

The State of South Carolina's 2021 Adoption Plan for Numeric Nutrient Water Quality Standards

Overview

The South Carolina Department of Health and Environmental Control (DHEC or Department) provides this plan in compliance with United States Environmental Protection Agency (EPA) guidelines regarding the adoption of numeric criteria for nutrients for waters of the United States. This plan gives a brief description of the Department's activities related to numeric nutrient criteria including past actions, current work status, potential future priorities, and a tentative schedule for promulgation of numeric nutrient water quality criteria. This plan describes methods the Department will use to set and adopt water quality criteria for nutrient parameters that protect against measurable impacts to the aquatic environment caused by nutrient over-enrichment.

The criteria development process will ultimately lead to adoption of water quality criteria for nutrients for all waters identified by the Department to have the potential for eutrophication from nutrient over enrichment. The date of adoption for all criteria is subject to change depending on the outcome of earlier tasks. Department staff will review this plan periodically and the EPA will be notified. The two parties will reestablish mutual agreement on any changes to this plan at the time of submittal.

Promulgated Nutrient Water Quality Criteria

The Department previously completed the process of promulgating numeric nutrient water quality criteria for lakes of forty acres or greater in the 2001 triennial review of the water quality standards regulation, South Carolina Regulation 61-68 *Water Classifications and Standards* (R.61-68). Due to both necessity and a legal urgency, the Department prioritized its lakes for numeric nutrient criteria development. The Department adopted an ecoregional approach for classification of these waters and modified EPA's Approach to Criteria Development as outlined in the Technical Guidance Documents that are specific to the waterbody types in order to reflect attributes specific to South Carolina's lakes. These numeric nutrient criteria are defined in R.61-68.E.11 as follows.

11. In order to protect and maintain lakes and other waters of the State, consideration needs to be given to the control of nutrients reaching the waters of the State. Therefore, the Department shall control nutrients as prescribed below.

a. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.

b. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.

(1) For the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l.

(2) For the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.

(3) For the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.

c. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.

d. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the above narrative and numeric criteria and other applicable water quality standards.

e. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.

At the time of development and promulgation of these numeric criteria, EPA did not specify that any additional language was necessary for the Department to assess its waters using the criteria that were duly promulgated and adopted. This has since changed and EPA has requested clarification regarding specific issues such as duration, frequency, and values used for determining compliance with the numeric criteria for 303(d) listing purposes and Total Maximum Daily Loads (TMDLs). With this issue in mind, in 2009, the Department extensively reviewed its existing criteria and the process by which they were developed. The LOESS regression, SPLINE regression, and logistic regression methods were applied to the data analysis. No adjustment to the existing criteria have been proposed, but methodology evaluation continues.

It is the intent of the Department to move forward with adoption and promulgation of numeric nutrient criteria for all waters of the state. The Department wants to ensure that these criteria reflect a scientifically defensible and sound approach that will not only provide for the protection and maintenance of our waters from nutrient over-enrichment, but will also improve those

waters that are currently impaired due to nutrient loadings. Department staff are working across the state to develop numeric nutrient criteria for estuaries, rivers, and streams. A two-year temporary grant position was previously funding a staff scientist to work towards these goals from 2014 - 2016.

Nutrient Parameters

The Department has adopted all four of the EPA nutrient criteria parameters for use with lakes, but Department staff will determine through the development process if all four parameters are necessary for rivers, streams and estuaries.

1. Total Phosphorus (TP) - Phosphorus has largely been implicated as the cause of over-enrichment in freshwater systems and implicated recently as the limiting factor in marine systems as well, thus it is likely that phosphorus criteria will be developed and adopted for all classes of waters. Criteria will be established based on evaluations of relationships between total phosphorus and various response variables (e.g., chlorophyll *a*, dissolved oxygen, and biological indices).
2. Total Nitrogen (TN) - The Department will develop appropriate nitrogen criteria by evaluating relationships between nitrogen concentrations and response variables (e.g., chlorophyll *a*, and biological indices) which are indicative of eutrophication. The need for nitrogen loading controls to address downstream water quality impacts will also be evaluated.
3. Chlorophyll *a* (chl_a) (can include periphyton and phytoplankton) - The Department will evaluate the utility of chlorophyll *a* criteria by examining relationships between chlorophyll *a* and nutrients in fresh and marine waters. The Department is also exploring the use of mathematical models to predict conditions that may cause impairment.
4. Turbidity - South Carolina has adopted turbidity criteria for all its waters based on waterbody types and also their classified uses.
5. When considering adoption of nutrient criteria for these parameters the Department may consider guidance and recommendations from EPA including, but not limited to *Preventing Eutrophication: Scientific Support for Dual Nutrient Criteria* (EPA-820-S-15-001) and *Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs* (EPA-822-R-21-005).
6. Other information to be evaluated - The Department will evaluate biological indices and macroinvertebrate data to determine its utility for setting nutrient criteria. The Department is considering the use of dissolved oxygen data and information as it relates to productivity or algal biomass. Finally, the Department is exploring the use of statistical and numerical models as tools to determine numeric nutrient criteria.

Nutrient TMDLs

As noted above, the Department developed numeric nutrient criteria for lakes greater than forty (40) acres in 2001. The Department monitors and assesses waters according to these criteria.

The Department also monitors waters for nutrients where there are no applicable numeric criteria. Where monitoring data indicate a violation of the numeric standard, these waters are placed on the 303(d) list and prioritized for TMDL development. To date, one (1) nutrient TMDL has been established and four (4) additional nutrient TMDL efforts are underway.

1. Completed Nutrient TMDLs

- Lake Edgar Brown - TP, pH

2. Prioritized Nutrient TMDLs as of 2018 303(d) List

- Catawba Lakes - 49 sites - mix of TP, TN and response parameters chla, DO, and pH - intensive data collection 2017-2020, proceeding with model development (see the Criteria section below for more information).
- Upper Lake Murray - 4 sites - mix of TP, TN and response parameters chla, DO, and pH - intensive data collection began 2021 (see the Criteria section below for more information).
- Reedy River Basin - 2 sites - mix of TP, TN and response parameters chla, DO, and pH (currently only impaired for TN; TP and chla trending back up) - 5R stakeholder model development is behind schedule. DHEC modeling staff were withdrawn from the Modeling Committee in spring 2021 due to uncertainty about the commitment of stakeholders to develop a defensible model to establish nutrient allocations and permit limits. It is our understanding that EPA modeling staff also ended participation in model committee meetings. The modeling is one part of the Reedy River Water Quality Group, which both DHEC and EPA have invested in. Over the next several months, DHEC will evaluate the path forward in coordination with EPA and work to determine the appropriate course of action by spring 2022.
- Lake Hartwell/18-mile Creek Arm - 1 site - TP, TN – TMDL on hold pending assessment of new data, new data are currently being assessed for the upcoming 2020-2022 303(d) List due to EPA by April 2022.

3. Other Nutrient Impaired Waters - TMDLs are required but not prioritized at this time

- Lake Marion
- Parr Reservoir
- Goose Creek Reservoir
- DNR Fishing Lakes
- These waters will be considered in accordance with the Department's future Vision 2.0 Prioritization Rationale and draft long term priority waters Candidate Pool, which are currently proposed by EPA to be submitted on or before September 30, 2023.

Developing Nutrient Water Quality Criteria

South Carolina plans to utilize EPA's technical guidance or modifications thereof to refine and develop criteria for other waters of the State. The actual approaches used will most likely depend on the result of the analysis of available data and future data collections and will use only data specific to South Carolina waters. The approaches will be either effect-based (correlating nutrient levels with measurable water quality or biological effects or impairments utilizing available data and data to be collected, findings in published literature, and historical information) or reference-based (utilizing a percentile of the frequency distribution of all sites for

different water body types based on site-specific data and ecoregions).

1. Estuaries

It is believed that all of South Carolina's estuaries lie within Nutrient Ecoregion XIV. During criteria development, a determination will be made if it is appropriate to have one set of indicators for all estuarine waters or to include several sets. In 2003, Department staff expanded its analysis of estuarine eutrophication indicators, as well as spatial coverage for estuarine sampling to gather data and information using a grant provided by the EPA. Algal growth potential test (AGPT) data were developed along with nutrients and other specific parameters on ten additional sites believed to represent all of South Carolina's estuaries. This effort also included two site locations that represent the least impacted or reference sites. While the study did not generate a large data collection, results indicated that either nitrogen or phosphorus may limit algal biomass even in the least impacted estuarine waters.

Several different statistical analyses of nutrient causal and response parameters based on the above classification schemes are being utilized to develop nutrient criteria for estuaries.

Calculations using the National Estuarine Research Reserves data have shown promising results. However, the data analyses from most South Carolina datasets results in low correlation and high variability.

This is likely due to the way most South Carolina coastal nutrient related data was collected, e.g., it was not collected with nutrient criteria development in mind, which has resulted in data gaps across both geographic and temporal scales. Therefore, the Department's subsequent approach involves a statistically validated estuary grouping method. Grouped estuaries will then be assigned numeric nutrient criteria using the EPA approved "data distribution approach" and the assignment of reference conditions.

As of December 2013, a marine nutrient database has been compiled which contains 182,000 water nutrient records and approximately 19 million additional water quality records from 799 sampling stations along the South Carolina coast. Data sources include the Department's own Ambient Surface Water Quality Monitoring Program, the United States Geological Survey, the National Estuarine Research Reserve's Central Data Management Office and generous contributions by local scientists.

Additionally, GIS software has been employed to subdivide the South Carolina coastline into 15 estuary regions. These estuary groups have also been more broadly classified by estuary type. From May through October of 2014 - 2016, surface water grab samples and in-situ continuous monitoring of water quality parameters were collected from Winyah Bay, the Ashley and Wando Rivers, and the Edisto Island marsh creek systems. These sites represent the range of coastal waters found in South Carolina, from river-dominated systems (Ashley and Wando Rivers) to tidally dominated systems (Edisto Island marsh creeks). Under South Carolina's water use classification system, samples have been collected from SA, SB, SFH, and ORW waters.

After QA/QC by Department staff the existing estuary data has been pushed to WQX and is publicly

accessible through the Water Quality Portal. Staff are currently discussing the NSTEPS proposal with EPA regarding initial exploratory analysis to determine if enough data currently exists. Staff are also discussing what steps would be necessary to fill in any possible gaps, should they exist. What the EPA says about this existing data set will determine the next steps.

The Department intends that numeric nutrient criteria for estuaries be adopted during a future triennial review of the water quality standards. The Department will provide updates to the EPA periodically as milestones are achieved and will submit for early review and concurrence any numeric criteria (including supporting data and analyses) proposed for water quality standards adoption.

2. Rivers and Streams

South Carolina's rivers and streams lie within Nutrient Ecoregions IX, XI, and XIV. The Department's river and stream monitoring program has traditionally included phosphorus, nitrogen, turbidity, and limited biological community analyses, with excellent spatial coverage across ecoregions and stream classes.

All appropriate data and information will be analyzed and used to develop numeric nutrient criteria for South Carolina rivers and streams according to EPA guidance. The dynamic relationships between nutrients, water chemistry, substrate, lentic and lotic conditions within the waterbody and designated uses of these waterbodies will be evaluated.

The Department proposes that numeric nutrient criteria for rivers and streams be adopted on a site-specific basis with the Department first establishing a methodology that will provide a measure for the presence of eutrophic conditions instream. This methodology will incorporate a process for identification of nutrient over-enrichment and the severity of the pollution. The individual site-specific numeric water quality criteria will be implemented once adopted as water quality standards and approved by the EPA. The Department will provide updates to the EPA periodically as milestones are achieved and will submit for early review and concurrence any numeric criteria (including supporting data and analyses) proposed for water quality standards adoption.

Discussions between Department staff and EPA staff have been initiated regarding the EPA NSTEPS program with the goal of creating a work plan to develop numeric nutrient criteria in freshwater streams. The focus of the NSTEPS program collaboration thus far has been obtaining information on identifying and quantifying periphyton as an indicator for stream health. EPA staff have provided DHEC with a wealth of resources on the subject as well as some classes and workshops that will help DHEC staff to obtain a diatom taxonomic certification. This certification is a major step in progressing toward the creation of an NSTEPS work plan.

Department staff have been formulating ideas for establishing a data collection plan and a formal periphyton program. This effort will begin as a small trial, after which staff will evaluate the viability for expanding the program. Once the NSTEPS work plan is established the goals for this program will be more clearly defined. Staff intend to track progress and milestones for this program and will provide updates to the EPA.

3. Lakes

Currently the Department has established numeric nutrient criteria for lakes greater than forty (40) acres. These criteria were established in 2001 based on an eco-regional approach and are highlighted above in the Promulgated Nutrient Water Quality Criteria section.

Catawba Lakes

The Department has recently considered a site-specific approach to development numeric nutrient criteria for the Lower Catawba River Basin. The Lower Catawba River Basin includes the watershed drainage from the tailrace at Lake Wylie in Fort Mill, South Carolina, to the tailrace at Lake Wateree in Kershaw County, South Carolina. The system is one of the major watersheds for the city of Charlotte, North Carolina, and its south suburbs including rapidly growing York County, South Carolina. More than 30 ambient monitoring locations in the Lower Catawba are included in the state's draft 2018 303(d) list as impaired for total phosphorus, total nitrogen, and/or chlorophyll-a. In addition, blooms of planktonic *Microcystis* and colonies of *Lyngbya wollei*, a filamentous, mat-forming algae are commonly present in Lake Wateree during the hot summer months. These cyanobacteria produce toxins known to cause swimmer's itch, respiratory problems, potential liver damage, potential brain damage, and taste and odor issues in drinking water.

In 2016, using an updated version of the WARMF model, DHEC determined and proposed preliminary total phosphorus and total nitrogen load reductions for point and nonpoint sources as the starting point for TMDLs. The load reductions included a 66 percent cut in phosphorus and a 55 percent cut in nitrogen from wastewater sources. Reductions from stormwater and human nonpoint sources varied by location, up to 50 percent. DHEC presented these results to stakeholders and proposed that stakeholders conduct an allocation process to determine individual allocations most effectively. DHEC provided a phosphorus allocation tool to assist the process.

In response, the dischargers in the Lower Catawba asked DHEC for time to collect additional data and develop more detailed modeling and develop site-specific numeric nutrient (total nitrogen, total phosphorus, and chlorophyll-a) criteria for the lakes. The criteria would be used to develop a TMDL aimed at addressing water quality impairments impacting designated uses. The stakeholders and the National Council for Air and Stream Improvement (NCASI) developed an approved Quality Assurance Project Plan (QAPP) and conducted extensive monitoring in the Catawba basin in 2017 and 2018. The group also initiated a facilitated model review group to select suitable models to support criteria and TMDL develop.

In 2019, DHEC implemented the *Lower Catawba River Basin – Stream and Lake Nutrient Water Quality Study* (Nutrient Study) as well as wet-weather watershed studies to produce an enhanced suite of environmental data. Additionally, in 2020, DHEC conducted a program to address specific questions that remained including further resolving the seasonal cycle of physical conditions and progression in phototroph ecology in the system. The new data will be coupled with previous water quality studies by the dischargers and DHEC's ambient water quality

monitoring data to develop new watershed, lake hydrodynamic, and lake water quality models to assist in informing site-specific numeric criteria for the Lower Catawba system.

As part of the Nutrient Study, DHEC's Bureau of Water (BOW) collected biweekly water quality data from six stream sites and 11 lake sites from mid-April through the end of October 2019. Broadly, the objectives of the Nutrient Study were to quantify nutrient loadings from the prevalent land use types in the basin and to resolve the relationship between physical and chemical conditions and ecological responses in Fishing Creek Reservoir and Lake Wateree. Samples were collected for 18 unique chemical water quality parameters in the streams and at multiple depths in the lakes. In addition, total chlorophyll-a and photosynthetic pigment samples along with sensor-based vertical profiles for physical parameters were collected in the lakes. Monitoring systems to continuously record physical parameters at the surface were also deployed at two locations: one in the mid-lake area of Fishing Creek Reservoir and one in Lake Wateree off the Dutchman Creek lake arm. Further, DHEC partnered with EPA to 1) conduct algal growth potential tests to investigate nutrient limitation on the phytoplankton community, 2) quantify sediment oxygen demand and nutrient fluxes between sediments and the water column, and 3) install two additional continuous monitoring systems at strategic locations in Lake Wateree. DHEC also collaborated with NCASI to quantify grain size and organic carbon content in Lake Wateree sediments. Lastly, DHEC and Coastal Carolina University installed a weather station at Wateree State Park to support modelling efforts.

In 2019 and into the winter of 2020, BOW conducted two watershed studies aimed at characterizing nutrient loadings to the Catawba River and lake during wet-weather events in five watersheds of varying land use types. Nutrient loadings during storm events, particularly at the 'first flush' of the event, can be significant due to release of accumulated pollutant mass at the surface and in soil pores associated with high energy runoff of heavy rainfall. Currently, there are no nutrient loading data for the Lower Catawba associated with the wet-weather events. An understanding of these loadings during storm events enhances the watershed modeling capability and robustness through verification of nutrient loading export mechanisms.

The 2020 program objective was achieved using a series of five monitoring systems in Lake Wateree and Fishing Creek Reservoir to continuously record physical/hydrographic parameters and biological responses (sensor-based chlorophyll-a and phycocyanin) coupled with biweekly water quality sampling. The data collected as part of this study will provide insights into the mechanistic links between physical conditions and nutrients and algal responses such as phytoplankton biomass and toxin production. Together with the results of the earlier studies, these links will help establish site-specific nutrient criteria that are protective of the waters' designated uses.

Additional watershed stream samples were collected in spring and early summer 2021 to better characterize nutrient contributions from small watersheds focusing on specific land uses. Currently, BOW is participating in a facilitated stakeholder process to select a modeling package to be used to model the watershed, river and lake system. The model will then be used to develop the TMDLs and site-specific criteria for the lakes. During the fourth quarter of 2021, BOW will initiate a Request for Proposals to select a contractor to build the models. Model development is expected to start early in 2022. Development of the framework for establishing

site-specific criteria in the lower Catawba lakes will parallel model development during 2022. It is expected that in 2023, the model will be used to propose criteria and TMDLs including equitable allocations for nutrient sources. The administrative process to adopt the criteria and finalize the TMDLs would follow.

Upper Lake Murray Data Collection

During 2021, BOW is conducting a detailed field study at key lake locations in the Little Saluda River arm, Clouds Creek arm, and Bush River arm in upper Lake Murray. The Little Saluda River/Clouds Creek and Bush River lake arms are designated priority 2016-2022 restoration areas in The State of South Carolina's 2018 Integrated Report. Four locations—S-309, RL-11033, S-324, and S-222—are prioritized for one or multiple parameters including total phosphorus (TP), dissolved oxygen (DO), chlorophyll-a (chl-a), and pH. These impairments and the underlying data are evidence of eutrophic conditions in the lake arms of upper Lake Murray stemming from elevated nutrient inputs. The objectives of the 2021 Lake Murray study are to:

- Support updated nutrient evaluation of Lake Murray and better define the spatial distribution of nutrients and nutrient-related parameters across the lake,
- Provide a comprehensive data set describing nutrient conditions in these lake arms,
- Determine what nutrients (nitrogen or phosphorus) may limit phytoplankton growth throughout the growing season,
- Develop a continuous record of key physical and biological parameters in each lake arm,
- Understand vertical hydrographic structure and light availability in the water column,
- Characterize the seasonal succession of phytoplankton biomass (i.e., chlorophyll-a), phytoplankton community structure, and potential emergence of cyanotoxins, and
- Support future watershed nutrient loading and nutrient TMDL determinations and better define the spatial extent for these determinations.

The results of this study will inform questions related to the scope of the TMDLs for these impaired sections in the upper region of the lake. Further, it is expected the 2021 study results will provide important baseline information to support the development of additional monitoring studies in 2022 that will be designed to support TMDL model development.

Data Needs

To continue data collection and to help fill in data gaps, the Department will seek to utilize any additional available funds, EPA nutrient criteria development and/or training funds, information available from studies in other states, etc. to provide resources or information to help fill in these data gaps. Additional data and resource needs include, but are not limited to:

1. Further assessments of relationships between nutrient (TP and TN) concentrations and impairment of designated uses in more waters throughout the state.
2. Seasonal effects of nutrients.
3. The importance of flow, turbidity, substrate, and light in moderating the effects of nutrients.

4. Additional resources to collect, compile, and analyze data from future collection efforts.

Other Concerns

The Department has other issues that will need to be addressed as nutrient criteria are developed for other waters of the State regarding criteria implementation. The Department expects to address these issues throughout the development process as additional information is gathered and that data and information are reviewed. These issues include, but are not limited to, the following:

1. Criteria protective of designated uses
2. Continued application of narrative standards
3. System for evaluating exceedances of nutrient criteria for assessment
4. Modeling and assessing effluents
5. Consideration of downstream effects

Schedule

1. 2022 Triennial Review
 - Department staff will continue focused efforts to establish site-specific numeric nutrient criteria for the Lower Catawba River Basin. It is expected that contractor selection and model development will occur in 2022 followed by proposed criteria and TMDLs in 2023. Therefore, Catawba nutrient criteria will come after the 2022 triennial review, but adoption could proceed as an interim standards revision as soon as the technical work and stakeholder process are completed prior to the 2025 triennial review. Depending on the timing of this process, Catawba nutrient criteria could be held for the subsequent 2025 triennial review if needed.
 - Department staff is actively exploring data needs, methods, and processes for eventual numeric nutrient criteria development in rivers, streams, and estuaries. Department staff is currently working with the EPA on identifying these items to aid in establishing a solid foundation that allows the Department to build towards criteria development. Progress by the Department will be documented to show active work towards the eventual goal of numeric criteria for these water body types. Once data needs have been identified and processes have been established then the Department may be able to establish a timeline for numeric nutrient criteria development in rivers, streams, and estuaries.
2. 2025 Triennial Review

- Upon promulgation and implementation of the Lower Catawba River Basin site-specific nutrient criteria Department staff will evaluate suitability of this approach for other lakes.

3. Separate from the triennial reviews Department staff will maintain quarterly calls with EPA staff based on the following schedule to discuss the status of criteria development for rivers, streams, and estuaries as well as the site-specific criteria and TMDL development for the Catawba Lakes. TMDL activities for Lake Murray and other lakes may be discussed as needed.

Date	General Activities	Waterbody Specific Activities
2022 First Quarter	<ul style="list-style-type: none"> • Triennial review kickoff • Quarterly call with EPA 	<p>Catawba Lakes: Model development is expected to start early in 2022. Development of the framework for establishing site-specific criteria in the lower Catawba lakes will parallel model development during 2022.</p>
2022 Second Quarter	<ul style="list-style-type: none"> • Triennial review stakeholder meetings • Quarterly call with EPA 	<p>Lake Murray: It is expected the 2021 study results will provide important baseline information to support the development of additional monitoring studies in 2022 that will be designed to support TMDL model development</p>
2022 Third Quarter	<ul style="list-style-type: none"> • Triennial review Notice of Proposed Regulation • Triennial review staff forum • Annual review of Nutrient Plan (and revision if needed) • Quarterly call with EPA 	<p>Other Lakes: TMDL activities may be discussed as needed.</p>
2022 Fourth Quarter	<ul style="list-style-type: none"> • Triennial review Notice of Final Regulation • Triennial review public hearing • Quarterly call with EPA 	<p>Estuaries: Complete NSTEPS project, if funded</p> <p>Rivers and Streams: NSTEPS workplan development</p>
2023 First Quarter	<ul style="list-style-type: none"> • Triennial review Board approved regulation moves to Legislative review • Quarterly call with EPA 	<p>Catawba Lakes: The model will be used to propose criteria and TMDLs including equitable allocations for nutrient sources.</p>
2023 Second Quarter	<ul style="list-style-type: none"> • Triennial review Legislative review is complete and final regulation is published • Quarterly call with EPA 	<p>Other Lakes: TMDL activities may be discussed as needed.</p>
2023 Third Quarter	<ul style="list-style-type: none"> • Triennial review submission to EPA • Annual review of Nutrient Plan (and revision if needed) • Quarterly call with EPA 	<p>Estuaries: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2023 Fourth Quarter	<ul style="list-style-type: none"> • Quarterly call with EPA 	<p>Rivers and Streams: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2024 First Quarter	<ul style="list-style-type: none"> • Quarterly call with EPA 	<p>Catawba Lakes: Begin administrative process to adopt the criteria and finalize the TMDLs. Evaluate suitability of this approach for other lakes.</p>
2024 Second Quarter	<ul style="list-style-type: none"> • Quarterly call with EPA 	<p>Other Lakes: TMDL activities may be discussed as needed.</p>
2024 Third Quarter	<ul style="list-style-type: none"> • Annual review of Nutrient Plan (and revision if needed) • Quarterly call with EPA 	<p>Estuaries: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2024 Fourth Quarter	<ul style="list-style-type: none"> • Quarterly call with EPA 	<p>Rivers and Streams: Specific activities informed by ongoing efforts discussed in quarterly calls</p>

Date	General Activities	Waterbody Specific Activities
2025 First Quarter	<ul style="list-style-type: none"> • Triennial review kickoff • Quarterly call with EPA 	<p>Lakes: TMDL activities may be discussed as needed.</p>
2025 Second Quarter	<ul style="list-style-type: none"> • Triennial review stakeholder meetings • Quarterly call with EPA 	<p>Estuaries: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2025 Third Quarter	<ul style="list-style-type: none"> • Triennial review Notice of Proposed Regulation • Triennial review staff forum • Annual review of Nutrient Plan (and revision if needed) • Quarterly call with EPA 	<p>Rivers and Streams: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2025 Fourth Quarter	<ul style="list-style-type: none"> • Triennial review Notice of Final Regulation • Triennial review public hearing • Quarterly call with EPA 	
2026 First Quarter	<ul style="list-style-type: none"> • Triennial review Board approved regulation moves to Legislative review • Quarterly call with EPA 	<p>Lakes: TMDL activities may be discussed as needed.</p>
2026 Second Quarter	<ul style="list-style-type: none"> • Triennial review Legislative review is complete and final regulation is published • Quarterly call with EPA 	<p>Estuaries: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2026 Third Quarter	<ul style="list-style-type: none"> • Triennial review submission to EPA • Annual review of Nutrient Plan (and revision if needed) • Quarterly call with EPA 	<p>Rivers and Streams: Specific activities informed by ongoing efforts discussed in quarterly calls</p>
2026 Fourth Quarter	<ul style="list-style-type: none"> • Quarterly call with EPA 	

State Rulemaking Process

The Department must promulgate these nutrient criteria in accordance with the South Carolina Administrative Procedures Act (APA) as outlined below. The APA process requires the Department to involve stakeholders, the public, and the South Carolina Legislature to make any amendments to the water quality standards. This process is described below.

1. Notice of Drafting – *State Register* notification. Includes a thirty (30) day public comment period (typically, January – February of triennial year).
2. Meetings with stakeholders – Usually multiple meetings are convened to provide for interaction between the many different stakeholders and the Department. Federal and State agencies are involved as well as environmental groups and members of the regulated community along with local governmental groups representing cities and towns (typically, March – May of triennial year).
3. First Board meeting – The Department requests permission from our Agency Board members for a Notice of Proposed Regulation, a Staff-conducted Informational Forum to be convened, and a Public Hearing to be held (typically, August of triennial year).

4. Notice of Proposed Regulation – *State Register* notification. Another thirty (30) day public comment period. Department staff prepares final language of the regulation and a responsiveness summary to all comments received during the process (typically, August of triennial year).
5. Staff Informational Forum – The Department provides an additional opportunity for the public to provide comments regarding the proposed regulation (typically, September - October of triennial year).
6. Public Hearing – Conducted before the Agency Board and if the proposed regulation is approved, then the Department may go forward with sending the promulgated regulation to the South Carolina Legislature for approval (typically, November - December of triennial year).
7. Submittal to S.C. Legislature – If after 120 days, it is approved or no action taken, the regulation is then published in the next *State Register*. The regulation becomes effective for purposes of state activities (typically, January of the next year).
8. Submittal by the Attorney General to the EPA – EPA is now given sixty (60) days to approve the regulation revisions or ninety (90) days to disapprove the regulation revisions (typically, July - August of the next year).
9. If approved by the EPA – State may use the numeric nutrient criteria as South Carolina water quality standards for purposes of the Clean Water Act (typically, September - October of the next year).