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Solid Waste Section
Asheville Regional Office

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December 6, 2011

Transmitted by Email
ethan.brown@ncdenr.gov

Mr. Ethan Brown
North Carolina Department of Environment and Natural Resources
Division of Waste Management - Solid Waste Section
217 West Jones Street
Raleigh, North Carolina 27603

Subject: Ten-Year Solid Waste Management Plan
McGuire Nuclear Station, Duke Energy Carolinas, LLC
Landfill #2 (Synthetically Lined), Permit No. 6004

Dear Mr. Brown,

On behalf of Duke Energy Carolinas (Duke), Altamont Environmental, Inc. submits this Ten-Year Solid Waste Management Plan for the McGuire Nuclear Station Landfill #2 (Synthetically Lined), Permit No. 6004 as required by GS 130A-309.09D.

Please feel free to call or respond with any questions or comments related to this project.

Sincerely,

ALTAMONT ENVIRONMENTAL, INC.



William M. Miller, P.E.

Enclosures: Ten-Year Solid Waste Management Plan, Years 2011 to 2021, McGuire Nuclear Station Landfill #2 (Synthetically Lined), Permit No. 6004, December 6, 2011.

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ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY



Ten-Year Solid Waste Management Plan

Years 2011 to 2021

McGuire Nuclear Station
Landfill #2 (Synthetically Lined)

Permit No. 6004

December 6, 2011

Prepared for



Prepared by
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1.0 Background and Period of Waste Management Plan

North Carolina General Statute Chapter 130A.309.09 D (c) requires each generator of industrial solid waste that owns and operates an industrial solid waste facility to establish a Ten-Year Solid Waste Management Plan.

This Ten-Year Solid Waste Management Plan pertains to the McGuire Nuclear Station Landfill #2 (MNS Landfill #2). The permit to operate MNS Landfill #2, Permit No. 6004, was initially issued by the North Carolina Department of Environment and Natural Resources (DENR) Division of Waste Management (DWM) on July 30, 1992. The Permit to Operate was amended and re-issued by the DWM on March 31, 2004 and July 7, 2009. The DWM revised the Permit to Operate on August 17, 2009.

This Ten-Year Waste Management Plan is for the period of July 1, 2011 until June 30, 2021.

2.0 Description of Landfill

The McGuire Nuclear Station (McGuire) is a two-unit nuclear power electrical generating facility located on Lake Norman in Mecklenburg County, North Carolina. The McGuire Nuclear Station is owned and operated by Duke Energy Carolinas, LLC (Duke) and has an electrical generating capacity of 2,200 megawatts.

Two landfills are located at the McGuire Nuclear Station, Landfill #1 (Unlined) and Landfill #2 (Synthetically Lined). Both landfills are permitted under Permit No. 6004. However, the MNS Landfill #1 was closed in 1993. The MNS Landfill #2 is actively accepting waste. The landfill first received waste in 1999.

The MNS Landfill #2 has a waste footprint of approximately five acres and is divided into four cells, which are referred and permitted by DWM as Phases 1-4. The MNS Landfill #2 was designed and constructed with a synthetic geomembrane liner and with a leachate collection system. Leachate and contact stormwater are collected in the landfill footprint and then piped to an adjacent lined leachate collection pond, located to the west of the landfill.

The MNS Landfill #2 is permitted to receive the following wastes generated by Duke:

- Asbestos
- Insulation (non-asbestos)
- Conventional wastewater sludge¹
- Empty containers
- Petroleum product spill cleanup materials
- Oil contaminated materials (filters, rags, brush, shrubs)
- Fish waste
- Non-hazardous excess, obsolete, expired chemicals

Waste accepted into the landfill is screened to ensure that no hazardous wastes, liquid wastes, incompatible waste, etc. are accepted into the landfill. Material Safety Data Sheets, analytical results, and other appropriate methods are used to ensure compliance.

¹ Non-contaminated or slightly radioactive contaminated sludge from the McGuire conventional waste water treatment system

3.0 Expected Annual Waste Quantities for Ten-Year Period

The MNS Landfill #2 has an estimated design capacity volume of 140,000 cubic yards.² The average waste placement density determined from annual landfill volume surveys and annual tonnage reports from the period of 2005-2011 is approximately 80 pounds per cubic foot (lb/ft³).³ The design landfill volumetric capacity corresponds to 151,200 tons of waste placed at a unit weight of 80 lb/ft³. Based on annual topographic surveys of the surface of the waste placed in the landfill, as of May 26, 2011, a total of approximately 50,194 cubic yards of waste had been disposed in the landfill.

The design volume of waste to be disposed of annually in the landfill is 5,000 cubic yards.⁴ With waste placed at a unit weight of 80 lb/ft³, the projected disposal rate measured in tons would be 5,400 tons per year.

The information below presents the quantities of waste that are expected to be placed in the MNS Landfill #2 based on the projected annual disposal rate. The yearly periods listed below correspond to the period July 1 through June 30 for the respective period.

Expected Annual Waste Quantities for Ten-Year Period

Year	Period	Expected Annual Quantity (tons)
Year 1	2011-2012	5,400
Year 2	2012-2013	5,400
Year 3	2013-2014	5,400
Year 4	2014-2015	5,400
Year 5	2015-2016	5,400
Year 6	2016-2017	5,400
Year 7	2017-2018	5,400
Year 8	2018-2019	5,400
Year 9	2019-2020	5,400
Year 10	2020-2021	5,400

² *McGuire Nuclear Station Landfill Operations Manual*. Permit No. 6004. Duke Energy Carolinas. Document ID No. 6987. March 10, 2009.

³ *Industrial Waste Landfill Facility Annual Report*. McGuire Nuclear Station—Duke Energy Carolinas, LLC. Permit 6004-INDUS-1981.

⁴ *Permit Application Report and Project Manual for McGuire Landfill Lined Expansion*. Duke Energy. September 26, 1990.

4.0 Years of Disposal Capacity Remaining

The MNS Landfill #2 has a capacity of 140,000 cubic yards.

Duke performs an annual topographic survey of the surface of waste placed in the landfill. Until 2009, the survey was performed in December. In 2010, the survey was performed toward the end of June to correspond with the July 1 to June 30 period. In 2011, the survey was performed at the end of May. Subsequent annual topographic surveys will be performed during the second quarter of each year.

As of May 26, 2011, approximately 50,194 cubic yards (yd³) of waste had been disposed in the landfill. The remaining capacity of the MNS Landfill #2 is calculated below:

140,000 yd ³	Landfill Capacity
<u>- 50,194 yd³</u>	Waste Placed through May 26, 2011
89,806 yd³	Landfill Remaining Capacity

Based on the approximate volume of waste placed through May 26, 2011, and using a waste density of 80 lb/ft³, the remaining capacity measured in tons would be 96,990 tons. At the projected disposal rate of 5,400 tons per year, the estimated years of disposal capacity remaining are calculated:

<u>96,990</u>	Tons Remaining Capacity	= 18	Estimated Years of
5,400	Tons/Year Expected Annual Quantity		Disposal Capacity Remaining

5.0 Waste Management Strategy—Plans for Waste Reduction

Options for management and reduction of wastes placed in the MNS Landfill #2 are limited due to the sources of waste placed in the landfill. The quantities of waste streams that are associated with the power production and operation of MNS Landfill #2 (i.e., asbestos, insulation, conventional wastewater sludge, and fish waste) are projected to remain at generally constant levels through the life of the landfill.

All Duke facilities, including McGuire Nuclear Station, adhere to corporate waste reduction initiatives at reducing waste sources and maximizing recycling. These goals are established and tracked annually. Corporate environmental audits are performed routinely on all Duke facilities. A portion of this audit is focused on source reduction, reuse of materials, methods of disposal used, recycling programs, and overall amount of material recycled.

With increased source reduction, recycling, and reuse, the disposal rate at the MNS Landfill #2 has averaged 2,660 cubic yards per year (2,873 tons per year) since January 2000, or 53 percent of the 5,000 cubic yards per year (5,400 tons per year) design annual disposal rate.

McGuire has reduced the volume of waste placed in the landfill through corporate goals aimed at reducing waste sources and maximizing reuse and recycling. In addition to the overall reduction of waste and recycling, Duke has reduced the volume of material placed in the landfill by using oil contaminated soil as cover material. McGuire has reduced the volume of expired or obsolete chemical disposed in the landfill by participating in corporate programs designed to identify alternative uses for these chemicals. Duke partners with schools, colleges, waste brokerages, and small industries to utilize these chemicals, where possible, avoiding disposal.

Duke strives to reduce the volume of petroleum product spill cleanup material through corporate efforts to reduce the number of petroleum spills, thereby reducing the volume of this type of material placed in the landfill.