February 26, 2018

VIA E-MAIL

Michael E. Scott
Director, Division of Waste Management
N.C. Department of Environmental Quality
217 West Jones Street
Raleigh, North Carolina 27699
michael.scott@ncdenr.gov

Re: Notice of Violation - Immediate Action Required
15A NCAC 02L - Immediate Source Control
Chemours Company-Fayetteville Works
Bladen County, NC

Dear Mr. Scott,

The Chemours Company FC, LLC ("Chemours") respectfully submits this response to the Notice of Violation ("NOV") issued by the Department of Environmental Quality ("NCDEQ") dated February 12, 2018. The NOV concerns interim source control measures undertaken to date along with additional measures to be undertaken by Chemours with respect to poly- and perfluorinated substances ("PFAS") in the groundwater on and around Chemours' Fayetteville, North Carolina facility ("Fayetteville Works").

The February 12th NOV was the second issued by NCDEQ with respect to groundwater contamination at the Fayetteville Works. NCDEQ had issued a previous NOV on September 6, 2017, which was based on sampling conducted by Chemours in August 2017, and was for constituents "that exceed the standards for CLASS GA waters, established in 15A NCAC 2L .0202 in monitoring wells located at the referenced facility." The earlier NOV required Chemours to meet the requirements of Title 15A of the North Carolina Administrative Code, Subchapter 02L, Section .0106 (15A NCAC 02L.0106), which specifies corrective action for groundwater.[1]

Chemours' Comprehensive Site Assessment Work

Chemours understood the importance of taking the measures required by the September 6th NOV and has devoted enormous attention and resources to complying fully and timely with DEQ's directions. Among many other things:

[1] In submitting this response, Chemours does not intend to waive any of its rights and defenses with respect to either NOV.

- Chemours, in consultation with NCDEQ, has put in place a comprehensive program to investigate PFAS in on-site soil and groundwater, and to consider source control and other remedial measures. As part of that program, Chemours has compressed a site-wide, multimedia investigation, as well as the review and recommendation of potential remedial options, a process that might otherwise have taken years, into less than six months.

- As part of that effort, and in response to NCDEQ' s June 21, 2017 request, Chemours provided NCDEQ a July 17, 2017 *Supplemental Groundwater Sampling Work Plan* to collect groundwater from 16 locations on the Fayetteville Works and analyze the samples for sixteen PFAS, including HFPO Dimer Acid.[2]

- On September 14, 2017, Chemours provided NCDEQ the results from these sampling events,[3] which were in addition to those data NCDEQ generated from split samples it received from this same sampling event.[4]

- In September 2017, Chemours also provided NCDEQ the *Additional Supplemental Soil and Surface Water Sampling Plan*, pursuant to which Chemours collected and analyzed thirteen soil samples and three surface water samples from Willis Creek for sixteen PFAS, including HFPO Dimer Acid.[5] Chemours provided NCDEQ the results from this sampling event by memorandum dated November 3, 2017.[6]

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[2] *Supplemental Groundwater Sampling Work Plan*, Chemours Fayetteville Works, RCRA Permit No. NCD047368642-R2-M3 (July 17, 2017).

[3] Ltr. from Michael Johnson, Environmental Manager, Chemours, to Joe Ghiold, NCDEQ (Sept. 14, 2017).

[4] *See* NCDEQ, Chemours Preliminary Data, August 2017, https://files.nc.gov/ncdeq/GenX/GenX%20Sampling%20Map%2020170906_3.pdf.

[5] Tracy Ovbey, Parsons, *Additional Supplemental Soil and Surface Water Sampling Plan* (Aug. 11, 2017).

[6] Tracy Ovbey, Parsons, *Additional Supplemental Soil and Surface Water Sampling Memorandum* (Nov. 3, 2017).

- Also in September 2017, Chemours submitted to NCDEQ the *Cape Fear River Surface Water Sampling Plan*, pursuant to which Chemours collected and analyzed sixteen surface water samples from the Cape Fear River (including locations upstream and downstream of the Fayetteville Works) for sixteen PFAS, including HFPO Dimer Acid.[7] Chemours provided NCDEQ the results from this sampling event by memorandum dated November 3, 2017.[8]

- On October 3, 2017, Chemours proposed that it would undertake a comprehensive site investigation of the Fayetteville Works pursuant to the following schedule, which has been followed to date and remains in effect:

    - Submit work plan to NCDEQ: October 31, 2017

    - Complete field work: December 31, 2017

    - Submit data evaluation and technical memorandum: January 31, 2018

    - Submit feasibility study of technical remedial options: February 28, 2018

    - Submit remedial plan (with timetable for completion): March 31, 2018

- On October 16, 2017, NCDEQ requested that Chemours add additional sampling locations and analyze for additional PFAS, which Chemours agreed to undertake.

- On October 31, 2017, Chemours provided NCDEQ (on schedule) the *Additional Investigation Work Plan* that addressed NCDEQ' s October 16th feedback.[9] The plan provides that Chemours will analyze 59

[7] Tracy Ovbey, Parsons, *Cape Fear River Surface Water Sampling Plan* (Sept. 22, 2017).

[8] Tracy Ovbey, Parsons, *Cape Fear River Surface Water Sampling Memorandum* (Nov. 3, 2017).

[9] *Additional Investigation Work Plan*, Chemours Fayetteville Works, RCRA Permit No. NCD047368642-R1 (Oct. 31, 2017)

groundwater samples and 38 soil samples for twenty-six PFAS, including for PFAS now capable of identification and quantification due to Chemours' development in the prior months of new analytical methods to detect and quantify compounds for which there had previously been no quantification method.

- On December 15, 2017, Chemours provided NCDEQ the December 13, 2017 revised *Proposed Fayetteville Works Stormwater Sampling Plan*, pursuant to which Chemours has conducted dry weather and wet weather sampling to evaluate the influence of storm events on potential source areas of eleven PFAS. Chemours will submit to NCDEQ in March a supplemental technical memorandum addressing the stormwater component.

- On January 15, 2018, Chemours submitted a detailed response to NCDEQ's December 15, 2017 request that Chemours submit an interim source control plan.[10] The January 15th submission specified the extensive actions Chemours had taken and would take to address source control, including a number of interim, immediate actions to remove, treat, or control sources of PFAS contamination, including (i) Chemours' elimination of process water discharges to the Cape Fear River, (ii) Chemours' ongoing efforts to ensure that residents with impacted private wells had access to drinking water that conformed to the North Carolina Department of Health and Human Service ("NCDHHS") provisional health goal for HFPO Dimer Acid, and (iii) Chemours' commitment to expeditiously design and install air emissions abatement measures to mitigate ongoing air emission source contributions to ground water.

- On January 31, 2018, Chemours submitted to NCDEQ its *Additional Site Investigation Report*, reporting on the extensive groundwater, soil and hydrogeologic investigation results undertaken pursuant to the October 31, 2017 *Additional Investigation Work Plan.* This report included data on the 97 samples taken, analyzed for 26 separate PFAS. It also included a report on a Site Conceptual Model developed by Chemours to focus investigation efforts and remedial decision-making and to identify areas for additional collection of potentially relevant data during future

[10] Ltr. from Kevin Garon, Project Director, Chemours Corporate Remediation Group to, to Michael Scott, NCDEQ (Jan. 15, 2018).

investigations. This report was intended to meet and be consistent with the site assessment requirements of 15A NCAC 02L .0106 (g). Chemours looks forward to receiving any comments from NCDEQ on this report, and to addressing any questions, concerns or perceived data gaps.

- Chemours will be providing NCDEQ the feasibility study of technical remedial options by February 28 (two days from now), as Chemours had committed. We look forward to receiving NCDEQ's comments on this report. We also request that NCDEQ consider the Feasibility Study report as part of Chemours' response to the NOV.

- Chemours will be providing NCDEQ by March 31 with the remedial plan (with timetable for completion), also as Chemours had committed.

Completion of these site assessment and remedial evaluation measures has been an essential element for knowing what source control measures can best be taken to most effectively address groundwater contamination. For example, the data now available strongly indicates that a high priority is to focus on stopping contamination and water infiltration to the perched zone beneath the facility, and to begin remediation of that zone. Now that the predicate assessments and studies are substantially complete--and we emphasize again the incredibly focused and timely manner in which they were conducted--Chemours is better able to move forward with aggressive source control measures.

Interim Action to Address Impacts from Offsite Groundwater

While on-site assessment and studies have been a major focus of Chemours' efforts during recent months, Chemours has also recognized the need to respond immediately to the ramification of elevated levels of HFPO Dimer Acid detected in private wells near the Fayetteville Works. To that end, since early September 2017, Chemours— in consultation and cooperation with NCDEQ— has been conducting a continuing residential well sampling program in the vicinity of the Fayetteville Works.

Pursuant to the September 8, 2017 *Residential Drinking Water Well Surveying and Sampling Plan*, Chemours has mitigated potential exposure by offering bottle water to all residents within the scope of the sampling program both (1) while their sample

results are pending; and (2) if the results from their residential drinking water well meet or exceed the NCDHHS provisional health goal for HFPO Dimer Acid.[11]

After Chemours submitted this plan, NCDEQ and Chemours conferred on numerous occasions regarding the residential well sampling program, including evaluating the data generated under the program and expanding the scope of the sampling program as warranted. Pursuant to the parties' agreed upon protocol, Chemours has been providing NCDEQ the results of this sampling program as they become available.

On January 11, 2018, Chemours submitted to NCDEQ a *Carbon Implementation Plan* that details Chemours' plan to offer granulated activated carbon treatment (at Chemours' own cost and expense) to those residents whose results from the residential sampling program are at or above the NCDHHS provisional health goal for HFPO Dimer Acid. At the request of NCDEQ, Chemours has agreed to conduct a Pilot Test on the effectiveness of GAC at four private wells, and Chemours and NCDEQ are finalizing the elements of that Pilot Test.

Chemours' Commitment to Additional Short Term Source Control Actions

Given the significant work Chemours had already undertaken and the ongoing communications between Chemours and NCDEQ regarding the plan to address the groundwater contamination, Chemours was surprised to receive the February 12th NOV, and to learn that NCDEQ considered Chemours' January 15th response to be insufficient. In providing this response to that NOV, we believe it is important to emphasize two points.

First, Chemours disagrees with the NOV's conclusion that Chemours' response actions have been insufficient. Chemours believes that a full examination of its activities during the last half-year would show that it has taken extensive actions to address NCDEQ's groundwater contamination concerns on a schedule that is unprecedented for a matter of this nature. The January 15th response detailed a range of short terms actions Chemours was taking to address source control, even as Chemours was seeking to develop comprehensive long-term measures to address the issues of underlying concern. In this regard, it is important to emphasize that such long-term effective remediation measures can only be implemented after a thorough remedial investigation and feasibility

[11] Tracy Ovbey, Parsons, *Residential Drinking Water Well Surveying and Sampling Plan* (Sept. 8, 2017).

study have been completed. Chemours has been progressing extremely expeditiously with those necessary and fundamental steps.

Second, notwithstanding the above and in an effort to address NCDEQ's continuing concerns with respect to groundwater contamination at Fayetteville Works, *Chemours has already taken substantial additional short term actions, beyond those previously described, to address source control and in the very near future will be taking further substantial source control measures.* As detailed herein, Chemours is undertaking the following source control actions:

- Starting this week (by March 2), commence an extensive abatement program to remove residual PFAS contamination on equipment and facilities, which is believed to be a source of groundwater contamination. In preparation for this abatement project, we have completed comprehensive sampling of the equipment at the site in order to appropriately target our efforts and have finished the pre-planning stage of this project.

- Starting within two weeks (by March 9), commence a program to excavate and remove contaminated soils in the vicinity of the so-called "Nafion ditch," which is believed to be a source of groundwater contamination. We already have completed the surface soil and storm runoff sampling for the purpose of evaluating which soils need to be addressed.

- Starting within three weeks (by March 15), begin to pump water from the perched zone, which the sampling and analytical data have shown to be the subsurface zone with by far the greatest concentrations of HFPO Dimer Acid and other PFAS, and a source of groundwater contamination through infiltration of other zones. The pumped water will be containerized for off-site disposal until such time as suitable treatment technology can be installed on-site. In preparation for this project, the technical team has identified the wells that will be used, completed the design and has ordered the pumps (starting with rental pumps so that we can begin sooner). As discussed below, this is an interim measure to be taken while Chemours evaluates and implement a longer term remedy.

- Complete design, which is already underway, of a project to excavate contaminated sediments and line the Nafion Ditch with a high quality synthetic liner, with a schedule for completion of the project, as discussed

further below, to be submitted by March 30. This project will reduce the infiltration of contaminated water into the perched zone. It will also reduce the overall water loading of the zone, so that the water levels in that zone drop and the perched zone will not infiltrate, or will infiltrate less, into the surficial and Black Creek aquifers near the River.

- Complete design, which is already underway, of a project to line the two sediment basin impoundments at the facility with a high quality synthetic liner with a schedule for completion of the project to be submitted by March 30. This project will reduce the overall water loading of the perched zone, so that the water levels in that zone will drop and the perched zone will not infiltrate, or will infiltrate less, into the surficial and Black Creek aquifers near the River.

- By March 30, select a remedial option, and submit a schedule for its expeditious design and implementation, for the channel of Old Outfall 002, which will consist of either lining and/or piping the channel to limit the potential of the channel to transport contaminated groundwater to the Cape Fear River. Samples have already been collected at a number of locations along this channel to inform the remedial design.

- Continue the design of granulated activated carbon systems to reduce air emissions of HFPO Dimer Acid and other PFAS from the indoor air sources and from the scrubber at the PPA plant and from indoor air sources at the Vinyl Ethers North facility. These air emissions are believed to be a contributing source of groundwater contamination. As has been discussed with the Division of Air Quality, these systems will be installed and operational by May 25.

- Continue the program already underway, as has been discussed with the Division of Air Quality, to reduce outdoor fugitive air emissions of HFPO Dimer Acid and other PFAS through implementation of recommendations by Chemours' consultant for an enhanced expanded Leak Detection and Repair program.

- Submit a written report to DEQ every two weeks on the progress of implementing the foregoing measures and on the evaluation and development of any additional source control measures.

- Confer with DEQ as frequently as DEQ would like concerning these measures and any others DEQ would like Chemours to consider.

These are major undertakings, which will require tremendous skill, diligence and hard work to complete. And they will be undertaken on schedules that are as short and tight as we believe are reasonably feasible, consistent with the overarching objectives of ensuring both the safety of the employees and contractor personnel involved and that we do not inadvertently exacerbate the very environmental conditions that we are seeking to abate. (We note that given NCDEQ' s strongly stated preference for source control measures to move forward as quickly as possible, we have for certain actions not built in the schedule a period for NCDEQ review and approval of a work plan. If NCDEQ would prefer that we add such a process to the schedule, we are glad to do so.)

To provide additional information on these additional source abatement measures, we address each of the four areas of activities specifically mentioned in the NOV. As detailed below, Chemours has already taken interim actions in each of these areas, and has begun or will promptly begin new actions in each:

A. Stormwater and wastewater conveyance ditches

The NOV directs Chemours to " effectively excavate, treat or control stormwater and wastewater conveyance ditches (including but not limited to current and former NPDES effluent channels, the Nafion Area ditch, and the Wood-lined ditch) such that they are no longer ongoing sources of contamination." Chemours has taken and will take the following effective measures concerning this topic

1. <u>Cessation of Process Water Discharges from Nafion/IXM facility (already completed)</u>

As you know, on November 29, 2017, Chemours severed the pipe conveying wastewater from the Fluoromonomers/Nafion Membrane manufacturing area to Outfall 002 and the Cape Fear River, further reducing PFAS concentrations at Outfalls 001 and 002, as well as concentrations in the effluent channel. These reductions are in addition to those reductions Chemours had achieved since July 2017 by identifying and voluntarily capturing for off-site disposal various wastestreams from within the Fluoromonomers/Nafion Membrane manufacturing area. Chemours' abatement efforts have collectively reduced HFPO Dimer Acid concentrations at Outfall 002 by over 99%.

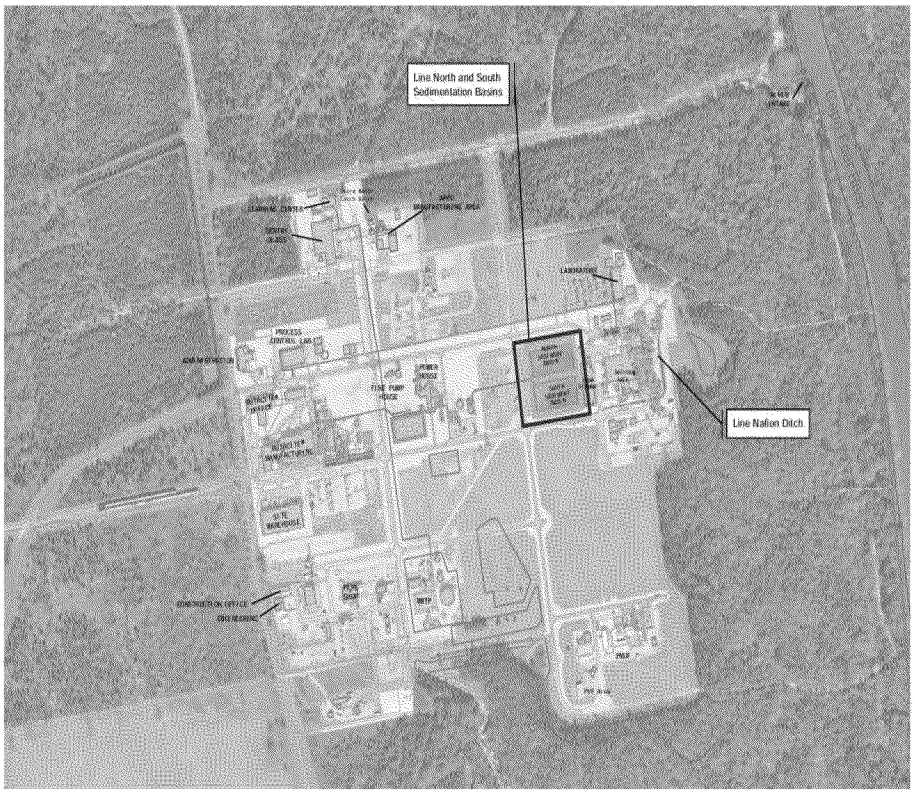
2. Excavation and Lining of Nafion Ditch

A core component of Chemours' source abatement plan is cleaning out and then lining the Nafion Ditch, shown on the Figure below, which presently carries up to 5 to 8 million gallons a day of non-contact cooling water from the Nafion/IXM facility to Outfall 002. The available data suggests that this ditch has been a significant contributing source of contamination to the perched zone under the facility, and also contributes to the watering of the perched zone and its infiltration of other aquifers. Accordingly, Chemours intends to excavate contaminated materials in the bottom of the ditch and then line it with an High Density Polyethylene liner. The design work is underway and will be completed by March 30, along with the preparation of a schedule for implementation of this project.

The design will define the extent of excavation that is advisable at the bottom and on the sides of the ditch, and the type of liner to be installed. As part of this project, we have sampled surface soil and storm runoff for the purpose of evaluating which soils need to be addressed.

We recognize the importance of expeditious implementation of this project, and Chemours is committed to exploring all feasible engineering options for doing so. There are several challenges that need to be addressed in developing a feasible schedule. The first is to find a way to implement the excavation and lining while the facility is operating and generating millions of gallons of non-contact cooling water a day that have to be transported to Outfall 002. In addition, portions of the Nafion ditch are in the designated blast zone for the facility[12], and for safety reasons, no one is allowed to be present in that zone during facility operation. Third, we have begun the process of acquiring the HDPE material necessary for the ditch lining, and have been informed that the acquisition will take at least two months. Given all that, Chemours can commit that the project will be completed no later than the next scheduled facility turn-around in October. Chemours is also investigating whether there are pumping or other alternatives that would allow the project to be implemented well in advance of October and will report on these efforts as more information become available with a schedule to be submitted by the end of March. Chemours also looks forward to discussing the details and timing of this project with NCDEQ during a site visit being scheduled in early March.

[12]. The facility is designed so that if there were to be an accidental explosion, debris would be directed in a single direction, called the " blast zone," which is off-limits during facility operation for safety reasons.



3. Soil Removal near Nafion ditch

In addition to activities within the Nafion ditch itself, Chemours will undertake to remove contaminated soils in the vicinity of the ditch and dispose of them offsite. That activity, other than the portions within the blast zone, can be undertaken while the facility is operating and so work will commence by March 9. Doing so will minimize overlap with the equipment cleaning project described below which is starting this week. Chemours has already conducted surface soil and storm runoff sampling for the purpose of evaluating which soils need to be addressed.

4. Lining of Sedimentation Basins

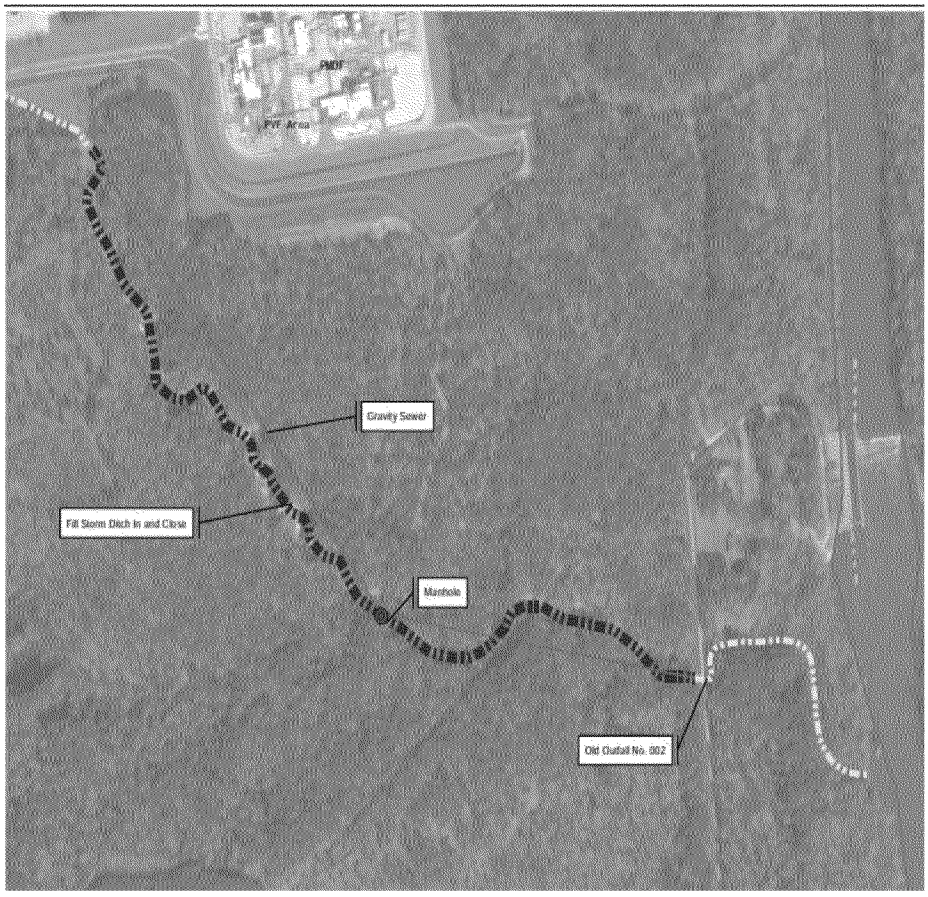
There are two surface impoundments shown on the Figure above, which are used to collect sediment generated during the filtration and clarification of intake water to be used at the facility from the Cape Fear River. The available data suggest that these basins are contributing to the watering of the perched zone, which in turn causes the perched

zone to infiltrate the surficial and Black Creek aquifer. Chemours plans to limit further such contributions by sequentially emptying and lining each basin with a high quality synthetic liner. The design work for this project is already underway. This project does not need to be tied to plant shutdown, and so can begin very soon, subject to the timing for acquisition of necessary HDPE or a substitute lining material. Chemours will submit a schedule for the project by March 30.

5. Former NPDES Effluent (Old Outfall 002) Channel

This channel was used to convey water to the former NPDES outfall, and now operates as a conveyance of stormwater to the Cape Fear River. It is shown on the Figure below and will be further addressed in the Feasibility Study report.

The available data indicates that this channel does not contribute to groundwater contamination as groundwater flows into the channel, not from it. However, as the channel does transport contaminated groundwater toward the Cape Fear River, Chemours plans to limit that transport by lining and/or piping the channel. Samples have already been collected at a number of locations along this channel to inform the remedial design. Chemours will fully assess each of these options, in consultation with NCDEQ, during March, and will provide NCDEQ with a proposed remedial option by March 30, along with a schedule for expeditious implementation.



6. Current NPDES Effluent Channel and Wood Lined Ditch

The NOV refers to controlling sources of contamination from (i) the current NPDES effluent channel, which is concrete lined, and (ii) the Wood Lined Ditch, which primarily conveys stormwater and non-contact cooling water from the Kuraray facility to the current NPDES effluent channel. Chemours' review of available data has not identified either of these conveyances as a significant source of groundwater contamination and so it does not propose any actions with respect to these features at this time. However, if NCDEQ has a different perspective on the contribution from these conveyances, we are prepared to promptly review that analysis and develop appropriate response actions. Moreover, Chemours will continue to examine, as it moves forward with the proposed source control actions, whether additional actions are appropriate.

B. Other Known Sources of Contamination

The NOV directs Chemours to " effectively remove, treat or control other known sources such that they are no longer ongoing sources or contamination." In addition to the projects discussed above and below under the first, third and fourth parts of NCDEQ' s directive, Chemours plans to take the following additional actions.

1. Pumping Water from Perched Zone

As detailed in the *Additional Site Investigation Report,* " An aerially limited perched water zone exists on top of the clay lens that underlies most of the manufacturing area. This Perched Zone appears mainly to result from seepage of surface water through the bottom of the North/South Sediment Basins that are used to settle out solids from Cape Fear River water (which is used on-site as non-contact cooling water) and infiltration of non-contact cooling water from the Nafion® Area ditch." This perched zone has observed PFAS concentrations substantially higher than those in the Surficial Aquifer and Black Creek Aquifer. The available data, and the Conceptual Site Model developed for the Site, suggest that contamination from the perched zone is infiltrating the lower aquifers.

To address the perched zone as a contributing source, Chemours will begin by March 15 to pump water from the three highest concentration wells in the perched zone. We estimate that the amount of water pumped per well will be in the range of three gallons per minute, with the precise level to be determined based on the experience once pumping begins. The pumped water will be containerized for off-site disposal until such time as suitable treatment technology can be installed on-site. The preparation for this project is already underway; the technical team has identified the wells to be used and has ordered the pumps (starting with rental pumps so that we can begin sooner). The March 15 start date will allow time for arrangements to be made for off-site disposal of pumped water. By dewatering the perched zone, we expect to substantially reduce infiltration to other aquifers.

C. Potentially Contaminated Equipment

The NOV directs Chemours to " clean potentially contaminated equipment (with capture or resulting wastewater for offsite disposal)." Chemours will immediately begin doing exactly that.

As the first step in this process, Chemours has already conducted extensive wipe sampling of exterior surfaces at the Nafion/IXM facility to identify areas that contain

HFPO Dimer Acid and may contribute to groundwater contamination from surface water run-off during rain events. This sampling has shown the highest levels of residual HFPO Dimer Acid material in the vicinity on the Vinyl Ethers South part of the facility, which is consistent with Chemours' working hypothesis that the residual contamination on surfaces was caused in substantial part by an incident, previously reported to NCDEQ, at the Vinyl Ethers South facility on October 6, 2017, which resulted in materials being discharged from that facility.

Given that information, Chemours is now undertaking a project to power wash equipment and facility components to remove residual contamination. Because of the higher levels observed at the Vinyl Ethers South part of the facility and its proximity to the suspected source of the contamination, we are beginning with Vinyl Ethers South and will proceed in phases. The first phase, addressing Vinyl Ethers South, should be completed in three weeks. This work requires careful planning to ensure that the water being used does not damage electrical components and will be captured for off-site disposal. The captured water will also be tested for HFPO Dimer Acid as a measure of the effectiveness of the process and we will share the results with NCDEQ. .

Once the first phase is complete, and the results evaluated in consultation with NCDEQ, Chemours will submit to NCDEQ by March 30 a schedule for the additional phases of cleaning that Chemours believes are appropriate based on the results that have been seen.

D. Air Emissions

The NOV directs Chemours " to reduce or eliminate air emissions that are contributing to groundwater contamination." In consultation with DEQ' s Division of Air Quality (" DAQ"), and in recognition of the available information suggesting that air emissions from the facility are impacting surrounding soil and groundwater via deposition, Chemours is well underway in implementing a comprehensive program to identify, evaluate, and abate PFAS air emissions at Fayetteville Works. The centerpiece of this program is a longer term effort to install a state of the art thermal oxidizer unit for controlling air emissions from the facility, which is expected to be at least 99.99% effective for HFPO Dimer Acid and other PFAS compounds. Beyond that, DAQ had

directed Chemours to develop shorter terms abatement strategies and we have been actively engaged in doing so, as described below.[13]

1. Actions Already Undertaken

Chemours has already taken the following remedial actions to reduce air emissions:

- Installed demister pad on the Division stack to increase scrubbing efficiency
- Made process changes such as vessel pressure set points to minimize/eliminate venting
- Upgraded piping systems to reduce potential for leaks and installed low emissions valves in multiple process locations
- Implemented helium leak testing in applicable areas to improve equipment commissioning

2. Source Testing

In coordination with DAQ, Chemours has undertaken a comprehensive source testing program, which began in January 2018 and is continuing this week, to allow the Facility and DAQ to better understand the sources and quantity of air emissions of HFPO Dimer Acid and other PFAS from the facility. This in turn allows Chemours to focus its abatement efforts on areas where it can achieve the greatest level of short term abatement.

This testing has required the development by Chemours scientists of sampling and testing standards and methods where no established sampling method previously existed. That process continues as DAQ has asked Chemours to be able to sample and test for additional compounds.

3. Granulated Activated Carbon Treatment Systems

Chemours has been designing and has committed to DAQ to install in three months -- by May 25, 2018 -- two granulated activated carbon adsorption systems to control HFPO Dimer Acid and other PFAS emissions at the PPA facility and the Vinyl Ethers North facility, respectively. These facilities account for what are understood to be

[13] On January 15, 2018, Chemours submitted to DAQ its " Update on Interim Measures to Quantify and Control Air Emissions of PFCs at the Fayetteville Works." This has been the subject of multiple updates in discussions with DAQ since that time.

by far the two largest sources of HFPO Dimer Acid air emissions at Fayetteville Works. The carbon system at the PPA facility is being designed to control both emissions from indoor leaks as well as from the facility scrubber; the Vinyl Ethers North Facility carbon system will capture and control indoor leak emissions. These units, which are being installed on an extremely compressed schedule with approval by DAQ on a pilot basis, will substantially reduce ongoing air emissions from the facility during the period until the Thermal Oxidizer can be installed.

4. Enhance Leak Detection and Repair Program (in implementation

The carbon adsorption units will not address outdoor fugitive emissions and so Chemours committed to DAQ in December 2017 to have an outside consultant evaluate its Leak Detection and Repair (" LDAR") program and make recommendation for enhancements. The consultant' s report was submitted to DAQ on January 31, 2018 (we attach a copy hereto for convenience), with seven recommendations that Chemours could undertake to reduce in the near term its emissions from equipment leaks. Chemours agreed to implement each of the recommendations, which are now being implemented on the following schedule submitted to DAQ on January 31, 2018 along with the report:

Recommendation	Plan to implement
1: Indoor Fugitive Leaks --Installation of GAC systems	Installation of GAC systems is proceeding
2: Pressure Testing --Use one of two potential methods for determining pressure drops during tests sufficient to trigger further action --Maintain formal documentation of pressure testing	The facility will begin to use one or the other of the recommended options for pressure testing and will maintain formal documentation of the testing by 2/16/2018. *(Completed)*
3: Enhanced AVO Inspections --Expanding the equipment subject to audio, visual and olfactory inspection --Consider use of	The facility will implement the recommended procedure by 2/16/2018. *(Completed).* It will also further evaluate the capabilities and compatibility of the ultrasonic leak detector in evaluating for leaks in the applicable units within the next 30 days.

ultrasonic leak detectors for evaluating leaks	
4: Additional Method 21 Instrument Monitoring -- Institute routine monitoring of outdoor equipment in certain services, with quarterly monitoring of additional valves and connectors and a lower internal leak definition and shorter and final initial repair and timelines -- ThermoFisher TVA-1000B FID equipment could be suitable for these purposes	The facility plans to conduct an experimental evaluation by 03/03/2018 to verify that the TVA-1000B would detect vapors of DAF. If the TVA sufficiently responds to HFPO-DA and HFPO-DAF the facility plans to implement the use of TVA-1000B as soon thereafter as practicable.
5: Enhanced Area Monitoring --Consider increasing the frequency of area air monitoring and increasing the number of area monitoring sampling locations -- Consider lowering the alarm thresholds to detect smaller leaks of acid fluorides	The facility will conduct an evaluation of the preferred method to implement this recommendation by 03/03/2018 and will implement in accordance with the recommendations from the evaluation.
6 and 7: Replacement or Improvement Options for Valves and Connectors -- Consider installing low leak technology at the time of replacement for	The facility will conduct an evaluation of the preferred methods to implement these recommendations by 03/20/2018 and will implement those methods as soon thereafter as practicable. In the interim, we will look for opportunities to increase the utilization of low emission replacement valves and

targeted process units --Reducing the number of connector components	connectors.

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As summarized above, Chemours has already undertaken numerous actions to remove, treat, or control sources of groundwater contamination involving HFPO dimer acid and other PFAS compounds at Fayetteville Works, and it is committed to undertaking major further actions on a highly expedited schedule, in close coordination with DEQ. In addition, we add the following additional ideas for your consideration:

- The plans submitted herewith are dynamic and Chemours continues to strive to do more and sooner. Accordingly, we plan, subject to any feedback from DEQ, to submit to DEQ every two weeks an update on our implementation of the projects outlined herein, and any new projects we propose to implement.

- We are available to confer with you in further detail on any aspect of this response and in whatever form you like. As mentioned above, we are looking forward to arranging a site visit for NCDEQ in early March, so we can discuss in the context of the facility itself, the projects and schedules we have proposed.

- We ask you to consider, as you are evaluating the completeness of this response, not only the details provided here and in the Feasibility Study which you will receive in two days, but also the totality of what Chemours has done and is doing to address these issues, including (i) its ongoing efforts to provide bottled water and carbon treatment systems to affected homeowners with private wells, and (ii) its site investigation, feasibility study and remedial selection process, which can often take years for a site as large and complex as this, but have been undertaken here in under six months.

- As you evaluate the schedules we have proposed, we ask that you also consider that none of the groundwater contamination we will be addressing here is contributing to any ongoing exceedance of the NCDHHS provisional health goal of 140 ppt for HFPO dimer acid at water intakes from the Cape Fear River (which levels remain consistently

below 140 ppt). We understand that time is still of the essence and that it is important that we proceed expeditiously and effectively, and have reflected those fundamental goals in what we hope you will recognize as an ambitious plan and schedule.

We look forward to further continuing to work with you as we implement these projects and, we hope, addressing your concerns, and we thank you for the time you have devoted to our facility.

Sincerely,

Kevin Garon
Project Director