Cape Fear Steam Electric Plant Ash Basin

Topographic Map and Discharge Assessment Plan

NPDES Permit NC0003433

December 30, 2014

DUKE ENERGY®

HDR

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List of Figures and Tables

Section 1 - Introduction

The purpose of this document is to address the requirements of North Carolina General Statute (GS)130A-309.210(a) *topographic map* and (b) *Assessment of Discharges from Coal Combustion Residuals Surface Impoundments to the Surface Waters of the State*, as modified by North Carolina Senate Bill 729, for the Cape Fear Steam Electric Plant (Cape Fear Plant) ash basin operated under National Pollutant Discharge Elimination System (NPDES) Permit NC0003433.

The following requirements are contained in General Statute (GS) 130A-309.210(a):

(1) The owner of a coal combustion residuals surface impoundment shall identify all discharges from the impoundment as provided in this subsection. The requirements for identifying all discharges from an impoundment set out in this subsection are in addition to any other requirements for identifying discharges applicable to the owners of coal combustion residuals surface impoundments.

(2) No later than December 31, 2014, the owner of a coal combustion residuals surface impoundment shall submit a topographic map that identifies the location of all (i) outfalls from engineered channels designed or improved for the purpose of collecting water from the toe of the impoundment and (ii) seeps and weeps discharging from the impoundment that are not captured by engineered channels designed or improved for the purpose of collecting water from the toe of the impoundment to the Department. The topographic map shall comply with all of the following:

a. Be at a scale as required by the Department.

b. Specify the latitude and longitude of each toe drain outfall, seep, and weep.

c. Specify whether the discharge from each toe drain outfall, seep, and weep is continuous or intermittent.

d. Provide an average flow measurement of the discharge from each toe drain outfall, seep, and weep including a description of the method used to measure average flow.

e. Specify whether the discharge from each toe drain outfall, seep, and weep identified reaches the surface waters of the State. If the discharge from a toe drain outfall, seep, or weep reaches the surface waters of the State, the map shall specify the latitude and longitude of where the discharge reaches the surface waters of the State.

f. Include any other information related to the topographic map required by the Department.

The following requirements are contained in General Statute (GS) 130A-309.210(b):

b) *Assessment of Discharges from Coal Combustion Residuals Surface Impoundments to the Surface Waters of the State. The owner of a coal combustion residuals surface impoundment shall conduct an assessment of discharges from the coal combustion residuals surface impoundment to the surface waters of the State as provided in this subsection. The requirements for assessment of discharges from the coal combustion residuals surface impoundment to the surface waters of the State set out in this subsection are in addition to any other requirements for the assessment of discharges from coal combustion residuals surface impoundments to surface waters of the State applicable to the owners of coal combustion residuals surface impoundments.*

   (1) *No later than December 31, 2014, the owner of a coal combustion residuals surface impoundment shall submit a proposed Discharge Assessment Plan to the Department. The Discharge Assessment Plan shall include information sufficient to allow the Department to determine whether any discharge, including a discharge from a toe drain outfall, seep, or weep, has reached the surface waters of the State and has caused a violation of surface water quality standards. The Discharge Assessment Plan shall include, at a minimum, all of the following:*

      a. *Upstream and downstream sampling locations within all channels that could potentially carry a discharge.*

      b. *A description of the surface water quality analyses that will be performed.*

      c. *A sampling schedule, including frequency and duration of sampling activities.*

      d. *Reporting requirements.*

      e. *Any other information related to the identification of new discharges required by the Department.*

   (2) *The Department shall approve the Discharge Assessment Plan if it determines that the Plan complies with the requirements of this subsection and will be sufficient to protect public health, safety, and welfare; the environment; and natural resources.*

   (3) *No later than 30 days from the approval of the Discharge Assessment Plan, the owner shall begin implementation of the Plan in accordance with the Plan's schedule.*

The North Carolina Senate Bill 729 establishes the submittal date of this topographic map and Discharge Assessment Plan no later than December 31, 2014.

The topographic map, developed to satisfy the requirements of GS130A-309.210(a), was utilized as the basis for developing the assessment procedures presented in this plan, required by GS130A-309.210(b).

Section 2 - Site Background

2.1 Plant Description

The Cape Fear Steam Electric Plant (Cape Fear Plant) is located on approximately 900 acres in central North Carolina near Moncure, in Chatham County. The site is along the east bank of the Cape Fear River, southeast of Moncure and west of Corinth Road. Cape Fear Plant operations began in 1923 with additional units added from 1924 to 1969. In the most recent configuration, the Cape Fear Plant employed two coal-fired units along with four oil-fueled combustion turbine units. Ash generated from coal combustion was stored on-site in ash basins. Operations were terminated at the Cape Fear Plant in October 2012 and demolition activities are currently underway.

2.2 Ash Basin Description

Five ash basins have historically been used at the Cape Fear Plant and are referenced using the date of construction: 1956, 1963, 1970, 1978, and 1985. The 1956 ash basin is located north of the former Cape Fear Plant, and the remaining ash basins are located south of the Cape Fear Plant area. The 1963 and 1970 ash basins were constructed on the west side of the Cape Fear Plant property, adjacent to the Cape Fear River. The 1978 ash basin was constructed east of and abutting the 1963 and 1970 as basins. The 1985 ash basin was constructed east of the existing ash basins between the discharge canal and Corinth Road. The ash basins are impounded by earthen dams. A 500-foot compliance boundary encircles the ash basins.

Currently, the 1956, 1963, and 1970 ash basins are dry and entirely covered with vegetation (hardwood and pine trees). A small area near the southern end of the 1970 ash basin is seasonally wet. The 1978 ash basin is partially vegetation-covered (trees and scrub), and a portion of the southern end of the ash basin retains water. The 1985 ash basin has some grass cover and ponded water in its southwest corner.

All wastewater, formerly generated by the site, historically discharged to the effluent channel prior to the combined outfall. The combined outfall now contains all waste stream flows and is located in the effluent channel. Downstream of the effluent channel, the manmade canal becomes an unnamed tributary of the Cape Fear River.

2.3 Site Geologic/Soil Framework

The Cape Fear Plant is within the Deep River Basin; an irregular, half-graben structural feature of Triassic age. In the area of the Cape Fear Plant, the basin is surrounded by and presumably underlain by igneous and metamorphic rocks of the Carolina Terrane rocks. Continental sediments overlying the basin are cut by numerous diabase dikes. The stratigraphy of the basin is represented by a lower sequence of coarse-grained arkosic sandstone and conglomerate; a middle sequence of siltstone, shale, and thin coal deposits; and an upper sequence of

sandstone, mudstone, siltstone, and conglomerate. The strata of the deep River Basin generally dip gently to the east (Horton and Zullo, 1991).

The Cape Fear Plant was constructed on 15 to 30 feet of residuum of the sedimentary rocks underlying the site, determined as brown to gray mudstones and siltstones from boring logs. Groundwater exists in the residuum and within joints and fractures of the underlying bedrock. The water table generally follows topography, with the predominant groundwater flow direction toward the west and west-southwest at a depth of about 10 to 20 feet.

2.4 Topographic Map and Identification of Discharges

A topographic map is presented in Figure 2 to meet the requirements of GS 130A-309.210(a) in the identification of outfalls from engineered channels, as well as seeps and weeps.

Seepage is the movement of wastewater from the ash basin through the ash basin embankment, the embankment foundation, the embankment abutments, basin rim, through residual material in areas adjacent to the ash basin. A seep is defined in this document as an expression of seepage at the ground surface. A weep is understood to have the same meaning as a seep.

Indicators of seepage include areas where water is observed on the ground surface and/or where vegetation suggests the presence of seepage. Seepage can emerge anywhere on the downstream face, beyond the toe, or on the downstream abutments at elevations below normal pool. Seepage may vary in appearance from a "soft," wet area to a flowing "spring." Seepage may show up first as only an area where the vegetation is lusher and darker green than surrounding vegetation. Cattails, reeds, mosses, and other marsh vegetation often become established in a seepage area. However, in many instances, indicators of seeps do not necessarily indicate the presence of seeps. Areas of apparent iron staining and/or excess iron bacteria may also indicate the presence of a seep.

Locations of seepage at the ground surface adjacent to the ash basin have been identified and are shown in Figure 2. These areas include the earthen embankments which impound the ash basin as well as adjacent areas where water from the ash basin may have infiltrated into the underlying residual materials and expressed as seepage.

2.4.1 Engineered Drainage System for Earthen Dam

Earth dams are subject to seepage through the embankment, foundation, and abutments. Seepage control is necessary to prevent excessive uplift pressures, instability of the downstream slope, piping through the embankment and/or foundation, and erosion of material by migration into open joints in the foundation and abutments. The control of seepage is performed by the use of engineered drains such as blanket drains, trench drains, and/or toe drains. In certain cases horizontal pipes may be installed into the embankment to collect and control seepage. It is standard engineering practice to collect the seepage and convey seepage away from the dam.

A number of internal outfalls drain to a canal where flow is directed to the Combined Wastewater Outfall. The engineered drainage system features, or outfalls, associated with the ash basin dam are shown as required by GS 130A-309.210(a)(2)(i) on Figure 2.

2.4.2 Non-Engineered Seep Identification

Topographic maps of the site were reviewed to identify regions of the site where there was a potential for ash basin related seepage to be present. These regions were determined by comparing ash basin full pond elevations to adjacent topography with ground surface elevations lower than the ash basin full pond elevation. Synterra staff performed site observations within these identified areas as part of NPDES inspections during the reapplication process during October 2014 and documented locations where seepage was apparent at the time of the site visit. These seeps are identified as required by GS 130A-309.210(a)(2)(ii) on Figure 2.

Section 3 - Discharge Assessment Plan

3.1 Purpose of Assessment

The purpose of the assessment is to determine whether existing, known discharges from toe drain outfalls, seeps, and weeps associated with the coal combustion residuals surface impoundment (ash basin) have reached the surface waters of the State and have caused a violation of surface water quality standards as required by North Carolina General Statute 130A-309.210(b).

Figure 2 and Table 1 present the background and downstream sampling locations to be considered as part of this Discharge Assessment Plan (DAP). These locations may be assessed by comparing surface water sampling analytical results of the associated background location with the corresponding downstream location. For discharges located at the toe of a dam, an upstream location within the channel may not have been possible to isolate for comparison given the proximity to the ash basin, which would have the same chemical composition as the discharge itself. As such, the upstream location was established upstream of the ash basin and is considered “background.” For discharges located a distance from the ash basin, an identified upstream, or “background” location for sampling may be compared to the downstream portion of the discharge channel. The background and downstream sampling locations are shown on Figure 2 with “B” and “D” identifiers, respectively, and the corresponding Seep locations associated with the sampling locations are indicated on Table 1.

3.2 Assessment Procedure

The assessment procedure associated with the Cape Fear Plant ash basins is provided within this section. In addition to the specific requirements for the assessment, Section 3.2 also provides the general requirements, the frequency of assessment, documentation requirements, and a description of the surface water quality analyses that will be performed.

3.2.1 General Assessment Requirements

Assessments are to be performed in three phases as follows:

- Observation and sampling (assessment site visit),
- Evaluation, and
- Assessment reporting.

The assessment site visit shall be performed when the background and downstream locations are accessible and not influenced by weather events. Locations on or adjacent to the ash basin embankments should be performed within two months after mowing, if possible. In addition, the assessment site visit should not be performed if the following precipitation amounts have occurred in the respective time period preceding the planned assessment site visit:

- Precipitation of 0.1 inches or greater within 72 hours or

- Precipitation of 0.5 inches or greater within 96 hours

The assessments shall be performed under the direction of a qualified Professional Engineer or Professional Geologist on a semi-annual basis within two nonadjacent quarters. The date of the initial assessment site visit shall be selected no later than 30 days from the approval of the Discharge Assessment Plan and should fall within one of the semi-annual timeframes. Additional seep locations that may have been identified and documented in an Identification of New Discharge report(s) shall be reviewed prior to performing an assessment site visit, if available.

3.2.2 Observation and Sampling

The initial assessment site visit should be performed to document baseline conditions of the discharge channel, including location, extent (i.e., dimensions of affected area), and flow of each discharge. Discharge channel background and downstream locations should be verified using a Global Positioning System (GPS) device. Photographs should be taken from vantage points that can be replicated during subsequent semi-annual assessments.

Initial and subsequent assessment site visits shall document a minimum of the following to respond to the requirements in 130A-309.210.1(b):

- Record the most recent ash basin water surface elevation and compare to the seep and outfall and associated discharge location surface water elevations.
- For each discharge channel, the observer shall note the following as applicable on the day of the assessment site visit:
    - Is the discharge channel flowing at the time of the assessment site visit?
    - Does the discharge channel visibly flow into a Water of the U.S. at the time of the assessment site visit?
    - How far away is the nearest Water of the U.S.?
    - Document evidence that flow has or could reach a Water of the U.S. (e.g., description of flow, including extent and/or direction) and describe the observed condition. Evidence that flow could or has reached a Water of the U.S. may be indicated by an inspection of the adjacent and downstream topographic drainage features.
    - Observe and document the condition of the discharge channel and outfall of the engineered channel or seep location with photographs. Photographs are to be taken from similar direction and scale as photographs taken during the initial assessment site visit.
- Record flow rate within the discharge channel, if measureable, using the following methods:

- Timed-volumetric method: Collect a volume of water from the discharge of the PVC pipe directly into an appropriately sized container. Measure volumes (in mL) in the field utilizing a graduated container. Record the amount of time (in seconds) needed to collect the volume of water and calculate the flows (in MGD) for the timed-volume.
- A V-notch weir apparatus will be installed, if necessary, during the initial assessment site visit to impound seepage at locations with a defined channel. Once the impounded seep reaches equilibrium discharge, flows will be measured using the timed-volumetric method described above.
- Area-velocity method: Measure point velocities and water depth at a minimum of 20 stations along a transect setup perpendicular to the direction of flow using a Swoffer® 3000 flow meter mounted to a standard United States Geologic Survey (USGS) top-set wading rod. Utilize the average velocity and cross-sectional area of the wetted channel to calculate flows in MGD.

- Collect water quality samples using the following methods:
  - Collect background and downstream samples during a period with minimal preceding rainfall to minimize potential effects of stormwater runoff. Collect samples from the discharge channel at the flow measurement devices or directly from the discharge into sample bottles while minimizing disturbance and entrainment of soil/sediment. After collection, samples will be preserved and stored according to parameter-specific methods and delivered to the laboratory under proper Chain-of-Custody (COC) procedures.
  - Analytical parameters for analysis include: Fluoride, Arsenic, Cadmium, Copper, Chromium, Nickel, Lead, Selenium, and Mercury. This list includes all parameters previously identified for seep sampling at Duke Energy power plants for which relevant stream water quality standards are in place. (This list is responsive to the statutory requirement for the discharge assessment to allow determination whether discharges from toe drain outfalls, seeps, or weeps have reached surface waters and caused a violation of surface water quality standards.) Analyses shall be conducted by Duke Energy's Huntersville Analytical Laboratory (NC Wastewater Certification #248) and Pace Analytical Laboratories (NC Wastewater Certification # 12). Laboratory analytical methods used for each constituent are provided in Table 2.
  - Seep in-situ measurements: In-situ field parameters (temperature and pH) shall be measured utilizing calibrated field meters either at the discharge of the seep directly, at the discharge of the flow measurement devices, or in the water pool created behind the device, if sufficient water depth did not exist at the device discharge.

- Cape Fear River and Ash Basins Sample Collection Method: Water quality samples and in-situ measurements from the Dan River shall be collected at a location upstream and downstream of the ash basin. Additionally, water samples and in-situ measurements shall be collected from an in-process ash basin location. The grab samples shall be collected from the river and basin's surface (0.3 m) directly into appropriate sample bottles.

3.2.3 Evaluation

Evaluation of the data from the initial assessment site visit will establish baseline conditions and will serve as the basis for comparison for subsequent assessment site visit results. Evaluation of observations and sampling results shall include location, extent (i.e., dimensions of affected area), and flow of each discharge. The analytical results of the upstream and downstream locations shall be compared to the 15A NCAC 2B standards for surface water quality upon receipt to identify potential exceedances.

3.2.4 Assessment Reporting

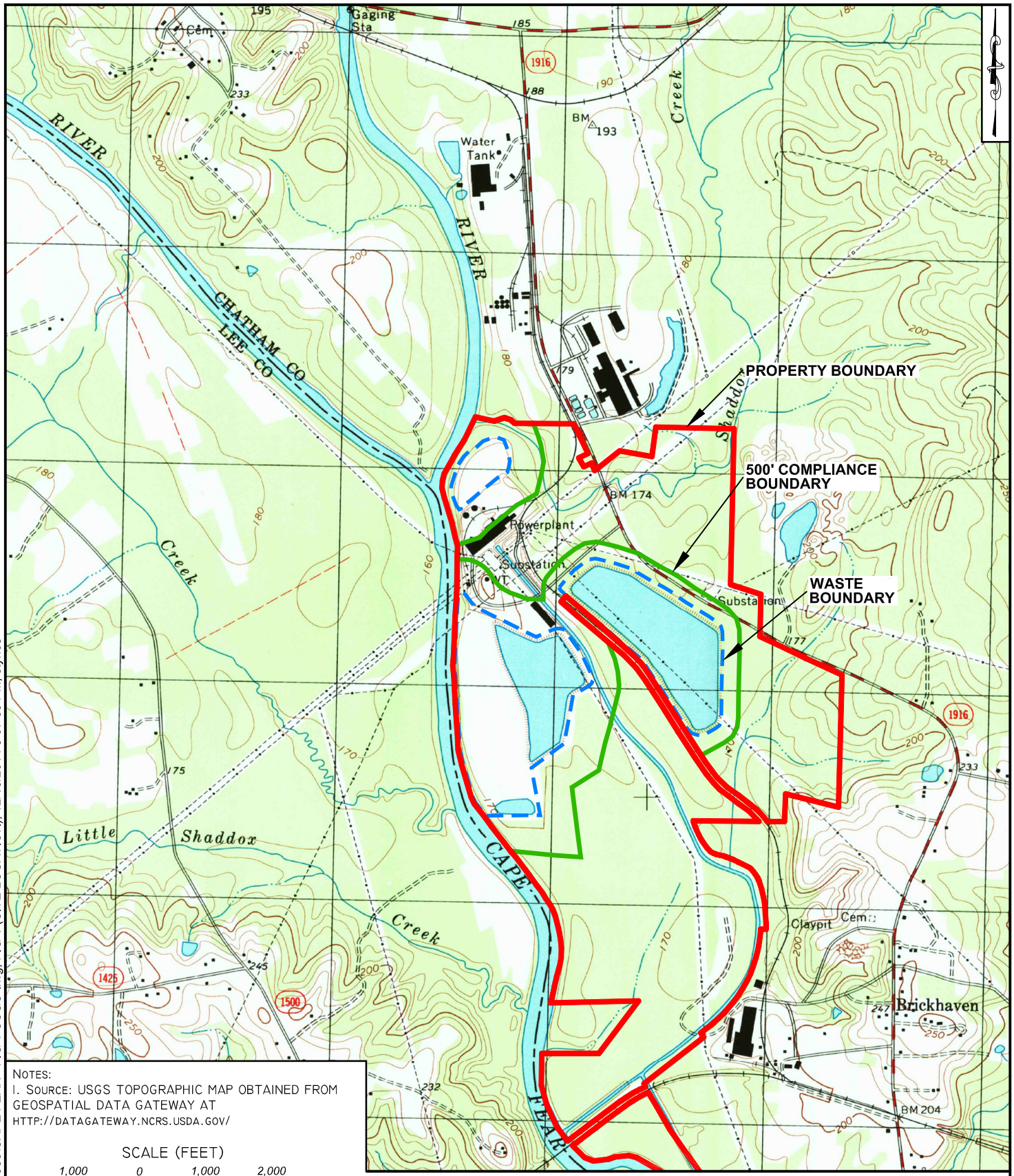
Each assessment site visit shall be documented by the individual performing the assessment, as described in Section 3.2.2 to meet the requirements in 130A-309.210.1(b). The report should contain site background, observation and sampling methodology, and a summary of the observations and descriptions of the discharge channels observed, changes in observations compared to previous assessment events, estimates of flows quantities, and photographs of discharges and outfalls of engineered channels designed or improved for collecting water from the impoundment. Photographs are to be numbered and captioned. The flow and analytical results shall be recorded and presented in tables similar to the examples provided as Tables 1 and 3. The analytical results shall be compared to the 15A NCAC 2B standards for surface water quality and exceedances highlighted. This information shall be compiled, reviewed, and submitted to NCDENR within 90 days from the Observation and Sampling event.

Section 4 - References

Horton, J. W. and Zullo, V. A. 1991. The Geology of the Carolinas, Carolina Geological Society Fiftieth Anniversary Volume, 406 pp.

NCDENR. 2007. Dam Operation, Maintenance, and Inspection Manual, North Carolina Department of Environment and Natural Resources, Division of Land Resources, Land Quality Division, 1985 (Revised 2007).

FIGURES AND TABLES



NOTES:
1. SOURCE: USGS TOPOGRAPHIC MAP OBTAINED FROM GEOSPATIAL DATA GATEWAY AT HTTP://DATAGATEWAY.NCRS.USDA.GOV/

SCALE (FEET)
1,000 0 1,000 2,000

License Number: F-0116
440 South Church Street Charlotte, NC 28202

SITE LOCATION MAP
DUKE ENERGY PROGRESS
CAPE FEAR STEAM ELECTRIC PLANT
NPDES PERMIT #NC0003433
MONCURE, NORTH CAROLINA

DATE
DEC. 16, 2014

FIGURE
1

C:\pwworking\tpa\d0640988\CAPE FEAR - FIG 1 USGS.dwg, FIG 1 (SITE LOCATION), 12/16/2014 5:07:39 PM, ctynes

LEGEND

- S-05 — SEEP LOCATION
- CF-HAW — SURFACE WATER SAMPLE LOCATION
- NPDES OUTFALL 001 — NPDES OUTFALL LOCATION
- CMW-3 — COMPLIANCE GROUNDWATER MONITORING WELL
- MW-11 — VOLUNTARY GROUNDWATER MONITORING WELL
- PZ-30 — PIEZOMETER (APPROXIMATE)
- DUKE ENERGY PROGRESS CAPE FEAR PLANT
- 500 ft COMPLIANCE BOUNDARY
- WASTE BOUNDARY
- ASH POND BOUNDARY (APPROXIMATE)
- POSSIBLE CONTINUOUS SEEP (APPROXIMATE)
- POSSIBLE INTERMITTENT SEEP (APPROXIMATE)
- 1-D — DISCHARGE SAMPLING LOCATIONS
- 1-B — BACKGROUND SAMPLING LOCATIONS

Seep / Discharge ID	Location Coordinates (NAD 83) Latitude	Longitude	Flow Description	Flow Measurement (MGD) and Method	Background Location	Discharge Location and Discharge Sampling Location	Discharge Location Coordinates (NAD 83) Latitude	Longitude
S-01	35.594102	-79.045478	Intermittent	N/A	1-B	Northeast of Duke personnel trailer 1-D	35.595078	-79.0456
S-02	35.593275	-79.044527	Intermittent	N/A		Northwest corner of 1985 ash pond 1-D		
S-03	35.592505	-79.045727	Intermittent	N/A		Grassy area between 1985 ash pond and CP&L drive 2-D	35.568678	-79.045808
S-04 (CF-85N)	35.593009	-79.042762	Continuous	NF		North side of 1985 ash pond 2-D		
S-05 (CF-J)	35.590292	-79.046627	Continuous	0.00102 timed-volumetric		West of cooling tower structure and north of 1978 pond 2-D		
S-06	35.589811	-79.045365	Intermittent	N/A		Western bank of canal by 1978 ash pond 2-D		
S-07 (CF-D)	35.58993	-79.043569	Continuous	NF		Upstream of NPDES Outfall 007 2-D		
S-08 (CF-85SW-CANAL)	35.585847	-79.04267	Continuous	0.00323 area-velocity		Discharge into canal along south(west) sides of 1985 pond 2-D		
S-09 (CF-B-OS26)	35.585944	-79.039791	Intermittent	NF		Towards southeast and the canal 2-D		
S-10	35.585806	-79.038592	Stagnant Pool	N/A		Southeast of southeast corner of 1985 ash pond 2-D		
S-11	35.585012	-79.041236	Intermittent	N/A		Adjacent to stormwater outfall 004 discharging into canal 2-D		
S-12	35.587903	-79.044679	Intermittent	N/A		Downslope of southeast corner of 1978 ash pond 2-D		
S-13	35.58463	-79.047426	Intermittent	N/A		Downslope of southeast corner of 1978 ash pond and southeast corner of 1970 ash pond 3-D	35.581369	-79.04895
S-14	35.582439	-79.047787	Intermittent	N/A		Bowl-like depression south end of 1970 ash pond; drains to southeast to Cape Fear River 3-D		
S-15 (CF-G)	35.588886	-79.051373	Continuous	0.00090 timed-volumetric		Beneath lower access road 3-D		
S-16	35.5903652	-79.0514205	Intermittent	0.00167 timed-volumetric		700 ft north of northern end of former 1963 ash basin 3-D		
S-17	35.590535	-79.051419	Intermittent	0.00015 timed-volumetric		100 ft north of s-16 (upstream Cape Fear River) 3-D		

SOURCES:

1. 2013 HIGH RESOLUTION AERIAL PHOTOGRAPH OBTAINED FROM CHATHAM COUNTY GIS WEBSITE AT http://chathamgis.com/ AND LEE COUNTY GIS WEBSITE AT http://leecountync.gov/departments/GISStrategicServices.aspx
2. 2014 AERIAL PHOTOGRAPH WAS OBTAINED FROM WSP FLOWN ON APRIL 17, 2014.
3. DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD 83)

SCALE (FEET)
400' 0 400' 800'
1" = 800'

TOPOGRAPHIC MAP WITH IDENTIFIED SEEPS AND OUTFALLS

DUKE ENERGY CAROLINAS, LLC
CAPE FEAR STEAM ELECTRIC PLANT
NPDES PERMIT #NC0003433
MONCURE, NORTH CAROLINA

DATE
DECEMBER, 2014

FIGURE
2

Table 1 –Cape Fear Electric Steam Station Ash Basin –Seep and Associated Discharge Locations and Descriptions

Seep / Discharge ID	Location Coordinates (NAD 83)		Flow Description	Flow Measurement (MGD) and Method	Background Location	Discharge Location and Discharge Sampling Location	Discharge Location Coordinates (NAD 83)	
	Latitude	Longitude					Latitude	Longitude
S-01	35.594102	-79.045478	Intermittent	N/A	1-B	Northeast of Duke personnel trailer 1-D	35.595078	-79.0456
S-02	35.593275	-79.044527	Intermittent	N/A		Northwest corner of 1985 ash pond 1-D		
S-03	35.592505	-79.045727	Intermittent	N/A		Grassy area between 1985 ash pond and CP&L drive 2-D	35.568678	-79.045808
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S-06	35.589811	-79.045365	Intermittent	N/A		Western bank of canal by 1978 ash pond 2-D		
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S-09 (CF-B-OS26)	35.585944	-79.039791	Intermittent	NF		Towards southeast and the canal 2-D		
S-10	35.585806	-79.038592	Stagnant Pool	N/A		Southeast of southeast corner of 1985 ash pond 2-D		
S-11	35.585012	-79.041236	Intermittent	N/A		Adjacent to stormwater outfall 004 discharging into canal 2-D		
S-12	35.587903	-79.044679	Intermittent	N/A		Downslope of southeast corner of 1978 ash pond 2-D		
S-13	35.58463	-79.047426	Intermittent	N/A		Downslope of southeast corner of 1978 ash pond and southeast corner of 1970 ash pond 3-D		
S-14	35.582439	-79.047787	Intermittent	N/A		Bowl-like depression south end of 1970 ash pond; drains to southeast to Cape Fear River		

Seep / Discharge ID	Location Coordinates (NAD 83)		Flow Description	Flow Measurement (MGD) and Method	Background Location	Discharge Location and Discharge Sampling Location	Discharge Location Coordinates (NAD 83)	
	Latitude	Longitude					Latitude	Longitude
						3-D	35.581369	-79.04895
S-15 (CF-G)	35.588886	-79.051373	Continuous	0.00090 timed-volumetric		Beneath lower access road 3-D		
S-16	35.590365 2	- 79.0514205	Intermittent	0.00167 timed-volumetric		700 ft north of northern end of former 1963 ash basin 3-D		
S-17	35.590535	-79.051419	Intermittent	0.00015 timed-volumetric		100 ft north of s-16 (upstream Cape Fear River) 3-D		

Notes:

1. Flow description for each seep sample location is based on observation during site visits performed by Synterra in June, July, and October 2014.

Table 2 – Laboratory Analytical Methods

Parameter	Method	Reporting Limit	Units	Laboratory
Fluoride (F)	EPA 300.0	1	mg/l	Duke Energy
Mercury (Hg)	EPA 245.1	0.05	µg/l	Duke Energy
Arsenic (As)	EPA 200.8	1	µg/l	Duke Energy
Cadmium (Cd)	EPA 200.8	1	µg/l	Duke Energy
Chromium (Cr)	EPA 200.8	1	µg/l	Duke Energy
Copper (Cu)	EPA 200.8	1	µg/l	Duke Energy
Lead (Pb)	EPA 200.8	1	µg/l	Duke Energy
Nickel (Ni)	EPA 200.8	1	µg/l	Duke Energy
Selenium (Se)	EPA 200.8	1	µg/l	Duke Energy

Table 3 – Cape Fear Steam Electric Station – Example of Surface Water /Seep Monitoring Flow and Analysis Results Table

Parameter	Units	S-04	S-05	S-07	S-08	S-09	S-15	S-16	S-17	CF-78 AshPond	CF-85 AshPond	CF-Down1	CF-Down2	CF-HAW	CF-SHCK-Up
Fluoride	**mg/l**	< 1	< 1	< 1	< 1	< 1	< 1	2.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hg - Mercury (71900)	**µg/l**	< 1	< 1	< 1	< 1	< 1	< 1	< 0.05	< 0.05	< 1	1	< 1	< 1	< 1	< 1
As - Arsenic (01002)	**µg/l**	2.39	< 1	4.77	< 1	< 1	38.7	45.6	< 1	5.85	34.4	< 1	< 1	< 1	1.28
Cd - Cadmium (01027)	**µg/l**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cr - Chromium (01034)	**µg/l**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cu - Copper (01042)	**µg/l**	< 1	< 1	< 1	1.04	< 1	< 1	< 1	< 1	1.29	< 1	1.2	1.26	1.01	2.01
Pb - Lead (01051)	**µg/l**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	3.79	< 1	< 1	< 1	< 1	< 1	< 1
Ni - Nickel (01067)	**µg/l**	3.52	9.37	4.65	5.32	4.16	4.26	207	23.9	3.67	1.92	1.32	1.20	1.10	1.76
Se - Selenium (01147)	**µg/l**	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2.39	65.7	< 1	< 1	< 1	< 1
pH	**s.u.**	6.7	5.7	6.4	7.7	6.8	7.0	3.3 [a]	4.2	6.9	7.7	7.2	8.2	7.1	7.4
Temperature	**℃**	28	24	24	28	26	19	25 [a]	15	32	30	29	29	27	33
Flow	**MGD**	NF	0.00102	NF	0.00323	NF	0.00090	0.00167	0.00015	NM	NM	NM	NM	NM	0.19388

Notes:

1. Flow measurements and analytical samples were collected on June 30, July 1, and October 1, 2014, by Synterra.