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, PG 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)
Johnston County C&D Landfill	County Home Road, Smithfield, NC	51-03	.0500	October 25-27, 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) _____
☐ 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 x222

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

Signature — 1/31/2012 Date — Affix NC Licensed/ Professional Geologist Seal

14 N. Boylan Ave, Raleigh, NC 27603

Facility Representative Address

C-0828

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

NORTH CAROLINA LICENSED SEAL 2275 GEOLOGIST MADELINE GERMAN 1/31/2012

Revised 6/2009

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Johnston County C&D Landfill
Ground Water Monitoring Report

Fall 2011 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 2012

RICHARDSON SMITH GARDNER
& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES

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Johnston County – C&D Landfill
Semi-annual Ground Water Monitoring Report
Fall 2011 Sampling Event

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Appendix B – Laboratory Analytical Report
Appendix C – Time vs. Concentration Graphs

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1 INTRODUCTION

The Johnston County C&D Landfill, currently operating under Solid Waste Permit # 51-03 (C&D) is required to submit semi-annual ground water monitoring reports in accordance with Solid Waste Section Rule 15A NCAC 13B. The permit to operate for this facility was received 8/24/2007. This report presents the semi-annual monitoring results for the event conducted on October 25-27, 2011.

This report includes a field procedure narrative, laboratory analyses, statistical analyses, and ground water characterization for the C&D site. Graphs of the analytical data over time and the laboratory analytical reports are also provided.

2 SITE GEOLOGY

The site is underlain by Middendorf Formation sediments 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 lenticular sediment deposits. Most 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 were 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 Middendorf Formation thickness is controlled by topography; with the bottom being relatively flat-lying at elevations of approximately 170 fmsl[1]. The unconsolidated sediment thickness ranges from approximately 65 feet to less than 10 feet in the lower elevations surrounding the landfill.

3 SAMPLING LOCATIONS

The ground water monitoring network for the C&D landfill includes 12 ground water monitoring wells (CDMW-1, CDMW-2, CDMW-3, CDMW-4, CDMW-5, CDMW-5D, CDMW-6, CDMW-7, CDMW-8, CDMW-8D, CDMW-9 and CDMW-9D), one surface water location (CDSW-1) and a leachate sample (LEACHATE). Monitoring well CDMW-8D and surface water location CDSW-1 contained insufficient water volume and were unable to be sampled. Boring information for monitoring well locations is presented in **Appendix A**.

4 SAMPLING PROCEDURES

The sampling event, performed by trained personnel from Johnston County Landfill, on October 25-27, 2011 was conducted in accordance with the approved Site Water Quality Monitoring Plan[2]. A trip blank was used for quality control.

Sampling methods followed the protocol outlined in the North Carolina Water Quality

[1] fmsl = feet above mean sea level

[2] G.N. Richardson and Associates, Inc. Permit to Construct Application, Johnson Co. C&D Landfill – Area 2 (Appendix J). October 2005.

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 for pH, specific conductivity and temperature were recorded at each well. Water table elevation data is presented in **Table 1**.

Samples were collected by Johnston County personnel in laboratory prepared containers for the specified analytical procedures. Samples were collected using new factory sealed teflon bailers. Ground water samples were properly preserved, placed on ice and transported to a NC certified laboratory facility within the specified holding times for each analysis.

5 FIELD AND LABORATORY RESULTS

5.1 Field Results

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

5.2 Laboratory Analysis

The ground water samples were transported to Environment 1, Inc., a North Carolina certified laboratory (NC Wastewater ID #10) located in Greenville, NC. Groundwater samples were analyzed for the Appendix I VOCs per EPA Test Method 8260B, Appendix I and C&D metals via EPA Test Method 200.7 or 200.8, iron via Test Method SM3111B, total alkalinity via Test Method SM2320B, chloride via Test Method SM4500-CLB, total dissolved residue via Test Method SM2540C and sulfate via Test Method SM426C. The leachate sample was analyzed for Appendix I VOC per EPA Test Method 8260B, Appendix I metals via EPA Test Method 200.8, BOD via Test Method SM5210B, COD via Test Method HACH8000, total suspended residue via Test Method SM24540D, ammonia nitrogen via EPA Test Method 350.1, nitrate nitrogen via EPA Test Method 353.2, total phosphorous via EPA Test Method 365.4 and sulfate via Test Method SM426C.

Samples were transported to the laboratory facility under proper chain of custody and analyzed at the specified DWM Solid Waste Section Limits (SWSL)[3] for Appendix constituents.

The laboratory analytical report is included as **Appendix B**.

5.3 Laboratory Results

The laboratory analysis results were compared with the 15A NCAC 2L 0200 Groundwater Standard (2L Standard), SWSL or Groundwater Protection (GWP) Standard.

5.3.1 Inorgainc Constituents

Inorganic results remain generally consistent with historically reported detections. Eleven

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

inorganic constituents were detected above the SWSL. Every sample contained at least one inorganic constituent. Five inorganic constituents were reported above the 2L/GWP Standard:

- arsenic (CDMW-1 & CDMW-9D);
- total chromium (CDMW-6 & CDMW-9);
- iron (all sampled wells);
- lead (CDMW-9); and
- manganese (CDMW-1, CDMW-2, CDMW-5, CDMW-5D, CDMW-6, CDMW-7, CDMW-9 & CDMW-9D).

Elevated turbidity levels likely influenced the metals detected in laboratory analysis.

5.3.2 Orgainc Constituents

Nine organic constituents were detected in seven monitoring wells; which is consistent with historically reported results. 1,1-Dichloroethane, 1,2-dichloropropane, 1,4-dichlorobenzene, benzene, chlorobenzene, cis-1,2-dichloroethene, methylene chloride, trichloroethylene, and vinyl chloride were reported at levels above the SWSL. Four organic constituents were reported above the 2L/GWP Standard:

- 1,1 dichloroethane (CDMW-9D);
- 1,2-dichloropropane (CDMW-9D);
- benzene (CDMW-2 & CDMW-9D); and
- vinyl chloride (CDMW-9 & CDMW-9D).

Laboratory results identified "J-qualified" values for both organic and inorganic constituents that represent a non-quantifiable number between the laboratory established method detection limit (MDL) and the SWSL. **Table 3** presents detected inorganic and organic constituents.

6 SITE ASSESSMENT/REMEDIAL ACTION

The Johnston County lined C&D landfill was constructed as a "piggy-back" landfill that partially covers a sideslope of the existing unlined Phase 3 MSW landfill. This "piggy-back" design for the lined C&D landfill is the latest phase of ongoing remedial action for the unlined Phases 3 & 4 MSW landfills. The remedial action plan includes construction of several lined "piggy-back" cells and a partial geomembrane cover to limit rainwater infiltration into the unlined waste mass. When remedial action is completed approximately 70 to 75% of the Phase 3 and 4 landfills will be covered to reduce infiltration and the production of uncontrolled leachate.

Prior to C&D landfill construction, a ground water assessment was performed in the proposed C&D area to evaluate the unlined landfill's effect on ground water within and around the then proposed C&D landfill. The assessment indicated some organic constituents were detected in CDMW-9 and CDMW-9D and several inorganic constituents were detected across the C&D area. Filtered sample collection indicated the inorganic detections were due to suspended solids in the samples. These results correspond with baseline sampling and recently collected data.

Please note wells CDMW-1 and CDMW-2, located next to the unlined Phases 1 and 2, and CDMW-5 & CDMW-5D, located adjacent to Phase 3, had not been installed at the time of the assessment. These wells are located adjacent to unlined landfill phases. Groundwater sample analysis collected prior to waste deposition in the C&D landfill indicated impact from the existing unlined phases. Based on this information, the impact on these wells appears to be from historical contamination from the unlined MSW landfill units. As stated above, the lined C&D landfill is one section of a larger "piggy back" landfill remedial strategy to limit water infiltration into the unlined landfill units.

7 STATISTICAL ANALYSIS & RESULTS

RSG reviewed the laboratory data for this event to evaluate trends, examine major site changes and establish statistical significance while considering differences between up and down gradient wells. 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.

Due to groundwater contamination existing prior to the C&D landfill construction, statistical analysis is performed using intrawell techniques for detected constituents. This provides more reliable information regarding the significance of groundwater contaminant levels at previously impacted wells. Time versus concentration graphs were also reviewed for each detected constituent and are included in **Appendix B**.

Statistical analysis was performed on inorganic and organic constituents using the non-parametric test Wilcoxon Rank Sum, the Poisson Prediction Limit or the Non-Parametric Prediction Limit for individual wells. Parameters were also analyzed for normality and equal variance. Sens Slope Analysis was run for select locations to determine trends.

No constituents were found to be statistically significant. A "Statistical Analysis Summary" is provided as **Table 4**.

8 GROUND WATER CHARACTERIZATION

A potentiometric surface map was prepared from ground water 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

Slug tests were not performed on the C&D wells except CDMW-9 which was previously named as PZ-9 during site permitting activities. Piezometers PZ-1 through PZ-10, installed in 2003, were previously located within the C&D footprint. Using the data from the former piezometers, the average hydraulic conductivity and porosity was used for the evaluation of ground water flow in CDMW-1 through CDMW-8.

Ground water velocities ranged from 0.035 feet/day (CDMW-7) to 0.182 feet/day (CDMW-3). Calculations are included in **Table 1**. The ground water flow is generally north towards the tributaries of Middle Creek, which is consistent with this site's historic ground water flow patterns. The potentiometric surface map is presented as **Figure 1**.

9 CONCLUSIONS

This monitoring event specified five inorganic constituents and four organic constituents were detected above their respective 2L Standards. The inorganic constituents are likely due to suspended solids in the samples which can both cause detection of these constituents as well as bias the results high. This was found to be the case during site assessment activities; prior to site permitting, both filtered and unfiltered samples were collected to evaluate suspended solids effect on inorganic constituent concentrations detected in groundwater samples. Sample filtration removed significant quantities of detected inorganic constituents. Most organic constituents were previously detected prior to waste placement in the C&D landfill unit. Given the site history and the location of unlined landfills adjacent to the C&D landfill, these detections are due to prior impact from the unlined landfills. The included constituent concentrations graphs over time indicate the concentrations detected are stable.

Overall site remediation includes the lined C&D landfill. The liner system installation reduced storm water infiltration over a portion of the unlined Phase 3 and the area beneath the C&D landfill adjacent to Phase 3. Groundwater quality is expected to improve over time because the lined C&D and Phase 4A landfills will continue to prevent storm water infiltration.

The next ground water monitoring event is scheduled for April 2012. A report will be submitted to NCDENR following completion of laboratory and statistical analyses.

Figures

LEGEND

- PROPERTY LINE (SHOWN WHITE ON MAP)
- ADJACENT PROPERTY LINES (SHOWN WHITE ON MAP)
- PHASE BOUNDARY
- EXISTING GROUND WATER MONITORING WELL
- C&D MONITORING WELL
- ABANDONED WELL
- APPROXIMATE SURFACE WATER SAMPLING LOCATION
- POTENTIOMETRIC SURFACE CONTOUR
- EXISTING DRAINAGE FEATURES/STREAMS
- TOC= TOP OF CASING
- DTW= DEPTH TO WATER (SEE NOTE 1)
- GWE= GROUND WATER ELEVATION
- NM NOT MEASURED
- GRADIENT MEASUREMENT

NOTE

1. GROUND WATER DATA COLLECTED IN OCTOBER 2011.
2. WELLS MARKED WITH AN * WERE NOT USED IN CONTOURING POTENTIOMETRIC SURFACE.

REFERENCES

1. AERIAL PHOTOGRAPHY PROVIDED BY GEODATA CORP. ON JUNE 17, 2011.

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DATE	NO.	REVISION

RICHARDSON SMITH GARDNER & ASSOCIATES
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SEAL

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PROJECT TITLE: JOHNSTON COUNTY LANDFILL SMITHFIELD, NORTH CAROLINA

DRAWING TITLE: GROUND WATER POTENTIOMETRIC SURFACE MAP FALL 2011

DESIGNED BY: M.M.G.	DRAWN BY: W.R.B.
CHECKED BY:	PROJECT NO.: JOHN-4
SCALE: AS SHOWN	DATE: JAN. 2011
FILE NAME: JOHN-D0650	
SHEET NO.	DRAWING NO. FIG. 1

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Tables

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By: MG
Date: 1/26/2012

Table 1
Johnston County C&D Landfill
Ground Water Elevations & Velocities
October 25-27, 2011

Well	Northing	Easting	TOC Elevation (feet)	Water Level (feet)	Groundwater Elevation (feet)	Hydraulic Conductivity (ft/day)	Porosity (%)	Gradient (ft/ft)	Velocity (ft/day)
CDMW-1	643114.61	2171305.99	189.46	8.45	181.01	0.232	0.25	0.045	0.042
CDMW-2	643114.86	2171456.69	186.13	8.57	177.56	0.232	0.25	0.043	0.040
CDMW-3	643860.05	2172212.35	170.65	33.38	137.27	0.232	0.25	0.196	0.182
CDMW-4	643975.97	2172197.24	172.84	30.61	142.23	0.232	0.25	0.091	0.084
CDMW-5	644405.08	2171517.29	167.39	32.89	134.50	0.232	0.25	0.119	0.110
CDMW-5D*	644409.22	2171513.79	167.43	30.90	136.53	NA	NA	NA	NA
CDMW-6	644066.12	2171963.60	162.12	10.10	152.02	0.232	0.25	0.067	0.062
CDMW-7	643451.38	2171727.87	175.27	14.49	160.78	0.232	0.25	0.038	0.035
CDMW-8	644487.10	2171754.20	127.41	4.96	122.45	0.232	0.25	0.038	NA
CDMW-8D*	644509.00	2171743.00	127.63	13.65	113.98	NA	NA	NA	NA
CDMW-9	644270.74	2171641.69	160.5	12.86	147.64	0.259	0.25	0.118	NA
CDMW-9D*	644268.20	2171653.67	160.71	14.78	145.93	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 conducted by G.N. Richardson and Associates July/August 2003.
Porosity values assumed from Groundwater & Wells (Driscoll)
NA = not available

By: MG
Date: 1/26/2012

Table 2
Johnston County C&D Landfill
Field Parameter Results
October 25-27, 2011

Well Identification #	Static Water Level (ft) * (DTW)	Temperature (°Celsius)	Turbidity (NTU)	Specific Conductivity (uS/cm)	pH
CDMW-1	8.45	19.97	95.1	243	5.87
CDMW-2	8.57	20.06	96.9	604	6.58
CDMW-3	33.38	16.39	12.5	26	5.59
CDMW-4	30.61	17.40	8.64	57	6.11
CDMW-5	32.89	17.55	318	84	5.58
CDMW-5D	30.90	16.90	9.23	132	5.72
CDMW-6	10.10	18.41	263	71	6.31
CDMW-7	14.49	19.36	251	235	4.83
CDMW-8	4.96	17.02	28.7	110	5.03
CDMW-8D	13.65	IWV	IWV	IWV	IWV
CDMW-9	12.86	18.07	*	194	5.60
CDMW-9D	14.78	17.82	4.12	231	5.64
CD-SW 1	NA	IWV	IWV	IWV	IWV
Leachate Point	NA	20.03	88.8	1570	6.42

NOTE:
IWV = Insufficient Water Volume for Determination
NA = Parameter not analyzed at this location.
Data Collected by Kevin Shields of Johnston County
* level above field meter reporting capability

By: MG
Date: 1/26/2012

Table 3
Johnston County C&D Landfill
Detected Inorganic and Organic Constituents
October 25-27, 2011

Constituents	MDL	SWSL	2L or GWP*	CDMW-1	CDMW-2	CDMW-3	CDMW-4	CDMW-5	CDMW-5D	CDMW-6	CDMW-7	CDMW-8	CDMW-9	CDMW-9D
Inorganic & Indicator														
Antimony	0.14	6	1*	<0.14	0.25 J	<0.14	<0.14	<0.14	0.15 J	<0.14	<0.14	<0.14	0.39 J	<0.14
Arsenic	0.10	10	10	**29**	2.8 J	0.28 J	<0.10	1.1 J	0.21 J	2.2 J	0.97 J	0.27 J	5.2 J	**17**
Barium	0.02	100	700	88.2 J	99.2 J	12.2 J	2.0 J	30.0 J	14.4 J	21.1 J	**191**	18.1 J	36.2 J	7.8 J
Beryllium	0.02	1	4*	<0.02	0.06 J	0.12 J	<0.02	0.41 J	0.10 J	1	**2**	0.46 J	0.46 J	<0.02
Cadmium	0.02	1	2	0.07 J	0.09 J	0.10 J	0.06 J	0.29 J	0.12 J	0.28 J	0.89 J	<0.02	0.42 J	0.05 J
Cobalt	0.03	10	1*	4.0 J	5.1 J	1.5 J	0.52 J	7.7 J	7.3 J	9.5 J	**27**	3.2 J	**172**	**38**
Copper	0.02	10	1000	2.1 J	2.5 J	5.2 J	3.0 J	**20**	2.8 J	**16**	**42**	1.8 J	**27**	0.45 J
Total Chromium	0.04	10	10	1.2 J	2.1 J	0.48 J	0.31 J	10	1.0 J	**18**	6.8 J	1.2 J	**19**	<0.04
Iron	15.9	300	300	**29480**	**73360**	**1537**	**791**	**22520**	**1288**	**54680**	**16510**	**3876**	**71900**	**9740**
Lead	0.02	10	15	2.2 J	2.9 J	0.82 J	0.54 J	8.5 J	0.47 J	10	**11**	0.74 J	**16**	0.18 J
Manganese	0.61	50	50	**385**	**506**	41 J	19 J	**325**	**86**	**382**	**351**	27 J	**4021**	**1718**
Mercury	0.05	0.2	1	<0.05	<0.05	<0.05	<0.05	0.12 J	**0.25**	<0.5	0.06 J	<0.05	<0.05	0.05 J
Nickel	0.04	50	100	1.8 J	1.3 J	2.3 J	3.0 J	19.3 J	6.5 J	27.8 J	16.3 J	5.0 J	39.3 J	8.7 J
Selenium	0.20	10	20	0.27 J	0.92 J	<0.20	<0.20	1.3 J	0.47 J	<0.20	2.3 J	0.43 J	1.0 J	0.90 J
Silver	0.02	10	20	<0.02	<0.02	<0.02	<0.02	0.06 J	0.27 J	0.12 J	0.11 J	<0.02	0.18 J	0.05 J
Thallium	0.02	5.5	0.28*	0.03 J	0.06 J	<0.02	<0.02	0.03 J	0.31 J	0.12 J	0.09 J	0.03 J	0.09 J	0.04 J
Vanadium	0.14	25	0.3*	5.6 J	7.7 J	0.62 J	<0.02	6.5 J	0.38 J	10.1 J	10.4 J	2.8 J	11.4 J	<0.14
Zinc	0.24	10	1000	3.0 J	3.3 J	6.9 J	7.2 J	**79**	**11**	**107**	**37**	**20**	**113**	6.1 J
Total Alkalinity	1000	--	--	54000	168000	6000	16000	21000	37000	23000	8000	7000	64000	82000
Chloride	5000	--	250000	23000	45000	<5000	<5000	7000	14000	<5000	14000	12000	14000	18000
Total Dissolved Residue	1000	--	500000	114000	145000	42000	44000	61000	94000	73000	152000	69000	112000	140000
Sulfate	5000	3E+05	250000	17400	10200	12500	5000 J	8800 J	10000 J	6100 J	24000 J	32500 J	<5000	5100 J
Organic														
1,1-Dichloroethane	0.20	5	6	<.20	<0.20	<0.20	0.3 J	3.80 J	4.70 J	<0.20	1.10 J	<0.20	3.80 J	**6.20**
1,2-Dichloroethane	0.27	1	0.4	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	0.40 J	0.50 J
1,2-Dichloropropane	0.21	1	0.6	<0.21	<0.21	<0.21	<0.21	0.70 J	0.80 J	<0.21	<0.21	<0.21	0.90 J	**1.50**
1,4-Dichlorobenzene	0.39	1	6	<0.39	**1.20**	<0.39	<0.39	0.50 J	0.90 J	<0.39	<0.39	<0.39	**3.00**	**5.00**
Benzene	0.24	1	1	<0.24	**1.20**	<0.24	<0.24	0.50 J	0.70 J	<0.24	0.30 J	<0.24	0.80 J	**1.10**
Chlorobenzene	0.30	3	50	<0.30	1.80 J	<0.30	<0.30	0.40 J	0.80 J	<0.30	<0.30	<0.30	**3.40**	**5.50**
Cis-1,2-Dichloroethene	0.25	5	70	<0.25	<0.25	<0.25	<0.25	2.90 J	3.40 J	<0.25	0.70 J	<0.25	**10.20**	**15.30**
Methylene Chloride	0.64	1	5	<0.64	<0.64	<0.64	<0.64	**2.10**	**3.50**	<0.64	<0.64	<0.64	<0.64	<0.64
Tetrahydrofuran	0.39	--	--	<0.39	<0.39	<0.39	<0.39	6.40	7.20	<0.39	2.00	<0.39	<0.39	0.90 J
Trichloroethene	0.23	1	3	<0.23	<0.23	<0.23	<0.23	0.70 J	0.70 J	<0.23	<0.23	<0.23	0.60 J	**1.30**
Vinyl Chloride	0.63	1	0.03	<0.63	**1.00**	<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	**1.10**	**1.20**

MDL	-	Method Detection Limit
SWSL	-	Solid Waste Section Quantitation Limit
2L	-	Groundwater Standard (15A NCAC 2L 0200)
GWP		Groundwater Protection Standard (indicated by *)
< MDL	-	Not detected at or above the MDL
Shading	-	Levels above 2L standard or GWP
Bold Letters	-	Constituent detected above SWSL
J	-	"J-qualified" reported from laboratory as data between the MDL and SWSL

Results are presented in ug/l.
Data from 11/17/2011 Environment 1, Incorporated Laboratory Report #6058.

By: MG
Date: 1/26/2012

Table 4
Johnston County C&D Landfill
Statistical Analysis Summary
October 25-27, 2011

Location	Parameter	Result	Detection Limit	Test Units	%ND	Normality	Test	Statistically Significant?
CDMW-1	Arsenic	29	10	ug/l	0	N	WRS	N
CDMW-9D	Arsenic	17	10	ug/l	7.7	N	PPL	N
CDMW-7	Barium	191	100	ug/l	30.8	N	WRS	N
CDMW-6	Beryllium	1	1	ug/l	30.8	N	WRS	N
CDMW-7	Beryllium	2	1	ug/l	15.4	N	WRS	N
CDMW-7	Cobalt	27	10	ug/l	15.4	N	WRS	N
CDMW-9	Cobalt	172	10	ug/l	0	N	WRS	N
CDMW-9D	Cobalt	38	10	ug/l	0	N	PPL	N
CDMW-5	Copper	20	10	ug/l	15.4	N	WRS	N
CDMW-6	Copper	16	10	ug/l	30.8	N	WRS	N
CDMW-7	Copper	42	10	ug/l	15.4	N	WRS	N
CDMW-9	Copper	27	10	ug/l	16.7	N	WRS	N
CDMW-5	Total Chromium	10	10	ug/l	15.4	N	WRS	N
CDMW-6	Total Chromium	18	10	ug/l	15.4	N	WRS	N
CDMW-9	Total Chromium	19	10	ug/l	8.3	N	WRS	N
CDMW-1	Iron	29480	300	ug/l	0	N	WRS	N
CDMW-2	Iron	73360	300	ug/l	0	N	WRS	N
CDMW-3	Iron	1537	300	ug/l	0	N	WRS	N
CDMW-4	Iron	791	300	ug/l	0	N	WRS	N
CDMW-5	Iron	22520	300	ug/l	11.1	N	WRS	N
CDMW-5D	Iron	1288	300	ug/l	0	N	WRS	N
CDMW-6	Iron	54680	300	ug/l	0	N	WRS	N
CDMW-7	Iron	16510	300	ug/l	0	N	WRS	N
CDMW-8	Iron	3876	300	ug/l	0	N	WRS	N
CDMW-9	Iron	71900	300	ug/l	0	N	WRS	N
CDMW-9D	Iron	9740	300	ug/l	0	N	WRS	N
CDMW-6	Lead	10	10	ug/l	23.1	N	WRS	N
CDMW-7	Lead	11	10	ug/l	15.4	N	WRS	N
CDMW-9	Lead	16	10	ug/l	8.3	N	WRS	N
CDMW-1	Manganese	385	50	ug/l	0	N	WRS	N
CDMW-2	Manganese	506	50	ug/l	0	N	WRS	N
CDMW-5	Manganese	325	50	ug/l	0	N	WRS	N
CDMW-5D	Manganese	86	50	ug/l	0	N	WRS	N
CDMW-6	Manganese	382	50	ug/l	0	N	WRS	N
CDMW-7	Manganese	351	50	ug/l	0	N	PPL	N
CDMW-9	Manganese	4021	50	ug/l	0	N	WRS	N
CDMW-9D	Manganese	1718	50	ug/l	0	N	WRS	N
CDMW-5D	Mercury	0.25	0.2	ug/l	0	Y	WRS	N
CDMW-5	Zinc	79	10	ug/l	0	N	WRS	N
CDMW-5D	Zinc	11	10	ug/l	38.5	N	WRS	N
CDMW-6	Zinc	107	10	ug/l	0	N	WRS	N
CDMW-7	Zinc	37	10	ug/l	7.7	N	WRS	N
CDMW-8	Zinc	20	10	ug/l	15.4	N	WRS	N
CDMW-9	Zinc	113	10	ug/l	0	N	WRS	N
CDMW-9D	1,1-Dichloroethane	6.2	5	ug/l	7.7	Y	WRS	N
CDMW-9D	1,2-Dichloropropane	1.5	1	ug/l	30.8	N	WRS	N
CDMW-2	1,4-Dichlorobenzene	1.2	1	ug/l	15.4	Y	WRS	N
CDMW-9	1,4-Dichlorobenzene	3	1	ug/l	25	Y	WRS	N
CDMW-9D	1,4-Dichlorobenzene	5	1	ug/l	30.8	Y	NPPL	N
CDMW-2	Benzene	1.2	1	ug/l	15.4	N	WRS	N
CDMW-9D	Benzene	1.1	1	ug/l	23.1	N	WRS	N
CDMW-9	Chlorobenzene	3.4	3	ug/l	41.7	Y	PPL	N
CDMW-9D	Chlorobenzene	5.5	3	ug/l	38.5	Y	WRS	N
CDMW-9	Cis-1,2-Dichloroethene	10.2	5	ug/l	0	Y	WRS	N
CDMW-9D	Cis-1,2-Dichloroethene	15.3	5	ug/l	0	Y	WRS	N
CDMW-5	Methylene Chloride	2.1	1	ug/l	38.5	Y	NPPL	N
CDMW-5D	Methylene Chloride	3.5	1	ug/l	30.8	Y	WRS	N
CDMW-9D	Trichloroethene	1.3	1	ug/l	30.8	N	NPPL	N
CDMW-2	Vinyl Chloride	1	1	ug/l	38.5	N	WRS	N
CDMW-9	Vinyl Chloride	1.1	1	ug/l	33.3	N	WRS	N
CDMW-9D	Vinyl Chloride	1.2	1	ug/l	30.8	N	WRS	N

Legend:
Detection Limit is the SWSL

%ND	Method chosen due to percent non-detects
NPPL	Non-Parametric Prediction Limit
WRS	Wilcoxon Rank Sum Test
PPL	Poisson Prediction Limit

By: MG
Date: 1/26/2012

Table 5
Johnston County C&D Landfill
Leachate Analytical Data
October 25-27, 2011

Parameter	Unit	Leachate
Arsenic	ug/l	9 J
Barium	ug/l	**296**
Cadmium	ug/l	0.04 J
Copper	ug/l	2.1 J
Total Chromium	ug/l	2.2 J
Lead	ug/l	0.54 J
Nickel	ug/l	4.5 J
Selenium	ug/l	3.1 J
Thallium	ug/l	0.11 J
Vanadium	ug/l	1.3 J
Zinc	ug/l	3.1 J
1,1-Dichloroethane	ug/l	0.60 J
1,2-Dichloroethane	ug/l	0.50 J
1,4-Dichlorobenzene	ug/l	**3.7**
Acetone	ug/l	11.70 J
Benzene	ug/l	**2.3**
Chlorobenzene	ug/l	**3.1**
Chloroethane	ug/l	1.10 J
Cis-1,2-Dichloroethene	ug/l	**6.2**
Ethylbenzene	ug/l	0.50 J
Methylene Chloride	ug/l	**1.8**
Tetrahydrofuran	ug/l	**2.2**
Toluene	ug/l	0.30 J
Trichloroethene	ug/l	0.30 J
Vinyl Chloride	ug/l	**4**
BOD	ug/l	**12000**
COD	ug/l	**62000**
Total Suspended Residue	ug/l	**63000**
Ammonia Nitrogen as N	ug/l	**25700**
Nitrate Nitrogen as N	ug/l	<30
Total Phosphorus as P	ug/l	**180**
Sulfate	ug/l	48500 J

J-values unquantified at concentrations below the SWSL.
Data from 11/17/2011 Environment 1, Incorporated Laboratory Report #6C

Appendix A

Monitoring Well Information

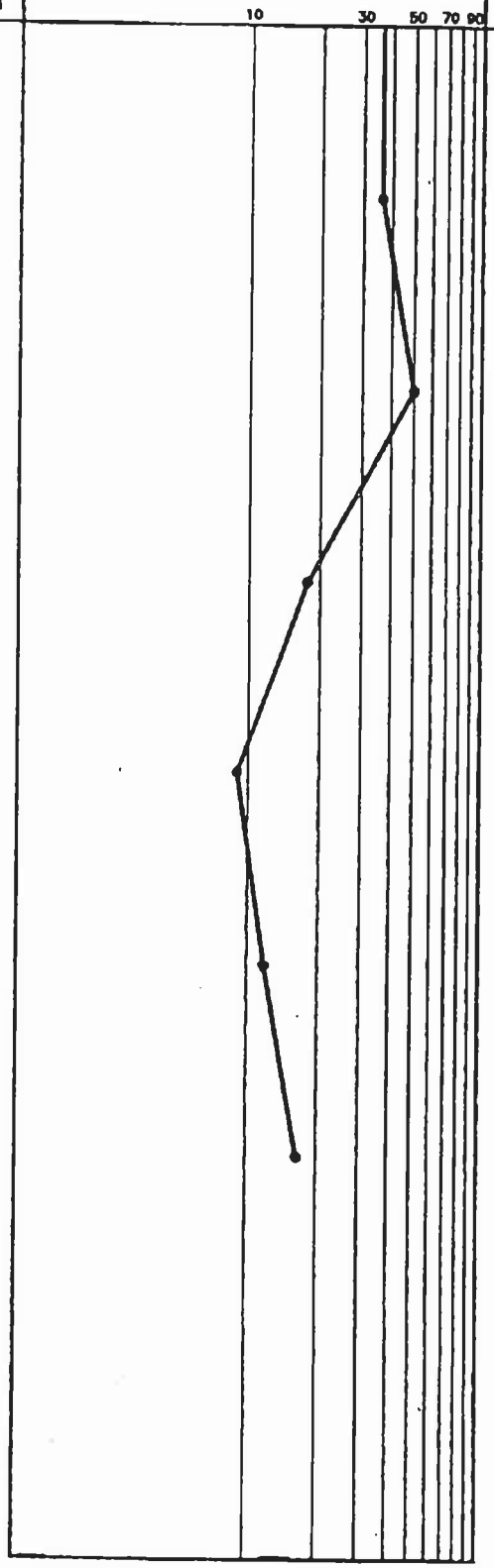
PROJECT:	JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION	TEST BORING RECORD	DMW 5-1
PROJECT NO.:	1054-95-286A	ELEVATION:	
LOGGED BY:	W. BECKWITH	BORING DEPTH:	30 FEET
DATE DRILLED:	4/16/97	WATER LEVEL:	19.4' ON 4/17/97
DRILL METHOD:	4 ¼" H.S.A.	DRILL RIG:	MUDBUG

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

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

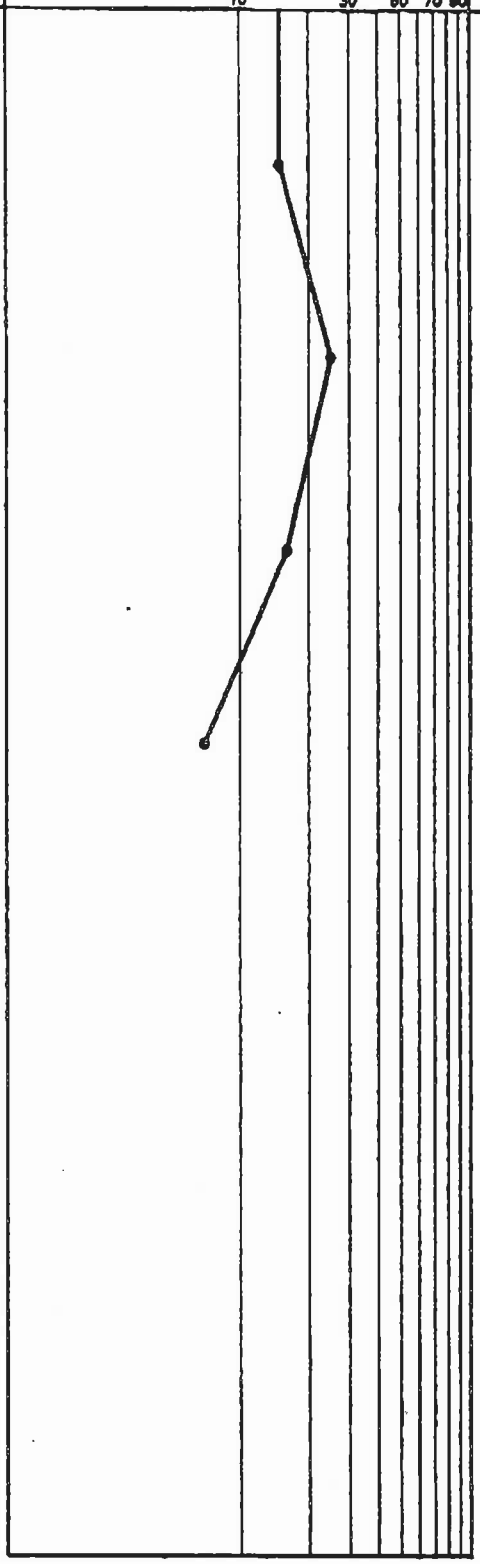
DEPTH (ft)	Soil Description	SAMPLE	BPF
	LOOSE GRAY SILTY FINE TO MEDIUM SAND (SM) PLOWED LAYER		
	LOOSE TAN SILTY FINE TO MEDIUM SAND (SM)		
	DENSE ORANGE BROWN CLAYEY MEDIUM TO COARSE SAND (SC)	SS-1	36
	DENSE ORANGE SILTY FINE TO MEDIUM SAND WITH TRACE OF CLAY (SM)	SS-2	50
		SS-3	18
	LOOSE PINK SILTY 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

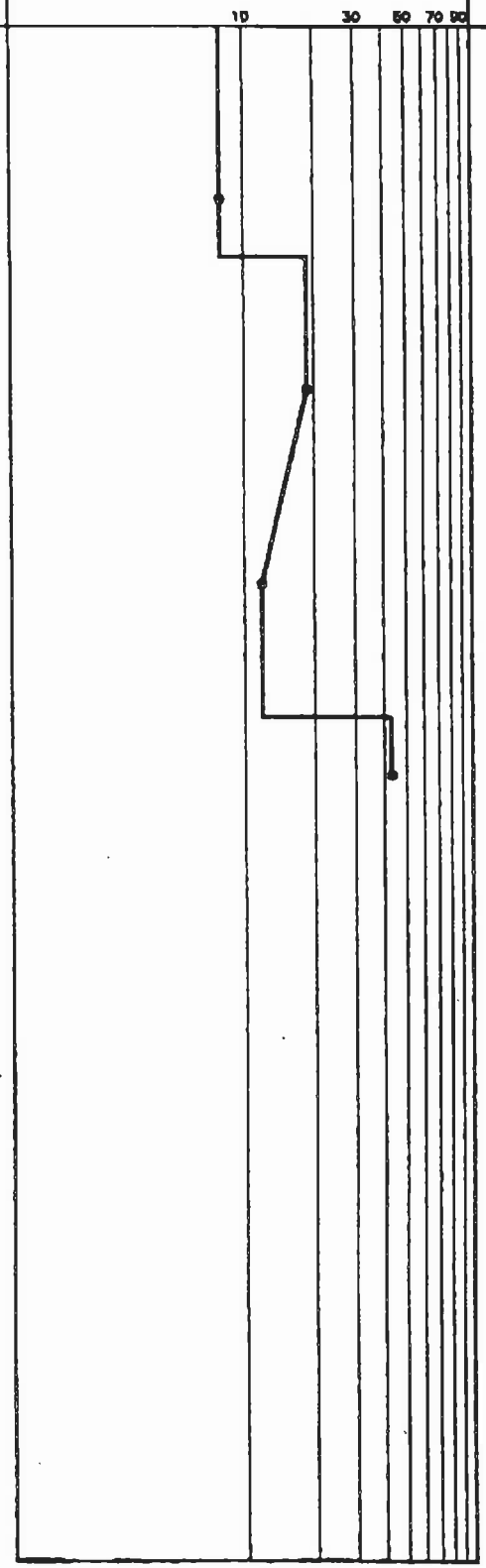
WELL SCHEMATIC LEGEND: SCREEN INTERVAL, SANDPACK, BENTONITE, GROUT

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	

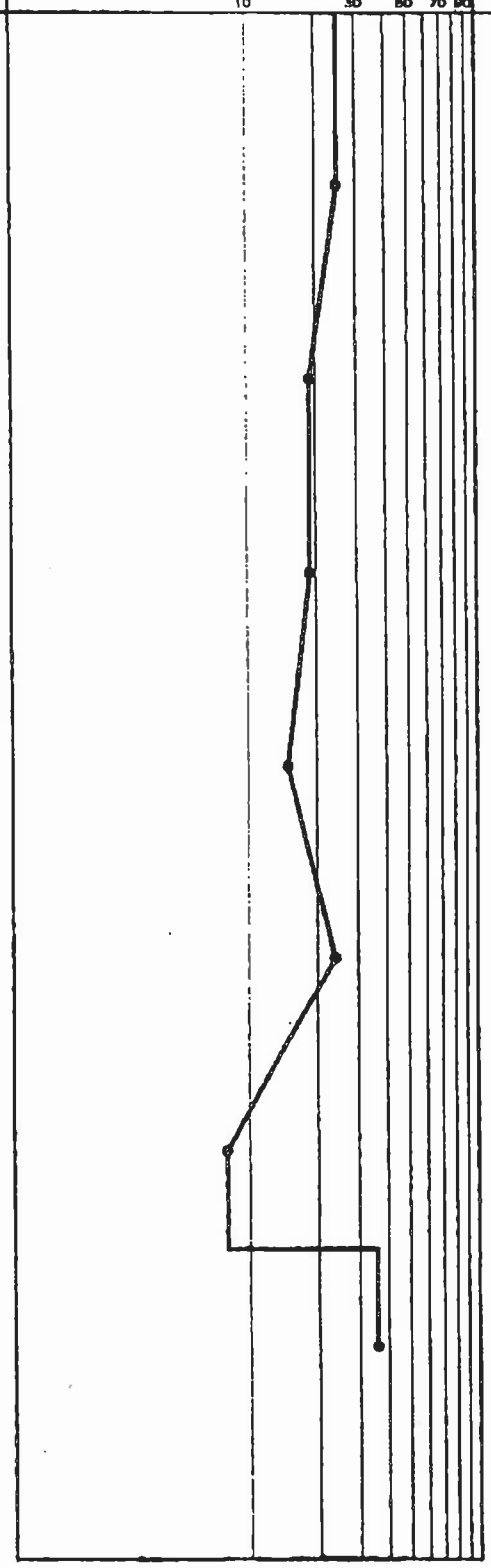
DEPTH (ft)	Soil Description	SAMPLE	Standard Penetration Test Data BLOWS/FT (10, 30, 50, 70, 90)	BPF
	FILL: LOSSE BROWN SILTY **SAND** (SM)			
	MEDIUM DENSE PINKISH GRAY CLAYEY FINE TO MEDIUM **SAND** (SC)	SS-1		18
5				
		SS-2		15
10				
		SS-3		16
15	MEDIUM DENSE LIGHT GRAY AND YELLOW CLAYEY **SAND** (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

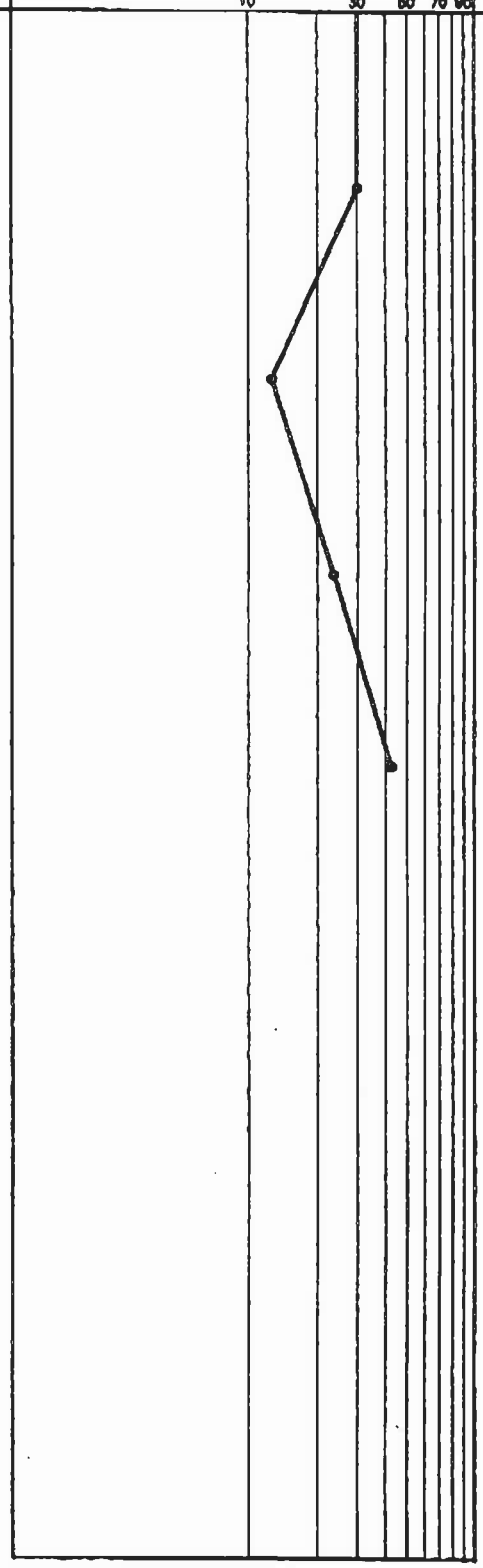
WELL SCHEMATIC LEGEND

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				



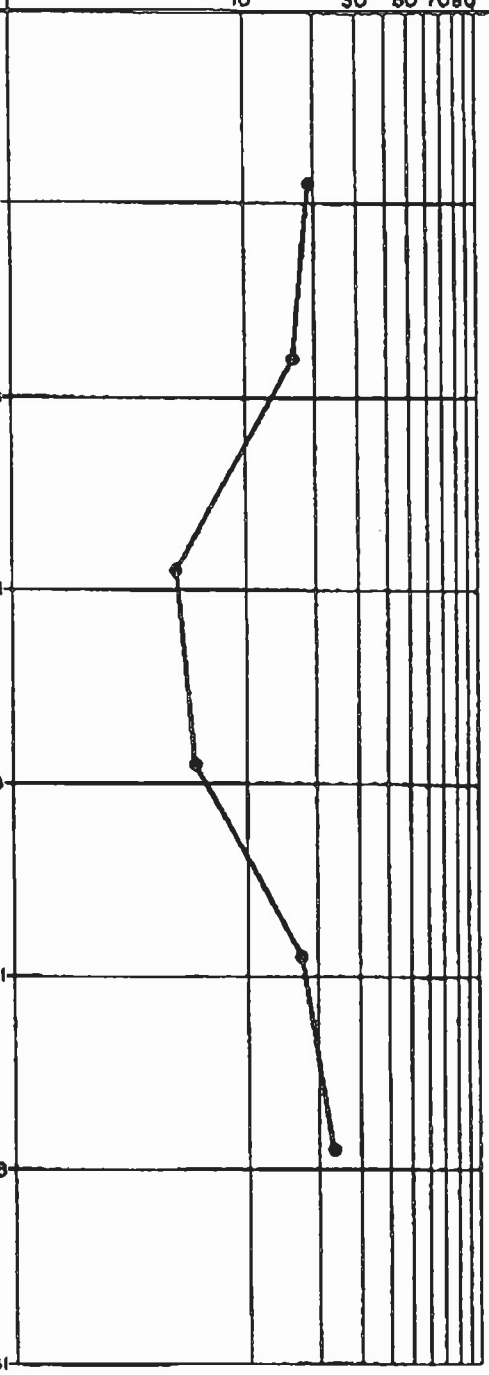
PROJECT: JOHNSTON COUNTY LANDFILL PHASE 5 MONITOR WELL INSTALLATION		TEST BORING RECORD DMW 5-8
PROJECT NO.: 1054-95-286A	ELEVATION:	NOTES: 2" PVC MONITOR WELL INSTALLED IN BOREHOLE AT COMPLETION OF DRILLING
LOGGED BY: W. BECKWITH	BORING DEPTH: 22 FEET	WELL SCHEMATIC LEGEND
DATE DRILLED: 4/21/97	WATER 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	

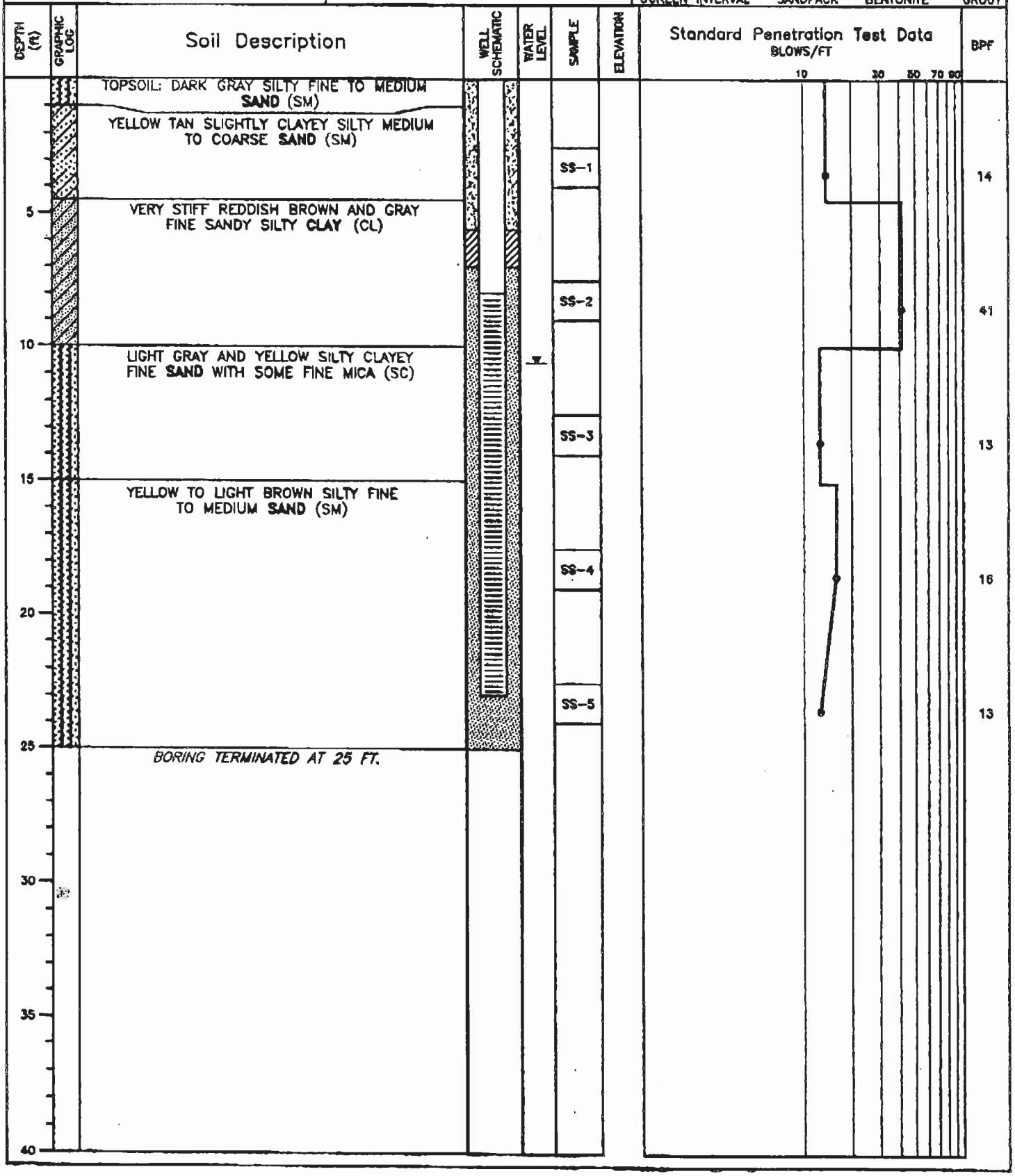
Standard Penetration Test Data (Blows/ft)



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

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#: 6058

JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/11
DATE REPORTED : 11/17/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	SW-1	CDMW-4	CDMW-5	CDMW-5D	Analysis Date	Analyst	Method Code
Total Alkalinity, mg/l	1.0	1.0		16	21	37	10/28/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0		--- U	7	14	10/28/11	HLB	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0		44	61	94	11/03/11	MEL	SM2540C
Sulfate, mg/l	5.0	250.0		5.0 J	8.8 J	10.0 J	11/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	Missing	--- U	--- U	0.15 J	11/03/11	CMF	EPA200.8
Arsenic, ug/l	0.10	10.0	Missing	--- U	1.1 J	0.21 J	11/03/11	CMF	EPA200.8
Barium, ug/l	0.02	100.0	Missing	2.0 J	30.0 J	14.4 J	11/03/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	Missing	--- U	0.41 J	0.10 J	11/03/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	Missing	0.06 J	0.29 J	0.12 J	11/03/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0	Missing	0.52 J	7.7 J	7.3 J	11/03/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	Missing	3.0 J	20	2.8 J	11/03/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	Missing	0.31 J	10	1.0 J	11/03/11	CMF	EPA200.8
Iron, ug/l	15.9	300.0		791	22520	1288	11/17/11	ADD	SM3111B
Manganese, ug/l	0.61	50.0		19 J	325	86	11/09/11	LFJ	EPA200.7
Lead, ug/l	0.02	10.0	Missing	0.54 J	8.5 J	0.47 J	11/03/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20		--- U			11/03/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20			0.12 J	0.25	11/04/11	ADD	EPA245.1
Nickel, ug/l	0.04	50.0	Missing	3.0 J	19.3 J	6.5 J	11/03/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	Missing	--- U	1.3 J	0.47 J	11/03/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	Missing	--- U	0.06 J	0.27 J	11/03/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	Missing	--- U	0.03 J	0.31 J	11/03/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	Missing	--- U	6.5 J	0.38 J	11/03/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	Missing	7.2 J	79	11	11/03/11	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

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

CLIENT: JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6058

ANALYST: MAO
DATE COLLECTED: 10/26/11
DATE ANALYZED: 11/01/11
DATE REPORTED: 11/17/11

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	CDMW-4	CDMW-5	CDMW-5D
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	2.10	3.50
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	0.30 J	3.80 J	4.70 J
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	2.90 J	3.40 J
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	0.50 J	0.70 J
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	0.70 J	0.70 J
23. 1,2-Dichloropropane	0.21	1.0	--- U	0.70 J	0.80 J
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	0.60 J	0.60 J
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	0.40 J	0.80 J
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	0.50 J	0.90 J
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U
48. Tetrahydrofuran	0.39	1.0	--- U	6.40	7.20

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

ID#: 6058

JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/27/11
DATE REPORTED : 11/18/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	Leachate	CDMW-1	CDMW-2	CDMW-3	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	12				10/28/11	TRB	SM5210B
COD, mg/l	20.0	20.0	62				11/03/11	TRB	HACH8000
Total Suspended Residue, mg/l	1.0	1.0	63				10/28/11	MEL	SM2540D
Ammonia Nitrogen as N, mg/l	0.04	0.04	25.70				11/01/11	ANO	EPA350.1
Nitrate Nitrogen as N, mg/l	0.03	10.0	--- U				11/02/11	ANO	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	0.18				11/03/11	SEJ	EPA365.4
Total Alkalinity, mg/l	1.0	1.0		54	168	6	10/31/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0		23	45	--- U	11/03/11	HLB	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0		114	145	42	11/03/11	MEL	SM2540C
Sulfate, mg/l	5.0	250.0	48.5 J	17.4 J	10.2 J	12.5 J	11/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	--- U	--- U	0.25 J	--- U	11/10/11	CMF	EPA200.8
Arsenic, ug/l	0.10	10.0	9 J		2.8 J		11/10/11	CMF	EPA200.8
Arsenic, ug/l	0.10	10.0		29		0.28 J	11/18/11	CMF	SM3113B
Barium, ug/l	0.02	100.0	296	88.2 J	99.2 J	12.2 J	11/10/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U	--- U	0.06 J	0.12 J	11/10/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.04 J	0.07 J	0.09 J	0.10 J	11/10/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0		4.0 J	5.1 J	1.5 J	11/10/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	2.1 J	2.1 J	2.5 J	5.2 J	11/10/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	2.2 J	1.2 J	2.1 J	0.48 J	11/10/11	CMF	EPA200.8
Iron, ug/l	15.9	300.0		29480	73360	1537	11/17/11	ADD	SM3111B
Manganese, ug/l	0.61	50.0		385	506	41 J	11/09/11	LFJ	EPA200.7
Lead, ug/l	0.02	10.0	0.54 J	2.2 J	2.9 J	0.82 J	11/10/11	CMF	EPA200.8
Mercury, ug/l	0.05	0.20		--- U	--- U	--- U	11/10/11	CMF	EPA200.8
Nickel, ug/l	0.04	50.0	4.5 J	1.8 J	1.3 J	2.3 J	11/10/11	CMF	EPA200.8
Selenium, ug/l	0.20	10.0	3.1 J	0.27 J	0.92 J	--- U	11/10/11	CMF	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	--- U	--- U	11/10/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	0.11 J	0.03 J	0.06 J	--- U	11/10/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	1.3 J	5.6 J	7.7 J	0.62 J	11/10/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	3.1 J	3.0 J	3.3 J	6.9 J	11/10/11	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

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

CLIENT: JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6058

ANALYST: MAO
DATE COLLECTED: 10/27/11
DATE ANALYZED: 11/04/11
DATE REPORTED: 11/18/11

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate	CDMW-1	CDMW-2	CDMW-3
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	4.00	--- U	1.00	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	1.10 J	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	11.70 J	--- 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	1.80	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	0.60 J	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	6.20	--- U	--- U	--- 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	2.30	--- U	1.20	--- U
21. 1,2-Dichloroethane	0.27	1.0	0.50 J	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	0.30 J	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	--- 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	0.30 J	--- 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	--- U	--- U	--- 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	3.10	--- U	1.80 J	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	0.50 J	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- 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	3.70	--- U	1.20	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- 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. Tetrahydrofuran	0.39	1.0	2.20	--- 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

6058A

CLIENT: 6058 WEEK: 42

JOHNSTON COUNTY
(NEW) C&D LANDFILL
P.O. BOX 2263
SMITHFIELD, NC 27577
KEVIN J. SHIELDS
(919) 938-4747

— 1 COOLER —

CHAIN OF CUSTODY RECORD

Page 1 of 1

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	ALKALINITY	CHLORIDE	TDS	SULFATE	METALS	EPA 8260B	8260 Dup. 1
CHLORINE NEUTRALIZED AT COLLECTION												
pH CHECK (LAB)										12	12	12
CONTAINER TYPE, P/G						P	P	P	P	P	G	G
CHEMICAL PRESERVATION						A	A	A	A	A	E	E
*SW-1	~~10/26/11~~	~~08:45~~	N/A	IWV								
CDMW-4	10/26/11	14:32	N/A	17	7	X	X	X	X	X	X	X
CDMW-5		09:52		18	7	X	X	X	X	X	X	X
CDMW-5D		09:29		17	7	X	X	X	X	X	X	X
CDMW-6		11:36		18	7	X	X	X	X	X	X	X
CDMW-7		12:25		19	7	X	X	X	X	X	X	X
CDMW-8		09:01		17	7	X	X	X	X	X	X	X
*CDMW-8D		~~08:53~~		IWV								
CDMW-9		11:04		18	7	X	X	X	X	X	X	X
CDMW-9D		10:33		18	7	X	X	X	X	X	X	X
TRIP BLANK		N/A		N/A	1						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]	10/27/11 09:00	[signature]	10/28 8:00
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS: * IWV - INSUFFICIENT WATER VOLUME TO PERFORM SAMPLING.

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

№ 222923

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#: 6058 A

JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/11
DATE REPORTED : 11/17/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	CDMW-6	CDMW-7	CDMW-8	CDMW-8D	CDMW-9	Analysis Date	Analyst	Method Code
Total Alkalinity, mg/l	1.0	1.0	23	8	7	Missing	64	10/28/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0	--- U	14	12	Missing	14	10/28/11	HLB	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0	73	152	69	Missing	112	11/03/11	MEL	SM2540C
Sulfate, mg/l	5.0	250.0	6.1 J	24.0 J	32.5 J	Missing	--- U	11/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	--- U	--- U	--- U	Missing	0.39 J	11/07/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	2.2 J	0.97 J	0.27 J	Missing	5.2 J	11/07/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	21.1 J	191	18.1 J	Missing	36.2 J	11/07/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	1	2	0.46 J	Missing	0.46 J	11/07/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.28 J	0.89 J	--- U	Missing	0.42 J	11/07/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	9.5 J	27	3.2 J	Missing	172	11/07/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	16	42	1.8 J	Missing	27	11/07/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	18	6.8 J	1.2 J	Missing	19	11/07/11	LFJ	EPA200.8
Iron, ug/l	15.9	300.0	54680	16510	3876	Missing	71900	11/17/11	ADD	SM3111B
Manganese, ug/l	0.02	50.0	382	351	27 J	Missing	4021	11/07/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	10	11	0.74 J	Missing	16	11/07/11	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	--- U	0.06 J	--- U	Missing	--- U	11/07/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	27.8 J	16.3 J	5.0 J	Missing	39.3 J	11/07/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	2.3 J	0.43 J	Missing	1.0 J	11/07/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	0.12 J	0.11 J	--- U	Missing	0.18 J	11/07/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.12 J	0.09 J	0.03 J	Missing	0.09 J	11/07/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	10.1 J	10.4 J	2.8 J	Missing	11.4 J	11/07/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	107	37	20	Missing	113	11/07/11	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#: 6058 A

JOHNSTON CO. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD ,NC 27577

DATE COLLECTED: 10/26/11
DATE REPORTED : 11/17/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	CDMW-9D	Trip Blank	Analysis Date	Analyst	Method Code
Total Alkalinity, mg/l	1.0	1.0	82		10/28/11	TRB	SM2320B
Chloride, mg/l	5.0	5.0	18		10/28/11	HLB	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0	140		11/03/11	MEL	SM2540C
Sulfate, mg/l	5.0	250.0	5.1 J		11/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	--- U		11/07/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	17		11/07/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	7.8 J		11/07/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U		11/07/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.05 J		11/07/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	38		11/07/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	0.45 J		11/07/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	--- U		11/07/11	LFJ	EPA200.8
Iron, ug/l	15.9	300.0	9740		11/17/11	ADD	SM3111B
Manganese, ug/l	0.02	50.0	1718		11/07/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	0.18 J		11/07/11	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	0.05 J		11/07/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	8.7 J		11/07/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	0.90 J		11/07/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	0.05 J		11/07/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.04 J		11/07/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	--- U		11/07/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	6.1 J		11/07/11	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. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6058 A

ANALYST: MAO
DATE COLLECTED: 10/26/11
DATE ANALYZED: 11/01/11
DATE REPORTED: 11/17/11

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	CDMW-6	CDMW-7	CDMW-8	CDMW-9	CDMW-9D
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	1.10	1.20
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	0.60 J	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	1.10 J	--- U	3.80 J	6.20
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	0.70 J	--- U	10.20	15.30
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	0.30 J	--- U	0.80 J	1.10
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	0.40 J	0.50 J
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	0.60 J	1.30
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U	0.90 J	1.50
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	0.30 J	1.20
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	3.40	5.50
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	--- U	--- U	3.00	5.00
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
48. Tetrahydrofuran	0.39	1.0	--- U	2.00	--- U	--- U	0.90 J

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. (NEW) C&D LANDFILL
MR. KEVIN SHIELDS
P.O. BOX 2263
SMITHFIELD, NC 27577

CLIENT ID: 6058 A

ANALYST: MAO
DATE COLLECTED: 10/26/11
DATE ANALYZED: 11/01/11
DATE REPORTED: 11/17/11

REVIEWED BY:

VOLATILE ORGANICS
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	0.27	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
48. Tetrahydrofuran	0.39	1.0	--- U

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

Johnston County
DEPARTMENT of PUBLIC UTILITIES
Solid Waste Division
FIELD MEASUREMENTS
Lined C & D Landfill Area

"Fall 2011" Groundwater Sampling Event (10/25/11 through 10/27/11)

November 3rd, 2011

Kevin J. Shields: Collector

◉ ALL NON-DEDICATED WELLS ◉

Well I.D. #	Static Water Level (ft.) **(DTW)**	Depth of Well (ft.) **(DTB)**	Required Volume Bailed (Liters)	Temperature (°Celsius)	Turbidity (NTU)	Specific Conductivity (uS/cm)	pH
CD-SW 1	N/A	N/A	N/A	**IWV**	**IWV**	**IWV**	**IWV**
CDMW-1	8.45	22.92	27	19.97	95.1	243	5.87
CDMW-2	8.57	22.51	26	20.06	96.9	604	6.58
CDMW-3	33.38	38.77	11	16.39	12.5	26	5.594
CDMW-4	30.61	47.37	32	17.40	8.64	57	6.11
CDMW-5	32.89	37.13	8	17.55	318	84	5.58
CDMW-5D	30.90	49.54	35	16.90	9.32	132	5.72
CDMW-6	10.10	37.15	51	18.41	263	71	6.31
CDMW-7	14.49	29.64	29	19.36	251	235	4.83
CDMW-8	4.96	12.02	13*	17.02	28.7	110	5.03
CDMW-8D	13.65	32.95	15*	**IWV**	**IWV**	**IWV**	**IWV**
CDMW-9	12.86	31.33	35	18.07	Off-Scale	194	5.60
CDMW-9D	14.78	47.98	62	17.82	4.12	231	5.64
Leachate Point	N/A	N/A	N/A	20.03	88.8	1570	6.42

DTW = Depth to water from top of PVC casing.

DTB = Depth to bottom of well from top of PVC casing.

IWV = Insufficient Water Volume to perform sampling.

*** Denotes Bailed Dry.**

Johnston County
Department of Public Utilities
Solid Waste Division
P.O. Box 2263 – 680 County Home Rd.
Smithfield, NC 27577
Phone: (919) 938-4747 Fax: (919) 989-7152

November 3rd, 2011

"Fall 2011" C & D Area Summary (performed 10/25/11 through 10/27/11)

Kevin J. Shields: Collector

On the afternoon of 10/25/11, following the sampling of the lagoon wells, CDMW's-8D, 8, 5D, 5, 9D, 9 & 6 were bailed in preparation for the next day's sampling. On the following day, 10/26/11, these wells were sampled (except 8D because of not recovering) along with CDMW's- 7 & 4. On the final day, 10/27/11, CDMW's-1, 2 & 3 were bailed and sampled along with the C & D Leachate Point (sampled only).

All wells were sampled for Appendix I constituents (at least (2) 40 ml vials for EPA 8260 VOC's and (1) 947 ml bottle for 6010 metals); and per the C & D landfill promulgations (15A NCAC 13B.0544 (b)(1)(D)) effective 01/01/2007, additional parameters are required beyond Appendix I. These are: mercury, iron, manganese, chloride, sulfate, total dissolved solids and alkalinity. All wells were also sampled for these parameters. Leachate retrieved from the riser pipe faucet was sampled for Appendix I constituents, and BOD, COD, TSR, ammonia nitrogen, nitrate, total phosphorus and sulfate.

Comments:

- Field analysis included pH, specific conductivity, temperature and turbidity.
- All wells are non-dedicated. They were bailed at a minimum 3X volume and sampled in accordance with North Carolina State guidelines.
- CDMW- 8D again did not recover for any type of sampling.
- C & D Surface Water-1 was dry; therefore, no sampling could be performed.
- CDMW-5 exhibited poor water recovery but enough to complete sampling.
- Static water levels were, in general, lower than previous fall events.
- The water retrieved from CDMW's-2, 5, 6, 7 & 9 was muddy/cloudy and high in turbidity; however, the rest of the wells exhibited a fairly to very clear quality.
- The entire event from 10/25/11 to 10/27/11 was cool in the morning (high 50's to low 60's), and warmed up to approximately 72-75 °F in the afternoon.

- I was assisted with the sampling endeavor for this part of the event by Mr. Darren C. Donnelly of the Johnston County Landfill

- All samples were placed on ice and picked-up by Environment 1's courier the next day.

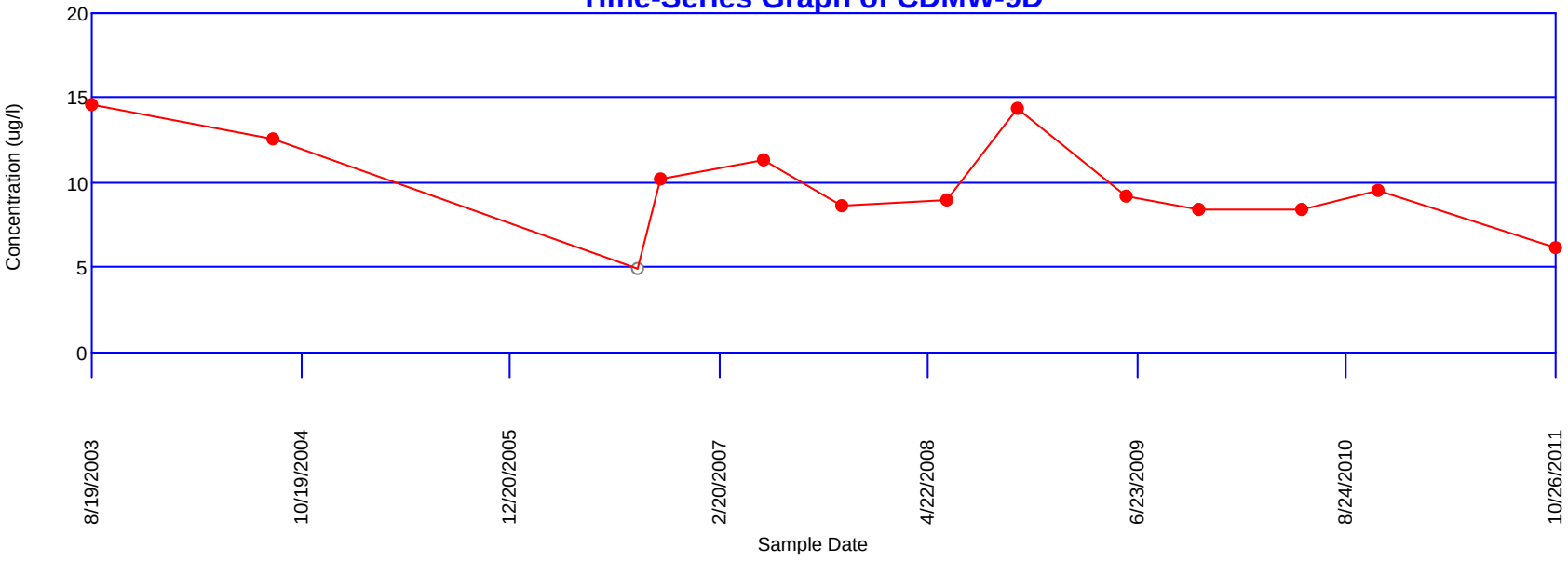
Kevin J. Shields
Johnston County Landfill

Appendix C

Time vs. Concentration Graphs

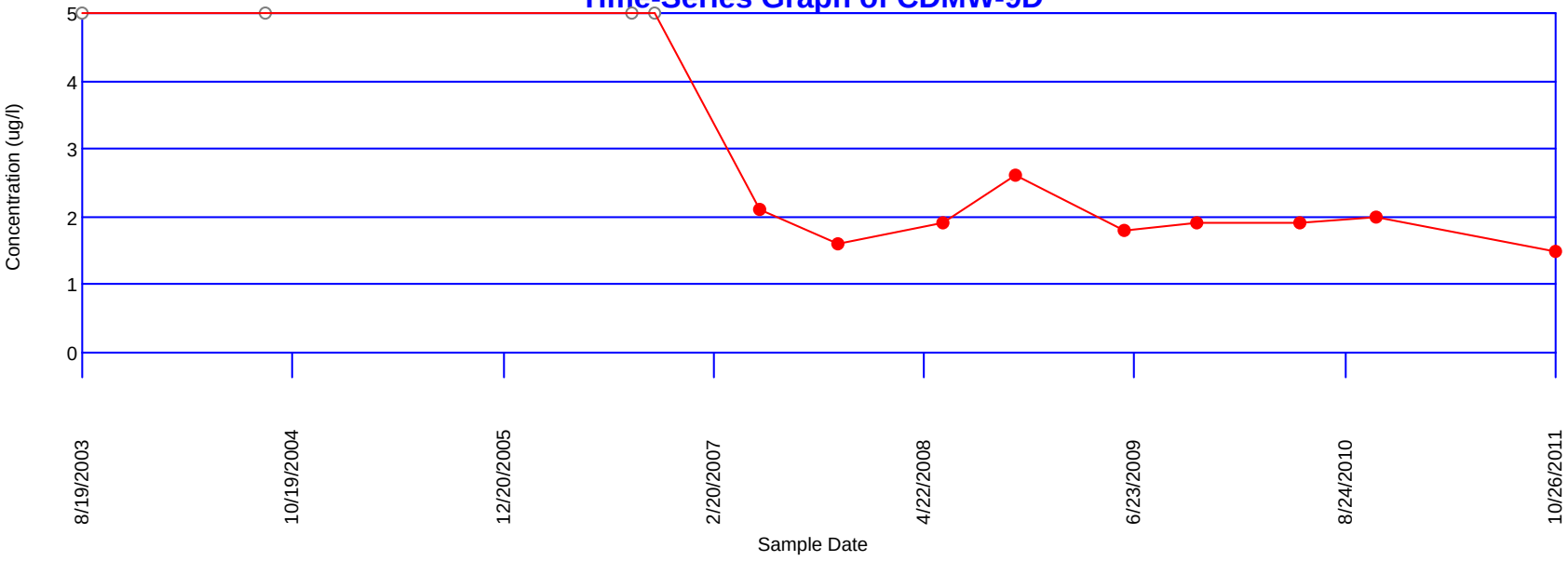
1,1-Dichloroethane

Time-Series Graph of CDMW-9D



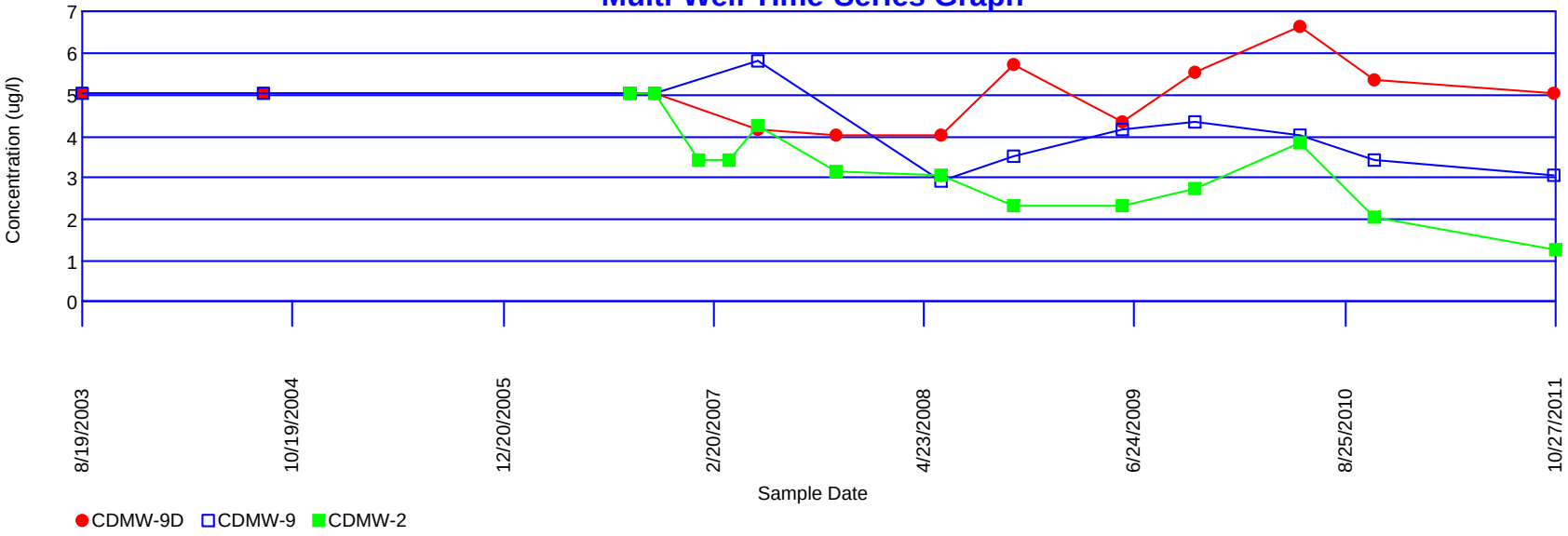
1,2-Dichloropropane

Time-Series Graph of CDMW-9D



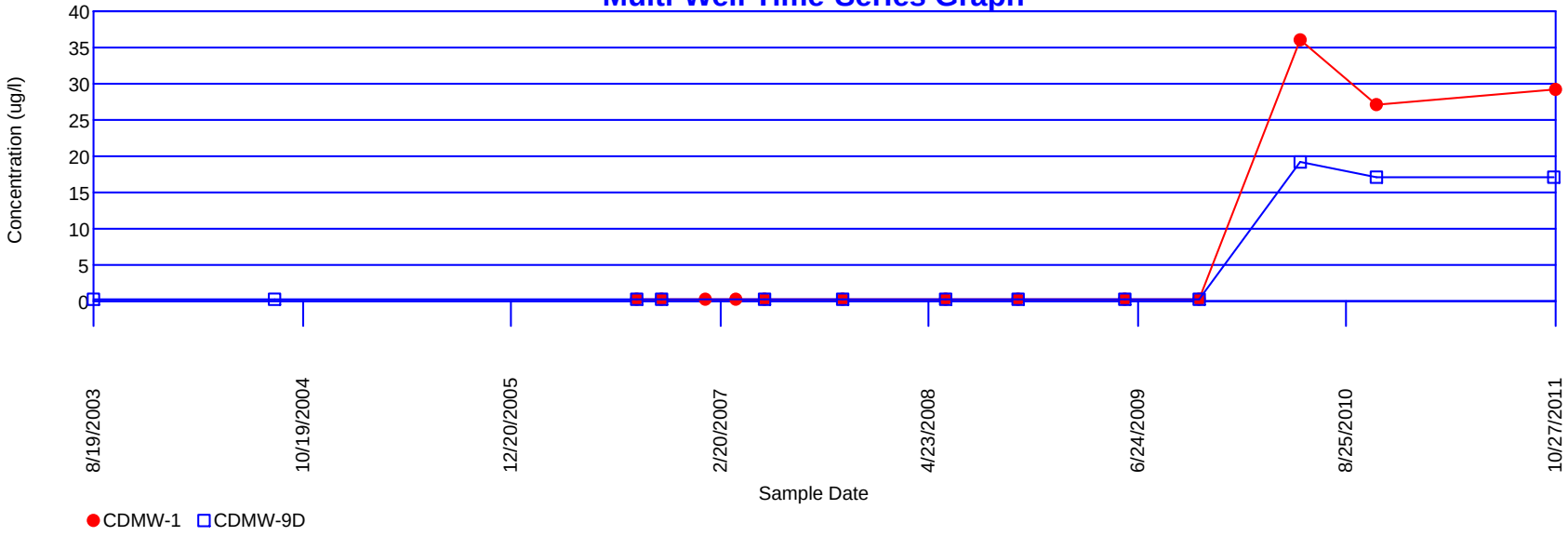
1,4-Dichlorobenzene

Multi-Well Time-Series Graph



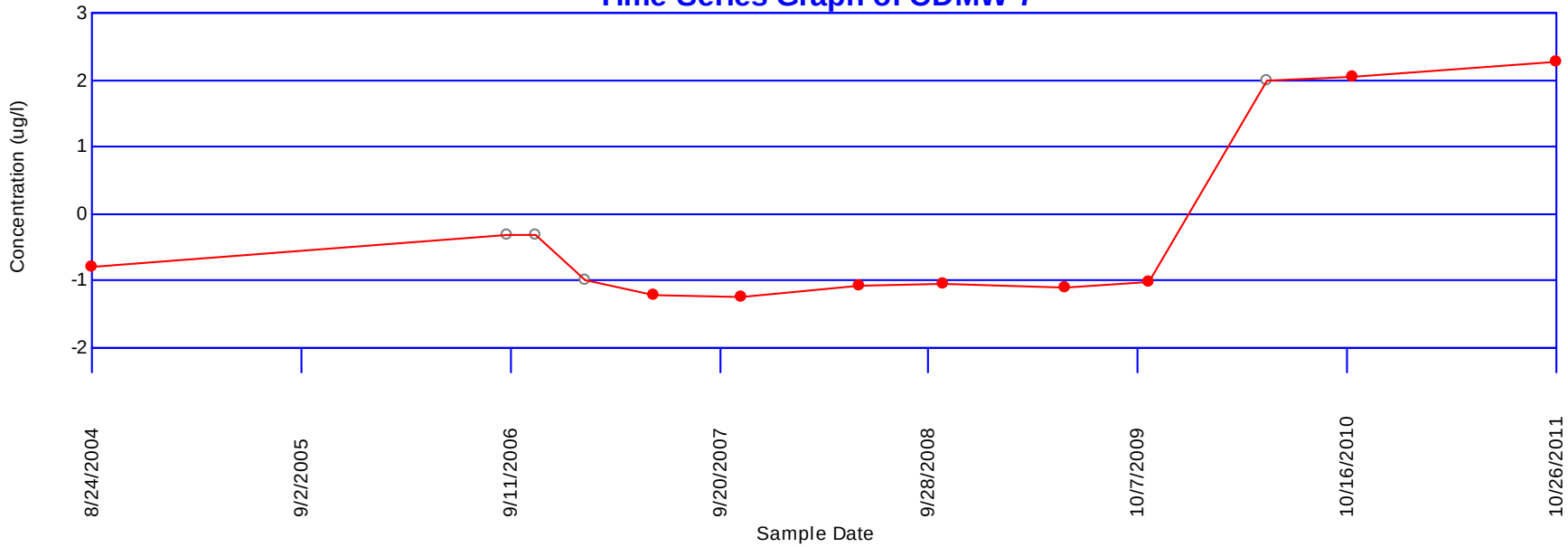
Arsenic

Multi-Well Time-Series Graph



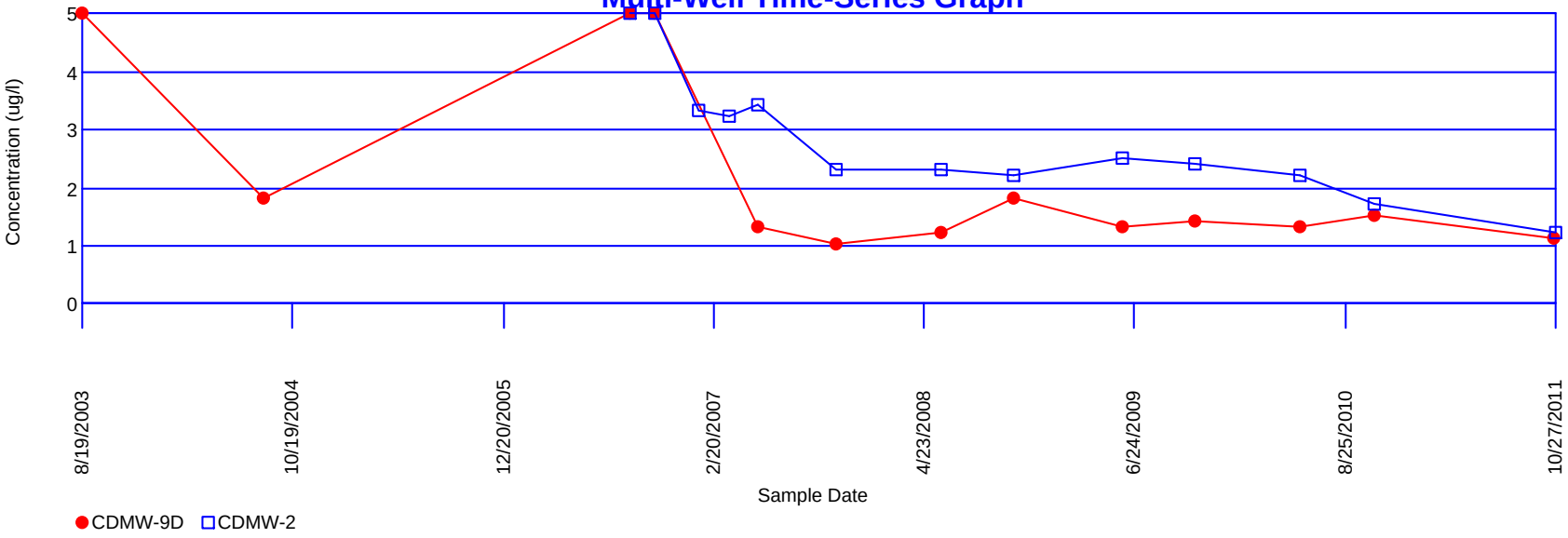
Barium

Time-Series Graph of CDMW-7



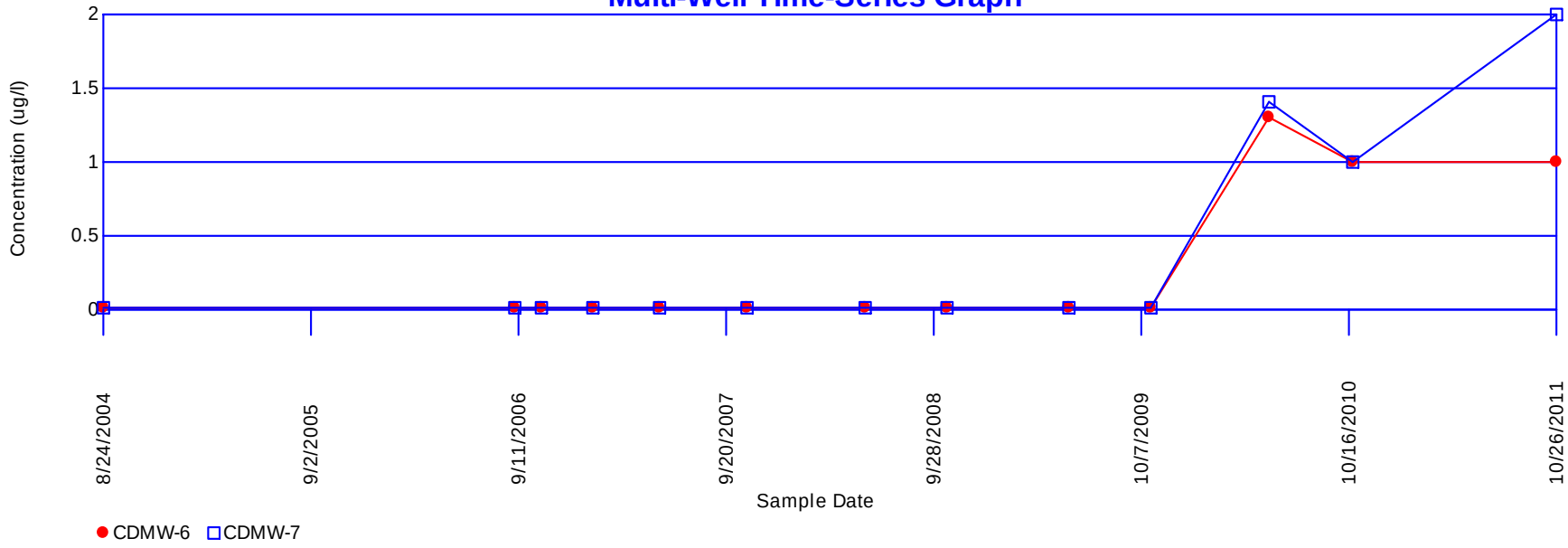
Benzene

Multi-Well Time-Series Graph



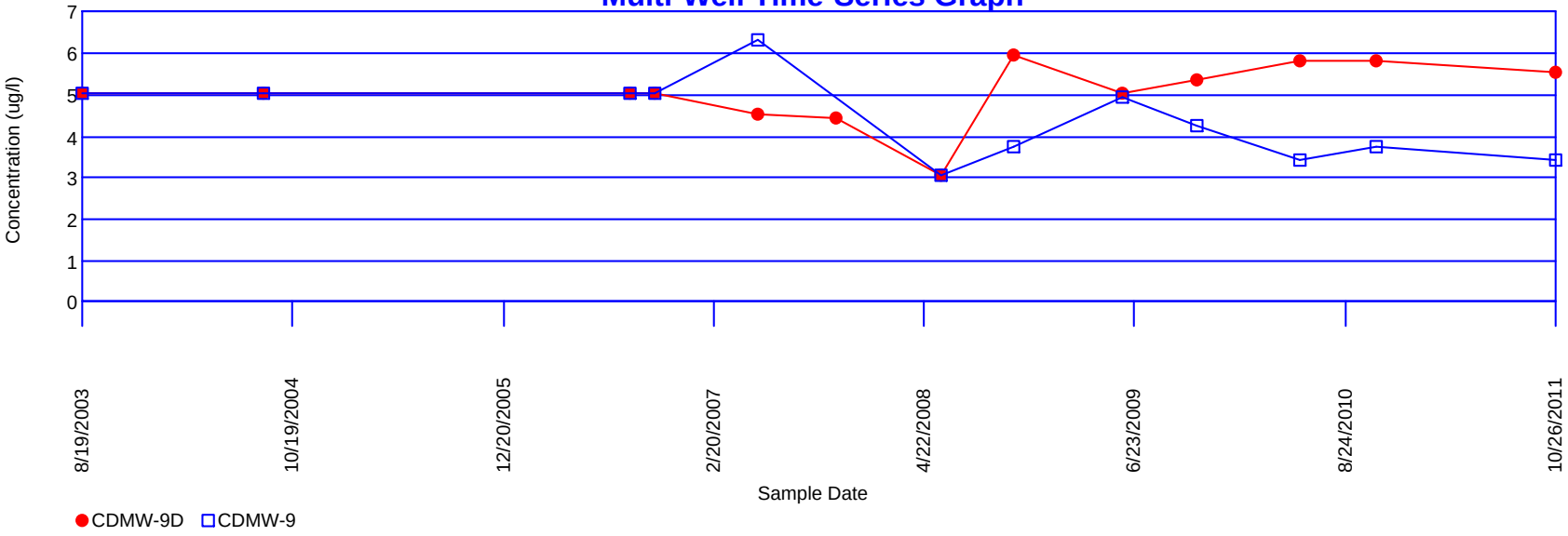
Beryllium

Multi-Well Time-Series Graph



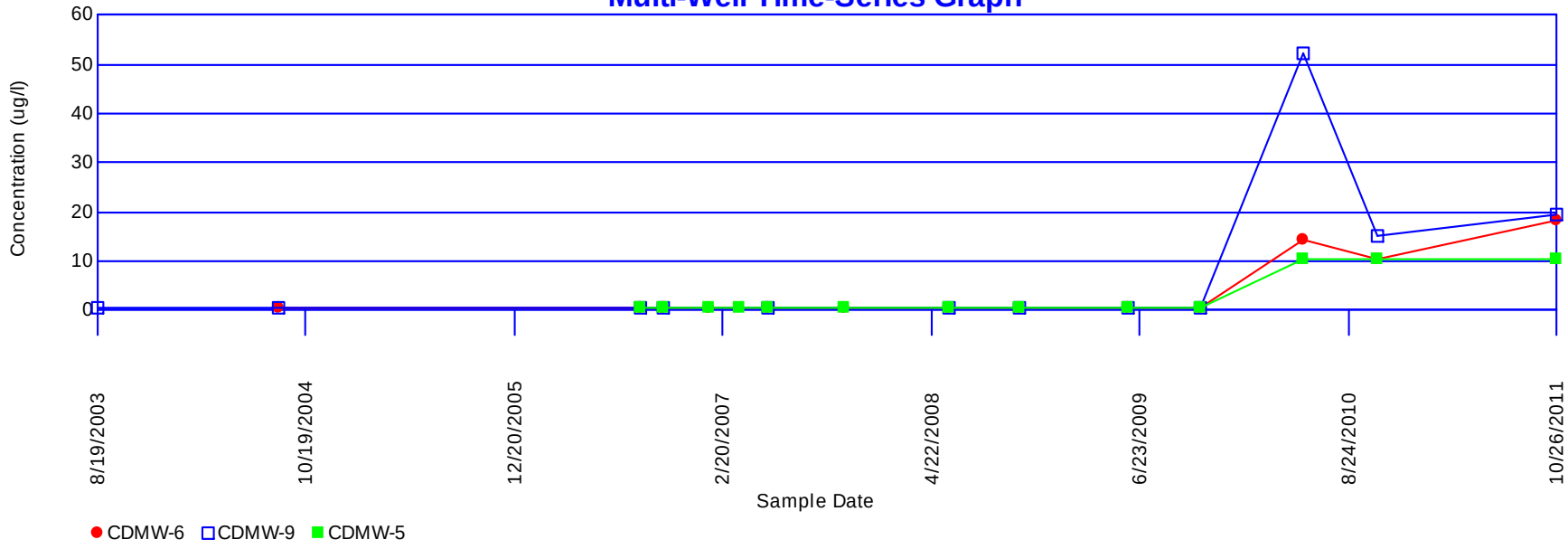
Chlorobenzene

Multi-Well Time-Series Graph



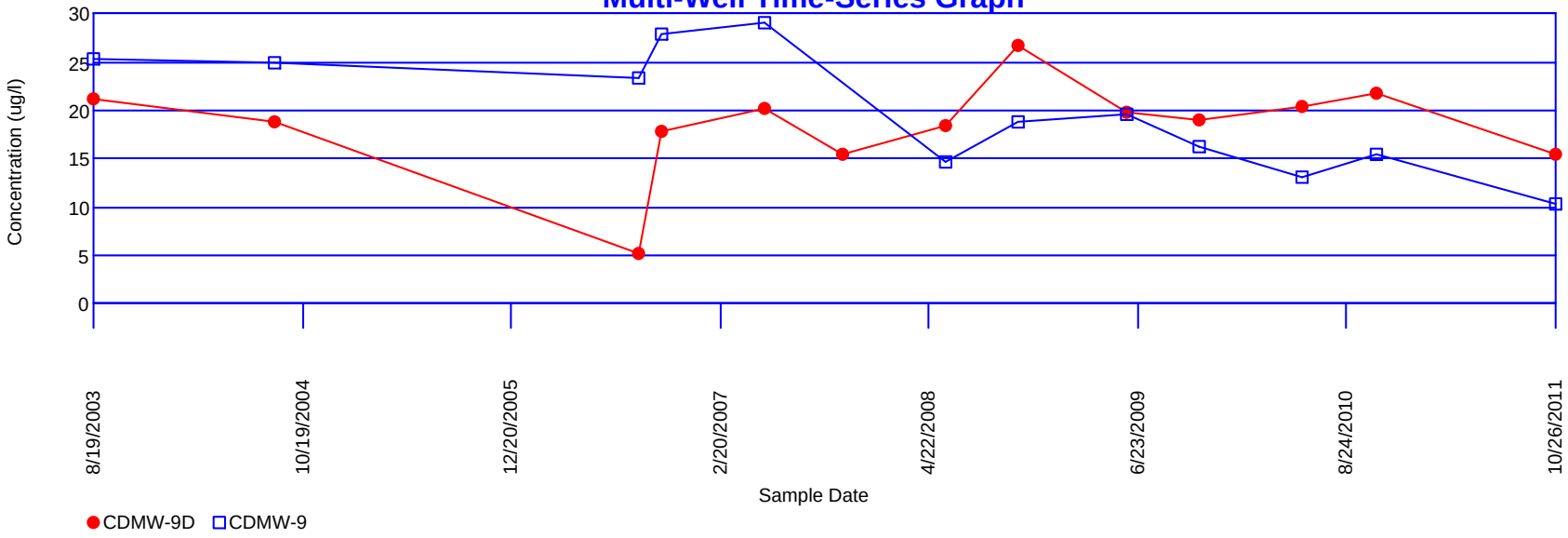
Total Chromium

Multi-Well Time-Series Graph



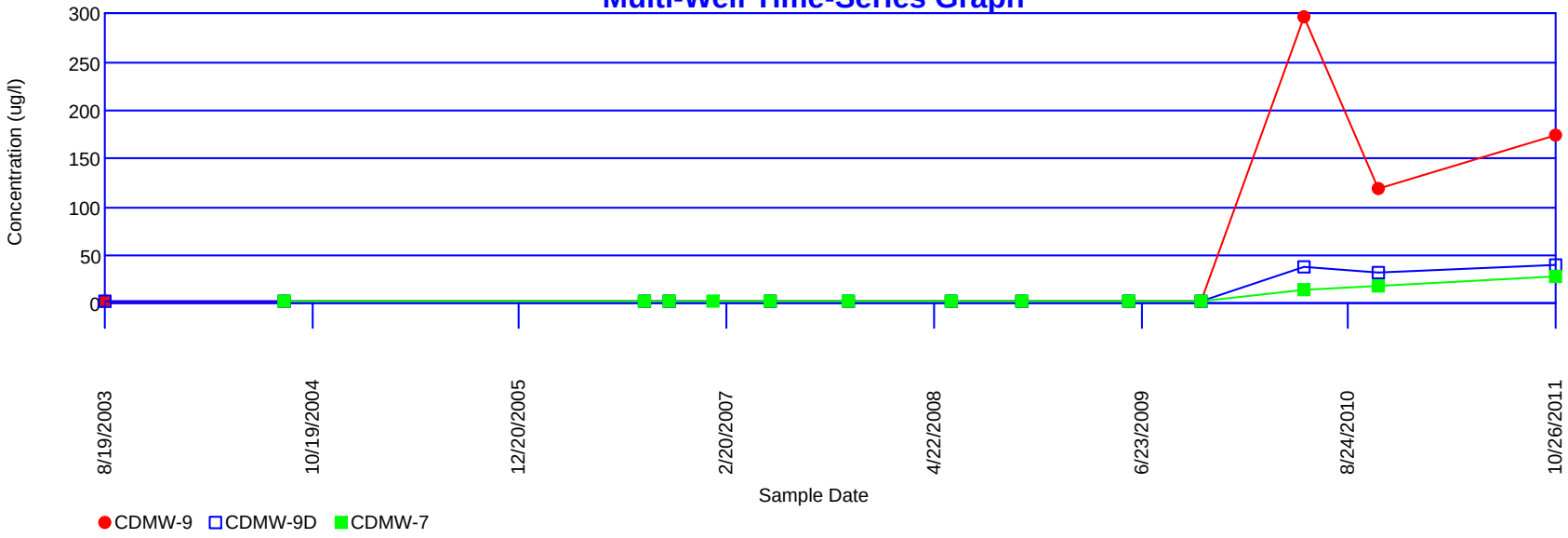
Cis-1,2-Dichloroethene

Multi-Well Time-Series Graph



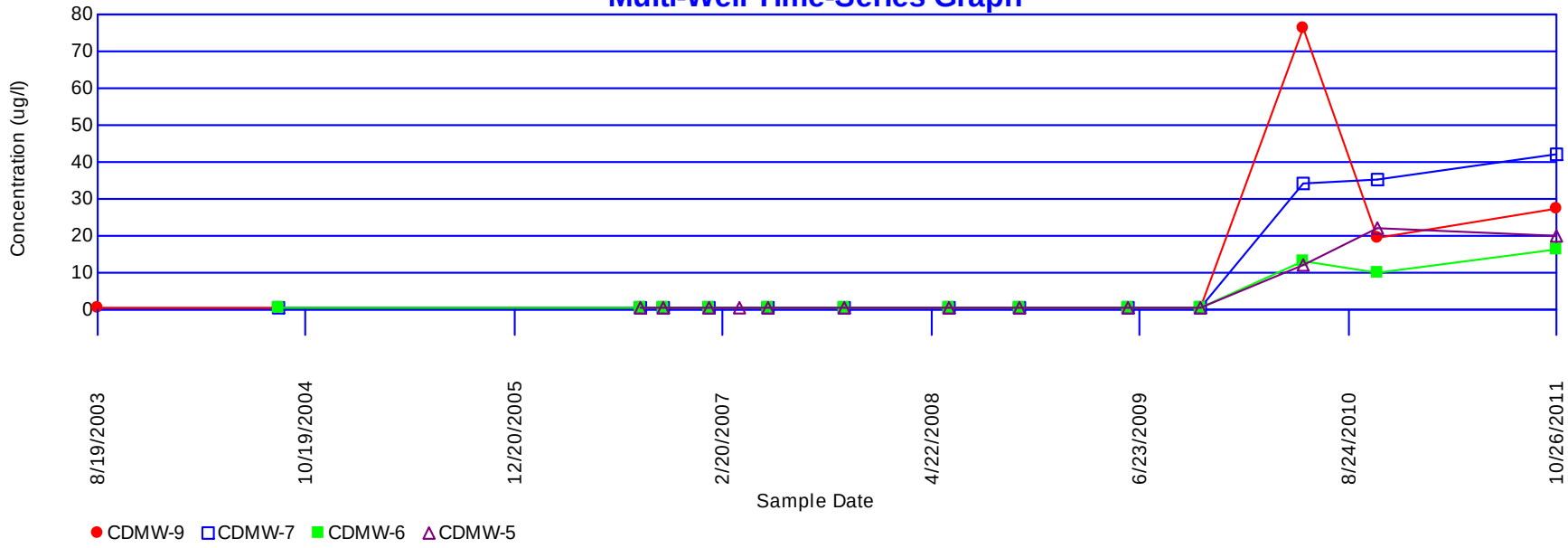
Cobalt

Multi-Well Time-Series Graph



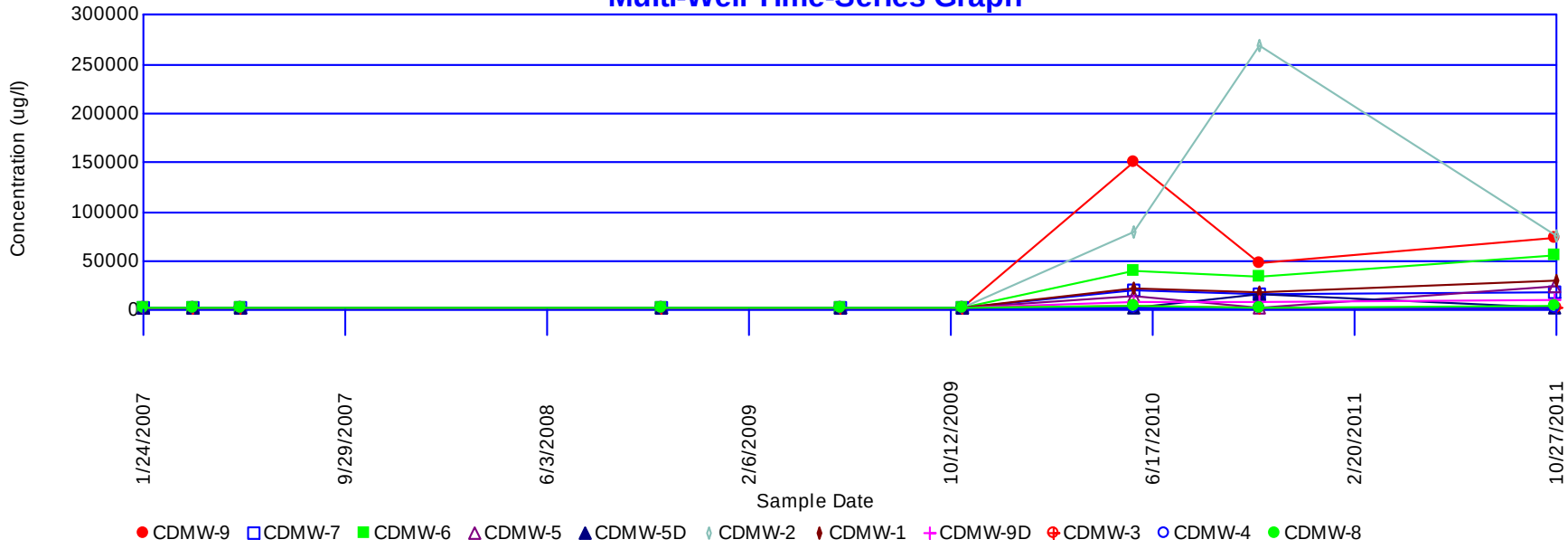
Copper

Multi-Well Time-Series Graph



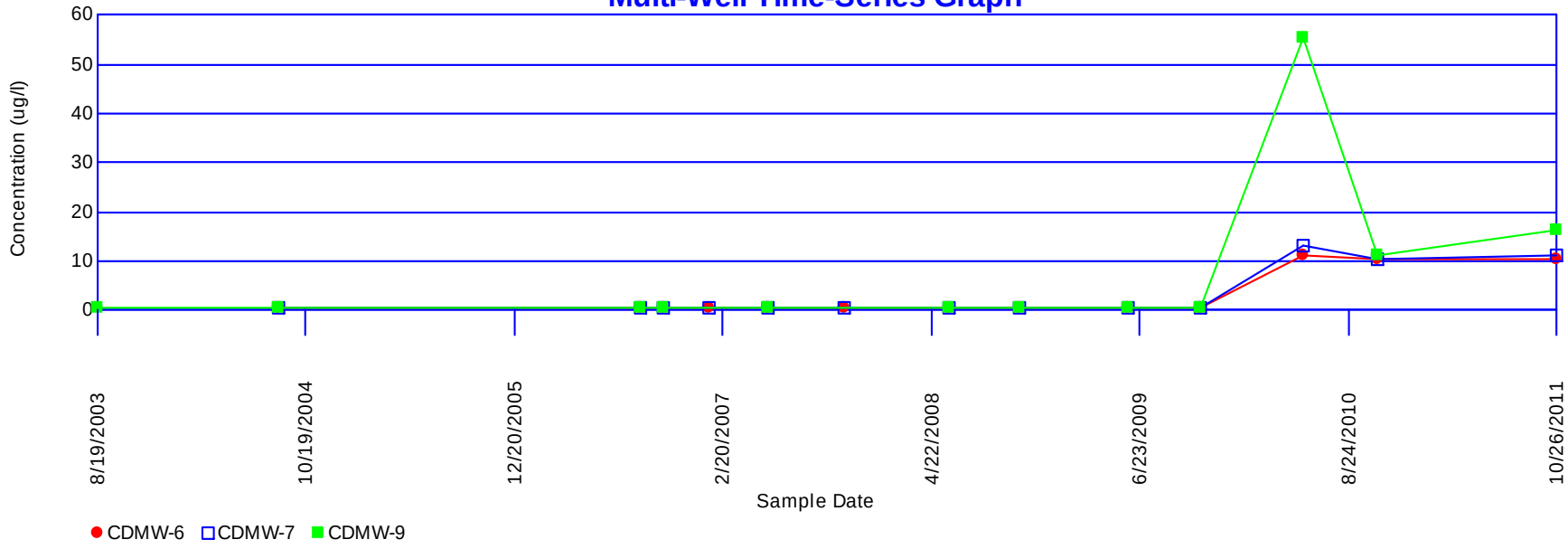
Iron

Multi-Well Time-Series Graph



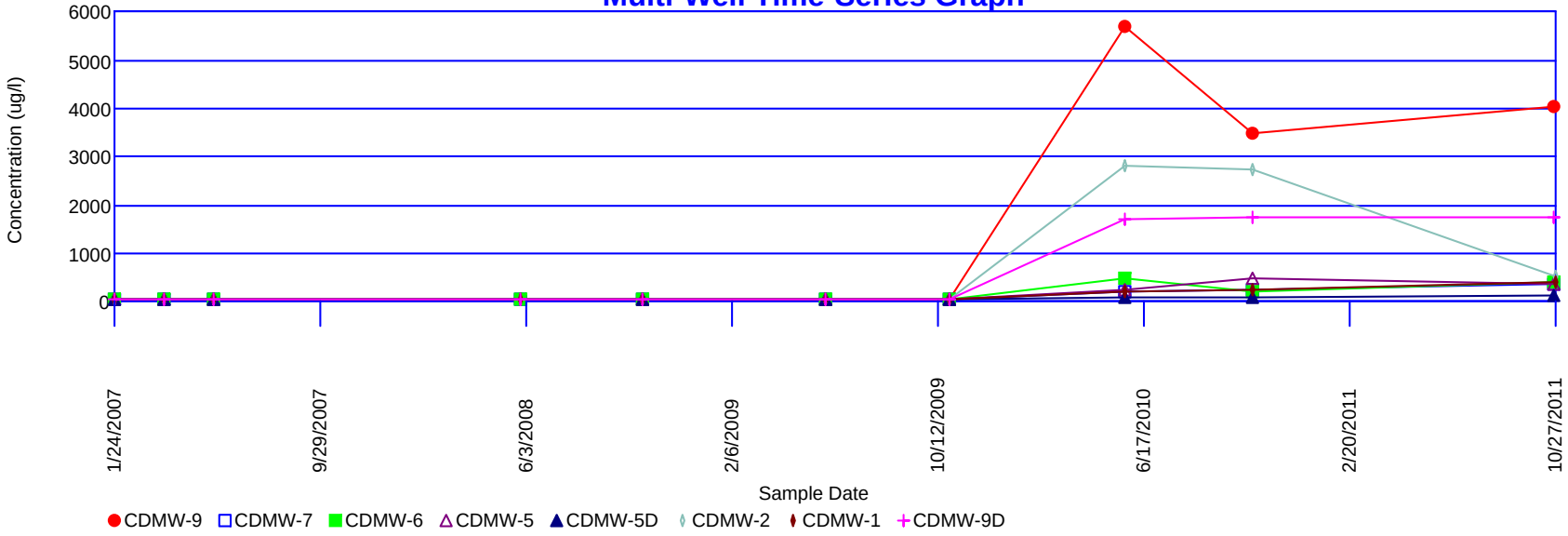
Lead

Multi-Well Time-Series Graph



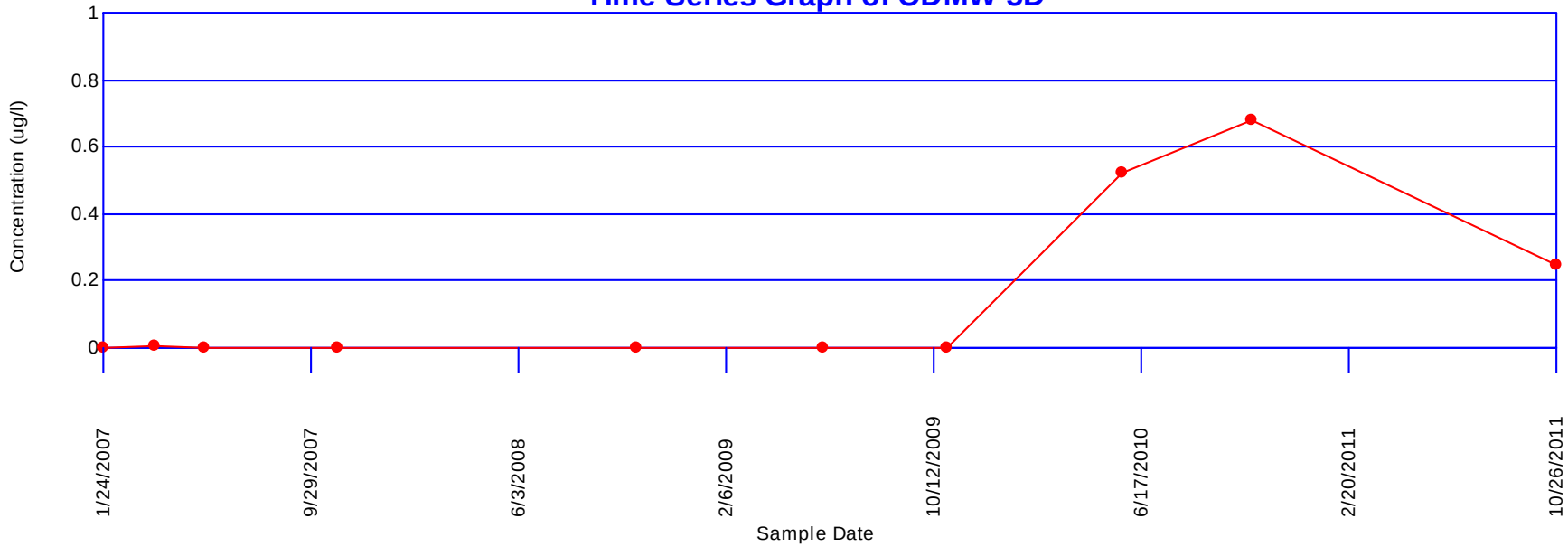
Manganese

Multi-Well Time-Series Graph



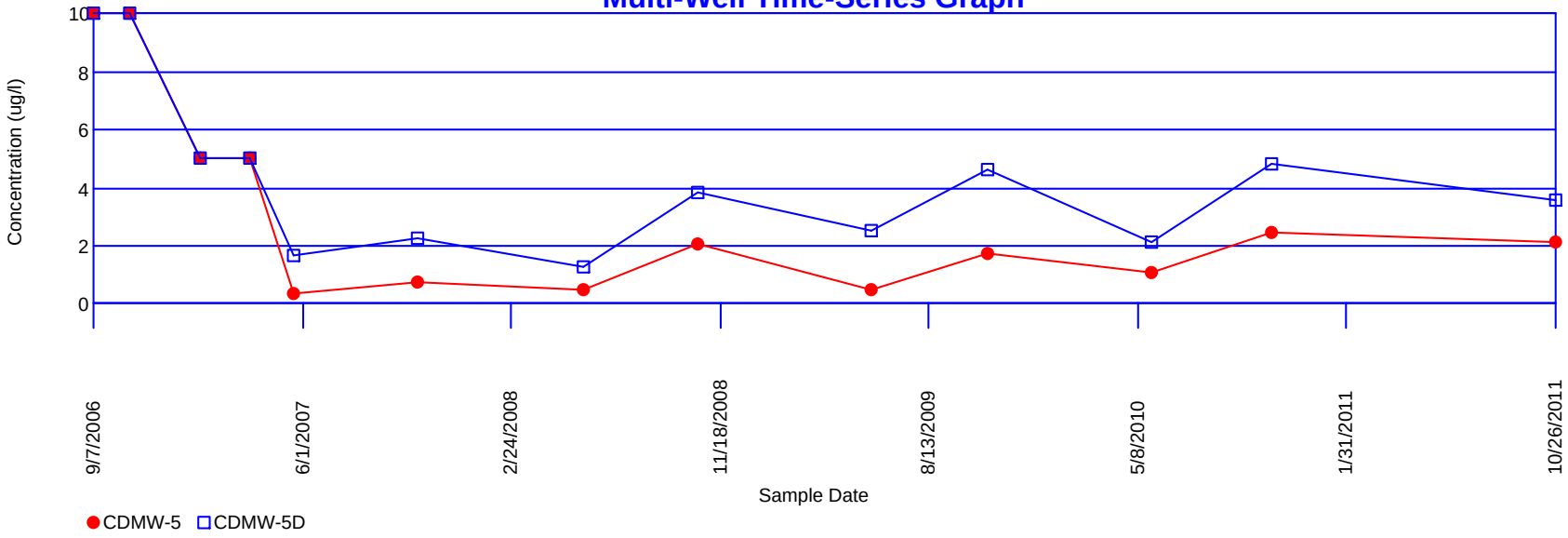
Mercury

Time-Series Graph of CDMW-5D



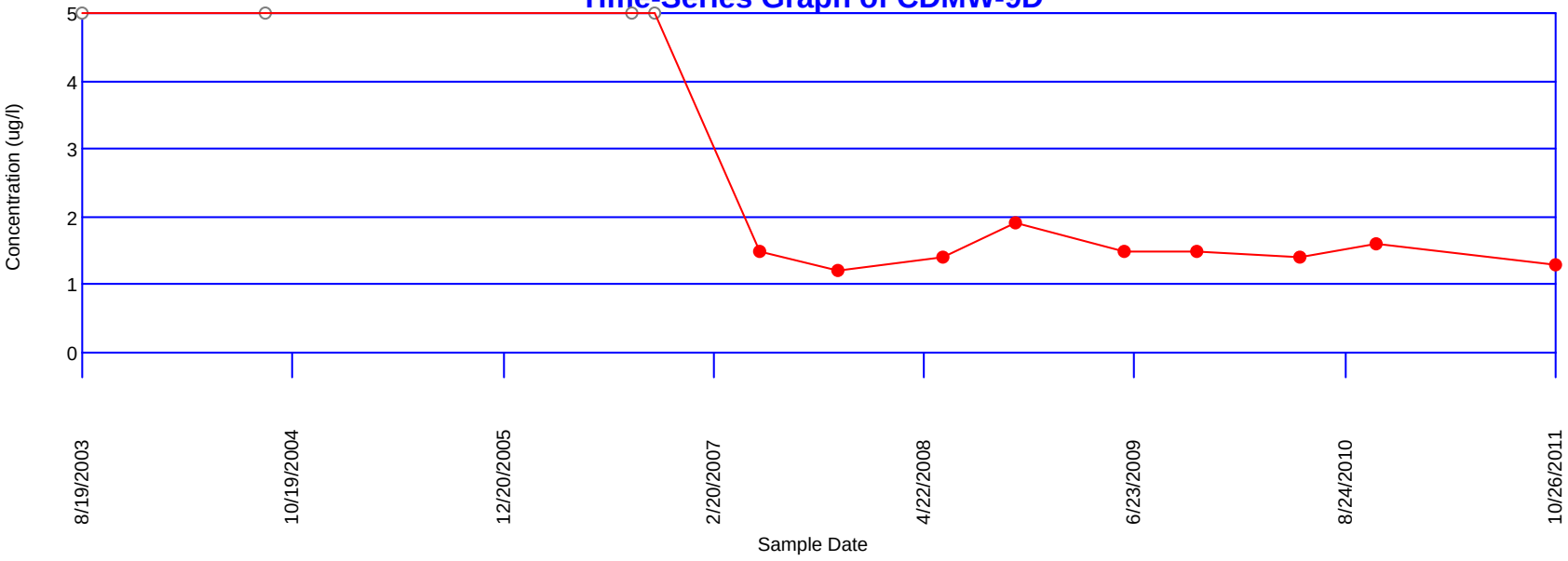
Methylene Chloride

Multi-Well Time-Series Graph



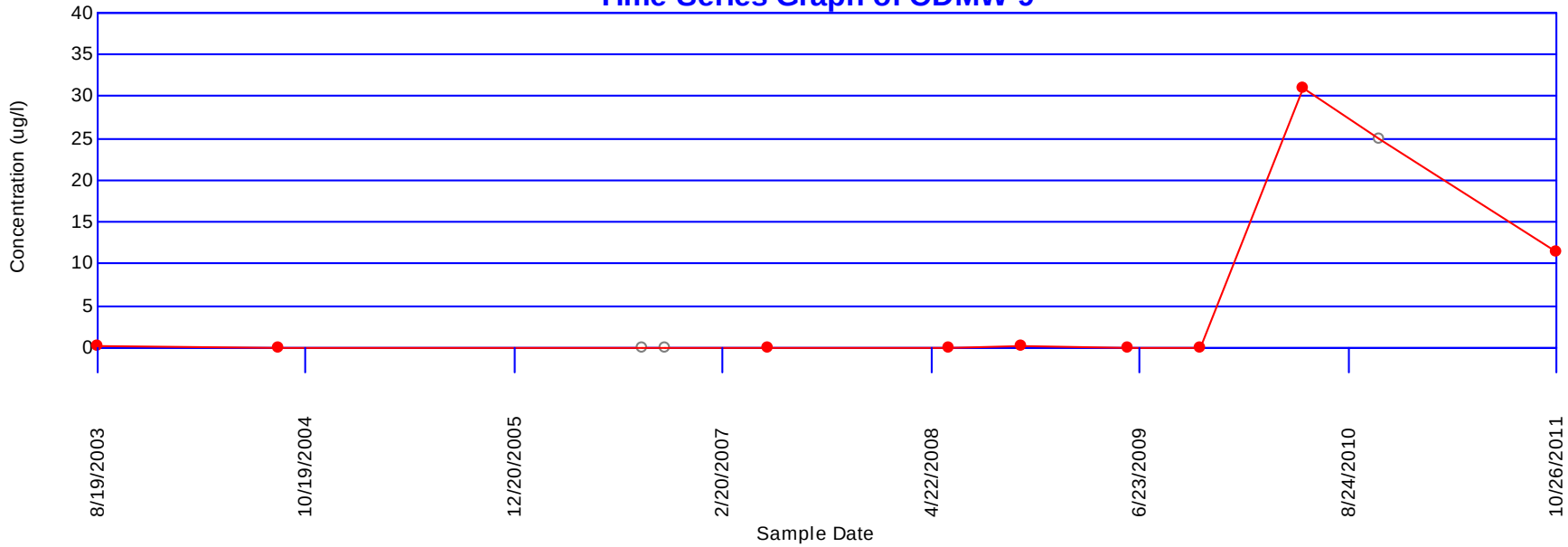
Trichloroethene

Time-Series Graph of CDMW-9D



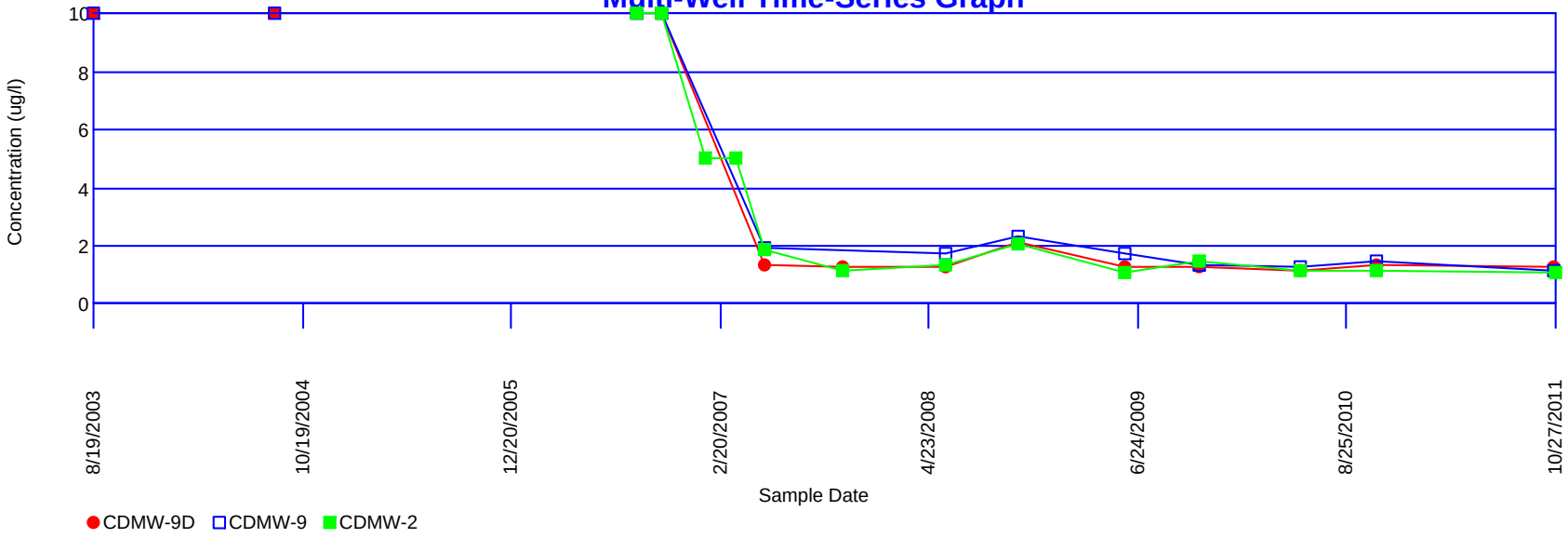
Vanadium

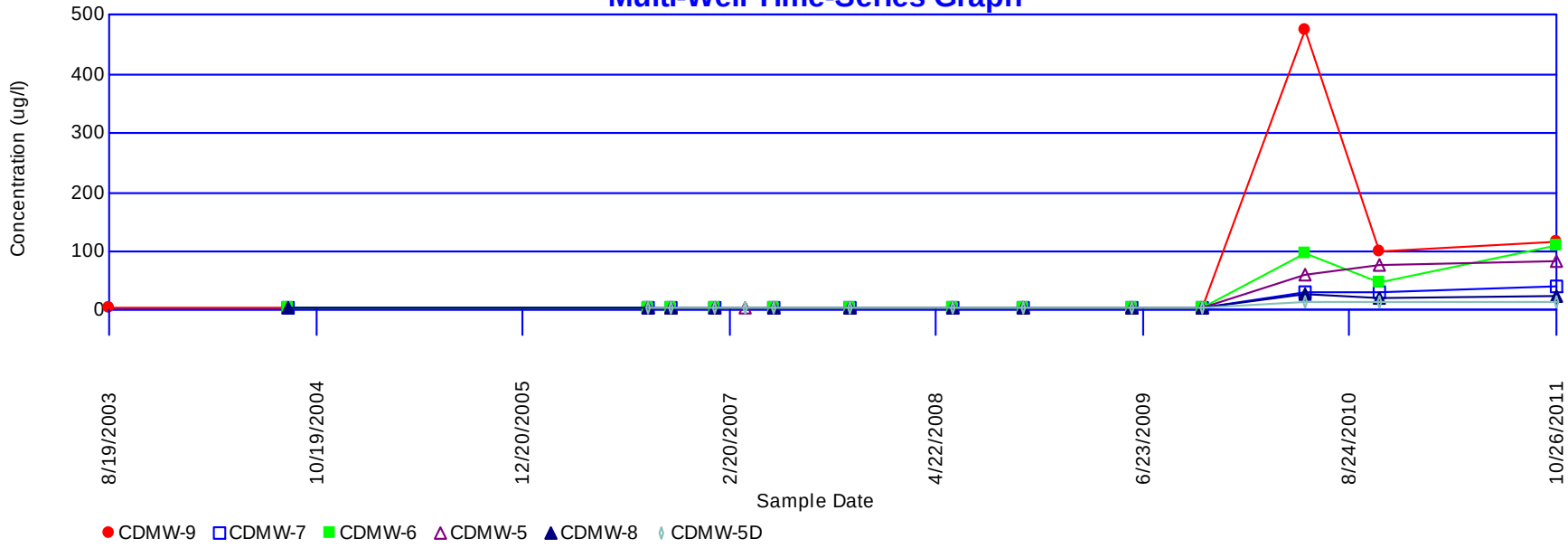
Time-Series Graph of CDMW-9



Vinyl Chloride

Multi-Well Time-Series Graph



Zinc

Multi-Well Time-Series Graph