North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

September 17, 2012

Mr. Mike Cummings
Edgecombe County Solid Waste Manager
P.O. Box 10
Tarboro, NC 27886

Re: Monitored Natural Attenuation Baseline Sampling Report
Edgecombe County Landfill, Permit #33-01

Dear Mr. Cummings:

The Solid Waste Section (Section) has reviewed the *Baseline Sampling and Monitored Natural Attenuation Report* submitted by S&ME, Inc. (S&ME) on behalf of Edgecombe County. The Monitored Natural Attenuation (MNA) baseline sampling was conducted on January 19 and July 20, 2010 and January 18 and July 27, 2011. Groundwater samples from three background monitoring wells and eight compliance monitoring wells were analyzed for Appendix I constituents and MNA parameters. In addition, field parameters such as specific conductivity, pH, oxygen reduction potential, dissolved oxygen, and temperature were measured in the field during sample collection.

The results of the baseline monitoring indicated the absence of volatile organic compounds (VOCs) and the presence of metals in the upgradient monitoring wells. Concentrations of VOC constituents of concern remained stable during the baseline monitoring period and the degradation of chlorinated solvents was evident by the presence of daughter products in the compliance monitoring wells. Results of the MNA parameter analysis indicated that the geochemical environment is anaerobic and reductive dechlorination is occurring slowly. S&ME concluded that natural attenuation is occurring on site by one or more reductive processes and the analyses of volatile fatty acids, biochemical oxygen demand, chemical oxygen demand, and hydrogen are not necessary since those parameters are only useful in providing information about aerobic environments. S&ME also recommended discontinuing MNA parameter analysis until corrective measures are implemented and resuming MNA monitoring every 18 months thereafter.

Although S&ME concluded the aforementioned parameters may only be useful in aerobic environments, their results provide beneficial information in evaluating the MNA process. The presence of volatile fatty acids indicates that fermentation is occurring and the environment may be conducive for reductive dechlorination. BOD values quantify the amount of oxygen used by microorganisms to oxidize organic compounds and the conversion of organic material measured as COD to methane could also provide further evidence of reductive dechlorination. Hydrogen values are used to differentiate between Type 1 and 2 environments where daughter products are rapidly removed and Type 3 environments where daughter products are not produced. In addition, hydrogen concentrations greater than 1nM typically indicate that the rate of deductive dechlorination should have environmental significance.

The Section does not approve the removal of volatile fatty acids, BOD, COD, and hydrogen from the MNA parameter list at this time since they provide further confirmation that the geochemical environment

remains favorable for reductive dechlorination. Edgecombe County is permitted to discontinue MNA monitoring until the corrective measures described in the corrective action plan are implemented and may sample for MNA parameters every 18 months thereafter. Please contact me at (919) 707-8288 or by e-mail at ervin.lane@ncdenr.gov if you have any questions or concerns regarding this letter. Thank you in advance for your cooperation in this manner.

Sincerely,

Ervin Lane
Compliance Hydrogeologist
Solid Waste Section

cc: Sam Watts, P.G., S&ME, Inc.
Mark Poindexter, Field Operations Branch Head
Dennis Shackelford, Eastern District Supervisor
Ben Barnes, Environmental Senior Specialist
Solid Waste Central Files