

Hydrogeological Investigation and Groundwater Monitoring

Closed Municipal Landfill, Greenville, SC

Site Description

The site was an active municipal solid waste landfill (MSWLF) until it was closed in 2000. South Carolina Department of Health and Environmental Control regulation R61-107.19 specifies minimum criteria for MSWLFs to ensure the protection of human health and the environment. Included in these criteria are regulations regarding groundwater monitoring, explosive gases control, and post-closure care.



Rogers & Callcott Services and Results

Install Groundwater Monitoring System – A total of 10 groundwater monitoring wells were installed and a groundwater sampling plan was prepared. Quarterly sampling and analyses were conducted until a semi-annual sampling schedule was approved by SCDHEC. Groundwater samples were collected and analyzed at the Rogers & Callcott laboratory. The parameter is based on Appendix I of the SC Municipal Solid Waste Regulations and modified for the site.

Rogers & Callcott prepares groundwater monitoring reports that meet the requirements of R61-107.19, including a statistical analysis to evaluate groundwater monitoring data. Results of the analyses are used to determine if levels of constituents observed in the down-gradient wells vary significantly from levels of the same constituent observed in the up-gradient well.

Prepare and Submit Mixing Zone Application – Although several volatile organic compounds (VOCs) were detected in groundwater at concentrations above their respective maximum contaminant levels, they did not present a significant threat to human health and the environment. SC DHEC approved a “no further action” recommendation under the condition that the applicability of a Groundwater Mixing Zone for the site be investigated. The Groundwater Mixing Zone application was prepared demonstrating that the specified criteria had been met regarding the following:

- Source Mitigation and/or Containment
- Adequate Groundwater Quality Characterization
- Characterization of Plume Extent and Migration
- Time versus Concentration Trends
- Potential Off-site Impact
- Identification of Receptors
- Potential Impact at Discharge Points

Methane Gas Monitoring – Rogers & Callcott prepared a plan for monitoring methane gas at the landfill. Three gas monitoring wells were installed within the vadose zone after an investigation using barhole probes. Methane levels are monitored on a quarterly basis at the monitoring wells and at selected ground surface monitoring stations located across the site.