Turn Off the Tap: Addressing Virginia's PFAS Water Pollution from Industrial Sources

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For a digital copy of the full report (including appendices), visit https://www.selc.org/resource/turn-off-the-tap-on-pfas/.

Executive Summary

Per- and polyfluoroalkyl substances (PFAS) are a class of synthetic chemicals that do not easily break down in the environment and instead build up and persist in our bodies, soil, and water. They are linked to significant adverse health effects, even at very low levels.

A major source of PFAS contamination is water pollution from industrial sources that use or manufacture PFAS. Conventional water treatment systems do not remove PFAS, meaning this pollution can lead to significant downstream impacts—like contamination of drinking water and sewage sludge (also known as biosolids), a wastewater treatment plant byproduct often applied to land as fertilizer. PFAS will continue to be added to our environment unless industrial sources install PFAS pollution controls. Doing nothing harms public health and imposes significant cleanup costs on downstream communities, rather than the polluters themselves.

As many Virginia communities are already seeing, drinking water providers and their customers must spend hundreds of millions of dollars to address PFAS contamination. It is not fair for downstream communities to bear the costs of PFAS treatment when industry is responsible for (and profiting from) the production and use of PFAS. It is also far more cost-effective for industrial facilities to treat their PFAS pollution at the source—treatment costs increase dramatically with the volume of contaminated water, and individual industrial facilities typically produce and treat considerably less water than water utilities.

Virginia's Department of Environmental Quality (DEQ) already has authority under the federal Clean Water Act to require industrial sources to disclose and control their discharges of PFAS pollution.

Based on existing law and examples from other states, SELC recommends three concrete steps DEQ should take to identify and stop PFAS water pollution from industrial sources today:

1. **Require disclosure and monitoring of PFAS;**
2. **Assess and impose effluent limitations for PFAS; and**
3. **Require control of PFAS that industries send to wastewater treatment plants.**

In addition to recommending specific measures to address PFAS water pollution in Virginia, this report provides background information on PFAS and its occurrence in Virginia and sets out the federal and state legislative and regulatory landscape.

PFAS water pollution is a statewide problem that needs a statewide solution. We must slow the PFAS cycle by stopping PFAS water pollution at the source.

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Table of Contents

I. The Solution – Controlling PFAS Water Pollution Today

Because per- and polyfluoroalkyl substances (PFAS) are persistent once they enter the environment, the easiest and most effective way to control PFAS pollution is to prevent it from entering the environment to begin with.

Industrial wastewater and stormwater releases are a substantial source of PFAS water pollution. Virginia's Department of Environmental Quality (DEQ) can take immediate action—without the need for new legislation or authority—to produce meaningful reductions in PFAS pollution, generate useful data, and, most importantly, protect communities and the environment.

Virginia must enforce existing law to ensure that PFAS polluters, rather than communities, bear the costs and burden of controlling PFAS pollution. **DEQ should use the discharge permit program to:**

1. **Require disclosure and monitoring of PFAS;**
2. **Assess and impose effluent limitations for PFAS; and**
3. **Require control of PFAS that industries send to wastewater treatment plants.**

In addition to being required by law, controlling PFAS pollution at the source offers significant benefits:

- Stopping PFAS at its source **prevents other downstream PFAS pollution problems**, like contamination of our drinking water and our food supply (which can be polluted by PFAS-laden sludge). Across the country, drinking water providers and their customers are already spending hundreds of millions of dollars to address industrial PFAS pollution and protect public health, and farmers and private well owners are dealing with contaminated farmland and drinking water supplies.

Unpermitted PFAS Discharges Violate the Clean Water Act

The federal Clean Water Act generally prohibits discharges of any pollutant into waterbodies. The limited exception to this prohibition is discharging under a specific permitting program—meaning that in order to pollute, a facility must have a permit.

> "Except as in compliance with [provisions of the Clean Water Act], the discharge of any pollutant by any person shall be unlawful."
> 33 U.S.C. § 1311(a).

Generally speaking, wastewater and stormwater from industrial sources enter the environment through two primary pathways:

- **Direct discharges:** Some industrial facilities directly release wastewater and stormwater into Virginia's streams and rivers. These facilities must obtain a discharge permit from DEQ for their wastewater and stormwater releases.
- **Indirect discharges:** Other industrial facilities send their wastewater and stormwater to wastewater treatment plants, which then release it into Virginia's waterways. In this context, the wastewater treatment plants are responsible for obtaining a permit from DEQ and regulating the wastewater they receive from indirect dischargers so the plants can comply with their permits.

The permitting regime that governs PFAS and other pollutants in wastewater and stormwater discharges is the National Pollutant Discharge Elimination System (NPDES) program, 40 C.F.R. Parts 122–25. In Virginia, DEQ administers the program as the Virginia Pollutant Discharge Elimination System (VPDES) program, 9 VAC 25-31 Parts I–XI.

- Since industrial facilities treat a fraction of the water that wastewater treatment plants and drinking water utilities treat—and since treatment costs increase dramatically with the volume of contaminated water—**it is not only fair for industrial facilities to treat their own PFAS pollution, it is far more cost-effective**.
- Disclosure and monitoring of PFAS through discharge permits **generates statewide data about PFAS releases from industry**. This data is critical for Virginia to ensure it identifies and stays ahead of potential PFAS pollution problems.

States around the country already successfully use these tools to control PFAS pollution from industrial facilities in their communities. Virginia should do the same.

1. Require Disclosure and Monitoring of PFAS

Accurate disclosure of pollutants is the keystone of the discharge permit program. DEQ and the public cannot assess pollution discharges unless they are adequately disclosed in the permit application process. If a facility does not disclose the presence of a pollutant in its discharge, the facility does not have permission to release the pollutant into rivers and streams. **DEQ needs to require all discharge permit applicants to disclose whether they release PFAS.**

DEQ can make it easier for industrial facilities to disclose PFAS discharges in their permit applications. Available testing methods allow industrial facilities to test for and report the release of many types of PFAS. U.S. Environmental Protection Agency (EPA) method 1633A tests for 40 PFAS compounds in wastewater, stormwater, and other media while EPA method 1621 is a screening method that can identify the presence of thousands of known PFAS in water samples.[1]

South Carolina

South Carolina has implemented explicit disclosure requirements for PFAS through a form included in the state's discharge permit application. Applicants indicate whether they use or generate PFAS and whether they know or suspect the chemicals could be released from their facility. The form also requires specific PFAS testing (Appendix A).

To help ensure that industrial sources of PFAS follow the law, **DEQ should make explicit the existing requirement of PFAS disclosure by immediately incorporating a PFAS reporting form into its discharge permit application.**

Additionally, DEQ should immediately modify its boilerplate discharge permit language to make clear that undisclosed, unpermitted discharges are not shielded from liability. If a pollutant is not disclosed during the permit application process, a permittee does not have permission to discharge it regardless of the language included in the permit. However, adding a provision to all discharge permits that explicitly states this could further encourage accurate PFAS discharge disclosure by permit applicants.

Tennessee

A discharge permit issued by Tennessee provides an example of how to make clear that undisclosed PFAS discharges violate the Clean Water Act: "The facility's application did not report any forms of PFAS as chemicals that there was the potential to discharge" and therefore "[t]he permittee has no permit shield for the discharge of PFAS compounds because no such chemicals were disclosed in the permit application or otherwise" (Appendix B).

Finally, DEQ's discharge permits should require all known or suspected PFAS dischargers to monitor for PFAS on at least a quarterly basis. Variations in industrial processes may mean that the amount of PFAS pollution in wastewater and stormwater differs over time. While monitoring is not a substitute for enforcing accurate pollutant disclosure, including quarterly monitoring requirements in discharge permits would give industrial facilities—and DEQ—up-to-date information about PFAS releases and help them to catch pollution problems early.

North Carolina
North Carolina required the McAlpine Creek Wastewater Management Facility to use EPA method 1633 (now known as method 1633A) for PFAS monitoring. This permit is also an example of requiring a wastewater treatment plant to utilize its pretreatment program to control PFAS from its industrial users (Appendix C).

2. Assess and Impose Effluent Limitations for PFAS

If an industrial facility releases PFAS, DEQ must consider including technology-based and water quality-based effluent limitations during the discharge permit issuance or renewal process.

Where EPA has not issued a national Effluent Limitation Guideline for a particular category of industry or pollutant—and there are currently no national guidelines for PFAS—DEQ must assess technology-based effluent limitations on a case-by-case basis. 40 C.F.R. § 125.3(c)(2). This assessment is not tied to water quality standards; it involves consideration of appropriate technology and any unique factors related to the facility to further the Clean Water Act's goal of zero discharge of pollutants. 33 U.S.C. § 1251(a)(1); 40 C.F.R. § 125.3(c)(2), (d). **Under the Clean Water Act, technology-based effluent limitations are "the minimum level of control that *must be imposed* in a permit."** 40 C.F.R. § 125.3(a) (emphasis added).

Technology-based effluent limitations "are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality-based effluent limitations."[2] **The Clean Water Act therefore requires DEQ to assess and implement water quality-based effluent limitations when technology-based effluent limitations are not sufficient to comply with state water quality standards—including narrative water quality standards.** 40 C.F.R. § 122.44(d).

North Carolina
In a discharge permit for the Chemours Fayetteville Works, North Carolina calculated and imposed technology-based effluent limitations based on a PFAS removal rate of over 99% achieved by granular activated carbon treatment technology (Appendix D).

While Virginia does not have numeric water quality standards for PFAS, Virginia's State Water Control Law has a narrative standard that requires state waters to "be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life." 9 VAC 25-260-20(A). This includes toxic substances and substances that bioaccumulate, like PFAS. *Id.*

3. Require Control of PFAS That Industries Send to Wastewater Treatment Plants

Wastewater treatment plants use pretreatment programs to control pollutants from their industrial users that the plants cannot remove and/or that might cause the plants to violate their own permits. 40 C.F.R. Part 403; 9 VAC 25-31 Part VII. **DEQ needs to require wastewater treatment plants to use their pretreatment programs to identify and control PFAS pollution by:**

1. **Identifying any industrial users that discharge PFAS to the plant;**
2. **Implementing regular PFAS monitoring requirements for industrial users; and**
3. **Controling any industrial sources of PFAS pollution by establishing and enforcing effluent limitations and requiring industrial users to install treatment technology.**

Pennsylvania

The Norristown Borough Sewer Treatment Plant's discharge permit requires the plant to implement effluent monitoring for certain PFAS, determine which of its industrial users are expected or suspected PFAS dischargers, mandate PFAS sampling from those industrial users, and document actions those industrial users are taking to reduce, substitute, or eliminate PFAS (Appendix E).

II. PFAS Basics

What are PFAS?

PFAS are a class of nearly 15,000 synthetic industrial chemicals that are often called "forever chemicals" because they do not easily break down and instead build up and persist in our bodies, soil, and water.[3]

PFAS have been manufactured and used widely since the 1940s.[4] They are commonly used for their water-, stain-, and fire-resistant properties in industrial processes such as metal plating and textile manufacturing, and are found in the coatings for non-stick cookware, stain-resistant carpeting and upholstery, grease-resistant food boxes, waterproof outdoor gear, and firefighting foams used at airports and military sites.[5]

FREQUENTLY DISCUSSED PFAS

Abbreviation	Scientific Name
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
PFBS	Perfluorobutane sulfonic acid
PFHxS	Perfluorohexane sulfonic acid
PFNA	Perfluorononanoic acid
HFPO-DA (GenX)	Hexafluoropropylene oxide dimer acid
PFBA	Perfluorobutanoic acid
PFHxA	Perfluorohexanoic acid
PFDA	Perfluorodecanoic acid

UNDERSTANDING UNITS OF PFAS

Studies have shown PFAS are dangerous even at very low concentrations. The most common unit used for PFAS concentrations is parts per trillion (ppt), which may also be reported as nanograms per liter (ng/L).

1 ppt is equivalent to 1 drop of water in about 20 Olympic-sized swimming pools.

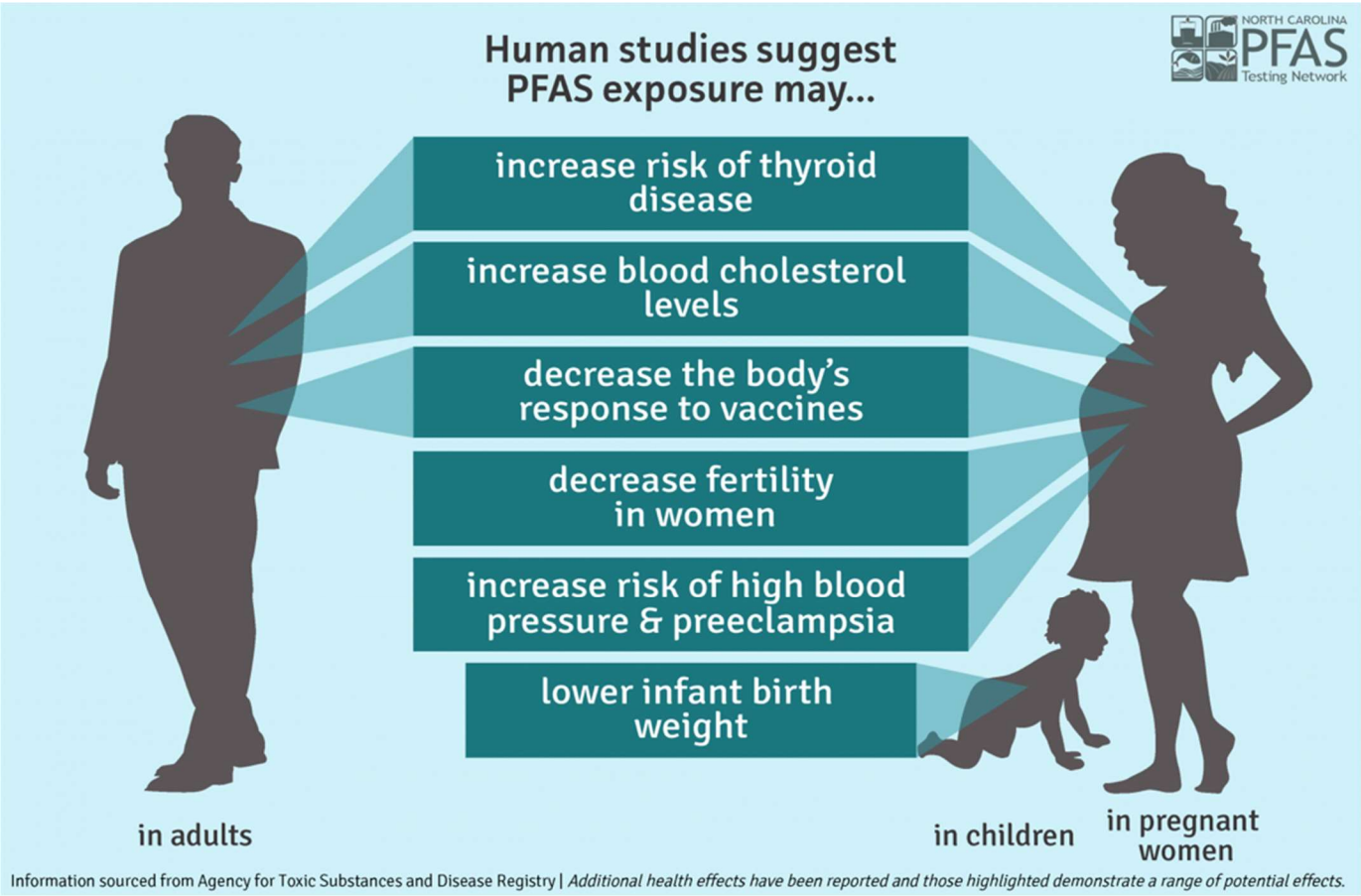
Common PFAS Reporting Units

1 milligram per liter (mg/L) = 1 part per million (ppm)
1 microgram per liter (μ/L) = 1 part per billion (ppb)
1 nanogram per liter (ng/L) = 1 part per trillion (ppt)
1 picogram per liter (pg/L) = 1 part per quadrillion (ppq)

1 ppm = 1,000 ppb = 1,000,000 ppt = 1,000,000,000 ppq

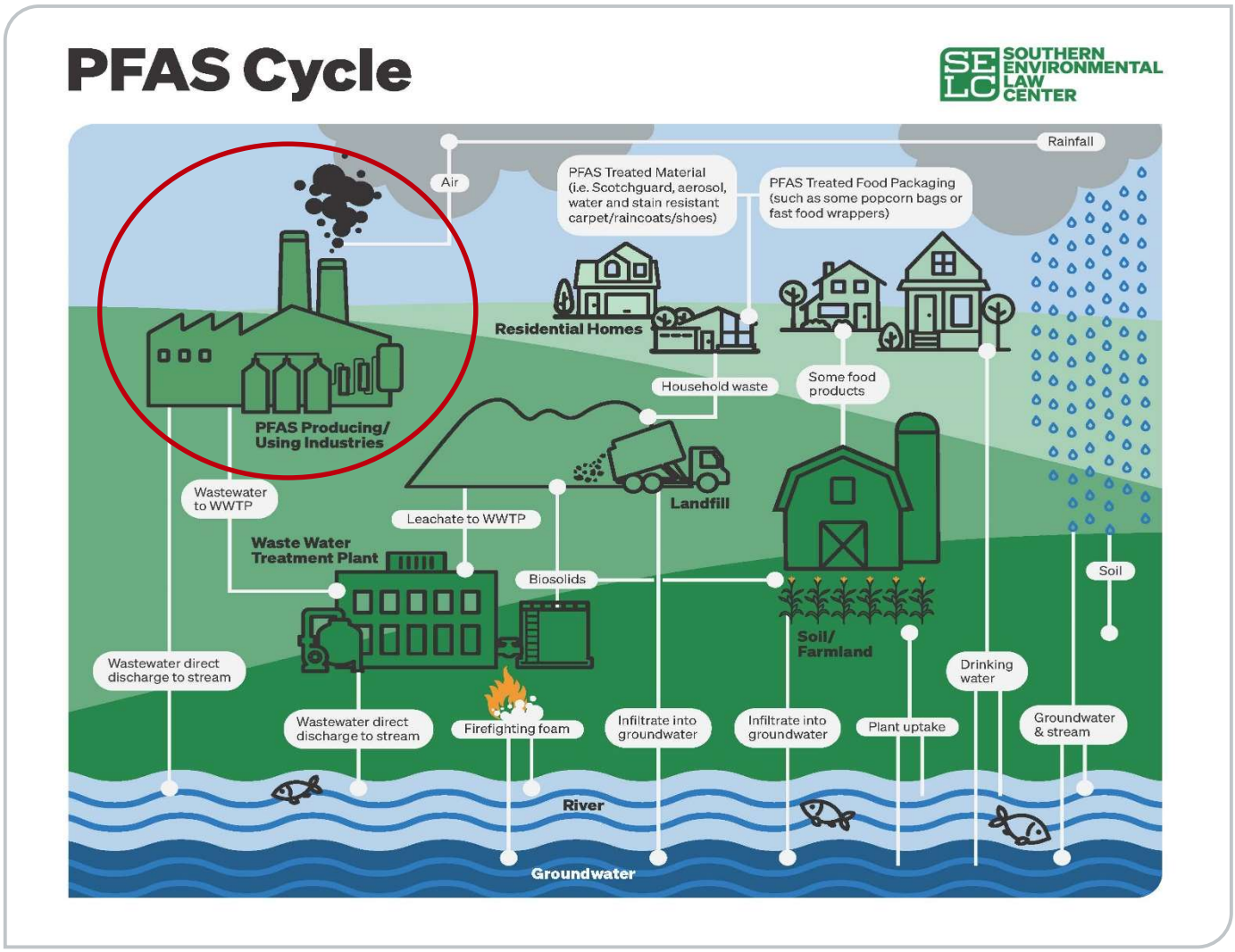
The Problem with PFAS

It is well established that PFAS are a threat to the health and safety of the public. PFAS are extremely resistant to breaking down in the environment and can travel long distances.[6] Even at very low levels, PFAS are associated with significant health harms, including cancer, harm to fetal and infant development, and reduced immune function.[7] PFAS bioaccumulate in people and wildlife, increasing their impact over time.[8] This means that communities that frequently fish and hunt are at higher risk of PFAS exposure and associated health effects.[9] Low-wealth communities and communities of color are also disproportionately exposed to PFAS pollution.[10]



How Do PFAS Enter the Environment?

The widespread use of PFAS means the chemicals enter and cycle through the environment in many ways. The starting point of the PFAS pollution cycle is PFAS production and use by industry. Industrial wastewater (water and other waste used by a facility and then discarded) and stormwater (precipitation at a facility that picks up pollutants before entering waterways) are significant sources of PFAS pollution into our rivers and streams.



EPA has identified 91 categories of facilities that are likely to produce and/or use PFAS, and therefore release them in their wastewater and stormwater, falling into the following industries (Appendix F):

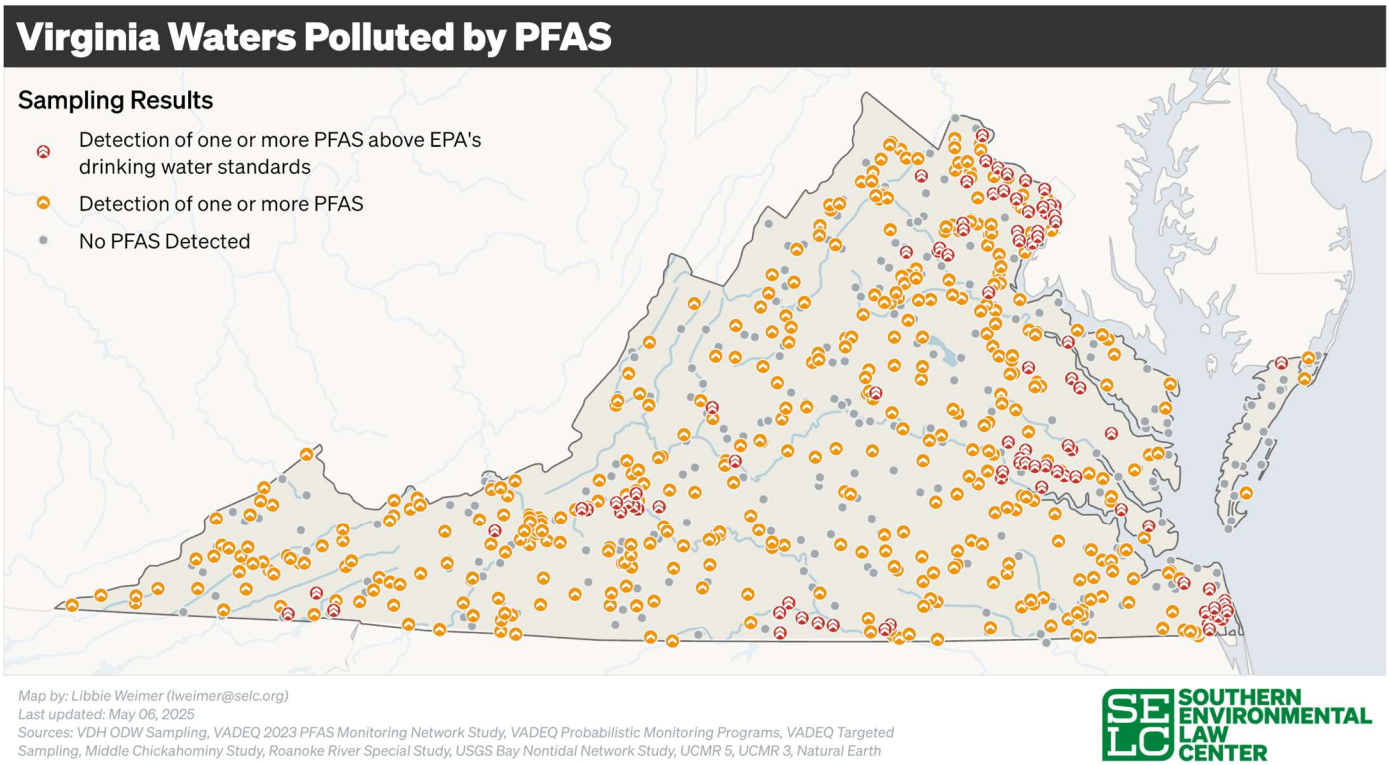
- Airports
- Cement Manufacturing
- Chemical Manufacturing
- Cleaning Products Manufacturing
- Consumer Products
- Electronics Industry
- Fire Protection and Training
- Furniture and Carpet
- Glass Products
- Industrial Gas
- Metal Coating
- Metal Machinery Manufacturing
- Mining and Refining
- National Defense
- Oil and Gas Extraction
- Paints and Coatings
- Paper Mills and Products
- Petroleum
- Plastics and Resins
- Printing
- Textiles and Leather
- Waste Management

Because conventional water treatment systems do not remove PFAS, PFAS contamination in wastewater and stormwater passes through treatment systems and enters our environment. This can result in PFAS contamination of surface water, groundwater, drinking water, and sewage sludge, a byproduct of wastewater treatment plants that is often used as land-applied fertilizer. Addressing PFAS pollution at the source helps prevent downstream impacts and turns off the tap of the "PFAS cycle."

PFAS in Virginia's Waters

Virginia only recently began testing for PFAS water pollution, but when we look for PFAS, we find it.

A limited study conducted from 2021 to 2023 by the Virginia Department of Health (VDH) identified PFAS contamination in 16 drinking water systems, impacting 2.5 million residents in the Commonwealth.[11] VDH, EPA and DEQ have continued to test drinking water, surface waters, and groundwater for PFAS. As of March 2025, DEQ's testing has found over 500 samples—more than half of all samples taken—in Virginia with PFAS contamination.[12] There are now at least 58 water systems in Virginia reporting exceedances of the PFAS drinking water standards (discussed below).[13]



EXAMPLES OF PFAS WATER POLLUTION IN VIRGINIA INCLUDE:

Spring Hollow Reservoir

In 2020 and 2021, testing found GenX concentrations as high as 62 ppt in the Western Virginia Water Authority's Spring Hollow Reservoir, which draws water from the Roanoke River.[14] The pollution was traced to a facility that cleaned equipment from Chemours, a PFAS manufacturer, and sent its wastewater to the Elliston-Lafayette wastewater treatment plant. The Western Virginia Water Authority will spend over $13 million to install and maintain treatment technology to ensure the drinking water from this reservoir is safe.[15] The water authority reached a settlement with Chemours to help offset some of these costs.[16]

White Oak Swamp

Sampling by the Newport News Waterworks found significant levels of PFAS in White Oak Swamp, part of the Chickahominy River watershed downstream of Richmond International Airport.[17] The sampling revealed concentrations as high as 130 ppt of PFOA, 900 ppt of PFOS, and 490 ppt of PFHxS—well above EPA's drinking water standards of 4 ppt for PFOA and PFOS and 10 ppt for PFHxS.[18]

DuPont Spruance Plant

The DuPont Spruance plant in Richmond is a known source of PFAS contamination. The plant has manufactured materials like Kevlar, Nomex, Tyvek, and Teflon.[19] There is significant PFOA groundwater contamination at the site (almost 7,500 ppt in some groundwater wells) and DuPont Spruance currently releases PFOA to the James River.[20]

Occoquan Reservoir

Fairfax Water has detected PFAS in the Occoquan Reservoir, including at concentrations above EPA's drinking water standards for PFAS. The Occoquan Reservoir is the drinking water source for over 800,000 Virginians.[21] The water authority estimates that installing PFAS treatment technology at the impacted water treatment plant will cost more than $300 million, with annual operating costs of approximately $20 million (Appendix K).

Federal Sites

PFAS contamination has been found at Department of Defense installations and other federal sites around Virginia, including in:

- **Hampton Roads**
  Due to historical use of PFAS-containing firefighting foams, the Navy is testing groundwater and drinking water wells at several of its Hampton Roads installations.
  - **Fentress Air Base:** To date, 39 drinking water wells have been found to contain PFAS, and groundwater concentrations of PFOA and PFOS combined are as high as 52,900 ppt.[22]
  - **Naval Air Station Oceana:** PFAS have been found in six drinking water wells, and several groundwater samples found combined concentrations of PFOA and PFOS above 100,000 ppt, including one as high as 493,600 ppt.[23]
  - **Naval Support Activity Northwest Annex:** Testing found PFOA and/or PFOS contamination in 12 of the tested wells, with concentrations of the chemicals as high as 34 ppt.[24]
- **Northern Virginia**
  - **Fort Belvoir Army Garrison:** Extremely high concentrations of PFOA (52,000 ppt), PFOS (28,000 ppt), and PFBS (3,100 ppt) have been found in groundwater near one of the firefighting training areas, in addition to PFAS concentrations ranging from 1.9 to 12,000 ppt at other testing locations across the base.[25]
- **Eastern Shore**
  - **NASA Wallops Island:** PFAS were detected in the Town of Chincoteague's drinking water supply due to historical use of PFAS-containing firefighting foams at Wallops Island. As a result, NASA supplemented the town's water supply while it installed granular activated carbon treatment technology to remove PFAS from the drinking water.[26]

III. Federal Actions on PFAS Water Pollution

PFAS Discharge Permit Guidance

In December 2022, EPA issued guidance to help states use their Clean Water Act authority to control PFAS water pollution from industrial sources (Appendix G). EPA recommends that states incorporate PFAS monitoring requirements, best management practices, and technology- and water quality-based effluent limitations into discharge permits. The agency also recommends that wastewater treatment plants use their pretreatment programs to assess and limit PFAS coming into their systems.

In January 2025, EPA issued additional guidance to states about assessing and imposing technology-based effluent limitations on a case-by-case basis to control PFAS water pollution (Appendix H). This guidance outlines factors for permit writers to consider when determining appropriate PFAS technology-based effluent limitations and describes resources available to aid states in performing these assessments.

PFAS Drinking Water Standards

In April 2024, EPA finalized enforceable national drinking water standards for six types of PFAS. These standards, called Maximum Contaminant Levels (MCLs), set limits on the concentration of the six chemicals in public drinking water systems. EPA also established a Hazard Index Maximum Contaminant Level to account for the dose-additive health effects of mixtures containing four types of PFAS. PFAS National Primary Drinking Water Regulation, 89 Fed. Reg. 32,532 (Apr. 26, 2024). In May 2025, EPA announced it may reconsider some of its regulatory determinations for the PFAS drinking water standards.[27]

PFAS	Maximum Contaminant Level
PFOA	4 ppt
PFOS	4 ppt
PFHxS	10 ppt
PFNA	10 ppt
GenX	10 ppt
Hazard Index (accounting for PFHxS, PFNA, GenX, and PFBS)	1.0 (unitless)

Drinking water providers will be required to install treatment technology to reduce PFAS in their finished drinking water to concentrations at or below the Maximum Contaminant Levels. Taking action to control PFAS pollution at industrial sources would help to stem the flow of PFAS entering drinking water and would mean the burden to install and pay for treatment technology does not fall entirely on drinking water providers, customers, and impacted communities.

Other PFAS Water Pollution Actions

Beyond advising states on how to use existing authority to control PFAS water pollution and establishing PFAS drinking water standards, EPA also developed a PFAS Strategic Roadmap for studying, controlling, and remediating PFAS pollution.[28] EPA has taken a series of actions over the past four years that provide tools and benchmarks for Virginia to use in its control of PFAS pollution. This includes finalizing new PFAS testing methods,[29] setting criteria that states and tribes can use to draft their own water quality standards for PFAS,[30] and publishing data analytic tools to make information about PFAS more readily available.[31]

IV. State Actions on PFAS Water Pollution

PFAS pollution is affecting communities across Virginia—our drinking water, surface waters, and groundwaters are already contaminated. **Until we stop PFAS water pollution at the source, downstream communities will continue to pay—both through health costs and drinking water treatment costs—for the impacts of this preventable pollution.**

The Clean Water Act offers a powerful tool to limit pollution and to shift the costs of PFAS monitoring and treatment to the industrial facilities that use and manufacture PFAS. This is exactly the type of action that EPA (Appendix I), conservation groups (Appendix J), and drinking water providers (Appendix K) have called for in Virginia, but DEQ has yet to enforce existing law to control PFAS pollution in this way.

Legislation

Virginia's General Assembly has passed several laws regarding PFAS use and pollution. These laws are largely tied to PFAS contamination in drinking water and are critical for protecting public health, but generally do not address stopping PFAS water pollution from industrial sources. **Importantly, the laws do not limit DEQ's authority under the Clean Water Act to require disclosure and control of PFAS pollution.**

2019

HB2762: Limited the use of firefighting foam with intentionally added PFAS starting July 1, 2021. Va. Code § 9.1-207.1.

2020

HB1257: Directed the establishment of Maximum Contaminant Levels for certain PFAS in drinking water. Va. Code § 32.1-169(B); 2020 Va. Acts ch. 1097.

HB586: Convened a work group to study the occurrence and source of certain PFAS in public drinking water and to develop recommendations for PFAS Maximum Contaminant Levels; limited sampling to no more than 50 representative waterworks and major drinking water sources as part of this effort. 2020 Va. Acts ch. 611. VDH published its study pursuant to HB586 in December 2021.[32]

2022

HB919: Prevented review of the PFAS work group recommendations until after July 1, 2022 and delayed establishment of PFAS Maximum Contaminant Levels. Va. Code § 32.1-169(B); 2022 Va. Acts ch. 585. Virginia PFAS Maximum Contaminant Levels have not been promulgated because EPA finalized PFAS drinking water standards in April 2024.

HB30/SB29: Appropriated $320,000 for DEQ to conduct PFAS surface water and groundwater sampling. 2022 Va. Acts ch. 2, Item 378.L.

2023

HB2189: In response to GenX contamination in the Spring Hollow Reservoir, required wastewater treatment plants to adopt pretreatment standards that require industries handling machinery or media used to treat water from manufacturing processes known to use PFAS to test their wastewater for PFAS and report the results to the plant. Va. Code § 62.1-44.15:5.3; 2023 Va. Acts ch. 276.

2024

HB1085/SB243: Required DEQ to: (1) prioritize and conduct PFAS Source Assessments to identify sources of PFAS pollution tied to exceedances of EPA's PFAS drinking water standards reported by VDH; (2) require self-reporting of PFAS manufacture and use by potential sources of PFAS; and (3) establish a PFAS Expert Advisory Committee. Va. Code §§ 62.1-44.34:29–33; 2024 Va. Acts ch. 316.

HB6001: Appropriated $500,000 for VDH to, in part, conduct a cost analysis of implementing the EPA PFAS drinking water standards. 2024 Va. Acts ch. 2, Item 280.G. A report detailing this analysis was published in January 2025.[33]

2025

HB2050: Required certain facilities discharging to the Occoquan Reservoir watershed to monitor their wastewater for PFAS by October 1, 2025 and report results to DEQ. For any facility with PFAS in their wastewater above the EPA's drinking water standards, DEQ must modify the relevant discharge permit to require that the facility's PFAS discharge not exceed those concentrations. Va. Code § 62.1-44.34:34; 2025 Va. Acts ch. 650.

VDH PFAS Drinking Water Study

VDH has undertaken various rounds of sampling to test drinking water for PFAS in Virginia. In its first round of sampling pursuant to HB586 (2020), VDH collected 63 samples from 45 public drinking water sources and found PFAS contamination in 15 of the samples.[34] Between 2021 and 2023, VDH sampled 274 public drinking water systems for six types of PFAS. Even though this testing was limited—there are over 2,800 public drinking water systems in Virginia[35] and 1.6 million Virginians get their drinking water from private wells,[36] which have not been subject to VDH PFAS testing—**VDH found 16 drinking water systems that were contaminated with PFAS at levels EPA determined to be detrimental to human health, impacting approximately 2.5 million Virginians.**[37] Since 2023, that number has only grown. As of April 2025, at least 58 drinking water systems in Virginia have reported exceedances of EPA's PFAS drinking water standards.[38]

Ultimately, drinking water contamination is a symptom of upstream PFAS pollution. Addressing PFAS pollution at industrial sources ensures that the burden and costs of meeting the PFAS drinking water standards do not fall solely on drinking water providers and downstream communities.

Drinking Water and PFAS Industrial Source Control

Drinking water providers are asking DEQ to require industrial sources to control PFAS releases from their facilities. For example, Fairfax Water has urged DEQ to address potential PFAS pollution from Washington Dulles International Airport in the airport's discharge permit (Appendix K). Dulles is upstream of the Occoquan Reservoir, a significant source of drinking water for northern Virginia where PFAS has been detected at levels above EPA's PFAS drinking water standards.

DEQ PFAS Source Assessment Process

The PFAS Source Assessment process established by HB1085/SB243 (2024) requires DEQ to identify sources of PFAS entering public drinking water systems, with a focus on systems with at least one documented exceedance of EPA's PFAS drinking water standards. While the legislation also requires DEQ to identify potential regulatory and nonregulatory options for addressing "significant" sources of PFAS pollution that impact these systems, it does not require implementation of any of these actions.

In November 2024, DEQ sent notices to potential industrial PFAS sources upstream of the 28 drinking water systems with PFAS levels exceeding EPA's PFAS drinking water standards it will assess first. DEQ asked facilities to monitor their wastewater for PFAS and report to DEQ whether they use or discharge PFAS.[39]

Importantly, the PFAS Source Assessment legislation does not restrict DEQ's authority under the Clean Water Act and should not keep DEQ from taking additional action today to control PFAS pollution from industrial sources.

V. Takeaways

By requiring industrial PFAS dischargers to disclose and control their pollution, Virginia can cut off a major source of PFAS pollution that drives PFAS cycling through our environment. Ultimately, this will protect downstream communities and ensure that polluters—not communities—bear the costs of removing these harmful pollutants from their wastewater and stormwater.

To do this, DEQ must enforce existing law by taking the following steps:

1. Require disclosure and monitoring of PFAS;
2. Assess and impose effluent limitations for PFAS; and
3. Require control of PFAS that industries send to wastewater treatment plants.

ZAC BILLMEIER

The Clean Water Act gives Virginia the tools it needs to address and control PFAS water pollution from industrial sources—starting today.

ENDNOTES

[1] *CWA Analytical Methods for Per- and Polyfluorinated Alkyl Substances (PFAS)*, EPA (Dec. 9, 2024), https://perma.cc/E3WJ-EFUN.

[2] EPA, *NPDES Permit Writers' Manual* 5-1 (Sept. 2010), https://bit.ly/2YeeAt3.

[3] *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)*, National Institute of Environmental Health Sciences (Mar. 6, 2025), https://perma.cc/ES6L-KKKF; *Protecting Against 'Forever Chemicals'*, Harvard T.H. Chan School of Public Health (Mar. 16, 2023), https://perma.cc/8CD4-8JNL.

[4] *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, EPA (Nov. 26, 2024), https://perma.cc/9QNZ-AMSB.

[5] *See id.*

[6] *Id.*; Interstate Technology Regulatory Council, *Fate and Transport of Per- and Polyfluoroalkyl Substances (PFAS)* (Sept. 2023), https://perma.cc/G7BX-FHGG.

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Appendices

Appendix A

Excerpt from South Carolina Dep't of Environmental Services, *Wastewater Application NPDES Industrial – New* 10–11 (Oct. 26, 2023).

Excerpt from South Carolina Dep't of Environmental Services, *Wastewater Application NPDES Domestic/Municipal – New* 22–23 (Oct. 26, 2023).

Outfall	Hazardous Substance	Amount of Substance that may be discharged (specify units)	Origin and Source of Discharge	Treatment provided for the discharge (a, b or c above)

Form 2D

*This section is conditionally displayed based on answers provided in other parts of the form

EPA Form 2D (Including instructions)
EPA Form 2D

Please complete and upload EPA Form 2D

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

Exhibit 2D-3 Effluent Characteristics (Table E):
Exhibit 2D-3

Pollutant: Use the space below to list any of the pollutants listed in Exhibit 2D-3 of the instructions, which you know or have reason to believe will be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it will be present and report any analytical data in your possession.

Pollutant:	Outfall Number	Reason Pollutant Believed Present:	Available Quantitative Data (specify units)

Effluent Testing Data

*This section is conditionally displayed based on answers provided in other parts of the form

Effluent Testing Data
Fill out the Effluent Testing Data excel spreadsheet linked below for each outfall discharging effluent to waters of the US then upload it using the attachment control provided.
Link to Excel Spreadsheet Application Data

Effluent Testing Data Excel:

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

PFAS and 1,4-Dioxane

PFAS

Will your facility use, manufacture, formulate, or repackage PFAS? *Select One

○ Yes ○ No

Do you know or suspect that PFAS will be present in your effluent? *Select One

*This control is conditionally displayed based on answers provided in other parts of the form

○ Yes ○ No

In the table below, please indicate the specific PFAS compound present (or suspected to be present) and provide the outfall number, the reason the pollutant is believed present, and the results of at least one analysis using the EPA Draft Method 1633 for each compound at each affected outfall. Add rows as necessary.

*This control is conditionally displayed based on answers provided in other parts of the form

PFAS Compound	Outfall	Reason Pollutant Believed Present in Discharge	Quantitative Data (specify units)

PFAS Laboratory Analytical Data (Effluent)

*This control is conditionally displayed based on answers provided in other parts of the form

Please upload lab sheets and a data spreadsheet for any analytical data reported above for PFAS.

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

Will effluent be land applied? *Select One

*This control is conditionally displayed based on answers provided in other parts of the form

○ Yes ○ No

In the table below, please indicate the specific PFAS compound present (or suspected to be present), the reason the pollutant is believed present, and the results of at least one analysis using the EPA Draft Method 1633 for each compound at each affected outfall. Add rows as necessary.

*This control is conditionally displayed based on answers provided in other parts of the form

PFAS Compound	Reason Pollutant Believed Present in Discharge	Quantitative Data (specify units)

PFAS Laboratory Analytical Data (Effluent to be Land Applied)
*This control is conditionally displayed based on answers provided in other parts of the form
Please upload lab sheets and a data spreadsheet for any analytical data reported above for PFAS.

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

Do you know or suspect that PFAS will be present in your sludge? *Select One
*This control is conditionally displayed based on answers provided in other parts of the form
○ Yes ○ No

In the table below, please indicate the specific PFAS compound present (or suspected to be present), the reason the pollutant is believed present, the results of at least one analysis for each compound using the EPA Draft Method 1633. Add rows as necessary.
*This control is conditionally displayed based on answers provided in other parts of the form

PFAS Compound	Reason Pollutant Believed Present in Sludge	Quantitative Data (specify units)

PFAS Laboratory Analytical Data (Sludge)
*This control is conditionally displayed based on answers provided in other parts of the form
Please upload lab sheets and a data spreadsheet for any analytical data reported above for PFAS.

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

Will sludge be land applied? *Select One
*This control is conditionally displayed based on answers provided in other parts of the form
○ Yes ○ No

In the table below, please indicate the specific PFAS compound present (or suspected to be present), the reason the pollutant is believed present, the results of at least one analysis for each compound using the EPA Draft Method 1633. Add rows as necessary.
*This control is conditionally displayed based on answers provided in other parts of the form

PFAS Compound	Reason Pollutant Believed Present in Sludge	Quantitative Data (specify units)

PFAS Laboratory Analytical Data (Sludge to be Land Applied)
*This control is conditionally displayed based on answers provided in other parts of the form
Please upload lab sheets and a data spreadsheet for any analytical data reported above for PFAS.

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

1,4-Dioxane

Will your facility manufacture, use directly or utilize chemical processes which generate 1,4-Dioxane as a by-product? *Select One
○ Yes ○ No

Do you have know or suspect that 1,4-Dioxane will be present in your effluent? *Select One
*This control is conditionally displayed based on answers provided in other parts of the form
○ Yes ○ No

In the table below, please provide the outfall number, the reason the pollutant is believed present, and the results of at least one analysis using SW 846 Method 8260D SIM for 1,4-Dioxane at each affected outfall. Add rows as necessary.
*This control is conditionally displayed based on answers provided in other parts of the form

Pollutant	Outfall	Reason Pollutant Believed Present in Discharge	Quantitative Data (specify units)
1,4-Dioxane			

1,4-Dioxane Laboratory Analytical Data (Effluent)
*This control is conditionally displayed based on answers provided in other parts of the form
Please upload lab sheets and a data spreadsheet for any analytical data reported above for 1,4-Dioxane.

Multiple attachments are not allowed. Please be aware that files exceeding 500 MB in size are not allowed. The following file types are accepted:
.7Z,.7z,*.AVI,*.avi,*.Avi,*.BMP,*.bmp,*.Bmp,*.CSV,*.csv,*.Csv,*.DAT,*.dat,*.Dat,*.DOC,*.doc,*.Doc,*.DOCX,*.docx,*.Docx,*.DWG,*.dwg,*.Dwg,*.EML,*.eml,*.Eml,*.GIF,*.gif,*.Gif,*.GPX,*.gpx,*.Gpx,*.HTM,*.

Comment

Form 2E
*This section is conditionally displayed based on answers provided in other parts of the form

EPA Form 2E (including instructions)
EPA Form 2E

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Are you requesting a mixing zone for whole effluent toxicity (WET)? *Select One

○ Tes ○ z o

No further information is needed. Submit this form. If WET testing is required, a chronic test at 100% will be required, unless the IWC is at least 80%. Proposed IWC %

*This control is conditionally displayed based on answers provided in other parts of the form

Are you proposing to perform or have performed a mixing zone demonstration to determine the appropriate zone of initial dilution (ZID) and/or mixing zone size. Complete the remainder of this form and submit a mixing zone demonstration plan as described on the back of this form. The Department recommends the demonstration plan be approved prior to implementation of any demonstration work.

*This control is conditionally displayed based on answers provided in other parts of the form

○ Tes ○ z o

Are you requesting a mixing zone by providing limited information such as a mixing model like CORMIX to determine mixing in accordance with suggested zone of initial dilution (ZID) and/or mixing zone sizes. Complete the remainder of this form, as applicable, and submit the CORMIX Supplement and modeling results (or other model assumptions, inputs and results). *Se One

*This control is conditionally displayed based on answers provided in other parts of the form

○ Tes ○ z o

Outfall Number and Design Flow for this Mixing Zone Demonstration/Mixing Model

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed ZID length (in meters):

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed ZID width (in meters):

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed acute WET test concentration percentage (or provide an explanation as to why not proposing an acute WET test concentration)?

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed mixing zone length (in meters):

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed mixing zone width (in meters):

*This control is conditionally displayed based on answers provided in other parts of the form

What is the proposed chronic WET test concentration percentage (or provide an explanation as to why not proposing a chronic WET test concentration)?

*This control is conditionally displayed based on answers provided in other parts of the form

Mixing Zone Documentation:

*This control is conditionally displayed based on answers provided in other parts of the form

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b t daPde uaau/ l c enas ure noauodbh em l ideuse Oe uh ure al uawides eX/ eeminS E* * b 0 in siLe ure noauodbh em Yl e wodbh inS wde aPes ure u/ / ePaem
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b l , F.Oc P, F.0 c P, F.2 W8, F./ sv, F.2 sv, F.BAY, F.mua F.Bua F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec d, F.Ec d, F.x :- , F.SiW, F.x iW, F.x l X, F.SPX, F.x PX, F.6 Yb , F.

Comment

PFAS and 1,4-Dioxane

PFAS

Does your facility receive wastewater from industrial users that use, manufacture, formulate, or repackage PFAS? *Select One

○ Tes ○ z o

Is PFAS present or suspected to be present in your effluent? *Select One

*This control is conditionally displayed based on answers provided in other parts of the form

○ Tes ○ z o

:n al e auOde Oe dbh, Pde use inmi/ uae al e sPe/ iw/ l - AW/ oc Pot nm Presenapor st sPe/ æma o Oe Presena/ unm Provime al e ot awdbh t c Oer, al e reuson al e Podlaunais Oe devem Presena unm al e rest ds owuade usaone unud5 sis t sin Sa e El A Bruvab ea om 1644 wor eu/ l / oc Pot nmuaeu/ l uwe/ æmot awdbl Tot c u5 eia er unmin muau c unt ud5 roh O5 roh, or 5ot / un / d/ y al e "Boh nobum" Ot aon. N Pen al e moh nobum meXed wde, in Pt audbmuau, unmsuve al e wde. Yl en, / d/ y al e "DPdbum" Ot aon unmuau/ l al e st Oje/ awde. Ammroh s us ne/ essur5.
z Nz E I RN3 :BEB

PFAS Laboratory Analytical Data (Effluent)

*This control is conditionally displayed based on answers provided in other parts of the form

I ideuse t Pdbum duOsl eeas unmu muau sPreums l eeawor un5 unud5a/ udmuau re Por æmu Cove wor l - AW.

b t daPde uaau/ l c enas ure noauodbh em l ideuse Oe uh ure al uawides eX/ eeminS E* * b 0 in siLe ure noauodbh em Yl e wodbh inS wde aPes ure u/ / ePaem
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b l , F.Oc P, F.0 c P, F.2 W8, F./ sv, F.2 sv, F.BAY, F.mua F.Bua F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec d, F.Ec d, F.x :- , F.SiW, F.x iW, F.x l X, F.SPX, F.x PX, F.6 Yb , F.

Comment

Will effluent be land applied? *Select One

*This control is conditionally displayed based on answers provided in other parts of the form

○ Tes ○ z o

:n a l e auOde Oeobh, Pdeuse inmi/ uæ a l e sPe/ iw/ I - AW/ oc Pot nmPresenapor st sPe/ æmao Oe Presenaf, a l e reuson a l e Podlaunais OedievemPresena, unma l e rest ds owuaeusaone unuc5sis t sinS a l e El A Bruvw b ea l om1644 vor eu/ I / oc Pot nmuaeu/ I uwe/ æmot awd! Tot c u5 eia l er ummin muau c unt ud5 roh O5 roh, or 5ot / un / d/ y a l e "Boh nobum" Ot aon. NPen a l e moh nobumemeX/ edwde, inPt audmuau, unmsuve a l e wde. Yl en, / d/ y a l e "DPobum" Ot aon unmuau/ I a l e st Oje/ awde. Anmroh s us ne/ essur5.
z NzE I RN3 :BEB

PFAS Laboratory Analytical Data (Effluent to be Land Applied)

**This control is conditionally displayed based on answers provided in other parts of the form*

I oeuse t PobumduOsl eeas unmu muau sPreumsl eeavor un5 unuc5a/ udmuau rePoræmuCove vor I - AW.

b t daPde uau/ I c enas ure noaudbh em I oeuse Oe uh ure a l uawdes eX/ eeminS E* * b 0 in siLe ure noaudbh em Yl e vodbh inS wde a5Pes ure u/ / ePæm
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b I , F.Oc P, F.0 c P, F.2 W8, F/ sv, F.2 sv, F.BAY, F.mua, F.Bua, F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec dF.Ec dF.x :- , F.SiwF.x iw, F.x I X, F.SPX, F.x PX, F.6 Yb , F.

Comment

Do you know or suspect that PFAS will be present in your sludge? **Select One*

**This control is conditionally displayed based on answers provided in other parts of the form*

○ Tes ○ z o

:n a l e auOde Oeobh, Pdeuse inmi/ uæ a l e sPe/ iw/ I - AW/ oc Pot nmPresenapor st sPe/ æmao Oe Presenaf, a l e reuson a l e Podlaunais OedievemPresena, a l e rest ds owuaeusaone unuc5sis wor eu/ I / oc Pot nmt sinS a l e El A Bruvab ea l om1644. Tot c u5 eia l er ummin muau c unt ud5 roh O5 roh, or 5ot / un / d/ y a l e "Boh nobum" Ot aon. NPen a l e moh nobumemeX/ edwde, inPt audmuau, unmsuve a l e wde. Yl en, / d/ y a l e "DPobum" Ot aon unmuau/ I a l e st Oje/ awde. Anmroh s us ne/ essur5.
z NzE I RN3 :BEB

PFAS Laboratory Analytical Data (Sludge)

**This control is conditionally displayed based on answers provided in other parts of the form*

I oeuse t PobumduOsl eeas unmu muau sPreumsl eeavor un5 unuc5a/ udmuau rePoræmuCove vor I - AW.

b t daPde uau/ I c enas ure noaudbh em I oeuse Oe uh ure a l uawdes eX/ eeminS E* * b 0 in siLe ure noaudbh em Yl e vodbh inS wde a5Pes ure u/ / ePæm
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b I , F.Oc P, F.0 c P, F.2 W8, F/ sv, F.2 sv, F.BAY, F.mua, F.Bua, F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec dF.Ec dF.x :- , F.SiwF.x iw, F.x I X, F.SPX, F.x PX, F.6 Yb , F.

Comment

Will sludge be land applied? **Select One*

**This control is conditionally displayed based on answers provided in other parts of the form*

○ Tes ○ z o

In the table below, please indicate the specific PFAS compound present (or suspected to be present), the reason the pollutant is believed present, the results of at least one analysis for each compound using the EPA Draft Method 1633. Add rows as necessary.

**This control is conditionally displayed based on answers provided in other parts of the form*

PFAS Compound	Reason Pollutant Believed Present in Sludge	Quantitative Data (specify units)

PFAS Laboratory Analytical Data (Sludge to be Land Applied)

**This control is conditionally displayed based on answers provided in other parts of the form*

I oeuse t PobumduOsl eeas unmu muau sPreumsl eeavor un5 unuc5a/ udmuau rePoræmuCove vor I - AW.

b t daPde uau/ I c enas ure noaudbh em I oeuse Oe uh ure a l uawdes eX/ eeminS E* * b 0 in siLe ure noaudbh em Yl e vodbh inS wde a5Pes ure u/ / ePæm
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b I , F.Oc P, F.0 c P, F.2 W8, F/ sv, F.2 sv, F.BAY, F.mua, F.Bua, F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec dF.Ec dF.x :- , F.SiwF.x iw, F.x I X, F.SPX, F.x PX, F.6 Yb , F.

Comment

1,4-Dioxane

Does your facility receive wastewater from industrial users that manufacture, use directly or utilize chemical processes which generate 1,4-Dioxane as a by-product? **Select One*

○ Tes ○ z o

Do you know or suspect that 1,4-Dioxane will be present in your effluent? **Select One*

**This control is conditionally displayed based on answers provided in other parts of the form*

○ Tes ○ z o

In the table below, please provide the outfall number, the reason the pollutant is believed present, and the results of at least one analysis using SW 846 Method 8260D SIM for 1,4-Dioxane at each affected outfall. Add rows as necessary.

**This control is conditionally displayed based on answers provided in other parts of the form*

Pollutant	Outfall	Reason Pollutant Believed Present in Discharge	Quantitative Data (specify units)
1, VkBioXune			

1,4-Dioxane Laboratory Analytical Data (Effluent)

**This control is conditionally displayed based on answers provided in other parts of the form*

I oeuse t PobumduOsl eeas unmu muau sPreumsl eeavor un5 unuc5a/ udmuau rePoræmuCove vor 1, VkBioXune.

b t daPde uau/ I c enas ure noaudbh em I oeuse Oe uh ure a l uawdes eX/ eeminS E* * b 0 in siLe ure noaudbh em Yl e vodbh inS wde a5Pes ure u/ / ePæm
F.HZ, F.HL, F.A3 ; F.uvi, F.Avi, F.0 b I , F.Oc P, F.0 c P, F.2 W8, F/ sv, F.2 sv, F.BAY, F.mua, F.Bua, F.BN2 , F.mo/ , F.Bo/ , F.BN2 X, F.mo/ X, F.Bo/ X, F.BU x , F.mh S, F.Bh S, F.Eb M, F.ec dF.Ec dF.x :- , F.SiwF.x iw, F.x I X, F.SPX, F.x PX, F.6 Yb , F.

Comment

Fee

Appendix B

Excerpt from Tennessee Dep't of Environment and Conservation, *NPDES Permit No. TN0002330, Holliston Holdings, LLC, Addendum to Rationale* 33–34 (2020), https://perma.cc/4RKY-PKFG.

ADDENDUM TO RATIONALE
Holliston Holdings, LLC
PERMIT NO. TN0002330

January 30, 2020
Addendum prepared by: Miss Julie Harse, P.E.

Staff from the Johnson City Environmental Field Office noted a typographical error in the permit limit tables for the draft permit. The storm water monitoring table on page three should have both SW2 and SW3.

A comment letter was received from the Southern Environmental Law Center regarding the potential for Holliston Holdings LLC to discharge chemicals relative to PFAS. The facility's application did not report any forms of PFAS as chemicals that there was the potential to discharge. The permittee has no permit shield for the discharge of PFAS compounds because no such chemicals were disclosed in the permit application or otherwise under TCA 69-3-108(v). EPA's website state's the following regarding PFAS.

> *Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body – meaning they don't break down and they can accumulate over time. There is evidence that exposure to PFAS can lead to adverse human health effects.PFAS can be found in:*
>
> - ***Food** packaged in PFAS-containing materials, processed with equipment that used PFAS, or grown in PFAS-contaminated soil or water.*
> - ***Commercial household products**, including stain- and water-repellent fabrics, nonstick products (e.g., Teflon), polishes, waxes, paints, cleaning products, and fire-fighting foams (a major source of groundwater contamination at airports and military bases where firefighting training occurs).*
> - ***Workplace**, including production facilities or industries (e.g., chrome plating, electronics manufacturing or oil recovery) that use PFAS.*
> - ***Drinking water**, typically localized and associated with a specific facility (e.g., manufacturer, landfill, wastewater treatment plant, firefighter training facility).*
> - ***Living organisms**, including fish, animals and humans, where PFAS have the ability to build up and persist over time.*
>
> *Certain PFAS chemicals are no longer manufactured in the United States as a result of phase outs including the PFOA Stewardship Program in which eight major chemical manufacturers agreed to eliminate the use of PFOA and PFOA-related chemicals in their products and as emissions from their facilities. Although PFOA and PFOS are no longer manufactured in the United States, they are still produced internationally and can be imported into the United States in consumer goods such as carpet, leather and apparel, textiles, paper and packaging, coatings, rubber and plastics.*

EPA conducted from 2012 to 2016 a monitoring program under the unregulated contaminant monitoring rule that included the sampling of various forms of PFAS. The data gathered in the study is available to the public on EPA's website. There were three facilities in Tennessee that pull raw water from the Holston River which participated in the study: Morristown Water System, First Utility District of Hawkins County #1, and Kingsport Water Department. The finished water sampling was non-detect for all PFOA and PFOS samples at these facilities. The division does not believe that there is any basis for requiring the facility to sample for PFAS in the new permit since they did not disclose the chemical in their application. There are many sources of PFAS that can result in an individual being exposed to the chemical.

Appendix C

Excerpt from North Carolina Dep't of Environmental Quality, *Permit No. NC0024970, McAlpine Creek WWMF* 3–4, 12–13, 17–18 (2023).

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

October 27, 2023

Mr. Joseph Lockler, Operations Chief
Charlotte Water
5100 Brookshire Boulevard
Charlotte, North Carolina 28216

Subject: Final NPDES Permit Renewal
Permit NC0024970
McAlpine Creek WWMF
Mecklenburg County
Grade IV Biological WPCS
SIC Code 4952

Dear Mr. Lockler:

Division personnel have reviewed and approved your application for renewal of the subject permit. Accordingly, we are forwarding the attached NPDES permit. This permit is issued pursuant to the requirements of North Carolina General Statute 143-215.1 and the Memorandum of Agreement between North Carolina and the U.S. Environmental Protection Agency dated October 15, 2007 (or as subsequently amended).

Please note that the receiving stream is listed as impaired for benthos and fish community on the North Carolina 2022 303(d) Impaired Waters List. Addressing impaired waters is a high priority with the Division, and instream data will continue to be evaluated. If there is noncompliance with permitted effluent limits and stream impairment can be attributed to your facility, then mitigative measures may be required.

The following changes were made to the draft permit sent to you on May 16, 2023:

- Special Condition A.(3.)(c.) has been revised to indicate the appropriate NPDES permit number for the Irwin Creek WWTP.
- Special Condition A.(4.)(c.) has been revised for clarity and to indicate the appropriate NPDES permit number for the Irwin Creek WWTP.
- To assess the industrial contribution of PFAS to the McAlpine Creek WWMF and assess levels of PFAS compounds in the facility effluent, Special Condition A.(10.) has been revised. Please review each paragraph carefully.

Please note that the Division considers "Between 6.0 and 9.0 standard units" for pH permit limitations to mean greater than or equal to 6.0 standard units and less than or equal to 9.0 standard units for compliance purposes.

The final permit maintains the following significant changes identified in the letter sent on May 16, 2023:

- Based on the reasonable potential analysis (RPA) showing no reasonable potential to violate state water quality standards, the monitoring requirements for total silver, dibromochloromethane and total phenolic compounds have been removed from the permit [See A.(1)].
- For calculation of total nitrogen and total phosphorous loadings, monitoring requirements for total monthly flow, TKN and Nitrate + Nitrite have been added to the permit [See A.(1.)].

- Total Phosphorous reporting requirements have been further broken down into total phosphorous concentration, daily loading, monthly loading, 12-month loading and combined 12-month loading [See A.(1.)].
- Language has been added to Special Condition A.(7.) Combined Limitation for Total Phosphorous and A.(8.) Calculation and Reporting of Total Phosphorous Loads to further clarify the requirements.
- Based on review of existing total residual chlorine requirements (TRC), the weekly average TRC limit has been removed and the daily maximum TRC limit has been revised [See A.(1.)].
- The statement, "There shall be no discharge of floating solids or visible foam in other than trace amounts," has been added back into the permit [See A.(1.)].
- Based on instream data review reporting observed levels of fecal coliform downstream of the Irwin Creek WWTP at heightened concentrations, instream fecal coliform monitoring has been added to the permit upstream in Irwin Creek and downstream in Sugar Creek [See Conditions A.(3.) and A.(4.)].
- Based on the 2022 Integrated Report identifying turbidity as exceeding criteria in the receiving stream, instream turbidity monitoring has been added to the permit upstream in Irwin Creek and downstream in Sugar Creek [See Conditions A.(3.) and A.(4.)].
- As the facility receives complex waste streams from various industrial users with the potential to discharge 1,4-dioxane via their pretreatment program and the facility discharges above the NC/SC state border, monthly monitoring for 1,4-dioxane as well as a 1,4-dioxane reopener condition have been added to the permit. After a 24-month sampling period, the Permittee may request the Division conduct a review of submitted data for assessment and approval of a 1,4-dioxane monitoring frequency reduction from monthly to quarterly [See A.(1.) and Special Condition A.(11.)].
- Some of the wording has changed in Special Condition A.(6.), Chronic Toxicity Permit Limit, please review each paragraph carefully.
- Special Condition A.(9.) has been modified to include the specific three years in which the Effluent Pollutant Scan shall be performed (2025, 2026, and 2027). In addition, at the end of the Special Condition, 2nd species Toxicity Testing Requirements for municipal permit renewals per Federal Regulations [40 CFR 122.21(j)(5)] have been added.
- A notation was made concerning the Electronic Reporting Rule – NPDES Electronic Reporting Rule – Phase 2 Extension. EPA extended the Phase 2 deadline to December 21, 2025.
- Federal regulations require electronic submittal of all discharge monitoring reports (DMRs) and program reports. The requirement to continue reporting discharge monitoring data electronically using the NC DWR's Electronic Discharge Monitoring Report (eDMR) internet application has been added to your NPDES permit [See Special Condition A.(13.)].

If any parts, measurement frequencies or sampling requirements contained in this permit are unacceptable to you, you have the right to an adjudicatory hearing upon written request within thirty (30) days following receipt of this letter. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings (6714 Mail Service Center, Raleigh, North Carolina 27699-6714). Unless such demand is made, this decision shall be final and binding.

Pretreatment updates in response to NPDES permit renewal:

- On July 1, 2024, 180 days after the effective date of this NPDES permit renewal, the City is required to submit to the Division a written technical evaluation of the need to revise local limits (i.e., an updated IWS/HWA-AT/L-STMP, or documentation of why is not needed). This action may include revising, updating, or adding to the list of SIUs regardless of timeframe.
    - Submit the updated Long-Term Monitoring Plan (LTMP)
        - If there are new industries within the service area, submit an updated Industrial Waste Survey (IWS)
        - Review pollutants of concern (POCs) and update the LTMP to reflect pollutants in industrial user permits (IUPs) and sludge management permit.

- As part of the local limits assessment, please submit the updated Headworks Analysis (HWA).
- For additional pretreatment actions related to PFAS, see Special Condition A.(10.) PFAS Monitoring Requirements.

The NPDES standard conditions (Parts II, III, and IV) are the same as in your current permit except that agency and division names have been updated. The latest version is available at https://bit.ly/3k5NFaL and can be viewed online or downloaded as a PDF file.

Please note that this permit is not transferable except after notice to the Division. The Division may require modification or revocation and reissuance of the permit. This permit does not affect the legal requirements to obtain other permits which may be required by the Division of Water Resources or any other Federal, State, or Local governmental regulations.

If you have any questions concerning this permit, please contact Nick Coco at (919) 707-3609 or via email at nick.coco@deq.nc.gov.

Sincerely,

DocuSigned by:
Michael Montebello
C464531431644FE...

for Richard E. Rogers, Jr., Director
Division of Water Resources, NCDEQ

Hardcopy: NPDES Files
Central Files
Ecopy: US EPA Region 4
DWR/Mooresville Regional Office/Water Quality/Andrew Pitner and Wes Bell
DWR/Aquatic Toxicology Branch/Cindy Moore and Molly Nicholson
DWR/Municipal Permitting Unit/Keyes McGee
SCDHEC/Brenda Green
SELC/Hannah Nelson

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES

PERMIT

TO DISCHARGE WASTEWATER UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

(NPDES)

In compliance with the provisions of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Charlotte Water

is hereby authorized to discharge wastewater from a facility located at the

McAlpine Creek Wastewater Management Facility (WWMF)
12701 Lancaster Highway
Pineville
Mecklenburg County

to receiving waters designated as McAlpine Creek in the Catawba River Basin

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III and IV hereof.

This permit shall become effective…… January 1, 2024.

This permit and authorization to discharge shall expire at midnight on ..... June 30, 2028.

Signed this day ..... October 27, 2023.

DocuSigned by:
Michael Montebello
C464531431644FE...

for Richard E. Rogers, Jr., Director
Division of Water Resources
By Authority of the Environmental Management Commission

SUPPLEMENT TO PERMIT COVER SHEET

All previous NPDES Permits issued to this facility, whether for operation or discharge are hereby revoked, and as of this issuance, any previously issued permit bearing this number is no longer effective. Therefore, the exclusive authority to operate and discharge from this facility arises under the permit conditions, requirements, terms, and provisions included herein.

Charlotte Water

is hereby authorized to:

1. Continue to operate and maintain McAlpine Creek WWMF, an existing 64.0 MGD facility consisting of the following components :
    - Flow equalization
    - Screening
    - Grit removal
    - Primary clarifiers
    - Aeration basins
    - Secondary clarifiers
    - Biological and chemical phosphorous removal
    - Alkaline addition for nitrification
    - Chlorination
    - Dechlorination
    - Anaerobic sludge digestion
    - Centrifuges and gravity sludge thickeners
    - Rapid sand filters

2. Discharge from said treatment works at the location specified on the attached map via Outfall 001 into McAlpine Creek currently classified C waters in the Catawba River Basin and 03050103 HUC.

PART I

A.(1.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS [64.0 MGD]
[15A NCAC 02B .0400 et seq., 15A NCAC02B .0500 et seq.] Grade IV
Biological Water Pollution Control System [15A NCAC 08G .0302]

(a.) During the period beginning on the effective date of the permit and lasting until permit expiration, the permittee is authorized to discharge treated municipal and industrial wastewater from Outfall 001. Such discharges shall be limited and monitored[1] by the permittee as specified below:

PARAMETER *Parameter Code*		EFFLUENT LIMITS			MONITORING REQUIREMENTS		
		Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location
Flow	*50050*	64.0 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	*82220*	Monitor and Report			Monthly	Recorded or Calculated	Influent or Effluent
CBOD, 5-day (20°C) [2] (April 1 -October 31)	*80082*	4.0 mg/L	6.0 mg/L		2/Week [3]	Composite	Influent and Effluent
CBOD, 5-day (20°C) [2] (November 1- March 31)	*80082*	8.0 mg/L	12.0 mg/L		2/Week [3]	Composite	Influent and Effluent
Total Suspended Solids [2]	*CO530*	15.0 mg/L	22.5 mg/L		2/Week [3]	Composite	Influent and Effluent
NH_3 as N (April 1 -Oct 31)	*CO610*	1.0 mg/L	3.0 mg/L		2/Week [3]	Composite	Effluent
NH_3 as N (Nov 1- Mar 31)	*CO610*	1.9 mg/L	5.7 mg/L		2/Week [3]	Composite	Effluent
Fecal Coliform (geometric mean)	*31616*	200/100 mL	400/100 mL	1000/ 100 mL	2/Week [3]	Grab	Effluent
pH	*00400*	Between 6.0 and 9.0 standard units			Daily	Grab	Effluent
Dissolved Oxygen	*00300*	Daily Average ≥ 6.0 mg/L			Daily	Grab	Effluent
Conductivity (µmhos/cm)	*00094*	Monitor and Report			Daily	Grab	Effluent
Temperature (°C)	*00010*	Monitor and Report			Daily	Grab	Effluent
Total Residual Chlorine [4]	*50060*			17 µg/L	Daily	Grab	Effluent
Total Nitrogen (NO_2+NO_3+TKN) (mg/L)	*CO600*	Monitor and Report			Monthly	Calculated	Effluent
TKN (mg/L)	*00625*	Monitor and Report			Monthly	Composite	Effluent
NO3-N + NO2-N (mg/L)	*00630*	Monitor and Report			Monthly	Composite	Effluent
Total Phosphorus (mg/L)	*CO665*	Monitor and Report			Monthly	Composite	Effluent
Daily TP Load [5,7]	*QD665*	1,067 lb/day			Monthly	Calculated	Effluent
Monthly TP Load (lb/mo) [5,7]	*QM665*	Monitor and Report			Monthly	Calculated	Effluent
12-Month TP Load (lb/yr) [5,7]	*QY665*	Monitor and Report			Monthly	Calculated	Effluent
Combined 12-Month TP Load (lb/day) [6,7]	*RA665*	See Conditions A.(7) and A.(8)			Monthly	Calculated	Effluent
Chronic Toxicity [8]	*TGP3B*	Monitor and Report			Quarterly	Composite	Effluent
Hardness -Total as $CaCO_3$ (mg/L)	*00900*	Monitor and Report			Quarterly	Composite	Effluent
PFAS	*variable*	Footnote 9			Footnote 9	Grab	Effluent
1,4-Dioxane (µg/L)[10]	*82388*	Monitor and Report			Monthly[10]	Grab	Effluent
Effluent Pollutant Scan	*NC01*	Monitor and Report			Footnote 11	Footnote 11	Effluent

Footnotes:

1. The permittee shall submit Discharge Monitoring Reports electronically using NC DWR's eDMR application system. See Special Condition A.(13.).
2. The monthly average effluent CBOD5 and Total Suspended Solids concentrations shall not exceed 15% of the respective influent value (85% removal).

Footnotes continue on the next page.

Footnotes continued from A.(1.) Effluent Limitations and Monitoring Requirements [64.0 MGD]:

3. Twice per week sampling must occur on any two non-consecutive days during the calendar week.
4. The facility shall monitor TRC when using chlorination for disinfection. The Division shall consider all effluent total residual chlorine values reported below 50 µg/l to be in compliance with the permit. However, the permittee shall continue to record and submit all values reported by a North Carolina certified laboratory (including field certified), even if these values fall below 50 µg/l.
5. The requirements for Monthly TP Load (lb/mo, QM665), Daily TP Load (lb/day, QD665), and 12-Month TP Load (lb/yr, QY665) apply to discharges from this McAlpine Creek WWMF. These parameters are defined in Condition A.(8) of this permit.
6. The Permittee is also subject to a Combined TP Load limit (lb/day, RA665) on the combined discharges from the McAlpine Creek, Sugar Creek, and Irwin Creek facilities in accordance with Conditions A.(7.) and A.(8.).
7. All TP Load values shall be calculated and reported as specified in this Condition and Conditions A.(7.) and A.(8.).
8. Chronic Toxicity (*Ceriodaphnia dubia*) P/F at 90% with testing in March, June, September, and December. See Special Condition A.(6.).
9. See Special Condition A.(10.).
10. Samples will be analyzed and reported using sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR part 136 for the analysis of pollutants or pollutant parameters. After a 24-month sampling period, the Permittee may request the Division conduct a review of submitted data for assessment and approval of a 1,4-dioxane monitoring frequency reduction from monthly to quarterly.
11. The permittee shall perform three effluent pollution scans during the term of this permit. See Special Condition A.(9.).

(b.) There shall be no discharge of floating solids or visible foam in other than trace amounts.

A.(10.) PFAS MONITORING REQUIREMENT AND PRETREATMENT
[G.S. 143-215.1(b.)]

(a) In the absence of a final 40 CFR Part 136 method, **influent and post-filtration** PFAS monitoring shall be conducted. The **3rd or more recent** wastewater draft analytical method 1633 (see 40 CFR 122.21(e)(3)(ii) and 40 CFR 122.44(i)(1)(iv)(B)) shall be used and shall include all **target analytes** listed under Table 1 of the draft method until such time as the Permittee uses the Final PFAS Method for wastewater. Effective the first full calendar quarter following six (6) months after EPA publishes a 40 CFR part 136 **Final** PFAS Method for wastewater in the *Federal Register*, **effluent** PFAS monitoring shall be conducted using the approved EPA Final PFAS Method 1633.

(b) **Influent and post-filtration monitoring takes effect the first full calendar quarter following six (6) months after the effective date of the permit** (July 1, 2024) and will be at a quarterly frequency thereafter.

(i.) Appendix A has been added to the permit to identify the current analytes listed under Table 1 of the 4th **Draft** Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) July 2023, in Aqueous Samples and the appropriate ICIS codes for use when reporting in the electronic Discharge Monitoring Reports (eDMRs). The method and list of analytes may also be found at:

https://www.epa.gov/system/files/documents/2022-12/3rd%20Draft%20Method%201633%20December%202022%2012-20-22_508.pdf

PFAS Monitoring using the Draft Method 1633 shall be reported quarterly using the Division-provided submittal form. Once PFAS monitoring is conducted using the EPA Final PFAS Method 1633, data shall be reported in the monthly eDMRs.

(ii.) Please note that specific considerations and protocols are required to avoid cross-contamination and minimize sample bias for PFAS. A current listing of laboratories accredited by the Perry Johnson Laboratory Accreditation, Inc. (PJLA), ANSI National Accreditation Board (ANAB), or the American Association for Laboratory Accreditation (A2LA) to perform EPA Draft Method 1633 can be found by contacting the individual associations. Please note that different labs are accredited for different matrices.

NOTES - Sampling and Analytical:

• Sampling shall be planned so that required holding times for analytical methods are met.

• Using one of the analytical laboratories included above will allow consistency in analytical method and in anticipation of a final method.

• "J" flag values shall be reported when the "J" flag value is associated with the method's upper bound. "J" flag values need not be reported when less than the method's Minimum Reporting Level (listed in Method 1633).

• Laboratories approved for Aqueous matrix may be utilized. Please note that the lab used does not have to be in North Carolina.

(c) Pretreatment program activities:

(i.) PFAS Monitoring Applicability: Industry categories known or suspected to discharge PFAS from the EPA PFAS Strategic Roadmap include: organic chemicals, plastics & synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper & paperboard; leather tanning & finishing; plastics molding & forming; textile mills; paint formulating, and airports. This is not an exhaustive list and additional industries may also discharge PFAS. For example, Centralized Waste Treatment (CWT) facilities may receive wastes from the aforementioned industries and should be considered for monitoring. There may also be categories of dischargers that do not meet the applicability criteria of any existing Effluent Limitation Guidelines (ELG); for instance, remediation sites, chemical manufacturing not covered by OCPSF, and military bases. [1.]

[1]ELG categories of airport deicing, landfills, textile mills, and plastics molding and forming do not have categorical pretreatment standards, and therefore small-volume indirect dischargers in those categories would not ordinarily be considered Significant Industrial Users (SIUs) and may not be captured on an existing IU inventory. IUs under the Paint Formulating category are only subject to Pretreatment Standards for New Sources (PSNS), and existing sources may need to be inventoried.

(ii.) The Permittee shall identify and locate each Significant Industrial User (SIU) in the approved pretreatment program in industry categories expected or suspected of PFAS discharges to the McAlpine Creek WWMF; and begin sampling of and modify Industrial User Permits (IUPs) for each SIU identified as suspected of PFAS discharges to the McAlpine Creek WWMF to ensure sampling begins **within six months of the permit effective date, by July 1, 2024.**

(iii.) Update Industrial Waste Survey (IWS) Inventory: POTWs must identify and locate all possible indirect dischargers that might be subject to the pretreatment program and identify the character and volume of pollutants contributed to the POTW by the indirect dischargers (see 40 CFR 403.8(f)(2)). As EPA regulations require, this information shall be provided to the Division (see 40 CFR 122.44(j) and 40 CFR 403.8(f)(6)) **as part of the 2024 Pretreatment Annual Report (PAR).** The IWS inventory shall be revised, as necessary, to include all indirect dischargers in industry categories expected or suspected of PFAS discharges.[1.] (see 15A NCAC 02H .0906(b)(2)).

(iv.) The Permittee shall begin sampling of and/or issue IUPs for each indirect discharger identified as suspected of PFAS discharges to the McAlpine Creek WWMF to ensure sampling begins **within six months of completion of the IWS.**

(v.) The Division has determined that all SIUs and indirect dischargers identified above analyze their discharge for PFAS **at the same quarterly sampling frequency and with the same analytical method** to ensure protection of human health and the environment due to the potential health hazards associated with PFAS. Collection and evaluation of this information will also assist the Department in developing sound policies with respect to PFAS in the environment.

(vi.) The Permittee shall ensure that IUPs within the McAlpine Creek WWMF service area are modified or reissued, new IUPs are issued, and other Pretreatment Program mechanisms are completed to address PFAS discharges to POTWs.

(vii.) In the absence of local limits, and based upon data as they become available, POTWs shall encourage Best Management Practices (BMPs), pollution prevention, product substitution, and good housekeeping practices to make meaningful reductions in PFAS introduced to POTWs. Such BMPs could be like those included in the EPA Office of Water, December 5, 2022, "Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs."A3. "Best Management Practices (BMPs) for discharges of PFAS, including product substitution, reduction, or elimination of PFAS, as detected by draft method 1633".

(viii.) A summary of all actions taken by the Permittee and their industries and monitoring conducted by each indirect discharger identified as part of this Special Condition shall be provided as part of the PAR (see 15A NCAC 02H .0908(b)).

A.(11.) 1,4-DIOXANE RE-OPENER

[NCGS 143-215.1 (b)]

Pursuant to N.C. General Statutes Section 143-215.1 and the implementing rules found in the North Carolina Administrative Code at 15A NCAC 2H.0112 (b) (1) and 2H.0114 (a) and Part II, Sections B-12 and B-13 of this permit, the Director of DWR may reopen this permit to modify permit requirements to address 1,4-Dioxane monitoring, treatment and/or compliance.

A.(12.) MERCURY MINIMIZATION PLAN (MMP)

[N.C.G.S. 143-215.1 (B)]

The Permittee shall maintain and continue to implement the Mercury Minimization Plan (MMP) developed in the previous permit term. The MMP shall continue to be available for inspection on-site. The MMP should place emphasis on identification of mercury contributors and goals for reduction. Results shall be summarized and submitted with the next permit renewal. Performance of the MMP will meet the requirements of the TMDL (Total Maximum Daily Load) for mercury approved by USEPA on October 12, 2012, unless and until a Waste Load Allocation specific to this facility is developed and this NPDES permit is amended to require further actions to address the Waste Load Allocation.

Appendix A. PFAS Target Analytes EPA Method 1633

(*4th Draft, July 2023*).

Target Analyte Name	Abbreviation	CAS Number	*Parameter Code*
Perfluoroalkyl carboxylic acids			
Perfluorobutanoic acid	PFBA	375-22-4	*51522*
Perfluoropentanoic acid	PFPeA	2706-90-3	*51623*
Perfluorohexanoic acid	PFHxA	307-24-4	*51624*
Perfluoroheptanoic acid	PFHpA	375-85-9	*51625*
Perfluorooctanoic acid	PFOA	335-67-1	*51521*
Perfluorononanoic acid	PFNA	375-95-1	*51626*
Perfluorodecanoic acid	PFDA	335-76-2	*51627*
Perfluoroundecanoic acid	PFUnA	2058-94-8	*51628*
Perfluorododecanoic acid	PFDoA	307-55-1	*51629*
Perfluorotridecanoic acid	PFTrDA	72629-94-8	*51630*
Perfluorotetradecanoic acid	PFTeDA	376-06-7	*51531*
Perfluoroalkyl sulfonic acids			
Perfluorobutanesulfonic acid	PFBS	375-73-5	*52602*
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	*52610*
Perfluorohexanesulfonic acid	PFHxS	355-46-4	*52605*
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	*52604*
Perfluorooctanesulfonic acid	PFOS	1763-23-1	*52606*
Perfluorononanesulfonic acid	PFNS	68259-12-1	*52611*
Perfluorodecanesulfonic acid	PFDS	335-77-3	*52603*
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	*52632*
Fluorotelomer sulfonic acids			
1*H*,1*H*,2*H*,2*H*-Perfluorohexane sulfonic acid	4:2FTS	757124-72-4	*52607*
1*H*,1*H*,2*H*,2*H*-Perfluorooctane sulfonic acid	6:2FTS	27619-97-2	*52608*
1*H*,1*H*,2*H*,2*H*-Perfluorodecane sulfonic acid	8:2FTS	39108-34-4	*52609*
Perfluorooctane sulfonamides			
Perfluorooctanesulfonamide	PFOSA	754-91-6	*51525*
N-methyl perfluorooctanesulfonamide	NMeFOSA	31506-32-8	*52641*
N-ethyl perfluorooctanesulfonamide	NEtFOSA	4151-50-2	*52642*

Table continues on next page.

Table continued from Appendix A. **PFAS Target Analytes EPA Method 1633** (*4th Draft, July 2023).*

Target Analyte Name	Abbreviation	CAS Number	*Parameter Code*
Perfluorooctane sulfonamidoacetic acids			
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9	*51644*
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6	*51643*
Perfluorooctane sulfonamide ethanols			
N-methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7	*51642*
N-ethyl perfluorooctanesulfonamidoethanol	NetFOSE	1691-99-2	*51641*
Per- and Polyfluorother carboxylic acids			
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	*52612*
4,8-Dioxa-3*H*-perfluorononanoic acid	ADONA	919005-14-4	*52636*
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	*PF002*
Perlfuoro-4-methoxybutanoic acid	PFMBA	863090-89-5	*PF006*
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	*52626*
Ether sulfonic acids			
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1	*PF003*
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	*PF004*
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7	*52629*
Fluorotelomer carboxylic acids			
3-Perfluoropropyl propanoic acid	3:3FTCA	356-02-5	*PF001*
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	914637-49-3	*PF007*
3-Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4	*PF005*

Appendix D

Excerpt from North Carolina Dep't of Environmental Quality, *Permit No. NC00900042, Chemours Company – Fayetteville Works, Permit Fact Sheet* 1–9, 11, 13–14 (2022) https://perma.cc/J3AZ-35VC.

Fact Sheet
NPDES Permit No. NC0090042

Permit Writer/Email Contact: Sergei Chernikov, Ph.D., sergei.chernikov@ncdenr.gov
Date: The Fact Sheet was initiated on April 27, 2020. The Final Fact Sheet was finalized on September 14, 2022. Text based on the draft permit appears in blue, revisions are in red.
Division/Branch: NC Division of Water Resources / NPDES Complex Permitting
Fact Sheet Template: Version 09Jan2017

Permitting Action:
☐ Renewal
☐ Renewal with Expansion
☒ New Discharge
☐ Modification (Fact Sheet should be tailored to mod request)

Note: A complete application should include the following:

- For New Dischargers, EPA Form 2A or 2D requirements, Engineering Alternatives Analysis, Fee
- For Existing Dischargers (POTW), EPA Form 2A, 3 effluent pollutant scans, 4 2nd species WET tests.
- For Existing Dischargers (Non-POTW), EPA Form 2C with correct analytical requirements based on industry category.

Complete applicable sections below. If not applicable, enter NA.

1. Basic Facility Information

Facility Information	
Applicant/Facility Name:	The Chemours Company / Chemours Fayetteville Works
Applicant Address:	1007 Market Street, Wilmington, DE 19899
Facility Address:	22828 NC Highway 87 W, Fayetteville, NC 28306-7332
Permitted Flow:	2.38 MGD
Facility Type/Waste:	MAJOR Industrial
Facility Class:	III
Treatment Units:	chemical oxidation, pH adjustment to precipitate metals, ultrafiltration membranes to remove total suspended solids and other constituents, granulated active carbon (GAC) system to remove PFAS compounds, and associated equipment
Pretreatment Program (Y/N):	N
County:	Bladen
Region:	Fayetteville

Briefly describe the proposed permitting action and facility background:

Chemours is a major industrial facility. Chemours operates an ion exchange monomers process and a polymer processing aid process. Also on-site, DuPont operates a polyvinyl fluoride process, and Kuraray operates Butacite and SentryGlas processes.

Beginning in mid-2017, PFAS compounds were found in the Cape Fear River. Certain compounds of concern, including GenX or HFPO dimer acid (HFPO-DA), were traced back to Chemours. Health effects of many PFAS are currently not well-known, but some are possibly linked health effects include kidney disease, developmental effects to fetuses, and some forms of cancer. To-date, EPA and the state of NC have not released/approved of any regulatory standards for these compounds. EPA has released a drinking water health advisory of 70 ng/L for the sum of PFOA and PFOS. NC Department of Health and Human Services (DHHS) has released a drinking water health goal (for the most vulnerable population) of 140 ng/L for GenX.

In order to reduce PFAS loading to the Cape Fear River pursuant to the Consent Order entered by the Bladen County Superior Court on February 25, 2019 ("Consent Order"), Chemours has requested a new NPDES permit for the discharge of treated groundwater, treated stormwater, and treated surface water from seeps located on its property.

The flow from Outfall 004 consists primarily of contaminated groundwater, stormwater, and seep water, which must be treated to remove at least 99% of indicator parameters HFPO-DA (GenX), PFMOAA, and PMPA. The treatment system shall meet such discharge limits as shall be set by DEQ, and shall, in addition and at a minimum, be at least 99% effective in controlling indicator parameters, HFPO-DA, PFMOAA, and PMPA, i.e. 99% removal of these parameters. The issuance of this permit will allow Chemours to begin remediation on this portion of it's site to meet the Consent Order requirement and reduce PFAS loading to the Cape Fear River.

Additionally, as part of the Consent Order, Chemours was required to conduct a Mass Loading Assessment. The summary report was submitted to DEQ on December 6, 2019 and updated quarterly since then. The report assesses pathways for per- and polyfluoroalkyl substances (PFAS) on and around the site and their potential mass loadings to the Cape Fear River using data from the May, June, and September 2019 sampling for the facility. Chemours preliminarily estimated that treating groundwater and seeps will reduce overall loading of Total Table 3+ PFAS compounds to the river by 51% based on an average of these two sampling events (Cape Fear River PFAS Loading Reduction Plan – Supplemental Information Report, November 2019). According to Chemours' most recent mass loading report, onsite groundwater currently contributes over 60% of the remaining PFAS loading to the Cape Fear River.

The outfall from the treatment system is named Outfall 004 in this new permit to allow for the potential consolidation of Chemours' other NPDES wastewater permit, NC0003573, in the future.

- Outfall 004 – Treated contaminated groundwater, stormwater, and surface water from seeps A and B.

The treatment system for the contaminated groundwater, stormwater, and seeps (seep A and seep B) is designed to treat PFAS compounds, and remove 99% of the PFAS compounds measured by indicator parameters HFPO-DA (GenX), PMPA, and PFMOAA. The system will treat groundwater from the series of extraction wells (~64 wells) and surface water (including stormwater) from seep A and seep B, it is capable of treating peak flows of 2.9 MGD, the average flow is projected to be 2.38 MGD. Most of the flow (91%) to the treatment system will be coming from groundwater. All the dry weather flow from seeps A and B as well as 0.5 inches of rain during 24-hour period will be captured and treated. This extracted contaminated groundwater, stormwater, and surface water from seeps A and B would otherwise flow untreated to the Cape Fear River.

The treatment system will include a chemical oxidation and pH adjustment to precipitate metals, ultrafiltration membranes to remove precipitated metals and other total suspended solids, a granulated active carbon (GAC) system to remove PFAS compounds, and other associated equipment. Treated effluent will be monitored and sampled at an internal point considered to be Outfall 004 then piped and mixed with existing wastewaters discharged through Outfall 002. The average flow from Outfall 004 is expected to be 2.38 MGD, and the average flow from Outfall 002 prior to the addition of the Outfall 004 is 23.17 MGD. Solids associated with reject streams from filtration and GAC systems will undergo dewatering through a thickening tank and filter press or centrifugation, from which sludge cake will be disposed of offsite and the press water will be recycled to the influent of the thickening tanks.

This permit will not authorize the discharge of any process wastewater from Chemours. The only process wastewater discharged comes from Chemours' tenants DuPont and Kuraray.

Installation of the treatment system that will remove 99% of the PFAS compounds from this groundwater, stormwater, and seeps pumped to this system and will result in significant reduction of the PFAS compounds in the effluent based upon data provided by Chemours.

The solids generated in the treatment plant will be tested and shipped off-site either to an incinerator or a licensed landfill. The GAC will be sent back to the manufacturer for recycling.

Projected Mass Load Reductions based on the indicator parameters of HFPO-DA, PMPA, and PFMOAA are calculated below.

Groundwater/Seeps
HFPO-DA= 0.0122 mg/L x 0.99 x 2.38 MGD x 8.34 x 365 days = 87.5 lb/year
PFMOAA= 0.0643 mg/L x 0.99 x 2.38 MGD x 8.34 x 365 days = 461.2 lb/year
PMPA= 0.0132 mg/L x 0.99 x 2.38 MGD x 8.34 x 365 days = 94.7 lb/year
Total reduction= 643.4 lb/year

(Concentration of these indicator parameters were obtained from the Chemours Fayetteville Works NPDES Permit Application for the Groundwater Treatment System dated June 13, 2021. Average concentration for each parameter is used for calculations).

In accordance with North Carolina General Statutes, an in-person public hearing was held on June 21, and a virtual public hearing was held on June 23, 2022, regarding the proposed NPDES permit. Notice of the proposals and the original hearing was published on May 17, 2022, in the Wilmington Star-News (notice is attached). On May 17, 2022, a news release about the public hearing was sent to media statewide as well as parties who voluntarily signed up to receive it, such as attorneys, businesses, and citizens. On May 17, 2022, an announcement of the public hearing was sent to the DWRPublicNotices List serve.

During both hearings, general information about the hearing as well as the draft permit was followed by DWR presentations with detailed information about the draft permit. Speakers provided public comments on the draft permit after the DWR presentation. Written comments were accepted for the proposed NPDES permit from May 17, 2022, through June 24, 2022. The Hearing Officer's Report details the public comments received.

Since the release of the draft permit, on June 15, 2022, EPA issued a lifetime, drinking water health advisory of 10 ng/L for GenX chemicals. EPA's drinking water advisory levels "identify

the concentration of a contaminant in drinking water at which adverse health effects are not anticipated to occur over specific exposure durations."

Based on review of the public record and written/oral comments received during the public hearing process, and further evaluation and consideration of the treatment data from Outfall 003, the following changes have been made to the draft permit:

1. Incorporated the wall maintenance requirements into the permit.
2. Revised initial limits for PFMOAA from 640 ng/L to 320 ng/L, and for PMPA from 130 ng/L to 100 ng/L.
3. Revised the limits for 3 indicator parameters to <10.0 ng/L for HFPO-DA (GenX), 10 ng/L for PMPA, and < 20.0 ng/L for PFMOAA after a 6-month optimization period.

Please note that as a matter of record a fact sheet contains both the original Rational for the Draft Permit (blue text) based on the information available at that time and the changes made after the Public Hearings oral and written comments and further evaluations (red text). Changes to the draft permit are summarized at the end of the Fact Sheet in Section 17.

2. Receiving Waterbody Information

[Outfall 004]

Receiving Waterbody Information	
Outfalls/Receiving Stream(s):	Internal Outfall 004 discharges through Outfall 002 to Cape Fear River
Stream Segment:	18-(26.25)
Stream Classification:	C, WS-IV
Drainage Area (mi^2):	4852
Summer 7Q10 (cfs):	8:1 dilution for Outfall 002 (17.14 cfs, the number is based on the modeling)
Winter 7Q10 (cfs):	603
30Q2 (cfs):	900
Average Flow (cfs):	4220
IWC (% effluent):	12.5% (based on the model) applies to Outfall 002
303(d) listed/parameter:	No, the segment is not listed on the 2018 303(d) list
Subject to TMDL/parameter:	Yes – State-wide Mercury TMDL implementation.
Sub-basin/HUC:	Outfall 002: 03-06-16 / HUC: 03030005
USGS Topo Quad:	Duart

3. Effluent Data Summary

N/A – New Discharge

4. Instream Data Summary

Instream monitoring may be required in certain situations, for example: 1) to verify model predictions when model results for instream DO are within 1 mg/l of instream standard at full permitted flow; 2) to verify model predictions for outfall diffuser; 3) to provide data for future TMDL; 4) based on other instream concerns. Instream monitoring may be conducted by the Permittee, and there are also Monitoring Coalitions established in several basins that conduct instream sampling for the Permittee (in which case instream monitoring is waived in the permit as long as coalition membership is maintained).

If applicable, summarize any instream data and what instream monitoring will be proposed for this permit action: As part of the Consent Order (Paragraph 11(d)), Chemours is required to sample its intake, discharge (Outfall 002), and a multitude of additional on-site locations for PFAS compounds. These sampling efforts are detailed in the Updated PFAS Characterization Plan, dated May 1, 2019. This plan and the sampling locations were conditionally approved by DWR on June 19, 2019.

Chemours' existing NPDES permit, NC0003573, has instream monitoring requirements for temperature, dissolved oxygen, and conductivity on a weekly basis to evaluate the effects of its discharge on the receiving stream. Chemours is a member of the Middle Cape Fear Basin Association, with upstream coalition station B8290000 (approximately 1 mile upstream of Outfall 002) and downstream coalition station B8302000 (approximately 4 miles downstream of Outfall 002). Instream monitoring for PFAS compounds is required in Chemours Permit NC0089915 (Outfall 003).

In order to evaluate impact of the remediation activities on the instream concentration of PFAS a comprehensive monitoring at four different transects along the Cape Fear River will be added to the permit (please see Special Condition A. (7.)).

Is this facility a member of a Monitoring Coalition with waived instream monitoring (Y/N): Y

Name of Monitoring Coalition: Middle Cape Fear Basin Association

5. Compliance Summary

Summarize the compliance record with permit effluent limits (past 5 years): This is a new permit.

Summarize the compliance record with aquatic toxicity test limits and any second species test results (past 5 years): This is a new permit.

Summarize the results from the most recent compliance inspection: This is a new permit.

6. Water Quality-Based Effluent Limitations (WQBELs)

Dilution and Mixing Zones

In accordance with 15A NCAC 2B.0206, the following stream flows are used for dilution considerations for development of WQBELs: 1Q10 streamflow (acute Aquatic Life); 7Q10 streamflow (chronic Aquatic Life; non-carcinogen HH); 30Q2 streamflow (aesthetics); annual average flow (carcinogen, HH).

If applicable, describe any other dilution factors considered (e.g., based on CORMIX model results):

The proposed treatment system will discharge from Internal Outfall 004, the treated wastewater from this Outfall will be routed to Cape Fear River through Outfall 002. Geosyntec Consultants of NC has submitted

CORMIX model results on behalf of The Chemours Company FC, LLC for the primary discharge Outfall 002 of their Fayetteville Works site discharging to the Cape Fear River, classified WS-IV, approximately 1,500 feet above the William O Huske Dam aka Lock and Dam 3 in Bladen County. The discharge was modeled because of concerns over incomplete mixing due to the presence of the lock and dam system and background concentrations from site runoff, aerial deposition, seepage, and groundwater flow containing per-and polyfluoralkyl substances (PFAS) into the river.

The CORMIX model river schematization used The Army Corps of Engineers 2016 bathymetric survey data which showed a consistent river cross-section profile from the point of discharge to just above Lock and Dam 3. Critical river flows were obtained from the USGS in June 2019, which showed a marked decrease in critical flow statistics from those used in prior permits. The lower flows reflect changes in the B. Everett Jordan Lake Drought Contingency Plan formally approved in 2008 and operationally in effect since 2007. Water levels in the model were determined from the continuous record USGS stream gage (Station 02105500) located at the lock and dam. Outfall parameters in the model were based on the existing outfall configuration.

The modeled pollutant of concern is HFPO-DA which showed continued mixing up to 21.2 m from the outfall where the plume begins to exhibit passive ambient diffusion with little additional dilution. At this point the effluent plume dilution is 8:1 until model end. The 8:1 dilution is used to establish dilution based effluent limitations for parameters with little to no background concentrations. The 8:1 dilution is both more conservative than and supported over instream waste concentration (IWC) based limitations normally performed under 15A NCAC 2B. The IWC from using standard procedures under 7Q10 flow conditions of 467 cubic feet per second (cfs) would be 9% versus 12.5% at an 8:1 dilution.

If applicable, describe any mixing zones established in accordance with 15A NCAC 2B.0204(b): N/A

Oxygen-Consuming Waste Limitations

Limitations for oxygen-consuming waste (e.g., BOD) are generally based on water quality modeling to ensure protection of the instream dissolved oxygen (DO) water quality standard. Secondary TBEL limits (e.g., BOD= 30 mg/l for Municipals) may be appropriate if deemed more stringent based on dilution and model results.

If permit limits are more stringent than TBELs, describe how limits were developed: N/A

Ammonia and Total Residual Chlorine Limitations

Limitations for ammonia are based on protection of aquatic life utilizing an ammonia chronic criterion of 1.0 mg/l (summer) and 1.8 mg/l (winter). Acute ammonia limits are derived from chronic criteria, utilizing a multiplication factor of 3 for Municipals and a multiplication factor of 5 for Non-Municipals.

Limitations for Total Residual Chlorine (TRC) are based on the NC water quality standard for protection of aquatic life (17 ug/l) and capped at 28 ug/l (acute impacts). Due to analytical issues, all TRC values reported below 50 ug/l are considered compliant with their permit limit.

Describe any proposed changes to ammonia and/or TRC limits for this permit renewal: N/A

Reasonable Potential Analysis (RPA) for Toxicants

If applicable, conduct RPA analysis and complete information below.

The need for toxicant limits is based upon a demonstration of reasonable potential to exceed water quality standards, a statistical evaluation that is conducted during every permit renewal utilizing the most recent effluent data for each outfall. The RPA is conducted in accordance with 40 CFR 122.44 (d) (i). The NC

RPA procedure utilizes the following: 1) 95% Confidence Level/95% Probability; 2) assumption of zero background; 3) use of ½ detection limit for "less than" values; and 4) stream flows used for dilution consideration based on 15A NCAC 2B.0206. Effective April 6, 2016, NC began implementation of dissolved metals criteria in the RPA process in accordance with guidance titled *NPDES Implementation of Instream Dissolved Metals Standards*, dated June 10, 2016.

A reasonable potential analysis was conducted on effluent toxicant data collected between May 2016 and March 2020. Pollutants of concern included toxicants with positive detections and associated water quality standards/criteria. Based on this analysis, the following permitting actions are proposed for this permit:

- Effluent Limit with Monitoring. The following parameters will receive a water quality-based effluent limit (WQBEL) since they demonstrated a reasonable potential to exceed applicable water quality standards/criteria: None
- Monitoring Only. The following parameters will receive a monitor-only requirement since they did not demonstrate reasonable potential to exceed applicable water quality standards/criteria, but the maximum predicted concentration was >50% of the allowable concentration: Lead, Cadmium, and Silver.
- No Limit or Monitoring: The following parameters will not receive a limit or monitoring, since they did not demonstrate reasonable potential to exceed applicable water quality standards/criteria and the maximum predicted concentration was <50% of the allowable concentration: Arsenic, Beryllium, Total Phenolic Compounds, Chromium, Copper, Cyanide, Fluoride, Nickel, Mercury, Molybdenum, Selenium, Zinc, Sulfate, Aluminum, Barium, Chloroform, Antimony, Thallium, and HFPO-DA (WQBEL is not required, TBEL will be used).

Attached are the RPA results and a copy of the guidance entitled "NPDES Implementation of Instream Dissolved Metals Standards – Freshwater Standards."

Toxicity Testing Limitations

Permit limits and monitoring requirements for Whole Effluent Toxicity (WET) have been established in accordance with Division guidance (per WET Memo, 8/2/1999). Per WET guidance, all NPDES permits issued to Major facilities or any facility discharging "complex" wastewater (contains anything other than domestic waste) will contain appropriate WET limits and monitoring requirements, with several exceptions. The State has received prior EPA approval to use an Alternative WET Test Procedure in NPDES permits, using single concentration screening tests, with multiple dilution follow-up upon a test failure.

Describe proposed toxicity test requirement: This is a Major Industrial facility, and a chronic WET limit at 12.5% with quarterly frequency is established in the permit.

Mercury Statewide TMDL Evaluation

There is a statewide TMDL for mercury approved by EPA in 2012. The TMDL target was to comply with EPA's mercury fish tissue criteria (0.3 mg/kg) for human health protection. The TMDL established a wasteload allocation for point sources of 37 kg/year (81 lb/year), and is applicable to municipals and industrial facilities with known mercury discharges. Given the small contribution of mercury from point sources (~2% of total load), the TMDL emphasizes mercury minimization plans (MMPs) for point source control. Municipal facilities > 2 MGD and discharging quantifiable levels of mercury (>1 ng/l) will receive an MMP requirement. Industrials are evaluated on a case-by-case basis, depending if mercury is a pollutant of concern. Effluent limits may also be added if annual average effluent concentrations exceed the WQBEL value (based on the NC WQS of 12 ng/l) and/or if any individual value exceeds a TBEL value of 47 ng/l.
Describe proposed permit actions based on mercury evaluation: This is a new permit and the Division has no historic data to conduct a comprehensive evaluation. The RPA does not indicate the need for a limit and

the effluent demonstrated compliance with the annual average Technology Based Effluent Limit for mercury of 47.0 ng/L. No limit is required.

Other TMDL/Nutrient Management Strategy Considerations

If applicable, describe any other TMDLs/Nutrient Management Strategies and their implementation within this permit: N/A

Other WQBEL Considerations

If applicable, describe any other parameters of concern evaluated for WQBELs:

The Technology Based Effluent Limits were the guiding criteria used to develop permit limitations for HFPO-DA, PFMOAA, and PMPA.

When EPA develops PFAS criteria or the State adopts standards for any of the compounds generated by Chemours, the Division will conduct a reasonable potential analysis and reopen the permit to include the new limits, if they are more stringent than the TBELs.

If applicable, describe any special actions (HQW or ORW) this receiving stream and classification shall comply with in order to protect the designated waterbody: N/A

If applicable, describe any compliance schedules proposed for this permit renewal in accordance with 15A NCAC 2H.0107(c)(2)(B), 40CFR 122.47, and EPA May 2007 Memo: N/A

If applicable, describe any water quality standards variances proposed in accordance with NCGS 143-215.3(e) and 15A NCAC 2B.0226 for this permit renewal: N/A

7. Technology-Based Effluent Limitations (TBELs)

Industrials (if not applicable, delete and skip to next Section)

Describe what this facility produces: This is a surface/groundwater remediation permit for the Chemours facility that produces organic chemicals.

List the federal effluent limitations guideline (ELG) for this facility: N/A

If the ELG is based on production or flow, document how the average production/flow value was calculated: N/A

For ELG limits, document the calculations used to develop TBEL limits: N/A

If any limits are based on best professional judgement (BPJ), describe development: N/A

Document any TBELs that are more stringent than WQBELs:

Document any TBELs that are less stringent than previous permit: N/A

HFPO-DA, PMPA, and PFMOAA were chosen as the three PFAS compounds that would be used to indicate reductions of Total PFAS in the remediated surface water. Therefore, TBELs for HFPO-DA, PFMOAA, and PMPA were calculated while recognizing the Consent Order's requirement that the treatment system removes at least 99% of HFPO-DA and PFMOAA.

The facility provided a Report on Treatment of Groundwater Treatability. The Report demonstrated that the proposed GAC system is able to remove 99% of the total Table 3+ PFAS compounds (as listed in NPDES permit application) present in the wastewater based on current analytical reporting limits and influent concentrations. The GAC system showed that when indicator compounds PFMOAA, PMPA, and HFPO-

DA are removed at the rate of 99%, the Total Table 3+ compounds (as listed in NPDES application) were also removed at the rate of 99% based on current analytical detection levels.

The expected effluent at 99% removal would be as follows (based on the projected average concentration):

Monthly Average Limits/ Daily Maximum Limits:

HFPO-DA = (12.2 µg/L/100%) * 1% = 122 ng/L
PFMOAA = (64.3 µg/L/100%) * 1% = 643 ng/L
PMPA = (13.2 µg/L/100%) * 1% = 132 ng/L

These calculations are based on Chemours data provided in the application.

In addition, and as required by the Consent Order, the treatment system will have to demonstrate 99% removal for HFPO-DA, PFMOAA, and PMPA based on monthly average concentration data.

$$\%\ Removal = \frac{Influent - Effluent}{Influent} * 100$$

Where: Influent = monthly average influent concentration
Effluent = monthly average effluent concentration

This percent removal will be reported monthly with Chemours electronic Discharge Monitoring Report (eDMR) data. The water treatment system effluent concentrations of less than the current reporting limits shall be considered as achieving 99% removal.

It is important to emphasize that the 99% removal requirement is self-tightening because as the influent concentration decreases over time, the enforceable effluent limit will also decrease.

8. Antidegradation Review (New/Expanding Discharge)

The objective of an antidegradation review is to ensure that a new or increased pollutant loading will not degrade water quality. Permitting actions for new or expanding discharges require an antidegradation review in accordance with 15A NCAC 2B.0201. Each applicant for a new/expanding NPDES permit must document an effort to consider non-discharge alternatives per 15A NCAC 2H.0105(c)(2). In all cases, existing instream water uses and the level of water quality necessary to protect the existing use is maintained and protected.

If applicable, describe the results of the antidegradation review, including the Engineering Alternatives Analysis (EAA) and any water quality modeling results: The facility provided an EAA to justify the chosen disposal alternative for this new discharge; the complete EAA document can be found within the application in DWR's Laserfiche files.

The facility reviewed the following available alternatives: Connection to the Existing Publicly Owned Treatment Works (POTW), Wastewater Reuse in the Facility, and Direct Discharge.

Connection to the existing POTW was not available since the nearest Rockfish Creek Water Reclamation Facility refused to accept this wastewater. Reuse is currently not a feasible option, because, including but not limited to, - the Consent Order requires Chemours to accelerated reduction of PFAS contamination in the Cape Fear River and downstream water intakes within a two-year period, and it would be difficult for Chemours to implement this in an accelerated manner. In addition, the facility is already uses Reverse Osmosis (RO) to treat wastewater from HFPO-DA process and Thermal Oxidizer wastewater. The RO effluent is being reused at the facility if it meets the production specifications for Total Organic Carbon.

Furthermore, the flow from Outfall 004 is expected to be around 2.38 MGD, which substantially exceed production needs of all the manufacturing entities that use less than 0.6 MGD.

The Present Value Costs for the next 20 years was calculated for the following alternatives using an EPA discount factor of 3.5%; the Costs are presented below:

Wastewater Reuse in the Facility - $69,600,000
Direct Discharge- $68,200,000

As compared to other alternatives, and in accordance with 15A NCAC 2H .0105(c)(2), the Engineering Alternatives Analysis provided justification for a direct discharge to surface water alternative and indicated that the direct discharge is the most environmentally sound alternative selected from all reasonably cost-effective options.

9. Antibacksliding Review

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding of effluent limitations in NPDES permits. These provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed (e.g., based on new information, increases in production may warrant less stringent TBEL limits, or WQBELs may be less stringent based on updated RPA or dilution).

Are any effluent limitations less stringent than previous permit (YES/NO): N/A. This is a new permit.

If YES, confirm that antibacksliding provisions are not violated: N/A

10. Monitoring Requirements

Monitoring frequencies for NPDES permitting are established in accordance with the following regulations and guidance: 1) State Regulation for Surface Water Monitoring, 15A NCAC 2B.0500; 2) NPDES Guidance, Monitoring Frequency for Toxic Substances (7/15/2010 Memo); 3) NPDES Guidance, Reduced Monitoring Frequencies for Facilities with Superior Compliance (10/22/2012 Memo); 4) Best Professional Judgement (BPJ). Per US EPA (Interim Guidance, 1996), monitoring requirements are not considered effluent limitations under Section 402(o) of the Clean Water Act, and therefore anti-backsliding prohibitions would not be triggered by reductions in monitoring frequencies.

11. Electronic Reporting Requirements

The US EPA NPDES Electronic Reporting Rule was finalized on December 21, 2015. Effective December 21, 2016, NPDES regulated facilities are required to submit Discharge Monitoring Reports (DMRs) electronically. Effective December 21, 2020, NPDES regulated facilities will be required to submit additional NPDES reports electronically. This permit contains the requirements for electronic reporting, consistent with Federal requirements.

12. Summary of Proposed Permitting Actions

Table A. Current Permit Conditions and Proposed Changes Outfall 004

Parameter	Current Permit	Proposed Change	Basis for Condition/Change

Flow	N/A (new permit)	Monitoring and 2.38 MGD limit added	15A NCAC 2B .0505 Flow limit is based on system design
Total Monthly Flow	N/A (new permit)	Monitoring added	Needed to calculate loading Consent order requirements.
BOD5	N/A (new permit)	30.0 mg/L MA 45.0 mg/L DM	WQBEL. Based on protection of DO standard. 15A NCAC 2B.0200
TSS	N/A (new permit)	30.0 mg/L MA 45.0 mg/L DM	TBEL. Best Professional Judgement.
Temperature	N/A (new permit)	The ambient water temperature to exceed 32°C	WQBEL. State WQ standard, 15A NCAC 2B .0200
DO	N/A (new permit)	Weekly upstream/downstream Monitoring Only	State WQ standard, 15A NCAC 2B .0200
HFPO-DA (GenX)	N/A (new permit)	MA 0.12 µg/L DM 0.12 µg/L and 99% removal	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design.
PFMOAA	N/A (new permit)	MA 0.64 µg/L DM 0.64 µg /L and 99% removal	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design.
PMPA	N/A (new permit)	MA 0.13 µg/L DM 0.13 µg/L and 99% removal	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design.
PFAS compounds (Table 3+ and/or EPA Method 357 mod)	N/A (new permit)	Monitoring added	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200
pH	N/A (new permit)	6.0 – 9.0 SU	WQBEL. State WQ standard, 15A NCAC 2B .0200
Total Nitrogen	N/A (new permit)	Monthly Effluent Monitoring Only	State WQ Rule, 15A NCAC 2B .0500

Total Phosphorus	N/A (new permit)	Monthly Effluent Monitoring Only	State WQ Rule, 15A NCAC 2B .0500
Conductivity	N/A (new permit)	Monthly upstream/downstream Monitoring Only	State WQ Rule, 15A NCAC 2B .0500
Toxicity Test	N/A (new permit)	Chronic limit, 12.5% effluent	WQBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 and 15A NCAC 2B.0500
Total Hardness	N/A (new permit)	Monitoring added	State WQ standard, 15A NCAC 2B .0200
Total Silver	N/A (new permit)	Quarterly Effluent Monitoring Only	State WQ standard, 15A NCAC 2B .0200 Monitoring is based on RPA
Total Cadmium	N/A (new permit)	Quarterly Effluent Monitoring Only	State WQ standard, 15A NCAC 2B .0200 Monitoring is based on RPA
Total Lead	N/A (new permit	Quarterly Effluent Monitoring Only	State WQ standard, 15A NCAC 2B .0200 Monitoring is based on RPA
Total Thallium	N/A (new permit	Quarterly Effluent Monitoring Only	State WQ standard, 15A NCAC 2B .0200 Monitoring is based on RPA
Electronic Reporting	N/A (new permit)	Required	In accordance with EPA Electronic Reporting Rule 2015.

MGD – Million gallons per day, MA – Monthly Average, WA – Weekly Average, DM – Daily Max

13. Public Notice Schedule

Permit to Public Notice: 05/22/2022

Per 15A NCAC 2H .0109 & .0111, The Division will receive comments for a period of 30 days following the publication date of the public notice. Any request for a public hearing shall be submitted to the Director within the 30 days comment period indicating the interest of the party filing such request and the reasons why a hearing is warranted.

14. NPDES Division Contact

If you have questions regarding any of the above information or on the attached permit, please contact Sergei Chernikov at (919) 707-3606 or via email at sergei.chernikov@ncdenr.gov.

15. Fact Sheet Addendum (if applicable)

Were there any changes made since the Draft Permit was public noticed (Yes/No): Yes
If Yes, list changes and their basis below:

16. Fact Sheet Attachments (if applicable)

- RPA Sheets
- NPDES Implementation of Instream Dissolved Metals Standards
- DMR Parameter Values Export – PFMOAA, PMPA, HFPO-DA

17. Changes in the Final Permit

- The Division is establishing an effluent limit for HFPO-DA of <10.0 ng/L based on the EPA drinking water health advisory of 10 ng/L that was issued on June 15, 2022, which was published after issuance of the draft permit. In addition, based on an evaluation of the data from Outfall 003, after an initial optimization period, effluent concentrations are consistently < 10.0 ng/L.
- Based on an evaluation of the data from Outfall 003 and in accordance with the procedure established in Chapter 5 of USEPA NPDES Permit Writers' Manual the Division is also establishing effluent limits for PMPA and PFMOAA as 10.0 ng/L and <20.0 ng/L, respectively. Please see attached calculations on file labeled DMR Parameter Values Export.
- Limits for all three indicator parameters will take effect after a 6-month optimization period.
- During the optimization period, effluent limits will be 120 ng/L for HFPO-DA, 320 ng/L for PFMOAA, and 100 ng/L for PMPA. These limits are based on best professional judgement.

These changes are summarized in the table below.

Parameter	Draft Permit	Final Permit	Basis for Condition/Change
HFPO-DA (GenX)	MA 0.12 µg/L DM 0.12 µg/L and 99% removal	MA 0.12 µg/L DM 0.12 µg/L and 99% removal After 6 months: MA <0.010 µg/L DM <0.010 µg/L	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design. New EPA drinking water health advisory of 10 ng/L.
PFMOAA	MA 0.64 µg/L DM 0.64 µg /L and 99% removal	MA 0.32 µg/L DM 0.32 µg /L and 99% removal After 6 months:	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design.

		MA <0.020 µg/L DM <0.020 µg/L	Procedure in Chapter 5 of USEPA NPDES Permit Writers' Manual
PMPA	MA 0.13 µg/L DM 0.13 µg/L and 99% removal	MA 0.10 µg/L DM 0.10 µg/L and 99% removal After 6 months: MA 0.010 µg/L DM 0.010 µg/L	TBEL. No toxics in toxic amounts. 15A NCAC 2B.0200 Consent order requirements. Values are based on system design. Procedure in Chapter 5 of USEPA NPDES Permit Writers' Manual

MGD – Million gallons per day, MA – Monthly Average, WA – Weekly Average, DM – Daily Max

NPDES Implementation of Instream Dissolved Metals Standards – Freshwater Standards

The NC 2007-2015 Water Quality Standard (WQS) Triennial Review was approved by the NC Environmental Management Commission (EMC) on November 13, 2014. The US EPA subsequently approved the WQS revisions on April 6, 2016, with some exceptions. Therefore, metal limits in draft permits out to public notice after April 6, 2016 must be calculated to protect the new standards - as approved.

Table 1. NC Dissolved Metals Water Quality Standards/Aquatic Life Protection

Parameter	Acute FW, µg/l (Dissolved)	Chronic FW, µg/l (Dissolved)	Acute SW, µg/l (Dissolved)	Chronic SW, µg/l (Dissolved)
Arsenic	340	150	69	36
Beryllium	65	6.5	---	---
Cadmium	Calculation	Calculation	40	8.8
Chromium III	Calculation	Calculation	---	---
Chromium VI	16	11	1100	50
Copper	Calculation	Calculation	4.8	3.1
Lead	Calculation	Calculation	210	8.1
Nickel	Calculation	Calculation	74	8.2
Silver	Calculation	0.06	1.9	0.1
Zinc	Calculation	Calculation	90	81

Table 1 Notes:

1. FW= Freshwater, SW= Saltwater
2. Calculation = Hardness dependent standard
3. Only the aquatic life standards listed above are expressed in dissolved form. Aquatic life standards for Mercury and selenium are still expressed as Total Recoverable Metals due to bioaccumulative concerns (as are all human health standards for all metals). It is still necessary to evaluate total recoverable aquatic life and human health standards listed in 15A NCAC 2B.0200 (e.g., arsenic at 10 µg/l for human health protection; cyanide at 5 µg/L and fluoride at 1.8 mg/L for aquatic life protection).

Table 2. Dissolved Freshwater Standards for Hardness-Dependent Metals

The Water Effects Ratio (WER) is equal to one unless determined otherwise under 15A NCAC 02B .0211 Subparagraph (11)(d)

Metal	NC Dissolved Standard, µg/l
Cadmium, Acute	WER*{1.136672-[*ln* hardness](0.041838)} · *e*^{0.9151 [*ln* hardness]-3.1485}
Cadmium, Acute Trout waters	WER*{1.136672-[*ln* hardness](0.041838)} · *e*^{0.9151[*ln* hardness]-3.6236}
Cadmium, Chronic	WER*{1.101672-[*ln* hardness](0.041838)} · *e*^{0.7998[*ln* hardness]-4.4451}
Chromium III, Acute	WER*0.316 · *e*^{0.8190[*ln* hardness]+3.7256}
Chromium III, Chronic	WER*0.860 · *e*^{0.8190[*ln* hardness]+0.6848}
Copper, Acute	WER*0.960 · *e*^{0.9422[*ln* hardness]-1.700}
Copper, Chronic	WER*0.960 · *e*^{0.8545[*ln* hardness]-1.702}
Lead, Acute	WER*{1.46203-[*ln* hardness](0.145712)} · *e*^{1.273[*ln* hardness]-1.460}
Lead, Chronic	WER*{1.46203-[*ln* hardness](0.145712)} · *e*^{1.273[*ln* hardness]-4.705}
Nickel, Acute	WER*0.998 · *e*^{0.8460[*ln* hardness]+2.255}
Nickel, Chronic	WER*0.997 · *e*^{0.8460[*ln* hardness]+0.0584}
Silver, Acute	WER*0.85 · *e*^{1.72[*ln* hardness]-6.59}
Silver, Chronic	Not applicable
Zinc, Acute	WER*0.978 · *e*^{0.8473[*ln* hardness]+0.884}
Zinc, Chronic	WER*0.986 · *e*^{0.8473[*ln* hardness]+0.884}

General Information on the Reasonable Potential Analysis (RPA)

The RPA process itself did not change as the result of the new metals standards. However, application of the dissolved and hardness-dependent standards requires additional consideration in order to establish the numeric standard for each metal of concern of each individual discharge.

The hardness-based standards require some knowledge of the effluent and instream (upstream) hardness and so must be calculated case-by-case for each discharge.

Metals limits must be expressed as 'total recoverable' metals in accordance with 40 CFR 122.45(c). The discharge-specific standards must be converted to the equivalent total values for use in the RPA calculations. We will generally rely on default translator values developed for each metal (more on that below), but it is also possible to consider case-specific translators developed in accordance with established methodology.

RPA Permitting Guidance/WQBELs for Hardness-Dependent Metals - Freshwater

The RPA is designed to predict the maximum likely effluent concentrations for each metal of concern, based on recent effluent data, and calculate the allowable effluent concentrations, based on applicable standards and the critical low-flow values for the receiving stream.

If the maximum predicted value is greater than the maximum allowed value (chronic or acute), the discharge has reasonable potential to exceed the standard, which warrants a permit limit in most cases. If monitoring for a particular pollutant indicates that the pollutant is not present (i.e. consistently below detection level), then the Division may remove the monitoring requirement in the reissued permit.

1. To perform a RPA on the Freshwater hardness-dependent metals the Permit Writer compiles the following information:
    - Critical low flow of the receiving stream, 7Q10 (the spreadsheet automatically calculates the 1Q10 using the formula $1Q10 = 0.843 (s7Q10, cfs)^{0.993}$
    - Effluent hardness and upstream hardness, site-specific data is preferred
    - Permitted flow
    - Receiving stream classification

2. In order to establish the numeric standard for each hardness-dependent metal of concern and for each individual discharge, the Permit Writer must first determine what effluent and instream (upstream) hardness values to use in the equations.

    The permit writer reviews DMR's, Effluent Pollutant Scans, and Toxicity Test results for any hardness data and contacts the Permittee to see if any additional data is available for instream hardness values, upstream of the discharge.

    If no hardness data is available, the permit writer may choose to do an initial evaluation using a default hardness of 25 mg/L (CaCO3 or (Ca + Mg)). Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L, respectively.

    If the use of a default hardness value results in a hardness-dependent metal showing reasonable potential, the permit writer contacts the Permittee and requests 5 site-specific effluent and upstream hardness samples over a period of one week. The RPA is rerun using the new data.

    The overall hardness value used in the water quality calculations is calculated as follows:

Combined Hardness (chronic)

= (Permitted Flow, cfs *Avg. Effluent Hardness, mg/L) + (s7Q10, cfs *Avg. Upstream Hardness, mg/L)

(Permitted Flow, cfs + s7Q10, cfs)

The Combined Hardness for acute is the same but the calculation uses the 1Q10 flow.

3. The permit writer converts the numeric standard for each metal of concern to a total recoverable metal, using the EPA Default Partition Coefficients (DPCs) or site-specific translators, if any have been developed using federally approved methodology.

> EPA default partition coefficients or the "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions to total recoverable metal at in-stream ambient conditions. This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:
>
> $$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$
>
> Where:
>
> ss = in-stream suspended solids concentration [mg/l], minimum of 10 mg/L used,

4. The numeric standard for each metal of concern is divided by the default partition coefficient (or site-specific translator) to obtain a Total Recoverable Metal at ambient conditions.

   In some cases, where an EPA default partition coefficient translator does not exist (i.e. silver), the dissolved numeric standard for each metal of concern is divided by the EPA conversion factor to obtain a Total Recoverable Metal at ambient conditions. This method presumes that the metal is dissolved to the same extent as it was during EPA's criteria development for metals. For more information on conversion factors see the June, 1996 EPA Translator Guidance Document.

5. The RPA spreadsheet uses a mass balance equation to determine the total allowable concentration (permit limits) for each pollutant using the following equation:

$$Ca = \frac{(s7Q10 + Qw)(Cwqs) - (s7Q10)(Cb)}{Qw}$$

Where: Ca = allowable effluent concentration (µg/L or mg/L)

Cwqs = NC Water Quality Standard or federal criteria (µg/L or mg/L)

Cb = background concentration: assume zero for all toxicants except NH_3* (µg/L or mg/L)

Qw = permitted effluent flow (cfs, match s7Q10)

s7Q10 = summer low flow used to protect aquatic life from chronic toxicity and human health through the consumption of water, fish, and shellfish from noncarcinogens (cfs)

* Discussions are on-going with EPA on how best to address background concentrations

Flows other than s7Q10 may be incorporated as applicable:

1Q10 = used in the equation to protect aquatic life from acute toxicity

QA = used in the equation to protect human health through the consumption of water, fish, and shellfish from carcinogens

30Q2 = used in the equation to protect aesthetic quality

6. The permit writer enters the most recent 2-3 years of effluent data for each pollutant of concern. Data entered must have been taken within four and one-half years prior to the date of the permit application (40 CFR 122.21). The RPA spreadsheet estimates the 95th percentile upper concentration of each pollutant. The Predicted Max concentrations are compared to the Total allowable concentrations to determine if a permit limit is necessary. If the predicted max exceeds the acute or chronic Total allowable concentrations, the discharge is considered to show reasonable potential to violate the water quality standard, and a permit limit (Total allowable concentration) is included in the permit **in accordance with the U.S. EPA Technical Support Document for Water Quality-Based Toxics Control published in 1991.**

7. When appropriate, permit writers develop facility specific compliance schedules in accordance with the EPA Headquarters Memo dated May 10, 2007 from James Hanlon to Alexis Strauss on 40 CFR 122.47 Compliance Schedule Requirements.

8. The Total Chromium NC WQS was removed and replaced with trivalent chromium and hexavalent chromium Water Quality Standards. As a cost savings measure, total chromium data results may be used as a conservative surrogate in cases where there are no analytical results based on chromium III or VI. In these cases, the projected maximum concentration (95th %) for total chromium will be compared against water quality standards for chromium III and chromium VI.

9. Effluent hardness sampling and instream hardness sampling, upstream of the discharge, are inserted into all permits with facilities monitoring for hardness-dependent metals to ensure the accuracy of the permit limits and to build a more robust hardness dataset.

10. Hardness and flow values used in the Reasonable Potential Analysis for this permit included:

Parameter	**Value**	**Comments (Data Source)**
Average Effluent Hardness (mg/L) [Total as, $CaCO_3$ or (Ca+Mg)]	25.0	Default value
Average Upstream Hardness (mg/L) [Total as, $CaCO_3$ or (Ca+Mg)]	25.0	Default value
7Q10 summer (cfs)	0	Lake or Tidal
1Q10 (cfs)	0	Lake or Tidal
Permitted Flow (MGD)	2.1	For dewatering

DMR Parameter Values Export – PFMOAA 1/4/2021 through 5/3/2022 n =92
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0039
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
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52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.004
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0047
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0024
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0029
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.004
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0032
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0024
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0061
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0032
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0043
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
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52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0028
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.0025
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52613 - Perfluoro-2-methoxyacetic acid (PFMOAA) Grab ug/l 0.002 LESSTHAN
99th percentile 0.006127
Mean (daily) 0.00233
Daily variability factor 2.629123
Daily Maximum 0.006127 Rounded to 0.02 in the permit.
due to the high variability
factor

DMR Parameter Values Export – PMPA Jan. 2021 through May 2022 n=82
52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
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52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
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52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
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52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
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52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
52624 - Perfluoro-2-methoxypropanoic acid (PMPA) Grab ug/l 0.01 LESSTHAN
99th percentile 0.01
Mean (daily) 0.01
Daily variability factor 1
Daily Maximum 0.01
95th percentile 0.01
Monthly variability factor 1
Monthly Average 0.01

DMR Parameter Values Export - HFPO-DA Jan. 2021 through May 2022 n=103

52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.025	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.0021	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.0021	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN

52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.0022	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.0023	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.0023	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN

52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN

52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN
52612 - Hexafluoropropylene oxide dimer acid (HFPO-DA / PFPrOPrA / GenX)	Grab	ug/l	0.002	LESSTHAN

99th percentile	0.0023
Mean (daily)	0.00223301
Daily variability factor	1.03
Daily Maximum	0.0023

Appendix E

Excerpt from Pennsylvania Dep't of Environmental Protection, *NPDES Permit No: PA0027421, Norristown Municipal Waste Authority, Norristown Borough Sewer Treatment Plant* 3–4, 25–27 (June 1, 2024), http://bit.ly/3YcJLUq.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM DISCHARGE REQUIREMENTS FOR PUBLICLY OWNED TREATMENT WORKS (POTWs)

NPDES PERMIT NO: PA0027421

In compliance with the provisions of the Clean Water Act, 33 U.S.C. Section 1251 *et seq.* ("the Act") and Pennsylvania's Clean Streams Law, as amended, 35 P.S. Section 691.1 *et seq.*,

Norristown Municipal Waste Authority
235 East Airy Street
Norristown, PA 19401

is authorized to discharge from a facility known as **Norristown Borough STP**, located at **368 East Washington Street, Norristown, PA 19401, Norristown Borough, Montgomery County**, to **Schuylkill River (WWF, MF)** in Watershed(s) **3-F** in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts A, B and C hereof.

THIS PERMIT SHALL BECOME EFFECTIVE ON JUNE 1, 2024

THIS PERMIT SHALL EXPIRE AT MIDNIGHT ON MAY 31, 2029

The authority granted by this permit is subject to the following further qualifications:

1. If there is a conflict between the application, its supporting documents and/or amendments and the terms and conditions of this permit, the terms and conditions shall apply.

2. Failure to comply with the terms, conditions or effluent limitations of this permit is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. (40 CFR 122.41(a))

3. A complete application for renewal of this permit, or notice of intent to cease discharging by the expiration date, must be submitted to DEP at least 180 days prior to the above expiration date (unless permission has been granted by DEP for submission at a later date), using the appropriate NPDES permit application form. (40 CFR 122.41(b), 122.21(d))

   In the event that a timely and complete application for renewal has been submitted and DEP is unable, through no fault of the permittee, to reissue the permit before the above expiration date, the terms and conditions of this permit, including submission of the Discharge Monitoring Reports (DMRs), will be automatically continued and will remain fully effective and enforceable against the discharger until DEP takes final action on the pending permit application. (25 Pa. Code §§ 92a.7(b), (c))

4. This NPDES permit does not constitute authorization to construct or make modifications to wastewater treatment facilities necessary to meet the terms and conditions of this permit.

DATE PERMIT ISSUED May 14, 2024 **ISSUED BY** /s/

Thomas L. Magge
Environmental Program Manager
Southeast Regional Office

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfalls 001& 002* , **Latitude** 40º 6' 29.86" , **Longitude** 75º 20' 10.18" , **River Mile Index** 23.4 , **Stream Code** 00833

Receiving Waters: Schuylkill River (WWF, MF)

Type of Effluent: Treated Sewage Effluent

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.

2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.2	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) * Nov 1 - Apr 30	2030	3250	XXX	25	40 Wkly Avg	50	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) * May 1 - Oct 31	1630	2440	XXX	20	30 Wkly Avg	40	1/day	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite

Outfalls 001 & 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Suspended Solids*	2440	3660	XXX	30	45 Wkly Avg	60	1/day	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Dissolved Solids*	XXX	XXX	XXX	1000.0 Avg Qrtly	XXX	2500	1/quarter	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000**	1/day	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/day	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen*	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite
Ammonia-Nitrogen* Nov 1 - Apr 30	1630	XXX	XXX	20	XXX	40	1/day	24-Hr Composite
Ammonia-Nitrogen* May 1 - Oct 31	810	XXX	XXX	10	XXX	20	1/day	24-Hr Composite
Total Phosphorus*	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Copper, Total*	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Lead, Total*	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
Thallium, Total*	0.47 Avg.Qrtly	0.73 Daily Max	XXX	0.006 Avg.Qrtly	0.009	0.014	1/ quarter	24-Hr Composite
Zinc, Total*	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	24-Hr Composite
PCBs Dry Weather Analysis (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
PCBs Wet Weather Analysis (pg/L)	XXX	XXX	XXX	XXX	Report	XXX	1/year	24-Hr Composite
PFOA (ng/L) ***	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
PFOS (ng/L) ***	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Outfalls 001 & 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
PFBS (ng/L) ***	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
HFPO-DA (ng/L) ***	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit****	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit****	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit****	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	XXX	Report	XXX	See Permit****	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at Outfall 001

*During periods when discharge occurs through outfall002, a combined sample shall be collected and analyzed for the parameters $CBOD_5$, Total Suspended Solids, NH_3-N, Phosphorus, Nitrogen, Copper, Lead, Zinc, Thallium and Total Dissolved Solids.
** Shall not exceed in more than 10% of samples. See Part C.I. Other Requirement No. F.
*** The permittee may discontinue monitoring for these parameters if the results in 4 consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittee must enter a No Discharge Indicator (NODI) Code of “GG” on DMRs.
****See Part C Condition No. IV.

3. A plan that identifies how key wastewater processes will be monitored while the treatment facility is not staffed.

4. For treatment plants that are impacted by wet weather flows, the permittee shall develop and implement a wet weather operations strategy that minimizes or eliminates the wash out of solids from the treatment system while maximizing the flow through the treatment plant.

5. An emergency plan that identifies how the facility will be operated during times of emergency. For example, the plan shall detail how key wastewater processes will be repaired or replaced in the event of a failure while minimizing loss of life and property damage to the facility. This plan shall also include emergency contact numbers for local emergency response agencies, plant personnel, critical suppliers and vendors, and DEP contacts, at a minimum.

6. A preventative maintenance plan that includes a schedule for preventative maintenance for all equipment within the treatment system. A spare parts inventory shall be included as part of this plan.

7. A solids management plan that identifies how solids produced by the facility will be wasted, treated, and ultimately disposed of.

II. POTW PRETREATMENT PROGRAM IMPLEMENTATION

A. General Requirement – The permittee shall operate and implement a POTW pretreatment program in accordance with the federal Clean Water Act, the Pennsylvania Clean Streams Law, and the federal General Pretreatment Regulations at 40 CFR Part 403. The program shall also be implemented in accordance with the permittee's approved pretreatment program and any modifications thereto submitted by the permittee and approved by the Approval Authority.

B. Annual Report and Other Requirements – The permittee shall submit a Pretreatment Annual Report by March 31 of each year to EPA that describes the permittee's pretreatment activities for the previous calendar year. The Pretreatment Annual Report shall include a description of pretreatment activities in all municipalities from which wastewater is received at the permittee's POTW. Upon receiving notification by EPA, the permittee shall begin using the "NETTPPR: NeT - Pretreatment Program Report" to submit the Pretreatment Annual Report required under 40 CFR 403.12(i). The electronic reporting tool shall be accessed at the following Uniform Resource Locator (URL): https://cdx.epa.gov/. The Pretreatment Annual Report shall include the following information, at minimum:

1. Industrial Listing – The Annual Report shall contain an updated industrial listing providing the names and addresses of all current Significant Industrial Users (SIUs) and Non-Significant Categorical Industrial Users (NSCIUs), as defined in 40 CFR 403.3, and the categorical standard, if any, applicable to each. The listing must: (1) identify any users that are subject to reduced reporting requirements under 40 CFR 403.12(e)(3); (2) identify which users are NSCIUs; (3) identify any users that have been granted a monitoring waiver in accordance with 40 CFR 403.12(e)(2) as well as the pollutants for which the waiver was granted and the date of the last POTW sampling event for each pollutant; and (4) identify any categorical industrial users that have been given mass-based limits in place of concentration-based categorical limits in accordance with 40 CFR 403.6(c)(5) or concentration-based limits in place of mass-based categorical limits in accordance with 40 CFR 403.6(c)(6).

   In addition, the Annual Report shall contain a summary of any hauled-in wastes accepted at the POTW including the source of the wastes (domestic, commercial or industrial) and the receiving location for acceptance of the wastes. For each industrial source (whether or not classified as an SIU), the report shall indicate (1) the name and address of the industrial source; (2) the average daily amount of wastewater received; (3) a brief description of the type of process operations conducted at the industrial facility; (4) whether the source facility is a categorical industrial user (including NSCIU), significant industrial users, or non-significant industrial user; and (5) any controls imposed on the user.

   The Annual Report shall contain an updated listing of IUs in industry categories expected or suspected of PFAS discharges. These industry categories shall include airports; centralized waste treatment;

electroplating; electric and electronic components; fire training; landfills; leather tanning & finishing; metal finishing; organic chemicals, plastics & synthetic fibers (OCPSF); paint formulating; plastics molding & forming; pulp, paper & paperboard; textile mills; sites known or suspected of PFAS contamination; and any other sources expected or suspected of PFAS discharges. The listing must contain the names, addresses, NAICS codes, and industry categories (as listed above) of any IUs identified. The Annual Report shall also provide a summary of actions taken by IUs to reduce, substitute, or eliminate PFAS, such as best management practices (BMPs) implemented by IUs.

2. Control Mechanism Issuance – The Annual Report shall contain a summary of SIU control mechanism issuance, including a list of issuance, effective, and expiration dates for each SIU control mechanism. For each general control mechanism issued, provide the names of all SIUs covered by the general control mechanism and an explanation of how the users meet the criteria of 40 CFR 403.8(f)(1)(iii)(A) for issuance of a general control mechanism.

3. Sampling and Inspection – The Annual Report shall contain a summary of the number and types of inspections and sampling events of SIUs by the permittee, including a list of all SIUs either not sampled or not inspected, and the reason that the sampling and/or inspection was not conducted. For any user subject to reduced reporting under 40 CFR 403.12(e)(3), the list shall include the date of the last POTW sampling event and the date of the last POTW inspection of the user. In addition, the report shall include a summary of the number of self-monitoring events conducted by each SIU and the number required to be conducted, including a list of all SIUs that did not submit the required number of reports and the reason why the reports were not submitted. For NSCIUs, the report shall provide the date of the compliance certification required under 40 CFR 403.12(q).

4. The permittee shall commence or require annual sampling of the following types of IUs that discharge process wastewater or sludge into the POTW: airports; centralized waste treatment; electroplating; electric and electronic components; fire training; landfills; leather tanning & finishing; metal finishing; organic chemicals, plastics & synthetic fibers (OCPSF); paint formulating; plastics molding & forming; pulp, paper & paperboard; textile mills; sites known or suspected of PFAS contamination; and any other sources expected or suspected of PFAS discharges. Sampling shall occur at the point of discharge to the POTW, and where local limits are applied. Monitoring data for any analytes listed in EPA Method 1633 shall be summarized and submitted as part of the Annual Report.

   Sampling and analysis shall be for the following PFAS parameters:

Industrial User Effluent Parameter	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
40 PFAS Analytes[1][2] (ng/l)	Report	1/Year for 5 Years	Grab

   [1] Report in nanograms per liter (ng/L). Monitoring shall be conducted using EPA Method 1633. This reporting requirement for the listed PFAS parameters takes effect 6 months after the effective date of this permit.

   [2] The permittee and/or IU may discontinue the IU discharge monitoring requirements for the 40 PFAS parameters detectable by EPA Method 1633 after 5 annual sampling events have been conducted.

5. Industrial User Compliance and POTW Enforcement – The Annual Report shall contain a summary of the number and type of violations of pretreatment standards and requirements, including local limits, and the actions taken by the permittee to obtain compliance, including compliance schedules, penalty assessments and actions for injunctive relief. The report shall state whether each SIU was in significant noncompliance, as that term is defined in 40 CFR Section 403.8(f)(2)(viii), and include the parameter(s) in violation, the period of violation, the actions taken by the POTW in response to the violations, and the compliance status at the end of the reporting period. A copy of the publication of users meeting the significant noncompliance criteria shall be included. In addition, the report shall provide a list of users

previously designated as NSCIUs that have violated (to any extent) any pretreatment standard or requirement during the year and the date and description of the violation(s).

6. Summary of POTW Operations – The Annual Report shall contain a summary of any interference, pass-through, or permit violations by the POTW and indicate the following: (1) which, if any, permit violations may be attributed to industrial users; (2) which IU(s) are responsible for such violations; and (3) the actions taken to address these events. The report shall also include all sampling and analysis of POTW treatment plant influent, effluent, and sludge conducted during the year for local limit and priority pollutants identified pursuant to Section 303(d) of the Clean Water Act, 33 U.S.C. 1313(d).

7. Pretreatment Program Changes – The Annual Report shall contain a summary of any changes made or proposed to the approved program during the period covered by the report and the date of submission to the Approval Authority.

A summary of pretreatment activities shall be incorporated into the permittee's Annual Municipal Wasteload Management Report required by 25 Pa. Code Chapter 94 and referenced in Part B I.C.4 of this permit.

C. Routine Monitoring – The permittee shall conduct monitoring at its treatment plant that, at a minimum, includes quarterly influent, effluent, and sludge analysis for all pollutants for which local limits have been established, and an annual priority pollutant scan for influent and sludge.

Additionally, the permittee shall conduct monitoring at its treatment plant that, at a minimum, includes quarterly influent, effluent, and sludge analysis for the 40 PFAS parameters detectable by EPA Method 1633. Monitoring data for any analytes listed in EPA Method 1633 shall be summarized and submitted as part of the Annual Report.

Parameter	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
40 PFAS Analytes(1) – Influent (ng/L)	Report	1/Quarter for 12 Quarters	Grab
40 PFAS Analytes(1) – Effluent (ng/L)	Report	1/Quarter for 12 Quarters	Grab
40 PFAS Analytes(1) – Sludge (ng/g)	Report	1/Quarter for 12 Quarters	Grab

(1) Report in nanograms per liter for aqueous samples and nanograms per gram for solid samples. Monitoring shall be conducted using EPA Method 1633. This reporting requirement for the listed PFAS parameters takes effect 6 months after the effective date of this permit. The permittee may discontinue influent, effluent and sludge sampling at the treatment works after 12 consecutive quarterly sampling events have been conducted.

D. Notification of Pass Through or Interference – The permittee shall notify EPA and DEP, in writing, of any instance of pass through or interference, as defined at 40 CFR 403.3(p) and (k), respectively, known or suspected to be related to a discharge from an IU into the POTW. The notification shall be attached to the DMR submitted to EPA and DEP and shall describe the incident, including the date, time, length, cause (including responsible user if known), and the steps taken by the permittee and IU (if identified) to address the incident. A copy of the notification shall also be sent to the EPA at the address provided below.

E. Headworks Analysis – The permittee shall submit to EPA a reevaluation of its local limits based on a headworks analysis of its treatment plant within one (1) year of permit issuance, and provide a revised submission within three (3) months of receipt of comments from EPA or DEP unless a longer period of time is granted in writing by EPA or DEP. In order to ensure that the permittee's discharge complies with water quality standards, the reevaluation of local limits shall consider, at a minimum, all water quality standards under 25 Pa. Code Chapter 93 applicable to the pollutants included in the reevaluation, unless the POTW is subject to an effluent limitation for the pollutant in Part A of this permit. The list of pollutants to be evaluated, as well as a sampling plan for collection of necessary data, shall be submitted to EPA within three (3) months

Appendix F

Excerpt from EPA, *Metadata for Data Sources within PFAS Analytic Tools* 37–41 (June 2024), https://perma.cc/Y3JQ-WBCD.

Metadata for Data Sources within PFAS Analytic Tools

06/2024

General Disclaimer:

It is important to note that much of the data included are not required to be reported nationally, and users should not make conclusions regarding the relative level of PFAS occurrence between different cities, counties, states, territories, Tribal lands, or other jurisdictions. Areas that are more widely testing and reporting occurrences of PFAS will generally have more data than areas collecting or reporting to a lesser extent (or in some cases, not at all). Users should also be aware that many datasets include entries where sampling has occurred, yet no PFAS have been found – which allows for a better understanding of where sampling has taken place.

Table of Contents

Potential PFAS-Handling Industry Sectors

Industry Name	2017 NAICS Code	NAICS Description	SIC Code	SIC Description
Oil and Gas	211120	Crude Petroleum Extraction	1311	Crude Petroleum and Natural Gas
Oil and Gas	211130	Natural Gas Extraction	2819	Industrial Inorganic Chemicals, NEC (recovering sulfur from natural gas)
Mining and Refining	212221	Gold Ore Mining	1041	Gold Ores
Mining and Refining	212230	Copper, Nickel, Lead, and Zinc Mining	1020	Copper Ores
Mining and Refining	212291	Uranium-Radium-Vanadium Ore Mining	1094	Uranium-Radium-Vanadium Ores
Waste Management	221320	Sewage Treatment Facilities		
Textiles and Leather	313110	Fiber, Yarn, and Thread Mills	2299	Textile goods, NEC
Textiles and Leather	313210	Broadwoven Fabric Mills	2221	Broadwoven Fabric Mills, Manmade Fiber and Silk
Textiles and Leather	313220	Narrow Fabric Mills and Schiffli Machine Embroidery		
Textiles and Leather	313230	Nonwoven Fabric Mills	2297	Non-woven Fabrics
Textiles and Leather	313240	Knit Fabric Mills		
Textiles and Leather	313310	Textile and Fabric Finishing Mills	2262	Finishers of Broadwoven Fabrics of Manmade Fiber and Silk
Textiles and Leather	313320	Fabric Coating Mills	2295	Coated Fabrics, Not Rubberized
Textiles and Leather	314110	Carpet and Rug Mills	2273	Carpets and Rugs
Textiles and Leather	314910	Textile Bag and Canvas Mills	2394	Canvas and Related Products
Textiles and Leather	314999	All Other Miscellaneous Textile Product Mills	2392	House furnishings, Except Curtains and Draperies
Textiles and Leather	314999	All Other Miscellaneous Textile Product Mills	2385	Waterproof Outerwear
Textiles and Leather	316110	Leather & Hide Tanning & Finishing	3111	Leather Tanning and Finishing
Textiles and Leather	316998	All Other Leather Good & Allied Product Mfg		Other Leather Goods and Allied Product Manufacturing
Paper Mills and Products	322121	Paper (except Newsprint) Mills	2621	Paper Mills (except newsprint mills)
Paper Mills and Products	322130	Paperboard Mills		
Paper Mills and Products	322219	Other Paperboard Container Manufacturing	2656	Sanitary Food Containers, Except Folding

Industry Name	2017 NAICS Code	NAICS Description	SIC Code	SIC Description
Paper Mills and Products	322220	Paper Bag and Coated and Treated Paper Manufacturing	2673	Plastics, Foil, and Coated Paper Bags
Paper Mills and Products	322220	Paper Bag and Coated and Treated Paper Manufacturing	2672	Coated and Laminated Paper, NEC
Paper Mills and Products	322220	Paper Bag and Coated and Treated Paper Manufacturing	2671	Packaging Paper and Plastics Film, Coated and Laminated
Printing	323111	Commercial Printing (except Screen and Books)	2752	Commercial Printing, Lithographic
Printing	323120	Support Activities for Printing	2796	Platemaking and Related Services
Petroleum	324110	Petroleum Refineries	2911	Petroleum Refining
Petroleum	324191	Petroleum Lubricating Oil and Grease Manufacturing	2992	Lubricating Oils and Greases
Petroleum	325110	Petrochemical Manufacturing	2869	Industrial Organic Chemicals, NEC (aliphatics)
Industrial Gas	325120	Industrial Gas Manufacturing	2813	Industrial Gases
Paints and Coatings	325130	Synthetic Dye and Pigment Manufacturing	2819	Industrial Inorganic Chemicals, NEC (recovering sulfur from natural gas)
Chemical Mfg	325180	Other Basic Inorganic Chemical Manufacturing	2819	Industrial Inorganic Chemicals, NEC
Chemical Mfg	325193	Ethyl Alcohol Manufacturing	2869	Industrial Organic Chemicals, NEC
Chemical Mfg	325199	All Other Basic Organic Chemical Manufacturing	2899	Chemicals and Chemical Preparations, NEC
Chemical Mfg	325199	All Other Basic Organic Chemical Manufacturing	2869	Industrial Organic Chemicals, NEC
Plastics and Resins	325211	Resin and Synthetic Rubber Manufacturing	2821	Plastics Materials, Synthetic and Resins, and Nonvulcanizable Elastomers
Plastics and Resins	325211	Plastics Material and Resin Manufacturing	2821	Plastics Materials, Synthetic and Resins, and Nonvulcanizable Elastomers
Plastics and Resins	325212	Synthetic Rubber Manufacturing	2822	Synthetic Rubber
Plastics and Resins	325220	Artificial and Synthetic Fibers and Filaments Manufacturing	2824	Manmade Organic Fibers, Except Cellulosic
Chemical Mfg	325320	Pesticide and Other Agricultural Chemical Manufacturing		
Paints and Coatings	325510	Paint and Coating Manufacturing	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
Paints and Coatings	325510	Paint and Coating Manufacturing	2899	Chemical Preparations, NEC (table salt)

Industry Name	2017 NAICS Code	NAICS Description	SIC Code	SIC Description
Cleaning Product Mfg	325611	Soap and Other Detergent Manufacturing	2841	Soaps and Other Detergents, Except Specialty Cleaners
Paints and Coatings	325611	Soap and Other Detergent Manufacturing	2844	Perfumes, Cosmetics, and other Toilet Preparations
Cleaning Product Mfg	325612	Polish and Other Sanitation Good Manufacturing	2842	Specialty Cleaning, Polishing, and Sanitation Preparations
Chemical Mfg	325613	Surface Active Agent Manufacturing	2843	Surface Active Agents, Finishing Agents, Sulfonated Oils, and Assistants
Chemical Mfg	325910	Printing Ink Manufacturing		
Chemical Mfg	325992	Photographic Film, Paper, Plate, Chemical, and Copy Toner Manufacturing		
Chemical Mfg	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	2899	Chemicals and Chemical Preparations, NEC
Plastics and Resins	326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing		
Plastics and Resins	326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	3081	Unsupported Plastics Film and Sheet
Plastics and Resins	326121	Unlaminated Plastics Profile Shape Manufacturing	3089	Plastics Products, NEC
Plastics and Resins	326121	Unlaminated Plastics Profile Shape Manufacturing	3082	Unsupported Plastics Profile Shapes
Plastics and Resins	326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing	3083	Laminated Plastics Plate, Sheet, and Profile Shapes
Consumer Products	326211	Tire Manufacturing (except Retreading)	3011	Tires and Inner Tubes
Glass Products	327215	Glass Product Manufacturing Made of Purchased Glass	3231	Glass Products Made of Purchased Glass
Cement Mfg	327310	Cement Manufacturing		Cement manufacturing
Mining and Refining	331313	Alumina Refining and Primary Aluminum Production		Alumina refining and primary aluminum production
Metal Coating	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	3479	Coating, Engraving, and Allied Services, NEC (except jewelry, silverware, and flatware engraving and etching)

Industry Name	2017 NAICS Code	NAICS Description	SIC Code	SIC Description
Metal Coating	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	3471	Electroplating, Plating, Polishing, Anodizing, and Coloring
Metal Machinery Mfg	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	3497	Metal Foil and Leaf
Metal Machinery Mfg	333249	Other Industrial Machinery Manufacturing	3841	Surgical and Medical Instruments and Apparatus
Metal Machinery Mfg	333249	Surgical and Medical Instruments and Apparatus		Other industrial machinery manufacturing
Metal Machinery Mfg	333316	Photographic and Photocopying Equipment Manufacturing	3861	Photographic Equipment and Supplies
Metal Machinery Mfg	333318	Other Commercial and Service Industry Machinery Manufacturing	3589	Service Industry Machinery, NEC
Electronics Industry	334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	3663	Radio and Television Broadcasting and Communications Equipment
Electronics Industry	334310	Audio and Video Equipment Manufacturing	3651	Household Audio and Video Equipment
Electronics Industry	334412	Bare Printed Circuit Board Manufacturing	3672	Printed Circuit Boards
Electronics Industry	334413	Semiconductor and Related Device Manufacturing	3674	Semiconductors and Related Devices
Electronics Industry	334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	3577	Computer Peripheral Equipment, NEC (plotter controllers)
Electronics Industry	334419	Other Electronic Component Manufacturing	3679	Electronic Components, NEC (other electronic components)
Electronics Industry	335931	Current-Carrying Wiring Device Manufacturing	3643	Current-carrying Wiring Devices
Electronics Industry	335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	3629	Electrical Industrial Apparatus, NEC
Metal Machinery Mfg	339112	Surgical and Medical Instrument Manufacturing		
Chemical Mfg	424690	Other Chemical and Allied Products Merchant Wholesalers	5169	Chemicals and Allied Products, NEC
Petroleum	424710	Petroleum Bulk Stations and Terminals		
Consumer Products	442291	Window Treatment Stores	5719	Miscellaneous Home Furnishings Stores
Airports	488119	Other Airport Operations (commercial and civil aviation)	4581	Airports, Flying Fields, and Services
Furniture and Carpet	561740	Carpet and Upholstery Cleaning Services	7217	Carpet and Upholstery Cleaning

Industry Name	2017 NAICS Code	NAICS Description	SIC Code	SIC Description
Waste Management	562112	Hazardous Waste Collection		
Waste Management	562211	Hazardous Waste Treatment and Disposal	4953	Refuse Systems
Waste Management	562212	Solid Waste Landfills	4953	Refuse Systems
Waste Management	562213	Solid Waste Combustors and Incinerators	4953	Refuse Systems
Waste Management	562219	Other Nonhazardous Waste Treatment and Disposal	4953	Refuse Systems
Furniture and Carpet	811420	Reupholstery and Furniture Repair	7641	Reupholstery and Furniture Repair
Fire Protection	922160	Fire Protection		
National Defense	928110	National Security	9711	National Security
Waste Management		RCRA Subtitle C Treatment, Storage, and Disposal Facilities (RCRA Part B permit holders; not defined by NAICS code)		
Fire Training Facilities		Based on keyword searches within facility name; not defined by NAICS code		
Airports (Part 139)		Based on list of operating airports published by FAA; not defined by NAICS code		

Appendix G

Memorandum from Radhika Fox, EPA, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* (Dec. 5, 2022), https://perma.cc/74SD-2SNK.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

December 5, 2022

MEMORANDUM

SUBJECT: Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs

FROM: Radhika Fox
Assistant Administrator

TO: EPA Regional Water Division Directors, Regions 1-10

The National Pollutant Discharge Elimination System (NPDES) program is an important tool established by the Clean Water Act (CWA) to help address water pollution by regulating point sources that discharge pollutants to waters of the United States. Collectively, the U.S. Environmental Protection Agency (EPA) and states issue thousands of permits annually, establishing important monitoring and pollution reduction requirements for Publicly Owned Treatment Works (POTWs), industrial facilities, and stormwater discharges nationwide. The NPDES program interfaces with many pathways by which per-and polyfluoroalkyl substances (PFAS) travel and are released into the environment, and ultimately impact water quality and the health of people and ecosystems. Consistent with the Agency's commitments in the October 2021 *PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024 (PFAS Strategic Roadmap)*, EPA will work in cooperation with our state-authorized permitting authorities to leverage the NPDES program to restrict the discharge of PFAS at their sources. In addition to reducing PFAS discharges, this program will enable EPA and the states to obtain comprehensive information on the sources and quantities of PFAS discharges, which can be used to inform appropriate next steps to limit the discharges of PFAS.

This memorandum provides EPA's guidance to states and updates the April 28, 2022 guidance[1] to EPA Regions for addressing PFAS discharges when they are authorized to administer the NPDES permitting program and/or pretreatment program. These recommendations reflect the Agency's commitments in the PFAS Strategic Roadmap, which directs the Office of Water to leverage NPDES permits to reduce PFAS discharges to waterways "*at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources.*" While the Office of Water works to revise Effluent Limitation Guidelines (ELGs) and develop water quality criteria to support technology-based and water quality-based effluent limits for PFAS in NPDES permits, this memorandum describes steps permit writers can implement under existing authorities to reduce the discharge of PFAS.

[1] Addressing PFAS Discharges in EPA-Issued NPDES Permits and Expectations Where EPA is the Pretreatment Control Authority, https://www.epa.gov/system/files/documents/2022-04/npdes_pfas-memo.pdf.

This memorandum also provides EPA's guidance for addressing sewage sludge PFAS contamination more rapidly than possible with monitoring based solely on NPDES permit renewals. States may choose to monitor the levels of PFAS in sewage sludge across POTWs and then consider mechanisms under pretreatment program authorities to prevent the introduction of PFAS to POTWs based on the monitoring results.

EPA recommends that the following array of NPDES and pretreatment provisions and monitoring programs be implemented by authorized states and POTWs, as appropriate, to the fullest extent available under state and local law. NPDES and pretreatment provisions may be included when issuing a permit or by modifying an existing permit pursuant to 40 CFR 122.62.

A. Recommendations for Applicable Industrial Direct Dischargers

1. **Applicability:** Industry categories known or suspected to discharge PFAS as identified on page 14 of the PFAS Strategic Roadmap include: organic chemicals, plastics & synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper & paperboard; leather tanning & finishing; plastics molding & forming; textile mills; paint formulating, and airports. This is not an exhaustive list and additional industries may also discharge PFAS. For example, Centralized Waste Treatment (CWT) facilities may receive wastes from the aforementioned industries and should be considered for monitoring. There may also be categories of dischargers that do not meet the applicability criteria of any existing ELG; for instance, remediation sites, chemical manufacturing not covered by OCPSF, and military bases.

   EPA notes that no permit may be issued to the owner or operator of a facility unless the owner or operator submits a complete permit application in accordance with applicable regulations, and applicants must provide any additional information that the permitting authority may reasonably require to assess the discharges of the facility (40 CFR 122.21(e), (g)(13)).[2] The applicant may be required to submit additional information under CWA Section 308 or under a similar provision of state law.

2. **Effluent-and wastewater residuals monitoring:** In the absence of a final 40 CFR Part 136 method, EPA recommends using CWA wastewater draft analytical method 1633 (*see* 40 CFR 122.21(e)(3)(ii) and 40 CFR 122.44(i)(1)(iv)(B)). EPA also recommends that monitoring include each of the 40 PFAS parameters detectable by draft method 1633 and be conducted at least quarterly to ensure that there are adequate data to assess the presence and concentration of PFAS in discharges. All PFAS monitoring data must be reported on Discharge Monitoring Reports (DMRs) (*see* 40 CFR 122.41(l)(4)(i)). The draft Adsorbable Organic Fluorine CWA wastewater method 1621 can be used in conjunction with draft method 1633, if appropriate. Certain industrial processes may generate PFAS-contaminated solid waste or air emissions not covered by NPDES permitting and permitting agencies should coordinate with appropriate state authorities on proper containment and disposal to avoid cross-media contamination. EPA's draft analytical method 1633 may be appropriate to assess the amount and types of PFAS for some of these wastestreams.[3]

[2] For more, see NPDES Permit Writer's Manual Section 4.5.1.
[3] See https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research for a list of EPA-approved methods for other media.

3. **Best Management Practices (BMPs) for discharges of PFAS, including product substitution, reduction, or elimination of PFAS, as detected by draft method 1633:** Pursuant to 40 CFR 122.44(k)(4), EPA recommends that NPDES permits for facilities incorporate the following conditions when the practices are "reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA."[4]
    a. BMP conditions based on pollution prevention/source reduction opportunities, which may include:
        i. Product elimination or substitution when a reasonable alternative to using PFAS is available in the industrial process.
        ii. Accidental discharge minimization by optimizing operations and good housekeeping practices.
        iii. Equipment decontamination or replacement (such as in metal finishing facilities) where PFAS products have historically been used to prevent discharge of legacy PFAS following the implementation of product substitution.
    b. Example BMP permit special condition language:
        i. *PFAS pollution prevention/source reduction evaluation*: Within 6 months of the effective date of the permit, the facility shall provide an evaluation of whether the facility uses or has historically used any products containing PFAS, whether use of those products or legacy contamination reasonably can be reduced or eliminated, and a plan to implement those steps.
        ii. *Reduction or Elimination*: Within 12 months of the effective date of the permit, the facility shall implement the plan in accordance with the PFAS pollution prevention/source reduction evaluation.
        iii. *Annual Report*: An annual status report shall be developed which includes a list of potential PFAS sources, summary of actions taken to reduce or eliminate PFAS, any applicable source monitoring results, any applicable effluent results for the previous year, and any relevant adjustments to the plan, based on the findings.
        iv. *Reporting:* When EPA's electronic reporting tool for DMRs (called "NetDMR") allows for the permittee to submit the pollution prevention/source reduction evaluation and the annual report, the example permit language can read, "The pollution prevention/source reduction evaluation and annual report shall be submitted to EPA via EPA's electronic reporting tool for DMRs (called "NetDMR").

4. **BMPs to address PFAS-containing firefighting foams for stormwater permits:** Pursuant to 122.44(k)(2), where appropriate, EPA recommends that NPDES stormwater permits include BMPs to address Aqueous Film Forming Foam (AFFF) used for firefighting, such as the following:[5]
    a. Prohibiting the use of AFFFs other than for actual firefighting.
    b. Eliminating PFOS and PFOA -containing AFFFs.
    c. Requiring immediate clean-up in all situations where AFFFs have been used, including diversions and other measures that prevent discharges via storm sewer systems.

5. **Permit Limits:** As specified in 40 CFR 125.3, technology-based treatment requirements under CWA Section 301(b) represent the minimum level of control that must be imposed in NPDES permits. Site-specific technology-based effluent limits (TBELs) for PFAS discharges developed on a best professional judgment (BPJ) basis may be appropriate for facilities for which there are no applicable effluent guidelines (*see* 40 CFR 122.44(a), 125.3). Also, NPDES permits must include water quality-based effluent limits (WQBELs) as derived from state water quality standards, in

[4] For more on BMPs, see NPDES Permit Writer's Manual Section 9.1 and EPA Guidance Manual for Developing Best Management Practices.
[5] Naval Air Station Whidbey Island MS4 permit incorporates these provisions.

addition to TBELs developed on a BPJ basis, if necessary to achieve water quality standards, including state narrative criteria for water quality (CWA Section 301(b)(1)(C); 40 CFR 122.44(d)). If a state has established a numeric criterion or a numeric translation of an existing narrative water quality standard for PFAS parameters, the permit writer should apply that numeric criterion or narrative interpretation in permitting decisions, pursuant to 40 CFR 122.44(d)(1)(iii) and 122.44(d)(1)(vi)(A), respectively.

B. Recommendations for Publicly Owned Treatment Works

1. **Applicability:** All POTWs, including POTWs that do not receive industrial discharges, and industrial users (IUs) in the industrial categories above.

2. **Effluent, influent, and biosolids monitoring:** In the absence of a final 40 CFR Part 136 method, EPA recommends using CWA wastewater draft analytical method 1633 (*see* 40 CFR 122.21(e)(3)(ii) and 40 CFR 122.44(i)(1)(iv)(B)). EPA also recommends that monitoring include each of the 40 PFAS parameters detectable by draft method 1633 and be conducted at least quarterly to ensure that there are adequate data to assess the presence and concentration of PFAS in discharges. All PFAS monitoring data must be reported on DMRs (*see* 40 CFR 122.41(l)(4)(i)). The draft Adsorbable Organic Fluorine CWA wastewater method 1621 can be used in conjunction with draft method 1633, if appropriate.

3. **Pretreatment program activities:**
   a. Update IU Inventory: Permits to POTWs should contain requirements to identify and locate all possible IUs that might be subject to the pretreatment program and identify the character and volume of pollutants contributed to the POTW by the IUs (*see* 40 CFR 403.8(f)(2)). As EPA regulations require, this information shall be provided to the pretreatment control authority (*see* 40 CFR 122.44(j) and 40 CFR 403.8(f)(6)) within one year. The IU inventory should be revised, as necessary, to include all IUs in industry categories expected or suspected of PFAS discharges listed above (*see* 40 CFR 403.12(i)).[6]
   b. Utilize BMPs and pollution prevention to address PFAS discharges to POTWs. EPA recommends that POTWs:
      i. Update IU permits/control mechanisms to require quarterly monitoring. These IUs should be input into the Integrated Compliance Information System (ICIS) with appropriate linkage to their respective receiving POTWs. POTWs and states may also use their available authorities to conduct quarterly monitoring of the IUs (*see* 40 CFR 403.8(f)(2), 403.10(e) and (f)(2)).
      ii. Where authority exists, develop IU BMPs or local limits. 40 CFR 403.5(c)(4) authorizes POTWs to develop local limits in the form of BMPs. Such BMPs could be like those for industrial direct discharges described in A.3 above.
      iii. In the absence of local limits and POTW legal authority to issue IU control mechanisms, state pretreatment coordinators are encouraged to work with the POTWs to encourage pollution prevention, product substitution, and good housekeeping practices to make meaningful reductions in PFAS introduced to POTWs.

[6] ELG categories of **airport deicing, landfills, textile mills, and plastics molding and forming do not have categorical pretreatment standards**, and therefore small-volume indirect dischargers in those categories would not ordinarily be considered Significant Industrial Users (SIUs) and may not be captured on an existing IU inventory. IUs under the Paint Formulating category are only subject to Pretreatment Standards for New Sources (PSNS), and existing sources may need to be inventoried.

C. Recommended Biosolids Assessment

1. Where appropriate, states may work with their POTWs to reduce the amount of PFAS chemicals in biosolids, in addition to the NPDES recommendations in Section B above, following these general steps:[7]

a. EPA recommends using draft method 1633 to analyze biosolids at POTWs for the presence of 40 PFAS chemicals.[8]

b. Where monitoring and IU inventory per section B.2 and B.3.a above indicate the presence of PFAS in biosolids from industrial sources, EPA recommends actions in B.3.b to reduce PFAS discharges from IUs.

c. EPA recommends validating PFAS reductions with regular monitoring of biosolids. States may also use their available authorities to conduct quarterly monitoring of the POTWs (*see* 40 CFR 403.10(f)(2)).

D. Recommended Public Notice for Draft Permits with PFAS-Specific Conditions

1. In addition to the requirements for public notice described in 40 CFR 124.10, EPA recommends that NPDES permitting authorities provide notification to potentially affected downstream public water systems (PWS) of draft permits with PFAS-specific monitoring, BMPs, or other conditions:

a. Public notice of the draft permit would be provided to potentially affected PWS with intakes located downstream of the NPDES discharge.

b. NPDES permit writers are encouraged to collaborate with their drinking water program counterparts to determine on a site-specific basis which PWS to notify.

   i. EPA's Drinking Water Mapping Application to Protect Source Waters (DWMAPS) tool may be helpful as a screening tool to identify potentially affected PWS to notify.

c. EPA will provide instructions on how to search for facility-specific discharge monitoring data in EPA's publicly available search tools.

[7] EPA is currently evaluating the potential risk of PFOA and PFOS in biosolids and supporting studies and activities to evaluate the presence of PFOA and PFOS in biosolids. This recommendation is not meant to supersede the PFOA and PFOS risk assessment or supporting activities. The conclusions of the risk assessment and supporting studies may indicate that regulatory actions or more stringent requirements are necessary to protect human health and the environment.

[8] While water quality monitoring activities (including monitoring of PFAS associated with NPDES permit or pretreatment requirements) at POTWs are generally not eligible for Clean Water State Revolving Fund (CWSRF), monitoring for the specific purpose of project development (planning, design, and construction) is eligible. Monitoring in this capacity, and within a reasonable timeframe, can be integral to the identification of the best solutions (through an alternatives analysis) for addressing emerging contaminants and characterizing discharge and point of disposal (e.g., land application of biosolids). Though ideally the planning and monitoring for project development would result in a CWSRF-eligible capital project, in some instances, the planning could lead to outcomes other than capital projects to address the emerging contaminants.

Appendix H

EPA, *Implementing Case-by-Case Technology-Based Effluent Limitations in NPDES Permits for Pollutants of Emerging Concern* (Jan. 2025), https://perma.cc/SN5K-9QJL.

Implementing Case-by-Case Technology-Based Effluent Limitations in NPDES Permits for Pollutants of Emerging Concern

A "How-To" for NPDES Permit Writers

United States Environmental Protection Agency

Background

The National Pollutant Discharge Elimination System (NPDES) permit program requires permits to include technology-based effluent limitations and any more stringent limitations necessary to protect the designated uses of waters of the United States and ensure applicable water quality criteria are not exceeded.[1] Technology-based effluent limitations for industrial facilities are developed from national effluent limitations guidelines (ELGs) for specific industrial categories or, where national ELGs are not applicable, on a case-by-case (also described as best professional judgement or BPJ) basis by the permit writer for a specific facility considering the same factors that are used to develop the national standards. 40 CFR 125.3(c).

For pollutants of emerging concern, including persistent pollutants such as per- and polyfluoroalkyl substances (PFAS), pharmaceutical and personal care products, and microplastics, it is often the case that national ELGs have not yet been developed or revised to include relevant effluent limitations. In December 2022, the Office of Water issued a memorandum to NPDES permitting authorities describing actions and permit conditions that could be implemented under existing authorities to address PFAS discharges from point sources while certain ELGs are being revised and water quality criteria developed to ensure comprehensive implementation of technology-based and water quality-based effluent limitations in Regional and state issued permits, including the use of case-by-case technology-based effluent limits.[2] This "how-to" fact sheet provides information on implementing case-by-case technology-based effluent limitations for PFAS, but the methodology can be applied to any pollutant of emerging concern.[3]

Case-by-Case Framework

Successful efforts to develop case-by-case effluent limitations start with early identification of the facilities within an industrial category known to utilize or generate PFAS.[4] The 2022 memorandum noted that permits cannot be issued unless the permittee submits a complete permit application, including any appropriate PFAS effluent monitoring data for final outfalls (40 CFR 122.21(e), (g)(13)). Permitting authorities should continue to work with permittees in these industrial categories to implement monitoring of facility discharges for PFAS.

While effluent monitoring at the final outfall(s) is important to demonstrate the presence and amounts of PFAS being discharged, EPA recommends that permitting authorities also require monitoring of the influent and effluent of any existing treatment technology to establish a treatment performance metric for use in a case-by-case evaluation.[5] If

[1] CWA sections 301(b)(1) and 301(b)(2).
[2] U.S. EPA, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* (Dec. 5, 2022). See EPA's Effluent Guidelines webpage for more information on PFAS and ELGs https://www.epa.gov/eg
[3] For more information, see Chapter 5 of the NPDES Permit Writers' Manual (5-44).
[4] Industrial categories known or suspected to discharge PFAS as identified on page 14 of the PFAS Strategic Roadmap include: organic chemicals, plastics & synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper &paperboard; leather tanning & finishing; plastics molding & forming; textile mills; paint formulating, and airports.
[5] The applicant may be required to submit additional information under CWA Section 308 or under a similar provision of state law.

permittees have identified potential treatment technologies for the pollutants, the permitting authority should request information on the anticipated performance of each technology on effluent generated from processes at the facility, including, where appropriate, information on pilot testing of any treatment technology. EPA recommends that permitting authorities reach out to permittees prior to permit reissuance and request that permittees submit with the application requested information to develop case-by-case effluent limitations.

In January 2025, the Office of Water proposed Method 1633A[6] (for 40 PFAS compounds) that has been tested in a wide variety of wastewaters and contains all the required quality control (QC) procedures for the Clean Water Act for inclusion in 40 CFR Part 136. The Office of Water also proposed Method 1621[7] that can broadly screen for thousands of known PFAS compounds at the part per billion level in water samples. The availability of these methods provides a suitable approach for PFAS screening at permitted facilities and obtaining relevant data in case-by-case effluent limitation evaluations. Note: until the 40 CFR Part 136 rulemaking is finalized, the methods are not required to be used for CWA monitoring purposes.

In 2021, EPA issued two reports that are key resources for facilities and permitting authorities in beginning their efforts to identify potential treatment technologies and predicting resulting effluent quality. The first report, *Evaluation of Industrial Wastewater PFAS Treatment Technologies Report*,[8] was an output of the PFAS Multi-Industry Study and provided an overview of the current literature on pollution control processes and treatment technologies capable of removing or eliminating PFAS in industrial wastewater streams. The second report, *Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Report – 2021 Preliminary Report*,[9] provided a summary of the readily available information and data the Office of Water collected and reviewed concerning industrial discharges of PFAS from five industrial point source categories: organic chemicals, plastics, and synthetic fibers (OCPSF) manufacturing; metal finishing; pulp, paper, and paperboard manufacturing; textile mills; and commercial airports. In addition, EPA's Industrial Wastewater Treatment Technology Database includes treatment technology performance data for PFAS.[10] More information can be found on EPA's Effluent Guidelines webpage.[11]

Regulatory Requirements

A case-by-case evaluation under 40 CFR 125.3(c)(2) must: (1) apply the factors found in 40 CFR 125.3(d); (2) consider the appropriate technology for the category of point sources of which the facility is a member; and (3) consider any unique factors related to the facility. All of the Clean Water Act technology-based standards for industrial facilities require the permit writer to address the following factors found in 40 CFR 125.3(d):

1. The age of equipment and facilities involved;
2. The process employed;
3. The engineering aspects of the application of various types of control techniques;
4. Process changes;
5. The cost of achieving such effluent reduction; and
6. Non-water quality environmental impact (including energy requirements).

Each of the Clean Water Act technology standards further requires a particular economic evaluation to determine the appropriate technology as specified in 40 CFR 125.3(d). For example, in developing case-by-case effluent limitations that reflect Best Available Technology Economically Achievable, the permit writer must consider "the cost of achieving such effluent reduction." 40 CFR 125.3(d)(3)(v).

At least 65 permits with effluent limitations have been issued and provide a model for permitting authorities to evaluate appropriate permit conditions for PFAS in NPDES permits. In the permits where case-by-case TBELs were developed, the effluent data and treatment technologies identified in these permits will be beneficial for discussions with permittees that may or do discharge. State permitting authorities can work with their EPA Regional office to identify permits that may serve as examples of appropriate approaches in specific circumstances.

[6] "Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS," a method to test for 40 PFAS compounds in wastewater, surface water, groundwater, soil, biosolids, sediment, landfill leachate, and fish tissue.
[7] "Determination of Adsorbable Organic Fluorine (AOF) in Aqueous Matrices by Combustion Ion Chromatography (CIC)," a method to measure the aggregate concentration of organofluorides (molecules with a carbon-fluorine bond) in wastewater.
[8] See Evaluation of Industrial Wastewater PFAS Treatment Technologies Report, Revision 1, (4-2 to 4-4) (Feb. 2021).
[9] See Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Report – 2021 Preliminary Report, (10-2 to 10-3) (Sept. 2021).
[10] See https://www.epa.gov/eg/industrial-wastewater-treatment-technology-database-iwtt.
[11] See https://www.epa.gov/eg.

The 2022 memorandum also discussed when it may be appropriate for permitting authorities to consider Best Management Practices (BMPs). EPA continues to recommend BMPs be included in permits where it is not feasible to calculate numeric PFAS effluent limitations (40 CFR 122.44(k)(3)) or to supplement numeric PFAS effluent limitations where reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intents of the Clean Water Act (40 CFR 122.44(k)(4).[12] BMP conditions based on pollution prevention/source reduction opportunities may include:

1. Product elimination or substitution when a reasonable alternative to using PFAS is available in the industrial process;
2. Accidental discharge minimization by optimizing operations and good housekeeping practices; and
3. Equipment decontamination or replacement (such as in metal finishing facilities) where PFAS products have historically been used to prevent discharge of legacy PFAS following the implementation of product substitution.

Case-by-Case Effluent Limitations: An Overview of Resources

Permit Information

The permit writer can obtain information about the presence or absence of pollutants of emerging concern from the permit application, discharge monitoring reports and special studies. These materials should provide information on pollutant concentrations in effluent from each process at the facility as well as whether the existing treatment effectively removes pollutants, information which can be considered in the case-by-case evaluation.

Other Facility Information

The permit writer can review permits for similar facilities to inform the potential for a facility to discharge pollutants of concern. These permits may also have case-by-case effluent limitations that, where appropriate, can be considered in developing case-by-case limitations for the subject facility, specifically, the treatment technologies considered, performance metrics and any cost information.

Effluent Guidelines

Published effluent guidelines provide a template for the evaluation of treatment technologies for specific pollutants and establishment of effluent limitations. As part of effluent guidelines development,[1] EPA prepares many documents, such as the development document, that provide factual information that can be utilized in case-by-case evaluations. The permit writer can use the information from the facility or similar facilities to identify ELGs that may provide insight for developing case-by-case limitations. EPA has published an ELG database[2] that allows permit writers to search existing ELGs based upon several criteria.

Economic Guidance

Effluent guidelines' economic analyses can provide information about treatment technologies affordability that may be transferable to the facility being evaluated. The permit writer can utilize EPA's BAT Workbook[3] in evaluating the economic achievability of a specific treatment technology. Permits incorporating case-by-case limitations can also be a resource for how to conduct an economic analysis consistent with the Clean Water Act's economic criteria.

1: https://www.epa.gov/eg/current-effluent-guidelines-program-plan
2: https://owapps.epa.gov/elg/
3: https://www3.epa.gov/npdes/pubs/protocol_npdespermits.pdf and https://www3.epa.gov/npdes/pubs/workbook_econ_permits.pdf

[12] For more information, see Guidance Manual for Developing Best Management Practices (BMPs).

Appendix I

Email from Jessica Martinsen, EPA Mid-Atlantic Region, to Becky France, DEQ, *Western Virginia Water Authority WPCP* (Dec. 28, 2023).

From: Martinsen, Jessica <Martinsen.Jessica@epa.gov>
Sent: Thursday, December 28, 2023 1:06 PM
To: France, Becky (DEQ)
Cc: Fulton, Jennifer; Shuart, Ryan; Yachera, Kelly
Subject: Western Virginia Water Authority WPCP (VA0025020)

Hello Becky:

EPA has reviewed the below referenced permit modification in accordance with 40 CFR §123.44, EPA review of and objection to State Permits, and the MOA between The Virginia State Water Control Board and the EPA.

Western Virginia Water Authority WPCP
NPDES Permit Number: VA0025020
EPA Received: 12/5/2023
30-day response date: 1/4/2024

EPA has exercised its discretion to perform a limited review of the state submitted draft permit for adherence to impaired waters requirements. EPA has chosen to perform a limited review based on the requirements of the following: Roanoke River Benthic and Bacteria TMDLs, The Roanoke River PCB TMDL, the federal effluent requirements (secondary treatment) at 40 CFR §133, the compliance schedule for total recoverable copper, and Pretreatment Program and NPDES implications of per-and polyfluoroalkyl substances (PFAS) contamination of the Roanoake River. As a result of the limited review EPA offers the following comments and recommendations:

1. Western Virginia Water Authority (WVWA) has a state approved local Pretreatment program and accepts wastewater from 38 Significant Industrial Users (SIUs). Based on information included on WVWA's NPDES Application, there are approximately 14 SIUs discharging wastewater to WVWA in an industry category known, or suspected, to discharge PFAS as identified on page 14 of the PFAS Strategic Roadmap. Industry categories known or suspected to discharge PFAS include organic chemicals, plastics & synthetic fibers (OCPSF); metal finishing; electroplating; electric and electronic components; landfills; pulp, paper & paperboard; leather tanning & finishing; plastic molding & forming; textile mills; paint formulating, and airports. This is not an exhaustive list and additional industries may also discharge PFAS. For example, Centralized Waste Treatment (CWT) facilities may receive wastes from the aforementioned industries and should be considered for monitoring. Due to the large number of facilities with the potential to discharge PFAS to WVWA's collection system and the known PFAS contamination in the receiving stream, the Roanoke River, EPA recommends VADEQ include sampling and industrial survey requirements in the NPDES permit and via the state approved Pretreatment program. Specifically, EPA recommends the following, consistent with Part B of EPA's Memorandum for Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs (Memo) published in December, 2022.

    a. Incorporate in WVWA's NPDES permit quarterly effluent, influent, and biosolids monitoring for each of the 40 PFAS parameters using draft analytical method 1633. The draft Adsorbable Organic Fluorine CWA wastewater method 1621 can be used in conjunction with draft method 1633, if appropriate. Analytical method 1633 is expected to be finalized soon.

Pretreatment program activities:

    b. Incorporate in the permit the requirement for WVWA's to conduct a survey to identify and locate all possible IUs that might be subject to the pretreatment program and identify the character and volume of pollutants contributing to the POTW by the IUs (see 40 CFR 403.8(f)(2)). As EPA regulations require,

this information shall be provided to the pretreatment control authority (see 40 CFR 122.44(j) and 40 CFR 403.8(f)(6)) within one year. The IU inventory should be revised, as necessary, to include all IUs in industry categories expected or suspected of PFAS discharges listed above (see 40 CFR 403.12(i)).

Utilize BMPs and pollution prevention to address PFAS discharges to POTWs. EPA recommends that WVWA:

i. Update IU permits/control mechanisms to require quarterly monitoring. These IUs should be input into the Integrated Compliance Information System (ICIS) with appropriate linkage to their respective receiving POTWs. POTWs and states may also use their available authorities to conduct quarterly monitoring of the IUs (see 40 CFR 403.8(f)(2), 403.10(e) and (f)(2)).

ii. Develop IU BMPs or local limits. 40 CFR 403.5(c)(4) authorizes POTWs to develop local limits in the form of BMPs. Some example BMP conditions based on pollution prevention/source reduction opportunities may include:

1. Product elimination or substitution when a reasonable alternative to using PFAS is available in the industrial process.
2. Accidental discharge minimization by optimizing operations and good housekeeping practices.
3. Equipment decontamination or replacement (such as in metal finishing facilities) where PFAS products have historically been used to prevent discharge of legacy PFAS following the implementation of product substitution.

2. EPA recommends DEQ include a justification for the length of time it has granted the facility in the compliance schedule for total recoverable copper in the permit record.

Should you have any questions, please feel free to reach out to Ryan Shuart, copied on this email. If there are any additional changes to the permit documents, please be sure to reach out to EPA as additional review may be necessary.

Respectfully,
Jessica

Jessica Martinsen
Chief, Permits Section
Water Division
US EPA Mid-Atlantic Region
Phone 215-814-5144
Cell 267-449-3848
Email martinsen.jessica@epa.gov

Appendix J

Letter from Carroll Courtenay, Southern Environmental Law Center, to Susan Edwards, DEQ, *Comments on Draft VPDES Permit for the Northside Wastewater Treatment Plant (Permit Number VA0060593)* (May 28, 2024), https://perma.cc/ZKP3-Q7Y2.

SOUTHERN ENVIRONMENTAL LAW CENTER

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Telephone 434-977-4090
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May 28, 2024

Susan Edwards
DEQ Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153
Susan.Edwards@deq.virginia.gov *via email*

Re: Comments on draft VPDES permit for the Northside Wastewater Treatment Plant (Permit Number VA0060593)

Dear Ms. Edwards:

The Southern Environmental Law Center, Dan River Basin Association, and Wild Virginia offer the following comments on the draft Virginia Pollutant Discharge Elimination System (VPDES) permit prepared by the Virginia Department of Environmental Quality (DEQ) for the Northside Wastewater Treatment Plant in Danville, Virginia (Northside WWTP) (Permit Number VA0060593). The Northside WWTP's own sampling indicates that the treatment plant has discharged concentrations of over 100 parts per trillion (ppt) of total per- and polyfluoroalkyl substances (PFAS) to the Dan River.[1] DEQ has been aware of this pollution since at least 2022[2] but has failed to assess effluent limits and failed to incorporate permit conditions recommended by the U.S. Environmental Protection Agency (EPA) to control PFAS pollution from the plant. In addition, DEQ did not disclose evidence of this PFAS pollution to the public until just seven days (including a holiday weekend) before the end of the period for comment on the draft permit, severely limiting the public's ability to provide meaningful input. We urge DEQ to extend the comment period and hold a public hearing for this draft permit in light of this belated disclosure.

DEQ's failure to address PFAS pollution coming from the Northside WWTP is inadequate under the Clean Water Act and DEQ must make several changes to the treatment plant's VPDES permit. Specifically, DEQ must evaluate and impose technology- and water quality-based effluent limits to address PFAS discharges from the Northside WWTP. In addition, consistent with EPA's recommendations, DEQ must require quarterly effluent, influent, and biosolids monitoring using EPA wastewater method 1633 (method 1633) and EPA wastewater method 1621 (method 1621). It also must add conditions to the VPDES permit that require the Northside WWTP to amend its pretreatment program to: (1) update its industrial user survey and determine all industrial sources of PFAS; (2) require regular monitoring by industrial users for PFAS using method 1633 and method 1621; and (3) control through its pretreatment program any industrial sources of PFAS that would result in pass through or interference pollution.

[1] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 11.
[2] *Id.* at PDF pg. 33-34.

I. Northside WWTP has discharged PFAS, a class of chemicals known to be harmful to human health and the environment.

Data indicates that the Northside WWTP has known it discharges PFAS since at least April 2021.[3] Sampling results from April 2021 show that the treatment plant's influent contained at least 12 types of PFAS (with concentrations of total PFAS of over 157 ppt) and its effluent contained at least nine types of PFAS (with concentrations of total PFAS of almost 109 ppt).[4] The PFAS discharged from the treatment plant included concentrations of 15 ppt of perfluorooctanoic acid (PFOA) and 17 ppt of perfluorooctanesulfonic acid (PFOS), well above the federal drinking water standards of 4 ppt for these types of PFAS (discussed below).[5] The results also show discharges of perflorobutanesulfonic acid (PFBS) (4.8 ppt) and perfluorohexanesulfonic acid (PFHxS) (4.9 ppt), which are subject to drinking water standards as well.[6]

It is our understanding that DEQ was aware no later than May 2022, when the treatment plant submitted its response to DEQ's "PFAS Survey," that Northside WWTP had sampled for and found PFAS in its influent and effluent.[7]

It is not surprising that the Northside WWTP discharges PFAS because it receives industrial wastewater from several significant industrial users that may use or discharge PFAS:

- Goodyear Tire & Rubber Co. (SIC 3011; NAICS 326211) – Goodyear Tire & Rubber manufactures aircraft tires and commercial tires at their Danville facility.[8] EPA[9] and several states[10] have listed tire manufacturing facilities as potentially using or discharging PFAS.

- Arkema Inc., Sartomer Business Unit (SIC 2869; NAICS 325199, 325211, 325998) – Arkema produces acrylate and methacrylate monomers and oligomers for industries such as electronics, coatings, adhesives and sealants, personal care products, and 3D printing.[11] Its industry codes are associated with organic chemical and plastics manufacturing, which

[3] *Id.* at PDF pg. 6-28.
[4] *Id.* at PDF pg. 11.
[5] *Id.* at PDF pg. 11; EPA, *Per- and Polyfluoroalkyl Substances (PFAS) – Final PFAS National Primary Drinking Water Regulation* (Apr. 10, 2024), https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas.
[6] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 11; EPA, *Per- and Polyfluoroalkyl Substances (PFAS) – Final PFAS National Primary Drinking Water Regulation* (Apr. 10, 2024), https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas.
[7] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 33-34. Survey responses were due by April 29, 2022.
[8] *Americas Facilities*, GOODYEAR CORPORATE, https://corporate.goodyear.com/us/en/about/global/americas.html (last visited May 17, 2024).
[9] EPA, METADATA FOR DATA SOURCES WITHIN PFAS ANALYTIC TOOLS 39 (Dec. 2023), https://echo.epa.gov/system/files/PFAS%20Analytic%20Tools%20Metadata%202023-12-22-508.pdf [hereinafter EPA PFAS METADATA].
[10] *PFAS Handling Industry Sectors*, N.J. DEP'T OF ENV'T PROT., https://www.nj.gov/dep/srp/guidance/srra/pfas_handling_industry_sectors.pdf (Dec. 2019); Dana Bate, *DEP Names Bergey's Tires as Source of PFAS Contamination in Bucks County Private Wells*, WHYY (Nov. 13, 2019), https://whyy.org/articles/dep-names-bergeys-tires-as-source-of-pfas-contamination-in-bucks-county-private-wells/.
[11] *Production Plant in Chatham, Virginia, USA*, ARKEMA (Nov. 2023), https://www.arkema.com/files/live/sites/arkema_usa/files/downloads/arkema-in-the-americas/site-overviews/Chatham%20Fact%20Sheet.pdf.

EPA,[12] some states,[13] and the Association of Drinking Water Administrators[14] list as an industry that may use or discharge PFAS.

- Polynt Composites USA (SIC 2821; NAICS 325211) – Polynt manufactures composite materials used for bonding pastes, cleaning agents, gelcoats, and other compounds for a wide array of industries.[15] EPA identifies these industry codes as associated with facilities that potentially use or discharge PFAS.[16]

- First Piedmont Corporation – Landfill (SIC 4953; NAICS 562212) – The Northside WWTP receives wastewater from the First Piedmont landfill. EPA lists solid waste landfills as a potential source of PFAS pollution.[17] Landfills receive PFAS from sources such as industrial waste, sewage sludge, fire cleanup debris, contaminated soil, and consumer products.[18] PFAS can become concentrated in landfill leachate[19] and one study found that PFAS concentrations in the influent for wastewater treatment plants that received leachate were three times higher than in the influent for plants that did not receive leachate.[20]

- Ascent Chemicals (SIC 2819, 2821, 2843; NAICS 325211, 325612) – Ascent Chemicals conducts batch organic synthesis for chemicals that are used in coatings, adhesives, polymers and elastomers, rubber and plastic additives, pulp and paper, textiles, oil and gas, personal care products, and water treatment.[21] The company lists fire retardant chemicals among those it regularly manufactures.[22] EPA,[23] several states,[24] and the

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[12] EPA PFAS METADATA, *supra* note 9, at 38.
[13] *Introduction to Per- and Polyfluoroalkyl Substances (PFAS)*, CONN. DEP'T OF ENERGY & ENV'T PROT., https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Contaminants-of-Emerging-Concern/Introduction-to-PFAS, (June 15, 2023); *PFAS Handling Industry Sectors*, N.J. DEP'T OF ENV'T PROT., https://www.nj.gov/dep/srp/guidance/srra/pfas_handling_industry_sectors.pdf (Dec. 2019).
[14] Ass'n of State Drinking Water Adm'rs, *Per- and Polyfluoroalkyl Substances (PFAS) Source Water Protection Guidance Project: Technical Appendix* 12, https://www.asdwa.org/wp-content/uploads/2020/05/ASDWA-PFAS-SWP-Technical-Appendix_FINAL3.pdf.
[15] *Composites Products*, POLYNT GROUP, https://www.polynt.com/chemical-products/composites/ (last visited May 17, 2024); Application Sectors, POLYNT GROUP, https://www.polynt.com/application-area/ (last visited May 17, 2024).
[16] EPA PFAS METADATA, *supra* note 9, at 39.
[17] *Id.* at 40.
[18] *See* Hanna Hamid et al., *Review of the Fate and Transformation of Per- and Polyfluoroalkyl Substances (PFASs) in Landfills*, 235 ENV'T POLLUTION 74, 74–75 (2018); Stephen Zemba, SANBORN HEAD, *PFAS Issues Facing Landfills: Presentation to the NH Solid Waste Working Group* 3 (May 27, 2022), https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/20220527-swwg-zemba-presentation.pdf.
[19] Hamid et al., *supra* note 18, at 75.
[20] Jason R. Masoner et al., *Landfill leachate contributes per-/poly-fluoroalkyl substances (PFAS) and pharmaceuticals to municipal wastewater*, 52 ENV'T SCI. & TECH. 1300–1311, 1305 (2020).
[21] *Process Capabilities*, ASCENT CHEMICALS, https://ascentchem.com/capabilities/ (last visited May 17, 2024); *Markets Served*, ASCENT CHEMICALS, https://ascentchem.com/markets-served/ (last visited May 17, 2024).
[22] *Our Products*, ASCENT CHEMICALS, https://ascentchem.com/our-products/ (last visited May 17, 2014).
[23] EPA PFAS METADATA, *supra* note 9, at 37–39.
[24] *Introduction to Per- and Polyfluoroalkyl Substances (PFAS)*, CONN. DEP'T OF ENERGY & ENV'T PROT., https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Contaminants-of-Emerging-Concern/Introduction-to-PFAS, (June 15, 2023); *PFAS Handling Industry Sectors*, N.J. DEP'T OF ENV'T PROT., https://www.nj.gov/dep/srp/guidance/srra/pfas_handling_industry_sectors.pdf (Dec. 2019).

Association of Drinking Water Administrators[25] have identified the industrial codes used by Ascent Chemicals as potential sources of PFAS pollution.

PFAS are a class of human-made chemicals that have been used in manufacturing since the 1940s.[26] They are used in the production of coatings for non-stick cookware, stain-resistant carpeting and upholstery, grease-resistant pizza boxes, and waterproof outdoor gear.[27] PFAS are found in numerous other consumer and industrial products, as well as in firefighting foam used at airports and military installations.[28]

It is well established that PFAS are a threat to the health and safety of the public. Two of the most commonly studied PFAS, PFOA and PFOS, have been found to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, lower birth weight and size, obesity, decreased immune response to vaccines, reduced hormone levels and delayed puberty.[29] Additionally, based upon a review of the existing literature, it is thought that PFAS exposure—because of its effect on the immune system—can exacerbate the effects of COVID-19[30] and it may affect fertility.[31] Studies show that many of these same health outcomes result from exposure to other types of PFAS.[32]

Given these harms, on June 15, 2022, EPA released drinking water Health Advisory Levels (HALs) for two particularly harmful PFAS, PFOA and PFOS.[33] EPA's 2022 HAL for PFOA is equal to 0.004 ppt or 4 parts per quadrillion (ppq), while the 2022 HAL for PFOS is equal to 0.02 ppt or 20 ppq. For perspective, 1 ppq as an expression of time would equal approximately one second out of about 31.7 million years, which illustrates the magnitude of the threat posed from these pollutants even in extremely small quantities.

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[25] Ass'n of State Drinking Water Adm'rs, *Per- and Polyfluoroalkyl Substances (PFAS) Source Water Protection Guidance Project: Technical Appendix* 12, https://www.asdwa.org/wp-content/uploads/2020/05/ASDWA-PFAS-SWP-Technical-Appendix_FINAL3.pdf.

[26] EPA, *Our Current Understanding of the Human Health and Environmental Risks of PFAS* (June 7, 2023), https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas.

[27] *See id.*; AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (ATSDR), PFAS: AN OVERVIEW OF THE SCIENCE AND GUIDANCE FOR CLINICIANS ON PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) 3 (2019), https://www.atsdr.cdc.gov/pfas/docs/ATSDR_PFAS_ClinicalGuidance_12202019.pdf.

[28] EPA, *Our Current Understanding of the Human Health and Environmental Risks of PFAS* (June 7, 2023), https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas; EPA PFAS METADATA, *supra* note 9, at 26–27.

[29] Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, 123 ENV'T HEALTH PERSP. 5, A 107 (May 2015); EPA, FACT SHEET ON PFOA & PFOS DRINKING WATER HEALTH ADVISORIES 2 (Nov. 2016), https://bit.ly/37o3eWp.

[30] *See* Lauren Brown, *Insight: PFAS, Covid-19, and Immune Response–Connecting the Dots*, BLOOMBERG LAW (July 13, 2020), https://news.bloomberglaw.com/environment-and-energy/insight-pfas-covid-19-and-immune-response-connecting-the-dots.

[31] Nathan J. Cohen, *Exposure to Perfluoroalkyl Substances and Women's Fertility Outcomes in a Singaporean Population-Based Preconception Cohort*, 873 SCI. TOTAL ENV'T 162267 (2023).

[32] ATSDR, TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS, DRAFT FOR PUBLIC COMMENT 5–6, 25–26 (June 2018), https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf.

[33] *See, e.g.*, Press Release, EPA, *EPA Announces New Drinking Water Health Advisories for PFAS Chemicals, $1 Billion in Bipartisan Infrastructure Law Funding to Strengthen Health Protections* (June 15, 2022), https://www.epa.gov/newsreleases/epa-announces-new-drinking-water-health-advisories-pfas-chemicals-1-billion-bipartisan.

On April 10, 2024, EPA announced its final national drinking water standards for six PFAS chemicals. The drinking water standards establish enforceable limits, called maximum contaminant levels (MCLs), on the concentration of certain PFAS in public drinking water systems. The MCLs for PFOA and PFOS are both 4 ppt, with maximum contaminant level goals (MCLGs) of 0 ppt.[34] The MCLs and MCLGs for PFHxS, PFNA, and HFPO-DA (commonly known as GenX chemicals) are 10 ppt each.[35] EPA also finalized a Hazard Index MCL to account for dose-additive health effects of mixtures that include any combination of PFHxS, HFPO-DA, PFNA, and PFBS.[36]

PFAS are also harmful to the environment. They have been shown to harm fish,[37] amphibians,[38] reptiles,[39] mollusks,[40] and other aquatic invertebrates[41]—resulting in developmental and reproductive impacts, behavioral changes, adverse effects to livers, disruption to endocrine systems, and weakened immune systems.[42] PFAS are extremely resistant to

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[34] EPA, *Per- and Polyfluoroalkyl Substances (PFAS) – Final PFAS National Primary Drinking Water Regulation* (Apr. 10, 2024), https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas.
[35] *Id.*
[36] *Id.*
[37] Chen et al., *Perfluorobutanesulfonate Exposure Causes Durable and Transgenerational Dysbiosis of Gut Microbiota in Marine Medaka*, 5 ENV'T SCI. & TECH. LETTERS 731–38 (2018); Chen et al., *Accumulation of Perfluorobutane Sulfonate (PFBS) and Impairment of Visual Function in the Eyes of Marine Medaka After a Life-Cycle Exposure*, 201 AQUATIC TOXICOLOGY 1–10 (2018); Du et al., *Chronic Effects of Water-Borne PFOS Exposure on Growth, Survival and Hepatotoxicity in Zebrafish: A Partial Life-Cycle Test*, 74 CHEMOSPHERE 723–29 (2009); Hagenaars et al., *Structure–Activity Relationship Assessment of Four Perfluorinated Chemicals Using a Prolonged Zebrafish Early Life Stage Test*, 82 CHEMOSPHERE 764–72 (2011); Huang et al., *Toxicity, Uptake Kinetics and Behavior Assessment in Zebrafish Embryos Following Exposure to Perfluorooctanesulphonicacid (PFOS)*, 98 AQUATIC TOXICOLOGY 139–47 (2010); Jantzen et al., *PFOS, PFNA, and PFOA Sub-Lethal Exposure to Embryonic Zebrafish Have Different Toxicity Profiles in terms of Morphometrics, Behavior and Gene Expression*, 175 AQUATIC TOXICOLOGY 160–70 (2016); Liu et al., *The Thyroid-Disrupting Effects of Long-Term Perfluorononanoate Exposure on Zebrafish (Danio rerio)*, 20 ECOTOXICOLOGY 47–55 (2011); Chen et al., *Multigenerational Disruption of the Thyroid Endocrine System in Marine Medaka after a Life-Cycle Exposure to Perfluorobutanesulfonate*, 52 ENV'T SCI. & TECH. 4432–39 (2018); Rotondo et al., *Environmental Doses of Perfluorooctanoic Acid Change the Expression of Genes in Target Tissues of Common Carp*, 37 ENV'T TOXICOLOGY & CHEM. 942–48 (2018).
[38] Ankley et al., *Partial Life-Cycle Toxicity and Bioconcentration Modeling of Perfluorooctanesulfonate in the Northern Leopard Frog (Rana Pipiens)*, 23 ENV'T TOXICOLOGY & CHEM. 2745 (2004); Cheng et al., *Thyroid Disruption Effects of Environmental Level Perfluorooctane Sulfonates (PFOS) in Xenopus Laevis*, 20 ECOTOXICOLOGY 2069–78 (2011); Lou et al., *Effects of Perfluorooctanesulfonate and Perfluorobutanesulfonate on the Growth and Sexual Development of Xenopus Laevis*, 22 ECOTOXICOLOGY 1133–44 (2013).
[39] Guillette et al., *Blood Concentrations of Per- and Polyfluoroalkyl Substances Are Associated with Autoimmune-like Effects in American Alligators From Wilmington, North Carolina*, FRONTIER TOXICOLOGY 4:1010185 (Oct. 20, 2022).
[40] Liu et al., *Oxidative Toxicity of Perfluorinated Chemicals in Green Mussel and Bioaccumulation Factor Dependent Quantitative Structure-Activity Relationship*, 33 ENV'T TOXICOLOGY & CHEM. 2323–32 (2014); Liu et al., *Immunotoxicity in Green Mussels under Perfluoroalkyl Substance (PFAS) Exposure: Reversible Response and Response Model Development*, 37 ENV'T TOXICOLOGY & CHEM. 1138–45 (2018).
[41] Houde et al., *Endocrine-Disruption Potential of Perfluoroethylcyclohexane Sulfonate (PFECHS) in Chronically Exposed Daphnia Magna*, 218 ENV'T POLLUTION 950–56 (2016); Liang et al., *Effects of Perfluorooctane Sulfonate on Immobilization, Heartbeat, Reproductive and Biochemical Performance of Daphnia Magna*, 168 CHEMOSPHERE 1613–18 (2017); Ji et al., *Oxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid on Freshwater Macroinvertebrates (Daphnia Magna and Moina Macrocopa) and Fish (Oryzias Latipes)*, 27 ENV'T TOXICOLOGY & CHEM. 2159 (2008); MacDonald et al., *Toxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid to Chironomus Tentans*, 23 ENV'T TOXICOLOGY & CHEM. 2116 (2004).
[42] *See* supra notes 37–41.

breaking down in the environment, can travel long distances, and bioaccumulate.[43] PFAS have been found in fish tissue across all 48 continental states,[44] and PFOS—a particularly harmful PFAS chemicals—is one of the most prominent PFAS found in freshwater fish.[45] As a result, the primarily low-income and minority communities that rely heavily on subsistence fishing have been found to have elevated PFAS levels in their blood.[46] In fact, researchers have concluded that "[w]idespread PFAS contamination of freshwater fish in surface waters in the U.S. is likely a significant source of exposure to PFOS and potentially other perfluorinated compounds for all persons who consume freshwater fish, but especially for high-frequency freshwater fish consumers."[47]

II. The Clean Water Act requires DEQ to analyze effluent limits for PFAS.

A. DEQ must assess technology-based effluent limits for PFAS.

The Clean Water Act generally prohibits discharges of "any pollutant" to water bodies.[48] The National Pollutant Discharge Elimination System (NPDES) program—implemented in Virginia as the VPDES program—is a limited exception to that prohibition.[49] The Clean Water Act requires permitting agencies to, at the very least, evaluate technology-based effluent limits on the discharge of pollutants.[50] Technology-based effluent limits are "the minimum level of control that *must be imposed* in a permit."[51]

As EPA has recognized, "technology-based limits aim to prevent pollution by requiring polluters to install and implement various forms of technology designed to reduce the pollution discharged into the nation's waters."[52] Where EPA has not issued a national effluent limitation guideline for a particular industry,[53] permitting agencies must implement technology-based effluent limits on a case-by-case basis using their "best professional judgment."[54] To carry out the case-by-case analysis for implementing technology-based effluent limitations, DEQ must

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[43] ATSDR, *supra* note 32.
[44] Nadia Barbo, et al., *Locally Caught Freshwater Fish Across the United States Are Likely a Significant Source of Exposure to PFOS and Other Perfluorinated Compounds*, 220 ENV'T RES. 115165 3 (2023), *available at* https://perma.cc/SB8F-C3Y6.
[45] *Id.* at 4.
[46] Patricia A. Fair et al., *Perfluoralkyl Substances (PFASs) in Edible Fish Species from Charleston Harbor and Tributaries, South Carolina, United States: Exposure and Risk Assessment*, 171 ENV'T RES. 266, 273–75 (2019), https://perma.cc/7976-XAVU; Chloe Johnson, *Industrial chemicals in Charleston Harbor taint fish – and those who eat them*, POST & COURIER (June 4, 2022), https://perma.cc/Z5TM-MB83.
[47] Barbo, *supra* note 44 at 9.
[48] 33 U.S.C. § 1311(a).
[49] *Nat'l Ass'n of Home Builders v. Defs. of Wildlife*, 551 U.S. 644, 650 (2007).
[50] *See* 40 C.F.R. § 125.3(a); 33 U.S.C. § 1311.
[51] 40 C.F.R. § 125.3(a) (emphasis added); *see also* Memorandum from Radhika Fox, Assistant Administrator, U.S. Env't Prot. Agency (EPA), *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* 3 (Dec. 5, 2022), https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf [hereinafter EPA PFAS NPDES Guidance].
[52] EPA, TECHNICAL ANALYSIS FOR DETERMINATION OF TECHNOLOGY-BASED PERMIT LIMITS FOR THE GUAYNABO DRINKING WATER TREATMENT FACILITY NPDES NUMBER PR0022438 2-1 (Mar. 23, 2009), https://bit.ly/3hLMzAY [hereinafter Guaynabo TBEL Analysis].
[53] 33 U.S.C. § 1314(b).
[54] 40 C.F.R. § 125.3; *see also* 33 U.S.C. § 1342(a)(1)(B); 9 VAC 25-31-210, 220; EPA NPDES PFAS Guidance, *supra* note 51, at 3–4.

consider appropriate technology for the category of point source and any unique factors related to the applicant.[55]

In its December 2022 guidance, EPA confirmed that technology-based limits should be calculated for PFAS.[56] In the case of PFAS pollution, effective treatment technology is available to remove PFAS from wastewater discharges. At the Chemours Fayetteville Works facility in North Carolina, the Chemours Company reduced PFAS concentrations from as high as 345,000 ppt in a creek contaminated by groundwater beneath the facility to nearly nondetectable levels by installing treatment technology.[57] And a 2018 report from the Interstate Technology Regulatory Council found that granular activated carbon (GAC) has been used to remove PFAS "for over 15 years at more than 45 military installations, as well as several industrial sites and publicly owned treatment works."[58]

The permitting documents released for review contain no indication that DEQ has undertaken case-by-case analysis to assess technology-based effluent limits for PFAS at the Northside WWTP. DEQ's failure to assess technology-based limits is contrary to the Clean Water Act.

B. DEQ must assess water quality-based effluent limits for PFAS.

As EPA has explained, technology-based limits "are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and water quality-based effluent limitations."[59] If the Northside WWTP's discharge would violate water quality standards even with technology-based effluent limits for PFAS in place, then water quality-based effluent limits must also be included in the permit.[60]

The State Water Control Law requires that VPDES permits include conditions to "achieve water quality standards established under the law and [section] 303 of the [Clean Water Act], *including state narrative criteria for water quality*."[61] The obligation to create water quality-based limits "may not be waived," and requires DEQ to incorporate a permit limit protective of water quality standards regardless of "treatability" or analytical method detection levels.[62]

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[55] *See* Guaynabo TBEL Analysis, *supra* note 52, at 2-1 (applying 40 C.F.R. § 125.3).
[56] EPA NPDES PFAS Guidance, *supra* note 51, at 2.
[57] *See* Chemours Outfall 003, NPDES NO. NC0089915 Discharge Monitoring Reports (2020-2022), available at https://perma.cc/8YND-XT5M; Ted Schoenberg, Parsons, Old Outfall 002 GAC Pilot Study Interim Results Report, Chemours Fayetteville, North Carolina Facility, at 4–5 (Aug. 5, 2019), https://perma.cc/DU3Y-25AW; Parsons, Old Outfall 002 Surface Water Sampling Results (Sept. 30, 2019) at Table 1, https://perma.cc/6BYQ-RNXZ.
[58] INTERSTATE TECH. REGULATORY COUNCIL, PFAS—PER- AND POLYFLUOROALKYL SUBSTANCES: 12 TREATMENT TECHNOLOGIES, https://pfas-1.itrcweb.org/12-treatment-technologies/ (last updated Sept. 2023) (citing E. Forrester and J. Matthis, *Treatment Solutions for PFAS Removal: Evaluating Total Cost* (2018)).
[59] EPA, NPDES PERMIT WRITERS' MANUAL 5-1 (Sept. 2010), https://bit.ly/2YeeAt3.
[60] 40 C.F.R. §§ 122.44(d)(1)(i), 125.3(f); *see also* 33 U.S.C. § 1311(b)(1)(C); 9 VAC 25-31-220(D)(1)(a) (stating that effluent "limitations must control all pollutants or pollutant parameters . . . which the board determines are or may be discharged at a level which will cause, or have the reasonable potential to cause, or contribute to an excursion above any Virginia water quality standard, including Virginia narrative criteria for water quality" in VPDES permits).
[61] 9 VAC 25-31-220(D)(1) (emphasis added).
[62] EPA, CENTRAL TENETS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING PROGRAM 3, https://www.epa.gov/sites/default/files/2015-09/documents/tenets.pdf.

Importantly, monitoring or data collection requirements "may not be substituted" for water quality-based permit limits.[63] EPA guidance confirms that compliance with state water quality standards is relevant when assessing PFAS discharges and directs that a "permit writer should apply" numeric or narrative water quality standards for PFAS in their permitting decisions.[64]

Although Virginia does not have numeric water quality standards for PFAS, state waters must "be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life" under Virginia's general water quality criteria.[65] Specific substances to be controlled include "toxic substances (including those which bioaccumulate)."[66] Virginia's surface water criteria also require that instream water quality conditions "not be acutely or chronically toxic except as allowed in 9 VAC 25-260-20 B (mixing zones)."[67] It is evident that, even in small concentrations, PFAS are detrimental to human, animal, and aquatic life, and that they bioaccumulate in organisms.

If PFAS in the Northside WWTP's effluent would not be controlled by technology-based effluent limits, DEQ must also apply appropriate water quality-based effluent limits to ensure that the treatment plant's discharges do not violate Virginia's water quality standards.

III. DEQ must incorporate PFAS conditions recommended by EPA in the Northside WWTP VPDES permit.

A. DEQ must require quarterly monitoring for PFAS.

EPA recommended that the Northside WWTP permit include a requirement for quarterly effluent, influent, and biosolids monitoring using method 1633 and method 1621[68] and 40 CFR 136 does not prohibit DEQ is from requiring the use of these methods.[69] North Carolina has already implemented quarterly PFAS monitoring requirements using these methods in permits of known or suspected PFAS dischargers. (Attachment 1, Special Condition A.(10.)). DEQ must implement similar monitoring requirements in the Northside WWTP permit.

B. DEQ must include pretreatment requirements related to PFAS.

DEQ also has tools and obligations under the Clean Water Act's pretreatment program to control PFAS pollution.[70] The pretreatment program governs the discharge of industrial wastewater to treatment plants and is intended to place the burden of treating polluted discharges on the entity that creates the pollution, rather than on the public. By setting PFAS limits and

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[63] *Id.*
[64] EPA PFAS NPDES Guidance, *supra* note 51, at 3–4.
[65] 9 VAC 25-260-20(A).
[66] *Id.*
[67] 9 VAC 25-260-140(A).
[68] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 3.
[69] *See e.g.*, U.S. Env't Prot. Agency, *Approved CWA Test Methods: Questions and Answers* (last updated Oct. 18, 2023), https://www.epa.gov/cwa-methods/approved-cwa-test-methods-questions-and-answers; U.S. Env't Prot. Agency, *CWA Analytical Methods for Per- and Polyfluorinated Alkyl Substances (PFAS)* (last updated Apr. 18, 2024), https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas.
[70] 40 C.F.R. § 403.8.

conditions in the Northside WWTP VPDES permit, DEQ can ensure that the Northside WWTP properly regulates its industrial users so it does not release PFAS into the environment.

Federal and Virginia pretreatment regulations include a general prohibition against users introducing any pollutant into a publicly owned treatment works that would "cause pass through, interference or violation of water quality standards," and this general prohibition applies "whether or not the user is subject to other national pretreatment standards or any national, state, or local pretreatment requirements."[71] "Pass through" occurs when an industrial discharge causes the treatment plant to violate its own NPDES permit,[72] including standard conditions such as the requirement that permittees "take all reasonable steps to minimize or prevent any discharge or sludge use" that has a "reasonable likelihood of adversely affecting human health or the environment."[73] "Interference" occurs when a discharge disrupts the treatment plant's operation or its sludge use or disposal and results a violation the treatment plant's NPDES permit or other applicable laws.[74]

Most wastewater treatment techniques do not effectively remove PFAS,[75] and some wastewater treatment process can even degrade and transform PFAS precursors into detectable PFAS.[76] Violating the prohibitions on pass through or interference constitutes a violation of the Clean Water Act's pretreatment standards and requirements.[77]

EPA specifically recommended that DEQ incorporate PFAS-related requirements into Northside WWTP's pretreatment program.[78] EPA's recommendation is also consistent with DEQ's own risk-based strategy to identify PFAS sources, which includes "requir[ing] municipalities to survey their industrial users on past and current use of PFAS compounds," "requir[ing] municipal Publicly Owned Treatment Works to conduct indirect discharge monitoring," and "requir[ing] at least semi annual monitoring of municipal and industrial VPDES permittees as permits come up for renewal."[79] North Carolina has also already implemented these conditions into WWTP NPDES permits. (Attachment 1, Special Condition A.(10.)).

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[71] 9 VAC 25-31-770(A)(1); *see* 40 C.F.R. § 403.5.

[72] Pass through is defined as "a discharge which exits the [treatment works] into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the [treatment works'] NPDES permit (including an increase in the magnitude or duration of a violation)." 40 C.F.R. § 403.3(p).

[73] *Id.* § 122.41(d).

[74] *Id.* § 403.3(k).

[75] Hamid et al., *Review of the Fate and Transformation of Per- and Polyfluoroalkyl Substances (PFASs) in Landfills,* 235 ENV'T POLLUTION 74, 75 (2018).

[76] VA. WATER RES. RESEARCH CTR., EMERGING CONTAMINANTS THE WATERS OF VIRGINIA: 2019 REPORT OF THE ACADEMIC ADVISORY COMMITTEE FOR VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY 17–19 (Oct. 2019), https://bit.ly/3fgs6Cc; Eriksson et al., *Contribution of Precursor Compounds to the Release of Per- and Polyfluoroalkyl Substances (PFASs) from Waste Water Treatment Plants (WWTPs)*, 61 J. ENV'T SCI. 80 (CHINA) (2017).

[77] 40 C.F.R. § 403.5(a)(1).

[78] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 3-4.

[79] Va. Dep't of Health & Va. Dep't of Env't Quality, *PFAS 101 – A Primer on PFAS for Public Health Professionals* 106 (May 5, 2023), https://www.vdh.virginia.gov/content/uploads/sites/8/2023/05/VDH-PFAS-101-PPT_Combined_FINAL-4-25.pdf.

i. Industrial user inventory

Under the pretreatment requirements, treatment plants are required to know what waste they receive from industrial users.[80] EPA has confirmed that this requirement extends to pollutants that are not conventional or listed as toxic, like PFAS.[81] Treatment plants must instruct their industrial users to identify their pollutants in an industrial waste survey[82] and to disclose "effluent data," including for internal waste streams, necessary to evaluate pollution controls when applying for a pretreatment permit.[83] Significant industrial users are further required to provide information on "[p]rincipal products and raw materials . . . that affect or contribute to the [significant industrial user's] discharge."[84]

EPA explicitly recommended that the Northside WWTP VPDES "permit [include] the requirement to conduct a survey to identify and locate all possible [industrial users] that might be subject to the pretreatment program and identify the character and volume of pollutants contributing to the POTW by the [industrial users]" and that the inventory "include all IUs in industry categories expected or suspected of PFAS discharges."[85]

ii. Best management practices & pollution prevention

Once sources are identified, EPA recommended that Northside WWTP work to develop local limits for PFAS or impose best management practices to control the pollution at the source.[86] Other states are already implementing these requirements as part of their NPDES programs. North Carolina NPDES permits, for example, require wastewater treatment plants to use their pretreatment authority to identify significant industrial users in industry categories known or suspected to discharge PFAS, require quarterly monitoring for PFAS, update their industrial wastewater surveys to account for PFAS discharges, and implement best management practices to reduce PFAS entering the wastewater treatment facility.[87]

iii. *Pretreatment conditions in the Northside WWTP VPDES permit*

Consistent with EPA's recommendations and DEQ's own risk-based strategy, DEQ must include conditions in the Northside WWTP VPDES permit to require the treatment plant to: (1) update its industrial user survey and determine all industrial sources of PFAS, (2) implement regular PFAS monitoring requirements using method 1633 and method 1621, and (3) control any industrial sources of PFAS through its pretreatment program,[88] including by controlling contributions from industrial users through "[p]ermit, order, or other similar means" and the

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[80] *Id.* § 403.8(f)(2).
[81] *See* EPA, PFAS STRATEGIC ROADMAP: EPA'S COMMITMENTS TO ACTION 2021-2024 14 (Oct. 2021), https://perma.cc/LK4U-RLBH.
[82] 40 C.F.R. § 403.8(f)(2)(ii); EPA, INTRODUCTION TO THE NATIONAL PRETREATMENT PROGRAM 4-3 (Jun. 2011), https://www.epa.gov/sites/default/files/2015-10/documents/pretreatment_program_intro_2011.pdf.
[83] EPA, INDUSTRIAL USER PERMITTING GUIDANCE MANUAL at 4-2 to 4-3 (2012), https://www.epa.gov/sites/default/files/2015-10/documents/industrial_user_permitting_manual_full.pdf.
[84] 40 C.F.R. § 122.21(j)(6)(ii)(C).
[85] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 3-4.
[86] *Id.*
[87] Attachment 1, Special Condition A.(10.).
[88] 40 C.F.R. § 403.8(f)(1).

application of effluent limits and/or local limits,[89] requiring the installation of technology by industrial users,[90] or other means under the Clean Water Act pretreatment program.

IV. DEQ cannot rely on an upcoming "PFAS assessment" process to satisfy its obligations under the Clean Water Act.

In DEQ's response to EPA's recommendations on the Northside WWTP VPDES permit, DEQ asserts that it will only "incorporate PFAS provisions in accordance with DEQs (sic) implementation program once developed."[91] DEQ, however, already has the authority under the Clean Water Act to take all of the actions outlined in this letter. It is not clear what "PFAS implementation program" this response refers to, but to the extent it is referencing the "PFAS assessment" process prescribed by Chapters 316 and 343 of the 2024 Virginia Acts of Assembly (Attachment 2)—which is focused on *identifying* sources of PFAS pollution in drinking water sources, not controlling them—those actions will not satisfy DEQ's obligations to control PFAS pollution under the Clean Water Act.

V. Conclusion

DEQ must evaluate whether technology- and water quality-based effluent limits are needed in the Northside WWTP VPDES permit to control PFAS discharges and include requirements for quarterly PFAS monitoring. The Northside WWTP VPDES permit should also require the treatment plant to amend its pretreatment program to update its industrial user survey to determine all industrial sources of PFAS, implement regular PFAS monitoring requirements for industrial users, and control through its pretreatment program any industrial sources of PFAS that would flow through the treatment plant. Finally, due to the late disclosure of information related to the discharge of PFAS from the treatment plant, we urge DEQ to extend the comment period and hold a public hearing for this draft permit to give the public the opportunity to provide meaningful input.

Sincerely,

Carroll Courtenay
Katherine Coffey
Southern Environmental Law Center

Tiffany Haworth
Dan River Basin Association

David Sligh
Wild Virginia

[89] *Id.* §§ 403.8(f)(1)(iii); 403.5(d).
[90] *Id.* § 403.8(f)(1)(iv).
[91] Va. Dep't of Env't Quality, *VPDES Permit VA0060593 Danville – Northside WWTP Reissuance 2024*, app. D. at PDF pg. 5.

cc: Kathryn Perszyk, Director, Land Protection and Revitalization Division, DEQ, Kathryn.Perszyk@deq.virginia.gov

Jennifer Fulton, Acting Chief, Clean Water Branch, EPA Mid-Atlantic Region, fulton.jennifer@epa.gov

Attachment 1: N.C. Dep't of Env't Quality, Final NPDES Permit Renewal for McAlpine Creek Wastewater Management Facility (Oct. 27, 2023)

Attachment 2: Chapters 316 and 343 of the 2024 Virginia Acts of Assembly

Appendix K

Letter from Jamie Bain Hedges, Fairfax Water, to Celeste DuFour, DEQ, *Comments on Draft VPDES Permit No. VA008954, MWAA Washington Dulles International Airport* (Sept. 3, 2024).

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September 3, 2024

Celeste DuFour
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Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193
Celeste.DuFour@deq.virginia.gov

Re: Comments on Draft VPDES Permit No. VA008954, MWAA Washington Dulles International Airport

Dear Ms. DuFour:

Fairfax Water appreciates the opportunity to comment on the Draft Permit No. VA0089541 for the MWAA-Washington Dulles International Airport (Dulles Airport). Discharges from Dulles Airport ultimately flow to the Occoquan Reservoir and the Potomac River, the sources of supply for Fairfax Water and the 2.2 million residents and thousands of businesses in Northern Virginia who rely upon us for high quality drinking water.

Safe drinking water is essential to public health and safety and to economic development within the Commonwealth of Virginia. As Virginia's largest water utility, Fairfax Water serves nearly 1 in 4 Virginians in the communities of Fairfax, Loudoun, and Prince William Counties, the Cities of Alexandria, Fairfax, and Falls Church, the Towns of Herndon and Vienna, Dulles Airport and Fort Belvoir.

Background

Industrial stormwater is a significant source of pollution nationally, whereby rainfall or snowmelt carries pollutants from industrial sites to receiving streams. Fairfax Water's Potomac intake is located approximately 12 miles downstream from Dulles Airport's Horsepen Creek

outfall. The Occoquan Reservoir is the downstream recipient of Dulles Airport's stormwater discharges to Dead Run and Cub Run, tributaries to Bull Run.

Fairfax Water and MWAA have collaborated over many years through this permit process to mitigate the adverse effects of airport stormwater pollutants, such as deicing agents, on drinking water. The release of per- and polyfluoroalkyl substances (PFAS) into the environment are now a major challenge for airports and water suppliers.

Certain PFAS have been detected in the Occoquan Reservoir supply to Fairfax Water's Griffith Water Treatment Plant (Griffith) at concentrations above the maximum contaminant level (MCL) recently established by the United States Environmental Protection Agency (EPA). Fairfax Water recently completed a bench-scale treatment study for Griffith, which included development of planning-level capital and operating cost estimates for PFAS treatment. Capital infrastructure costs for PFAS treatment at Griffith are currently estimated to exceed $300 million, with associated annual operating costs of $20 million. Unless PFAS pollution is controlled at the source, the drinking water rate-paying public will be responsible for bearing the cost of PFAS removal.

Watershed monitoring conducted by both Virginia Department of Environmental Quality (DEQ) and the Occoquan Watershed Monitoring Laboratory (OWML) under an Occoquan watershed PFAS monitoring program funded by Fairfax Water have detected PFAS at concentrations exceeding the drinking water MCL in subwatersheds that are influenced by Dulles Airport discharges. On May 9, 2022, DEQ sampling in Cub Run at Route 50, downstream of Dulles Airport, measured 50.7 parts per trillion (ppt) of PFOS, and 305 ppt of 6:2 FTS, a known ingredient in Aqueous Film-Forming Foam (AFFF) used to fight fires [1]. This PFOS level is more than 12 times the drinking water MCL of 4 ppt. Similar results have been obtained during monthly sampling conducted this year by OWML at this location.

Requested Permit Changes

Fairfax Water has identified several important requirements that should be included in the discharge permit for this facility:

1. **PFAS Monitoring -** Under 40 CFR§ 122.48, Virginia DEQ must include in discharge permits, monitoring of a "type, interval and frequency sufficient to yield data representative" of the Dulles Airport discharge. Airports are an industrial category known or suspected by EPA to discharge PFAS [2]. In order to yield data representative of the Dulles Airport discharge, monitoring for PFAS is needed. We request DEQ require quarterly PFAS monitoring, using EPA method 1633, for at least one-year, at the outfalls draining to the Bull Run (Occoquan) and Broad Run (Potomac) watersheds.

2. **PFAS Discharge Limits -** Inclusion of discharge permit limits (in Part 1.A) equivalent to the national primary drinking water MCLs for the six regulated PFAS compounds, if PFAS is detected above the MCLs during the one-year monitoring period.

3. **PFAS Best Management Practices (BMPs) -** Inclusion of PFAS BMPs to minimize and mitigate the impacts of any spills. According to federal databases, the National Response Center received reports of a June 24, 2017, equipment malfunction of the fire suppression system at one of the hangers at Dulles Airport, resulting in the release of 600 gallons of AFFF [3].

   The permit should include requirements to:
   - Prohibit the use of AFFF other than for actual firefighting.
   - Require immediate clean-up in all situations where AFFFs have been used, including diversions and other measures that prevent discharges to storm sewer systems that ultimately flow to the Occoquan and Potomac.
   - Minimize accidental AFFF discharge by optimizing operations and good housekeeping practices.
   - Decontaminate or replace equipment where PFAS products have historically been used to prevent discharge of legacy PFAS following the implementation of product substitution.

   Within six months of the effective date of the permit, the Permittee should be required to:
   - Conduct a PFAS pollution prevention/source reduction evaluation.
   - Conduct a review of whether the facility has historically used any products containing PFAS on the Dulles Airport property, whether use of those products or legacy contamination reasonably can be reduced or eliminated, and a plan to implement those steps. This report should be submitted to DEQ within one year.
   - Identify any areas where further remedial investigation may be appropriate to prevent discharge to waters of the State that could impact use of the Occoquan Reservoir and Potomac River as drinking water sources.
   - Submit an annual status report to the Virginia DEQ, which includes a list of potential PFAS sources, a summary of actions taken to reduce or eliminate PFAS, and any applicable source monitoring results.

4. **PFAS- Free Fire-Fighting Foam -** According to the draft permit attachments, 4,500 gallons of AFFF is stored at Dulles Airport. The firefighting foam for Dulles Airport specified in Metropolitan Washington Airports Authority Contract #1-18-C117 contains 6% pure AFFF concentrate [4]. In January 2023, the Department of Defense (DoD) published a fluorine free foam (F3) military specification (MILSPEC) [5]. Federal Aviation Administration (FAA) considers foams on the Qualified Products meeting the MILSPEC standard acceptable to meet regulatory requirements of FAA Part 139, which applies to large airports such as Dulles Airport. Further, the EPA has recommended eliminating PFOS- and PFOA-containing AFFFs as a BMP for industrial facilities with potential to impact water sources. Given the well-documented impacts of AFFF containing PFAS, that runoff from Dulles Airport flows to the Occoquan Reservoir and

Potomac Rivers drinking water supply sources, and measured PFOA and PFOS concentrations Occoquan watershed that exceed the EPA's drinking water MCL, we request that an alternatives evaluation of fluorine-free firefighting foams be performed by MWAA. The alternatives evaluation should be performed within six months of the effective date of the permit and submitted to DEQ.

5. **Reopener Clause** - We urge the inclusion of a PFAS-specific reopener clause in this permit. The reopener clauses (Part I.E) and severability clause (Part II.Z) may not be adequate to address changing scientific, regulatory, and policy developments specific to PFAS that may require changes to the permit in a timely manner.

6. **50 mg/L Glycol Monitoring Threshold** - Previous monitoring has shown elevated levels of glycol from deicing operations at Dulles Airport into tributaries to the Potomac River and the Occoquan Reservoir. Glycol in source water causes taste and odor issues for Fairfax Water's drinking water supply. In the draft permit, Virginia DEQ has proposed relaxing the threshold for glycol monitoring from 50 mg/l to 100 mg/l. The 50 mg/L threshold was included in the current Dulles Airport permit to provide early notice to Fairfax Water following the winter weather glycol applications so that additional treatment measures can be implemented at the Corbalis Water Treatment Plant. We request retaining the provision for winter weather glycol monitoring until concentrations reduce to below 50 mg/l.

7. **Winter Weather 7-day Glycol Monitoring** - In winter weather events, glycol can be frozen within ice for several days and then flushed into receiving streams with rain or warming temperatures. For this reason, we request compliance monitoring for glycol be required until concentrations are reduced below the monitoring threshold for 7 days instead of 3 days.

8. **Additional Total Organic Carbon (TOC) Analyzers** - We request that new TOC analyzers be added to Dead Run outfall location #025 and Cub Run outfall locations SS002 and SS003 because monitoring data has shown elevated levels of glycol in the Cub Run tributaries within the Occoquan Watershed. TOC analyzers provide surrogate monitoring for organic substances like propylene glycol and fuel oil. Previously, the Dulles Airport TOC analyzers at the Horsepen Outfall have not consistently worked during cold weather. To address these concerns, we request the permit include a requirement for maintenance and backup power to ensure proper operation of all TOC analyzers. Further, we request a requirement for the real time data from TOC analyzers be made available to Fairfax Water.

Fairfax Water firmly believes that a multipronged approach to addressing PFAS and other contaminants at the source is the most effective and cost effective way to reduce pollution.

In calling for PFAS monitoring and appropriate limits, our comments are aligned with EPA Region 3 comments included in this draft fact sheet package and with EPA's December 2022 guidance to use Clean Water Act permitting to protect against PFAS [6]. We urge DEQ to leverage VPDES permitting to reduce PFAS discharges to our drinking water sources by monitoring discharges near suspected sources and imposing appropriate limits.

We respectfully ask that you respond to each of our comments and requests for changes with the issuance of the final permit. Please contact Greg Prelewicz, Director, Planning and Water Resources at 703-289-6318 (or gprelewicz@fairfaxwater.org) if you have any questions or need any additional information. Thank you for considering our requested changes.

Sincerely,

Jamie Bain Hedges, P.E.
General Manager/CEO

References:

[1]: https://www.deq.virginia.gov/topics-of-interest/per-and-polyfluoroalkyl-substances-pfas
[2] *PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024* https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024
[3]: https://echo.epa.gov/system/files/Initial_Calls_Reported_to_NRC_Indicating_AFFF_Usage_02-23-2022.xlsx
[4]: https://www.mwaa.com/business/1-18-c117-firefighting-foam-concentrates-national-and-dulles-airports
[5]: https://www.acq.osd.mil/eie/eer/ecc/pfas/news/2023/First-Qualified-Fluorine-Free-Foam_F3_Announced.html
[6]: *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf

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For a digital copy of the full report (including appendices), visit https://www.selc.org/resource/turn-off-the-tap-on-pfas/.