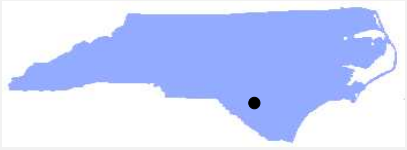
DENR/DEMLR
FACT SHEET FOR NPDES STORMWATER PERMIT DEVELOPMENT

NPDES No. NCS000589

Facility Information			
Applicant/Facility Name:	Duke Energy Progress, LLC – W.H. Weatherspoon Plant		
Applicant Mailing Address:	801 Sutton Steam Plant Road; Wilmington, North Carolina 28401		
Facility Address:	491 Power Plant Road; Lumberton, North Carolina 28358		
Permitted Flow:	N/A (Stormwater Discharges Only)		
Industrial Activities:	Primary SIC Code: 4911 – Electric Services		
Permit Status:	New NPDES Stormwater Permit		
County:	Robeson County		
Miscellaneous			
Receiving Stream:	Lumber River	Regional Office:	Fayetteville
Stream Classification:	C;Sw	State Grid / USGS Quad:	I22NE
303(d) Listed?	Hg, statewide	Permit Writer:	B. Georgoulias
Subbasin:	03-07-51	Date:	September 15, 2016



Facility Location: Lat. 34° 34' 58" N Long. 78° 58' 25" W

BACKGROUND

Duke Energy's Weatherspoon Steam Station was a coal fired steam electric plant in Robeson County. **The facility was retired and then demolished in 2013.** In 2008, the Division of Water Quality issued an NPDES wastewater permit that *included three stormwater outfalls* potentially influenced by ash transport along the entrance road during an ash reuse project that discharged to waters of the state. Those outfalls were removed from that permit in 2011, after the conclusion of the activity. The company is applying for a separate NPDES stormwater permit for these outfalls because the discharge points will again be impacted by ash transport in the near future.

In addition to NPDES wastewater discharge permit NC0005363, the facility also holds: NCG560006 (General NPDES WW permit to apply pesticides), 6094T (NC air permit), WQ0000020 (ash utilization permit) and NCD000830620 (Hazardous wastes RCRA permit). The facility is subject to federal requirements of 40 CFR §423 – Steam Electric Power Generation. This category is subject to federal NPDES stormwater discharge permit requirements per 40 CFR §122.26 (b)(14)(vii). Duke Energy Progress has not yet submitted a decommissioning plan for ash ponds on the site but will notify the Division when ash pond closure will begin.

This facility discharges to the Lumber River. There is a statewide total maximum daily load (TMDL) for mercury (Hg), approved in September 2012. No specific reductions or Hg limits are required from NPDES stormwater permittees at this time. There are no threatened or endangered aquatic life species on or within a mile of the plant site; however there is a State-listed endangered reptile (Eastern Diamondback Rattlesnake), as well as State-listed endangered or threatened plant species (Carolina Bogmint, Comfortroot, and Florida Yellow-eyed grass) within a mile of the site (from Natural Heritage Data Explorer, *accessed 9/13/2016*).

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 Weatherspoon has ceased, coal ash is still present at the site. Coal ash will be disturbed and/or transported as ash pond close-out procedures are carried out.

PROPOSED MONITORING FOR STORMWATER DISCHARGES

Stormwater from the demolished former coal plant site is routed to the cooling pond and is included in the proposed NPDES wastewater permit. This draft stormwater permit covers the three stormwater outfalls that drain runoff from the access road along which ash will be transported.

The Division considered potential pollutants from past and present industrial activities (coal-fired electric generation, plant decommissioning, and future ash removal) and data submitted with the NPDES Stormwater application. Sampling included **conventional pollutants** [Oil and Grease (O&G), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS)]; **applicable effluent guideline pollutants** [copper (Cu), iron (Fe), arsenic (As), selenium (Se), pH, and temperature]; as well as **other coal ash associated pollutants** [chloride, fluoride, sulfate (SO_4), mercury (Hg), aluminum (Al), antimony (Sb), barium (Ba), boron (B), calcium (Ca), cadmium (Cd), chromium (Cr), lead (Pb), magnesium (Mg), manganese (Mn), molybdenum (Mo), nickel (Ni), thallium (Tl), zinc (Zn), Total Dissolved Solids (TDS), specific conductivity, hardness, and pH]. Sampling results from 9/30/2014 were submitted with EPA Form 2F as part of the NPDES stormwater permit application in 2016. The same stormwater event samples for **SW-2 and SW-3** were included in the seep report submitted with DWR's NPDES wastewater permit application (instead designated as S-07 and S-08, respectively); however, **these two outfalls are not seeps.** These outfalls are influenced by groundwater.

None of the 9/30/2014 sample results was above current stormwater benchmarks for any of the outfalls (see p. 8 of this Fact Sheet). DEMLR's review noted that mercury was not sampled with a method sensitive enough to quantify levels below 50 ng/l; however, the proposed draft permit requires Method 1631 that quantifies lower levels be used for Hg analysis. The draft permit also requires the company to submit to DEMLR a copy of annual fish tissue sampling results for arsenic, mercury, and selenium obtained per DWR wastewater permit requirements.

The company's permit application indicated outfalls SW-2 and SW-3 were influenced by groundwater and have non-stormwater discharges. The Division requested an evaluation of the discharge characteristics to demonstrate such discharges would be allowable under an NPDES Stormwater permit. Allowable non-stormwater discharges include uncontaminated groundwater (See Part IV, 3. in the proposed permit).

These two outfalls had been sampled multiple times between 3/2014 and 4/2016 (Five events at SW-2 and four events at SW-3, including the stormwater event in 2014). In August 2016, the company submitted additional information in support of dry weather discharges being attributable to uncontaminated groundwater. Combined average concentrations from SW-2 and SW-3 discharge sampling events were compared to background groundwater well concentrations (23 sample events from 2010-2016) and to toe drain concentrations (up to five sample events from each of four toe drains). Boron levels were below detectable in all stormwater outfall samples, and sulfate (SO_4) levels were an order of magnitude lower than both background well and toe drain data (note that all three averages were below the current SO_4 stormwater benchmark of 200 mg/l). Alkalinity, iron, arsenic, chromium, copper, and lead average concentrations were significantly higher in the toe drain samples than in SW-2 and SW-3 discharges and in the background groundwater well. Individual sample results for both SW-2 and SW-3 showed concentrations were not highly variable (i.e., combined averages did not disguise particularly high values), and no samples exceeded current stormwater benchmarks. Mercury values that were reported from a more sensitive test in four samples were below 2 ng/l. The Division concurred with the conclusion that groundwater discharges from SW-2 and SW-3 outfalls would be permissible under the NPDES stormwater permit unless circumstances or characteristics change.

The proposed draft permit does contain language stating that if discharge characteristics or influences change at SW-2 or SW-3 such that discharges contain contaminated groundwater or other waters not authorized by the permit, the permittee will be required to obtain or modify a wastewater permit to cover these discharges or find an alternative to direct discharge.

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 transport through the drainage area). Below is a table of the proposed monitoring for the outfalls at the Weatherspoon site. **All outfalls ultimately discharge to the Lumber River.**

Stormwater Discharge Outfall (SDO) Monitoring	
SW-1, SW-2, SW-3 *Draining access road where ash hauling will occur*	
Polychlorinated Biphenyls (PCBs)	Semi-annual monitoring; **may be discontinued after the first year (two samples) if not detected**. **BASIS:** Electrical equipment onsite prior to decommissioning may have contained PCBs, which persist in the environment if ever released. If all PCBs have been removed and past releases cleaned up, these compounds should not be detected.
Total Suspended Solids (TSS)	Semi-annual monitoring. **BASIS:** Potential pollutant from drainage area and BMP effectiveness indicator, particularly during ash hauling activities. **Quarterly** monitoring *if coal or coal ash transported through this drainage area*.
Non-polar Oil & Grease (Method 1664 SGT-HEM)	Semi-annual monitoring. **BASIS:** Potential pollutant from lubricants; Method 1664 SGT-HEM targets petroleum-based O&G. **Quarterly** monitoring *if coal or coal ash transported through this drainage area*.
pH	Semi-annual monitoring. **BASIS:** Pollutant indicator and important to interpreting toxicity potential of metals. **Quarterly** monitoring *if coal or coal ash transported through this drainage area*.
Priority Pollutant Metals Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, and Zn.	**Quarterly** monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Coal combustion waste (CCW) constituents. Monitoring is quarterly because these outfalls will be impacted when coal ash hauling activities commence.
Boron	**Quarterly** monitoring *only if coal or coal ash transported through this drainage area*. **BASIS:** Coal combustion waste (CCW) constituent / coal tracer. Monitoring is quarterly because these outfalls will be impacted when coal ash hauling activities commence.

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 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 (Total)	0.09	Acute Aquatic Criterion, ½ FAV
Arsenic (As), mg/L (Total)	0.34	Acute Aquatic Criterion, ½ FAV
Beryllium (Be), mg/L (Total)	0.065	Acute Aquatic Criterion, ½ FAV
Cadmium (Cd), mg/L (Total)	0.003	Acute Aquatic Criterion, ½ FAV
Chromium (Cr), mg/L (Total)	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 (Total)	0.010	Acute Aquatic Criterion, ½ FAV
Lead (Pb), mg/L (Total)	0.075	Acute Aquatic Criterion, ½ FAV
Mercury (Hg), ng/L (Total)	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 (Total)	0.335	Acute Aquatic Criterion, ½ FAV
Polychlorinated biphenyl compounds (PCBs), µg/L	Detected	NC Water Quality Standards vs. present Arochlors quantitation levels (higher than standard)
Selenium (Se), mg/L (Total)	0.056	½ FAV, NC-specific, based on 1986 Study on Se impacts in North Carolina
Silver (Ag), mg/L (Total)	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 (Total)	N/A	Monitoring Only, CCW/Coal constituent. National Recommended Human Health Criterion.
Zinc (Zn), mg/L (Total)	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 One actions proposed in this draft differs slightly from the Program's standard template. A single benchmark exceedance prompts immediate monthly monitoring for all parameters. This change is consistent with power plant permits most recently issued in May 2016 and is based on public comments received on those draft permits and the intensity of activities during ash removal.

Tier Two actions (upon two consecutive benchmark exceedances at an outfall) proposed in this draft permit also differs from the Program's standard template and includes **step 5**. That step

provides an opportunity for the permittee to propose an **alternative monitoring plan for approval** by the Region:

4. *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.
5. 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

- 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 ash removal activities.
- Standard text that allows a permittee to forgo collecting samples outside of regular facility operating hours was modified in Part II because this power plant has been decommissioned and 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.

FISH TISSUE MONITORING

Weatherspoon's proposed wastewater NDPES permit NC0005363 requires fish tissue monitoring for arsenic (As), selenium (Se), and mercury (Hg) near the ash pond discharge each year. The proposed stormwater permit requires the permittee to **submit a copy of monitoring results to the DEMLR Stormwater Program** (Central Office) within 30 days of receiving results and indicate the location of sampling in relation to stormwater discharge outfalls. *DEMLR is requiring the fish tissue analysis results be submitted separately to ensure Stormwater Program staff who are not in the Division of Water Resources receive results and have an opportunity for review.*

PROPOSED SCHEDULE FOR PERMIT ISSUANCE:

Draft Permit to Public Notice: September 2016 (est.)
Permit Scheduled to Issue: November 2016 (est.)

STATE CONTACT:

If you have any questions about any of the above information or the attached permit, please contact Bethany Georgoulias at (919) 807-6372 or bethany.georgoulias@ncdenr.gov.

STORMWATER SAMPLE RESULTS FROM WEATHERSPOON (9/30/2014, FROM APPLICATION SUBMITTAL):

Parameter	Current Stormwater Benchmark	Outfall SW-1 (mg/l)	Outfall SW-2 (mg/l)	Outfall SW-3 (mg/l)
Oil and Grease	30 (15, non-polar)	<5.0	<5.0	<5.0
Aluminum	0.75 mg/l	0.086	0.041	0.058
Antimony	0.09 mg/l	<0.001	<0.001	<0.001
Arsenic	0.34 mg/l	0.0027	<0.001	<0.001
Barium	N/A	0.018 mg/l	0.039 mg/l	0.022 mg/l
Boron	N/A	<0.05 mg/l	<0.05 mg/l	<0.05 mg/l
Cadmium	0.003 mg/l	<0.001	<0.001	<0.001
Chromium	0.9 (Cr III) mg/l, 0.016 (Cr VI) mg/l	<0.001	<0.001	<0.001
Copper	0.010 mg/l	<0.001	<0.001	<0.001
Iron	N/A	2.5 mg/l	0.619 mg/l	0.319 mg/l
Lead	0.075 mg/l	<0.001	<0.001	<0.001
Magnesium	32 mg/l	0.723	0.918	0.364
Manganese	N/A	0.030 mg/l	0.013 mg/l	<0.005 mg/l
Mercury	12 ng/l	**<50 ng/l***	**<50 ng/l***	**<50 ng/l***
Molybdenum	510 mg/l	<0.001	<0.001	<0.001
Nickel	0.335 mg/l	<0.001	<0.001	<0.001
Selenium	0.056 mg/l	<0.001	<0.001	<0.001
Silver	0. 3 μg/l	Not sampled	Not sampled	Not sampled
Thallium	N/A	0.501 μg/l	0.39 μg/l	<0.2 μg/l
Zinc	0.126 mg/l	0.011	<0.005	<0.005
Hardness	N/A (mg/l $CaCO_3$)	25.9	8.65	6.39
TSS	100 mg/l	<5	<5	<5
BOD	30 mg/l	Not provided	Not provided	Not provided
COD	120 mg/l	<20	<20	<20
pH	6-9 SU	6.37	7.3	7.52
Total Nitrogen	30 mg/l	Not provided	Not provided	Not provided
Total Phosphorus	2 mg/l	Not provided	Not provided	Not provided
Chloride	860 mg/l	3.4	3.9	2.3
Fluoride	6 mg/l	<0.1	<0.1	<0.1
Sulfate	500 mg/l	1.2	5.1	2.3

*** More sensitive EPA Method 1631E is required for Hg analysis in proposed permit.**