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VIA EMAIL DELIVERY TO EPDcomments@dnr.state.ga.us

Ms. Audra Dickson
Wastewater Regulatory Program
Watershed Protection Branch
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152 East Tower
Atlanta, Georgia 30334

Re: Draft NPDES Permit No. GA0039420 – Plant Vogtle Units 3 & 4

Dear Ms. Dickson:

On behalf of the Savannah Riverkeeper and the Southern Alliance for Clean Energy, the Turner Environmental Law Clinic and the Southern Environmental Law Center submit the following comments on the draft National Pollutant Discharge Elimination System (“NPDES”) Permit for Plant Vogtle Units 3 & 4, Permit No. GA0039420 (hereinafter, “draft permit”). On January 12, 2015, the Georgia Environmental Protection Division (“EPD”) issued the draft permit to Southern Nuclear Operating Company (“Southern Nuclear”) for the operation of its two new reactors at Plant Vogtle in Waynesboro, Georgia.

Both Georgia and South Carolina rely on the Savannah River for transportation, drinking water, recreation, and industry. Yet, the river is one of the most polluted in the country. Heavy water demands and pollution, largely from industrial users, have contributed to both reduced flow and declining dissolved oxygen (“DO”) levels in the river. Plant Vogtle has played no small part in the river’s water quality problems—the plant’s existing reactors, Units 1 & 2, are already among the largest users of surface water on the Savannah River. The addition of two new reactors will result in even larger consumptive losses to the river, which in conjunction with wastewater discharges from the plant, will reduce the river’s assimilative capacity and potentially exacerbate dissolved oxygen problems downstream.

The Savannah Harbor has been listed on Georgia’s Clean Water Act (“CWA”) 303(d) list as impaired for DO for over a decade. This has led to efforts to establish a new DO Total Maximum Daily Load (“TMDL”) or restoration plan (“5R”) for the harbor, an ongoing process that has involved extensive efforts and coordination among Georgia, South Carolina, the U.S. Environmental Protection Agency (“EPA”), EPD, and other key stakeholders. Indeed, because the assimilative capacity for DO in the Savannah Harbor is already exceeded by current discharges, it has been EPD’s practice for several years neither to renew nor issue new NPDES

permits for the river while awaiting the outcome of the TMDL/5R process. This draft NPDES permit represents a break from that practice and seems premature given that the reactors are still years away from operation.¹

The draft NPDES permit also comes in the wake of EPD's issuance of the water withdrawal permit for the reactors, on which we commented, and which is currently under challenge by the State of South Carolina. We reiterate our prior concern that the water withdrawal and discharge permits should have been considered in tandem to properly account for the overall water impacts from the reactors. This would also be consistent with EPD's previous position on the subject.²

With these considerations in mind, and as discussed in detail below, we submit the following comments regarding the draft permit and supporting documentation:

- EPD should conduct a “reasonable potential” analysis to determine whether the permitted discharge will cause or contribute to a violation of the water quality standard for dissolved oxygen in the Savannah Harbor.
- EPD should defer issuing the permit until the new dissolved oxygen TMDL, or a 5R restoration plan, is set for the Savannah Harbor. EPD previously refrained from issuing new NPDES permits pending a final decision on the TMDL/5R; EPD should not depart from that practice now.
- EPD should defer issuing this permit until the water withdrawal permit challenge filed by the State of South Carolina has been resolved. The resolution of that matter could impact the final discharge – *e.g.*, if the total withdrawal permitted is reduced, the discharge amount and the concentrations of pollutants in the discharge would likely change.
- EPD should consider whether a zero liquid discharge (“ZLD”) system is the best available technology for limiting discharges at Plant Vogtle Units 3 & 4. A ZLD system would eliminate all impacts caused by the discharge and would also reduce the volume of water withdrawals. Further, a ZLD system would be both economically and technologically feasible.
- EPD should set effluent limits for pollutants expected in the final discharge to the river, at Outfall 1. The draft permit includes some discharge limits and monitoring requirements for internal waste streams, but the only limit on the final discharge is for pH, along with a

¹ According to Southern Company/Georgia Power's January 29, 2015 Form 8-K filing with the SEC, reactor Unit 3 is projected to be operational in the second quarter of 2019 and Unit 4 one year later. They were originally estimated to be operational in April 2016 and April 2017 respectively. See Form 8-K Current Report, United States Securities and Exchange Commission (Jan. 29, 2015) (“SEC Form 8-K”), available at <https://www.sec.gov/Archives/edgar/data/41091/000009212215000004/ga-so8xkvgtlschedule1x15.htm>.

² See EPD Comments on the U.S. Nuclear Regulatory Commission's Draft Environmental Impact Statement for an Early Site Permit at the Vogtle Electric Generating Plant Site, at 2 (Nov. 28, 2007) (stating that the withdrawal and discharge permits would be considered together and “in the context of current water planning efforts, consumptive water losses, and any contingencies necessary to manage future droughts.”) (“EPD Comments on Vogtle Early Site Permit EIS”), attached hereto as Exhibit A.

requirement to monitor for flow. EPD must also set limits at the final discharge to the river, or explain why exceptional circumstances make doing so impracticable or infeasible.

- EPD should impose mass-based effluent limitations in addition to concentration-based limitations. EPD has failed to justify its decision to impose only concentration-based limitations. Mass-based limits are critical to assessing the cumulative effects from multiple dischargers. Given the heavy discharge burden on the Savannah River, and the ongoing TMDL/5R process, mass-based effluent limits are necessary to set a total limit on the amount of pollutant discharges. This is particularly important for oxygen-demanding pollutants such as phosphorus or biological oxygen demand.
- EPD should include a provision in the permit requiring Southern Nuclear to comply with any and all radioactive effluent limits set by the Nuclear Regulatory Commission.
- EPD must require more frequent monitoring of effluents in the permit to ensure daily limits are being met. Quarterly, monthly, and bi-weekly monitoring is insufficient to establish compliance with daily average and daily maximum limits.

I. EPD should analyze whether there is a “reasonable potential” for the discharge from Units 3 & 4 to cause or contribute to a violation of the dissolved oxygen water quality standard in the Savannah River.

The draft permit and supporting documentation do not sufficiently analyze the discharge’s reasonable potential to cause or contribute to a violation of the DO water criteria in the Savannah Harbor, which is impaired for DO. The operation of Units 3 & 4 clearly has the potential to violate the standard, as EPD acknowledged when it issued the water withdrawal permit. EPD included in the water withdrawal permit a condition requiring oxygen injection in the harbor; but here, EPD appears to assume that the discharges associated with those same units will have no harmful effect. EPD’s position is troubling given its prior stance that *any* new discharge of oxygen-demanding pollutants could worsen the harbor’s low oxygen conditions.³

NPDES permits should include any requirements necessary to ensure water quality standards are met, even if those requirements are more stringent than promulgated effluent limits. 40 C.F.R. § 122.44(d)(1); *see also* Ga. Comp. R. & Regs. 391-3-6-.03(4)(a)(10) (EPD may require more stringent limits when necessary to ensure compliance with water quality standards). This requirement applies to all pollutant discharges determined to have the reasonable potential to cause or contribute to a violation of either narrative or numeric state water quality standards. *Id.* at § 122.44(d)(1)(i). If, after conducting the appropriate analysis, the agency finds there is reasonable potential for a discharge to cause or contribute to a water quality standard violation, an effluent limitation must be set. *Id.* at § 122.44(d)(1)(iii).

Aside from a conclusory assertion in EPD’s Fact Sheet that “there is no reasonable potential for the discharge to violate applicable water quality criteria and/or instream standards

³ *See id.*

for priority pollutants,” it appears EPD performed no analysis of the discharge’s potential impacts on DO levels.⁴ However, a number of pollutants listed in the permit application have the potential to impact DO levels in the Savannah River and Savannah Harbor, including biochemical oxygen demand (“BOD”), chemical oxygen demand (“COD”), heat, nitrate-nitrite, and phosphorus.⁵ The permit file contains scant analysis of these pollutants and their potential to impact DO levels.

Only one document – titled “Savannah River Considerations - Draft” – contains any discussion of DO impacts from the thermal discharge and evaporative loss at Plant Vogtle.⁶ According to that document, DO impacts are anticipated, and “[t]he proposed Plant Vogtle project will have to provide mitigation for this impact to the DO assimilative capacity.”⁷ No further discussion of the thermal discharge’s impact on DO is offered, and no mitigation measures are required in the draft permit.

In addition, it appears EPD conducted no reasonable potential analysis for pollutants other than heat that may cause or contribute to DO water quality violations – including BOD, COD, phosphorus, and nitrate-nitrite. In comments on the Early Site Permit Environmental Impact Statement (“EIS”), EPD acknowledged that sanitary wastewater (containing BOD), and any other new discharges of oxygen-demanding pollutants from the new units would need to be handled with a no-discharge system because of the potential to impact DO levels.⁸ According to the anti-degradation analysis for the draft permit, sanitary wastewater from Units 3 & 4 will use the existing wastewater treatment facility for Units 1 & 2.⁹ This will presumably change the discharge permitted for the existing Vogtle Units 1 & 2 by increasing discharges from their wastewater treatment facility. But there is no explanation of how this discharge will be accounted for – for example, is EPD proposing to amend the NPDES permit for Vogtle 1 & 2 to account for the increased discharges? *See* NPDES Permit for Vogtle Units 1 & 2 at 5 (allowing for a daily average of 30 mg/l of BOD₅). And here the potential for adverse impacts to DO levels extends well beyond increased discharges of sanitary wastewater and includes new discharges of other oxygen-demanding constituents. The levels of BOD, COD, phosphorus, and nitrate-nitrite shown in the permit application are sufficient to warrant a reasonable potential analysis.

Indeed, in its water withdrawal permitting process for the new units, EPD recognized the importance of examining the impacts on DO levels in the harbor. There, EPD and Southern Nuclear conducted at least some level of analysis and modeling of DO impacts. In fact, while we believe more effective mitigation measures would have been appropriate (as detailed in our comments on the withdrawal permit), EPD at least attempted to mitigate DO impacts to the harbor associated with the proposed withdrawals by including an oxygenation condition in the withdrawal permit.¹⁰ A similar analysis, with appropriate mitigation measures, should be

⁴ *See* Fact Sheet for Plant Vogtle 3 & 4 NPDES Permit No. GA0039420, at 4 (Dec. 5, 2014) (“Fact Sheet”).

⁵ *See* Southern Nuclear’s Revised NPDES Permit Application, Form 2D at 3 (Sept. 3, 2013) (“Permit Application”).

⁶ Draft Savannah River Considerations Assessment (July 24, 2012).

⁷ *Id.* at Attachment C, at 1.

⁸ EPD Comments on Vogtle Early Site Permit EIS, *supra* n. 2, at 2-3.

⁹ NPDES Industrial Anti-degradation Analysis for Vogtle Units 3 & 4, at 20 (May 2011).

¹⁰ As discussed at length in our comments on the water withdrawal permit, the oxygen injection system requirement in the water withdrawal permit is deficient because there are no testing and monitoring requirements to ensure its

conducted regarding the DO effects of the proposed discharges in the NPDES permit context. In addition, as discussed further below, the analysis of the permit's impact on DO should be coordinated with ongoing efforts by EPA, EPD, and South Carolina's Department of Health and Environmental Control ("DHEC") to establish a TMDL/5R for DO in the Savannah Harbor.

In sum, EPD should conduct a reasonable potential analysis for DO impacts caused or contributed to by the discharges listed in the permit application. This analysis should pay particular heed to pollutants known to impact DO levels.

II. EPD should defer issuing this permit until the new dissolved oxygen TMDL or 5R is finalized for the Savannah Harbor.

Assessing the permit's impacts on DO is especially important here because the Savannah Harbor suffers from persistent and long-term DO impairment.¹¹ For several years, EPA, EPD, and DHEC have been coordinating to establish a new TMDL or 5R restoration plan for DO for the Savannah Harbor.¹² Upstream discharges are a significant contributing cause to the DO deficiencies in the Savannah Harbor. The TMDL recognizes this fact by identifying the total load of oxygen-demanding substances that is permissible from Thurmond Dam all the way down to the harbor.¹³ To ensure compliance, individual NPDES permits will include specific waste load allocations based on the total load established in the TMDL.¹⁴

EPD acknowledged in its comments on the Early Site Permit EIS for the new units that "no increase in oxygen-demanding loads can be permitted between Thurmond Dam and the Savannah Harbor" because "*the assimilative capacity in the harbor is already exceeded by current discharges and must be addressed.*"¹⁵ As noted above, EPD has recognized that "any expansion of the sanitary sewer treatment facility, or *new discharge of oxygen demanding constituents, will have to be handled through a no discharge system.*"¹⁶ EPD asserted then that the new discharges would not be subject to the TMDL because they would lack oxygen-demanding constituents,¹⁷ but the permit application shows that the discharges will in fact contain such constituents (*e.g.*, heat, BOD, COD, phosphorus, and nitrate-nitrite).

efficacy. Comments of Savannah Riverkeeper and Southern Alliance for Clean Energy on Draft Surface Water Withdrawal Permit for Plant Vogtle 3 & 4 (Mar. 7, 2014) ("SACE and SRK Water Withdrawal Permit Comments"), attached hereto as Exhibit B.

¹¹ See *e.g.*, Georgia Environmental Protection Division, Draft 2014 Integrated 305(b)/303(d) List, at 4, available at https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/303d_Draft_Sounds_Y2014.pdf. The potential causes are listed as: industrial facilities, municipal facilities, and urban runoff/urban effects. *Id.*

¹² See, *e.g.*, Draft Subcategory 5R Documentation for Point Source Dissolved Oxygen Impaired Water in the Savannah River Basin, Georgia and South Carolina, Savannah Harbor, Georgia Environmental Protection Division in Cooperation with South Carolina Department of Health and Environmental Control (not dated), attached hereto as Exhibit C.

¹³ Draft Revised Total Maximum Daily Load for Dissolved Oxygen in the Savannah Harbor, EPA Region 4, at i (2010), available at https://epd.georgia.gov/sites/epd.georgia.gov/files/related_files/site_page/EPA_DRAFT_REVISED_SavannahHarb_or_DO_TMDL_March2010.pdf.

¹⁴ *Id.* EPA considers this interpretation to be consistent with 40 C.F.R. 122.44(d)(1)(vii)(B). *Id.*

¹⁵ EPD Comments on Vogtle Early Site Permit EIS, *supra* n. 2, at 2.

¹⁶ *Id.* at 2-3 (emphasis added).

¹⁷ *Id.* at 2.

Southern Nuclear will not be harmed if EPD delays issuing the NPDES permit until a TMDL/5R is established. Units 3 & 4 are currently not estimated to begin operating until mid-2019 and 2020, respectively.¹⁸ Although Units 3 & 4 were originally expected to begin operation in April 2016 and 2017, respectively, Southern Nuclear has pushed back these dates several times due to repeated construction delays.¹⁹ As such, EPD and Southern Nuclear have ample time to wait until the DO issue is resolved. At the March 3, 2015 public hearing, a representative from Southern Nuclear indicated the permit was needed immediately to allow for testing of the new reactors.²⁰ This appears to be a gross exaggeration. While pre-operational testing would require an NPDES permit, this testing is unlikely to be conducted for several years. According to NRC guidance, testing typically requires approximately 9 months, and initial start-up testing requires an additional 3 months – a total of only about 1 year of pre-operational testing.²¹ This belies Southern Nuclear’s assertion that it needs these permits immediately for pre-operational testing.

For these reasons, EPD should delay issuing the NPDES permit until the TMDL/5R for the Savannah Harbor is established. Allowing for a new discharge into an impaired river without sufficient safeguards and analysis of cumulative impacts from existing dischargers will make eventual DO TMDL/5R compliance even more difficult to achieve.

III. EPD should defer issuing this permit until South Carolina’s challenge to the Plant Vogtle Units 3 & 4 surface water withdrawal permit has been resolved.

On January 2, 2015, the State of South Carolina filed a Petition for Hearing with Georgia’s Office of State Administrative Hearings (“OSAH”), challenging the surface water withdrawal permit for Plant Vogtle’s new reactors, which EPD issued to Southern Nuclear in December 2014.²² The hearing is scheduled for March 30, 2015.²³ The water withdrawal permit is stayed pending the outcome of that proceeding.

The outcome has the potential to impact this NPDES permit. For example, if the OSAH court finds the amount of the withdrawal unreasonable and remands to EPD to reduce the total withdrawal, then the discharge amount would likely change as well. A change in the discharge could change the pollutant concentrations or the size of the mixing zone needed for dilution. Alternatively, the OSAH court could strike down the water withdrawal permit entirely, and without a permitted withdrawal, there would be no associated discharge. Because of this

¹⁸ See SEC Form 8-K, *supra* n. 1.

¹⁹ See David Williams, Plant Vogtle expansion delayed another 18 months, Atlanta Business Chronicle (Jan. 29, 2015), available at http://www.bizjournals.com/atlanta/blog/capitol_vision/2015/01/plant-vogtle-expansion-delayed-another-18-months.html?page=all.

²⁰ Comments of Dale Fulton, Environmental Affairs Manager for Southern Nuclear Operating Company, EPD Public Hearing on Plant Vogtle Units 3 and 4 Draft NPDES Permit (Mar. 3, 2015).

²¹ NRC, Regulatory Guide 1.68, Initial Test Programs for Water-Cooled Nuclear Power Plants Rev. 4, at 11 (June 2013), available at <http://pbadupws.nrc.gov/docs/ML1305/ML13051A027.pdf>.

²² Office of State Administrative Hearings, South Carolina Department of Health and Environmental Control Petition for Hearing, Case No. OSAH-BNR-WW-1532765-60-Schroer (Jan. 2, 2015), attached hereto as Exhibit D.

²³ OSAH Hearing Calendar for March 30, 2015, Case No. OSAH-BNR-WW-1532765-60-Schroer, available at <http://www.osah.ga.gov/case-detail.aspx?docketNum=1532765&clerk=230>.

uncertainty, EPD should defer issuing the NPDES permit until the withdrawal challenge has been resolved. This would also ensure that the two permits are considered in tandem, as recommended above.

As stated above, the new reactors are not estimated to commence operation until at least four years from now. The water withdrawal permit challenge will be resolved long before then.²⁴ Thus, no harm to Southern Nuclear will result from deferring issuance of the NPDES permit until the OSAH challenge is resolved.

IV. EPD should consider whether the best available technology to treat discharges from Plant Vogtle 3 & 4 requires using a zero liquid discharge system.

The Clean Water Act requires all NPDES permits to include technology-based effluent limitations (“TBELs”) which are established by the permitting agency based on the best available pollution control technologies. 33 U.S.C. §§1311, 1342(a)(1). TBELs in NPDES permits must be “based on how low current technology can push pollution levels, and those limits are to be lowered as pollution-reducing technology improves.” Sierra Club v. Meiburg, 296 F.3d 1021, 1024 (11th Cir. 2002). Under these technology-based requirements, NPDES permits must limit the discharge of pollution to the greatest extent possible.

New sources are subject to particularly stringent TBELs called new source performance standards (“NSPS”). Section 306 of the CWA requires EPA to promulgate national standards of performance for categories of new sources; these NSPS must require effluent limitations achievable through “best available demonstrated control technology.” 33 U.S.C. §1336. In enacting this section, Congress intended to subject new sources to the most stringent regime of technology-based standards, and therefore to help stimulate the development of new, more efficient and effective technologies over time. Nat. Res. Def. Council v. EPA, 822 F.2d 104, 110-11 (D.C. Cir. 1987). In setting new source standards, EPA is statutorily required to give serious consideration to a standard permitting *no* discharge of pollutants. 33 U.S.C. §1316(a)(1).

In 1982, EPA promulgated effluent limitation guidelines (“ELGs”) for pollutants discharged by the “Steam Electric Generating Point Source Category,” a category which includes nuclear power plants; these ELGs are still in effect today. 40 C.F.R. § 423. However, these effluent limits have not been updated in over 25 years, and the limits imposed may not reflect the major technology improvements that occurred over that time.

The NSPS regulations act as a floor, not a ceiling. For instance, federal regulations state that “where promulgated effluent guidelines only apply to certain aspects of a discharger’s operation, or to *certain pollutants*, other aspects or activities are subject to regulation on a case-by-case basis in order to carry out the provisions of the Act.” 40 C.F.R. § 125.3(c)(3) (emphasis added). In other words, EPD may use its “best professional judgment” (“BPJ”) to address discharge concerns that are not adequately addressed by the NSPS regulations. In conducting

²⁴ The water withdrawal challenge will likely be resolved within a matter of months. By statute, an administrative law judge must render a decision in a permit challenge within 90 days unless established by order and agreed to by *all* parties; an administrative law judge may take an additional 60 days to render a decision for good cause. *See* O.C.G.A. § 12-2-2(c)(2)(B).

such an analysis, the permit writer must consider, among other factors, the process to be employed, the engineering aspects of the application of various types of control techniques, the cost of achieving such effluent reduction, and any non-water quality environmental impacts (including energy requirements). *Id.* at §125.3(d)(3).

Here, the permit application for Vogtle Units 3 & 4 anticipates discharging numerous pollutants not addressed in the NSPS regulations. These pollutants include BOD, COD, nitrate-nitrite, phosphorus, and temperature. Permit Application at 3. The draft NPDES permit does not contain effluent limits for any of these pollutants.

EPD should exercise its best professional judgment to assess whether the best available technology applicable to this discharge requires using a zero liquid discharge (“ZLD”) system. The effluent reductions achieved by a site-appropriate ZLD system would be significant, effectively eliminating cooling tower discharges by recycling cooling water blowdown.²⁵ By recycling the blowdown, a ZLD system would also reduce the water withdrawal needs. This potential to reduce water withdrawals is particularly important in light of recent droughts, the frequency of which may increase over time due to impacts of climate change.²⁶ Moreover, the cost of achieving such reduction is reasonable;²⁷ a ZLD treatment technology for Units 3 & 4 is likely to cost between \$32 and \$42 million.²⁸ When measured against the total cost of the project, now expected to reach well over \$14 billion, the costs of a ZLD system would not impose an unreasonable burden on Southern Nuclear.²⁹ Additionally, the technology is well-tested and available. In the United States, over 100 operating power plants currently use ZLD wastewater treatment systems.³⁰ ZLD has been used successfully since the 1970s to treat cooling water blowdown and other plant wastewater at coal-fired power plants.³¹ Recently, ZLD systems have been implemented in combined-cycle natural gas plants, concentrating solar

²⁵ Bill Powers, Vogtle Units 3 and 4: Feasible and Cost-Effective Water Conservation Measures, at 6 (May 15, 2014) (citing Global Water Intelligence, From zero to hero – the rise of ZLD (December 2009)), attached hereto as Exhibit E.

²⁶ Our concerns surrounding drought and climate change are discussed at length in comments on the water withdrawal permit. *See* SACE and SRK Water Withdrawal Permit Comments, *supra* n. 10, at 2-5, 11-13.

²⁷ EPA is currently finalizing new ELGs for electric generating units, and is expected to issue the final rule in September of this year. In the proposed ELGs, issued in 2013, EPA stated that technologies that can achieve ZLD are available and may be appropriate for particular plants. While EPA declined to base ELGs for Flue Gas Desulfurization wastewater on ZLD technologies because of the costs to the industry as a whole in its draft rule, EPD should still consider whether a ZLD system is appropriate for this particular permit. *See* U.S. EPA, Proposed Effluent Guidelines for the Steam Electric Power Generating Category, <http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm>.

²⁸ Powers, *supra* n. 25, at 6.

²⁹ Ray Henry, Southern Co.’s Vogtle Costs Could Top \$8 Billion, State Analysis Says, Augusta Chronicle (Feb. 13, 2015), available at <http://chronicle.augusta.com/news/metro/2015-02-13/southern-cos-vogtle-costs-could-top-8-billion-state-analysis-says>.

³⁰ Electric Power Research Institute, Abstract: Summary of Zero Liquid Discharge (ZLD) Water Management Installations at U.S. Power Plants (Dec. 12, 2008), available at <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=00000000001015592>; *see also* Michael Mickley, P.E., Ph.D., Survey of High-Recovery and Zero Liquid Discharge Technologies for Water Utilities, WaterReuse Foundation (2008).

³¹ GE Power & Water, Water & Process Technologies, Integrated Approach to Water/Wastewater Treatment at Zero Liquid Discharge, Combined Cycle Power Plants (2011), available at <https://www.gewater.com/kcpguest/document-library.do> (search for “integrated approach”; follow hyperlink to document titled in citation).

facilities, and newer carbon capture and storage facilities.³² In at least one instance, a state permitting agency is considering ZLD to be the best available technology for a power plant's discharge.³³

If implemented here, a ZLD system would both reduce the quantity of the withdrawals and eliminate the associated discharges. Given these dual benefits, EPD should strongly consider whether ZLD is the best available technology for addressing the discharges associated with this permit.

V. EPD should include effluent limitations and require monitoring for pollutants at Outfall 1, the plant's ultimate discharge to the river.

At Outfall 1, the final discharge point, the draft permit limits pH and requires flow monitoring, but sets no other effluent limitations or monitoring requirements. Instead, most limits in the draft permit are imposed on internal discharge points. For example, the permit contains an internal limit on total suspended solids from Outfalls 4 and 5. These outfalls flow into the blowdown sump, commingling with discharges from at least five other internal outfalls, all of which are combined with the liquid radwaste treatment outfalls, and ultimately discharged from Outfall 1. *See* Fact Sheet Attachment C and Draft Permit at 2-7. Suspended solids from all of these outfalls are combined, but the permit imposes no limit or monitoring requirement for suspended solids at Outfall 1. Draft Permit at 2.

While internal discharge limits can be useful for limiting pollution prior to the commingling of waste streams, it is also important to limit and monitor the final discharge. A key purpose of the Clean Water Act is to eliminate and regulate "discharge[s] of pollutants into navigable waters." 33 U.S.C. § 1251(a). Unlike internal discharges, the discharges from Outfall 1 directly impact the river. As it stands, it is unclear whether EPD has even assessed the impact of the combined waste streams, particularly from the standpoint of mass loadings of pollutants into the river.

Internal discharge monitoring points are permissible under NPDES regulations when imposing effluent limits at the point of discharge is impractical, infeasible, or otherwise justified by exceptional circumstances. Ga. Comp. R. & Regs. R. 391-3-6-.06(4)(b); 40 C.F.R. §122.45(h). However, even where internal limitations may be appropriate, it does not diminish the requirement to limit effluent discharges into the river itself. OSAH has previously held that, where a facility is subject to the NSPS set forth in 40 C.F.R. §423.15, which addresses cooling tower blowdown, EPD must establish limits for both the cooling tower blowdown outfalls *and* the final discharge, or explain why it is not setting limits at the final discharge in accordance with the requirements of 40 C.F.R. §124.45(h)(2).³⁴

³² Tim Dixon, Blog, Visiting the Kemper CCS Project (Feb. 4, 2015), available at <http://ieaghg.org/publications/blog/118-general/526-visiting-the-kemper-ccs-project>; *see also* U.S. Water Services, U.S. Opens First Concentrated Solar Power Tower Plant in California, available at <http://www.uswaterservices.com/case-studies/details/Solar-Power-Tower-Plant>.

³³ U.S. EPA New England Region 1, Fact Sheet for the Merrimack Station Revised Draft Permit (April 2014), available at <http://www.epa.gov/region1/npdes/permits/draft/2014/draftnh0001465permit.pdf#page=30>

³⁴ *Altamaha Riverkeeper, Inc. v. Dir., Env'tl. Prot. Div.*, Docket Nos. OSAH-BNR-WQC-1031706-98-WALKER, OSAH-BNR-WW-1031708-98-WALKER, at 9-10 (OSAH July 23, 2010), attached hereto as Exhibit F.

Neither the Fact Sheet nor the draft NPDES permit for the discharges from the new reactors set forth a basis for establishing effluent limitations for only the internal waste streams rather than also including limitations for the final discharge at Outfall 1. To rectify this deficiency, EPD must either impose effluent limits for effluents at Outfall 1, or follow the procedure for setting effluent limitations on internal waste streams. Setting limits and monitoring effluents from Outfall 1 is not impractical or infeasible, as shown by the draft NPDES permit itself, which sets flow and pH limits for Outfall 1. EPD's failure to set limits at the final discharge, or explain why it has not done so, renders the draft permit legally deficient.

If EPD declines to require a ZLD system, as recommended above, it should set limits for temperature, total suspended solids, BOD, COD, phosphorus, nitrate-nitrite, and any other pollutants which EPD determines may have reasonable potential to cause or contribute to water quality standard violations. As described in the next section, these limits should be both mass-based and concentration-based.

Finally, EPD should include a provision explicitly incorporating established water quality standards set forth in Ga. Comp. R. & Regs. § 391-3-6-.03. This would further ensure that the final discharges do not adversely impact the river.

VI. EPD should include mass-based effluent limitations in addition to concentration-based limitations.

EPD asserts that it exercised its best professional judgment to set concentration-based limits as opposed to the mass-based limits contained in 40 CFR § 423.15. Fact Sheet at 4. However, EPD does not explain how it reached this decision. Because the Savannah Harbor is subject to a TMDL for dissolved oxygen it is important that the permit include both mass- and concentration-based limits.

Hundreds of municipal and industrial sources discharge pollution into the Savannah and the river now carries the distinction of having the third-largest toxic pollutant load of any river in the country.³⁵ Concentration-based limits address the concentration of pollutants discharged from a facility, but they fail to account for the *total quantity* of such pollutants. Where there are multiple discharges into a river, as is the case for the Savannah, mass-based limits are necessary to limit and monitor the *total amount* of a given pollutant present in the river. For many pollutants, particularly those that tend to persist and bioaccumulate, the cumulative mass of the pollutant may cause negative impacts to the river and its biota, even if the overall concentration is small.³⁶ For this reason, even though the discharge from Vogtle Units 3 & 4 will be diluted, as EPD notes in the Fact Sheet, this will not necessarily prevent the discharge from further degrading the already-poor water quality of the river, particularly when considered in combination with existing pollutant loads.

³⁵ See Georgia Water Coalition, Georgia's Dirty Dozen 2014, at 16 (October 2014), available at <http://www.garivers.org/gawater/pdf%20files/2014DirtyDozen/FullReport2014.pdf>.

³⁶ See, e.g., EPA Region 10, Guidance for WQBELs Below Analytical Detection/Quantitation Level, at 4 (March 22, 1996), available at <http://dec.alaska.gov/water/npdes/Binders/application/> ("Mass-based limits are particularly important for control of bioconcentratable pollutants.").

The TMDL process itself requires a calculation of the river's assimilative capacity, or the mass-based daily load of a pollutant that the river can absorb while still meeting water quality standards. This total maximum daily load is then allocated among the various dischargers into the water body. As explained above, when a permit contains only concentration-based limits, it does not limit the total load of a pollutant that ends up in the river. Mass-based daily limits can facilitate the TMDL process and ensure that EPD can adequately control and evaluate the impact of this NPDES permit, in combination with the NPDES permits for other dischargers, on the assimilative capacity of the river.

Additionally, the inclusion of both mass- and concentration-based effluent limitations will encourage the proper operation of treatment facilities at all times. Mass-based limits incentivize water conservation and reduce the use of dilution as a treatment mechanism. Concentration-based limits may instead encourage water use, even during low-flow periods, by promoting dilution as a means of treatment.³⁷ Including mass-based effluent limits is especially appropriate where the requirements in the effluent guidelines include a concentration requirement but direct the permit writer to calculate a mass-based effluent limit using the concentration requirement and the wastewater flow, as is the case for the NSPS under 40 C.F.R. §423.15.³⁸

At a minimum, EPD should explain why, in its best professional judgment, it was appropriate to substitute concentration-based limits for the mass-based limits contained in 40 CFR § 423.15. Given the precarious state of the Savannah River basin, EPD's explanation that it has used concentration-based limits for other power plants in the past falls well short of the necessary justification of its choice. Fact Sheet at 4.

VII. EPD should include a provision in the draft permit incorporating any and all radioactive discharge effluent limitations set by the Nuclear Regulatory Commission.

The draft permit allows for discharge from the plant's liquid radwaste treatment systems (internal discharges), but states that the radioactive component of the discharge is regulated by the NRC, under 10 C.F.R. Part 20.³⁹ The draft permit does not itself require any reporting or monitoring of such discharge, nor does it explicitly require compliance with the NRC regulations. EPD should remedy this deficiency by including the following, or similar, language into either the requirements for outfalls 1, 6, and 7 or the "Special Requirements" section of the draft permit: "This permit incorporates the requirements set forth in 10 C.F.R. Part 20 and any and all limits and monitoring requirements set by the Nuclear Regulatory Commission on discharges of radioactive materials from outfalls 1, 6, and 7." Similar provisions have been used in NPDES permits in other jurisdictions.⁴⁰ Including such a provision will ensure the

³⁷ U.S. EPA, 2010 NPDES Permit Writers' Manual at 5-21, 5-32—5-33, available at http://water.epa.gov/polwaste/npdes/basics/upload/pwm_chapt_05.pdf.

³⁸ *Id.* at 5-32.

³⁹ Draft Permit at 5.

⁴⁰ *See, e.g.*, Alabama Dept. of Env'tl. Mgmt., Revised Draft NPDES Permit for Farley Nuclear Plant, Permit No. AL0024619 at 46, available at <http://www.adem.state.al.us/newsEvents/notices/oct13/npdes/10southern.pdf> ("This permittee shall comply with all the U.S. Nuclear Regulatory Commission requirements relative to this discharge.")

enforceability of the NRC's effluent limitations and monitoring requirements for radioactive discharges.

VIII. EPD must require more frequent monitoring for effluents in the plant's discharge in order to ensure daily limits are being met.

The draft permit sets daily average and maximum limits, but the required frequency of monitoring is insufficient to establish that the limits are being met. For example, daily average limits for zinc from Outfalls 2 and 3 is limited to 1 mg/L, but monitoring is only required *once per quarter*.⁴¹ Total suspended solids are subject to daily average and daily maximum limits at outfalls for low volume waste streams (Outfalls 4 and 5) and liquid radwaste (Outfalls 6 and 7). However, monitoring is only required *twice a month* for low volume waste streams and only *once per quarter* for liquid radwaste system discharges.⁴² This lack of consistency occurs throughout the permit.

Under CWA regulations, permits must specify monitoring "frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring." 40 C.F.R. § 122.48(b). The monitoring requirements in the draft permit are not sufficient to demonstrate that the discharge will meet a daily average and daily maximum limit. More frequent monitoring, matching each limit in question, is therefore required.

IX. Additional comments and concerns.

In addition to the foregoing comments, we submit the following suggestions for the draft permit:

- EPD should change the permit's pH limits to comply with requirements set forth in its own regulations. The draft permit requires that "pH shall not be less than 6.0 standard units nor greater than 9.0 standard units . . ." Draft Permit at 2. However, EPD regulations impose a water quality standard for pH "[w]ithin the range of 6.0-8.5." Ga. Comp. R. & Regs. 391-3-6-.03(6)(c)(ii). As such, the permit should be modified accordingly to be consistent with these regulations.
- EPD should require whole effluent toxicity testing at the discharge point for Outfall 1. Such a provision would "ensure[] protection from acute toxicity *within any designated mixing zone* and helps to define alternate criteria to allow for safe passage of aquatic organisms through streams . . ." See Ga. Comp. R. & Regs. § 391-3-6-.06(4)(d)(5)(vi) (emphasis added).
- EPD should explain what best management practices ("BMPs") are required by the permit. The Fact Sheet indicates that BMPs will be used, but no further detail is offered. Fact Sheet at 2. The agency must require and specify best management practices to "control or abate the discharge of pollutants when . . . [t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA." 40 C.F.R. § 122.44(k)(4).

⁴¹ Draft Permit at 3.

⁴² *Id.* at 4-5.

- EPD should assess whether the discharge will have any impact on trophic-weighted residue value of mercury in fish tissue exceeding the human health standard (“TWR”). According to EPD’s Draft 2014 Integrated 305(b)/303(d) List, a 59-mile stretch of the river downstream of Plant Vogtle is not supporting its designated use for TWR.⁴³ According to the permit application, there will be a small concentration of mercury in the discharge.⁴⁴ The permit and accompanying documentation fail to explain why this discharge will not impact TWR levels. EPD should analyze and address any potential impacts on TWR levels downstream and should consider the cumulative impact of mercury that will be discharged into the Savannah River, instead of merely assessing the concentration of mercury expected in the discharge.
- EPD should require the permittee to mitigate any impacts to dissolved oxygen levels and impacts caused by any other pollutants in the discharge. Such mitigation should use tested, reliable technology and its effectiveness should be monitored. Permittees “shall take all reasonable steps to minimize or prevent any discharge . . . which has a reasonable likelihood of adversely affecting human health or the environment.” 40 C.F.R. § 122.41(d).

X. Conclusion

We appreciate the opportunity to submit these comments and look forward to EPD’s response.

Respectfully submitted,

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⁴³ EPD Draft 2014 Integrated 305(b)/303(d) List, *supra* n. 11, at 259.

⁴⁴ Permit Application at Form 2D, p. 4.