DEPARTMENT OF ENVIRIONMENTAL QUALITY / DIVISION OF WATER RESOURCES

FACT SHEET FOR NPDES PERMIT DEVELOPMENT

Duke Energy Progress, LLC. – W. H. Weatherspoon Plant
NC0005363

Facility Information			
Applicant/Facility Name:	Duke Energy Progress, LLC. / W.H. Weatherspoon Plant		
Applicant Address:	801 Sutton Steam Plant Road, Wilmington, NC 28401		
Facility Address:	491 Power Plant Road, Lumberton, NC 28358		
Permitted Flow:	Not Limited		
Type of Waste:	99.9% Industrial and 0.1% Domestic		
Classification:	Grade I Biological Water Pollution Control System		
Permit Status:	Major Modification / Renewal		
County:	Robeson		
Miscellaneous			
Receiving Stream/Index:	Lumber River/14-(13)	Drainage Basin:	Lumber
Stream Classification:	C-Sw	Sub-basin:	03-07-51
303(d) Listed?	No	HUC:	03040203
Drainage Area (mi^2):	716 mi^2	State Grid / USGS Quad:	I23SW/SE Lumberton, NC
Summer 7Q10 (cfs):	122	Latitude:	34° 34’ 58” N
Winter 7Q10 (cfs):	192	Longitude:	78° 58’ 25” W
30Q2 (cfs):	304	Regional Office:	Fayetteville
Average Flow (cfs):	869	Permit Writer:	Trupti Desai
IWC (%):	2.48%	Date:	06/06/2018

I SUMMARY

Duke Energy Progress, LLC. owns and operates the W.H. Weatherspoon Power Plant site in Lumberton, NC. The plant encompasses approximately 835 acres, including a 65-acre ash basin and a 225-acre cooling pond. There is a court order that requires Duke Energy to complete excavation at Weatherspoon by April 4, 2028. The Weatherspoon Plant has four operating internal combustion turbines with a total electric generation capacity of 160MW. Three coal-fired units were in operation prior to 2011. These retired units were demolished in 2013. The plant no longer meets the definition of a steam electric generating facility under 40 CFR 423.10 after retirement of the coal-fired units and is not considered as a categorical industry.

The site occasionally discharges water from the off-stream cooling pond located on the north side of the Lumber River in Robeson county. The cooling pond is bordered by the Lumber River on the west and Jacobs Swamp on the east and southeast. The pond receives waste streams from combustion turbine site, ash pond, retired coal site drains, fuel oil remedial recovery system, coal ash truck wash and sanitary waste treatment system. The estimated flow from these sources to the cooling pond is 0.153 MGD. The discharge from the cooling ponds is expected to occur only during a major storm event or for maintenance purposes. The pond last discharged to the Lumber River during Hurricane Matthew in 2016 and during Hurricane Floyd in 1999.

Duke Energy Progress, LLC applied for NPDES permit renewal for its W. H. Weatherspoon Plant on January 28, 2014. This permit (NC0005363) expired on July 31, 2014. There had been two permit modifications to the previous permit since it was originally issued in November, 2009. The Division removed Section B (Stormwater Requirements) in 2011 on the basis that coal ash hauling activity had ceased. A second modification was issued in 2012 to remove effluent limitations and monitoring requirements for Outfall 002 due to the fact that the coal-fired units were retired and the discharge structure

was capped. The permittee has amended the application several times from 2014 to 2016 to provide information on seepage flows, chemical characterization of seeps, and ash pond water. The Division of Water Resources prepared a draft permit and issued a public notice on November 4, 2016. The public hearing was held on December 8, 2016 at the Robeson Community College in Lumberton, North Carolina.

II DATA REVIEW AND EXISTING CONDITIONS

A. Data Availability and Review

The facility is not regularly discharging wastewater to the Lumber River. Therefore, it is not required to submit DMRs or conduct instream monitoring. However, the facility submitted one DMR and conducted one acute toxicity test in October, 2016 during Hurricane Matthew. The permittee had submitted effluent characterization data for cooling pond water with the renewal application. Supplemental data on chemical characterization of ash pond water were added to the application. These data were used to conduct a Reasonable Potential Analysis (RPA) in order to determine limitations and monitoring requirements for toxicants in the permit.

B. Compliance Summary

The compliance history from January 2010 to March, 2018 was reviewed. The facility has not violated the requirements of its NPDES permit during this period. The facility passed one acute toxicity testy conducted during the last permit period.

C. Existing conditions (Ash Pond)

The coal ash from the ash pond is being excavated for reuse in a cement manufacturing unit in South Carolina. Up to 50 truckloads of coal ash are being transported from the facility every day. These trucks are loaded within the ash basin, capped and rinsed to prevent coal ash combustion residual (CCR) material from being tracked out of the ash basin as well as Duke Energy property. A self-contained truck washing unit with a 15,000 gallon tank is installed at the facility, and truck wash water is recycled after each rinse. This tank can be periodically flushed to the basin and rinse water drains to the cooling pond.

Currently, there is only interstitial water in the ash pond, hence the facility is not required to decant the ash pond water. With the permission of the Division, the facility discharges ash pond water to the cooling pond approximately twice a week for 6 to 8 hours. This results in a discharge up to 423,000 gallons per day from the ash pond to the cooling pond. Once the NPDES permit for this facility is issued, this will be a regulated discharge and the facility will comply with the effluent limitation and monitoring requirements shown in condition A.(3) in the permit.

D. Receiving Waters

Outfall 001 discharges to the Lumber River. This segment of the River, which is classified as C-Sw waters, is not listed for any impairment in 303(d) list published in 2016.

E. Ash Pond Dams

Seepage through earthen dams is common and is an expected consequence of impounding water with an earthen embankment. Even the tightest, best-compacted clays cannot prevent some water from seeping through them. Seepage is not necessarily an indication that a dam has structural problems, but should be kept in check through various engineering controls and regularly monitored for changes in quantity or quality which, over time, may result in dam failure. Dam inspection, maintenance, and repairs are overseen by the Dam Safety Program at DEMLR.

III PROPOSED PERMITTING ACTION

This permit is being modified and renewed to include discharge from unpermitted toe drains from the ash pond, to establish effluent limitation and monitoring requirements for dewatering of the ash pond, allow and discharge from the proposed emergency spillway Outfall 002.

Outfall 001 at the facility is permitted to occasionally discharge water from the cooling pond to the Lumber River. The facility is planning to construct an emergency spillway to discharge cooling pond water during emergency situations. The Division proposes Outfall 002 for emergency spillway discharge. The Division

also proposes two internal outfalls, 001A and 115A, for discharge water from the ash pond and toe drains, respectively.

Mercury evaluation, according to the permitting guidance developed for implementation of the statewide Mercury TMDL, was conducted using method 1631E data from outfalls where mercury analysis were performed. The Division conducted EPA-recommended analyses to determine the reasonable potential for toxicants to be discharged at levels exceeding water quality standards/EPA criteria by this facility. For the purposes of the RPA, the background concentrations for all parameters were assumed to be below detection levels. The RPA uses 95% probability level and 95% confidence basis in accordance with the EPA Guidance entitled "Technical Support Document for Water Quality-based Toxics Control." The RPA included evaluation of dissolved metals' standards, utilizing either a default hardness value of 25 mg/L $CaCO_3$ for hardness-dependent metals or actual hardness of the effluent. The instream hardness was set to a default value of 25 mg/l as $CaCO_3$. The mercury evaluation and RPA spreadsheets are attached to this Fact Sheet

A. Outfall 001 (Cooling Pond Water Only)

Outfall 001 is permitted to discharge the cooling pond water to the Lumber River under special conditions. The reasonable potential analysis and mercury evaluation were conducted for this outfall using the data available from the permit application and one DMR submitted in October, 2016 when the facility discharged cooling pond water due to Hurricane Matthew.

Mercury Evaluation

The permittee did not use EPA method 1631 E for mercury analysis. Hence, it was not possible to conduct mercury evaluation according to permitting guidance developed for the implementation of the statewide Mercury TMDL.

Reasonable Potential Analysis (RPA) (Cooling Pond Water Only)

RPA was conducted for arsenic, cadmium, chromium, copper, lead, nickel, selenium, thallium and zinc. None of these parameters showed reasonable potential to exceed water quality criteria of the Lumber River. No limits were added to the permit for these metals. The monitoring requirements for iron and copper were removed based on the results of the RPA. The monitoring requirements for arsenic and selenium remain unchanged from the previous permit.

Aquatic Toxicity Testing

The permittee will continue to conduct acute episodic toxicity test using *Fathead Minnow (Pimephales promelas)* during this permit period.

Instream Monitoring

Hardness monitoring was added to the permit to collect data to conduct RPA for hardness dependent metals in the next permitting cycle. In addition, the facility shall conduct monthly instream monitoring (approximately ¼ mile upstream and ¼ mile downstream of the Outfall 001) for total arsenic, total selenium, total mercury (method 1631E), total chromium, dissolved lead, dissolved cadmium, dissolved copper, total hardness, dissolved zinc, total bromide, turbidity and total dissolved solids. The monitoring results shall be submitted with the NPDES permit renewal application.

Combined Cooling and Ash Pond Water

Once the dewatering operations are completed, Outfall 001 will be permitted to discharge the cooling pond water combined with the interstitial water from the ash pond to the Lumber River under special conditions (i.e. under extreme weather conditions or during plant maintenance). Data from both the interstitial water and cooling pond were combined to evaluate a potential of combined discharge to the river.

Reasonable Potential Analysis (RPA) (Combined Cooling Pond and Ash Pond Water)

The facility submitted data for the standing surface water in the ash ponds, interstitial water in the ash, and interstitial ash water that was treated by filters of various sizes. The highest measured concentration for a particular parameter was used in conducting RPA to introduce a margin of safety. The Division took the

highest discharge rate (i.e. 2 MGD) for the dewatering process. The RPA was conducted for arsenic, barium, cadmium, chloride, chromium, copper, fluoride, lead, molybdenum, nickel, selenium, thallium and zinc

Except for arsenic, none of these parameters showed reasonable potential to violate water quality standards/EPA criteria. The discharge limit was added for arsenic upon commencement of dewatering. Cadmium, chromium, copper lead, thallium and zinc were the parameters of concern for the discharges from coal ash facilities and will be monitored after ash pond water combines with cooling pond water.

Limits and Monitoring Requirements

Current conditions, proposed changes as well as the basis for the changes are summarized in Table 1.

Table 1. Current Conditions and Proposed Changes (Outfall 001)

Parameter	Current Limit/Condition		Change from Previous Permit	Basis for Condition/Change
	Monthly Average	Daily Maximum		
Flow			No Change	15A 2B .0505
Temperature			No Change	State WQ standards, 15A 2B .0200
Oil & Grease	15 mg/L	20 mg/L	Added limit	40 CFR 423 Ash pond transport legacy waste water
Total Suspended Solids	30 mg/L	100 mg/L	Added limit	40 CFR 423 Ash pond transport legacy wastewater
Total Dissolved Solids	No monitoring		Added monitoring	As per recommendation from EPA
Turbidity	No monitoring		Added monitoring for combined cooling pond and ash pond water	Parameter of concern for dewatering of ash pond
pH	Between 6.0 and 9.0 S.U		No Change	State WQ standards, 15A 2B .0200
Hardness –Total as [$CaCO_3$]	No monitoring		Added effluent and instream monitoring	Revised water quality standards and EPA's guidelines on hardness dependent metals
TN, TP, TKN, Nitrate/Nitrite Nitrogen	No monitoring		Added monitoring	15A 2B .0508
Chlorides and Sulfates	No monitoring		Added monitoring for combined cooling pond and ash pond water	Parameters of concern for discharges from coal ash facilities
Total Arsenic	Monitoring only		No Change prior to dewatering. Added limit for combined cooling pond and ash pond water	Parameters of concern for discharges from coal ash facilities RPA results
Total Selenium	Monitoring only		No change	Parameters of concern for discharges from coal ash facilities
Total Iron	Monitoring only		Removed monitoring	Iron is not a parameter of concern from ash pond facilities
Total Copper	Monitoring only		Removed monitoring prior to dewatering Added monitoring for combined cooling pond and ash pond water	Based on RPA results Parameter of concern for discharges from coal ash facilities
Total Cadmium, Total Chromium, Total Lead, Total Zinc, Total Thallium	No monitoring		Added monitoring for combined cooling pond and ash pond water	Parameters of concern for discharges from coal ash facilities
Total Mercury	No limit and monitoring		Added monitoring	Parameter of concern for discharges from coal ash facilities
Naphthalene and Total Phenols	No monitoring		Added monitoring	Parameters of concern for discharges from fuel oil remediation system

B. Emergency Spillway Outfall 002 (Cooling Pond Water Only)

The permittee identified the need to add an emergency spillway to the cooling pond as a result of Hurricane Matthew response activities at the facility. This emergency spillway will add a second outlet to draw down the level of the cooling pond quickly during extreme rainfall events, prevent overtopping and subsequent damage to the cooling pond dike, and ensure controlled release of cooling pond water during all discharge scenarios. This spillway will be 200 feet long adjacent to the existing Outfall 001. The wastewater discharged from Outfall 001 will be representative of the wastewater discharged over the spillway. The Division has modified the NPDES permit and created an external Outfall 002 to allow discharge cooling pond water from the emergency spillway. The permittee requested to waive sampling requirements for this proposed outfall as it would be inaccessible during flood events. The Condition A. (2) shows effluent limitation and monitoring requirements for Outfall 002 which are similar to Outfall 001 as both outfalls discharge the cooling pond water. However, the Division has waived sampling requirements for this outfall due to safety concerns during extreme rainfall and flood events.

C. Internal Outfall 001A (Ash Pond Water)

To meet the requirements of the Coal Ash Management Act of 2014, the facility needs to dewater the ash pond by removing the interstitial water and excavate the ash to deposit it in landfills. The Division proposes an internal Outfall 001A to discharge ash pond water to the cooling pond during dewatering operation. Currently, the facility periodically discharges the ash pond water with the Division's permission but this discharge will be regulated after issuance of this permit and the permittee will comply with the effluent limitation and monitoring requirements shown in the condition A.(3). Usually, only pH, oil & grease and TSS are monitored at the internal outfalls but the Division took the conservative approach to make sure that all the parameters of concerns are monitored at this outfall. The Division also took the same approach in developing monitoring for dewatering activities by conducting the mercury evaluation and RPA using the seven-day ten-year flow data of Lumber River. The monitoring frequency for all the parameters listed in Section A. (3) is weekly as per the recommendation by EPA.

Mercury Evaluation

A mercury evaluation was conducted using the mercury data for interstitial water and permitting guidance developed for the implementation of the statewide Mercury TMDL. The evaluation was conducted using the chemical characterization data for interstitial water from the ash pond. The highest concentration of mercury in the interstitial water was considered for the evaluation. The facility does not need a mercury limit according to the results of the mercury evaluation, however mercury monitoring was added to the permit.

Reasonable Potential Analysis (RPA) (Outfall 001A)

RPA was conducted for arsenic, barium, cadmium, chloride, chromium, copper, fluoride, lead, molybdenum, nickel, selenium, thallium and zinc. Except arsenic, none of these parameters showed reasonable potential. Because this is an internal outfall, limits are not required. Therefore, only monitoring for arsenic was added. Monitoring for the other parameters is not required. However, cadmium, chromium, copper, lead, selenium, thallium, and zinc are - parameters of concern for discharges from coal ash facilities. Therefore, monitoring requirements were added in the permit for these pollutants of concern. Monitoring requirements for total dissolved solids were also added to the permit per EPA recommendation.

Limits and Monitoring Requirements

This is a proposed outfall. All the monitoring requirements are new and will come into effect during the dewatering of the ash pond. The proposed requirements are given in Table – 2.

Table 2. Proposed Changes (Internal Outfall 001A)

Parameter	Proposed Changes		Basis for Condition/Change
	Monthly Average	Daily Maximum	
Flow	2.0 MGD		Based on the capacity of the treatment plant
Oil & Grease	Added limit and monitoring		40 CFR 423 Ash transport legacy wastewater

Total Suspended Solids	Added limit and monitoring	40 CFR 423 Ash transport legacy wastewater
Turbidity	Added limit and monitoring	Parameter of concern for dewatering of ash pond
Total Dissolved Solids	Added monitoring	As per recommendation from EPA
pH	Between 6.0 and 9.0 S.U	State WQ standards, 15A 2B .0200
Hardness –Total as [$CaCO_3$]	Added Monitoring	Revised water quality standards and EPA's guidelines on hardness dependent metals
Chlorides and Sulfates	Added monitoring	Parameters of concern for discharges from coal ash facilities
Parameter	**Proposed Changes**	**Basis for Condition/Change**
Total Arsenic	Added monitoring	Based on the RPA results
Total Cadmium, Total Chromium, Total Copper, Total Lead, Total Selenium, Total Zinc, Total Thallium	Added Monitoring	Parameters of concern for discharges from coal ash facilities
Total Mercury	Added monitoring	Parameter of concern for discharges from coal ash facilities

D. <u>Internal Outfall 115A</u> (Ash pond water from Toe Drains S-11, S-12, S-13, S-14, S-25, S-26, S-27)
The Division has identified 7 engineered toe drains from the ash settling basin. Contaminated water from all toe drains discharge to the cooling pond near S-15. The Division has proposed an internal outfall 115A to regulate discharge from toe drains.

The location of the seeps are identified in Table 3 below and are depicted on the map attached to the permit.

Table 3. Toe Drain Coordinates

Discharge ID	Latitude	Longitude
S-11	34° 35' 18"N	78° 58' 05" W
S-12	34° 35' 19"N	78° 58' 04" W
S-13	34° 35' 20"N	78° 58' 02" W
S-14	34° 35' 20"N	78° 58' 01" W
S-25	34° 35' 19.76"N	78° 58' 3.64" W
S-26	34° 35' 20.23"N	78° 58' 2.76" W
S-27	34° 35' 20.68"N	78° 58' 1.91" W

<u>Limits and Monitoring Requirements</u>
This is a proposed internal outfall. All the monitoring requirements are new and will come into effect after the permit becomes effective. Proposed requirements are given in Table – 4. (See A.(4))

Table 4. Proposed Changes (Internal Outfall 115A)

Parameter	Proposed Changes		Basis for Condition/Change
	Monthly Average	Daily Maximum	
Flow			15A 2B .0505
Oil & Grease	Added limit and monitoring		40 CFR 423 Ash transport legacy wastewater
Total Suspended Solids	Added limit and monitoring		40 CFR 423 Ash transport legacy wastewater

IV CWA SECTION 316(a) and 316(b)
W.H. Weatherspoon Plant has ceased operations of its coal fired power generation units since 2011. CWA section 316 (a) and 316 (b) are not applicable for this facility.

V. OTHER PROPOSED CHANGES
1. To meet new federal regulations for electronic reporting, Special Condition A. (13) has been added describing requirements for submittal of electronic DMRs.

2. A. (7) Biocide condition was changed for biocide used in the cooling pond which was required for cooling water systems in the previous permit.
3. The following new conditions were added to the draft permit to be consistent with other Duke permits.
    - A. (5) Additional Conditions and Definitions
    - A. (8) Compliance Boundary
    - A. (9) Structural Integrity Inspections of Ash Pond Dam
    - A. (10) Ash Pond Closure
    - A. (11) Instream Monitoring
    - A. (12) Applicable State Law (State Enforceable Only)
    - A. (15) Fish Tissue Monitoring Near Ash Pond Discharge
4. Stormwater permit requirements were removed from the permit.

VI. STATE CONTACT INFORMATION

If you have any questions on any of the above information or on the attached permit, please contact Sergei Chernikov at 919-707-3606 or sergei.chernikov@ncdern.gov

VII. CHANGES IN THE FINAL PERMIT

To address comments from the public and the permittee, the following changes have been made in the final permit:

1) The annual average mercury limit of 47.0 ng/L was added to Outfall 001.
2) The storm-related notification period was reduced from 48 hours to 24 hours.
3) The limits and monitoring for BOD and Fecal Coliform were removed to correct an error.
4) The instream monitoring requirement was modified to account for very infrequent discharges from the external outfall.
5) The requirement to notify North Carolina Wildlife Resources Commission (NCWRC) of the storm-related events and maintenance activities was added to the permit.
6) Outfall 002 was renamed as Outfall 003 to avoid confusion with the currently discontinued Outfall 002.
7) The decanting and the dewatering definition was expanded in the permit.


S-06
S-01
S-02
S-03
S-09
S-05
S-04
S-23
S-27
S-10
S-15
S-13
S-26
S-25
S-12
S-11
S-24
S-16