

**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: 919-828-0577x222  
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)
Washington County Closed MSW Landfill	718 Landfill Road, Roper, NC	94-02	.0500	September 9, 2014

**Environmental Status: (Check all that apply)**

- Initial/Background Monitoring  Detection Monitoring  Assessment Monitoring  Corrective Action

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

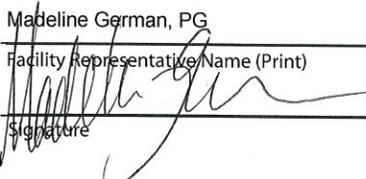
- Groundwater monitoring data from monitoring wells  Methane gas monitoring data  
 Groundwater monitoring data from private water supply wells  Corrective action data (specify) \_\_\_\_\_  
 Leachate monitoring data  Other(specify) \_\_\_\_\_  
 Surface water monitoring data

**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.

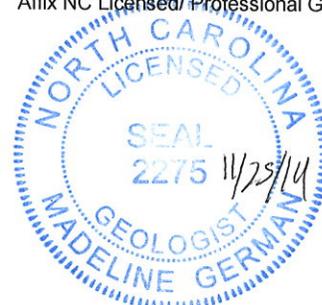
Madeline German, PG Geologist 919-828-0577x222  
 Facility Representative Name (Print) Title (Area Code) Telephone Number  
 Affix NC Licensed/Professional Geologist Seal  
 Signature Date 11/25/14

14 N. Boylan Ave, Raleigh, NC 27603

Facility Representative Address

CO828

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



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# September 2014 Groundwater Monitoring Report

## Washington County Closed MSW Landfill Roper, North Carolina NC Solid Waste Permit No. 94-02 – MSWLF-1980

Prepared for:



Washington County  
P.O. Box 1007  
Plymouth, North Carolina 27962

November 2014

Prepared by:

# SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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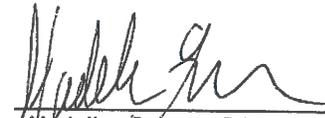
# September 2014 Groundwater Monitoring Report

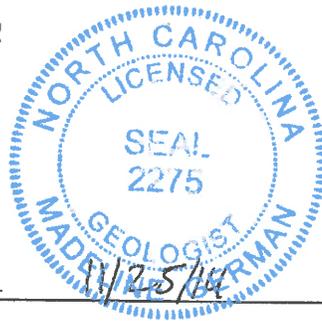
**Washington County Closed MSW Landfill  
NC Permit No. 94-02-MSWLF-1980**

Prepared For:

**Washington County Solid Waste  
Plymouth, North Carolina**

**S+G Project No. WASH 08-2**

  
\_\_\_\_\_  
Madeline German, P.G.  
Project Geologist



  
\_\_\_\_\_  
Joan A. Smyth, P.G.  
Senior Hydrogeologist



**November 2014**

**SMITH + GARDNER**

14 N. Fayette Avenue, Raleigh, NC 27603 | 919.828.6577

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**Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF 1980**

**September 2014 Groundwater Monitoring Report**

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**FIGURE**

Figure 1      Washington County Landfill Site Map

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Table 1      Groundwater Elevation Data  
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Table 4      Detected Organic Constituents

**APPENDICES**

Appendix A    Well Logs  
Appendix B    Laboratory Analytical Reports  
Appendix C    Organic Constituent Results - Graphs

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## 1.0 INTRODUCTION

The Washington County Closed unlined, MSW Landfill, operating under Solid Waste Permit #94-02-MSWLF-1980, is required to conduct semi-annual groundwater monitoring in accordance with Solid Waste Section Rule 15A NCAC 13B.0500 (et seq.). This report presents the semi-annual sampling results for the event conducted on September 9, 2014; and includes a field procedure summary, laboratory analyses and groundwater characterization for the site. The laboratory analytical results and a single-day potentiometric surface map are also included.

## 2.0 REGIONAL GEOLOGY

The Washington County Landfill is located near Roper, North Carolina. According to the Geologic Map of North Carolina (*USGS, 1985*) this site is underlain by Quaternary surficial deposits that include sand, gravel, clay, and peat deposited in marine, fluvial, eolian and lacustrine environments; typical for a coastal plain environment.

## 3.0 SAMPLING PROCEDURES

The sampling event, reportedly performed by Environment 1, Inc. on September 9, 2014, included sample collection from four groundwater monitoring wells (MW-1 through MW-4). Well logs are presented in **Appendix A**. No surface water monitoring locations are identified for this site. A trip blank was analyzed for Appendix I volatile organic compounds (VOCs) for quality control purposes.

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (North Carolina Department of Environment and Natural Resources, Division of Waste Management). The depth to water in each well was gauged prior to purging and sampling. Field measurements for pH, specific conductivity, and temperature were recorded for each well.

Samples were collected in laboratory prepared containers for the specified analytical procedures. Groundwater samples were properly preserved, placed on ice and transported to the laboratory facility within the specified holding times for each analysis.

## 4.0 FIELD & LABORATORY DATA

### 4.1 Laboratory Analysis

The groundwater samples were transported to Environment 1, Inc., in Greenville, NC, a North Carolina certified laboratory (NC Wastewater ID #10). Samples were analyzed for the Appendix I VOCs via EPA Test Method 8260B and metals via EPA Test Method 200.8. The laboratory analytical report is included as **Appendix B**.

## 4.2 Field and Laboratory Results

No inorganic constituents were reported above their 15A NCAC 2L.0100 et seq Standards (2L).

Only 1,4-dichlorobenzene in MW-2 was reported above its 2L Groundwater Standard for this event. Constituents detected between the Method Detection Limit (MDL) and SWSL are defined by the laboratory as "J" qualified values; indicating they are not quantifiable values. Benzene and Chlorobenzene were detected at concentrations below the 2L groundwater standard.

The field parameter results are shown in **Table 2**. Detected inorganic constituents (metals) are presented in **Table 3** and organic constituents (VOCs) are presented in **Table 4**. Historic detected organic constituent graphs are included in **Appendix C**.

## 5.0 GROUNDWATER CHARACTERIZATION

A single-day potentiometric surface map was prepared from groundwater data collected during this sampling event; from both the closed MSW landfill and the adjacent C&D landfill. The groundwater elevations indicate that groundwater flows in a general north - northwesterly direction. Hydraulic conductivity data is not available for these wells so groundwater velocities could not be calculated. The potentiometric surface map is presented as **Figure 1**.

## 6.0 CONCLUSIONS

Laboratory results indicate that water quality at the Washington County Closed MSW Landfill is generally consistent with reported historical detections. Chlorobenzene, benzene and 1,4 dichlorobenzene concentrations are below the 2L groundwater standard and are within the range of historical detections in MW-2 and MW-3.

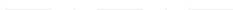
The next groundwater monitoring event is scheduled for March 2015. Results will be reported to NCDENR following laboratory analysis.

**FIGURE**

**September 2014 Groundwater Monitoring Report  
Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF-1980**

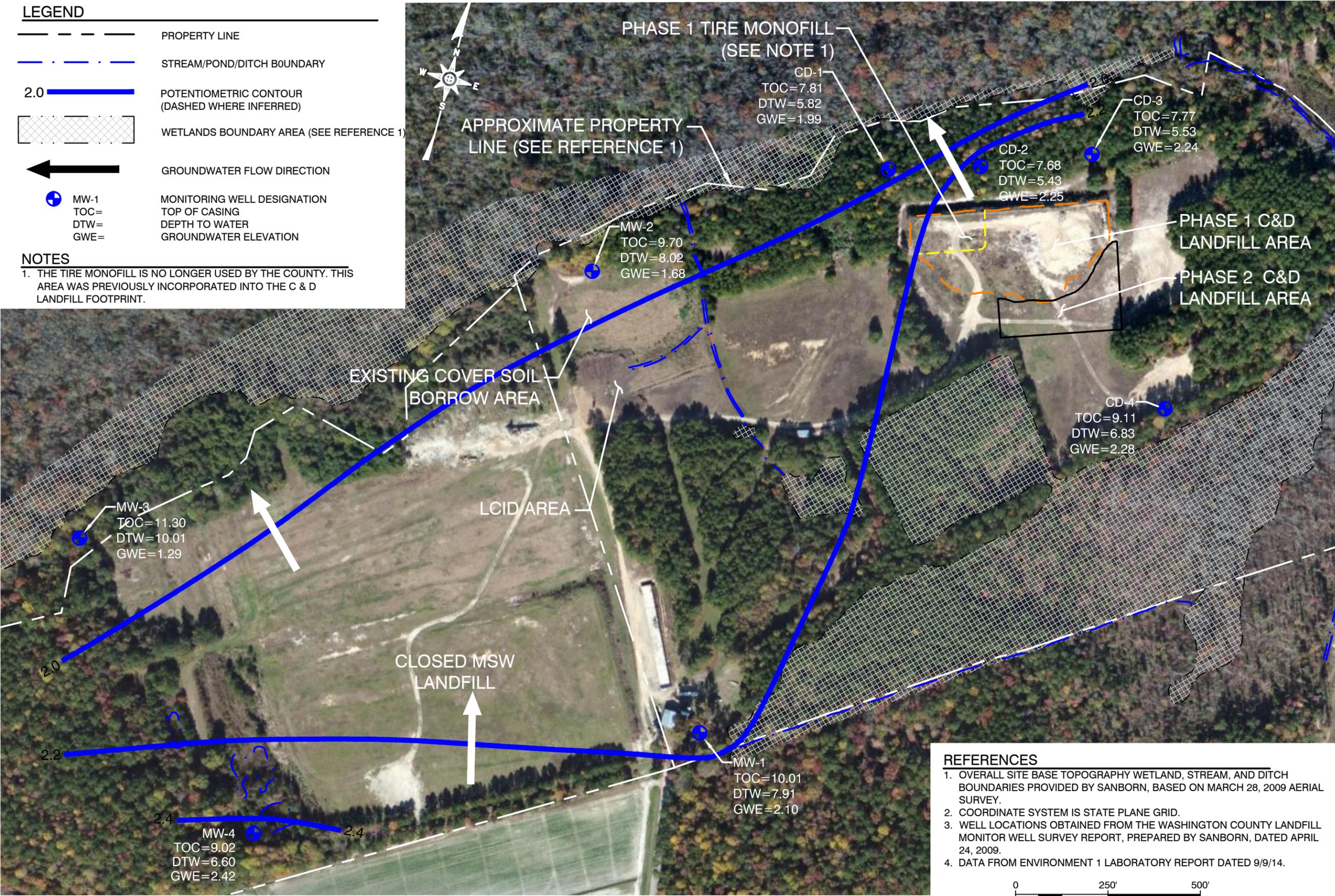
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**LEGEND**

-  PROPERTY LINE
-  STREAM/POND/DITCH BOUNDARY
-  2.0 POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
-  WETLANDS BOUNDARY AREA (SEE REFERENCE 1)
-  GROUNDWATER FLOW DIRECTION
-  MW-1  
TOC=  
DTW=  
GWE= MONITORING WELL DESIGNATION  
TOP OF CASING  
DEPTH TO WATER  
GROUNDWATER ELEVATION

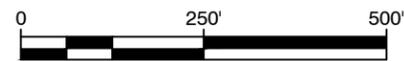
**NOTES**

1. THE TIRE MONOFILL IS NO LONGER USED BY THE COUNTY. THIS AREA WAS PREVIOUSLY INCORPORATED INTO THE C & D LANDFILL FOOTPRINT.



**REFERENCES**

1. OVERALL SITE BASE TOPOGRAPHY WETLAND, STREAM, AND DITCH BOUNDARIES PROVIDED BY SANBORN, BASED ON MARCH 28, 2009 AERIAL SURVEY.
2. COORDINATE SYSTEM IS STATE PLANE GRID.
3. WELL LOCATIONS OBTAINED FROM THE WASHINGTON COUNTY LANDFILL MONITOR WELL SURVEY REPORT, PREPARED BY SANBORN, DATED APRIL 24, 2009.
4. DATA FROM ENVIRONMENT 1 LABORATORY REPORT DATED 9/9/14.



G:\CAD\Washington County\Wash 08-2\sheets\WASH-B0047.dwg - 11/4/2014 3:13 PM

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PREPARED BY: NC LIC. NO. C-0828 (ENGINEERING)

**SMITH+GARDNER**  
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN:	J.A.L.	APPROVED:	M.M.G.
DATE:	Nov 2014	SCALE:	M.S.G. AS SHOWN
PROJECT NO.:	WASH 08-2	FIGURE NO.:	1
FILENAME:	WASH-B0047		

**WASHINGTON COUNTY**  
**MSW AND C&D LANDFILLS**  
**POTENTIOMETRIC SURFACE MAP**  
**SEPTEMBER 2014**

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## **TABLES**

**September 2014 Groundwater Monitoring Report  
Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF-1980**

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**Table 1  
Groundwater Elevation Data  
Washington County MSW Landfill  
September 09, 2014**

Well	Well Installation Date	Latitude	Longitude	Well Diameter (inches)	Total Well Depth (feet bgs)	Ground Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Water (feet)	Groundwater Elevation (feet)	Screen Interval (feet bgs)	Screen Geology
MW-1	6/29/1989	35.9186669	76.66470642	2.0	27.0	7.30	10.01	7.91	2.10	8-23	sand
MW-2	6/28/1989	35.9218076	76.66665444	2.0	27.0	7.23	9.70	8.02	1.68	5-20	sand
MW-3	6/29/1989	35.9189837	76.67063239	2.0	25.0	8.51	11.30	10.01	1.29	8-23	sand
MW-4	6/28/1989	35.9171607	76.66845219	2.0	26.5	6.25	9.02	6.60	2.42	4-24	sand

Data from Environment 1 laboratory report dated 10/13/2014, Client ID# 6018.

Depth to Water measured from top of PVC casing.

Well locations and elevations provided by Sanborn, Charlotte, NC from field survey conducted on 4/8/09.

**Table 2**  
**Field Parameter Results**  
**Washington County MSW Landfill**  
**September 09, 2014**

Well	pH (Std units)	Specific Conductivity (umhos/cm)	Temperature (Celsius)
MW-1	5.3	360	21
MW-2	6.5	952	21
MW-3	6.1	187	18
MW-4	5.8	101	21

**Note:** Temperature and pH measured with a laboratory grade thermometer.  
Data from Environment 1 laboratory report dated 10/13/2014, Client ID# 6018.

**Table 2**  
**Field Parameter Results**  
**Washington County MSW Landfill**  
**September 09, 2014**

Well	pH (Std units)	Specific Conductivity (umhos/cm)	Temperature (Celsius)
MW-1	5.3	360	21
MW-2	6.5	952	21
MW-3	6.1	187	18
MW-4	5.8	101	21

**Note:** Temperature and pH measured with a laboratory grade thermometer.  
Data from Environment 1 laboratory report dated 10/13/2014, Client ID# 6018.

**Table 4**  
**Detected Organic Constituents**  
**Washington County MSW Landfill**  
**September 09, 2014**

Parameter	MDL	SWSL	2L Standard	MCL	MW-2	MW-3
1,4-Dichlorobenzene	0.39	1	6	NE	<b>7.40</b>	<0.39
Benzene	0.24	1	1	5	0.5 J	<0.24
Chlorobenzene	0.30	3	50	100	10.20	1.3 J

Note: Results are presented in ug/l (ppb)

- SWSL - Solid Waste Section Quantitation Limits
- 2L - Groundwater Standards (15A NCAC 2L 0200)
- MDL - Method Detection Limit
- MCL - Federal Maximum Contaminant Limit
- Bold Letters - Levels above 2L standard or no 2L standard
- < MDL - Level not detected above the MDL
- NE - Not Established
- J - Identified by Laboratory as detected between MDL and SWSL limit

## **Appendix A**

### **Well Logs**

**September 2014 Groundwater Monitoring Reports  
Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF-1980**

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LOG OF HAND AUGER BORING NO.

MW-1

JOB NAME

Washington County Landfill

SITE LOCATION

Washington County



WILSON  
ENGINEERING  
ASSOCIATES, INC.

ELEVATION DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION
					TOPSOIL
5					CLAYEY SILTY SAND, Tan. (SM-SC)
10					
15					SAND, Tan to gray. (SW) NOTE: Saturated
20					
25					CLAYEY SILTY FINE SAND, trace of mica, dark gray. (SM-SC)
30					BORING TERMINATED AT 27.0 FEET Hollow Stem Auger Used Full Depth

NOTES

○ CALIBRATED PENETROMETER  
TONS/FT<sup>2</sup>  
1 2 3 4 5 7 9

PLASTIC LIMIT % WATER CONTENT % LIQUID LIMIT %  
X-----●-----△  
10 20 30 40 50 70 90

⊗ DYNAMIC CONE PENETRATION BLOWS/1.75"  
10 20 30 40 50 70 90

NOTES: WATER LEVEL IN BOREHOLE AT "N" HOURS AFTER BORING

D = \_\_\_\_\_ DRY DENSITY FROM UNDISTURBED SAMPLE LBS/FT<sup>3</sup>

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN SITU THE TRANSITION MAY BE GRADUAL.

SHEET NO. 1 OF 1	BORING STARTED
DRAWN: BNO CHECKED: BVW	BORING COMPLETED
WEA JOB NO. 89-978 EA	CREW

WILSON  
ENGINEERING  
ASSOCIATES, INC.

P.O. Box 12015  
Research Triangle Park  
North Carolina 27709

Durham (919) 544-1733  
Raleigh (919) 566-9515  
Wilmington (919) 770-3010



MW-3

JOB NAME

Washington County Landfill

SITE LOCATION

Washington County



WILSON  
ENGINEERING  
ASSOCIATES, INC.

ELEVATION  
DEPTH  
SAMPLE NO  
SAMPLE TYPE  
SAMPLE DISTANCE  
RECOVERY

DESCRIPTION OF MATERIAL

SURFACE ELEVATION

CLAYEY SILTY SAND, Tan to brown.  
(SM-SC)

SAND, Tan to white. (SW)

NOTE: Saturated

CLAYEY SILTY FINE SAND, dark  
gray. (SM-SC)

BORING TERMINATED AT 25.0 FEET  
Hollow Stem Auger Used Full Depth

NOTES

○ CALIBRATED PENETROMETER  
TONS/FT<sup>2</sup>

1 2 3 4 5 7 9

PLASTIC LIMIT % WATER CONTENT % LIQUID LIMIT %

X ———— ◆ ———— △

10 20 30 40 50 70 90

⊗ DYNAMIC CONE  
PENETRATION

10 20 30 40 50 70 90

BLOWS/1.75"

*Any split sample*

NOTES:



WATER LEVEL IN BOREHOLE  
AT "N" HOURS AFTER BORING

D = \_\_\_\_\_ DRY DENSITY FROM UNDISTURBED SAMPLE LBS/FT<sup>3</sup>

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN SITU THE TRANSITION MAY BE GRADUAL.

SHEET NO. 1	OF 1	BORING STARTED
DRAWN: BNO	CHECKED: BVW	BORING COMPLETED
WEA JOB NO. 89-078 EA		CREW

WILSON  
ENGINEERING  
ASSOCIATES, INC.

P.O. Box 12015  
Research Triangle Park  
North Carolina 27709

Durham (919) 544-1736  
Raleigh (919) 566-0515  
Washington (703) 770-2016

LOG OF HAND AUGER BORING NO.

MW-4

JOB NAME

Washington County Landfill

SITE LOCATION

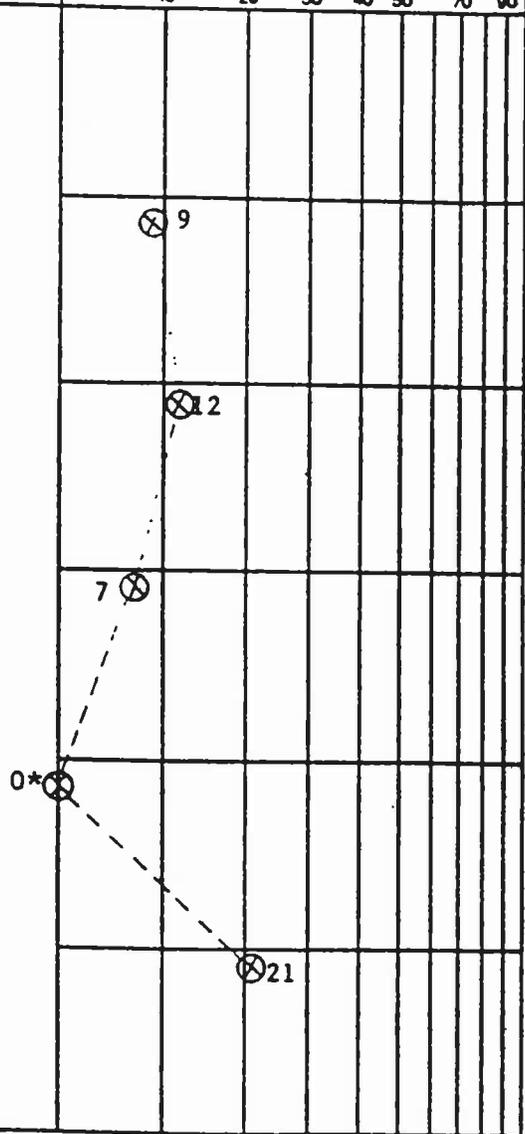
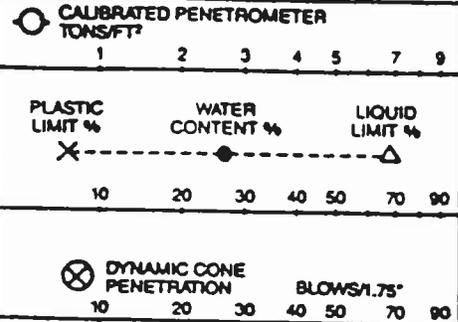
Washington County



WILSON  
ENGINEERING  
ASSOCIATES, INC.

ELEVATION	DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
						SURFACE ELEVATION
						TOPSOIL
	5					CLAYEY SILTY SAND, loose to medium dense, tan to brown. (SM-SC)
	10					FINE SAND, some silt, medium dense, gray. (SP) NOTE: Saturated
	15					
	20					MEDIUM TO COARSE SAND, trace of silt, very loose to loose, white. (SW) NOTE: Saturated
	25					
	30					CLAYEY SILTY, FINE SAND, dark gray. (SM-SC) BORING TERMINATED AT 26.5 FEET Hollow Stem Auger Used Full Depth

NOTES



NOTES: WATER LEVEL IN BOREHOLE AT 'N' HOURS AFTER BORING

\* - WEIGHT OF ROD  
D = \_\_\_\_\_ DRY DENSITY FROM UNDISTURBED SAMPLE LBS/FT<sup>3</sup>

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN SITU THE TRANSITION MAY BE GRADUAL.

SHEET NO. 1 OF 1	BORING STARTED 6/28/89
DRAWN: BNO CHECKED: BVW	BORING COMPLETED 6/28/89
WEA JOB NO. 89-078 EA	CREW RP/HW

WILSON  
ENGINEERING  
ASSOCIATES, INC.

P.O. Box 12015  
Research Triangle Park  
North Carolina 27709

Durham (919) 544-1730  
Raleigh (919) 566-0915  
Wilmington (919) 778-3016

## **Appendix B**

### **Laboratory Analytical Reports**

**September 2014 Groundwater Monitoring Reports  
Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF-1980**

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# Environment 1, Incorporated

Drinking Water ID: 37715  
Wastewater ID: 10

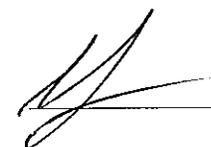
P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

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

ID#: 6018

WASHINGTON CO. LANDFILL  
MR. CARL CRITCHER  
P.O. BOX 1007  
PLYMOUTH, NC 27962

DATE COLLECTED: 09/09/14  
DATE REPORTED : 10/13/14

REVIEWED BY: 

PARAMETERS	MDL	SWSL	MW-1	MW-2	MW-3	MW-4	Trip	Analysis		Method
							Blank	Date	Analyst	Code
PH (field measurement), Units			5.3	6.5	6.1	5.8		09/09/14	BF	4500HB-00
Arsenic, ug/l	0.10	10.0	0.54 J	6.5 J	2.0 J	0.65 J		10/03/14	LFJ	EPA200.8
Barium, ug/l	0.12	100.0	136	186	24.6 J	42.3 J		10/03/14	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.10 J	0.25 J	---	0.41 J		10/03/14	LFJ	EPA200.8
Total Chromium, ug/l	0.14	10.0	0.23 J	1.7 J	0.14 J	1.7 J		10/03/14	LFJ	EPA200.8
Lead, ug/l	0.13	10.0	---	---	---	1.5 J		10/03/14	LFJ	EPA200.8
Mercury, ug/l	0.06	0.20	---	---	---	---		09/19/14	MTM	245.1 R3-9
Selenium, ug/l	0.16	10.0	0.84 J	1.2 J	0.38 J	0.27 J		10/03/14	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	---	---	---	---		10/03/14	LFJ	EPA200.8
Conductivity (at 25c), uMhos/cm	1.0	1.0	360	952	187	101		09/09/14	BF	2510B-97
Temperature, °C			21	21	18	21		09/09/14	BF	2550B-00
Static Water Level, feet			7.91	8.02	10.01	6.60		09/09/14	BF	
Well Depth, feet			23.09	19.30	19.97	22.90		09/09/14	BF	

# 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: WASHINGTON CO. LANDFILL  
MR. CARL CRITCHER  
P.O. BOX 1007  
PLYMOUTH, NC 27962

CLIENT ID: 6018

ANALYST: MAO  
DATE COLLECTED: 09/09/14  
DATE REPORTED: 10/13/14

Page: 1

REVIEWED BY: \_\_\_\_\_

VOLATILE ORGANICS  
EPA METHOD 8260B R1 (96)

PARAMETERS, ug/l	Date Analyzed:		09/13/14	09/13/14	09/19/14	09/19/14	09/19/14
	MDL	SWSL	MW-1	MW-2	MW-3	MW-4	Trip Blank
1. Chloromethane	0.77	1.0	--- U				
2. Vinyl Chloride	0.63	1.0	--- U				
3. Bromomethane	0.67	10.0	--- U				
4. Chloroethane	0.48	10.0	--- U				
5. Trichlorofluoromethane	0.24	1.0	--- U				
6. 1,1-Dichloroethene	0.17	5.0	--- U				
7. Acetone	9.06	100.0	--- U				
8. Iodomethane	0.26	10.0	--- U				
9. Carbon Disulfide	0.23	100.0	--- U				
10. Methylene Chloride	0.64	1.0	--- U				
11. trans-1,2-Dichloroethene	0.23	5.0	--- U				
12. 1,1-Dichloroethane	0.20	5.0	--- U				
13. Vinyl Acetate	0.20	50.0	--- U				
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U				
15. 2-Butanone	2.21	100.0	--- U				
16. Bromochloromethane	0.27	3.0	--- U				
17. Chloroform	0.25	5.0	--- U				
18. 1,1,1-Trichloroethane	0.19	1.0	--- U				
19. Carbon Tetrachloride	0.22	1.0	--- U				
20. Benzene	0.24	1.0	--- U	0.50 J	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U				
22. Trichloroethene	0.23	1.0	--- U				
23. 1,2-Dichloropropane	0.21	1.0	--- U				
24. Bromodichloromethane	0.21	1.0	--- U				
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U				
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U				
27. Toluene	0.23	1.0	--- U				
28. trans-1,3-Dichloropropene	0.28	1.0	--- U				
29. 1,1,2-Trichloroethane	0.25	1.0	--- U				
30. Tetrachloroethene	0.17	1.0	--- U				
31. 2-Hexanone	1.57	50.0	--- U				
32. Dibromochloromethane	0.24	3.0	--- U				
33. 1,2-Dibromoethane	0.26	1.0	--- U				
34. Chlorobenzene	0.30	3.0	--- U	10.20	1.30 J	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U				
36. Ethylbenzene	0.21	1.0	--- U				
37. Xylenes	0.68	5.0	--- U				
38. Dibromomethane	0.28	10.0	--- U				
39. Styrene	0.19	1.0	--- U				
40. Bromoform	0.20	3.0	--- U				
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U				
42. 1,2,3-Trichloropropane	0.43	1.0	--- U				
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	7.40	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U				
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U				
46. Acrylonitrile	2.72	200.0	--- U				
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U				

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

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

**CHAIN OF CUSTODY RECORD**

CLIENT: 6018      Week: 39

WASHINGTON CO. LANDFILL  
MR. CARL CRITCHER  
P.O. BOX 1007  
PLYMOUTH NC 27962

(252) 793-5615

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION			Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2	PARAMETERS/TESTS
	DATE	TIME				<input type="checkbox"/> CHLORINE	<input type="checkbox"/> UV	<input type="checkbox"/> NONE									
MW-1	9-9-14	1150		21	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	A	A	A					A - NONE    D - NAOH B - HNO <sub>3</sub> E - HCL C - H <sub>2</sub> SO <sub>4</sub> F - ZINC ACETATE/NAOH G - NA THIOSULFATE
MW-2	9-9-14	1020		21	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	P	P	P	P					
MW-3	9-9-14	0955		18	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	P	P	P	P					
MW-4	9-9-14	0940		21	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A	A	A	A					
Trip Blank	9-9-14				2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
<p>REINQUISHED BY (SIG.) (SAMPLER)      DATE/TIME      RECEIVED BY (SIG.)      DATE/TIME      COMMENTS:</p> <p><i>Bobby Ford</i>      9-9-14 11:41      <i>[Signature]</i>      9/9/14 1:42</p> <p>REINQUISHED BY (SIG.)      DATE/TIME      RECEIVED BY (SIG.)      DATE/TIME</p> <p>REINQUISHED BY (SIG.)      DATE/TIME      RECEIVED BY (SIG.)      DATE/TIME</p>																	
<p>CLASSIFICATION:</p> <p><input type="checkbox"/> WASTEWATER (NPDES)</p> <p><input type="checkbox"/> DRINKING WATER</p> <p><input type="checkbox"/> DWQ/GW</p> <p><input checked="" type="checkbox"/> SOLID WASTE SECTION</p> <p>CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY</p> <p>SAMPLES COLLECTED BY: <i>Bobby Ford</i></p> <p>(Please Print)</p> <p>SAMPLES RECEIVED IN LAB AT <u>0.9</u> °C</p>																	

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 282042**

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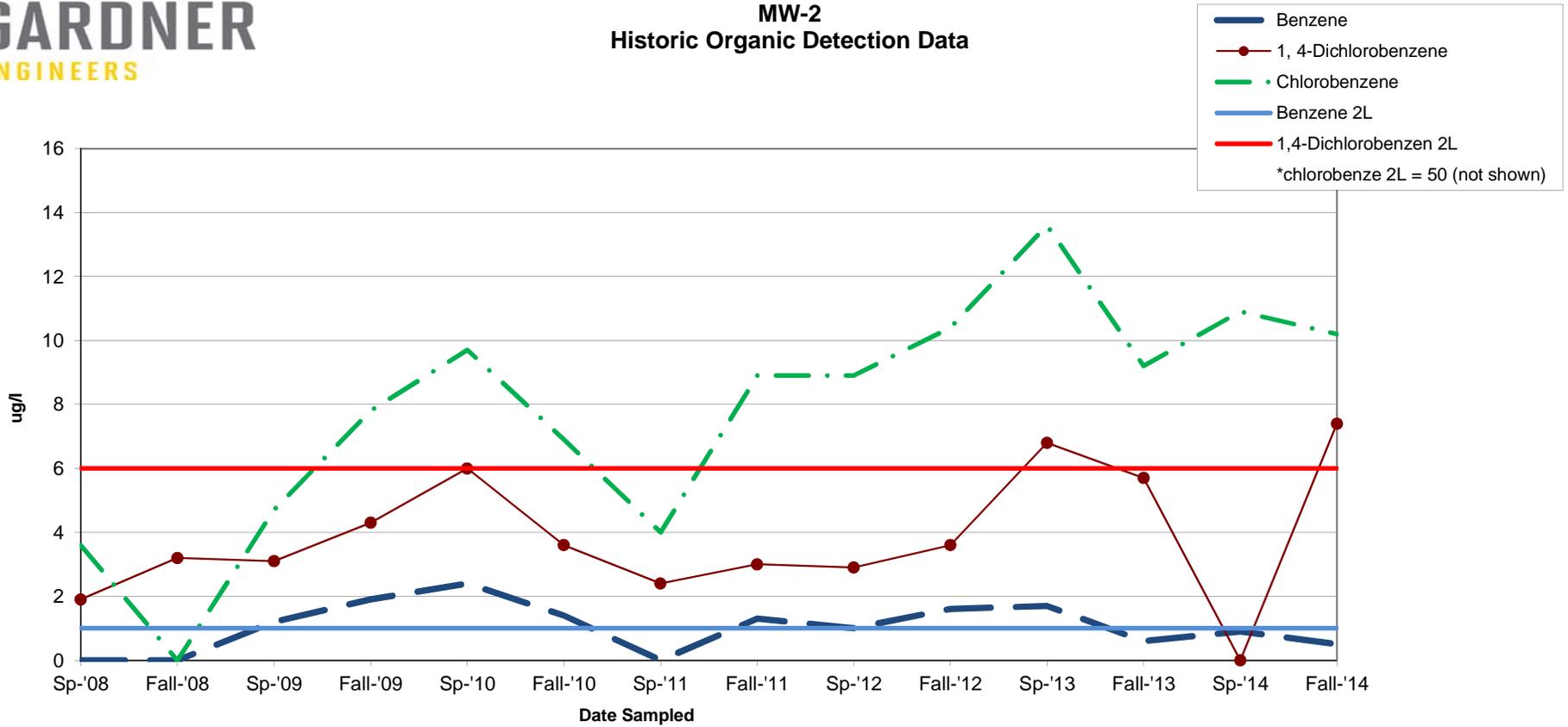
## **Appendix C**

### **Historic Organic Constituent Graphs**

**September 2014 Groundwater Monitoring Report  
Washington County Closed MSW Landfill  
NC Solid Waste Permit No. 94-02-MSWLF-1980**

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Washington County MSW Landfill  
MW-2  
Historic Organic Detection Data



Washington County MSW Landfill  
MW-3  
Historic Organic Detection Data

