

JAMES E. ROGERS ENERGY COMPLEX (FORMERLY CLIFFSIDE STEAM STATION) RISK CLASSIFICATION



James E. Rogers Energy Complex Overall Risk Classification

DEQ has proposed the risk classification for the Active Ash Basin as **LOW TO INTERMEDIATE**.

- Groundwater Key Factor. If either it is determined that no receptor is impacted by the coal ash impoundments or alternate water is made available to all residents whose wells are being impacted by coal ash impoundments, the overall groundwater risk would be low. Based on the information received to date, there appears to be no downgradient receptors located 1,500 feet downgradient of the impoundment compliance boundary. The following data gaps related to groundwater uncertainty include:
 - Incomplete capture zone modeling in fractured bedrock for up-gradient and side-gradient supply wells in the immediate vicinity of the impoundments
 - Incomplete background concentration determination
 - Amount and extent of CCR in storage areas
 - Need a better understanding of heterogeneities in subsurface

(It should be noted that the data gaps are currently being addressed by Duke Energy and their findings will be presented to the DEQ in supplemental reports.)

- Surface Water Key Factor. The impoundment is not located within the 100-year floodplain.
- Dam Safety Key Factor. The impoundment received a high risk ranking before any repairs are made and a low risk rating once repairs are made.

DEQ has proposed the risk classification for the Retired Unit 1-4 and Retired Unit 5 Basin as **LOW**.

- Groundwater Key Factor. Based on the information received to date, there appears to be no downgradient receptors located 1,500 feet downgradient of the impoundment compliance boundary.
- Surface Water Key Factor. The impoundment is not located within the 100-year floodplains.
- Dam Safety Key Factor. The impoundments received a low to intermediate ranking before any repairs are made and a low risk rating once repairs are made and the impoundments have been dewatered.

Coal Ash Plant, Operations, and CCR Impoundment Description Summary (from CSA Report)

- NPDES Permit No.: NC0005088
- County: Rutherford/Cleveland
- Plant Status: Operating
- Number of CCR Impoundments: 3 (Active Ash Basin, Retired Unit 1-4 Basin, Retired Unit 5 Basin)
- Duke Energy owns and operates the Cliffside Steam Station (CSS) located in Mooresboro, in Rutherford and Cleveland counties, North Carolina. CSS began operation in 1940 as a coal-fired generating station. Units 1 through 4 were subsequently retired in October 2011, and Units 5 and 6 continue to operate at CSS. Coal ash residue and other liquid discharges from CSS's coal combustion process have been disposed of in the ash basin system located both west and east-southeast from the station and adjacent to the Broad River. Discharge from the active ash basin is currently permitted by the DWR under the NPDES Permit NC0005088. Coal ash residue is conveyed to the active ash basin system at the plant and is used to settle and retain ash generated from coal combustion at CSS. The ash basin system is located adjacent to the Broad River and consists of the active ash basin, the Units 1-4 inactive ash basin, and the Unit 5 inactive ash basin, all of which are unlined. A series of stormwater and plant process water storage ponds are located atop the unit 1-4 inactive ash basin.
- The ash basin system is an integral part of the CSS station's wastewater treatment system. Currently, the active ash basin is permitted to receive variable wastewater and stormwater inflows from the Unit 5 fly ash handling system, Unit 5 bottom ash handling system, cooling tower blowdown, stormwater runoff from yard drainage,

coal pile runoff, gypsum pile runoff, limestone pile runoff, landfill leachate, and wastewater streams generated from emission monitoring equipment, precipitators, and Selective Catalytic Reduction (SCR) Unit. Additional inflow consists of treated sanitary wastewater, miscellaneous cleaning wastes, domestic package plant wastewater (through the yard sumps) and water treatment system wastes (filter backwash, demineralizer regeneration waste, reverse osmosis rinse water, and clarifier solids). The coal ash was historically sluiced to the ash basin system via sluice lines.

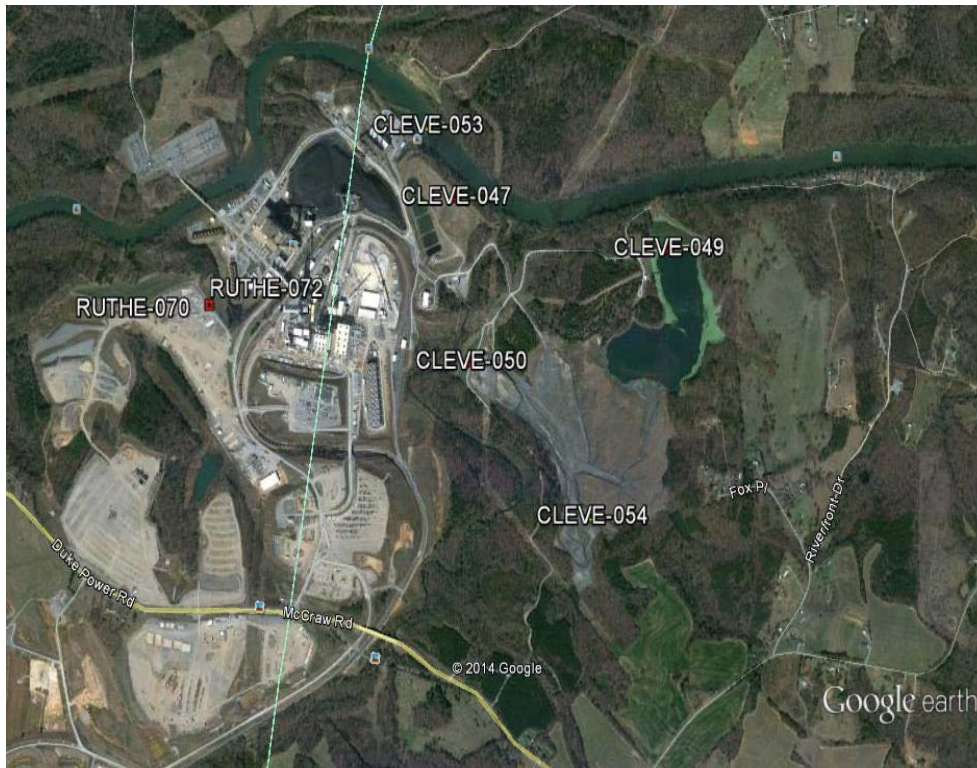
Source Characterization Summary (from CSA Report)

- Coal Ash. Laboratory analytical results of ash samples collected from the ash basins and ash storage areas identified eight COIs: arsenic, barium, boron, cobalt, iron, manganese, selenium and vanadium.
- Ash Pore Water. COIs identified in pore water in the ash basins and ash storage area included antimony, arsenic, boron, cobalt, iron, manganese, pH, sulfate, thallium, vanadium, and total dissolved solids.
- Ash Basin Surface Water. COIs identified in water within the basin included aluminum, arsenic, cadmium, cobalt, copper, dissolved oxygen, and thallium

Groundwater Risk Classification – Key Factor

- Based on the data provided in CSA Report and results of the groundwater modeling results presented in the CAP Report, the number of downgradient receptors (well users) 1,500 feet from the compliance boundary that are potentially or currently known to be exposed to impacted groundwater from source(s) or migration pathways related to the CCR impoundments:
 - Active Ash Basin, including adjacent ash storage areas. **LOW RISK.** There are two reported water supply wells within 1,500 feet that are side-gradient or possibly downgradient of the active basin compliance boundary; however, neither well appears to be impacted by CCR contamination.
 - Retired Unit 1-4 Basin. **LOW RISK.** There are no reported supply wells within 1,500 feet downgradient of the Retired Unit 1-4 Basin compliance boundary.
 - Retired Unit 5 Basin. **LOW RISK.** There are no reported supply wells within 1,500 feet downgradient of the impoundment compliance boundary.

Dam Safety Risk Classification – Key Factor



- State of Structural Stability and Maintenance:
 - Active Ash Basin (CLEVE-049 & CLEVE-050). **HIGH RISK** before repairs are made. **LOW RISK** after repairs are made. This impoundment received a notice of deficiency with structural deficiencies. The following modifications/repairs to the dam have been submitted and should be completed, as a minimum: slope improvements, grout pipe, and installation of a new spillway.
 - Retired Unit 1-4 Basin (CLEVE-047). **LOW RISK**. This impoundment received a notice of inspection. The following modifications/repairs to the dam have been submitted and should be completed, as a minimum: vegetation removal, grout pipe, and remove toe drains.
 - Retired Unit 5 Basin (RUTHE-070 & RUTHE-072). **HIGH RISK** before repairs are made. **LOW RISK** after repairs are made. This impoundment received a notice of deficiency with structural deficiencies. The following modifications/repairs to the dam have been submitted and should be completed, as a minimum: slope improvements, grout pipe, and installation of graded filter.