

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

Instructions:

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

Solid Waste Monitoring Data Submittal Information

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

Smith Gardner, Inc.

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

Name: Madeline German Phone: (919) 828-0577 x222
 E-mail: madeline@smithgardnerinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Harnett County - Anderson Creek C&D Landfill	1164 Poplar Dr., Spring Lake, NC 28390	43-03	.0500	October 26, 2015

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

Notification attached?

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

Certification

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

Madeline German, PG Geologist (919) 828-0577 x222

Facility Representative Name (Print) Title (Area Code) Telephone Number
 Signature Date Affix NC Licensed/ Professional Geologist Seal

14 N Boylan Ave, Raleigh, NC 27603

Facility Representative Address

C0828

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



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October 2015 Groundwater Monitoring Report

Harnett County Anderson Creek Landfill NC Solid Waste Permit No. 43-03

Prepared for:

Halifax County Solid Waste Department
P.O. Box 940
Lillington, North Carolina 27546



December 2015

Prepared by:

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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October 2015 Groundwater Monitoring Report

**Harnett County Anderson Creek Landfill
NC Solid Waste Permit 43-03**

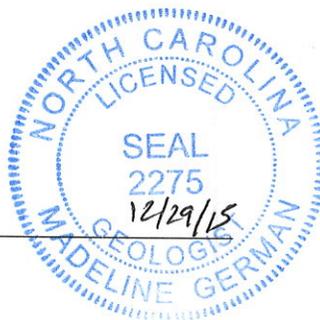
Prepared For:

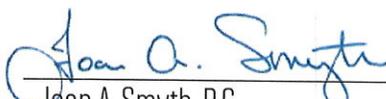
**Harnett County Solid Waste Department
Lillington, North Carolina**

S+G Project No. Harnett-AC 13-2



Madeline German, P.G.
Project Geologist





Joan A. Smyth, P.G.
Senior Hydrogeologist

December 2015

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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**Harnett County Anderson Creek Landfill
NC Solid Waste Permit No. 43-03**

October 2015 Groundwater Monitoring Report

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1.0 INTRODUCTION

The Harnett County Anderson Creek Landfill, located at 1086 Poplar Drive, Spring Lake, North Carolina, operates a C&D landfill under Solid Waste Permit #43-03 and a MSW transfer station under Solid Waste Permit #43-09T. A permit condition of 15A NCAC 13B.0500 (et. seq.) is submittal of semi-annual groundwater monitoring reports to NCDENR. The Harnett County Anderson Creek Facility has two closed unlined MSW landfill units located in the southeast portion of the site; closure was completed in 1994. Two closed C&D landfill units were closed in accordance with the current closure regulations. One located between the closed, unlined MSW landfill and the second to the west of the larger closed MSW unit.

This report presents the results from the semi-annual monitoring event conducted October 26, 2015 and includes a field procedure summary, laboratory analyses, summary tables and graphs and groundwater characterization.

2.0 SITE HYDROGEOLOGY

According to the 1985 North Carolina Geological Map the landfill is situated in the Coastal Plain Physiographic Province. The Dunn–Erwin area in Harnett County is underlain by the cretaceous age Middendorf formation that is primarily light gray sand, sandstone and mudstone which acts as a confining unit. The Middendorf formation was deposited in a deltaic system and varies from 15m to over 100m thick¹.

Groundwater depths generally range from just under 5 ft. to more than 30 ft. below ground surface (bgs) across the facility. Groundwater generally flows southwest towards the local wetland feature. There are minor seasonal variations in the flow pattern, but overall flow direction is consistent.

3.0 SAMPLING LOCATIONS

The sampling event, performed by Smith Gardner, Inc. (S+G) personnel, utilized the groundwater monitoring network that includes four monitoring wells. MW-1, MW-2, MW-4 and MW-5 which monitor the closed MSW landfill, four monitoring wells (CDMW-2, CDMW-3, CDMW-5 and CDMW-6) which monitor the C&D landfill, and two surface water locations (SW-1 and SW-2). MW-1 is used as the background well for the site due to its remote, up-gradient location. A trip blank was also analyzed for quality control.

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

¹ Sohl, Norman F. and Owens, James P. "Cretaceous Stratigraphy of the Carolina Coastal Plain". The Geology of the Carolinas. University of Tennessee Press, 1991. p191-220.

4.0 SAMPLING PROCEDURES

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (DENR, DWM) and the approved site Water Quality Monitoring Plan². Each well was gauged to determine groundwater depth and then purged three well volumes or until dry. Depth to groundwater is presented in **Table 1**.

Samples were collected by S+G personnel in laboratory prepared containers for the specified analytical procedures. Groundwater samples and quality control blanks, were properly preserved, placed on ice and transported to the laboratory facility within the specified hold times for each analysis.

5.0 FIELD & LABORATORY RESULTS

5.1 Field Results

Temperature, pH, turbidity and specific conductance were measured in the field at the time of sampling via direct read instruments. Turbidity exceeded the meter calibration for the samples from CDMW-3 and CDMW-5. Increased turbidity has been known to bias-high inorganic sample results. The field parameter results are summarized in **Table 2** and are generally consistent with historic sample results.

5.2 Laboratory Analysis

Ground and surface water samples were transported to Environment 1, Inc. (Greenville, NC) a North Carolina certified laboratory (Wastewater ID: 10) for RCRA 8 metals and Appendix I VOC analysis. C&D samples were also analyzed for Tetrahydrofuran. The laboratory report is presented as **Appendix B**.

5.3 Laboratory Results

Analytical results were compared to Rule 15A NCAC 2L.0200 (2L Standard), SWS established Groundwater Protection (GWP) Limits and Federal Maximum Contaminant Limits (MCL). Surface water results were compared with the NCAC 2B Standard for Class C waters (2B Standards).

Most constituents were either below the method detection limit (MDL) or were “J-values”. J-values are identified by the laboratory as “between the MDL and the SWSL”.

Historic graphs are provided for constituents detected over their 2L Standard this event in **Appendix C**.

² Groundwater Monitoring Plan for Construction and Demolition Expansion, Harnett County, Anderson Creek Landfill, prepared for C.T. Clayton, Sr., P.E., by GeoLogix, Revised September 2004.

5.3.1 Inorganic Constituents

Water quality samples were analyzed for 8 RCRA metals. Four metals were reported at concentrations above their 2L Standard this event.

- Barium (CDMW-3 and CDMW-5);
- Chromium (CDMW-3);
- Lead (CDMW-3 and CDMW-5); and
- Mercury (CDMW-3)

Inorganic detections are summarized in **Table 3**. It should be noted that both CDMW-3 and CDMW-5 exhibited excessive turbidity measurements during this event.

5.3.2 Organic Constituents

Analytical results from the water quality samples indicate benzene in MW-5 was the only organic constituent detected above its 2L Standard for this event.

Tetrahydrofuran was also detected in the sample collected from MW-5; however no standards have been established for this parameter.

Organic detections are provided on **Table 4**

5.3.3 Surface Water Results

No inorganic or organic constituents were detected above 2B Standards in surface water samples this event.

6.0 GROUNDWATER CHARACTERIZATION

A potentiometric surface map was prepared from groundwater data for this sampling event. The data indicates that groundwater is flowing generally southwest towards the wetlands and McLeod Creek. This is consistent with groundwater flow patterns previously reported for the site. The potentiometric surface map is included as **Figure 1**.

Groundwater flow velocities during the sampling event were calculated using the equation:

$$V = Ki/n$$

where: K = hydraulic conductivity

i = groundwater gradient

n = porosity

Calculated groundwater velocities were 0.066 cm/sec (MW-4) and 0.002 cm/sec (MW-5) for the MSW wells; C&D wells averaged 2.14×10^{-4} cm/sec. Flow velocities and calculated gradients are included in **Table 5**.

7.0 CONCLUSIONS

Turbidity measurements exceeded the meter range for CDMW-3 and CDMW-5, corresponding to the wells with detected inorganic parameters. Barium, chromium and lead are naturally occurring in the soils of North Carolina and, in conjunction with high sample turbidity can yield inorganic results that are “biased high”. The organic constituent benzene was detected in the sample from MW-5. These results are similar to previous sampling events.

The next groundwater monitoring event is scheduled for April 2016. A report with laboratory analysis will be submitted to NCDENR in accordance with 15A NCAC 13B .0544.

FIGURES

**October 2015 Groundwater Monitoring Report
Harnett County Anderson Creek Landfill
NC Solid Waste Permit No. 43-03**

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TABLES

**October 2015 Groundwater Monitoring Report
Harnett County Anderson Creek Landfill
Solid Waste Permit No. 43-03**

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Monitoring Location	Well Installation Date	Latitude	Longitude	Well Diameter (inches)	Total Well Depth (ft bgs)	Ground Surface Elevation (ft amsl)	TOC Elevation (ft)	Depth to Water (ft. bgs)	Water Table Elevation (ft. amsl)	Screen Interval (ft bgs)	Screen Geology
MSW											
MW-1	NA	35.29132	78.99564	2	21.19 ⁶	313.08	NA	14.05	-	NA	NA
MW-2	NA	35.29003	79.00122	2	25.95 ⁶	236.49	NA	11.61	-	NA	NA
MW-4	4/2/1996	35.29140	78.99972	2	17	253.02	254.85	6.57	248.28	NA	silty sandy clay
MW-5	4/2/1996	35.29029	78.99948	2	18	250.00	251.77	8.52	243.25	NA	NA
C&D											
CDMW-2	1/28/1997	35.29213	78.99805	2	40	274.66	276.71	4.41	272.30	25 - 40	sandy clay
CDMW-3	1/28/1997	35.29209	78.99905	2	43	266.09	268.17	11.36	256.81	28 - 43	sandy clay
CDMW-5	NA	35.29278	78.99943	2	29.74 ⁶	271.35	273.10	1.31	271.79	NA	NA
CDMW-6	NA	35.29496	78.99665	2	42.75 ⁶	336.00	338.69	34.27	304.42	NA	NA

NOTE:

- 1.) Table data for MSW wells MW-4 and MW-5 from Appendix II, Table 1- Monitoring Well Static Water Elevations, Hydraulic Conductivity and Effective Porosity, Geologic and Hydrologic C&D Phase 3 landfill expansion, prepared by C.T. Clayton, Sr., P.E. Inc., 3/20/2013
- 2.) Groundsurface elevations from 7/16/2013 aerial survey by Maping Resource Group
- 3.) TOC Elevation for C&D wells from Table 2 - Historical Groundwater Elevation Summary (2004-2009), Geologic and Hydrologic Report for C&D Phase 3 Landfill Expansion, prepared by C.T. Clayton, Sr., P.E., Inc. 3/20/2013.
- 4.) Depth to Water measured by S+G personnel
- 5.) MW-1 is not used in the groundwater characterization calculations due to its remote location from the landfill
- 6.) Depth to well bottom measured by S+G personnel 10/26/2015.
- 7.) NA - Well information was unable to be located
- 8.) ft amsl = feet above mean sea level
- 9.) ft bgs = feet below ground surface
- 10.) Available well construction information from well logs (provided in Appendix A)

Table 2
 Field Parameters
 Harnett County Anderson Creek Landfill
 October 26, 2015

Monitoring Location	pH (std units)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
MSW				
MW-1	5.85	110	20.9	17.7
MW-2	6.73	120	18.4	9.44
MW-4	6.28	120	19.4	18.5
MW-5	6.39	160	20.6	10.2
C&D				
CDMW-2	5.14	80	17	70.6
CDMW-3	5.75	80	17.1	*
CDMW-5	4.94	100	18.3	*
CDMW-6	4.84	50	18.5	31.1
SW-1	5.43	40	16.7	59.2
SW-2	5.89	40	16.8	12.1

NOTES:
 Field data measured by S+G personnel
 * Turbidity exceeded meter calibration

Table 3
 Detected Inorganic Constituents
 Harnett County Anderson Creek Landfill
 October 26, 2015

Monitoring Location	MDL	SWSL	2L Standard	MCL	2B Standard	MW-1	MW-2	MW-4	MW-5	CDMW-2	CDMW-3	CDMW-5	CDMW-6	SW-1	SW-2
Arsenic	0.14	10	10	10	10	3.7 J	0.46 J	1.6 J	3.4 J	0.38 J	3.1 J	1.4 J	0.91 J	<0.14	<0.14
Barium	0.01	100	700	2000	2000000	7 J	369	55.4	150	57.5 J	754	946	20.9 J	10.5 J	10.1 J
Cadmium	0.01	1	2	5	2	0.13 J	0.05 J	0.03 J	<0.01	0.02 J	0.75 J	0.10 J	0.11 J	<0.01	<0.01
Chromium, total	0.12	10	10	100	50	0.2 J	0.69 J	<0.12	1.7 J	0.2 J	97	9.2 J	4.1 J	<0.12	<0.12
Lead	0.03	10	15	15	25	0.41 J	2.1 J	0.17 J	2.2 J	1.7 J	95	17	2.9 J	0.18 J	0.22 J
Mercury	0.05	0	1	2	0.012	0.08 J	<0.05	<0.05	<0.05	<0.05	1.1	0.07 J	<0.05	<0.05	0.08 J
Selenium	0.22	10	20	50	5	<0.22	1.1 J	0.25 J	7.4 J	<0.22	2.4 J	0.31 J	<0.22	<0.22	<0.22
Silver	0.01	10	20	100 ²	0.06	0.04 J	0.02 J	0.02 J	0.05 J	0.02 J	0.29 J	0.04 J	0.07 J	<0.01	<0.01

NOTE:

- MDL - Method Detection Limit
- SWSL - Solid Waste Section Quantitation Limits
- 2L - Groundwater Standards (15A NCAC 2L 0200)
- MCL - EPA Maximum Contaminant Level
- 2 - National Secondary Drinking Water Regulation
- 2B - NCAC 2B Standard for Class C waters
- Bold** - Detection above 2L Standard
- J - Laboratory defined detection below the Reporting Limit, therefore result is an estimated concentration.
- <MDL - Not detected at or above the MDL.

Table units are presented in ug/l.

Lab data analysis by Environment 1, Incorporated. Report dated 12/01/2015, Client ID 6041

Table 4
 Detected Organic Constituents
 Harentt County Anderson Creek Landfill
 October 26, 2015

Monitoring Location	MDL	SWSL	2L Standard	MCL	MW-2	MW-4	MW-5
1,1-Dichloroethane	0.20	5	6	NE	<0.20	<0.20	0.6 J
1,4-Dichlorobenzene	0.39	1	6	75	<0.39	<0.39	0.5 J
Acetone	9.06	100	6000	NE	<9.06	<9.06	11.30 J
Benzene	0.24	1	1	5	<0.24	<0.24	1.3
Chlorobenzene	0.30	3	50	100	<0.30	<0.30	1.2 J
Tetrahydrofuran	0.390	NE	NE	NE	0.5 J	0.9 J	2.0

NOTE:

- MDL - Method Detection Limit
- SWSL - Solid Waste Section Quantitation Limits
- 2L - Groundwater Standards (15A NCAC 2L 0200)
- MCL - Maximum Contaminant Level
- <RL - Not detected at or above Reporting Limit used by Prism Laboratories, Inc.
- Bold** - Detection above 2L Standard
- NE - Not Established

Table units are presented in ug/l.

Lab data analysis by Environment 1, Incorporated. Report dated 12/01/2015, Client ID 6041

Table 5
 Velocity and Conductivity Calculations
 Harnett County Anderson Creek Landfill
 October 26, 2015

Monitoring Location	Water Table Elevation (ft. amsl)	Hydraulic Conductivity (cm/sec)	Approximate Effective Porosity	Hydraulic Gradient (ft/ft)	Groundwater Velocity (cm/sec)
MSW					
MW-4	248.28	0.48	0.3	0.0410	0.066
MW-5	243.25	0.036	0.425	0.0221	0.002
C&D					
CDMW-2	272.30	2.36E-04	0.07	0.0511	1.72E-04
CDMW-3	256.81	2.36E-04	0.07	0.0966	3.26E-04
CDMW-5	271.79	2.36E-04	0.07	0.0663	2.24E-04
CDMW-6	304.42	2.36E-04	0.07	0.0398	1.34E-04

NOTE:

- 1.) Velocity Calculated from $V=K*i/n$
 V = velocity
 K = Hydraulic Conductivity
 i = Gradient
 n = Porosity
- 2.) Hydraulic Gradient Measured from October 2015 Potentiometric Surface
- 3.) Table data for MSW wells MW-4 and MW-5 from Appendix II, Table 1- Monitoring Well Static Water Elevations, Hydraulic Conductivity and Effective Porosity, Geologic and Hydrologic C&D Phase 3 landfill expansion, prepared by C.T. Clayton, Sr., P.E. Inc., 3/20/2013
- 4.) TOC Elevation for C&D wells from Table 2 - Historical Groundwater Elevation Summary (2004-2009), Geologic and Hydrologic Report for C&D Phase 3 Landfill Expansion, prepared by C.T. Clayton, Sr., P.E., Inc. 3/20/2013.
- 5.) Hydraulic Conductivity for C&D locations estimated from Table 3, Aquifer Testing Summary, Anderson Creek Phase 3, Geologic and Hydrologic Report, prepared by C.T. Clayton Sr, P.E., Inc.
- 6.) Porosity for C&D locations from Freeze and Cherry 1979, average specific yield

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Appendix A

Well Logs

**October 2015 Groundwater Monitoring Report
Harnett County Anderson Creek Landfill
Solid Waste Permit No. 43-03**

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WELL CONSTRUCTION RECORD
CDMW-1

Lat. _____ Long. _____ PC _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR Graham & Currie Well Drilling Co.
 DRILLER REGISTRATION NUMBER 537

STATE WELL CONSTRUCTION
 PERMIT NUMBER n/a

1. Well Location: (show sketch of the location below (on right))
 Nearest Town Spring Lake, North Carolina
S.R. 1116 - Doc's Road
 (Road, Community, or Subdivision and Lot Number)

County Harnett

2. Owner Harnett County
 Address Post Office Box 759, Lillington, North Carolina 27546
 (Street or Route #) (City/Town) (State) (Zip Code)

Depth From To	Drilling Log Formation Description
0 - 4'	Tan clayey <u>SAND</u>
4' - 12'	Tan moist sandy <u>CLAY</u>
12' - 17'	Tan moist clayey <u>SAND</u>
17' - 40'	Dull gray to brown <u>CLAY</u>
40 - 63'	Buish-gray to gray sandy micaceous <u>CLAY</u>

If Additional Space Is Needed Use Back Of Form

3. Date Drilled 01/29/97 Use of Well Monitoring
 4. Total Depth 63' Cuttings Collected ()Yes ()No
 5. Does Well Replace Existing Well? ()Yes ()No
 6. Static Water Level: 64.52 Feet ()Above ()Below Top of Casing
 Top of Casing is 2.5 Feet Above Land Surface.
 7. Yield (gpm) n/a Method of Test _____
 8. Water Zones (depth) n/a
 9. Disinfection → Type n/a Amount _____

10. CASING			
Depth	Diameter	Wall Thickness or weight/feet	Material
48' - +2.5'	2-inch	Sch.40	PVC
11. GROUT			
Depth	Material	Method	
44' - 0'	Neat Cement	Tremie	
12. SCREEN			
Depth	Diameter	Slot Size	Material
63' - 48'	2-inch	0.010	PVC
13. GRAVEL PACK			
Depth	Size	Material	
63' - 46'	Medium-grained	Torpedo Sand	

LOCATION SKETCH

Show direction and distance from at least "2" Two State Roads, or Other Map Reference Points

Please See Attached Maps

14. REMARKS A bentonite seal was placed in this well from 44' to 46'

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

R. Dennis Holdrege 6/5/97
 (Signature of Contractor or Agent) (Date)

WELL CONSTRUCTION RECORD
CDMW-2

Lat. _____ Long. _____ PC _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR Graham & Currie Well Drilling Co.
 DRILLER REGISTRATION NUMBER 537

STATE WELL CONSTRUCTION PERMIT NUMBER n/a

1. Well Location: (show sketch of the location below (on right))
 Nearest Town Spring Lake, North Carolina

County Harnett

S.R. 1116 - Doc's Road
 (Road, Community, or Subdivision and Lot Number)

2. Owner Harnett County

Address Post Office Box 759, Lillington, North Carolina 27546
 (Street or Route #) (City/Town) (State) (Zip Code)

3. Date Drilled 01/28/97 Use of Well Monitoring

4. Total Depth 40' Cuttings Collected ()Yes ()No

5. Does Well Replace Existing Well? ()Yes ()No

6. Static Water Level: 32.78 Feet ()Above ()Below Top of Casing
 Top of Casing is 2.5 Feet Above Land Surface.

7. Yield (gpm) n/a Method of Test _____

8. Water Zones (depth) n/a

9. Contamination → Type n/a Amount _____

Depth From	To	Drilling Log Formation Description
0 - 1.5'		Tan SAND
1.5' - 12.0'		Dark gray to black clayey loamy SAND
12.0' - 19.0'		Light gray wet clayey SAND
19.0' - 40.0'		Tan to bluish gray sandy CLAY

If Additional Space Is Needed Use Back Of Form

10. CASING

Depth	Diameter	Wall Thickness or weight/feet	Material
25' - +2.5'	2-inch	Sch.40	PVC

11. GROUT

Depth	Material	Method
21' - 0'	Neat Cement	Tremie

12. SCREEN

Depth	Diameter	Slot Size	Material
40' - 25'	2-inch	0.010	PVC

13. GRAVEL PACK

Depth	Size	Material
40' - 23'	Medium-grained	Torpedo Sand

LOCATION SKETCH

Show direction and distance from at least "2" Two State Roads, or Other Map Reference Points

Please See Attached Maps

REMARKS A bentonite seal was placed in this well from 21' to 23'

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

SMIT ORIGINAL TO DIVISION OF ENVIRONMENTAL MANAGEMENT
 3 A COPY TO THE WELL OWNER

R. Dennis Holder
 (Signature of Contractor or Agent)

5/5/97
 (Date)

WELL CONSTRUCTION RECORD
CDMW-3

Lat. _____ Long. _____ PC _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

DRILLER CONTRACTOR Graham & Currie Well Drilling Co.

DRILLER REGISTRATION NUMBER 537

STATE WELL CONSTRUCTION
 PERMIT NUMBER n/a

1. Well Location: (show sketch of the location below (on right))

Nearest Town Spring Lake, North Carolina

County Harnett

S.R. 1116 - Doc's Road
 (Road, Community, or Subdivision and Lot Number)

2. Owner Harnett County

Address Post Office Box 759, Lillington, North Carolina 27546
 (Street or Route #) (City/Town) (State) (Zip Code)

3. Date Drilled 01/28/97 Use of Well Monitoring

4. Total Depth 43' Cuttings Collected () Yes () No

5. Does Well Replace Existing Well? () Yes () No

6. Static Water Level: 38.73 Feet () Above () Below Top of Casing
 Top of Casing is 2.0 Feet Above Land Surface.

7. Yield (gpm) n/a Method of Test _____

8. Water Zones (depth) n/a

9. Location → Type n/a Amount _____

Depth From	To	Drilling Log Formation Description
0 - 1.0'		Tan <u>SAND</u>
1.0' - 5.0'		Dark gray to black loamy <u>SAND</u>
5.0' - 10.0'		Tan to brown sandy <u>CLAY</u>
10.0' - 13.0'		Wet tan clayey <u>SAND</u>
13.0' - 16.0'		Tan moist sandy <u>CLAY</u>
16.0' - 43.0'		Light gray to medium gray sandy <u>CLAY</u>

If Additional Space Is Needed Use Back Of Form

10. CASING

Depth	Diameter	Wall Thickness or weight/feet	Material
28' - +2.0'	2-inch	Sch.40	PVC

11. GROUT

Depth	Material	Method
24' - 0'	Neat Cement	Tremie

12. SCREEN

Depth	Diameter	Slot Size	Material
43' - 28'	2-inch	0.010	FVC

13. GRAVEL PACK

Depth	Size	Material
43' - 26'	Medium-grained	Torpedo Sand

LOCATION SKETCH

Show direction and distance from at least "2" Two State Roads, or Other Map Reference Points

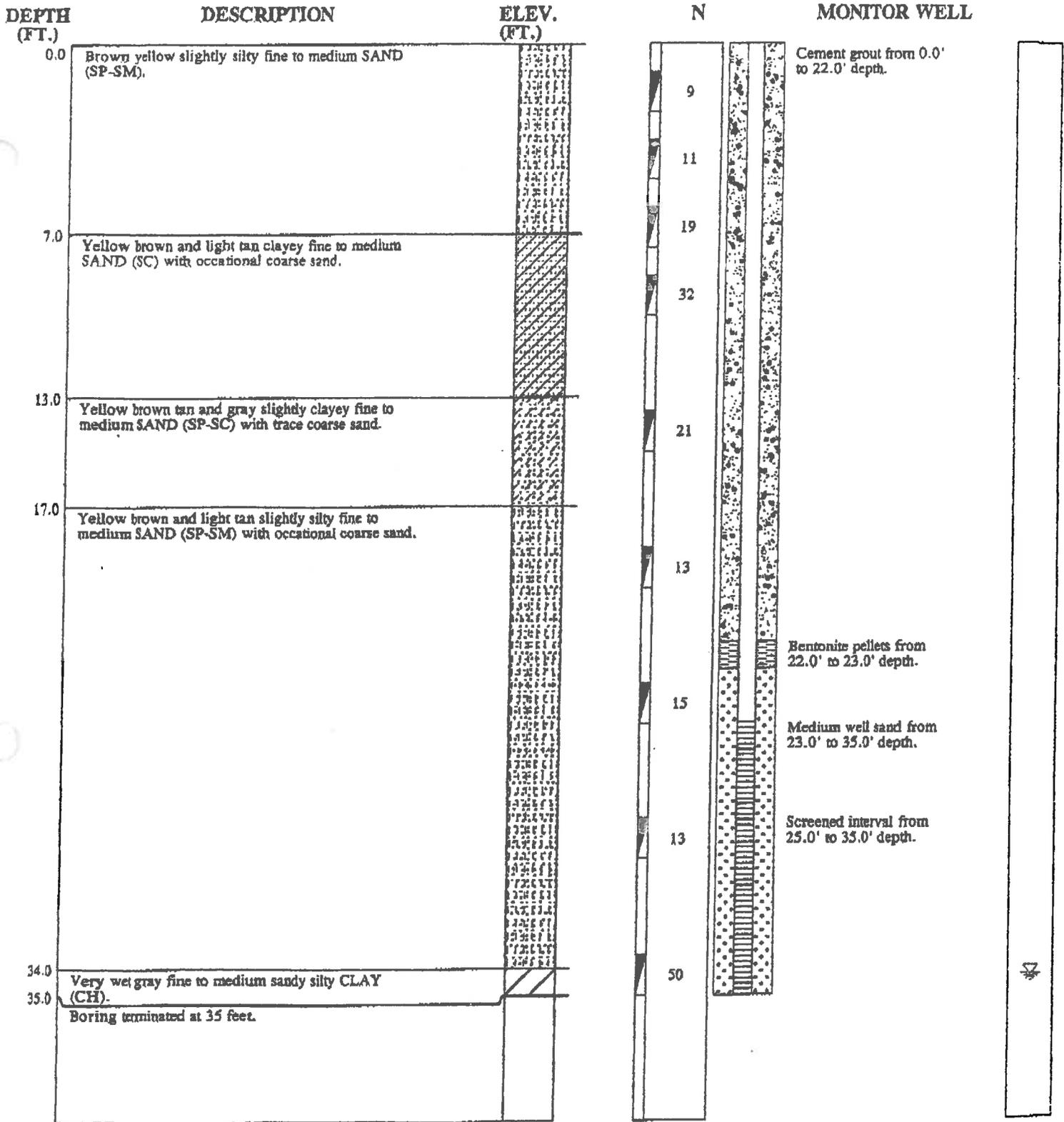
Please See Attached Maps

REMARKS A bentonite seal was placed in this well from 24' to 26'

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

SMIT ORIGINAL TO DIVISION OF ENVIRONMENTAL MANAGEMENT
 D A COPY TO THE WELL OWNER

R. Dennis Holder 5/5/97
 (Signature of Contractor or Agent) (Date)



Classified By: BOB NEEL, TITAN
 Driller: CAROLINA DRILLING
 Drill Rig: ROVER
 Boring Type: HSA

GROUNDWATER READINGS

DATE	TIME	DEPTH	ELEVATION	STABILIZATION TIME
8/22/02	-	34.3'	-	71 DAYS

MONITOR WELL INSTALLATION	
WELL NUMBER	CDMW 4-S
DATE DRILLED	4/12/02
PROJECT NUMBER	20422-80
PROJECT	ANDERSON CREEK LANDFILL
PAGE 1 OF 1	
TITAN ATLANTIC GROUP	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

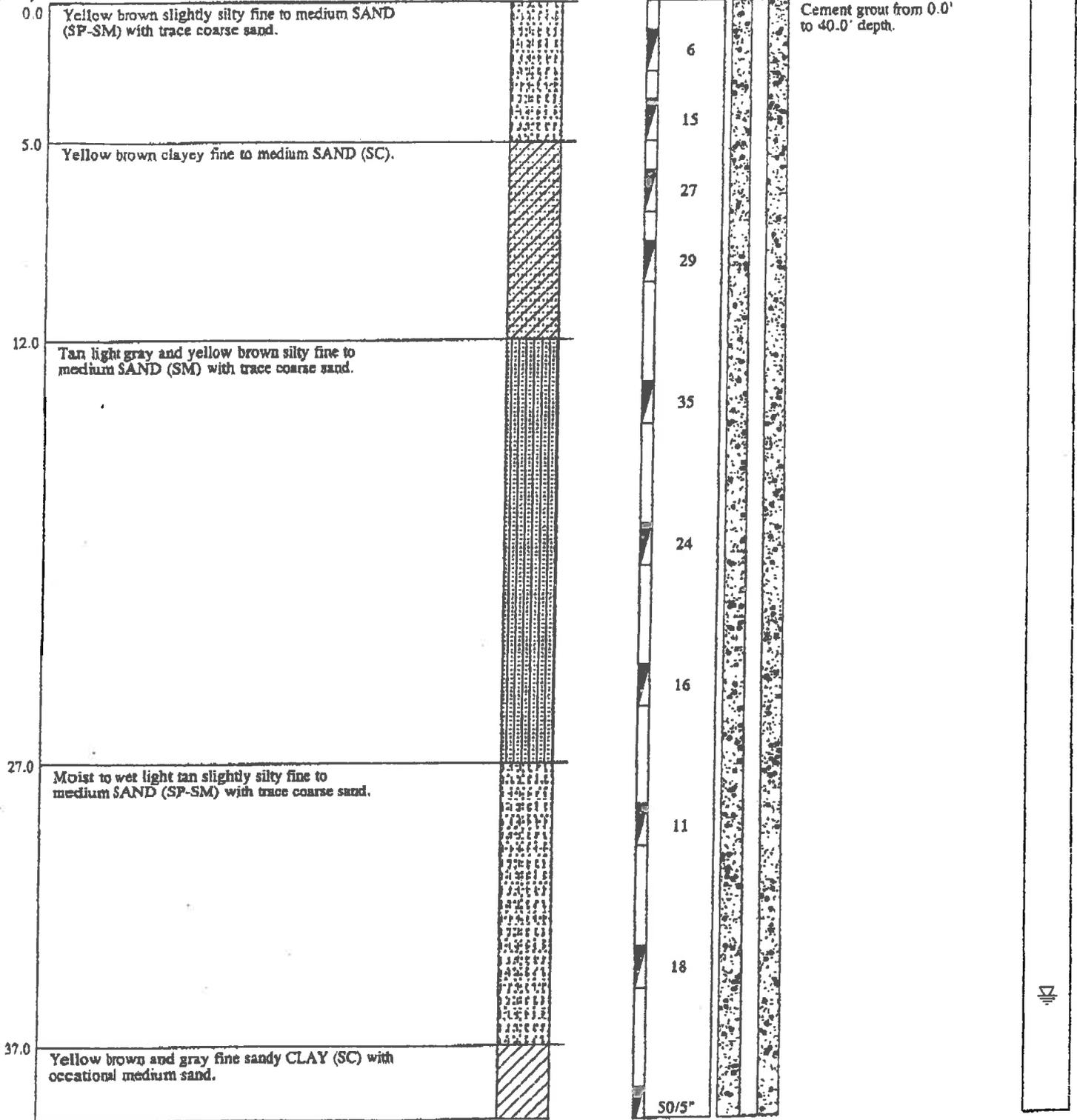
DEPTH
(FT.)

DESCRIPTION

ELEV.
(FT.)

N

MONITOR WELL



Classified By: BOB NEEL, TITAN
 Driller: CAROLINA DRILLING
 Drill Rig: ROVER
 Boring Type: HSA

GROUNDWATER READINGS

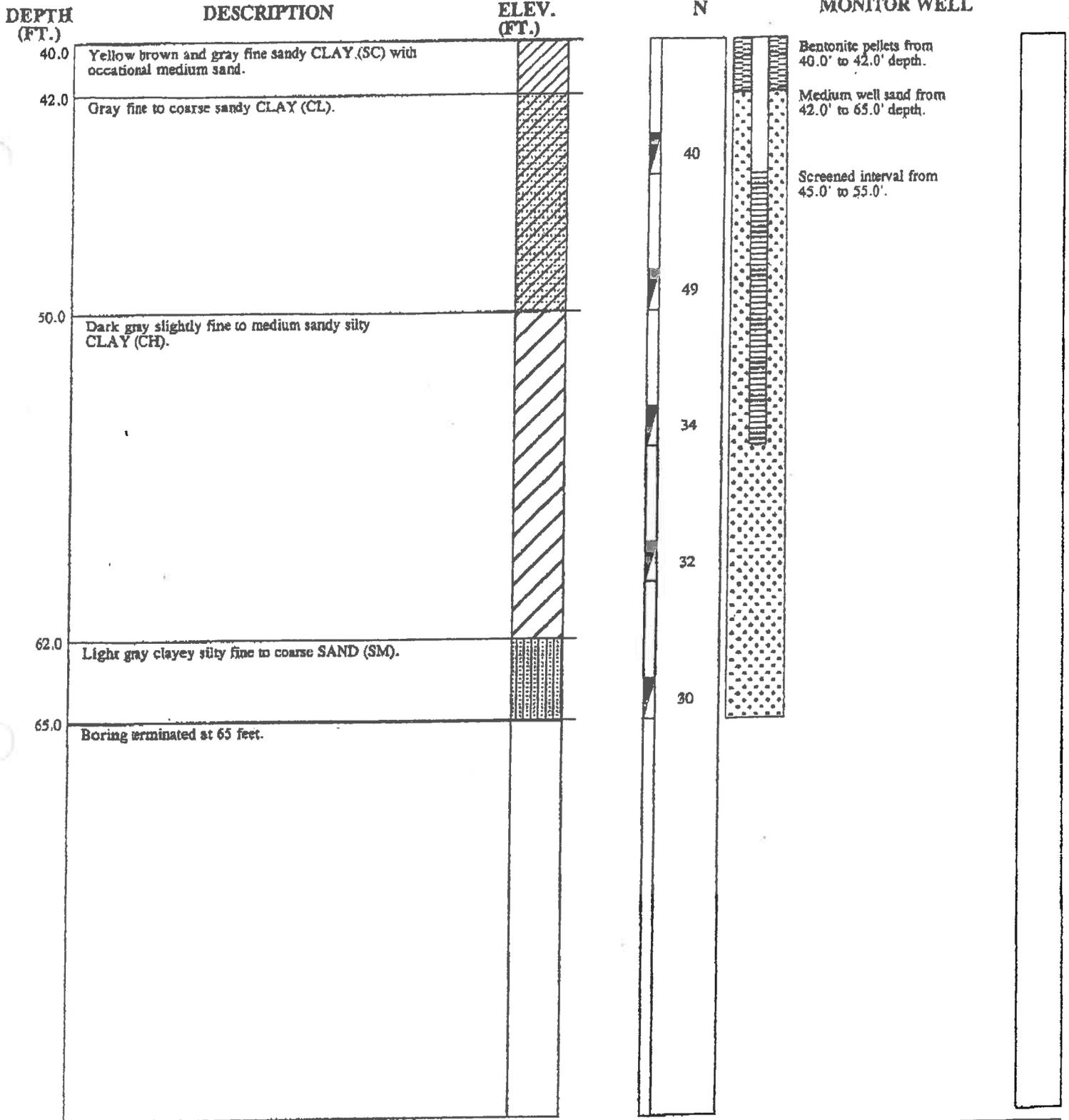
DATE	TIME	DEPTH	ELEVATION	STABILIZATION TIME
6/22/02	-	35.5'	-	72 DAYS

MONITOR WELL INSTALLATION

WELL NUMBER CDMW 4-D
 DATE DRILLED 4/11/02
 PROJECT NUMBER 20422-80
 PROJECT ANDERSON CREEK LANDFILL
 PAGE 1 OF 2

TITAN ATLANTIC GROUP

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS



Classified By: BOB NEEL, TITAN
 Driller: CAROLINA DRILLING
 Drill Rig: ROVER
 Boring Type: HSA

GROUNDWATER READINGS				
DATE	TIME	DEPTH	ELEVATION	STABILIZATION TIME
8/22/02	-	39.5'	-	72 DAYS

MONITOR WELL INSTALLATION	
WELL NUMBER	CDMW 4-D
DATE DRILLED	4/1 1/02
PROJECT NUMBER	20422-80
PROJECT	ANDERSON CREEK LANDFILL
PAGE 1 OF 1	
TITAN ATLANTIC GROUP	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS



**PATTERSON
EXPLORATION SERVICES**

P.O. BOX 3008 - SANFORD, N.C. 27331-3008 - (919) 774-3770
FAX: (919) 774-3510

TEST BORING FIELD REPORT

Job Name: Anderson Creek Landfill	Job Number: 030896	Job Location: S.R. 1116, Harnett County
Field Supervisor: Dennis Holder	Date Drilled: 04/02/96	Boring or Well Number: MW-4

SPT	1st 6	2nd 6	3rd 6	4th 6	BORING LOG	
					Depth	Formation Description
0' - 2'	1	1	1	2	0 - 1' 1' - 7.5' 7.5' - 9' 9' - 11.5' 11.5' - 17'	Brown to tan medium-grained <u>SAND</u> Brown to gray silty clayey <u>SAND</u> Tan coarse-grained wet <u>SAND</u> Gray silty clayey <u>SAND</u> Grayish blue silty sandy <u>CLAY</u>
2' - 4'	1	1	2	4		
4' - 6'	5	5	4	4		
6' - 8'	2	3	4	7		
8' - 10'	1	2	2	1		
10' - 12'	1	1	1	5		
12' - 14'	7	14	18	20		
14' - 16'	3	5	14	16		



**PATTERSON
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TEST BORING FIELD REPORT

Job Name: Anderson Creek Landfill	Job Number: 030896	Job Location: S.R. 1116, Harnett County
Field Supervisor: Dennis Holder	Date Drilled: 04/02/96	Boring or Well Number: MW-5

SPT	1st 6	2nd 6	3rd 6	4th 6	BORING LOG	
					Depth	Formation Description
0' - 2'	1	2	4	5	0 - 7' 7' - 9' 9' - 9.5' 9.5' - 18'	Brown to gray silty clayey <u>SAND</u> Grayish blue silty sandy <u>CLAY</u> Gray moist <u>SAND</u> Grayish to brown silty <u>CLAY</u>
2' - 4'	1	2	4	5		
4' - 6'	1	3	5	6		
6' - 8'	1	2	4	6		
8' - 10'	2	2	2	3		
10' - 12'	1	2	6	8		
12' - 14'	3	6	9	10		
14' - 16'	2	4	7	10		
16' - 18'	7	12	16	19		

Appendix B

Laboratory Analytical Report

**October 2015 Groundwater Monitoring Report
Harnett County Anderson Creek Landfill
NC Solid Waste Permit No. 43-03**

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Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

ID#: 6041

HARNETT CO. LANDFILL (ANDERSON CK.)
ENGINEERING FACILITIES
C/O MS. AMANDA BADER
P.O. BOX 2773
LILLINGTON, NC 27546

DATE COLLECTED: 10/26/15
DATE REPORTED : 12/01/15

REVIEWED BY: 

PARAMETERS	MDL	SWSL	MW-1	MW-2	MW-4	MW-5	SW-1	Analysis		Method
								Date	Analyst	Code
Arsenic, ug/l	0.14	10.0	3.7 J	0.46 J	1.6 J	3.4 J	---	U	11/12/15	LFJ EPA200.8
Barium, ug/l	0.01	100.0	7.0 J	369	55.4 J	150	10.5 J	---	11/12/15	LFJ EPA200.8
Cadmium, ug/l	0.01	1.0	0.13 J	0.05 J	0.03 J	---	---	U	11/12/15	LFJ EPA200.8
Total Chromium, ug/l	0.12	10.0	0.20 J	0.69 J	---	1.7 J	---	U	11/12/15	LFJ EPA200.8
Lead, ug/l	0.03	10.0	0.41 J	2.1 J	0.17 J	2.2 J	0.18 J	---	11/12/15	LFJ EPA200.8
Mercury, ug/l	0.05	0.20	0.08 J	---	---	---	---	U	10/30/15	JMN 245.1 R3-9
Selenium, ug/l	0.22	10.0	---	1.1 J	0.25 J	7.4 J	---	U	11/12/15	LFJ EPA200.8
Silver, ug/l	0.01	10.0	0.04 J	0.02 J	0.02 J	0.05 J	---	U	11/12/15	LFJ EPA200.8

Environment 1, Incorporated

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Wastewater ID: 10

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LILLINGTON, NC 27546

DATE COLLECTED: 10/26/15
DATE REPORTED : 12/01/15

REVIEWED BY: 

PARAMETERS	MDL	SWSL	SW-2	CDMW-2	CDMW-3	CDMW-5	CDMW-6	Analysis		Method
								Date	Analyst	Code
Arsenic, ug/l	0.14	10.0	--- U	0.38 J	3.1 J	1.4 J	0.91 J	11/12/15	LFJ	EPA200.8
Barium, ug/l	0.01	100.0	10.1 J	57.5 J	754	946	20.9 J	11/12/15	LFJ	EPA200.8
Cadmium, ug/l	0.01	1.0	--- U	0.02 J	0.75 J	0.10 J	0.11 J	11/12/15	LFJ	EPA200.8
Total Chromium, ug/l	0.12	10.0	--- U	0.20 J	97	9.2 J	4.1 J	11/12/15	LFJ	EPA200.8
Lead, ug/l	0.03	10.0	0.22 J	1.7 J	95	17	2.9 J	11/12/15	LFJ	EPA200.8
Mercury, ug/l	0.05	0.20	0.08 J	--- U		0.07 J		10/30/15	JMN	245.1 R3-9
Mercury, ug/l	0.05	0.20			1.1		--- U	11/12/15	JMN	245.1 R3-9
Selenium, ug/l	0.22	10.0	--- U	--- U	2.4 J	0.31 J	--- U	11/12/15	LFJ	EPA200.8
Silver, ug/l	0.01	10.0	--- U	0.02 J	0.29 J	0.04 J	0.07 J	11/12/15	LFJ	EPA200.8

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

Environment 1, Incorporated

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C/O MS. AMANDA BADER
P.O. BOX 2773
LILLINGTON, NC 27546

DATE COLLECTED: 10/26/15
DATE REPORTED : 12/01/15

REVIEWED BY: 

PARAMETERS	MDL	Equipment		Trip Blank	Analysis		Method Code
		SWSL	Blank		Date	Analyst	
Arsenic, ug/l	0.01	10.0	Missing				
Barium, ug/l	0.01	10.0	Missing				
Cadmium, ug/l	0.01	10.0	Missing				
Total Chromium, ug/l	0.01	10.0	Missing				
Lead, ug/l	0.01	10.0	Missing				
Mercury, ug/l	0.01	10.0	Missing				
Selenium, ug/l	0.01	10.0	Missing				
Silver, ug/l	0.01	10.0	Missing				

Environment 1, Incorporated

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DATE ANALYZED: 11/05/15
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Page: 1

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

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

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

Environment 1, Incorporated

Drinking Water ID: 37715

Wastewater ID: 10

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

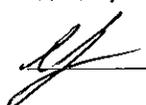
PHONE (252) 756-6208
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CLIENT: HARNETT CO. LANDFILL (ANDERSON CK.)
ENGINEERING FACILITIES
C/O MS. AMANDA BADER
P.O. BOX 2773
LILLINGTON, NC 27546

CLIENT ID: 6041

ANALYST: MAO
DATE COLLECTED: 10/26/15
DATE ANALYZED: 11/05/15
DATE REPORTED: 12/01/15

Page: 1

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

PARAMETERS, ug/l	MDL	SWSL	MW-1	MW-2	MW-4	MW-5	CDMW-2		
1. Chloromethane	0.77	1.0	---	U	---	U	---	U	
2. Vinyl Chloride	0.63	1.0	---	U	---	U	---	U	
3. Bromomethane	0.67	10.0	---	U	---	U	---	U	
4. Chloroethane	0.48	10.0	---	U	---	U	---	U	
5. Trichlorofluoromethane	0.24	1.0	---	U	---	U	---	U	
6. 1,1-Dichloroethene	0.17	5.0	---	U	---	U	---	U	
7. Acetone	9.06	100.0	---	U	---	U	11.30 J	---	U
8. Iodomethane	0.26	10.0	---	U	---	U	---	U	
9. Carbon Disulfide	0.23	100.0	---	U	---	U	---	U	
10. Methylene Chloride	0.64	1.0	---	U	---	U	---	U	
11. trans-1,2-Dichloroethene	0.23	5.0	---	U	---	U	---	U	
12. 1,1-Dichloroethane	0.20	5.0	---	U	---	U	0.60 J	---	U
13. Vinyl Acetate	0.20	50.0	---	U	---	U	---	U	
14. Cis-1,2-Dichloroethene	0.25	5.0	---	U	---	U	---	U	
15. 2-Butanone	2.21	100.0	---	U	---	U	---	U	
16. Bromochloromethane	0.27	3.0	---	U	---	U	---	U	
17. Chloroform	0.25	5.0	---	U	---	U	---	U	
18. 1,1,1-Trichloroethane	0.19	1.0	---	U	---	U	---	U	
19. Carbon Tetrachloride	0.22	1.0	---	U	---	U	---	U	
20. Benzene	0.24	1.0	---	U	---	U	1.30	---	U
21. 1,2-Dichloroethane	0.27	1.0	---	U	---	U	---	U	
22. Trichloroethene	0.23	1.0	---	U	---	U	---	U	
23. 1,2-Dichloropropane	0.21	1.0	---	U	---	U	---	U	
24. Bromodichloromethane	0.21	1.0	---	U	---	U	---	U	
25. Cis-1,3-Dichloropropene	0.24	1.0	---	U	---	U	---	U	
26. 4-Methyl-2-Pentanone	1.19	100.0	---	U	---	U	---	U	
27. Toluene	0.23	1.0	---	U	---	U	---	U	
28. trans-1,3-Dichloropropene	0.28	1.0	---	U	---	U	---	U	
29. 1,1,2-Trichloroethane	0.25	1.0	---	U	---	U	---	U	
30. Tetrachloroethene	0.17	1.0	---	U	---	U	---	U	
31. 2-Hexanone	1.57	50.0	---	U	---	U	---	U	
32. Dibromochloromethane	0.24	3.0	---	U	---	U	---	U	
33. 1,2-Dibromoethane	0.26	1.0	---	U	---	U	---	U	
34. Chlorobenzene	0.30	3.0	---	U	---	U	1.20 J	---	U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	---	U	---	U	---	U	
36. Ethylbenzene	0.21	1.0	---	U	---	U	---	U	
37. Xylenes	0.68	5.0	---	U	---	U	---	U	
38. Dibromomethane	0.28	10.0	---	U	---	U	---	U	
39. Styrene	0.19	1.0	---	U	---	U	---	U	
40. Bromoform	0.20	3.0	---	U	---	U	---	U	
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	---	U	---	U	---	U	
42. 1,2,3-Trichloropropane	0.43	1.0	---	U	---	U	---	U	
43. 1,4-Dichlorobenzene	0.39	1.0	---	U	---	U	0.50 J	---	U
44. 1,2-Dichlorobenzene	0.32	5.0	---	U	---	U	---	U	
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	---	U	---	U	---	U	
46. Acrylonitrile	2.72	200.0	---	U	---	U	---	U	
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	---	U	---	U	---	U	
48. Tetrahydrofuran	0.39	1.0	---	U	0.50 J	0.90 J	2.00	---	U

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

Environment 1, Incorporated

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Wastewater ID: 10

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GREENVILLE, N.C. 27835-7085

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CLIENT ID: 6041
ANALYST: MAO
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Page: 2

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B R1(96)

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

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

CHAIN OF CUSTODY RECORD

Environment 1, Inc.
 P.O. Box 7085, 114 Oakmont Dr.
 Greenville, NC 27858
 environment1inc.com
 Phone (252) 756-6208 • Fax (252) 756-0633

CLIENT: 6041 Week: 43

HARNETT CO. LANDFILL (ANDERSON CK.)
 ENGINEERING FACILITIES
 C/O MS. AMANDA BADER
 P.O. BOX 2775
 LILLINGTON NC 27546

(910) 814-6156

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Metals			COMMENTS	PARAMETERS/TESTS
	DATE	TIME				A	P	G		
Trip Blank					2					DISINFECTED: <input type="checkbox"/> CHLORINE, <input type="checkbox"/> UV, <input type="checkbox"/> NONE CHLORINE NEUTRALIZED AT COLLECTION: <input type="checkbox"/> pH CHECK (LAB): <input type="checkbox"/> CONTAINER TYPE: PG CHEMICAL PRESERVATION: <input type="checkbox"/> A-NONE, <input type="checkbox"/> D-NAOH, <input type="checkbox"/> B-HNO ₃ , <input type="checkbox"/> E-HCL, <input type="checkbox"/> C-H ₂ SO ₄ , <input type="checkbox"/> F-ZINC ACETATE/NAOH, <input type="checkbox"/> G-NA THIOSULFATE CLASSIFICATION: <input type="checkbox"/> WASTEWATER (NPDES) <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> DWO/GW <input checked="" type="checkbox"/> SOLID WASTE SECTION CHAIN OF CUSTODY (SEAL) MAINTAINED DURING SHIPMENT/DELIVERY SAMPLES COLLECTED BY: <u>YN</u> SAMPLES RECEIVED IN LAB AT <u>1.0</u> °C
REINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS: REINQUISHED BY (SIG.) <u>[Signature]</u> DATE/TIME <u>10/21/15 15:36</u> RECEIVED BY (SIG.) <u>[Signature]</u> DATE/TIME <u>10/25/15 8:00</u>				

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

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested. No 304975

CHAIN OF CUSTODY RECORD

Environment 1, Inc.
 P.O. Box 7085, 114 Oakmount Dr.
 Greenville, NC 27858
 environment1inc.com
 Phone (252) 756-6208 • Fax (252) 756-0633

CLIENT: 6041 Week: 43

HARNETT CO. LANDFILL (ANDERSON CK.)
 ENGINEERING FACILITIES
 C/O MS. AMANDA BADER
 P.O. BOX 2773
 LILLINGTON NC 27546

(910) 814-6156

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION			Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2	CHLORINE NEUTRALIZED AT COLLECTION
	DATE	TIME				<input type="checkbox"/> CHLORINE	<input type="checkbox"/> UV	<input type="checkbox"/> NONE					
MW-1	10/26/15	15:20			4								
MW-2	10/26/15	14:58			3								
MW-4	10/26/15	14:26			3								
MW-5	10/26/15	14:33			3								
MW-1	10/26/15	14:14			3								
SW-2	10/26/15	14:50			3								
CDMW-2	10/26/15	13:41			3								
CDMW-3	10/26/15	13:50			3								
CDMW-5	10/26/15	13:58			3								
CDMW-6	10/26/15	13:32			3								
Equipment Blank	10/26/15	13:35			3								
RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36	<i>[Signature]</i>	10/26/15 15:36
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>	
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>		<i>[Signature]</i>	

COMMENTS: NO ER metals returned empty

PARAMETERS/TESTS:
 A - NONE D - NAOH
 B - HNO₃ E - HCL
 C - H₂SO₄ F - ZINC ACETATE/NAOH
 G - NA THIOSULFATE

CLASSIFICATION:
 WASTEWATER (NPDES)
 DRINKING WATER
 DWO/GW
 SOLID WASTE SECTION

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

SAMPLES COLLECTED BY: _____
 (Please Print)

SAMPLES RECEIVED IN LAB AT 1.0 °C

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

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested. **No 304947**

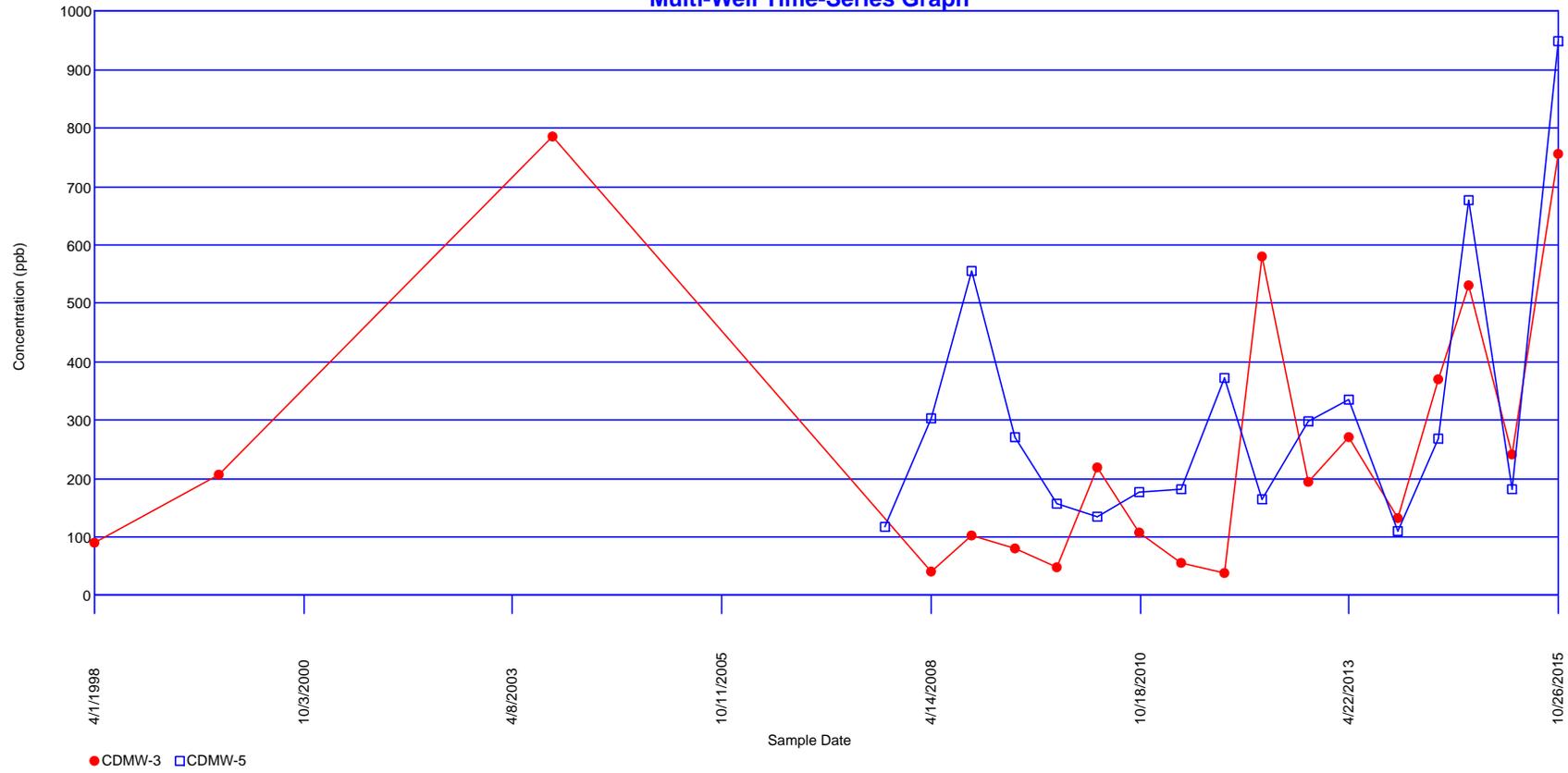
Appendix C

Time vs. Concentration Graphs

**October 2015 Groundwater Monitoring Report
Harnett County Anderson Creek Landfill
NC Solid Waste Permit No. 43-03**

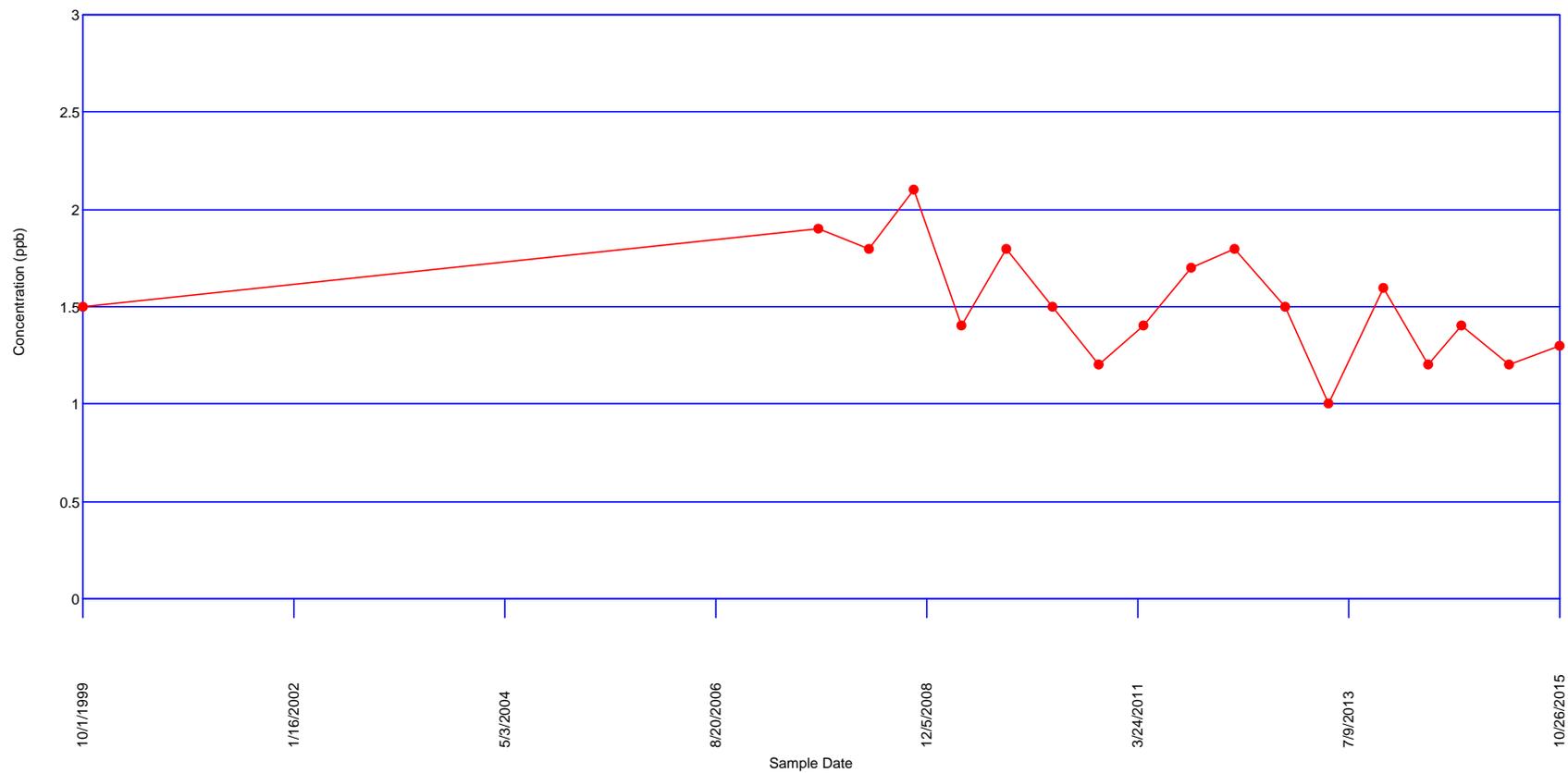
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Barium, total Multi-Well Time-Series Graph

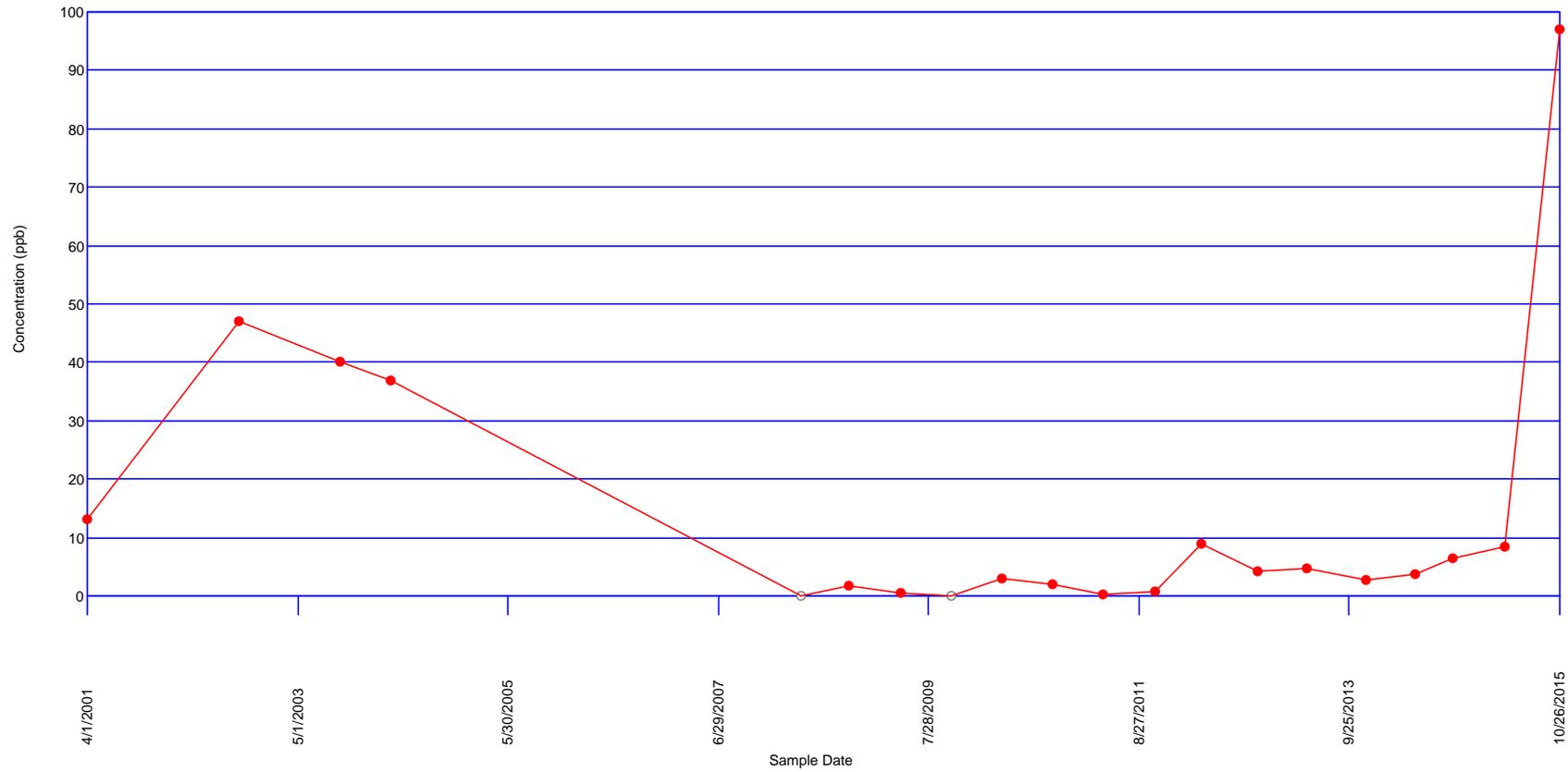


Benzene

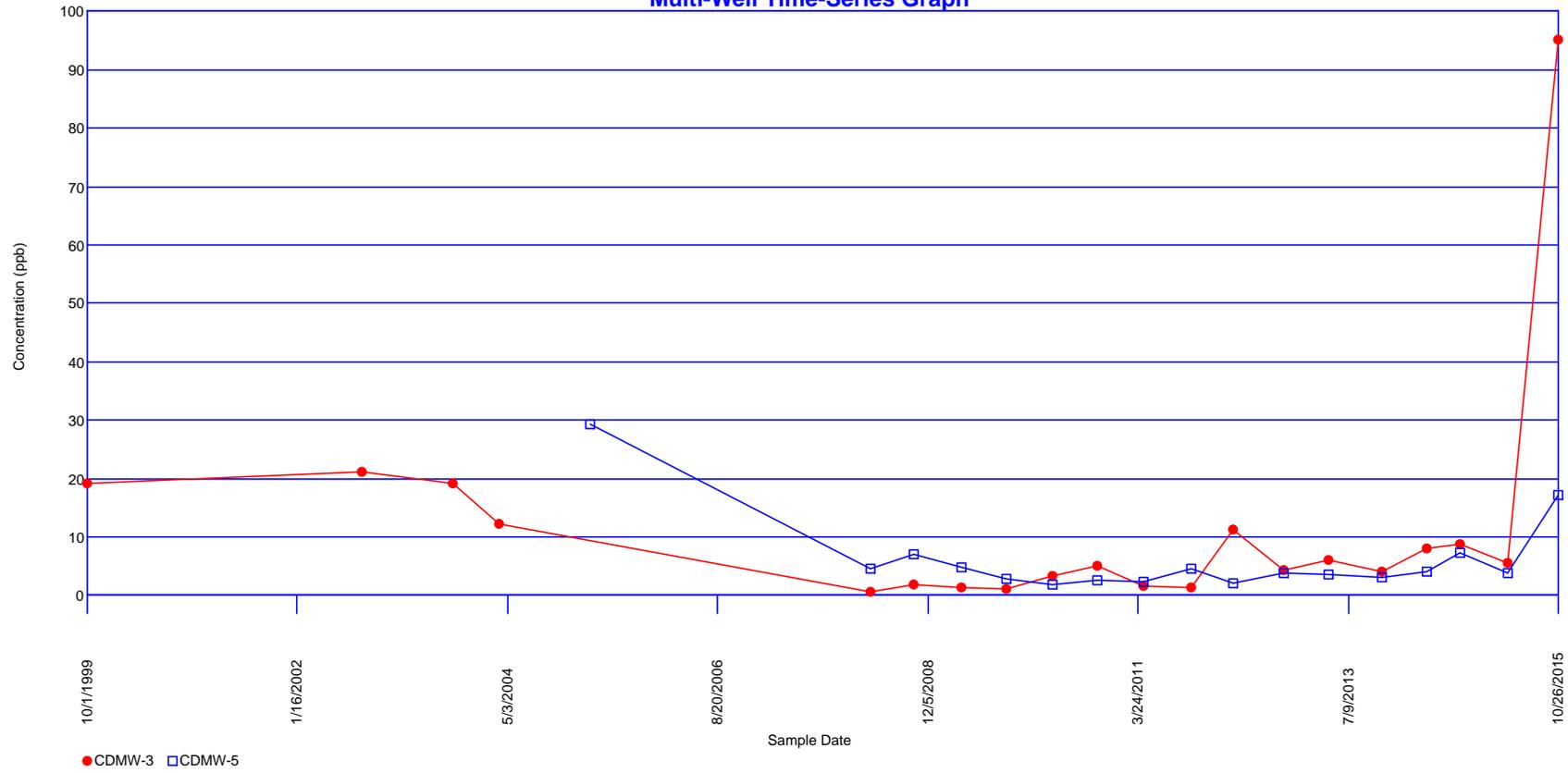
Time-Series Graph of MW-5



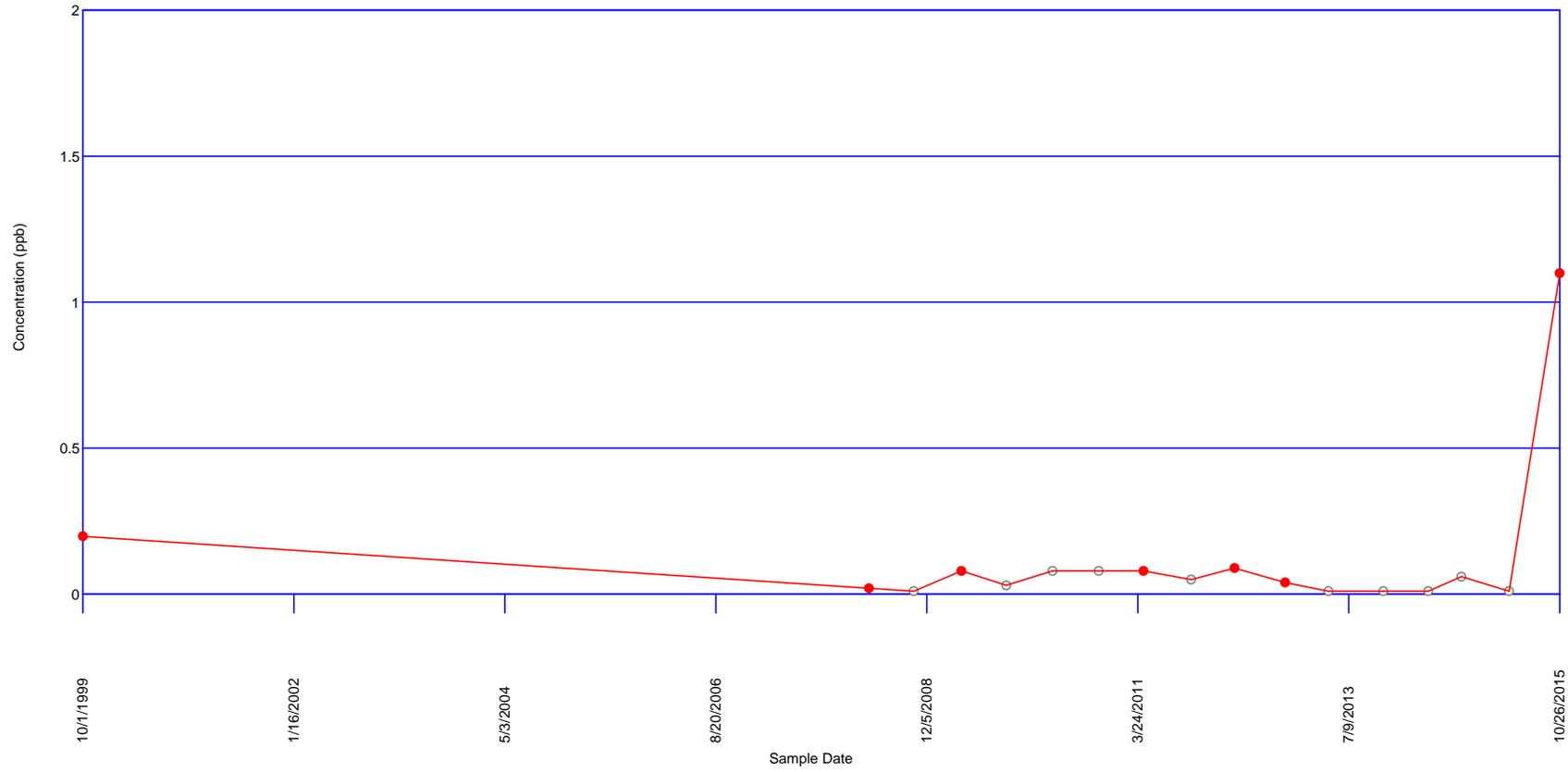
Chromium, total Time-Series Graph of CDMW-3



Lead, total Multi-Well Time-Series Graph



Mercury Time-Series Graph of CDMW-3



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