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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 Smyth Phone: 919-828-0577 x122

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)
Davidson County Phase 1 Landfill	220 Landfill Road Lexington, NC 27292	29-06	.1600	September 25, 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 x122
Facility Representative Name (Print)	Title	(Area Code) Telephone Number

Joan A. Smyth — 11/19/09

Signature — Date

Affix NC Licensed/ Professional Geologist/Engineer Seal here:

NORTH CAROLINA LICENSED SEAL 1369 GEOLOGIST JOAN A SMYTH

Revised 01/2007

Ground Water Monitoring Report

September 2009 Monitoring Event

Davidson County
Phase 1 Lined MSW Landfill
Lexington, North Carolina
NC Solid Waste Permit # 29-06

Prepared for:

Davidson County Integrated Solid Waste
1242 Old Highway 29
Thomasville, NC 27360-0024

November 2009

RICHARDSON SMITH GARDNER
& ASSOCIATES
ENGINEERING & GEOLOGICAL
SERVICES

PRINTED ON 100% RECYCLED PAPER

Ground Water Monitoring Report
Davidson County Lined MSW Landfill
September 2009 Semi - Annual Report

Prepared for:

Davidson County Integrated Solid Waste
1242 Old Highway 29
Thomasville, NC 27360

RSG Project No. **DAVDCO - 4**

Joan A. Smyth, P.G.
Senior Hydrogeologist

11/19/09

NORTH CAROLINA LICENSED SEAL 1369 GEOLOGIST JOAN A. SMYTH

November 2009

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

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Davidson County Lined MSW Landfill

Ground Water Monitoring Report
September 2009 Monitoring Event

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1.0 Introduction

On September 25th 2009, Richardson Smith Gardner & Associates (RSG) personnel performed the required semi-annual ground water monitoring event at the Davidson County Phase 1 Lined Landfill. This sampling event satisfies the requirements of the monitoring programs for this site, 15A NCAC 13B.1600. The following report summarizes the monitoring event, sampling procedures, field and laboratory results, statistical analysis, and ground water characterization as required by NC Solid Waste Regulations.

2.0 Site Geology

The Davidson County Landfill facility is located in the Piedmont Physiographic Province of North Carolina. More specifically, the Geologic Map of North Carolina (1985) indicates that the site lies within, but at the western margin of, the Carolina Slate Belt. This belt includes predominantly volcanic and sedimentary rocks of Late Proterozoic to Cambrian age that have been metamorphosed and intruded by numerous igneous plutons. The boundary zone between the Carolina Slate Belt and the adjacent Charlotte Belt is known as the Gold Hill/Silver Hill shear zone.

The most detailed mapping of the area was published by the US Geological Survey in the Geologic Map of Charlotte by Goldsmith, Milton and Horton (1988). This mapping indicates that the site vicinity is underlain by two stratigraphic units: metavolcanic rocks (mv), and metamorphosed granodiorite (mgd).

The metavolcanic rocks include mafic, intermediate and felsic volcanic rocks, rocks from the Flat Swamp Member of the Cid Formation, and metavolcanic rocks of the Battleground Formation. The Battleground Formation is characterized as a quartz-sericite schist and phyllite. It contains subordinate beds of quartz-pebble conglomerate, quartzite, kyanite or sillmanite quartzite and manganiferous schist.

3.0 Davidson County Lined MSW Landfill

3.1 Sampling Procedures

Ground water sampling was performed at 12 well locations shown on **Figure 1**. Monitoring well MW-2 was not sampled because the well had insufficient water. Sampling procedures followed the protocols set forth in the site's Water Quality Monitoring Plan[1]. Each well was gauged to determine ground water depth and then purged of a minimum of three well volumes or until dry. The wells were purged and allowed to stabilize prior to sample collection. Ground water purging and sample collections were performed using a factory sealed Teflon™ bailer.

Field measurements of temperature, pH, and conductivity were taken at each well and surface water sampling location. Additionally, each well was inspected to determine if any maintenance is

[1] Davidson County Landfill Sampling and Analysis Plan. G.N. Richardson and Associates, June 1999.

required at the wellhead. No damage was noted with the exception of MW-9 which requires that a replacement well be installed. Field data sheets are included in **Appendix A**. Monitoring well boring logs are included in **Appendix B**. Samples were collected in laboratory containers provided by Environment 1, Inc. (NC Laboratory Certification # 10). Upon collection, the samples were sealed, placed on ice, and transported to the laboratory. A trip blank was also analyzed for quality control purposes.

During the sampling process, each well was inspected for signs of damage or unusual conditions. One monitoring well, MW-9, was found damaged, and could not be sampled. This well is planned for abandonment and replacement prior to the next sampling event.

Samples from surface water points SW-1 and SW-2, located upstream and downstream of the landfill on Jimmy's Creek, were collected. SW-4 located near the leachate pond, was dry and could not be sampled. The surface water locations are show in **Figure 1**.

3.2 Field and Laboratory Results

All samples were transported to the laboratory facility under proper chain of custody analyzed at the specified DWM Practical Quantitation Limits for Appendix I constituents[2]. The laboratory analysis is included in **Appendix C**.

Ground water and field measurements are included as **Tables 1 and 2,** respectively. Eight (8) inorganic constituents (barium, copper, total chromium, iron, manganese, lead, vanadium and zinc) were detected above the Solid Waste Section Practical Quantitation Limits (SWSLs) in six (6) wells (MW-1s, MW-3, MW-4, MW-7s, MW-8 & MW-11). Three (3) inorganic constituents were detected above their 15A NCAC 2L.0200 (2L) / Ground Water Protection (GWP) standards:

- iron (MW-1s);
- manganese (MW-1s); and
- vanadium (MW-7s, MW-8 and MW-11).

Laboratory analysis of ground water indicated no detectable levels of organic constituents in any of the wells. The laboratory results are summarized in **Table 3**, and are included in **Appendix C**.

A leachate sample was also collected from the lined landfill. This sample was analyzed for Appendix I constituents as well as BOD, COD, nitrate, and total phosphorus. Analysis of this sample indicated no detectable levels of organic and inorganic constituents above the SWSLs. The laboratory report is included in **Appendix C**. Time versus concentration graphs for detected constituents are included in **Appendix D**.

3.3 Statistical Analysis

Statistical analysis of the laboratory data indicated statistically significant increases of four (4)

2 New guidelines for electronic submittal of environmental monitoring data memo, NCDENR DWM, Solid Waste Section, October 27, 2006.

constituents: cobalt (MW-8), total chromium (MW-8 and MW-11), vanadium (MW-8 and MW-11) and zinc (MW-11). The statistical analysis results are summarized in **Table 4**.

3.4 2L/MCL Statistical Analysis

For wells that showed statistically significant differences from background concentrations, additional analysis was performed. 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).

The statistical results for this additional analysis are presented in **Table 4**. An upper tolerance limit higher than the GWPS was considered to be a statistically significant result. This analysis indicated statistically significant results for cobalt (MW-8), total chromium (MW-8 and MW-11), vanadium (MW-8 and MW-11) and zinc (MW-11). The results are summarized in **Table 4**.

4.0 Site Ground Water Characterization

A potentiometric surface map was prepared for the entire site 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 at the lined MSW landfill ranged from 0.002 feet/day (MW-6) to 3.139 feet/day (MW-11). These calculations are included in **Table 1**. The data indicates that ground water underneath the lined MSW landfill is flowing generally to the north and northwest towards Jimmy's 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.

5.0 Conclusions

The results presented from the lined landfill indicate an increased number of detections of inorganic constituents. This is likely due to turbidity and an increase in suspended solids in the samples and is not indicative of impact from the landfill. In general, detected ground water concentrations at the site have remained stable. The next ground water monitoring event will be completed in April 2010. The results of this event will be reported to NCDENR upon completion of statistical analysis of laboratory data.

Figures

Tables

By: KBS
Date: 11/6/2009

Table 1
Ground Water Elevations & Velocities
Davidson County Lined Landfill
9/25/2009

Well	Northing	Easting	TOC Elevation (feet)	Water Level (feet)	GW Elev (feet)	Hyd. Cond. (ft/day)	Porosity (%)	Gradient (ft/ft)	Velocity (ft/day)
MW-1	763311.06	1650889.31	736.20	56.52	679.68	0.14	0.1	0.024	0.034
MW-2	763253.6	1649411.4	708.29	41.72	666.57	0.17	0.1	0.012	NA
MW-3	764274.92	1651226.41	666.72	12.53	654.19	0.62	0.1	0.019	0.118
MW-4	764433.34	1650879.1	673.68	19.9	653.78	1.31	0.2	0.021	0.138
MW-5	764515.15	1650681.8	678.23	26.36	651.87	NA	0.2	0.025	NA
MW-6	764259.47	1650467.49	694.13	34.87	659.26	0.02	0.1	0.015	0.003
MW-7S	764228.53	1650127.95	663.39	9.61	653.78	0.38	0.15	0.031	0.079
MW-7D	764228.53	1650127.95	663.59	9.60	653.99	NA	NA	0.030	NA
MW-8	764340.45	1649624.12	661.16	9.45	651.71	0.57	0.15	0.036	0.137
MW-9	764134.52	1649433.54	692.60	NM	NM	2.65	0.1	NA	NA
MW-10	764044.52	1649157.57	671.64	23.62	648.02	0.88	0.1	0.085	0.748
MW-11	763749.09	1649125.82	692.10	31.95	660.15	4.13	0.1	0.051	2.106
MW-12	763456.03	1649124.23	711.66	52.5	659.16	0.58	0.1	0.023	0.133

Notes:

Velocity Calculated from V=K*I/n where:
V = velocity
K = Hydraulic Conductivity
I = Gradient
n = Porosity
Hydraulic Conductivity data from slug tests performed in 1994
Porosity values assumed from Groundwater & Wells (Driscoll)
Survey Data collected by Michael Green and Associates.

NM - Not Measured
NA - Not Available

By: KBS

Date: 11/6/2009

Table 2
Field Parameters
Davidson County Lined Landfill
9/25/2009

Well	pH (Std. Units)	Conductivity (umhos)	Temp. (celsius)	Turbidity (NTU)
MW-1	6.8	300.0	15	NM
MW-2	NM	NM	NM	NM
MW-3	7.0	100.0	15	NM
MW-4	6.6	60.0	13	NM
MW-5	6.8	70.0	13	NM
MW-6	7.4	120.0	15	NM
MW-7	6.5	70.0	17	NM
MW-7d	6.7	30.0	16	NM
MW-8	7.1	40.0	15	NM
MW-9	NM	NM	NM	NM
MW-10	6.9	150.0	13	NM
MW-11	7.2	150.0	13	NM
MW-12	7.5	250.0	14.5	NM
SW-1	NM	NM	NM	NM
SW-2	NM	NM	NM	NM

Notes: Data Collected by Don Misenheimer and Byron Hackney of RSG Engineers Inc.
NM- Not Measured

By: KBS
Date: 11/6/2009

Table 3
Detected Inorganic Constituents
Davidson County Lined Landfill
9/25/2009

Parameter	SWSL	2L or GWP	MW-10	MW-11	MW-12	MW-1s	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7d	MW-7s	MW-8	SW-1	SW-2
Inorganic Constituents																
antimony	6	1.4	ND	ND	ND	ND	NS	ND	ND	ND	ND	ND	0.6 J	ND	ND	ND
arsenic	10	50	ND	0.9 J	0.2 J	0.3 J	NS	ND	ND	ND	ND	ND	0.9 J	0.4 J	0.8 J	0.5 J
barium	100	2000	10.6 J	89.1 J	1 J	35.6 J	NS	**112**	62.6 J	54.2 J	12.8 J	6.4 J	93 J	93.7 J	41.3 J	35.4 J
beryllium	1	4	0.1 J	0.9 J	ND	ND	NS	0.1 J	ND	ND	ND	ND	0.5 J	0.4 J	ND	ND
cadmium	1	1.75	ND	0.3 J	0.2 J	ND	NS	ND	ND	0.1 J	0.2 J	0.1 J	0.3 J	0.1 J	ND	0.5 J
cobalt	10	70	1.8 J	7.5 J	0.2 J	1.2 J	NS	3.7 J	2.3 J	0.5 J	0.1 J	0.2 J	5.9 J	ND	2.2 J	1 J
copper	10	1000	5.1 J	**80**	0.4 J	2.8 J	NS	**13**	**11**	1.9 J	0.4 J	1.9 J	**40**	**28**	2.1 J	0.7 J
chromium, total	10	50	4.4 J	**40**	ND	0.1 J	NS	0.7 J	3.3 J	ND	ND	ND	9.2 J	**14**	0.8 J	ND
iron	300	300	ND	ND	ND	**1407**	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
manganese	50	50	ND	ND	ND	**68**	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
lead	10	15	0.8 J	8.8 J	0.2 J	0.7 J	NS	0.8 J	0.8 J	0.3 J	0.1 J	0.1 J	3.9 J	**15**	2.2 J	0.1 J
mercury	0.2	1.05	ND	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
nickel	50	100	3.3 J	15.1 J	1.1 J	1.8 J	NS	3.3 J	2.6 J	1 J	0.6 J	0.3 J	6.6 J	7.7 J	2.2 J	1 J
selenium	10	50	ND	0.6 J	0.2 J	1 J	NS	ND	ND	ND	ND	ND	0.3 J	0.2 J	ND	ND
silver	10	17.5	0.1 J	0.2 J	0.1 J	ND	NS	ND	ND	ND	ND	ND	0.2 J	ND	ND	ND
thallium	5	0.28	ND	ND	0.1 J	ND	NS	ND	ND	ND	ND	ND	0.1 J	ND	ND	ND
vanadium	25	3.5	14.7 J	**128**	7.4 J	5.1 J	NS	17.9 J	11.5 J	5.4 J	1.5 J	2.2 J	**35**	**59**	4 J	1.8 J
zinc	10	1050	5.7 J	**62**	3 J	3.1 J	NS	**19.5**	**16.6**	2.7 J	1.2 J	2.5 J	**32**	**32**	4.1 J	4.2 J
Organic Constituents																
acetone	100	700	10.7 J	58.4 J	3.1 J	1.3 J	NS	1.9 J	10.4 J	19.8 J	2.1 J	ND	4.1 J	ND	1.6 J	ND
toluene	1	1000	ND	0.2 J	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	0.2 J

SWSL	-	Solid Waste Section Pratical Quantitation Limits
GWP	-	Ground Water Protection Standard
ND	-	Not detected
Shading	-	Levels above 2L standard or no 2L standard
Bold Letters	-	Constituent detected above SWSL
J	-	Constituents detected below SWSL
NS	-	Not sampled

Note	-	Trip Blank detected 0.90 J of Toluene.
	-	All units are in ug/L.
	-	Samples analyzed by Environment 1, Inc.

By: KBS
Date: 11/6/2009

Table 4
Davidson County Lined Landfill
Statistical Analysis Summary
9/25/2009

Location	Parameter	Result (ug/l)	Detection Limit (ug/l)	Test Units	%ND	CL	Test	Statistically Significant?	2L/MCL statistical analysis	Method for MCL analysis
MW-3	Barium	112	100	ug/l	85.71	94.1	NPPL	N	---	---
MW-8	Cobalt	11	10	ug/l	77.55	94.1	NPPL	Y	Y	MCL-PTI (1992)
MW-11	Copper	80	10	ug/l	81.17	76.2	NPTL	N	---	---
MW-3	Copper	13	10	ug/l	81.17	76.2	NPTL	N	---	---
MW-4	Copper	11	10	ug/l	81.17	76.2	NPTL	N	---	---
MW-7S	Copper	40	10	ug/l	81.17	76.2	NPTL	N	---	---
MW-8	Copper	28	10	ug/l	81.17	76.2	NPTL	N	---	---
MW-8	Lead	15	10	ug/l	77.55	94.1	NPPL	N	---	---
MW-11	Total Chromium	40	10	ug/l	59.72	88.9	NPTL	Y	Y	MCL-PTI (1992)
MW-8	Total Chromium	14	10	ug/l	59.72	88.9	NPTL	Y	Y	MCL-PTI (1992)
MW-11	Vanadium	128	25	ug/l	69.52	84.2	NPTL	Y	Y	MCL-PTI (1992)
MW-7S	Vanadium	35	25	ug/l	69.52	84.2	NPTL	N	---	---
MW-8	Vanadium	59	25	ug/l	69.52	84.2	NPTL	Y	Y	MCL-PTI (1992)
MW-11	Zinc	62	10	ug/l	70.17	76.2	NPTL	Y	Y	MCL-PTI (1992)
MW-3	Zinc	19.5	10	ug/l	70.17	76.2	NPTL	N	---	---
MW-4	Zinc	16.6	10	ug/l	70.17	76.2	NPTL	N	---	---
MW-7S	Zinc	32	10	ug/l	70.17	76.2	NPTL	N	---	---
MW-8	Zinc	32	10	ug/l	70.17	76.2	NPTL	N	---	---

Highlighting indicates statistical significance.
Upgradient well : MW -1s

Appendix A

Field Data Sheets

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-15 **Initials:** DD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

ok.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		✓
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

if concrete apron is present, it appears to be buried

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-2 Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-3 **Initials:** MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

ok

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		✓
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

if concrete apron is present, it appears to be buried

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

ok

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-4 Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-5 Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-6 **Initials:** TD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-7S Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		✓
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

if concrete apron is present, it appears to be buried

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-7d Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		✓
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

if concrete apron is present, it appears to be buried

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-8 **Initials:** MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

ok.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-9 Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.		
B. Vicinity is free of potential contaminants.		
C. Dead trees, etc. not in danger of falling and damaging wells.		
D. Well is in the same location as on field maps.		
E.		

Comments/ items addressed or to be addressed:

WELL BROKEN AND CANNOT BE SAMPLED

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		
B. Steel case is present and upright.		
C. Steel case is not movable and cemented in.		
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.		
E. Well tag is present with pertinent information.		
F. Well numbers are prominently displayed (Reflective address numbers, etc.).		
G. No evidence of tampering is present.		
H. Lock operates properly.		
I.		

Comments/ items addressed or to be addressed:

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.		
B. Riser is of appropriate height (has not been cut off too low within the steel case).		
C. Riser is not loose/ easily moved.		
D. Riser does not appear cracked, broken, or brittle.		
E. No visual sign of external contamination entering well through riser.		
F.		

Comments/ items addressed or to be addressed:

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-10 **Initials:** MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

ok.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) **Date:** 9/23/09

Well ID: MW-11 **Initials:** TD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

ok.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.	✓	
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I		

Comments/ items addressed or to be addressed:

o.k.

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

RICHARDSON SMITH GARDNER & ASSOCIATES
ENGINEERING & GEOLOGICAL SERVICES

Groundwater Monitoring Well Inspection Checklist

This checklist is provided to inform our clients about the health and maintenance of their groundwater monitoring wells. This checklist provides no information pertaining to groundwater quality, but focuses on the physical characteristics of the well and its vicinity.

Site: DAVIDSON (L) Date: 9/23/09

Well ID: MW-12 Initials: MD

Please mark the aproprate box for the following areas of concern. If you answer NO, please explain in the comment box.

1. Well Vicinity	YES	NO
A. Well is assessable and surrounding area is safe for employees.	✓	
B. Vicinity is free of potential contaminants.	✓	
C. Dead trees, etc. not in danger of falling and damaging wells.	✓	
D. Well is in the same location as on field maps.	✓	
E.		

Comments/ items addressed or to be addressed:

o.k.

2. Concrete Apron and Steel Case	YES	NO
A. Concrete apron is present and in good condition.		✓
B. Steel case is present and upright.	✓	
C. Steel case is not movable and cemented in.	✓	
D. Steel case lid opens and closes correctly with no gaps. Lock can be easily applied.	✓	
E. Well tag is present with pertinent information.	✓	
F. Well numbers are prominently displayed (Reflective address numbers, etc.).	✓	
G. No evidence of tampering is present.	✓	
H. Lock operates properly.	✓	
I.		

Comments/ items addressed or to be addressed:

if concrete apron is present, it appears to be buried

3. PVC Riser	YES	NO
A. Monitoring cap is present and provides a tight seal.	✓	
B. Riser is of appropriate height (has not been cut off too low within the steel case).	✓	
C. Riser is not loose/ easily moved.	✓	
D. Riser does not appear cracked, broken, or brittle.	✓	
E. No visual sign of external contamination entering well through riser.	✓	
F.		

Comments/ items addressed or to be addressed:

o.k.

Appendix B

Monitoring Well Information

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-1D

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER AND AIR ROTARY
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/03/94 DATE COMPLETED: 5/03/94

TOP OF CASING ELEVATION: 736.18
TOTAL DEPTH: 88.5
GROUND SURFACE ELEVATION: 735.01
SHEET: 1 OF: 4

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	51.88 AB	
Time	9:37	
Date:	05/04/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	OGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								CLAY AND SILT: with sand; white quartz and weathered feldspar; grades into light green weathered chlorite schist.
1.0								
2.0								
3.0	15	Ss	S1					
4.0	50/5							
5.0								
6.0								
7.0								
8.0	26	Ss	S2					
9.0	50/4							CLAY AND SILT: chlorite schist; light bluish green; some black stained vertical fractures; very dense; dry.
10.0								
11.0								
12.0								
13.0	42	Ss	S3					
14.0	50/4							CLAY AND SILT: bluish gray green; weathered chlorite schist; with white feldspar (talc) veins; some black to orange stained subvertical fractures.
15.0								
16.0								
17.0								
18.0	35	Ss	S4					
19.0	50/4							CLAY AND SILT: weathered chlorite/white feldspar schist; horizontal to subvertical fractures; dry; very dense; auger refusal.
20.0								
21.0								

LITHOLOGY

WELL INSTALLATION

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-1D

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: AIR ROTARY
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/03/94 DATE COMPLETED: 5/03/94

TOP OF CASING ELEVATION: 736.18
TOTAL DEPTH: 88.5
GROUND SURFACE ELEVATION: 735.01
SHEET: 2 OF: 4

STATIC WATER LEVEL (BLS)		
WD-While Drilling AB-After Boring		
Depth(ft)	51.88 AB	
Time	9:37	
Date:	05/04/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	OGI	LITHOLOGY DESCRIPTION	LITHOLOGY	WELL INSTALLATION
21.0								SCHIST: chlorite/white feldspar schist; few horizontal to subvertical fractures.		
22.0										
23.0										
24.0										
25.0										
26.0										
27.0										
28.0										
29.0										
30.0										
31.0										
32.0										
33.0										
34.0										
35.0										
36.0										
37.0										
38.0										
39.0										
40.0										
41.0										
42.0										
43.0										
44.0										
45.0										

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-1D

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: AIR ROTARY
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/03/94 DATE COMPLETED: 5/03/94

TOP OF CASING ELEVATION: 736.18
TOTAL DEPTH: 88.5
GROUND SURFACE ELEVATION: 735.01
SHEET: 3 OF: 4

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	51.88 AB	
Time	9:37	
Date:	05/04/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION	LITHOLOGY	WELL INSTALLATION
45.0								SCHIST: chlorite/white feldspar schist; few horizontal to subvertical fractures.		
46.0										
47.0										
48.0										
49.0										
50.0										
51.0										
52.0										
53.0										
54.0										
55.0										
56.0										
57.0										
58.0										
59.0										
60.0										
61.0										
62.0										
63.0										
64.0										
65.0										
66.0										
67.0										
68.0										

FIELD BOREHOLE LOG

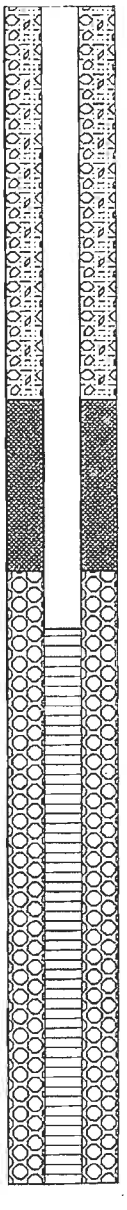
BOREHOLE NUMBER: MW-10

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: AIR ROTARY
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/03/94 DATE COMPLETED: 5/03/94

TOP OF CASING ELEVATION: 736.18
TOTAL DEPTH: 88.5
GROUND SURFACE ELEVATION: 735.01
SHEET: 4 OF: 4

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	51.88 AB	
Time	9:37	
Date:	05/04/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION	LITHOLOGY	WELL INSTALLATION
68.0								SCHIST: chlorite/white feldspar schist; few horizontal to subvertical fractures.		
69.0										
70.0										
71.0										
72.0										
73.0										
74.0										
75.0										
76.0										
77.0										
78.0										
79.0										
80.0										
81.0										
82.0										
83.0										
84.0										
85.0										
86.0										
87.0										
88.0										



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-2

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/5/94 DATE COMPLETED: 5/5/94

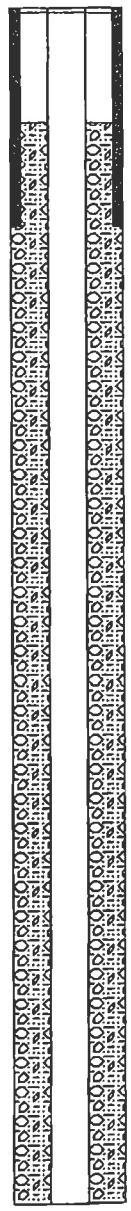
TOP OF CASING ELEVATION: -
TOTAL DEPTH: 39.0
GROUND SURFACE ELEVATION: -
SHEET: 1 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)		
Time		
Date:		

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	CGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								SAND AND SILT: brown;fine grained.
1.0								
2.0								CLAY AND SILT AND SAND: brown to green; fine grained.
3.0	6	Ss	S1					
4.0	6 7							
5.0								
6.0								
7.0								
8.0	4	Ss	S2					
9.0	6 7							
10.0								
11.0								SAND AND SILT: brown green; fine grained.
12.0								
13.0	11	Ss	S3					
14.0	16 16							
15.0								
16.0								
17.0								
18.0	14	Ss	S4					
19.0	21 22							
20.0								

LITHOLOGY

WELL INSTALLATION



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-2

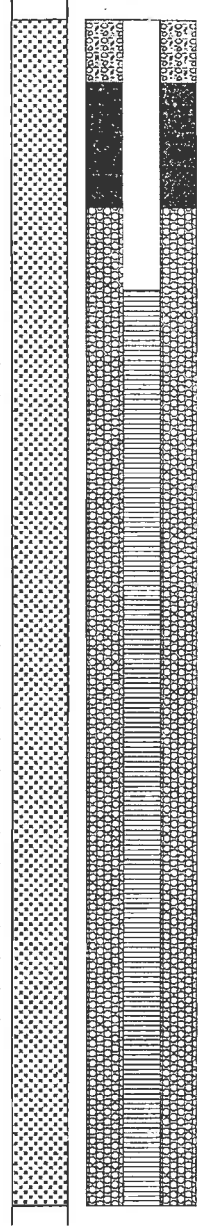
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/5/94 DATE COMPLETED: 5/5/94

TOP OF CASING ELEVATION: -
TOTAL DEPTH: 39.0
GROUND SURFACE ELEVATION: -
SHEET: 2 OF 2

STATIC WATER LEVEL (BLS)		
WO=While Drilling AB=After Boring		
Depth(ft)		
Time		
Date		

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
20.0								DIORITE: white feldspar with augite, weathered
21.0								
22.0								
23.0	15	Ss	S5					
24.0	32							
	37							
25.0								
26.0								
27.0								
28.0	40	Ss	S6					
29.0	50/5							
30.0								
31.0								
32.0				W				
33.0	50/5	Ss	S7					
34.0								
35.0								
36.0								
37.0								
38.0	50/5	Ss	S8					
39.0								

DEPTH | LITHOLOGY | WELL INSTALLATION



FIELD BOREHOLE LOG

BOREHOLE NUMBER
MW-3

PROJECT NUMBER 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/27/94 DATE COMPLETED: 4/27/94

TOP OF CASING ELEVATION 666.72
TOTAL DEPTH 20.0
GROUND SURFACE ELEVATION 664.56
SHEET: 1 OF: 1

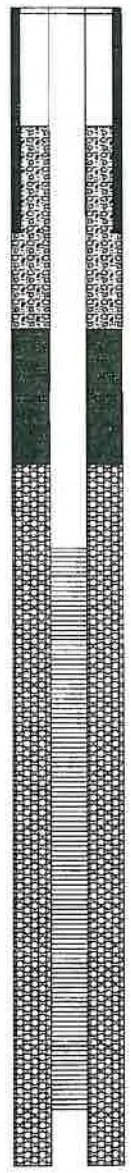
STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	12.10 AB	
Time	15:40	
Date:	05/03/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								SAND AND CLAY: organic rich, heavily rooted, trace to abundant 1/4" black and orange rind concretions, moist, firm to stiff; brown to dark brown.
1.0								
2.0								
3.0	4	Ss	S1					
4.0	5 11							
5.0								
6.0								
7.0								
8.0	10	Ss	S2					
9.0	12 15							CLAY AND SILT AND SAND: numerous white feldspar black manganese, and orange iron inclusions, firm; moist; orange brown
10.0								
11.0								
12.0								
13.0	50/6	Ss	S3					
14.0								SAND AND CLAY: medium to coarse grained sand, some muscovite and feldspar, moist, light tan to medium gray
15.0								
16.0								
17.0								
18.0	10	Ss	S4	W				
19.0	11 12							SAND AND CLAY AND SILT: 1.5 inch pegmatite zones; med. tan to gray
20.0								

DEPTH

LITHOLOGY

WELL INSTALLATION



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-4

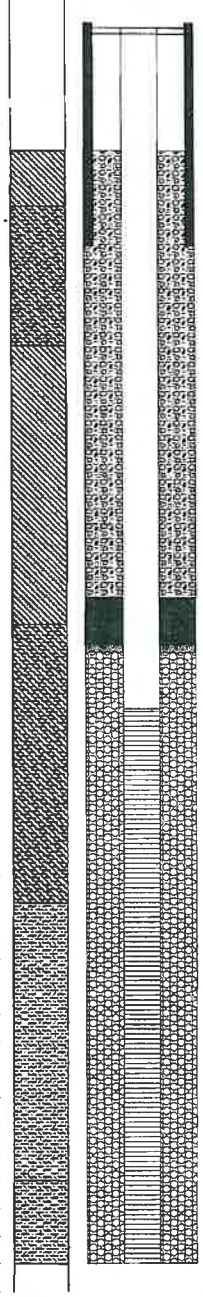
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/28/94 DATE COMPLETED: 4/28/94

TOP OF CASING ELEVATION: 673.68
TOTAL DEPTH: 20.0
GROUND SURFACE ELEVATION: 671.51
SHEET 1 OF: 1

STATIC WATER LEVEL (BLS)		
WO=While Drilling AB=After Boring		
Depth(ft)	19.21 AB	
Time	16:50	
Date	05/03/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								SAND AND CLAY: tan to orange; fill
1.0								SAND AND CLAY AND SILT: rooted, med. brown
2.0								
3.0	16	Ss	S1					CLAY AND SAND: some silt, relict granite gneiss with white med to coarse feldspar, medium to fine quartz and abundant biotite laminae dry, very dense; light tan to orange tan
4.0	32							
	42							
5.0								
6.0								
7.0								
8.0	36	Ss	S2					SILT AND CLAY: trace fine biotite (2 inches), coarse clayey sand granite gneiss, coarse white feldspar and biotite, dry, very dense; dark olive green
9.0	50/4							
	25							
10.0								
11.0								
12.0								
13.0	27	Ss	S3					SAND AND SILT: with some clay; medium to coarse grained feldspar and quartz, abundant muscovite; weathered granite gneiss; equigranular, dry; very dense; light tan
14.0								
15.0								
16.0								
17.0								
18.0	36	Ss	S4	W				SAND AND SILT: fine to med feldspar, some biotite; moist, very dense, light gray
19.0	36							
	50/5							
20.0								

LITHOLOGY



WELL INSTALLATION

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-5A

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/28/94 DATE COMPLETED: 4/28/94

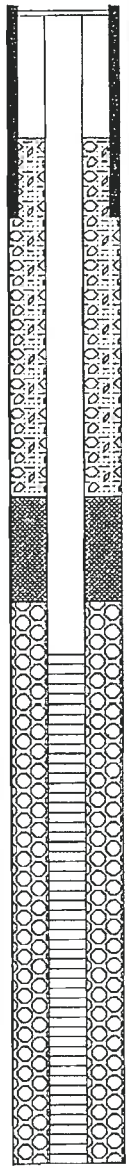
TOP OF CASING ELEVATION: 674.57
TOTAL DEPTH: 19.5
GROUND SURFACE ELEVATION: 672.23
SHEET: 1 OF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	19.45 DB	
Time	16:15	
Date:	04/28/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								CLAY AND SILT: with manganese staining; dry; stiff; yellow tan.
1.0								
2.0								
3.0	8	Ss	S1					
4.0	7 9							
5.0								
6.0								
7.0								
8.0	12	Ss	S2					
9.0	15 25							SAND AND CLAY: med. to coarse grained quartz and feldspar; feldspar is white to pinkish; abundant biotite; some iron staining; dry; dense; weathered granite gneiss; light tan.
10.0								
11.0								
12.0								
13.0	25	Ss	S3					
14.0	50/5							SAND AND CLAY: med. to coarse feldspar (white) and quartz; abundant muscovite; orange iron staining throughout; equigranular; very dense; wet; orange tan.
15.0								
16.0								
17.0								
18.0	50/5	Ss	S4					
19.0				W				CLAY AND SAND AND SILT: med. to fine grained; abundant feldspar and blue quartz; lt. brown.
20.0								

LITHOLOGY

WELL INSTALLATION



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-6D

PROJECT NUMBER 94012
PROJECT NAME DAVIDSON COUNTY
LOCATION LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/04/94 DATE COMPLETED: 5/04/94

TOP OF CASING ELEVATION 694.13
TOTAL DEPTH: 68.5
GROUND SURFACE ELEVATION 692.79
SHEET: 1 OF: 3

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)		
Time		
Date:		

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
0.0								CLAY AND SILT AND SAND: fill.
1.0								CLAY AND SAND coarse sand, light tan brown, soft, moist; fill; some roots
3.0–4.0	5 7 7	Ss	S1					
8.0–9.0	5 6 9	Ss	S2					CLAY AND SILT: tan brown to orange red; interbedded with light tan coarse sandy clay, with quartz and feldspar; soft, moist; medium dense.
13.0–14.0	6 10 12	Ss	S3					CLAY AND SILT light tan, interbedded with orange coarse sandy clay, some greenstone and wood fragments; stiff.
18.0–19.0	9 10 9	Ss	S4					CLAY AND SILT: light tan, interbedded with orange coarse sandy clay, some greenstone fragments, stiff.

DEPTH: 1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0

LITHOLOGY

WELL INSTALLATION

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-6D

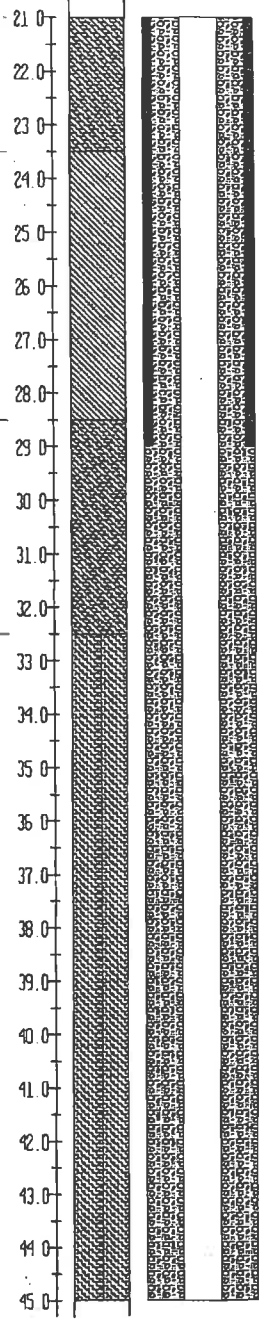
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/04/94 DATE COMPLETED: 5/04/94

TOP OF CASING ELEVATION: 694.13
TOTAL DEPTH: 68.5
GROUND SURFACE ELEVATION: 692.79
SHEET 2 OF 3

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)		
Time		
Date:		

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
21.0								CLAY AND SILT: light tan; interbedded with orange coarse sandy clay, some greenstone fragments, stiff.
22.0								
23.0	6	Ss	S5					
24.0	10							CLAY AND SAND: orange brown, coarse grained; moist; stiff.
	14							
25.0								
26.0								
27.0								
28.0	12	Ss	S6					
29.0	50/5							CLAY AND SAND AND SILT: dark brown to orange and tan; heavy manganese staining; tan feldspar bands; residual weathered gneiss.
30.0								
31.0								
32.0								
33.0	50/1	Ss	S7					GRANITE GNEISS: bedrock; auger refusal
34.0								
35.0								
36.0								
37.0								
38.0								
39.0								
40.0								
41.0								
42.0								
43.0								
44.0								
45.0								

DEPTH | LITHOLOGY | WELL INSTALLATION



FIELD BOREHOLE LOG

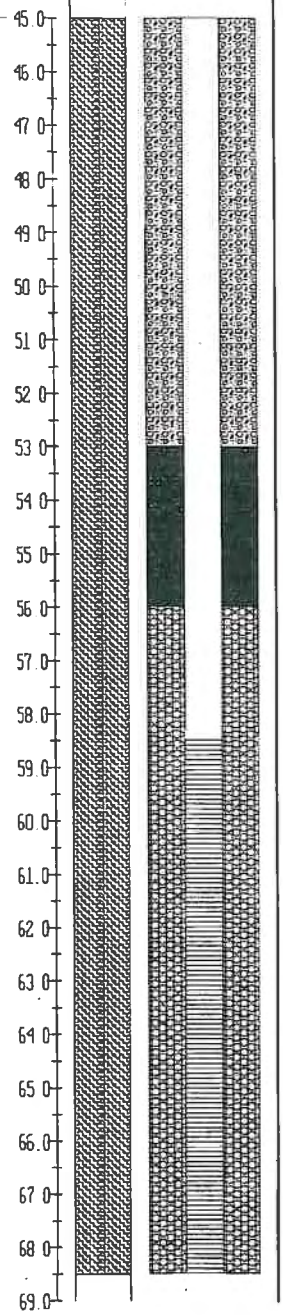
BOREHOLE NUMBER: MW-6D

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 5/04/94 DATE COMPLETED: 5/04/94

TOP OF CASING ELEVATION: 694.13
TOTAL DEPTH: 68.5
GROUND SURFACE ELEVATION: 692.79
SHEET: 3 OF 3

STATIC WATER LEVEL (BLS)		
WO=While Drilling AB=After Boring		
Depth(ft)		
Time		
Date		

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
45.0								GRANITE GNEISS: bedrock.
46.0								
47.0								
48.0								
49.0								
50.0								
51.0								
52.0								
53.0								
54.0								
55.0								
56.0								
57.0								
58.0								
59.0								
60.0								
61.0								
62.0								
63.0								
64.0								
65.0								
66.0								
67.0								
68.0								
69.0								



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-7

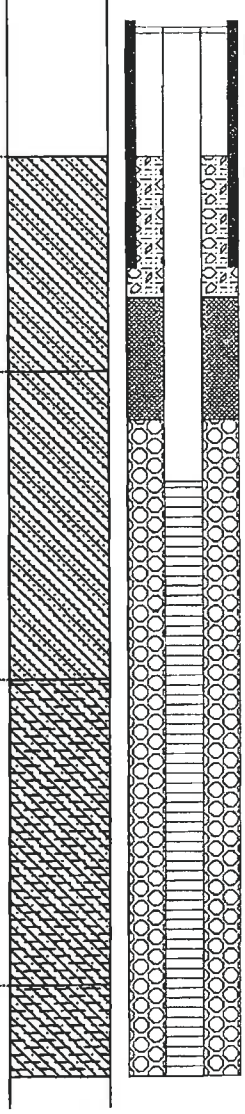
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/25/94 DATE COMPLETED: 4/25/94

TOP OF CASING ELEVATION: 663.39
TOTAL DEPTH: 15.0
GROUND SURFACE ELEVATION: 661.30
SHEET: 1 DF: 1

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	5.08 AB	
Time	12:43	
Date:	05/03/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								CLAY AND SAND: fill; orange brown; moist.
1.0								
2.0								
3.0	13	Ss	S1	W				
4.0	17							CLAY AND SAND: orange brown to orange gray; hard; moist; 1 inch orange to tan clay sand with quartz (granite residuum); 3 inch green and white chlorite feldspar gneiss; wet; SM.
	25							
5.0	26							
6.0								
7.0								
8.0	9	Ss	S2					
9.0	11							CLAY AND SILT: relict chlorite schist structure with trace of white feldspar veins; dark green and white; hard; wet.
	14							
10.0								
11.0								
12.0								
13.0	7	Ss	S3					
14.0	11							CLAY AND SILT: chlorite feldspar schist; one 45 degree fracture; dk. green and white.
	16							
15.0								

LITHOLOGY



WELL INSTALLATION

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-7D

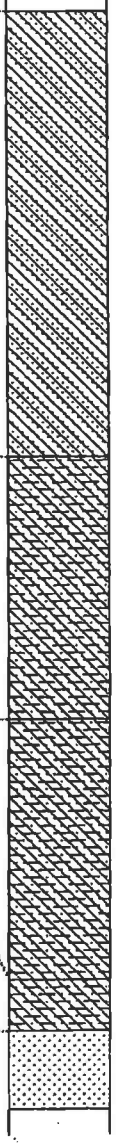
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER AND AIR ROTARY
WEATHER: SUNNY
FIELD PARTY: KENNY MOGLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/26/94 DATE COMPLETED: 4/26/94.

TOP OF CASING ELEVATION: 663.59
TOTAL DEPTH: 46.0
GROUND SURFACE ELEVATION: 661.44
SHEET: 1 OF: 2

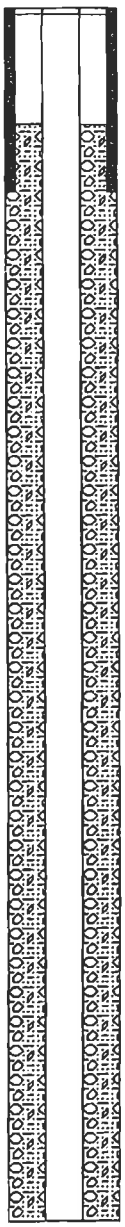
STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	4.55 AB	
Time	4:37	
Date:	04/26/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								CLAY AND SAND: with organics; yellowish orange grading to gray green coarse sandy clay; some relict chlorite schist fabric; dry to moist; hard.
1.0								
2.0								
3.0	8	Ss	S1					
4.0	13							
	18							
5.0								
6.0								
7.0								
8.0	8	Ss	S2					
9.0	11							CLAY AND SILT: gray to green; relict chlorite schist; with heavy orange brown iron staining and bands; saprolite; moist; trace hair veins; hard.
	13							
10.0								
11.0								
12.0								
13.0	13	Ss	S3					
14.0	13			W				CLAY AND SILT: equigranular chlorite/white feldspar schist with red/brown iron stained fractures; moist; dense.
	19							
15.0								
16.0								
17.0								SILT AND CLAY: gray green chlorite feldspar schist; numerous miscellaneously oriented feldspar microveins; orange staining.
18.0	20	Ss	S4					
19.0	36							
	50/6							
20.0								SAND: coarse grained feldspar, quartz muscovite granite; iron stained.
21.0								

LITHOLOGY



WELL INSTALLATION



FIELD BOREHOLE LOG

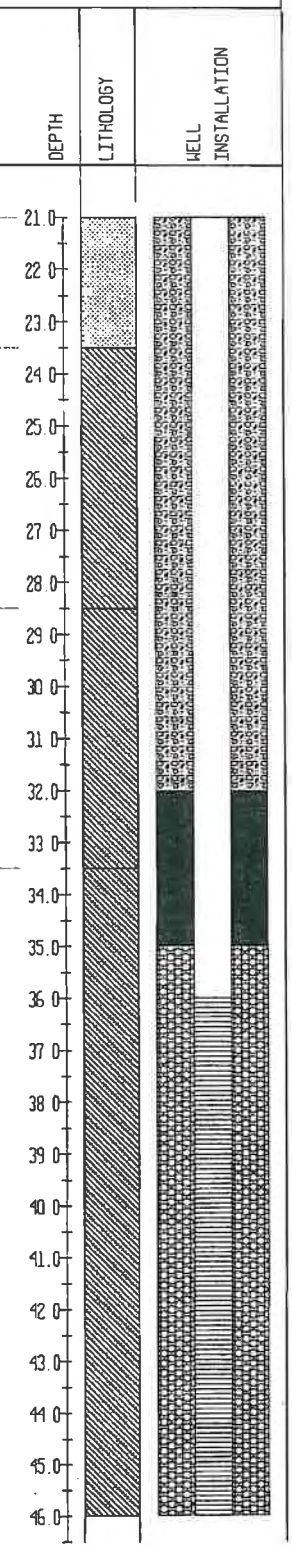
BOREHOLE NUMBER: MW-7D

PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/26/94 DATE COMPLETED: 4/26/94

TOP OF CASING ELEVATION 663.59
TOTAL DEPTH 46.0
GROUND SURFACE ELEVATION 661.44
SHEET: 2 OF: 2

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	4.55 AB	
Time	4:37	
Date:	04/26/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	SAMPLE RECOVERY	DRILL METHOD	LITHOLOGY DESCRIPTION
21.0								SAND coarse grained quartz muscovite granite, medium gray with gray quartz; heavy iron staining
22.0								
23.0	25	Ss	S5					
24.0	50/6 50/5							SAND AND CLAY coarse sand, orange brown porphyritic gray quartz/white feldspar trace muscovite and hornblende granite; heavy iron staining
25.0								
26.0								
27.0								
28.0	50/5	Ss	S6					
29.0								SAND AND CLAY coarse sand, brown; porphyritic gray quartz/white feldspar; trace muscovite and hornblende granite, heavy iron staining
30.0								
31.0								
32.0								
33.0	50/4	Ss	S7					
34.0								SAND AND CLAY coarse sand, dark brown; porphyritic gray quartz/white feldspar, trace muscovite and hornblende granite, heavy iron staining
35.0								
36.0								
37.0								
38.0	50/5	Ss	S8					
39.0								
40.0								
41.0								
42.0								
43.0	50/3	Ss	S9					
44.0								
45.0								
46.0								



FIELD BOREHOLE LOG

BOREHOLE NUMBER: MW-8

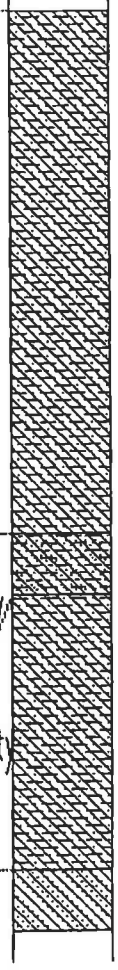
PROJECT NUMBER: 94012
PROJECT NAME: DAVIDSON COUNTY
LOCATION: LEXINGTON, NORTH CAROLINA
DRILLING COMPANY: BORE AND CORE
RIG TYPE & NUMBER: MOBILE B-53
DRILLING METHOD: HOLLOW STEM AUGER
WEATHER: SUNNY
FIELD PARTY: KENNY MOSLEY
GEOLOGIST: GRAHAM SIMMERMAN
DATE BEGUN: 4/27/94 DATE COMPLETED: 4/27/94

TOP OF CASING ELEVATION: 661.16
TOTAL DEPTH: 15.0
GROUND SURFACE ELEVATION: 659.83
SHEET: 1 OF: 1

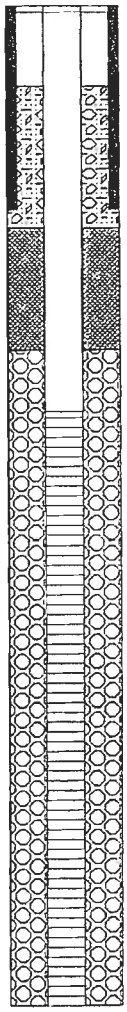
STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	6.34 AB	
Time	9:37	
Date:	04/28/94	

DEPTH	BLOW COUNTS	SAMPLING METHOD	SAMPLE NUMBER	MOISTURE	CONSISTANCY	ORGANIC VAPOR	CGI	LITHOLOGY DESCRIPTION
2.0								
1.0								
0.0								CLAY AND SILT: with medium to coarse sand; engineered fill (nine inches thick); numerous root fragments; mottled iron staining; wetland soil; dark grayish brown.
1.0								
2.0								
3.0	7	Ss	S1					
4.0	4							
	5							
5.0								
6.0								
7.0				W				
8.0	6	Ss	S2					
9.0	4							CLAY AND SAND AND SILT: sand is med. to coarse blue quartz; angular; some reddish orange sandy clay; moist; med. dense.
	4							
10.0								
11.0								
12.0								CLAY AND SILT: light bluish green with tan silty clay; some iron staining; slight relict chlorite/feldspar schist fabric.
13.0	10	Ss	S3					
14.0	10							
	9							CLAY AND SAND: relict granite texture; quartz; feldspar; equigranular; moist.
15.0								

LITHOLOGY



WELL INSTALLATION



Appendix C

Laboratory Analytical Report

Environment 1, Incorporated

REC'D OCT 28 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#: 6038

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/09
DATE REPORTED : 10/26/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-1S	MW-2	MW-3	MW-4	MW-5	Analysis Date	Analyst	Method Code
Total Alkalinity, mg/l	1.0	1.0	259					09/29/09	TRB	SM2320B
Chloride, mg/l	5.0	5.0	32					10/05/09	MJN	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0	387					09/29/09	TRB	SM2540C
Sulfate, mg/l	5.0	250.0	37.1 J					10/07/09	TRB	SM426C
Antimony, ug/l	0.06	6.0	--- U	Missing	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.3 J	Missing	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	35.6 J	Missing	112	62.6 J	54.2 J	10/02/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	--- U	Missing	0.1 J	--- U	--- U	10/02/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	Missing	--- U	--- U	0.1 J	10/02/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	1.2 J	Missing	3.7 J	2.3 J	0.5 J	10/02/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	2.8 J	Missing	13	11	1.9 J	10/02/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	0.1 J	Missing	0.7 J	3.3 J	--- U	10/02/09	LFJ	EPA200.8
Iron, ug/l	14.0	300.0	1407					10/05/09	ADD	SM3111B
Manganese, ug/l	0.50	50.0	68					10/02/09	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	0.7 J	Missing	0.8 J	0.8 J	0.3 J	10/02/09	LFJ	EPA200.8
Mercury, ug/l	0.03	0.20	--- U					10/02/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	1.8 J	Missing	3.3 J	2.6 J	1 J	10/02/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	1 J	Missing	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	Missing	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U	Missing	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	5.1 J	Missing	17.9 J	11.5 J	5.4 J	10/08/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	3.1 J	Missing	19.5	16.6	2.7 J	10/02/09	LFJ	EPA200.8
8260 (duplicate)	0.14	10.0		Missing						
8260 (duplicate)	0.14	10.0		Missing						

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#: 6038

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/09
DATE REPORTED : 10/26/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-6	MW-7D	MW-8	MW-7S	MW-9	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	--- U	--- U	--- U	0.6 J	Missing	10/02/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	--- U	--- U	0.4 J	0.9 J	Missing	10/02/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	12.8 J	6.4 J	93.7 J	93 J	Missing	10/02/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	--- U	--- U	0.4 J	0.5 J	Missing	10/02/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.2 J	0.1 J	0.1 J	0.3 J	Missing	10/02/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.1 J	0.2 J	11	5.9 J	Missing	10/02/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	0.4 J	1.9 J	28	40	Missing	10/02/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	--- U	--- U	14	9.2 J	Missing	10/02/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.1 J	0.1 J	15	3.9 J	Missing	10/02/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.6 J	0.3 J	7.7 J	6.6 J	Missing	10/02/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	--- U	--- U	0.2 J	0.3 J	Missing	10/02/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	0.2 J	Missing	10/02/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U	--- U	--- U	0.1 J	Missing	10/02/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	1.5 J	2.2 J	59	35	Missing	10/08/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	1.2 J	2.5 J	32	32	Missing	10/02/09	LFJ	EPA200.8
8260 (duplicate)	0.14	10.0					Missing			

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: DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH, NC 27603

CLIENT ID: 6038

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

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-1S	MW-3	MW-4	MW-5	MW-6
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	1.30 J	1.90 J	10.40 J	19.80 J	2.10 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	--- 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	--- U	--- U	--- U	--- U	--- U
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

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

CLIENT: DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH, NC 27603

CLIENT ID: 6038

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

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-7D	MW-8	MW-7S
1. Chloromethane	0.18	1.0	--- U	--- 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	--- U	--- 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	--- U	--- U	4.10 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	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- 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	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- 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	--- U	--- U	--- U
27. Toluene	0.13	1.0	--- U	--- 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	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- 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	--- U	--- 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.

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: 6038 **Week:** 40

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH NC 27603

(919) 828-0577

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Alkalinity	Chloride	TDS	Sulfate	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION													
pH CHECK (LAB)										L2	L2	L2	L2
CONTAINER TYPE, P/G						P	P	P	P	P	G	G	G
CHEMICAL PRESERVATION						A	A	A	A	A	E	E	E
MW-1S	9/25/09	8:57a			7	■	■	■	■	■	■	■	
MW-2	Dry				4					■	■	■	■
MW-3	9/25/09	10:06a			3					■	■	■	
MW-4	9/25/09	10:23a			3					■	■	■	
MW-5	9/25/09	10:40a			3					■	■	■	
MW-6	9/25/09	11:23a			3					■	■	■	
MW-7D	9/25/09	11:00a			3					■	■	■	
MW-8	9/25/09	7:48a			3					■	■	■	
MW-7S	9/25/09	11:08a			3					■	■	■	
MW-9	No well				3					■	■	■	

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) Don Misenheimer

SAMPLES RECEIVED IN LAB AT 3.0 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Joan Smyth	9/28/09 3:05	[signature]	9/29 1030
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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

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

№ 191987

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#: 6038 B

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/09
DATE REPORTED : 10/26/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-10	MW-11	MW-12	SW-1	SW-2	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	--- U	--- U	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	--- U	0.9 J	0.2 J	0.8 J	0.5 J	10/02/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	10.6 J	89.1 J	1 J	41.3 J	35.4 J	10/02/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.1 J	0.9 J	--- U	--- U	--- U	10/02/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	0.3 J	0.2 J	--- U	0.5 J	10/02/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	1.8 J	7.5 J	0.2 J	2.2 J	1 J	10/02/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	5.1 J	80	0.4 J	2.1 J	0.7 J	10/02/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	4.4 J	40	--- U	0.8 J	--- U	10/02/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.8 J	8.8 J	0.2 J	2.2 J	0.1 J	10/02/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	3.3 J	15.1 J	1.1 J	2.2 J	1 J	10/02/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	--- U	0.6 J	0.2 J	--- U	--- U	10/02/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.1 J	0.2 J	0.1 J	--- U	--- U	10/02/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U	--- U	0.1 J	--- U	--- U	10/02/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	14.7 J	128	7.4 J	4 J	1.8 J	10/08/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	5.7 J	62	3 J	4.1 J	4.2 J	10/02/09	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#: 6038 B

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH ,NC 27603

DATE COLLECTED: 09/25/09
DATE REPORTED : 10/26/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Trip Blank	Equipment Blank	Analysis Date	Analyst	Method Code
8260 (duplicate)	0.14	10.0		Missing			

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: DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH, NC 27603

CLIENT ID: 6038 B

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

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	--- U
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	0.90 J
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

CHAIN OF CUSTODY RECORD

CLIENT: 6038 B **Week:** 40

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH NC 27603

(919) 828-0577

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	≥2
						P	G	G	G
						A	E	E	E
MW-10	9/25/09	7:58a			4	▒	▒	▒	▒
MW-11	9/25/09	8:17a			3	▒	▒	▒	
MW-12	9/25/09	8:29a			3	▒	▒	▒	
SW-1	9/25/09	8:08a			3	▒	▒	▒	
SW-2	9/25/09	10:10a			3	▒	▒	▒	
Trip Blank					2		▒	▒	
Equipment Blank					2		▒	▒	

PARAMETERS

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

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) Don Misenheimer

SAMPLES RECEIVED IN LAB AT 3.0 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Joan Smyth	3:30 9/28/09	[signature]	9/29 10:50
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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

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

FORM #5

№ 191985

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#: 6038 A

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH ,NC 27603

DATE COLLECTED: 09/24/09
DATE REPORTED : 10/26/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Leachate	Analysis Date	Analyst	Method Code
BOD, mg/l	2.0	2.0	32	09/25/09	TRB	SM5210B
COD, mg/l	10.0	10.0	145	09/28/09	TRB	HACH8000
Nitrate Nitrogen as N, mg/l	0.03	10.0	0.08 J	09/25/09	TWA	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	0.10	10/01/09	TWA	EPA365.4
Sulfate, mg/l	5.0	250.0	5.4 J	10/07/09	TRB	SM426C
Antimony, ug/l	0.06	6.0	0.3 J	10/01/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	2.2 J	10/01/09	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	43.6 J	10/01/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	--- U	10/01/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	10/01/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	2.5 J	10/01/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	5.2 J	10/01/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	1.8 J	10/01/09	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.3 J	10/01/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	13.8 J	10/01/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	2.1 J	10/01/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.1 J	10/01/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U	10/01/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	13.8 J	10/01/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	5.7 J	10/01/09	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: DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH, NC 27603

CLIENT ID: 6038 A

ANALYST: MAO
DATE COLLECTED: 09/24/09
DATE ANALYZED: 10/07/09
DATE REPORTED: 10/26/09

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate
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	3.90 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	1.20 J
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.

Ei... r, Inc.
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858

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

CHAIN OF CUSTODY RECORD

CLIENT: 6038 A **Week:** 40

DAVIDSON COUNTY (LINED)
MS. JOAN SMYTH
RICHARDSON SMITH GARDNER
14 N. BOYLAN AVENUE
RALEIGH NC 27603

(919) 828-0577

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	Nitrate	T. Phosphorus	Sulfate	Metals	EPA 8260B	8260 Dup. 1
CHLORINE NEUTRALIZED AT COLLECTION													
pH CHECK (LAB)							<2		<2		<2	<2	<2
CONTAINER TYPE, P/G						P	P	P	P	P	P	G	G
CHEMICAL PRESERVATION						A	C	A	C	A	A	E	E
Leachate	9/24/09	12:30			8								

PARAMETERS

CHEMICAL PRESERVATION: 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)

SAMPLES RECEIVED IN LAB AT 06 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	9/24/09 3:50	[signature]	9/25 9:55
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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

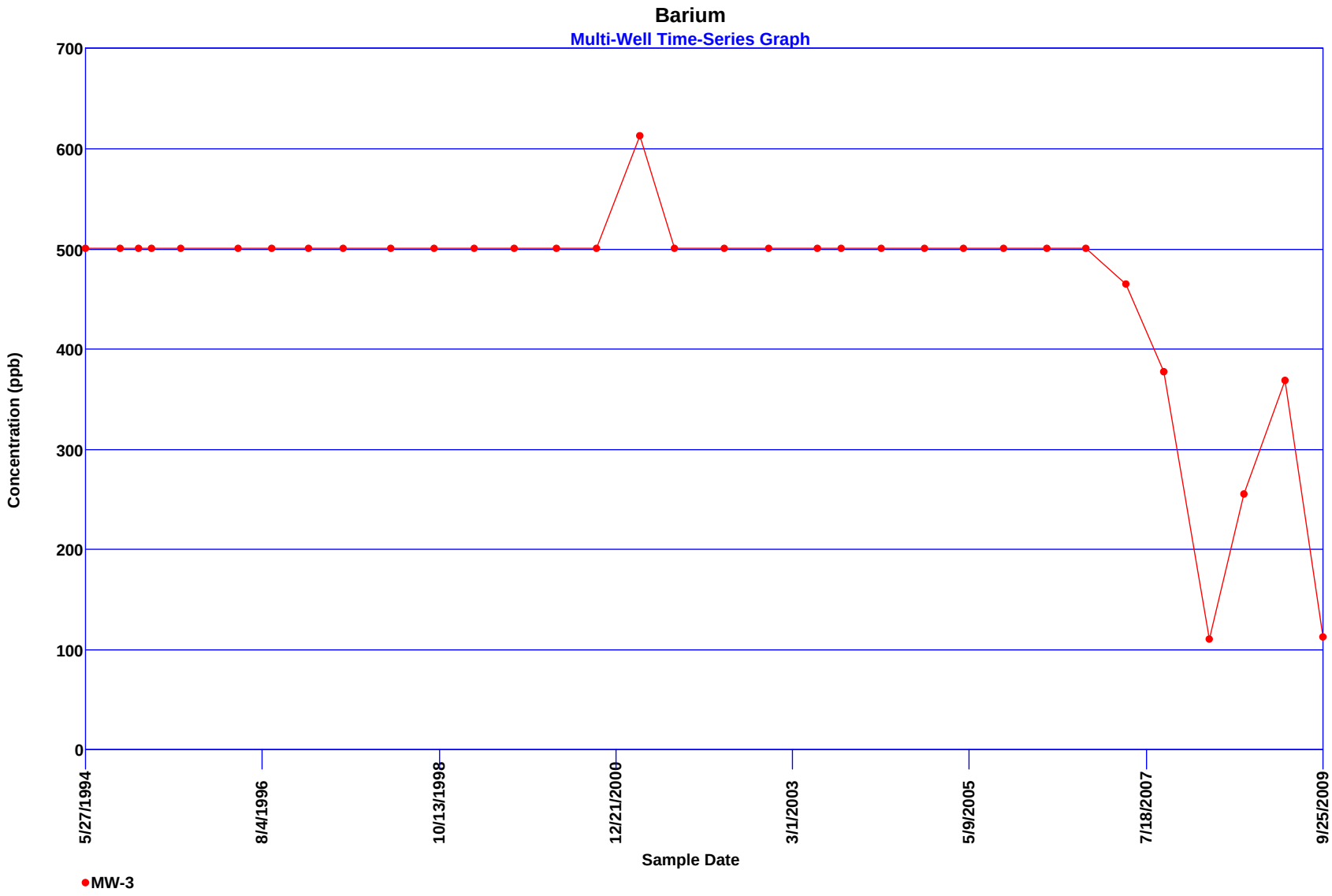
Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

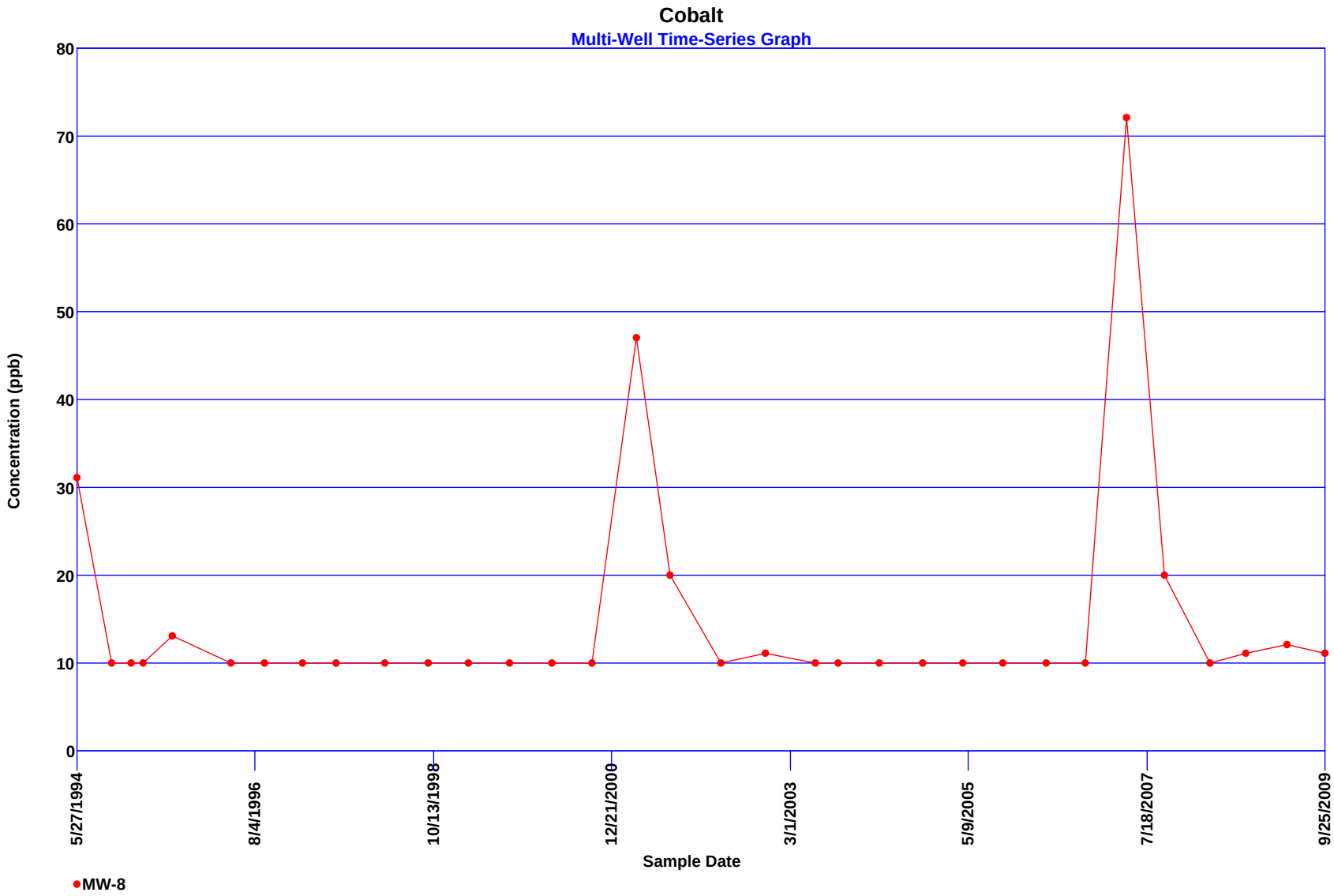
№ 191986

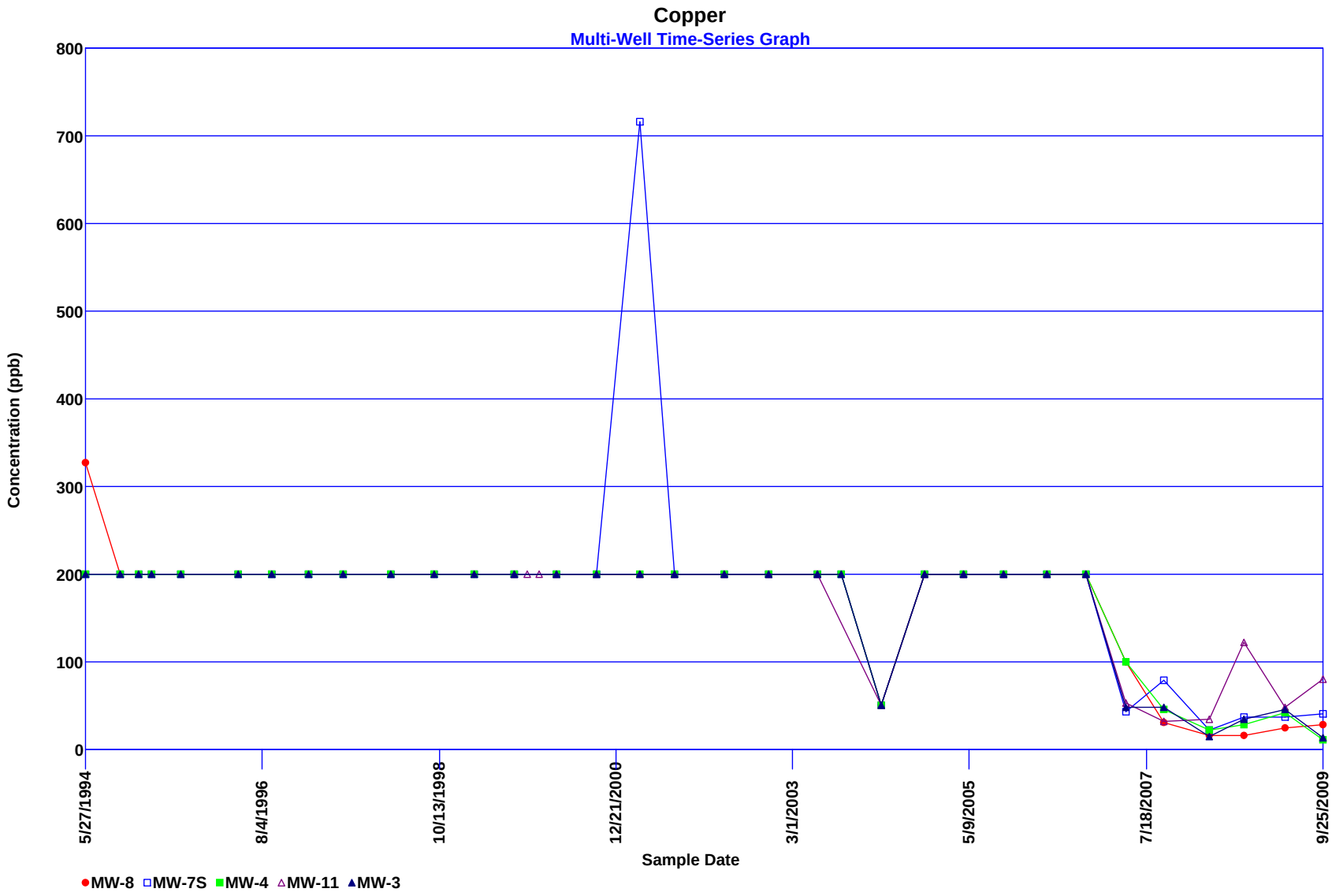
FORM #5

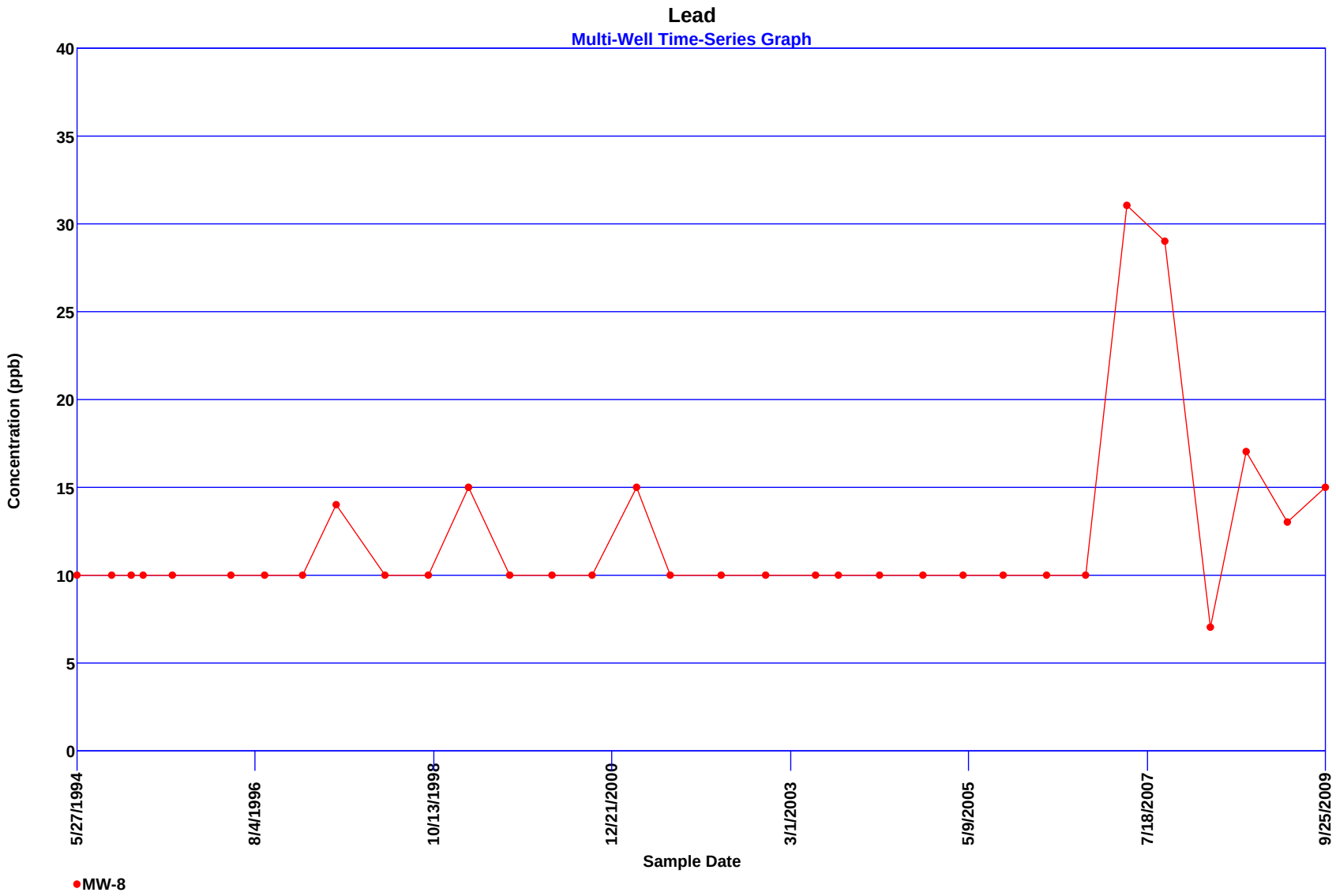
Appendix D

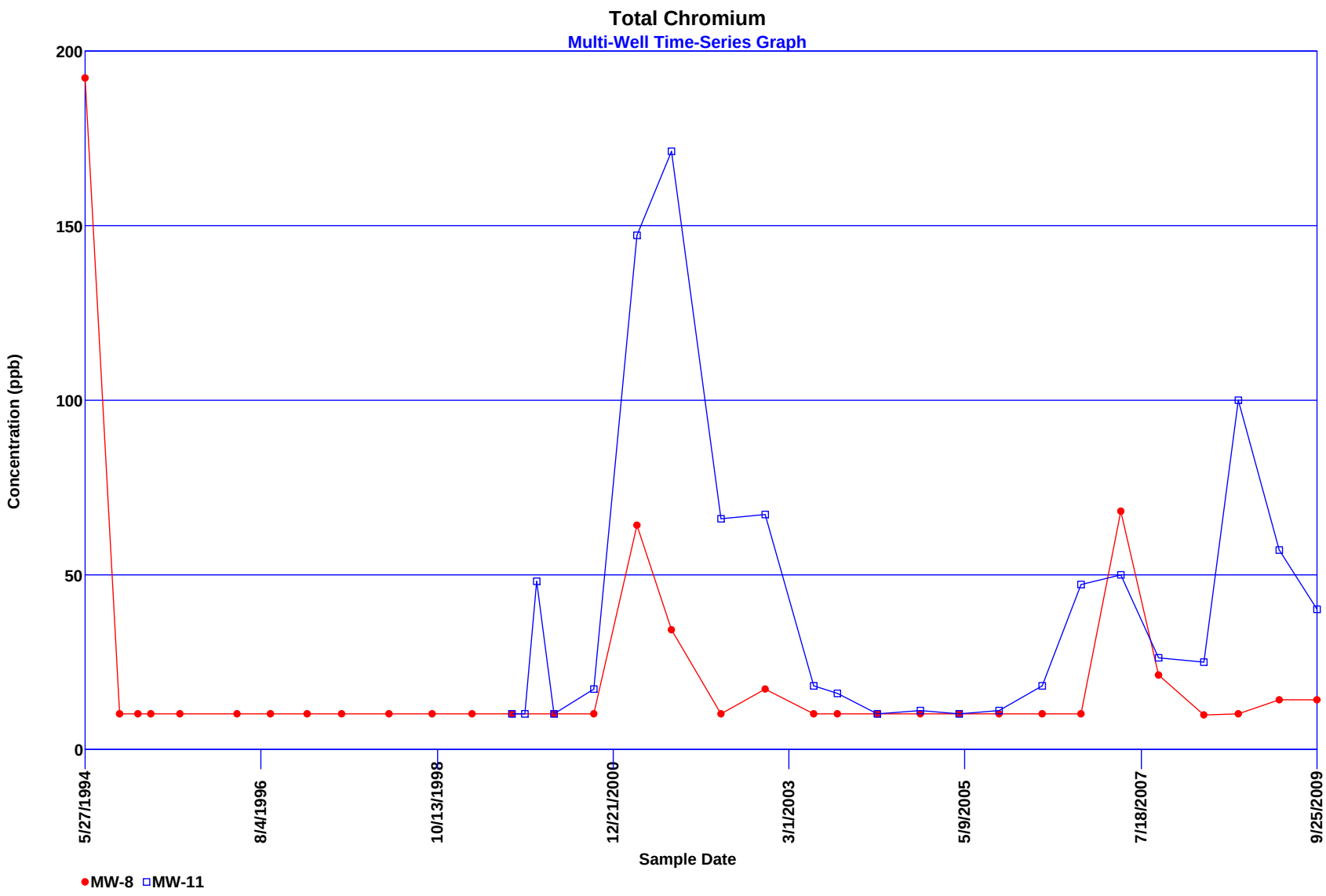
Time Vs. Concentration Graphs

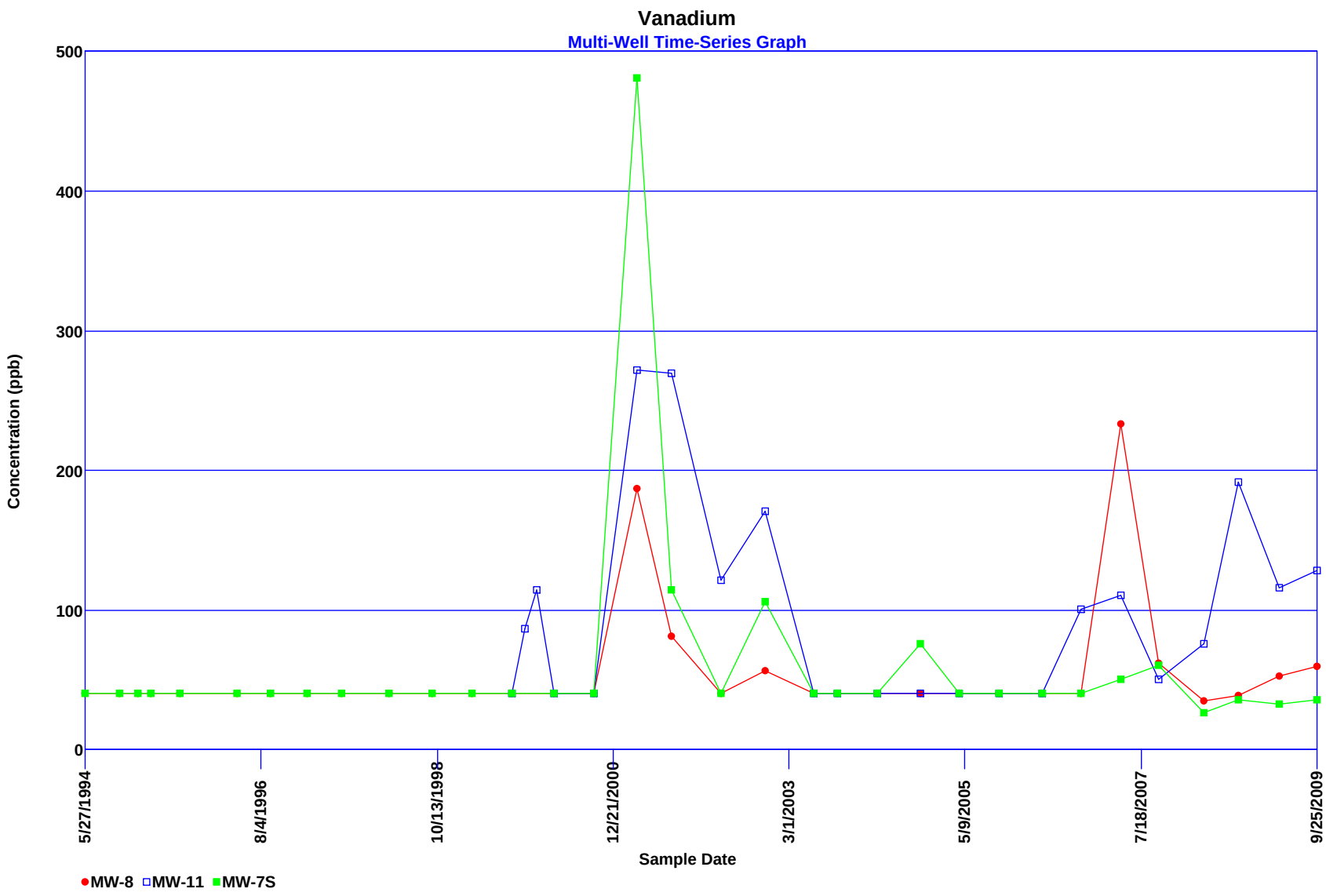

Barium
Multi-Well Time-Series Graph
700
600
500
400
300
200
100
0
Concentration (ppb)
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-3

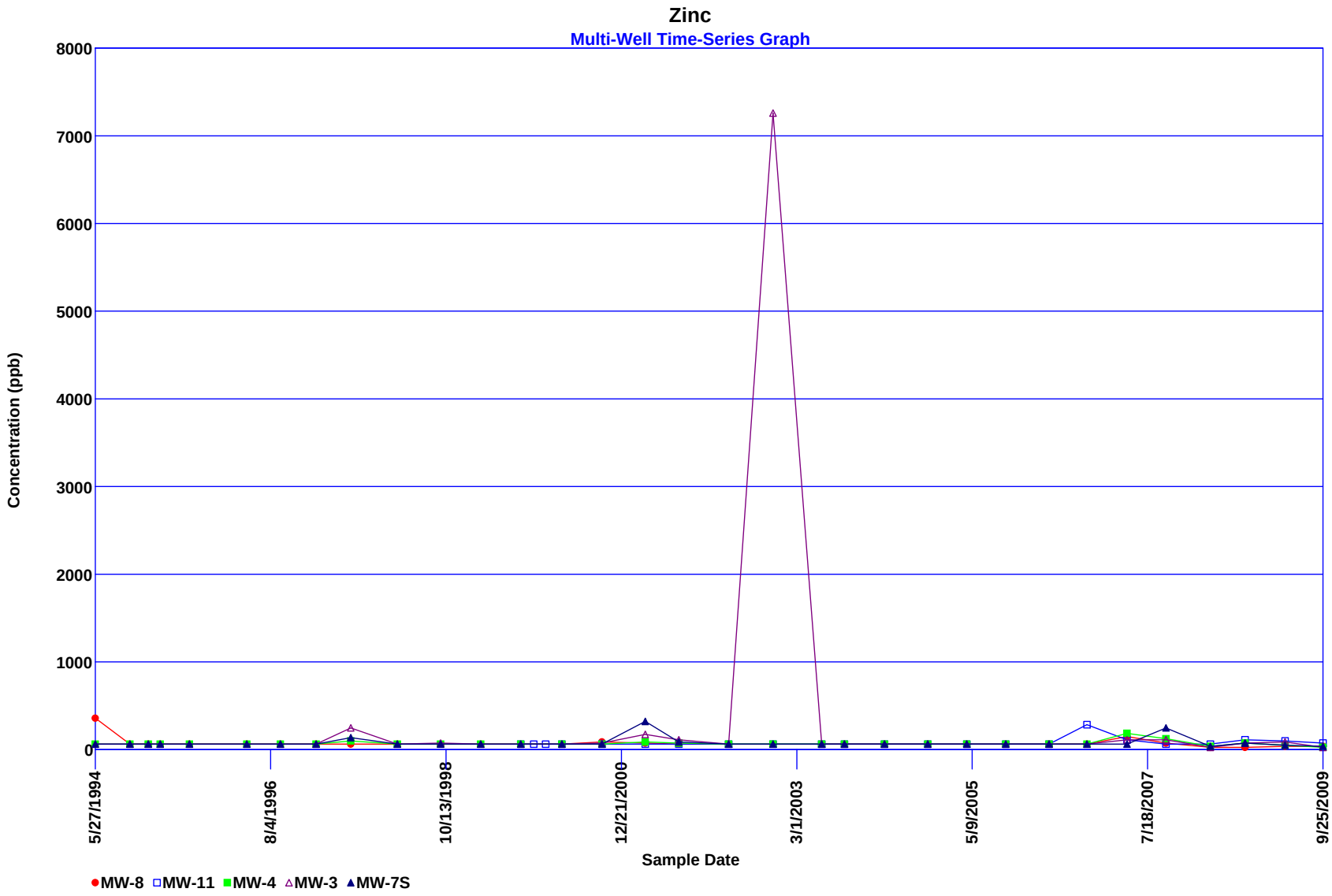

Cobalt
Multi-Well Time-Series Graph
Concentration (ppb)
80
70
60
50
40
30
20
10
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8


Copper
Multi-Well Time-Series Graph
Concentration (ppb)
800
700
600
500
400
300
200
100
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8
MW-7S
MW-4
MW-11
MW-3


Lead
Multi-Well Time-Series Graph
Concentration (ppb)
40
35
30
25
20
15
10
5
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8


Total Chromium
Multi-Well Time-Series Graph
Concentration (ppb)
200
150
100
50
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8
MW-11


Vanadium
Multi-Well Time-Series Graph
Concentration (ppb)
500
400
300
200
100
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8
MW-11
MW-7S


Zinc
Multi-Well Time-Series Graph
Concentration (ppb)
8000
7000
6000
5000
4000
3000
2000
1000
0
5/27/1994
8/4/1996
10/13/1998
12/21/2000
3/1/2003
5/9/2005
7/18/2007
9/25/2009
Sample Date
MW-8
MW-11
MW-4
MW-3
MW-7S