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Transmitted by Email  
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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  
Allen Steam Station, Duke Energy Carolinas, LLC  
Retired Ash Basin (RAB)—Ash Landfill, Phase 1, Permit No. 3612  
Gaston County, North Carolina

Dear Mr. Brown,

On behalf of Duke Energy Carolinas (Duke), Altamont Environmental, Inc. submits this Ten-Year Solid Waste Management Plan for the Allen Steam Station Retired Ash Basin (RAB)—Ash Landfill, Phase 1, Cells 1 and 2, Permit No. 3612, 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, Allen Steam Station  
Retired Ash Basin (RAB)—Ash Landfill, Phase 1, Permit No. 3612, December 12, 2011.

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# ALTAMONT ENVIRONMENTAL, INC.

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## Ten-Year Solid Waste Management Plan

Years 2011 to 2021

Retired Ash Basin (RAB)—Ash Landfill  
Phase 1, Cells 1 and 2  
Permit No. 3612

Allen Steam Station  
Duke Energy Carolinas, LLC

December 12, 2011

Prepared for



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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 Allen Steam Station Retired Ash Basin (RAB)—Ash Landfill, Phase 1, Cells 1 and 2. The Allen Steam Station RAB Ash Landfill is located at Duke Energy Carolinas, LLC (Duke) Allen Steam Station, in Gaston County. The North Carolina Department of Environment and Natural Resources Division of Waste Management (DWM) issued a Permit to Operate for Phase 1, Cell 1 on December 9, 2009. Phase 1, Cell 2 received a Permit to Operate on December 7, 2010. The Permit to Operate is subject to review every five years.

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

## 2.0 Description of Landfill

The landfill is located on the eastern portion of the Duke Allen Steam Station property, approximately 0.25 miles south of the Allen Steam Station in the footprint of the retired ash basin (RAB). The RAB is bound to the north, east, south, and west by earthen dikes. The Catawba River is located to the east. Adjacent to the RAB to the south is the existing active ash basin, and to the west is a structural fill area. The landfill receives combustion residuals including fly ash, bottom ash, boiler slag, mill rejects, and flue gas desulfurization (FGD) residue generated at the Allen Steam Station.

The landfill was designed and constructed with a double liner system, consisting of two geomembranes, with a leak detection system located between the two geomembranes. The landfill will be developed in two phases. The waste footprint of Phase 1 and Phase 2 is projected to be approximately 47 acres. The entire landfill facility, including the waste footprint, associated perimeter berms, ditches, stormwater management systems and roads, is projected to encompass an area of approximately 62 acres, when completed.

As of the date of this plan, only Phase 1 is operational. Phase 1 includes Cell 1 and Cell 2 and has a waste footprint of approximately 25 acres. Phase 1 is projected to reach its final capacity in approximately 2014. Duke has developed the design for Phase 2 of the landfill. Phase 2 would consist of two additional cells, Cell 3 and Cell 4, located adjacent to Phase 1. Permitting and construction of Phase 2 would be initiated prior to reaching the final capacity of Phase 1.

### 3.0 Expected Annual Waste Quantities for Ten-Year Period

Duke expects that 500,000 tons of waste will be disposed annually in the landfill for the ten-year period of this plan. As described in Section 2.0, Duke anticipates that Phase 1 will reach its capacity prior to the end of the ten-year period and that permitting and construction for Phase 2 will be required.

The information below presents the quantities of waste that are expected to be placed in Phase 1 and Phase 2 of the Allen Steam Station RAB—Ash Landfill during the ten-year period. Each year listed below corresponds to July 1 through June 30 of the respective period.

**Expected Annual Waste Quantities for Ten-Year Period**

Year	Period	Phase 1—Expected Annual Disposal Quantity (tons)	Phase 2—Expected Annual Disposal Quantity (tons)
Year 1	2011-2012	500,000	-
Year 2	2012-2013	500,000	-
Year 3	2013-2014	479,036	20,964
Year 4	2014-2015	0	500,000
Year 5	2015-2016	0	500,000
Year 6	2016-2017	0	500,000
Year 7	2017-2018	0	500,000
Year 8	2018-2019	0	500,000
Year 9	2019-2020	0	500,000
Year 10	2020-2021	0	500,000

## 4.0 Years of Disposal Capacity Remaining

### Phase 1

As stated in the Permit to Operate<sup>1</sup>, the approximate gross landfill capacity of Phase 1 is 2,082,500 cubic yards (yd<sup>3</sup>). Assuming an approximate final cover soil thickness of 3 feet (ft) (2-ft final cover and 1-ft interim cover)<sup>2</sup> over an approximate 25-acre footprint, the net landfill capacity of Phase 1 is calculated to be approximately 1,961,500 yd<sup>3</sup>. Using an assumed in-place density of 75 pounds per cubic foot (1.01 tons per yd<sup>3</sup>), the net capacity corresponds to approximately 1,986,019 tons.

As of June 30, 2011, the landfill had received approximately 506,983 tons of waste. The remaining capacity of Phase 1 is calculated below:

1,986,019 tons	Phase 1 Net Capacity
<u>- 506,983 tons</u>	Waste Placed through June 30, 2011
<b>1,479,036 tons</b>	<b>Phase 1 Remaining Capacity</b>

Based on the Phase 1 Remaining Capacity and the expected annual disposal rate of 500,000 tons/year, the estimated years of Phase 1 disposal capacity remaining are calculated:

$$\frac{\mathbf{1,479,036 \text{ tons remaining capacity in Phase 1}}}{\mathbf{500,000 \text{ tons/year expected annual disposal rate}}} = \mathbf{3 \text{ Years of Disposal Capacity Remaining in Phase 1}}$$

Based on this calculation, Phase 1 of the landfill will have the capacity to accept waste until approximately 2013-2014.

### Phase 2

Duke's plans for disposal are to continue to place material in Phase 1 until the capacity of Phase 1 is reached. Duke has developed the design for Phase 2 of the landfill. Phase 2 would consist of two additional cells, Cell 3 and Cell 4, located adjacent to Phase 1. Permitting and construction of Phase 2 would be initiated prior to reaching the final capacity of Phase 1.

Phase 2 will be designed to receive approximately 500,000 tons of waste per year. Phase 2 of the landfill has a proposed gross capacity of approximately 3,958,200 cubic yards<sup>1</sup> and a calculated net capacity of 3,851,720 cubic yards (3,899,867 tons), based on an assumed 3-foot-thick cover (2-foot-thick final cover and 1-foot-thick interim cover)<sup>2</sup> over 22 acres.

Phase 2 of the landfill will begin receiving waste in approximately years 2013 to 2014. Phase 1 and Phase 2 will accept wastes concurrently until Phase 1 has reached its capacity. Phase 2 will be designed with capacity to accept waste until approximately years 2021 to 2022.

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<sup>1</sup> Permit to Operate, Permit 3612, Duke Allen Steam Station, Retired Ash Basin (RAB)—Ash Landfill Phase 1, Document ID No. 7949. December 9, 2009,.

<sup>2</sup> Operations Plan, Allen Steam Station Retired Ash Basin (RAB)—Ash Landfill. May 23, 2011

## 5.0 Waste Management Strategy—Plans for Waste Reduction and Disposal

Duke's Byproduct Management Group was developed to seek markets and applications for use of coal combustion byproducts. This group continuously works toward maximizing the use of coal combustion byproducts. The market of combustion byproducts is the primary waste reduction effort.

The Duke Byproduct Management Group is continuing to pursue the beneficial use of the ash produced at Allen. Duke believes that an improving regional economy will increase the demand for beneficial ash reuse, resulting in a decrease in the quantity of material disposed in the landfill.

Beneficial ash reuse at the Allen facility is mostly connected to the concrete industry, which can also be sensitive to economic conditions. These markets are great opportunities for beneficial reuse with the understanding that the market strength from year to year is uncertain.

The reuse markets for gypsum from the Allen facility are the wallboard and agricultural markets. The wallboard market is very sensitive to current economic conditions and can be difficult to project. The agricultural market is a new area for sales at the Allen facility with little background or recurring sales, but it is less susceptible to economic impacts. These markets provide opportunities for beneficial reuse with the understanding that the market strength from year to year is uncertain.

Duke's goal for the reuse market is to increase sales by two percent each year, which would reduce the amount of waste going to the facilities if production rates were stable. This goal is attainable and will be the standard going forward at the Allen facility; however, achieving this goal depends on uncertainties associated with the reuse markets as well as generation rates.

## 6.0 Applicability with Pending Regulations

In June 2010, the US Environmental Protection Agency (EPA) issued a draft rule<sup>1</sup> that considers two possible regulatory options for the management of coal combustion residuals (CCR). The EPA definition of CCR includes fly ash; bottom ash; flue gas desulfurization (FGD) materials, including synthetic gypsum; and boiler slag. Both regulatory options fall under the Resource Conservation and Recovery Act (RCRA). Under the first option, EPA would list these residuals as special wastes subject to regulation under Subtitle C of RCRA when destined for disposal in landfills or surface impoundments. Under the second option, EPA would regulate coal ash under Subtitle D of RCRA, the section for non-hazardous wastes. The proposed regulations have the potential to affect the disposal and the beneficial uses for CCR. In addition to the disposal requirements under the proposed rules, both proposed options may require the removal of solids from the ash basin.

The EPA has solicited public comments on the proposed rule and is in the process of developing a final rule. The EPA issued a Notice of Data Availability (NODA) for the proposed rule on October 12, 2011. The NODA announced additional information and invited comment on additional information obtained by EPA in conjunction with the June 21, 2010 proposed rule.

It is anticipated that no final rule will be issued in 2011. The effective dates for the rules will vary from six months after the rule is finalized for the Subtitle D option to one to two years after the rule is finalized for the Subtitle C option.

As part of this rulemaking process, the EPA is soliciting comment on unencapsulated uses of CCR and whether they should continue to be exempted from RCRA regulations for the purpose of beneficial uses under the Bevill exemption.<sup>2</sup> EPA will decide on appropriate regulations for beneficial uses after completion of the rule making.

In the current version of the proposed rule, both the Subtitle C and the Subtitle D versions of the proposed rule may require removal of solids from the existing ash basin (Allen Active Ash Pond). However, there is consideration of ash basin closure with the solids in place. If the final rule requires removal of solids from the ash basin, Duke would perform a hydrographic survey to estimate the volume of solids to be removed and would incorporate this additional volume of material into the planning sequence for additional landfill phases.

If the final rule does not require removal of the solids from the ash basin and requires ash basin closure, then only the quantity of ash that is now sluiced to the ash basin would require disposal in a landfill. This ash would be disposed of in the landfill phase permitted at the time of the effective date of the rule and the quantities would be included in designs for future site landfills.

At this time, the proposed rule does not appear to affect the disposal of gypsum in a permitted landfill nor does the proposed rule seem likely to affect the beneficial uses of gypsum.

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<sup>1</sup> Federal Register: June 21, 2010, Volume 75, Number 118, Proposed Rules Page 35127-35264.

<sup>2</sup> Section 3001(b)(3)(A)(i) of Resource Conservation and Recovery Act (known as the Bevill exclusion or exemption) excluded certain large volume wastes generated primarily from the combustion of coal or other fossil fuels from being regulated as hazardous waste under subtitle C of RCRA. This amendment also allowed certain beneficial uses of coal combustion residuals.