

April 10, 2008

Mr. Johnny Beal
Wake County Solid Waste Management Division
Post Office Box 550
Raleigh, NC 27602

Re: Wake County North Wake C&D Landfill
November 2007 Semi-Annual Groundwater
Sampling Report
H&S No. 30547-014

Dear Mr. Beal,

As authorized by Wake County, Hazen and Sawyer has prepared a report on the Semi-Annual Groundwater Sampling event for North Wake C&D Landfill conducted on November 7, 2007. For this, the second of the 2007 sampling events, a total of four groundwater monitoring wells (MW-1 (background), CD-1, CD-2, and CD-3) were sampled and tested for Appendix I volatile organic compounds (VOC's) as well as eight selected Appendix I metals. Sampling and testing was conducted by Environment 1, Incorporated as a sub-consultant to Hazen and Sawyer.

Locations for each of the wells sampled for the C&D Landfill are provided on the attached "Lined MSW and C&DD Landfills Monitoring Well Location Plan," Drawing GW-2, prepared by Hazen and Sawyer. This drawing reflects the updated well locations and site conditions based upon drawings prepared by Taylor Weisman Taylor (TWT), dated February 21, 2005, under contract with Wake County.

Field activities during sampling as well as presentation and discussion of test results and analyses are provided in the following sections. Complete laboratory data and chain-of-custody are provided in the Appendix.

Field Activities

Samples were obtained from groundwater monitoring wells and surface water sampling points on November 7, 2007 by representatives of Environment 1, Inc. of Greenville, North Carolina. The static water level and total well depth at each well are first recorded using an electric water level indicator. Each monitoring well is purged (3 to 5 well volumes) using properly cleaned and prepared 1-liter non-disposable Teflon bailers. A bailer is prepared and dedicated for each well to be sampled in order to minimize the risk of cross-contamination.

Once the wells have recharged to an extent that sampling is practical, well samples are analyzed in the field for pH, temperature, and conductivity. Groundwater samples are obtained, prepared, and stored, and the Chain-Of-Custody documentation is recorded for each well.

HAZEN AND SAWYER

Mr. Johnny Beal
April 10, 2008
Page 2 of 4

Sampling personnel note any conditions, including monitoring well damage that may impact sampling or testing results. Any such issues will be presented and discussed in the report as necessary.

Groundwater depths in each groundwater monitoring well were converted to groundwater elevations by Hazen and Sawyer based upon the updated 2006 site and well survey data provided by TWT. Groundwater depths and elevations for each well are presented on Table 1. These elevations are based upon the 2005 TWT survey data. Groundwater elevations were used to prepare a Potentiometric Surface contour map for North Wake Lined Landfill, which is provided on the attached "Potentiometric Surface Map, November 7, 2007," Drawing GW-4.

A summary of field parameters for each well is also presented in Table 1.

Summary of Groundwater and Surface Water Testing

All of the groundwater monitoring wells were analyzed for Appendix I volatile organic compounds as well as eight Appendix I metals. A summary of the detected parameters is provided below. Parameters listed below represent constituents where reported concentrations were above laboratory detection limits. Concentrations that exceed State Groundwater Quality Standards (15A NCAC 02L.0202) are highlighted. A summary of the results for each well is provided on Table 2 for metals and complete laboratory analyses and reports are provided in the Appendix.

In accordance with the October 27, 2006 NCDENR Solids Waste Section Memorandum regarding New Guidelines for Electronic Submittal of Environmental Data (including the February 23, 2007 addendum), laboratories now must report to the Solid Waste Section Limit (SWSL). The SWSL is the lowest concentration of an analyte that can be determined and is often lower than the method limits that can accurately be reported. For all sampling data beginning on or after January 1, 2007, constituents may be reported that have not been reported for a particular well in the past. This may not indicate any changes in groundwater quality, but may only reflect the lower required reporting limits.

MW-1

Metals: Barium, Chromium, **Lead**
Volatile Organic Compounds: None Detected

CD-1

Metals: Barium, Chromium, Lead
Volatile Organic Compounds: None Detected

CD-2

Metals: Barium, Lead
Volatile Organic Compounds: None Detected

CD-3

Metals: Barium, Lead (at GWP standard)
Volatile Organic Compounds: None Detected

Equipment Blanks

Metals: Not Tested
Volatile Organic Compounds: None Detected

No VOC's were detected in any of the wells. This agrees with the results of previous testing events since the wells were first sampled in spring 2001. One metal, *lead* exceeded State Groundwater Quality Standards in well CD-1. Concentrations were recorded prior to this sampling event but as slightly lower concentrations.

The drought experienced throughout 2007 has resulted in reductions in the groundwater elevations for most of the monitoring wells at North Wake. Monitoring wells in the vicinity of the C&DD Landfill have dropped approximately 2-ft since the April 2006 sampling event.

The effect of lower groundwater elevations may be to concentrate constituents in shallow wells that could appear to impact groundwater quality. This effect, if noted, may not be related to the landfill itself, but to the amount of groundwater available to dilute and break down volatile organic or metal constituents. Sampling of the wells may be more difficult due to less available groundwater and slower recharge times. This often results in an increase in sample turbidity, which can increase metals concentrations. It should be noted that the samples are not filtered prior to analyses, in accordance with State regulatory policy.

Chromium was reported in monitoring wells MW-1 and CD-1 at just above the reporting limits. Lead and Chromium were reported at levels just above the reporting limits in wells MW-1 and CD-2. Although these constituents were reported at similar concentrations in the past, this trend should be further evaluated during the 2008 sampling events to examine any influence of rising groundwater levels.

The sealed Environmental Monitoring Report From and summary of detected constituents immediately follow this report.

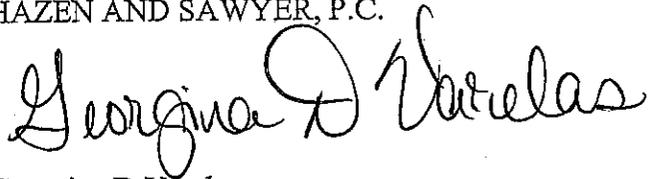
Complete laboratory data for the November 7, 2007 sampling program are provided in digital form as part of the Semi-Annual Sampling Report for the North Wake Lined Landfill, submitted under separate cover. In addition, a copy of this report, including tables, in Portable Document Format (PDF) is also included on the CD. One copy of this report has been provided to the North Carolina Department of Environment and Natural Resources (NCDENR).

Mr. Johnny Beal
April 10, 2008
Page 4 of 4

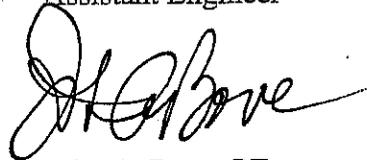
Hazen and Sawyer personnel are available to meet with you and your staff to discuss this Report and to answer any questions you may have. In the interim, if you have any questions or require additional information, please contact us.

Very truly yours,

HAZEN AND SAWYER, P.C.



Georgina D Varelas
Assistant Engineer



John A. Bove, PE
Associate

Attachment: Environmental Monitoring Reporting Form

cc: Jackie Drummond, NCDENR (w/attachment)

DENR USE ONLY

Paper Report

Electronic Data - Email CD (data loaded: Yes / No)

Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

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

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- 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):

Hazen and Sawyer, P.C.

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

Name: John A. Bove, P.E.

Phone: (919) 833-7152

E-mail: jbove@hazensandsawyer.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
North Wake C&D Landfill	9004 Deponie Drive Raleigh, NC 27615	92-09	.0500	November 7, 2007

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.

John A. Bove, P.E.

Associate

(919) 833-7152

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

Signature

Date

Affix NC Licensed/ Professional Geologist/Engineer Seal here:



Facility Name: North Wake C&D Landfill
 Monitoring Event Date: 11/07/2007

FACILITY PERMIT	WELL ID	CAS Number	SWS ID	PARAMETER	RESULT	UNITS	QUALIFIER*	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE
92-09	MW-1	7440-38-2	14	Arsenic	0.9	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	MW-1	7440-39-3	15	Barium	151	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	MW-1	7440-43-9	34	Cadmium	0.8	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	MW-1	7440-47-3	51	Chromium	11	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	MW-1	7439-92-1	131	Lead	28	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-1	7440-39-3	15	Barium	501	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-1	7440-43-9	34	Cadmium	0.2	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-1	7440-47-3	51	Chromium	13	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-1	7439-92-1	131	Lead	11	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-2	7440-39-3	15	Barium	224	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-2	7440-43-9	34	Cadmium	0.3	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-2	7440-47-3	51	Chromium	5.8	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-2	7439-92-1	131	Lead	12	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-3	7440-38-2	14	Arsenic	1	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-3	7440-39-3	15	Barium	269	ug/l		1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-3	7440-43-9	34	Cadmium	0.2	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-3	7440-47-3	51	Chromium	2.1	ug/l	J	1	11/07/2007	11/07/2007	11/19/2007
92-09	CD-3	7439-92-1	131	Lead	15	ug/l		1	11/07/2007	11/07/2007	11/19/2007

*J Qualifier = estimated result between MDL and SWSL

Table 1
Water Quality Field Parameters - November 7, 2007
North Wake C&D Landfill

Monitoring Well I.D.	Field Measurements			Groundwater Elevations		
	pH (-)	Conductivity (μ S)	Temperature (deg. C)	TOC Elevation* (feet AMSL)	Depth to Groundwater (feet)	Groundwater Elevation* (feet AMSL)
MW-1	5.90	79	15.0	333.80	46.87	286.93
CD-1	6.20	119	16.0	296.26	15.28	280.98
CD-2	6.10	111	15.0	282.64	12.04	270.60
CD-3	5.70	61	17.0	301.49	22.16	279.33

NOTES:

AMSL - Above Mean Sea Level

TOC - Top of Casing

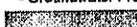
* - TOC and Groundwater Elevations Based Upon 2005 Taylor-Weisman-Taylor Survey

Table 2
Detected Groundwater Constituents - Metals
North Wake C & D Landfill November 7, 2007

Monitor Well	Sample Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
NC Standard		0.05	2	0.00175	0.05	0.015	0.00105	0.05	0.0175
MW-1	5-Jun-01	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
MW-1	29-Nov-01	<.010	<.100	<.010	<.010	<.010	<.010	<.010	<.010
MW-1	5-Apr-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
MW-1	7-Nov-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
MW-1	16-Apr-03	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
MW-1	30-Oct-03	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
MW-1	7-Apr-04	<.010	<.100	<.010	<.010	<.010	<.0003	<.020	<.010
MW-1	19-Nov-04	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
MW-1	22-Apr-05	<.010	<.500	<.001	<.010	0.016	<.0005	<.020	<.010
MW-1	10-Nov-05	<.010	<.500	<.001	<.010	0.015	<.001	<.020	<.010
MW-1	13-Apr-06	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
MW-1	8-Nov-06	<.010	<.500	<.001	<.010	<.010	<.0005	<.020	<.010
MW-1	18-Apr-07	<.010	<.100	<.001	<.010	<.010	<.0002	<.010	<.010
MW-1	7-Nov-07	<.010	0.151	<.001	0.011	0.028	<.0002	<.010	<.010
CD-1	5-Jun-01	<.010	0.102	<.010	<.010	<.010	<.0003	<.010	<.010
CD-1	29-Nov-01	<.010	0.371	<.010	<.010	<.010	<.010	<.010	<.010
CD-1	5-Apr-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-1	7-Nov-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-1	16-Apr-03	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-1	30-Oct-03	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
CD-1	7-Apr-04	<.010	<.100	<.010	<.010	<.010	<.0003	<.020	<.010
CD-1	19-Nov-04	<.010	<.500	0.001	<.010	<.010	<.001	<.020	<.010
CD-1	22-Apr-05	<.010	0.735	<.001	0.011	0.015	<.0005	<.020	<.010
CD-1	10-Nov-05	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-1	13-Apr-06	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-1	8-Nov-06	<.010	<.500	<.001	<.010	0.011	<.0005	<.020	<.010
CD-1	18-Apr-07	<.010	0.501	<.001	0.015	0.011	<.0002	<.010	<.010
CD-1	7-Nov-07	<.010	0.561	<.001	0.013	0.011	<.0002	<.010	<.010
CD-2	5-Jun-01	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
CD-2	29-Nov-01	<.010	0.357	<.010	<.010	<.010	<.010	<.010	<.010
CD-2	5-Apr-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-2	7-Nov-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-2	16-Apr-03	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-2	30-Oct-03	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
CD-2	7-Apr-04	<.010	<.100	<.010	<.010	<.010	<.0003	<.020	<.010
CD-2	19-Nov-04	<.010	<.500	<.001	0.015	0.011	<.001	<.020	<.010
CD-2	22-Apr-05	<.010	<.500	<.001	<.010	0.018	<.0005	<.020	<.010
CD-2	10-Nov-05	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-2	13-Apr-06	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-2	8-Nov-06	<.010	<.500	<.001	<.010	0.016	<.0005	<.020	<.010
CD-2	18-Apr-07	<.010	0.192	<.001	<.010	<.010	<.0002	<.010	<.010
CD-2	7-Nov-07	<.010	0.224	<.001	<.010	0.012	<.0002	<.010	<.010
CD-3	5-Jun-01	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
CD-3	29-Nov-01	<.010	<.100	<.010	<.010	<.010	<.010	<.010	<.010
CD-3	5-Apr-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-3	7-Nov-02	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-3	16-Apr-03	<.010	<.500	<.001	<.010	<.010	<.0003	<.020	<.010
CD-3	30-Oct-03	<.010	<.100	<.010	<.010	<.010	<.0003	<.010	<.010
CD-3	7-Apr-04	<.010	<.100	<.010	<.010	<.010	<.0003	<.020	<.010
CD-3	19-Nov-04	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-3	22-Apr-05	<.010	<.500	<.001	<.010	<.010	<.0005	<.020	<.010
CD-3	10-Nov-05	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-3	13-Apr-06	<.010	<.500	<.001	<.010	<.010	<.001	<.020	<.010
CD-3	8-Nov-06	<.010	<.500	<.001	<.010	<.010	<.0005	<.020	<.010
CD-3	18-Apr-07	<.010	0.109	<.001	<.010	<.010	<.0002	<.010	<.010
CD-3	7-Nov-07	<.010	0.269	<.001	<.010	0.015	<.0002	<.010	<.010

All units are in milligrams per liter (parts per million).

* - Groundwater Protection Standard

 - Concentration exceeds N.C. Groundwater Standards (2L).

