SUMMARY OF PROPOSED ADDENDUM TO CHEMOURS CONSENT ORDER AND RESPONSE TO PUBLIC COMMENT

OCTOBER 6, 2020

BACKGROUND

On February 25, 2019 Judge Douglas B. Sasser entered a Consent Order between the North Carolina Department of Environmental Quality ("DEQ"), the Chemours Company FC LLC ("Chemours"), and Cape Fear River Watch ("CFRW") in *State of North Carolina ex. rel. Michael S. Regan v. The Chemours Company FC, LLC*, 17 CVS 580 (Bladen County). Paragraph 12 of the Consent Order requires amendment of the Consent Order to address per- and polyfluoroalkyl substances ("PFAS") loading to the Cape Fear River from residual contamination at Chemours' Fayetteville Works Facility ("Facility"). The term "PFAS loading" refers to the mass of PFAS originating from contaminated groundwater, surface water and soils at the Facility and reaching surface waters.

Paragraph 12 of the Consent Order required Chemours to submit a plan to DEQ and Cape Fear River Watch demonstrating the maximum reductions in PFAS loading from the Facility (including loading from contaminated stormwater and groundwater) to surface waters that are economically and technologically feasible, and can be achieved within a two-year period. Paragraph 12 further required that the plan be supported by interim benchmarks to ensure continuous progress in reduction of PFAS loading and that, if significantly greater reductions can be achieved in a longer implementation period, Chemours could propose, in addition, an implementation period of up to five years supported by interim benchmarks to ensure continuous progress. This plan for PFAS loading reduction is in addition to, and not a substitute for, the groundwater corrective action plan required in Paragraph 16 of the Consent Order.

Paragraph 12 also required Chemours to share the plan with downstream public utilities who would have the opportunity to meet with DEQ staff to discuss the plan.

Chemours submitted the plan on August 26, 2019 to DEQ, CFRW and to the downstream drinking water utilities. DEQ and CFRW provided comments to Chemours regarding concerns with the plan. Chemours submitted a revised plan to address the concerns. Additionally, Cape Fear Public Utility Authority provided comments and a technical assessment by Tetra Tech on September 27, 2019. These comments were shared with Chemours. Chemours submitted a revised plan on November 4, 2019.

DEQ, CFRW and Chemours have worked in good faith to reach agreement on the terms set forth in the proposed Addendum to Consent Order Paragraph 12 ("Proposed Addendum"). The Proposed Addendum outlines the required steps Chemours must take on an expedited basis to achieve maximum feasible reductions in PFAS loading to the Cape Fear River and the downstream raw water intakes.

The Proposed Addendum was released for public comment on August 17, 2020 and DEQ took comments through September 17, 2020. DEQ received 22 comments. Approximately half of the comments were supportive of the Proposed Addendum, or supportive with recommendations. More details on the comments and response to comments follow in the Responses to Comments Section below.

TERMS OF PROPOSED ADDENDUM TO CONSENT ORDER

As discussed above, at the time of the entry of the Consent Order in February 2019, there was still much to be learned about the loading of PFAS to the Cape Fear River from residual sources at the Facility. Since the Consent Order was entered, DEQ has required Chemours to perform additional analysis to better identify the different pathways for PFAS loading to the Cape Fear River. The data collected to date indicate that the following sources are the most significant pathways of PFAS loading to the Cape Fear River: (1) contaminated groundwater flowing directly to the Cape Fear River; (2) contaminated groundwater flowing through four surface water features or "seeps" into the Cape Fear River; and (3) contaminated surface water flowing through an old outfall at the site known as "Old Outfall 002." The terms of the Consent Order and the Proposed Addendum require Chemours to take aggressive actions to reduce PFAS loading from each of these pathways. The Proposed Addendum also requires treatment of stormwater from Chemours' IXM manufacturing area:

Old Outfall 002 – Paragraph 12(e) of the Consent Order: Under Paragraph 12(e) of the Consent Order, Chemours is required to remove PFAS from surface water flowing through an old outfall at the facility during dry weather, Old Outfall 002, at an efficiency of 99%. Chemours commenced operation of this treatment system on October 1, 2020.

Seeps – Paragraph 2 of the Proposed Addendum: As an interim measure, Chemours is required to install in situ treatment systems to remove PFAS from the seeps at an efficiency of 80% during dry weather until a long-term seep remediation system is installed. These treatment systems will consist of flow through cells containing granular activated carbon. The first in situ treatment system will be installed in November of 2020 with all four systems being completed by April 2021. On a long-term basis, Chemours will be required to reduce PFAS loading during dry weather by 99%. In addition, Chemours will be required to reduce PFAS loading by 95% during a combination of dry weather and following rain events of .5 inches or less.

Onsite Groundwater – Paragraph 3 of the Proposed Addendum: Chemours is required to construct an approximately 1.5-mile-long subsurface barrier wall and groundwater extraction system that will remove at least 99% of PFAS flowing from groundwater under the facility to the Cape Fear River. The system must be completed by March 2023.

Stormwater – Paragraph 4 of the Proposed Addendum: Chemours is required to capture on-site stormwater from its main manufacturing area that is adding residual pollution to the river and treat it with a removal efficiency of at least 99%. The stormwater system must be installed and operational in June 2021.

The Proposed Addendum also requires monitoring and reporting to ensure compliance with these requirements. According to modeled estimates, these measures are projected to remove approximately 80% percent of PFAS loading from residual contamination to the Cape Fear River. While these estimates are preliminary, NCDEQ is requiring Chemours to continually gather additional data to update its PFAS loading model pursuant to Paragraph 1 of the Proposed Addendum. Moreover, these reductions do not include the reductions that will be required by the Corrective Action Plan that is currently under review by DEQ.

The Proposed Addendum also includes stipulated penalties in the event deadlines are missed or the technology does not achieve the required reductions in PFAS loading, including:

- Failure to meet the construction schedule for the interim measures will result in fines of $5,000 per day for the first 14 days and $10,000/day thereafter until construction is complete.
- Failure to meet the barrier wall installation schedule will result in a $150,000 fine followed by $20,000 per week until installation is complete.
- Failure to meet the barrier wall's 95% mass loading reduction requirement will result in a $500,000 fine, with a $100,000 fine for failure to meet any of the four subsequent demonstrations.

The Proposed Addendum to the Consent Order was released for public comment for 30 days, from August 17, 2020 through September 17, 2020. DEQ's responses to comments received are presented in the next section.

Response to Comments

DEQ received 22 comments during the 30-day comment period. Approximately half of the comments expressed support, or support with recommendations. A majority of comments in opposition to the Proposed Addendum focused on matters that were outside the scope of this action. Such matters include Chemours' groundwater Corrective Action Plan, financial compensation to individuals or utilities currently being pursued through separate litigation, and Chemours actions under Paragraph 19 of the Consent Order, which governs provision of alternative drinking water supplies for homes with contaminated drinking water wells. DEQ has provided responses to all comments below.

A. Comments Supporting the Proposed Addendum

i. **Comment:** One commenter included a petition with 1141 signatures urging DEQ to support the Proposed Addendum. Another commenter recommended that DEQ sign the Proposed Addendum and present it to Bladen County Superior Court, saying, "Contaminated water from Old Outfall 002, extracted groundwater, and stormwater will all be treated with technology that can reduce PFAS to levels below detection limits. As a result, residents – and especially children – will be protected from PFAS contamination." Another commenter expressed general support of the Proposed Addendum, particularly the interim benchmarks, enforceable requirements and stipulated penalties. Other commenters provided general statements of support for the Proposed Addendum to the Consent Order. One commenter expressed that the actions identified in the Proposed Addendum is the least that Chemours can do and believes the actions will mitigate some of the harm to the community.

Response: DEQ appreciates the support of these commenters for DEQ's actions. DEQ views the Proposed Addendum as the next major step in addressing contamination emanating from the site, and in particular it requires actions to reduce PFAS from residual contamination from entering the Cape Fear River and impacting the downstream drinking water intakes. DEQ believes the actions outlined in the Proposed Addendum represent those actions that can be implemented most quickly in order to improve the water quality at the drinking water intakes downstream. DEQ has seen that the most effective and expedient way of reducing concentrations of PFAS in the Cape Fear River is through effective source control. This approach—controlling PFAS at its source—is precisely the approach required under Paragraph 12 of the Consent Order to address surface water contamination.

B. Substantive/Technical Comments Regarding the Measures Required under the Proposed Addendum

i. **Comment:** One commenter stated that Chemours has until late 2021 to show the interim seep remediation can achieve 80 percent reduction in PFAS. Concern was expressed about the system's design, the time it will take to get an alternative system in place if the in situ treatment does not perform at 80% reduction, the lack of specifics regarding the long-term solution, and the time to complete the system – March 2023.

Response: Under Paragraph 2 of the Proposed Addendum, interim seep remediation systems will be installed at Seeps C, A, B, and D, in November 2020, February 2021, March 2021, and April 2021, respectively. Chemours must submit a report within four months of completing construction of each system demonstrating that the system operates with a minimum removal efficiency of 80% on a monthly average basis for the second and third months of operation. The proposed interim seep remediation systems are using granulated activated carbon as the control system, which has been shown to be effective in removing PFAS. DEQ believes this technology can be implemented quickly and the control efficiency will be known in early 2021 for Seep C. The Proposed Addendum to the Consent Order is not intended to include all of the technical requirements associated with Chemours remediation activities, which is predominantly addressed through separate submittals that will be subject to review and approval by DEQ's technical staff. For instance, the design of the long-term system will be available in phases – 60% design by August 15, 2021 and 90% by March 31, 2022. These designs will be submitted to DEQ for review and will made available on the DEQ website.

ii. Comment: One commenter stated the Proposed Addendum's seep remediation systems will not prevent migration of PFAS to the Cape Fear River from the seeps.

Response: The commenter did not provide evidence as to why the proposed remediation systems will not reduce loading of PFAS from the seeps. DEQ does not agree that the seep remediation systems will not prevent migration of PFAS to the Cape Fear River from the seeps. The Proposed Addendum will require Chemours to remove PFAS from the seeps during dry weather at an efficiency of 80% on an interim basis. On a long-term basis Chemours will be required to reduce PFAS mass loading during dry weather conditions by 99%. If Chemours fails to comply with these requirements, Chemours will be required to implement additional measures and/or be subject to enforcement remedies as set forth in the Consent Order.

i. Comment: One commenter stated that the PFAS mass loading measurements set forth in Paragraph 1 of the Proposed Addendum will vastly underestimate loadings to the Cape Fear River

Response: The commenter did not provide details as to why the commenter believes the mass loading calculations will underestimate loadings to the river. While NCDEQ recognizes that the loading values contained in Chemours' submissions are modeled estimates, NCDEQ does not have data indicating that these estimates vastly underestimate PFAS loading to the Cape Fear River. The Proposed Addendum requires that Chemours continually update its loading estimates based on ongoing sampling.

ii. **Comment:** One commenter stated that the proposed testing and monitoring in the Proposed Addendum is insufficient to protect the public. Another commenter questioned whether Chemours can be adequately monitored for compliance. Another commenter stated that reporting requirements in the Consent Order should be more frequent than monthly and that DEQ should post within a week of receipt. The commenter also stated that sampling during a rainfall event should occur within the first hour of event to ensure an accurate measurement of pollutants leaving the site.

Response: DEQ believes the testing and monitoring requirements set forth in the Proposed Addendum will allow DEQ to monitor compliance with the requirements in the Proposed Addendum and take appropriate action to address noncompliance.

iii. **Comment:** One commenter stated that the Proposed Addendum should require Chemours to remediate the sediment.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading to the Cape Fear River from residual sources at the Facility on an expedited basis. The sediment remediation in the Cape Fear River is outside the scope of Paragraph 12 of the Consent Order. However, PFAS contamination in river sediment is the subject of ongoing study required under Paragraph 11.2 of the Consent Order, which requires Chemours to develop and implement a plan for determining the nature and extent of PFAS sediment contamination in the Cape Fear River originating from the Facility. These data will inform future decisions regarding the need for sediment remediation.

iv. **Comment:** One commenter stated that the reductions in the groundwater should match the thermal oxidizer reductions (99.9%).

Response: The reductions required in the Proposed Addendum are based on an analysis of currently available technology to treat PFAS compounds in groundwater and surface water. The Commenter does not offer any support for the position that technology designed to treat PFAS compounds in groundwater and surface water is capable of capturing and treating at the same removal efficiency as technology designed to reduce PFAS in air emissions.

v. **Comment:** One commenter stated that DEQ should require the Alternative Interim Seep Remediation System now to achieve more PFAS reductions.

Response: The interim seep remediation system required under the Proposed Addendum will result in expedited reductions of PFAS loading. The alternate system would require significant additional time to implement, and would only exist for a short period of time prior to installation of the permanent seep remediation system required under the Proposed Addendum. For these reasons, DEQ does not agree with the

commenter that the alternate interim seep remediation system should be implemented. However, such implementation will be required if the interim seep remediation system is unsuccessful.

vi. **Comment:** One commenter stated that the 80% control requirement for the Interim Seep Remediation Measures should be higher.

Response: DEQ believes that the 80% control requirement is appropriate based on DEQ's analysis of site conditions, currently available technology, and the expedited implementation schedule, especially given that the Proposed Addendum requires the interim seep remediation system to be installed on an expedited basis without prior field testing and that the long-term remediation requirement for the seeps is 99% mass reduction during dry weather.

vii. **Comment:** Some commenters stated the penalties for noncompliance with the Proposed Addendum were too low. Others requested that NCDEQ make clear that penalties on page 22 of Addendum apply for failing to sample and failing to report.

Response: DEQ believes that the stipulated penalties set forth in the Addendum are adequate to ensure compliance with the Addendum. It is also important to note that the stipulated penalties are only one of the tools DEQ has to ensure compliance with the terms of the Proposed Addendum. For certain provisions, DEQ may call upon the court to exercise its contempt authority to require Chemours to comply with the terms of the proposed Addendum. The Proposed Addendum thus represents a powerful tool for ensuring that the pollution reduction measures set forth in the Proposed Addendum are achieved. DEQ also retains its administrative authority outside the Consent Order to enforce North Carolina's environmental laws.

viii. **Comment:** One commenter stated that there should be a containment system for any possible spills and a treatment for the water entering the containment system, and that a standard established for the volume of spillage requiring a report.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order which requires implementation of maximum feasible measures to reduce PFAS loading to the Cape Fear River from residual sources at the Facility on an expedited basis. To the extent this comment is directed towards the spill resulting from a scrubber malfunction that occurred in October 2018, that scrubber is no longer operational. Furthermore, the Proposed Addendum requires that stormwater in the IXM manufacturing area be captured and treated before being released into the Cape Fear River.

ix. **Comment:** One commenter stated that there should be opportunity for notice and comment on Chemours submittals under the Proposed Addendum.

Response: All documents submitted by Chemours pursuant to the Proposed Addendum will be made available to the public for review. DEQ will evaluate the appropriateness of formal notice and comment on a case-by-case basis.

C. Comments Regarding Protection of Downstream Communities and Utilities.

i. Comment: Some commenters stated that more should be done by Chemours to help residents of downstream communities. Some commenters stated that Chemours should be required to provide downstream users relief that is equivalent to the relief provided to private well owners near the facility, such as filtration systems. Others stated that Chemours should be required to provide funding to downstream utilities for water treatment.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading from residual sources at the Facility to the Cape Fear River on an expedited basis.

DEQ notes that there are significant differences between groundwater contamination and surface water contamination. Contamination in downstream raw water intakes arises from surface water pollution. Contamination in drinking water wells arises from groundwater pollution. Groundwater contamination and surface water contamination are different problems that often involve different regulatory approaches. DEQ has seen that the most effective and expedient way of reducing concentrations of PFAS in the Cape Fear River is through source control. This approach—controlling PFAS at its source—is precisely the approach required under Paragraph 12 of the Consent Order to address surface water contamination. However, this approach is often ineffective on its own for achieving timely reductions in pollution concentrations in groundwater, which has built up over decades, moves much more slowly and interacts in complex ways with the subsurface.

The Proposed Addendum contains source control measures designed to achieve the purpose of reducing PFAS loading to the Cape Fear River on a maximum feasible basis and on an accelerated schedule. DEQ believes the actions outlined in the Proposed Addendum represent those actions that will have a substantial impact and can be implemented most expeditiously at the site to improve the water quality at the drinking water intakes downstream.

DEQ further notes that the actions already underway at Old Outfall 002, which includes a granulated activated carbon treatment system that became operational on October 1, 2020, and the Proposed Addendum measures are projected to result in a significant reduction in PFAS loading to the Cape Fear River from residual sources at the Chemours facility in less than six months. Based on modeled estimates, the measures required in the Proposed Addendum are projected to reduce PFAS loading from

residual sources at the Facility to the Cape Fear River by approximately 80%. These measures are in addition to DEQ's action in November 2017 to partially suspend the company's wastewater discharge permit. Chemours is required to capture its process wastewater and not discharge into the Cape Fear River. Additionally, DEQ is currently reviewing Chemours' proposed groundwater Corrective Action Plan which will require further reductions. All of these actions are done with the goal of reducing PFAS that arrives at the downstream drinking water intakes.

DEQ understands and appreciates the desire of downstream public water customers for a remedy that addresses impacts to drinking water. As stated above, DEQ believes that the Proposed Addendum is critical to address the contamination of downstream drinking water through the source control measures it requires.

It is important to note that Consent Order represents the resolution of a state enforcement action for injunctive relief in Superior Court. DEQ does not have authority to recover damages on behalf of third parties. Under North Carolina law, any civil penalties collected by DEQ must be placed in a public school fund.

Furthermore, the Consent Order is only one piece of DEQ's broader strategy to address PFAS contamination in the Cape Fear River Basin. The Consent Order does not release Chemours or any other entity from claims that DEQ or the State may have that fall outside the scope of claims for injunctive relief and civil penalties. The Consent Order also does not release Chemours from claims that DEQ may have based on new information. The Consent Order also does not release Chemours or any other entity from any liability it may have to any third parties arising from Chemours' actions.

ii. Comment: Some commenters stated that public water utilities should be involved in negotiation of the Proposed Addendum.

Response: Paragraph 12 of the Consent Order required Chemours to provide all of the downstream drinking water utilities with the Cape Fear River PFAS Loading Reduction Plan and Supplemental Report. All drinking water utilities were also given an opportunity to meet with DEQ and discuss the plan and supplemental report prior to the Proposed Addendum being developed. CFPUA met with DEQ and provided comments on the plan in September 2019.

iii. Comment: Some commenters expressed concern about the pace of the work proposed in the Proposed Addendum.

Response: DEQ believes the deadlines set forth in the Proposed Addendum are very aggressive. For instance, the first seep remediation system must be installed in November 2020 and the final seep remediation system must be installed in April 2021, less than six months from now. A stormwater treatment system must be installed in June 2021, less than ten months from now. The commenters did not provide

information that would support a conclusion that it would be feasible to properly implement these measures on a more expedited basis.

D. Comments Regarding Private Drinking Water Wells.

i. Comment: Some commenters stated that Chemours should provide whole house filtration or municipal water to homeowners whose wells have been contaminated by PFAS. One commenter believes that more needs to done for those with contaminated wells. One commenter is concerned about dermal absorption, and believes three RO systems is a band aid and not a complete remedy.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading from residual sources at the Facility to the Cape Fear River on an expedited basis. The alternative drinking water supply provisions are outside the scope of this action. DEQ continues to work with the community and Chemours to provide as much flexibility as possible based on community concerns. It should also be noted that based on information available to DEQ, current public health references do not indicate that the uptake of PFAS from water through the skin represents a public health risk.

E. Miscellaneous

i. Comment: One commenter stated that the goal of the Proposed Addendum should be to eliminate PFAS, not just significantly and permanently reduce the compounds. This commenter believes that the company should shut down until it develops the technology to eliminate PFAS.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading to the Cape Fear River on an expedited basis. Due to the measures required under the Consent Order, the ongoing operations of the facility are not a primary contributor of PFAS to the Cape Fear River. DEQ does not believe that shutting down the facility would significantly reduce PFAS loading because it would not address the predominant source of current contamination of the Cape Fear River – residual contamination of groundwater and soil that has accrued over the last three decades of the facility's operation. The Proposed Addendum requires that those pathways of carrying PFAS from the contaminated groundwater to the Cape Fear River be remediated in the coming months with permanent groundwater remediation measures completed and in place by March 2023.

ii. Comment: One commenter stated that the Proposed Addendum does not address the clean-up of wells and suggested that, if the Proposed Addendum is not the right mechanism to address these issues, the Corrective Action Plan and other enforcement

tools must be used to accomplish these goals. Other commenters expressed concern that contaminated soil and groundwater remain near the facility putting nearby families and community members at risk. These commenters stated DEQ should require Chemours to address the soil and groundwater contamination in a strong Corrective Action Plan

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading from residual sources at the Facility to the Cape Fear River on an expedited basis. Remediation of offsite groundwater is outside the scope of the Proposed Addendum. NCDEQ is committed to ensuring PFAS contamination caused by activities at the Fayetteville works facility is addressed through appropriate action in compliance with North Carolina environmental regulations. The Proposed Addendum is one component of NCDEQ's approach to achieving this goal. The groundwater Corrective Action Plan required under paragraph 16 of the Consent Order is another important component of NCDEQ's strategy.

iii. Comment: One commenter stated that Chemours should be mandated to study health impacts of the PFAS it has released.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading from residual sources at the Facility to the Cape Fear River on an expedited basis. Toxicity testing is outside the scope of the Proposed Addendum. However, Chemours is required to conduct toxicity testing pursuant to Paragraph 14 of the Consent Order. NCDEQ is in the process of reviewing Chemours proposed protocols for conducting that testing.

iv. Comment: Commenters submitted a petition signed by over 1000 people requesting that DEQ immediately require Chemours to create a PFAS Community Relief Fund for Victims of Chemours/DuPont. Other commenters also expressed support for a fund for persons who experience health impacts. Another commenter stated that Chemours needs to provide every victim of their contamination with a permanent solution and stated that Chemours should use all of their profits to provide restitution to every person affected.

Response: The Proposed Addendum implements the requirements set forth in Paragraph 12 of the Consent Order, which requires implementation of maximum feasible measures to reduce PFAS loading from residual sources at the Facility to the Cape Fear River on an expedited basis. This comment is outside the scope of this Proposed Addendum. It is important to note that the Consent Order, as well as the Proposed Addendum, represent the resolution of a state enforcement action for

injunctive relief in Superior Court. DEQ does not have authority to recover damages on behalf of third parties.

v. Comment: One commenter expressed concern about PFAS from other companies at the site – DuPont and Kuraray.

Response: DEQ continues to monitor the wastewater discharges from both Kuraray and DuPont and will take appropriate action in the event that DEQ identifies a violation associated with these discharges.