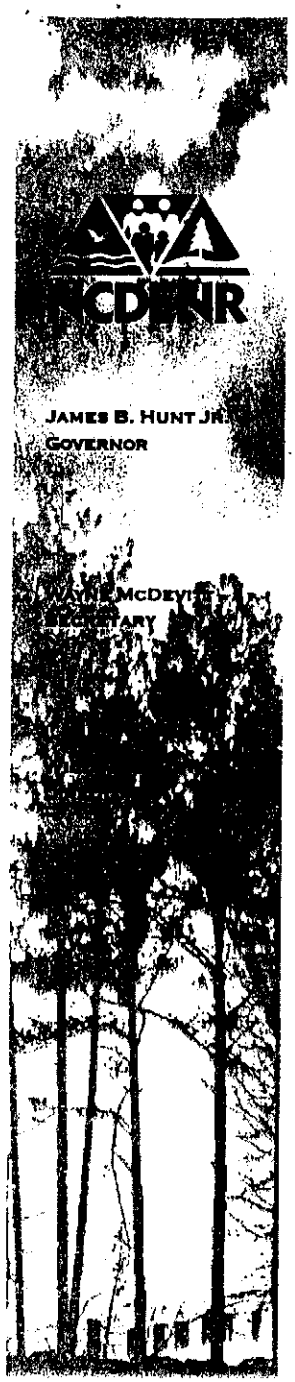

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

Fac/Perm/Co ID #	Date	Doc ID#
1804	7/15/11	DIN 14396

December 18, 1998

Mr. Grayling Vandervelde
Duke Power
1339 Hagers Ferry Road
Huntersville, NC 28078

RE: Marshall Steam Station Catawba County
Industrial Solid Waste Landfill Permit #18-04

Dear Mr. Vandervelde,

The Solid Waste Section Hydrogeologic Unit has received the Compliance Demonstration Report dated November 24, 1997. According to Rule .0503(2)(d)(ii) all industrial landfills which receive solid waste after January 1, 1998 must submit a design which satisfies either (A) a design ensuring that the ground water standards established under 15A NCAC 2L will not be exceeded in the uppermost aquifer at the compliance boundary established by the Division in accordance with 15A NCAC 2L or (B) a design with a leachate collection system, a closure cap system, and a composite liner system. In the case of this landfill the option (A) was chosen and an attempt to demonstrate compliance at the compliance boundary was made using HELP modeling along with FOWL-GH modeling.

At this time the Section wants to only address whether or not the 2L standards are being exceeded at the compliance boundary. If indeed it is found that the landfill does cause an exceedance of the 2L standards then the landfill will need to be closed.

This landfill was originally permitted on December 30, 1983. According to the Information Package ash placement began in March 1986. Monitoring wells were placed in June 1989 and the first sampling event was on August 29, 1989. The 2L standard has been exceeded at well MW-3 for manganese and for pH consistently according to our records. The manganese has been recorded at 3 times the 2L standard and seems to be increasing over time. The 2L standard of the pH also has been exceeded on wells MW-1, MW-2, and MW-4 but to a lesser degree. It has not been shown by direct measuring at wells or by modeling with FOWL-GH that manganese, nitrates,

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or pH will not exceed the 2L standards at the compliance boundary. The FOWL-GH model in not representative of and, according to the FOWL-GH literature, does not model manganese, nitrates or iron. If compliance of 2L standards cannot be demonstrated than closure of the landfill needs to be started. According to the Compliance Demonstration Report (page 12) the existing landfill is built (at least in part) on top of a former ash basin at elevation 805. It would be expected that the groundwater would be directly under or within the ash landfill. Modeling of soils under the landfill is not appropriate in this instance.

According to the potentiometric map presented in the Information Package for Rule .0503(d)(iii) dated April 23, 1996, Monitoring well MW-4 appears to be the upgradiant well. MW-3 is shown as an upgradiant and sidegradiant well in the Information Package, but because of the height of the ash immediately next to this well it may indeed be downgradiant and be fairly representative of the discharge from the landfill. Please note that the compliance boundary (at the property line) is within 75 feet of this well. MW-2 is downgradiant. Monitoring wells MW-1 is 1400 feet from the landfill. MW-1 is considered to be of minimal use because the groundwater quality would not be representative of the quality of the ground water passing the point of compliance, which in the case of an industrial landfill is 250 feet or 50 feet within the property boundary according to 15A NCAC 2L standards.

It can be seen by the aforementioned locations of the wells and the fact that the 2L standards have been exceeded at MW-3 that monitoring wells need to be located in such a way as to better detect any possible releases from this landfill. It needs to be known in particular the height of the groundwater in/under the ash. An observation well would be an appropriate way to obtain this information. A revised water quality monitoring plan needs to be submitted which includes an updated potentiometric map and additional wells which are to be located, sampled, and analyzed in such a way as 2L standards at the compliance boundaries can be demonstrated. Included in the new monitoring system should be 2 or more added downgradient wells.

During the installation of the new monitoring wells a better understanding needs to be made of the geology and hydrology of the site. This is in order for you to be able to model that the design ensures that the 2L ground water standards will not be exceeded at the compliance boundary. In order to satisfy Rule .0503(2)(d)(ii)(A)part(I) which states: "The design shall be based upon modeling methods acceptable to the Division, which shall include, at a minimum, the hydrogeological characteristics of the facility and surrounding lands", the geological characteristics of the wells needs to be recorded and testing of the soil and water needs to be performed. Please see the rules .0504(1)(c) for determination as to what would be considered acceptable to this section.

Any future modeling needs to be with a constituent appropriate model (ie. Fe, Mn, or nitrates). Real data from the landfill site needs to be included in the model (ie. hydraulic conductivities, soil data, depth to rock, etc.) This data should come from borings or other testing performed on site as explained in previous paragraph.

The intent of this letter is to make clear some important issues which need immediate attention before a final review of this can be completed. Since this information is time sensitive the updated monitoring system and lab results should be completed in four to six months. Please contact me with an indication of how these issues will be addressed. I can be contacted at 919-733-0692 extension 345.

~~Bill Bossom~~s, Solid Waste Section
Jim Coffey, Solid Waste Section