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CAPE FEAR RIVER PFAS MASS LOADING ASSESSMENT - SECOND QUARTER 2021 REPORT

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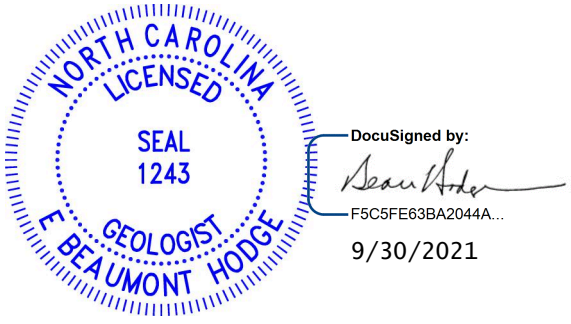

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cfs	cubic feet per second
CFR-TARHEEL	Cape Fear River at Tar Heel Ferry Road Bridge
CO	Consent Order
CO Addendum	Addendum to Consent Order Paragraph 12
DVM	Data Verification Module
FTC	flow-through cell
kg	kilograms
mg/s	milligrams per second
ng/L	nanograms per liter
NCDEQ	North Carolina Department of Environmental Quality
PFAS	pe- and polyfluoroalkyl substances
PFHpA	perfluoroheptanoic acid
Q1	first quarter
Q2	second quarter
Q3	third quarter
Q4	fourth quarter
SOP	standard operating procedure
USGS	United States Geological Survey

1 INTRODUCTION AND OBJECTIVES

Geosyntec Consultants of NC, P.C. (Geosyntec) has prepared this Cape Fear River PFAS Mass Loading Assessment report for The Chemours Company, FC, LLC (Chemours). Chemours operates the Fayetteville Works facility in Bladen County, North Carolina (the Site). This report provides monitoring and assessment results pursuant to the requirements of Paragraphs 1(a) and 1(b) of the Addendum to Consent Order Paragraph 12 (CO Addendum) and Paragraph 16 of the executed Consent Order (CO) dated 25 February 2019 among the North Carolina Department of Environmental Quality (NCDEQ), Cape Fear River Watch, and Chemours.

The purpose of this report is to describe the second quarter 2021 (Q2 2021) PFAS Mass Loading Assessment of the Cape Fear River based on the findings of surface water, river water, and groundwater samples collected at and surrounding the Site. This is the eighth assessment done since first quarter (Q1) 2020. Data collected were used to assess mass loading of total per- and polyfluoroalkyl substances (PFAS) to the Cape Fear River. Total PFAS is a term used to refer to PFAS detected in the environment for those PFAS compounds listed in Table 1 and analyzed by the Table 3+ standard operating procedure (SOP) analytical method.

There are two primary objectives for this report:

1. To assess Cape Fear River PFAS mass loads. Specifically:
    a. Mass loads measured in the Cape Fear River.
    b. Mass loads prevented from reaching the Cape Fear River by implemented remedies.
    c. The total mass load to the Cape Fear River, i.e., the sum of the two quantities above.
2. To assess the relative PFAS loadings from the different PFAS transport pathways to the Cape Fear River during the reporting period[1] using the Mass Loading Model.

The CO Addendum requires sampling the Cape Fear River for PFAS compounds listed in Attachment C of the CO (Cape Fear River Mass Loading Calculation Protocol Version 2, Geosyntec 2020d). Accordingly, this report contains data from April 2021 through June 2021, and mass loading calculations and reporting are done on the set of PFAS compounds listed in Table 1, i.e., both "Table 3+" and "Attachment C".

The remainder of this report is organized as follows:

- **Scope** – This section describes the sampling programs performed in Q2 2021.

[1] Starting in December 2020, Chemours commenced monthly sampling of the mass loading model pathways as per CO Paragraph 1(b) and the associated protocol document Cape Fear River Mass Loading Calculation Protocol Version 2 (Geosyntec 2020d). Monthly sampling of these pathways will be conducted for one year and thereafter on a quarterly basis for the next four years.

- **PFAS Mass Load to Cape Fear River** – This section describes the assessments of Cape Fear River PFAS Mass Loads.
- **Cape Fear River PFAS Mass Loading Model** – This section describes the assessment of the relative mass loading from the various PFAS transport pathways.
- **Summary** – This section summarizes report findings.

2 SCOPE

The Q2 2021 sampling was completed by Parsons of NC (Parsons) and Geosyntec from April through June 2021. The scope of the sampling programs is summarized below, and complete descriptions of the field methods can be found in Appendix A.

2.1 Sampling Activities in Q2 2021

Q2 2021 (April to June 2021) sampling activities included:

1. The Cape Fear River PFAS Mass Load Sampling Program consisted of collecting twice weekly composite samples at Cape Fear River at Tar Heel Ferry Road Bridge (CFR-TARHEEL).
2. The Cape Fear River PFAS Mass Loading Model Sampling Program event which consisted of the following:
    a. Collecting three synoptic rounds of groundwater elevations from select on and offsite monitoring wells.
    b. Collecting water samples for PFAS from 18 onsite and offsite monitoring wells[2].
    c. Collecting seep, surface water, and river water samples for PFAS.
    d. Measuring flow rates at specified seep and surface water locations.
3. Additional river sampling upstream of the Cape Fear River (CFR-MILE-54) and mouths of the Haw River (HAW-RIVER-END) and Deep River (DEEP-RIVER-END). Analytical results for these additional upstream river samples are discussed in Appendix A.

Each program is described in further detail below.

[2] Bladen-1D (damaged) and PW-11 (being pumped as part of the Pre-design Investigation activities) could not be sampled in Q2 2021.

2.2 Cape Fear River PFAS Mass Load Sampling Program

The Cape Fear River PFAS Mass Load Sampling Program consists of collecting twice weekly composite samples from the sampling location at CFR-TARHEEL, approximately 7 miles downstream of the Site (Figure 2). This location is situated downstream of the Site such that water from the seeps, onsite groundwater, Outfall 002, Old Outfall 002 and Georgia Branch Creek are well mixed in the river.

Composite samples were collected using an autosampler and were generally composited over 24 hours with aliquots collected at one-hour intervals yielding seven samples per week. Two samples per week were selected based on sample completeness and sent for analysis. Collected samples were evaluated for the PFAS compounds listed in Table 1.

Interruptions to the sampling program may occur due to events such as vandalism, equipment malfunction or a high river stage, which will flood the platform and necessitates sampler removal. During interruptions, field protocol is to collect a grab sample from the river twice per week at the CFR-TARHEEL location to continue establishing a record of river concentrations over time.

During the reporting period between April 1, 2021 and June 30, 2021, no interruptions were recorded. This resulted in 4 grab samples and 27 composite samples collected over the reporting period.

The data collected from the PFAS Mass Load Sampling Program were used to estimate PFAS mass load in the Cape Fear River using concentrations from the CFR-TARHEEL location and flows as reported by the United States Geological Survey (USGS) river gauging station at the W.O. Huske Dam (Figure 2). Details of the sample collection methods, flow measurement methods, and calculation methods were reported in the *Cape Fear River PFAS Mass Loading Calculation Protocol Version 2* (Geosyntec, 2020d). Mass load calculations are provided in Section 3 and sampling results are presented in Appendix A.

2.3 Cape Fear River PFAS Mass Loading Model Sampling Program

The Mass Loading Model Sampling Program for this reporting period consisted of collecting concentration and flow data from the various PFAS transport pathways in April 2021, May 2021, and June 2021. Environmental media sampled were surface water (seeps, creeks, Old Outfall, Outfall 002, and Cape Fear River) and groundwater. Surface and river water sampling and flow gauging locations for the Q2 2021 Events are shown on Figures 4A, 4B, 4C, and 5 and listed in Table 2. Groundwater sampling locations for the Q2 2021 Events are shown on Figure 6 and listed in Table 3. Collected samples were evaluated for the PFAS compounds listed in Table 1.

Due to construction of the flow-through cells (FTCs) at the seeps during Q2 2021, some samples and flow measurements were collected at alternate surface water locations as close as possible to the designated location. These alternate locations are noted in Figures 4A, 4B, 4C and Table 2.

The data collected from these Q2 2021 field activities were then incorporated into the Mass Loading Model to estimate PFAS mass discharge from the nine potential transport pathways to the Cape Fear River (Figure 3), as identified in the Conceptual Site Model (Geosyntec, 2019) and discussed in more detail in Section 4. These Mass Loading Model estimates were compared to mass loading observed downstream at CFR-TARHEEL.

Details of the sample collection methods, flow measurement methods, and calculation methods were reported in the *Cape Fear River PFAS Mass Loading Calculation Protocol Version 2* (Geosyntec, 2020d). Mass Loading Model results are provided in Section 4.2 and sampling results are presented in Appendix A.

2.4 Laboratory Analyses

Samples were analyzed for PFAS by Table 3+ Laboratory SOP. The focus of this report is on the set of PFAS originating from manufacturing activities at the Site; therefore, results of sampling activities and assessments of mass loading were performed and presented with respect to the PFAS groupings presented in Table 1: (i) Attachment C, (ii) Table 3+ (17 compounds)[3], and (iii) Table 3+ (20 compounds).

For clarity, the text, tables and figures of this report describe the Total Table 3+ (17 compounds), though the report tables also include results for Total Attachment C and Total Table 3+ (20 compounds).

The calculations for Total Attachment C PFAS concentrations include the fluoroether PFAS on the Attachment C list, i.e., excludes perfluoroheptanoic acid (PFHpA). As presented in the Cape Fear River PFAS Mass Loading Assessment – Third Quarter 2020 Report (Geosyntec, 2020e), the presence of PFHpA upstream and offsite are unrelated to the Site and is already present in the upstream river from other sources and is therefore excluded from the Attachment C sum. This represents a modification to the *Cape Fear River PFAS Mass Loading Calculation Protocol Version 2* submitted to NCDEQ on November 18, 2020 (Geosyntec, 2020d).

[3] As reported in the *Matrix Interference During Analysis of Table 3+ Compounds* memorandum (Geosyntec, 2020a), matrix interference studies conducted by the analytical laboratory (TestAmerica, Sacramento) have shown that the quantitation of three compounds (R-PSDA, Hydrolyzed PSDA, and R-EVE) is inaccurate due to interferences by the sample matrix in both groundwater and surface water. Total Table 3+ PFAS concentrations are calculated and presented two ways in this report: (i) summing over 17 of the 20 Table 3+ compounds "Total Table 3+ (17 compounds)", i.e., excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE, and (ii) summing over 20 of the Table 3+ compounds "Total Table 3+ (20 compounds)"

3 PFAS MASS LOAD TO CAPE FEAR RIVER

This section presents results of the Cape Fear River PFAS mass loads for the present Q2 2021 reporting period of April 1, 2021 to June 30, 2021. Specifically, this section discusses three types of mass loads defined in Equation 1.

Equation 1: Total PFAS Mass Load

$$M_{CFR} = m_{CFR} + m_{Remedies}$$

where,

M_{CFR} = is the Mass Load of PFAS compounds in the Cape Fear River, including the mass load prevented from reaching the Cape Fear River by implemented remedies, measured in kilograms (kg).

m_{CFR} = is the In-River Mass Load estimated using PFAS concentrations in samples taken in the Cape Fear River downstream of the Site where the river is well mixed and using measured river flow volumes.

$m_{Remedies}$ = is the Captured Mass Load prevented from reaching the Cape Fear River by remedies implemented by Chemours.

Remedies that have been implemented by Chemours through Q2 2021[4] include:

- Old Outfall 002 treatment system (October 1, 2020)
- Seep C FTC (December 16, 2020)
- Seep A FTC (April 28, 2021)
- Seep B FTC (June 8, 2021)
- Seep D FTC (June 24, 2021)[5]

These remedies prevent PFAS mass loads from reaching the Cape Fear River and were quantified in the $m_{Remedies}$ term of Equation 1. The specific methodology for estimating the prevented mass per remedy was developed on a per remedy basis and details of these calculations are provided in the *Cape Fear River PFAS Mass Loading Calculation Protocol Version 2* (Geosyntec, 2020d). The goal of these calculations is to estimate the Total PFAS mass diverted from reaching the Cape Fear River by the remedy that would have otherwise reached the Cape Fear River.

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[4] There have been numerous other interim and permanent actions taken to limit PFAS reaching the Cape Fear River prior to Q2 2021, i.e., air abatement measures (installation of the thermal oxidizer and carbon beds, etc.), grouting of the terracotta pipe, sediment removal from onsite channels, among others, and these may not be captured in these captured mass load calculations but should be considered in the overall assessment of PFAS reductions.

[5] The first sample collected from the FTC at Seep D occurred in third quarer (Q3) 2021 (July 9, 2021), therefore, the captured mass from this remedy will be calculated and presented in the Q3 2021 report.

3.1 Q2 2021 Total PFAS Mass Load

During the Q2 2021 reporting period the in-river Total Table 3+ mass load measured at CFR-TARHEEL was 74.8 kg and the Total Table 3+ mass load prevented from reaching the Cape Fear River was 43.9 kg. The installation of remedies at Old Outfall 002 and at Seeps A, B, and C (Table 4) resulted in the prevented load. The sum of these two loads, the in-river and prevented load was 119 kg, representing the total PFAS mass load towards the Cape Fear River.

The total measured and estimated in-river mass load (74.8 kg) was based on the 54 mass loading estimation intervals presented in Table 5A. The total measured and estimated mass load captured by remedies implemented by Chemours (43.9 kg) was based on the concentrations in samples collected at the influent and effluent stilling basins (as reported in Appendix A) and measured flows at the Old Outfall 002 treatment system and the Seep A, B, and C FTCs (Tables 5B to 5E).

For the Old Outfall 002 treatment system, a total of 24.2 kg was captured and prevented from reaching the Cape Fear River. This estimate was based on three mass loading estimation intervals between April 1, 2021 and June 30, 2021 (Table 5B). For the Seep A FTC, a total of 10.8 kg was captured and prevented from reaching the Cape Fear River. This estimate was based on four mass loading estimation intervals between April 28, 2021 and June 30, 2021 (Table 5C). For the Seep B FTC, a total of 2.55 kg was captured and prevented from reaching the Cape Fear River. This estimate was based on three mass loading estimation intervals between June 8, 2021 and June 30, 2021 (Table 5D). For the Seep C FTC, a total of 6.34 kg was captured and prevented from reaching the Cape Fear River. This estimate was based on seven mass loading estimation intervals between April 1, 2021 and June 30, 2021 (Table 5E).

The in-river Total PFAS mass discharges calculated from samples collected in Q2 2021 are provided in Table 6, while those from previous quarters are presented in Appendix A. For Q2 2021, the Total Table 3+ mass discharge among samples with detected Total Table 3+ PFAS concentrations ranged from 3.3 milligrams per second (mg/s) (CAP0521-CFR-TARHEEL-052621) to 26 mg/s (CFR-TARHEEL-24-040521), with the median mass discharge being 7.3 mg/s.

The plots of Total Table 3+ concentrations over time are presented in Figure 7 and indicate that, generally, concentrations in the Cape Fear River are inversely correlated to river flow rate. That is, concentrations were higher when flow rates were lowest, while concentrations were lower when river flow rates were higher. This trend is consistent with higher river flow volumes diluting Table 3+ mass discharge into the river. Higher river flows lead to a greater volume of water that the mass loads are distributed over leading to a lower concentration value.

The plots of Total Table 3+ mass discharge since the beginning of the sampling program (March 28, 2020) are shown on Figure 8. Similar to the Q2 2021 mass discharges, the range of mass discharge across all samples with detected concentrations of Table 3+ PFAS was 2.7 mg/s (CFR-TARHEEL-9-100620) to 50.8 mg/s (CFR-TARHEEL-20-111220), though the mass

discharges are typically between 5 and 20 mg/s with approximately 84% of the data falling within this range.

3.2 Measured Mass at Bladen Bluffs, Tar Heel Ferry Road Bridge and Kings Bluff Intake Canal

The Total Table 3+ concentrations and mass discharge values from the Q2 2021 events are shown in the table below. Total Table 3+ concentrations at the three downstream river locations ranged from 50 nanograms per liter (ng/L) (CFR-TARHEEL in June 2021) to 130 ng/L (CFR-KINGS in May 2021). The CFR-TARHEEL AND CFR-BLADEN locations are located within 2 miles of each other and consequently often have similar sample results. Meanwhile the CFR-KINGS location is located significantly further away from the other two samples at 48 miles from the CFR-TARHEEL location. River conditions sampled and PFAS concentrations measured at CFR-KINGS may be considerably different than the other two locations due multiple factors. Specifically, water travelling to CFR-KINGS can take several days to arrive from CFR-TARHEEL, and therefore the sample collected at CFR-KINGS most likely does not represent the same "package" of water that was sampled at CFR-TARHEEL. Additionally, between CFR-TARHEEL and CFR-KINGS additional flows join the river, and storm events may also occur, further changing river flow volumes.

The Total Table 3+ mass discharge ranged from 3.3 mg/s (CFR-TARHEEL in May 2021) to 9.0 mg/s (CFR-TARHEEL in April 2021). In previous assessments, CFR-KINGS is sampled approximately three days after CFR-TARHEEL and CFR-BLADEN to help account for travel time between these two locations and CFR-KINGS. During the May and June 2021 events, CFR-KINGS was sampled before the estimated three-day travel time due to rising river levels and predicted rain events which constrained field sampling activities. This sample collection change may contribute to the difference in mass discharges observed between CFR-KINGS and the other two locations. Additionally, there is inherent variability associated with river sample collection due to changing flow rates, precipitation near the Site and along the course of the river, sample collection location, and grab sampling methods.

Sample Location	Sample Collection Date	Flow Rate (cfs)	Total Table 3+	
			Concentration (ng/L)	Mass Discharge (mg/s)
CFR-BLADEN	04/20/2021	2,890	100	8.2
CFR-TARHEEL	04/20/2021	2,900	110	9.0
CFR-KINGS	04/23/2021	2,230	97	6.1
CFR-BLADEN	05/26/2021	1,230	120	4.2
CFR-TARHEEL	05/26/2021	1,240	95	3.3
CFR-KINGS	05/28/2021	1,510	130	5.6
CFR-BLADEN	06/15/2021	4,450	53	6.7
CFR-TARHEEL	06/15/2021	4,480	50	6.3
CFR-KINGS	06/17/2021	4,290	69	8.4

4 CAPE FEAR RIVER PFAS MASS LOADING MODEL

Where Section 3 presented the Total Table 3+ PFAS mass load in the Cape Fear River, this section presents an analysis evaluating the relative loadings from the identified PFAS transport pathways to the observed in-river PFAS mass discharge. This evaluation supports remediation planning to reduce the PFAS loading from the Transport Pathways to the Cape Fear River. This evaluation was performed using the Mass Loading Model. The following subsections describe the transport pathways and the results of the Mass Loading Model assessment, including the sensitivity and the limitations of the Mass Loading Model.

4.1 PFAS Mass Loading Model Pathways

The nine potential pathways representing compartments to the PFAS Mass Loading Model are briefly described below and described in more detail in the *Cape Fear River PFAS Mass Loading Calculation Protocol Version 2* (Geosyntec, 2020d). The following pathways were identified as potential contributors of PFAS to the river PFAS concentrations:

- **Transport Pathway 1**: Upstream Cape Fear River and Groundwater – This pathway is comprised of contributions from non-Chemours related PFAS sources on the Cape Fear River and tributaries upstream of the Site, and upstream offsite groundwater with PFAS present from aerial deposition.
- **Transport Pathway 2**: Willis Creek – Groundwater and stormwater discharge and aerial deposition to Willis Creek and then to the Cape Fear River.
- **Transport Pathway 3**: Direct aerial deposition of PFAS on the Cape Fear River (see Appendix F for further details).
- **Transport Pathway 4**: Outfall 002 – Comprised of (i) water drawn from the Cape Fear River and used as non-contact cooling water, (ii) treated non-Chemours process water, (iii) Site stormwater, (iv) steam condensate, and (v) power neutralization discharge, which are then discharged through Outfall 002.
- **Transport Pathway 5**: Onsite Groundwater – Direct upwelling of onsite groundwater to the Cape Fear River from the Black Creek Aquifer (see Appendix E for further details).
- **Transport Pathway 6**: Seeps – Onsite groundwater seeps A, B, C and D and offsite Lock and Dam Seep above the Cape Fear River water level on the bluff face from the facility that discharge into the Cape Fear River.
- **Transport Pathway 7**: Old Outfall 002 – Groundwater discharge to Old Outfall 002 and stormwater runoff that flows into the Cape Fear River.
- **Transport Pathway 8**: Adjacent and Downstream Offsite Groundwater – Offsite groundwater adjacent and downstream of the Site upwelling to the Cape Fear River (see

Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 [Geosyntec, 2020d] for further details).

- **Transport Pathway 9**: Georgia Branch Creek – Groundwater, stormwater discharge and aerial deposition to Georgia Branch Creek and then to the Cape Fear River.

For the Q2 2021 Mass Loading Model assessments, data sources used as model inputs for each potential pathway are described in Table 7. These data sources included flow measurements, water levels and analytical results from the Q2 2021 sampling events (as discussed in Appendix A) and supplemental data provided in Appendices B, E, and F.

4.2 Mass Loading Model Results

For each monthly sampling event, the Total PFAS mass discharges are summarized in Tables 8A, 8B, 9A, 9B, 10A, and 10B. Analyte-specific mass discharges estimated from the Mass Loading Model and measured at CFR-TARHEEL are provided in Appendix B. A comparison of relative contributions per pathway for the Q2 2021 MLM assessments is provided in Table 11.

4.2.1 Reductions in Modeled Mass Discharge

The model estimated "Before Remedies" and "After Remedies" Total PFAS mass discharge values from the Q2 2021 monthly events are provided in Tables 8A, 8B, 9A, 9B, 10A, and 10B. The reduction in Total Table 3+ mass discharges after remedies is summarized in the table below. The mass discharges across the months are similar and relatively stable (Tables 8A to 10B). Additionally, the operation of the Old Outfall 002 treatment system and Seep A, B, and C FTCs was effective at reducing the Total Table 3+ mass discharge, which ranged from 2.3 to 6.4 mg/s across the three months. More specifically, the reductions of mass discharge from Old Outfall 002 ranged from 1.8 to 3.8 mg/s (April to June 2021), from Seep A ranged from 1.1 to 1.3 mg/s (May to June 2021), from Seep B was 1.3 mg/s in June 2021, and from Seep C ranged 0.19 to 0.53 mg/s (April to June 2021).[6]

Pathway	**After Remedies Reduction in Model-Estimated Total Table 3+ Mass Discharge (mg/s)**		
	April 2021	**May 2021**	**June 2021**
All Pathways	**2.3**	**4.4**	**6.4**
Old Outfall 002	***1.8***	***2.8***	***3.8***
Seep A	***N/A***	***1.3***	***1.1***
Seep B	***N/A***	***N/A***	***1.3***
Seep C	***0.53***	***0.30***	***0.19***

N/A – not applicable; FTC at this seep location was not yet operational.

[6] In June 2021, bypass flow observed at Seeps A and C; see Geosyntec (2021a) for more details.

The variability in the absolute value of the modeled mass discharge reductions at the Old Outfall 002 and Seeps A to C are expected due to variability in influent flows and concentrations. Overall, the mass discharge reductions increase over these three events as more of the FTCs became operational over time; Seep C FTC was operational from April to June 2021, Seep A FTC was operational from May to June 2021, and Seep B FTC was June 2021.

4.2.2 Modeled versus Measured Mass Discharge

The model-estimated "After Remedies" Total Table 3+ mass discharge values were compared to the measured mass discharge at CFR-TARHEEL shown in Tables 8B, 9B, and 10B. The ranges in the lower and upper bounds for the modeled mass discharge estimates are not wide and are generally within 1.0 mg/s. The measured mass discharges at CFR-TARHEEL were lower than the modeled estimates in April and May 2021, whereas, the measured mass discharge at CFR-TARHEEL was slightly higher than the upper bound model estimate in June 2021.

When comparing the modeled values within the quarter to the measured mass discharges, the model estimates fall within the range observed at CFR-TARHEEL (Figure 9; top plot).

Further, when the model-estimated mass discharges were used to estimate the Total Table 3+ river concentrations, the modeled concentrations showed a good fit and tracks closely to the trends in the observed Total Table 3+ concentrations measured at CFR-TARHEEL (Figure 9; bottom plot). Therefore, despite the discrepancies between model and measured mass discharges for the one snap-shot in time, overall the model shows reasonable agreement, albeit with a tendency to overestimate concentrations at CFR-TARHEEL during some periods in Q2 2021 as compared to model results from December 2020 through March 2021.

4.2.3 Relative Contributions by Pathway

The relative contributions per pathway for the Q2 2021 MLM assessments is provided in Table 11. The most significant pathways to contribute PFAS continue to be the Seeps (approximately 25% to 45%) and Onsite Groundwater (approximately 15% to 30%) for the three monthly events, which is consistent with previous events (Geosyntec, 2020b; Geosyntec, 2020c; Geosyntec, 2020e; Geosyntec, 2021b; Geosyntec, 2021c).

In previous assessments the Old Outfall 002 was a significant contributor to the total mass discharge. The implementation of the Old Outfall 002 treatment system has reduced the overall loading to between 2% to 6% of the Total Table 3+ mass load reaching the Cape Fear River.

In June 2021, when the Seep A, B, and C FTC remedies were implemented, the Seeps Before Remedies Load contributed between 29% to 31% of the potential Total Table 3+ mass load reaching the Cape Fear River. Remedy implementation at Seeps A, B, and C has reduced this potential June 2021 loading to between 9% to 10% of the Total Table 3+ mass load reaching the Cape Fear River. The combined reductions from the Seeps are expected to increase throughout 2021; as of June 24, 2021, FTCs have been installed at Seeps A, B, C, and D.

4.3 Mass Loading Model Sensitivities

As described in previous Cape Fear River PFAS Mass Loading Assessment reports (Geosyntec, 2020b; Geosyntec, 2020c; Geosyntec, 2020e; Geosyntec, 2021b; Geosyntec 2021c), the Mass Loading Model is a suitable tool to evaluate which PFAS transport pathways are significant contributors of mass to the Cape Fear River, but the results of the model may underestimate or overestimate the mass discharge observed in the Cape Fear River. As more remedies come on-line the ability to assess uncertainties is obfuscated, but the overall intent of the model is attained.

4.4 Variability in Input Parameters

The Mass Loading Model assessments provide PFAS mass discharge estimates and relative proportions of loadings for a 'snapshot' in time. While controlling for temporal variability, the model-based mass discharge estimates contain some level of uncertainty due to the inherent variability and measurement error in the input parameters, e.g., flow, concentrations, etc. To better understand the sensitivity of the model to the various pathway-specific input parameters, the uncertainties associated with the input parameters were used to conduct a sensitivity analysis in the Q1 2020 report (Geosyntec, 2020b). An updated sensitivity assessment is in progress using the data collected since March 2020.

4.4.1 River Flows and Precipitation

Sampling events with higher river flows due to above average levels of precipitation (e.g., Q4 2020 and Q1 2021) could potentially result in higher sensitivities to the estimates of mass discharge, particularly in the river samples (e.g., CFR-TARHEEL). These sensitivities to the changes in river conditions will be studied further using data collected over the past year to better characterize the effect of varying conditions on river concentrations.

5 SUMMARY

Two sampling programs were conducted in Q2 2021:

- The PFAS Mass Load Sampling program consisting of 27 composite samples and 4 grab samples collected at the Tar Heel Ferry Road Bridge. The analytical results of these samples were used to calculate the in-river PFAS mass loads in the Cape Fear River during the reporting period and to calculate the Baseline Mass Load.
- The Q2 2021 PFAS Mass Loading Model Sampling program collected water samples from the PFAS transport pathways (seeps, creeks, Old Outfall, Outfall 002, groundwater and Cape Fear River) and paired water flow measurements and estimates. These data were used to assess the relative loadings per transport pathway to the Cape Fear River using the PFAS Mass Loading Model.

The Cape Fear River PFAS Mass Load assessment estimated the Total PFAS that was either discharged or prevented from being discharged to the Cape Fear River over the load assessment period of March 31, 2021 to June 30, 2021. Over this period, 74.8 kg was the in-river Total Table 3+ mass load measured at CFR-TARHEEL and 43.9 kg was the Total Table 3+ mass load prevented from reaching the Cape Fear River due to the installation of remedies at Old Outfall 002 and at Seeps A, B, and C. The sum of these two values, 119 kg, represents the total PFAS mass load towards the Cape Fear River. As additional remedies are implemented at the Site and recently implemented remedies are operated for longer durations[7] greater quantities of mass will be prevented from reaching the Cape Fear River.

The Cape Fear River Mass Loading Model assessments showed that model estimates were relatively consistent and show reasonable agreement with the monthly trends at observed at CFR-TARHEEL (Figure 9; top plot). When the model-estimated mass discharges were used to estimate the Total Table 3+ river concentrations, the modeled concentrations showed a reasonable fit that tracks closely with a slight overestimation of the trends observed in Total Table 3+ concentrations measured at CFR-TARHEEL during Q2 2021 (Figure 9; bottom plot). Overall, reductions in model-estimated mass discharges ranged from 2.3 mg/s to 6.4 mg/s. The measured mass discharges at CFR-TARHEEL were lower than the modeled estimates in April and May 2021, whereas, the measured mass discharge at CFR-TARHEEL was slightly higher than the upper bound model estimate in June 2021.

In terms of relative contributions, the most significant pathways continue to be the Seeps (Transport Pathway 6) and Onsite Groundwater (Transport Pathway 5). Previous assessments (Geosyntec, 2020b; Geosyntec, 2020c; Geosyntec, 2020e; Geosyntec, 2021b; Geosyntec, 2021c) indicated that Old Outfall 002 (Pathway 7) was also a significant contributor; the Old Outfall 002 Before Remedies Load in Q2 2021 contributed between 18% to 34% of the potential Total Table 3+ mass load reaching the Cape Fear River. Implementation of the Old Outfall 002 treatment system has reduced this potential loading to between 2% to 6% of the Total Table 3+ mass load reaching the Cape Fear River. In June 2021, when the Seep A, B, and C FTC remedies were implemented, the Seeps Before Remedies Load contributed between 29% to 31% of the potential Total Table 3+ mass load reaching the Cape Fear River. Remedy implementation at Seeps A, B, and C has reduced this potential June 2021 loading to between 9% to 10% of the Total Table 3+ mass load reaching the Cape Fear River. The combined reductions from Seeps A, B, C, and D are expected to increase throughout 2021. These four seeps have operating FTCs with Seep D, the last FTC installed, beginning operation on June 24, 2021.

Sample collection will continue as outlined in the *Cape Fear River Mass Loading Calculation Protocol Version 2* (Geosyntec 2020d). Capture and treatment of water from the Old Outfall 002

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[7] FTCs at Seeps A and B began operation during Q2 2021. The seep D FTC also began operation at the end of Q2 2021, but performance monitoring data were not available for the Q2 period, but will be available for the Q3 period.

and the Seeps has begun and future sampling events will continue to evaluate PFAS mass loads and associated remedy facilitated at CFR-TARHEEL.

6 REFERENCES

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Geosyntec, 2020b. Cape Fear River Table 3+ PFAS Mass Loading Assessment – First Quarter 2020 Report, Chemours Fayetteville Works. July 31, 2020.

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Geosyntec, 2020e. Cape Fear River PFAS Mass Loading Assessment – Third Quarter 2020 Report, Chemours Fayetteville Works. December 23, 2020.

Geosyntec, 2021a. Interim Seep Remediation – Seep A Effectiveness Demonstration Report, Chemours Fayetteville Works. August 26, 2021.

Geosyntec, 2021b. Cape Fear River PFAS Mass Loading Assessment – Fourth Quarter 2020 Report, Chemours Fayetteville Works. March 31, 2021.

Geosyntec, 2021c. Cape Fear River PFAS Mass Loading Assessment – First Quarter 2021 Report, Chemours Fayetteville Works. June 30, 2021.

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

TABLES

TABLE 1
PFAS ANALYTE LIST
Chemours Fayetteville Works, North Carolina

Common Name[1]	PFAS Grouping			Chemical Name	CASN	Chemical Formula
	Attachment C	Table 3+ (17 compounds)	Table 3+ (20 compounds)			
HFPO-DA[2]	✓	✓	✓	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
PEPA	✓	✓	✓	Perfluoro-2-ethoxypropionic acid	267239-61-2	C5HF9O3
PFECA-G	✓	✓	✓	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	C12H9F9O3S
PFMOAA	✓	✓	✓	Perfluoro-2-methoxyacetic acid	674-13-5	C3HF5O3
PFO2HxA	✓	✓	✓	Perfluoro-3,5-dioxahexanoic acid	39492-88-1	C4HF7O4
PFO3OA	✓	✓	✓	Perfluoro-3,5,7-trioxaoctanoic acid	39492-89-2	C5HF9O5
PFO4DA	✓	✓	✓	Perfluoro-3,5,7,9-tetraoxadecanoic acid	39492-90-5	C6HF11O6
PMPA	✓	✓	✓	Perfluoro-2-methoxypropionic acid	13140-29-9	C4HF7O3
Hydro-EVE Acid	--	✓	✓	2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2,2-tetrafluoroethyl)oxy]propan-2-yl}oxy)propionic acid	773804-62-9	C8H2F14O4
EVE Acid	--	✓	✓	2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propan-2-yl}oxy)propionic acid	69087-46-3	C8HF13O4
PFECA B	--	✓	✓	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	C5HF9O4
R-EVE	--	--	✓	Pentanoic acid, 4-(2-carboxy-1,1,2,2-tetrafluoroethoxy)-2,2,3,3,4,5,5,5-octafluoro-	2416366-22-6	C8H2F12O5
PFO5DA	✓	✓	✓	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	C7HF13O7
R-PSDA	--	--	✓	Pentanoic acid, 2,2,3,3,4,5,5,5-octafluoro-4-(1,1,2,2-tetrafluoro-2-sulfoethoxy)-	2416366-18-0	C7H2F12O6S
R-PSDCA	--	✓	✓	Ethanesulfonic acid, 1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy]-	2416366-21-5	C6H2F12O4S
Hydrolyzed PSDA	--	--	✓	Acetic acid, 2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2-tetrafluoro-2-sulfoethoxy)propoxy]-	2416366-19-1	C7H3F11O7S
NVHOS	--	✓	✓	1,1,2,2,4,5,5,5-heptafluoro-3-oxapentanesulfonic acid; or 2-(1,2,2,2-ethoxy)tetrafluoroethanesulfonic acid; or 1-(1,1,2,2-tetrafluoro-2-sulfoethoxy)-1,2,2,2-tetafluoroethane	1132933-86-8	C4H2F8O4S
PES	--	✓	✓	Perfluoro-2-ethoxyethanesulfonic acid	113507-82-7	C4HF9O4S
PS Acid	✓	✓	✓	Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	29311-67-9	C7HF13O5S
Hydro-PS Acid	✓	✓	✓	Ethanesulfonic acid, 2-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	749836-20-2	C7H2F14O5S
PFHpA[2]	✓	--	--	Perfluoroheptanoic acid	375-85-9	C7HF13O2

Notes:
1 - Analyzed under analytical method Table 3+ Lab SOP.
2 - HFPO-DA and PFHpA can be analyzed under methods Table 3+ SOP and EPA Method 537 Mod.
EPA - Environmental Protection Agency
PFAS - Per- and Polyfluoroalkyl substances
SOP - Standard Operating Procedure

TABLE 2
SURFACE WATER SAMPLE COLLECTION AND FLOW MEASUREMENT SUMMARY
Chemours Fayetteville Works, North Carolina

Pathway / Location	Location ID	Location Description	April 2021		May 2021		June 2021	
			Sample Collection Method[1]	Flow Measurement Method[2]	Sample Collection Method[1]	Flow Measurement Method[2]	Sample Collection Method[1]	Flow Measurement Method[2]
Upstream River Water and Groundwater[6]	CFR-MILE-76	Cape Fear River Mile 76	Grab	USGS Data	Grab	USGS Data	Grab	USGS Data
Willis Creek	WC-1	Mouth of Willis Creek	24-hour composite	Marsh-McBirney Flow	24-hour composite	Marsh-McBirney Flow	24-hour composite	Marsh-McBirney Flow
Intake River Water at Facility	Intake at Facility	Water Drawn Through the Intake Sampled at the Power Area at the Site	24-hour composite	Facility DMRs	24-hour composite	Facility DMRs	24-hour composite	Facility DMRs
Outfall 002	Outfall 002	Outfall 002 in open channel	24-hour composite	Facility DMRs	24-hour composite	Facility DMRs	24-hour composite	Facility DMRs
Seep A	SEEP-A-1	Mouth of Seep A	--	--[3]	--	Flume	--	Flume
	SEEP-A-EFF	Effluent Basin of Seep A FTC	--	--	24-hour composite	--	336-hour composite	--
	SEEP-A-IMP	Impoundment Pond Before Seep A FTC	Grab	--	--	--	--	--
Seep B	SEEP-B-1	Mouth of Seep B	--	--[3]	--	--[3]	--	Flume
	SEEP-B-EFF	Effluent Basin of Seep B FTC	--	--	--	--	24-hour composite	--
	SEEP-B-IMP	Impoundment Pond Before Seep A FTC	24-hour composite	--	24-hour composite	--	--	--
Seep C	SEEP-C-1	Mouth of Seep C	--	--[3]	--	Flume	--	Flume
	SEEP-C-EFF	Effluent Basin of Seep C FTC	24-hour composite	--	24-hour composite	--	336-hour composite	--
Seep D	SEEP-D-1	Mouth of Seep D	24-hour composite	--[3]	--	Flume	--	Flume
	SEEP-D-IMP	Impoundment Pond Before Seep D FTC	--	--	24-hour composite	--	24-hour composite	--
Lock and Dam Seep	LOCK-DAM SEEP	Mouth of the Lock and Dam Seep	--[4]	--[4]	Grab	Marsh-McBirney Flow[5]	Grab	Marsh-McBirney Flow
Old Outfall 002	OLDOF-1	Mouth of Old Outfall 002	24-hour composite	Marsh-McBirney Flow	24-hour composite	Marsh-McBirney Flow	24-hour composite	Marsh-McBirney Flow
Georgia Branch Creek	GBC-1	Mouth of Georgia Branch Creek	Grab	Marsh-McBirney Flow	Grab	Marsh-McBirney Flow	Grab	Marsh-McBirney Flow
Tar Heel Ferry Road Bridge[6]	CFR-TARHEEL	Cape Fear River at Tar Heel Ferry Road Bridge	Grab / Composite	USGS Data	Grab / Composite	USGS Data	Grab / Composite	USGS Data
Bladen Bluffs[6]	CFR-BLADEN	Cape Fear River at Bladen Bluffs	Grab	USGS Data	Grab	USGS Data	Grab	USGS Data
Kings Bluffs[7]	CFR-KINGS	Cape Fear River at Kings Bluff Raw Water	Grab	USGS Data	Grab	USGS Data	Grab	USGS Data

Notes:
1 - Samples analyzed for PFAS by EPA Method 537 Mod and Table 3+ Lab SOP.
2 - Results of estimated flow at these locations are provided in Appendix A Table A6 and supplemental flow measurement data are included in Appendix B.
3 - Flow at this location could not be measured due to the offline operations of the flume(s). Surrogate flow data from the seep flumes were used in the mass loading model calculations.
4 - Flow measurement and sample collection at Lock and Dam Seep was not obtained during the April 2021 event. Flow and analytical results for the Lock and Dam Seep from March 2021 were used in the mass loading model calculations (Geosyntec, 2021b).
5 - Calculated flow value using the Marsh-McBirney method was considered erroneous when compared to the historical flows measured at Lock and Dam Seep. Flow value at Lock and Dam Seep for the April 2021 mass loading model was used.
6 - USGS data measurements are recorded from the USGS flow gauging station at the W.O. Huske Dam, ID 02105500 (USGS, 2021).
7 - USGS data measurements are recorded from the USGS flow gauging station at the Lock and Dam #1, ID 02105769 (USGS, 2021).
-- - not sampled or not measured
DMRs - Discharge Monitoring Reports
EPA - Environmental Protection Agency
FTC - flow-through cell
PFAS - per- and polyfluoroalkyl substances
USGS - United States Geological Survey

TABLE 3
GROUNDWATER MONITORING WELL SAMPLE COLLECTION AND WATER LEVEL MEASUREMENT SUMMARY
Chemours Fayetteville Works, North Carolina

Area	Water Bearing Unit[1]	Well ID	Adjacent Surface Water Feature	April 2021		May 2021		June 2021	
				Sample Collection Date	Synoptic Water Level Date	Sample Collection Date	Synoptic Water Level Date	Sample Collection Date	Synoptic Water Level Date
Onsite	Black Creek	PIW-3D	Cape Fear River	4/29/2021	4/8/2021	5/17/2021	5/3/2021	6/23/2021	6/7/2021
Onsite	Floodplain	PIW-7S	Cape Fear River	4/22/2021	4/8/2021	5/19/2021	5/3/2021	6/24/2021	6/7/2021
Onsite	Black Creek	PIW-7D	Cape Fear River	4/22/2021	4/8/2021	5/19/2021	5/3/2021	6/24/2021	6/7/2021
Onsite	Floodplain	LTW-01	Cape Fear River	4/30/2021	4/8/2021	5/17/2021	5/3/2021	6/23/2021	6/7/2021
Onsite	Black Creek	LTW-02	Cape Fear River	4/29/2021	4/8/2021	5/17/2021	5/3/2021	6/23/2021	6/7/2021
Onsite	Floodplain	LTW-03	Cape Fear River	4/22/2021	4/8/2021	5/18/2021	5/3/2021	6/24/2021	6/7/2021
Onsite	Floodplain	LTW-04	Cape Fear River	4/22/2021	4/8/2021	5/19/2021	5/3/2021	6/24/2021	6/7/2021
Onsite	Black Creek	LTW-05	Cape Fear River	4/27/2021	4/8/2021	5/18/2021	5/3/2021	6/22/2021	6/7/2021
Onsite	Black Creek	PZ-22	Cape Fear River	4/22/2021	4/8/2021	5/19/2021	5/3/2021	6/24/2021	6/7/2021
Onsite	Surficial	PW-06	Georgia Branch Creek	4/14/2021	4/8/2021	5/10/2021	5/3/2021	6/3/2021	6/7/2021
Onsite	Surficial	PW-07	Georgia Branch Creek	4/14/2021	4/8/2021	5/7/2021	5/3/2021	6/21/2021	6/7/2021
Onsite	Surficial	PW-04	Old Outfall	4/14/2021	4/8/2021	5/10/2021	5/3/2021	6/21/2021	6/7/2021
Onsite	Black Creek	PW-11[2]	Old Outfall	--	4/8/2021	--	5/3/2021	--	6/7/2021
Onsite	Black Creek	PW-09	Willis Creek	4/13/2021	4/8/2021	5/13/2021	5/3/2021	6/23/2021	6/7/2021
Onsite	Surficial	SMW-11	Willis Creek	4/13/2021	4/8/2021	5/12/2021	5/3/2021	6/4/2021	6/7/2021
Onsite	Surficial	SMW-10	Willis Creek	4/27/2021	4/8/2021	5/21/2021	5/3/2021	6/4/2021	6/7/2021
Onsite	Black Creek	SMW-12	Willis Creek	4/15/2021	4/8/2021	5/21/2021	5/3/2021	6/23/2021	6/7/2021
Onsite	Floodplain	PIW-1S	Cape Fear River / Willis Creek	4/16/2021	4/8/2021	5/20/2021	5/3/2021	6/22/2021	6/7/2021
Onsite	Surficial	PIW-1D	Cape Fear River / Willis Creek	4/16/2021	4/8/2021	5/17/2021	5/3/2021	6/3/2021	6/7/2021
Offsite	Black Creek	Bladen-1D[2]	Georgia Branch Creek	--	4/8/2021	--	5/3/2021	--	6/7/2021

Notes:
1 - Water Bearing Unit - refers to primary aquifer unit well screen is estimated to be screened within.
2 - Bladen-1D (damaged) and PW-11 (being pumped as part of the Pre-design Investigation activities) could not be sampled in Q2 2021.
-- - not applicable

TABLE 4
SUMMARY OF CALCULATED TOTAL MASS LOAD IN THE CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Reporting Period[1]	Reporting Period Details				Total Attachment C[2]		
	Start Date	End Date	Days	River volume (m^3)	Load in Cape Fear River (kg)[4]	Remedy Reduction Loads (kg)[5]	Total Load to Cape Fear River (kg)[6]
Q1-2020	03/28/2020 1:00	05/09/2020 23:49	43	514,570,000	45.1	0	45.1
Q2-2020	05/09/2020 23:49	06/29/2020 16:06	51	1,308,600,000	79.1	0	79.1
Q3-2020	06/29/2020 16:06	10/01/2020 0:01	93	1,036,200,000	77.3	0	77.3
Q4-2020	10/01/2020 0:01	12/30/2020 10:56	90	2,118,700,000	75.8	25.5	101
Q1-2021	12/30/2020 10:56	03/31/2021 23:01	92	3,157,900,000	93.8	28.3	122
Q2-2021	03/31/2021 23:01	07/01/2021 23:01	92	674,620,000	73.0	43.3	116

Notes:

1 - Calculated total mass loads by compound and time interval are provided in Tables 5A though 5E for the current quarterly reporting period and in Appendix B for previous quarterly reporting periods.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - Calculated Cape Fear River loads represents loads measured in the Cape Fear River at the CFR-TARHEEL sampling location downstream of the Site.

5 - Calculated remedy reduction loads represents loads from Old Outfall 002 and Seeps A to C that were prevented from reaching the Cape Fear River.

6 - Total load to Cape Fear River represents the sum of the measured in-river load and the remedy reduction load. This value represents the baseline load that would reach the Cape Fear River in the absence of any remedies.

kg - kilograms

m^3 - cubic meters

TABLE 4

SUMMARY OF CALCULATED TOTAL MASS LOAD IN THE CAPE FEAR RIVER

Chemours Fayetteville Works, North Carolina

Reporting Period[1]	Reporting Period Details				Total Table 3+ (17 Compounds)[3]		
	Start Date	End Date	Days	River volume (m^3)	Load in Cape Fear River (kg)[4]	Remedy Reduction Loads (kg)[5]	Total Load to Cape Fear River (kg)[6]
Q1-2020	03/28/2020 1:00	05/09/2020 23:49	43	514,570,000	45.8	0	45.8
Q2-2020	05/09/2020 23:49	06/29/2020 16:06	51	1,308,600,000	79.7	0	79.7
Q3-2020	06/29/2020 16:06	10/01/2020 0:01	93	1,036,200,000	78.5	0	78.5
Q4-2020	10/01/2020 0:01	12/30/2020 10:56	90	2,118,700,000	76.7	25.9	103
Q1-2021	12/30/2020 10:56	03/31/2021 23:01	92	3,157,900,000	94.4	28.7	123
Q2-2021	03/31/2021 23:01	07/01/2021 23:01	92	674,620,000	74.8	43.9	119

Notes:

1 - Calculated total mass loads by compound and time interval are provided in Tables 5A though 5E for the current quarterly reporting period and in Appendix B for previous quarterly reporting periods.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - Calculated Cape Fear River loads represents loads measured in the Cape Fear River at the CFR-TARHEEL sampling location downstream of the Site.

5 - Calculated remedy reduction loads represents loads from Old Outfall 002 and Seeps A to C that were prevented from reaching the Cape Fear River.

6 - Total load to Cape Fear River represents the sum of the measured in-river load and the remedy reduction load. This value represents the baseline load that would reach the Cape Fear River in the absence of any remedies.

kg - kilograms

m^3 - cubic meters

TABLE 4
SUMMARY OF CALCULATED TOTAL MASS LOAD IN THE CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Reporting Period[1]	Reporting Period Details				Total Table 3+ (20 Compounds)		
	Start Date	End Date	Days	River volume (m^3)	Load in Cape Fear River (kg)[4]	Remedy Reduction Loads (kg)[5]	Total Load to Cape Fear River (kg)[6]
Q1-2020	03/28/2020 1:00	05/09/2020 23:49	43	514,570,000	58.7	0	58.7
Q2-2020	05/09/2020 23:49	06/29/2020 16:06	51	1,308,600,000	102	0	102
Q3-2020	06/29/2020 16:06	10/01/2020 0:01	93	1,036,200,000	99.5	0	99.5
Q4-2020	10/01/2020 0:01	12/30/2020 10:56	90	2,118,700,000	98.5	26.6	125
Q1-2021	12/30/2020 10:56	03/31/2021 23:01	92	3,157,900,000	118	29.5	148
Q2-2021	03/31/2021 23:01	07/01/2021 23:01	92	674,620,000	103	46.8	150

Notes:

1 - Calculated total mass loads by compound and time interval are provided in Tables 5A though 5E for the current quarterly reporting period and in Appendix B for previous quarterly reporting periods.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - Calculated Cape Fear River loads represents loads measured in the Cape Fear River at the CFR-TARHEEL sampling location downstream of the Site.

5 - Calculated remedy reduction loads represents loads from Old Outfall 002 and Seeps A to C that were prevented from reaching the Cape Fear River.

6 - Total load to Cape Fear River represents the sum of the measured in-river load and the remedy reduction load. This value represents the baseline load that would reach the Cape Fear River in the absence of any remedies.

kg - kilograms
m^3 - cubic meters

TABLE 5A
CAPE FEAR RIVER PFAS MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details				Calculated Mass Load[2] (kg)																						
Interval ID	Start Time[1]	End Time[1]	Total River Flow (m^3)	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid (Formerly PFESA-BP1)	Hydro-PS Acid (Formerly PFESA-BP2)	R-PSDA (Formerly Byproduct 4)	Hydrolyzed PSDA (Foremerly Byproduct 5)	R-PSDCA (Formerly Byproduct 6)	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	PFHpA	Total Attachment C[3]	Total Table 3+ (17 Compounds)[4]	Total Table 3+ (20 Compounds)
2021_1_Q2	3/31/21 23:01	4/5/21 0:01	129,765,602	2.28	6.14	2.25	0.42	0.16	0	2.01	0	0	0	1.0	3.12	0	0	0	0	0.42	0	0	0	0.38	13	13	18
2021_2_Q2	4/5/21 0:01	4/5/21 23:01	11,113,824	0.34	0.98	0.34	0.07	0.03	0	0.34	0	0	0	0.18	0.50	0	0	0	0	0	0	0	0	0.04	2.1	2.1	2.9
2021_3_Q2	4/5/21 23:01	4/7/21 0:01	10,735,879	0.24	0.62	0.25	0.05	0.01	0	0.31	0	0	0	0.13	0.31	0	0	0	0	0.03	0	0	0	0.03	1.5	1.5	2.0
2021_4_Q2	4/7/21 0:01	4/7/21 23:01	10,410,944	0.15	0.29	0.16	0.03	0	0	0.27	0	0	0	0.08	0.14	0	0	0	0	0	0	0	0	0.03	0.9	0.9	1.1
2021_5_Q2	4/7/21 23:01	4/12/21 0:01	45,886,544	0.55	1.35	0.62	0.08	0	0	1.03	0	0	0	0.34	0.71	0	0	0	0	0.11	0	0	0	0.14	3.6	3.6	4.8
2021_6_Q2	4/12/21 0:01	4/12/21 23:01	13,840,482	0.14	0.43	0.17	0	0	0	0.26	0	0	0	0.10	0.25	0	0	0	0	0.06	0	0	0	0.04	1.0	1.0	1.4
2021_7_Q2	4/12/21 23:01	4/15/21 0:01	29,381,843	0.29	0.91	0.34	0	0	0	0.50	0	0	0	0.19	0.39	0	0	0	0	0.07	0	0	0	0.10	2.0	2.0	2.7
2021_8_Q2	4/15/21 0:01	4/15/21 23:01	11,500,434	0.12	0.36	0.13	0	0	0	0.17	0	0	0	0.06	0.10	0	0	0	0	0	0	0	0	0.05	0.8	0.8	0.9
2021_9_Q2	4/15/21 23:01	4/18/21 0:01	16,662,709	0.28	0.68	0.22	0	0	0	0.27	0	0	0	0.15	0.22	0	0.02	0	0	0.03	0	0	0	0.06	1.5	1.5	1.9
2021_10_Q2	4/18/21 0:01	4/19/21 0:01	8,227,630	0.20	0.42	0.13	0	0	0	0.14	0	0	0	0.10	0.15	0	0.02	0	0	0.03	0	0	0	0.03	0.9	0.9	1.2
2021_11_Q2	4/19/21 0:01	4/19/21 23:01	7,742,902	0.24	0.71	0.37	0.15	0.04	0	0.19	0	0	0	0.15	0.17	0	0.03	0	0	0.05	0	0	0	0.04	1.7	1.7	2.1
2021_12_Q2	4/19/21 23:01	4/20/21 15:00	4,805,992	0.10	0.32	0.15	0.05	0.01	0	0.10	0	0	0	0.07	0.09	0	0.02	0	0	0.01	0	0	0	0.02	0.7	0.8	0.9
2021_13_Q2	4/20/21 15:00	4/21/21 10:48	4,923,224	0.10	0.24	0.13	0.03	0.01	0	0.14	0	0	0	0.08	0.11	0	0	0	0	0.01	0	0	0	0.02	0.6	0.7	0.9
2021_14_Q2	4/21/21 10:48	4/21/21 14:20	767,103	0.02	0.04	0.03	0.01	0.00	0	0.03	0	0	0	0.01	0.02	0	0	0	0	0	0	0	0	0	0.1	0.1	0.2
2021_15_Q2	4/21/21 14:20	4/22/21 13:20	4,914,813	0.11	0.31	0.13	0.04	0.01	0	0.09	0	0	0	0.16	1.62	0	0.02	0	0	0.11	0	0	0	0.02	0.7	0.7	2.6
2021_16_Q2	4/22/21 13:20	4/27/21 19:10	24,434,154	0.56	1.55	0.62	0.16	0.02	0	0.60	0	0	0	0.57	4.41	0	0.08	0	0	0.28	0	0	0	0.09	3.5	3.6	8.9
2021_17_Q2	4/27/21 19:10	4/28/21 0:01	951,361	0.02	0.06	0.02	0.01	0	0	0.03	0	0	0	0.01	0.03	0	0	0	0	0	0	0	0	0	0.1	0.1	0.2
2021_18_Q2	4/28/21 0:01	4/28/21 23:01	5,011,912	0.09	0.28	0.10	0.02	0	0	0.12	0	0	0	0.09	0.10	0	0.02	0	0	0	0	0	0	0.02	0.6	0.6	0.8
2021_19_Q2	4/28/21 23:01	5/3/21 0:01	21,894,557	0.35	1.15	0.37	0.09	0	0	0.50	0	0	0	0.38	0.41	0	0.16	0	0	0.05	0	0	0	0.09	2.5	2.6	3.5
2021_20_Q2	5/3/21 0:01	5/3/21 23:01	5,122,772	0.07	0.25	0.07	0.02	0	0	0.11	0	0	0	0.09	0.09	0	0.06	0	0	0.02	0	0	0	0.02	0.5	0.6	0.8
2021_21_Q2	5/3/21 23:01	5/6/21 23:01	12,568,517	0.18	0.67	0.19	0.04	0	0	0.36	0	0	0	0.22	0.24	0	0.11	0	0	0.05	0	0	0	0.06	1.4	1.5	2.1
2021_22_Q2	5/6/21 23:01	5/10/21 0:01	21,343,568	0.28	0.95	0.29	0.06	0	0	0.65	0	0	0	0.37	0.36	0	0.15	0	0	0.07	0	0	0	0.12	2.2	2.4	3.2
2021_23_Q2	5/10/21 0:01	5/10/21 23:01	7,888,422	0.09	0.25	0.08	0.02	0	0	0.21	0	0	0	0.14	0.11	0	0.06	0	0	0.02	0	0	0	0.05	0.6	0.7	1.0
2021_24_Q2	5/10/21 23:01	5/12/21 0:01	7,988,324	0.09	0.29	0.08	0.02	0	0	0.20	0	0	0	0.13	0.12	0	0.05	0	0	0.03	0	0	0	0.05	0.7	0.7	1.0
2021_25_Q2	5/12/21 0:01	5/12/21 23:01	5,563,666	0.07	0.22	0.06	0.02	0	0	0.13	0	0	0	0.08	0.09	0	0.03	0	0	0.02	0	0	0	0.03	0.5	0.5	0.7
2021_26_Q2	5/12/21 23:01	5/17/21 0:01	22,401,202	0.28	0.86	0.29	0.08	0	0	0.68	0	0	0	0.29	0.40	0	0.11	0	0	0.07	0	0	0	0.14	2.2	2.3	3.1
2021_27_Q2	5/17/21 0:01	5/17/21 23:01	4,025,636	0.05	0.15	0.06	0.02	0	0	0.15	0	0	0	0.04	0.08	0	0.02	0	0	0.01	0	0	0	0.03	0.4	0.4	0.6
2021_28_Q2	5/17/21 23:01	5/20/21 0:01	7,962,584	0.14	0.33	0.13	0.03	0	0	0.29	0	0	0	0.10	0.16	0	0.04	0	0	0.02	0	0	0	0.05	0.9	1.0	1.2
2021_29_Q2	5/20/21 0:01	5/20/21 23:01	3,378,313	0.07	0.15	0.06	0.01	0	0	0.12	0	0	0	0.05	0.07	0	0.02	0	0	0.01	0	0	0	0.02	0.4	0.4	0.6
2021_30_Q2	5/20/21 23:01	5/24/21 0:01	9,420,080	0.20	0.52	0.20	0.04	0	0	0.33	0	0	0	0.12	0.20	0	0.04	0	0	0.03	0	0	0	0.05	1.3	1.3	1.7
2021_31_Q2	5/24/21 0:01	5/24/21 23:01	2,681,039	0.06	0.18	0.07	0.02	0	0	0.09	0	0	0	0.03	0.06	0	0.01	0	0	0.01	0	0	0	0.02	0.4	0.4	0.5
2021_32_Q2	5/24/21 23:01	5/26/21 11:25	4,522,087	0.09	0.20	0.09	0.02	0	0	0.15	0	0	0	0.03	0.05	0	0.02	0	0	0.01	0	0	0	0.02	0.5	0.6	0.7
2021_33_Q2	5/26/21 11:25	5/26/21 14:18	345,834	0.01	0.01	0.01	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
2021_34_Q2	5/26/21 14:18	5/27/21 0:01	1,223,288	0.03	0.07	0.03	0.01	0	0	0.04	0	0	0	0.02	0.03	0	0.01	0	0	0.01	0	0	0	0.01	0.2	0.2	0.2
2021_35_Q2	5/27/21 0:01	5/27/21 13:18	1,679,472	0.03	0.10	0.04	0.01	0	0	0.07	0	0	0	0.02	0.04	0	0.01	0	0	0.01	0	0	0	0.01	0.3	0.3	0.3
2021_36_Q2	5/27/21 13:18	5/27/21 23:01	1,215,897	0.02	0.08	0.03	0.01	0	0	0.06	0	0	0	0.01	0.02	0	0.01	0	0	0	0	0	0	0.01	0.2	0.2	0.2
2021_37_Q2	5/27/21 23:01	6/2/21 0:01	14,589,491	0.28	0.82	0.30	0.06	0	0	0.63	0	0	0	0.16	0.28	0	0.07	0	0	0.06	0	0	0	0.09	2.1	2.2	2.7
2021_38_Q2	6/2/21 0:01	6/3/21 0:01	3,174,432	0.06	0.16	0.06	0.01	0	0	0.12	0	0	0	0.03	0.06	0	0.01	0	0	0.01	0	0	0	0.02	0.4	0.4	0.5
2021_39_Q2	6/3/21 0:01	6/3/21 23:01	3,883,939	0.36	0.30	0.15	0.04	0.02	0.01	0.20	0	0.02	0.01	0.11	0.19	0	0.02	0	0	0.04	0	0	0	0.02	1.1	1.1	1.5
2021_40_Q2	6/3/21 23:01	6/7/21 0:01	23,824,549	1.23	1.22	0.62	0.18	0.05	0.04	0.93	0	0.07	0.04	0.52	0.76	0	0.15	0	0	0.12	0	0	0	0.15	4.4	4.5	5.9
2021_41_Q2	6/7/21 0:01	6/7/21 23:01	7,766,348	0.09	0.20	0.11	0.03	0	0	0.20	0	0	0	0.12	0.11	0	0.05	0	0	0.00	0	0	0	0.05	0.6	0.7	0.9
2021_42_Q2	6/7/21 23:01	6/12/21 0:01	25,267,009	0.59	1.07	0.56	0.16	0.04	0	0.77	0	0.03	0.03	0.47	0.49	0	0.12	0	0	0.08	0	0	0	0.17	3.2	3.4	4.4
2021_43_Q2	6/12/21 0:01	6/12/21 23:01	8,880,305	0.32	0.52	0.27	0.08	0.03	0	0.31	0	0.02	0.02	0.20	0.22	0	0.03	0	0	0.06	0	0	0	0.06	1.6	1.6	2.1
2021_44_Q2	6/12/21 23:01	6/15/21 0:01	29,707,544	0.64	1.13	0.57	0.16	0.04	0	0.88	0	0.03	0.03	0.33	0.46	0	0.05	0	0	0.10	0	0	0	0.18	3.5	3.5	4.4
2021_45_Q2	6/15/21 0:01	6/15/21 15:35	6,612,380	0.05	0.11	0.06	0.01	0	0	0.16	0	0	0	0	0.04	0	0	0	0	0	0	0	0	0.03	0.4	0.4	0.4
2021_46_Q2	6/15/21 15:35	6/15/21 23:01	3,621,442	0.02	0.06	0.03	0.01	0	0	0.08	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0.01	0.2	0.2	0.2
2021_47_Q2	6/15/21 23:01	6/16/21 14:35	7,354,253	0.05	0.11	0.07	0.02	0	0	0.15	0	0	0	0	0.04	0	0	0	0	0	0	0	0	0.03	0.4	0.4	0.4

TABLE 5A
CAPE FEAR RIVER PFAS MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details				Calculated Mass Load[2] (kg)																					
Interval ID	Start Time[1]	End Time[1]	Total River Flow (m^3)	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid (Formerly PFESA-BP1)	Hydro-PS Acid (Formerly PFESA-BP2)	R-PSDA (Formerly Byproduct 4)	Hydrolyzed PSDA (Foremerly Byproduct 5)	R-PSDCA (Formerly Byproduct 6)	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	PFHpA	Total Attachment C[3]	Total Table 3+ (17 Compounds)[4]	Total Table 3+ (20 Compounds)
2021_48_Q2	6/16/21 14:35	6/17/21 0:01	3,899,485	0.03	0.05	0.03	0.01	0	0	0.09	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0.02	0.2	0.2	0.2
2021_49_Q2	6/17/21 0:01	6/17/21 23:01	9,285,009	0.08	0.11	0.07	0.02	0	0	0.24	0	0	0	0	0.05	0	0	0	0	0	0	0	0	0.04	0.5	0.5	0.6
2021_50_Q2	6/17/21 23:01	6/22/21 0:01	20,440,884	0.21	0.30	0.20	0.05	0	0	0.60	0	0	0	0	0.05	0	0	0	0	0	0	0	0	0.10	1.4	1.4	1.4
2021_51_Q2	6/22/21 0:01	6/22/21 23:01	6,539,747	0.08	0.11	0.08	0.02	0	0	0.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.5	0.5	0.5
2021_52_Q2	6/22/21 23:01	6/24/21 0:01	7,308,125	0.08	0.16	0.08	0.02	0	0	0.23	0	0	0	0.07	0.04	0	0.03	0	0	0.01	0	0	0	0.04	0.6	0.6	0.7
2021_53_Q2	6/24/21 0:01	6/24/21 23:01	6,478,583	0.06	0.17	0.06	0.02	0	0	0.19	0	0	0	0.12	0.08	0	0.05	0	0	0.03	0	0	0	0.04	0.5	0.6	0.8
2021_54_Q2	7/1/21 0:01	7/1/21 23:01	3,680,312	0.04	0.09	0.05	0.01	0	0	0.10	0	0	0	0	0.02	0	0.02	0	0	0	0	0	0	0.02	0.3	0.3	0.3
Q2 2021 Totals	**3/31/21 23:01**	**7/1/21 23:01**	**674,616,447**	**12**	**29**	**12**	**2.5**	**0.47**	**0.05**	**17**	**0**	**0.18**	**0.14**	**7.8**	**18**	**0**	**1.9**	**0**	**0**	**2.3**	**0**	**0**	**0**	**3.0**	**73.0**	**74.8**	**103**

Notes:

1 - Start and end times are adjusted based on sampling times ± one hour to account for the total flow of the Cape Fear River.

2 - The calculated mass load is a product of weighted concentration and total river flow. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for more details.

3 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

4 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 5B
OLD OUTFALL 002 CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details					Calculated Captured Mass Load (kg)[1]																					
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m^3)	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)
OF003_2021_1_Q2	4/1/21 0:00	4/30/21 0:00	696	110,000	0.61	3.4	0.98	0.23	0.11	0.05	0.45	0.15	0.08	0.03	0.06	0.14	0	0.03	0.01	0.02	0.02	0	0	0	6.1	6.1	6.3
OF003_2021_2_Q2	5/1/21 0:00	5/31/21 0:00	720	110,000	0.87	4.9	1.3	0.37	0.16	0.08	0.55	0.20	0.10	0.03	0.05	0.12	0	0.04	0.01	0.02	0.02	0	0	0	8.6	8.7	8.8
OF003_2021_3_Q2	6/1/21 0:00	6/30/21 0:00	696	110,000	0.70	5.6	1.4	0.37	0.14	0.08	0.62	0.21	0.03	0.04	0.07	0.34	0	0.05	0	0.02	0.02	0	0	0	9.2	9.4	9.8
Q2 2021 Totals	**4/1/21 0:00**	**6/30/21 0:00**	**2,112**	**330,000**	**2.2**	**14**	**3.8**	**1.0**	**0.4**	**0.22**	**1.6**	**0.56**	**0.20**	**0.10**	**0.18**	**0.6**	**0**	**0.13**	**0.02**	**0.05**	**0.07**	**0**	**0**	**0**	**24.0**	**24.2**	**25.0**

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow at the influent for the sampling interval. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for more details.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

OF003 - Outfall 003, i.e., Old Outfall 002 treatment system

TABLE 5C
SEEP A FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details					Calculated Captured Mass Load (kg)[1]																					
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m^3)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)
SeepA_2021_1_Q2	4/28/21 19:05	5/17/21 5:00	442	13,949	0.29	1.0	0.48	0.17	0.11	0.07	0.27	0.13	0.03	0.02	0.03	0.27	0	0.01	0.01	0.02	0.02	0	0	0	2.57	2.69	2.94
SeepA_2021_2_Q2	5/17/21 5:01	5/31/21 5:00	336	12,813	0.39	1.1	0.50	0.18	0.09	0.07	0.28	0.11	0.04	0.03	0.04	0.47	0	0.02	0.01	0.02	0.02	0	0	0	2.78	2.78	3.40
SeepA_2021_3_Q2	5/31/21 5:01	6/14/21 5:00	336	7,147	0.16	0.49	0.26	0.10	0.05	0.03	0.14	0.07	0.03	0.01	0.02	0.13	0	0.01	0.01	0.01	0.01	0	0	0	1.36	1.36	1.50
SeepA_2021_4_Q2	6/14/21 5:01	6/30/21 23:59	403	20,791	0.54	1.3	0.73	0.27	0.15	0.12	0.48	0.14	0.11	0.03	0.05	0.54	0	0.02	0.02	0.03	0.02	0	0	0	3.95	3.95	4.57
Q2 2021 Totals	**4/28/21 19:05**	**6/30/21 23:59**	**1,517**	**54,700**	**1.4**	**3.9**	**2.0**	**0.72**	**0.39**	**0.29**	**1.2**	**0.46**	**0.21**	**0.09**	**0.14**	**1.4**	**0**	**0.06**	**0.04**	**0.09**	**0.07**	**0**	**0**	**0**	**10.7**	**10.8**	**12.4**

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for more details.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 5D
SEEP B FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details					Calculated Captured Mass Load (kg)[1]																					
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m^3)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)
SeepB 2021 1 Q2	6/8/21 0:00	6/12/21 13:00	109	788	0.02	0.02	0.01	0.003	0.001	0.0002	0.02	0.01	0.002	0.001	0.002	0.008	0	0.001	0.002	0.001	0.001	0	0	0	0.09	0.09	0.10
SeepB 2021 2 Q2	6/12/21 13:01	6/15/21 13:00	72	1,884	0.06	0.06	0.03	0.007	0.002	0.00096	0.06	0.02	0.005	0.002	0.006	0.04	0	0.003	0.007	0.003	0.005	0	0	0	0.24	0.26	0.30
SeepB 2021 3 Q2	6/15/21 13:01	6/30/21 23:59	371	12,200	0.43	0.63	0.24	0.06	0.02	0.01	0.49	0.21	0.03	0.01	0.05	0.34	0	0.03	0.04	0.03	0.04	0	0	0	2.07	2.20	2.68
Q2 2021 Totals	**6/8/21 0:00**	**6/30/21 23:59**	**552**	**14,872**	**0.50**	**0.72**	**0.28**	**0.07**	**0.02**	**0.01**	**0.56**	**0.24**	**0.03**	**0.01**	**0.06**	**0.39**	**0**	**0.03**	**0.05**	**0.03**	**0.05**	**0**	**0**	**0**	**2.41**	**2.55**	**3.09**

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for more details.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 5E
SEEP C FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q2 2021
Chemours Fayetteville Works, North Carolina

Interval Details					Calculated Captured Mass Load (kg)[1]																					
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m^3)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)
SeepC_2021_1_Q2	4/1/21 0:00	4/15/21 8:20	344	9,513	0.18	0.77	0.23	0.08	0.02	0	0.08	0.03	0	0.004	0.007	0.006	0	0.007	0	0.01	0.007	0	0	0	1.43	1.43	1.43
SeepC_2021_2_Q2	4/15/21 8:21	4/30/21 6:00	358	8,536	0.18	0.65	0.22	0.07	0.02	0	0.08	0.03	0	0.004	0.008	0.009	0	0.007	0	0.01	0.008	0	0	0	1.28	1.28	1.28
SeepC_2021_3_Q2	4/30/21 6:01	5/10/21 14:15	248	5,937	0.11	0.48	0.15	0.05	0.02	0	0.06	0.02	0	0.003	0.004	0.006	0	0.005	0	0.007	0.004	0	0	0	0.89	0.89	0.89
SeepC_2021_4_Q2	5/10/21 14:16	5/16/21 11:00	141	2,859	0.05	0.19	0.06	0.02	0.01	0.00025	0.03	0.01	0	0.001	0.002	0.002	0	0.002	0	0.003	0.002	0	0	0	0.37	0.37	0.37
SeepC_2021_5_Q2	5/16/21 11:01	5/31/21 20:00	369	10,303	0.25	0.69	0.24	0.08	0.02	0	0.10	0.03	0	0.005	0.009	0.011	0	0.007	0	0.01	0.009	0	0	0	1.44	1.44	1.44
SeepC_2021_6_Q2	5/31/21 20:01	6/14/21 8:00	324	6,488	0.08	0.22	0.08	0.03	0.01	0	0.03	0.01	0	0.002	0.004	0.003	0	0.002	0	0.004	0.003	0	0	0	0.46	0.47	0.48
SeepC_2021_7_Q2	6/14/21 8:01	6/30/21 23:59	400	4,887	0.07	0.20	0.08	0.03	0.01	0.00059	0.04	0.01	0	0.002	0.003	0.003	0	0.003	0	0.005	0.003	0	0	0	0.45	0.46	0.47
Q2 2021 Totals	**4/1/21 0:00**	**6/30/21 23:59**	**2,184**	**48,523**	**0.92**	**3.2**	**1.1**	**0.34**	**0.12**	**0.001**	**0.42**	**0.15**	**0**	**0.02**	**0.04**	**0.04**	**0**	**0.03**	**0**	**0.05**	**0.04**	**0**	**0**	**0**	**6.32**	**6.34**	**6.36**

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for more details.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 6
SUMMARY OF TOTAL PFAS MASS DISCHARGE AT TARHEEL FERRY ROAD BRIDGE
Chemours Fayetteville Works, North Carolina

Quarter	Field Sample ID	Collection Date	Hours Composited[1]	Concentrations (ng/L)			Total Volume (ft^3)[4]	Instantaneous Flow Rate (ft^3/s)[5]	Mass Discharge (mg/s)		
				Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)			Total Attachment C[2]	Total Table 3+ (17 compounds)[3]	Total Table 3+ (20 compounds)
2021 Q2	CFR-TARHEEL-24-040521	4/5/21 23:01	23	190	190	260	392,480,000	--	26	26	35
2021 Q2	CFR-TARHEEL-24-040721	4/7/21 23:01	23	86	86	110	367,660,000	--	11	11	13
2021 Q2	CFR-TARHEEL-24-041221	4/12/21 23:01	23	72	72	100	488,770,000	--	12	12	17
2021 Q2	CFR-TARHEEL-24-041521	4/15/21 23:01	23	67	67	81	406,130,000	--	9.3	9.3	11
2021 Q2	CFR-TARHEEL-24-041821	4/18/21 23:01	23	110	110	140	278,500,000	--	10	10	14
2021 Q2	CFR-TARHEEL-24-041921	4/19/21 23:01	23	220	220	270	273,440,000	--	21	21	25
2021 Q2	CAP0421-CFR-TARHEEL-042021	4/20/21 15:00	0	110	110	140	--	2,900	9	9	11
2021 Q2	CAP0421-CFR-TARHEEL-5-042121	4/21/21 14:48	4	160	160	210	31,230,000	--	9.8	9.8	13
2021 Q2	CAP0421-CFR-TARHEEL-24-042221	4/22/21 13:20	23	140	140	530	173,560,000	--	8.3	8.6	31
2021 Q2	CFR-TARHEEL-042721	4/27/21 19:10	0	150	150	200	--	1,960	8.3	8.3	11
2021 Q2	CFR-TARHEEL-24-042821	4/28/21 23:01	23	120	130	160	176,990,000	--	7.3	7.7	9.8
2021 Q2	CFR-TARHEEL-24-050321	5/3/21 23:01	23	100	110	150	180,910,000	--	6.2	7	9.5
2021 Q2	CFR-TARHEEL-24-050621	5/6/21 23:01	0	130	130	170	--	1,800	6.6	6.6	8.7
2021 Q2	CFR-TARHEEL-24-051021	5/10/21 23:01	23	81	89	120	278,580,000	--	7.7	8.5	12
2021 Q2	CFR-TARHEEL-24-051221	5/12/21 23:01	23	89	94	130	196,480,000	--	6	6.3	8.7
2021 Q2	CFR-TARHEEL-24-051721	5/17/21 23:01	23	110	110	140	142,160,000	--	5.3	5.4	7
2021 Q2	CFR-TARHEEL-24-052021	5/20/21 23:01	23	120	130	170	119,300,000	--	4.9	5.3	6.8
2021 Q2	CFR-TARHEEL-24-052421	5/24/21 23:01	23	150	160	190	94,680,000	--	4.9	5	6.3
2021 Q2	CAP0521-CFR-TARHEEL-052621	5/26/21 11:25	0	91	95	95	--	1,240	3.2	3.3	3.3
2021 Q2	CAP0521-CFR-TARHEEL-24-052721	5/27/21 13:18	23	140	150	190	102,510,000	--	4.9	5.2	6.7
2021 Q2	CFR-TARHEEL-24-052721	5/27/21 23:01	23	160	160	200	102,250,000	--	5.6	5.7	7
2021 Q2	CFR-TARHEEL-24-060221	6/2/21 23:01	23	130	130	170	107,500,000	--	4.8	4.9	6.1
2021 Q2	CFR-TARHEEL-24-060321	6/3/21 23:01	23	290	290	380	137,160,000	--	14	14	18
2021 Q2	CFR-TARHEEL-24-060721	6/7/21 23:01	23	81	87	120	274,270,000	--	7.6	8.1	11
2021 Q2	CFR-TARHEEL-24-061221	6/12/21 23:01	23	180	180	230	313,600,000	--	19	19	25
2021 Q2	CFR-TARHEEL-24-061521	6/15/21 23:01	23	59	59	65	361,400,000	--	7.3	7.3	8
2021 Q2	CAP0621-CFR-TARHEEL-24-061621	6/16/21 14:35	23	55	55	60	387,600,000	--	7.3	7.3	7.9
2021 Q2	CFR-TARHEEL-24-061721	6/17/21 23:01	23	57	57	62	327,900,000	--	6.4	6.4	6.9
2021 Q2	CFR-TARHEEL-24-062221	6/22/21 23:01	23	77	77	77	230,950,000	--	6.1	6.1	6.1
2021 Q2	CFR-TARHEEL-24-062421	6/24/21 23:01	23	79	87	120	228,790,000	--	6.2	6.8	9.5
2021 Q2	CFR-TARHEEL-24-070121	7/1/21 23:01	23	82	87	93	129,970,000	--	3.6	3.9	4.1

Notes:

1 - Samples with a compositing duration of zero (0) hours are grab samples.
2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).
3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.
4 - Total flow volume is determined based on measurements taken over the sample collection period.
5 - For samples with a duration of zero (0) hours, i.e., grab samples, the instantaneous flow rate was used to calculated the mass discharge.

-- - not applicable
ng/L - nanograms per liter
ft^3 - cubic feet
ft^3/s - cubic feet per second
mg/s - milligrams per second

TABLE 7
PFAS MASS LOADING MODEL POTENTIAL PATHWAYS
Chemours Fayetteville Works, North Carolina

Transport Pathway Number	Potential PFAS Transport Pathway	Analytical Data Source for Mass Loading Model[1]	Flow Data Source for Mass Loading Model[1]
1	Upstream River and Groundwater	Measured from Cape Fear River Mile 76 samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured flow rates from USGS gauging station at W.O. Huske Dam during April, May, June 2021 volumetrically adjusted for flow pathways between River Mile 76 and W.O. Huske Dam[2].
2	Willis Creek	Measured from Willis Creek samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured flow rates through Marsh-McBirney method during April, May, June 2021 as reported in Appendix B.
3	Aerial Deposition on River	Estimated from air deposition modeling[3].	Estimated from air deposition modeling[3].
4	Outfall 002	Measured from Outfall 002 samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured daily Outfall 002 flow rates recorded in Facility discharge monitoring reports, summarized in Appendix B.
5	Onsite Groundwater	Measured from monitoring well samples collected in April, May, June 2021 as reported in Appendix A Table A5.	Estimated as the sum of the mass flux from the Black Creek Aquifer calculated from a transect along the Cape Fear River. Further details and supporting calculations provided in Appendix E.
6	Seeps	Measured from Seeps A, B, C, and D samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured flow rates through flumes during April, May, June 2021 as reported in Appendix B.
7	Old Outfall 002	Measured from Old Outfall 002 samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured flow rates through Marsh-McBirney method during April, May, June 2021 as reported in Appendix B.
8	Adjacent and Downstream Groundwater	Estimated using a scaling factor applied to upstream mass discharge. Refer to Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for details.	Estimated using a scaling factor applied to upstream mass discharge. Refer to Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020d) for details.
9	Georgia Branch Creek	Measured from Georgia Branch Creek samples collected in April, May, June 2021 as reported in Appendix A Table A2.	Measured flow rates through Marsh-McBirney method during April, May, June 2021 as reported in Appendix B.

Notes:

1 - Flow and concentration data are multiplied together to estimate the PFAS mass discharge in the Cape Fear River originating from each pathway.

2 - Cape Fear River flow rates measured at USGS gauging station #02105500 located at William O Huske Lock & Dam accessed from https://waterdata.usgs.gov on 2021-07-30 at 12:00 EDT.

3 - ERM, 2018. Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

TABLE 8A
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY BEFORE REMEDIES -APRIL 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	1,771	0.0	0.00	2.5	0.19	11	0.85
2	Willis Creek	7.5	2,300	0.75	2,300	0.75	2,700	0.88
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	14	190	0.12	190	0.12	0[6]	0.00
5	Onsite Groundwater (Lower Bound)[7]	--	--	2.8	--	2.8	--	2.8
	Onsite Groundwater (Upper Bound)[7]	--	--	3.7	--	3.8	--	3.8
6A	Seep A	0.25	230,000	2.5	240,000	2.6	260,000	2.8
6B	Seep B	0.15	230,000	1.5	240,000	1.5	270,000	1.7
6C	Seep C[8]	0.08	150,000	0.53	150,000	0.53	150,000	0.53
6D	Seep D	0.26	86,000	0.98	87,000	0.99	88,000	1.0
6E	Lock and Dam Seep[9]	0.02	140,000	0.14	140,000	0.14	150,000	0.15
7	Old Outfall 002[8]	1.0	56,000	2.5	56,000	2.5	58,000	2.6
8	Offsite Adjacent and Downstream Groundwater	--	--	0.00	--	0.07	--	0.32
9	Georgia Branch Creek	4.9	1,900	0.40	1,900	0.40	2,000	0.43
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**12.2**		**12.7**		**14.1**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**13.1**		**13.6**		**15.1**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Seep A, Lock and Dam Seep, and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass loading set to zero when using Total Table 3+ (20 compounds) concentrations; Total Table 3+ (20 compounds) concentration at the Intake River Water at Facility location was greater than the concentration from Outfall 002 when accounting for the three additional compounds (R-PSDA, Hydrolyzed PSDA, R-EVE) where laboratory analyses are unreliable.

7 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

8 - For April 2021, the concentrations from the influent samples collected at the Old Outfall 002 treatment system and Seep C flow-through cell were used to calculate the Before Remedy mass discharge for these pathways.

9 - Flow measurement and sample collection at Lock and Dam Seep was not obtained during the April 2021 event. Flow and analytical results for the Lock and Dam Seep from March 2021 were used in the mass loading model calculations (Geosyntec, 2021c).

TABLE 8B
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY AFTER REMEDIES - APRIL 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	1,771	0.0	0.00	2.5	0.19	11	0.85
2	Willis Creek	7.5	2,300	0.75	2,300	0.75	2,700	0.88
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	14	190	0.12	190	0.12	0[6]	0.00
5	Onsite Groundwater (Lower Bound)[7]	--	--	2.8	--	2.8	--	2.8
	Onsite Groundwater (Upper Bound)[7]	--	--	3.7	--	3.8	--	3.8
6A	Seep A	0.25	230,000	2.5	240,000	2.6	260,000	2.8
6B	Seep B	0.15	230,000	1.5	240,000	1.5	270,000	1.7
6C	Seep C[8]	0.08	37	0.00	37	0.00	37	0.00
6D	Seep D	0.26	86,000	0.98	87,000	0.99	88,000	1.0
6E	Lock and Dam Seep[9]	0.02	140,000	0.14	140,000	0.14	150,000	0.15
7	Old Outfall 002[8]	1.0	16,000	0.71	16,000	0.71	16,000	0.71
8	Offsite Adjacent and Downstream Groundwater	--	--	0.00	--	0.07	--	0.32
9	Georgia Branch Creek	4.9	1,900	0.40	1,900	0.40	2,000	0.43
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**9.9**		**10.4**		**11.7**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**10.8**		**11.3**		**12.7**
Measured Total Table 3+ Loading (mg/s) at Tar Heel		**1,310**	**140**	**8.0**	**140**	**8.0**	**530**	**30.5**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Seep A, Lock and Dam Seep, and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass loading set to zero when using Total Table 3+ (20 compounds) concentrations; Total Table 3+ (20 compounds) concentration at the Intake River Water at Facility location was greater than the concentration from Outfall 002 when accounting for the three additional compounds (R-PSDA, Hydrolyzed PSDA, R-EVE) where laboratory analyses are unreliable.

7 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

8 - For April 2021, the concentrations from the Old Outfall 002 sample collected downgradient from the treatment system and the Seep C sample collected in the effluent basin of the Seep C flow-through cell were used to calculate the After Remedy mass discharge for these pathways.

9 - Flow measurement and sample collection at Lock and Dam Seep was not obtained during the April 2021 event. Flow and analytical results for the Lock and Dam Seep from March 2021 were used in the mass loading model calculations (Geosyntec, 2021c).

TABLE 9A
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY BEFORE REMEDIES-MAY 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	772	25	0.85	29	0.98	29	0.98
2	Willis Creek	4.5	2,900	0.57	2,900	0.57	3,400	0.67
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	16	130	0.09	150	0.10	310	0.21
5	Onsite Groundwater (Lower Bound)[6]	--	--	2.6	--	2.6	--	2.6
	Onsite Groundwater (Upper Bound)[6]	--	--	3.6	--	3.6	--	3.6
6A	Seep A[7]	0.13	230,000	1.3	230,000	1.3	280,000	1.6
6B	Seep B	0.15	250,000	1.6	260,000	1.7	290,000	1.9
6C	Seep C[7]	0.05	150,000	0.30	150,000	0.30	150,000	0.30
6D	Seep D	0.16	220,000	1.6	230,000	1.6	260,000	1.9
6E	Lock and Dam Seep[8]	0.02	140,000	0.14	140,000	0.14	150,000	0.15
7	Old Outfall 002[7]	0.90	77,000	3.04	78,000	3.08	79,000	3.12
8	Offsite Adjacent and Downstream Groundwater	--	--	0.32	--	0.37	--	0.37
9	Georgia Branch Creek	3.9	2,300	0.39	2,300	0.39	2,300	0.39
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**12.7**		**13.1**		**14.1**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**13.7**		**14.1**		**15.1**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Lock and Dam Seep and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

7 - For May 2021, the concentrations from the influent samples collected at the Old Outfall 002 treatment system and Seep A and C flow-through cells were used to calculate the Before Remedy mass discharge for these pathways.

8 - Calculated flow value using the Marsh-McBirney method was considered erroneous when compared to the historical flows at Lock and Dam Seep. Flow value at Lock and Dam Seep for the April 2021 mass loading model was used.

TABLE 9B
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY AFTER REMEDIES -MAY 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	772	25	0.85	29	0.98	29	0.98
2	Willis Creek	4.5	2,900	0.57	2,900	0.57	3,400	0.67
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	16	130	0.09	150	0.10	310	0.21
5	Onsite Groundwater (Lower Bound)[6]	--	--	2.6	--	2.6	--	2.6
	Onsite Groundwater (Upper Bound)[6]	--	--	3.6	--	3.6	--	3.6
6A	Seep A[7]	0.13	21	0.00	21	0.00	21	0.00
6B	Seep B	0.15	250,000	1.6	260,000	1.7	290,000	1.9
6C	Seep C[7]	0.05	81	0.00	81	0.00	81	0.00
6D	Seep D	0.16	220,000	1.6	230,000	1.6	260,000	1.9
6E	Lock and Dam Seep[8]	0.02	140,000	0.14	140,000	0.14	150,000	0.15
7	Old Outfall 002[7]	0.90	7,800	0.31	7,800	0.31	7,900	0.31
8	Offsite Adjacent and Downstream Groundwater	--	--	0.32	--	0.37	--	0.37
9	Georgia Branch Creek	3.9	2,300	0.39	2,300	0.39	2,300	0.39
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**8.4**		**8.8**		**9.4**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**9.4**		**9.8**		**10.4**
Measured Total Table 3+ Loading (mg/s) at Tar Heel		**780**	**140**	**4.8**	**150**	**5.1**	**190**	**6.5**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Lock and Dam Seep and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

7 - For May 2021, the concentrations from the Old Outfall 002 sample collected downgradient from the treatment system and effluent samples collected at the effluent basins of the Seep A and C flow-through cells were used to calculate the After Remedy mass discharge for these pathways.

8 - Calculated flow value using the Marsh-McBirney method was considered erroneous when compared to the historical flows at Lock and Dam Seep. Flow value at Lock and Dam Seep for the April 2021 mass loading model was used.

TABLE 10A
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY BEFORE REMEDIES - JUNE 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	2,875	2.5	0.31	2.5	0.31	6.6	0.83
2	Willis Creek	10	1,900	0.86	2,000	0.90	2,300	1.0
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	19	118	0.10	138	0.11	243	0.20
5	Onsite Groundwater (Lower Bound)[6]	--	--	2.3	--	2.3	--	2.3
	Onsite Groundwater (Upper Bound)[6]	--	--	3.2	--	3.2	--	3.3
6A	Seep A[7]	0.13	190,000	1.1	190,000	1.1	210,000	1.2
6B	Seep B[7]	0.21	130,000	1.2	140,000	1.3	160,000	1.4
6C	Seep C[7]	0.06	71,000	0.19	72,000	0.19	74,000	0.19
6D	Seep D	0.19	120,000	1.0	130,000	1.1	130,000	1.1
6E	Lock and Dam Seep	0.03	120,000	0.13	120,000	0.13	130,000	0.14
7	Old Outfall 002[7]	1.1	84,000	4.1	85,000	4.1	89,000	4.3
8	Offsite Adjacent and Downstream Groundwater	--	--	0.12	--	0.12	--	0.31
9	Georgia Branch Creek	5.2	1,800	0.41	1,800	0.41	1,900	0.43
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**11.8**		**12.1**		**13.6**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**12.7**		**13.0**		**14.5**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Lock and Dam Seep and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

7 - For June 2021, the concentrations from the influent samples collected at the Old Outfall 002 treatment system and Seep A, B, and C flow-through cells were used to calculate the Before Remedy mass discharge for these pathways.

TABLE 10B
SUMMARY OF TOTAL PFAS MASS DISCHARGE BY PATHWAY AFTER REMEDIES - JUNE 2021
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MG)[1]	Total Attachment C[2]		Total Table 3+ (17 compounds)[3]		Total Table 3+ (20 compounds)	
			Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)	Concentration (ng/L)	Mass Loading (mg/s)
1	Upstream River Water and Groundwater[4]	2,875	2.5	0.3	2.5	0.3	6.6	0.8
2	Willis Creek	10	1,900	0.86	2,000	0.90	2,300	1.0
3	Aerial Deposition on Water Features	--	--	0.01	--	0.01	--	0.01
4	Outfall 002[5]	19	118	0.10	138	0.11	243	0.20
5	Onsite Groundwater (Lower Bound)[6]	--	--	2.3	--	2.3	--	2.3
	Onsite Groundwater (Upper Bound)[6]	--	--	3.2	--	3.2	--	3.3
6A	Seep A[7]	0.13	160	0.001	160	0.001	180	0.001
6B	Seep B[7]	0.21	5.3	0.00	5.3	0.00	5.3	0.00
6C	Seep C[7]	0.06	140	0.0004	140	0.0004	140	0.0004
6D	Seep D	0.19	120,000	1.0	130,000	1.1	130,000	1.1
6E	Lock and Dam Seep	0.03	120,000	0.13	120,000	0.13	130,000	0.14
7	Old Outfall 002[7]	1.1	6,900	0.34	6,900	0.34	6,900	0.34
8	Offsite Adjacent and Downstream Groundwater	--	--	0.1	--	0.1	--	0.3
9	Georgia Branch Creek	5.2	1,800	0.41	1,800	0.41	1,900	0.43
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Lower Bound)				**5.6**		**5.8**		**6.7**
Calculated Total Table 3+ Loading (mg/s) at Tar Heel (Upper Bound)				**6.5**		**6.7**		**7.7**
Measured Total Table 3+ Loading (mg/s) at Tar Heel		**2,930**	**55**	**7.1**	**55**	**7.1**	**60**	**7.7**

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Lock and Dam Seep and Georgia Branch Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - Mass dicharge calculations for Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include R-PSDA, Hydrolyzed, PSDA, and R-EVE.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - Total PFAS concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

6 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix E. The lower and upper bounds on the mass discharge were calculated using two different contour elevation differences in the vicinity of the river frontage: a ten-foot elevation difference (between the 40 and 50 ft contours) and a twenty-foot elevation difference (between the 40 and 60 ft contours) as described in Appendix E.

7 - For June 2021, the concentrations from the Old Outfall 002 sample collected downgradient from the treatment system, effluent samples collected at the effluent basins of the Seeps A, B, and C flow-through cells were used to calculate the After Remedy mass discharge for these pathways.

TABLE 11
CAPE FEAR RIVER TOTAL TABLE 3+ (17 COMPOUNDS) RELATIVE MASS DISCHARGE PER PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway[1]	April 2021		May 2021		June 2021	
	Lower	Upper	Lower	Upper	Lower	Upper
[1] Upstream River Water and Groundwater	2%	1%	7%	7%	3%	2%
[2] Willis Creek	6%	6%	4%	4%	7%	7%
[3] Aerial Deposition on Water Features	<1%	<1%	<1%	<1%	<1%	<1%
[4] Outfall 002	1%	1%	1%	1%	1%	1%
[5] Onsite Groundwater	22%	28%	20%	25%	19%	25%
[6] Seeps	46%	43%	38%	36%	31%	29%
Seeps (After Remedies)[2]	*42%*[2a]	*39%*[2a]	*26%*[2b]	*24%*[2b]	*10%*[2c]	*9%*[2c]
[7] Old Outfall 002	20%	18%	23%	22%	34%	32%
Old Outfall 002 (After Remedies)[3]	*6%*	*5%*	*2%*	*2%*	*3%*	*3%*
[8] Offsite Adjacent and Downstream Groundwater	1%	1%	3%	3%	1%	1%
[9] Georgia Branch Creek	3%	3%	3%	3%	3%	3%

Notes:

< - less than indicated value.

1 - Relative contributions were calculated using the before remedies Total Table 3+ (17 compounds) model-estimated mass discharges (Tables 8A, 9A, and 10A). These relative contributions are presented as a range, which represents the upper and lower bound model estimates. Relative contributions for Total Attachment C and Total Table 3+ (20 compounds) are provided in Appendix B.

2 - The Seeps (After Remedies) relative contributions for April to June 2021 were calculated using the After Remedies model-estimated mass discharges at Seeps A to D, and Lock and Dam Seep (Tables 8B, 9B, and 10B). After Remedy relative contribution changes from one month to the next based on the transient implementation of the flow-through cells (FTCs) as follows:

a) April 2021 - Seep C FTC only was operational.

b) May 2021 - Seep A and C FTCs only were operational.

c) June 2021 - Seep A, B, and C FTCs only were operational.

3 - The relative contributions were calculated using the After Remedies model-estimated mass discharges at Old Outfall 002 (Tables 8B, 9B, and 10B).

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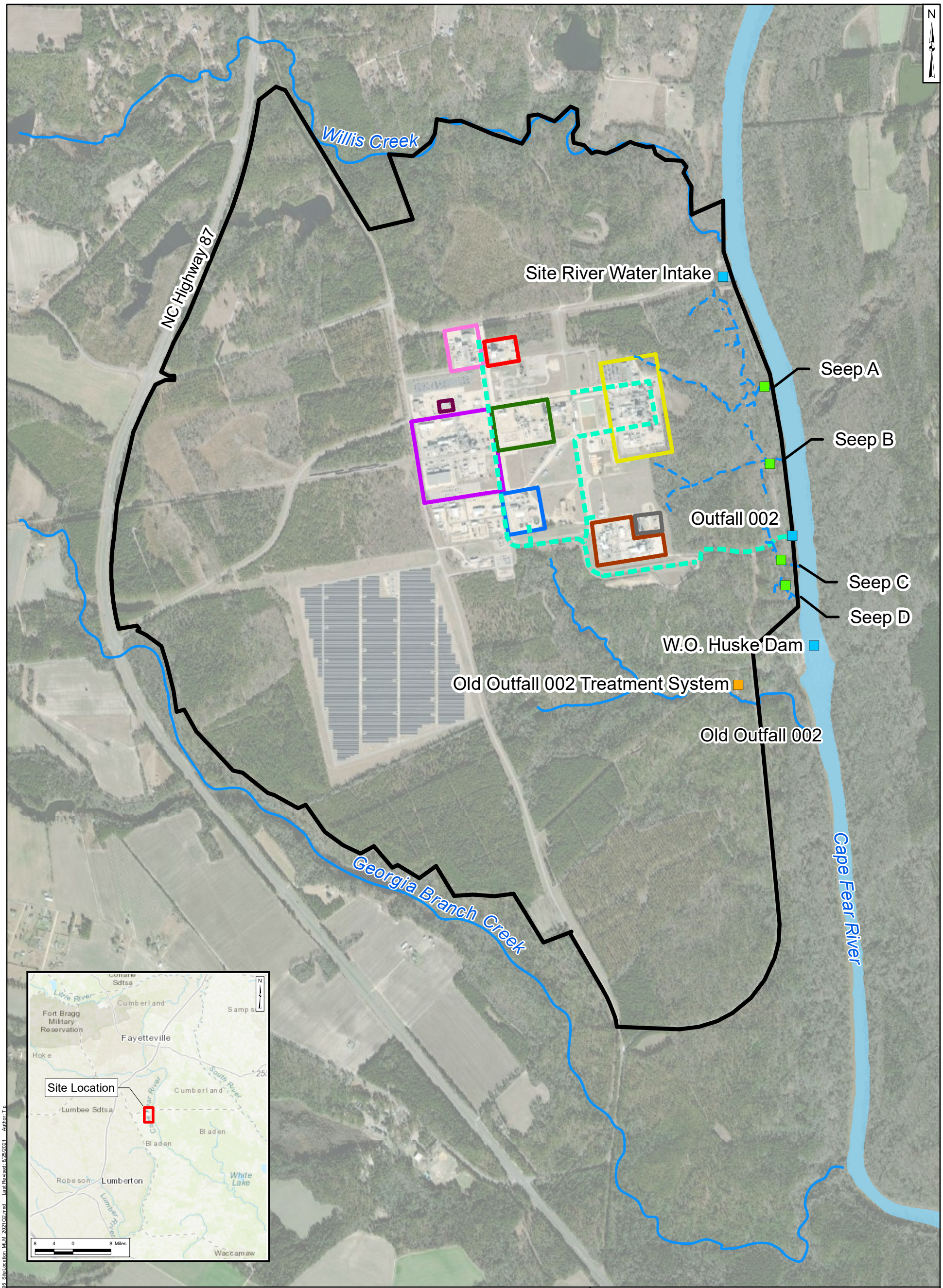
FIGURES



Legend

- Flow-Through Cell
- Old Outfall 002 Treatment System
- Site Features
- Site Boundary
- Nearby Tributary
- Observed Seep (Natural Drainage)
- Site Conveyance Network

Areas at Site

- Chemours Monomers IXM
- Chemours Polymer Processing Aid Area
- DuPont Polyvinyl Fluoride Leased Area
- Former DuPont PMDF Area
- Kuraray SentryGlas® Leased Area
- Kuraray Trosifol® Leased Area
- Wastewater Treatment Plant
- Power - Filtered and Demineralized Water Production
- Kuraray Laboratory

1,000 500 0 1,000 Feet

Notes:
1. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Path: P:\PR\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring\Workplan\TR0795_SiteLocation_MLM_20210902.mxd Last Revised: 8/25/2021 Author: Tlp

Site Location Map

Chemours Fayetteville Works, North Carolina

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Figure 1

Virginia

North Carolina

South Carolina

Greensboro

Raleigh

Fayetteville

Wilmington

Start of Cape Fear River

Chemours Fayetteville Works

Tar Heel Ferry Road Bridge

W.O. Huske Dam

Bladen Bluffs Intake

Kings Bluff Intake Canal

Haw River

Deep River

Little River

Cape Fear River

Legend

- Chemours Fayetteville Works
- Upper Basin
- Middle Basin
- Lower Basin

Note:
Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

20 10 0 20 Miles

Cape Fear River Watershed and Downstream Drinking Water Intakes

Chemours Fayetteville Works, North Carolina

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Figure 2

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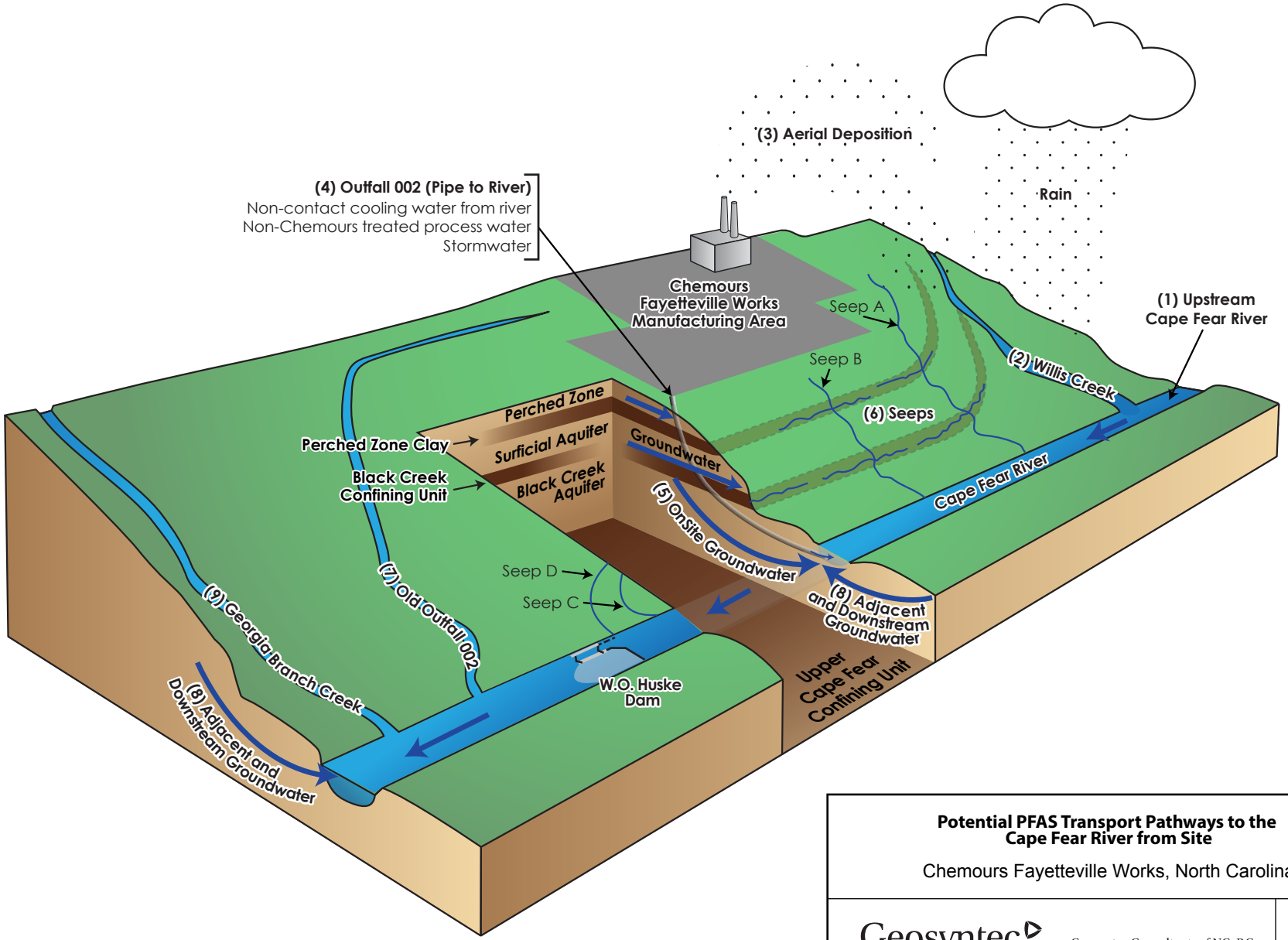
Path: P:\PR\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_Cape Fear River Watershed and Downstream Intakes.mxd; Tip; 06/16/2021

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Note: Image is conceptual and is not to scale

Potential PFAS Transport Pathways to the Cape Fear River from Site

Chemours Fayetteville Works, North Carolina

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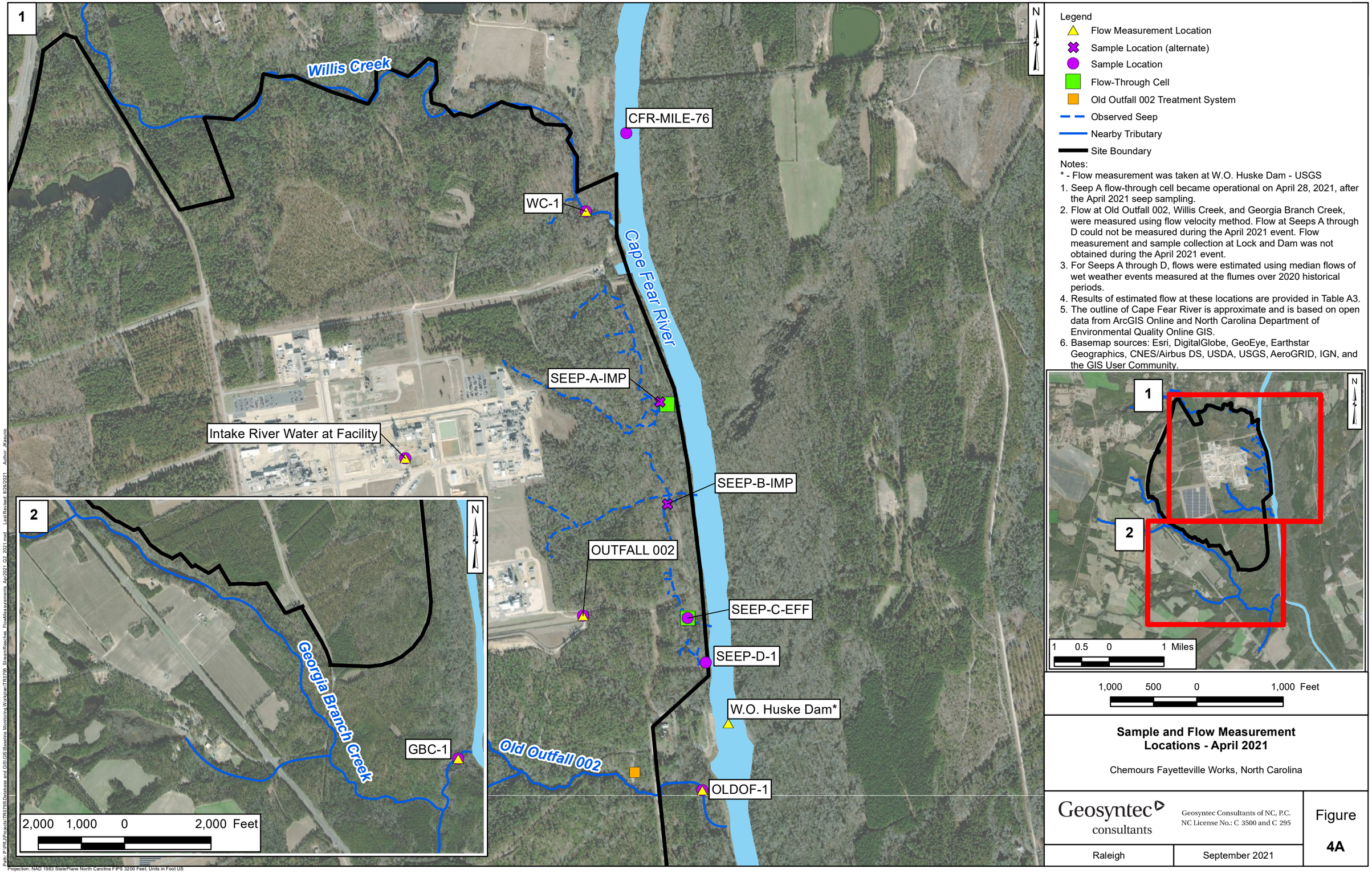
Figure 3

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/3D CSM Illustration/ConceptualSiteModel_Dec2020.ai



Sample and Flow Measurement Locations - April 2021

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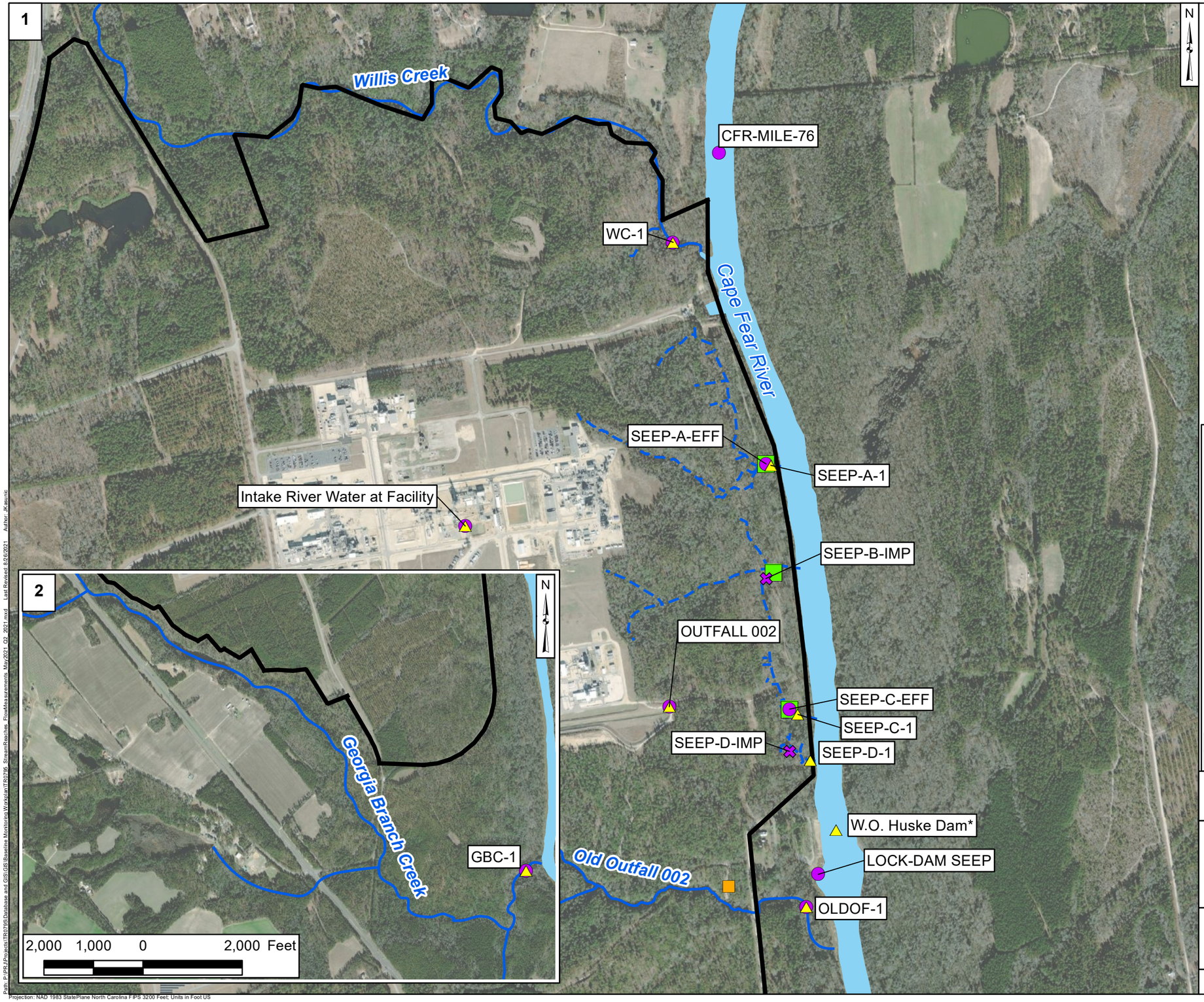
Figure **4A**

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_StreamReaches_FlowMeasurements_Apr2021_Q2_2021.mxd Last Revised: 8/26/2021 Author: JKasunic

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



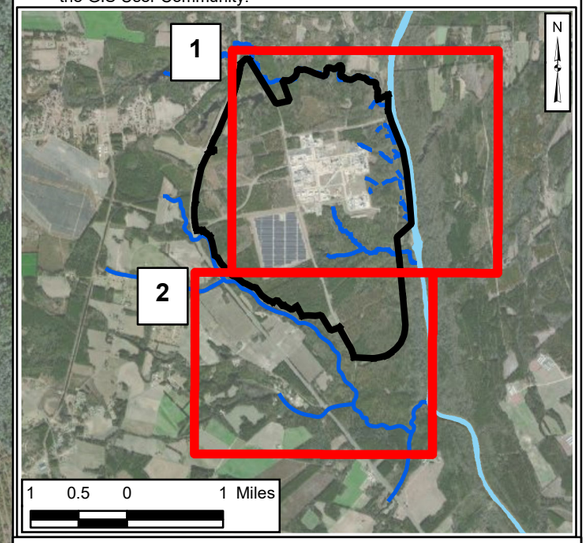
Legend

- Flow Measurement Location
- Sample Location (alternate)
- Sample Location
- Flow-Through Cell
- Old Outfall 002 Treatment System
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:

* - Flow measurement was taken at W.O. Huske Dam - USGS

1. Seep B flow-through cell became operational on June 8, 2021, after the May 2021 sampling event.
2. Flows at Seeps A, C, and D were measured using a flume.
3. Flow at Old Outfall 002, Georgia Branch Creek, and Willis Creek were measured using flow velocity method. Flow at Seep B could not be measured during the May 2021 event. Flow measurement at Lock and Dam was not obtained during the May 2021 event.
4. For Seep B, flows were estimated using median flows of wet weather events measured at the flumes over 2020 historical periods.
5. Results of estimated flow at these locations are provided in Table A3.
6. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
7. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



1,000 500 0 1,000 Feet

Sample and Flow Measurement Locations - May 2021

Chemours Fayetteville Works, North Carolina

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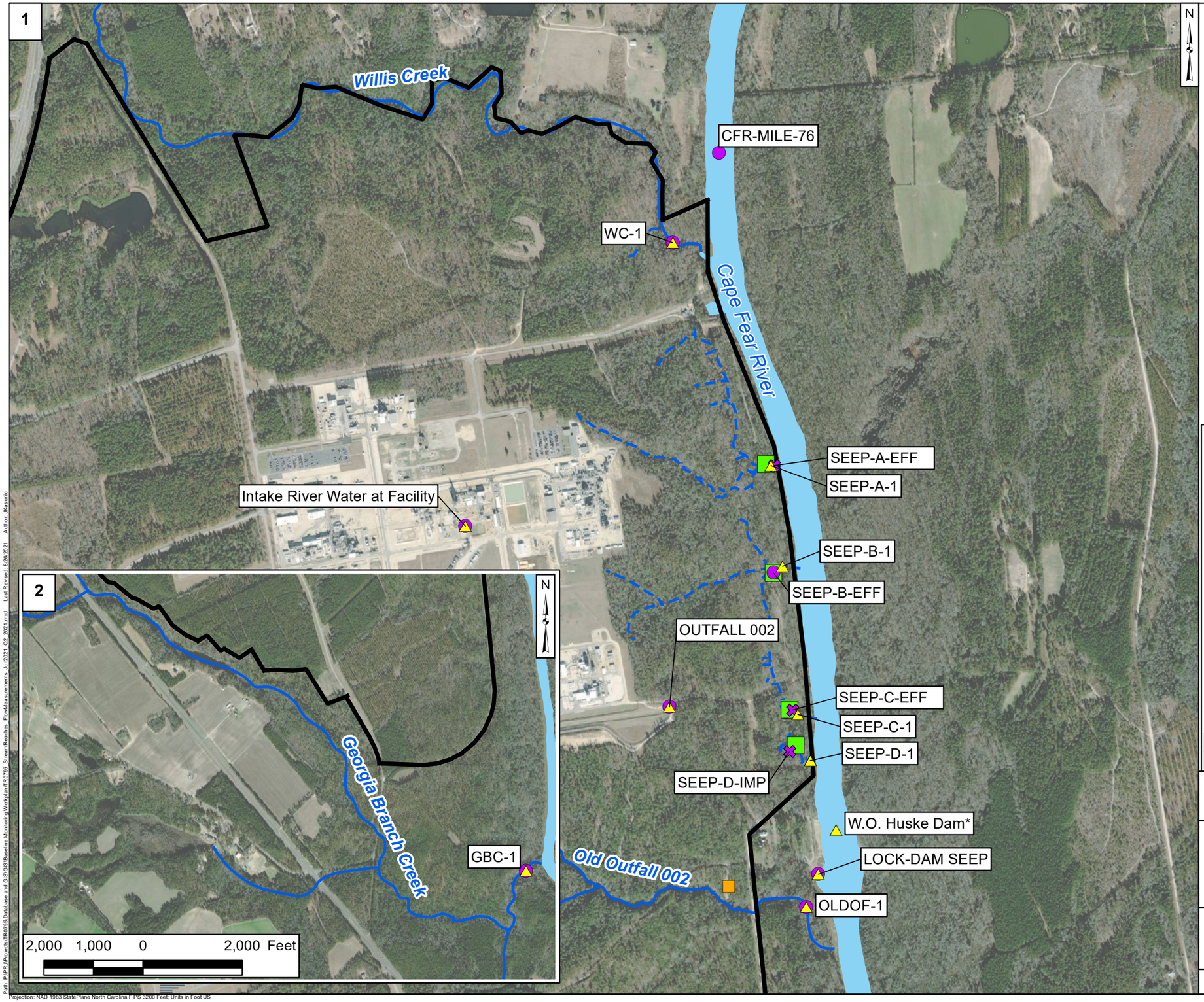
Figure **4B**

Path: P:\PR_P\Projects\TR07995\Database and GIS\GIS\Baseline Monitoring\Workplan\TR07995_StreamReaches_FlowMeasurements_May2021_Q2_2021.mxd Last Revised: 8/26/2021 Author: JKeaunic

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



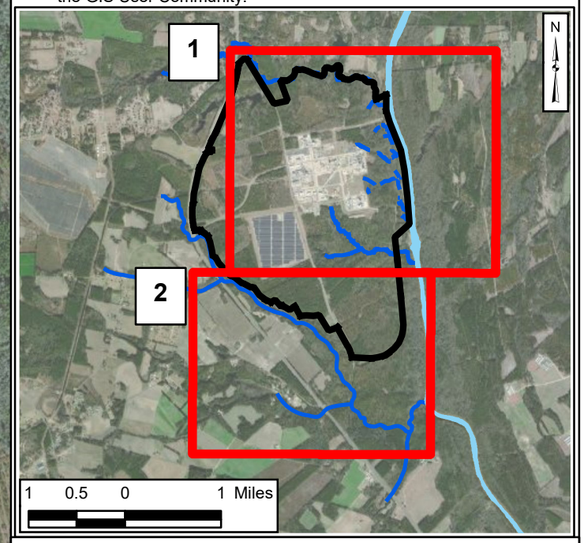
Legend

- Flow Measurement Location
- Sample Location (alternate)
- Sample Location
- Flow-Through Cell
- Old Outfall 002 Treatment System
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:

* - Flow measurement was taken at W.O. Huske Dam - USGS

1. Seep D flow-through cell became operational on June 24, 2021, after the June 2021 seep sampling.
2. Flows at Seeps A through D were measured using a flume.
3. Flow at Old Outfall 002, Georgia Branch Creek, Willis Creek and Lock and Dam were measured using flow velocity method.
4. Results of estimated flow at these locations are provided in Table A3.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



1,000 500 0 1,000 Feet

Sample and Flow Measurement Locations - June 2021

Chemours Fayetteville Works, North Carolina

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Figure 4C

Author: JKasunic
Last Revised: 8/26/2021
Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_StreamReaches_FlowMeasurements_Jun2021_Q2_2021.mxd
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

1

CFR-MILE-76

CFR-BLADEN

CFR-TARHEEL

2 - Downstream

CFR-KINGS

2 1 0 2 Miles

N

Legend

- Sample Location
- Site Boundary
- Cape Fear River

Notes:
1. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1

2

25 12.5 0 25 Miles

2 1 0 2 Miles

Cape Fear River Sample Locations - Q2 2021

Chemours Fayetteville Works, North Carolina

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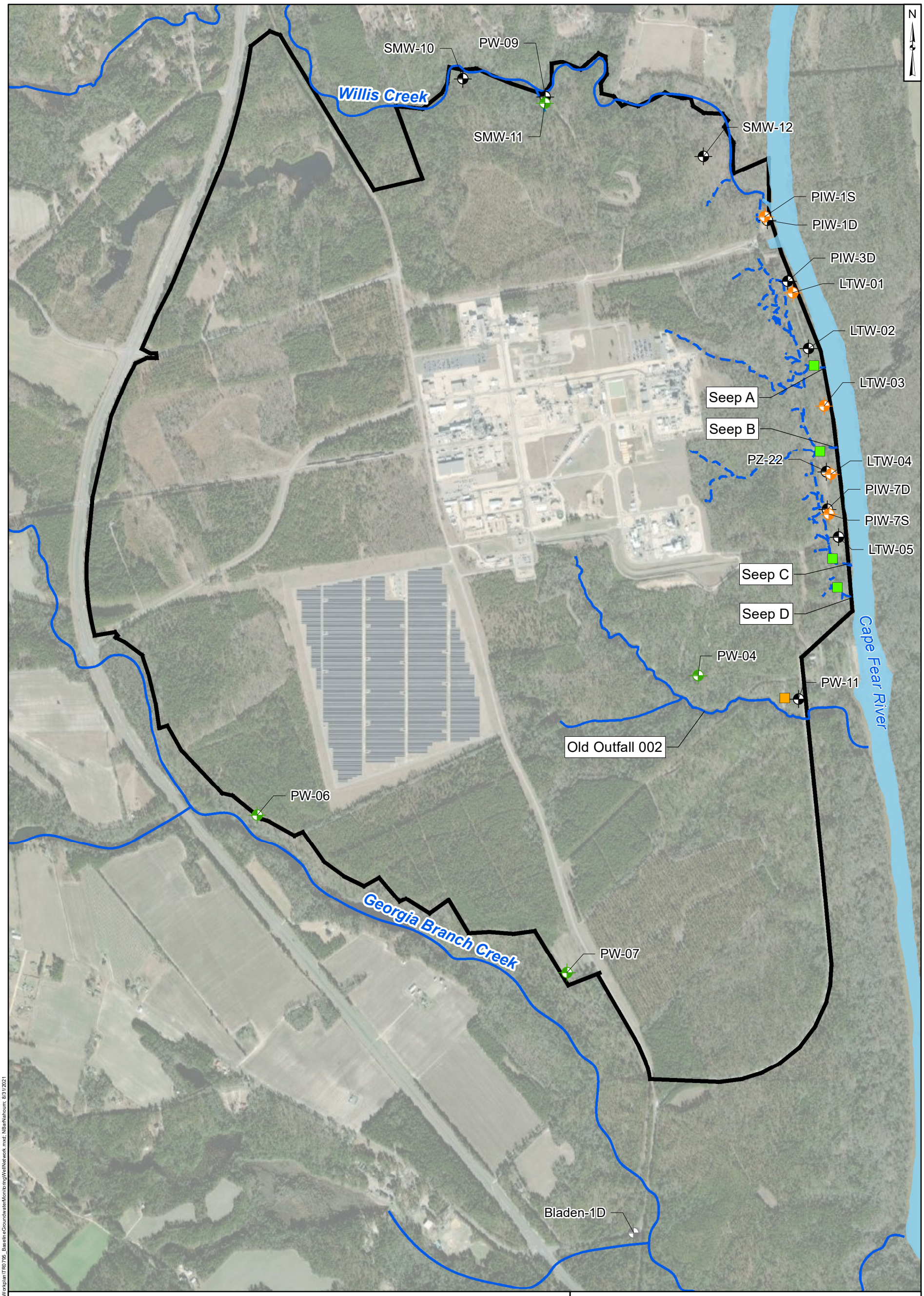
Figure 5

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_CapeFearRiverSampleLocations_Dec2020.mxd Last Revised: 2/25/2021 Author: NBarNahum

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- Damaged
- Flow-Through Cell
- Old Outfall 002 Treatment System
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
1. Due to the scale of the map, pairs of wells that are in close proximity have been offset for visibility. Therefore, the placement of these wells on this map do not reflect their true geographic coordinates.
2. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Groundwater Wells for Mass Loading Assessment

Chemours Fayetteville Works, North Carolina

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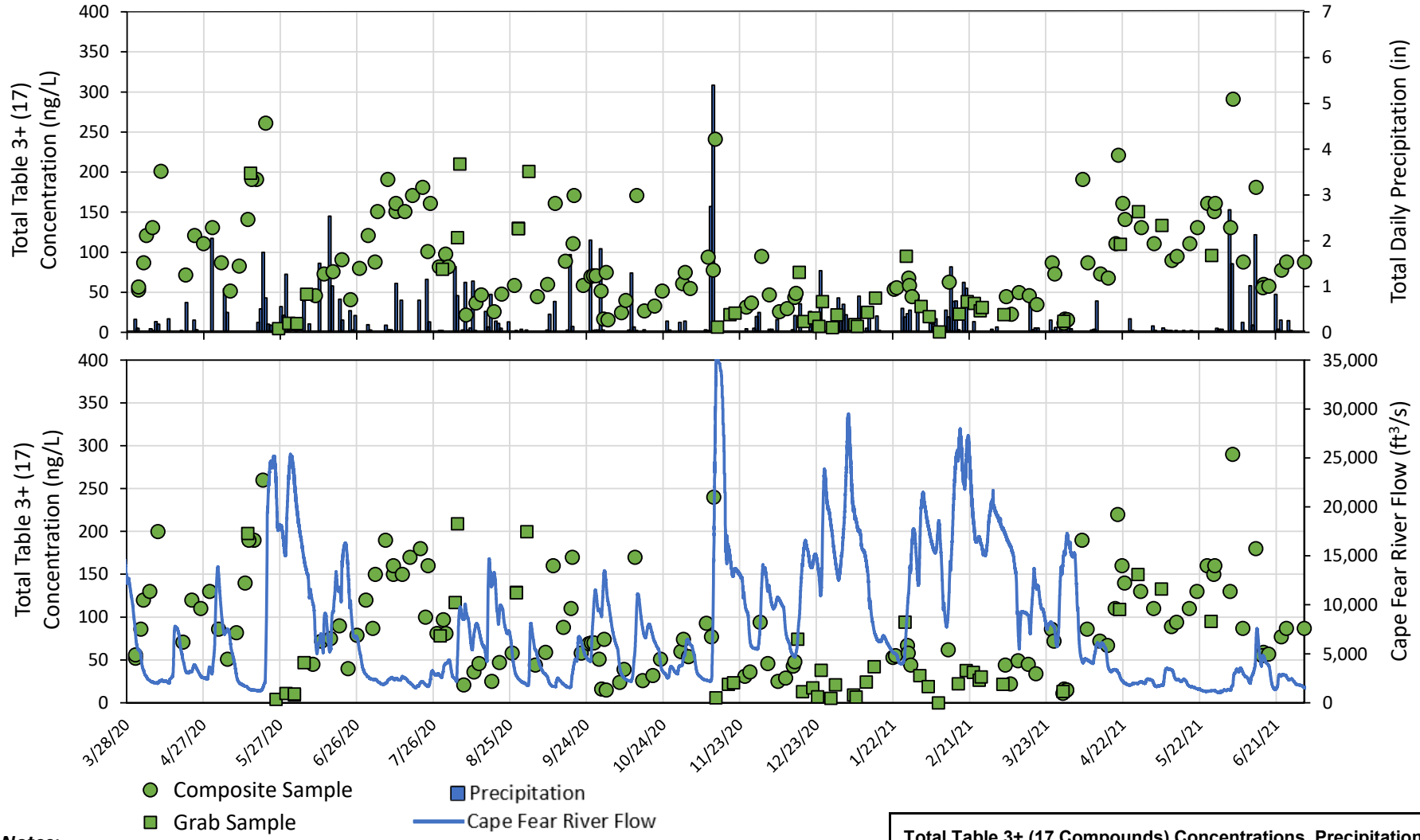
Figure 6

Path: \\gueiph-01\data\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_BaselineGroundwaterMonitoringWellNetwork.mxd; NBan'Nahoum; 8/31/2021

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Notes:

-Total Table 3+ concentrations calculated by summing over Attachment C compounds and Table 3+ (20 compounds) are provided in Appendix A.

-Precipitation data are from the USGS monitoring site at the W.O. Huske Dam.

Abbrevations:

in - inches

ng/L - nanograms per liter

ft^3/s - cubic feet per seconds

Total Table 3+ (17 Compounds) Concentrations, Precipitation and Daily Flow at Tar Heel Ferry Road Bridge

Chemours Fayetteville Works, North Carolina

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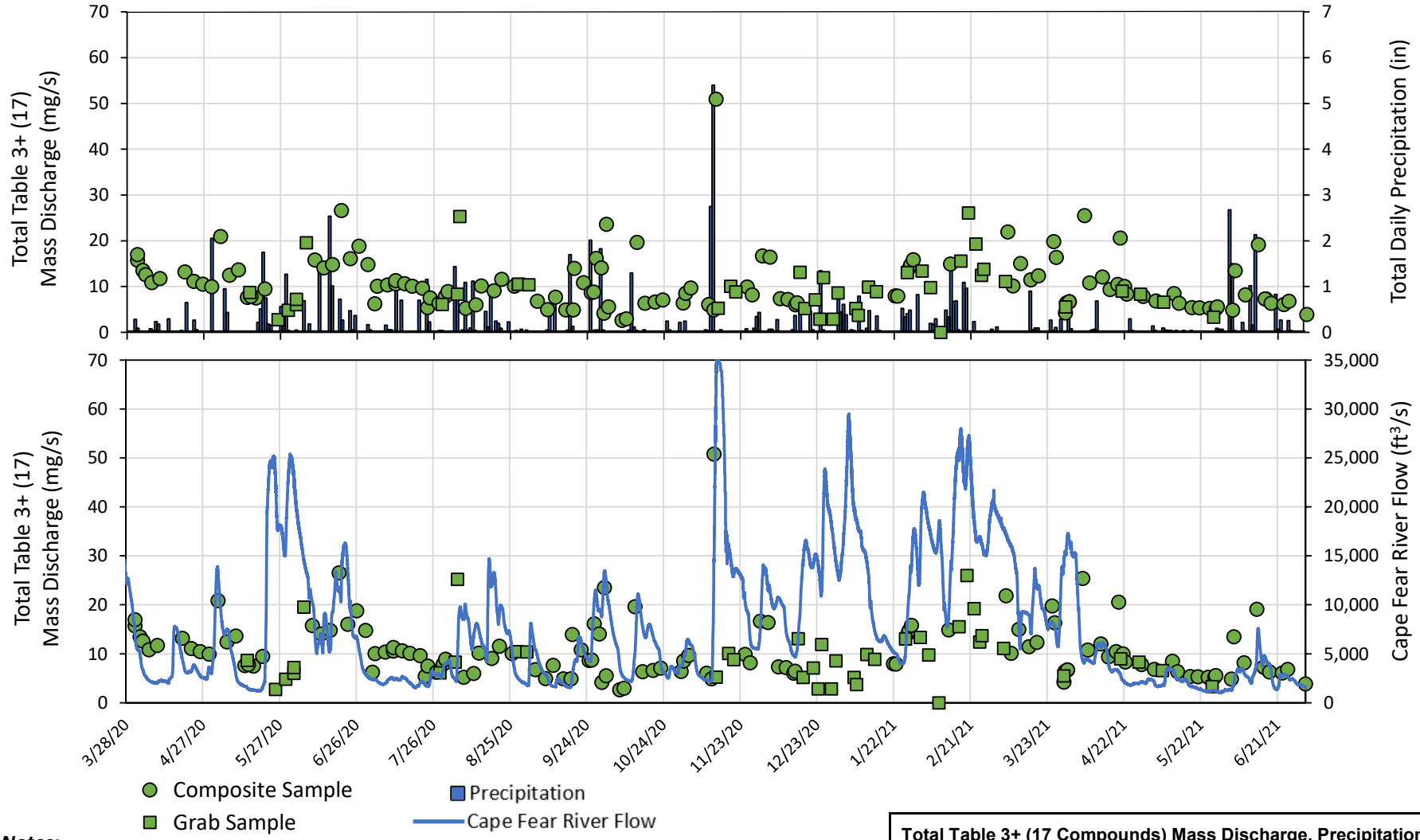
Figure 7

Raleigh | September 2021



Notes:

-Total PFAS mass discharges calculated by summing over Table 3+ compounds (20 compounds) are provided in Table 6 and Appendix B.

-Precipitation data are from the USGS monitoring site at the W.O. Huske Dam.

Abbrevations:

in - inches

mg/s - milligram per seconds

ft^3/s - cubic feet per seconds

Total Table 3+ (17 Compounds) Mass Discharge, Precipitation and Daily Flow at Tar Heel Ferry Road Bridge

Chemours Fayetteville Works, North Carolina

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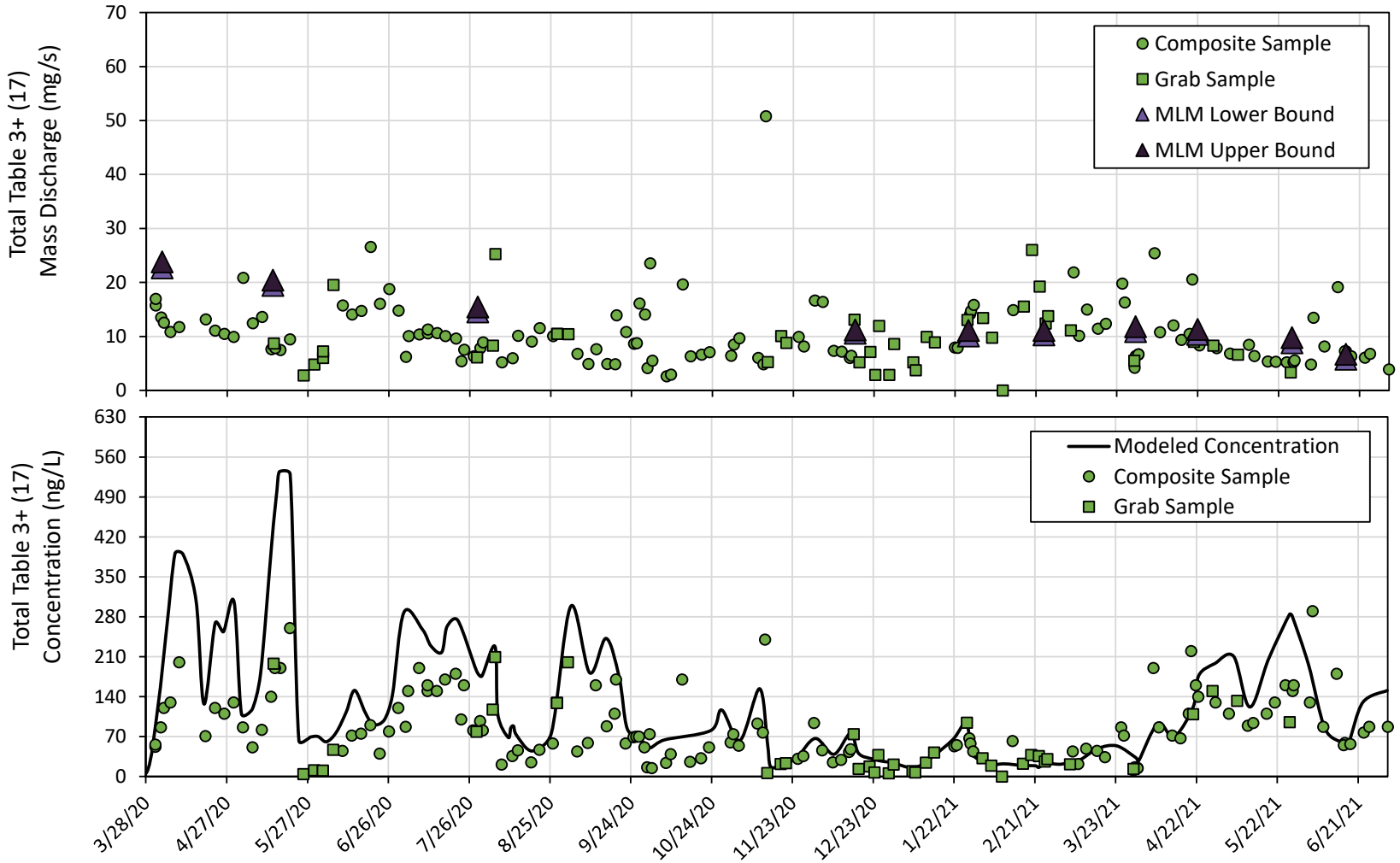
Figure 8



Notes:

1. Modeled mass discharges and concentrations were estimated using the MLM. The Q2 2021 mass discharge estimates are reported in Tables 8A, 8B, 9A, 9B, 10A, and 10B. The modeled concentrations are provided in Appendix A.
2. Measured mass discharges and concentrations at CFR-TARHEEL are reported in Table 6 and Appendix B.

mg/s - milligrams per seconds
MLM - mass loading model
ng/L - nanograms per liter

Modeled versus Measured Total PFAS Mass Discharge and Concentration
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Figure 9