

Coal Combustion Residuals (CCR) in North Carolina



Coal Combustion Residuals (CCR) and Products (CCPs)

2015 - 2016

Fly Ash ~ powdery material composed mostly of silica with nearly all particles being spherical captured in air pollution control systems

Bottom Ash ~ large particles such as sand and small rocks from pulverizing coal and collected in the bottom of the boilers/furnace

Flue Gas Desulfurization (FGD) Material ~ powdery material with a mixture of sulfites & sulfates (aka gypsum) produced when reducing SO₂ emissions

Boiler Slag ~ molten bottom ash which fractures and crystallizes to form hard black pellets when quenched with water

Tons of Ash Recycled

Edgecombe	8,476
Genco, LLC	
UNC Chapel Hill	14,463
Duke Energy	466,570

Tons of FGD Recycled

Duke Energy 1,151,701



NC Regulation of Coal Ash Prior to the Dan River Incident

DWR permitted the wastewater treatment system via National Pollutant Discharge Elimination System (NPDES) Permit Program

- Wet residuals were specifically not solid waste
- DWM permitted dry ash handling, via landfills
- Power plant dams were **specifically exempt** from the state Dam Safety Act and oversight by the Division of Energy, Mineral, and Land Resources (DEMLR)



Coal Ash Release – What Happened?

Sunday - Feb 2nd

- Coal ash ponds at Dan River Station retired in 2012.
- On the afternoon of Feb 2 (Sunday) a stormwater pipe under the primary 27 acre coal ash pond fails.
- Corrugated metal portion of pipe fails.
- Failure of pipe under the pond allows the release of coal ash & water to the adjacent Dan River.
- Partial collapse of interior pond berm.
- Duke notifies Eden/Danville/Rockingham County.
- Duke calls Division of Emergency Management hotline Sunday evening.



Dan River Steam Station



Dan River CTCC - Eden, NC
February 4, 2013
www.AerialPhotosElite.com

Pipe Failure at Dan River



NC Coal Ash Tonnage

Duke Energy provides an inventory coal ash stored at their 14 facilities online:

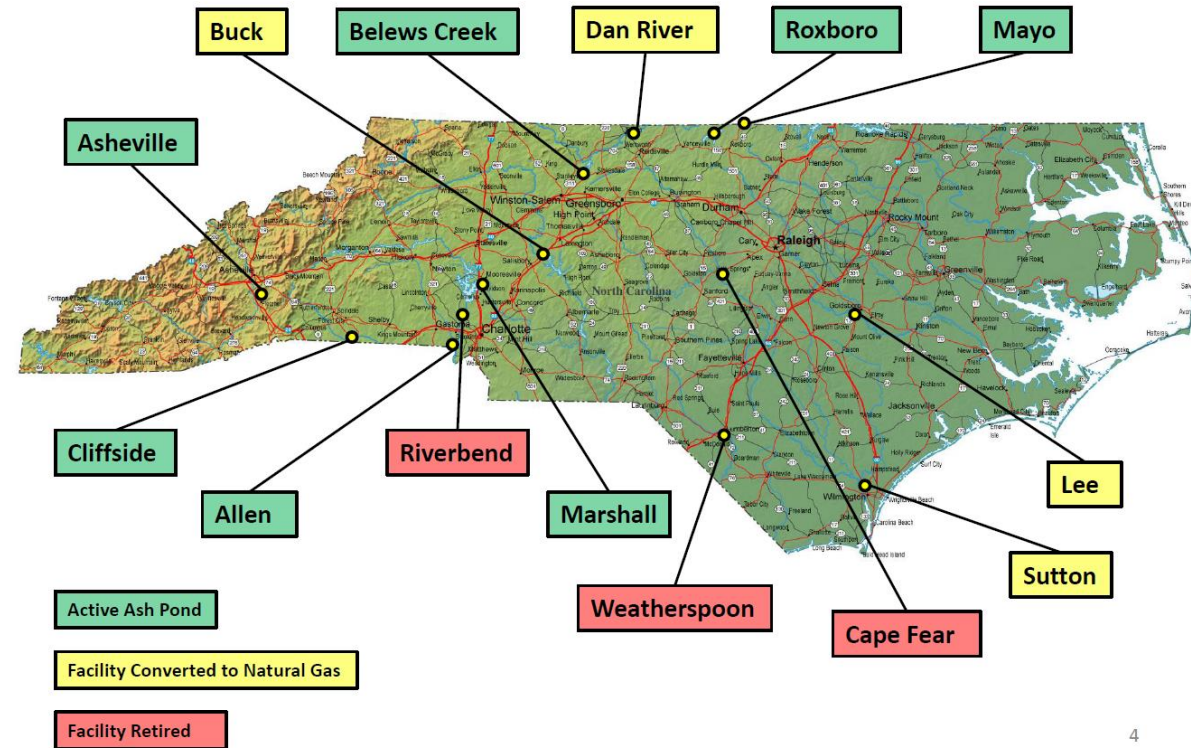
<https://www.duke-energy.com/our-company/about-us/power-plants/ash-management>.

Duke Energy's "ash metrics" (September 22, 2016):

Total Ash Inventory in Basins	(32)	115,550,000 tons
Total Ash Inventory in Landfills	(12)	24,560,000 tons
<u>Total Ash Inventory in Fills</u>	<u>(10)</u>	<u>21,690,000 tons</u>
Total Weight of Ash at all 14 Facilities		158,962,000 tons

Coal Ash Remaining

Plans to Remove CCR		CCR To Be Determined	
Asheville	6,280,000	Allen	19,270,000
Dan River	2,960,000	Belews Creek	19,760,000
Riverbend	5,180,000	Cliffside	9,890,000
Sutton	7,340,000	Marshall	30,890,000
Cape Fear	5,730,000	Mayo	6,980,000
Weatherspoon	2,450,000	Roxboro	34,620,000
H.F. Lee	5,960,000		
Buck	5,310,000		
Total	41,210,000	Total	121,410,000



- (Duke Energy Marshall) Catawba CO.
 - 1804-INDUS-1983 (closed)
 - 1809-INDUS-
 - 1812-INDUS-2008 * #

- (Duke Energy Allen) Gaston CO.
 - 3612-INDUS-2008 * #

- (Duke Energy Sutton) New Hanover CO.
 - 6512-INDUS-2016

- (Duke Energy Dan River) Rockingham CO.
 - 7906-INDUS-2016

- (Duke Energy Rogers) Rutherford CO.
 - 8106-INDUS-2009

- (Duke Energy Roxboro) Person CO.
 - 7302-INDUS-1988 *

- (Duke Energy Mayo) Person CO.
 - 7305-INDUS-2012

- (Duke Energy Belews Creek) Stokes CO.
 - 8503-INDUS-1984 (closed)
 - 8504-INDUS-
 - 8505-INDUS-

- (Westmoreland Partners
Roanoke Valley Energy Plant) Halifax CO.
 - 4204-INDUS-1994

** Constructed on top of retired ash basin
No GW monitoring (double lined)*



Session Law 2014-122 (Senate Bill 729) Overview

Coal Ash Management Act (CAMA)

Require all plants to convert to dry fly ash by Dec 31, 2018 and dry bottom ash by Dec 31, 2019

- Create coal ash management commission
- Expedite review of permits
- Require quarterly reports on ash ponds to be submitted to the G.A.
- Prohibit local government regulation of management of CCPs
- Prohibit new construction or expansion of ash ponds, effective Oct 1, 2014
- Prohibit disposal of CCPs to ash ponds at plants no longer producing CCPs, effective Oct 1, 2014
- Prohibit storm water discharge to ash ponds, effective Dec 31, 2019

Session Law 2014-122 (Senate Bill 729) Overview

Coal Ash Management Act (CAMA)

By Dec 31, 2015 prioritize the closure and remediation of all ash ponds

- Duke submit plans for all ash ponds; Closure and remediation of certain ash ponds by Aug 1, 2019
 - Requires DEQ to establish a schedule for closure and remediation of ash ponds
 - Establish minimum statutory requirements for structural fills and perform an inventory and inspect certain structural fills
 - Moratorium on structural fills until Aug 1, 2015 and direct DENR to study adequacy of current law
- Require groundwater assessments for all ash ponds
 - Require corrective action at ash ponds to restore groundwater quality
 - Require survey of drinking water wells and replace contaminated water supplies
 - Identify, assess and correct any unpermitted discharges from ash ponds

CCR Management and HB630 SL 2016-95

On July 14, 2016, Session Law 2016-95, Section 3(a) **revised the Coal Ash Management Act of 2014**

- Abolished the Coal Ash Management Commission ruled unconstitutional
- (130A-309.213(d)) Directed DEQ to issue final classification for remaining impoundments no later than October 15, 2018
- Mandated the recycling of ash from three Duke facilities
- Allowed closure under the federal CCR rule, thus making the department write the CCR rule into state code



NC DEQ Addresses Coal Ash

Coal Ash Basin Action Management Team- Coordination and leading actions for the department, melding all the parts for the multiple permits and actions needed at multiple facilities simultaneously

Water Resources- leading the comprehensive site assessments, groundwater corrective action plans, alternate water, modeling,

Waste Management- Landfills, closure of ponds, rules

Division of Energy, Mineral and Land Resources- Dam Safety and rules



Closure of CCP Ash Ponds

- By Dec 31, 2019 high risk ash ponds shall be closed with a closure plan submitted by Dec 31, 2016
- By Dec 31, 2024 intermediate risk ash ponds shall be closed with a closure plan submitted by Dec 31, 2017**
- By Dec 31, 2029 low risk ash ponds shall be closed with a closure plan submitted by Dec 31, 2019

***Intermediate ponds being excavated for recycling have until August 1, 2028*



Uses for Coal Ash

- Drywall industry utilizes gypsum (FGD material) as a supplemental ingredient in the wallboard production process
- CertainTeed (wallboard production) recently opened a facility across the river from the Roxboro Power Plant
- Duke has reported an increased need for gypsum
 - 8505-INDUS (Belews Creek - FGD) has been mining gypsum for the past 12 months

Fly ash can be used as raw material (substitute for Portland cement) in concrete products and a component in road bases



Coal Ash Recycling

3 sites mandated under 130A-309.216 (Ash Beneficiation Projects)

By January 1, 2017, Duke must designate two facilities for the beneficiation project; A third site must be designated by July 1, 2017

- Each site must produce 300,000 tons per year
- Beneficiation expected to supply product to the cement industry
- Carbon content too high in ash basins must be further processed
- The sites must be operational within two years of permit issuance
- Sites must be cleaned by December 31, 2029

Duke announced on October 5, 2016 that Buck Steam Station be the first site slated for beneficiation



Federal Coal Combustion Residual Rule / Law

- EPA finalized the *Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule)* under a subtitle D
 - the solid waste or non-hazardous waste provisions of RCRA December 14, 2014.
 - The CCR Rule was further amended and became effective October 4, 2016.
- The US Congress passed the *Water Infrastructure Improvements for the Nation Act* or the *WIIN Act* on December 18, 2016.
 - Section 2301 of the Act is the *Approval of State Programs for Control of Coal Combustion Residuals*.



Timeline of NC Coal Ash Regulations

September 2014 – Coal Ash Management Act (CAMA)

April 2015 – EPA CCR Published

July 2016 – CAMA Updated

Fall 2016 – DEQ Initial Rule Presentation to the North Carolina
Environmental Management Commission

December 2016 – WIIN Act passed

March 2018 – DEQ Stakeholder Meetings

April 2018 – EPA Proposes Federal CCR Rule Changes

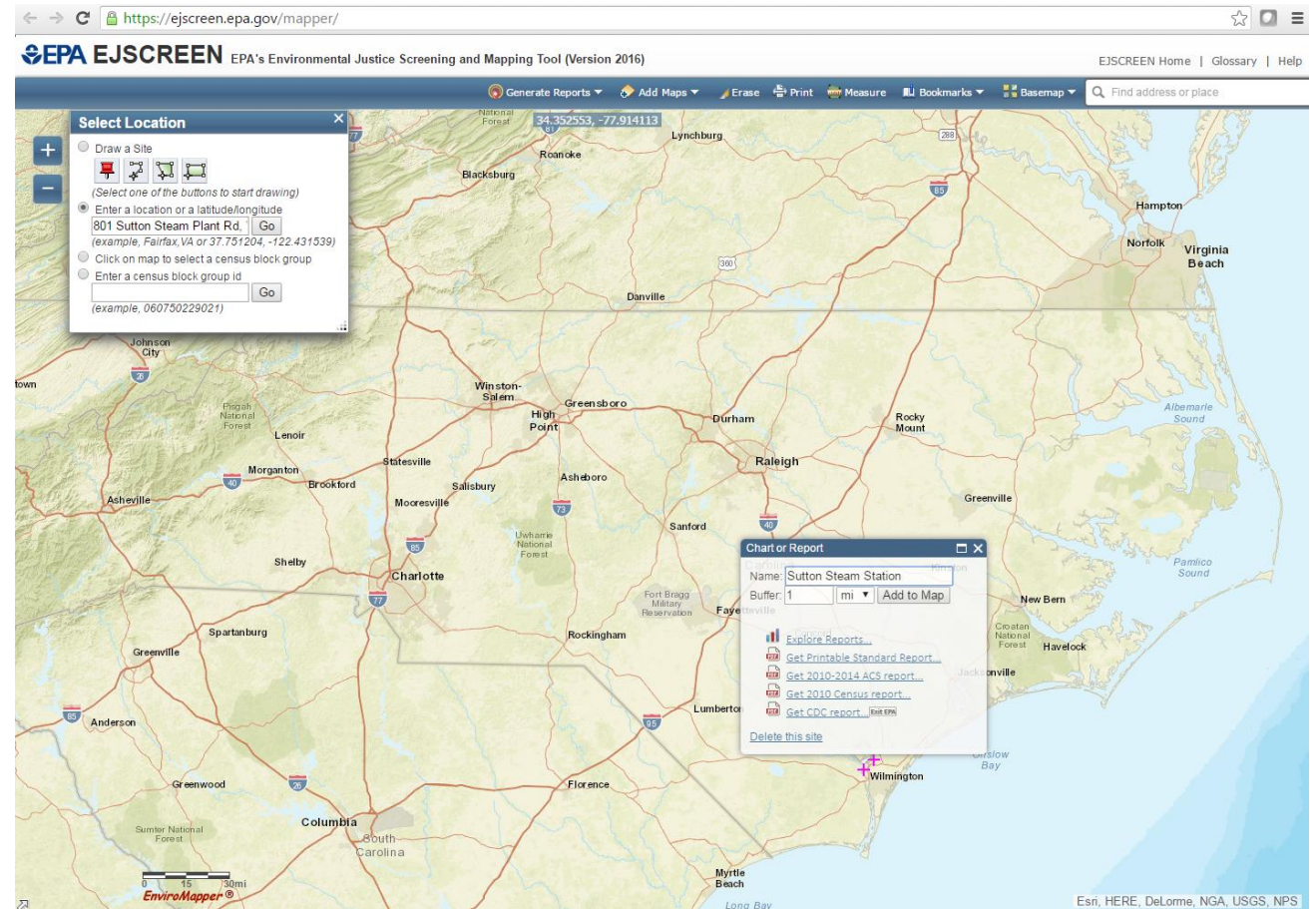
May 2018 – Groundwater & Waste Management (GWWM) Committee Meeting

July 2018 – Environmental Management Commission (EMC) Meeting



Topics of Interest Related to Coal Ash

- Environmental Justice
 - EJSCREEN Tool
- Media & public attention
- Public record requests
- Public hearings, public comments
- Promulgation of NC rule set
- Intense public interest led by SELC, Riverkeepers, community groups.
- Continuous litigation





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