



Submissions to the State of North Carolina and Cape Fear River Watch

The following table identifies submissions made by Chemours pursuant to the Consent Order and Addendum (COA) for the period of April 1, 2021 through the end of the second quarter on June 30, 2021.¹

CO Section	Title	Submitted Date
11c	Characterization of PFAS in Process and Non-Process Wastewater and Stormwater; Initial Characterization – Final Quarterly Report Addendum 1	05/28/2021
12-COA 1b	Cape Fear River PFAS Mass Loading Assessment – First Quarter 2021 Report	06/30/2021
12-COA 2a	Interim Seep Remediation Operation & Maintenance Report 2	05/28/2021
12-COA 2a	Interim Seep Remediation – Seep C Effectiveness Demonstration Report	04/16/2021
12-COA 4d	WWTP Table 3+ PFAS Loading Assessment	05/28/2021
18	Response to NCDEQ Comments on Consent Order Paragraph 18 On and Offsite Assessment Report	06/14/2021
28	Quarterly Progress Report	04/23/2021

¹ Consent Order submissions by Chemours from lodging of the Proposed Consent Order in November 2018 through March 31, 2019 were presented in the 2019 1st quarter report, April 1, 2019 through June 30, 2019 in the 2019 2nd quarter report, July 1, 2019 through September 30, 2019 in the 2019 3rd quarter report, October 1, 2019 through December 31, 2019 in the 2019 4th quarter report, January 1, 2020 through March 31, 2020 in the 2020 1st quarter report, April 1, 2020 through June 30, 2020 in the 2020 2nd quarter report, July 1, 2020 through September 30, 2020, in the 2020 3rd quarter report, October 1, 2020 through December 31, 2020 in the 2020 4th quarter report, and January 1, 2021 through March 31, 2021 in the 2021 1st quarter report.



2021 Second Quarter Residential Summary

Item	Cumberland County (East of River)	Cumberland County (West of River)	Bladen County (East of River)	Bladen County (West of River)	Robeson County	Sampson County	Total
Total Number of Residences Sampled	246	218	23	4	35	1	527
Residences Exceeding GAC Criteria (GenX >= 140 ng/L)	1	0	0	0	0	0	1
Residences Exceeding RO Criteria (Σ PFAS >= 70 ng/L)	31	18	4	0	5	0	58
Residences Exceeding RO Criteria (PFAS >= 10 ng/L)	84	58	6	0	9	0	157
Residences Drinking Water Well Detections (Results < 10 ng/L)	26	64	5	0	9	1	105
Residences Drinking Water Well Non-Detections	104	78	8	4	12	0	206



Replacement Drinking Water Actions

(Replacement drinking water actions from November 2018² - June 30, 2021)

Summary		Number of residents on bottled water	GAC Systems On-line & Confirmation Sampling Complete	Number of Homes Where RO Systems Installed
	Total		2235	100

Bottled Water		Residences Eligible for Bottled Water	Already connected to Public Water	Eligible Residences Receiving Bottled Water
	Q2 2021		239	0
Total		2235	143	2235

GAC		Residences Eligible for GAC	Already connected to Public Water	Public Water Readily Available	Public Water Feasible	Residents Declined GAC System	GAC Systems to Install	Number of Residences Responded to GAC Offer (Interview Conducted or Declined Offer)	
	Q2 2021		2	Data Not Available	0	0	0	2	0
	Total		265	23	Data Not Available	Data Not Available	7	130	121
		Number of GAC Systems to Install but Resident has Not Responded to Offer	System On-line	Confirmation Sampling Complete	GAC Offer Letters Sent to Residents	Call Log Interactions with GAC Residents	GAC Residence Response Rate		
	Q2 2021		2	3	2	279	Not Applicable		
	Total		107	105	100	265	3742	45%	

RO		Residences Eligible for RO (includes homes with shared wells)	Number of Residences Responded to RO Offer	Residents Declined RO	Homes/Buildings where RO Systems to be Installed but Resident has Not Responded	RO Residence Response Rate	
	Q2 2021		291	511	0	70	Not Applicable
	Total		4835	3166	112	1412	65%
		Number of Homes where RO Systems Installed	Homes/Buildings where RO Systems are to be Installed	Number of RO Offer Letters Sent to Residences	Call Log Interactions with RO Residents		
	Q2 2021		337	291	291	1700	
	Total		2479	2018	4835	20657	

² The date the proposed Consent Order was lodged.

Consent Order Progress Details

This section summarizes the activities that have been undertaken by Chemours pursuant to the Consent Order Compliance Measures and Addendum for the period from April 1, 2021 through the end of the second quarter of 2021 (June 30, 2021). On August 13, 2020, Chemours signed the Addendum to Consent Order Paragraph 12, and the Addendum was entered by the Bladen County Superior Court on October 12, 2020.

Section 7 Control Technology Improvements

The thermal oxidizer (see photo at right) continues to control process emissions at an average PFAS destruction efficiency exceeding 99.99%.



Section 10 No Discharge of Process Wastewater from Chemours' Manufacturing Areas

Chemours does not discharge its process wastewater and instead collects and ships its process wastewater offsite for disposal. Chemours is recycling treated water internally within several manufacturing processes.

Section 11 Characterization of PFAS in Process and Non-Process Wastewater and Stormwater at the Facility

During the second quarter of 2021, two sampling events were conducted, during April 29 – May 4, 2021 (the April/May 2021 event) and on June 18, 2021 (the June 2021 event). Samples were collected from 23 locations during the April/May 2021 event and from 21 locations during the June 2021 event. Results from these sampling events will be reported in the first semi-annual report of Paragraph 11(d) ongoing sampling, which Chemours plans to submit by September 30, 2021. Chemours also submitted an addendum to the Paragraph 11(c) Final Quarterly Report to NCDEQ on May 28, 2021, which reported results from sample events collected in October 2020 and November 2020.

Section 12 Accelerated Reduction of PFAS Contamination in the Cape Fear River and Downstream Water Intakes, and Addendum to Consent Order Paragraph 12

During the second quarter of 2021, Chemours continued operation of the treatment system for the Old Outfall (Outfall 003) pursuant to Consent Order Paragraph 12(e) and a NPDES permit issued by NCDEQ.

As noted above, the Addendum to Consent Order Paragraph 12 was signed in the third quarter of 2020 and entered by the Court during the fourth quarter of 2020. Chemours' Addendum implementation activities during the second quarter of 2021 included:

Consent Order Addendum Paragraph 1

On June 30, 2021, Chemours submitted to NCDEQ and Cape Fear River Watch the Cape Fear River PFAS Mass Loading Assessment – First Quarter 2021 Report pursuant to Consent Order Addendum



Paragraph 1(b). The report describes sampling activities and mass loading results for the Cape Fear River and PFAS loading pathways from the first quarter of 2021. This submission was also pursuant to quarterly reporting of mass loading sampling outlined in the Corrective Action Plan (Paragraph 16). In each of April, May and June 2021, Chemours conducted monthly mass loading sampling required by Consent Order Addendum Paragraph 1.

Consent Order Addendum Paragraph 2

During the second quarter of 2021, Chemours operated and maintained the Seep C flow-through cell, i.e., the interim remediation system at Seep C. The flow-through cell has been operational since December 16, 2020. On April 28, June 8, and June 24, 2021, Chemours also completed construction/initiated operation of the Seep A, Seep B, and Seep D flow-through cells, respectively. On May 28, 2021, Chemours submitted the Interim Seep Remediation Operation and Maintenance Report #2, describing the operations and maintenance activities at the Seep A and Seep C flow-through cells over the reporting period of March 1 through April 30, 2021.

Consent Order Addendum Paragraph 3

As required by the Addendum, the Black Creek Aquifer interim measure system to extract groundwater from the seven existing Black Creek Aquifer monitoring wells (BCA-01, BCA-02, PW-11, PW-14, PW-15R, PIW-9D, and PIW-10DR) continued to operate in the second quarter as designed. In April, the system was transitioned back to operating continuously based on groundwater levels (the system had been operated on timers for several weeks due to mechanical issues). During the second quarter of 2021 (April, May, and June), the system extracted 437,556 gallons of water for a total of 812,525 gallons since startup on November 30, 2020. The wells have continued to operate as designed with only minor, routine shutdowns for maintenance or equipment issues.

On June 29, 2021, Chemours submitted to NCDEQ Version 2 of the Pre-Design Investigation Report. Version 2 was updated from Version 1 (submitted March 24, 2021), following advancement of additional boreholes along the proposed barrier wall alignment. This report summarizes the investigation work completed at the site to facilitate preparing the 60% design submittal package by August 15, 2021 to NCDEQ pursuant to Consent Order Addendum Paragraph 3.

Chemours presented a presentation via Microsoft Teams to NCDEQ on May 17, 2021 describing the initial conceptual design of the barrier wall and hydraulic containment system. The presentation was also provided to Cape Fear River Watch on June 4, 2021.

Consent Order Addendum Paragraph 4

During the second quarter of 2021, Chemours continued the stormwater and non-contact cooling water separation efforts in the Monomers & IXM area that were initiated during the annual facility turn-around in October 2020. The water types are being separated to facilitate the treatment of stormwater pursuant to Consent Order Addendum Paragraphs 4(a) through (c). As of the end of the second quarter of 2021, separation efforts were mostly complete with a few tie-ins remaining; contingency plans were implemented including temporary pumps and hoses. The stormwater treatment system was installed and commissioned by the selected vendor, Evoqua, during May and June 2021. Operations of the stormwater treatment system began on June 30, 2021.

Chemours received comments regarding the Stormwater Sampling Plan from NCDEQ, and Chemours submitted to NCDEQ a revised Stormwater Sampling Plan and example electronic Discharge Monitoring Report on May 11, 2021. Approval from NCDEQ to implement the plan was received on June 25, 2021.

Chemours also grouted in and decommissioned the terracotta pipe as of April 21, 2021 and submitted the report of the investigation into the significant remaining sources of PFAS loading to the wastewater treatment plant on May 28, 2021.

Section 14 Toxicity Studies

Chemours has all five Consent Order Attachment B substances synthesized. One substance required additional purification; that purification is currently on-going and expected to finish in the third quarter of 2021.

The rat and mouse pilot study in-life phase was completed for four of the five substances and the reports for the studies are completed. The analytical development for the dose analysis method for the mammalian Consent Order studies is completed. This will be submitted when the final protocols are approved by NCDEQ.

The draft protocols for the aquatic toxicology work were submitted for approval to NCDEQ in December 2020. Chemours received comments back from NCDEQ in March 2021 and provided responses to NCDEQ on May 28, 2021. Chemours is continuing to address the points raised in the comments by updating the aquatic toxicology protocols, and Chemours intends to submit updated protocols to NCDEQ for approval.

NCDEQ also provided the OECD guideline number for the sediment toxicity study required by the Consent Order. The contract lab has completed the draft protocol and it has been submitted for NCDEQ review.

Section 16 Groundwater Remediation

On June 30, 2021, Chemours submitted to NCDEQ and Cape Fear River Watch the Cape Fear River PFAS Mass Loading Assessment – First Quarter 2021 Report pursuant to Consent Order Addendum Paragraph 1(b). This submission was also pursuant to quarterly reporting of mass loading sampling outlined in the Corrective Action Plan (Paragraph 16). On-going groundwater remediation activities are being conducted pursuant to Consent Order Addendum Paragraph 3 and are described earlier in this document under that paragraph.

Section 18 Onsite and Offsite Assessment

On June 14, 2021, Chemours submitted a memorandum to NCDEQ responding to the Paragraph 18 comment letter sent to Chemours from NCDEQ on December 23, 2020.

Sections 19 and 20 Provision of Public Water Supplies, Whole Building Filtration Systems, and Reverse Osmosis Drinking Water Systems

As shown in the summary tables above, Chemours continues to make significant progress in implementing the Consent Order requirements of Paragraphs 19 and 20. Since resuming RO installations in June 2020, following the COVID-19 postponement period, the pace of RO acceptance rates and installations has been on the rise. O&M activities for installed GAC systems continues uninterrupted. Bottled water services continue uninterrupted for 2,235 homes.



Section 21 Private Well Testing

To date, 11,137 residences have been identified within the current study area, of which 6,856 have been sampled and 3,010 residences have received at least one initial sample offer letter. Results of sampling that occurred throughout the second quarter of 2021 (527 residences) are presented at the beginning of this progress report. Current Step-out and Infill distance intervals range from 2.5 miles to 15.5 miles from the Site. Based on the requirements set forth in the Consent Order, delineation has been completed in nine sectors and there is near delineation in four sectors.

On June 23, 2021, Chemours reinstated the pre-COVID residential private well cold-calling protocol (i.e., to confirm residences, tenant/owner name and phone number, addresses, not connected to public water, and residents' willingness to have a sample collected from their drinking water well).

Section 22 Provision of Sampling Results

Chemours provided (and continues to provide) sampling results to NCDEQ and residents as required under the Consent Order. Chemours has provided sampling results to NCDEQ by sending a courtesy email notification and by uploading sampling results to the state Equis database. Chemours has also provided final lab reports to NCDEQ. Chemours has provided sampling results to residents by including preliminary results with water filtration system initial offer letters and sending the final lab reports to residents within the following 30 days. Chemours has also provided non-detect sampling results to residents.

Section 23 Interim Replacement of Private Drinking Water Supplies

All residences eligible to receive the interim replacement drinking water supplies have received the supplies (i.e., bottled water or voucher card for bottled water). As of June 30, 2021, there are 2,235 residences receiving bottled water services.

Section 26 Total Organic Fluorine

Please see Appendix A for the quarterly progress report from Dr. Susan D. Richardson.

Section 28 Reporting

Chemours submitted the Consent Order first quarter 2021 progress report on April 23, 2021.

Sections 29 and 30 Public Information

Chemours has continued to post its Consent Order submissions at <https://www.chemours.com/Fayetteville-Works/en-us/c3-dimer-acid/compliance-testing/>.

Appendix A

7th Progress Report
Development of a Total Organic Fluorine (TOF) Method for the Analysis of
Processed Wastewater Streams and Air from Fayetteville Works (NC)
Susan D. Richardson, Alexandria L. Forster, Danielle C. Westerman, University of
South Carolina
July, 2021

Since the last progress report in March, focus has been directed towards finishing the optimization of the Adsorbable Organic Fluorine (AOF) method and beginning the optimization of the Extractable Organic Fluorine (EOF) method.

1. Adsorbable Organic Fluorine (AOF)

As mentioned in the previous progress report, an important parameter for this method is to remove inorganic fluoride from the sample in order to avoid false positive organic fluorine values. For this extraction technique, one of the major ways to remove inorganic fluoride is to incorporate an anion exchange rinsing step after the sample has been loaded on the activated carbons. Various compositions, volumes, and pH values of a rinsing step have been tested to evaluate their efficiency at removing inorganic fluoride while also retaining the highest percent organic fluorine. As well as a rinsing step post sample adsorption, a pre-sample load rinse step has also been tested to evaluate whether or not a pre-rinse could be used to lower the inorganic fluoride affinity to the activated carbon columns by filling the spots with an ion that has a higher adsorption affinity than fluoride to the activated carbon.

Other steps in the AOF method that have been further optimized include sample pH pretreatment at more values than previously evaluated for this method, and further optimization of the absorption solution post combustion of the carbons. For the absorption solution optimization, varying concentrations of different buffers, reducing agents, and pH values have been evaluated.

The current optimized AOF method was compared to quantification of PFAS using our LC-QTOF and river water samples collected from the Congaree River. The results from this comparison further proved the need for a TOF method.

2. Extractable Organic Fluorine (EOF)

Also since the last progress report, optimization of the EOF method has been a large focus. Four solid phase extraction (SPE) cartridges have been compared for their retention of inorganic fluoride and recovery of organic fluorine. The cartridge that showed the least retention for inorganic fluoride and highest percent recovery of organic fluorine was chosen for further optimization. The parameters for this method that have been tested at this point included sample load volume, sample pH values, and the composition of the elution and wash steps.

Focus in further experiments will be on the continuation of optimizing the EOF method parameters, such as the elution and wash step volumes, composition and pH adjustment of these steps, sample extraction concentration, etc.