



MECKLENBURG COUNTY
Land Use and Environmental Services Agency
Solid Waste Services
April 11, 2011

Jaclyne Drummond
North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Groundwater Compliance Unit
Mail Service Center 1646
Raleigh, NC 27699-1646

Subject: Holbrooks Road Landfill Permit 60-02
Semi-annual Monitoring Results

Dear Ms. Drummond:

Mecklenburg County conducted semi-annual water quality monitoring at the closed Holbrooks Road Landfill in March 2011 in accordance with the approved sample and analysis plan dated March 27, 2003. This report details the results of that monitoring event. Laboratory analytical data, field-measured data table of values exceeding 2L standards and landfill gas monitoring data is contained on the electronic data deliverable submittal.

Samples were collected from eleven (11) monitoring wells (HRW-7, HRW-8, HRW-9, HRW-10, HRW-11R, HRW-13, HRW-16, HRW-18, HRW-19, HRW-20 and HRW-21) and three (3) surface-water sampling locations (HRSW-2, HRSW-3 and HRSW-4). Samples were analyzed for metals and volatile organic compounds ("VOCs") listed in Appendix I of 40 CFR Part 258.54 "Detection monitoring program". Field measurements of temperature, pH, and specific conductivity were made at each sampling location using a calibrated instrument. Additionally, measurements of dissolved oxygen were made at each surface-water sampling location.

The electronic data deliverable package containing the monitoring data is labeled to reflect the units used for reporting. Surface water standards listed are the water quality standards established for freshwater classification for aquatic life as outlined in 15A NCAC 2B "Classification and Water Quality Standards Applicable to Surface Waters of North Carolina". Groundwater standards listed are the standards outlined in 15A NCAC 2L "Classification of Water Quality Standards applicable to the Groundwaters of North Carolina". If the sample is reported in parts per billion, then the standard is also reported in parts per billion.

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Surface-water samples:

No VOCs were detected in any of the samples collected from the three surface-water sampling locations (HRSW-2, HRSW-4 and HRSW-3). Zinc was detected at all three locations and copper was detected at HRSW-3. The following table shows the detections for metals.

Sample Location	Metal Constituent	Concentration	2b Standard
HRSW-2 upstream	Zinc	36	50
HRSW-4 mid-stream	Zinc	220	50
HRSW-3 downstream	Zinc	45	50
HRSW-3 downstream	Copper	2.6	7

All field-measured parameters were within the established regulatory limits. The following table summarizes field-measured parameters for surface water samples.

Sample Location	Temp. °C	pH S.U.	Specific Conductivity ms/cm	Dissolved Oxygen mg/l
HRSW-2 upstream	8.8	7.08	0.180	7.07
HRSW-4 mid-stream	8.3	7.17	0.178	8.42
HRSW-3 downstream	7.0	7.05	0.195	8.31

Groundwater samples:

Vanadium, cobalt, cadmium and chromium were detected in various wells above the 2l standard. The standards for vanadium and cobalt were recently added and wells that have had no violations of the 2l standard in the past now currently have detections above the 2l standard. The following table summarizes metals detection for groundwater samples.

Well ID	Ba ug/l	Cd ug/l	Cr ug/l	Co ug/l	Cu ug/l	Pb ug/l	Ni ug/l	Se ug/l	Vn ug/l	Zn ug/l
HRW-7	300	70	-----	8.1	23	-----	-----	-----	22	120
HRW-8	-----	-----	6.5	-----	11	-----	-----	-----	23	19
HRW-9	290	-----	-----	-----	5.6	-----	-----	-----	-----	17
HRW-10	120	-----	-----	-----	5.2	-----	10	7.6	-----	-----
HRW-11R	160	-----	-----	-----	4.1	-----	5.3	-----	5.2	38
HRW-13	190	-----	25	12	47	-----	16	-----	51	58
HRW-16	110	-----	-----	-----	7.3	-----	-----	-----	12	17
HRW-18	320	-----	-----	-----	-----	-----	7.1	-----	-----	-----
HRW-19	-----	-----	-----	-----	-----	-----	-----	-----	5.2	-----
HRW-20	-----	-----	-----	-----	-----	-----	-----	-----	7.6	-----
HRW-21	-----	-----	-----	-----	-----	-----	-----	-----	5.7	-----
2L Std.	700	2	10	1	1,000	15	100	20	0.3	1,000

Note: Results shown in bold exceed the 2L standard.

VOCs were detected in four monitoring wells; HRW-7, HRW-9, HRW-18 and HRW-20. The following table summarizes VOC detections.

Well ID	Volatile Constituent	Concentration (ug/l)	2L Standard (ug/l)
HRW-7	Cis-1,2-Dichloroethene	8	70
	Trichloroethene	7	3
HRW-9	Cis-1,2 Dichloroethene	88	70
	Tetrachloroethene	5	0.7
	Trichloroethene	8	3
	Vinyl Chloride	9	0.03
	1,2-Dichlorobenzene	8	20
	1,4-Dichlorobenzene	8	6
	1,1-Dichloroethane	46	6
	Methylene Chloride	5	5
HRW-18	Benzene	22	1
	Chloroethane	21	3,000
	Trichlorofluoromethane	7	2,000
	1,1 Dichloroethane	37	6
	1,2 Dichloroethane	3	0.4
	1,2 Dichloropropane	3	0.6
	1,4 Dichlorobenzene	6	6
	Vinyl Chloride	39	0.03
	Toluene	4	600
HRW-20	1,1-Dichloroethane	4	6

Note: Results shown in bold exceed the 2L standard.

Measurements of pH were more acidic than the 2L standard range of 6.5 to 8.5 standard units at locations HRW-7, HRW-8, HRW-9, HRW-11R, HRW-13, and HRW-16. Field-measured parameters for groundwater samples are summarized in the following table.

Sample Location	Temp. °C	PH	Specific Conductivity ms/cm
HRW-7	18.1	6.03	0.490
HRW-8	12.0	5.67	0.090
HRW-9	14.4	6.16	0.709
HRW-10	11.5	6.65	0.643
HRW-11R	12.2	5.29	0.516
HRW-13	11.5	5.97	0.120
HRW-16	12.1	5.71	0.103
HRW-18	16.4	6.64	1.296
HRW-19	15.1	6.64	0.257
HRW-20	15.4	6.51	0.199
HRW-21	16.1	6.58	0.456

Note: Results shown in bold are outside of the 2L standard range of 6.5 - 8.5 S.U.

Please call me at (704) 432-2478 if you have any questions regarding this report.



Sincerely,

Amber R. Grzymski, P.G.
Project Manager
Solid Waste Services