



North Carolina Department of Environment and Natural Resources

Division of Waste Management

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July 2, 2013

Sent Via Email – YIY1@RJRT.com

Ms. Yongsheng Yi
R.J. Reynolds Tobacco Company
Environment, Health, and Safety
401 North Main St.
Winston-Salem, NC 27101

Re: *Groundwater Modeling & Water Quality Monitoring and Adoption of Proposed Selected Remedy*
R.J. Reynolds Rural Hall Ash Landfill
Forsyth County, Solid Waste Permit Number 34-05
DIN 19214

Dear Ms. Yong Yi:

The Solid Waste Section has completed a review of the *Groundwater Modeling & Water Quality Monitoring* dated October 9, 2012 (DIN 14344) and submitted by ERM NC, Inc. on behalf of R.J. Reynolds Tobacco Company for the Rural Hall Ash Landfill, Solid Waste Permit #34-05. The *Groundwater Modeling & Water Quality Monitoring* was submitted in response to the Solid Waste Section letter dated August 10, 2013 (DIN 17025) and as a result of historical and consistent water quality (groundwater and surface water) exceedances.

Although the Solid Waste Section requested pursuing off-site access for the installation of an off-site groundwater monitoring well(s) located to the east and northeast of the facility, due to the difficulty in securing access to install the off-site groundwater well(s) at that time, the Solid Waste Section was amenable to the non-invasive groundwater modeling approach for demonstration purposes as part of the groundwater assessment for determining groundwater flow and migration of contaminants in the east and northeast directions of the landfill. The *Summary Report – Groundwater Modeling for Site Assessment* dated May 2, 2012 (DIN 16708) and also the *Groundwater Modeling & Water Quality Monitoring* document were both submitted to determine the potential for groundwater contamination to migrate off-site across the creek to the east and northeast of the landfill. The *Summary Report – Groundwater Modeling for Site Assessment* document modeled current conditions prior to the installation of the new landfill cap while the *Groundwater Modeling & Water Quality Monitoring* document modeled 100 years after the installation of the new landfill cap. Unfortunately, these two submitted modeling exercises were presented in two different ways. This was not the Solid Waste Section's intent and objective of the groundwater modeling exercise when this option was discussed during the April 28, 2011 meeting.

In addition, prior to the submittal of the *Groundwater Modeling & Water Quality Monitoring* document, the Solid Waste Section requested a conference call on September 4, 2012 with your consultant, ERM NC, Inc., to discuss our concerns regarding the first groundwater modeling exercise (*Summary Report Groundwater Modeling for Site Assessment*). The conference call included the need to show contaminant transport pathways with various transport periods (in years) utilizing current conditions (at that time in

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2012) prior to the installation of the modified landfill cap to illustrate how the contaminant plume may change and migrate over time. For example, the modeling would include five years, 10 years, 25 years, and 50 years of migration based upon the analytical data, aquifer characteristics, and overall site conditions. This was the purpose of the groundwater modeling exercise used in lieu of installing an off-site groundwater monitoring well(s). Other items discussed during the conference call included the assumptions for the aquifer characteristics; local versus regional watershed scales; the use of the groundwater elevation data; semiannual sampling of the off-site water supply well used as a livestock well (1160 Sixty Five Highway), why the three permanent groundwater monitoring wells W-7, W-8, and W-9, and the five temporary piezometers PZ-1, PZ-2, PZ-3, PZ-4, and PZ-5 need to be added to the facility's groundwater monitoring network; why the facility's piezometers were not utilized for the groundwater modeling exercise; and the recommendation of conducting pump tests at the facility to provide site specific hydraulic conductivities.

In the meantime, R.J. Reynolds Tobacco Company has installed a linear low density polyethylene (LLDPE) synthetic liner to the landfill cap and also made drainage improvements. This landfill cap modification was completed in September 2012. The first water quality monitoring event conducted since the completion of the landfill cap modification was the April 17, 2013 event. The Solid Waste Section received the results of this water quality monitoring event on June 11, 2013 (DIN 19140). These results were consistent with historical results, but the water quality results did show a slight decrease in concentrations of specific constituents.

Based upon the historical and recent semiannual water quality monitoring analytical data, the overall water quality assessment conducted, and R.J. Reynolds Tobacco's proactive and prompt approach to complete the modifications to the landfill cap, no additional water quality assessment is required at this time. However, as stated within the December 9, 2010 letter (DIN 12386), since the contaminant plume has migrated beyond the facility's compliance boundary, this is a violation, and corrective action will be required.

In response, R.J. Reynolds Tobacco Company submitted an *Adoption of Proposed Selected Remedy* dated November 7, 2012 (DIN 19115) for the corrective action for the water quality contamination. As a result of the historical and consistent water quality exceedances that have been detected at and beyond the compliance boundary in all cardinal, primary intercardinal, and secondary intercardinal directions of the facility (all directions), R.J. Reynolds Tobacco Company has selected the installation of a linear low density polyethylene (LLDPE) synthetic liner to the landfill cap (already completed), drainage improvements (already completed), and the recordation of land use restrictions (LURs). No potential contingency plans were listed.

As a result, the Solid Waste Section is receptive to R.J. Reynolds Tobacco Company's proposed selected remedy of the installation of a LLDPE synthetic liner to the landfill cap and the drainage improvements as source control and containment technologies for water quality corrective action. However, the selected remedy also needs to address the migration of the contaminants that are currently present at and beyond the facility's compliance boundary in all directions that have impacted surface waters and may be impacting or have the potential to impact the adjacent properties (some contain water supply wells). Finally, the Solid Waste Section is not receptive to the recordation of land use restrictions (LURs) as part of the corrective action, however, they are a condition of the 2011 Settlement Agreement and still need to be recorded along with the survey plat as approved by the Solid Waste Section.

Therefore, within 30 days of receipt of this letter, please submit a new groundwater corrective action application. Please also include two potential contingency plans (A and B) within the application. These contingency plans should later be discussed in detail within the R.J. Reynolds Tobacco's Corrective Action Plan (CAP). The selected remedy and the two contingency plans should address effective ways

to restore groundwater quality at and beyond the facility's compliance boundary in all directions, to stop unacceptable impacts to the adjacent surface waters and to the adjacent properties, and to reduce the overall groundwater contamination at the facility. The *North Carolina Solid Waste .0500 Groundwater Corrective Action Application* is conveniently located on our Environmental Monitoring webpage at http://portal.ncdenr.org/c/document_library/get_file?uuid=2c45914c-bf33-49e1-9a5e-b54858e46fc0&groupId=38361.

After the Solid Waste Section approves the selected remedy and the two contingency plans in writing, a submittal of a Corrective Action Plan (CAP) will be required. The selected remedy and the Corrective Action Plan (CAP) should be submitted pursuant to 15A NCAC 02L .0103, 15A NCAC 02L .0106, 15A NCAC 02L .0107, 15A NCAC 02L .0108, 15A NCAC 02L .0202, 15A NCAC 13B .0503(2), 15A NCAC 13B .0601, and NCGS 143-214.1.

If you have any questions or concerns regarding this letter, please feel free to contact me at 919-707-8294 or by email at jaclynne.drummond@ncdenr.gov. Thank you again for your continued cooperation with this critical matter.

Sincerely,



Jaclynne Drummond
Compliance Hydrogeologist
Solid Waste Section

cc sent via email: Michael Scott, Solid Waste Section Chief
 Jason Watkins, Western District Supervisor
 C.T. Gerstell, Environmental Senior Specialist
 John Murray, Permitting Engineer