



April 16, 2019

**Department of Environmental Quality
Presentation to the House Environment Committee**



PFAS History

- June 8, 2017 – Star News Report on GenX
- June 21, 2017 – Chemours Announces Voluntary Diversion of Wastewater Containing GenX
- August 2017 – DWM Tests Groundwater Wells on Facility Property
- Sept. 5, 2017 – DWR Issues 60-day Notice of Intent to Suspend NPDES Permit
- Sept. 6, 2017 – DWM Issues NOV & Intent to Assess Civil Penalty for Groundwater Violation and Begins Sampling of Private Drinking Wells near Facility
- Sept. 8, 2017 – Partial Consent Order, Bladen County Superior Court
- October 2017 – DAQ Begins Work on Air Deposition
- Oct. 24, 2017 – DWR Lifted Sept. 5, 2017 Intention to Suspend NPDES Permit
- Nov. 13, 2017 – DWR Issues NOV & Intent to Assess Civil Penalty related to release on Oct. 6, 2017
- Nov. 16, 2017 – DWR Issues Notice of Partial Suspension and 60-Day Notice of Intent to Partially Revoke NPDES Permit, with Effective Date of Suspension November 30, 2017



PFAS History

- January 2018 – DAQ Begins Wet Deposition Monitoring Near Facility
- April 6, 2018 – DAQ Issues Notice of Intent to Modify Chemours Air Permit
- April 9, 2018 – DOJ files Amended Complaint and Motion for Preliminary Injunctive Relief
- April 27, 2018 – Chemours Responds to DAQ Notice
- June 11, 2018 – DEQ Files Proposed Order Against Chemours, with a 30-day Public Comment Period
- November 21, 2018 – DEQ Announces Proposed Consent Order with Chemours, Cape Fear Riverwatch, with a 30-day Public Comment Period
- December 21, 2018 – DEQ Extends Public Comment Period to January 7, 2019
- February 20, 2019 – DEQ Announces Final Consent Agreement Signed by the Three Parties
- February 25, 2019 – Judge Douglas Sasser Signs Consent Order, Order is Filed in Bladen County Superior Court
- March 14, 2019 – DAQ Issues Permit for Installation of Thermal Oxidizer



Chemours Consent Agreement

- Three Party Agreement – DEQ, Chemours, Cape Fear Riverwatch
- Comprehensive Agreement
 - Reduce Air Emissions by 99%
 - Address Groundwater Remediation
 - No Discharge of Process Wastewater Until DEQ Issues NPDES Permit With Limits Necessary and Appropriate to Control GenX and Other PFAS
 - Alternative Drinking Water for Affected Well Owners, Including Paying Water Bills or Maintaining Filtration Systems for 20 Years
 - Measure and Analyze Chemours' Contribution to PFAS Contamination at Downstream Public Water Utilities' Raw Water Intakes
 - Analyze PFAS Contamination in River Sediment
 - Notification Requirement to Downstream Public Water Utilities if an Upset Has Potential to Cause Discharge into Cape Fear River of GenX above 140 ppt
 - Remove 99% of Contamination of the Surface Water and Groundwater from an old Outfall
 - Provide an Accelerated Plan to Reduce PFAS Contamination in Cape Fear River



S.L. 2018-5

REQUIRE ESTABLISHMENT OF PERMANENT REPLACEMENT WATER SUPPLIES FOR AFFECTED PARTIES WITH DRINKING WATER WELLS CONTAMINATED BY PER- AND POLY-FLUOROALKYL SUBSTANCES

SECTION 13.1.(d) In order to ensure the expeditious establishment of alternative permanent water supplies for each affected party, in accordance with the requirements of G.S. 143-215.2A, the sum of two million dollars (\$2,000,000) of the funds appropriated in this act to the Division of Water Infrastructure of the Department of Environmental Quality is allocated to provide funding to local governments for necessary expenditures that local governments may incur as a result of activities to connect affected parties to public water supplies pursuant to an order issued under G.S. 143-215.2A. These funds shall be deposited into the PFAS Recovery Fund, which is established within the Department as a special fund. The Department may distribute funds to local governments solely for the purposes of planning, analysis, and surveying of waterline extensions for affected parties subject to an order issued pursuant to G.S. 143-215.2A. No later than 30 days after completion of a local government's activities to connect an affected party to a public water supply pursuant to G.S. 143-215.2A, the Secretary shall deliver a statement of all funds paid from the PFAS Recovery Fund to the local government and the costs expended by the local government for such activities. The Department shall report on activities conducted and funds expended pursuant to this section on a quarterly basis to the Environmental Review Commission, and the Fiscal Research Division, beginning September 1, 2018.



S.L. 2018-5

FUNDS TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY

SECTION 13.1.(m) One million three hundred thousand dollars (\$1,300,000) of the funds appropriated to the Department of Environmental Quality for the 2016-2017 fiscal year and allocated for in situ nutrient management by Section 14.13(e) of S.L. 2016-94, as amended by Section 13.24 of S.L. 2017-57, is reallocated for the purposes described in subsection (o) of this section.

SECTION 13.1.(n) Twenty-five thousand dollars (\$25,000) in nonrecurring funds appropriated to the Rural Economic Development Division of the Department of Commerce for the 2017-2018 fiscal year and provided as a grant-in-aid to the Town of Stedman by subdivision (15) of Section 15.8(b) of S.L. 2017-57 is transferred to the Department of Environmental Quality and allocated for the purposes described in subsection (o) of this section.



S.L. 2018-5

SECTION 13.1.(o) The funds provided to the Department of Environmental Quality by subsections (m) and (n) of this section shall be allocated for the 2018-2019 fiscal year as follows:

- (1) Six hundred thirteen thousand dollars (\$613,000) to the Division of Water Resources for time-limited positions and operations support of water quality sampling and targeted analysis of samples related to per- and poly-fluoroalkyl substances (PFAS), including the chemical known as "GenX" (CAS registry number 62037-80-3 or 13252-13-6), and to purchase supplies for operation of the mass spectrometer acquired pursuant to subsection (q) of this section to perform targeted analysis of water samples related to discharges of PFAS, including GenX.
- (2) Two hundred thousand dollars (\$200,000) to the Division of Water Resources for time-limited positions and operations support to address permitting backlogs.
- (3) Two hundred thirty-two thousand nine hundred fifty dollars (\$232,950) to the Division of Air Quality for sampling and analysis of atmospheric deposition of PFAS, including GenX.
- (4) Two hundred seventy-nine thousand fifty dollars (\$279,050) to the Division of Waste Management for sampling and analysis of PFAS, including GenX, in groundwater wells, soil, and sediment.

SECTION 13.1.(p) Funds reallocated by subsection (o) of this section shall not revert but shall remain available for nonrecurring expenses.



S.L. 2018-5

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Time limited: Engineer and Environmental Specialists for permitting, and Environmental Technician for sampling

Laboratory: Lead Chemist, Chemist to perform emerging compound analysis

Data/GIS: Data management and GIS

Health Evaluation: Toxicologist and Health Risk Consultant

Sampling: Environmental Specialists

Permitting: Engineers and Environmental Specialist



Current Sampling

Division of Water Resources Staff Conduct Weekly Sampling

- The Chemours outfall 002 has two composite samples:
Monday - Thursday and Friday - Sunday
- Drinking water facilities downstream are sampled weekly:
Bladen Bluff
International Paper
NW Brunswick
Pender County
CFPU Sweeney

Ambient Monitoring

- Jordan Lake
- Falls Lake
- Public Water Supply Reservoirs in the Cape Fear,
- New and Watauga River Basins



Water/Wastewater Sample Analysis

Weekly samples

Finished drinking water and Chemours wastewater analyzed by EPA Athens laboratory
September 2017 – December 14, 2018

Weekly samples taken December 21, 2018 – February 28, 2019:

Finished drinking water samples sent to Dr. Knappe's lab for analysis.

Chemours Outfall 002 wastewater samples analyzed by GEL Laboratories and EPA Athens laboratory.

March 4th – Present:

Finished drinking water and Chemours Outfall 002 wastewater samples began sending back to EPA Athens, GA lab for analysis starting March 4th.

- Received analysis on April 10th.



S.L. 2018-5

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(3) Two hundred thirty-two thousand nine hundred fifty dollars (\$232,950) to the Division of Air Quality for sampling and analysis of atmospheric deposition of PFAS, including GenX.

- Fixed Rainwater collection sites established near Chemours
 - Four sites have been operational since April 2018.
 - A fifth became operational in May 2018.
 - The weekly rainfall total is measured.
- GenX and 28 other PFAS compounds are quantified weekly.
- Both wet and dry deposition are now being measured.



NC DAQ PFAS Rainwater Network

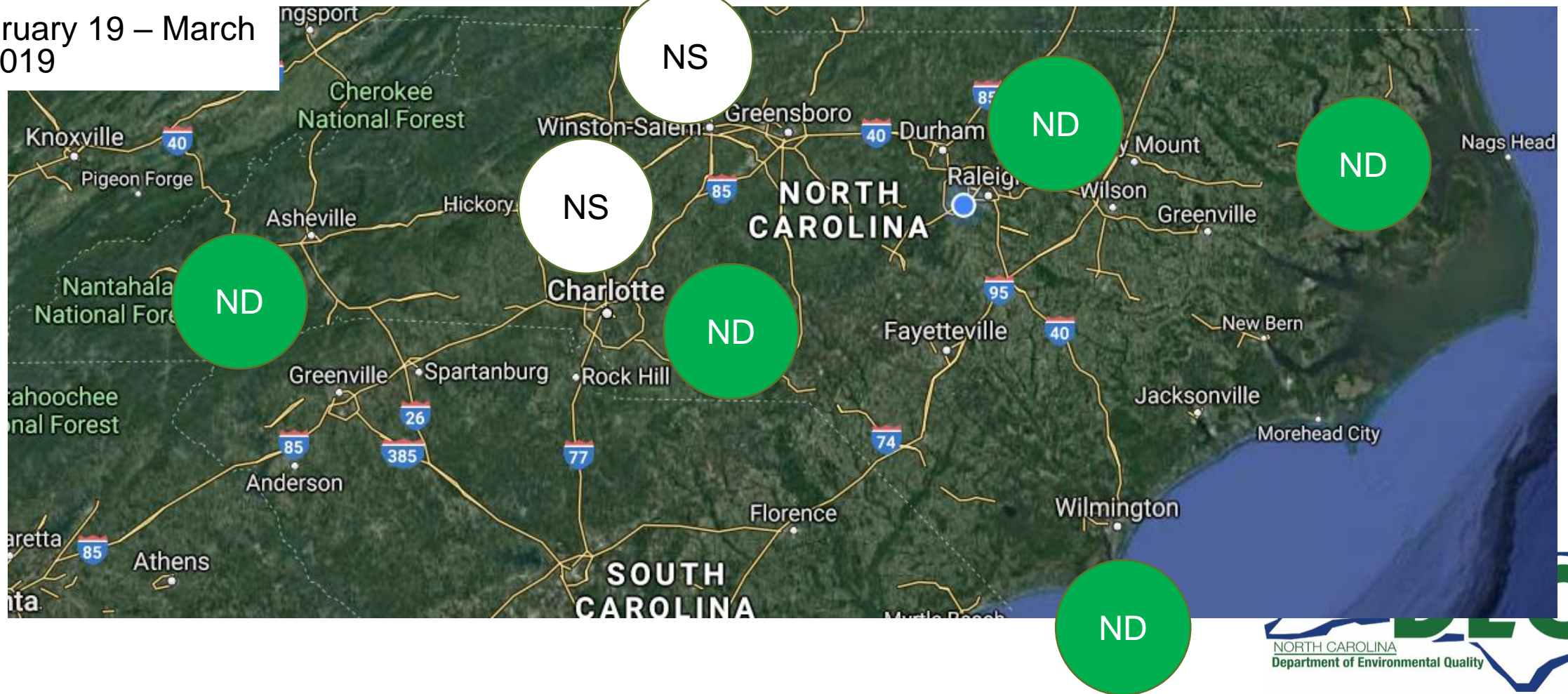
- The DAQ has established a background PFAS rainwater network across the state. Seven sites have been located near our seven regional offices. Weekly sampling equipment, rain gauges and security fencing have been purchased and installed since June 2018. Rainfall, GenX and 28 other PFAS compounds are measured weekly.
- One detection of Perfluoro-n-butanoic acid (PFBA) at 7.4 ng/L during the week of 5/29/18-6/5/18 at the Raleigh sampling location.
- All other samples for 28 analytes have been non-detect.



NC DAQ PFAS Rainwater Network

Background Rainwater PFAS Concentrations
Measured in ppt; ND = Not detected; NS = No sample for the time period

February 19 – March 5, 2019



NC DAQ PFAS Rainwater Network



Annual Rainwater Network Sample Analysis Cost *

- \$225 per sample analysis
 - 20 samples per week
 - 10 from Chemours sites – 5 wet & 5 dry deposition
 - 7 Regional office sites,
 - 3 QA samples
 - Weekly deposition network - \$4500 for analysis and \$170 shipping
 - Annual
 - Sample analysis per year (52 weeks) = \$234,000
 - Shipping per year (52 weeks) = \$8840
 - Total annual cost* = \$242,840
- *cost is calculated only for sample analysis, staff time to prepare, travel, collect, QA, deploy equipment, repair equipment, etc is not included.



NC DAQ PFAS Rainwater Network



- The background rainwater network will assist in determining potential air emissions contributions to surface or groundwater PFAS contamination.
- Future sample analysis will be performed by the Division of Water Resources' mass spectrometer beginning as early as the summer of 2019.
- The DAQ will continue to contract with a third party laboratory in the event there are capacity limitations.



S.L. 2018-5

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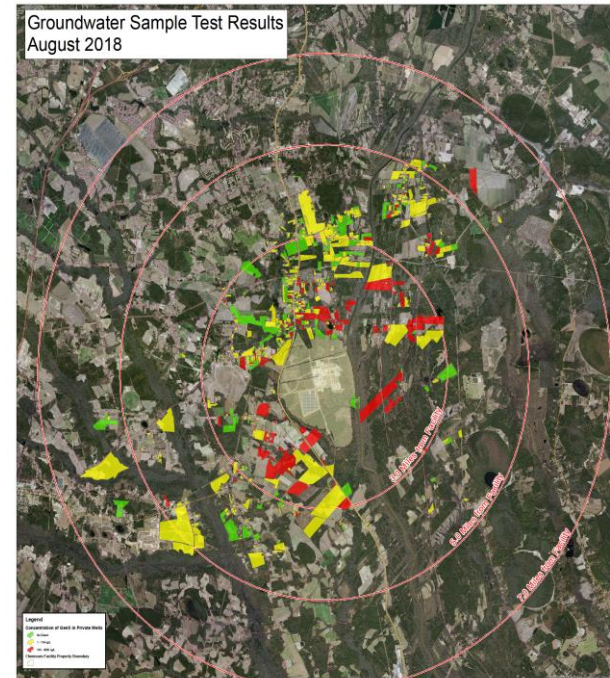
(4) Two hundred seventy-nine thousand fifty dollars (\$279,050) to the Division of Waste Management for sampling and analysis of PFAS, including GenX, in groundwater wells, soil, and sediment.

- Chemours- groundwater
- Department of Defense Facilities
- Assisting Health Departments with PFAS
- Landfill leachate testing for PFAS



Chemours Offsite Groundwater Testing

- Found high levels of PFAS compounds in onsite monitoring wells at Chemours
- Tested private wells on properties adjacent to Chemours first and found high levels
- DEQ has been testing additional private wells around the Chemours plant (180 private wells tested by DEQ)
- Funds from the General Assembly have been utilized for this sampling



Water Treatment System Pilot Study

- DEQ asked Chemours to provide alternate water for 164 homes with greater than 140 ppt GenX in wells. Chemours provided those homes with bottled water.
- Chemours submitted a proposal to DEQ in Jan 2018 to install granular activated carbon (GAC) filtration systems.
- DEQ requested a pilot study to determine:
 - System effectiveness,
 - System maintenance schedule, and
 - Compound breakthrough.



Water Treatment System Pilot Study (cont'd)

- All 6 GAC systems were installed by April 20, 2018.
- Both DEQ and Chemours' third-party consultants have been sampling the filter unit every other week (alternating).
- DEQ is testing for 33 PFAS compounds at 3-4 locations per system.
- DEQ results are posted on the DEQ website:
<https://deq.nc.gov/news/hot-topics/genx-investigation/groundwater>

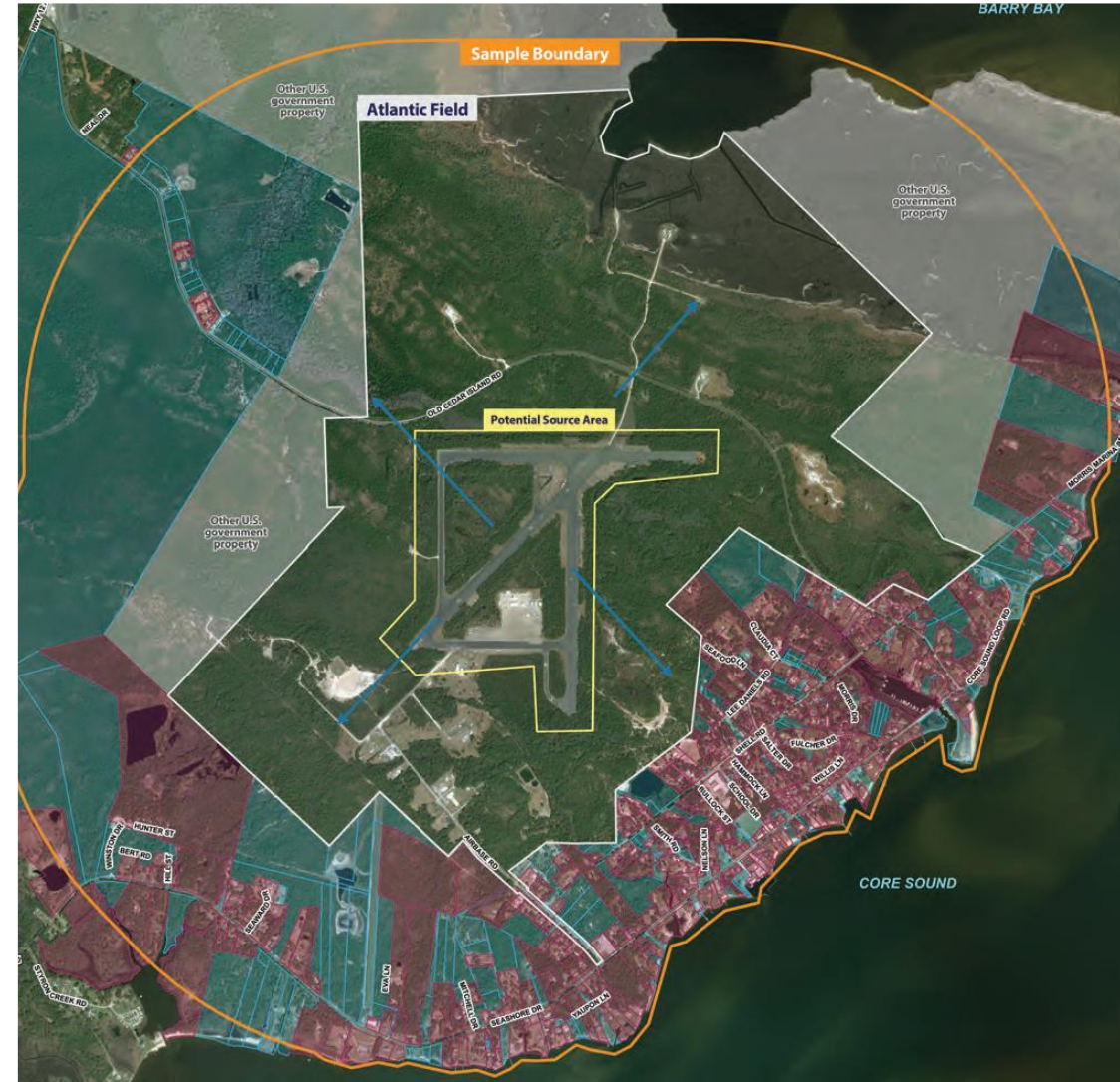


GAC Filter Systems and Sampling Points



Marine Corps Well Sampling near MCOLF Atlantic

- DEQ has collaborated with the Department of Defense (DOD) on sampling 258 private wells within a one-mile radius of Marine Corps Outlying Landing Field Atlantic.
- DEQ has also participated in the Community Information sessions related to this site.
- Sampling results showed detections of PFOA/PFOS in 32 wells. Two wells exceeded the EPA lifetime health advisory of 70 ppt.
- DOD has provided whole house filters to impacted residents.



Guilford County and Piedmont Triad International Airport

- DEQ sampled private drinking water wells near Piedmont Triad International Airport and near streams upon the request of Guilford County.
- DEQ provided health recommendations and consultations to impacted well owners.
- DEQ was prepared to provide bottled water to any well owners with detections above EPA health advisory levels (70 ppt PFOA/PFOS).
- Groundwater data showed no PFOA/PFOS levels above 70 ppt.
- DEQ plans to resample wells with detections, and sample additional wells as needed around the airport.



New Hanover County Landfill Leachate Sampling



- DEQ assisted New Hanover County with landfill leachate testing for PFAS.
- Testing included raw and treated leachate.
- DEQ tested for 33 PFAS analytes.
- PFAS detected in raw leachate.
- Non-detect in treated leachate.



S.L. 2018-5

SECTION 13.1.(q) Five hundred thirty-seven thousand dollars (\$537,000) of the funds appropriated by this act for the 2018-2019 fiscal year to the Department of Environmental Quality Senate Bill 99 Session Law 2018-5 Page 127 Quality to purchase a triple quadrupole (QqQ) mass spectrometer shall be used to perform targeted analysis of water samples related to discharges of PFAS, including GenX, that are identified by testing conducted pursuant to subsections (f), (g), (h), and (i) of this section. Funds appropriated by this subsection shall not revert but shall remain available for nonrecurring expenses.



Community Outreach

Communication

- DEQ has held seven public information sessions to date in the communities around the Chemours plant.
- DEQ responds to community concerns.



Transparency

- Post data, enforcement docs, letters, etc. on the GenX webpage: <https://deq.nc.gov/news/hot-topics/genx-investigation>

Ongoing Efforts

- Daily communication with individuals and the community



PFAS Next Steps

- Continued coordination with all stakeholders - EPA, citizens, industry, environmental groups.
- Continue to evaluate areas of potential exposure to PFAS compounds.
- Glean information from other countries (Netherlands) and states (Michigan, Vermont) who are addressing this same subject.
- Advocate for research to keep moving forward on analytical test methods, potential sources and health impacts.
- Continue coordination with the UNC Collaboratory - Use research results to help refine our regulatory program work.
- Continued focus on risk communication for what is known and what is not known about PFAS.



PFAS Next Steps

- Expand water quality sampling along Cape Fear.
- Require testing for PFAS for dischargers into Cape Fear to characterize other contributions.
- Evaluate other areas where PFAS has been deposited into the environment (E.g., landfills, biosolids).
- After complete characterization of Cape Fear, begin work on other river basins in North Carolina.
- Not all PFAS contamination can be traced to a single responsible party, as GenX is to Chemours.
- Determine which PFAS need regulatory standards; work with the Secretaries' Science Advisory Board.



2019 Governor's Budget Request

\$6,055,552 R / \$336,441 NR / 37 FTE

- New staff would be dedicated to emerging compounds specifically, rather than being redirected from normal duties.
- Staff would be located at both DEQ headquarters and across the state at regional offices.
- 37 FTEs are mostly scientists divided between DWR and DWM.
- NR funds would be used acquire a mobile lab to help bring drinking water systems back online faster.



Questions?

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