

National Ash Management Advisory Board

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April 5, 2016

Mr. Tom Reeder
Assistant Secretary
North Carolina Department of Environmental Quality
217 West Jones Street
Raleigh, NC 27603

RE: National Ash Management Advisory Board Comments on Proposed Risk Classifications

Dear Mr. Reeder,

This letter is written in response to the North Carolina Department of Environmental Quality's (DEQ) request for public comment on its proposed risk classifications of coal ash impoundments. Our comments are directed at impoundments which have proposed classifications of low-intermediate, intermediate, and high, according to DEQ's application of the Coal Ash Management Act (CAMA).

This letter has been compiled, reviewed and endorsed by the National Ash Management Advisory Board (NAMAB). Note that Duke Energy is required to actively maintain the NAMAB for compliance with its Plea Agreement, as per *United States of America v. Duke Energy Business Services, LLC*, and settlement in the United States District Court for the Eastern District of North Carolina, Western Division. The NAMAB is an independent group of experts chartered through Duke Energy and managed by the University of North Carolina at Charlotte (UNC Charlotte). Board members provide advice to Duke Energy, but they are contracted with and report to UNC Charlotte.

The NAMAB has been integrally involved in the review of groundwater assessment plans, comprehensive site assessments, and corrective action plans, which have been submitted to DEQ. Likewise, it has participated in the review of stability and engineering related assessments and with the implementation of NAMAB-recommended health and environmental assessments of risk. While licensed professionals are responsible for these work products, the group is sufficiently aware of the site-specific conditions to which the CAMA risk classification criteria are being applied. For example, licensed engineers and geologists, with support from health and environmental risk assessors, have determined that there is no imminent hazard. Those same professionals have determined that existing conditions at these sites do not present a substantial likelihood that death, serious illness, severe personal injury, or a substantial endangerment to health, property, or the environment will occur.

In the abstract, a risk classification system is logical. In reality, DEQ's risk classification cannot be de-coupled from the prescriptive remedy approach defined by CAMA. A risk classification of intermediate or high (for instance high priority as prescribed in the case of Asheville, Dan River, Riverbend and Sutton) by law requires excavation and re-disposal to a new location without a scientific basis, and without consideration of broader immediate and life cycle impacts to communities and the environment. Moreover, aggressive closure schedules preclude the pursuit of beneficial use opportunities.

Excavation of coal ash is one method of addressing site's groundwater or stability concerns. However, based on holistic and life cycle considerations, it may not be a safe, effective and sustainable alternative. Other alternatives either individually or in combinations, such as capping, monitored natural attenuation, slurry cutoff walls, in-place stabilization/fixation, pumping wells, permeable reactive barriers and volume reduction of impounded ash through escalation of beneficial use, should be considered and compared on an impoundment by impoundment basis to develop an effective, safe and sustainable remedial strategy. The efficacy of these alternative methods increases with the amount of ash in any given location, i.e., the larger the impoundment, the smarter we need to be. The environmental and geotechnical remediation business is very mature and has evolved beyond a "dig and haul" mentality as the best and most environmentally protective solution.

The additional risk imposed by excavating and transporting ash from one location to another can exceed the potential risk posed by leaving the ash in place. Risk drivers include the statistical certainty of traffic fatalities and injuries, as tabulated by the National Highway Traffic Safety Administration. Likewise, excavation results in ecological disturbance, ongoing site releases from ash disturbance for years and broader environmental impacts from resource use and emissions, as noted by the U.S. Environmental Protection Agency (EPA). These risks and impacts should be calculated and considered before embarking on the mass movement of tens of millions of tons of material.

Licensed engineers and scientists have the education and experience needed to select and design the means, methods and timeline for closure activities. It may be appropriate for legislation to define the initiation of closure activities, but it should not stipulate a prescriptive approach with specific completion dates. The latter depends on site-specific details that are encountered as data are collected and professionally evaluated. This logic is understood by the environmental professionals as well as the EPA in reference to its approach to evaluating corrective action:

"EPA understands that there are a variety of activities that may be necessary in order to select the appropriate remedy (e.g., discussions with affected citizens, state and local governments; conducting on-site studies or pilot projects); and, once selected, to implement the remedy (e.g., securing on-site utilities if needed, obtaining any necessary permits, etc.). That is why EPA does not find it appropriate to set specific timeframes for selecting the remedy or to begin implementing the selected remedy."

This logic was incorporated into CAMA, given the provision for the Coal Ash Management Commission (CAMC). The CAMC existed to perform several tasks, one of which was to "Review and make recommendations on statutes and rules related to the management of coal ash". That provision was intended to allow for a statutory response to evolving data and analysis as has accumulated to date.

Unless the CAMA language for intermediate and high risk (and for that matter, for high priority sites) is changed, the appropriate risk classification for virtually all impoundments is "Low". This is because a risk classification of "Low" allows for all options to be considered, including full excavation, supported by the science and engineering and protective of human health and the environment. This will allow DEQ to review and approve a rational closure option that is protective of the public and environment, based on site-specific conditions.

We would be pleased to meet with you or other DEQ staff at any time. Our board is composed of highly credentialed and published experts with many years of experience on the relevant subjects from here and abroad. And we are independent.

Respectfully,



Dr. John L. Daniels, P.E., Chair
(Professor and Chair of Civil and Environmental Engineering, UNC Charlotte)

Signed on behalf of entire NAMAB:

Dr. Jeffrey C. Evans, P.E., Groundwater Subcommittee Chair
(*Professor and Chair of Mechanical Engineering, Bucknell University*)

Dr. William E. Wolfe, P.E., Closure Plan Subcommittee Chair
(*Professor Emeritus of Civil, Environmental and Geodetic Engineering, The Ohio State University*)

Dr. Patricia D. Galloway, P.E., member and Project Management Oversight Board Chair
(*President and CEO of Pegasus Global Holdings, Inc.*)

Dr. Susan E. Burns, P.E., member
(*Georgia Power Distinguished Professor of Civil and Environmental Engineering, Georgia Institute of Technology*)

Dr. Robert B. Jewell, member
(*Senior Research Engineer, University of Kentucky*)

Dr. Lawrence L. Sutter, member
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Dr. Garrick E. Louis, member
(*Associate Professor of Systems Engineering, University of Virginia and Science Advisor, U.S. Department of State*)

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