DEQ/DWR
FACT SHEET FOR NPDES PERMIT DEVELOPMENT
NPDES PERMIT NC0003433

Facility Information	
Applicant/Facility Name:	Duke Energy Progress LLC– Cape Fear Steam Electric Plant (decommissioned)
Applicant Address:	500 CP&L Road, Moncure, NC 27599
Facility Address:	500 CP&L Road, Moncure, NC 27599
Permitted Flow:	Outfall 008 -1.93 Daily Maximum
Type of Waste:	100% Industrial
Facility/Permit Status:	Class II/Renewal and Major Modification SIC 4911
County:	Chatham

Miscellaneous

Receiving Stream	Index	7Q10s (cfs)	QA (cfs)	IWC (7Q10s)
Outfall 007 – Unnamed tributary to Cape Fear River	18-(1)	0	0	100%
Outfall 008 – Cape Fear River	18-(1)	-	-	100%
Outfall 009 – Shaddox Creek	16-43	0	0	100%
Outfall 010A, 010B – Unnamed tributary to Cape Fear River	18-(1)	0	0	100%
Outfalls 011A, 011B,011C, 011D – Cape Fear River	18-(1)	-	-	100%

Stream Classification:	WS-IV	Regional Office:	Raleigh
303(d) Listed?:	No	USGS Topo Quad:	E22SE Moncure, NC
HUC No.:	03030002	Permit Writer:	Ron Berry
Subbasin:	03-06-07	Date:	10/3/16

Cape Fear River Stream Statistics – 2016	
Drainage (mi^2):	-
Summer – 7Q10 (cfs):	Not defined [1]
Winter – 7Q10 (cfs):	Not defined [1]
30Q2 (cfs):	Not defined [1]
QA (cfs):	Not defined [1]

Note:

1. Complex nature of this section of the Cape Fear River does not yield a definable 7Q10, 30Q2, QA stream statistics per USGS.

Current Status

Duke Energy's ceased operation of its combined 400 megawatts, coal-fire and combustion turbine, Cape Fear Steam Electric Plant in 2011. Except for a single small (less than 0.1 MGD) episodic discharge in February 2016 from a leaking valve, the last consistent discharge from this facility was in July 2014. The plant was dismantled and no longer withdraws water from the Cape Fear River nor discharges wastewater as defined for an active operation of a steam electric generation facility. Currently, there are five ash basins, three which contain a visible water level, and no treatment facilities. As part of the current active NPDES issued in 2011, storm water was separated and is covered under its own permit.

In July 2014 Duke Energy submitted a modification application to amend permit conditions to address operation changes and recently identified unpermitted seeps. Subsequent application amendments have been submitted to update data and to request additional modifications. In February 2016, a request was made by the Permittee to accept the permit modification application under review as the required permit renewal application. During the interim Duke continued to provided documents

and data associated with identified seeps as well as data associated with the ash basins bulk wastewater decanting/dewatering analyses. As part of the final August 2016 amended application Duke Energy requested:

- Activation of the former 1963/1970 ash basin stormwater Outfall 008 as an NPDES outfall for discharging ash basins treated decanting/dewatering and other treated wastewater from two proposed treatment facilities with a requested flow limit of 1.78 MGD.
- Provisions to allow for future on-site treated groundwater wastewater discharge to Outfall 008. The treatment systems will be modified as needed.
- Provisions to allow for future on-site treated ash landfill leachate wastewater discharge to Outfall 008 once all on-site ash basin decanting/dewatering activities are completed/terminated. The treatment systems will be modified as needed.
- Approval for repurposing existing Internal Outfalls 001 and 005 for emergency overflow discharges for East and West Ash Basins until completion of their decanting process (Outfall 001 and 005 discharge to Outfall 007 effluent channel).
- Approval for a new emergency overflow Internal Outfall 008A for 1963/1970 Ash Basin until completion of its decanting process (Outfall 008A will discharge to Outfall 008).
- Approval to collect and monitor AOWs (area of wetness) S-05, S-07, S-08, S-09, S-12 in the existing designated Outfall 007 effluent channel as contributing flows to Outfall 007.
- Approval not to require notification to the Division of any newly identified AOWs that contribute flow to any existing Outfalls.

In conjunction with the August 2016 application amendment, Duke Energy withdrew its previous request for NPDES coverage for AOWs S-01, S-02, S-03, S-06, S-11, S-13, S-14 based on the confirmation by sampling data of the lack of pollutants being released to waters of the state.

The facility can discharge to three stream locations, Shaddox Creek, unnamed tributaries to the Cape Fear River, and the Cape Fear River. All streams are classified as WS-IV. For this permit, based on the USGS 2016 review and recommendation, all three locations are considered undefined flow or "zero" flow streams. This facility is subject to EPA effluent guidelines 40 CFR 423 and to NC Senate Bill 729 (Coal Ash Management Act).

Outfall Description for Proposed Permit

Internal Outfall 001 - West Ash Basin

This existing outfall will be re-designated as requested by the Permittee as an emergency discharge only and will consist of ash basin comingled decanting wastewater and storm water. This will be limited to discharging excess wastewater above the available treatment plant capacity during an eminent threat of West Ash Basin overflow to the facility's effluent channel. The channel discharges through Outfall 007.

Internal Outfall 005 - East Ash Basin
This existing outfall will be re-designated as requested by the Permittee as an emergency discharge only and will consist of ash basin comingled decanting wastewater and storm water. This will be limited to discharging excess wastewater above the available treatment plant capacity during an eminent threat of East Ash Basin overflow to the facility's effluent channel. The channel discharges through Outfall 007.

Outfall 007 - Combined Wastewater
This existing outfall will discharge as requested by the Permittee the accumulated flows of designated seeps S-05, S-07, S-08, S-12, storm water, and episodic emergency flow from Internal Outfalls 001 and 005. Outfall 007 discharges to an unnamed tributary to the Cape Fear River.

Outfall 008 - Combined Wastewater
This outfall was a previous retired 1963/1970 Ash Basin storm water outfall and as requested by the Permittee will be re-activated as a NPDES discharge. It will be designated for the discharge of the combined flows of treated wastewater from the two proposed on-site treatment facilities, and for the episodic emergency flow from Internal Outfall 008A. Outfall 008 discharges to the Cape Fear River.

Internal 008A - 1963/1970 Ash Basin
This will be a new outfall requested by the Permittee and will be designated as an emergency discharge only, and will consist of ash basin comingled decanting wastewater and storm water. This will be limited to discharging excess wastewater above the available treatment plant capacity during an eminent threat of 1963/1970 Ash Basin overflow to Outfall 008.

Outfall 009 - Seep
This will be a new outfall required to address the discharge from designated seep S-04 associated with the East Ash Basin. Outfall 009 discharges into an existing ditch that discharges into Shaddox Creek.

Outfalls 010A and 010B – Seeps
These will be new outfalls required to address the discharge from designated seeps S-09, S-10 associated with the East Ash Basin. Outfalls 010A and 010B discharge into existing ditches that discharge into an unnamed tributary to the Cape Fear River.

Outfalls 011A, 011B, 011CD, 011D – Seeps
These will be new outfalls required to address the discharge from designated seeps S-15, S-16, S-17, S-18 associated with the 1963/1970 Ash Basin. Outfalls 011A, 01B, 011C, and 011D discharge to the Cape Fear River.

Compliance Review
During this permit cycle while operating as a steam electric generating facility up to shutting down in May 2014, the facility had two TSS limit violations on Internal Outfall 005 and some monitoring frequency violations. No fines were assessed.

A total of 11 chronic toxicity tests at 90% effluent concentration using ceriodaphnia dubia were performed and passed.

During this permit cycle samples were taken from 13 monitoring wells for 22 parameters 3/ Year. Groundwater violations were noted for Total Manganese, Total Iron, Total Boron, Total Vanadium, TSS, Total Cobalt, Sulfates, Total Selenium, Total Cadmium, Total Chromium, and Total Thallium. As required the Permittee is preparing an Action Plan to address groundwater remediation that will be submitted to the Groundwater Protection Branch for final approval.

Instream Monitoring

As part of the required site seep investigation and reporting, instream samples were taken in July 2014 in the Haw River at the mouth of Shaddox Creek, upstream in Shaddox Creek, in the Cape Fear River just upstream of the mouth of the unnamed tributary that receives flow from Outfall 007, and in the Cape Fear River approximately 1.9 miles downstream from the mouth of the unnamed tributary. There was a notable reduction in impact to the concentration of the measured constituents that entered Haw River from Shaddox Creek most likely from dilution. The Cape Fear River samples did not show any significant differences. There were no reported values that violated NC water quality standards or EPA criteria.

Fish Tissue Study Near Ash Basins

As required a fish tissue study was conducted in the Cape Fear River in May 2014 to evaluate the uptake of arsenic, mercury, and selenium by fish near the ash basin discharge. There were four fish tissue samples out of the thirty-six sample taken, three upstream and one downstream, that were $\geq$ the Mercury 2006 NC Health Directors Action Advisory Level of 0.4 µg/g fresh weight. The fish tissue samples Mercury levels ranged from < 0.04 to 0.68 µg/g fresh weight. There was no exceedance of the arsenic or the selenium fish tissue fresh weight criteria for any fish tissue sampled.

Proposed Permitting Action

To implement the 2014 Coal Ash Management Act, this facility must decant and dewater the ash basins, and then excavate the ash to an approved landfill. Currently, there are three ash basins scheduled for decanting/dewatering at this site. The Permittee is planning on seeking approval to construct a lined ash landfill on-site and to construct and begin operation of a groundwater remediation system.

The Permittee proposes to install two ash basin treatment facilities for treatment of ash basin decanting and dewatering wastewater that will mix and discharge through Outfall 008. In addition, the Permittee proposes to add groundwater remediation wastewater as an influent to the ash basin treatment units at some point. Once all the ash basin decanting and dewatering is completed, the Permittee has requested the option to add on-site ash landfill leachate to the treatment units' influent in conjunction with groundwater remediation wastewater, and continue to be allowed to discharge treated wastewater from Outfall 008. For the purposes of determining the maximum permitted flow and daily limit for Outfall 008, the maximum treatment capacity of 1.93 MGD was calculated based on 600 GPM (groundwater) and 70 GPM (leachate) being sent to each treatment unit.

The East and West Ash Basins bulk water and interstitial water analyses was accepted as representing the bulk water and interstitial water characteristics for the 1963/1970 Ash Basin. The Permittee will be required to notify the Division when the initial ash basin decanting process begins, and when a change in the purpose and the wastewater sources occurs to Outfall 008, to ensure the appropriate requirements are applied. The change in wastewater sources will also require submittal of EPA Form 2C. The permit may be opened to implement additional requirements if warranted.

As a result of the decommissioning and removing of the steam and turbine components, removing of the domestic WWTP, and eliminating of other related on-site sources, the following current permit Special Conditions are no longer applicable and will be removed from this permit:

- A. (2.) Internal Outfall 003
- A. (6) Intake Screen Backwashing
- A. (7.) Biocide Condition
- A. (8.) Domestic Wastewater Treatment Plant
- A. (10.) Section 316 (b) of CWA

Internal Outfalls 001, 005, and 008A - Ash Basins Emergency Overflow Discharge

The Permittee requested internal outfalls be allowed for the three ash basins to address potential emergency overflow events. Currently, the East Ash Basin Internal Outfall 005 and the West Ash Basin Internal Outfall 001 will be adapted as emergency overflow discharging to the facility's effluent channel which discharges through Outfall 007. The 1963/1970 Ash basin will require a new emergency overflow outfall, Internal Outfall 008A. The emergency overflow wastewater from Internal Outfall 008A will mix with the treated ash basin treatment systems wastewater effluent and then can discharge through Outfall 008. Table 1 lists the monitoring requirements for the ash basin emergency overflow internal outfalls based on 40 CFR 423 effluent guidelines and NC water quality standards.

Table 1: Ash Basin Emergency Overflow Internal Outfalls

Parameter	**Monitoring Requirements**	**Sample Requirements** [1,2]	
Flow	Monitor & Report, MGD	Daily during Episodic Event	Pump Logs, meters, or estimate
pH	$6.0 \leq pH \leq 9.0$ S.U.	Weekly	Grab
Total Suspended Solids	30.0 mg/L MA 100.0 mg/L DM	Weekly	Grab
Oil and Grease	15.0 mg/L MA 20.0 mg/L DM	Weekly	Grab

Notes

1. During a discharge event, the flow shall be reported daily and the TSS, pH, Oil & Grease shall be monitored and reported weekly including at least once during a discharge event for an event duration of less than a week.
2. Effluent sampling shall be conducted on effluent from the Ash Basin emergency overflow discharge prior to mixing with any other waste stream.

Outfall 008 - Ash Basin Decanting

Treated ash basin decanting wastewater will be pumped and mixed from the two on-site ash basin treatment facilities before discharging from Outfall 008. Monitoring for ash basin decanting pollutants, and monitoring and limits for Flow, pH, TSS, Oil & Grease, and Chronic toxicity, and narratives will be applied based on the strategy for decanting.

Reasonable Potential (RP) Analyses

A RP analyses was conducted based on the highest July/August 2014 toxicant measurements from each East and West Ash Basins bulk water measurements and applying the new NC WQS and EPA criteria. Based on the analyses the following additional permitting actions are proposed for decanting:

- Monitor with Limit
  The flowing parameters will receive a WQBEL requirement, since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Copper, Fluoride, Molybdenum, Nickel, Selenium, Sulfates, Thallium, Zinc
- Monitor Only
  The following parameters will receive a monitoring only requirement since the predicted value ≥ 50% of the Allowable Cw: Total Barium, Chlorides
  The following parameter will receive a monitoring only requirement, since the MDL > Allowable Cw and > PQL: Cadmium
- No Limit or Monitoring
  The following parameters will not receive a limit or monitoring requirement, since there were no detects and the MDL < WQBEL: Chromium VI, Chromium III, Total Chromium, Lead, Antimony

A spreadsheet of the RP Analyses is attached to this Fact Sheet.

Mercury TMDL

A mercury TMDL was approved by US EPA in October 2012 and will be implemented in this permit. All reported data was above the TBEL and the annual average WQBEL, in this case, the WQBEL as an annual average will be required. See RP Analyses spreadsheet for Mercury data.

Upon commencing of an ash basin dewatering process the terms and conditions associated with the dewatering process automatically supersede the decanting effluent page limitations. Table 2 summarizes the proposed Outfall 008 decanting requirements.

Table 2: Ash Basin Decanting Outfall 008

Parameter	Monitoring Requirements	DMR Monitoring Frequency	Basis
Flow	1.93 MGD DM	Daily	Decanting strategy, 15A NCAC 2B .0505
pH	6.0 ≤ pH ≤ 9.0 S.U. Continuous monitoring/auto shutoff	Monthly	Decanting strategy, 15A NCAC 2B .0200
TSS	30.0 mg/L MA 100 mg/L DM Continuous monitoring/auto shutoff	Monthly	Decanting strategy, EPA requirement, 40 CFR 423
Oil & Grease	15.0 mg/L MA 20.0 mg/L DM	Monthly	Decanting strategy, 40 CFR 423
Total Arsenic	10.0 µg/L MA 10.0 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Copper	7.9 µg/L MA 10.5 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Mercury	12 ng/L, annual average	Monthly	Mercury TMDL
Total Molybdenum	160 µg/L MA 160 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Nickel	25.0 µg/L MA 25.0 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Selenium	5.0 µg/L MA 56.0 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Thallium	0.24 µg/L MA 0.24 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Total Zinc	125.7 µg/L MA 125.7 µg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Fluoride	1.8 mg/L MA 1.8 mg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Sulfates	250 mg/L MA 250 mg/L DM	Monthly	RP to exceed NC WQS and EPA criteria
Turbidity	Net Turbidity ≤ 50 NTU	Monthly	Decanting strategy, EPA requirement
Total Hardness	Monitor & Report, mg/L	Monthly	Collect data for RP analyses
Total Barium	Monitor & Report, mg/L	Monthly	Maximum predicted value ≥ allowable Cw
Total Cadmium	Monitor & Report, µg/L	Monthly	MDL > Allowable Cw and > PQL
Chlorides	Monitor & Report, mg/L	Monthly	Maximum predicted value ≥ allowable Cw
Nitrate/Nitrite as N	Monitor & Report, mg/L	Monthly	Decanting strategy, 40 CFR 423
Chronic Toxicity	90% concentration, P/F	Monthly	DEQ Toxicity Policy
Total Kjeldahl Nitrogen	Monitor & Report, mg/L	Quarterly	Needed to calculate TN
Total Nitrogen	Monitor & Report, mg/L	Quarterly	15A NCAC 02B .0500
Total Phosphorus	Monitor & Report, mg/L	Quarterly	15 A NCAC 02B .0500

Outfall 008 Ash Basin Dewatering (and/or combination Dewatering/Decanting)
Treated ash basin dewatering wastewater will be pumped and mixed from two on-site ash basin treatment facilities before discharging from Outfall 008. It may be possible to mix treated decanting and dewatering wastewater in which case Outfall 008 discharge is deemed dewatering. Monitoring for ash basin dewatering pollutants, and monitoring and limits for Flow, pH, TSS, Oil & Grease, and Chronic toxicity, and narratives will be applied based on the strategy for dewatering.

Reasonable Potential (RP) Analyses
A RP analyses was conducted based on the highest July/August 2014 toxicant measurement from the East and West Ash Basins interstitial water and applying the new NC WQS and EPA criteria. Based on the analyses the following additional permitting actions are proposed for watering:

- Monitor with Limit
  The flowing parameters will receive a WQBEL requirement, since the RP exists to violate NC WQS and EPA criteria: Arsenic, Barium, Chromium VI, Chromium III, Total Chromium, Copper, Fluoride, Lead, Molybdenum, Nickel, Selenium, Sulfates, Thallium, Zinc
- Monitor Only
  The following parameter will receive a monitoring only requirement since the predicted value ≥ 50% of the Allowable Cw: Chlorides
  The following parameters will receive a monitoring only requirement, since the MDL > Allowable Cw: Antimony, Cadmium

A spreadsheet of the RP Analyses is attached to this Fact Sheet.

Mercury TMDL
A mercury TMDL was approved by US EPA in October 2012 and will be implemented in this permit. All reported data was above the TBEL and the annual average WQBEL, in this case, the WQBEL as an annual average will be required. See RP Analyses spreadsheet for Mercury data.

In summary, the monitoring requirements for Ash Basin Dewatering are the same as Table 2 with the following modifications:

- Add limits for Barium, Copper
- Add monitoring and limits for Lead, Chromium VI, Chromium III
- Add monitoring for Antimony, Cadmium, and Total Chromium
- Increase DMR monitoring frequency to weekly for designated dewatering parameters

Outfall 008 Ash Basin Dewatering (and/or combination Dewatering/Decanting/Groundwater Remediation)
On-site groundwater remediation wastewater will be pumped and mixed with the ash basin dewatering wastewater, treated, and discharge from Outfall 008. A review of the existing site groundwater monitoring data was conducted, and several toxicants of concern were noted. The monitoring requirements will remain the same as the dewatering requirements with the following modifications to address additional groundwater remediation concerns:

- Add limits for Antimony, Cadmium, and Chlorides
- Add monthly monitoring for Aluminum, Manganese, TDS

Outfall 008 - Groundwater Remediation

Upon completion/termination of ash basin dewatering and continued or beginning of on-site groundwater remediation, the groundwater remediation wastewater will be pumped to the ash basin treatment systems, treated, mixed, and discharged from Outfall 008. The parameters of concern remain the same as the parameters of concern for the combined dewatering and groundwater remediation wastewater, but will be modified and implemented as a permitted Class II groundwater remediation facility as shown in Table 3.

Table 3: Outfall 008 – Groundwater Remediation

Parameter	Requirements/Limits	DMR Monitoring Frequency	Basis
Flow	Monitor & Report, MGD	Weekly	15A NCAC 2B .0505
pH	6.0 ≤ pH ≤ 9.0 S.U.	Weekly	15A NCAC 2B .0200
TSS	30.0 mg/L MA 30.0 mg/L DM	Weekly	Groundwater Remediation Strategy NCG510000
Oil & Grease	15.0 mg/L MA 20.0 mg/L DM	Weekly	Pollutant of concern, 40 CFR 423
Toxicants (Limits)	Same as Outfall 008 - dewatering/groundwater remediation	Weekly	Pollutants of concern, 15A NCAC 2B .0500
Toxicants (No Limits)		Monthly	Pollutants of interest 15A NCAC 2B .0500
Total Mercury		Monthly	Parameter of concern Mercury TMDL
Turbidity	Net Turbidity ≤ 50 NTU	Weekly	15A NCAC 2B .0200
Total Hardness	Monitor & Report, mg/L	Quarterly	Collect data for RP analyses
Nitrate/Nitrite as N	Monitor & Report, mg/L	Quarterly	Needed to calculate TN
Chronic Toxicity	90% concentration, P/F	Quarterly	DEQ Toxicity Policy

Outfall 008 - Groundwater Remediation/Ash Landfill Leachate

Upon completion/termination of ash basin dewatering and continued or beginning of groundwater remediation, and with the addition of on-site ash landfill leachate, the combined groundwater remediation wastewater and leachate wastewater will be mixed in the ash basin treatment systems' influent, treated, and discharged from Outfall 008. The Permittee provided an analyses of a similar ash basin landfill leachate from another facility for review, and several toxicants of concern were noted. The monitoring requirements will remain the same as the groundwater remediation requirements with the following modifications:

- Add weekly monitoring with limits for Silver
- Add weekly monitoring for Temperature
- Add monthly monitoring for Conductivity

Seep Outfalls

The facility identified 18 non-engineered discharges from seepage from the ash settling basins. However, 7 of the seeps do not need coverage under this permit based on the low concentration of the constituents associated with coal ash and/or absence of the discharge to the "Waters of the State". These seeps are not considered point source wastewater discharges under the Clean Water Act.

An effluent channel determination was completed by the Division on September 2, 2016. The seeps listed in Table 4 were identified as effluent channels and are depicted on the permit map. Seeps S-05, S-07, S-08, S-12 are tributaries through the facility's effluent channel to Outfall 007 which discharges to an unnamed tributary to the Cape Fear River. Outfall 009 discharges to Shaddox Creek. Outfalls 010A and 010B discharge to an unnamed tributary to the Cape Fear River. Outfalls 011A, 011B, 011C, and 011D discharge to the Cape Fear River.

Table 4: Seeps Discharge Coordinates and Assigned Outfall Numbers

Discharge ID	Latitude	Longitude	Outfall number
S-04	35° 35' 35" N	79° 2' 34" W	009
S-05	35° 35' 25" N	79° 2' 48" W	007
S-07	35° 35' 24" N	79° 2' 37" W	007
S-08	35° 35' 9" N	79° 2' 34" W	007
S-09	35° 35' 9" N	79° 2" 23" W	010A
S-10	35° 35' 9" N	79° 2' 19" W	010B
S-12	35° 35' 16" N	79° 2' 41" W	007
S-15	35° 35' 20" N	79° 3' 5" W	011A
S-16	35° 35' 25.2" N	79° 3' 5" W	011C
S-17	35° 35' 26" N	79° 3' 5" W	011D
S-18	35° 35' 24.9" N	79° 3" 5" W	011B

Within 180 days of the effective date of this permit, the permittee shall demonstrate, through in-stream sampling meeting the requirements of condition A. (23.), that the water quality standards in the receiving stream are not contravened.

Discharges from Seepage Identified After Permit Issuance

The facility shall comply with the "Plan for Identification of New Discharges" as contained in Attachment 2. For any discharge identified pursuant to this Plan, the facility shall, within 90 days of the seep discovery, determine if the discharge seep meets the state water quality standards established in 15A NCAC 2B .0200 and submit the results of this determination to the Division. If the standards are not contravened, the facility shall conduct monitoring for the parameters specified in A. (11.).

If any of the water quality standards are exceeded, the facility shall be considered in violation until one of the options below is fully implemented:

1) Submit a complete application for 404 Permit (within 30 days after determining that a water quality standard is exceeded) to pump the seep discharge to one of the existing outfalls, install a pipe to discharge the seep to the Cape Fear River, or install an *in-situ* treatment system. After the 404 Permit is obtained, the facility shall complete the installation of the pump, pipe, or treatment system within 180 days from the date of the 404 permit receipt and begin pumping/discharging or treatment.

2) Demonstrate through modeling that the decanting and dewatering of the ash basin will result in the elimination of the seep. The modeling results shall be submitted to the Division within 120 days from the date of the seep discovery. Within 180 days from the completion of the dewatering the facility shall confirm that the seep flow ceased. If the seep flow continues, the facility shall choose one of the other options in this Special Condition.

3) Demonstrate that the seep is discharging through the designated "Effluent Channel" and the water quality standards in the receiving stream are not contravened. This demonstration should be submitted to the Division no later than 180 days from the date of the seep discovery. The "Effluent Channel" designation should be established by the DEQ Regional Office personnel prior to the issuance of the permit. This permit shall be reopened for cause to include the "Effluent Channel" in a revised permit.

All effluent limits, including water quality-based effluent limits, remain applicable notwithstanding any action by the Permittee to address the violation through one of the identified options, so that any discharge in exceedance of an applicable effluent limit is a violation of the Permit as long as the seep remains flowing.

New Identified Seeps

If new seeps are identified, the facility shall follow the procedures outlined above. The deadlines for new seeps shall be calculated from the date of the seep discovery. The new identified seeps are not permitted until the permit is modified and the new seep included in the permit and the new outfall established for the seep.

Reasonable Potential (RP) Analyses For Proposed Seep-Based Outfalls

A RP analyses was conducted for each seep-based outfall using the reported 2014-2016 seeps measurements for Antimony, Arsenic, Barium, Cadmium, Chlorides, Chromium, Copper, Fluoride, Lead, Molybdenum, Nickel, Selenium, Sulfates, Thallium, and Zinc. The IWC was 100% for all seeps as no stream dilution was applicable. For summary purposes, the RP Analyses seep flows were multiplied by a safety factor of 10 but had no impact on the IWC. The seeps Mercury data was used to evaluate each seep-based outfall for implementation of the October 2012 Mercury TMDL. As a result of the RP Analyses and the Mercury TMDL, the following additional permitting actions are proposed in conjunction with continuing the seep's same monitoring parameters:

Outfall 007 - S-05, S-07, S-08, and S-12

- Monitor with Limit
  WQBEL will be required since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Cadmium, Copper, Molybdenum, Nickel, Sulfates, Thallium
- No Limit or Monitoring
  No limit or monitoring will be required since there were no detects and the MDL < WQBEL: Chromium VI, Chromium III, Antimony
- Mercury TMDL
  All reported seep data was below the TBEL and the annual average WQBEL, in this case, monitoring only will be required.

Note: Since the estimated flow will be above 0.05 MGD, quarterly monitoring for Total Kjeldahl Nitrogen, TN, and TP will be required.

Outfall 009 - S-04

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Cadmium, Chromium VI, Copper, Lead, Nickel, Selenium, Sulfates, Thallium

- No Limit or Monitoring
  The following parameter will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Fluoride, Chromium III
- Mercury TMDL
  All reported data was below the TBEL and the annual average WQBEL, in this case, monitoring only will be required.

Outfall 010A - S-09

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Sulfates
- No Limit or Monitoring
  The following parameter will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Antimony, Chromium VI, Chromium III
- Mercury TMDL
  All reported data was below the TBEL and the annual average WQBEL, in this case, monitoring only will be required.

Outfall 010B - S-10

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with the seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Copper, Lead
- No Limit or Monitoring
  The following parameters will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Antimony, Chromium VI, Chromium III, Fluoride
- Mercury TMDL
  All reported data was below the TBEL but the annual average exceeds the WQBEL, in this case, monitoring with a WQBEL annual average will be required.

Outfall 011A – S-15

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Molybdenum, Thallium, Sulfates
- No Limit or Monitoring
  The following parameter will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Antimony, Chromium VI, Chromium III
- Mercury TMDL
  All reported data was below the TBEL and the annual average WQBEL, in this case, monitoring only will be required.

Outfall 011B – S-18

There was no data available as there was insufficient flow to take a sample upon discovery and reporting by the Permittee. Adjacent seeps S-15, S-17, S-18 were considered representative so their RP Analyses and were used for determining S-18 requirements as follows:

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with seep monitoring: Arsenic, Fluoride, Molybdenum, Nickel, Sulfates, Thallium, Zinc
- No Limit or Monitoring
  The following parameter will not receive a limit or monitoring: Antimony
- Mercury TMDL
  With no sample there was no Mercury data. Mercury is a major parameter of concern for ash basin seeps, in this case, monitoring with a WQBEL annual average will be required.

Outfall 011C – S-16

- Monitor with Limit
  The following parameters will receive WQBEL requirements in conjunction with the seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Arsenic, Fluoride, Nickel, Sulfates, Thallium, Zinc
- No Limit or Monitoring
  The following parameters will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Antimony, Chromium VI, Chromium III
- Mercury TMDL
  All reported data was below the TBEL but the annual average exceeds the WQBEL, in this case, monitoring with a WQBEL annual average will be required.

Outfall 011D – S-17

- Monitor with Limit
  The flowing parameters will receive WQBEL requirements in conjunction with the seep monitoring, since the RP exists to violate NC WQS and EPA Criteria: Lead, Nickel, Sulfates, Zinc
- No Limit or Monitoring
  The following parameters will not receive a limit or monitoring, since there were no detects and the MDL < WQBEL: Antimony, Fluoride, Chromium VI, Chromium III
- Mercury TMDL
  All reported data was below the TBEL but the annual average exceeds the WQBEL, in this case, monitoring with a WQBEL annual average will be required.

Spreadsheets of the seeps RP Analyses are attached to this Fact Sheet and include Mercury data.

In addition to the requirements for each seep-based outfall, monitoring and limits will be required as listed in Table 5.

Table 5: Additional Proposed Seep-Based Outfall Requirements

Parameter	Limits/Monitoring Requirements	Basis
Flow, MGD	Monitor & Report	15A NCAC 2B .0505
pH	6.0 ≤ pH ≤ 9.0 S.U.	WQ, 15A NCAC 2B .0200
TSS	30.0 mg/L MA 100.0 mg/L DM	40 CFR 423.12(b)(4)
Oil & Grease	15.0 mg/L MA 20.0 mg/L DM	40 CFR 423.12(b)(4)
Aluminum, mg/L Nitrate/Nitrite as N, mg/l TDS, mg/L Temperature, °C Conductivity, µmho/cm	Monitor & Report	Parameters of Concern

Instream Monitoring

The current permit did not require instream monitoring. The proposed permit will require semiannual instream monitoring and reporting for Total Arsenic, Total Cadmium, Total Chromium, Total Copper, Total Lead, Total Hardness, Total Mercury (Method 1631E), Total Selenium, and Total Zinc at the locations listed in Table 6.

Table 6: Instream Monitoring Locations

Instream Sample Description	Location
Upstream Outfall 008	0.9 miles upstream from Outfall 008 in Cape Fear River
Upstream Outfall 008	50 ft upstream from Outfall 008 in Cape Fear River
Downstream Outfall 008	1.2 miles downstream from Outfall 008 in Cape Fear River
Upstream Outfall 009 (confluence with Shaddox Creek)	East side SR1916 Bridge, Shaddox Creek
Downstream Outfall 009 (confluence with Shaddox Creek)	CP&L Railroad Bridge, Shaddox Creek
Downstream 007	2,900 ft downstream from Outfall 007 in the unnamed tributary to the Cape Fear River

Summary of Proposed Changes

1. Eliminated Internal Outfall 003; Special Conditions A. (6.) Intake Screen Backwash, A. (7.) Biocide Condition, A. (8.) Domestic Wastewater Treatment Plant, A. (10.) Section 316(b) of CWA; as they are no longer applicable.
2. Modified Internal Outfalls 001 and 005 limitation pages to define the monitoring and limits requirements for the emergency overflow that may occur discharging from the West and East Ash Basins.
3. Modified Outfall 007 limitation page to define the monitoring and limit requirements for the identified seeps discharging from Outfall 007.
4. Modified Special Condition A. (19.) Chronic Toxicity Limit (Quarterly) to be re-assigned to Outfall 008.
5. Modified Supplement to Permit Cover Sheet to show the new outfalls' configuration.

6. Added new multiple Outfall 008 limitation pages to define special narratives, and the monitoring and limits requirements for various combination of treated wastewater sources of ash basin decanting, ash basin dewatering, on-site groundwater remediation, and on-site ash landfill leachate that will occur discharging from Outfall 008.
7. Added new Internal Outfall 008A limitation page to define the monitoring and limits requirements for the emergency overflow that may occur discharging from the 1963/1970 Ash Basin.
8. Added new seep-based Outfalls 009, 010A, 010B, 011A, 011B, 011C, 011D limitation pages to define the monitoring and limit requirements for identified seeps discharging to waters of the state.
9. Added instream monitoring to monitor the impact of the permitted discharges on the receiving streams.
10. Added Special Condition A. (18.) Chronic Toxicity Limit (Monthly) for decanting/dewatering activities from Outfall 008.
11. Added Special Condition A. (25.) Addition of Other Wastewater to Ash Basin Treatment Systems for submittal of EPA Form 2C upon addition of groundwater and ash landfill leachate wastewater to treatment systems.
12. Added Special Condition A. (24.) Applicable State Law narrative to meet requirements of Senate Bill 729 (Coal Ash Management Act).
13. Added Special Condition A. (26.) Discharge from Seepage to address requirements of future discovered seeps.
14. Added Special Condition A. (27.) Electronic Reporting of Discharge Monitoring Reports for electronic reporting of DMRs. Starting December 21, 2016, federal regulations require electronic submittal of all discharge monitoring reports (DMRs) and specify that, if a state does not establish a system to receive such submittals, then permittees must submit DMRs electronically to the Environmental Protection Agency (EPA).

Proposed Schedule

Draft Permit to Public Notice:	October 5, 2016
Public Hearing	November 28, 2016
Permit Scheduled to Issue:	December 2016

State Contact

If you have any questions on any of the above information or on the attached permit, please contact Ron Berry at (919) 807-6396 or ron.berry@ncdenr.gov.

Name: Ron Berry Date: 6-4-16

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

C *REQUIRED DATA ENTRY*

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	008 Ash Basin Decanting
Flow, Qw (MGD)	1.930
Receiving Stream	Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	25 mg/L (Avg)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	25 mg/L
Combined Hardness Acute	25 mg/L
Data Source(s)	Ash Basins 2014 - higest pollutant concentrations from each basin; defaut hardness; 600 GPM + 70 GPM per treatment train - two trains wiyh effluent mixing before discharging; USGS recommendation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquactic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	0.5899	FW	3.2396		ug/L
C Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	117.7325	FW	905.0818		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
C Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
C Par11	Copper	Aquatic Life	NC	7.8806	FW	10.4720		ug/L
C Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
C Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	2.9416	FW	75.4871		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	37.2313	FW	335.2087		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	0.2964		ug/L
Par21	Zinc	Aquatic Life	NC	126.7335	FW	125.7052		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	34.4	34.4	Std Dev.	3.4648
2	10/10/2014	39.3	39.3	Mean	36.8500
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	39.3 ug/L
8				Max. Pred Cw	148.9 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	< 1	0.5	Std Dev.	0.0000
2	10/10/2014	< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.500 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	33	33	Std Dev.	0.7071
2	10/10/2014	32	32	Mean	32.5
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.8
7				Max. Value	33.0 mg/L
8				Max. Pred Cw	125.1 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	< 1	0.5	Std Dev.	0.0000
2	10/10/2014	< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.5 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	1.29	1.29	Std Dev.	1.5556
2	10/10/2014	3.49	3.49	Mean	2.3900
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	3.49 ug/L
8				Max. Pred Cw	13.23 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	10/10/2015	299	299	Std Dev.	333.0473
2	10/10/2015	770	770	Mean	534.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	770.0 ug/L
8				Max. Pred Cw	2918.3 ug/L

Lead

	Date		BDL=1/2DL	Results	
1	7/1/2014	< 1	0.5	Std Dev.	0.0000
2	10/10/2014	< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.500 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	< 1000	500	Std Dev.	727966.4312
2	10/10/2014	1E+06	1030000	Mean	515250.0000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	1030000.0 ng/L
8				Max. Pred Cw	3903700.0 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	192	192	Std Dev.	9.8995
2	10/10/2014	178	178	Mean	185.0000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	192.0 ug/L
8				Max. Pred Cw	727.7 ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	3.67	3.67	Std Dev.	28.1641
2	10/10/2015	43.5	43.5	Mean	23.5850
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	43.5 µg/L
8				Max. Pred Cw	164.9 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	65.7	65.7	Std Dev.	12.0915
2	10/108/14	48.6	48.6	Mean	57.1500
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	65.7 ug/L
8				Max. Pred Cw	249.0 ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	< 5	2.5	Std Dev.	192.5866
2	10/10/2014	275	275	Mean	138.7500
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	275.0 ug/L
8				Max. Pred Cw	1042.3 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	< 1	0.5	Std Dev.	0.0000
2	10/10/2014	< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.500000 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	0.179	0.179	Std Dev.	0.0127
2	10/10/2014	0.161	0.161	Mean	0.1700
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.179000 mg/L
8				Max. Pred Cw	0.678410 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	91	91	Std Dev.	13.4350
2	10/10/2014	110	110	Mean	100.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	110.000000 mg/L
8				Max. Pred Cw	416.900000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	7/1/2014	0.664	0.664	Std Dev.	0.4639
2	10/10/2014	1.32	1.32	Mean	0.9920
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	1.320000 µg/L
8				Max. Pred Cw	5.002800 µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

Outfall 008 Ash Basin Decanting
Qw = 1.93 MGD

MAXIMUM DATA POINTS = 58

Qw (MGD) = **1.93**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 25 mg/L
Chronic = 25 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 0 value > 100 mg/L
Effluent Hard Avg = 25 mg/L

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	2	2	148.9 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 No value > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 2 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
Cadmium	NC	0.5899	FW	3.2396		ug/L	2	0	NO DETECTS	Acute: 3.240 Chronic: 0.590 Max MDL = 1	No detects, MDL> Allowable Cw and > PQL -apply Monthly Monitoring required
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	2	2	125.1 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply Monthly Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	117.7325	FW	905.0818		µg/L	0	0	N/A	Acute: 905.1 Chronic: 117.7	No detects
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	No detects
Chromium, Total	NC					µg/L	2	0	NO DETECTS	Max MDL = 1	No detects, MDL< Allowable Cw for Chromium III & VI - No Monitoring required
							Note: n ≤ 9 Limited data set				
Copper	NC	7.8806	FW	10.4720		ug/L	2	2	13.23 Default C.V.	Acute: 10.47 Chronic: 7.88 No value > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	2	2	2,918.3 Default C.V.	Acute: NO WQS Chronic: 1,800.0 No value > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Lead	NC	2.9416	FW	75.4871		ug/L	2	0	NO DETECTS	Acute: 75.487 Chronic: 2.942 Max MDL = 1	No detects, MDL< Allowable Cw - No Monitoring required
							Note: n ≤ 9 Limited data set				

Cape Fear Steam Electric Plant ≥ **Outfall 008 Ash Basin Decanting**

NC0003433 **Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators** **Qw = 1.93 MGD**

Mercury	NC	12	FW		0.5	ng/L	2 1 Note: n ≤ 9 Limited data set	3,903,700.0 Default C.V.	Acute: NO WQS Chronic: 12.0 2 value(s) > Allowable Cw	All values > TBEL and WQBEL - apply Monthly monitoring with 12 ng/L WQBEL annual average
Molybdenum	NC	160	WS			ug/L	2 2 Note: n ≤ 9 Limited data set	727.7 Default C.V.	Acute: NO WQS Chronic: 160.0 2 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
Nickel	NC	37.2313	FW	335.2087		µg/L	2 2 Note: n ≤ 9 Limited data set	164.9 Default C.V.	Acute (FW): 335.2 Chronic (FW): 37.2 1 value(s) > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 1 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
Selenium	NC	5	FW	56		ug/L	2 2 Note: n ≤ 9 Limited data set	249.0 Default C.V.	Acute: 56.0 Chronic: 5.0 2 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit RP shown - apply Monthly Monitoring with Limit
Zinc	NC	126.7335	FW	125.7052		ug/L	2 1 Note: n ≤ 9 Limited data set	1,042.3 Default C.V.	Acute: 125.7 Chronic: 126.7 1 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit RP shown - apply Monthly Monitoring with Limit
Antimony	NC	5.6	WS			µg/L	2 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL< Allowable Cw - No Monitoring required
Barium	NC	1	WS			mg/L	2 2 Note: n ≤ 9 Limited data set	0.67841 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply Monthly Monitoring
Sulfates	NC	250	WS			mg/L	2 2 Note: n ≤ 9 Limited data set	416.90000 Default C.V.	Acute: NO WQS Chronic: 250.00000 No value > Allowable Cw	RP shown - apply Monthly Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	2 2 Note: n ≤ 9 Limited data set	5.00280 Default C.V.	Acute: NO WQS Chronic: 0.24000 2 value(s) > Allowable Cw	RP shown - apply Monthly Monitoring with Limit

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

C *REQUIRED DATA ENTRY*

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	008 - Ash Basin Dewatering
Flow, Qw (MGD)	1.930
Receiving Stream	Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	25 mg/L (Avg)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	25 mg/L
Combined Hardness Acute	25 mg/L
Data Source(s)	Ash Basins Interstitial Water Data 2014 - highest pollutant concentration, default hardness 25 mg/L; 600 GPM + 70 GPM per treatment train-two trains with effluent mixed before discharging; USGS recommendation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

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Par04	Cadmium	Aquatic Life	NC	0.5899	FW	3.2396		ug/L
C Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	117.7325	FW	905.0818		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
C Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
C Par11	Copper	Aquatic Life	NC	7.8806	FW	10.4720		ug/L
C Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
C Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	2.9416	FW	75.4871		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	37.2313	FW	335.2087		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	0.2964		ug/L
Par21	Zinc	Aquatic Life	NC	126.7335	FW	125.7052		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	656	656	Std Dev.	0.0000
2				Mean	656.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	656.0 ug/L
8				Max. Pred Cw	4067.2 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	< 10	5	Std Dev.	0.0000
2				Mean	5.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	5.000 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	29.97	29.97	Std Dev.	0.0000
2				Mean	30.0
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.2
7				Max. Value	30.0 mg/L
8				Max. Pred Cw	185.8 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	155	155	Std Dev.	0.0000
2				Mean	155.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	155.0 µg/L
8				Max. Pred Cw	961.0 µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	408	408	Std Dev.	0.0000
2				Mean	408.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	408.00 ug/L
8				Max. Pred Cw	2529.60 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	2208	2208	Std Dev.	0.0000
2				Mean	2208.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	2208.0 ug/L
8				Max. Pred Cw	13689.6 ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	112	112	Std Dev.	0.0000
2				Mean	112.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	112.000 ug/L
8				Max. Pred Cw	694.400 ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	8E+07	76600000	Std Dev.	0.0000
2				Mean	76600000.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	76800000.0 ng/L
8				Max. Pred Cw	474920000.0 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	316	316	Std Dev.	0.0000
2				Mean	316.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	316.0 ug/L
8				Max. Pred Cw	1959.2 ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	122	122	Std Dev.	0.0000
2				Mean	122.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	122.0 µg/L
8				Max. Pred Cw	756.4 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	426	426	Std Dev.	0.0000
2				Mean	426.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	426.0 ug/L
8				Max. Pred Cw	2641.2 ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	538	538	Std Dev.	0.0000
2				Mean	538.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	538.0 ug/L
8				Max. Pred Cw	3335.6 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	< 10	5	Std Dev.	0.0000
2				Mean	5.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	5.000000 µg/L
8				Max. Pred Cw	0 DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	1.48	1.48	Std Dev.	0.0000
2				Mean	1.4800
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	1.480000 mg/L
8				Max. Pred Cw	9.176000 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	441	441	Std Dev.	0.0000
2				Mean	441.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	441.000000 mg/L
8				Max. Pred Cw	2734.200000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	1/15/2015	4.96	4.96	Std Dev.	0.0000
2				Mean	4.9600
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	4.960000 µg/L
8				Max. Pred Cw	30.752000 µg/L

Cape Fear Steam Electric Plant
NC0003433

Outfall 008 - Ash Basin Dewatering
Qw = 1.93 MGD

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

Qw (MGD) = **1.93**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 25 mg/L
Chronic = 25 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 0 value > 100 mg/L
Effluent Hard Avg = 25 mg/L

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	1	1	4,067.2 Default C.V.	Acute (FW): 340.0	
										Chronic (FW): 150.0 1 value(s) > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Cadmium	NC	0.5899	FW	3.2396		ug/L	1	0	*NO DETECTS*	Acute: 3.240	
							Note: n ≤ 9 Limited data set			Chronic: 0.590 Max MDL = 10	No detects, MDL > Allowable Cw - apply Weekly Monitoring
Chlorides	NC	250	WS			mg/L	1	1	185.8 Default C.V.	Acute: NO WQS	
							Note: n ≤ 9 Limited data set			Chronic: 250.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply Weekly Monitoring
Chromium III	NC	117.7325	FW	905.0818		µg/L	0	0	N/A	Acute: 905.1	RP shown - apply Weekly Monitoring with Limit
										Chronic: 117.7	RP shown - apply Weekly Monitoring with Limit
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0	RP shown - apply Weekly Monitoring with Limit
										Chronic: 11.0	RP shown - apply Weekly Monitoring with Limit
Chromium, Total	NC					Tot Cr value(s) > 50 with 1 Tot Cr value(s) ≥ Cr III Allowable Cw µg/L	1	1	961.0 Default C.V.	Max reported value = 155	d. Limit both Chromium III and Chromium VI when any Total Chromium sample is ≥ 50 µg/L and ≥ to the Allowable Cw for Chromium III. Monitor for Total Chromium and Chromium Vi, report the calculated Chromium III.
							Note: n ≤ 9 Limited data set				
Copper	NC	7.8806	FW	10.4720		ug/L	1	1	2,529.60 Default C.V.	Acute: 10.47	RP shown - apply Weekly Monitoring with Limit
							Note: n ≤ 9 Limited data set			Chronic: 7.88 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Fluoride	NC	1800	FW			ug/L	1	1	13,689.6 Default C.V.	Acute: NO WQS	
							Note: n ≤ 9 Limited data set			Chronic: 1,800.0 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Lead	NC	2.9416	FW	75.4871		ug/L	1	1	694.400 Default C.V.	Acute: 75.487	RP shown - apply Weekly Monitoring with Limit
							Note: n ≤ 9 Limited data set			Chronic: 2.942 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit

Cape Fear Steam Electric Plant ≥ **Outfall 008 - Ash Basin Dewatering**

NC0003433 **Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators** **Qw = 1.93 MGD**

Mercury	NC	12	FW		0.5	ng/L	1 1 Note: n ≤ 9 Limited data set	474,920,000.0 Default C.V.	Acute: NO WQS Chronic: 12.0 1 value(s) > Allowable Cw	Value > WQBEL and TBEL - apply Weekly Monitoring with WQBEL annual average
Molybdenum	NC	160	WS			ug/L	1 1 Note: n ≤ 9 Limited data set	1,959.2 Default C.V.	Acute: NO WQS Chronic: 160.0 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Nickel	NC	37.2313	FW	335.2087		µg/L	1 1 Note: n ≤ 9 Limited data set	756.4 Default C.V.	Acute (FW): 335.2 Chronic (FW): 37.2 1 value(s) > Allowable Cw	~~RP shown - apply Weekly Monitoring with Limit~~
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Selenium	NC	5	FW	56		ug/L	1 1 Note: n ≤ 9 Limited data set	2,641.2 Default C.V.	Acute: 56.0 Chronic: 5.0 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit RP shown - apply Weekly Monitoring with Limit
Zinc	NC	126.7335	FW	125.7052		ug/L	1 1 Note: n ≤ 9 Limited data set	3,335.6 Default C.V.	Acute: 125.7 Chronic: 126.7 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit RP shown - apply Weekly Monitoring with Limit
Antimony	NC	5.6	WS			µg/L	1 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 10	No RP, MDL ≥ 50% of Allowable Cw - apply Weekly Monitoring
Barium	NC	1	WS			mg/L	1 1 Note: n ≤ 9 Limited data set	9.17600 Default C.V.	Acute: NO WQS Chronic: 1.00000 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Sulfates	NC	250	WS			mg/L	1 1 Note: n ≤ 9 Limited data set	2,734.20000 Default C.V.	Acute: NO WQS Chronic: 250.00000 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	1 1 Note: n ≤ 9 Limited data set	30.75200 Default C.V.	Acute: NO WQS Chronic: 0.24000 1 value(s) > Allowable Cw	RP shown - apply Weekly Monitoring with Limit

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

C *REQUIRED DATA ENTRY*

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	011D Seep S-17
Flow, Qw (MGD)	0.002
Receiving Stream	Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 1030 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data; USGS recommendation; Raleigh Regional Office evaluation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HHWS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
C Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
C Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
C Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
C Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
C Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

Date	Data	BDL=1/2DL	Results	
S-17	1030	1030	Std Dev.	0.0000
			Mean	1030.0000
			C.V. (default)	0.6000
			n	1
			10th Per value	1030.00 mg/L
			Average Value	99.00 mg/L
			Max. Value	1030.00 mg/L

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.5 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Cadmium

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.500 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S-17	17	17	Std Dev.	0.0000
2				Mean	17.0
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.2
7				Max. Value	17.0 mg/L
8				Max. Pred Cw	105.4 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.5 µg/L
8					Max. Pred Cw	0 DETECTS µg/L

Copper

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.50 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Fluoride

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1000	500	Std Dev.	0.0000
2					Mean	500.0000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	500.0 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Lead

	Date		BDL=1/2DL	Results	
1	S-17	3.79	3.79	Std Dev.	0.0000
2				Mean	3.7900
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	3.790 ug/L
8				Max. Pred Cw	23.498 ug/L

Mercury

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	50	25	Std Dev.	0.0000
2					Mean	25.0000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	25.0 ng/L
8					Max. Pred Cw	NO DETECTS ng/L

Molybdenum

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.5 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Nickel

	Date	Data		BDL=1/2DL	Results	
1	S-17		23.9	23.9	Std Dev.	0.0000
2					Mean	23.9000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	23.9 µg/L
8					Max. Pred Cw	148.2 µg/L

Selenium

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.5 ug/L
8					Max. Pred Cw	0 DETECTS ug/L

Zinc

	Date	Data		BDL=1/2DL	Results	
1	S-17		98	98	Std Dev.	0.0000
2					Mean	98.0000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	98.0 ug/L
8					Max. Pred Cw	607.6 ug/L

Antimony

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	1	0.5	Std Dev.	0.0000
2					Mean	0.5000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.500000 µg/L
8					Max. Pred Cw	0 DETECTS µg/L

Barium

	Date	Data		BDL=1/2DL	Results	
1	S-17		0.018	0.018	Std Dev.	0.0000
2					Mean	0.0180
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.018000 mg/L
8					Max. Pred Cw	0.111600 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S-17	1400	1400	Std Dev.	0.0000
2				Mean	1400.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	1400.000000 mg/L
8				Max. Pred Cw	8680.000000 mg/L

Thallium

	Date	Data		BDL=1/2DL	Results	
1	S-17	<	0.2	0.1	Std Dev.	0.0000
2					Mean	0.1000
3					C.V. (default)	0.6000
4					n	1
5						
6					Mult Factor =	6.20
7					Max. Value	0.100000 µg/L
8					Max. Pred Cw	0 DETECTS µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

Outfall 011D Seep S-17
Qw = 0.002 MGD

Qw (MGD) = **0.002**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 1 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 1030 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	1	0	NO DETECTS	Acute (FW): 340.0 Chronic (FW): 150.0 Max MDL = 1	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 Max MDL = 1	No detects, MDL < Alowable Cw - apply seep Monitoring
Cadmium	NC	1.6678	FW	10.7582		ug/L	1	0	NO DETECTS	Acute: 10.758	
							Note: n ≤ 9 Limited data set			Chronic: 1.668 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Chlorides	NC	250	WS			mg/L	1	1	105.4	Acute: NO WQS	
							Note: n ≤ 9 Limited data set		Default C.V.	Chronic: 250.0 No value > Allowable Cw	No RP , Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8	
										Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0	
										Chronic: 11.0	
Chromium, Total	NC					µg/L	1	0	NO DETECTS		No detects, MDL< Allowable Cw for Chromium III & VI - apply seep Monitoring
							Note: n ≤ 9 Limited data set			Max MDL = 1	
Copper	NC	25.5442	FW	38.2981		ug/L	1	0	NO DETECTS	Acute: 38.30	
							Note: n ≤ 9 Limited data set			Chronic: 25.54 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Fluoride	NC	1800	FW			ug/L	1	0	NO DETECTS	Acute: NO WQS	
							Note: n ≤ 9 Limited data set			Chronic: 1,800.0 Max MDL = 1000	No detects, MDL < Allowable Cw - No Monitoring required
Lead	NC	13.5358	FW	347.3518		ug/L	1	1	23.498	Acute: 347.352	
							Note: n ≤ 9 Limited data set		Default C.V.	Chronic: 13.536 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit

Mercury	NC	12	FW		0.5	ng/L	1 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 12.0 Max MDL = 50	No detects, MDL > TBEL - apply seep Monitoring with WQBEL annual avg
Molybdenum	NC	160	WS			ug/L	1 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 160.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Nickel	NC	119.2776	FW	1073.9039		µg/L	1 1 Note: n ≤ 9 Limited data set	148.2 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 No value > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L	Limited data set		Chronic (WS): 25.0 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Selenium	NC	5	FW	56		ug/L	1 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: 56.0 Chronic: 5.0 Max MDL = 1	No detects, MDL < Alllowable Cw - apply seep Monitoring
Zinc	NC	406.7415	FW	403.4414		ug/L	1 1 Note: n ≤ 9 Limited data set	607.6 Default C.V.	Acute: 403.4 Chronic: 406.7 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Antimony	NC	5.6	WS			µg/L	1 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL < Allowable Cw - No Monitoring required
Barium	NC	1	WS			mg/L	1 1 Note: n ≤ 9 Limited data set	0.11160 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring required
Sulfates	NC	250	WS			mg/L	1 1 Note: n ≤ 9 Limited data set	8,680.00000 Default C.V.	Acute: NO WQS Chronic: 250.00000 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	1 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 0.24000 Max MDL = 0.2	No detects, MDL < Alowable Cw - apply seep Monitoring

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

REQUIRED DATA ENTRY

Table 1. Project Information

	☐ CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	011C Seep S-16
Flow, Qw (MGD)	0.009
Receiving Stream	Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑ Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 1165 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data; USGS recommendation; Raleigh Regional Office evaluation
☐ CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	S-16	1170	1170	Std Dev.	7.0711
2		1160	1160	Mean	1165.0000
3				C.V. (default)	0.6000
4				n	2
5				10th Per value	1161.00 mg/L
6				Average Value	99.00 mg/L
7				Max. Value	1170.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	S-16	45.1	45.1	Std Dev.	88.9603
2		200	200	Mean	136.8400
3		118	118	C.V. (default)	0.6000
4		255	255	n	5
5		86.6	86.6		
6				Mult Factor =	2.32
7				Max. Value	255.0 ug/L
8				Max. Pred Cw	591.6 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	S-16	< 1	0.5	Std Dev.	2.0125
2		< 1	0.5	Mean	1.4000
3		< 1	0.5	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	5.000 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S-16	15	15	Std Dev.	3.0219
2		13	13	Mean	10.9
3		10	10	C.V. (default)	0.6000
4		7.6	7.6	n	5
5		9	9		
6				Mult Factor =	2.3
7				Max. Value	15.0 mg/L
8				Max. Pred Cw	34.8 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A ug/L
8				Max. Pred Cw	N/A ug/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	S-16	< 1	0.5	Std Dev.	2.0125
2		< 1	0.5	Mean	1.4000
3		< 1	0.5	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	5.0 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	S-16	< 1	0.5	Std Dev.	1.8974
2		< 1	0.5	Mean	1.6560
3		1.06	1.06	C.V. (default)	0.6000
4		< 10	5	n	5
5		1.22	1.22		
6				Mult Factor =	2.32
7				Max. Value	5.00 ug/L
8				Max. Pred Cw	11.60 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	S-16	2100	2100	Std Dev.	360.5551
2		1900	1900	Mean	2200.0000
3		2600	2600	C.V. (default)	0.6000
4				n	3
5					
6				Mult Factor =	3.00
7				Max. Value	2600.0 ug/L
8				Max. Pred Cw	7800.0 ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	s-16	< 1	0.5	Std Dev.	2.0125
2		< 1	0.5	Mean	1.4000
3		< 1	0.5	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	5.000 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	S-16	0.939	0.939	Std Dev.	0.2584
2		< 1	0.5	Mean	0.8360
3		1.11	1.11	C.V. (default)	0.6000
4		0.795	0.795	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	1.1 ng/L
8				Max. Pred Cw	2.9 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	S-16	< 1	0.5	Std Dev.	2.9252
2		7.24	7.24	Mean	3.2280
3		2.9	2.9	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	7.2 ug/L
8				Max. Pred Cw	16.8 ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	s-16	207	207	Std Dev.	22.5677
2		251	251	Mean	223.4000
3		208	208	C.V. (default)	0.6000
4		208	208	n	5
5		245	245		
6				Mult Factor =	2.32
7				Max. Value	251.0 µg/L
8				Max. Pred Cw	582.3 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	s-16	< 1	0.5	Std Dev.	2.0125
2		< 1	0.5	Mean	1.4000
3		< 1	0.5	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	5.0 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	S-16	525	525	Std Dev.	54.5408
2		638	638	Mean	581.6000
3		599	599	C.V. (default)	0.6000
4		538	538	n	5
5		509	509		
6				Mult Factor =	2.32
7				Max. Value	638.0 ug/L
8				Max. Pred Cw	1480.2 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	S-16	< 1	0.5	Std Dev.	2.0125
2		< 1	0.5	Mean	1.4000
3		< 1	0.5	C.V. (default)	0.6000
4		< 10	5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	5.000000 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	S-16	0.023	0.023	Std Dev.	0.0062
2		0.037	0.037	Mean	0.0266
3		0.021	0.021	C.V. (default)	0.6000
4		< 0.05	0.025	n	5
5		0.027	0.027		
6				Mult Factor =	2.32
7				Max. Value	0.037000 mg/L
8				Max. Pred Cw	0.085840 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S-16	1700	1700	Std Dev.	460.4348
2		2300	2300	Mean	2120.0000
3		2700	2700	C.V. (default)	0.6000
4		1600	1600	n	5
5		2300	2300		
6				Mult Factor =	2.32
7				Max. Value	2700.000000 mg/L
8				Max. Pred Cw	6264.000000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	S-16	0.275	0.275	Std Dev.	0.2729
2		0.505	0.505	Mean	0.5510
3		0.417	0.417	C.V. (default)	0.6000
4		< 2	1	n	5
5		0.558	0.558		
6				Mult Factor =	2.32
7				Max. Value	1.000000 µg/L
8				Max. Pred Cw	2.320000 µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators
MAXIMUM DATA POINTS = 58

Outfall 011C Seep S-16
Qw = 0.009 MGD

Qw (MGD) = **0.009**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 2 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 1165 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	5	5	591.6 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 2 value(s) > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Cadmium	NC	1.6678	FW	10.7582		ug/L	5	0	*NO DETECTS*	Acute: 10.758 Chronic: 1.668 Max MDL = 10	No detects, 4 of 5 MDLs < Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	5	5	34.8 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP , Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8 Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	
Chromium, Total	NC					µg/L	5	0	*NO DETECTS*	Max MDL = 10	No detects, MDL< Allowable Cw for Chromium III & VI - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Copper	NC	25.5442	FW	38.2981		ug/L	5	2	11.60 Default C.V.	Acute: 38.30 Chronic: 25.54 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	3	3	7,800.0 Default C.V.	Acute: NO WQS Chronic: 1,800.0 3 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Lead	NC	13.5358	FW	347.3518		ug/L	5	0	*NO DETECTS*	Acute: 347.352 Chronic: 13.536 Max MDL = 10	No detects, MDL< Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				

Mercury	**NC**	12	FW		0.5	ng/L	4 3 **Note: n ≤ 9** **Limited data set**	2.9 Default C.V.	Acute: NO WQS Chronic: 12.0 No value > Allowable Cw	All values < WQBEL and < TBEL - apply seep Monitoring
Molybdenum	**NC**	160	WS			ug/L	5 2 **Note: n ≤ 9** **Limited data set**	16.8 Default C.V.	Acute: NO WQS Chronic: 160.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Nickel	**NC**	119.2776	FW	1073.9039		µg/L	5 5 **Note: n ≤ 9**	582.3 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 5 value(s) > Allowable Cw	
Nickel	**NC**	25.0000	WS			µg/L	**Limited data set**		Chronic (WS): 25.0 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Selenium	**NC**	5	FW	56		ug/L	5 0 **Note: n ≤ 9** **Limited data set**	*NO DETECTS*	Acute: 56.0 Chronic: 5.0 Max MDL = 10	No detects, 4 of 5 MDLs < Alllowable Cw - apply seep Monitoring
Zinc	**NC**	406.7415	FW	403.4414		ug/L	5 5 **Note: n ≤ 9** **Limited data set**	1,480.2 Default C.V.	Acute: 403.4 Chronic: 406.7 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Antimony	**NC**	5.6	WS			µg/L	5 0 **Note: n ≤ 9** **Limited data set**	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 10	No detects, 4 of 5 MDLs < Allowable Cw - No Monitoring required
Barium	**NC**	1	WS			mg/L	5 4 **Note: n ≤ 9** **Limited data set**	0.08584 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring required
Sulfates	**NC**	250	WS			mg/L	5 5 **Note: n ≤ 9** **Limited data set**	6,264.00000 Default C.V.	Acute: NO WQS Chronic: 250.00000 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallium	**NC**	0.24	WS			µg/L	5 4 **Note: n ≤ 9** **Limited data set**	2.32000 Default C.V.	Acute: NO WQS Chronic: 0.24000 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

REQUIRED DATA ENTRY

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	011A Seep S-15
Flow, Qw (MGD)	0.009
Receiving Stream	Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 327 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data, USGS recommendation; Raleigh Regional Office evaluation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

Date	Data	BDL=1/2DL	Results	
S-15	340	340	Std Dev.	16.8226
	333	333	Mean	327.0000
	308	308	C.V. (default)	0.6000
			n	3
			10th Per value	313.00 mg/L
			Average Value	99.00 mg/L
			Max. Value	340.00 mg/L

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	S-15	39.4	39.4	Std Dev.	29.3870
2		38.7	38.7	Mean	48.2400
3		36.5	36.5	C.V. (default)	0.6000
4		100	100	n	5
5		26.6	26.6		
6				Mult Factor =	2.32
7				Max. Value	100.0 ug/L
8				Max. Pred Cw	232.0 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3		< 1	0.5	C.V. (default)	0.6000
4		< 1	0.5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	0.500 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S-15	35	35	Std Dev	2.8810
2		33	33	Mean	36.6
3		36	36	C.V. (default)	0.6000
4		39	39	n	5
5		40	40		
6				Mult Factor =	2.3
7				Max. Value	40.0 mg/L
8				Max. Pred Cw	92.8 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 5	2.5	Std Dev.	0.9627
2		< 1	0.5	Mean	1.1880
3		< 1	0.5	C.V. (default)	0.6000
4		1.94	1.94	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	2.5 µg/L
8				Max. Pred Cw	5.8 µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 5	2.5	Std Dev.	0.9513
2		< 1	0.5	Mean	1.1760
3		< 1	0.5	C.V. (default)	0.6000
4		1.88	1.88	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	2.50 ug/L
8				Max. Pred Cw	5.80 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 1000	500	Std Dev.	106.2073
2		< 1000	500	Mean	586.0000
3		580	580	C.V. (default)	0.6000
4		760	760	n	5
5		590	590		
6				Mult Factor =	2.32
7				Max. Value	760.0 ug/L
8				Max. Pred Cw	1763.2 ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 1	0.5	Std Dev.	0.2370
2		< 1	0.5	Mean	0.6060
3		< 1	0.5	C.V. (default)	0.6000
4		1.03	1.03	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	1.030 ug/L
8				Max. Pred Cw	2.390 ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 0.5	0.25	Std Dev.	3.0921
2		5.73	5.73	Mean	2.1827
3		0.508	0.508	C.V. (default)	0.6000
4				n	3
5					
6				Mult Factor =	3.00
7				Max. Value	5.7 ng/L
8				Max. Pred Cw	17.2 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	S-15	101	101	Std Dev.	7.8549
2		108	108	Mean	111.2000
3		115	115	C.V. (default)	0.6000
4		122	122	n	5
5		110	110		
6				Mult Factor =	2.32
7				Max. Value	122.0 ug/L
8				Max. Pred Cw	283.0 ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 5	2.5	Std Dev.	1.5894
2		4.26	4.26	Mean	4.4780
3		4.36	4.36	C.V. (default)	0.6000
4		6.9	6.9	n	5
5		4.37	4.37		
6				Mult Factor =	2.32
7				Max. Value	6.9 µg/L
8				Max. Pred Cw	16.0 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3		< 1	0.5	C.V. (default)	0.6000
4		< 1	0.5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	0.5 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 5	2.5	Std Dev.	3.3541
2		< 5	2.5	Mean	4.0000
3		< 5	2.5	C.V. (default)	0.6000
4		10	10	n	5
5		< 5	2.5		
6				Mult Factor =	2.32
7				Max. Value	10.0 ug/L
8				Max. Pred Cw	23.2 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3		< 1	0.5	C.V. (default)	0.6000
4		< 1	0.5	n	5
5		< 1	0.5		
6				Mult Factor =	2.32
7				Max. Value	0.500000 µg/L
8				Max. Pred Cw	0 DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	S-15	0.078	0.078	Std Dev.	0.0410
2		0.078	0.078	Mean	0.0890
3		0.068	0.068	C.V. (default)	0.6000
4		0.161	0.161	n	5
5		0.06	0.06		
6				Mult Factor =	2.32
7				Max. Value	0.161000 mg/L
8				Max. Pred Cw	0.373520 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S-15	180	180	Std Dev.	5.4772
2		180	180	Mean	176.0000
3		170	170	C.V. (default)	0.6000
4		180	180	n	5
5		170	170		
6				Mult Factor =	2.32
7				Max. Value	180.000000 mg/L
8				Max. Pred Cw	417.600000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	S-15	< 0.2	0.1	Std Dev.	0.1925
2		0.485	0.485	Mean	0.1963
3		< 0.2	0.1	C.V. (default)	0.6000
4		< 0.2	0.1	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.485000 µg/L
8				Max. Pred Cw	1.256150 µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

Outfall 011A Seep S-15
Qw = 0.009 MGD

Qw (MGD) = **0.01**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 3 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 327 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	5	5	232.0 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 No value > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 5 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Cadmium	NC	1.6678	FW	10.7582		ug/L	5	0	*NO DETECTS*	Acute: 10.758 Chronic: 1.668 Max MDL = 1	No detects, MDL< Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	5	5	92.8 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8 Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	
Chromium, Total	NC					µg/L	Tot Cr value(s) < 50 and < Cr VI Allowable Cw 5	1	5.8 Default C.V.	Max reported value = 2.5	a. All Total Chromium samples are < the Chromium VI Allowable Cw - apply seep monitoring
							Note: n ≤ 9 Limited data set				
Copper	NC	25.5442	FW	38.2981		ug/L	5	1	5.80 Default C.V.	Acute: 38.30 Chronic: 25.54 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - applt seep Monitoring
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	5	3	1,763.2 Default C.V.	Acute: NO WQS Chronic: 1,800.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Lead	NC	13.5358	FW	347.3518		ug/L	5	1	2.390 Default C.V.	Acute: 347.352 Chronic: 13.536 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				

Cape Fear Steam Electric Plant ≥ **Outfall 011A Seep S-15**

NC0003433 **Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators** **Qw = 0.009 MGD**

Mercury	NC	12	FW		0.5	ng/L	3 2 Note: n ≤ 9 Limited data set	17.2 Default C.V.	Acute: NO WQS Chronic: 12.0 No value > Allowable Cw	All values < WQBEL and < TBEL - apply seep Monitoring
Molybdenum	NC	160	WS			ug/L	5 5 Note: n ≤ 9 Limited data set	283.0 Default C.V.	Acute: NO WQS Chronic: 160.0 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Nickel	NC	119.2776	FW	1073.9039		µg/L	5 4 Note: n ≤ 9 Limited data set	16.0 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 No value > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
Selenium	NC	5	FW	56		ug/L	5 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: 56.0 Chronic: 5.0 Max MDL = 1	No detects, MDL < Alllowable Cw - apply seep Monitoring
Zinc	NC	406.7415	FW	403.4414		ug/L	5 1 Note: n ≤ 9 Limited data set	23.2 Default C.V.	Acute: 403.4 Chronic: 406.7 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Antimony	NC	5.6	WS			µg/L	5 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL< Allowable Cw - No Monitoring required
Barium	NC	1	WS			mg/L	5 5 Note: n ≤ 9 Limited data set	0.37352 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring required
Sulfates	NC	250	WS			mg/L	5 5 Note: n ≤ 9 Limited data set	417.60000 Default C.V.	Acute: NO WQS Chronic: 250.00000 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	4 1 Note: n ≤ 9 Limited data set	1.25615 Default C.V.	Acute: NO WQS Chronic: 0.24000 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

C *REQUIRED DATA ENTRY*

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	010B - Seep S10
Flow, Qw (MGD)	0.001
Receiving Stream	UT to Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	25 mg/L (Avg)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	25 mg/L
Combined Hardness Acute	25 mg/L
Data Source(s)	AOW data; USGS data; Raleigh Regional Office evaluation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	0.5899	FW	3.2396		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	117.7325	FW	905.0818		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	7.8806	FW	10.4720		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	2.9416	FW	75.4871		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	37.2313	FW	335.2087		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	0.2964		ug/L
Par21	Zinc	Aquatic Life	NC	126.7335	FW	125.7052		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallum	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	S10	2.64	2.64	Std Dev.	1.5132
2		< 1	0.5	Mean	1.5700
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	2.6 ug/L
8				Max. Pred Cw	10.0 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	S10	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.500 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S10	32	32	Std Dev.	10.6066
2		17	17	Mean	24.5
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.8
7				Max. Value	32.0 mg/L
8				Max. Pred Cw	121.3 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	S10	1.91	1.91	Std Dev.	0.9970
2		< 1	0.5	Mean	1.2050
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	1.9 µg/L
8				Max. Pred Cw	7.2 µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	S10	2.65	2.65	Std Dev.	0.3465
2		2.16	2.16	Mean	2.4050
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	2.65 ug/L
8				Max. Pred Cw	10.04 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	S10	< 1000	500	Std Dev.	0.0000
2				Mean	500.0000
3				C.V. (default)	0.6000
4				n	1
5					
6				Mult Factor =	6.20
7				Max. Value	500.0 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	S10	1.95	1.95	Std Dev.	1.0253
2		< 1	0.5	Mean	1.2250
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	1.950 ug/L
8				Max. Pred Cw	7.391 ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	6/11/2015	10.5	10.5	Std Dev.	4.9497
2	10/28/2015	17.5	17.5	Mean	14.0000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	17.5 ng/L
8				Max. Pred Cw	66.3 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	S10	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.5 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	S10	2.67	2.67	Std Dev.	0.0283
2		2.63	2.63	Mean	2.6500
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	2.7 µg/L
8				Max. Pred Cw	10.1 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	S10	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.5 ug/L
8				Max. Pred Cw	0 DETECTS ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	S10	12	12	Std Dev.	4.2426
2		6	6	Mean	9.0000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	12.0 ug/L
8				Max. Pred Cw	45.5 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	S10	< 1	0.5	Std Dev.	0.0000
2		< 1	0.5	Mean	0.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.500000 µg/L
8				Max. Pred Cw	0 DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	S10	0.119	0.119	Std Dev.	0.0566
2		0.039	0.039	Mean	0.0790
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.119000 mg/L
8				Max. Pred Cw	0.451010 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S10	19	19	Std Dev.	26.1630
2		56	56	Mean	37.5000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	56.000000 mg/L
8				Max. Pred Cw	212.240000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	S10	< 0.2	0.1	Std Dev.	0.0000
2		< 0.2	0.1	Mean	0.1000
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	0.100000 µg/L
8				Max. Pred Cw	0 DETECTS µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

Outfall 010B - Seep S10
Qw = 0.001 MGD

Qw (MGD) = **0.001**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **UT to Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 25 mg/L
Chronic = 25 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 0 value > 100 mg/L
Effluent Hard Avg = 25 mg/L

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	2	1	10.0 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 No value > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Cadmium	NC	0.5899	FW	3.2396		ug/L	2	0	NO DETECTS	Acute: 3.240 Chronic: 0.590 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	2	2	121.3 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	117.7325	FW	905.0818		µg/L	0	0	N/A	Acute: 905.1 Chronic: 117.7	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	
Chromium, Total	NC						Tot Cr value(s) < 50 and < Cr VI Allowable Cw				
						µg/L	2	1	7.2 Default C.V.	Max reported value = 1.91	a. No Limit required if all Total Chromium samples are < the Chromium VI Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Copper	NC	7.8806	FW	10.4720		ug/L	2	2	10.04 Default C.V.	Acute: 10.47 Chronic: 7.88 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	1	0	NO DETECTS	Acute: NO WQS Chronic: 1,800.0 Max MDL = 1000	No detects, MDL < Allowable Cw - No Monitoring required
							Note: n ≤ 9 Limited data set				
Lead	NC	2.9416	FW	75.4871		ug/L	2	1	7.391 Default C.V.	Acute: 75.487 Chronic: 2.942 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				

Mercury	NC	12	FW		0.5	ng/L	2 2 Note: n ≤ 9 Limited data set	66.3 Default C.V.	Acute: NO WQS Chronic: 12.0 1 value(s) > Allowable Cw	Annual avg > WQBEL, all values < TBEL - apply WQBEL with seep Monitoring
Molybdenum	NC	160	WS			ug/L	2 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 160.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Nickel	NC	37.2313	FW	335.2087		µg/L	2 2 Note: n ≤ 9 Limited data set	10.1 Default C.V.	Acute (FW): 335.2 Chronic (FW): 37.2 No value > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Selenium	NC	5	FW	56		ug/L	2 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: 56.0 Chronic: 5.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Zinc	NC	126.7335	FW	125.7052		ug/L	2 2 Note: n ≤ 9 Limited data set	45.5 Default C.V.	Acute: 125.7 Chronic: 126.7 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Antimony	NC	5.6	WS			µg/L	2 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL < Allowable Cw - No Monitoring required
Barium	NC	1	WS			mg/L	2 2 Note: n ≤ 9 Limited data set	0.45101 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Sulfates	NC	250	WS			mg/L	2 2 Note: n ≤ 9 Limited data set	212.24000 Default C.V.	Acute: NO WQS Chronic: 250.00000 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
Thallium	NC	0.24	WS			µg/L	2 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 0.24000 Max MDL = 0.2	No detects, MDL < Allowable Cw - apply seep Monitoring

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

REQUIRED DATA ENTRY

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	010A - Seep S09
Flow, Qw (MGD)	0.001
Receiving Stream	UT to Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 226 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data; USGS recommendation; Raleigh Regional evaluation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallum	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data		BDL=1/2DL	Results	
1	S09	192		192	Std Dev.	48.0833
2		260		260	Mean	226.0000
3					C.V. (default)	0.6000
4					n	2
5					10th Per value	198.80 mg/L
6					Average Value	99.00 mg/L
7					Max. Value	260.00 mg/L
8						

Upstream Hardness

	Date	Data		BDL=1/2DL	Results	
1		25		25	Std Dev.	0.0000
2					Mean	25.0000
3					C.V. (default)	0.6000
4					n	1
5					10th Per value	25.00 mg/L
6					Average Value	25.00 mg/L
7					Max. Value	25.00 mg/L
8						

Arsenic

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	1.07		1.07	Std Dev.	0.2850
2	6/30/2014	< 1		0.5	Mean	0.6425
3	5/20/2015	< 1		0.5	C.V. (default)	0.6000
4	10/28/2015	< 1		0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	1.1 ug/L
8					Max. Pred Cw	2.8 ug/L

Cadmium

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	< 1		0.5	Std Dev.	0.0000
2	6/30/2014	< 1		0.5	Mean	0.5000
3	5/20/2015	< 1		0.5	C.V. (default)	0.6000
4	10/28/2015	< 1		0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.500 ug/L
8					Max. Pred Cw	O DETECTS ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	3/11/2014	19	19	Std Dev.	1.5000
2	6/30/2014	21	21	Mean	19.8
3	5/20/2015	21	21	C.V. (default)	0.6000
4	10/28/2015	18	18	n	4
5					
6				Mult Factor =	2.6
7				Max. Value	21.0 mg/L
8				Max. Pred Cw	54.4 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	5	2.5	Std Dev.	1.0000
2	6/30/2014	<	1	0.5	Mean	1.0000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	2.5 µg/L
8					Max. Pred Cw	O DETECTS µg/L

Copper

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	5	2.5	Std Dev.	1.0000
2	6/30/2014	<	1	0.5	Mean	1.0000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	2.50 ug/L
8					Max. Pred Cw	O DETECTS ug/L

Fluoride

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	1000	500	Std Dev.	121.2438
2	6/30/2014	<	1000	500	Mean	430.0000
3	10/28/2015		290	290	C.V. (default)	0.6000
4					n	3
5						
6					Mult Factor =	3.00
7					Max. Value	500.0 ug/L
8					Max. Pred Cw	1500.0 ug/L

Lead

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	1	0.5	Std Dev.	0.0000
2	6/30/2014	<	1	0.5	Mean	0.5000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.500 ug/L
8					Max. Pred Cw	O DETECTS ug/L

Mercury

	Date	Data		BDL=1/2DL	Results	
1	5/20/2015	2.67		2.67	Std Dev.	1.1243
2	10/28/2015	4.26		4.26	Mean	3.4650
3					C.V. (default)	0.6000
4					n	2
5						
6					Mult Factor =	3.79
7					Max. Value	4.3 ng/L
8					Max. Pred Cw	16.1 ng/L

Molybdenum

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	1	0.5	Std Dev.	0.0000
2	6/30/2014	<	1	0.5	Mean	0.5000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.5 ug/L
8					Max. Pred Cw	O DETECTS ug/L

Nickel

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	5		5	Std Dev.	0.4071
2	6/30/2014	4.16		4.16	Mean	4.3975
3	5/20/2015	4.29		4.29	C.V. (default)	0.6000
4	10/28/2015	4.14		4.14	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	5.0 µg/L
8					Max. Pred Cw	13.0 µg/L

Selenium

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	1	0.5	Std Dev.	0.0000
2	6/30/2014	<	1	0.5	Mean	0.5000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.5 ug/L
8					Max. Pred Cw	O DETECTS ug/L

Zinc

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	5		5	Std Dev.	2.6141
2	6/30/2014	< 5		2.5	Mean	4.5000
3	5/20/2015	8		8	C.V. (default)	0.6000
4	10/28/2015	< 5		2.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	8.0 ug/L
8					Max. Pred Cw	20.7 ug/L

Antimony

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	1	0.5	Std Dev.	0.0000
2	6/30/2014	<	1	0.5	Mean	0.5000
3	5/20/2015	<	1	0.5	C.V. (default)	0.6000
4	10/28/2015	<	1	0.5	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.500000 µg/L
8					Max. Pred Cw	O DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	3/11/2014	0.034	0.034	Std Dev.	0.0181
2	6/30/2014	0.071	0.071	Mean	0.0488
3	5/20/2015	0.056	0.056	C.V. (default)	0.6000
4	10/28/2015	0.034	0.034	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.071000 mg/L
8				Max. Pred Cw	0.183890 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	3/11/2014	160	160	Std Dev.	35.8050
2	6/30/2014	160	160	Mean	128.0000
3	5/20/2015	99	99	C.V. (default)	0.6000
4	10/28/2015	97	97	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	160.000000 mg/L
8				Max. Pred Cw	414.400000 mg/L

Thallium

	Date	Data		BDL=1/2DL	Results	
1	3/11/2014	<	0.2	0.1	Std Dev.	0.0000
2	6/30/2014	<	0.2	0.1	Mean	0.1000
3	5/20/2015	<	0.2	0.1	C.V. (default)	0.6000
4	10/28/2015	<	0.2	0.1	n	4
5						
6					Mult Factor =	2.59
7					Max. Value	0.100000 µg/L
8					Max. Pred Cw	O DETECTS µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

# Outfall 010A - Seep S09
Qw = 0.001 MGD

Qw (MGD) = **0.001**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **UT to Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 2 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 226 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	4	1	2.8 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 No value > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Cadmium	NC	1.6678	FW	10.7582		ug/L	4	0	NO DETECTS	Acute: 10.758 Chronic: 1.668 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	4	4	54.4 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8 Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	
Chromium, Total	NC					µg/L	4	0	NO DETECTS	Max MDL = 5	No detects, MDL < Chromium VI and < Chromium III Allowable Cws - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Copper	NC	25.5442	FW	38.2981		ug/L	4	0	NO DETECTS	Acute: 38.30 Chronic: 25.54 Max MDL = 5	No detects, MDL < Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	3	1	1,500.0 Default C.V.	Acute: NO WQS Chronic: 1,800.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Lead	NC	13.5358	FW	347.3518		ug/L	4	0	NO DETECTS	Acute: 347.352 Chronic: 13.536 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				

Mercury	NC	12	FW		0.5	ng/L	2 2 Note: n ≤ 9 Limited data set	16.1 Default C.V.	Acute: NO WQS Chronic: 12.0 No value > Allowable Cw	All vakues < WQBEL and < TBEL - apply seep Monitoring
Molybdenum	NC	160	WS			ug/L	4 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 160.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Nickel	NC	119.2776	FW	1073.9039		µg/L	4 4 Note: n ≤ 9 Limited data set	13.0 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 No value > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
Selenium	NC	5	FW	56		ug/L	4 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: 56.0 Chronic: 5.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoring
Zinc	NC	406.7415	FW	403.4414		ug/L	4 2 Note: n ≤ 9 Limited data set	20.7 Default C.V.	Acute: 403.4 Chronic: 406.7 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Antimony	NC	5.6	WS			µg/L	4 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL < Allowable Cw - No Monitoring required
Barium	NC	1	WS			mg/L	4 4 Note: n ≤ 9 Limited data set	0.18389 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Sulfates	NC	250	WS			mg/L	4 4 Note: n ≤ 9 Limited data set	414.40000 Default C.V.	Acute: NO WQS Chronic: 250.00000 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallum	NC	0.24	WS			µg/L	4 0 Note: n ≤ 9 Limited data set	NO DETECTS	Acute: NO WQS Chronic: 0.24000 Max MDL = 0.2	No detects, MDL < Allowable Cw - apply seep Monitoring

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

REQUIRED DATA ENTRY

Table 1. Project Information

	☐CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	007 Seep - (S-05,S-07,S-08,S-12)&001&005
Flow, Qw (MGD)	0.600
Receiving Stream	UT to Cape Fear River
HUC Number	03030002
Stream Class	WS-IV
☑Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 159.65 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data, highest concentration for each seep; lowest hardness for each seep; episodic discharge from 001 & 005 ; Raleigh Reginal Office evaluation
☐CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquactic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	S-05	137	137	Std Dev.	109.2591
2	S-07	276	276	Mean	159.6500
3	S-08	206	206	C.V. (default)	0.6000
4	S-12	19.6	19.6	n	4
5				10th Per value	54.82 mg/L
6				Average Value	99.00 mg/L
7				Max. Value	276.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	0.0000
2				Mean	25.0000
3				C.V. (default)	0.6000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	S-05	1.13	1.13	Std Dev.	2.0219
2	S-07	4.71	4.71	Mean	1.7100
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	4.7 ug/L
8				Max. Pred Cw	12.2 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	S-05	1.21	1.21	Std Dev.	0.3550
2	S-07	< 1	0.5	Mean	0.8775
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	1.210 ug/L
8				Max. Pred Cw	3.134 ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S-05	33	33	Std Dev.	9.5545
2	S-07	23	23	Mean	21.7
3	S-08	21	21	C.V. (default)	0.6000
4	S-12	9.7	9.7	n	4
5					
6				Mult Factor =	2.6
7				Max. Value	33.0 mg/L
8				Max. Pred Cw	85.5 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	S-05	< 5	2.5	Std Dev.	1.1547
2	S-07	< 1	0.5	Mean	1.5000
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 5	2.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	2.5 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	S-05	26.7	26.7	Std Dev.	11.6673
2	S-07	6.48	6.48	Mean	9.4500
3	S-08	2.18	2.18	C.V. (default)	0.6000
4	S-12	2.44	2.44	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	26.70 ug/L
8				Max. Pred Cw	69.15 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	S-05	< 1000	500	Std Dev.	200.4994
2	S-07	< 1000	500	Mean	410.0000
3	S-08	530	530	C.V. (default)	0.6000
4	S-12	110	110	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	530.0 ug/L
8				Max. Pred Cw	1372.7 ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	S-05	3.75	3.75	Std Dev.	1.6250
2	S-07	< 1	0.5	Mean	1.3125
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	3.750 ug/L
8				Max. Pred Cw	9.713 ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	S-05	3.16	3.16	Std Dev.	2.2262
2	S-07	6.81	6.81	Mean	3.7125
3	S-08	1.51	1.51	C.V. (default)	0.6000
4	S-12	3.37	3.37	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	6.8 ng/L
8				Max. Pred Cw	17.6 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	S-05	< 1	0.5	Std Dev.	32.1500
2	S-07	< 1	0.5	Mean	16.5750
3	S-08	64.8	64.8	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	64.8 ug/L
8				Max. Pred Cw	167.8 ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	S-05	36.7	36.7	Std Dev.	14.4140
2	S-07	14.9	14.9	Mean	16.9825
3	S-08	5.9	5.9	C.V. (default)	0.6000
4	S-12	6.43	6.43	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	36.7 µg/L
8				Max. Pred Cw	95.1 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	S-05	< 1	0.5	Std Dev.	0.0000
2	S-07	< 1	0.5	Mean	0.5000
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.5 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	S-05	127	127	Std Dev.	50.2195
2	S-07	51	51	Mean	64.0000
3	S-08	6	6	C.V. (default)	0.6000
4	S-12	72	72	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	127.0 ug/L
8				Max. Pred Cw	328.9 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	S-05	< 1	0.5	Std Dev.	0.0000
2	S-07	< 1	0.5	Mean	0.5000
3	S-08	< 1	0.5	C.V. (default)	0.6000
4	S-12	< 1	0.5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.500000 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	S-05	0.035	0.035	Std Dev.	0.0205
2	S-07	0.074	0.074	Mean	0.0500
3	S-08	0.031	0.031	C.V. (default)	0.6000
4	S-12	0.06	0.06	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.074000 mg/L
8				Max. Pred Cw	0.191660 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S-05	250	250	Std Dev.	114.4669
2	S-07	330	330	Mean	203.0000
3	S-08	170	170	C.V. (default)	0.6000
4	S-12	62	62	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	330.000000 mg/L
8				Max. Pred Cw	854.700000 mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	S-05	0.942	0.942	Std Dev.	0.4010
2	S-07	0.495	0.495	Mean	0.4093
3	S-08	< 0.2	0.1	C.V. (default)	0.6000
4	S-12	< 0.2	0.1	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	0.942000 µg/L
8				Max. Pred Cw	2.439780 µg/L

Cape Fear Steam Electric Plant
NC0003433

Outfall 007 Seep - (S-05,S-07,S-08,S-12)&001&005
Qw = 0.6 MGD

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

Qw (MGD) = **0.60**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **UT to Cape Fear River HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 3 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 159.65 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	4	2	12.2 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 No value > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Cadmium	NC	1.6678	FW	10.7582		ug/L	4	1	3.134 Default C.V.	Acute: 10.758 Chronic: 1.668 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	4	4	85.5 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8 Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	
Chromium, Total	NC					µg/L	4	0	*NO DETECTS*	Max MDL = 5	No detects, MDL < Allowable Cw - apply seep Monitoirng
							Note: n ≤ 9 Limited data set				
Copper	NC	25.5442	FW	38.2981		ug/L	4	4	69.15 Default C.V.	Acute: 38.30 Chronic: 25.54 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	4	2	1,372.7 Default C.V.	Acute: NO WQS Chronic: 1,800.0 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Lead	NC	13.5358	FW	347.3518		ug/L	4	1	9.713 Default C.V.	Acute: 347.352 Chronic: 13.536 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				

Cape Fear Steam Electric Plant ≥ **Outfall 007 Seep - (S-05,S-07,S-08,S-12)&001&005**

NC0003433 **Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators** **Qw = 0.6 MGD**

Mercury	NC	12	FW		0.5	ng/L	4 4 Note: n ≤ 9 Limited data set	17.6 Default C.V.	Acute: NO WQS Chronic: 12.0 No value > Allowable Cw	All values < WQBEL and < TBEL - apply seep Monitoring
Molybdenum	NC	160	WS			ug/L	4 1 Note: n ≤ 9 Limited data set	167.8 Default C.V.	Acute: NO WQS Chronic: 160.0 No value > Allowable Cw	RP shown - apply seep Monitoring with Limit
Nickel	NC	119.2776	FW	1073.9039		µg/L	4 4 Note: n ≤ 9 Limited data set	95.1 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 No value > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Selenium	NC	5	FW	56		ug/L	4 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: 56.0 Chronic: 5.0 Max MDL = 1	No detects, MDL < Allowable Cw - apply seep Monitoirng
Zinc	NC	406.7415	FW	403.4414		ug/L	4 4 Note: n ≤ 9 Limited data set	328.9 Default C.V.	Acute: 403.4 Chronic: 406.7 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
Antimony	NC	5.6	WS			µg/L	4 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 1	No detects, MDL < Allowable Cw - no Monitoring required
Barium	NC	1	WS			mg/L	4 4 Note: n ≤ 9 Limited data set	0.19166 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Sulfates	NC	250	WS			mg/L	4 4 Note: n ≤ 9 Limited data set	854.70000 Default C.V.	Acute: NO WQS Chronic: 250.00000 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	4 2 Note: n ≤ 9 Limited data set	2.43978 Default C.V.	Acute: NO WQS Chronic: 0.24000 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

REQUIRED DATA ENTRY

Table 1. Project Information

	☐ CHECK IF HQW OR ORW WQS
Facility Name	Cape Fear Steam Electric Plant
WWTP/WTP Class	Class II
NPDES Permit	NC0003433
Outfall	009 seep S-04
Flow, Qw (MGD)	0.001
Receiving Stream	sw ditch to Shaddock Creek
HUC Number	03030002
Stream Class	WS-IV
☑ Apply WS Hardness WQC	
7Q10s (cfs)	0.00
7Q10w (cfs)	0.00
30Q2 (cfs)	0.00
QA (cfs)	0.00
1Q10s (cfs)	0.00
Effluent Hardness	default 99 mg/L-WS (Eff Hard Avg = 271 mg/L)
Upstream Hardness	25 mg/L (Avg)
Combined Hardness Chronic	99 mg/L
Combined Hardness Acute	99 mg/L
Data Source(s)	AOW data; USGS recommendation; Raleigh Regional office evaluation
☐ CHECK TO APPLY MODEL	

To appy a Model IWC %: Once the "Flow, Qw (MGD)" and and the "CHRONIC DILUTION FACTOR = " values are entered, the 7Q10s (cfs) flow is calculated and displayed. Enter the calculated "7Q10s (cfs)" flow value in Table 1.

Follow directions for data entry. In some cases a comment menu list the available choices or a dropdown menu will provide a list you may select from. Error message occur if data entry does not meet input criteria.

Table 2. Parameters of Concern

	Name	WQS	Type	Chronic	Modifier	Acute	PQL	Units
Par01	Arsenic	Aquatic Life	C	150	FW	340		ug/L
Par02	Arsenic	Human Health Water Supply	C	10	HH/WS	N/A		ug/L
Par03	Beryllium	Aquatic Life	NC	6.5	FW	65		ug/L
Par04	Cadmium	Aquatic Life	NC	1.6678	FW	10.7582		ug/L
Par05	Chlorides	Water Supply	NC	250	WS			mg/L
Par06	Chlorinated Phenolic Compounds	Water Supply	NC	1	A			ug/L
Par07	Total Phenolic Compounds	Aquatic Life	NC	300	A			ug/L
Par08	Chromium III	Aquatic Life	NC	363.4201	FW	2793.8313		ug/L
Par09	Chromium VI	Aquatic Life	NC	11	FW	16		µg/L
Par10	Chromium, Total	Aquatic Life	NC	N/A	FW	N/A		µg/L
Par11	Copper	Aquatic Life	NC	25.5442	FW	38.2981		ug/L
Par12	Cyanide	Aquatic Life	NC	5	FW	22	10	ug/L
Par13	Fluoride	Aquatic Life	NC	1,800	FW			ug/L
Par14	Lead	Aquatic Life	NC	13.5358	FW	347.3518		ug/L
Par15	Mercury	Aquatic Life	NC	12	FW		0.5	ng/L
Par16	Molybdenum	Water Supply	NC	160	WS			ug/L
Par17	Nickel	Aquatic Life	NC	119.2776	FW	1073.9039		µg/L
Par18	Nickel	Water Supply	NC	25.0000	WS	N/A		µg/L
Par19	Selenium	Aquatic Life	NC	5	FW	56		ug/L
Par20	Silver	Aquatic Life	NC	0.06	FW	3.1616		ug/L
Par21	Zinc	Aquatic Life	NC	406.7415	FW	403.4414		ug/L
Par22	Antimony	Water Supply	NC	5.6	WS			µg/L
Par23	Barium	Water Supply	NC	1	WS			mg/L
Par24	Sulfates	Water Supply	NC	250	WS			mg/L
Par25	Thallium	Water Supply	NC	0.24	WS			µg/L

Effluent Hardness

	Date	Data	BDL=1/2DL	Results	
1	S-04	247	247	Std Dev.	33.9411
2		295	295	Mean	271.0000
3				C.V. (default)	0.6000
4				n	2
5				10th Per value	251.80 mg/L
6				Average Value	99.00 mg/L
7				Max. Value	295.00 mg/L
8					

Upstream Hardness

	Date	Data	BDL=1/2DL	Results	
1	default	25	25	Std Dev.	N/A
2				Mean	25.0000
3				C.V.	0.0000
4				n	1
5				10th Per value	25.00 mg/L
6				Average Value	25.00 mg/L
7				Max. Value	25.00 mg/L
8					

Arsenic

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	197.3996
2		2.39	2.39	Mean	113.3225
3		408	408	C.V. (default)	0.6000
4		42.4	42.4	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	408.0 ug/L
8				Max. Pred Cw	1056.7 ug/L

Cadmium

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	13.8633
2		< 1	0.5	Mean	8.8500
3		29.4	29.4	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	29.400 ug/L
8				Max. Pred Cw	76.146 ug/L

Chlorides

	Date	Data	BDL=1/2DL	Results	
1	S-04	20	20	Std Dev.	1.5000
2		20	20	Mean	21.3
3		22	22	C.V. (default)	0.6000
4		23	23	n	4
5					
6				Mult Factor =	2.6
7				Max. Value	23.0 mg/L
8				Max. Pred Cw	59.6 mg/L

Chromium III

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium VI

	Date	Data	BDL=1/2DL	Results	
1				Std Dev.	NO DATA
2				Mean	NO DATA
3				C.V.	NO DATA
4				n	0
5					
6				Mult Factor =	N/A
7				Max. Value	N/A µg/L
8				Max. Pred Cw	N/A µg/L

Chromium, Total

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	33.7867
2		< 1	0.5	Mean	18.8500
3		69.4	69.4	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	69.4 µg/L
8				Max. Pred Cw	179.7 µg/L

Copper

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 5	2.5	Std Dev.	226.0427
2		< 1	0.5	Mean	129.5500
3		467	467	C.V. (default)	0.6000
4		48.2	48.2	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	467.00 ug/L
8				Max. Pred Cw	1209.53 ug/L

Fluoride

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1000	500	Std Dev.	0.0000
2		< 1000	500	Mean	500.0000
3		< 1000	500	C.V.	0.0000
4				n	3
5					
6				Mult Factor =	1.00
7				Max. Value	500.0 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Lead

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	37.1606
2		< 1	0.5	Mean	20.5500
3		76.2	76.2	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	76.200 ug/L
8				Max. Pred Cw	197.358 ug/L

Mercury

	Date	Data	BDL=1/2DL	Results	
1	S-04	6.82	6.82	Std Dev.	3.7547
2		1.51	1.51	Mean	4.1650
3				C.V. (default)	0.6000
4				n	2
5					
6				Mult Factor =	3.79
7				Max. Value	6.8 ng/L
8				Max. Pred Cw	25.8 ng/L

Molybdenum

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	2.5981
2		< 1	0.5	Mean	2.7500
3		< 10	5	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	5.0 ug/L
8				Max. Pred Cw	O DETECTS ug/L

Nickel

	Date	Data	BDL=1/2DL	Results	
1	S-04	14.6	14.6	Std Dev.	240.5059
2		3.52	3.52	Mean	176.0300
3		519	519	C.V. (default)	0.6000
4		167	167	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	519.0 µg/L
8				Max. Pred Cw	1344.2 µg/L

Selenium

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	4.7948
2		< 1	0.5	Mean	4.1500
3		10.6	10.6	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	10.6 ug/L
8				Max. Pred Cw	27.5 ug/L

Zinc

	Date	Data	BDL=1/2DL	Results	
1	S-04	32.7	32.7	Std Dev.	14.8868
2		< 5	2.5	Mean	10.6025
3		5.97	5.97	C.V. (default)	0.6000
4		1.24	1.24	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	32.7 ug/L
8				Max. Pred Cw	84.7 ug/L

Antimony

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 1	0.5	Std Dev.	2.5981
2		< 1	0.5	Mean	2.7500
3		< 10	5	C.V. (default)	0.6000
4		< 10	5	n	4
5					
6				Mult Factor =	2.59
7				Max. Value	5.000000 µg/L
8				Max. Pred Cw	O DETECTS µg/L

Barium

	Date	Data	BDL=1/2DL	Results	
1	S-04	0.019	0.019	Std Dev.	0.1075
2		0.072	0.072	Mean	0.1057
3		0.226	0.226	C.V. (default)	0.6000
4				n	3
5					
6				Mult Factor =	3.00
7				Max. Value	0.226000 mg/L
8				Max. Pred Cw	0.678000 mg/L

Sulfates

	Date	Data	BDL=1/2DL	Results	
1	S-04	160	160	Std Dev.	205.0203
2		150	150	Mean	273.3333
3		510	510	C.V. (default)	0.6000
4				n	3
5					
6				Mult Factor =	3.00
7				Max. Value	510.000000 mg/L
8				Max. Pred Cw	########## mg/L

Thallium

	Date	Data	BDL=1/2DL	Results	
1	S-04	< 0.2	0.1	Std Dev.	2.6823
2		5.13	5.13	Mean	2.0767
3		< 2	1	C.V. (default)	0.6000
4				n	3
5					
6				Mult Factor =	3.00
7				Max. Value	5.130000 µg/L
8				Max. Pred Cw	15.390000 µg/L

Cape Fear Steam Electric Plant
NC0003433

Freshwater RPA - 95% Probability/95% Confidence Using Metal Translators

MAXIMUM DATA POINTS = 58

# Outfall 009 seep S-04
Qw = 0.001 MGD

Qw (MGD) = **0.001**
1Q10S (cfs) = **0.00**
7Q10S (cfs) = **0.00**
7Q10W (cfs) = **0.00**
30Q2 (cfs) = **0.00**
Avg. Stream Flow, QA (cfs) = **0.00**
Receiving Stream: **sw ditch to Shaddock Creek HUC 03030002**

WWTP/WTP Class: **Class II**
IWC% @ 1Q10S = **100**
IWC% @ 7Q10S = **100**
IWC% @ 7Q10W = **100**
IWC% @ 30Q2 = **100**
IW%C @ QA = **100**
Stream Class: **WS-IV**

COMBINED HARDNESS (mg/L)
Acute = 99 mg/L
Chronic = 99 mg/L
YOU HAVE DESIGNATED THIS RECEIVING STREAM AS WATER SUPPLY
Effluent Hard: 2 value > 100 mg/L
default 99 mg/L-WS (Eff Hard Avg = 271 mg/L)

PARAMETER	TYPE (1)	NC STANDARDS OR EPA CRITERIA			PQL	UNITS	REASONABLE POTENTIAL RESULTS				RECOMMENDED ACTION
		Chronic	Applied Standard	Acute			n	# Det.	Max Pred Cw	Allowable Cw	
Arsenic	C	150	FW	340		ug/L	4	3	1,056.7 Default C.V.	Acute (FW): 340.0 Chronic (FW): 150.0 1 value(s) > Allowable Cw	
Arsenic	C	10	HH/WS			ug/L	Note: n ≤ 9 Limited data set			Chronic (HH): 10.0 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Cadmium	NC	1.6678	FW	10.7582		ug/L	4	1	76.146 Default C.V.	Acute: 10.758 Chronic: 1.668 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Chlorides	NC	250	WS			mg/L	4	4	59.6 Default C.V.	Acute: NO WQS Chronic: 250.0 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
							Note: n ≤ 9 Limited data set				
Chromium III	NC	363.4201	FW	2793.8313		µg/L	0	0	N/A	Acute: 2,793.8 Chronic: 363.4	
Chromium VI	NC	11	FW	16		µg/L	0	0	N/A	Acute: 16.0 Chronic: 11.0	RP shown - apply seep Monitoring wih Limit RP shown - apply seep Monitoring with Limit
Chromium, Total	NC					Tot Cr value(s) >50 with 1 Tot Cr value(s) ≥ Cr VI Allowable µg/L	4 Note: n ≤ 9 Limited data set	1	179.7 Default C.V.	Max reported value = 69.4	c. Monitor Total Chromium and Chromium VI, along with a limit for Chromium VI if any Total Chromium sample is ≥ 50 µg/L and ≥ to the Allowable Cw for Chromium VI but < the Allowable Cw for Chromium III.
Copper	NC	25.5442	FW	38.2981		ug/L	4	2	1,209.53 Default C.V.	Acute: 38.30 Chronic: 25.54 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				
Fluoride	NC	1800	FW			ug/L	3	0	*NO DETECTS*	Acute: NO WQS Chronic: 1,800.0 Max MDL = 1000	No detects, MDL < Allowable Cw - No Monitoring required
							Note: n ≤ 9 Limited data set				
Lead	NC	13.5358	FW	347.3518		ug/L	4	1	197.358 Default C.V.	Acute: 347.352 Chronic: 13.536 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
							Note: n ≤ 9 Limited data set				

Mercury	NC	12	FW		0.5	ng/L	2 2 Note: n ≤ 9 Limited data set	25.8 Default C.V.	Acute: NO WQS Chronic: 12.0 No value > Allowable Cw	All values < WQBEL and < TBEL - apply seep monitoring
Molybdenum	NC	160	WS			ug/L	4 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 160.0 Max MDL = 10	No detects, MDL < Allowable Cw - appy seep Monitoring
Nickel	NC	119.2776	FW	1073.9039		µg/L	4 4 Note: n ≤ 9 Limited data set	1,344.2 Default C.V.	Acute (FW): 1,073.9 Chronic (FW): 119.3 2 value(s) > Allowable Cw	
Nickel	NC	25.0000	WS			µg/L			Chronic (WS): 25.0 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Selenium	NC	5	FW	56		ug/L	4 1 Note: n ≤ 9 Limited data set	27.5 Default C.V.	Acute: 56.0 Chronic: 5.0 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Zinc	NC	406.7415	FW	403.4414		ug/L	4 3 Note: n ≤ 9 Limited data set	84.7 Default C.V.	Acute: 403.4 Chronic: 406.7 No value > Allowable Cw	No RP, Predicted Max < 50% of Allowable Cw - apply seep Monitoring
Antimony	NC	5.6	WS			µg/L	4 0 Note: n ≤ 9 Limited data set	*NO DETECTS*	Acute: NO WQS Chronic: 5.60000 Max MDL = 10	No detects, MDL > Allowable Cw - apply seep Monitoring
Barium	NC	1	WS			mg/L	3 3 Note: n ≤ 9 Limited data set	0.67800 Default C.V.	Acute: NO WQS Chronic: 1.00000 No value > Allowable Cw	No RP , Predicted Max ≥ 50% of Allowable Cw - apply seep Monitoring
Sulfates	NC	250	WS			mg/L	3 3 Note: n ≤ 9 Limited data set	1,530.00000 Default C.V.	Acute: NO WQS Chronic: 250.00000 1 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit
Thallium	NC	0.24	WS			µg/L	3 1 Note: n ≤ 9 Limited data set	15.39000 Default C.V.	Acute: NO WQS Chronic: 0.24000 2 value(s) > Allowable Cw	RP shown - apply seep Monitoring with Limit