 J	6.7 J	3.7 J	7.2 J	9.0 J	2.9 J	6.8 J	**17**	6.4 J	**11**	**11**	7.7 J	2.0 J	24

SWSL - Solid Waste Section Quantitation Limits
2L - Groundwater Standards (15A NCAC 2L 0200)
GWP - Groundwater Protection Standards (noted by [§])
2B - NCAC 2B Standard for Class C waters
MDL - Method Detection Limit
Shading - Detection above 2L standard or GWP standard
Bold Letters - Constituents detected above SWSL
J - Detected between MDL and SWSL limit
ND - Not detected at or above MDL

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ENGINEERING & GEOLOGICAL SERVICES

By: MG
Date: 12/1/2011

Table 4
Halifax County Closed Landfill
Detected Organic Constituents
August 24 & 25, 2011

Monitoring Location	SWSL	2L Standard	2B Standard	MW-2A	MW-2AD	MW-3AS	MW-3D	MW-6D	MW-15R	MW-16A	MW-17	MW-18S	SW-1
Benzene	1	1	NA	ND	ND	0.60 J	0.40 J	**1.6**	ND	**2.1**	ND	ND	ND
1,1-Dichloroethane	5	6	NA	0.80 J	**6.6**	**6.4**	**7.6**	ND	**7.0**	**11.5**	4.8 J	0.40 J	ND
1,1-Dichloroethene	5	7	NA	ND	0.20 J	0.30 J	0.20 J	ND	ND	0.40 J	0.20 J	ND	ND
1,2- Dichlorobenzene	5	20	NA	ND	ND	ND	ND	ND	ND	0.80 J	ND	ND	ND
1,2-Dichloroethane	1	0.4	NA	ND	ND	ND	ND	ND	0.60 J	ND	ND	ND	ND
1,2- Dichloropropane	1	0.6	NA	ND	ND	0.30 J	ND	ND	ND	0.30 J	ND	ND	ND
1,4-Dichlorobenzene	1	6	NA	ND	0.40 J	0.50 J	ND	**1.7**	ND	**1.2**	ND	ND	ND
Bis (2-Ethylhexyl) Phthalate	15	3	NA	ND	ND	ND	ND	ND	**23.0**	ND	ND	ND	ND
Dichlorodifluoromethane	5	1000	NA	ND	ND	ND	1.1 J	ND	ND	**10.0**	1.7 J	ND	ND
Cis-1,2-Dichlorethene	5	70	NA	0.30 J	**9.4**	**9.3**	**6.0**	ND	3.5 J	**26.4**	2.8 J	ND	ND
Chlorobenzene	3	50	NA	ND	1.4 J	0.60 J	ND	**7.0**	ND	0.90 J	ND	ND	ND
Chloroethane	10	3000	NA	ND	0.70 J	0.60 J	ND	0.70 J	ND	0.70 J	ND	ND	ND
Methylene chloride	1	5	NA	ND	ND	ND	ND	ND	**4.2**	**3.1**	ND	ND	ND
Tetrachloroethene	1	0.7	NA	ND	ND	ND	**1.2**	ND	**2.6**	**53.1**	**1.5**	ND	ND
Trans-1,2 Dichloroethene	5	100	NA	ND	ND	ND	ND	ND	ND	0.50 J	ND	ND	ND
Trichlorofluoromethane	1	2000	NA	ND	ND	ND	ND	ND	ND	0.70 J	ND	ND	ND
Trichloroethene	1	3	NA	ND	**1.3**	**1.90**	**1.2**	ND	**2.0**	**20.6**	**1.4**	ND	ND
Toluene	1	600	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30 J
Vinyl Chloride	1	0.03	NA	**1.2**	**2.1**	**2.1**	ND	ND	ND	0.70 J	ND	ND	ND
Xylenes	5	500	NA	ND	ND	ND	ND	ND	ND	0.70 J	ND	ND	ND

SWSL - Solid Waste Section Quantitation Limits
2L - Groundwater Standards (15A NCAC 2L 0200)
GWP - Groundwater Protection Standards (noted by §)
2B - NCAC 2B Standard for Class C waters
MDL - Method Detection Limit
Shading - Detection above 2L standard or GWP standard
Bold Letters - Constituents detected above SWSL
J - Detected between MDL and SWSL limit
ND - Not detected at or above MDL

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

By: MG
Date: 12/1/2011

Table 5
Halifax County Closed Landfill
MNA Parameter Summary
August 24 & 25, 2011

	MDL*	SWSL	MW-2A	MW-2AD	MW-3AS	MW-3D	MW-6D	MW-17	MW-18S	G-13
BOD, ug/l	2000	NE	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
COD, ug/l	20000	NE	26000	<20000	27000	<20000	<20000	<20000	<20000	<20000
Nitrate Nitrogen as N, ug/l	30	10000	50 J	<30	<30	80 J	<30	110 J	80 J	140 J
Total Organic Carbon, ug/l	300	NE	**8540**	**1000**	**3120**	<300	**1820**	<300	**5020**	**1400**
Total Alkalinity, ug/l	1000	NE	**101000**	**242000**	**159000**	**64000**	**234000**	**59000**	**96000**	**47000**
Chloride, ug/l	5000	NE	**5000**	**5000**	**7000**	**7000**	**22000**	**6000**	**8000**	**10000**
Sulfate, ug/l	5000	250000	6300	12500	<5000	10500	12400	8900	<5000	16700
Sulfide, ug/l	100	1000	<100	<100	<100	<100	<100	<100	<100	<100
Turbidity, NTU	1	NE	**42**	**33**	**550**	**1.4**	<1	**70**	**190**	**21**
Dissolved Oxygen, ug/l	100	NE	**450**	**480**	**3190**	**1520**	**360**	**740**	**830**	**250**
Carbon Dioxide, ug/l	1000	NE	**60000**	**95000**	**215000**	**21000**	**26200**	**68000**	**75000**	**76000**
ORP, mv	--	NE	**-53.6**	**34.2**	**-57.3**	**353.6**	**147.1**	**464.9**	**-36**	**45.4**
Methane, ug/l	0.015	NE	**8800**	**670**	**1400**	**3000**	**98**	**2000**	**4400**	**30**
Ethane, ug/l	0.010	NE	<0.010	0.054	0.27	<0.010	**0.46**	<0.010	**0.050**	<0.010
Ethene, ug/l	0.010	NE	<0.010	0.10	0.14	0.030	**0.12**	<0.010	**0.049**	**0.026**
Hydrogen, nM	0.60	NE	**3.5**	**3.4**	**4.2**	**5.5**	**4.9**	**1.5**	**4.5**	**2.7**
Lactic Acid, mg/l	0.10	NE	**0.26**	**0.16**	**0.28**	**0.22**	**0.11**	**0.22**	**0.38**	<0.10
Acetic Acid mg/l	0.070	NE	**0.11**	**0.086**	**0.10**	<0.070	<0.070	<0.070	**0.11**	<0.070
Propionic Acid, mg/l	0.050	NE	**0.079**	**0.078**	**0.074**	**0.054**	**0.062**	**0.067**	**0.083**	**0.052**
Butyric Acid, mg/l	0.050	NE	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Pyruvic Acid, mg/l	0.15	NE	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
i-Pentanoic Acid, mg/l	0.15	NE	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Pentanoic Acid, mg/l	0.070	NE	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
i-Hexanoic Acid, mg/l	0.050	NE	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexanoic Acid, mg/l	0.050	NE	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

MDL - Method Detection Limit
SWSL - Solid Waste Section Quantitation Limits
J - Detected between MDL and SWSL limit
< MDL - Not detected at or above MDL
NE - not established

Analysis provided by Environment 1, Inc and Microseeps Laboratories.
Note: * Microseeps data used RDL values in place of MDL values(method AM23G and AM20GAX).

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

By: MG
Date: 12/14/2011

Table 6
Halifax County Landfill
Statistical Analysis Summary
August 24 & 25, 2011

Monitoring Well	Parameters	Detected level (ug/l)	Detection Limit (ug/l)	%ND	CL (%)	Test	Statistically Significant?	2L/MCL statistical analysis	Method for MCL analysis
MW-2A	Barium	109	0.02	55.92	99	PPL	No		
MW-2AD	Barium	111	0.02	55.92	99	PPL	No		
MW-6D	Barium	529	0.02	55.92	99	PPL	No		
MW-6D	Cobalt	3.8	0.03	68	99	PPL	No		
MW-2A	Iron	26225	15.9	0	99	PPL	No		
MW-2AD	Iron	3686	15.9	0	99	PPL	No		
MW-3AS	Iron	72450	15.9	0	99	PPL	No		
MW-6D	Iron	796	15.9	0	99	PPL	No		
MW-17	Iron	45140	15.9	0	99	PPL	No		
MW-18S	Iron	26950	15.9	0	99	PPL	No		
G-13	Iron	5104	15.9	0	99	PPL	No		
MW-15R	Mercury	0.3	0.05	60.78	99	PPL	No		
MW-16A	Mercury	0.22	0.05	60.78	99	PPL	No		
MW-17	Zinc	17	0.24	0	99	PPL	No		
G-13	Zinc	11	0.24	0	99	PPL	No		
G-13D	Zinc	11	0.24	0	99	PPL	No		

Notes:

NPTL Non-parametric Tolerance Limit (Inter-well comparision)
NPPL Non-parametric Prediction Limit (Inter-well comparision)
PPL Poisson Prediction Limit

MW-1 used as background well

Appendix A

Boring Logs

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FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-2A

PROJECT NUMBER HALIFAX-2
PROJECT NAME: HALIFAX COUNTY LANDFILL
LOCATION HALIFAX, NC
DRILLING COMPANY BORE & CORE
RIG TYPE & NUMBER MOBILE B-57 ATV
DRILLING METHOD HOLLOW STEM AUGER
WEATHER: HOT, HUMID
FIELD PARTY: BILL BROW
GEOLOGIST DAVID GARRETT
DATE BEGUN: 7/25/95 DATE COMPLETED: 7/26/95

TOP OF CASING ELEVATION -
TOTAL DEPTH: 16.0
GROUND SURFACE ELEVATION -
SHEET 1 OF 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	7.3 FT	
Time	2:00 PM	
Date	7/25/95	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0								SILTY SAND: Loose red-brown very silty clayey coarse-fine SAND; SM-ML; fill pad.
2.0				D				
3.0		Ss	S1					
4.0	2							
5.0	3							SILT: M. stiff black-gray fine sandy clayey SILT; wet; alluvium; ML.
6.0	3							
7.0	8	Ss	S2					
8.0	10							SAND: Loose light-gray and red-gray slightly silty-clayey fine-coarse SAND; alluvium; very clayey from 9.5' to 10.5'; fine rounded gravel from 10.5' to 12.5'; Water level at 7.3 ft; SW-SM; SC, CL, SW.
9.0	11							
10.0	10	Ss	S3	W				
11.0	7							
12.0	7							
13.0								SAND: V. dense brown clayey fine SAND w/ scattered coarse sand; SM-ML; residual soil; well developed upon completion by surging and overpumping.
14.0								
15.0	26	Ss						
16.0	50/0	4"						

LITHOLOGY

WELL INSTALLATION

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-2od

PROJECT NUMBER: HALIFAX-14
PROJECT NAME: Halifax County Landfill
LOCATION: Aurelian Springs, North Carolina
DRILLING COMPANY: Engineering Tectonics, P.A.
RIG TYPE & NUMBER: MOBILE B-60
DRILLING METHOD: Hollow Stem Auger
WEATHER: Cloudy, 70 degrees
FIELD PARTY: David Barron
GEOLOGIST: Philip May
DATE BEGUN: 9/1/99 DATE COMPLETED: 9/1/99

TOP OF CASING ELEVATION: TBD
TOTAL DEPTH: 40.0 FT
GROUND SURFACE ELEVATION: TBD
SHEET 1 OF 1

STATIC WATER LEVEL (BLS)		
WD-While Drilling	AB-After Boring	
Depth(ft)	6.0'	5.25'
Time	12:00	9:00
Date:	9/1/99	9/2/99

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION	DEPTH	LITHOLOGY	WELL INSTALLATION
10.0	5 5 6	SS	S1	W		10"		CLAYEY SILTY SAND: Grey clayey silty sand, wet, Fe staining and quartz gravel.	10.0		
15.0	15 29 34	SS	S2	W		12"		SILTY SAND: Mottled white, tan-pink, grey & rust M-C slightly silty sand, moist, relict rock, quartz, some mica.	15.0		
20.0	50/4"	SS	S3	W		2"		PWR: Wet C sand, partially weathered rock, tan-pink gravel w/ white, brown, & grey mottling, micaceous;	20.0		
25.0	50/3"	SS	S4	W		1"		25.0' same as above;	25.0		
30.0	50/4"	SS	S5	W		2"		30.0' same as above;	30.0		
35.0	50/2"	SS	S6	W		0"		35.0' same as above;	35.0		
40.0								40.0' Boring terminated at 40'.	40.0		

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578-Phone (919) 733-3221

WELL CONSTRUCTION RECORD

Well ID: MW-2ad

DRILLING CONTRACTOR: Engineering Tectonics, P.A.
DRILLER REGISTRATION #: 835
STATE WELL CONSTRUCTION PERMIT#:

1. WELL USE (Check Applicable Box): Residential ☐ Municipal ☐ Industrial ☐ Agricultural ☐ Monitoring ☒
Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use:

2. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Aurelian Springs County: Halifax
Liles Road
(Road, Community, or Subdivision and Lot No.)

3. OWNER Halifax County
ADDRESS
(Street or Route No.)
Halifax NC
City or Town State Zip Code

4. DATE DRILLED 9/1/99
5. TOTAL DEPTH 40.0
6. CUTTINGS COLLECTED YES ☐ NO ☒
7. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
8. STATIC WATER LEVEL Below Top of Casing: 5.26 FT.
(Use + if Above Top of Casing)
9. TOP OF CASING IS 2.5 FT. Above Land Surface *
* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .01 18
10. YIELD(gpm): _____ METHOD OF TEST
11. WATER ZONES (depth):
12. CHLORINATION: Type _____ Amount _____
13. CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft	Material
From	2.0	TO 30.0	Ft.	2"		PVC
From		TO	Ft.			
From		TO	Ft.			

14. GROUT:

	Depth			Material	Method
From	0	TO 26.0	Ft.	Portland cement	Tremie
From	26.0	To 28.0	Ft.	Bentonite	

15. SCREEN:

	Depth			Diameter		Slot Size		Material
From	30.0	TO 40.0	Ft	2	in.	10	in.	PVC
From		To	Ft.		in.		in.	
From		TO	Ft		in.		in.	

16. SAND/GRAVEL PACK:

	Depth			Size	Material
From	28.0	To 40.0	Ft.	No. 2 Filter Sand	
From		To	Ft.		

17. REMARKS:

DEPTH From	DEPTH To	DRILLING LOG Formation Description
See attached boring log		

If additional space is needed use back of form

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY
Quad No:

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submitted to Division of Water Quality and copy to well owner.

FIELD BOREHOLE LOG

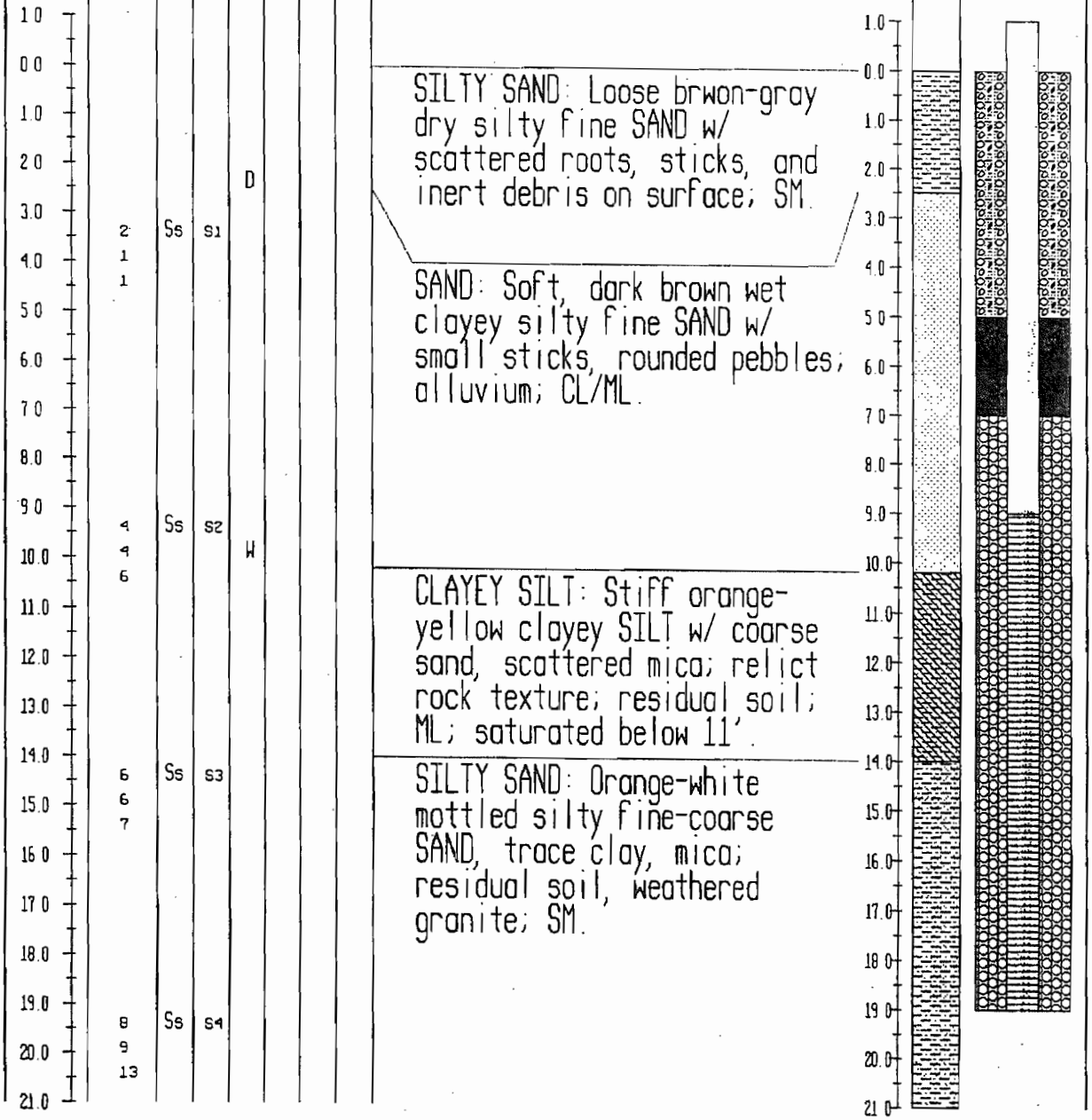
BOREHOLE NUMBER MW-3A-S

PROJECT NUMBER HALIFAX-2
PROJECT NAME HALIFAX COUNTY LANDFILL
LOCATION HALIFAX, NC
DRILLING COMPANY BORE & CORE
RIG TYPE & NUMBER MOBILE B-57 ATV
DRILLING METHOD HOLLOW STEM AUGER
WEATHER HOT, HUMID
FIELD PARTY BILL BROW
GEOLOGIST DAVID GARRETT
DATE BEGUN 7/25/95 DATE COMPLETED 7/25/95

TOP OF CASING ELEVATION -
TOTAL DEPTH 21
GROUND SURFACE ELEVATION -
SHEET 1 OF 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	6.0 FT	
Time	3:45PM	
Date	7/25/95	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0								
1.0								
2.0				D				SILTY SAND: Loose brwon-gray dry silty fine SAND w/ scattered roots, sticks, and inert debris on surface; SM.
3.0	2	Ss	S1					
4.0	1							
5.0	1							SAND: Soft, dark brown wet clayey silty fine SAND w/ small sticks, rounded pebbles; alluvium; CL/ML.
6.0								
7.0								
8.0								
9.0	4	Ss	S2					
10.0	4			W				
11.0	6							CLAYEY SILT: Stiff orange-yellow clayey SILT w/ coarse sand, scattered mica; relict rock texture; residual soil; ML; saturated below 11'.
12.0								
13.0								
14.0	6	Ss	S3					
15.0	6							SILTY SAND: Orange-white mottled silty fine-coarse SAND, trace clay, mica; residual soil, weathered granite; SM.
16.0	7							
17.0								
18.0								
19.0								
20.0	8	Ss	S4					
21.0	9							
	13							



N. C. Department of Human Resources
Division of Health Services

MW 6S

WELL COMPLETION RECORD

MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C
EPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH
P. O. BOX 2091, RALEIGH, N.C. 27602

SOLID WASTE SECTION
JAN 27 199?

NAME OF SITE: Halifax County Landfill	PERMIT NO.: 41-0176-WM-0033
ADDRESS: S.R. 1417 Aurelian Springs, N.C.	OWNER (print): Halifax County
DRILLING CONTRACTOR: Bore and Core, Inc.	REGISTRATION NO.: 763

Casing Type:	PVC	dia.	2	in.	Grout Depth:	from 0	to -6'	ft. - dia.	7 in
Casing Depth:	from 2'	to -8' 8	ft. - dia.	2	in.	Bentonite Seal:	from -6	to -7'	ft. - dia.	7 in
Screen Type:	010 slotted PVC	dia.	2	in.	Sand/Gravel PK:	from -7	to -23	ft. - dia.	7 in
Screen Depth:	from -8' 8	to -23'	ft. - dia.	2	in.	Total Well Depth:	from 3	to -23'	ft. - dia.	7 in

Static Water Level: 11'4" below ground surface ~~feet from top of casing~~ Date Measured 1 / 6 / 92

Yield (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

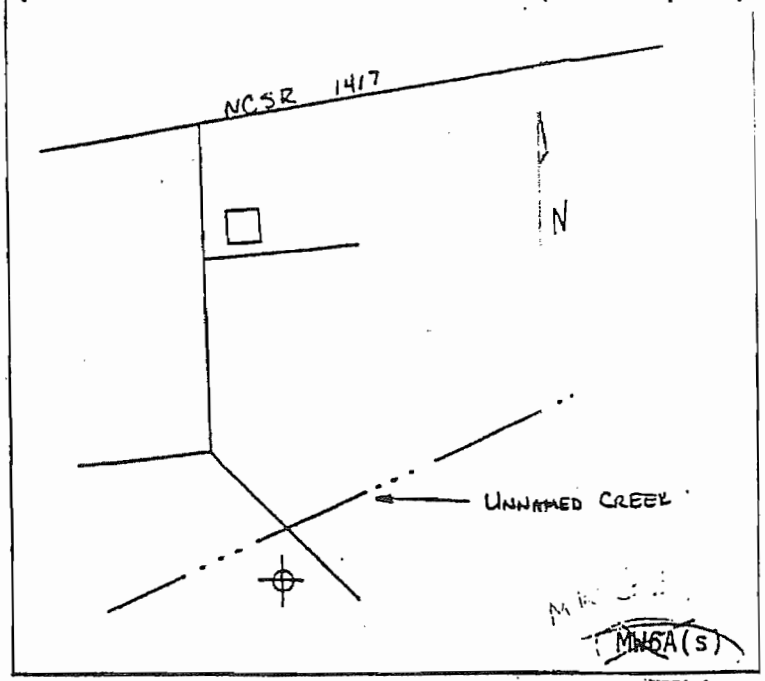
DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
0.0	8.4	Brown fine sandy silt
8.4	23.0	Wet, brown, silty fine to medium sand

Well numbering scheme changed on 12-13-93 to match scheme used during past sampling episodes.

LK

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



DATE: 1/6/92 SIGNATURE: John D Barnard

GW 3342 (6/85)

MW6S

MW-7

TEST BORING FIELD REPORT

Name Halifax County Landfill Aurelian Springs, N.C. Job No. 3720

ield Supervisor Tony Crew Ken Hrs. Drilling Hrs. Moving ~~MW6A(S)~~ Boring # _

a e 1/6/92 Weather Cool Ground Surface Elevation _____

c...	Soil Strata To	Soil Description and Remarks	Sampling/Blows per F No.	Depth	1st 6"	2nd 6"	3r
.0	8.4	Brown fine sandy silt					
..	23.0	Wet brown silty fine to medium sand/gravel B.T. 23.0'					
		Set 2"x 15' screen at 23.0 with 10' riser 4 bags sand					
		½ bucket bentonite, grout to top, 1 2" locking cap 1 4"x 5'					
		protective casing					

Level 11'4" at TOR

Level _____ at _____

t Level _____ at 24 Hours

t r Losses _____

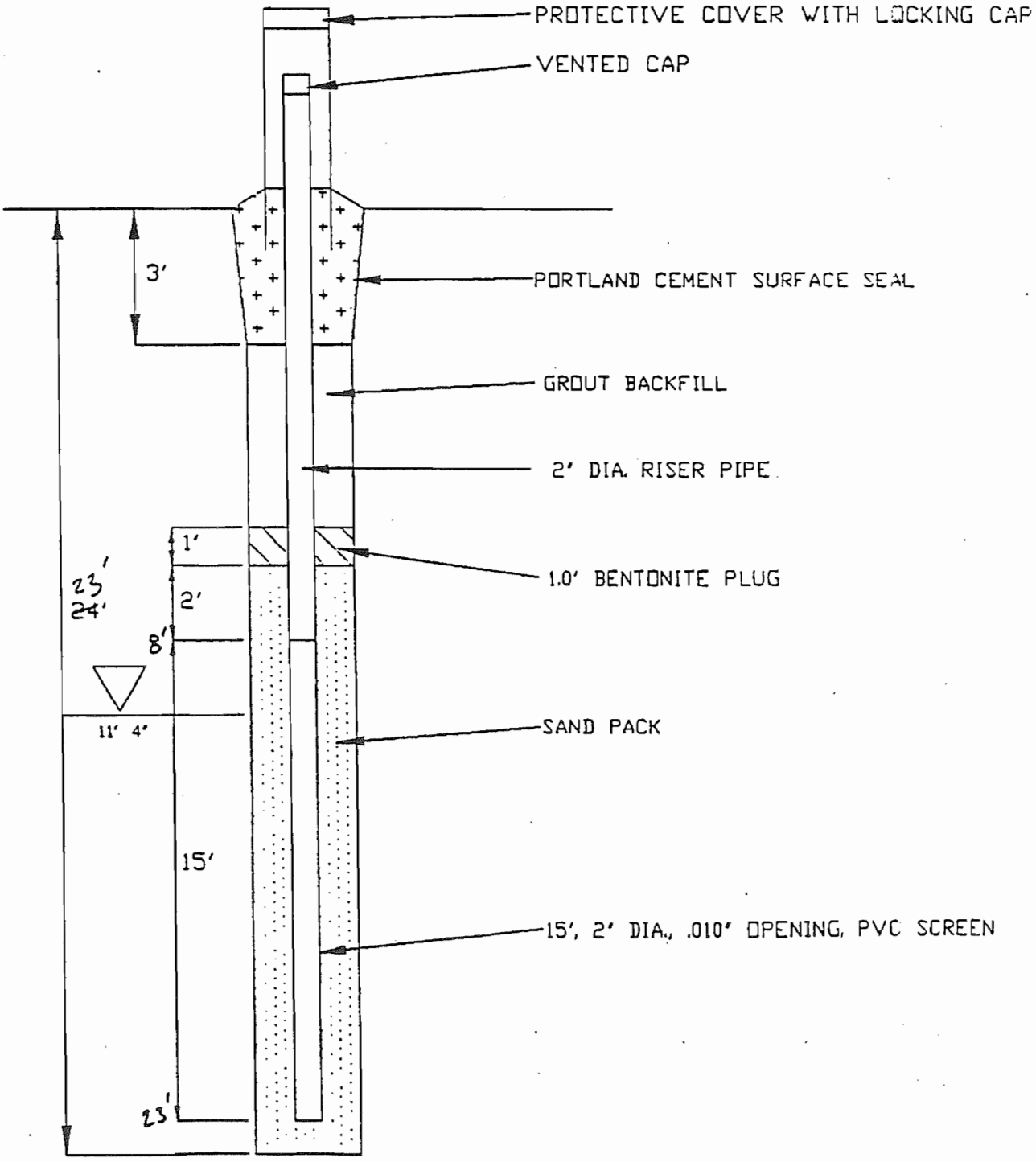
sing, Size Length _____

Note: (Record Methods of Drilling & Depths)

CME 450 ATV
4¼" I.D. H.S.A.
0.0' - 23.0'

TYPICAL MONITORING WELL SCHEMATIC

PROJECT HALIFAX COUNTY LANDFILL VERTICAL EXPANSION
WELL NUMBER MW-6a(s)



WELL COMPLETION RECORD

MW-6A MW-6d

TE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. MENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, 91, RALEIGH, N.C. 27602

OF SITE:	PERMIT NO.:
Halifax County Sanitary Landfill	41-0176-WM-0033
ES:	OWNER (print):
R. 1417 Aurelian Springs, N.C.	Halifax County
LING CONTRACTOR:	REGISTRATION NO.:
ore & Core, Inc.	763

Type:	PVC	dia.	2	in.	Grout Depth:	from 0'	to -21'	ft. - dia.	4 in.
Depth:	from 2'	to -25	ft. - dia.	2 in.	Bentonite Seal:	from -21'	to -23	ft. - dia.	4 in.
Type:	slotted .010	dia.	2	in.	Sand/Gravel PK:	from -23	to -40	ft. - dia.	4 in.
Depth:	from -25	to -40	ft. - dia.	2 in.	Total Well Depth:	from 2'	to -41	ft. - dia.	4 in.

Water Level: 11' 7" Below ground surface ~~feet from top of casing~~ Date Measured 11 / 26 / 91

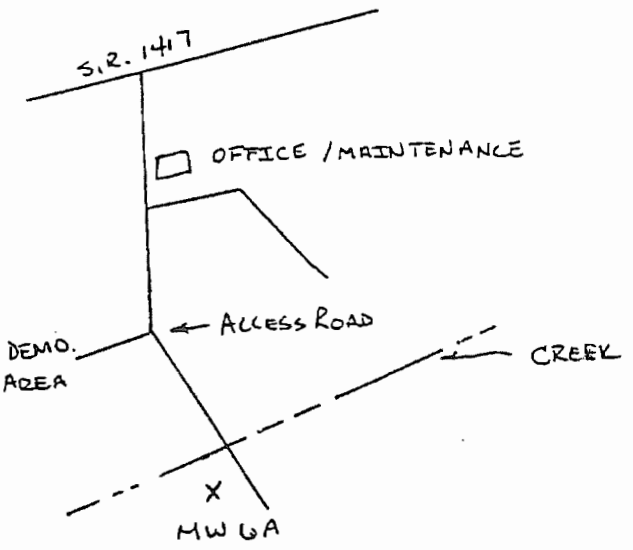
(if m): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

FROM	TO	FORMATION DESCRIPTION
DEPTH		
	2.8	Brown fine sandy silt
	10.6	Brown medium to fine silt
10.6	22.4	Damp DrkBr.Med. sandy silt
22.4	40.0	Wet Br. fine sandy silt

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



REMARKS: Well screened too deep.
Static water level is above the screen.

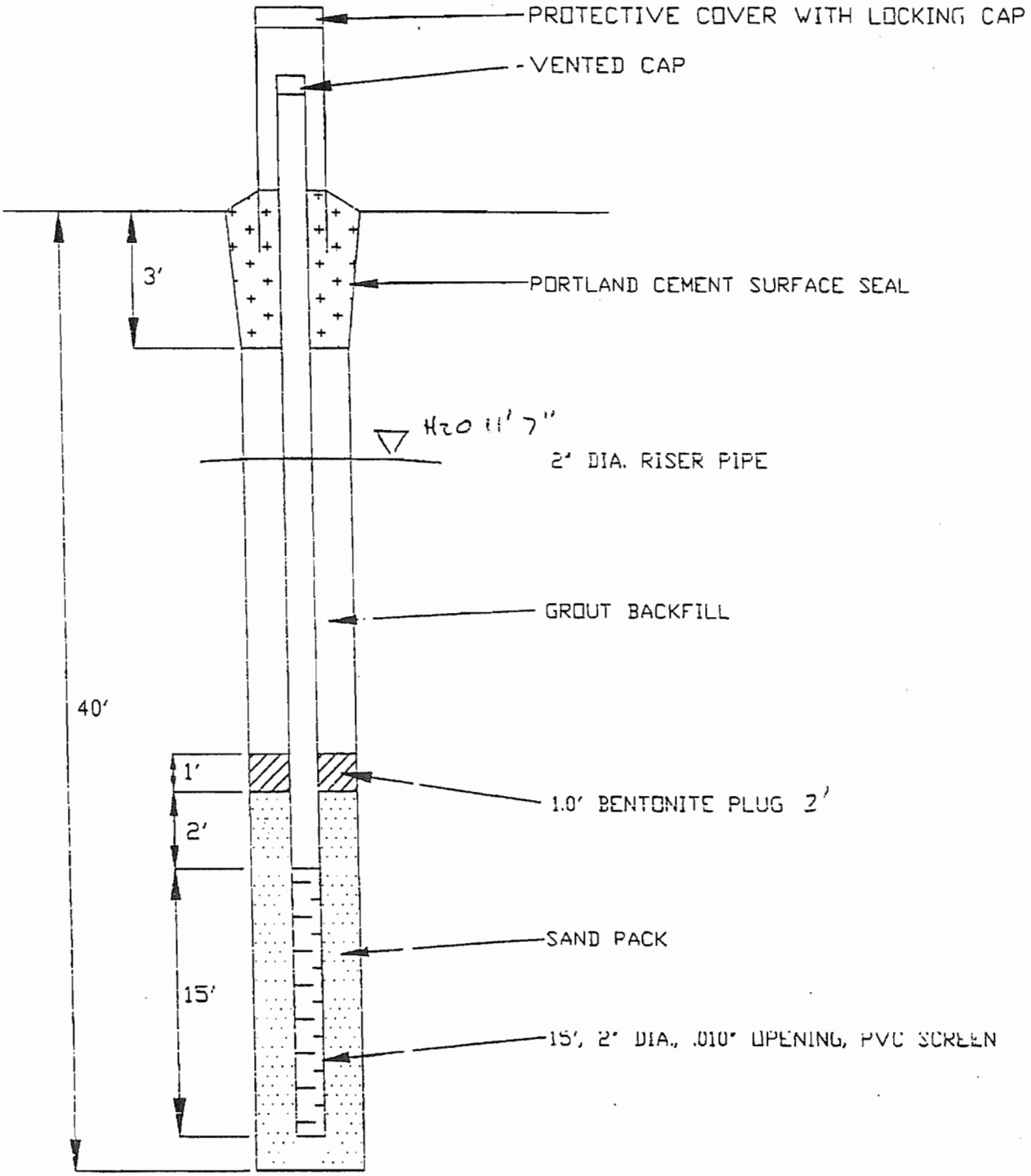
SIGNATURE: _____

3342 (6/85)
& Hazardous Waste Management Branch

TYPICAL MONITORING WELL SCHEMATIC

PROJECT HALIFAX COUNTY LANDFILL VERTICAL EXPANSION
WELL NUMBER MW-6A

6d



TEST BORING FIELD REPORT

MW6d

Name Halifax County Landfill Vertical Expansion Job No. _____

Supervisor Tony Crew Ben Hrs. Drilling ___ Hrs. Moving ___ Boring # MW6

a e 10/30/91 Weather _____ Ground Surface Elevation _____

Soil Strata			Sampling/Blows per Ft.				
o	To	Soil Description and Remarks	No.	Depth	1st6"	2nd6"	3rd6"
.0	2.8	Brown fine sandy silt w/rocks					
.8	10.6	Brown medium to fine sandy silt					
.f	22.4	Damp dark brown medium sandy silt					
.4	40.0	Wet brown fine sandy silt					
		B.T. 40.0					
		Set 2"x15' PVC screen at 40.0 with 30' PVC riser 4 bags					
		sand, ½ bucket bentonite 1 2" locking cap, 1 4"x5'					
		protective casing					

ter Level _____ at TOB

er Level _____ at _____

er Level _____ at 24 Hours

Losses _____

sing, Size _____ Length _____

Note: (Record Methods of Drilling & Depths)

CME 450 ATV
4¼" ID hollow stem auger
0.0 - 40.0

N. C. Department of Human Resources
Division of Health Services

MW 7S

WELL COMPLETION RECORD

)MPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C
EPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH
P. O. BOX 2091, RALEIGH, N.C. 27602

NAME OF SITE:	PERMIT NO.:
Halifax County Landfill	41-0176-WW-0033
ADDRESS:	OWNER (print):
S.R. 141/ Aurelian Springs, NC	Halifax County
DRILLING CONTRACTOR:	REGISTRATION NO.:
Bore and Core, Inc.	763

Casing Type: PVC dia. 2 in.
Casing Depth: from 2.5 to -2.5 ft. - dia. 2 in.
Screen Type: .010 slotted PVC dia. 2 in.
Screen Depth: from -2.5 to -17.5 ft. - dia. 2 in.

Grout Depth: from 0 to -1 ft. - dia. 7 in
Bentonite Seal: from -1 to -2 ft. - dia. 7 in
Sand/Gravel PK: from -2 to -17 ft. - dia. 7 in
Total Well Depth: from 2.5 to -17.5 ft. - dia. 7 in

Static Water Level: 3'2" below ground surface ~~feet from top of casing~~

Thin sand pack between bentonite + screen.

Date Measured 1 / 7 / 92

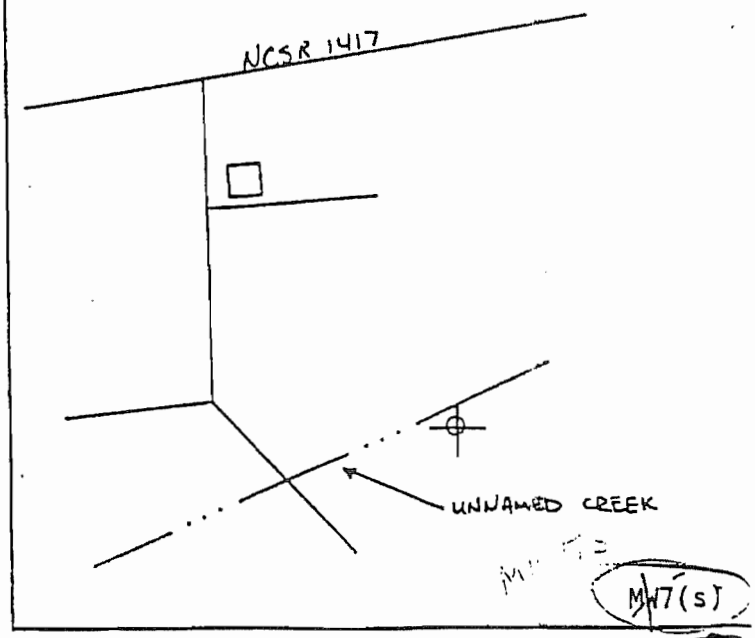
Yield (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
.0	3.4	Brown fine to medium sandy silt
.4	17.0	Damp brown fine to medium sand/gravel

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



REMARKS: _____

DATE: 1-7-92 SIGNATURE: John O Barnard

MW 15

TEST BORING FIELD REPORT

Name Halifax County Landfill - Aurelian Springs, N.C. Job No. 3720

Field Supervisor Tony Crew Ken Hrs. Drilling Hrs. Moving Boring # MW-15

Date 1-7-92 Weather Cool Ground Surface Elevation

From	To	Soil Strata — Soil Description and Remarks	Sampling/Blows per — No.	Depth	1st 6"	2nd 6"	
0.0	3.4	Brown fine to medium sandy silt					
3.4	17.0	Damp brown fine to medium sand/gravel B.T. 17.0					
		Set 2"x 15' screen at 17.5' with 5.0' riser 4 bags					
		sand, ½ bucket bentonite, grout to top. 1, 2" locking cap					
		1, 4"x 5' protective casing.					

Level 3'2" at TOR

Level _____ at _____

Level _____ at 24 Hours

Water Losses _____

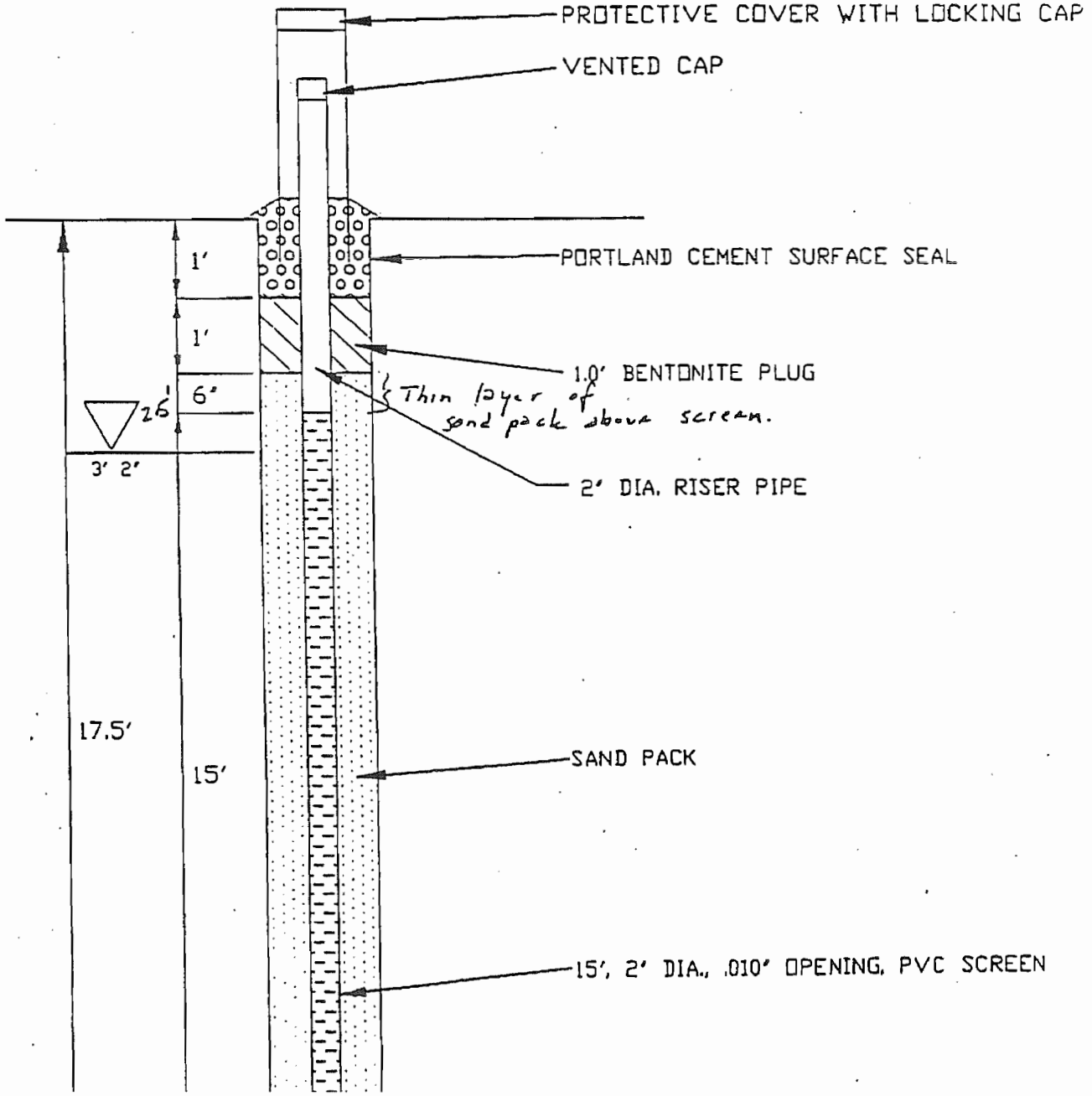
Casing, Size _____ Length _____

Note: (Record Methods of Drilling & Depths)

CME 450 ATV
4¼" I.D. H.S.A.
0.0' - 17.0'

TYPICAL MONITORING WELL SCHEMATIC

PROJECT HALIFAX COUNTY LANDFILL VERTICAL EXPANSION
WELL NUMBER MW-7(S)



WELL COMPLETION RECORD

MW-7 MW-7d

'I ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. 'MENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, 091, RALEIGH, N.C. 27602

.C. SITE: ifax County Sanitary Landfill	PERMIT NO.: 41-0176-WM-0033
.E S: .. 1417 Aurelian Springs, N.C.	OWNER (print): Halifax County
.I G CONTRACTOR: e & Core, Inc.	REGISTRATION NO.: 763

ype:	PVC dia. 2 in.	Grout Depth:	from 0 to -21' ft. - dia. 4" in.
epth:	from 2 to -25 ft. - dia. 2 in.	Bentonite Seal:	from -21' to -23' ft. - dia. 4" in.
Type:	slotted PVC .010 dia. 2 in.	Sand/Gravel PK:	from -23' to 40' ft. - dia. 4" in.
Depth:	from -25 to -40 ft. - dia. 2 in.	Total Well Depth:	from 2' to -40' ft. - dia. 4" in.

W. ater Level: 3' 11" Below ground surface feet from top of casing Date Measured 11 / 26 / 91

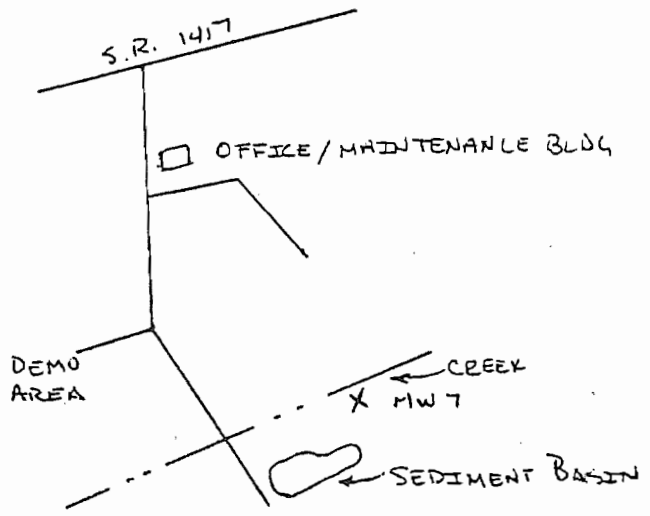
(g m): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	DEPTH TO	FORMATION DESCRIPTION
	1.4	Brown fine sandy silt
4	6.7	Brown fine sandy silt
.7	14.3	Damp DrkBr. fine very sandy silt.
4 ?	40.0	Wet Brown medium sandy silt/gravel

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



1 RKS: Well screened too deep.
Static water table is above the screen.

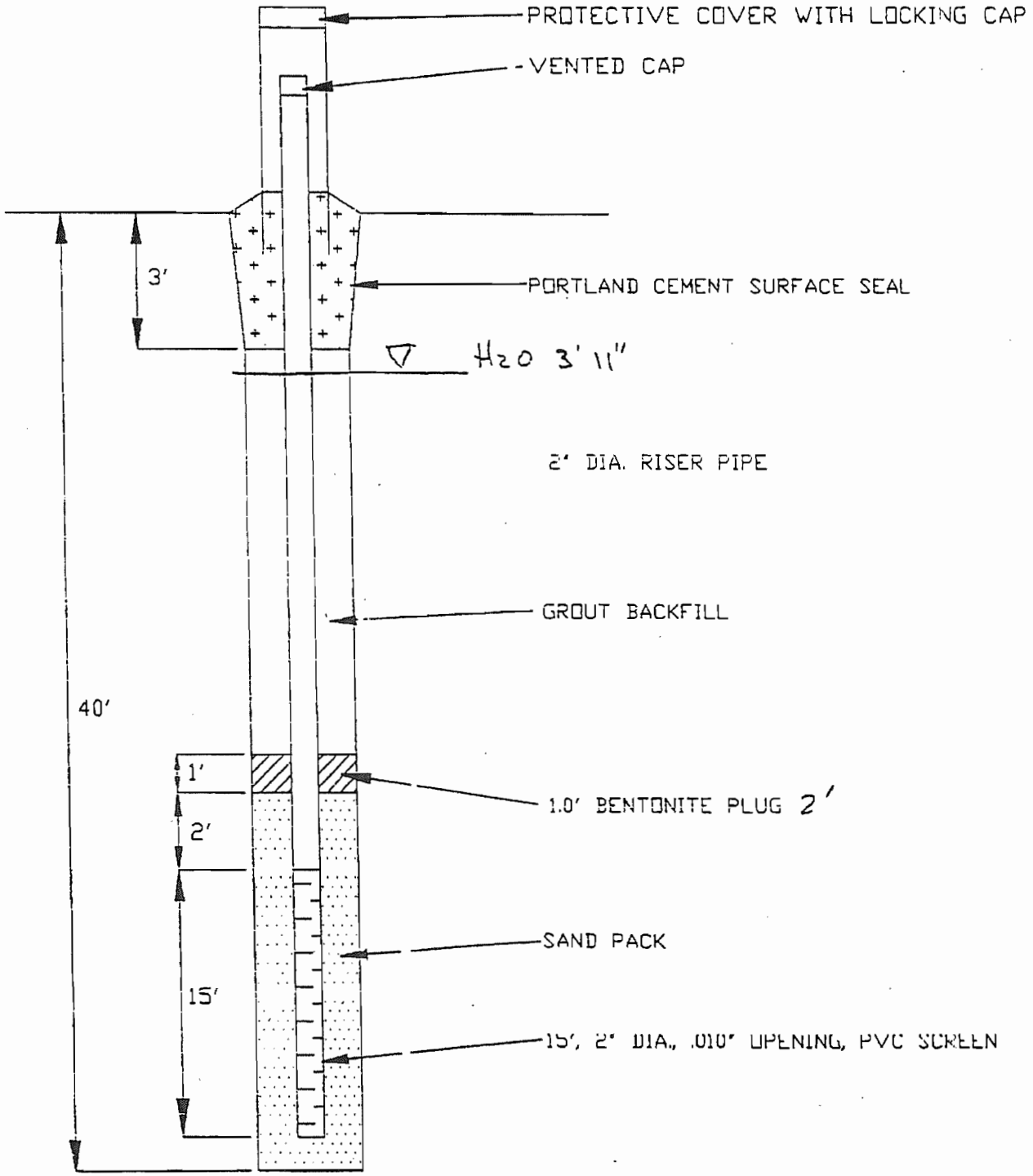
_____ SIGNATURE: _____

3342 (6/85)
& Hazardous Waste Management Branch

TYPICAL MONITORING WELL SCHEMATIC

PROJECT HALIFAX COUNTY LANDFILL VERTICAL EXPANSION
WELL NUMBER MW-7

7d



TEST BORING FIELD REPORT

MW7d

Name Halifax County Landfill Vertical Expansion Job No. _____

Supervisor Tony Crew Ben Hrs. Drilling ___ Hrs. Moving ___ Boring # MW7

Date 10/31/91 Weather _____ Ground Surface Elevation _____

Soil Strata			Sampling/Blows per Ft				
From	To	Soil Description and Remarks	No.	Depth	1st 6"	2nd 6"	3rd 6"
.?	1.4	Brown fine sandy silt with roots					
.4	6.7	Brown fine sandy silt					
.	14.3	Damp dark brown fine very sandy silt					
.3	40.0	Wet brown medium sandy silt with gravel B.T. 40.0					
		Set 2" PVC screen (15') at 40.0 with 30' PVC riser 4 bags					
		sand, ½ bucket Bentonite 1 2" locking cap, 1 4"x5'					
		protective casing					

er Level _____ at TOB

er Level _____ at _____

Level _____ at 24 Hours

Losses _____

asing, Size _____ Length _____

Note: (Record Methods of Drilling & Depths)

CME 450 ATV
4¼" ID hollow stem auger
0.0 - 40.0

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-15R

PROJECT NUMBER: HALIFAX-19
PROJECT NAME: Halifax County Landfill
LOCATION: Aurelian Springs, North Carolina
DRILLING COMPANY: Engineering Tectonics, P.A.
RIG TYPE & NUMBER: MOBILE B-60
DRILLING METHOD: Hollow Stem Auger
WEATHER: Cloudy, 70 degrees
FIELD PARTY: David Barron
GEOLOGIST: Phillip May
DATE BEGUN: 8/31/99 DATE COMPLETED: 8/31/99

TOP OF CASING ELEVATION TBD
TOTAL DEPTH 43.0 FT
GROUND SURFACE ELEVATION: TBD
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS) WD=While Drilling AB=After Boring		
Depth(Ft)	31.5'	31.55'
Time	2:00	12:00
Date:	8/31/99	9/1/99

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0								SANDY CLAYEY SILT: Slightly moist rust-brown F sandy clayey silt, mottled (20%) w/ grey clay & some gravel, lower 1" moist white F sandy silt w/ rust mottling, some Mn & quartz throughout.
5.0	5 6 8	Ss	s1	SM		8"		
10.0	6 10 15	Ss	s2	SM		12"		CLAYEY SILTY SAND: Slightly moist tan-pink clayey silty F sand w/ grey, white, yellow, & rust mottles (50%);
15.0	9 12 13	Ss	s3	SM		12"		15.0' same as above, grading into rust orange matrix w/ other mottles, some mica & quartz.
20.0	10 14 17	Ss	s4	M		12"		SANDY CLAYEY SILT: Moist M-C sandy clayey silt, mottled tan-pink, grey-black, white, & rust, quartz gravel;
25.0	8 11 15	Ss	s5	M		6"		25.0' Moist M-C sandy clayey silt, grey-tan-pink, brown-black, grey-tan, & white mottles, quartz, Feldspar, Mn, Mica;
30.0	9 17 25	Ss	s6	M		8"		30.0' same as above;
35.0	20 29 11	Ss	s7	W		12"		35.0' same as above, very moist;
43.0	11 20 33	Ss	s8	W		14"		43.0' same as above, wet, boring terminated at 43.0'.

LITHOLOGY

WELL INSTALLATION

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section
P.O. Box 29578 - Raleigh, N.C. 27626-0578-Phone (919) 733-3221

WELL CONSTRUCTION RECORD

Well ID: MW-15r

DRILLING CONTRACTOR: Engineering Tectonics, P.A.
DRILLER REGISTRATION #: 835
STATE WELL CONSTRUCTION PERMIT#:

1. WELL USE (Check Applicable Box): Residential ☐ Municipal ☐ Industrial ☐ Agricultural ☐ Monitoring ☒
Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use:

2. WELL LOCATION: (Show sketch of the location below)
Nearest Town: Aurelian Springs County: Halifax
Liles Road
(Road, Community, or Subdivision and Lot No.)

3. OWNER Halifax County
ADDRESS
(Street or Route No.)
Halifax NC
City or Town State Zip Code

4. DATE DRILLED 8/31/99
5. TOTAL DEPTH 43.0
6. CUTTINGS COLLECTED YES ☐ NO ☒
7. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
8. STATIC WATER LEVEL Below Top of Casing: 31.55 FT
(Use + if Above Top of Casing)
9. TOP OF CASING IS 2.5 FT. Above Land Surface *
* Casing Terminated at/or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .01 18
10. YIELD(gpm): _____ METHOD OF TEST
11. WATER ZONES (depth):
12. CHLORINATION: Type Amount

DEPTH From	DEPTH To	DRILLING LOG Formation Description
See attached boring log		

If additional space is needed use back of form

13. CASING:

	Depth			Diameter	Wall Thickness or Weight/Ft	Material
From	2.0	TO 33.0	Ft.	2"		PVC
From		TO	Ft.			
From		TO	Ft.			

14. GROUT:

	Depth			Material	Method
From	0	TO 29.0	Ft.	Portland cement	Tremie
From	29.0	To 31.0	Ft.	Bentonite	

15. SCREEN:

	Depth			Diameter	Slot Size	Material
From	33.0	TO 43.0	Ft	2 in.	10 in.	PVC
From		To	Ft.	in.	in.	
From		TO	Ft	in.	in.	

16. SAND/GRAVEL PACK:

	Depth			Size	Material
From	31.0	To 43.0	Ft.	No. 2 Filter Sand	
From		To	Ft.		

17. REMARKS:

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

FOR OFFICE USE ONLY
Quad No:

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Water Quality and copy to well owner.

FIELD BOREHOLE LOG

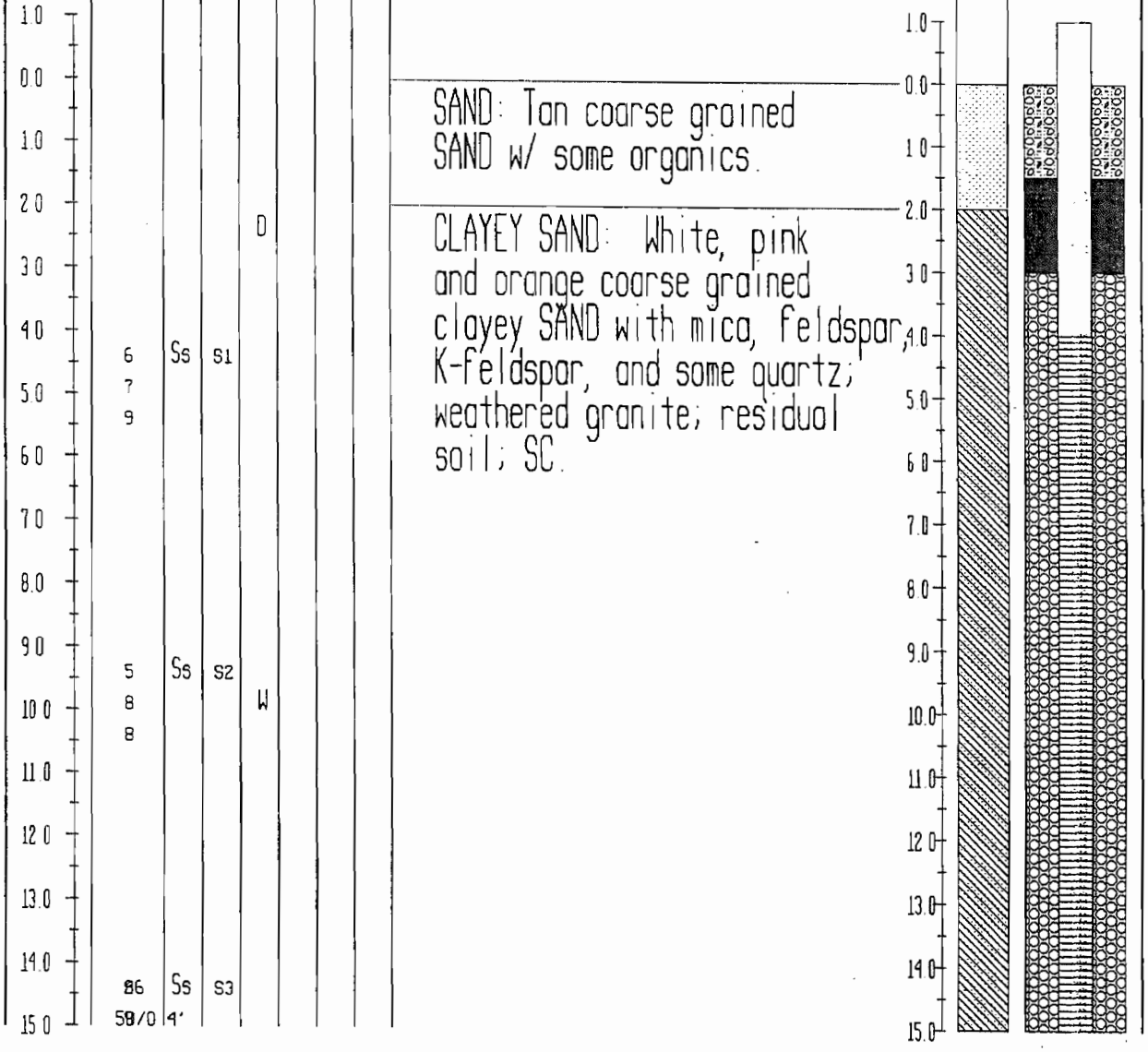
BOREHOLE NUMBER
MW-16A

PROJECT NUMBER HALIFAX-2
PROJECT NAME HALIFAX COUNTY LANDFILL
LOCATION HALIFAX, NC
DRILLING COMPANY BORE & CORE
RIG TYPE & NUMBER MOBILE B-57 ATV
DRILLING METHOD HOLLOW STEM AUGER
WEATHER HOT, HUMID
FIELD PARTY BILL BROW
GEOLOGIST GREG MILLS
DATE BEGUN 7/26/95 DATE COMPLETED 7/26/95

TOP OF CASING ELEVATION -
TOTAL DEPTH 16.0
GROUND SURFACE ELEVATION -
SHEET 1 OF 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	7.2 FT	
Time	3:00 PM	
Date	7/26/95	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0								SAND: Tan coarse grained SAND w/ some organics.
2.0				D				CLAYEY SAND: White, pink and orange coarse grained clayey SAND with mica, feldspar, K-feldspar, and some quartz; weathered granite; residual soil; SC.
4.0	6	Ss	S1					
5.0	7							
	9							
9.0	5	Ss	S2					
10.0	8			W				
	8							
14.0	86	Ss	S3					
15.0	50/0	4"						



Richardson Smith Gardner and Assoc
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

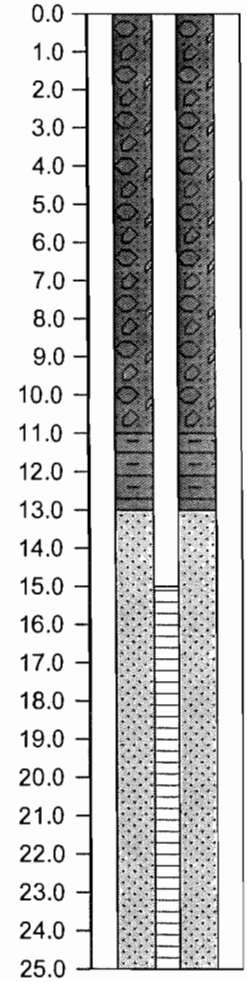
BOREHOLE NUMBER **MW-17** Page 1 of 1

PROJECT NAME: **Halifax Landfill**
OCATION: **Halifax Co.**
DRILLING CO: **McCall Bros.**
DRILLING METHOD: **HSA**
FIELD PARTY: **Ken McDonald**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/03/07** DATE COMPLETED: **10/03/07**

TOTAL DEPTH: **25**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0				HSA	SILTY CLAY: Wet, dark brown silty clay with organic matter.	
5.0	2,2,4,6	SS	16"			
10.0	4,6,10,12	SS	14"		SAPROLITE: Wet, very weathered to weathered K-spar granitic saprolite. Boring terminated at 25' below grade.	
15.0	11,16,22,27	SS	8"			
20.0	7,22,29,33	SS	6"			
25.0						



Richardson Smith Gardner and Assoc
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

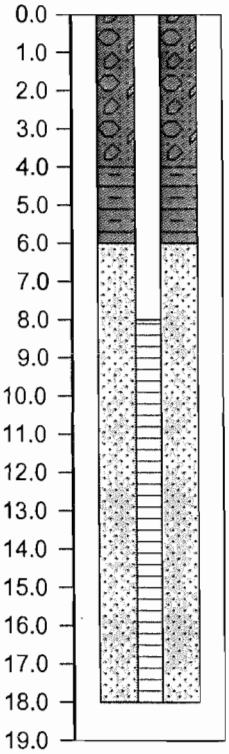
BOREHOLE NUMBER **MW-18s** Page 1 of 1

PROJECT NAME: **Halifax Landfill**
LOCATION: **Halifax Co.**
DRILLING CO: **McCall Bros.**
DRILLING METHOD: **HSA**
FIELD PARTY: **Ken McDonald**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/16/07** DATE COMPLETED: **10/16/07**

TOTAL DEPTH: 19
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY
0.0				HSA	SILTY CLAY: Moist to Wet gray green silty clay	
5.0	2,2,1,2	SS	6"			
10.0	3,2,3,11	SS	8"		CLAYEY SILTY SAND: Wet, dark gray, clayey silty sand with some partially weathered rock.	
15.0	18,26,27,26	SS	12"		SAPROLITE: Wet weathered potassium feldspar granite saprolite. Auger Refusal at 19 feet. Running sands backfilled hole to 18' where well was then set.	
19.0						



Richardson Smith Gardner and Assoc
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-18d**

PROJECT NAME: **Halifax Landfill**
LOCATION: **Halifax Co.**
DRILLING CO: **McCall Bros.**
DRILLING METHOD: **HSA**
FIELD PARTY: **Ken McDonald**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/16/07** DATE COMPLETED: **10/17/07**

TOTAL DEPTH: **52**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
0.0				HSA	SILTY CLAY: Moist to Wet gray green silty clay		0.0	
5.0	2,2,1,2	SS	6"				5.0	
10.0	3,2,3,11	SS	8"		CLAYEY SILTY SAND: Wet, dark gray, clayey silty sand with some partially weathered rock.		10.0	
15.0	18,26,27,26	SS	12"		SAPROLITE: Wet weathered potassium feldspar granite saprolite. Auger Refusal at 32 feet.		15.0	
20.0		Grab					20.0	
25.0		Grab					25.0	
29.0		Grab					30.0	

Richardson Smith Gardner and Assoc
14 North Boylan Avenue, Raleigh NC 27603
(919) 828-0577

FIELD BOREHOLE LOG

BOREHOLE NUMBER **MW-18d**

PROJECT NAME: **Halifax Landfill**
LOCATION: **Halifax Co.**
DRILLING CO: **McCall Bros.**
DRILLING METHOD: **HSA**
FIELD PARTY: **Ken McDonald**
GEOLOGIST: **J. Smyth**
DATE BEGUN: **10/16/07** DATE COMPLETED: **10/17/07**

TOTAL DEPTH: **52**
GROUND SURFACE ELEVATION:
TOP OF CASING ELEVATION:

STATIC WATER LEVEL (TOC)		
Depth (ft)		
Time		
Date		

DEPTH	BLOW COUNT	SAMPLING METHOD	RECOVERY	DRILL METHOD	DESCRIPTION	LITHOLOGY	DEPTH	WELL INSTALLATION
31.0							31.0	
32.0				AH	GRANITE: Wet Potassium Feldspar Granite (observed by cuttings). Boring terminated at 52'.		32.0	
33.0							33.0	
34.0							34.0	
35.0		Grab					35.0	
36.0							36.0	
37.0							37.0	
38.0							38.0	
39.0							39.0	
40.0		Grab					40.0	
41.0							41.0	
42.0							42.0	
43.0							43.0	
44.0							44.0	
45.0		Grab					45.0	
46.0							46.0	
47.0							47.0	
48.0							48.0	
49.0							49.0	
50.0		Grab					50.0	
51.0							51.0	
52.0							52.0	

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Appendix B

Laboratory Analytical Report

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Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

ID#: 6015 A

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/23/11
DATE REPORTED : 09/14/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	SW-1	SW-2	SW-3	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.7	6.5	6.2	08/23/11	RJH	SM4500HB
Antimony, ug/l	0.14	6.0	--- U	--- U	--- U	08/31/11	CMF	EPA200.8
Arsenic, ug/l	0.10	10.0	2.1 J	1.0 J	0.83 J	08/31/11	CMF	EPA200.8
Barium, ug/l	0.02	100.0	46.9 J	56.4 J	42.6 J	08/31/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	0.08 J	--- U	1	08/31/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.05 J	--- U	0.47 J	08/31/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0	1.5 J	0.59 J	1.7 J	08/31/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	1.2 J	0.33 J	0.70 J	08/31/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.54 J	--- U	--- U	08/31/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	1.2 J	0.14 J	0.16 J	08/31/11	CMF	EPA200.8
Nickel, ug/l	0.04	50.0	0.68 J	0.74 J	1.6 J	08/31/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	0.50 J	3.4 J	08/31/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	--- U	08/31/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	0.04 J	--- U	--- U	08/31/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	6.5 J	1.2 J	2.7 J	08/31/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	7.7 J	2.0 J	24	08/31/11	CMF	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	83	188	871	08/23/11	RJH	SM2510B
Temperature, °C			23	24	21	08/23/11	RJH	SM2550B

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 A

ANALYST: MAO
DATE COLLECTED: 08/23/11
DATE ANALYZED: 08/25/11
DATE REPORTED: 09/14/11

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	SW-1	SW-2	SW-3
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	0.27	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	0.30 J	--- 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

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

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6015 A **Week: 33**

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	EPA 8260B	8260 Dup. 1
						P	P	P	P	G	G
						A	A	A	A	E	E
SW-1	08/23/11	1050		23	4	G	G	G	G	G	G
SW-2	08/23/11	1125		24	4	G	G	G	G	G	G
SW-3	08/23/11	1000		21	4	G	G	G	G	G	G

CHLORINE NEUTRALIZED AT COLLECTION
pH CHECK (LAB): 2 2 2
CONTAINER TYPE, P/G
CHEMICAL PRESERVATION
PARAMETERS

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

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

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

SAMPLES COLLECTED BY: (Please Print) N Pagel Fax

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
N Pagel Fax	8/23 11		8/23 1323
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.

№ 225578

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#: 6015

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/24/11
DATE REPORTED : 10/26/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-1	MW-7D	MW-15R	MW-16A	Equipment Blank	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.2	5.5	4.6	5.4		08/24/11	RJH	SM4500HB
Antimony, ug/l	0.14	6.0	0.25 J	--- U	--- U	--- U		08/31/11	CMF	EPA200.8
Arsenic, ug/l	0.10	10.0	0.28 J	0.20 J	0.21 J	0.26 J		08/31/11	CMF	EPA200.8
Barium, ug/l	0.02	100.0	36.1 J	59.6 J	62.6 J	83.7 J		08/31/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	0.30 J	0.25 J	0.17 J	0.47 J		08/31/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.08 J	0.29 J	0.40 J	0.20 J		08/31/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0	1.2 J	0.43 J	0.44 J	0.67 J		08/31/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	2.3 J	1.1 J	1.6 J	0.53 J		08/31/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.41 J	--- U	--- U	--- U		08/31/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	1.4 J	1.7 J	0.20 J	0.26 J		08/31/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20		--- U				08/31/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20			0.30	0.22		09/09/11	ADD	EPA245.1
Nickel, ug/l	0.04	50.0	0.55 J	0.20 J	0.16 J	0.17 J		08/31/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	--- U	--- U	--- U		08/31/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	--- U	--- U		08/31/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	0.09 J	0.07 J	0.18 J	--- U		08/31/11	CMF	EPA200.8
Tin, ug/l	0.16	100.0		0.50 J	0.29 J	0.49 J		08/31/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	1.8 J	1.5 J	0.33 J	0.75 J		08/31/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	7.1 J	9.0 J	2.9 J	6.8 J		08/31/11	CMF	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	37	41	62	130		08/24/11	RJH	SM2510B
Temperature, °C			18	20	19	19		08/24/11	RJH	SM2550B
Static Water Level, feet			36.02	4.64	33.45	9.16		08/24/11	RJH	
Well Depth, feet			42.36	39.57	46.41	22.73		08/24/11	RJH	

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY: _____

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/24/11
DATE EXTRACTED: 08/29/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

PESTICIDES AND PCB'S
EPA METHOD 8081B

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A
1. Aldrin	0.029	0.05	--- U	--- U	--- U
2. Alpha-BHC	0.032	0.05	--- U	--- U	--- U
3. Beta-BHC	0.031	0.05	--- U	--- U	--- U
4. Delta-BHC	0.030	0.05	--- U	--- U	--- U
5. Gamma-BHC (Lindane)	0.032	0.05	--- U	--- U	--- U
6. Chlordane	0.320	0.50	--- U	--- U	--- U
7. 4,4-DDD	0.051	0.10	--- U	--- U	--- U
8. 4,4-DDE	0.049	0.10	--- U	--- U	--- U
9. 4,4-DDT	0.052	0.10	--- U	--- U	--- U
10. Dieldrin	0.042	0.075	--- U	--- U	--- U
11. Endosulfan I	0.056	0.10	--- U	--- U	--- U
12. Endosulfan II	0.046	0.10	--- U	--- U	--- U
13. Endosulfan Sulfate	0.072	0.10	--- U	--- U	--- U
14. Endrin	0.053	0.10	--- U	--- U	--- U
15. Endrin Aldehyde	0.068	0.10	--- U	--- U	--- U
16. Heptachlor	0.039	0.05	--- U	--- U	--- U
17. Heptachlor Epoxide	0.042	0.075	--- U	--- U	--- U
18. Methoxychlor	0.530	1.00	--- U	--- U	--- U
19. Pcb's (Aroclors)	0.500	2.00	--- U	--- U	--- U
20. Toxaphene	0.690	1.50	--- U	--- U	--- U

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<<< LABORATORY COPY >>>

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

PHONE (252) 756-6208
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CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/24/11
DATE EXTRACTED: 08/31/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8151A

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A
1. 2,4-D	0.36	2.0	--- U	--- U	--- U
2. Dinoseb	0.54	1.0	--- U	--- U	--- U
3. 2,4,5-TP	0.42	2.0	--- U	--- U	--- U
4. 2,4,5-T	0.47	2.0	--- U	--- U	--- U

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<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/24/11
DATE ANALYZED: 09/06/11
DATE REPORTED: 10/26/11

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-1
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 Quanititation Limits.

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/24/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

REVIEWED BY:

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A
1. Acenaphthene	2.66	10.0	--- U	--- U	--- U
2. Acenaphthylene	2.60	10.0	--- U	--- U	--- U
3. Anthracene	2.97	10.0	--- U	--- U	--- U
4. Benzo[a]antrhacene	4.16	10.0	--- U	--- U	--- U
5. Benzo[b]fluoranthene	3.32	10.0	--- U	--- U	--- U
6. Benzo[k]fluoranthene	4.23	10.0	--- U	--- U	--- U
7. Benzo[g,h,i]perylene	2.61	10.0	--- U	--- U	--- U
8. Benzo[a]pyrene	3.27	10.0	--- U	--- U	--- U
9. 4-Bromophenyl Phenyl Ether	2.63	10.0	--- U	--- U	--- U
10. Butyl Benzyl Phthalate	5.78	10.0	--- U	--- U	--- U
11. Bis-(2-Chloroethoxy) Methane	3.14	10.0	--- U	--- U	--- U
12. Bis-(2-Chloroethyl) Ether	2.58	10.0	--- U	--- U	--- U
13. Bis-(2-Chloroisopropyl) Ether	2.58	10.0	--- U	--- U	--- U
14. 2-Chloronaphthalene	2.17	10.0	--- U	--- U	--- U
15. 4-Chlorophenyl Phenyl Ether	2.42	10.0	--- U	--- U	--- U
16. Chrysene	4.04	10.0	--- U	--- U	--- U
17. Dibenzo[a,h]anthracene	2.78	10.0	--- U	--- U	--- U
18. Di-N-Butyl Phthalate	3.09	10.0	--- U	--- U	--- U
19. Dimethyl Phthalate	3.78	10.0	--- U	--- U	--- U
20. Diethyl Phthalate	3.92	6000	--- U	--- U	--- U
21. 2,4-Dinitrotoluene	3.95	10.0	--- U	--- U	--- U
22. 2,6-Dinitrotoluene	3.88	10.0	--- U	--- U	--- U
23. Di-N-Octyl Phthalate	2.81	10.0	--- U	--- U	--- U
24. Bis-(2-Ethylhexyl) Phthalate	9.97	15.0	--- U	23.00	--- U
25. Fluoranthene	3.92	10.0	--- U	--- U	--- U
26. Fluorene	2.95	10.0	--- U	--- U	--- U
27. Hexachlorobenzene	2.61	10.0	--- U	--- U	--- U
28. Hexachlorocyclopentadiene	4.16	10.0	--- U	--- U	--- U
29. Indeno[1,2,3-Cd]pyrene	2.91	10.0	--- U	--- U	--- U
30. Isophorone	3.74	10.0	--- U	--- U	--- U
31. Nitrobenzene	2.85	10.0	--- U	--- U	--- U
32. N-Nitrosodimethylamine	4.25	10.0	--- U	--- U	--- U
33. N-Nitrosodiphenylamine	3.95	10.0	--- U	--- U	--- U
34. N-Nitrosodi-N-Propylamine	4.06	10.0	--- U	--- U	--- U
35. Phenanthrene	3.24	10.0	--- U	--- U	--- U
36. Pyrene	3.63	10.0	--- U	--- U	--- U
37. 4-Chloro-3-Methylphenol	3.79	20.0	--- U	--- U	--- U
38. 2-Chlorophenol	2.75	10.0	--- U	--- U	--- U
39. O-Cresol	3.68	10.0	--- U	--- U	--- U
40. P-Cresol	4.12	10.0	--- U	--- U	--- U
41. 2,4-Dichlorophenol	5.19	10.0	--- U	--- U	--- U
42. 2,6-Dichlorophenol	4.89	10.0	--- U	--- U	--- U
43. 2,4-Dimethylphenol	3.21	10.0	--- U	--- U	--- U
44. 4,6-Dinitro-2-Methylphenol	4.77	50.0	--- U	--- U	--- U
45. 2,4-Dinitrophenol	4.37	50.0	--- U	--- U	--- U
46. Ethyl Methanesulfonate	5.26	20.0	--- U	--- U	--- U
47. Methyl Methanesulfonate	4.92	10.0	--- U	--- U	--- U
48. 2-Nitrophenol	3.64	10.0	--- U	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/24/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

REVIEWED BY:

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A
49. 4-Nitrophenol	3.17	50.0	--- U	--- U	--- U
50. Pentachlorophenol	5.33	25.0	--- U	--- U	--- U
51. Phenol	1.86	10.0	--- U	--- U	--- U
52. 2,3,4,6-Tetrachlorophenol	3.12	10.0	--- U	--- U	--- U
53. 2,4,5-Trichlorophenol	4.17	10.0	--- U	--- U	--- U
54. 2,4,6-Trichlorophenol	3.84	10.0	--- U	--- U	--- U
55. Acetophenone	2.89	10.0	--- U	--- U	--- U
56. 2-Acetylaminofluorene	3.98	20.0	--- U	--- U	--- U
57. 4-Aminobiphenyl	4.12	20.0	--- U	--- U	--- U
58. Benzyl Alcohol	4.47	20.0	--- U	--- U	--- U
59. 4-Chloroaniline	3.36	20.0	--- U	--- U	--- U
60. Chlorobenzilate	5.12	10.0	--- U	--- U	--- U
61. Diallate	2.98	10.0	--- U	--- U	--- U
62. Dibenzofuran	4.28	10.0	--- U	--- U	--- U
63. 3,3-Dichlorobenzidine	4.22	20.0	--- U	--- U	--- U
64. Dimethoate	3.98	20.0	--- U	--- U	--- U
65. P-Dimethylaminoazobenzene	2.89	10.0	--- U	--- U	--- U
66. 7,12-Dimethylbenz[a]anthracene	5.26	10.0	--- U	--- U	--- U
67. 3,3-Dimethylbenzadine	3.21	10.0	--- U	--- U	--- U
68. 1,3-Dinitrobenzene	2.89	20.0	--- U	--- U	--- U
69. Diphenylamine	5.10	10.0	--- U	--- U	--- U
70. Disulfoton	4.28	10.0	--- U	--- U	--- U
71. Famphur	3.98	20.0	--- U	--- U	--- U
72. Hexachloropropene	4.31	10.0	--- U	--- U	--- U
73. Isosafrole	2.88	10.0	--- U	--- U	--- U
74. Kepone	2.78	20.0	--- U	--- U	--- U
75. Methapyrilene	3.54	100.0	--- U	--- U	--- U
76. 3-Methylchloroanthrene	4.21	10.0	--- U	--- U	--- U
77. 2-Methylnaphthalene	3.79	10.0	--- U	--- U	--- U
78. Methyl Parathion	4.32	10.0	--- U	--- U	--- U
79. m-Cresol	3.81	10.0	--- U	--- U	--- U
80. 1,4-Naphthoquinone	4.00	10.0	--- U	--- U	--- U
81. 1-Naphthylamine	5.61	10.0	--- U	--- U	--- U
82. 2-Naphthylamine	4.62	10.0	--- U	--- U	--- U
83. 2-Nitroaniline	3.61	50.0	--- U	--- U	--- U
84. 3-Nitroaniline	4.81	50.0	--- U	--- U	--- U
85. 4-Nitroaniline	4.22	20.0	--- U	--- U	--- U
86. 5-Nitro-O-Toluidine	4.01	10.0	--- U	--- U	--- U
87. N-Nitrosodi-n-butylamine	3.63	10.0	--- U	--- U	--- U
88. N-Nitrosodiethylamine	3.83	20.0	--- U	--- U	--- U
89. N-Nitrosomethylethylamine	3.83	10.0	--- U	--- U	--- U
90. N-Nitrosopiperidine	5.19	20.0	--- U	--- U	--- U
91. N-Nitrosopyrrolidine	2.89	10.0	--- U	--- U	--- U
92. Parathion	3.12	10.0	--- U	--- U	--- U
93. Pentachlorobenzene	3.92	10.0	--- U	--- U	--- U
94. Pentachloronitrobenzene	3.71	20.0	--- U	--- U	--- U
95. Phenacetin	4.41	20.0	--- U	--- U	--- U
96. 1,4 Benzenediamine	2.99	10.0	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/24/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A
97. Phorate	3.86	10.0	--- U	--- U	--- U
98. Pronamide	3.69	10.0	--- U	--- U	--- U
99. Safrole	4.12	10.0	--- U	--- U	--- U
100. 1,2,4,5-Tetrachlorobenzene	5.01	10.0	--- U	--- U	--- U
101. Thionazin	4.62	20.0	--- U	--- U	--- U
102. O-Toluidine	4.11	10.0	--- U	--- U	--- U
103. 1,3,5-Trinitrobenzene	3.98	10.0	--- U	--- U	--- U
104. 0,0,0-Triethyl Phosphorothioate	3.61	10.0	--- U	--- U	--- U
105. Hexachloroethane	1.49	10.0	--- U	--- U	--- U
106. Isodrin	3.11	20.0	--- U	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/24/11
DATE ANALYZED: 09/06/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A	Equipment Blank
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	0.70 J	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	0.70 J	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	0.70 J	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	0.40 J	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	4.20	3.10	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	0.50 J	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	7.00	11.50	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	3.50 J	26.40	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	2.10	--- U
21. 1,2-Dichloroethane	0.21	1.0	--- U	0.60 J	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	2.00	20.60	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	0.30 J	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	2.60	53.10	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	0.90 J	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	0.70 J	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	1.20	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	0.80 J	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U
48. Acrolein	40.57	53.0	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/24/11
DATE ANALYZED: 09/06/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-15R	MW-16A	Equipment Blank
49. Allyl Chloride	0.20	10.0	--- U	--- U	--- U	--- U
50. Chloroprene	0.21	20.0	--- U	--- U	--- U	--- U
51. 1,3-Dichlorobenzene	0.41	5.0	--- U	--- U	--- U	--- U
52. Dichlorodifluoromethane	0.51	5.0	--- U	--- U	10.00	--- U
53. 1,3-Dichloropropane	0.28	1.0	--- U	--- U	--- U	--- U
54. 2,2-Dichloropropane	0.17	15.0	--- U	--- U	--- U	--- U
55. 1,1-Dichloropropene	0.22	5.0	--- U	--- U	--- U	--- U
56. Ethyl Methacrylate	0.16	10.0	--- U	--- U	--- U	--- U
57. Hexachlorobutadiene	0.57	10.0	--- U	--- U	--- U	--- U
58. Isobutyl Alcohol	12.80	100.0	--- U	--- U	--- U	--- U
59. Methacrylonitrile	1.93	100.0	--- U	--- U	--- U	--- U
60. Methyl Methacrylate	0.25	30.0	--- U	--- U	--- U	--- U
61. Naphthalene	0.47	10.0	--- U	--- U	--- U	--- U
62. Propionitrile	3.26	150.0	--- U	--- U	--- U	--- U
63. 1,2,4-Trichlorobenzene	0.50	10.0	--- U	--- U	--- U	--- U
64. Acetonitrile	36.29	55.0	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6015 **Week:** 33

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	EPA 8270C	8270C Dup. 1	EPA 8081B	8260B App. II	8260 App. II 1	8260 App. II 2	8151A Landfill
CHLORINE NEUTRALIZED AT COLLECTION																			
pH CHECK (LAB)							12									12	12	12	
CONTAINER TYPE, P/G						P	P	P	P		G	G	G	G	G	G	G	G	G
CHEMICAL PRESERVATION						A	A	A	A		E	E	A	A	A	E	E	E	A
MW-1	08	24 11	0845		18	4	G	G	G	G	G	G	G							
[redacted]																			
MW-7D	08	24 11	1040		20	8	G	G	G	G	G		G	G	G	G	G		G
[redacted]																			
MW-15R	08	24 11	1005		19	8	G	G	G	G	G		G	G	G	G	G		G
[redacted]																			
MW-16A	08	24 11	1015		19	8	G	G	G	G	G		G	G	G	G	G		G
Equipment Blank	08	24 11				2										G	G		
Trip Blank						2													

PARAMETERS

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

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

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

SAMPLES COLLECTED BY: (Please Print) [redacted]

SAMPLES RECEIVED IN LAB AT 2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[redacted]	8/24/11	[redacted]	8/24/12
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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

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

FORM #5

№ 225579

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#: 6015

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/25/11
DATE REPORTED : 10/26/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.07	5.82	6.13	5.70	6.40	08/25/11	RJH	SM4500HB
Antimony, ug/l	0.14	6.0	--- U	--- U	--- U	--- U	0.24 J	09/01/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	2.4 J	--- U	2.1 J	0.21 J	2.0 J	09/01/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	109	56.8 J	111	529	33.3 J	09/01/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	0.40 J	0.14 J	0.11 J	0.36 J	0.12 J	09/01/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.09 J	0.05 J	0.07 J	0.14 J	0.09 J	09/01/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	4.7 J	0.04 J	7.4 J	3.8 J	3.2 J	09/01/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	0.61 J	0.73 J	0.67 J	0.90 J	0.82 J	09/01/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.37 J	--- U	--- U	--- U	0.11 J	09/01/11	LFJ	EPA200.8
Iron, ug/l	15.9	300.0	26225	96 J	3686	796	72450	09/08/11	ADD	SM3111B
Lead, ug/l	0.02	10.0	0.46 J	0.04 J	0.09 J	0.05 J	0.63 J	09/01/11	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	--- U	--- U	--- U	--- U	--- U	09/01/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.48 J	0.43 J	1.1 J	1.6 J	0.35 J	09/01/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	--- U	--- U	0.37 J	--- U	09/01/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	0.05 J	--- U	0.04 J	09/01/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.10 J	0.06 J	0.20 J	0.04 J	0.05 J	09/01/11	LFJ	EPA200.8
Tin, ug/l	0.16	100.0	0.22 J	0.20 J	0.27 J	0.32 J	0.33 J	09/01/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	3.0 J	0.64 J	0.66 J	0.32 J	1.5 J	09/01/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	7.0 J	3.7 J	3.1 J	7.2 J	6.7 J	09/01/11	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	237	166	427	533	378	08/25/11	RJH	SM2510B
Temperature, °C			21.43	18.25	16.85	16.21	20.20	08/25/11	RJH	SM2550B
Static Water Level, feet			5.02	7.99	4.78	13.05	8.64	08/25/11	RJH	
Well Depth, feet			17.21	52.07	41.75	43.55	22.89	08/25/11	RJH	

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY:

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/29/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

PESTICIDES AND PCB'S
EPA METHOD 8081B

PARAMETERS, ug/l	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS
1. Aldrin	0.029	0.05	--- U	--- U	--- U	--- U	--- U
2. Alpha-BHC	0.032	0.05	--- U	--- U	--- U	--- U	--- U
3. Beta-BHC	0.031	0.05	--- U	--- U	--- U	--- U	--- U
4. Delta-BHC	0.030	0.05	--- U	--- U	--- U	--- U	--- U
5. Gamma-BHC (Lindane)	0.032	0.05	--- U	--- U	--- U	--- U	--- U
6. Chlordane	0.320	0.50	--- U	--- U	--- U	--- U	--- U
7. 4,4-DDD	0.051	0.10	--- U	--- U	--- U	--- U	--- U
8. 4,4-DDE	0.049	0.10	--- U	--- U	--- U	--- U	--- U
9. 4,4-DDT	0.052	0.10	--- U	--- U	--- U	--- U	--- U
10. Dieldrin	0.042	0.075	--- U	--- U	--- U	--- U	--- U
11. Endosulfan I	0.056	0.10	--- U	--- U	--- U	--- U	--- U
12. Endosulfan II	0.046	0.10	--- U	--- U	--- U	--- U	--- U
13. Endosulfan Sulfate	0.072	0.10	--- U	--- U	--- U	--- U	--- U
14. Endrin	0.053	0.10	--- U	--- U	--- U	--- U	--- U
15. Endrin Aldehyde	0.068	0.10	--- U	--- U	--- U	--- U	--- U
16. Heptachlor	0.039	0.05	--- U	--- U	--- U	--- U	--- U
17. Heptachlor Epoxide	0.042	0.075	--- U	--- U	--- U	--- U	--- U
18. Methoxychlor	0.530	1.00	--- U	--- U	--- U	--- U	--- U
19. Pcb's (Aroclors)	0.500	2.00	--- U	--- U	--- U	--- U	--- U
20. Toxaphene	0.690	1.50	--- U	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/31/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

REVIEWED BY:

LANDFILL APPENDIX II
EPA METHOD 8151A

PARAMETERS, ug/l	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS
1. 2,4-D	0.36	2.0	--- U	--- U	--- U	--- U	--- U
2. Dinoseb	0.54	1.0	--- U	--- U	--- U	--- U	--- U
3. 2,4,5-TP	0.42	2.0	--- U	--- U	--- U	--- U	--- U
4. 2,4,5-T	0.47	2.0	--- U	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

REVIEWED BY:

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS
1. Acenaphthene	2.66	10.0	--- U	--- U	--- U	--- U	--- U
2. Acenaphthylene	2.60	10.0	--- U	--- U	--- U	--- U	--- U
3. Anthracene	2.97	10.0	--- U	--- U	--- U	--- U	--- U
4. Benzo[a]antrhacene	4.16	10.0	--- U	--- U	--- U	--- U	--- U
5. Benzo[b]fluoranthene	3.32	10.0	--- U	--- U	--- U	--- U	--- U
6. Benzo[k]fluoranthene	4.23	10.0	--- U	--- U	--- U	--- U	--- U
7. Benzo[g,h,i]perylene	2.61	10.0	--- U	--- U	--- U	--- U	--- U
8. Benzo[a]pyrene	3.27	10.0	--- U	--- U	--- U	--- U	--- U
9. 4-Bromophenyl Phenyl Ether	2.63	10.0	--- U	--- U	--- U	--- U	--- U
10. Butyl Benzyl Phthalate	5.78	10.0	--- U	--- U	--- U	--- U	--- U
11. Bis-(2-Chloroethoxy) Methane	3.14	10.0	--- U	--- U	--- U	--- U	--- U
12. Bis-(2-Chloroethyl) Ether	2.58	10.0	--- U	--- U	--- U	--- U	--- U
13. Bis-(2-Chloroisopropyl) Ether	2.58	10.0	--- U	--- U	--- U	--- U	--- U
14. 2-Chloronaphthalene	2.17	10.0	--- U	--- U	--- U	--- U	--- U
15. 4-Chlorophenyl Phenyl Ether	2.42	10.0	--- U	--- U	--- U	--- U	--- U
16. Chrysene	4.04	10.0	--- U	--- U	--- U	--- U	--- U
17. Dibenzo[a,h]anthracene	2.78	10.0	--- U	--- U	--- U	--- U	--- U
18. Di-N-Butyl Phthalate	3.09	10.0	--- U	--- U	--- U	--- U	--- U
19. Dimethyl Phthalate	3.78	10.0	--- U	--- U	--- U	--- U	--- U
20. Diethyl Phthalate	3.92	6000	--- U	--- U	--- U	--- U	--- U
21. 2,4-Dinitrotoluene	3.95	10.0	--- U	--- U	--- U	--- U	--- U
22. 2,6-Dinitrotoluene	3.88	10.0	--- U	--- U	--- U	--- U	--- U
23. Di-N-Octyl Phthalate	2.81	10.0	--- U	--- U	--- U	--- U	--- U
24. Bis-(2-Ethylhexyl) Phthalate	9.97	15.0	--- U	--- U	--- U	--- U	--- U
25. Fluoranthene	3.92	10.0	--- U	--- U	--- U	--- U	--- U
26. Fluorene	2.95	10.0	--- U	--- U	--- U	--- U	--- U
27. Hexachlorobenzene	2.61	10.0	--- U	--- U	--- U	--- U	--- U
28. Hexachlorocyclopentadiene	4.16	10.0	--- U	--- U	--- U	--- U	--- U
29. Indeno[1,2,3-Cd]pyrene	2.91	10.0	--- U	--- U	--- U	--- U	--- U
30. Isophorone	3.74	10.0	--- U	--- U	--- U	--- U	--- U
31. Nitrobenzene	2.85	10.0	--- U	--- U	--- U	--- U	--- U
32. N-Nitrosodimethylamine	4.25	10.0	--- U	--- U	--- U	--- U	--- U
33. N-Nitrosodiphenylamine	3.95	10.0	--- U	--- U	--- U	--- U	--- U
34. N-Nitrosodi-N-Propylamine	4.06	10.0	--- U	--- U	--- U	--- U	--- U
35. Phenanthrene	3.24	10.0	--- U	--- U	--- U	--- U	--- U
36. Pyrene	3.63	10.0	--- U	--- U	--- U	--- U	--- U
37. 4-Chloro-3-Methylphenol	3.79	20.0	--- U	--- U	--- U	--- U	--- U
38. 2-Chlorophenol	2.75	10.0	--- U	--- U	--- U	--- U	--- U
39. O-Cresol	3.68	10.0	--- U	--- U	--- U	--- U	--- U
40. P-Cresol	4.12	10.0	--- U	--- U	--- U	--- U	--- U
41. 2,4-Dichlorophenol	5.19	10.0	--- U	--- U	--- U	--- U	--- U
42. 2,6-Dichlorophenol	4.89	10.0	--- U	--- U	--- U	--- U	--- U
43. 2,4-Dimethylphenol	3.21	10.0	--- U	--- U	--- U	--- U	--- U
44. 4,6-Dinitro-2-Methylphenol	4.77	50.0	--- U	--- U	--- U	--- U	--- U
45. 2,4-Dinitrophenol	4.37	50.0	--- U	--- U	--- U	--- U	--- U
46. Ethyl Methanesulfonate	5.26	20.0	--- U	--- U	--- U	--- U	--- U
47. Methyl Methanesulfonate	4.92	10.0	--- U	--- U	--- U	--- U	--- U
48. 2-Nitrophenol	3.64	10.0	--- U	--- U	--- U	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS
49. 4-Nitrophenol	3.17	50.0	--- U	--- U	--- U	--- U	--- U
50. Pentachlorophenol	5.33	25.0	--- U	--- U	--- U	--- U	--- U
51. Phenol	1.86	10.0	--- U	--- U	--- U	--- U	--- U
52. 2,3,4,6-Tetrachlorophenol	3.12	10.0	--- U	--- U	--- U	--- U	--- U
53. 2,4,5-Trichlorophenol	4.17	10.0	--- U	--- U	--- U	--- U	--- U
54. 2,4,6-Trichlorophenol	3.84	10.0	--- U	--- U	--- U	--- U	--- U
55. Acetophenone	2.89	10.0	--- U	--- U	--- U	--- U	--- U
56. 2-Acetylaminofluorene	3.98	20.0	--- U	--- U	--- U	--- U	--- U
57. 4-Aminobiphenyl	4.12	20.0	--- U	--- U	--- U	--- U	--- U
58. Benzyl Alcohol	4.47	20.0	--- U	--- U	--- U	--- U	--- U
59. 4-Chloroaniline	3.36	20.0	--- U	--- U	--- U	--- U	--- U
60. Chlorobenzilate	5.12	10.0	--- U	--- U	--- U	--- U	--- U
61. Diallate	2.98	10.0	--- U	--- U	--- U	--- U	--- U
62. Dibenzofuran	4.28	10.0	--- U	--- U	--- U	--- U	--- U
63. 3,3-Dichlorobenzidine	4.22	20.0	--- U	--- U	--- U	--- U	--- U
64. Dimethoate	3.98	20.0	--- U	--- U	--- U	--- U	--- U
65. P-Dimethylaminoazobenzene	2.89	10.0	--- U	--- U	--- U	--- U	--- U
66. 7,12-Dimethylbenz(a)anthracene	5.26	10.0	--- U	--- U	--- U	--- U	--- U
67. 3,3-Dimethylbenzadine	3.21	10.0	--- U	--- U	--- U	--- U	--- U
68. 1,3-Dinitrobenzene	2.89	20.0	--- U	--- U	--- U	--- U	--- U
69. Diphenylamine	5.10	10.0	--- U	--- U	--- U	--- U	--- U
70. Disulfoton	4.28	10.0	--- U	--- U	--- U	--- U	--- U
71. Famphur	3.98	20.0	--- U	--- U	--- U	--- U	--- U
72. Hexachloropropene	4.31	10.0	--- U	--- U	--- U	--- U	--- U
73. Isosafrole	2.88	10.0	--- U	--- U	--- U	--- U	--- U
74. Kepone	2.78	20.0	--- U	--- U	--- U	--- U	--- U
75. Methapyrilene	3.54	100.0	--- U	--- U	--- U	--- U	--- U
76. 3-Methylchloroanthrene	4.21	10.0	--- U	--- U	--- U	--- U	--- U
77. 2-Methylnaphthalene	3.79	10.0	--- U	--- U	--- U	--- U	--- U
78. Methyl Parathion	4.32	10.0	--- U	--- U	--- U	--- U	--- U
79. m-Cresol	3.81	10.0	--- U	--- U	--- U	--- U	--- U
80. 1,4-Naphthoquinone	4.00	10.0	--- U	--- U	--- U	--- U	--- U
81. 1-Naphthylamine	5.61	10.0	--- U	--- U	--- U	--- U	--- U
82. 2-Naphthylamine	4.62	10.0	--- U	--- U	--- U	--- U	--- U
83. 2-Nitroaniline	3.61	50.0	--- U	--- U	--- U	--- U	--- U
84. 3-Nitroaniline	4.81	50.0	--- U	--- U	--- U	--- U	--- U
85. 4-Nitroaniline	4.22	20.0	--- U	--- U	--- U	--- U	--- U
86. 5-Nitro-O-Toluidine	4.01	10.0	--- U	--- U	--- U	--- U	--- U
87. N-Nitrosodi-n-butylamine	3.63	10.0	--- U	--- U	--- U	--- U	--- U
88. N-Nitrosodiethylamine	3.83	20.0	--- U	--- U	--- U	--- U	--- U
89. N-Nitrosomethylethylamine	3.83	10.0	--- U	--- U	--- U	--- U	--- U
90. N-Nitrosopiperidine	5.19	20.0	--- U	--- U	--- U	--- U	--- U
91. N-Nitrosopyrrolidine	2.89	10.0	--- U	--- U	--- U	--- U	--- U
92. Parathion	3.12	10.0	--- U	--- U	--- U	--- U	--- U
93. Pentachlorobenzene	3.92	10.0	--- U	--- U	--- U	--- U	--- U
94. Pentachloronitrobenzene	3.71	20.0	--- U	--- U	--- U	--- U	--- U
95. Phenacetin	4.41	20.0	--- U	--- U	--- U	--- U	--- U
96. 1,4 Benzenediamine	2.99	10.0	--- U	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY:

CLIENT ID: 6015

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-2A	MW-3D	MW-2AD	MW-6D	MW-3AS
97. Phorate	3.86	10.0	--- U	--- U	--- U	--- U	--- U
98. Pronamide	3.69	10.0	--- U	--- U	--- U	--- U	--- U
99. Safrole	4.12	10.0	--- U	--- U	--- U	--- U	--- U
100. 1,2,4,5-Tetrachlorobenzene	5.01	10.0	--- U	--- U	--- U	--- U	--- U
101. Thionazin	4.62	20.0	--- U	--- U	--- U	--- U	--- U
102. O-Toluidine	4.11	10.0	--- U	--- U	--- U	--- U	--- U
103. 1,3,5-Trinitrobenzene	3.98	10.0	--- U	--- U	--- U	--- U	--- U
104. 0,0,0-Triethyl Phosphorothioate	3.61	10.0	--- U	--- U	--- U	--- U	--- U
105. Hexachloroethane	1.49	10.0	--- U	--- U	--- U	--- U	--- U
106. Isodrin	3.11	20.0	--- U	--- U	--- U	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE REPORTED: 10/26/11

REVIEWED BY:

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed: MDL	SWSL	09/06/11 MW-2A	09/06/11 MW-3D	09/06/11 MW-2AD	09/06/11 MW-6D	09/06/11 MW-3AS
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	1.20	--- U	2.10	--- U	2.10
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	0.70 J	0.70 J	0.60 J
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	0.20 J	0.20 J	--- U	0.30 J
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	0.80 J	7.60	6.60	--- U	6.40
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	0.30 J	6.00	9.40	--- U	9.30
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	0.40 J	--- U	1.60	0.60 J
21. 1,2-Dichloroethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	1.20	1.30	--- U	1.90
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- U	0.30 J
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	1.20	--- 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	1.40 J	7.00	0.60 J
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	0.40 J	1.70	0.50 J
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 Quanititation Limits.

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed: MDL	SWSL	09/06/11 MW-2A	09/06/11 MW-3D	09/06/11 MW-2AD	09/06/11 MW-6D	09/06/11 MW-3AS
48. Acrolein	40.57	53.0	--- U	--- U	--- U	--- U	--- U
49. Allyl Chloride	0.20	10.0	--- U	--- U	--- U	--- U	--- U
50. Chloroprene	0.21	20.0	--- U	--- U	--- U	--- U	--- U
51. 1,3-Dichlorobenzene	0.41	5.0	--- U	--- U	--- U	--- U	--- U
52. Dichlorodifluoromethane	0.51	5.0	--- U	1.10 J	--- U	--- U	--- U
53. 1,3-Dichloropropane	0.28	1.0	--- U	--- U	--- U	--- U	--- U
54. 2,2-Dichloropropane	0.17	15.0	--- U	--- U	--- U	--- U	--- U
55. 1,1-Dichloropropene	0.22	5.0	--- U	--- U	--- U	--- U	--- U
56. Ethyl Methacrylate	0.16	10.0	--- U	--- U	--- U	--- U	--- U
57. Hexachlorobutadiene	0.57	10.0	--- U	--- U	--- U	--- U	--- U
58. Isobutyl Alcohol	12.80	100.0	--- U	--- U	--- U	--- U	--- U
59. Methacrylonitrile	1.93	100.0	--- U	--- U	--- U	--- U	--- U
60. Methyl Methacrylate	0.25	30.0	--- U	--- U	--- U	--- U	--- U
61. Naphthalene	0.47	10.0	--- U	--- U	--- U	--- U	--- U
62. Propionitrile	3.26	150.0	--- U	--- U	--- U	--- U	--- U
63. 1,2,4-Trichlorobenzene	0.50	10.0	--- U	--- U	--- U	--- U	--- U
64. Acetonitrile	36.29	55.0	--- U	--- U	--- U	--- U	--- U

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

<<< LABORATORY COPY >>>

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

PHONE (252) 756-6208
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CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE REPORTED: 10/26/11

REVIEWED BY:

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed: MDL	SWSL	09/07/11 Trip 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	0.21	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 Quanititation Limits.

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Date Analyzed: 09/07/11 Trip Blank
48. Acrolein	40.57	53.0	--- U
49. Allyl Chloride	0.20	10.0	--- U
50. Chloroprene	0.21	20.0	--- U
51. 1,3-Dichlorobenzene	0.41	5.0	--- U
52. Dichlorodifluoromethane	0.51	5.0	--- U
53. 1,3-Dichloropropane	0.28	1.0	--- U
54. 2,2-Dichloropropane	0.17	15.0	--- U
55. 1,1-Dichloropropene	0.22	5.0	--- U
56. Ethyl Methacrylate	0.16	10.0	--- U
57. Hexachlorobutadiene	0.57	10.0	--- U
58. Isobutyl Alcohol	12.80	100.0	--- U
59. Methacrylonitrile	1.93	100.0	--- U
60. Methyl Methacrylate	0.25	30.0	--- U
61. Naphthalene	0.47	10.0	--- U
62. Propionitrile	3.26	150.0	--- U
63. 1,2,4-Trichlorobenzene	0.50	10.0	--- U
64. Acetonitrile	36.29	55.0	--- U

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

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6015 **Week:** 33

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION
- [ ] CHLORINE
- [ ] UV
- [ ] NONE
- [ ] _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	EPA 8270C	8270C Dup. 1	EPA 8081B	8260B App. II	8260 App. II 1	8260 App. II 2	8151A Landfill			PARAMETERS
[redacted]																						
MW-2A	08 25 11	1400		21.43	8	G	G	G	G	G			G	G	G	G	G		G			
MW-3D	08 25 11	1200		18.25	9	G	G	G	G	G			G	G	G	G	G	G	G			
[redacted]																						
MW-2AD	08 25 11	1430		16.85	8	G	G	G	G	G			G	G	G	G	G		G			
MW-6D	08 25 11	1535		16.21	8	G	G	G	G	G			G	G	G	G	G		G			
[redacted]																						
MW-3AS	08 25 11	1125		20.20	9	G	G	G	G	G			G	G	G	G	G	G	G			
[redacted]																						
[redacted]																						
[redacted]																						

CHLORINE NEUTRALIZED AT COLLECTION																						
pH CHECK (LAB)							L2				L					L2	L2	L2				
CONTAINER TYPE, P/G						P	P	P	P		G	G	G	G	G	G	G	G	G			
CHEMICAL PRESERVATION						A	A	A	A		E	E	A	A	A	E	E	E	A			

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

CLASSIFICATION:
- [ ] WASTEWATER (NPDES)
- [ ] DRINKING WATER
- [ ] DWQ/GW
- [X] SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
Y N

SAMPLES COLLECTED BY:
(Please Print)
H Dagge / F ot

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob H Dagge	08 25 11	B [signature]	08/25
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.

№ 225579

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#: 6015 C

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/25/11
DATE REPORTED : 10/26/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-17	MW-18S	BP-3	BP-9	G-13	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.76	6.58			5.67	08/25/11	RJH	SM4500HB
Antimony, ug/l	0.14	6.0	--- U	--- U			--- U	09/01/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	--- U	3.5 J			1.3 J	09/01/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	64.7 J	84.1 J			53.9 J	09/01/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	0.81 J	0.21 J			1	09/01/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.14 J	0.08 J			0.10 J	09/01/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.97 J	5.6 J			2.3 J	09/01/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	1.9 J	1.1 J			1.3 J	09/01/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.66 J	0.75 J			0.26 J	09/01/11	LFJ	EPA200.8
Iron, ug/l	15.9	300.0	45140	26950			5104	09/08/11	ADD	SM3111B
Lead, ug/l	0.02	10.0	3.4 J	1.1 J			1.8 J	09/01/11	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	--- U					09/09/11	ADD	EPA245.1
Mercury, ug/l	0.05	0.20		--- U				09/01/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	1.2 J	1.4 J			0.93 J	09/01/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	--- U			--- U	09/01/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U			--- U	09/01/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.06 J	0.04 J			0.05 J	09/01/11	LFJ	EPA200.8
Tin, ug/l	0.16	100.0	0.52 J	0.46 J				09/01/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	4.4 J	4.4 J			4.1 J	09/01/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	17	6.4 J			11	09/01/11	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	142	221			127	08/25/11	RJH	SM2510B
Temperature, °C			19.80	16.49			17.82	08/25/11	RJH	SM2550B
Static Water Level, feet			4.22	4.54	32.40	33.85	12.83	08/25/11	RJH	
Well Depth, feet			27.59	20.25			15.15	08/25/11	RJH	

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

<<< LABORATORY COPY >>>

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#: 6015 C

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/25/11
DATE REPORTED : 10/26/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	G-13D	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.70	08/25/11	RJH	SM4500HB
Antimony, ug/l	0.14	6.0	--- U	09/01/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	--- U	09/01/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	41.6 J	09/01/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	0.22 J	09/01/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.07 J	09/01/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.13 J	09/01/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	2.5 J	09/01/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	--- U	09/01/11	LFJ	EPA200.8
Iron, ug/l	15.9	300.0	272 J	09/08/11	ADD	SM3111B
Lead, ug/l	0.02	10.0	0.20 J	09/01/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.53 J	09/01/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	09/01/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	09/01/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	--- U	09/01/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	0.62 J	09/01/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	11	09/01/11	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	71	08/25/11	RJH	SM2510B
Temperature, °C			17.00	08/25/11	RJH	SM2550B
Static Water Level, feet			12.88	08/25/11	RJH	
Well Depth, feet			56.72	08/25/11	RJH	

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 C

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE ANALYZED: 09/07/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	G-13	G-13D	Trip 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	0.27	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

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY:

CLIENT ID: 6015 C

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/31/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

LANDFILL APPENDIX II
EPA METHOD 8151A

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
1. 2,4-D	0.36	2.0	--- U	--- U
2. Dinoseb	0.54	1.0	--- U	--- U
3. 2,4,5-TP	0.42	2.0	--- U	--- U
4. 2,4,5-T	0.47	2.0	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 C

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/29/11
DATE ANALYZED: 09/24/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

PESTICIDES AND PCB'S
EPA METHOD 8081B

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
1. Aldrin	0.029	0.05	--- U	--- U
2. Alpha-BHC	0.032	0.05	--- U	--- U
3. Beta-BHC	0.031	0.05	--- U	--- U
4. Delta-BHC	0.030	0.05	--- U	--- U
5. Gamma-BHC (Lindane)	0.032	0.05	--- U	--- U
6. Chlordane	0.320	0.50	--- U	--- U
7. 4,4-DDD	0.051	0.10	--- U	--- U
8. 4,4-DDE	0.049	0.10	--- U	--- U
9. 4,4-DDT	0.052	0.10	--- U	--- U
10. Dieldrin	0.042	0.075	--- U	--- U
11. Endosulfan I	0.056	0.10	--- U	--- U
12. Endosulfan II	0.046	0.10	--- U	--- U
13. Endosulfan Sulfate	0.072	0.10	--- U	--- U
14. Endrin	0.053	0.10	--- U	--- U
15. Endrin Aldehyde	0.068	0.10	--- U	--- U
16. Heptachlor	0.039	0.05	--- U	--- U
17. Heptachlor Epoxide	0.042	0.075	--- U	--- U
18. Methoxychlor	0.530	1.00	--- U	--- U
19. Pcb's (Aroclors)	0.500	2.00	--- U	--- U
20. Toxaphene	0.690	1.50	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY:

CLIENT ID: 6015 C

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
1. Acenaphthene	2.66	10.0	--- U	--- U
2. Acenaphthylene	2.60	10.0	--- U	--- U
3. Anthracene	2.97	10.0	--- U	--- U
4. Benzo[a]antrhacene	4.16	10.0	--- U	--- U
5. Benzo[b]fluoranthene	3.32	10.0	--- U	--- U
6. Benzo[k]fluoranthene	4.23	10.0	--- U	--- U
7. Benzo[g,h,i]perylene	2.61	10.0	--- U	--- U
8. Benzo[a]pyrene	3.27	10.0	--- U	--- U
9. 4-Bromophenyl Phenyl Ether	2.63	10.0	--- U	--- U
10. Butyl Benzyl Phthalate	5.78	10.0	--- U	--- U
11. Bis-(2-Chloroethoxy) Methane	3.14	10.0	--- U	--- U
12. Bis-(2-Chloroethyl) Ether	2.58	10.0	--- U	--- U
13. Bis-(2-Chloroisopropyl) Ether	2.58	10.0	--- U	--- U
14. 2-Chloronaphthalene	2.17	10.0	--- U	--- U
15. 4-Chlorophenyl Phenyl Ether	2.42	10.0	--- U	--- U
16. Chrysene	4.04	10.0	--- U	--- U
17. Dibenzo[a,h]anthracene	2.78	10.0	--- U	--- U
18. Di-N-Butyl Phthalate	3.09	10.0	--- U	--- U
19. Dimethyl Phthalate	3.78	10.0	--- U	--- U
20. Diethyl Phthalate	3.92	6000	--- U	--- U
21. 2,4-Dinitrotoluene	3.95	10.0	--- U	--- U
22. 2,6-Dinitrotoluene	3.88	10.0	--- U	--- U
23. Di-N-Octyl Phthalate	2.81	10.0	--- U	--- U
24. Bis-(2-Ethylhexyl) Phthalate	9.97	15.0	--- U	--- U
25. Fluoranthene	3.92	10.0	--- U	--- U
26. Fluorene	2.95	10.0	--- U	--- U
27. Hexachlorobenzene	2.61	10.0	--- U	--- U
28. Hexachlorocyclopentadiene	4.16	10.0	--- U	--- U
29. Indeno[1,2,3-Cd]pyrene	2.91	10.0	--- U	--- U
30. Isophorone	3.74	10.0	--- U	--- U
31. Nitrobenzene	2.85	10.0	--- U	--- U
32. N-Nitrosodimethylamine	4.25	10.0	--- U	--- U
33. N-Nitrosodiphenylamine	3.95	10.0	--- U	--- U
34. N-Nitrosodi-N-Propylamine	4.06	10.0	--- U	--- U
35. Phenanthrene	3.24	10.0	--- U	--- U
36. Pyrene	3.63	10.0	--- U	--- U
37. 4-Chloro-3-Methylphenol	3.79	20.0	--- U	--- U
38. 2-Chlorophenol	2.75	10.0	--- U	--- U
39. O-Cresol	3.68	10.0	--- U	--- U
40. P-Cresol	4.12	10.0	--- U	--- U
41. 2,4-Dichlorophenol	5.19	10.0	--- U	--- U
42. 2,6-Dichlorophenol	4.89	10.0	--- U	--- U
43. 2,4-Dimethylphenol	3.21	10.0	--- U	--- U
44. 4,6-Dinitro-2-Methylphenol	4.77	50.0	--- U	--- U
45. 2,4-Dinitrophenol	4.37	50.0	--- U	--- U
46. Ethyl Methanesulfonate	5.26	20.0	--- U	--- U
47. Methyl Methanesulfonate	4.92	10.0	--- U	--- U
48. 2-Nitrophenol	3.64	10.0	--- U	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY: _____

CLIENT ID: 6015 C

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
49. 4-Nitrophenol	3.17	50.0	--- U	--- U
50. Pentachlorophenol	5.33	25.0	--- U	--- U
51. Phenol	1.86	10.0	--- U	--- U
52. 2,3,4,6-Tetrachlorophenol	3.12	10.0	--- U	--- U
53. 2,4,5-Trichlorophenol	4.17	10.0	--- U	--- U
54. 2,4,6-Trichlorophenol	3.84	10.0	--- U	--- U
55. Acetophenone	2.89	10.0	--- U	--- U
56. 2-Acetylaminofluorene	3.98	20.0	--- U	--- U
57. 4-Aminobiphenyl	4.12	20.0	--- U	--- U
58. Benzyl Alcohol	4.47	20.0	--- U	--- U
59. 4-Chloroaniline	3.36	20.0	--- U	--- U
60. Chlorobenzilate	5.12	10.0	--- U	--- U
61. Diallate	2.98	10.0	--- U	--- U
62. Dibenzofuran	4.28	10.0	--- U	--- U
63. 3,3-Dichlorobenzidine	4.22	20.0	--- U	--- U
64. Dimethoate	3.98	20.0	--- U	--- U
65. P-Dimethylaminoazobenzene	2.89	10.0	--- U	--- U
66. 7,12-Dimethylbenz[a]anthracene	5.26	10.0	--- U	--- U
67. 3,3-Dimethylbenzadine	3.21	10.0	--- U	--- U
68. 1,3-Dinitrobenzene	2.89	20.0	--- U	--- U
69. Diphenylamine	5.10	10.0	--- U	--- U
70. Disulfoton	4.28	10.0	--- U	--- U
71. Famphur	3.98	20.0	--- U	--- U
72. Hexachloropropene	4.31	10.0	--- U	--- U
73. Isosafrole	2.88	10.0	--- U	--- U
74. Kepone	2.78	20.0	--- U	--- U
75. Methapyrilene	3.54	100.0	--- U	--- U
76. 3-Methylchloroanthrene	4.21	10.0	--- U	--- U
77. 2-Methylnaphthalene	3.79	10.0	--- U	--- U
78. Methyl Parathion	4.32	10.0	--- U	--- U
79. m-Cresol	3.81	10.0	--- U	--- U
80. 1,4-Naphthoquinone	4.00	10.0	--- U	--- U
81. 1-Naphthylamine	5.61	10.0	--- U	--- U
82. 2-Naphthylamine	4.62	10.0	--- U	--- U
83. 2-Nitroaniline	3.61	50.0	--- U	--- U
84. 3-Nitroaniline	4.81	50.0	--- U	--- U
85. 4-Nitroaniline	4.22	20.0	--- U	--- U
86. 5-Nitro-O-Toluidine	4.01	10.0	--- U	--- U
87. N-Nitrosodi-n-butylamine	3.63	10.0	--- U	--- U
88. N-Nitrosodiethylamine	3.83	20.0	--- U	--- U
89. N-Nitrosomethylethylamine	3.83	10.0	--- U	--- U
90. N-Nitrosopiperidine	5.19	20.0	--- U	--- U
91. N-Nitrosopyrrolidine	2.89	10.0	--- U	--- U
92. Parathion	3.12	10.0	--- U	--- U
93. Pentachlorobenzene	3.92	10.0	--- U	--- U
94. Pentachloronitrobenzene	3.71	20.0	--- U	--- U
95. Phenacetin	4.41	20.0	--- U	--- U
96. 1,4 Benzenediamine	2.99	10.0	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

REVIEWED BY: _____

CLIENT ID: 6015 C

ANALYST: CHS
DATE COLLECTED: 08/25/11
DATE EXTRACTED: 08/30/11
DATE ANALYZED: 09/09/11
DATE REPORTED: 10/26/11

SEMI-VOLATILE ORGANICS
EPA METHOD 8270C

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
97. Phorate	3.86	10.0	--- U	--- U
98. Pronamide	3.69	10.0	--- U	--- U
99. Safrole	4.12	10.0	--- U	--- U
100. 1,2,4,5-Tetrachlorobenzene	5.01	10.0	--- U	--- U
101. Thionazin	4.62	20.0	--- U	--- U
102. O-Toluidine	4.11	10.0	--- U	--- U
103. 1,3,5-Trinitrobenzene	3.98	10.0	--- U	--- U
104. 0,0,0-Triethyl Phosphorothioate	3.61	10.0	--- U	--- U
105. Hexachloroethane	1.49	10.0	--- U	--- U
106. Isodrin	3.11	20.0	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 C

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE ANALYZED: 09/07/11
DATE REPORTED: 10/26/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
1. Chloromethane	0.77	1.0	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	0.20 J	--- U
7. Acetone	9.06	100.0	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	4.80 J	0.40 J
13. Vinyl Acetate	0.20	50.0	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	2.80 J	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U
21. 1,2-Dichloroethane	0.21	1.0	--- U	--- U
22. Trichloroethene	0.23	1.0	1.40	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U
30. Tetrachloroethene	0.17	1.0	1.50	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U
48. Acrolein	40.57	53.0	--- U	--- U

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

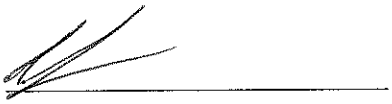
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 C

ANALYST: MAO
DATE COLLECTED: 08/25/11
DATE ANALYZED: 09/07/11
DATE REPORTED: 10/26/11

REVIEWED BY: 

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-17	MW-18S
49. Allyl Chloride	0.20	10.0	--- U	--- U
50. Chloroprene	0.21	20.0	--- U	--- U
51. 1,3-Dichlorobenzene	0.41	5.0	--- U	--- U
52. Dichlorodifluoromethane	0.51	5.0	1.70 J	--- U
53. 1,3-Dichloropropane	0.28	1.0	--- U	--- U
54. 2,2-Dichloropropane	0.17	15.0	--- U	--- U
55. 1,1-Dichloropropene	0.22	5.0	--- U	--- U
56. Ethyl Methacrylate	0.16	10.0	--- U	--- U
57. Hexachlorobutadiene	0.57	10.0	--- U	--- U
58. Isobutyl Alcohol	12.80	100.0	--- U	--- U
59. Methacrylonitrile	1.93	100.0	--- U	--- U
60. Methyl Methacrylate	0.25	30.0	--- U	--- U
61. Naphthalene	0.47	10.0	--- U	--- U
62. Propionitrile	3.26	150.0	--- U	--- U
63. 1,2,4-Trichlorobenzene	0.50	10.0	--- U	--- U
64. Acetonitrile	36.29	55.0	--- U	--- U

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

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6015 C **Week: 33**

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION
- [ ] CHLORINE
- [ ] UV
- [ ] NONE
- [ ] _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	EPA 8270C	8270C Dup. 1	EPA 8081B	8260B App. II	8260 App. II 1	8260 App. II 2	8151A Landfill	8151A Duplicate	PARAMETERS
							L2				L2	L2				L2	L2	L2			
						P	P	P	P		G	G	G	G	G	G	G	G	G	G	
						A	A	A	A		E	E	A	A	A	E	E	E	A	A	
MW-17	08 25 11	1235		19.80	10	G	G	G	G	G			G	G	G	G	G	G	G	G	
MW-18S	08 25 11	1325		16.49	10	G	G	G	G	G			G	G	G	G	G	G	G	G	
BP-3	08 25 11				1					G											
BP-9	08 25 11				1					G											
G-13	08 25 11	1520		17.82	4	G	G	G	G	G	G	G									
G-13D	08 25 11	1510		17	4	G	G	G	G	G	G	G									

CHLORINE NEUTRALIZED AT COLLECTION
pH CHECK (LAB)
CONTAINER TYPE, P/G
CHEMICAL PRESERVATION

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

CLASSIFICATION:
- [ ] WASTEWATER (NPDES)
- [ ] DRINKING WATER
- [ ] DWQ/GW
- [X] SOLID WASTE SECTION

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

SAMPLES COLLECTED BY: (Please Print) H Cooper / F Cox

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob H Cooper 08 25 11		B [signature]	8/25 6:00
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.

№ 225577

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

CLIENT: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 Y

ANALYST: MAO
DATE COLLECTED: 08/24/11
DATE ANALYZED: 09/06/11
DATE REPORTED: 09/14/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Trip 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	0.21	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
48. Acrolein	40.57	53.0	--- U

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

<<< LABORATORY COPY >>>

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: HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX, NC 27839

CLIENT ID: 6015 Y

ANALYST: MAO
DATE COLLECTED: 08/24/11
DATE ANALYZED: 09/06/11
DATE REPORTED: 09/14/11

REVIEWED BY: _____

LANDFILL APPENDIX II
EPA METHOD 8260B

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

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

<<< LABORATORY COPY >>>

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#: 6015 X

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/25/11
DATE REPORTED : 09/01/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-2A	MW-3D	MW-17	MW-2AD	MW-6D	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	--- U	--- U	--- U	--- U	--- U	08/26/11	TRB	SM5210B
COD, mg/l	20.0	20.0	26	--- U	--- U	--- U	--- U	08/30/11	TRB	HACH8000
Nitrate Nitrogen as N, mg/l	0.03	10.0	0.05 J	0.08 J	0.11 J	--- U	--- U	08/26/11	MPH	EPA353.2
Total Organic Carbon, mg/l	0.30	1.0	8.54	--- U	--- U	1.00	1.82	08/30/11	SEJ	SM5310C
Total Alkalinity, mg/l	1.0	1.0	101	64	59	242	234	08/26/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0	5	7	6	5	22	08/30/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	6.3 J	10.5 J	8.9 J	12.5 J	12.4 J	08/29/11	TRB	SM426C
Turbidity, NTU	1.0	1.0	42	1.4	70	33	--- U	08/26/11	MEL	SM2130B
Sulfide, ug/l	100	1000	--- U	--- U	--- U	--- U	--- U	08/26/11	LFJ	SM4500-S2D
Dissolved Oxygen, mg/l	0.1	0.1	0.45	1.52	0.74	0.48	0.36	08/25/11	RJH	SM4500OG
Carbon Dioxide, mg/l	1.0	1.0	60	21	68	95	262	08/26/11	TRB	SM4500CO2C
ORP, mv			-53.6	353.6	464.9	34.2	147.1	08/25/11	RJH	SM2580B

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

<<< LABORATORY COPY >>>

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#: 6015 X

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX ,NC 27839

DATE COLLECTED: 08/25/11
DATE REPORTED : 09/01/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-3AS	MW-18S	G-13	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	--- U	--- U	--- U	08/26/11	TRB	SM5210B
COD, mg/l	20.0	20.0	27	--- U	--- U	08/30/11	TRB	HACH8000
Nitrate Nitrogen as N, mg/l	0.03	10.0	--- U	0.08 J	0.14 J	08/26/11	MPH	EPA353.2
Total Organic Carbon, mg/l	0.30	1.0	3.12	5.02	1.40	08/30/11	SEJ	SM5310C
Total Alkalinity, mg/l	1.0	1.0	159	96	47	08/26/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0	7	8	10	08/30/11	HLB	SM4500-CLB
Sulfate, mg/l	5.0	250.0	--- U	--- U	16.7 J	08/29/11	TRB	SM426C
Turbidity, NTU	1.0	1.0	550	190	21	08/26/11	MEL	SM2130B
Sulfide, ug/l	100	1000	--- U	--- U	--- U	08/26/11	LFJ	SM4500-S2D
Dissolved Oxygen, mg/l	0.1	0.1	3.19	0.83	0.25	08/25/11	RJH	SM4500OG
Carbon Dioxide, mg/l	1.0	1.0	215	75	76	08/26/11	TRB	SM4500CO2C
ORP, mv			-57.3	-36.0	45.4	08/25/11	RJH	SM2580B

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

<<< LABORATORY COPY >>>

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6015 X **Week:** 33

HALIFAX CO. LANDFILL (CLOSED MSW)
MS. GWEN MATTHEWS
P.O. BOX 70
HALIFAX NC 27839

(252) 583-1807

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	Nitrate	TOC	Alkalinity	Chloride	Sulfate	Turbidity	Sulfide	DO	CO2	ORP
CHLORINE NEUTRALIZED AT COLLECTION																	
pH CHECK (LAB)							<2		<2					>9			
CONTAINER TYPE, P/G						P	P	P	P	P	P	P	P	P	P	P	P
CHEMICAL PRESERVATION						A	C	A	C	A	A	A	A	F D	A	A	A
MW-2A	08 25 11	1400		21.43	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-3D	08 25 11	1200		18.25	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-17	08 25 11	1235		19.80	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-2AD	08 25 11	1430		16.85	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-6D	08 25 11	1555		16.21	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-3AS	08 25 11	1125		20.20	10	G	G	G	G	G	G	G	G	G	G	G	G
MW-18S	08 25 11	1325		16.49	10	G	G	G	G	G	G	G	G	G	G	G	G
G-13	08 25 11	1520		17.82	10	G	G	G	G	G	G	G	G	G	G	G	G

PARAMETERS

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

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

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

SAMPLES COLLECTED BY: (Please Print) Bob Hoge / Fat

SAMPLES RECEIVED IN LAB AT 02 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob Hoge	08 25 11		
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.

№ 225576

FORM #5

Microseeps, Inc
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

September 12, 2011

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

RE: **Halifax County**
Microseeps Workorder: 2340

Dear Steve Jones:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, August 26, 2011. 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,

Heather Hauser 9/16 DH

Heather Hauser 09/12/2011
hhauser@microseeps.com

Enclosures

Total Number of Pages 22

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LABORATORY ACCREDITATIONS & CERTIFICATIONS

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

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SAMPLE SUMMARY

Workorder: 2340 Halifax County

Lab ID	Sample ID	Matrix	Date Collected	Date Received
23400001	WL2A	Water	8/25/2011 14:00	8/26/2011 14:22
23400002	W2AD	Water	8/25/2011 14:30	8/26/2011 14:22
23400003	W3AS	Water	8/25/2011 11:25	8/26/2011 14:22
23400004	MW3D	Water	8/25/2011 12:00	8/26/2011 14:22
23400005	WL6D	Water	8/25/2011 15:55	8/26/2011 14:22
23400006	MW17	Water	8/25/2011 12:35	8/26/2011 14:22
23400007	W18S	Water	8/25/2011 13:25	8/26/2011 14:22
23400008	G13	Water	8/25/2011 15:20	8/26/2011 14:22
23400009	WL2A	Bubble Strip	8/25/2011 14:00	8/26/2011 14:22
23400010	W2AD	Bubble Strip	8/25/2011 14:30	8/26/2011 14:22
23400011	W3AS	Bubble Strip	8/25/2011 11:25	8/26/2011 14:22
23400012	MW3D	Bubble Strip	8/25/2011 12:00	8/26/2011 14:22
23400013	WL6D	Bubble Strip	8/25/2011 15:55	8/26/2011 14:22
23400014	MW17	Bubble Strip	8/25/2011 12:35	8/26/2011 14:22
23400015	W18S	Bubble Strip	8/25/2011 13:25	8/26/2011 14:22
23400016	G13	Bubble Strip	8/25/2011 15:20	8/26/2011 14:22

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400001** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **WL2A** Date Collected: 8/25/2011 14:00

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.26	mg/l	0.10	0.010	1			9/1/2011 04:20	KB		
Acetic Acid	0.11	mg/l	0.070	0.0060	1			9/1/2011 04:20	KB		
Propionic Acid	0.079	mg/l	0.050	0.0070	1			9/1/2011 04:20	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 04:20	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 04:20	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 04:20	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 04:20	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 04:20	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 04:20	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400002** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **W2AD** Date Collected: 8/25/2011 14:30

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.16	mg/l	0.10	0.010	1			9/1/2011 06:26	KB		
Acetic Acid	0.086	mg/l	0.070	0.0060	1			9/1/2011 06:26	KB		
Propionic Acid	0.078	mg/l	0.050	0.0070	1			9/1/2011 06:26	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 06:26	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 06:26	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 06:26	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 06:26	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 06:26	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 06:26	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400003** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **W3AS** Date Collected: 8/25/2011 11:25

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G	Analytical Method: AM23G										
Lactic Acid	0.28	mg/l	0.10	0.010	1			9/1/2011 07:08	KB		
Acetic Acid	0.10	mg/l	0.070	0.0060	1			9/1/2011 07:08	KB		
Propionic Acid	0.074	mg/l	0.050	0.0070	1			9/1/2011 07:08	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 07:08	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 07:08	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 07:08	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 07:08	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 07:08	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 07:08	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400004** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **MW3D** Date Collected: 8/25/2011 12:00

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.22	mg/l	0.10	0.010	1			9/1/2011 07:51	KB		
Acetic Acid	<0.070	mg/l	0.070	0.0060	1			9/1/2011 07:51	KB		
Propionic Acid	0.054	mg/l	0.050	0.0070	1			9/1/2011 07:51	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 07:51	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 07:51	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 07:51	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 07:51	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 07:51	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 07:51	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400005** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **WL6D** Date Collected: 8/25/2011 15:55

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.11	mg/l	0.10	0.010	1			9/1/2011 08:33	KB		
Acetic Acid	<0.070	mg/l	0.070	0.0060	1			9/1/2011 08:33	KB		
Propionic Acid	0.062	mg/l	0.050	0.0070	1			9/1/2011 08:33	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 08:33	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 08:33	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 08:33	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 08:33	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 08:33	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 08:33	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400006** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **MW17** Date Collected: 8/25/2011 12:35

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.22	mg/l	0.10	0.010	1			9/1/2011 09:15	KB		
Acetic Acid	<0.070	mg/l	0.070	0.0060	1			9/1/2011 09:15	KB		
Propionic Acid	0.067	mg/l	0.050	0.0070	1			9/1/2011 09:15	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 09:15	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 09:15	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 09:15	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 09:15	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 09:15	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 09:15	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400007** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **W18S** Date Collected: 8/25/2011 13:25

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	0.38	mg/l	0.10	0.010	1			9/1/2011 09:57	KB		
Acetic Acid	0.11	mg/l	0.070	0.0060	1			9/1/2011 09:57	KB		
Propionic Acid	0.083	mg/l	0.050	0.0070	1			9/1/2011 09:57	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 09:57	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 09:57	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 09:57	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 09:57	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 09:57	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 09:57	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400008** Date Received: 8/26/2011 14:22 Matrix: Water

Sample ID: **G13** Date Collected: 8/25/2011 15:20

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
EDonors											
Analysis Desc: AM23G			Analytical Method: AM23G								
Lactic Acid	<0.10	mg/l	0.10	0.010	1			9/1/2011 10:39	KB		
Acetic Acid	<0.070	mg/l	0.070	0.0060	1			9/1/2011 10:39	KB		
Propionic Acid	0.052	mg/l	0.050	0.0070	1			9/1/2011 10:39	KB		
Butyric Acid	<0.050	mg/l	0.050	0.0040	1			9/1/2011 10:39	KB		
Pyruvic Acid	<0.15	mg/l	0.15	0.033	1			9/1/2011 10:39	KB		
i-Pentanoic Acid	<0.15	mg/l	0.15	0.044	1			9/1/2011 10:39	KB		
Pentanoic Acid	<0.070	mg/l	0.070	0.012	1			9/1/2011 10:39	KB		
i-Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 10:39	KB		
Hexanoic Acid	<0.050	mg/l	0.050	0.0060	1			9/1/2011 10:39	KB		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400009** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **WL2A** Date Collected: 8/25/2011 14:00

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	8800	ug/l	0.015	0.0030	1			9/10/2011 12:08	SL		
Ethane	<0.010	ug/l	0.010	0.0010	1			9/10/2011 12:08	SL		
Ethene	<0.010	ug/l	0.010	0.0020	1			9/10/2011 12:08	SL		
Hydrogen	3.5	nM	0.60	0.25	1			9/10/2011 12:08	SL		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400010** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip
Sample ID: **W2AD** Date Collected: 8/25/2011 14:30

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	670	ug/l	0.015	0.0030	1			9/10/2011 12:20	SL		
Ethane	0.054	ug/l	0.010	0.0010	1			9/10/2011 12:20	SL		
Ethene	0.10	ug/l	0.010	0.0020	1			9/10/2011 12:20	SL		
Hydrogen	3.4	nM	0.60	0.25	1			9/10/2011 12:20	SL		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400011** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **W3AS** Date Collected: 8/25/2011 11:25

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	1400	ug/l	0.015	0.0030	1			9/10/2011 12:32	SL		
Ethane	0.27	ug/l	0.010	0.0010	1			9/10/2011 12:32	SL		
Ethene	0.14	ug/l	0.010	0.0020	1			9/10/2011 12:32	SL		
Hydrogen	4.2	nM	0.60	0.25	1			9/10/2011 12:32	SL		

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nelac

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400012** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **MW3D** Date Collected: 8/25/2011 12:00

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	3000	ug/l	0.015	0.0030	1			9/10/2011 12:45	SL		
Ethane	<0.010	ug/l	0.010	0.0010	1			9/10/2011 12:45	SL		
Ethene	0.030	ug/l	0.010	0.0020	1			9/10/2011 12:45	SL		
Hydrogen	5.5	nM	0.60	0.25	1			9/10/2011 12:45	SL		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400013** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **WL6D** Date Collected: 8/25/2011 15:55

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	98	ug/l	0.030	0.0060	2			9/10/2011 13:12	SL		
Ethane	0.46	ug/l	0.020	0.0020	2			9/10/2011 13:12	SL		
Ethene	0.12	ug/l	0.020	0.0040	2			9/10/2011 13:12	SL		
Hydrogen	4.9	nM	1.2	0.50	2			9/10/2011 13:12	SL		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400014** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **MW17** Date Collected: 8/25/2011 12:35

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	2000	ug/l	0.015	0.0030	1			9/10/2011 13:25	SL		
Ethane	<0.010	ug/l	0.010	0.0010	1			9/10/2011 13:25	SL		
Ethene	<0.010	ug/l	0.010	0.0020	1			9/10/2011 13:25	SL		
Hydrogen	1.5	nM	0.60	0.25	1			9/10/2011 13:25	SL		

CERTIFICATE OF ANALYSIS

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Microseeps, Inc
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400015** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **W18S** Date Collected: 8/25/2011 13:25

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	4400	ug/l	0.015	0.0030	1			9/10/2011 13:38	SL		
Ethane	0.050	ug/l	0.010	0.0010	1			9/10/2011 13:38	SL		
Ethene	0.049	ug/l	0.010	0.0020	1			9/10/2011 13:38	SL		
Hydrogen	4.5	nM	0.60	0.25	1			9/10/2011 13:38	SL		

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ANALYTICAL RESULTS

Workorder: 2340 Halifax County

Lab ID: **23400016** Date Received: 8/26/2011 14:22 Matrix: Bubble Strip

Sample ID: **G13** Date Collected: 8/25/2011 15:20

Parameters	Results	Units	RDL	MDL	DF	Prepared	By	Analyzed	By	Qual	RegLmt
RISK											
Analysis Desc: AM20GAX			Analytical Method: AM20GAX								
Methane	30	ug/l	0.015	0.0030	1			9/10/2011 13:50	SL		
Ethane	<0.010	ug/l	0.010	0.0010	1			9/10/2011 13:50	SL		
Ethene	0.026	ug/l	0.010	0.0020	1			9/10/2011 13:50	SL		
Hydrogen	2.7	nM	0.60	0.25	1			9/10/2011 13:50	SL		

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Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 2340 Halifax County

PARAMETER QUALIFIERS

U	Indicates the compound was analyzed for, but not detected.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (RDL).

CERTIFICATE OF ANALYSIS

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Microseeps Lab. Proj. # 2340

CHAIN - OF - CUSTODY RECORD

Microseeps COC cont. # 1

Phone: (412) 826-5245 | Microseeps, Inc. - 220 William Pitt Way - Pittsburgh, PA 15238 | Fax No. : (412) 826-3433

Company : ENVIRONMENT 1, INC.

Co. Address : 114 OAKMONT DRIVE, GREENVILLE, NC 27858

Phone # : 252-756-6208 Fax # : 252-756-6633

Proj. Manager : STEVE JONES

Proj. Name/Number : HALIFAX COUNTY

Sampler's signature : BOB HOPE

Cooler Temp.

Results to : SAME

Invoice to : SAME

	Sample ID	Sample Description	Sample Type Water	Vapor	Solid	Date	Time	# of Bottles	Parameters Requested: HAZARDOUS	METHANE/ETHANE/ETHENE	LLUFA	Remarks
1	WL2A	MW2A	✓	✓		8/25/11	1420	5	✓	✓	✓	
2	W2AD	MW2AD	✓	✓			1430	5	✓	✓	✓	
3	W3AS	W3AS	✓	✓			1125	5	✓	✓	✓	
4	MW3D	MW3D	✓	✓			1200	5	✓	✓	✓	FACILITY ID# 4204
5	WL6D	WL6D	✓	✓			1555	5	✓	✓	✓	
6	MW17	MW17	✓	✓			1235	5	✓	✓	✓	
7	W18S	W18S	✓	✓			1325	5	✓	✓	✓	
8	G13	G13	✓	✓		↓	1520	5	✓	✓	✓	

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
	ENVIRONMENT 1	8/25/11	4:30pm		Microseeps	8/26/11	1444
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Accompany Samples YELLOW COPY : Laboratory File PINK COPY : Submitter

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Appendix C

Time Vs. concentration Graphs

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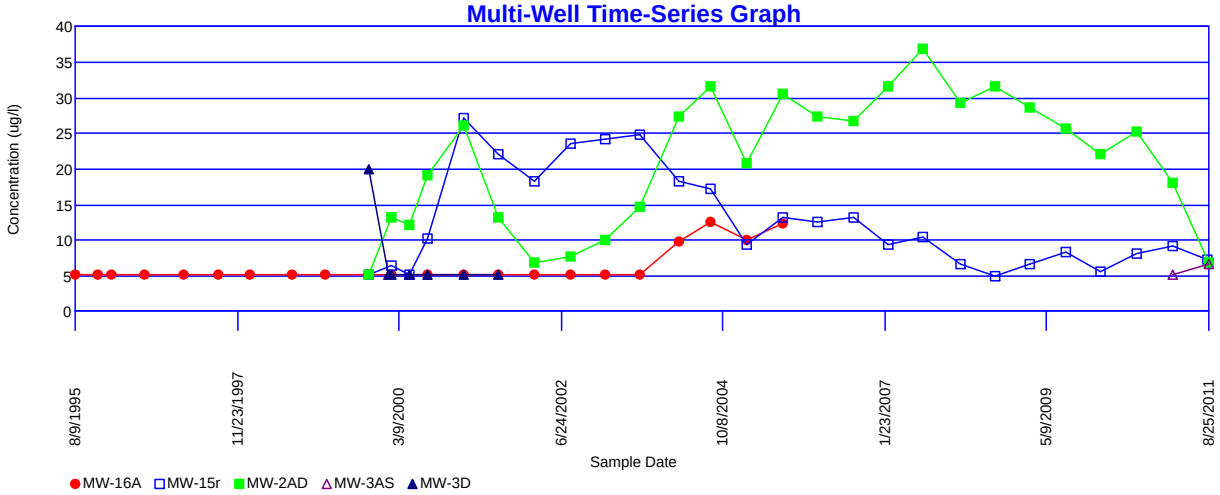
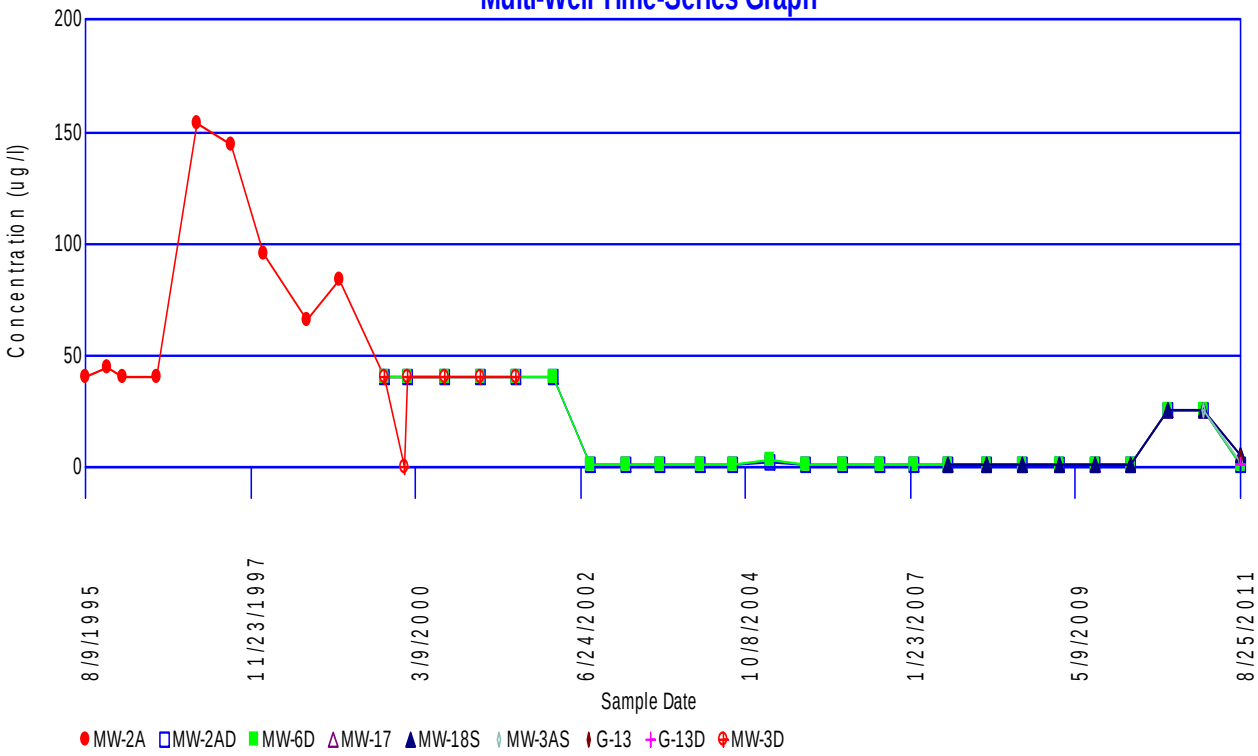
1,1-Dichloroethane

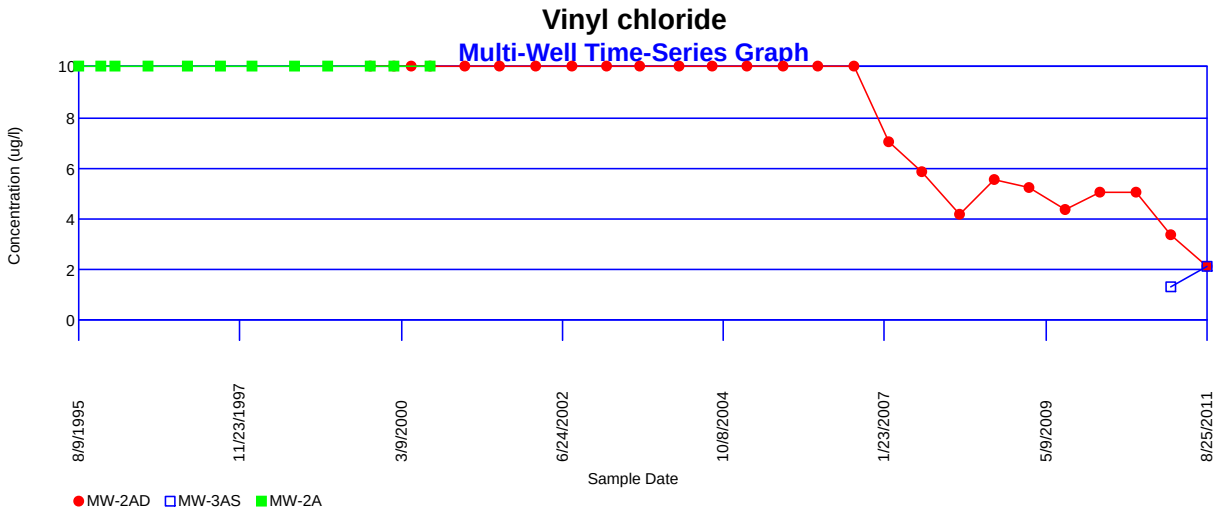
Multi-Well Time-Series Graph

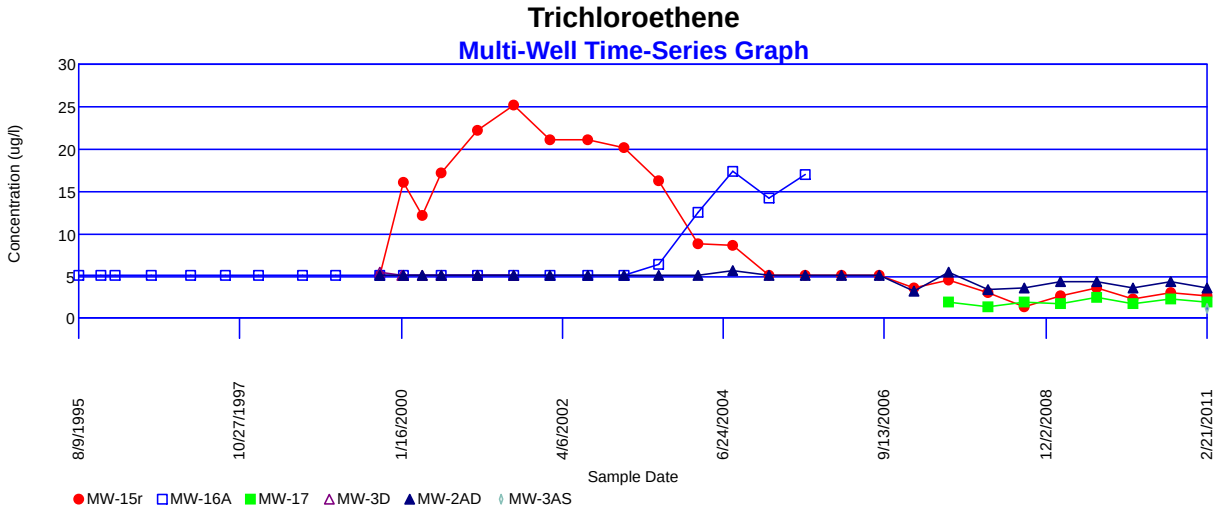


Vanadium

Multi-Well Time-Series Graph

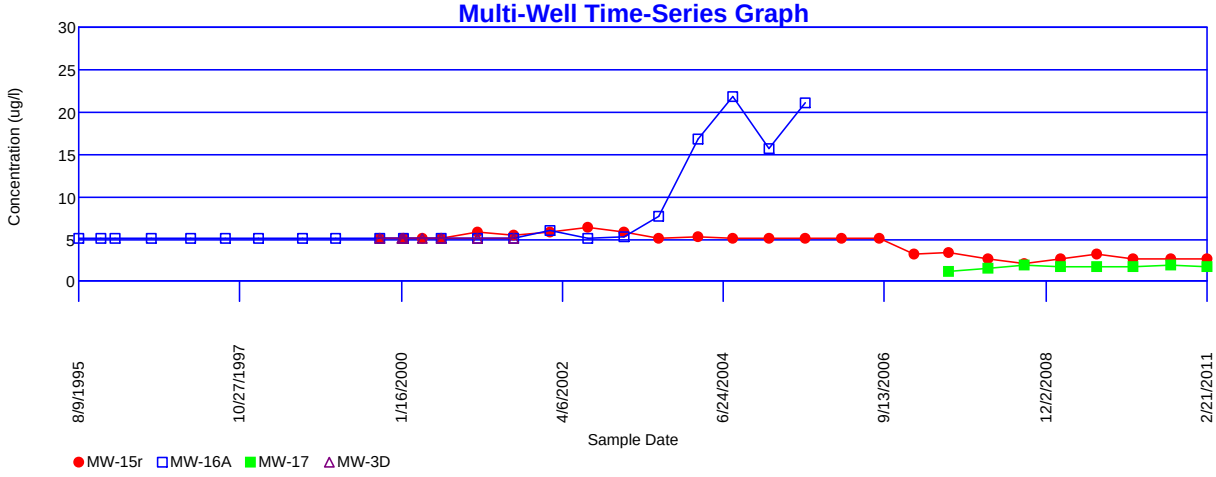



Vinyl chloride
Multi-Well Time-Series Graph
Concentration (ug/l)
10
8
6
4
2
0
8/9/1995
11/23/1997
3/9/2000
6/24/2002
10/8/2004
1/23/2007
5/9/2009
8/25/2011
Sample Date
MW-2AD
MW-3AS
MW-2A


Trichloroethene
Multi-Well Time-Series Graph
Concentration (ug/l)
30
25
20
15
10
5
0
8/9/1995
10/27/1997
1/16/2000
4/6/2002
6/24/2004
9/13/2006
12/2/2008
2/21/2011
Sample Date
MW-15r
MW-16A
MW-17
MW-3D
MW-2AD
MW-3AS

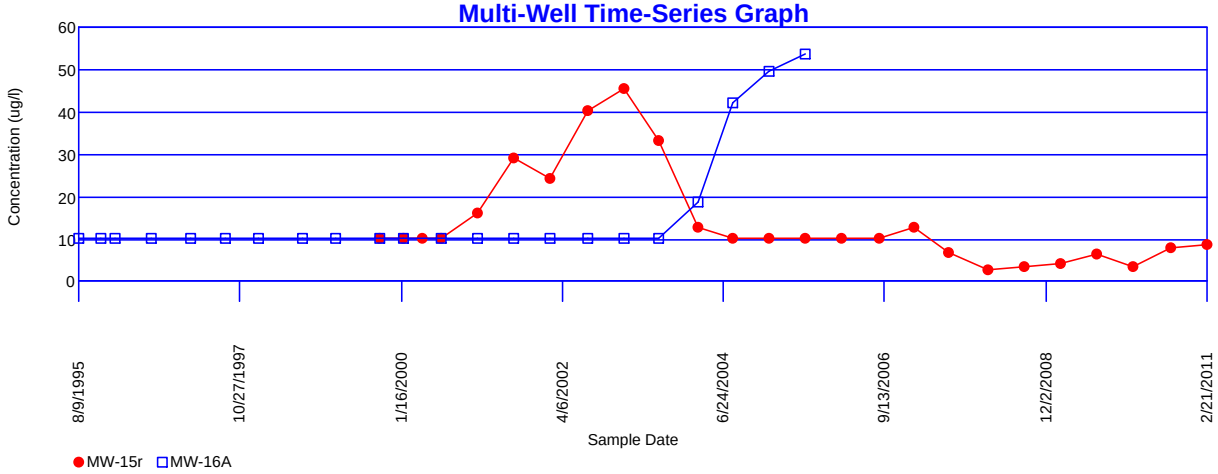
Tetrachloroethene

Multi-Well Time-Series Graph



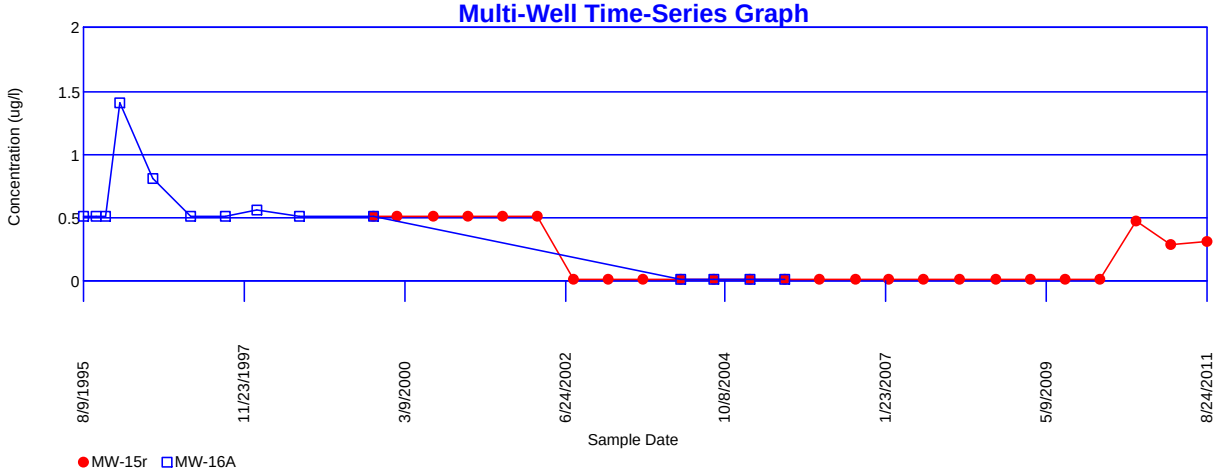
Methylene Chloride

Multi-Well Time-Series Graph



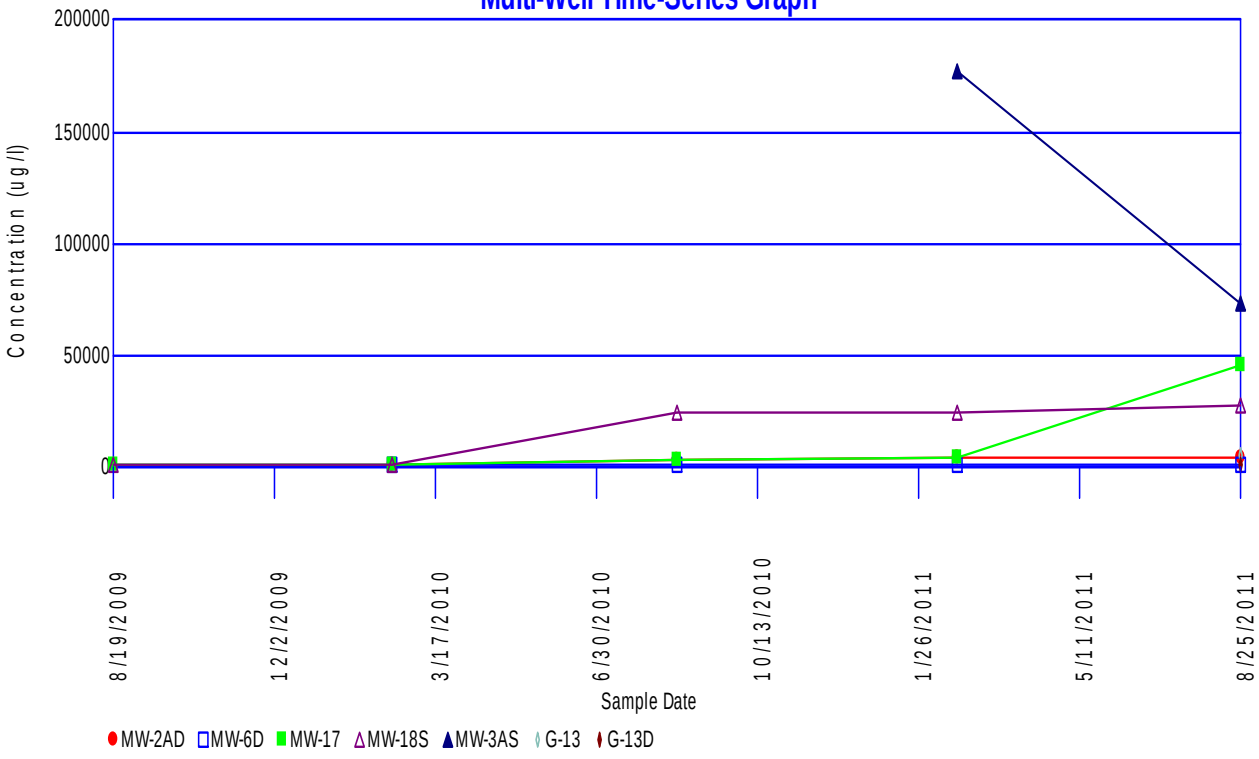
Mercury

Multi-Well Time-Series Graph



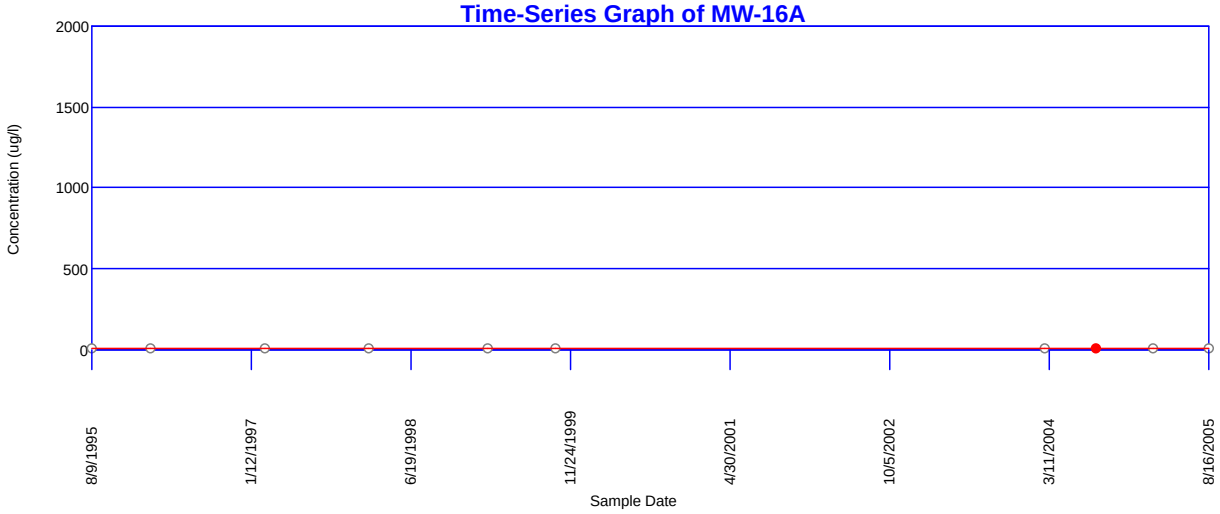
Iron

Multi-Well Time-Series Graph



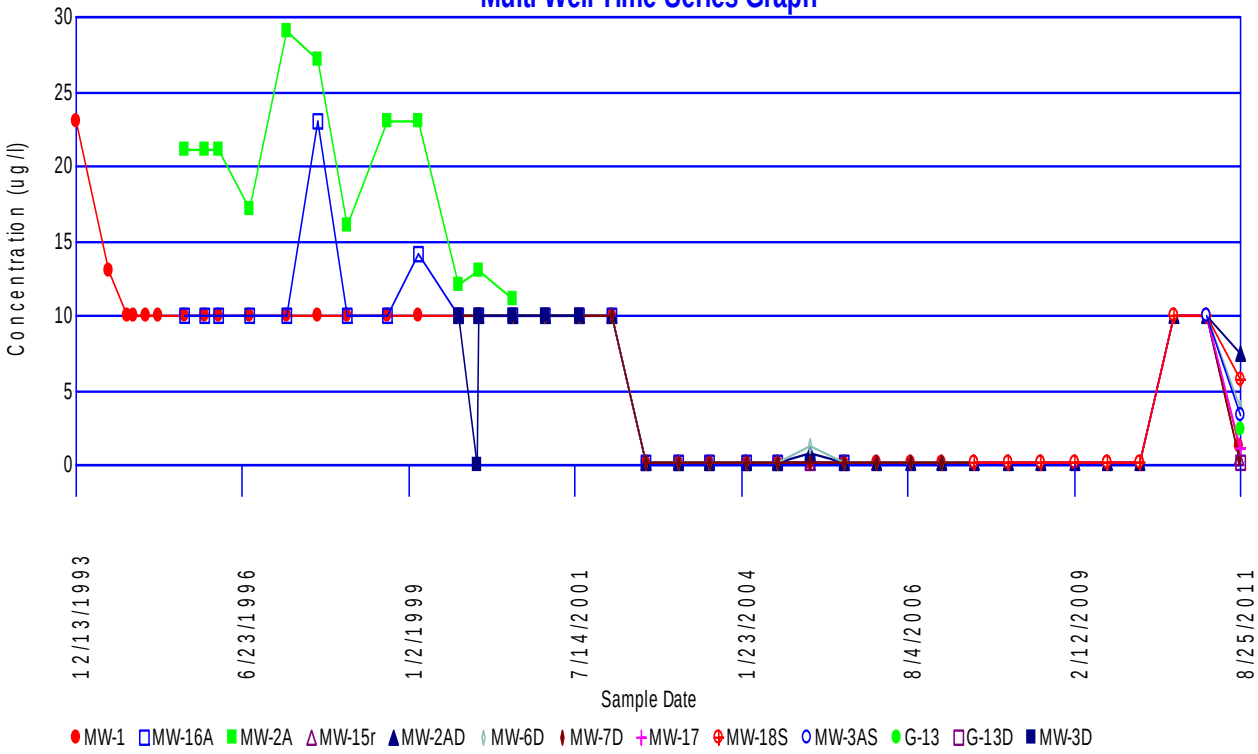
Dichlorodifluoromethane

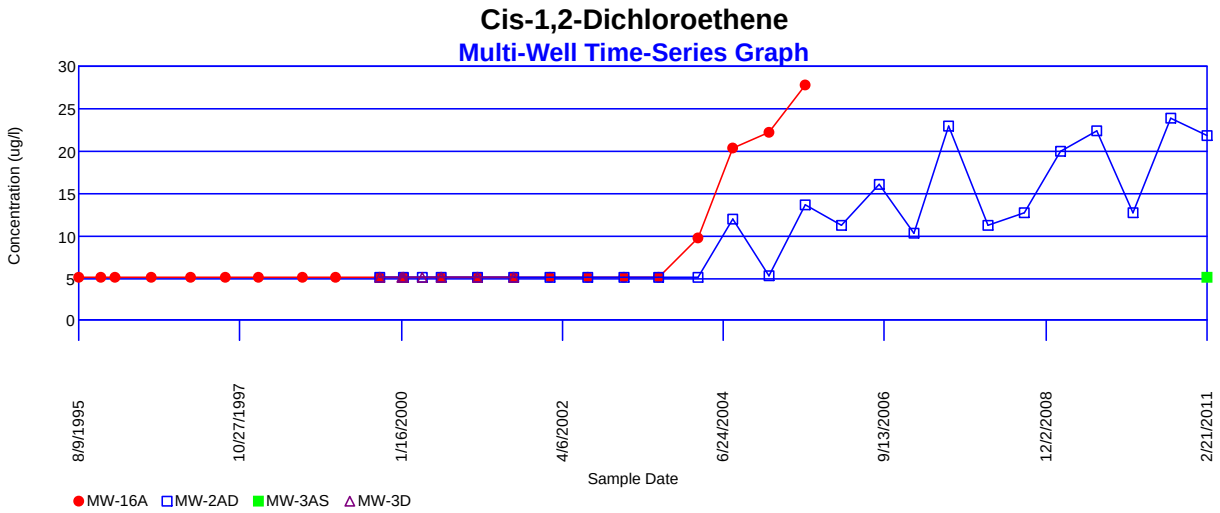
Time-Series Graph of MW-16A



Cobalt

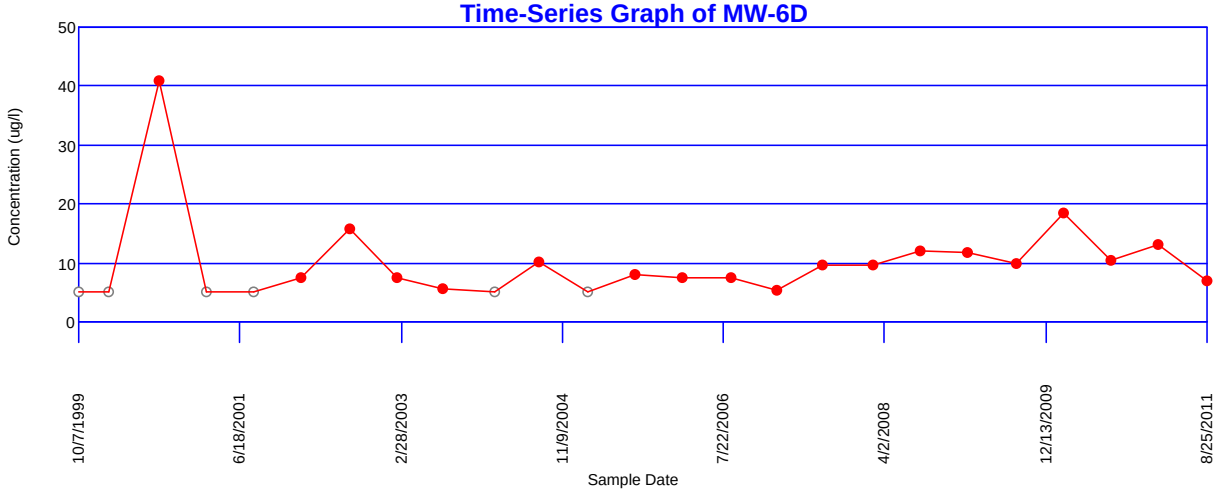
Multi-Well Time-Series Graph




Cis-1,2-Dichloroethene
Multi-Well Time-Series Graph
Concentration (ug/l)
30
25
20
15
10
5
0
8/9/1995
10/27/1997
1/16/2000
4/6/2002
6/24/2004
9/13/2006
12/2/2008
2/21/2011
Sample Date
MW-16A
MW-2AD
MW-3AS
MW-3D

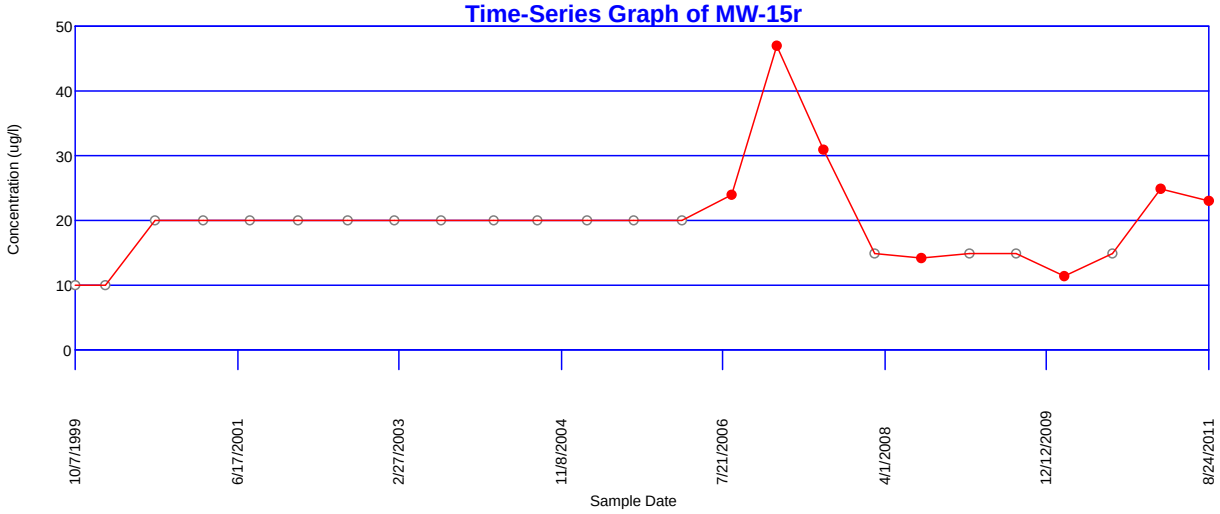
Chlorobenzene

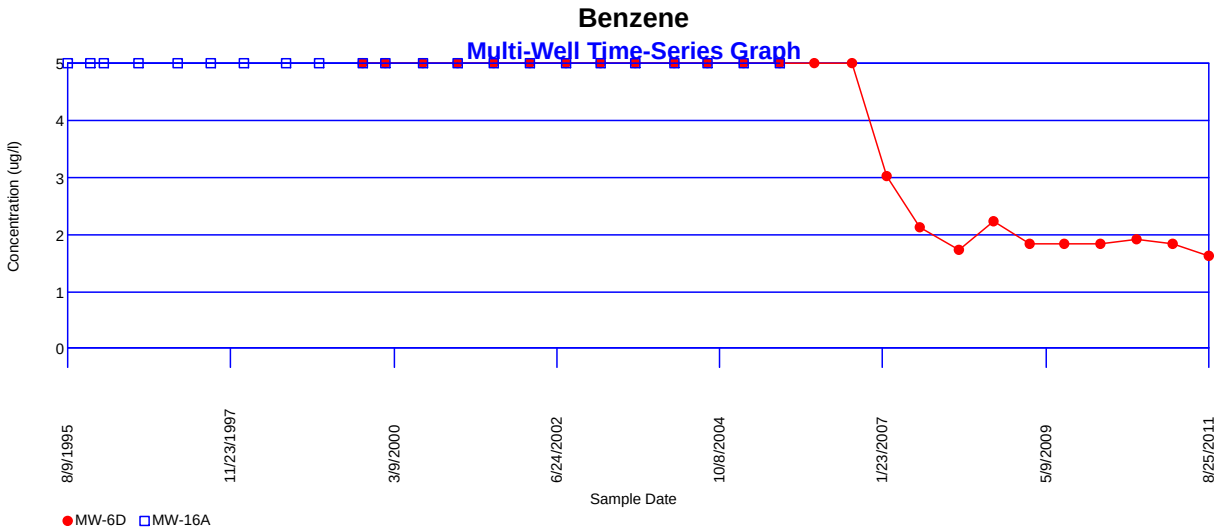
Time-Series Graph of MW-6D



Bis-(2-Ethylhexyl) Phthalate

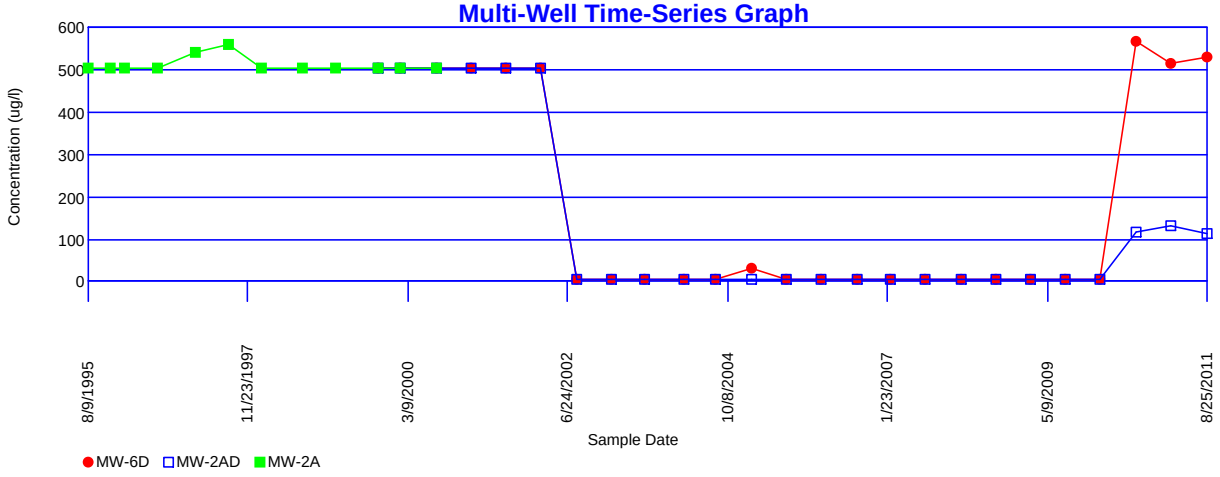
Time-Series Graph of MW-15r

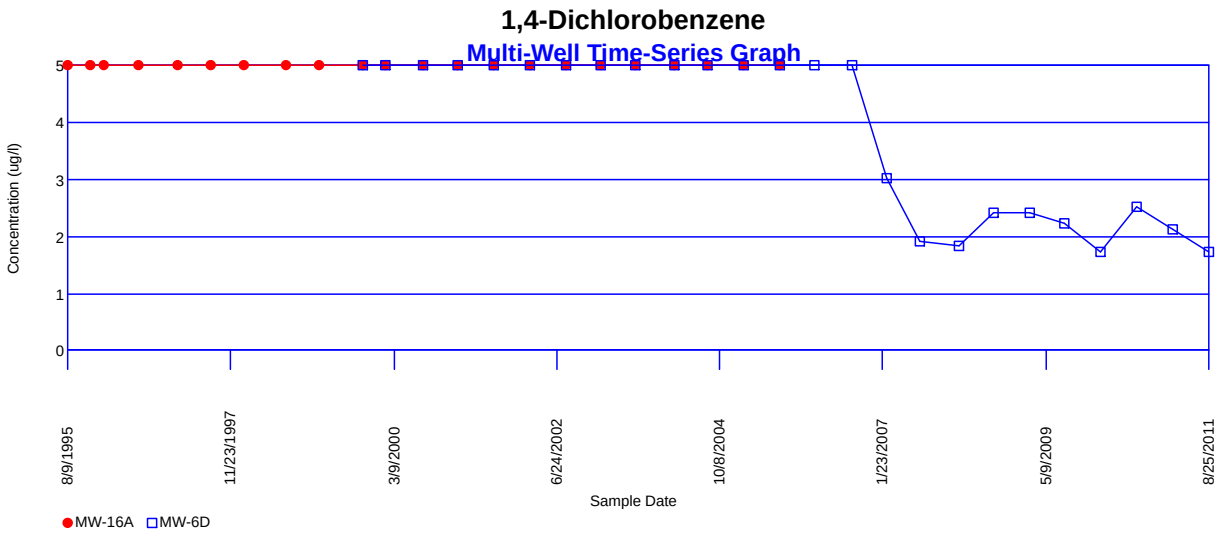



Benzene
Multi-Well Time-Series Graph
Concentration (ug/l)
5
4
3
2
1
0
8/9/1995
11/23/1997
3/9/2000
6/24/2002
10/8/2004
1/23/2007
5/9/2009
8/25/2011
Sample Date
MW-6D
MW-16A

Barium

Multi-Well Time-Series Graph




1,4-Dichlorobenzene
Multi-Well Time-Series Graph
Concentration (ug/l)
5
4
3
2
1
0
8/9/1995
11/23/1997
3/9/2000
6/24/2002
10/8/2004
1/23/2007
5/9/2009
8/25/2011
Sample Date
MW-16A
MW-6D