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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).
- In accordance with NC General Statutes Chapter 89C and 89E and NC Solid Waste Management Rules 15A NCAC 13B, be sure to affix a seal to the bottom of this page, when applicable.
- 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: Joan A. Smyth, P.G. Phone: 919-828-0577 x 221

E-mail: joan@rsgengineers.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Johnston County Phase 5 Landfill	680 County Home Road Smithfield, NC	51-03	.1600	October 28th - November 2nd 2009

Environmental Status: (Check all that apply)

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

Type **of data submitted: (Check all that apply)**

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

Notification attached?

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

Certification

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

Joan A. Smyth, P.G.	Senior Hydrogeologist	919-828-0577 x 221
Facility Representative Name (Print)	Title	(Area Code) Telephone Number
Joan A. Smyth	1/12/10	Affix NC Licensed/ Professional Geologist/Engineer Seal here:
Signature	Date	

NORTH CAROLINA LICENSED SEAL 1369 GEOLOGIST JOAN A. SMYTH

Revised 01/2007

Johnston County Landfill
Phase 5

Ground Water Monitoring Report

October 2009 Semi-annual Monitoring Event

Johnston County Landfill
Smithfield, North Carolina
NC Solid Waste Permit # 51-03

Prepared for:
Johnston County Department of Public Utilities
309 East Market Street
Smithfield, North Carolina 27577

January 2010

RICHARDSON SMITH GARDNER
& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES

Fall 2009 Ground Water Monitoring Report

Johnston County Landfill
Phase 5
Smithfield, North Carolina
NC Solid Waste Permit # 51-03

Prepared for:

Johnston County Department of Public Utilities
309 East Market Street
Smithfield, North Carolina 27577

RSG Project No. **Johnston - 4**

Joan A. Smyth, P.G.
Senior Hydrogeologist

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January 2010

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

PRINTED ON 100% RECYCLED PAPER

Johnston County – Phase 5 Lined Landfill
Semi-annual Ground Water Monitoring Report
October 2009 Sampling Event

1.0 INTRODUCTION 1

2.0 SITE GEOLOGY 1

3.0 SAMPLING PROCEDURES 1

4.0 FIELD AND LABORATORY RESULTS 2
4.1 Laboratory Analysis 2
4.2 Field and Laboratory Results 2

5.0 STATISTICAL ANALYSIS AND RESULTS 2
5.1 Statistical Analysis 2
5.2 2L/MCL Statistical Analysis 3

6.0 GROUND WATER CHARACTERIZATION 4

7.0 GROUND WATER ASSESSMENT 4

8.0 CONCLUSIONS 4

FIGURES

Figure 1 – Ground Water Potentiometric Map

TABLES

Table 1 – Ground Water Elevations & Velocities
Table 2 – Field Parameters
Table 3 – Detected Inorganic and Organic Constituents
Table 4 – Statistical Analysis Summary

APPENDICES

Appendix A – Monitoring Well Information
Appendix B – Laboratory Analytical Report
Appendix C – Time vs. Concentration Graphs

1.0 Introduction

Johnston County formerly operated a Subtitle-D landfill under Solid Waste Permit # 51-03 (Phase 5). This report presents the results of the second semi-annual ground water monitoring event for 2009 for Phase 5, conducted on October 26th - October 27th, 2009. This event was performed to comply with the semi-annual monitoring schedule required by NC Solid Waste Regulations.

The ground water monitoring network for the Phase 5 landfill includes 10 ground water monitoring wells and four leachate lagoon monitoring wells. This report includes summaries of the field procedures, laboratory analyses, statistical analyses, and ground water characterization for the Phase 5 unit. Also included are graphs of the data, and laboratory analytical reports.

2.0 Site Geology

The site is underlain by sediments of the Middendorf Formation which were deposited largely in a deltaic system. According to Geology of the Carolinas (Horton/Zullo, 1991) the formation consists of unfossiliferous, interbedded, thin clay and sand. The stratigraphy tends to be very discontinuous, indicating that the sediment deposits are lenticular. Most of the sediments range from silty clay to a coarse clayey sand and gravel with thin lenses of dense clay. There are occasional concretions of iron oxide minerals which form very hard thin layers within the sand layers. In general, the unconsolidated sediments logged during drilling events at the site consisted of mainly medium to coarse sands with some silts and clays. The Middendorf Formation is underlain by highly weathered metamorphic rocks of the Carolina Slate Belt.

The thickness of the Middendorf Formation is controlled by topography with the bottom being relatively flat-lying at elevations of approximately 170 fmsl. The thickness of the unconsolidated sediment ranges from approximately 65 feet to less than 10 feet in the lower elevations surrounding the landfill.

3.0 Sampling Procedures

The sampling event, performed by trained personnel from Johnston County Landfill, consisted of collecting samples from 10 ground water monitoring wells (MW-5-1, MW-5-2, MW-5-3, MW-5-4, MW-5-5, MW-5-6, MW-5-7, MW-5-8, MW-5-9, and MW-5-10), shown in **Figure 1**. The sampling was conducted in accordance with the approved site Water Quality Monitoring Plan. Also included in the analysis was a trip blank for quality control. Surface water samples were collected from two locations (SW-5-1 and SW-5-2) up and downstream from the landfill unit on Middle Creek.

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (NCDENR, DWM). The depth to water in each well was gauged prior to purging and sampling. Field measurements of pH, specific conductivity, and temperature were obtained from each well. Water table elevations and field parameter results are included in **Tables 1 and 2**, respectively.

All samples were collected by Johnston County personnel in laboratory prepared containers for the specified analytical procedures. Samples were obtained through dedicated Micropurge low flow pumps. Ground water samples were properly preserved, placed on ice, and transported to the laboratory facility, Environment 1, Inc., within the specified holding times for each analysis.

4.0 Field and Laboratory Results

4.1 Laboratory Analysis

Ground water samples were collected from the monitoring network associated with the Phase 5 landfill unit using dedicated low-flow pumps. These samples were analyzed for Appendix I constituents.

4.2 Field and Laboratory Results

All samples were transported to the laboratory facility under proper chain of custody analyzed at the specified DWM Solid Waste Section Limits (SWSL)[1] for Appendix I constituents. Monitoring well boring logs are included in **Appendix A**. The laboratory analytical report is included as **Appendix B**.

Ground water and field measurements included in **Table 2**, remained similar to previous results. The laboratory analysis detected eight (8) inorganic constituents; beryllium, barium, copper, total chromium, cobalt, lead, vanadium and zinc; and one (1) organic constituent; 1,2-dichloropropane. Of these, lead (MW5-3 & MW5-4) and vanadium (MW5-3) and 1,2-dichloropropane (MW 5-2 & MW5-8) were detected above 2L standards. Constituents detected below the SWSL are denoted as "J" values and are also included in **Table 3.**

There are currently two surface water monitoring points associated with Phase 5 (SW-5-1, and SW-5-2). Laboratory analysis detected barium in surface water sample SW 5-1.

5.0 Statistical Analysis & Results

5.1 Statistical Analysis

The laboratory analytical results were entered into our statistical database for the site. Data entry and analysis was performed using the Chempoint/Chemstat™ statistical software package developed specifically for RCRA Subtitle D sites (Starpoint Software, Cincinnati, OH). Chemstat follows EPA and DSWM protocols for approved statistical analysis methods for groundwater data.

The data from this monitoring event was added to our existing database for this site and was reviewed to evaluate the most appropriate analysis methods. Initial analysis consisted of a

[1] New Guidelines for electronic submittal of environmental monitoring data memo, NCDENR DWM, Solid Waste Section, October 27, 2006.

basic review of the data and of time-concentration graphs (**Appendix C**) to determine any major changes or trends in the data. Non-parametric testing methods were used on most wells due to the lack of normality, in the data. Statistical analysis was performed using MW-5-1 as background well and MW-5-2, MW-5-3, MW-5-4, MW-5-5, MW-5-6, MW-5-7, MW-5-8, MW-5-9 and MW-5-10 as the compliance wells. The statistical analysis reports are summarized in **Table 4**.

The following constituents were found to be statistically significant:

- 1,2-dichloropropane (MW-5-8);
- barium (MW-5-2 & MW-4);
- cobalt (MW-5-10); and
- lead (MW-5-3 & MW-5-4).

These are highlighted on **Table 4**.

5.2 2L/MCL Statistical Analysis

For wells that showed statistically significant differences from background concentrations, additional analysis was performed. This analysis has recently been required as part of ongoing Assessment monitoring for landfills in North Carolina. To perform the analysis, the respective 2L standard or MCL was determined for each parameter with statistically significant results. Each compliance well with statistical significance was re-analyzed against the lower of the 2L or MCL standard as a Ground Water Protection Standard (GWPS).

This analysis was performed using tolerance interval analysis. Since a smaller subset of wells was analyzed during this step, the compliance well data were retested for normal distribution. If the data were normally distributed, parametric tolerance intervals were constructed for each well and compared to the GWPS for each parameter. For those wells not exhibiting normal distribution, Poisson tolerance intervals were constructed. If the distribution of the data was marginally normal, both tests were run to cross-check the results. All of these cross-checks yielded the same results from both test methods.

The statistical results for this additional analysis are presented in **Table 4**. An upper tolerance limit higher than the GWPS standard was considered to be a statistically significant result. This analysis indicated statistically significant results for:

- 1,2-dichloropropane (MW-5-8);
- barium (MW-5-2 & MW-4);
- cobalt (MW-5-10); and
- lead (MW-5-3 & MW-5-4).

6.0 Ground Water Characterization

A potentiometric surface map was prepared from ground water elevation data collected during this sampling event. Ground water velocity was calculated for each monitoring well on-site using the equation V = (KI)/n where:

K = hydraulic conductivity
I = ground water gradient
n = porosity

Ground water velocities ranged from 0.005 feet/day (MW-5-10) to 0.63 feet/day (MW-5-2). These calculations are included in **Table 1**. The data indicates that ground water is flowing generally to the north toward Middle Creek. This is consistent with ground water flow patterns previously seen at this site. The potentiometric surface map (**Figure 1**) is also attached for your review.

7.0 Ground Water Assessment

During previous events concentrations of 1,2-dichloropropane were detected. 1,2-dichloropropane has several uses, one of which is as a soil fumigant. Due to the historic use of this property for farming, we believe that is the source of this constituent.

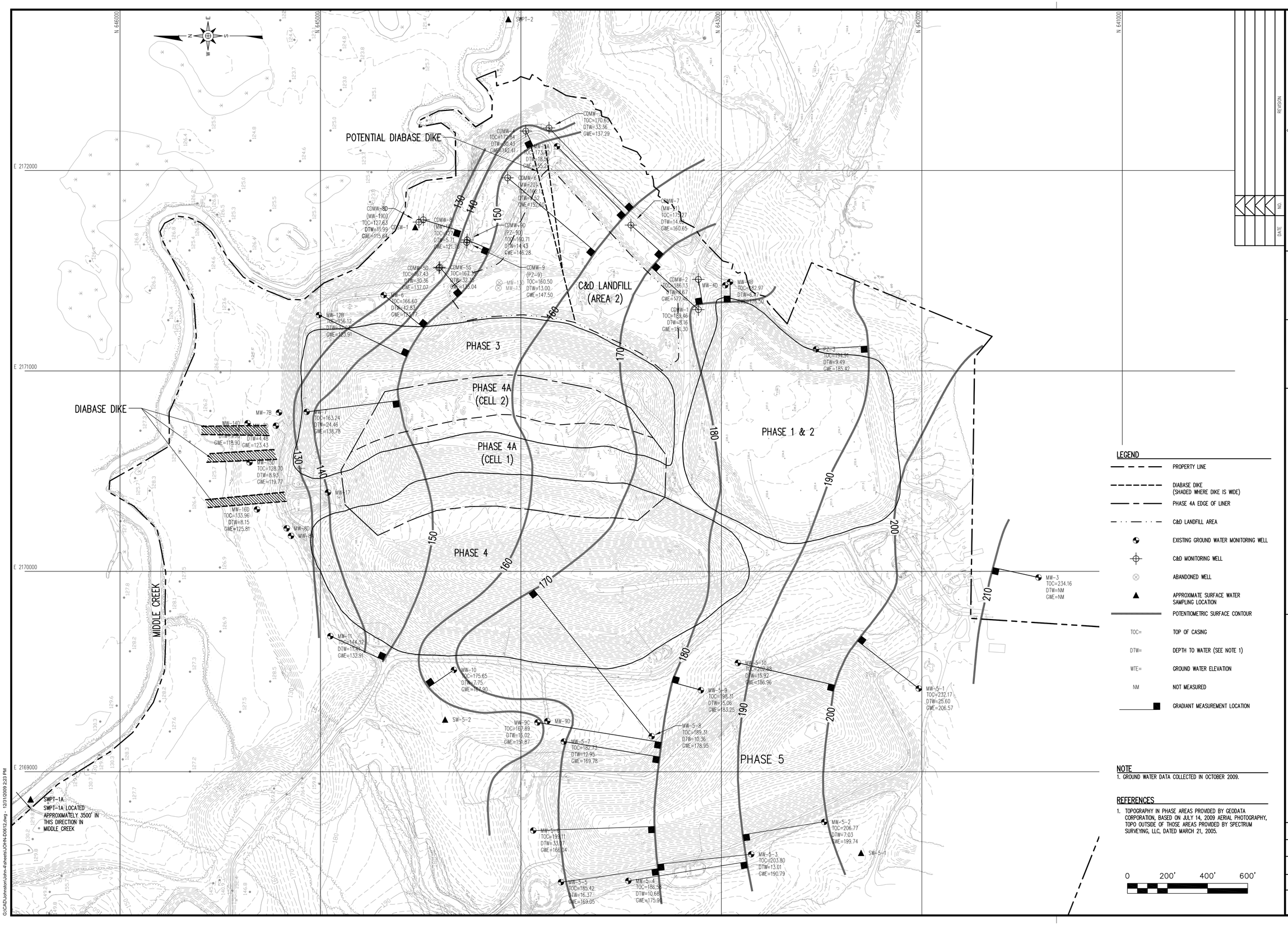
Leachate samples intermittently have had a "J-value" detection of this constituent that is below the Solid Waste Section (SWSL) and orders of magnitude below the detected level in the ground water. During several previous events this constituent has not been detected in leachate at all. Therefore, it is unlikely that the landfill is the source of this impact. Additionally, no other constituent that has been detected in the leachate was found to be present in the samples from these wells. This information further supports the source as historical farming practices.

We will continue to monitor the levels of this constituent over the coming semi-annual events.

8.0 Conclusions

The results of this monitoring event indicated detection of three constituents; lead, vanadium & 1,2-dichloropropane. We are continuing to evaluate the detections of 1,2-dichloropropane in this phase but believe it to be due to historic farming practices of the site. The next semi-annual sampling event will be performed in spring 2010. These results will be reported upon receipt of the laboratory data and completion of the statistical analyses.

Figures



NOTE

1. GROUND WATER DATA COLLECTED IN OCTOBER 2009.

REFERENCES

1. TOPOGRAPHY IN PHASE AREAS PROVIDED BY GEODATA CORPORATION, BASED ON JULY 14, 2009 AERIAL PHOTOGRAPHY, TOPO OUTSIDE OF THOSE AREAS PROVIDED BY SPECTRUM SURVEYING, LLC, DATED MARCH 21, 2005.

NO.	DATE	REVISION

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SEAL

SEAL

PROJECT TITLE: JOHNSTON COUNTY LANDFILL
SMITHFIELD, NORTH CAROLINA

DRAWING TITLE: GROUND WATER POTENTIOMETRIC SURFACE MAP FALL 2009

DESIGNED BY: K.B.S.	DRAWN BY: J.A.L.
CHECKED BY:	PROJECT NO.: JOHN-4
SCALE: AS SHOWN	DATE: DEC. 2009
FILE NAME: JOHN-D0612	
SHEET NO.	DRAWING NO. FIG. 1

G:\CAD\Johnston\John-4\phase5\JOHN-D0612.dwg - 12/31/2009 2:23 PM

Tables

By: KBS
Date: 11/11/2009

Table 1
Johnston County Phase 5 Lined Landfill
Ground Water Elevations & Velocities
10/26-27/2009

Well	Northing	Easting	TOC Elevation (feet)	Water Level (feet)	GW Elev (feet)	Hyd. Cond. (ft/day)	Porosity (%)	Gradient (ft/ft)	Velocity (ft/day)
MW-5-1	642015.58	2169415.4	232.17	25.6	206.57	2.275	0.2	0.017	0.193
MW-5-2	642487.14	2168749.63	206.77	7.03	199.74	5.247	0.2	0.024	0.630
MW-5-3	642851.56	2168588.27	203.8	13.01	190.79	0.995	0.2	0.023	0.114
MW-5-4	643464.18	2168455.67	186.58	10.68	175.9	0.465	0.2	0.007	0.016
MW-5-5	643800.44	2168449.11	185.42	16.37	169.05	0.261	0.2	0.022	0.029
MW-5-6	643938.92	2168706.91	199.11	33.07	166.04	0.366	0.2	0.023	0.042
MW-5-7	643786.2	2169150.69	182.73	12.95	169.78	0.422	0.2	0.022	0.046
MW-5-8	643347.86	2169177.25	189.31	10.36	178.95	0.312	0.2	0.010	0.015
MW-5-9	643102.64	2169406.82	198.31	15.06	183.25	0.309	0.2	0.022	0.034
MW-5-10	642917.77	2169543.59	202.88	15.92	186.96	0.037	0.2	0.027	0.005
LL-1	645398.84	2168192.54	na	na	na	na	na	na	na
LL-2	645867.44	2168271.33	na	na	na	na	na	na	na
LL-3	645957.48	2168106	na	na	na	na	na	na	na
LL-4	645781.3	2167851.39	na	na	na	na	na	na	na

Notes: Velocity Calculated from V=K*I/n
V = velocity
K = Hydraulic Conductivity
I = Gradient
n = Porosity
Hydraulic Conductivity data from slug testing
Porosity values assumed from Groundwater & Wells (Driscoll)
na = not available

By: KBS
Date: 11/11/2009

Table 2
Johnston County Phase 5 Lined Landfill
Field Parameters
10/26-27/2009

Well Identification #	Static Water Level (ft) * (DTW)	Temperature (°Celsius)	Turbidity (NTU)	pH	Specific Conductivity (uS/cm)
MW – 5-1	25.6	18.91	31.7	4.02	142
MW – 5-2	7.03	17.34	103	3.78	381
MW – 5-3	13.01	18.72	Off-Scale	4.06	87
MW – 5-4	10.68	17.45	489	4.33	47
MW – 5-5	16.37	19.16	22.6	4.22	41
MW – 5-6	33.07	18.17	7.13	4.91	58
MW – 5-7	12.95	17.17	77.1	4.47	54
MW – 5-8	10.36	18.42	2.18	4.57	272
MW – 5-9	15.06	17.93	38.7	4.22	70
MW – 5-10	15.92	17.39	252	4.78	44
Phase 5 Direct Leachate	N/A	20.33	Off-Scale	7.47	7480
Leachate Lagoon #1	BPH	18.05	2.07	5.45	97
Leachate Lagoon #2	BPH	16.62	2.57	5.28	93
Leachate Lagoon #3	BPH	17.45	6.42	5.39	61
Leachate Lagoon #4	BPH	16.24	3.49	5.39	102
SW5 – 1	N/A	13.3	11.4	7.12	313
SW5 – 2	N/A	IWV	IWV	IWV	IWV

N/A - Not Analyzed
BPH - Below Pump Head
IWV - Insufficient Water Volume
Data collected by Kevin Shields of Johnston County

By: KBS
Date: 11/11/2009

Table 3
Johnston County Phase 5 Lined Landfill
Detected Inorganic and Organic Constituents
10/26-27/2009

Inorganic Constituents

Parameter	SWSL	2L	MW-5-1	MW-5-2	MW-5-3	MW-5-4	MW-5-5	MW-5-6	MW-5-7	MW-5-8	MW-5-9	MW-5-10	SW-5-1	SW-5-2
Antimony	6	1.4	0.1J	0.1J	0.1J	0.1J	0.1J	ND	0.6J	0.1J	0.2J	0.1J	0.1J	NA
Arsenic	10	50	0.5J	0.6J	3J	2J	ND	1.2J	0.3J	ND	0.3J	0.7J	ND	NA
Barium	100	2000	**158**	**512**	**133**	**539**	58.7J	47.7J	53.5J	**445**	**116**	**316**	**330**	NA
Beryllium	1	4	0.4J	**1.4**	1.5	**1**	0.2J	ND	0.3J	0.3J	0.4J	0.2J	ND	NA
Cadmium	1	1.75	ND	0.3J	0.5J	0.3J	ND	ND	0.1J	0.1J	0.1J	0.1J	ND	NA
Cobalt	10	70	2.3J	7.1J	2.6J	9.3J	4.1J	4.7J	7.9J	5.8J	3.5J	**29**	0.4J	NA
Copper	10	1000	0.7J	2J	**12**	6.2J	1.1J	0.9J	2.9J	1.3J	1.4J	2.6J	0.6J	NA
Total Chromium	10	50	1J	0.9J	**10**	0.5J	0.4J	0.2J	1.4J	ND	0.8J	2.2J	ND	NA
Lead	10	15	3.2J	7.7J	**26**	**17**	2.4J	0.5J	2.1J	4.4J	3.1J	7.1J	0.2J	NA
Nickel	50	100	3.2J	7.5J	3.1J	8.5J	2.3J	1.7J	8.2J	5.6J	2.9J	5.7J	1.6J	NA
Selenium	10	50	0.3J	0.7J	1.6J	0.6J	0.3J	ND	0.3J	0.5J	0.7J	1.3J	0.2J	NA
Silver	10	17.5	ND	0.1J	0.1J	0.1J	0.1J	ND	ND	0.2J	0.2J	0.1J	ND	NA
Thallium	5	0.28	0.1J	0.1J	0.1J	0.2J	0.1J	0.1J	0.1J	0.2J	ND	0.3J	0.1J	NA
Vanandium	25	3.5	2.8J	3.9J	**26**	3.4J	1.1J	0.8J	3.4J	0.9J	3.1J	8.4J	0.9J	NA
Zinc	10	1050	1.8J	9.4J	**18**	**24**	3.5J	3.7J	**16**	3.7J	5.8J	6.8J	4J	NA

Organic Constituents

Parameter	SWSL	2L	MW-5-1	MW-5-2	MW-5-3	MW-5-4	MW-5-5	MW-5-6	MW-5-7	MW-5-8	MW-5-9	MW-5-10	SW-5-1	SW-5-2
1,1,2,2-Tetrachloroethane	3	70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
1,2,3-Trichloropropane	1	0.005	ND	0.40J	ND	ND	ND	ND	ND	0.30J	ND	ND	ND	NA
1,1-Dichloroethane	5	70	ND	ND	ND	ND	ND	0.40J	ND	ND	ND	ND	ND	NA
1,2-Dichloropropane	1	0.51	ND	**4.3**	0.30J	0.20J	ND	ND	0.40J	**5.9**	0.30J	ND	ND	NA
Acetone	100	700	2.70J	2.00J	1.80J	2.10J	2.70J	2.60J	1.30J	2.30J	1.9J	1.50J	2.70J	NA
2-Butanone	100	4200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
4-Methyl-2-Pentanone	100	560	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Benzene	1	1	ND	ND	ND	ND	ND	0.70J	ND	ND	ND	ND	ND	NA
Carbon Disulfide	100	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Chloroform	5	70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Chloromethane	1	2.6	ND	ND	ND	ND	ND	0.20J	ND	ND	ND	ND	ND	NA
Mythylene Chlroide	1	---	ND	ND	ND	ND	ND	0.20J	ND	ND	ND	ND	ND	NA
Cis-1,2-Dichloroethene	5	70	ND	ND	ND	ND	ND	0.70J	ND	ND	ND	ND	ND	NA
Toluene	1	1000	0.30J	0.30J	0.30J	0.40J	0.40J	0.60J	0.30J	0.30J	0.20J	0.30J	0.50J	NA
Vinyl Chloride	1	0.015	ND	ND	ND	ND	ND	0.70J	ND	ND	ND	ND	ND	NA

ND - Not detected at or above SWSL
Shading - Levels above 2L standard or no 2L standard
Bold Letters - Constituent detected above SWSL
J - Detected constituents below SWSL limit

All SWSLs, 2L Standards and Results are in ug/l.

Notes: - Acetone detected in Trip Blank at 1.80J
Acetone detected in Trip Blank at 3.10JJ
Acetone detected in Equipment Blank at 6.20J

By: KBS
Date: 11/11/2009

Table 4
Johnston County Phase 5 Landfill
Statistical Analysis Summary
10/26-27/2009

Location	Parameter	Result	Detection Limit	Test Units	%ND	%CL	Test	Statistically Significant?	2nd statistical Analysis	Test
MW-5-2	1,2-Dichloropropane	4.3	<1	ug/l	74	93	NPPL	N	---	---
MW-5-8	1,2-Dichloropropane	5.9	<1	ug/l	74	93	NPPL	Y	Y	MCL - PTI (1992)
MW-5-10	Barium	0.316	<0.100	mg/l	71.95	81.8	NPPL	N	---	---
MW-5-2	Barium	0.512	<0.100	mg/l	71.95	81.8	NPPL	Y	Y	MCL - PTI (1992)
MW-5-3	Barium	0.133	<0.100	mg/l	71.95	81.8	NPPL	N	---	---
MW-5-4	Barium	0.539	<0.100	mg/l	71.95	81.8	NPPL	Y	Y	MCL - PTI (1992)
MW-5-8	Barium	0.445	<0.100	mg/l	71.95	81.8	NPPL	N	---	---
MW-5-9	Barium	0.116	<0.100	mg/l	71.95	81.8	NPPL	N	---	---
MW-5-2	Beryllium	0.0014	<0.001	mg/l	75.9	90	NPPL	N	---	---
MW-5-3	Beryllium	0.0015	<0.001	mg/l	75.9	90	NPPL	N	---	---
MW-5-4	Beryllium	0.001	<0.001	mg/l	75.9	90	NPPL	N	---	---
MW-5-10	Cobalt	0.029	<0.010	mg/l	57	96.4	NPPL	Y	Y	MCL - PTI (1992)
MW-5-3	Copper	0.012	<0.010	mg/l	75	96.4	NPPL	N	---	---
MW-5-3	Lead	0.026	<0.010	mg/l	72.8	93.1	NPPL	Y	Y	MCL - PTI (1992)
MW-5-4	Lead	0.017	<0.010	mg/l	72.8	93.1	NPPL	Y	Y	MCL - PTI (1992)
MW-5-3	Total Chromium	0.01	<0.010	mg/l	25		kruskal wallis	N	---	---
MW-5-3	Vanadium	0.026	<0.025	mg/l	66.7	96.4	NPPL	N	---	---
MW-5-3	Zinc	0.018	<0.010	mg/l	76.8	90	NPPL	N	---	---
MW-5-4	Zinc	0.024	<0.010	mg/l	76.8	90	NPPL	N	---	---
MW-5-7	Zinc	0.016	<0.010	mg/l	76.8	90	NPPL	N	---	---

Legend:

%ND	Method chosen due to percent non-detects
NPTL	Non-parametricTolerance Limit
NPPL	Non-parametric Prediction Interval

Shading indicates statistical significance.

Notes:
MW-5-1 was used as the background well

Appendix A

Monitoring Well Information

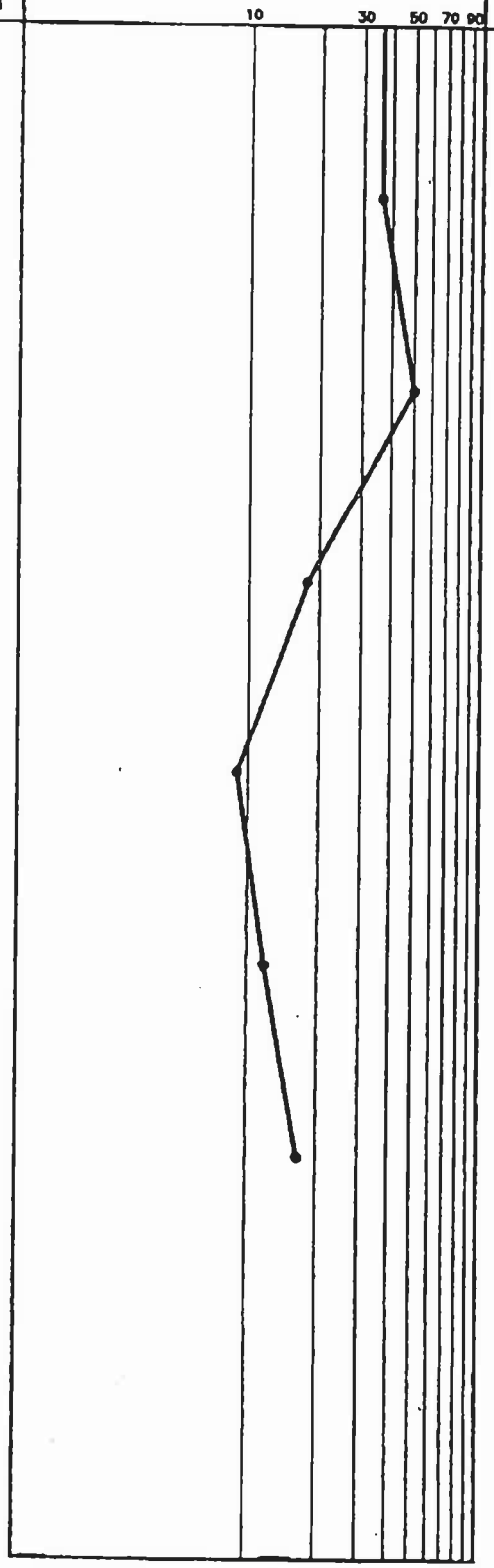
PROJECT:	JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION	TEST BORING RECORD	DMW 5-1
PROJECT NO.:	1054-95-286A	ELEVATION:	
LOGGED BY:	W. BECKWITH	BORING DEPTH:	30 FEET
DATE DRILLED:	4/16/97	WATER LEVEL:	19.4' ON 4/17/97
DRILL METHOD:	4 ¼" H.S.A.	DRILL RIG:	MUDBUG

NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING

WELL SCHEMATIC LEGEND: SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT

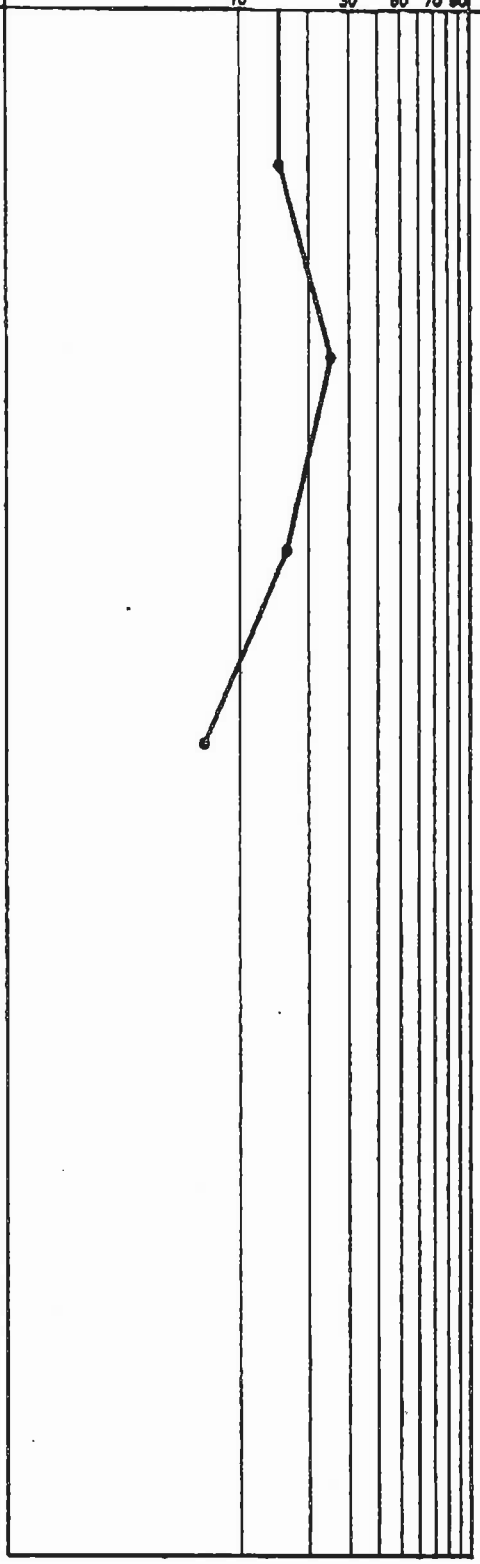
DEPTH (ft)	Soil Description	SAMPLE	BPF
	LOOSE GRAY SILTY FINE TO MEDIUM SAND (SM) PLOWED LAYER		
	LOOSE TAN SILTY FINE TO MEDIUM SAND (SM)		
	DENSE ORANGE BROWN CLAYEY MEDIUM TO COARSE SAND (SC)	SS-1	36
	DENSE ORANGE SILTY FINE TO MEDIUM SAND WITH TRACE OF CLAY (SM)	SS-2	50
		SS-3	18
	LOOSE PINK SILTY WELL GRADED SAND WITH OCCAISIONAL PES GRAVEL (SW-SM)	SS-4	9
	MEDIUM DENSE YELLOW BROWN SILTY WELL GRADED SAND WITH SOME GRAVEL (15-20% UP TO 1/2"ø) (SM-GM) AND WELL-ROUNDED QUARTZ	SS-5	12
	RED SILTY FINE TO COARSE SAND WITH OCCASIONAL PEA GRAVEL (SM) HEAVY IRON STAINING	SS-6	16
	BORING TERMINATED AT 30 FT.		

Standard Penetration Test Data BLOWS/FT



PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-2
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 22 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/22/97	WATER LEVEL: 1.6' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT	BPF
		FILL: LOOSE LIGHT BROWN FINE TO MEDIUM GRAINED **SAND** (SP)						
		TOPSOIL: MEDIUM DENSE BLACK SILTY FINE TO COARSE **SAND** WITH SOME ORGANIC MATTER (SM)		W				
		MEDIUM DENSE LIGHT BROWN SLIGHTLY SILTY FINE TO COARSE **SAND** (SW)			SS-1			15
5		IRON CEMENTED CONGLOMERATE						
		VERY STIFF REDDISH BROWN BECOMING GRAY SILTY **CLAY** (CH)			SS-2			25
10		VERY STIFF GRAY SILTY **CLAY** WITH SOME FINE SAND AND OCCAISIONAL QUARTZ GRAVEL (CL-CH)			SS-3			16
15		LOOSE YELLOW BROWN AND GRAY SILTY FINE TO MEDIUM GRAINED **SAND** FINELY LAMINATED (SC)			SS-4			7
20		*BORING TERMINATED AT 22 FT.*						
25								
30								
35								
40								



PROJECT:	JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION	TEST BORING RECORD	DMW 5-3
PROJECT NO.:	1054-95-286A	ELEVATION:	
LOGGED BY:	W. BECKWITH	BORING DEPTH:	22 FEET
DATE DRILLED:	4/22/97	WATER LEVEL:	7.0' ON 4/25/97
DRILL METHOD:	4 ¼" H.S.A.	DRILL RIG:	MOBILE B-57 ATV

NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING

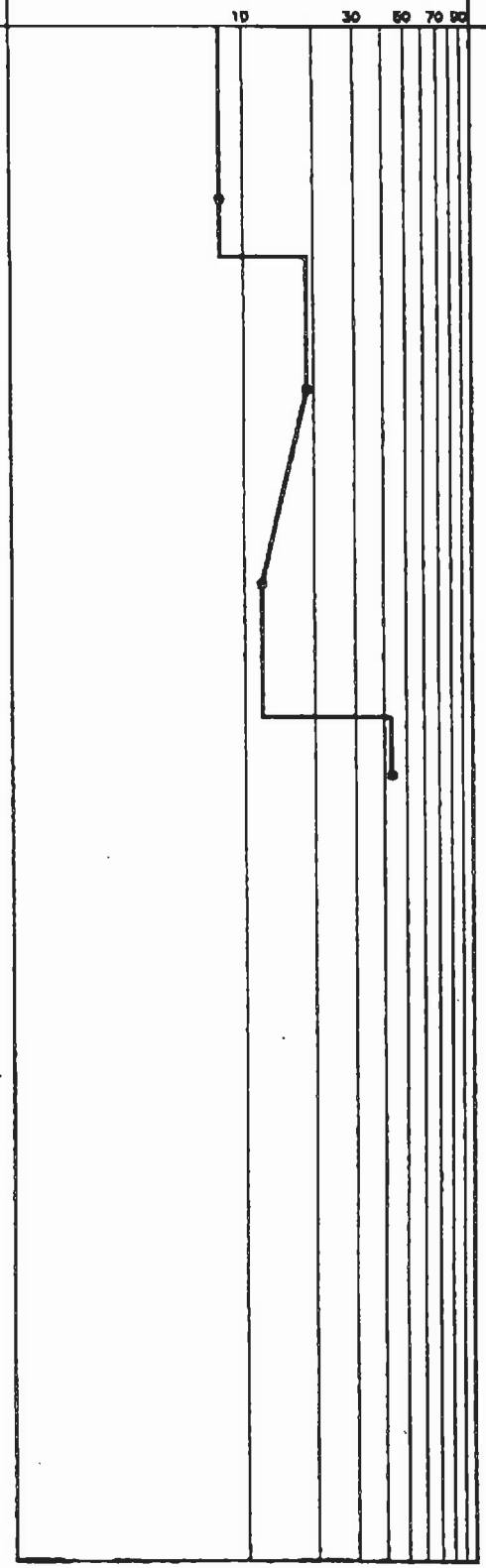
WELL SCHEMATIC LEGEND: SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
		TOPSOIL: GRAY SILTY **SAND** (SM)						
		STIFF REDDISH TAN TO RED AND GRAY SILTY **CLAY** (CL)			SS-1			14
5								
		HARD GRAY SILTY **CLAY** WITH TRACE OF FINE SAND AND OCCAISIONAL GRAVEL BEDS (CL)		▼	SS-2			31
10								
		VERY STIFF RED BROWN AND YELLOW SILTY FINE **SAND** FINELY LAMINATED WITH SILTY CLAY (CL)			SS-3			25
15								
		MEDIUM DENSE LIGHT GRAY AND BROWN SILTY VERY FINE **SAND** WITH CLAY LENSES (SM)			SS-4			13
20								
		BORING TERMINATED AT 22 FT.						
25								
30								
35								
40								

PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-4
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 22 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/22/97	WATER LEVEL: 2.9' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (ft)	Soil Description	SAMPLE	BPF
	DARK GRAY SILTY **SAND** (SM)		
	LOOSE GRAY AND TAN CLAYEY **SAND** (SC)	SS-1	8
5			
	MEDIUM DENSE LIGHT GRAY STREAKED WITH YELLOW SILTY FINE TO MEDIUM **SAND** WITH TRACE OF MICA	SS-2	19
10			
	MEDIUM DENSE YELLOW BROWN TO ORANGE STREAKED WITH GRAY SILTY CLAYEY **SAND** (SM-SC)	SS-3	12
15			
	RESIDUUM: HARD YELLOW BROWN TO LIGHT GRAY FINE SANDY CLAYEY **SILT** (ML)	SS-4	44
20			
	BORING TERMINATED AT 22 FT.		
25			
30			
35			
40			

Standard Penetration Test Data BLOWS/FT



PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-5
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 22 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/22/97	WATER LEVEL: 8.1' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

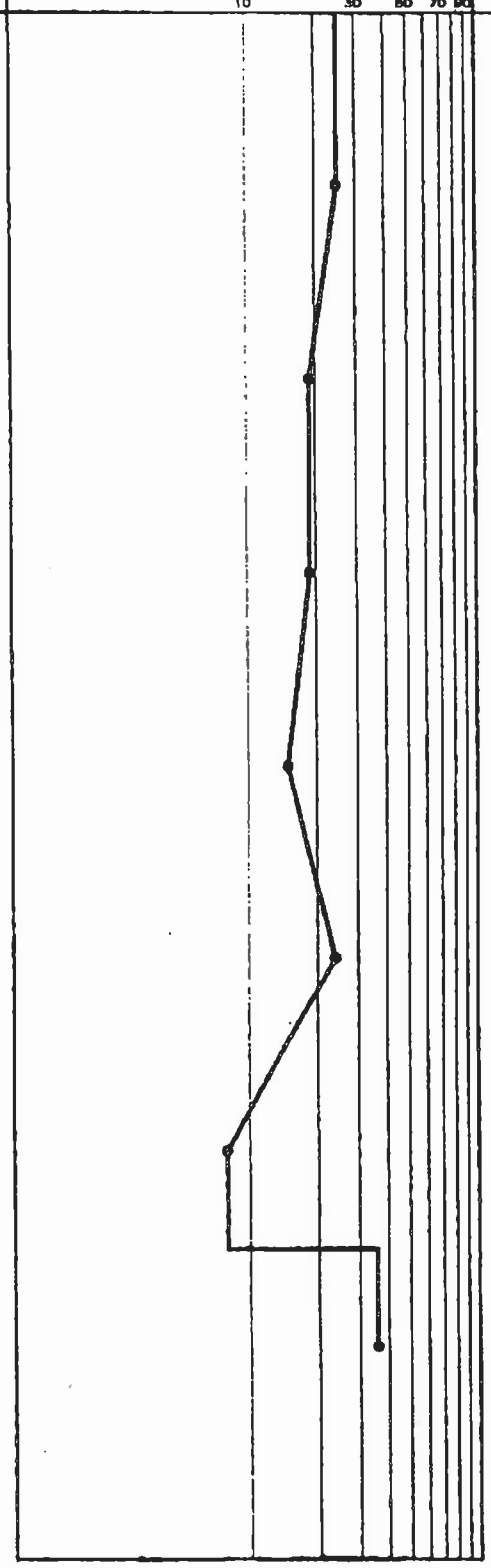
DEPTH (ft)	Soil Description	SAMPLE	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
	FILL: LOSSE BROWN SILTY **SAND** (SM)			
	MEDIUM DENSE PINKISH GRAY CLAYEY FINE TO MEDIUM **SAND** (SC)	SS-1		18
5				
		SS-2		15
10				
		SS-3		16
15	MEDIUM DENSE LIGHT GRAY AND YELLOW CLAYEY **SAND** (SC)			
	VERY STIFF ORANGE BROWN SILTY **CLAY** WITH ROUNDED QUARTZ GRAVEL UP TO 3/4"ø (CL)	SS-4		27
20	RESIDUUM: VERY STIFF YELLOW **SILT** (ML)			
	BORING TERMINATED AT 22 FT.			
25				
30				
35				
40				

PROJECT:	JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION	TEST BORING RECORD	DMW 5-6
PROJECT NO.:	1054-95-286A	ELEVATION:	
LOGGED BY:	W. BECKWITH	BORING DEPTH:	39 FEET
DATE DRILLED:	4/22/97	WATER LEVEL:	25.5' ON 4/25/97
DRILL METHOD:	4 ¼" H.S.A.	DRILL RIG:	MOBILE B-57 ATV

NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING

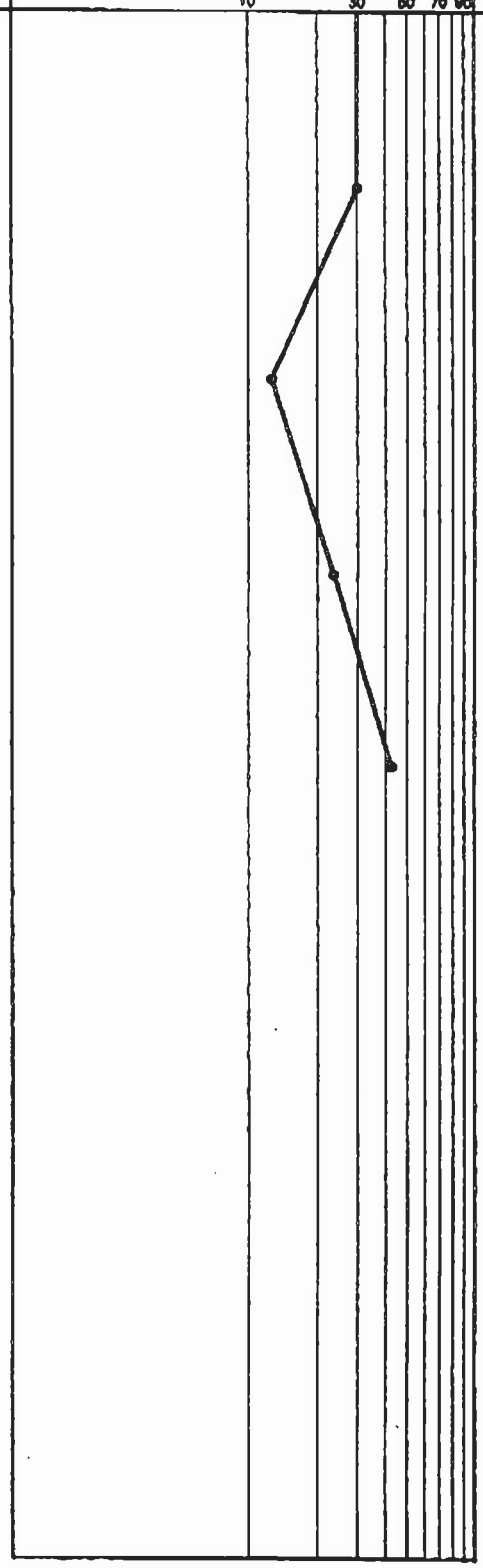
WELL SCHEMATIC LEGEND

DEPTH (ft)	Soil Description	SAMPLE	BPF
	LIGHT GRAY CLAYEY **SAND** (SC)		
	LIGHT GRAY SILTY **CLAY** (CH)		
5	MEDIUM DENSE YELLOW BROWN SLIGHTLY CLAYEY SILTY FINE TO MEDIUM GRAINED **SAND** (SC-SM)	SS-1	25
10	MEDIUM DENSE ORANGE BROWN SILTY FINE TO MEDIUM **SAND** WITH OCCASIONAL 1" THICK CLAY LENSES (SM WITH CL)	SS-2	19
15		SS-3	19
20	MEDIUM DENSE WHITE CLAYEY MEDIUM TO COARSE **SAND** (SC)	SS-4	15
25		SS-5	24
30		SS-6	8
35	HARD YELLOW BROWN AND LIGHT GRAY **SILT** (ML) SHOWS RELICT SLATE STRUCTURE	SS-7	36
40	BORING TERMINATED AT 39 FT.		



PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-7
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 23 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/18/97	WATER LEVEL: 7.0' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 1/4" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (M)	GRAPHIC LOG	Soil Description	SAMPLE	BPF
		TOPSOIL: LIGHT GRAY SILTY SAND (SM)		
5		MEDIUM DENSE LIGHT BROWN SILTY FINE SAND WITH SOME WELL-ROUNDED QUARTZ GRAVEL (SM)	SS-1	30
10		MEDIUM DENSE BROWN MEDIUM TO COARSE SAND WITH TRACE OF SILT (SW)	SS-2	13
15		VERY STIFF TAN SILT (ML)	SS-3	24
20		HARD TAN SILT (ML) SHOWS RELICT BEDROCK TEXTURE	SS-4	43
25		BORING TERMINATED AT 23 FT.		
30				
35				
40				



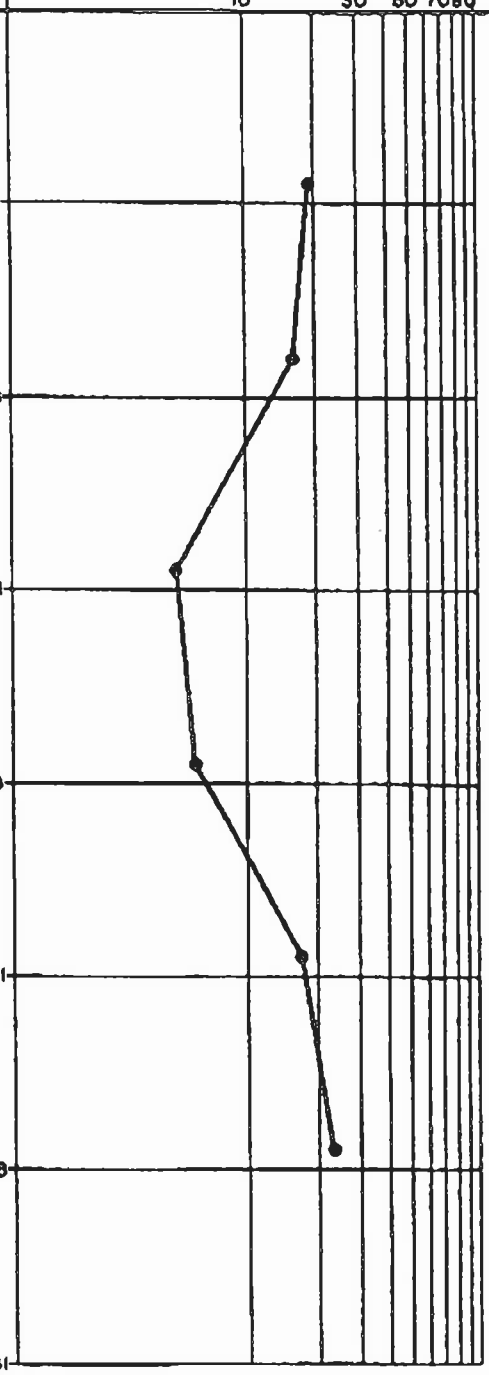
PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-8
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 22 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/21/97	WATER LEVEL: 3.2' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
		FILL: LOOSE REDDISH TAN SILTY **SAND** (SM)						
		TOPSOIL: LOOSE GRAY SILTY **SAND** (SM)						
		ALLUVIUM: LIGHT TAN FINE TO MEDIUM **SAND** WITH TRACE OF SILT (SP)			SS-1			12
5								
		LOOSE GRAY SILTY FINE TO MEDIUM **SAND** (SM)			SS-2			8
10								
		WHITE YELLOW AND ORANGE SILTY VERY FINE **SAND** WITH OCCASIONAL FINE MICA (SM)			SS-3			10
15								
		REDDISH TAN SILTY WELL GRADED **SAND** WITH OCCASIONAL GRAVEL (SW)						
		LIGHT GRAY TAN FINELY LAMINATED **SILT** (ML)			SS-4			15
20								
		BORING TERMINATED AT 22 FT.						
25								
30								
35								
40								

PROJECT:	Johnston County Landfill Johnston County, NC	TEST BORING RECORD DMW 5-9
PROJECT NO.: 1054-95-266	ELEVATION: 195.53 FEET	NOTES: Monitor Well Installed
LOGGED BY: WJB	BORING DEPTH: 30.0 FEET	
DATE DRILLED: 3-18-95	WATER LEVEL: 10.8/6.65 FEET	
DRILLING METHOD: 3-1/4" I.D. HSA	DRILL RIG: Mobile B-57	

DEPTH (ft)	GRAPHIC LOG	Soil Description	OVM (ppm)	WATER LEVEL	SAMPLE	ELEV.	BPF
		Topsoil					
		Stiff Yellow-Brown Wet Sandy Silty **CLAY** (CL)					
5		Medium Dense to Loose Red-Tan and Yellow-Gray Wet Clayey **SAND** (SC)				191	19
10						186	18
15		Loose Light Gray and Yellow Silty **SAND** (SM)				181	5
20						176	8
		Medium Dense Pink-Tan and Light Gray Silty **SAND** with Trace of Mica (SM)					
25		- with Iron-Cemented Fragments below 26.0'				171	17
30		Stiff to Very Stiff White-Tan Clayey **SILT** with occasional Quartz Fragments (ML-MH)				166	23
35		Boring terminated at 30.0. Groundwater encountered at 10.8' and 6.65' below existing grade at the completion of drilling and 24 hours after completion drilling, respectively.				161	

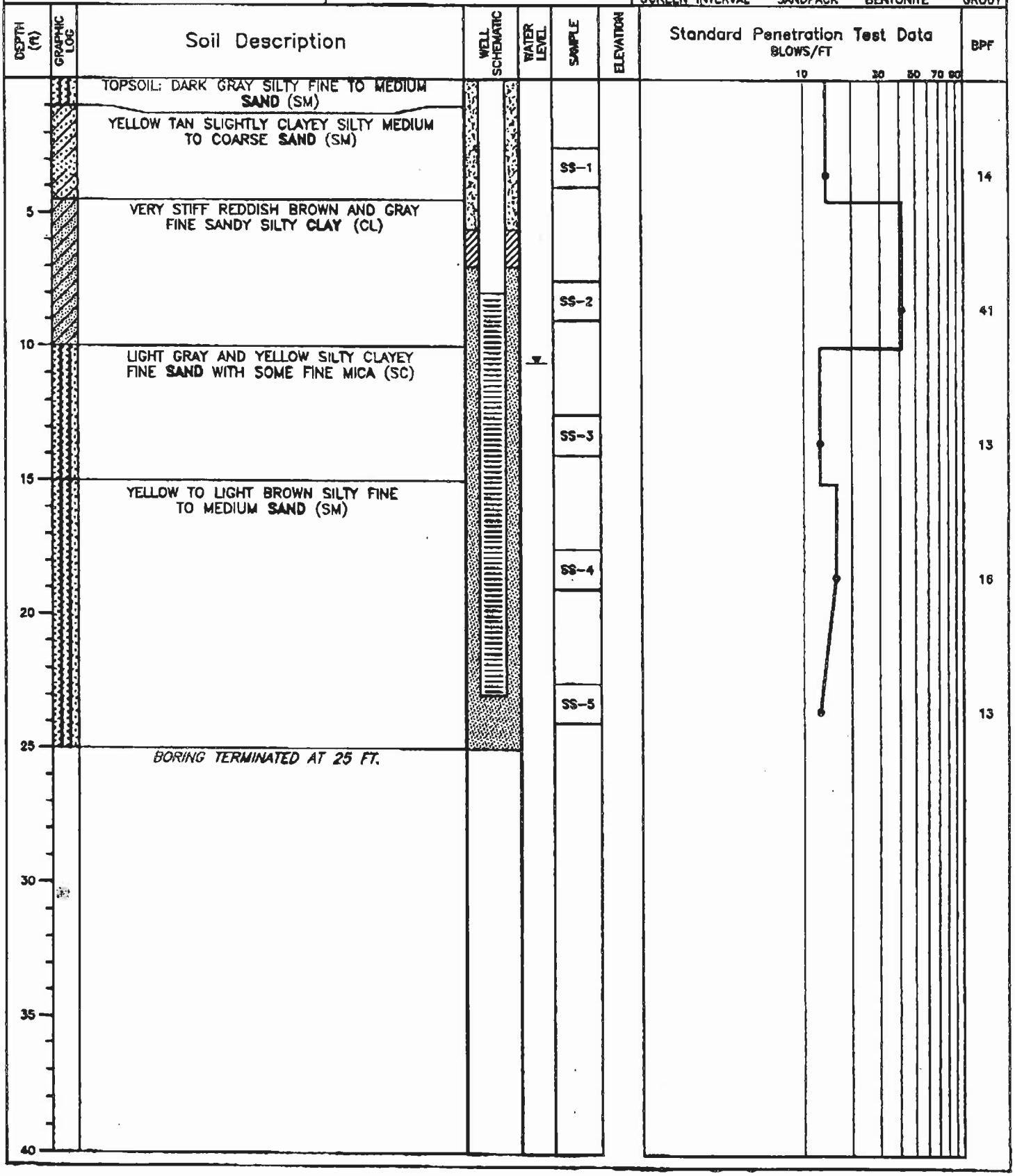
Standard Penetration Test Data (Blows/ft)



S&ME Environmental Services

PROJECT:	JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION	TEST BORING RECORD DMW 5-10
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 25 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/21/97	WATER LEVEL: 10.6' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (ft)	Soil Description	SAMPLE	BPF
	TOPSOIL: DARK GRAY SILTY FINE TO MEDIUM **SAND** (SM)		
	YELLOW TAN SLIGHTLY CLAYEY SILTY MEDIUM TO COARSE **SAND** (SM)	SS-1	14
5	VERY STIFF REDDISH BROWN AND GRAY FINE SANDY SILTY **CLAY** (CL)	SS-2	41
10	LIGHT GRAY AND YELLOW SILTY CLAYEY FINE **SAND** WITH SOME FINE MICA (SC)	SS-3	13
15	YELLOW TO LIGHT BROWN SILTY FINE TO MEDIUM **SAND** (SM)	SS-4	16
20		SS-5	13
25	*BORING TERMINATED AT 25 FT.*		
30			
35			
40			



PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DLL-I
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 23 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/17/97	WATER LEVEL: 12.2' ON 4/18/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: DIETRICH D-100	

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
		LOOSE GRAY SILTY SAND (SM)						
		MEDIUM DENSE ORANGE BROWN CLAYEY FINE SAND (SC)			SS-1			16
5								
		HARD GREEN GRAY SILT (ML) SHOWS RELICT BEDROCK TEXTURE.			SS-2			42
10								
		PARTIALLY WEATHERED ROCK (SLATE) SAMPLED AS GREEN AND BROWN SILT AND SLATE FRAGMENTS		▼	SS-3			50/.42
15								
					SS-4			50/.25
20								
		BORING TERMINATED AT 23 FT.						
25								
30								
35								
40								

PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DLL-2
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 24 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/17/97	WATER LEVEL: 11.5' ON 4/18/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: DIETRICH D-100	

DEPTH (ft)	Soil Description	SAMPLE	BPF
	MEDIUM DENSE TAN CLAYEY FINE SAND WITH OCCAISIONAL SMALL WELL-ROUNDED QUARTZ GRAVEL (SC)		
5		SS-1	11
	HARD REDDISH BROWN SILT WITH WEATHERED SLATE FRAGMENTS (ML)		
	PARTIALLY WEATHERED ROCK (SLATE) SAMPLED AS BLUE GREEN SILT WITH SLATE FRAGMENTS		
10		SS-2	50/.4
15		SS-3	50/.4
20		SS-4	50/.15
	BORING TERMINATED AT 24 FT.		
25			
30			
35			
40			

Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)

PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DLL-3
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 28 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/18/97	WATER LEVEL: 15.9 ON 4/21/97	
DRILL METHOD: 4 ¼" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

SCREEN INTERVAL | SANDPACK | BENTONITE | GROUT

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
		LOOSE REDDISH TAN CLAYEY SAND WITH WELL-ROUNDED QUARTZ GRAVEL (SC)						
		STIFF REDDISH BROWN TO TAN SILT (ML)						
5								
		HARD GREEN-TAN SILT (ML) SHOWS RELICT BEDROCK TEXTURE						
10								
15					SS-1			43
20					SS-2			37
		PARTIALLY WEATHERED ROCK (SLATE) SAMPLED AS GREEN TAN SILT WITH SLATE FRAGMENTS			SS-3			50.3
25								
		BORING TERMINATED AT 28 FT.						
30								
35								
40								

PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DLL-4
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 14.5 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/24/97	WATER LEVEL: 4.0' ON 4/25/97	SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT
DRILL METHOD: 4 1/4" H.S.A.	DRILL RIG: MOBILE B-57 ATV	

DEPTH (ft)	GRAPHIC LOG	Soil Description	WELL SCHEMATIC	WATER LEVEL	SAMPLE	ELEVATION	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
		STIFF RED BROWN CLAYEY SILT WITH DIABASE COBBLES (ML-CL)						
		STIFF YELLOW TO BROWN SILT WITH DIABASE COBBLES (ML)			SS-1			50/.5
5					SS-2			50/.5
10					SS-3			6
		DIABASE BEDROCK						
15		BORING TERMINATED UPON AUGER REFUSAL AT 14.5 FT.						
20								
25								
30								
35								
40								

Appendix B

Laboratory Analytical Report

Environment 1, Incorporated

REC'D DEC 08 2009

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#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW5-2	MW5-3	MW5-4	MW5-6	MW5-7	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	0.1 J	0.1 J	0.1 J			10/30/09	LFJ	EPA200.8
Antimony, ug/l	0.06	6.0				--- U	0.6 J	11/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.6 J	3 J	2 J			03/04/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0				1.2 J	0.3 J	11/03/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	512	133	539			10/30/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0				47.7 J	53.5 J	11/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	1.4	1.5	1			10/30/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0				--- U	0.3 J	11/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.3 J	0.5 J	0.3 J			10/30/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0				--- U	0.1 J	11/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	7.1 J	2.6 J	9.3 J			10/30/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0				4.7 J	7.9 J	11/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	2 J	12	6.2 J			10/30/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0				0.9 J	2.9 J	11/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	0.9 J	10	0.5 J			10/30/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0				0.2 J	1.4 J	11/03/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	7.7 J	26	17			10/30/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0				0.5 J	2.1 J	11/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	7.5 J	3.1 J	8.5 J			10/30/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0				1.7 J	8.2 J	11/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	0.7 J	1.6 J	0.6 J			10/30/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0				--- U	0.3 J	11/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.1 J	0.1 J	0.1 J			10/30/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0				--- U	--- U	11/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J	0.1 J	0.2 J			10/30/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0				0.1 J	0.1 J	11/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	3.9 J	26	3.4 J			10/30/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0				0.8 J	3.4 J	11/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	9.4 J	18	24			10/30/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0				3.7 J	16	11/03/09	LFJ	EPA200.8

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

ID#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW5-8	MW5-9	Surface Water #5-1	Surface Water #5-2	MW-5(5')	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	0.1 J	0.2 J	0.1 J	Missing	0.1 J	11/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	--- U	0.3 J	--- U	Missing	--- U	11/03/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	445	116	330	Missing	58.7 J	11/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.3 J	0.4 J	--- U	Missing	0.2 J	11/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.1 J	0.1 J	--- U	Missing	--- U	11/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	5.8 J	3.5 J	0.4 J	Missing	4.1 J	11/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	1.3 J	1.4 J	0.6 J	Missing	1.1 J	11/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	--- U	0.8 J	--- U	Missing	0.4 J	11/03/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	4.4 J	3.1 J	0.2 J	Missing	2.4 J	11/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	5.6 J	2.9 J	1.6 J	Missing	2.3 J	11/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	0.5 J	0.7 J	0.2 J	Missing	0.3 J	11/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.2 J	0.2 J	--- U	Missing	0.1 J	11/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.2 J	--- U	0.1 J	Missing	0.1 J	11/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	0.9 J	3.1 J	0.9 J	Missing	1.1 J	11/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	3.7 J	5.8 J	4 J	Missing	3.5 J	11/03/09	LFJ	EPA200.8

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

ID#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-5(10')	Trip Blank	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	0.1 J		11/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.7 J		11/03/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	316		11/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.2 J		11/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.1 J		11/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	29		11/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	2.6 J		11/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	2.2 J		11/03/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	7.1 J		11/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	5.7 J		11/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	1.3 J		11/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.1 J		11/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.3 J		11/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	8.4 J		11/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	6.8 J		11/03/09	LFJ	EPA200.8

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
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CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO
DATE COLLECTED: 10/26/09
DATE ANALYZED: 11/09/09
DATE REPORTED: 12/01/09

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW5-2	MW5-3	MW5-4	MW5-6	MW5-7
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	0.20 J	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U	0.70 J	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	2.00 J	1.80 J	2.10 J	2.60 J	1.30 J
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U	0.20 J	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	--- U	0.40 J	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U	0.70 J	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	--- U	0.70 J	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	4.30	0.30 J	0.20 J	--- U	0.40 J
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	0.30 J	0.30 J	0.40 J	0.60 J	0.30 J
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	0.40 J	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- 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: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO
DATE COLLECTED: 10/26/09
DATE ANALYZED: 11/09/09
DATE REPORTED: 12/01/09

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW5-8	MW5-9	Surface Water #5-1	MW-5(5')	MW-5(10')
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	0.20 J	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	2.30 J	1.90 J	2.70 J	2.70 J	1.50 J
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	5.90	0.30 J	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	0.30 J	0.20 J	0.50 J	0.40 J	0.30 J
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	0.30 J	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- 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: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO
DATE COLLECTED: 10/26/09
DATE ANALYZED: 11/09/09
DATE REPORTED: 12/01/09

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Trip Blank
1. Chloromethane	0.18	1.0	--- U
2. Vinyl Chloride	0.34	1.0	--- U
3. Bromomethane	0.26	10.0	--- U
4. Chloroethane	0.29	10.0	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U
7. Acetone	1.21	100.0	1.80 J
8. Iodomethane	0.12	10.0	--- U
9. Carbon Disulfide	0.14	100.0	--- U
10. Methylene Chloride	0.14	1.0	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U
15. 2-Butanone	0.85	100.0	--- U
16. Bromochloromethane	0.11	3.0	--- U
17. Chloroform	0.13	5.0	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U
20. Benzene	0.16	1.0	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U
22. Trichloroethene	0.13	1.0	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U
24. Bromodichloromethane	0.13	1.0	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U
27. Toluene	0.13	1.0	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U
30. Tetrachloroethene	0.16	1.0	--- U
31. 2-Hexanone	1.00	50.0	--- U
32. Dibromochloromethane	0.14	3.0	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U
34. Chlorobenzene	0.13	3.0	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U
36. Ethylbenzene	0.16	1.0	--- U
37. Xylenes	0.48	5.0	--- U
38. Dibromomethane	0.17	10.0	--- U
39. Styrene	0.16	1.0	--- U
40. Bromoform	0.11	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U
46. Acrylonitrile	1.49	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- 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

1 COOLER ONLY

CHAIN OF CUSTODY RECORD

CLIENT: 6033
JOHNSTON COUNTY LANDFILL (PHASE 5)
KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577
(919) 938-4747

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	METALS	EPA 8260B	8260 Dup 1	8260 Dup 2	CHLORINE NEUTRALIZED AT COLLECTION	pH CHECK (LAB)	CONTAINER TYPE, P/G	CHEMICAL PRESERVATION
											L2	P	A
											L2	G	E
											L2	G	E
											L2	G	E
SW-5-1	10/26/09	09:09	N/A	13	3	X	X	X					
~~SW-5-2~~					3	DRY - NO WATER							
MW-5-2		14:50		17	3	X	X	X					
MW-5-3		15:32		19	3	X	X	X					
MW-5-4		13:14		17	3	X	X	X					
MW-5-5		13:54		19	3	X	X	X					
MW-5-6		16:15		18	3	X	X	X					
MW-5-7		10:35		17	3	X	X	X					
MW-5-8		11:20		18	3	X	X	X					
MW-5-9		12:01		18	3	X	X	X					
MW-5-10		12:34		17	3	X	X	X					

PARAMETERS

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
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)
KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/27/09 09:30	[signature]	10/27 4:00
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

Instructions for completing this form are 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

№ 129394

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: 6033
JOHNSTON COUNTY LANDFILL (PHASE 5)
KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577
(919) 938-4747

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

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	METALS	EPA 8260B	8260 Dup. 1	8260 Dup. 2
							<2	<2	<2
						P	G	G	G
						A	E	E	E
TRIP BLANK	10/26/09	N/A	N/A	N/A	1		X		

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

PARAMETERS

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
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)
KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 0.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/27/09 09:30	[signature]	10/27 4:00
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

Instructions for completing this form are 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.

№ 103178

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#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/27/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW5-1	Leachate Lag #1	Leachate Lag #2	Leachate Lag #3	Leachate Lag #4	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	0.1 J	--- U	0.1 J	--- U	--- U	11/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.5 J	--- U	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	158	13 J	7.7 J	11.7 J	0.9 J	11/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.4 J	--- U	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	--- U	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	2.3 J	0.4 J	1.2 J	0.4 J	0.1 J	11/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	0.7 J	0.4 J	1 J	1 J	0.4 J	11/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	1 J	0.6 J	0.6 J	0.2 J	2 J	11/03/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	3.2 J	--- U	0.1 J	0.1 J	--- U	11/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	3.2 J	2.9 J	2.7 J	1.5 J	0.6 J	11/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	0.3 J	2.5 J	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J	--- U	--- U	--- U	--- U	11/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	2.8 J	0.6 J	0.7 J	0.9 J	1 J	11/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	1.8 J	4.1 J	7.3 J	3.6 J	1.9 J	11/03/09	LFJ	EPA200.8

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

ID#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/27/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Leachate Jun Box	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	140	10/29/09	TRB	SM5210B
COD, mg/l	10.0	10.0	3621	11/06/09	TRB	HACH8000
Total Suspended Residue, mg/l	1.0	1.0	2360	10/29/09	JIJ	SM2540D
Ammonia Nitrogen as N, mg/l	0.04	0.04	443	10/29/09	TWA	EPA350.1
Nitrate Nitrogen as N, mg/l	0.03	10.0	1.10 J	10/30/09	TWA	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	84.40	11/02/09	TWA	EPA365.4
Sulfate, mg/l	5.0	250.0	--- U	11/10/09	TRB	SM426C
Antimony, ug/l	0.06	6.0	22	11/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	601	11/03/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	15698	11/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	2.5	11/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	19	11/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	69	11/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	13	11/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	190	11/03/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	27	11/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	522	11/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	20	11/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	2.8 J	11/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J	11/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	563	11/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	20464	11/03/09	LFJ	EPA200.8

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: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO
DATE COLLECTED: 10/27/09
DATE REPORTED: 12/01/09

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	11/10/09 MW5-1	11/10/09 Leachate Lag #1	11/10/09 Leachate Lag #2	11/10/09 Leachate Lag #3	11/10/09 Leachate Lag #4
	Date Analyzed:						
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	2.70 J	1.80 J	1.60 J	2.70 J	--- U
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	0.30 J	0.30 J	0.30 J	0.90 J	0.50 J
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- 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

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FAX (252) 756-0633

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO
DATE COLLECTED: 10/27/09
DATE REPORTED: 12/01/09

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Date Analyzed: 11/11/09 Leachate Jun Box	11/10/09 Trip Blank	11/10/09 Equipment Blank
1. Chloromethane	0.18	1.0	2.80	--- U	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	0.70 J	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U
7. Acetone	1.21	100.0	91.00 J	3.10 J	6.20 J
8. Iodomethane	0.12	10.0	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	1.10 J	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	0.60 J	--- U	--- U
15. 2-Butanone	0.85	100.0	8.70 J	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U
20. Benzene	0.16	1.0	3.40	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	0.40 J	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	1.60 J	--- U	--- U
27. Toluene	0.13	1.0	3.40	--- U	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	0.40 J	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	6.20	--- U	--- U
37. Xylenes	0.48	5.0	20.00	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	7.40	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- U	--- U	--- U

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

— 2 COOLERS —

CHAIN OF CUSTODY RECORD

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

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

CLIENT: 6033 WEEK: 42

JOHNSTON CO. LANDFILL (PHASE 5)
KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577
(919) 938-4747

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	TSR	AMMONIA NITRO.	NITRATE	T. PHOSPHORUS	SULFATE	METALS	EPA 8260B	8260 Dup. 1	8260 Dup. 2	8260 Dup. 3				
CHLORINE NEUTRALIZED AT COLLECTION																					
pH CHECK (LAB)									<2		<2			<2	<2	<2	<2				
CONTAINER TYPE, P/G						P	P	P	P	P	P	P	P	G	G	G	G				
CHEMICAL PRESERVATION						A	C	A	C	A	C	A	A	E	E	E	E				
MW 5-1	10/27/09	14:05	N/A	19	4								X	X	X	X					
LEACHATE LAG #1		12:24	N/A	18	3								X	X	X						
LEACHATE LAG #2		09:44	N/A	17	3								X	X	X						
LEACHATE LAG #3		10:30	N/A	17	4								X	X	X	X					
LEACHATE LAG #4		11:28	N/A	16	5								X	X	X	X	X				
LEACHATE JUNC. BOX		14:43	N/A	20	10	X	X	X	X	X	X	X	X	X	X						
TRIP BLANK		N/A	N/A	N/A	1									X							
EQUIPMENT BLANK		16:33	N/A	N/A	1									X							

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) KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 0.3 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/28/09 09:30	[signature]	10/28 4:00
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

Instructions for completing this form are 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

№ 129389

Environment 1, Incorporated

REC'D DEC 08 2009

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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ID#: 6033 A

JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 11/02/09
DATE REPORTED : 12/01/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Leachate	Trip Blank	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	110		11/04/09	TRB	SM5210B
COD, mg/l	10.0	10.0	209		11/06/09	TRB	HACH8000
Total Suspended Residue, mg/l	1.0	1.0	184		11/04/09	JIJ	SM2540D
Ammonia Nitrogen as N, mg/l	0.04	0.04	100		11/05/09	TWA	EPA350.1
Nitrate Nitrogen as N, mg/l	0.03	10.0	0.59 J		11/04/09	ANO	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	0.61		11/09/09	TWA	EPA365.4
Sulfate, mg/l	5.0	250.0	13.5 J		11/10/09	TRB	SM426C
Antimony, ug/l	0.06	6.0	0.8 J		11/12/09	CMF	EPA200.8
Arsenic, ug/l	0.17	10.0	7.9 J		11/12/09	CMF	EPA200.8
Barium, ug/l	0.04	100.0	145		11/12/09	CMF	EPA200.8
Beryllium, ug/l	0.06	1.0	0.1 J		11/12/09	CMF	EPA200.8
Cadmium, ug/l	0.04	1.0	0.1 J		11/12/09	CMF	EPA200.8
Cobalt, ug/l	0.02	10.0	284		11/12/09	CMF	EPA200.8
Copper, ug/l	0.04	10.0	3.8 J		11/12/09	CMF	EPA200.8
Total Chromium, ug/l	0.10	10.0	4.2 J		11/12/09	CMF	EPA200.8
Lead, ug/l	0.04	10.0	0.8 J		11/12/09	CMF	EPA200.8
Nickel, ug/l	0.04	50.0	26.1 J		11/26/09	CMF	EPA200.8
Selenium, ug/l	0.12	10.0	10		11/12/09	CMF	EPA200.8
Silver, ug/l	0.04	10.0	0.1 J		11/12/09	CMF	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J		11/12/09	CMF	EPA200.8
Vanadium, ug/l	0.28	25.0	5.1 J		11/12/09	CMF	EPA200.8
Zinc, ug/l	0.14	10.0	137		11/12/09	CMF	EPA200.8

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

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CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6033 A

ANALYST: MAO
DATE COLLECTED: 11/02/09
DATE ANALYZED: 11/13/09
DATE REPORTED: 12/01/09

REVIEWED BY: _____

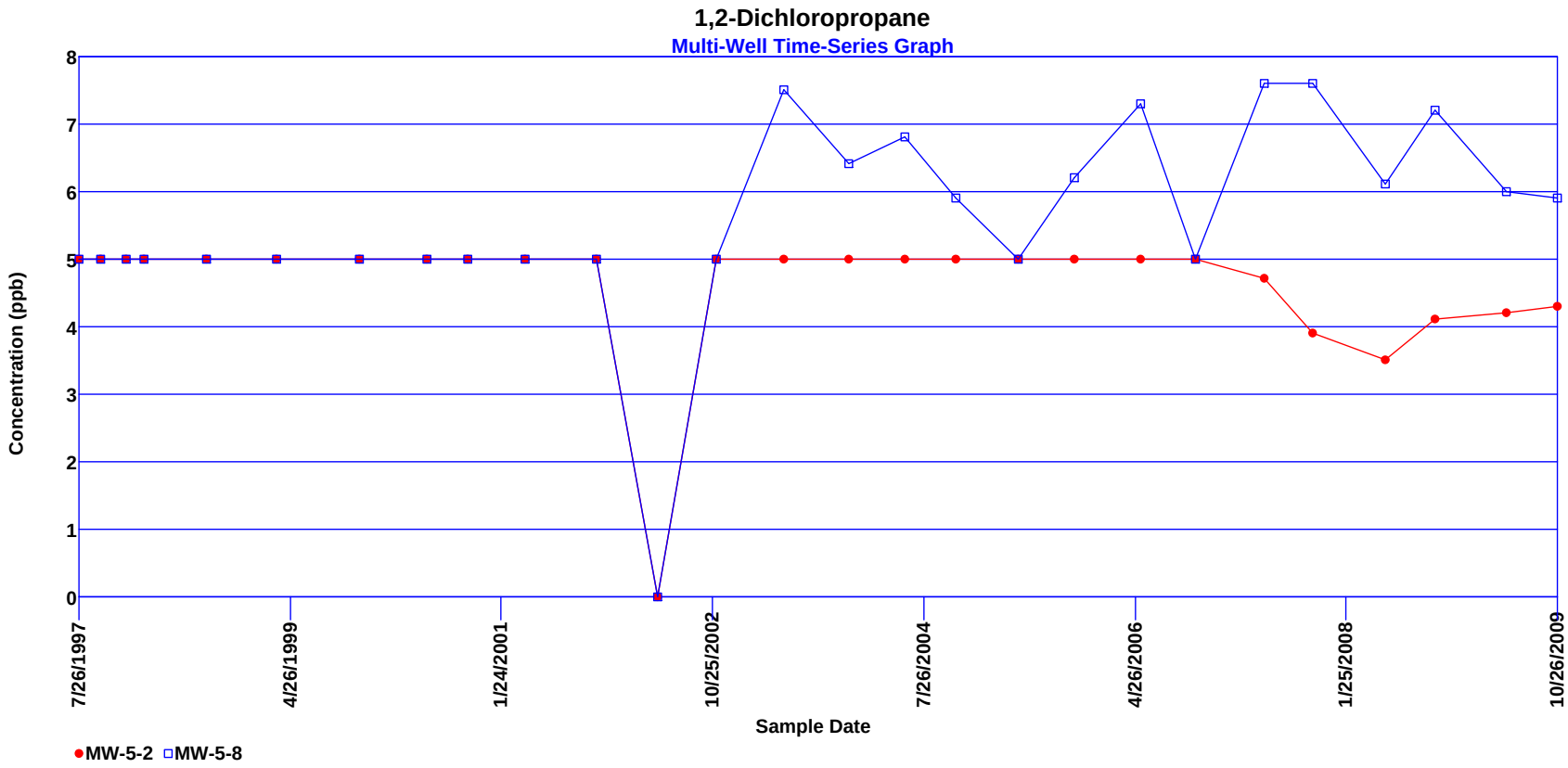
VOLATILE ORGANICS
EPA METHOD 8260B

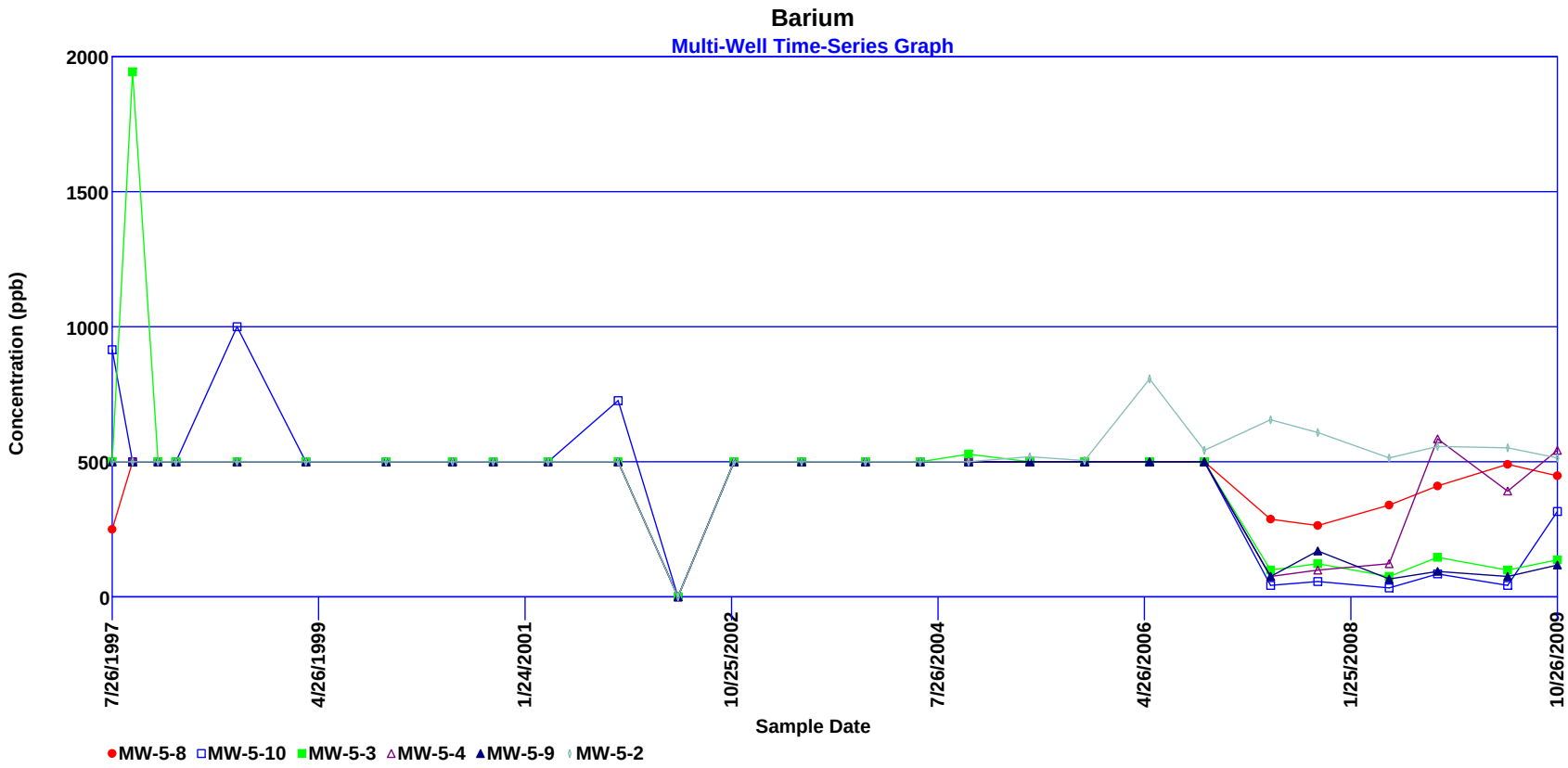
PARAMETERS, ug/l	MDL	SWSL	Leachate	Trip Blank
1. Chloromethane	0.18	1.0	--- U	--- U
2. Vinyl Chloride	0.34	1.0	0.40 J	--- U
3. Bromomethane	0.26	10.0	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U
7. Acetone	1.21	100.0	23.00 J	--- U
8. Iodomethane	0.12	10.0	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U
10. Methylene Chloride	0.14	1.0	0.20 J	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	1.20 J	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	0.40 J	--- U
15. 2-Butanone	0.85	100.0	4.40 J	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U
20. Benzene	0.16	1.0	1.30	--- U
21. 1,2-Dichloroethane	0.12	1.0	0.50 J	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	0.70 J	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U
27. Toluene	0.13	1.0	0.20 J	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U
34. Chlorobenzene	0.13	3.0	1.00 J	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U
36. Ethylbenzene	0.16	1.0	1.00	--- U
37. Xylenes	0.48	5.0	7.00	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	3.50	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	0.20 J	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- U	--- U

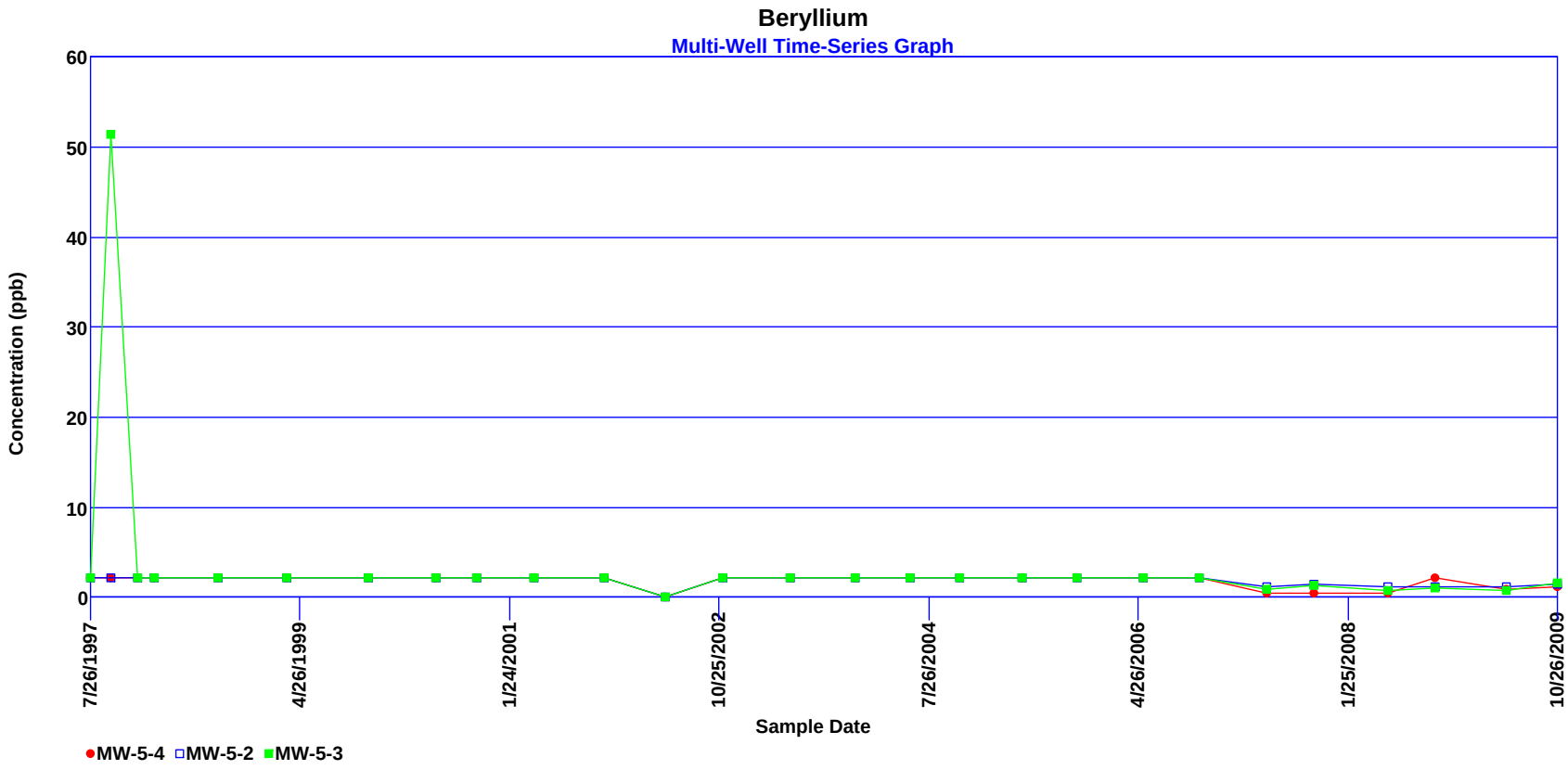
J = Between MDL and SWSL, U = Below ALL Quanititation Limits.

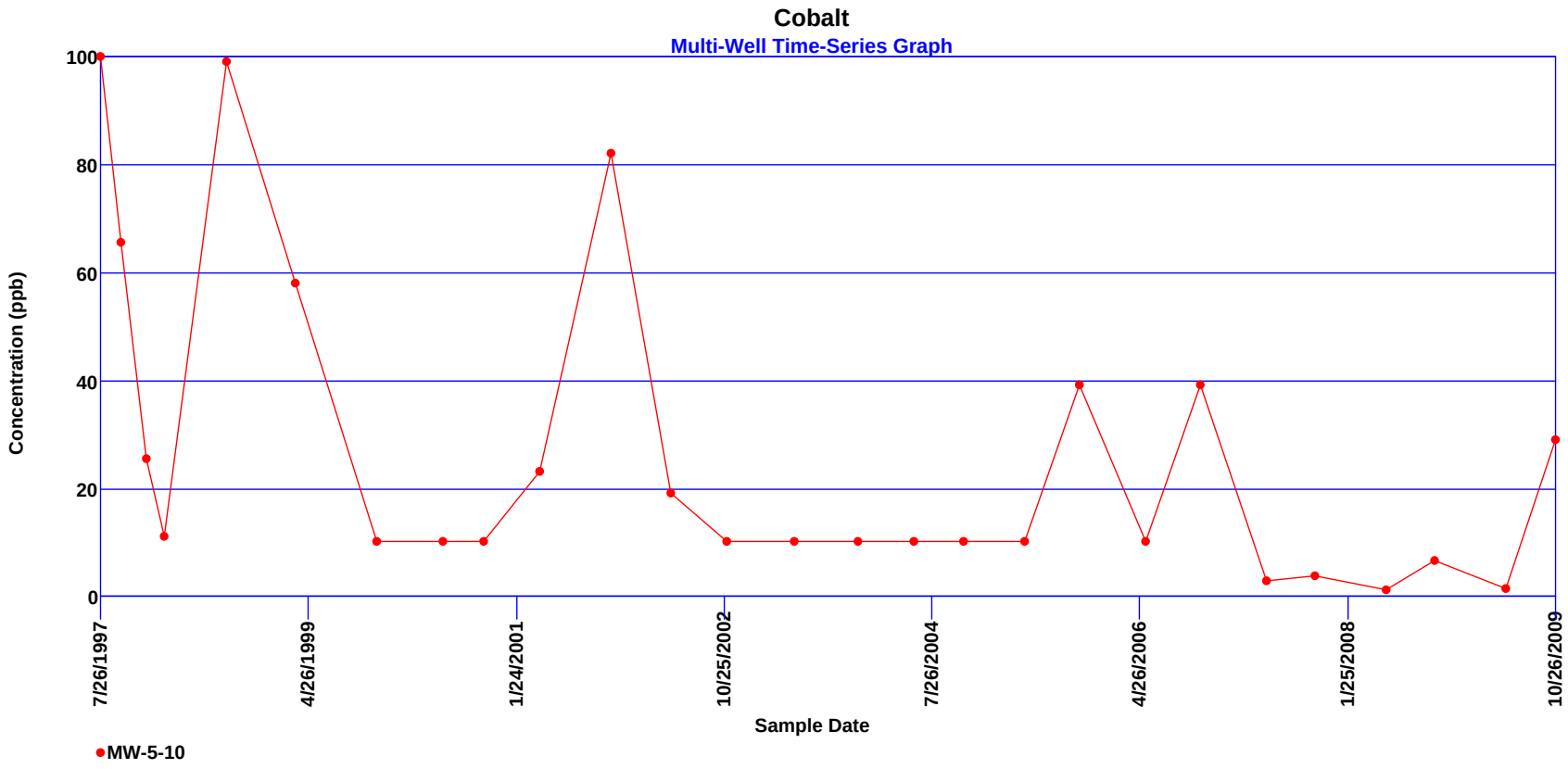
Appendix C

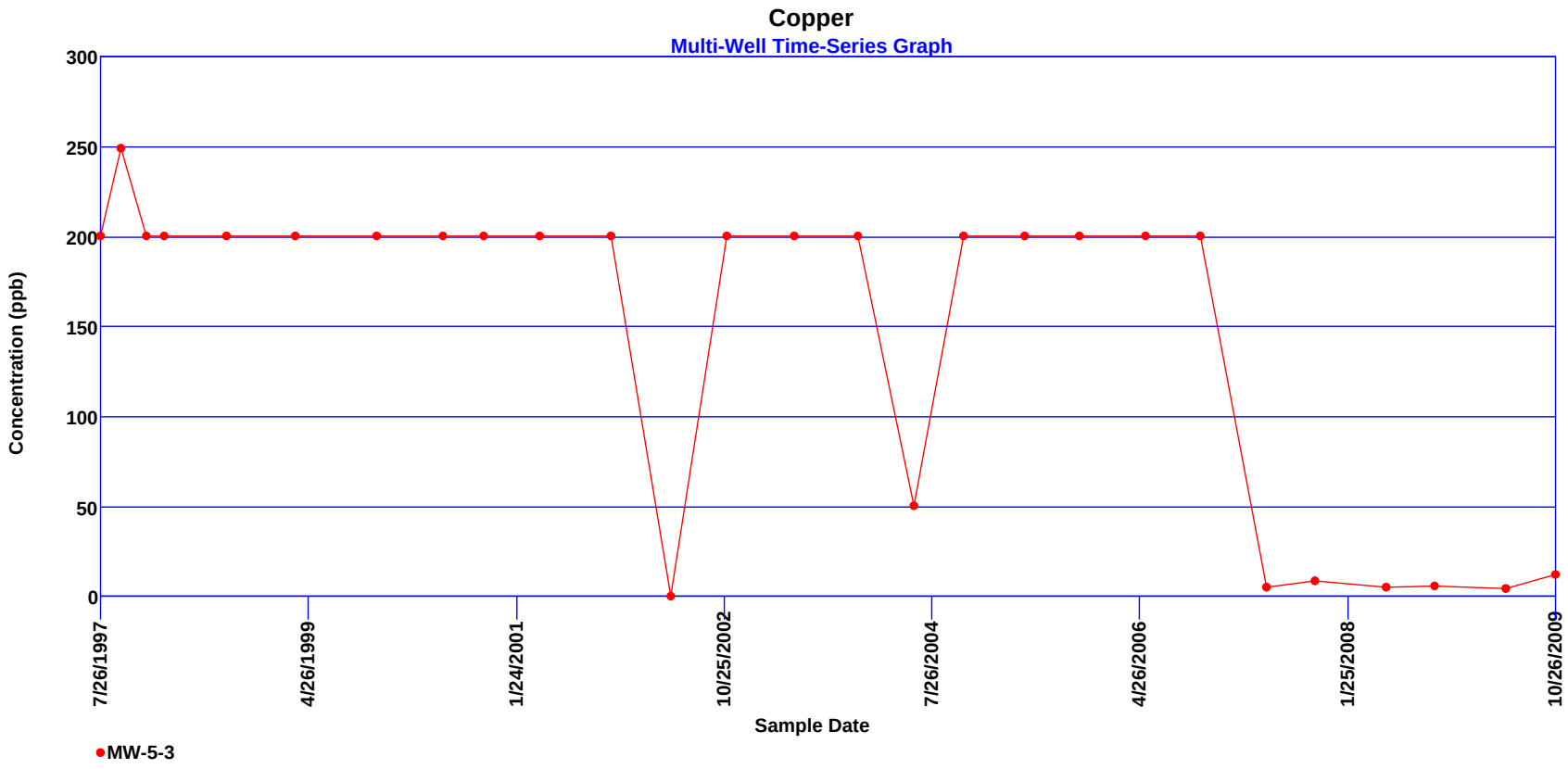
Time Vs. concentration Graphs

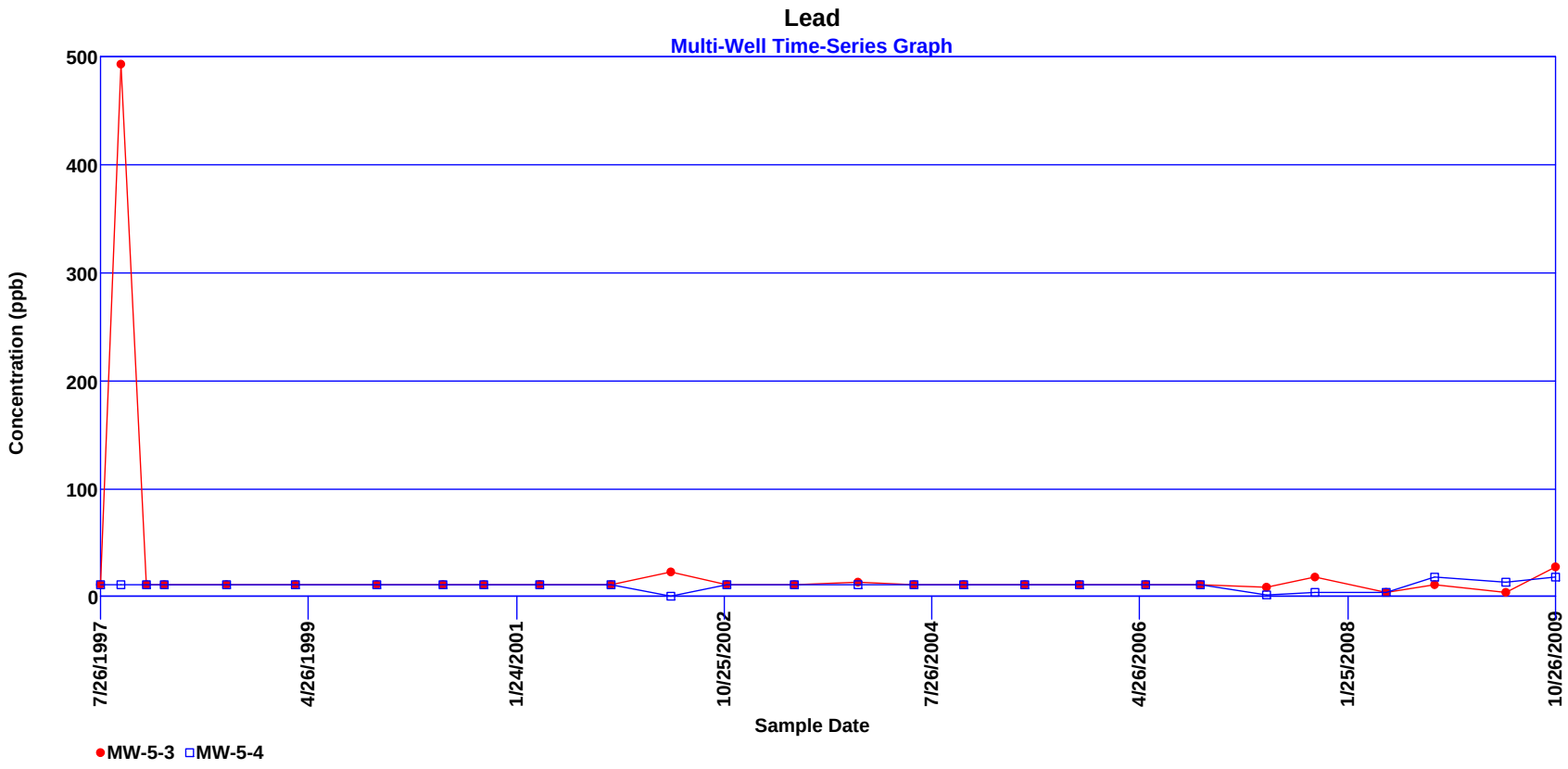

1,2-Dichloropropane
Multi-Well Time-Series Graph
Concentration (ppb)
8
7
6
5
4
3
2
1
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-2
MW-5-8

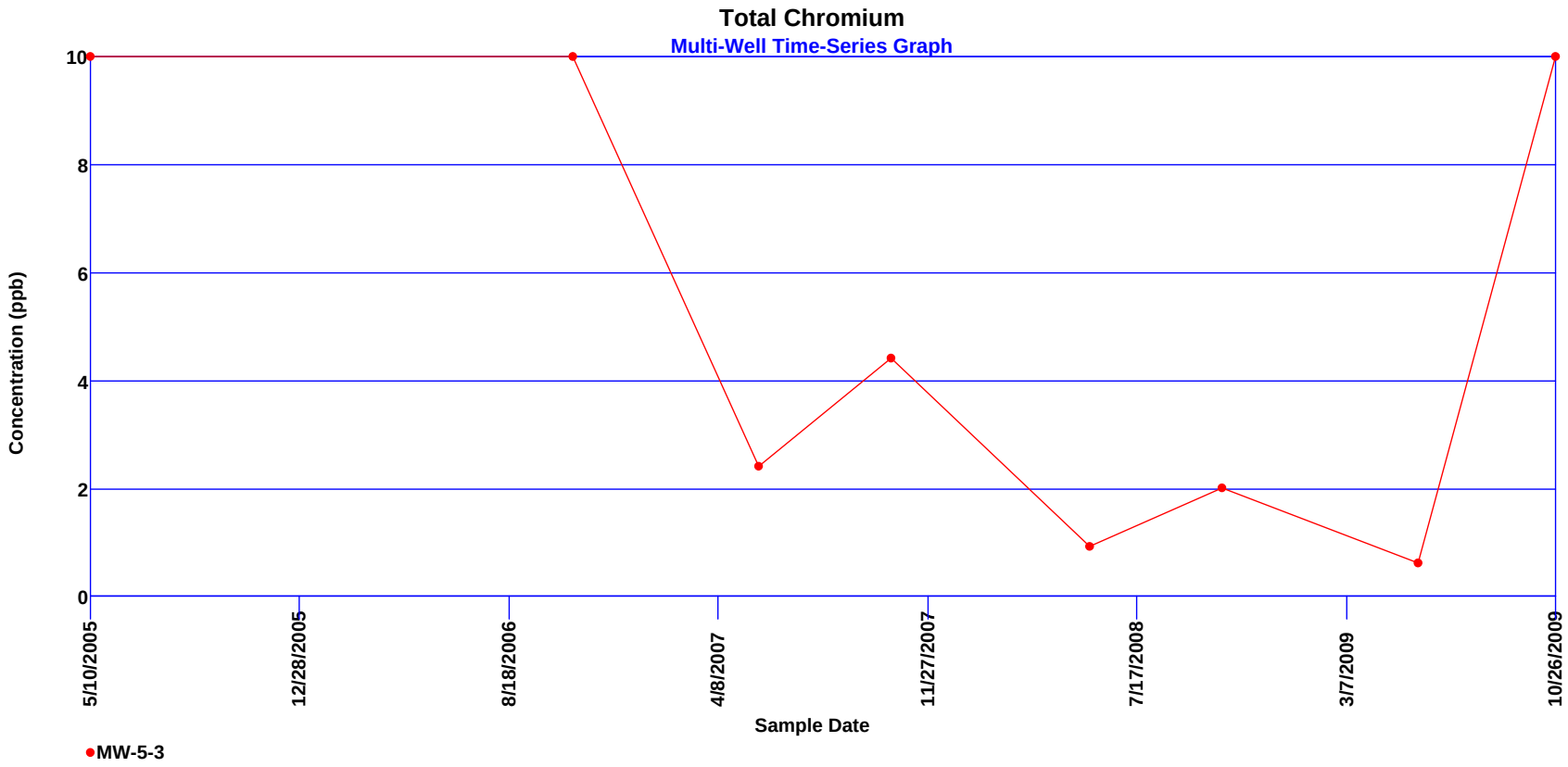

Barium
Multi-Well Time-Series Graph
Concentration (ppb)
2000
1500
1000
500
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-8
MW-5-10
MW-5-3
MW-5-4
MW-5-9
MW-5-2

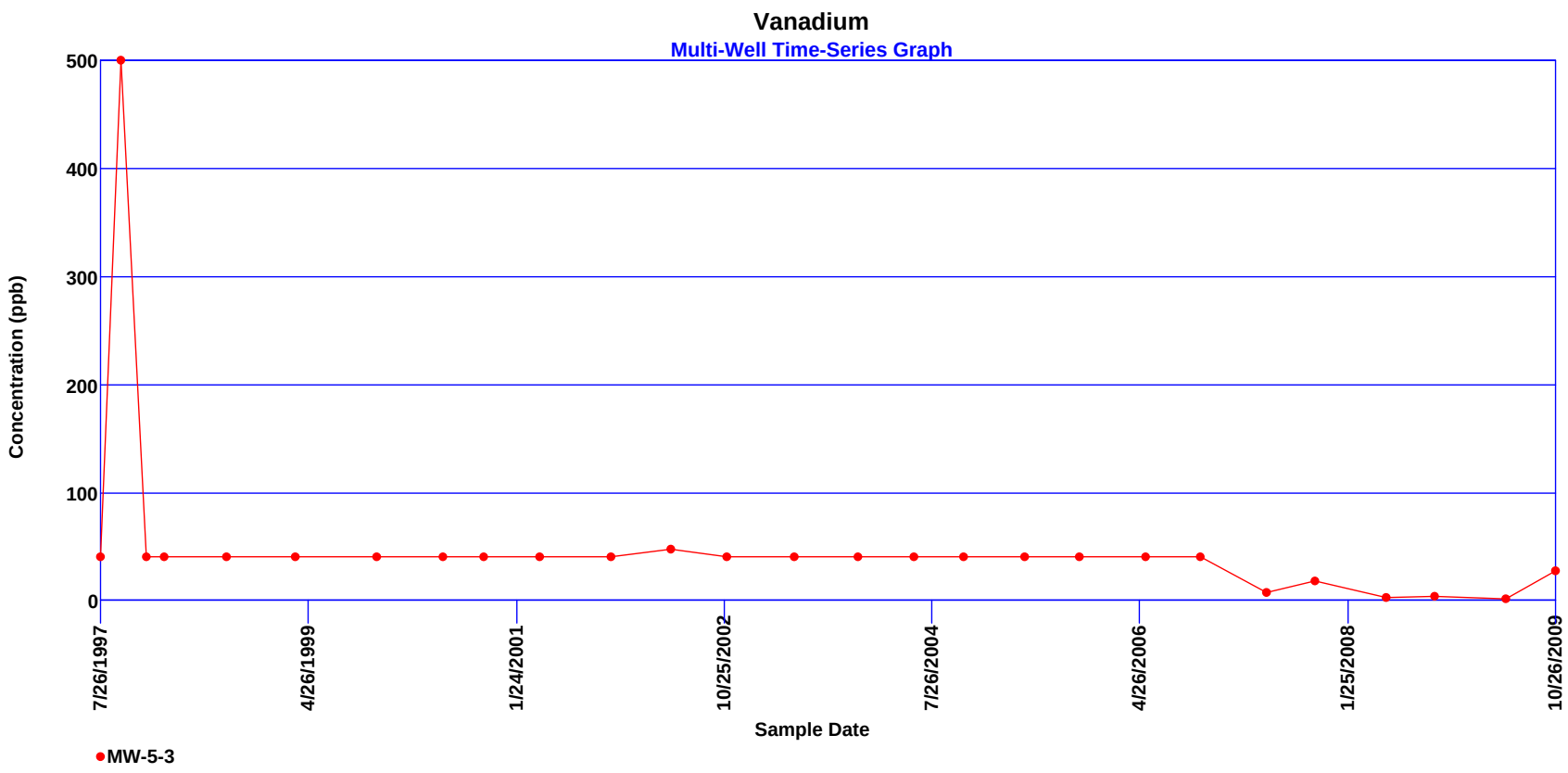

Beryllium
Multi-Well Time-Series Graph
Concentration (ppb)
60
50
40
30
20
10
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-4
MW-5-2
MW-5-3

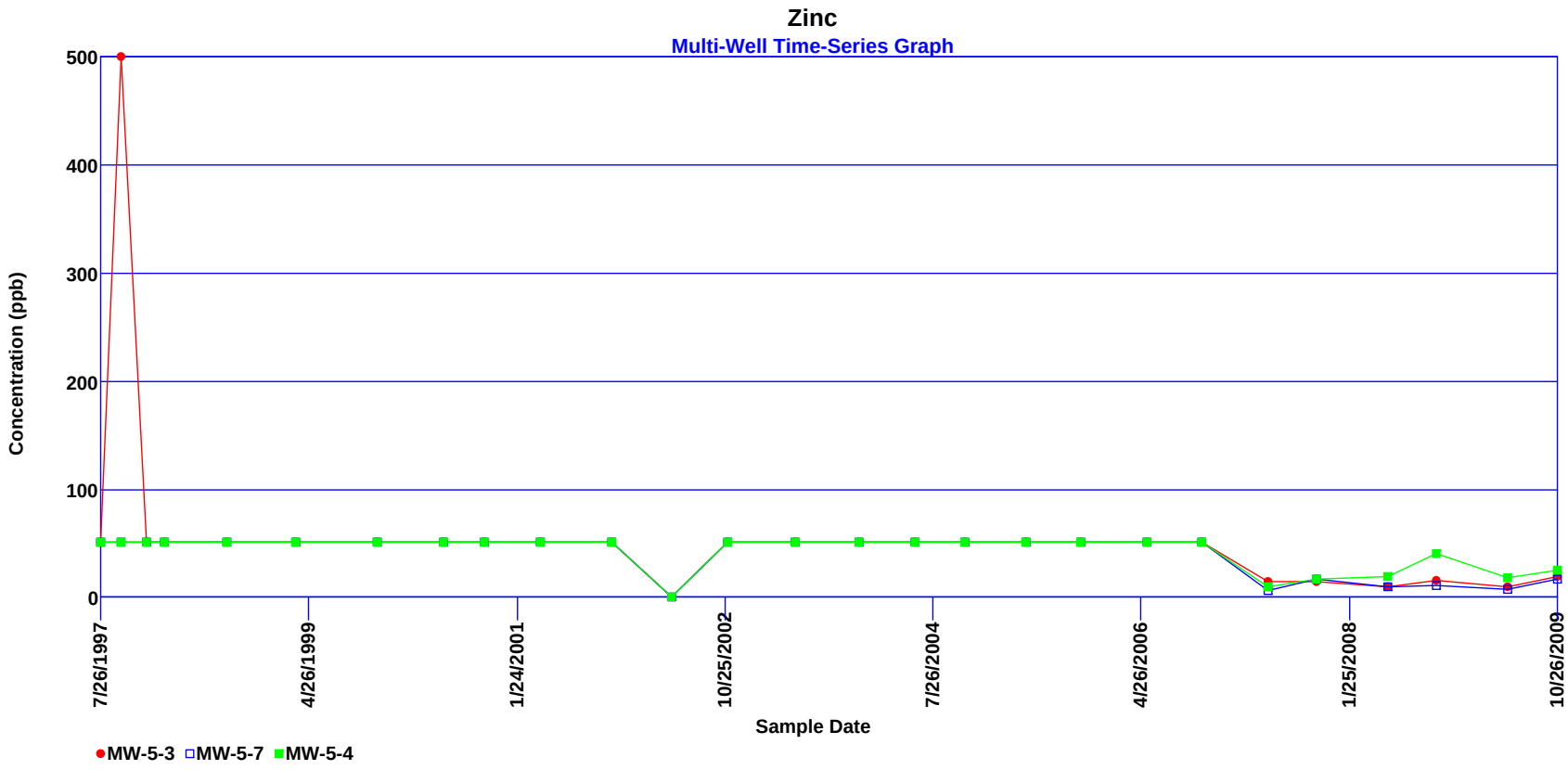

Cobalt
Multi-Well Time-Series Graph
Concentration (ppb)
100
80
60
40
20
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-10


Copper
Multi-Well Time-Series Graph
Concentration (ppb)
300
250
200
150
100
50
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-3


Lead
Multi-Well Time-Series Graph
500
400
300
200
100
0
Concentration (ppb)
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-3
MW-5-4


Total Chromium
Multi-Well Time-Series Graph
Concentration (ppb)
10
8
6
4
2
0
5/10/2005
12/28/2005
8/18/2006
4/8/2007
11/27/2007
7/17/2008
3/7/2009
10/26/2009
Sample Date
MW-5-3


Vanadium
Multi-Well Time-Series Graph
Concentration (ppb)
500
400
300
200
100
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-3


Zinc
Multi-Well Time-Series Graph
Concentration (ppb)
500
400
300
200
100
0
7/26/1997
4/26/1999
1/24/2001
10/25/2002
7/26/2004
4/26/2006
1/25/2008
10/26/2009
Sample Date
MW-5-3
MW-5-7
MW-5-4