DENR/DEMLR
FACT SHEET FOR NPDES STORMWATER PERMIT DEVELOPMENT
NPDES No. NCS000574

Facility Information			
Applicant/Facility Name:	Duke Energy Progress, Inc., Cape Fear Steam Electric Plant		
Applicant Address:	500 CP&L Road, Moncure, North Carolina 27559		
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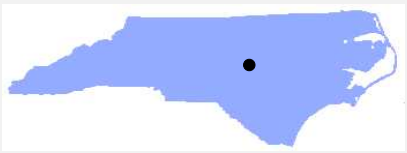
Permitted Flow:	N/A (Stormwater Discharges Only)		
Industrial Activities:	Primary SIC Code: 4911 – Electric Services		
Permit Status:	New NPDES Stormwater Permit		
County:	Chatham County		
Miscellaneous			
Receiving Stream:	Shaddox Creek	Regional Office:	Raleigh Regional Office
Stream Classification:	WS-IV	State Grid / USGS Quad:	E22NE Merry Oakes
303(d) Listed?	No	Permit Writer:	M. Randall
Subbasin:	03-06-07	Date:	October 14, 2014



Facility Location: Lat. 35° 35' 15" N Long. 79° 02' 39" W

BACKGROUND

The Cape Fear Steam Electric Plant is a retired steam cycle electric generating plant that formerly operated two coal-fired units, two heat recovery boilers and four Internal Combustion (IC) Turbines in Chatham County. The site was retired in 2011 and is currently being demolished.

STORMWATER OUTFALLS AND DRAINAGE AREA DESCRIPTIONS

Outfall 007, Outfall 001 and Outfall 005

All **wastewaters** formerly generated by the site historically discharged to an effluent channel prior to the combined outfall (Outfall 007). Outfall 007 contains all waste stream flows including the West Ash Pond Discharge (Outfall 001) and the East pond Discharge (Outfall 005). **At this time, Outfall 007, Outfall 001, and Outfall 005 are regulated as a wastewater discharge.**

Outfall SW-1 and Outfall SW-8 (also identified as Outfall 008)

Outfall SW-1 and Outfall SW-8 (also identified as Outfall 008) are legacy riser structures from inactive ponds. Discharges of **stormwater** from these two outfalls are rare and NCDENR has concurred with the estimation that it would take greater than the 25-year, 24-hour storm event for there to be a discharge form either of these outfalls. Outfall SW-1 discharges into the Cape Fear River. Outfall SW-8 discharges into the Shaddox Creek which flows into the Haw River just above the confluence with the Deep River which forms the Cape Fear River.

The heavily vegetated area basically functions as a large dry detention pond, and water levels rarely build up to the CMP riser pipe that leads to the discharge outlet pipe. The draft permit proposes monitoring for this outfall only if a discharge results from a storm event less than the 25-year, 24-hour storm (approximately 5.7" inches in this area of NC, based on NOAA Precipitation Frequency Estimates). In the industrial stormwater permitting program, NCDEMLR considers holding ponds that do not discharge in response to smaller storms as equivalent to a non-discharging system (on the basis that more conservative design specifications for engineered non-discharge systems use that same design storm criterion). The proposed permit condition is consistent with that interpretation.

The stormwater outfall discharge from the Abandoned Ash Pond (1953) identified as SW-1 and Abandoned Ash Pond (1963/1970) identified as Outfall SW-8 (also identified as SW-008) are not considered a potential point source discharge to surface waters, as observed by DEMLR staff during a site visit on November 12, 2014. **At this time, SW001 and SW008 are not a regulated point source discharge.**

Outfall SW-2

Stormwater collected along the railroad track between the plant entrance road and the plant site combines with drainage of and open field which is directed via outfall SW-2 into Shaddox Creek that flows into the Haw River just above the confluence with the Deep River.

DENR anticipates that the demolition and/or closure of the site's ash ponds may soon be underway, and that the activity may be begun and completed within the term of the stormwater permit. We would expect that some aspects of the ash pond closure activity may present the potential for stormwater pollution, for example, activities such as transport of ash by rail and/or along on-site haul roads. **At this time, Outfall SW-2 will be regulated as a stormwater discharge from an industrial activity.**

Outfall SW-3

Stormwater collected along the roadside swell beside the plant entrance road is directed via Outfall SW-3 toward drainages that go to Shaddox Creek. Historically this location was selected to capture potential impacts from an ash sluice line that crossed under the entrance road. Ash is no longer sluiced and the line has been disconnected.

DENR anticipates that the demolition and/or closure of the site's ash ponds may soon be underway, and that the activity may be begun and completed within the term of the stormwater permit. We would expect that some aspects of the ash pond closure activity may present the potential for stormwater pollution, for example, activities such as transport of ash by rail and/or along on-site haul roads. **At this time, Outfall SW-2 will be regulated as a stormwater discharge from an industrial activity.**

Outfall SW-5

Stormwater collected in an open field along the entrance is directed via outfall SW-5 into Shaddox Creek that flows into the Haw River just above the confluence with the Deep River. **Outfall SW-5 is not from an industrial activity.**

Outfall from the Coal Pile

Stormwater collected in the coal pile area is discharged into into Shaddox Creek that flows into the Haw River just above the confluence with the Deep River. Duke Energy removed the coal and coal residual and restored the area.

WHY THIS FACILITY IS SUBJECT TO A PERMIT

Federal NPDES regulations define **stormwater discharge associated with industrial activity** in 40 CFR §122.26 (b)(14) as "the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under this part 122. For the categories of industries identified in this section, the term includes, but is not limited to, storm water [sic] discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and **areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.** For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water [sic] drained from the above described areas."

Although electricity generation at the Cape Fear Steam Electric Plant has ceased, coal ash and other materials are still present at the site.

PROPOSED MONITORING FOR STORMWATER DISCHARGES

The Division considered potential pollutants from past and present industrial activities (coal-fired electric generation, plant decommissioning, and future ash removal). Unlike most stormwater permits in its program, the Division is proposing a permit structure with outfall-specific monitoring for discharges. Parameters are based on potential pollutants in the drainage area, sampling results, and in some cases, dependent upon future activities (e.g., ash removal through the drainage area). Below is a table of the proposed monitoring for each outfall at the Cape Fear Steam Electric Plant site.

Stormwater Discharge Outfall (SDO) Monitoring	
Railroad tracks, designated as outfalls SW002, and Access Road, designated as outfall SW003.	
Total Suspended Solids (TSS)	Semi-annual monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Potential pollutant from drainage area and BMP effectiveness indicator
Non-polar Oil & Grease (Method 1664 SGT-HEM)	Semi-annual monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G
pH	Semi-annual monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Pollutant indicator and important to interpreting toxicity potential of metals
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	Semi-annual monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Coal combustion waste (CCW) constituents
Boron	Semi-annual monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Coal combustion waste (CCW) constituent / coal tracer.

STORMWATER BENCHMARKS AND TIERED RESPONSE

Rather than limits, North Carolina NPDES Stormwater permits contain benchmark concentrations. Stormwater benchmarks are numerical action levels for stormwater monitoring. **Benchmarks are not effluent limits, and benchmark exceedances are not permit violations.** Benchmarks provide facilities a tool for assessing the significance of pollutants in stormwater discharges and the effectiveness of best management practices (BMPs). Benchmark concentrations are intended as guidelines for the facility's development and implementation of the Stormwater Pollution Prevention Plan (SPPP).

Benchmark exceedances require the permittee to increase monitoring, increase management actions, increase record keeping, and/or install stormwater BMPs in a tiered program. The permit establishes a tiered approach to specify actions the permittee must take in response to analytical results above benchmark concentrations (Part II, Section B., following Table 3). The tiered structure of the permit provides the permittee and NCDEMLR wide flexibility to address issues that may arise with one or more parameters and/or outfalls.

Metals benchmarks are calculated to mimic acute water quality standards and with the guidance of NC's Division of Water Resources (DWR). NC DWR follows established federal procedures for calculating acute standards when developing the benchmarks. Just like the acute standards, metals benchmarks normally reflect one half of the calculated Final Acute Value (the "½ FAV"). In most cases, translation into total recoverable values is based on an assumed hardness of 25 mg/l and a total suspended solids (TSS) concentration of 10 mg/l. Acute standards protect aquatic life from negative impacts of short-term exposure to higher levels of chemicals where the discharge enters a waterbody. The Stormwater Permitting Program applies this approach because of the ephemeral nature of rainfall events.

The Division may evaluate results to determine if a smaller suite of parameters for some outfalls is adequate to characterize potential pollution or BMP effectiveness. For example, one or more metals or other parameters may serve as an adequate tracer for the presence of ash pollution during disturbance or ash removal in specific drainage areas at this site. For parameters that do not have a stormwater benchmark, the Division may develop a benchmark value if appropriate toxicity data become available or if rising trends in concentrations suggest a persistent source.

A summary of the benchmarks in the draft permit, and their basis, is below:

Parameter	Benchmark	Basis
Antimony (Sb), mg/L	0.09	Acute Aquatic Criterion, ½ FAV
Arsenic (As), mg/L	0.34	Acute Aquatic Criterion, ½ FAV
Beryllium (Be), mg/L	0.065	Acute Aquatic Criterion, ½ FAV
Cadmium (Cd), mg/L	0.003	Acute Aquatic Criterion, ½ FAV
Chromium (Cr), mg/L	0.9	½ FAV, based on (Cr III + Cr VI) acute thresholds and assumption that industrial activities here are not a source of hexavalent chromium.
Copper (Cu), mg/L	0.010	Acute Aquatic Criterion, ½ FAV
Lead (Pb), mg/L	0.075	Acute Aquatic Criterion, ½ FAV
Mercury (Hg), ng/L	N/A	Monitoring only, CCW/Coal Constituent. Hg influenced by regional transport and wet deposition. Values above 12 ng/L (NC WQ standard) should be noted on the DMR but do not trigger Tier Responses.
Nickel (Ni), mg/L	0.335	Acute Aquatic Criterion, ½ FAV
Selenium (Se), mg/L	0.056	½ FAV, NC-specific, based on 1986 Study on Se impacts in North Carolina
Silver (Ag), mg/L	0.0003	Acute Aquatic Criterion, ½ FAV. (The Division notes this value is below the practical quantitation level (PQL) of 1 μg/L of EPA Method 200.8)
Boron (B), mg/L	N/A	Monitoring only, CCW/Coal Constituent. Narrative National Recommended Water Quality Criterion.
Thallium (Tl), mg/L	N/A	Monitoring Only, CCW/Coal constituent. National Recommended Human Health Criterion.
Zinc (Zn), mg/L	0.126	Acute Aquatic Criterion, ½ FAV
Total Suspended Solids (TSS), mg/L	100	National Urban Runoff Program (NURP) Study, 1983
Non-Polar Oil & Grease, *EPA Method 1664 (SGT-HEM)*, mg/L	15	Review of other state's daily maximum benchmark concentration for this more targeted O&G; NC WQ Standard that does not allow oil sheen in waters.
pH	6-9	NC Water Quality Standard (Range)

STORMWATER POLLUTION PREVENTION PLAN

The proposed permit conditions reflect the Environmental Protection Agency's (EPA) and North Carolina's pollution prevention approach to stormwater permitting. The Division's maintains that implementation of Best Management Practices (BMPs) and traditional stormwater management practices that control the source of pollutants meets the definition of Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT). The permit conditions are not numeric effluent limitations but are designed to be flexible requirements for implementing site-specific plans to minimize and control pollutants in stormwater discharges associated with the industrial activity. Title 40 Code of Federal Regulations (CFR) §122.44(k)(2) **authorizes the use of BMPs in lieu of numeric effluent limitations in NPDES permits when the agency finds numeric effluent limitations to be infeasible.** The agency may also impose BMP requirements which are "reasonably necessary" to carry out the purposes of the Act under the authority of 40 CFR 122.44(k)(3). The conditions proposed in this draft permit are included under the authority of

both of these regulatory provisions. In essence, the pollution prevention and BMP requirements operate as limitations on effluent discharges that reflect the application of BAT/BCT.

The permit proposes some language specific to coal fired power plants (and in particular, to those plants being decommissioned). Determining specific BMPs that are appropriate for the site and activities are the permittee's responsibility, and the permit strives not to limit what BMPs can be used. The permittee should also refer to the BMPs described in both EPA's Multi-Sector Permit (MSGP) and Industrial Stormwater Fact Sheet for Steam Electric Power Generating Facilities (Sector O) for guidance on pollution prevention measures.

It is important to note that the majority of stormwater at this facility is ultimately routed into the waste treatment system (ash pond), and those discharges are regulated by the NPDES *wastewater* permit.

MERCURY MONITORING REQUIREMENTS

The proposed permit requires mercury to be measured in stormwater samples by EPA Method 1631E, which can detect levels as low as 0.5 ng/l. This requirement is consistent with recent federal rule-making that requires NPDES permittees to monitor discharges with sufficiently sensitive test procedures approved under 40 CFR §136. Modifications to 40 CFR §122.44(i) require a method that has a minimum level (ML) at or below the effluent limit (not applicable here), or the lowest minimum level (ML) of EPA approved analytical methods for the measured parameter. Based on results, Method 1631E will be required to quantify levels in these discharges. NC DEMLR understands that this method is more costly and requires a more intensive sampling protocol than most other parameters, and that fish tissue sampling will be provided during the permit cycle. Therefore, no benchmark applies that would trigger tiered response actions. Proposed permit provisions also allow the permittee to use field blank and/or method blank concentrations to adjust reported mercury levels as long as documented is submitted with the Data Monitoring Report (DMR).

FLEXIBILITY IN TIER RESPONSES

Tier Two actions (upon two consecutive benchmark exceedances at an outfall) proposed in this draft permit differs slightly from the Program's standard template and includes **step 6**. That step provides an opportunity for the permittee to propose an **alternative monitoring plan for approval** by the Region.

Alternatively, in lieu of steps 2 and 3, the permittee may, after two consecutive exceedances, exercise the option of contacting the DEMLR Regional Engineer as provided below in Tier Three. The Regional Engineer may direct the response actions on the part of the permittee as provided in Tier Three, including reduced or additional sampling parameters or frequency.
If pursuing the alternative above after two consecutive exceedances, the permittee may propose an **alternative monitoring plan** for approval by the Regional Engineer.

The permit therefore allows the permittee to petition the Regional Office for monitoring changes *sooner than* **Tier Three** (upon any four benchmark exceedances) and gives guidance on one option to take. For example, the permitttee may request that mercury only be monitored semi-annually under the tiers, or that only parameters over the benchmark be monitored more frequently. In this way, changes to the monitoring scheme for any outfall could be handled outside of a permit modification.

OTHER PROPOSED REQUIREMENTS

- It is standard for Stormwater Pollution Prevention Plan (SPPP) requirements to include an annual certification that stormwater outfalls have been evaluated for the presence of *non-stormwater* discharges, and if any are identified, how those discharges are permitted. The draft permit requires this **facility to submit the first certification to DEMLR no later than 90 days after the effective date of the permit** (Part II, Section A.).
- Requirement to submit a request for permit modification if the facility identifies or creates any new outfalls, removes outfalls, or alters any drainage area that changes potential pollutants. This site may trigger this requirement during demolition or ash removal activities.
- Standard text that allows a permittee to forgo collecting samples outside of regular operating hours was omitted in Part II because this power plant is not currently operating. The Division expects the permittee to apply best professional judgment and consider the safety of its personnel in fulfilling sampling obligations under the permit.
- Proposed federal regulations will require electronic submittal of all discharge monitoring reports (DMRs). If a state does not establish a system to receive such submittals, then permittees must submit DMRs electronically to the Environmental Protection Agency (EPA). The Division anticipates that these regulations will be adopted and is beginning implementation. Permit provisions addressing this impending requirement is included in Part III, Section B. (General Conditions), 3.e.
- **Quarterly** Qualitative/Visual Monitoring to assure regular observation of outfalls throughout year.

PROPOSED SCHEDULE FOR PERMIT ISSUANCE:

Draft Permit to Public Notice: [Date]
Permit Scheduled to Issue: [Date]

STATE CONTACT:

If you have any questions about any of the above information or the attached permit, please contact Mike Randall at (919) 807-6374 or mike.randall@ncdenr.gov.