



Roadmap for Developing and Updating Nutrient Reduction Strategies

September 2023

1.0 Purpose

The Clean Water Act (CWA) authorizes the United States Environmental Protection Agency (US EPA) and delegated states to develop and implement water quality standards to protect human health, aquatic life, and the environment. In April 2022, EPA issued a Nutrient Policy Memorandum that outlined EPA's plans to accelerate progress in controlling nutrient pollution in the nation's waters using three main strategies, which included deepening collaborative partnerships with agriculture, increasing efforts to support the achievement of nutrient reductions from all sources, and utilizing Clean Water Act authorities to drive progress, innovation, and collaboration. This document provides Georgia's roadmap for the development of a comprehensive Nutrient Reduction Strategy for point and nonpoint source discharges.

2.0 Current Nutrient Permitting Requirements

When developing NPDES Permits, the Georgia Environmental Protection Division (EPD) includes permit requirements for nutrients based on both technology-based effluent limitations (TBELs) and water quality-based effluent limitations (WQBELs). The first step in the permit development process is evaluating the TBELs. However, by analyzing the effect of a pollutant in the discharge on the receiving water, a permit writer could find that TBELs alone will not achieve the applicable water quality standards or protect downstream users. In such cases, the CWA and its implementing regulations require development of WQBELs.

As discussed in EPA's National Pollutant Discharge Elimination System (NPDES) Permit Writers Manual, TBELs aim to prevent pollution by requiring a minimum level of effluent quality that is attainable using demonstrated technologies for reducing discharges of pollutants or pollution into the waters of the State. TBELs are developed independently of the potential impact of a discharge on the receiving water, which is addressed through water quality standards and WQBELs. The NPDES regulations at 40 C.F.R. §125.3(a) require NPDES permit writers to develop technology-based treatment requirements, consistent with CWA section 301(b), that represent the minimum level of control that must be imposed in a permit. The regulation also requires permit writers to include in permits additional or more stringent effluent limitations and conditions, including those necessary to protect water quality.

For pollutants not specifically regulated by Federal Effluent Limit Guidelines (ELGs) or the secondary treatment standards, the permit writer must identify any needed TBELs and utilize best professional judgment to establish TBELs or determine other appropriate means to control its discharge if there is a reasonable potential to cause or contribute to a violation of the water quality standards.

2.1 TBELs – Secondary treatment standards for Publicly Owned Treatment Works (POTWs)

TBELs for POTWs must be based on secondary treatment standards and the “equivalent to secondary treatment standards” (40 C.F.R. §125.3(a)(1)). The regulation applies to all POTWs and identifies the technology-based performance standards achievable based on secondary treatment for five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH. At this time, EPA has not developed TBELs for nutrients from POTWs.

2.2 TBELs – Industrial Effluent Limitation Guidelines (ELGSs)

EPA has promulgated regulations under the CWA that establish effluent limitations guidelines for existing sources, standards of performance for new sources, and pretreatment standards for new and existing sources. These regulations are codified at 40 C.F.R. §§401-471. The following industrial subcategories have effluent limitation guidelines for nitrogen, ammonia, or phosphorus:

Nitrogen/Ammonia

432 Meat and Poultry Products
415 Inorganic Chemicals Manufacturing
418 Fertilizer Manufacturing
419 Petroleum Refining
420 Iron and Steel Manufacturing
421 Nonferrous Metals Manufacturing
424 Ferroalloy Manufacturing
426 Glass Manufacturing
432 Meat and Poultry Products
439 Pharmaceutical Manufacturing
440 Ore Mining and Dressing
445 Landfills
449 Airport Deicing
471 Nonferrous Metals Forming and Metal Powders

Phosphorus/Total Phosphorus

426 Glass Manufacturing
465 Coil Coating
418 Fertilizer Manufacturing
422 Phosphate Manufacturing
439 Pharmaceutical Manufacturing

Further, case-by-case TBELs are established in situations where EPA promulgated effluent guidelines are inapplicable, such as:

- When EPA has not yet promulgated effluent guidelines for the point source category or subcategory;
- When effluent guidelines are available for the industry category but are not applicable to the NPDES permit applicant; and
- When effluent guidelines are available for the category, but not for the pollutant of concern.

2.3. WOBELS – Evaluating Reasonable Potential

EPA regulations state: “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any [s]tate water quality standard, including [s]tate narrative criteria for water quality” 40 C.F.R. §122.44(d)(1)(i).

EPA regulations in 40 C.F.R. §122.44(d)(1)(ii) require state agencies to develop procedures for determining whether a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative or numeric criterion within a state water.

Upon identification of a pollutant of concern, the permit writer must perform a reasonable potential analysis (RPA) using a procedure that has accounted for any combination of the following criteria:

- existing controls on point and nonpoint sources of pollution,
- the variability of the pollutant or pollutant parameter in the effluent,
- the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and
- where appropriate, the dilution of the effluent in the receiving water.

to determine if the pollutant and its discharge has the reasonable potential to cause or contribute to an in-stream excursion above the allowable ambient concentration of a state narrative or numeric criteria within the state's water quality standards for an individual pollutant. If such reasonable potential is determined to exist, the NPDES permit must contain pollutant effluent limits. If the permit writer has determined there is insufficient data, the permit writer might also consider monitoring requirements to collect the additional data related to the presence or absence of a specific pollutant to provide information for further analyses for the development of appropriate numeric or narrative standard.

In 2022, EPD submitted a draft NPDES permit for review by EPA Region 4 in accordance with the National Pollutant Discharge Elimination System Memorandum Of Agreement Between the State of Georgia And The United States Environmental Protection Agency Region 4. EPA provided comments to EPD on the NPDES permit identifying the absence of an RPA for nitrogen. EPA asserted that any facility that has the potential to discharge nitrogen must go through an RPA as required in the federal regulations to determine if the discharge of nitrogen has the reasonable potential to cause or contribute to an instream water quality standard violation. The results of the RPA may require the inclusion of numeric nutrient effluent limits in NPDES permits. EPD agrees with EPA, whereby facilities discharging pollutants of concern, such as nitrogen directly to or upstream from waterbodies with total nitrogen water quality standards, must undergo an analysis to determine if the discharge has the reasonable potential to cause or contribute to instream water quality standard violations. The comments received from EPA led EPD to review current nutrient permitting strategies and identify gaps where new or revised strategies may be needed.

3.0 Existing Nutrient Requirements

The following existing laws, guidance documents, and permitting strategies are used in Georgia to manage and reduce nutrients in Georgia's waters:

- **Lake Law (OCGA 12-5-3-23.1).** In 1990, the Georgia legislature passed the "Lake Law" that authorizes the EPD to establish water quality standards for each publicly owned lake or reservoir located wholly or partially within the state of Georgia that has a normal pool level surface area of 1,000 or more acres. The law requires that a comprehensive study of each lake be conducted prior to the adoption of lake and major tributary water quality standards.
- **Phosphorus Detergent Ban (OCGA 12-5-27-1).** On January 1, 1991, it became unlawful to sell retail cleaning agents containing phosphorus.
- **Chattahoochee River Wastewater Discharge Limits (OCGA 12-5-23.2).** In 1996, the Georgia legislature passed a law requiring all NPDES permits discharging 1 MGD or greater into the Chattahoochee River between Buford Dam and West Point Lake to have a monthly average Total Phosphorus limit of 0.75 mg/L.
- **Total P Limits for New Facilities >3 MGD (OCGA 12-5-29(d)(2)&(3)).** In 1996, the Georgia legislature passed a law requiring all new NPDES permits issued after January 1, 2001, for facilities discharging more than 3 MGD of wastewater to include a total phosphorus limit of no more than 0.30 mg/L.
- **Discharges in the Metro Chattahoochee Basin.** In 2002, EPD issued the memo "Discharges in the Metro Chattahoochee Basin". The memo acknowledged that there was no assimilative capacity in the Chattahoochee River in the Metro Atlanta area; however, there was limited capacity in the tributaries. To allow future growth, only discharges to tributaries were allowed and these discharges were given reuse limits with Total Phosphorus limits of 0.13 mg/L to encourage urban reuse of wastewater for irrigation.
- **Point Source Phosphorus Load above Lake Jackson. (GA. COMP. R. & REGS. 391-3-6-.03(17)(c))** Numeric nutrient criteria and chlorophyll a criteria were established for Lake Jackson in 1997. In 2007, the phosphorus load allocation above Lake Jackson was revised at GA. COMP. R. & REGS. 391-3-6-.03(17)(c). The revisions included if a facility with an existing phosphorus load of 0.3 mg/L were to expand, their Total Phosphorus load would be maintained; All minor facilities with permit flows between 0.1 and 1.0 MGD that had no Total Phosphorus limit would be given a permit limit of 0.30 mg/L with a compliance schedule; and all new facilities were provided a Total Phosphorus limit of 0.15 mg/L.
- **Georgia's Plan for the Adoption of Water Quality Standards for Nutrients.** In 2008, EPD developed the first version of "Georgia's Plan for the Adoption of Water Quality Standards for Nutrients" (Nutrient WQS Plan). In 2011, EPA requested each State develop a strategy for adopting nutrient water quality standards following the "Recommended Elements of a State Nutrient Framework". The Nutrient WQS Plan was revised in 2011 and again in 2013. EPA mutually agreed to the latest revision in August 2013. This Plan

outlines EPD approach to develop numeric nutrient criteria in Georgia including developing an inventory of all state waters, characterizing the various waterbodies, determining water quality parameters to be used as criteria, developing the technical approaches to be used to select criteria, and coming to a mutual consensus with the EPA on the methods for assessing waters for compliance.

- **Phosphorus Strategy.** In 2011, EPD published the “Strategy for Addressing Phosphorus in NPDES Permitting” (Phosphorus Strategy). The Phosphorus Strategy identifies a general strategy for all waters and specific strategies for: 1) waters in close proximity to lakes and/or estuaries; 2) waters entering lakes with specific water quality standards; and 3) waters on the Georgia 303(d) List of impaired waters.
- **Development of Numeric Nutrient Criteria in Estuaries.** In 2015, EPD, South Carolina Department of Health and Environmental Control, and EPA developed "An Approach to Develop Numeric Nutrient Criteria for Georgia and South Carolina Estuaries." This document indicates that nutrient criteria can be derived based on reference conditions, stressor-response relationships, and/or water quality simulation modeling.
- **Ammonia Permitting Strategy.** EPA published recommended ammonia water quality criteria for the protection of aquatic life in freshwater in 2013. These criteria were to protect mussels from ammonia toxicity. EPD choose not to adopt the numeric ammonia criteria, but instead developed the “NPDES Permitting Strategy for Addressing Ammonia Toxicity” in 2017 to implement EPA’s ammonia criteria through the state’s narrative toxicity criteria, the wasteload allocation (WLA) process, and instream monitoring.
- **Trading Guidance.** In 2021, EPD began developing a water quality trading guidance document that outlines how water quality trading could be used to address limitations in available assimilative capacity, particularly nutrients. The “Guidance for Water Quality Trading in Georgia” was finalized in February 2023.
- **Georgia’s Nonpoint Source Management Plan.** Georgia’s Statewide Nonpoint Source Management Plan provides EPD and other partners and stakeholders with specific long-term goals and short-term activities to address nonpoint source pollution and restore and protect good water quality. Every five years, EPD reviews and revises the Statewide Nonpoint Source Management Plan. This plan lists nutrients as priority pollutants, and identifies common urban, agricultural, and silvicultural nonpoint sources of nutrients. The plan includes specific numeric milestones for annual nitrogen and phosphorus load reductions to be achieved from Section 319(h) funded projects.

4.0 New and Updated Nutrient Requirements

- Georgia’s Plan for the Adoption of Water Quality Standards for Nutrients. The schedules for the development of lake and estuary standards needs to be revised.
- Strategy for Addressing Phosphorus in NPDES Permitting. All POTW dischargers need to be provided Total Phosphorus limits. Limits for existing dischargers without phosphorus

limit need to be developed based on demonstrated performance. The strategy for existing discharges upstream of lakes needs to be updated to maintain existing loads, and the strategy for new facilities upstream of lakes needs to be revised.

Additionally, EPD has plans to develop the following documents:

- A Total Nitrogen NPDES Permitting Strategy
- Reasonable Potential Analysis for Nitrogen
- Reasonable Potential Analysis for Phosphorus
- Guidance for Developing the Comprehensive Nutrient Optimization Plan

5.0 Proposed Actions & Timelines

<u>No.</u>	<u>Actions¹</u>	<u>Notes</u>	<u>Target Timelines</u>	<u>Deliverable</u>	<u>Public Processes</u>
1	Public notice kick-off stakeholder meeting (~30-day public notice)		30 days	Public notice document	
2	Stakeholder meeting to present the Draft Nutrient Roadmap, and solicit feedback		August 17, 2022	Presentation to stakeholders	Stakeholder meeting
3	Review stakeholder feedback	Dependent on level of stakeholder participation and feedback	60 days		
4	Update Phosphorus NPDES Permitting Strategy		Summer 2023	Updated Total Phosphorus Permitting Strategy	
5	Develop phosphorus RPA procedures for point source dischargers		Fall 2023	RPA Strategy and calculation worksheet	Stakeholder process may be needed if RPA procedures deviate from current RPA

6	Update the Plan to adopt numeric nutrient criteria		Fall 2023	Updated schedule to develop lake and estuary water quality standards based on preliminary modeling and the complexity of the lake and estuary systems that currently don't have chlorophyll a and/or nutrient criteria. Submit updated Plan to EPA for mutual agreement.	
7	Develop Total Nitrogen NPDES Permitting Strategy		Spring 2024		
8	Develop nitrogen RPA procedures for point source dischargers		Spring 2024	RPA Strategy and calculation worksheet	Stakeholder process may be needed if RPA procedures deviate from current RPA
9	Public notice stakeholder meeting (~30-day public notice)		Spring 2024	Public notice document	
10	Stakeholder meeting to present Total Nitrogen Permitting Strategy and solicit feedback		TBD	Presentation to stakeholders	Stakeholder meeting
11	Comment period open for 30-60 days		60 days	None	Public comments

12	Review stakeholder feedback and update models and or strategies as needed		60 – 90 days	Updated documents (Total Nitrogen Permitting Strategy, Phosphorus Strategy, Permitting Strategy for Addressing Ammonia Toxicity) as needed	
13	Finalize and implement strategies		TBD	Updates language in NPDES permits and fact sheets	
14	Continued update of water quality models and development of water quality standards for lakes and estuaries as funding and resources become available.	Identify critical variables	Ongoing	Site Specific lake/estuary chlorophyll a criteria and numeric nutrient lake/estuary targets. Adapt the criteria as part of our water quality standards. Submit lake criteria to EPA for approval.	Public participation during rule making process