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North Carolina: Coal Ash Disposal, Damage and Regulation

Plant[1,2]	Operator	Coal Ash Disposal Sites[3]	High Hazard Dams[1]	County
Asheville Power Station	Progress Energy Carolinas	2 ponds	2	Buncombe
Belews Creek Steam Station	Duke Carolinas LLC	1 pond/3 landfills	1	Stokes
Buck Power Station	Duke Carolinas LLC	5 ponds	5	Rowan
Cape Fear Power Station	Progress Energy Carolinas	5 ponds	5	Chatham
Cliffside Power Station	Duke Carolinas LLC	6 ponds/1 landfill	5	Cleveland
Dan River Power Station	Duke Carolinas LLC	2 ponds	2	Rockingham
Edgecombe Genco LLC	Edgecombe Oper. Serv. LLC			Edgecombe
G. G. Allen Power Station	Duke Carolinas LLC	3 ponds/1 landfill	2	Gaston
L. V. Sutton Power Station	Progress Energy Carolinas	2 ponds		New Hanover
Lee Power Station	Progress Energy Carolinas	5 ponds	1	Wayne
Marshall Steam Station	Duke Carolinas LLC	1 pond	1	Catawba
Mayo Power Station	Progress Energy Carolinas	2 ponds/1 landfill	1	Person
Primary Energy Southport	CPI USA NC LLC			Brunswick
Riverbend Power Station	Duke Carolinas LLC	3 ponds	3	Gaston
Roxboro Power Station	Progress Energy Carolinas	4 ponds/1 landfill	1	Person
W. H. Weatherspoon Power Station	Progress Energy Carolinas	2 ponds		Robeson
Roanoke Valley Energy Facility I and II	Westmoreland Partners	landfill[4]		Halifax
Univ of NC Chapel Hill Cogen Facility	University of North Carolina			Orange
Elizabethtown Power LLC	Carolina Power Holdings			Bladen
Lumberton	Carolina Power Holdings			Robeson
Primary Energy Roxboro	CPI USA NC LLC			Person

Amount of coal ash generated per year: Over 5.5 million tons. NC ranks 9th in the U.S. in ash generation.[5]

Number of Coal Ash Ponds: 37 ponds[6] at 14 plants.
Pond Ratings: 29 ponds in NC have been rated "high hazard", and 2 have been rated "intermediate hazard." [7] A high hazard rating means that pond failure will probably cause a loss of human life in addition to economic loss, environmental damage and damage to infrastructure An intermediate hazard rating indicates that a failure at the pond can cause economic loss, environmental damage, or damage to infrastructure.[8,9]
Age of Ponds: No NC coal ash pond has a composite liner, [10] and only 4 have any liner at all. Only 6 of the 37 ponds have leachate collection systems to capture chemicals before they reach groundwater. 17 ponds are over 40 years old, and 10 are over 30 years old. [11]
Pond Releases: The EPA database mentions waste releases caused (1) by a breach of an internal pond dike at the W.H. Weatherspoon Power Station in 2001, (2) by flooding that washed away waste at Cliffside Steam Station in 2005, and (3) via a pond breach at the Roxboro Power Station in 2008. [12] On September 28, 2010, a coal ash pond dam failed at Progress Energy's Sutton coal-fired power plant. Progress Energy employees found the failure when they drove a truck into the breach. A coal ash plume estimated to be approximately 8 feet deep and about 22 feet wide by 100 feet long was released.[13] [14]

Documented Damage at Coal Ash Disposal Sites: There are 13 documented cases of water contamination:

- **Hyco Lake, Roxboro**. Hyco Lake was constructed in 1964 as a cooling water source for the CP&L Roxboro Steam Electric Plant. The lake received discharges from the plant's ash-settling ponds containing high levels of selenium. The selenium accumulated in the fish in the lake, affecting reproduction and causing declines in fish populations in the late 1970s and 1980s. The NC Department of Health and Human Services issued a fish consumption advisory in 1988.[15]
- **Belews Lake.** Impounded in the1970s as a cooling reservoir. Fly ash produced by the power plant was disposed in a settling basin, which released selenium-laden effluent to the lake. Due to the selenium contamination, 16 of the 20 fish species present in the reservoir were entirely eliminated, including all the primary sport fish. Selenium discharge from the plant and fish impacts

persisted from 1974 to 1985. In 1985, under a mandate from NC, the plant stopped the discharge. Bioaccumulation of Se has been found in birds visiting the lake.[16]

• **Duke Power Allen Steam Generating Plant**. According to1985 data, EPA noted exceedances of manganese and iron in wells downstream from the coal ash disposal site. [17]

• **Progress Energy Sutton Steam Plant.** Arsenic, boron, manganese, and iron exceed NC groundwater standards underneath the coal ash impoundment. Arsenic concentrations have been measured as high as 29 times the federal drinking water standard.[18]

• **Progress Energy Lee Steam Plant:** Arsenic, lead, boron, manganese, and iron exceed NC groundwater standards onsite. Arsenic concentrations have been measured as high as 44 times the federal drinking water standard.[19]

• **Progress Energy Cape Fear Steam Plant**: Levels of lead, chromium, boron, iron, manganese and sulfate exceed NC groundwater standards.[20]

• **Progress Energy, Asheville Steam Plant.** Levels of chromium, boron, iron, and manganese exceed NC groundwater standards in groundwater underneath and downgradient of the plant's coal ash impoundment.[21]

• **Duke Energy, Belews Creek Station**. Leaching coal ash landfills have contaminated underlying groundwater above NC standards with arsenic, cadmium, selenium and nitrate and are polluting surface water.[22]

• **Full Circle Solutions, Inc.'s Swift Creek Structural Fill**. Arsenic, barium, lead, mercury and sulfate exceed NC groundwater standards and federal drinking water standards.[23]

• **Duke Energy Dan River Station**. Levels of chromium, iron, lead, manganese, silver and sulfate exceed NC groundwater standards and federal drinking water standards.[24]

• **Duke Energy Buck Steam Station.** Groundwater monitoring data obtained through a recent Freedom of Information Act request show a history of exceedances of state and/or federal standards for boron, iron, manganese, and pH.

• **Duke Energy Cliffside Steam Station.** Groundwater monitoring data obtained through a recent Freedom of Information Act request show a history of exceedances of state and/or federal standards for chromium, iron, manganese, and pH.

• **Duke Energy Marshall Steam Station.** Groundwater monitoring data obtained through a recent Freedom of Information Act request show a history of exceedances of state and/or federal standards for boron, barium, chlorine, iron, manganese, pH, total dissolved solids, selenium, chromium, nickel, and lead.

Deficiencies in North Carolina Coal Ash Regulations*:* Ash ponds constructed before 1994 (at least 21 of North Carolina's 37 ash ponds) are not required to have caps, liners, or conduct groundwater monitoring. Until 2009, ash pond dams were also exempted from any dam safety inspection under the North Carolina Dam Safety Act of 1967 until the TVA coal ash disaster in Kingston, TN prompted the NC legislature to revise the statue in 2009 with Senate Bill 1004.[25] Monitoring at coal ash landfills is discretionary, not mandatory, and landfills are not required to conduct on□site groundwater monitoring after closure.

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[1] NC DENR Dam Safety Engineering Division. Spreadsheet of power dam impoundments (updated August 2012). Information collected by site visits and inspections.

[2] U.S. EPA. Database of coal combustion waste surface impoundments (2012). Industry responses to Information Collection Request letters 2009-11, *available at* http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm. U.S. EPA, Response to FOIA (July 26.2012) *available at* http://earthjustice.org/sites/default/files/Coal-Plant-CCW-Disposal-Units-from-ICR.pdf.

[3] *Id.*

[4] U.S. Dept of Energy's Energy Information Administration, Form EIA-767, Annual Steam-Electric Plant Operation and Design Data. 2005.

[5] U.S. EPA, *Regulatory Impact Analysis for EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry*, Exhibit 3D (August 2010).

[6] U.S. EPA. Database of coal combustion waste surface impoundments (2012). Industry responses to Information Collection Request letters 2009-11, *available at* http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm. U.S. EPA, Response to FOIA (July 26.2012) *available at* http://earthjustice.org/sites/default/files/Coal-Plant-CCW-Disposal-Units-from-ICR.pdf.

[7] NC DENR Dam Safety Engineering Division. Spreadsheet of power dam impoundments (updated August 2012). Information collected by site visits and inspections.

[8] NC DENR Dam Safety Engineering Division Dam Hazards Classification. http://portal.ncdenr.org/c/document_library/get_file?uuid=8703e0ad-f20a-4e9b-b2d3-03f33969fcf3&groupId=38334

[9] *Id.*

[10] Correspondence with the NC DENR Dam Safety Engineering Divison August 10, 2012.

[11] U.S. EPA, Fact Sheet: Coal Combustion Residues (CCR) - Surface Impoundments with High Hazard Potential Ratings (Aug. 2009)..

[12] U.S. EPA. Database of coal combustion waste surface impoundments (2009).

[13] Gareth McGrath & Brian Freskos, "Deluge takes toll on roads, ash pond, sewers" Star News Online, September 28, 2010. http://www.starnewsonline.com/article/20100928/ARTICLES/100929663/1177?p=all&tc=pgall and

[14] John Murawski, "Progress Energy plugs leak at rain soaked coal ash pit" News & Observer http://blogs.newsobserver.com/business/progress-energy-plugs-leak-at-rain-soaked-coal-ash-pit

[15] U.S. EPA. *Coal Combustion Waste Damage Case Assessments* (July 9, 2007).

[16] *Id.*
[17] *Id.*
[18] Earthjustice, Environmental Integrity Project. Out of Control: Mounting Damages from Coal ash Waste Sites (2010) available at http://earthjustice.org/sites/default/files/library/reports/ej-eipreportout-of-control-final.pdf.
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Id.*
[23] *Id.*
[24] Earthjustice, Environmental Integrity Project, Sierra Club. In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment (2010), available at http://earthjustice.org/sites/default/files/files/report-in-harms-way.pdf.
[25] See N.C.G.S. 143-215.25A: Session Law 2009-390.