

July 17, 2023

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**Re: Southern Environmental Law Center Comments on NPDES Wastewater
Draft Permit NC0024571, Lumberton Wastewater Treatment Plant**

Dear Mr. Coco:

The Southern Environmental Law Center offers the following comments, on behalf of Winyah Rivers Alliance, regarding the draft renewal National Pollutant Discharge Elimination System (“NPDES”) Permit NC0024571, issued by the North Carolina Department of Environmental Quality (“the Department”) to the city of Lumberton for the operation of its wastewater treatment plant.¹ The city of Lumberton discharges wastewater into the Lumber River, a class C water, approximately 30 miles upstream of the North Carolina and South Carolina border.²

The Lumberton wastewater treatment plant discharges toxic per- or polyfluoroalkyl substances (“PFAS”) at extraordinarily high levels, documented as high as 11,300 parts per trillion (“ppt”).³ The city also likely discharges 1,4-dioxane. Despite the Department’s acknowledgment of such,⁴ it did not impose limits or conditions to control the town’s toxic pollution.⁵ As the U.S. Environmental Protection Agency (“EPA”) made clear in guidance issued last December, state permitting agencies should use their “existing authorit[y]” to control toxic chemical pollution, including PFAS, “to the fullest extent available under state and local law.”⁶ EPA’s PFAS NPDES Guidance highlights central tenets of the NPDES permitting program—

¹ N.C. Dep’t of Env’t Quality, Draft NPDES Permit NC0024571 (June 13, 2023) [hereinafter “Lumberton Draft Permit”]. We note that while the draft permit is dated June 13, 2023, the public was not notified about the draft until June 17, 2023. We submit these comments within 30 days of the public notice. 15A N.C. Admin. Code 2H.0109(a)(2); see also N.C. Dep’t of Env’t Quality, *Public Notices: Notice of Intent to Issue a NPDES Wastewater Permit NC0024571 Lumberton WWTP* (Jun. 17, 2023), <https://www.deq.nc.gov/news/events/notice-intent-issue-npdes-wastewater-permit-nc0024571-lumberton-wwtp> (explaining comments will be accepted until July 17, 2023).

² N.C. Dep’t of Env’t Quality, Draft Fact Sheet NPDES Permit No. NC0024571 (May 16, 2023), at 1 [hereinafter “Lumberton Draft Fact Sheet”].

³ GEL Laboratories LLC, NCDQ001, GEL Work Order: 572111 (Mar. 11, 2022), at PDF pg. 15–18, Attachment 1 [hereinafter “DEQ, Lumberton PFAS Sampling Results”].

⁴ Lumberton Draft Fact Sheet, *supra* note 2, at 8.

⁵ See Lumberton Draft Permit, *supra* note 1 at 3, 8.

⁶ Memorandum from Radhika Fox, Assistant Administrator, U.S. Env’t Prot. Agency, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* (December 5, 2022) (emphasis added) [hereinafter “EPA’s PFAS NPDES Guidance”], Attachment 2.

including effluent limitations and the pretreatment program—that are effective at controlling PFAS pollution.⁷ Those same tools can and should be used to control 1,4-dioxane. Because this draft permit does not impose effluent limits for these chemicals or require Lumberton to utilize its pretreatment program to control pollution flowing from its significant industrial users, it is unlawful, and it must be withdrawn and revised, as discussed below.

I. Lumberton discharges PFAS, a class of chemicals known to be harmful to human health and the environment.

Lumberton did not disclose that it discharges PFAS in its permit application materials,⁸ but prior sampling collected by the Department confirms the facility discharges the chemicals at concentrations exceeding 11,300 ppt.⁹

PFAS are a group of man-made chemicals manufactured and used broadly by industry since the 1940s.¹⁰ PFAS pose a significant threat to human health at extremely low concentrations. Two of the most studied PFAS—perfluorooctanoic acid (“PFOA”) and perfluorooctane sulfonate (“PFOS”)—are bioaccumulative and highly persistent in humans.¹¹ PFOA and PFOS have been shown to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, obesity, decreased immune response to vaccines, reduced hormone levels, delayed puberty, decreased fertility, and lower birth weight and size.¹² Because of its impacts on the immune system, PFAS can also exacerbate the effects of Covid-19.¹³ Studies show that exposure to mixtures of different PFAS can worsen these health effects.¹⁴ Given these harms, EPA in June

⁷ *Id.* at 3–4.

⁸ See generally City of Lumberton, NPDES Permit Renewal Application Permit # NC0024571 (Nov. 2, 2021) [hereinafter “Lumberton Permit Application”]; see also Lumberton Draft Fact Sheet, *supra* note 2, at 8, PDF pg. 12.

⁹ DEQ, Lumberton PFAS Sampling Results, *supra* note 3, at PDF pg. 15–18.

¹⁰ Lifetime Drinking Water Health Advisories for Four Perfluoroalkyl Substances, 87 Fed. Reg. 36,848, 36,849 (June 21, 2022); *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas> (last visited July 13, 2023).

¹¹ 87 Fed. Reg. at 36,849; U.S. Env’t Prot. Agency, Interim Drinking Water Health Advisory: Perfluorooctanoic Acid (PFOA) CASRN 335-67-1 (June 2022), at 3–4, available at <https://www.epa.gov/system/files/documents/2022-06/interim-pfoa-2022.pdf>; U.S. Env’t Prot. Agency, Interim Drinking Water Health Advisory: Perfluorooctane Sulfonic Acid (PFOS) CASRN 1763-23-1 (June 2022), at 3–4, available at <https://www.epa.gov/system/files/documents/2022-06/interim-pfos-2022.pdf>.

¹² Arlene Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, 123 ENV’T. HEALTH PERSP. 5, A 107 (May 2015); U.S. Env’t Prot. Agency, Drinking Water Health Advisories for PFAS: Fact Sheet for Communities, at 1–2 (June 2022), available at <https://www.epa.gov/system/files/documents/2022-06/drinking-water-ha-pfas-factsheet-communities.pdf>; Nathan J. Cohen, et al., *Exposure to Perfluoroalkyl Substances and Women’s Fertility Outcomes in a Singaporean Population – Based Preconception Cohort*, 873 Sci of The Total Env’t 162267 (May 2023).

¹³ See Lauren Brown, *Insight: PFAS, Covid-19, and Immune Response—Connecting the Dots*, BLOOMBERG LAW (July 13, 2020, 4:00 AM), <https://news.bloomberglaw.com/environment-and-energy/insight-pfas-covid-19-and-immune-response-connecting-the-dots?context=article-related>.

¹⁴ Emma V. Preston et al., *Prenatal Exposure to Per- and Polyfluoroalkyl Substances and Maternal and Neonatal Thyroid Function in the Project Viva Cohort: A Mixtures Approach*, 139 ENV’T INT’L 1 (2020), <https://perma.cc/DJK3-87SN>.

2022 established interim updated lifetime health advisories for PFOA and PFOS in drinking water of 0.004 ppt and 0.02 ppt, respectively.¹⁵

Epidemiological studies show that many of the negative health outcomes associated with PFOA and PFOS can result from exposure to other PFAS, including, but not limited to, perfluorohexane sulfonic acid (“PFHxS”),¹⁶ perfluorobutanesulfonic acid (“PFBS”),¹⁷ perfluorobutanoic acid (“PFBA”),¹⁸ perfluorohexanoic acid (“PFHxA”),¹⁹ perfluorononanoic acid (“PFNA”),²⁰ perfluorodecanoic acid (“PFDA”),²¹ and hexafluoropropylene oxide dimer acid (“GenX Chemicals”).²²

While the harms to human health are extreme, PFAS are also detrimental to wildlife and the environment. The chemicals have been shown to cause damaging effects in fish,²³

¹⁵ 87 Fed. Reg. at 36,848–49.

¹⁶ U.S. Env’t Prot. Agency, DRAFT Systematic Review Protocol for the PFBA, PFHxA, PFHxS, PFNA, and PFDA (anionic and acid forms) IRIS Assessments (updated Jan. 2021), at 2-22, <https://perma.cc/32DL-AAQK> [hereinafter “DRAFT Toxicological Data PFBA, PFHxA, PFHxS, PFNA, and PFDA”] (explaining that studies indicate that PFHxS is associated with developmental, endocrine, hepatic, immune, reproductive, and urinary effects); Minn. Dep’t of Health, Toxicological Summary for: Perfluorohexane sulfonate (Aug. 2020), at 7 <https://perma.cc/4CWG-9UQB> (stating that exposure to PFHxS has been associated with detrimental endocrine and reproductive impacts).

¹⁷ U.S. Env’t Prot. Agency, Drinking Water Health Advisory: Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3) (June 2022), <https://perma.cc/X74T-EQ83> (explaining that literature confirms exposure to PFBS impacts to thyroid, reproductive systems, development, kidneys, liver, and lipid and lipoprotein homeostasis).

¹⁸ U.S. Env’t Prot. Agency, IRIS Toxicological Review of Perfluorobutanoic Acid (PFBA, CASRN 375-22-4) and Related Salts (Dec. 2022), at xii, <https://perma.cc/HD3F-78VJ> (explaining “available evidence indicates that developmental, thyroid, and liver effects in humans are likely caused by PFBA exposure in utero or during adulthood”).

¹⁹ DRAFT Toxicological Data PFBA, PFHxA, PFHxS, PFNA, and PFDA, *supra* note 16 at 2-22.

²⁰ *Id.*; N.J. Drinking Water Quality Inst., Health-Based Maximum Contaminant Level Support Document: Perfluorononanoic acid (“PFNA”), at 35 (June 22, 2015), <https://perma.cc/JU9Z-AG9T> (explaining exposure to PFNA has been associated with developmental issues, including neonatal mortality, and liver functions).

²¹ DRAFT Toxicological Data PFBA, PFHxA, PFHxS, PFNA, and PFDA, *supra* note 16 at 2-22.

²² U.S. Env’t Prot. Agency, Drinking Water Health Advisory: Hexafluoropropylene Oxide (HFPO) Dimer Acid (CASRN 13252-13-6) and HFPO Dimer Acid Ammonium Salt (CASRN 62037-80-3), Also Known as “GenX Chemicals” (June 2022), at vii, <https://perma.cc/9F6H-5BBY> (explaining that exposure to GenX increases harms to liver, reproductive, and developmental functions).

²³ 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 LifeCycle 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); Hagens 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).

amphibians,²⁴ reptiles,²⁵ mollusks,²⁶ and other aquatic invertebrates²⁷—resulting in developmental and reproductive impacts, behavioral changes, adverse effects to livers, disruption to endocrine systems, and weakened immune systems.²⁸

PFAS are extremely resistant to breaking down in the environment.²⁹ Once released, the chemicals can travel long distances and bioaccumulate in organisms.³⁰ PFAS have been found in fish tissue across all 48 continental states,³¹ and PFOS—a particularly harmful PFAS compound—is one of the most prominent PFAS found in freshwater fish.³² 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.³³ In fact, researchers conclude 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.”³⁴ On July 13, 2023, the North Carolina Department of Health and Human Services

²⁴ 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).

²⁵ 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).

²⁶ 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).

²⁷ Houde et al., *Endocrine-Disruption Potential of Perfluoroethylcyclohexane Sulfonate (PFECBS) 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).

²⁸ See *supra* notes 23–27.

²⁹ Carol F. Kwiatkowski, et al., *Scientific Basis for Managing PFAS as a Chemical Class*, ENV'T SCI. & TECH. LETTERS 8–9 (2020).

³⁰ See *What are PFAS?*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <https://www.atsdr.cdc.gov/pfas/health-effects/overview.html> (last visited Feb. 27, 2023); see also *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, *supra* note 10.

³¹ 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>.

³² *Id.* at 4.

³³ Patricia A. Fair et al., *Perfluoroalkyl 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 (April 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>.

³⁴ Barbo, *supra* note 31 at 9.

adopted fish consumption advisories in the Cape Fear River due to high levels of PFOS detected in many of the fish sampled.³⁵

In 2022, the Department investigated sources of PFAS in the Lumberton River and collected an effluent sample from the Lumberton wastewater treatment plant. That sampling confirmed that Lumberton discharges PFAS in total concentrations of 11,379.5 ppt.³⁶ Lumberton's discharge contains PFOA and PFOS at 77.7 ppt and 14.1 ppt, respectively.³⁷ The city's discharge also contains staggering levels of other PFAS including:

- 1,1,2,2-Tetrafluoro-2-(1,2,2,2-tetrafluoroethoxy) ethane sulfonic acid: 2,850 ppt,
- Nafion Byproduct 4 ("PFESA BP4"): 3,420 ppt,
- Nafion Byproduct 5 ("PFESA BP5"): 1,250 ppt,
- Perfluoropentanoic acid ("PFPeA"): 1,240 ppt,
- Perfluoropropanoic acid ("PPF Acid"): 829 ppt,
- R-EVE: 390 ppt,
- PFBA: 354 ppt,
- PFBS: 352 ppt,
- PFHxA: 203 ppt,
- Nafion Byproduct 2 ("PFESA BP2"): 91.1 ppt,
- Perfluoroheptanoic acid ("PFHpA"): 78.4 ppt,
- GenX: 48.4 ppt,
- Perfluoro-2-methoxyacetic acid ("PFMOAA"): 41.5 ppt,
- Nafion Byproduct 6 ("PFESA BP6"): 21.4 ppt.³⁸

While Lumberton did not disclose the presence of these chemicals in its discharge, it's likely (if not certain) that the discharges have continued. Lumberton receives wastewater from ten industrial users, many of which are known or suspected sources of PFAS pollution.

For example, Lumberton accepts landfill leachate from the Sampson County landfill at a rate of 58,179 gallons per day ("GPD").³⁹ The Department has already confirmed that the leachate from the Sampson County landfill contains high concentrations of many PFAS.⁴⁰ In sampling conducted in 2019, the Department recorded that the Sampson County landfill's leachate contains the following PFAS at their respective concentrations: PFOA (1,790 ppt), PFOS (222 ppt), GenX (10,800 ppt),⁴¹ PFPeA (86,400 ppt), PFBA (4,770 ppt), PFBS (7,530

³⁵ N.C. Dep't of Health and Human Servs., *NCDHHS Recommends Limiting Fish Consumption from the Middle and Lower Cape Fear River Due to Contamination With "Forever Chemicals"* (July 13, 2023), <https://www.ncdhhs.gov/news/press-releases/2023/07/13/ncdhhs-recommends-limiting-fish-consumption-middle-and-lower-cape-fear-river-due-contamination> [hereinafter "DHHS, PFAS Fish Consumption Advisories"].

³⁶ DEQ, Lumberton PFAS Sampling Results, *supra* note 3, at PDF pg. 15–18.

³⁷ *Id.*

³⁸ *Id.*

³⁹ Lumberton Permit Application, *supra* note 8, at PDF pg. 43.

⁴⁰ Hart & Hickman, Collective Study of PFAS and 1,4-Dioxane in Landfill Leachate and Estimated Influence on Wastewater Treatment Plant Facility Influent (Mar. 10, 2020), at Table 3, Attachment 3 [hereinafter "DEQ, Leachate PFAS Study"].

⁴¹ In the report, GenX is listed as "2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)." DEQ, Leachate PFAS Study, *supra* note 40, at Table 3. GenX is the trade name for this chemical.

ppt), PFHpA (5,520 ppt), and PFHxA (6,730 ppt), among others.⁴² Notably, many of these PFAS are the same reflected in Lumberton’s wastewater. While the Department’s landfill sampling was conducted in 2019, it is likely that the leachate flowing from the Sampson County landfill continues to contain the toxic chemicals. The landfill receives sludge from known and suspected sources of PFAS, including The Chemours Fayetteville Works FC⁴³ and DAK Americas,⁴⁴ two manufacturing facilities in Fayetteville, North Carolina. The sludge from these facilities settles into the landfill and contaminates the leachate that is collected and sent to municipal wastewater plants like Lumberton.

Lumberton also receives approximately 21,000 GPD of leachate from the Wake County South Wake Landfill.⁴⁵ Like the Sampson County landfill, the Department has already determined that leachate from the Wake County landfill contains high concentrations of PFAS, including PFOA (803 ppt), PFOS (82.3 ppt), PFBA (600 ppt), PFBS (1,420 ppt), PFHpA (241 ppt), PFHxS (237 ppt), PFHxA (2,940 ppt), and PFPeA (577 ppt). Many of these are also present in Lumberton’s wastewater.

Lumberton also receives leachate from suspected sources of PFAS. The Robeson County Solid Waste Management facility and Red Rock Disposal LLC, for instance, are two other landfills that could be sending PFAS to the Lumberton wastewater treatment plant. In a recent analysis, EPA determined that over 95 percent of the landfills studied have PFAS in their leachate,⁴⁶ suggesting that the same could be happening here. Additionally, textile manufacturers like Lumberton’s Kayser Roth have been found to use PFAS to enhance products’ resistance to water, oil, and heat.⁴⁷ Depending on the type of fabric production, PFAS can be added to the fibers themselves or sprayed onto the finished fabric to enhance performance and durability.⁴⁸ As a result, EPA has determined that PFAS “are present in wastewater discharges” from textile companies.⁴⁹

Similarly, pulp and paper companies, like Lumberton’s International Paper, are a known consumer of PFAS, which the industry uses to improve the water-resistant properties in paper products.⁵⁰ PFAS can be added to the pulp to improve the internal water-resistant properties of

⁴² DEQ, Leachate PFAS Study, *supra* note 40, at Table 3.

⁴³ Steve DeVane, *Sludge From Chemours Plant Dumped in Sampson County Landfill*, The Fayetteville Observer (Oct. 20, 2018), <https://www.fayobserver.com/story/news/2018/10/20/sludge-from-chemours-plant-dumped-in-sampson-county-landfill/9501213007/>.

⁴⁴ DAK Americas, Permit Renewal and Modification NPDES Permit No.: NC0003719 (May 3, 2022), at PDF pg. 14.

⁴⁵ Lumberton Permit Application, *supra* note 8, at PDF pg. 45.

⁴⁶ U.S. Env’t Prot. Agency, Effluent Guidelines Program Plan 15 (Jan. 2023), at 6-13, https://www.epa.gov/system/files/documents/2023-01/11143_ELG%20Plan%2015_508.pdf.

⁴⁷ U.S. Env’t Prot. Agency, Multi-Industry Per- and Polyfluoroalkyl Substances (PFAS) Study – 2021 Preliminary Report (Sept. 2021), at 8-3 to 8-4, https://www.epa.gov/system/files/documents/2021-09/multi-industry-pfas-study-preliminary-2021-report_508_2021.09.08.pdf [hereinafter “EPA, Preliminary Industry Report”].

⁴⁸ *Id.* at 8-1 to 8-2.

⁴⁹ *Id.* at 8-4.

⁵⁰ *Id.* at 7-1.

paper products,⁵¹ or added externally as a surface coating for packaging products.⁵² In addition to incorporation into manufactured products, fluoropolymers are used on equipment and production processes for their non-corrosive properties, from pulp mills and recovery operations to the paper machines themselves.⁵³ It is likely, therefore, that the wastewater being discharged by pulp and paper companies contains PFAS. Finally, chemical manufacturers, like Lumberton's Trinity Manufacturing, are suspected PFAS sources. EPA notes that this category:

includes a broad range of sectors, raw materials, and unit operations that may manufacture or use PFAS...some [organic chemicals, plastics, and synthetic fiber] facilities use PFAS feedstocks as polymerization or processing aids or in the production of...products.⁵⁴

Given these characteristics, EPA has found that this industry category is likely to generate wastewater containing long-chain and short-chain PFAS, including those that are well-studied and known to be harmful to humans.⁵⁵

Because Lumberton's industrial users fall into categories that are known or suspected sources of PFAS, it is nearly certain that the wastewater plant continues to discharge exceptionally high levels of PFAS into the Lumber River.

II. Lumberton likely discharges 1,4-dioxane, a cancer causing chemical.

In addition to PFAS, it is likely that Lumberton is discharging 1,4-dioxane, a probable human carcinogen. 1,4-dioxane is a clear, man-made chemical that is used in or created as a byproduct of many industrial processes.⁵⁶ The chemical is toxic to humans,⁵⁷ causing liver and kidney damage at incredibly low levels.⁵⁸ As a result of the harms caused by 1,4-dioxane, EPA established a drinking water health advisory with an associated lifetime cancer risk of one-in-

⁵¹ See Xenia Trier et al., *PFAS in Paper and Board for Food Contact: Options for Risk Management of Poly- and Perfluorinated Substances*, (Nordic Council of Ministers 2018); Gregory Glenn et al., *Per- and Polyfluoroalkyl Substances and their Alternatives in Paper Food Packaging*, *Comprehensive Reviews in Food Sci. and Food Safety* (2021) ("PFAS chemicals tend to coat the surfaces of fibers, including fibers located internally when internal sizing containing PFAS is used such as with molded pulp paper packaging.").

⁵² Andrew B. Lindstrom, Mark J. Strynar, and E. Laurence Libelo, *Polyfluorinated Compounds: Past, Present, and Future*, 45 *Env't. Sci. & Tech.* 7954 (2011).

⁵³ See Leon Magdzinski, *Fluoropolymer Use in the Pulp and Paper Industry*, *CORROSION* 99 (1999) (noting "fluoropolymer have become ubiquitous in the pulp and paper industry"); Rainer Lohmann et al., *Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?*, 54 *Env't. Sci. & Tech.* 12,820 (2020).

⁵⁴ EPA, Preliminary Industry Report, *supra* note 47, at 5-2.

⁵⁵ *Id.* at 5-8 to 5-9.

⁵⁶ U.S. Env't Prot. Agency, *Technical Fact Sheet – 1,4-Dioxane 1-2* (2017), Attachment 4 [hereinafter "EPA, *Technical Fact Sheet – 1,4-Dioxane*"].

⁵⁷ *Id.* at 1.

⁵⁸ *Id.*; U.S. Env't Prot. Agency, *Integrated Risk Information System, Chemical Assessment Summary: 1,4-dioxane 2* https://iris.epa.gov/static/pdfs/0326_summary.pdf (Aug. 11, 2010).

one-million at a concentration of 0.35 parts per billion (“ppb”).⁵⁹ The Department has similarly determined that 1,4-dioxane is toxic and poses a cancer risk at levels higher than 0.35 ppb.⁶⁰

At least two of Lumberton’s industrial users are known sources of 1,4-dioxane. Both the Sampson County and Wake County landfills send leachate laden with the harmful chemical to Lumberton’s wastewater treatment plant.⁶¹ Sampson County’s leachate contains 1,4-dioxane at concentrations exceeding 180 ppb, and Wake County’s leachate contains the chemical at concentrations reaching 30 ppb.⁶² Because 1,4-dioxane is used in a variety of manufacturing processes, it is possible that Lumberton’s other industrial users could be sending wastewater laden with the chemical to the treatment plant.

III. Lumberton’s pollution threatens the Lumber River and those who use it.

PFAS and 1,4-dioxane do not break down in the environment and are not removed by conventional treatment technology.⁶³ That means that if released upstream, these chemicals can, and will, pollute downstream waters and the communities that rely upon them. This has been confirmed before by various health crises in North Carolina. PFAS from the Chemours Fayetteville Works Facility has contaminated drinking water intakes nearly 80 miles downstream,⁶⁴ and 1,4-dioxane pollution from the city of Greensboro’s wastewater plant has reached the intake for Pittsboro approximately 50 miles downstream.⁶⁵ In addition to drinking water contamination, PFAS (specifically PFOS) discharged by a variety of sources has contaminated fish in the lower portions of the Cape Fear River so much that the state no longer considers them safe to consume.⁶⁶

Robeson County, where Lumberton discharges, suffers from some of the most extreme environmental injustice in North Carolina. The population in Robeson County is 42 percent

⁵⁹ *2018 Edition of the Drinking Water Standards and Health Advisories*, EPA OFFICE OF WATER 4 (2018), <https://www.epa.gov/system/files/documents/2022-01/dwtable2018.pdf>; EPA, *Technical Fact Sheet – 1,4-Dioxane*, *supra* note 56 at 3.

⁶⁰ N.C. Div. of Water Res., *1,4-dioxane Monitoring in the Cape Fear River Basin of North Carolina: An Ongoing Screening, Source Identification, and Abatement Verification Study* (2017), at 2, [hereinafter “NCDWR, *1,4-dioxane 2017 Report*”], available at https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/Dioxane/DioxaneYear2ReportWithMemo_20170222.pdf (affirming EPA’s conclusions); *see also* N.C. Dep’t of Env’t Quality, Div. Water Res., *Surface Water Quality Standards, Criteria & In-Stream Target Values* (2019) (stating that the one-in-one million cancer risk for 1,4-dioxane is 0.35 ppb), Attachment 5.

⁶¹ DEQ, *Leachate PFAS Study*, *supra* note 40, at Table 8.

⁶² *Id.*

⁶³ *See What are PFAS?*, *supra* note 30; *see also Our Current Understanding of the Human Health and Environmental Risks of PFAS*, *supra* note 10; EPA, *Technical Fact Sheet – 1,4-Dioxane*, *supra* note 56, at 1–2; *see also* Yuyin Tang and Xinwei Mao, *Recent Advances in 1,4-dioxane Removal Technologies for Water and Wastewater Treatment*, 15 WATER 1535 (2023), available at <https://www.mdpi.com/2073-4441/15/8/1535>.

⁶⁴ *See* Lisa Sorg, *Breaking: New Analysis Indicates That Toxics Were Present in Wilmington Drinking Water at Extreme Levels*, N.C. POLICY WATCH (Oct. 9, 2019), <https://pulse.ncpolicywatch.org/2019/10/09/breaking-new-analysis-indicates-that-toxics-were-present-in-wilmington-drinking-water-at-extreme-levels/#sthash.OtzCYiv3.dpbs>.

⁶⁵ *See* Lisa Sorg, *PW Special Report Part Two: Lax Local Regulation Allows Toxic Carcinogen to Infiltrate Drinking Water Across the Cape Fear River Basin*, N.C. POLICY WATCH (July 23, 2020), <https://ncpolicywatch.com/2020/07/23/pw-special-report-part-two-lax-local-regulation-allows-toxic-carcinogen-to-infiltrate-drinking-water-across-the-cape-fear-river-basin/>.

⁶⁶ DHHS, *PFAS Fish Consumption Advisories*, *supra* note 35.

Native American and 24 percent Black, and nearly 28 percent of community members live in poverty.⁶⁷ Unfortunately, the community is forced to experience water and air pollution from industrial hog and poultry operations, more than a dozen unlined dumps, fourteen hazardous waste sites, and multiple land clearing operations, all in addition to industrial and municipal sources of PFAS.⁶⁸ Moreover, because of the low lying terrain, the community experiences extreme flooding, exacerbating these pollution concerns as waters carry harmful contaminants onto people’s land and homes.⁶⁹

A large part of the Lumberton community depends on the Lumber River for recreational and subsistence fishing—many fish throughout the River multiple times a week, hoping to catch enough fish to eat. Indeed, the stretch of the Lumber River downstream of Lumberton’s discharge is a popular fishing and recreation spot. According to state resource officials, the Lumber River hosts an estimated 47 fish species, including bluegill, largemouth bass, and multiple types of sunfish.⁷⁰ The North Carolina Wildlife Resources Commission concludes that the Lumber River supports one of “the most diverse fish community among southeastern NC rivers...and offers unique angling opportunities.”⁷¹

As discussed above, Lumberton discharges PFAS at incredibly high concentrations. That pollution has been documented downstream— with instream concentrations reaching over 460 ppt.⁷² PFAS can bioaccumulate in animals, like fish.⁷³ Studies in the Cape Fear River have demonstrated that fish exposed to PFAS in our waterways have elevated concentrations in their tissue,⁷⁴ and nationally conducted research has confirmed that PFAS in fish tissue pose a significant threat to those who consume the fish they catch.⁷⁵ The levels are so concerning that North Carolina has adopted strict fish consumption advisories for fish caught in that river system.⁷⁶ The fish advisories highlight PFOS as the pollutant of concern, due to its ability to accumulate in large fish.⁷⁷ The state now recommends that women of childbearing age, pregnant women, nursing mothers, and children **should not eat** certain fish from this portion of the Cape Fear River, including striped bass, bluegill, largemouth bass, flathead catfish, and redear.⁷⁸ Other adults should not eat more than **one meal** made from these fish per year.⁷⁹ Lumberton’s discharge contains PFOS from its industrial users, and many of the fish susceptible to PFOS pollution in the Cape Fear are also present in the Lumber River. The Cape Fear fish consumption

⁶⁷ *Quick Facts: Robeson County, North Carolina*, U.S. CENSUS BUREAU (July 2022), <https://www.census.gov/quickfacts/robesoncountynorthcarolina>.

⁶⁸ See Lisa Sorg, *Newsline Special Report: A Community Inundated with Industrial Waste*, N.C. NEWSLINE (May 27, 2023), <https://ncnewsline.com/2023/05/27/newsline-special-report-a-community-inundated-with-industrial-waste/>.

⁶⁹ *Id.*

⁷⁰ Kyle T. Rachels & J. Michael Fisk, N.C. Wildlife Res. Comm’n, *Fisheries Resources of the Lumber River* (2021), at 4, <https://www.ncwildlife.org/Portals/0/Fishing/documents/2021/Fisheries-resources-of-the-Lumber-River.pdf?ver=UdDo8pc2IU2MFpBzate0Ng%3D%3D>.

⁷¹ *Id.* at 6.

⁷² DEQ, *Lumberton PFAS Sampling Results*, *supra* note 3, at 11–14.

⁷³ See, e.g., *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, *supra* note 10.

⁷⁴ Frannie Nilsen, N.C. Dep’t of Env’t Quality, *2022 Water and Fish Collection Project – Status Update* (Dec. 5, 2022), at slides 12–24, <https://www.deq.nc.gov/fish-water-status-updates-12522-saab-meeting/open>.

⁷⁵ Barbo, *supra* note 31 at 9.

⁷⁶ DHHS, *PFAS Fish Consumption Advisories*, *supra* note 35.

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

advisories make clear that sources other than Chemours can contribute to harmful levels of PFAS in fish. Lumberton’s discharges are thus particularly concerning for members of the Lumberton community who enjoy fishing in the River or rely on an abundance of healthy fish for recreational and subsistence purposes.

Moreover, the Lumber River is naturally and culturally significant, suggesting that any industrial pollution should be limited. Since 1998, the Lumber River downstream of Lumberton’s discharge has been federally designated as a Wild and Scenic River under Section 2(a) of the national Wild and Scenic Rivers Act.⁸⁰ This designation was created to “preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.”⁸¹ In particular, this portion of the River is designated to protect the waterway’s fish, wildlife, botanical, and recreational values.⁸² The Lumber River is also included in the North Carolina Natural and Scenic River System, meaning that the North Carolina General Assembly has deemed that the River “possess[es] outstanding natural, scenic, education, geological, recreational, historic, fish and wildlife, scientific and cultural values of great present and future benefit to the people.”⁸³ The Lumber River is also culturally important to the Lumbee Tribe, who have for decades relied on the River for food, water, and commerce. Finally, the stretch of River downstream of Lumberton’s discharge is also recognized as a “high priority” conservation area by the Southeast Conservation Adaptation Strategy, meaning conservation in this portion of the River would yield large impacts for plants and wildlife.⁸⁴ Industrial pollution, including PFAS and possible 1,4-dioxane from the wastewater treatment plant, threatens these important natural, cultural, and conservation values.

IV. The law requires the Department to analyze limits for municipal wastewater treatment plants and requires municipalities to control their industrial users.

In December 2022, EPA released guidance instructing state agencies how to address PFAS through existing NPDES authorities.⁸⁵ EPA’s guidance explained that foundational tools of the Clean Water Act could and should be used to control PFAS released into wastewater treatment plants like Lumberton’s. The same tools exist for 1,4-dioxane. Federal and state law, as well as EPA’s guidance, make clear that the Department must consider effluent limits and permit conditions to control Lumberton’s pollution.

The Clean Water Act requires permitting agencies to, at the very least, incorporate technology-based effluent limitations on the discharge of pollutants.⁸⁶ When EPA has not issued

⁸⁰ *Lumber River, North Carolina*, NAT’L WILD & RIVERS SYSTEM, <https://www.rivers.gov/rivers/lumber.php> (last visited July 13, 2023).

⁸¹ *About the WSR Act*, NAT’L WILD & SCENIC RIVERS SYSTEM, <https://www.rivers.gov/wsr-act.php> (last visited July 13, 2023).

⁸² *Lumber River, North Carolina*, *supra* note 80.

⁸³ N.C. Gen. Stat. § 143B-135.142.

⁸⁴ *The Southeast Conservation Blueprint*, Southeast Conservation Adaptation Strategy, <https://secassoutheast.org/blueprint> (last visited July 13, 2023).

⁸⁵ EPA’s PFAS NPDES Guidance, *supra* note 6.

⁸⁶ 40 C.F.R. § 125.3(a) (“Technology-based treatment requirements under section 301(b) of the Act represent the *minimum* level of control that *must* be imposed in a permit...” (emphasis added)); *see also* 33 U.S.C. § 1311; *see also* EPA’s PFAS NPDES Guidance, *supra* note 6 at 2.

a national effluent limitation guideline for a particular industry,⁸⁷ permitting agencies must implement technology-based effluent limits on a case-by-case basis using their “best professional judgment.”⁸⁸ North Carolina water quality laws further state that municipalities must be treated like an industrial discharger if an industrial user “significantly impact[s]” a municipal treatment system.⁸⁹ In this situation, the agency must consider technology-based effluent limits for the municipality, even if effluent limits and guidelines have not been published and adopted.⁹⁰

If technology-based limits are not enough to ensure compliance with water quality standards, the Department must include water quality-based effluent limits in the permit.⁹¹ North Carolina’s toxic substances standard protects the public from the harmful effects of toxic chemicals, like PFAS and 1,4-dioxane.⁹² For instance, the toxic substances standard mandates that the concentration of cancer-causing chemicals shall not result in “unacceptable health risks,” defined as “more than one case of cancer per one million people exposed.”⁹³ In order to comply with the Clean Water Act, therefore, the Department must analyze appropriate treatment technology and then determine if a discharger’s pollution has the “reasonable potential to cause, or contribute” to pollution at levels that could harm human health.⁹⁴

In addition to using effluent limits to control PFAS and 1,4-dioxane pollution, the Department has tools and obligations under the Clean Water Act’s pretreatment program.⁹⁵ The pretreatment program governs the discharge of industrial wastewater to wastewater treatment plants and is intended to place the burden of treating polluted discharges on the entity that creates the pollution, rather than on the taxpayers that support municipal wastewater plants.

Under the pretreatment requirements, municipalities are required to know what waste they receive from their “Industrial Users.”⁹⁶ EPA has confirmed that this requirement extends to pollutants that are not conventional or listed as toxic, like PFAS⁹⁷ and the Department has confirmed the same applies to 1,4-dioxane.⁹⁸ Municipalities like Lumberton must instruct their industries to identify their pollutants in an industrial waste survey⁹⁹ and then to apply for a pretreatment permit, by disclosing “effluent data,” including on internal waste streams, necessary to evaluate pollution controls.¹⁰⁰ Significant industrial users are further required to provide

⁸⁷ 33 U.S.C. § 1314(b).

⁸⁸ 40 C.F.R. § 125.3; *see also* 33 U.S.C. § 1342(a)(1)(B); 15A N.C. Admin. Code 2B.0406.

⁸⁹ 15A N.C. Admin. Code 2B.0406(a)(1).

⁹⁰ *Id.*

⁹¹ 40 C.F.R. § 122.44(d)(1)(i); *see also* 33 U.S.C. § 1311(b)(1)(C); 15A N.C. Admin. Code 2H.0112(c) (stating that Department must “reasonably ensure compliance with applicable water quality standards and regulations”).

⁹² 15A N.C. Admin. Code 2B.0208.

⁹³ *Id.* at 2B.0208(a)(2)(B).

⁹⁴ 40 C.F.R. § 122.44(d)(1)(i).

⁹⁵ *Id.* § 403.8.

⁹⁶ *Id.* § 403.8(f)(2).

⁹⁷ *See* U.S. Env’t Prot. Agency, PFAS Strategic Roadmap: EPA’s Commitments to Action 2021-2024 14 (Oct. 2021), available at <https://perma.cc/LK4U-RLBH>.

⁹⁸ *See, e.g.,* NCDWR, *1,4-dioxane 2017 Report*, *supra* note 60 at 5.

⁹⁹ 40 C.F.R. § 403.8(f)(2)(ii); U.S. Env’t Prot. Agency, Introduction to the National Pretreatment Program, at 4-3 (Jun. 2011), available at https://www.evansville.gov/egov/documents/1499266949_62063.pdf.

¹⁰⁰ U.S. Env’t Prot. Agency, Industrial User Permitting Guidance Manual (2012), at 4-2 to 4-3, available at https://www.epa.gov/sites/default/files/2015-10/documents/industrial_user_permitting_manual_full.pdf.

information on “[p]rincipal products and raw materials . . . that affect or contribute to the [significant industrial user’s] discharge.”¹⁰¹

A municipality that runs a wastewater plant is required to regulate its industries so that industries do not cause “pass through” or “interference” or otherwise violate pretreatment laws.¹⁰² “Pass through” is when an industrial discharge causes the wastewater plant to violate its own NPDES permit,¹⁰³ including standard conditions such as the one requiring permittees to “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.”¹⁰⁴ Industries are also not permitted to interfere with publicly-owned treatment works operations. “Interference” occurs when a discharge disrupts the treatment works’ operation or its sludge use or disposal and violates the facility’s NPDES permit or other applicable laws.¹⁰⁵ Violating the prohibitions on pass through or interference constitutes a violation of the Clean Water Act’s pretreatment standards and requirements.¹⁰⁶ Municipalities must also act “immediately and effectively to halt or prevent any discharge of pollutants to the [treatment works] which reasonably appears to present an imminent endangerment to the health or welfare of persons.”¹⁰⁷ Rules like these are further memorialized in cities’ sewer use ordinances, which lay out specific rules that industrial users must follow and steps the city must take if violations occur.

Municipalities like Lumberton have broad authority to control their industrial users so that municipally owned treatment works can comply with these pretreatment laws. They can “deny or condition” pollution permits for industries, control industrial pollution “through Permit, order or similar means,” and “require” “the installation of technology.”¹⁰⁸ Municipalities can also implement local limits to control industrial pollution sent to treatment works in the first place.¹⁰⁹ And in addition to the implementing effluent limits, the Department can ensure that municipalities comply with the Clean Water Act pretreatment program by including the appropriate permit conditions in the municipalities’ NPDES permit.

These rules are how the Clean Water Act “assures the public that [industrial] dischargers cannot contravene the [Clean Water Act’s] objectives of eliminating or at least minimizing discharges of toxic and other pollutants simply by discharging indirectly through [wastewater treatment plants] rather than directly to receiving waters.”¹¹⁰ The laws governing the program

¹⁰¹ 40 C.F.R. § 122.21(j)(6)(ii)(C).

¹⁰² *Id.* §§ 403.8(a), 403.5(a)(1).

¹⁰³ 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).” *Id.* § 403.3(p).

¹⁰⁴ *Id.* § 122.41(d).

¹⁰⁵ *Id.* § 403.3(k).

¹⁰⁶ 40 C.F.R. § 403.5(a)(1).

¹⁰⁷ *Id.* § 403.8(f)(1)(vi)(B).

¹⁰⁸ *Id.* § 403.8(f)(1).

¹⁰⁹ *Id.* § 403.5.

¹¹⁰ General Pretreatment Regulations for Existing and New Sources, 52 Fed. Reg. 1586, 1590 (Jan. 14, 1987) (codified at 40 C.F.R. § 403).

ensure that municipally owned wastewater plants do not become dumping grounds for uncontrolled industrial waste.

V. Lumberton’s industries are violating the law by releasing PFAS and 1,4-dioxane into the city’s sewer system.

Lumberton is responsible for ensuring that its industrial users comply with the Clean Water Act pretreatment program and the city’s own local sewer use ordinances. The Department, in turn, is responsible for ensuring that Lumberton does so and must incorporate the city’s pretreatment program “as enforceable conditions in the [wastewater treatment plant’s] NPDES permit.”¹¹¹ Because Lumberton’s industries are releasing PFAS and other harmful chemicals into the wastewater treatment plant, they are violating the city’s permit, the Clean Water Act pretreatment requirements and the city’s municipal law.

First, Lumberton’s industries are causing “pass through” and “interference” in violation of the city’s pretreatment program. As explained in Section IV above, “pass through” is when an industrial discharge causes the wastewater plant to violate its own NPDES permit. PFAS and 1,4-dioxane pollution from Lumberton’s industries cause “pass through” because the industries cause Lumberton to discharge chemicals that it is not permitted to release and cause the city to violate the standard conditions applicable to all NPDES permits, including the condition requiring permittees to “take all reasonable steps to prevent or minimize any discharge or sludge use” that has a “reasonable likelihood of adversely affecting human health or the environment.”¹¹²

Second, Lumberton land applies biosolids produced during the wastewater treatment process.¹¹³ Because these chemicals are not removed by conventional wastewater treatment technology, the chemicals can end up in the city’s sludge. Studies have shown that PFAS-contaminated sludge that is land applied can runoff into surface waters that supply drinking water for communities downstream and leach into groundwater which in turn threatens drinking water wells.¹¹⁴ The PFAS and 1,4-dioxane coming from the city’s industries are therefore likely

¹¹¹ U.S. Env’t Prot. Agency, NPDES Permit Writers’ Manual 9-10 (2010) [hereinafter “EPA NPDES Permit Writers’ Manual”], available at https://www.epa.gov/sites/default/files/2015-09/documents/pwm_2010.pdf; see also 40 C.F.R. § 403.8.

¹¹² 40 C.F.R. § 122.41(d).

¹¹³ Lumberton is permitted to land apply 2,000 dry tons of biosolids each year across more than 700 acres in Robeson County. See Letter from Daniel Smith, Div. of Water Res., to Corey Walkers, City of Lumberton (Sept. 14, 2020) (approving the modification to Lumberton’s non-discharge permit allowing for application of 2,000 dry tons per year); City of Lumberton, Residuals Land Application Modification for City of Lumberton (Aug. 7, 2020), at PDF pg. 88–89.

¹¹⁴ Andrew B. Lindstrom et al., *Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well Water in Decatur, Alabama, USA*, 45 ENV’T. SCI. & TECH. 8015 (2011); Jennifer G. Sepulvado et al., *Occurrence and Fate of Perfluorochemicals in Soil Following the Land Application of Municipal Biosolids*, 45 ENV’T. SCI. & TECH. (2011); Janine Kowalczyk et al., *Transfer of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) From Contaminated Feed Into Milk and Meat of Sheep: Pilot Study*, 63 ARCHIVES ENV’T CONTAMINATION & TOXICOLOGY 288 (2012); Holly Lee et al., *Fate of Polyfluoroalkyl Phosphate Diesters and Their Metabolites in Biosolids-Applied Soil: Biodegradation and Plant Uptake in Greenhouse and Field Experiments*, 48 ENV’T. SCI. & TECH. 340 (2014).

causing “interference,” by further interfering with the city’s sludge processes, use, and disposal practice.¹¹⁵

Lumberton’s failure to impose specific limits to prevent pass through and interference, to prohibit these illegal discharges, to enforce or remedy these continuing acts, and to revise and adopt local limits to prevent them from occurring, are violations of Lumberton’s NPDES Permit and federal law,¹¹⁶ resulting in high levels of toxic pollution released into the environment.

In addition, Lumberton’s industrial users are likely violating the city’s sewer use ordinance. Lumberton’s sewer use ordinance sets a general prohibition against “contribut[ing] or caus[ing] to be contributed into the POTW, directly or indirectly, any pollutant or wastewater which causes interference or pass through.”¹¹⁷ Specifically, Lumberton prohibits any industrial user from sending wastewater to the treatment plant that “caus[es] the treatment plant effluent to violate State Water Quality Standards for toxic substances as described in 15A NCAC 2B .0200.”¹¹⁸ Lumberton’s industrial users are likely causing the city to discharge PFAS and 1,4-dioxane in concentrations that violate the toxic substances standard, in further violation of local law. The city should “[t]ake appropriate actions”¹¹⁹ to address this pollution, including through issuing, modifying, or revoking pretreatment permits.¹²⁰

VI. The Department must control Lumberton’s PFAS and 1,4-dioxane pollution.

The Department is aware that Lumberton discharges PFAS and that at least two of its industrial users send 1,4-dioxane laden waste to the treatment plant.¹²¹ The Department did not, however, impose effluent limits or permit conditions to control the city’s pollution.¹²² Despite noting that the city “accepts influent wastewater from several industrial facilities that are potential sources of PFAS and 1,4-dioxane,” the agency only included monitoring requirements for these chemicals.¹²³ The law requires the Department to do more. And the state’s recent Cape Fear fish consumption advisories highlight the dire need to control all sources of pollution, like Lumberton, *before* our state’s fish resources are too toxic to consume.

a. The Department must require Lumberton to disclose its toxic pollution.

One major concern with the permitting materials for Lumberton’s draft permit is that the city did not disclose that it discharges PFAS and 1,4-dioxane into the Lumber River. The Clean Water Act prohibits the discharge of any pollutant, including PFAS or 1,4-dioxane, without a NPDES permit.¹²⁴ The discharge of a specific pollutant (or group of pollutants) cannot be

¹¹⁵ 40 C.F.R. § 403.3(k).

¹¹⁶ *Id.* §§ 122.41, 403.5(a)(1), 403.5(c)(1), (c)(2); *see also* N.C. Dep’t of Env’t Quality, Final NPDES Permit Renewal Permit NC0024571 (June 30, 2017), at Part II, Standard Conditions for NPDES Permits.

¹¹⁷ Lumberton Code of the City, Ch. 23, Art. IV § 23-98(a).

¹¹⁸ *Id.* § 23-98(b)(19).

¹¹⁹ *Id.* § 23-98(d)(2).

¹²⁰ *See id.* §§ 23-98(d)(2), 23-112.

¹²¹ *See* DEQ, Leachate PFAS Study, *supra* note 40, at Table 3; DEQ, Lumberton PFAS Sampling Results, *supra* note 9, at 15–18.

¹²² Lumberton Draft Permit, *supra* note 1, at 3, 8.

¹²³ Lumberton Draft Fact Sheet, *supra* note 2 at 8; Lumberton Draft Permit, *supra* note 1 at 3, 8.

¹²⁴ 33 U.S.C. § 1311(a).

permitted if it is not disclosed in a NPDES permit application. For decades, EPA has stressed the need for disclosure of pollutants during the permitting process:

[D]ischargers have a duty to be aware of any significant pollutant levels in their discharge. [...] Most important, [the disclosure requirements] provide the information which the permit writers need to determine what pollutants are likely to be discharged in significant amounts and to set appropriate permit limits. [...] [P]ermit writers need to know what pollutants are present in an effluent to determine appropriate permit limits in the absence of applicable effluent guidelines.¹²⁵

In December 2022, EPA confirmed that these disclosure requirements apply to PFAS stating that “no permit may be issued to the owner or operator of a facility unless the owner or operator submits a complete permit application” providing all information “that the permitting authority may reasonably require to assess the discharges of the facility” including information regarding PFAS.¹²⁶ The same is true for 1,4-dioxane.

Disclosure is considered adequate under the Clean Water Act when the applicant provides enough information for a permitting agency to “be[] able to judge whether the discharge of a particular pollutant constitutes a significant threat to the environment.”¹²⁷ To meet this burden, an applicant must include all relevant information, including the concentration, volume, and frequency of the discharge.¹²⁸ The Clean Water Act places the burden of disclosure on the permit applicant because they are in the best position to know what is in their discharge.¹²⁹

In its enforcement action against Chemours for the company’s discharge of PFAS into the Cape Fear River, the Department stated:

Part of the permit applicant’s burden in this regard is to disclose all relevant information, such as the presence of known constituents in a discharge that pose a potential risk to human health. The permit applicant is required to disclose “all known toxic components that can be reasonably expected to be in the discharge,

¹²⁵ Consolidated Permit Application Forms for EPA Programs, 45 Fed. Reg. 33,526–31 (May 19, 1980).

¹²⁶ EPA’s PFAS NPDES Guidance, *supra* note 6, at 2.

¹²⁷ *Piney Run Pres. Ass’n v. Cty. Comm’rs of Carroll Cty., Maryland*, 268 F.3d 255, 268 (4th Cir. 2001) (“Because the permitting scheme is dependent on the permitting authority being able to judge whether the discharge of a particular pollutant constitutes a significant threat to the environment, discharges not within the reasonable contemplation of the permitting authority during the permit application process, whether spills or otherwise, do not come within the protection of the permit shield.”).

¹²⁸ *See In re Ketchikan Pulp Co.*, 7 E.A.D. 605 (EPA) (1998) (“In explaining the provisions of 40 C.F.R. § 122.53(d)(7)(iii), which required dischargers to submit quantitative data relating to certain conventional and nonconventional pollutants that dischargers know or have reason to believe are present in their effluent, the [EPA] stated: ‘permit writers need to know what pollutants are present in an effluent to determine appropriate limits in the absence of effluent guidelines.’”).

¹²⁹ *S. Appalachian Mountain Stewards v. A & G Coal Corp.*, 758 F.3d 560, 566 (4th Cir. 2014). (“The statute and regulations purposefully place the burden of disclosure on the permit applicant.”).

including *but not limited to* those contained in a priority pollutant analysis.” 15A N.C.A.C. 2H .0105(j) (emphasis added).¹³⁰

Those same disclosure obligations apply to wastewater treatment plants like Lumberton. In order to adequately inform the analysis discussed below, the Department should instruct Lumberton to amend its permit application and disclose the presence of PFAS and 1,4-dioxane in the city’s effluent. Importantly, if Lumberton does not disclose its PFAS and 1,4-dioxane pollution, any discharge of those chemicals would be unlawful.¹³¹

b. The Department must analyze and impose effluent limits for PFAS and 1,4-dioxane.

As required by the Clean Water Act and discussed in Section IV of this letter, the Department should consider available treatment technology for Lumberton’s wastewater plant because its waste is significantly impacted by industries that are suspected and confirmed sources of PFAS and 1,4-dioxane. Effective treatment technologies for PFAS are available. Relevant here, a reverse osmosis treatment system installed at the Seneca Meadows Landfill in New York has virtually eliminated PFAS discharges from the landfill sent to the Seneca Falls wastewater plant.¹³² The reverse osmosis plant costs the landfill approximately three cents per gallon, suggesting that the treatment is not only effective but also affordable.¹³³ Like reverse osmosis, granular activated carbon is a cost-effective and efficient technology that can reduce PFAS concentrations to virtually nondetectable levels. A granular activated carbon treatment system at the Chemours’ facility, for example, has reduced PFAS concentrations as high as 345,000 ppt from a creek contaminated by groundwater beneath the facility to nearly nondetectable concentrations.¹³⁴ The Department must consider the feasibility of using these technologies or similarly effective technologies to control Lumberton’s discharges—either at the point of the discharge or at the industrial user level.

As with PFAS, treatment technologies for 1,4-dioxane are available. For instance, the chemical can be removed using advanced oxidation processes, such as using ultraviolet light in combination with hydrogen peroxide.¹³⁵ Such a process has been used at the Tucson

¹³⁰ Amended Complaint, N.C. Dept. of Environmental Quality v. Chemours, 17 CVS 580, 6–7 (N.C. Super. 2018) (citing 33 U.S.C. § 1342(k); *Piney Run*, 268 F.3d at 265), <https://perma.cc/ZT3U-7QJB> [hereinafter “Chemours Amended Complaint”].

¹³¹ See *Piney Run*, 268 F.3d at 268; *S. Appalachian Mountain Stewards*, 758 F.3d at 567; *In re Ketchikan Pulp Co.*, 7 E.A.D. 605; see also Chemours Amended Complaint, *supra* note 130, at 6–7.

¹³² See David Shaw, *Two Area Landfills Show High PFAS Levels in Leachate*, Finger Lakes Times (Apr. 9, 2022), https://www.fltimes.com/news/two-area-landfills-show-high-pfas-levels-in-leachate/article_81f25f53-4c2a-58ee-a378-8c35c5bcf872.html; Cornerstone Engineering and Geology, Seneca Meadows Landfill 2022 Annual Report 209-4233133 (Mar. 1, 2023), at 3-1 available at <https://perma.cc/UQ2W-7CZW>.

¹³³ Seneca Meadows Landfill 2022 Annual Report, *supra* note 132 at 7-3.

¹³⁴ See Parsons, Engineering Report – Old Outfall 002 GAC Pilot Study Results (Sept. 2019), available at <https://www.chemours.com/ja/-/media/files/corporate/12e-old-outfall-2-gac-pilot-report-2019-09-30.pdf?rev=6e1242091aa846f888afa895eff80e2e&hash=040CAA7522E3D64B9E5445ED6F96B0FB>; see also Chemours Outfall 003, NPDES No. NC0089915 Discharge Monitoring Reports (2020–2022), available at <https://perma.cc/8YND-XT5M>.

¹³⁵ Amie C. McElroy, et al., *1,4-Dioxane in drinking water: emerging for 40 years and still unregulated*, 7 CURRENT OPINION IN ENV’T SCIENCE & HEALTH 117, 119 (2019), available at <https://agris.fao.org/agris-search/search.do?recordID=US201900256076>.

International Airport Area Superfund Site to remove legacy 1,4-dioxane contamination.¹³⁶ That treatment system can remove over 97 percent of the chemical from polluted water.¹³⁷ Treatment technology for 1,4-dioxane has also been installed at industries in North Carolina that discharge into municipal sewer systems.¹³⁸ The Department must assess treatment technology available to control Lumberton's 1,4-dioxane waste.

Additionally, as discussed in Section IV, the Department must evaluate water quality-based effluent limits for Lumberton's permit—particularly limits to ensure compliance with the narrative toxic substances standard. EPA's health advisories for PFAS and countless toxicity studies indicate that the chemicals pose unacceptable health risks at extremely low levels. And the state's recent Cape Fear fish consumption advisories highlight the danger of unchecked PFAS pollution.¹³⁹ The Department has stated that PFAS “meet the definition of ‘toxic substance’” and has included limits for PFAS referencing the water quality standard and EPA's health advisory for GenX in at least one NPDES permit.¹⁴⁰ The Department should similarly assess effluent limits in Lumberton's permit based on EPA's interim and final PFAS health advisories, EPA's proposed drinking water standards, and other available toxicity information for the chemicals. The Department should also consider the state's recent Cape Fear fish consumption advisories given the levels of PFOS present in Lumberton's discharge and in the waste streams of the city's industrial users. Imposing limits of PFAS are how the Department can and should prevent more of these consumption advisories from being issued throughout the state.

The Department must also ensure that Lumberton's 1,4-dioxane discharges do not violate the narrative toxic substances standard. As the North Carolina Environmental Management Commission has made clear, the state uses this standard to set limits and conditions for 1,4-dioxane in NPDES permits.¹⁴¹ The Department has interpreted the standard to require concentrations of 1,4-dioxane be less than 0.35 ppb in rivers and streams that serve as drinking water supplies, and 80 ppb for non-water supply waters.¹⁴²

¹³⁶ See *Advanced Treatment for 1,4-Dioxane – Tucson Removes Contamination Through UV-oxidation*, TROJANUV CASESTUDIES (2019), available at <https://www.resources.trojanuv.com/wp-content/uploads/2018/05/Treatment-of-Groundwater-Contaminated-with-14-Dioxane-Tucson-Arizona-Case-Study-Environmental-Contaminant-Treatment.pdf>.

¹³⁷ *Id.* at 2; see also *Educational Brochure*, TUCSON AIRPORT AREA REMEDIATION PROJECT, available at https://www.tucsonaz.gov/files/water/docs/AOP_TARP_educational_signs.pdf.

¹³⁸ See City of Greensboro, EMC SOC WQ S19-010 Year One Report: May 1, 2021 – April 30, 2022 4 (June 13, 2022), available at <https://www.greensboro-nc.gov/home/showpublisheddocument/53017/637908166316270000>.

¹³⁹ DHHS, PFAS Fish Consumption Advisories, *supra* note 35.

¹⁴⁰ Amended Complaint, *North Carolina v. The Chemours Co.*, 17 CVS 580 (Apr. 9, 2018), at ¶ 152 (stating that “the process wastewater from [Chemours'] Fluoromonomers/Nafion® Membrane Manufacturing Area contains and has contained substances or combinations of substances which meet the definition of “toxic substance” set forth in 15A N.C.A.C. 2B.0202,” referring to GenX and other PFAS); N.C. Dep't of Env't Quality, NPDES Permit NC0090042 (Sept. 15, 2022), <https://perma.cc/WQV7-L8C4>; N.C. Dep't of Env't Quality, Fact Sheet NPDES Permit No. NC0090042 (Sept. 15, 2022), at 11–12, <https://perma.cc/EP5R-32A7>.

¹⁴¹ See, e.g., N.C. Env't Mgmt. Comm'n, Regulatory Impact Analysis, 2020-2022 Triennial Review – Surface Water Quality Standards D-13 (2021), available at <https://www.deq.nc.gov/proposed-rules/15a-ncac-02b-0200-0300-regulatory-impact-analysis/download?attachment> (explaining that the state uses the narrative toxic substances standard to set limits in NPDES permits).

¹⁴² NCDWR, *1,4-dioxane 2017 Report*, *supra* note 60 at 2.

Importantly, the Department does not need extensive sampling to calculate allowable limits for PFAS and 1,4-dioxane in this NPDES permit. The Department can utilize a formula that takes into consideration (1) the flow from the facility, (2) and flow of the river at the point of the discharge and the water supply boundary, and (3) the applicable water quality standard to calculate the maximum amount that Lumberton should be permitted to discharge. Limits are all the more important here because of the significant recreational and subsistence fishing that occurs around and downstream of the discharge.

- c. The Department must impose conditions in Lumberton's permit requiring the city to use its pretreatment authority to control industrial sources.*

Utilization of the pretreatment program is the most effective and fair way to prevent toxic industrial chemical pollution from contaminating our communities. Just last December, EPA recognized that incorporating PFAS into the pretreatment program is an important tool for state agencies to utilize when faced with a municipal source of PFAS contamination.¹⁴³ The same is true for 1,4-dioxane. EPA's PFAS NPDES Guidance explicitly directs that permits issued to municipal wastewater treatment plants, like Lumberton, "contain requirements to identify and locate all possible [industrial users]" that are "expected or suspected for PFAS discharges."¹⁴⁴ This directive is all the more important here when existing studies exist showing Lumberton's industrial users discharge PFAS, but the city did not disclose such pollution. Once sources are identified, EPA recommends that municipalities develop local limits for PFAS or impose best management practices to control the pollution at the source.¹⁴⁵ The Department should incorporate similar directives here.

As the permitting authority for Lumberton and the approval authority of the city's pretreatment program, the Department must incorporate NPDES requirements as necessary to ensure compliance with the program. The Department should therefore include necessary conditions in Lumberton's permit to require the town to: (1) update its industrial user survey and determine all industrial sources of PFAS and 1,4-dioxane, and (2) control any industrial sources of the chemicals "through Permit, order," "the installation of technology,"¹⁴⁶ local limits,¹⁴⁷ or other means under the Clean Water Act pretreatment program.

As stated in EPA's NPDES Permit Writers' Manual, "NPDES permits drive the development and implementation of pretreatment programs."¹⁴⁸ They do so by requiring "control mechanisms issued to significant industrial users," "compliance monitoring activities," and "swift and effective enforcement."¹⁴⁹ The Department must impose the above conditions in Lumberton's permit for PFAS and 1,4-dioxane.

¹⁴³ EPA's PFAS NPDES Guidance, *supra* note 6 at 4.

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ 40 C.F.R. § 403.8(f)(1) (emphasis added).

¹⁴⁷ *Id.* § 403.5.

¹⁴⁸ U.S. Env't Prot. Agency, NPDES Permit Writers' Manual 9-10 (2010), available at https://www.epa.gov/sites/default/files/2015-09/documents/pwm_2010.pdf.

¹⁴⁹ *Id.*

d. A reopener for 1,4-dioxane does not replace the need for strict pollution controls.

Additionally, the reopener placed in Lumberton's permit is not enough to protect downstream water quality from the utility's toxic chemical pollution, especially because it entirely ignores the drastic PFAS pollution flowing from the facility. The Department cannot issue a permit unless it ensures compliance with water quality standards,¹⁵⁰ and a mere reopener cannot overcome the Department's obligation to ensure that water quality standards will be met *before* issuing a permit. Based on the Department's failure to stop other 1,4-dioxane discharges, it is unlikely that Lumberton's permit will be reopened. The city of Greensboro, for example, has consistently discharged high levels of 1,4-dioxane, and the Department has not reopened the city's permit or acted on its renewal permit in a timely manner.¹⁵¹ The Department must analyze existing data and impose pollution limits for Lumberton's wastewater treatment plant before issuing a final permit. What the agency has done in the current draft permit—requiring only monitoring—is not enough.

e. The Department must impose PFAS monitoring requirements immediately.

In addition to adding limits and pretreatment conditions, the Department should update the monitoring requirement for PFAS. The permit currently only directs Lumberton to sample for PFAS quarterly¹⁵² and does not require that testing start until six months after EPA finalizes a PFAS sampling method.¹⁵³ This requires amending for three reasons. First, as the Department is aware, discharges from industrial users are unpredictable, and sporadic sampling is likely to misrepresent the full scope of the pollution flowing from the Lumberton wastewater treatment plant.¹⁵⁴ This is all the more likely here where many of Lumberton's industrial users are landfills who do not send routine and predictable waste streams to the facility. The Department must

¹⁵⁰ 15A N.C. Admin. Code 2H.0112(c) (“No permit may be issued until the applicant provides sufficient evidence to ensure that the proposed system will comply with all applicable water quality standards and requirements. No permit may be issued when the imposition of conditions cannot reasonably ensure compliance with applicable water quality standards and regulations of all affected states.”).

¹⁵¹ *Compare* N.C. Dep't of Env't Quality, NPDES Permit No. NC0047384 (2014) (containing a reopener that states “[t]his permit may be reopened and modified in the future to include 1,4-dioxane monitoring and/or reduction measures, if the wastewater discharge is identified as contributing to violations of surface water quality standards”) with N.C. Dep't of Env't Quality, T.Z. Osborne WWTP DEQ Special Study: 1,4-Dioxane Effluent Data (2020), available at <https://deq.nc.gov/media/18067/download> (collecting effluent sample results between 2017 and 2020 and reaching as high as 957.5 ppb) and City of Greensboro, T.Z. Osborne 1,4-dioxane Grab Sample Data (Feb. 2022), <https://www.greensboro-nc.gov/home/showpublisheddocument/52232/637837174143630000> (reporting 1,4-dioxane concentrations ranging between 1.54 ppb and 823 ppb in Greensboro's effluent between May 5, 2021 and February 15, 2022).

¹⁵² We note that the permit requirements listed in Part 1 direct the permittee to Condition A.(7), but should in fact direct the permittee to Condition A.(6) for the PFAS monitoring requirements. Additionally, the table in Part 1 should state the monitoring frequency for clarity.

¹⁵³ Lumberton Draft Permit, *supra* note 1, at 8.

¹⁵⁴ For example, it wasn't until the Department required routine bi-weekly sampling for 1,4-dioxane that the Department understood that High Point wastewater treatment plant was a significant source of the toxic pollution. See N.C. Dep't of Env't Quality, Annual 1,4 Dioxane Progress Report, 1,4 Dioxane NPDES Permitting Strategy, Env't Mgmt. Comm'n (Jan. 2023), at PDF pg. 87, available at <https://edocs.deq.nc.gov/WaterResources/DocView.aspx?id=2618519&dbid=0&repo=WaterResources>.

increase the frequency of the sampling if it genuinely wants to accurately document the scope of the PFAS pollution flowing from the Lumberton wastewater treatment plant.

Second, the Department does not need to wait for EPA to issue a final method for PFAS before requiring sampling to commence. In fact, in its PFAS NPDES Guidance issued last December, EPA stated that it “recommends using CWA wastewater draft analytical method 1633” in the absence of any final wastewater method.¹⁵⁵ The Department should update the monitoring condition to require sampling to begin as soon as the permit is issued, in line with EPA’s direction.

Third, the Department should instruct Lumberton to not only sample its effluent for PFAS monitoring, too, but also its biosolids or sludge. As discussed above, the city has a permit to land apply the biosolids produced by the wastewater treatment process. EPA instructs state permitting agencies to include effluent, influent, and biosolids monitoring in permits issued to municipal wastewater plants like Lumberton’s.¹⁵⁶ For the biosolids monitoring, too, the EPA recommends using draft method 1633 in the absence of a final method. The Department should make these changes to ensure this permit is in line with EPA’s guidance.

VII. The Department should make additional changes in this permit.

There are additional changes that we recommend the Department make before finalizing this permit. We call the Department’s attention to the fact that the Lumber River suffers from cumulative sources of pollution, which, when taken together, significantly impact the River’s integrity and the community that relies upon it. Because there are cumulative threats to the Lumber River, we encourage the Department to think comprehensively about this permit and evaluate it in the larger context of the river system. For example, we note that while the permit has limits for Chromium VI, it does not set limits for Total Chromium.¹⁵⁷ The same is true for Total Nitrogen.¹⁵⁸ There are multiple sources of Chromium and Nitrogen throughout the watershed, and any addition of these pollutants can cause stress on the water system. We encourage the Department to impose limits for Total Chromium and Total Nitrogen.

Additionally, the draft fact sheet notes that past monitoring shows a “statistically significant” discrepancy in conductivity between upstream and downstream samples¹⁵⁹ as well as the possibility that Lumberton’s discharge may impact dissolved oxygen levels downstream.¹⁶⁰ Despite these findings, the Department did not make any changes to the permit. In line with the Department’s findings, the permit should be amended to—at the very least—set a trigger for each of these metrics that would cause the permit to be reopened and the pollution to be addressed if levels become too dire. Because dissolved oxygen and conductivity are useful

¹⁵⁵ EPA’s PFAS NPDES Guidance, *supra* note 6, at 2.

¹⁵⁶ *Id.* at 4.

¹⁵⁷ Lumberton Draft Permit, *supra* note 1, at 3.

¹⁵⁸ *Id.*

¹⁵⁹ Lumberton Draft Fact Sheet, *supra* note 2, at 4.

¹⁶⁰ *Id.* at 3–4.

indicators of other types of pollution, it is irresponsible to ignore the contributions the Lumberton wastewater treatment plant is making.

VIII. Conclusion.

In summary, the Department must use this NPDES permit to control PFAS and 1,4-dioxane waste being released into the Lumber River. The Department's own data shows that Lumberton's wastewater contains PFAS at concentrations exceeding 11,000 ppt. The city's wastewater contaminates stretches of the River used for recreational and subsistence fishing. In order to protect those who use and rely on the River downstream of the facility, the Department should withdraw and amend this permit in line with the changes discussed in this comment letter to control Lumberton's harmful pollution.

Thank you for considering these comments. Please contact me at 919-967-1450 or hnelson@selcnc.org if you have any questions regarding this letter.

Sincerely,

A handwritten signature in black ink that reads "Hannah M. Nelson". The signature is written in a cursive style with a clear, legible font.

Hannah M. Nelson