



**Algae, Weeds, and Slimes, Oh My:
A Call for Numeric Nutrient Criteria in New York State**

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I. Introduction

Nutrient pollution plagues waterways nationwide, threatening public health and the environment.¹ While nitrogen and phosphorus occur naturally in aquatic ecosystems, excessive nutrient loads and nutrient eutrophication in rivers, streams, lakes, estuaries, and wetlands can create significant and challenging problems.² Excessive nutrients fuel algal blooms, which deplete oxygen levels in water, causing fish kills and dead zones.³ Toxins and bacteria associated with algal blooms can cause sickness in people and pets, and high levels of nutrient pollution in drinking water can contribute to public health problems.⁴ Nutrient pollution comes from a variety of sources, including animal manure, fertilizer, erosion, stormwater runoff, sewage overflows, and discharges from wastewater treatment plants.⁵

In New York, nutrient pollution affects waterways across the state.⁶ Nutrient eutrophication has been recognized by the New York State Department of Environmental Conservation's ("DEC") Water Quality Assessment Program as one of the "top ten most prevalent causes/sources of water quality impact/impairment" in the state.⁷ Further, DEC has identified nutrients as a "major source" of pollution in twenty-three percent of impaired waterways in New York, as well as a "contributing source" of pollution in another twenty-nine percent of impaired waterways.⁸ Although total maximum daily loads ("TMDLs")—sometimes referred to as "pollution diets"—have been developed to address nutrient impairments in some waterways,⁹ others have languished on the state's list of impaired waterways awaiting restoration.¹⁰ In several instances, DEC has yet to even identify the underlying source of the nutrient pollution.¹¹

In 2018, Governor Andrew Cuomo identified harmful algal blooms ("HABs")—those composed of algae species that can produce dangerous toxins—as a threat to New York's waterways:

In recent years, the extent, duration, and impacts, and awareness of HABs have increased, threatening the recreational use of lakes that are essential to upstate tourism, as well as sources of drinking water. In 2017, more than 100 beaches were closed for at least part of the

¹ U.S. Env'tl. Prot. Agency, Nutrient Pollution: The Issue, <https://www.epa.gov/nutrientpollution/issue> (last visited June 4, 2019).

² *See id.*

³ *Id.*

⁴ *See id.*

⁵ *See* U.S. Env'tl. Prot. Agency, Nutrient Pollution: The Sources and Solutions, <https://www.epa.gov/nutrientpollution/sources-and-solutions> (last visited June 4, 2019).

⁶ N.Y. Dep't of Env'tl. Conservation, Nutrient Loadings and Eutrophication, <https://www.dec.ny.gov/chemical/69489.html> (last visited June 4, 2019).

⁷ N.Y. Dep't of Env'tl. Conservation, Top Water Quality Issues, <https://www.dec.ny.gov/chemical/100967.html> (last visited June 4, 2019).

⁸ N.Y. Dep't of Env'tl. Conservation, Nutrient Loadings and Eutrophication, *supra* note 6.

⁹ N.Y. Dep't of Env'tl. Conservation, Clean Water Plans, <https://www.dec.ny.gov/chemical/23835.html> (last visited June 4, 2019).

¹⁰ N.Y. Dep't of Env'tl. Conservation, *The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy* (Nov. 2016), https://www.dec.ny.gov/docs/water_pdf/303dListfinal2016.pdf ("2016 Final 303(d) List").

¹¹ *Id.* at 27–30.

summer due to HABs, and Skaneateles Lake, a cherished source of unfiltered drinking water for several communities including the city of Syracuse, was threatened by algal blooms for the first time.¹²

To begin to address the problem, the New York State Water Quality Rapid Response team worked with experts and stakeholders to develop Action Plans to reduce pollution in twelve priority locations that span from Western and Central New York to the North Country and the Hudson Valley.¹³ While the Action Plans summarize existing data and provide recommendations for steps to be taken that may resolve the root causes of some HABs, the plans are not fully funded or coordinated in their implementation.¹⁴ Furthermore, the plans are specific to the twelve priority locations and do not constitute a comprehensive program to understand the drivers of, or effective treatments for, HABs across the state.

In the Hudson River Watershed, phosphorus is a source of widespread water quality problems. Several waterbodies, including the Wallkill River and several of its tributaries; Washington Lake and Browns Pond (reservoirs that have served as drinking water supplies for the City of Newburgh); the middle Saw Mill River; Fallkill Creek; Wappingers Lake; and numerous other lakes are listed, or proposed to be listed, as impaired due to phosphorus pollution.¹⁵ In addition, numerous waterbodies, including the Mohawk River, the drinking water supplies that rely on it, and many of its tributaries; several Upper Hudson River tributaries; the Lower Esopus Creek; Fishkill Creek; Quassaick Creek; Moodna Creek; Woodbury Creek; Sparkill Creek; and other waterbodies in the Hudson River Watershed are known or suspected to be stressed at least in part due to excess phosphorus.¹⁶

Improved regulation of nutrient pollution is necessary to better protect humans, animals, and aquatic life in New York. The use of numeric water quality criteria as a means to control nutrient pollution would benefit the state in many ways, including by facilitating the identification of

¹² Governor Andrew M. Cuomo, *2018 State of the State* 286–87 (2018), available at <https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2018-stateofthestatebook.pdf> (“2018 State of the State”).

¹³ See *id.* at 287–88; N.Y. Dep’t of Env’tl. Conservation, Harmful Algal Bloom (HAB) Action Plans, <https://www.dec.ny.gov/chemical/113733.html> (last visited June 4, 2019).

¹⁴ Governor Cuomo committed to providing nearly sixty million dollars in grant funding for plan implementation. 2018 State of the State, *supra* note 12, at 289. As of December 2018, fifty million dollars had been awarded. Press Release, N.Y. Dep’t of Env’tl. Conservation, DEC Announces \$103 Million in Grants to Improve Water Quality, Reduce Algal Blooms Included in REDC Awards (Dec. 28, 2019), <https://www.dec.ny.gov/press/115741.html>.

¹⁵ 2016 Final 303(d) List, *supra* note 10; N.Y. Dep’t of Env’tl. Conservation, *The Draft New York State 2018 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy* (June 20, 2018), https://www.dec.ny.gov/docs/water_pdf/303dlistdraft18.pdf (“2018 Draft 303(d) List”).

¹⁶ See e.g., N.Y. Dep’t of Env’tl. Conservation, Mohawk River WI/PWL, <https://www.dec.ny.gov/chemical/36739.html> (last visited June 4, 2019); N.Y. Dep’t of Env’tl. Conservation, Esopus Creek WI/PWL Fact Sheet, 3 (Dec. 13, 2007), https://www.dec.ny.gov/docs/water_pdf/wilhudsesopus.pdf (Esopus Creek, Lower, Main Stem); N.Y. Dep’t of Env’tl. Conservation, Fishkill Creek WI/PWL Fact Sheet 3, 8 (Mar. 26, 2008 & Feb. 20, 2008), https://www.dec.ny.gov/docs/water_pdf/wilhudsfishkill.pdf (Fishkill Creek, Lower, and tribs; Quassaick Creek, Lower, and minor tribs); N.Y. Dep’t of Env’tl. Conservation, Moodna Creek WI/PWL Fact Sheet 4, 7 (Apr. 1, 2016 & Mar. 26, 2008), https://www.dec.ny.gov/docs/water_pdf/wilhudsmoodna.pdf (Moodna, Upper, and minor tribs; Woodbury Creek and tribs); N.Y. Dep’t of Env’tl. Conservation, Saw Mill River WI/PWL Fact Sheet 20 (June 6, 2008), https://www.dec.ny.gov/docs/water_pdf/wilhudssawmillriver.pdf (Sparkill Creek, Upper, and minor tribs).

polluted waterbodies and the development of TMDLs; providing greater accountability in existing nutrient reduction programs; better informing effluent limitations in discharge permits; and providing clear standards against which to measure progress and identify water quality problems.¹⁷ Therefore, Riverkeeper is calling on New York State to expeditiously propose and adopt comprehensive, statewide, numeric water quality criteria for nitrogen, phosphorus, chlorophyll a and turbidity.

II. The Clean Water Act

Passed in 1972, the Clean Water Act (“CWA” or “the Act”) prohibits the discharge of pollutants into waters of the United States without a permit.¹⁸ The Act also establishes a system for the development and implementation of water quality standards (“WQS”).¹⁹ WQS are foundational components of the CWA that, among other things, establish “the water quality goals for a specific water body.”²⁰

A. Water Quality Standards

Water quality standards exist to protect public health and the environment.²¹ They are comprised of three elements: (1) designated uses; (2) water quality criteria; and (3) antidegradation requirements.²² The designated uses of a waterbody refer to the types of activities that the waterway should be able to support, such as recreation or fish propagation. Wherever possible, the designated uses of a waterway should at least reflect the “fishable/swimmable” goal laid out in section 101(a)(2) of the CWA.²³ Additional uses for which a waterway may be designated are laid out in section 303(c) of the CWA, and include public drinking water supplies or support for agricultural or industrial activities.²⁴

Water quality criteria describe the conditions necessary to support designated uses.²⁵ For example, if a waterway is designated for primary contact recreation, the criteria must reflect

¹⁷ See Memorandum, U.S. Env'tl. Prot. Agency, Nutrient Pollution and Numeric Water Quality Standards 2 (May 25, 2007), <https://www.epa.gov/sites/production/files/2014-08/documents/nutrient-memo-may252007.pdf> (“2007 EPA Mem.”).

¹⁸ See 33 U.S.C.A. § 1311 (Lexis 2019).

¹⁹ See 33 U.S.C.A. § 1313; see also, 40 C.F.R. Part 131 (Lexis 2019).

²⁰ U.S. Env'tl. Prot. Agency, *Water Quality Standards Handbook, Ch. 1: General Provisions* 1 (Sept. 2014), available at <https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter1.pdf> (“WQS Handbook Ch. 1”).

²¹ 40 C.F.R. § 131.3(i) (stating that “[w]ater quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act”).

²² WQS Handbook Ch. 1, *supra* note 20, at 2; see also, 33 U.S.C.A. § 1313(c); 40 C.F.R. § 131.3(i); U.S. Env'tl. Prot. Agency, Standards for Water Body Health, <https://www.epa.gov/standards-water-body-health/what-are-water-quality-standards> (last visited June 4, 2019).

²³ U.S. Env'tl. Prot. Agency, *Water Quality Standards Handbook, Ch. 2: Designation of Uses* 1 (2012), available at <https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter2.pdf> (“WQS Handbook, Ch. 2”); see also 33 U.S.C.A. § 1251.

²⁴ 33 U.S.C.A. § 1313(c)(2)(A); 40 C.F.R. § 131.10(a); see also WQS Handbook, Ch. 2, *supra* note 23, at 2 (describing additional types of designated uses including (1) coral reef preservation; (2) marinas; (3) groundwater recharge; (4) aquifer protection; and (5) hydroelectric power).

²⁵ 40 C.F.R. § 131.3(b).

water quality conditions that do not pose a danger to swimmers. Similarly, if a waterway is designated for fish propagation, the criteria must reflect water quality conditions that do not pose a danger to aquatic life. The criteria can be expressed either as numeric measurements or as narrative statements.²⁶ Either way, the criteria “must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use.”²⁷

Antidegradation requirements refer to policies that states must develop and follow to protect current water quality from deteriorating.²⁸ At a minimum, states should have antidegradation policies that protect existing uses and existing water quality.²⁹

States typically take the lead role in developing, revising, and adopting their own WQS, with review and approval from the U.S. Environmental Protection Agency (“EPA”).³⁰ However, section 303 of the CWA requires that EPA promulgate WQS when a state fails to do so and new or revised standards are necessary to comply with the Act.³¹ Furthermore, pursuant to section 304, EPA must publish water quality criteria recommendations that states and authorized tribes may use as guidance in developing their WQS.³² According to EPA’s Water Quality Standards Handbook, these “national criteria recommendations” set forth “quantitative concentrations or levels and/or qualitative measures of pollutants that, if not exceeded, will generally ensure adequate water quality for protection of a designated use.”³³ While EPA recommends that states utilize the agency’s recommendations when developing their own criteria, states may adopt other criteria so long as they are scientifically defensible and protect the designated use(s) of the waterway.³⁴

B. Numeric and Narrative Water Quality Criteria

Water quality criteria can be expressed as numeric values or narrative statements.³⁵ Numeric criteria consist of measurable levels or concentrations of specific pollutants (e.g., pH, dissolved oxygen, or bacteria), whereas narrative criteria consist of statements that describe water quality conditions (e.g., prohibitions on odors, suspended solids, or floating substances).³⁶ In general, states should develop numeric criteria where possible, and narrative criteria where “numerical criteria cannot be established or to supplement numerical criteria.”³⁷

²⁶ *Id.*; see also 6 NYCRR Part 703 (2019).

²⁷ 40 C.F.R. § 131.11(a)(1).

²⁸ U.S. Env’tl. Prot. Agency, *Water Quality Standards Handbook, Ch. 4: Antidegradation* 1 (2012), available at <https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter4.pdf>.

²⁹ 40 C.F.R. § 131.12(a).

³⁰ See 33 U.S.C.A. § 1313.

³¹ *Id.*

³² 33 U.S.C.A. § 1314(a); see also U.S. Env’tl. Prot. Agency, *Water Quality Standards Handbook, Ch. 3: Water Quality Criteria* 2 (2017), available at <https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter3.pdf> (“WQS Handbook, Ch. 3”).

³³ WQS Handbook, Ch. 3, *supra* note 32, at 2.

³⁴ *Id.* at 2.

³⁵ 40 C.F.R. § 131.11(b).

³⁶ See e.g., 6 NYCRR Part 703.

³⁷ 40 C.F.R. § 131.11(b)(2).

States have historically relied on narrative criteria to regulate nutrient pollution. While narrative criteria play an important role in water quality regulation, adopting numeric criteria would be advantageous to New York and other areas that are facing nutrient pollution problems. EPA recognizes several key benefits of numeric nutrient criteria, including:

- easier and faster development of TMDLs;
- quantitative targets to support trading programs;
- easier to write protective [National Pollutant Discharge Elimination System (“NPDES”)] permits;
- increased effectiveness in evaluating success of nutrient runoff minimization programs; and
- measurable, objective water quality baselines against which to measure environmental progress.³⁸

Simply put, numeric nutrient criteria provide clear, measurable standards that can be easily implemented through existing programs and tools to measure and reduce nutrient pollution.³⁹

III. Federal Action on Numeric Nutrient Criteria

A. Federal Numeric Nutrient Criteria Policy

In June 1998, EPA published the *National Strategy for the Development of Regional Nutrient Criteria* (“1998 National Strategy”).⁴⁰ The 1998 National Strategy followed on the heels of the Clinton Administration’s *Clean Water Action Plan: Restoring America’s Waters* (“1998 Clean Water Action Plan”), released in February of the same year.⁴¹ The 1998 Clean Water Action Plan called for “strong federal and state standards” to improve water quality,⁴² including the following “key action” related to nutrient pollution:

EPA will establish, by the year 2000, numeric criteria for nutrients (i.e., nitrogen and phosphorus) that are tailored to reflect the different types of water bodies (e.g., lakes, rivers, and estuaries) and

³⁸ 2007 EPA Mem., *supra* note 17, at 2.

³⁹ *Id.* at 2; *see also* Memorandum, U.S. Env’tl. Prot. Agency, Renewed Call to Action to Reduce Nutrient Pollution and Support for Incremental Actions to Protect Water Quality and Public Health 5 (Sept. 22, 2016), <https://www.epa.gov/sites/production/files/2016-09/documents/renewed-call-nutrient-memo-2016.pdf> (“2016 EPA Mem.”) (stating that numeric criteria “provide measurable water quality-based goals that are easier to implement than the narrative criteria statements in many state water quality standards.”); U.S. Env’tl. Prot. Agency, Preventing Eutrophication: Scientific Support for Dual Nutrient Criteria 1 (Feb. 2015), <https://www.epa.gov/sites/production/files/documents/nandpfactsheet.pdf> (stating that “[d]evelopment of numeric nutrient criteria is one aspect of a coordinated and comprehensive approach to nutrient management.”).

⁴⁰ U.S. Env’tl. Prot. Agency, *National Strategy for the Development of Regional Nutrient Criteria* (June 1998), available at <https://nepis.epa.gov/Exec/ZyPDF.cgi/20003NOU.PDF?Dockey=20003NOU.PDF> (“1998 National Strategy”).

⁴¹ *Id.* at iii; *see also* U.S. Env’tl. Prot. Agency & U.S. Dep’t of Agric., *Clean Water Action Plan: Restoring and Protecting America’s Waters* (Feb. 14, 1998), available at <https://nepis.epa.gov/Exec/ZyPDF.cgi/20004J7S.PDF?Dockey=20004J7S.PDF> (“1998 Clean Water Action Plan”).

⁴² 1998 Clean Water Action Plan, *supra* note 41, at iv–v.

the different ecoregions of the country, and will assist states in adopting numeric water quality standards based on these criteria over the following three years. If a state does not adopt appropriate nutrient standards, EPA will begin the process of promulgating nutrient standards.⁴³

The 1998 National Strategy further detailed the two-phase process envisioned by the 1998 Clean Water Action Plan for achieving numeric nutrient criteria.⁴⁴ First, EPA would develop criteria guidance documents that take into account geography and waterbody type.⁴⁵ EPA anticipated that the guidance, which would be available for nitrogen, phosphorus, and other nutrient indicators, would be expressed “as numerical ranges, reflecting a menu of different values based on the type of waterbody (i.e., streams and rivers, coastal waters and estuaries, lakes and reservoirs, and wetlands) and the region of the country in which the water is located.”⁴⁶ Second, states and authorized tribes would use the guidance documents or “other scientifically defensible methods” to develop numeric nutrient standards.⁴⁷ EPA expected both phases of the process to be complete by the end of 2003.⁴⁸ If a state failed to promulgate appropriate criteria, both the 1998 Clean Water Action Plan and the 1998 National Strategy recognized that EPA would step in and do so.⁴⁹

In 2000 and 2001, EPA published nutrient criteria guidance manuals for lakes and reservoirs, rivers and streams, and estuarine and coastal marine waters.⁵⁰ Also in the early 2000s, EPA developed a series of ecoregional nutrient criteria documents, largely for lakes and reservoirs and rivers and streams.⁵¹ As envisioned by the 1998 National Strategy, these guidance documents were intended to assist states and authorized tribes in adopting numeric nutrient criteria.

EPA provided additional procedural guidance in 2001, issuing a memorandum that encouraged states and authorized tribes to develop nutrient criteria plans.⁵² The plans would “outline the

⁴³ *Id.* at 59.

⁴⁴ 1998 National Strategy, *supra* note 40, at 5.

⁴⁵ *Id.* Due to the diversity of factors that influence nutrient pollution, EPA diverged from its general practice of developing a single national guidance level. *Id.* at iv.

⁴⁶ *Id.* at 5.

⁴⁷ *Id.* at 5–6.

⁴⁸ *Id.* at 6.

⁴⁹ 1998 Clean Water Action Plan, *supra* note 41 at 59; 1998 National Strategy, *supra* note 40, at 6.

⁵⁰ U.S. Env'tl. Prot. Agency, *Nutrient Criteria Technical Guidance Manual: Lakes and Reservoirs*, (Apr. 2000), available at <https://www.epa.gov/sites/production/files/2018-10/documents/nutrient-criteria-manual-lakes-reservoirs.pdf>; U.S. Env'tl. Prot. Agency, *Nutrient Criteria Technical Guidance Manual: Rivers and Streams* (July 2000), available at <https://www.epa.gov/sites/production/files/2018-10/documents/nutrient-criteria-manual-rivers-streams.pdf>; U.S. Env'tl. Prot. Agency, *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters* (Oct. 2001), available at <https://www.epa.gov/sites/production/files/2018-10/documents/nutrient-criteria-manual-estuarine-coastal.pdf>. The guidance manual for wetlands, which lagged behind, was not published until 2008. U.S. Env'tl. Prot. Agency, *Nutrient Criteria Technical Guidance Manual: Wetlands* (June 2008), available at <https://www.epa.gov/sites/production/files/2018-10/documents/nutrient-criteria-manual-wetlands.pdf>.

⁵¹ U.S. Env'tl. Prot. Agency, *Ecoregional Criteria*, <https://www.epa.gov/nutrient-policy-data/ecoregional-criteria> (last visited June 4, 2019).

⁵² Memorandum, U.S. Env'tl. Prot. Agency, *Development and Adoption of Nutrient Criteria into Water Quality Standards 3* (Nov. 14, 2001), <https://www.epa.gov/sites/production/files/2014-08/documents/nutrient-memo-nov142001.pdf> (“2001 EPA Mem.”).

specific strategy, milestones and schedule for developing and adopting nutrient criteria, taking into consideration specific situations, needs and processes.”⁵³ EPA viewed the nutrient criteria plans as a way to “bridge the gap” from technical guidance documents to final water quality standards.⁵⁴ Unlike the 1998 National Strategy, EPA’s 2001 memorandum did not set a deadline for the adoption of numeric nutrient criteria. Rather, EPA set a deadline of the end of 2004 for reviewing the progress made by states and authorized tribes in keeping with the schedules laid out in their nutrient criteria plans.⁵⁵ If a state or authorized tribe was making progress in accordance with its plan, then EPA would likely allow the entity to continue working toward its own standards.⁵⁶ If not, then EPA would consider promulgating numeric nutrient standards in its place.⁵⁷

In 2007, EPA issued a national update on the development of numeric nutrient criteria, emphasizing the need to “accelerat[e] the pace of state and tribal progress” and “take bold steps” to solve the nutrient pollution problem.⁵⁸ EPA also urged states and authorized tribes to move more quickly to adopt numeric nutrient standards.⁵⁹ If necessary, EPA recommended addressing “priority waters—i.e., waters at greatest risk of nutrient pollution . . . or of greatest consequence (such as drinking water sources)—first.”⁶⁰

In 2008, EPA published a national report detailing state progress in adopting numeric criteria.⁶¹ The nutrient parameters considered in the report included both “causal” (e.g., total nitrogen and total phosphorus) and “response” (e.g., chlorophyll a and water clarity) variables.⁶² The waterbody types included lakes and reservoirs; rivers and streams; estuaries; and wetlands.⁶³ At the time of the 2008 report, the following progress had been made at the state level:⁶⁴

⁵³ *Id.*

⁵⁴ *Id.* at 3–4.

⁵⁵ *Id.* at 9–10.

⁵⁶ *Id.* at 9.

⁵⁷ *Id.* at 9–10. If the state or authorized tribe had not developed a nutrient criteria plan, it should have begun the process of adopting numeric nutrient criteria. *Id.* at 10.

⁵⁸ See 2007 EPA Mem., *supra* note 17, at 1.

⁵⁹ *Id.* at 2.

⁶⁰ *Id.*

⁶¹ U.S. Env'tl. Prot. Agency, *State Adoption of Numeric Nutrient Standards 1998-2008* (Dec. 2008), available at <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1002TQ0.PDF?Dockey=P1002TQ0.PDF>. (“2008 EPA Report”).

⁶² *Id.* at 5.

⁶³ *Id.*

⁶⁴ *Id.* at 7.

Table 1: Status of Numeric Nutrient Criteria in 2008

Waterbody Type	States with Numeric Criteria for One or More Nutrient Parameters for the Entire Waterbody Type	States with Numeric Criteria for One or More Nutrient Parameters for Part of the Waterbody Type	States with No Numeric Nutrient Criteria for the Waterbody Type
Lakes/Reservoirs	6	13	31
Rivers/Streams	5	9	36
Estuaries (24 states)	3	7	14
Wetlands	0	4	46

Between 1998 and 2008, the number of states that had adopted numeric criteria for at least one nutrient parameter applicable to at least one entire waterbody type increased minimally, from six (Hawaii, Minnesota, New Jersey, North Carolina, Rhode Island, and Vermont) to seven (Oregon).⁶⁵ The number of states that had adopted numeric criteria for at least one nutrient parameter for part of a waterbody type increased from seven (Arizona, California, Georgia, Illinois, Nevada, New York, and Washington) to eighteen (Alabama, Colorado, Delaware, Florida, Massachusetts, Maryland, Montana, Oklahoma, South Carolina, Tennessee, and Virginia).⁶⁶

The 2008 report also documents the following state progress in developing and implementing nutrient criteria plans:⁶⁷

Table 2: Status of Nutrient Criteria Plans

States with an EPA-Reviewed Plan	46
States with an EPA-Reviewed Plan that Contains Projected Adoption Date(s)	33
States that have Missed Projected Adoption Date(s)	7
States that have Met Projected Adoption Date(s)	4

⁶⁵ Compare *id.* at 9 (Figure 1), with *id.* at 10 (Figure 2).

⁶⁶ *Id.*

⁶⁷ *Id.* at 7–8. Hawaii, Oregon, and South Dakota had not submitted plans to EPA, *id.* at 7, but Hawaii had already adopted nutrient standards. *Id.* at 7, n. 12. In addition, California was no longer using its plan. *Id.* at 7.

Also in 2008, state and federal officials formed the State-EPA Nutrient Innovations Task Group (“NITG”) to “review past nutrient control efforts and evaluate the potential for creating a new combination of existing tools and innovative approaches for addressing nutrient pollution.”⁶⁸ The following year, the NITG published *An Urgent Call to Action: Report of the State-EPA Nutrient Innovations Task Group*.⁶⁹ The NITG, which characterized efforts to address nutrient pollution as “hard-fought but collectively inadequate at both a statewide and national scale,”⁷⁰ reached several key findings in its 2009 report, including the following:

- The nutrient pollution problem is nationally significant, expanding, and likely to substantially accelerate.
- Existing efforts are not succeeding at improving water quality.
- Current tools such as numeric nutrient criteria, water quality assessments and listings, urban stormwater controls, [publicly owned treatment works (“POTW”)] nutrient limits, and animal feedlot controls are underused and poorly coordinated.⁷¹

In 2011, EPA issued a memorandum reiterating its commitment to addressing the nutrient pollution problem and its support for state action to develop numeric nutrient criteria.⁷² Specifically, the memorandum states:

It has long been EPA’s position that numeric nutrient criteria targeted at different categories of water bodies and informed by scientific understanding of the relationship between nutrient loadings and water quality impairment are ultimately necessary for effective state programs [N]umeric standards will facilitate more effective program implementation and are more efficient than site-specific application of narrative water quality standards. We believe that a substantial body of scientific data, augmented by state-specific water quality information, can be brought to bear to develop such criteria in a technically sound and cost-effective manner.⁷³

While prior agency guidance indicated that states and authorized tribes had some flexibility in regulating the causal (e.g., nitrogen and phosphorus) and response (e.g., chlorophyll a and water clarity) parameters associated with nutrient pollution,⁷⁴ EPA’s 2011 memorandum reflects a

⁶⁸ Nutrient Innovations Task Group Report Fact Sheet 1 (Aug. 2009), <https://www.epa.gov/sites/production/files/documents/nitgfactsheet.pdf>.

⁶⁹ State-EPA Nutrient Innovations Task Group, *An Urgent Call to Action: Report of the State-EPA Nutrient Innovations Task Force* (Aug. 2009), available at <https://www.epa.gov/sites/production/files/documents/nitgreport.pdf> (“2009 NITG Report”).

⁷⁰ Letter from State-EPA Nutrient Innovations Task Group to Lisa Jackson, Adm’r, U.S. Env’tl. Prot. Agency 1 (Aug. 27, 2009), <https://www.epa.gov/sites/production/files/documents/nitgreport.pdf>.

⁷¹ 2009 NITG Report, *supra* note 69, at 31.

⁷² See Memorandum, U.S. Env’tl. Prot. Agency, Working in Partnership with the States to Address Phosphorus and Nitrogen Pollution Through the Use of a Framework for State Nutrient Reductions (Mar. 16, 2011), http://www.acoel.org/file.axd?file=2011%2f9%2fEPA+nitrogen_framework.pdf (“2011 EPA Mem.”)

⁷³ *Id.* at 2–3.

⁷⁴ See 2001 EPA Mem., *supra* note 52, at 8–9; 2007 EPA Mem., *supra* note 17, at 2–3.

more specific focus on the causal parameters.⁷⁵ In a framework to guide pollution reduction efforts, EPA recommended, among other things, that each state develop a work plan with a schedule and interim milestones for the adoption of numeric nitrogen and phosphorus criteria for each waterbody type.⁷⁶ EPA determined that three to five years was a “reasonable timeline” for states to adopt a set of criteria for a waterbody type.⁷⁷ Five years later, in 2016, EPA once again stated its support for the development of numeric nutrient criteria at the state level.⁷⁸

Although EPA has produced a series of documents and memoranda since the Clean Water Action Plan and the 1998 National Strategy, the agency’s approach to numeric nutrient criteria has remained largely the same: encourage states and authorized tribes to develop plans and adopt numeric nutrient criteria—nitrogen and phosphorus criteria in particular—for all waterbody types. However, over the years, EPA relaxed its projections as to when the criteria should be adopted, extending its initial timeline of the end of 2003 (set forth in the 1998 National Strategy) to a “reasonable timeline” of three to five years for each waterbody type (set forth in the 2011 memorandum).

B. Efforts to Prompt Federal Action on Numeric Nutrient Criteria

1. Environmental Organizations Petition EPA for Rulemaking

In July 2008, several environmental organizations (“the Petitioners”) submitted a petition for rulemaking urging EPA to use its authority under section 303(c) of the CWA to promulgate numeric criteria for nitrogen, phosphorus, chlorophyll a and turbidity for all waterways that lack such criteria, or at least for the Gulf of Mexico and the Mississippi River Basin.⁷⁹ In addition, the Petitioners asked that EPA use its authority under section 303(d) of the Act to establish nitrogen and phosphorus TMDLs for the Mississippi River, its tributaries, and the Gulf of Mexico.⁸⁰ The Petitioners recognized that EPA had offered strategies for addressing nutrient pollution, but argued that those strategies failed due to the lack of any direct federal action as a backstop.⁸¹

Three years later, on July 29, 2011, EPA denied the petition.⁸² While EPA agreed that nitrogen and phosphorus pollution was “a significant water quality problem” that can lead to dangerous environmental and public health conditions, including harmful algal blooms, fish kills, dead

⁷⁵ See 2011 EPA Mem., *supra* note 72, at 6.

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ 2016 EPA Mem., *supra* note 39, at 5.

⁷⁹ Petition of Gulf Restoration Network et al. for Rulemaking Under the Clean Water Act, Numeric Water Quality Standards for Nitrogen and Phosphorus and TMDLs for the Mississippi River and the Gulf of Mexico 3–5, 71–72 (2008), https://www.nrdc.org/sites/default/files/media-uploads/nutrient_petition_final.pdf.

⁸⁰ *Id.* at 3–5, 73.

⁸¹ *Id.* at 2.

⁸² Letter from Michael H. Shapiro, Deputy Assistant Adm’r, U.S. Env’tl. Prot. Agency, to Kevin Reuther, Legal Dir., Minn. Ctr. For Env’tl. Advocacy & Albert Ettinger (July 29, 2011), <https://www.epa.gov/sites/production/files/2015-01/documents/mississippi-river-petition-nutrients-letter.pdf>; see also Ridgway Hall, *EPA Denies Petition for Nutrient Criteria Rulemaking for the Mississippi River Basin*, Am. College of Env’tl. Lawyers (Sept. 7, 2011), <http://www.acoel.org/post/2011/09/07/EPA-Denies-Petition-for-Nutrient-Criteria-Rulemaking-for-the-Mississippi-River-Basin.aspx>.

zones, drinking water contamination, and exposure to toxic cyanobacteria,⁸³ the agency stood behind its policy of working cooperatively with states to develop their nutrient management programs and criteria.⁸⁴ However, EPA did not rule out the possibility of federal action on a case-by-case basis in the future:

[L]ong-standing policy, consistent with the CWA, has been that states should develop and adopt standards in the first instance, with the EPA using its own rulemaking authority only in cases where it disapproves a new or revised standard, or affirmatively determines that new or revised standards are needed to meet CWA requirements. While the EPA may at some future time use its authority in response to specific circumstances, the EPA's current approach, consistent with the CWA and Agency policy, is to address [nitrogen and phosphorus] pollution and accelerate state adoption of [numeric nutrient criteria] by working in partnership with states and stakeholders to reduce nutrient loadings from both point and non-point sources.⁸⁵

EPA also declined to establish TMDLs, deferring again to the states and reiterating the agency's commitment to providing technical and policy guidance.⁸⁶

2. Environmental Organization Sue EPA to Prompt Rulemaking

Also in July 2008, five environmental organizations (“the Plaintiffs”) sued EPA in an effort to prompt federal rulemaking for numeric nutrient criteria in Florida.⁸⁷ The Plaintiffs argued that the 1998 National Strategy constituted a determination by EPA that “numeric nutrient criteria were necessary to meet the requirements of the CWA ... and required that states either adopt such standards by 2003 or have EPA set the standards for them.”⁸⁸ Because Florida had failed to adopt such criteria, the Plaintiffs alleged that EPA had a nondiscretionary duty to do so under section 303 of the CWA.⁸⁹

EPA denied the allegation that the 1998 National Strategy constituted a determination under section 303(c) of the CWA.⁹⁰ However, after the lawsuit was initiated, EPA sent a letter to the Florida Department of Environmental Protection (“FDEP”) that made an express determination

⁸³ Letter from Michael H. Shapiro to Kevin Reuther, *supra* note 82, at 1–2.

⁸⁴ *Id.* at 4–5.

⁸⁵ *Id.* at 5.

⁸⁶ *Id.*

⁸⁷ Complaint, *Fla. Wildlife Fed'n, Inc. v. Jackson*, No. 4:08cv324-RH/WCS, 2009 U.S. Dist. LEXIS 123651 (N.D. Fla. Dec. 30, 2009), http://earthjustice.org/sites/default/files/library/legal_docs/complaint-and-exhibits-fwf-v-usepa-07-17-08.pdf; see also, Mohammad O. Jazil & David W. Childs, *Numeric nutrient criteria in Florida: The road to cooperative federalism*, Am. Bar. Assoc. (Nov. 1, 2015), https://www.americanbar.org/groups/environment_energy_resources/publications/trends/2015-2016/november-december-2015/numeric_nutrient_criteria_in_florida_the_road_to_cooperative_federalism.html.

⁸⁸ Complaint, *supra* note 87, at 12.

⁸⁹ *Id.*

⁹⁰ *Fla. Wildlife Fed'n, Inc.*, 2009 U.S. Dist. LEXIS 123651, at *7.

that “new or revised water quality standards are necessary to meet the requirements of the CWA for the State of Florida” (the “2009 Determination”).⁹¹ Pursuant to the 2009 Determination, EPA would propose numeric criteria for lakes and flowing waters and for estuaries and coastal waters, within twelve and twenty-four months, respectively.⁹²

The Plaintiffs maintained that the 1998 National Strategy constituted a determination, but also amended their complaint to include the 2009 Determination.⁹³ A proposed consent decree followed, under which EPA would be required to publish and promulgate numeric nutrient criteria in timeframes similar to those set out in the 2009 Determination, unless the state did so first or the deadlines were otherwise extended.⁹⁴ The U.S. District Court for the Northern District of Florida approved the consent decree,⁹⁵ and, because the parties settled, the question of whether the 1998 National Strategy was a “determination” within the context of section 303(c) remained unanswered.⁹⁶ In December 2010, EPA published final numeric nutrient criteria for lakes, springs, and streams in Florida (“2010 Rule”).⁹⁷

EPA’s 2009 Determination and 2010 Rule were both challenged in subsequent litigation.⁹⁸ The U.S. District Court for the Northern District of Florida upheld the 2009 Determination,⁹⁹ as well as the numeric nutrient criteria for lakes and springs.¹⁰⁰ However, the Court found the stream criteria to be arbitrary and capricious,¹⁰¹ and set a new deadline for EPA to issue criteria for those waters.¹⁰² Following the lawsuit, the effective date of EPA’s approved criteria was repeatedly delayed and EPA’s later-proposed criteria for streams and estuaries and coastal waters were never finalized.¹⁰³ Federal rulemaking ultimately came to a halt because Florida promulgated, and EPA approved, numeric nutrient criteria for the relevant waterways in 2012.¹⁰⁴

⁹¹ Letter from Benjamin H. Grumbles, Assistant Adm’r, U.S. Env’tl. Prot. Agency, to Michael Sole, Sec., Fla. Dep’t of Env’tl. Prot. 1 (Jan 14, 2009),

<https://www.epa.gov/sites/production/files/201507/documents/determination2009.pdf>.

⁹² *Id.* at 10.

⁹³ *Fla. Wildlife Fed’n, Inc.*, 2009 U.S. Dist. LEXIS 123651, at *8.

⁹⁴ *Id.* at *8–9.

⁹⁵ *Id.* at *19–20. An appeal of District Court’s entry of the consent decree by third-party intervenors was subsequently dismissed. *Fla. Wildlife Fed’n, Inc. v. South Fla. Water Mgmt. District*, 647 F.3d 1296 (11th Cir. 2011).

⁹⁶ *Fla. Wildlife Fed’n, Inc.*, 2009 U.S. Dist. LEXIS 123651, at *11–12 (stating that the assertion that the 1998 National Strategy constituted a determination was “not frivolous” and that “[w]hen the settlement was entered, neither side could have said with certainty that it would win the litigation over whether the 1998 documents constituted a ‘determination’”).

⁹⁷ Water Quality Standards for the State of Florida’s Lakes and Flowing Waters, 75 Fed. Reg. 75762 (Dec. 6, 2010); *see also*, U.S. Env’tl. Prot. Agency, Final Water Quality Standards for the State of Florida’s Lakes and Flowing Waters (Nov. 2010), <https://www.epa.gov/sites/production/files/2015-07/documents/floridafactsheet-2010.pdf>.

⁹⁸ *Fla. Wildlife Fed’n, Inc. v. Jackson*, 853 F. Supp. 2d 1138 (N.D. Fla. 2012).

⁹⁹ *Id.* at 1156–60. The Court found EPA’s conclusion “that the narrative criterion was not getting the job done” to be supported by “substantial, indeed overwhelming” evidence. *Id.* at 1157.

¹⁰⁰ *Id.* at 1166–67.

¹⁰¹ *Id.* at 1169.

¹⁰² *Id.* at 1177.

¹⁰³ *See* U.S. Env’tl. Prot. Agency, Numeric Nutrient Criteria for the State of Florida: Withdrawing the Federal Actions (Sept. 2014), <https://www.epa.gov/sites/production/files/2015-07/documents/factsheet-withdrawl-2014.pdf>.

¹⁰⁴ *Id.*; *see also*, U.S. Env’tl. Prot. Agency, EPA’s Approval of Florida’s Numeric Nutrient Criteria Rules (Nov. 2012), https://www.epa.gov/sites/production/files/documents/factsheet-fdep-approval-final-12-03-12_0.pdf.

IV. State Action on Numeric Nutrient Criteria

According to EPA's website that tracks numeric nutrient standards across the country, many states have made at least some progress in adopting complete or partial numeric nitrogen, phosphorus, and/or chlorophyll a criteria for one or more watertypes.¹⁰⁵ However, few have made significant progress. Hawaii is the only state that EPA categorizes as having a complete set of numeric nitrogen and phosphorus criteria for all watertypes.¹⁰⁶ Just four more states—Florida, Minnesota, New Jersey, and Wisconsin—have a complete set of nitrogen and/or phosphorus criteria for two watertypes.¹⁰⁷ Similarly, while many states have made at least some progress in adopting chlorophyll a criteria, few have made significant progress.¹⁰⁸ Only North Carolina and Oregon have a complete set of chlorophyll a criteria for all watertypes, and only Florida has a complete set for two watertypes.¹⁰⁹

In the Northeast, New Jersey, Rhode Island, Massachusetts, and Vermont have adopted numeric nutrient criteria in some form, applicable to some watertypes.¹¹⁰ New Jersey promulgated its statewide phosphorus criteria for lakes/ponds and rivers/streams in 1981, prior to EPA's 1998 National Strategy.¹¹¹ New Jersey's Nutrient Criteria Enhancement Plan outlines the efforts of the Department of Environmental Protection ("NJDEP") to "enhanc[e] the existing nutrient criteria for freshwaters and develop[] new nutrient criteria for coastal waters...."¹¹² The plan details several projects that will inform any changes or additions to the state's numeric nutrient criteria.¹¹³ However, it does not set a target date for any revised or new criteria recommendations, other than "[b]eyond 2015."¹¹⁴

Rhode Island adopted statewide total phosphorus criteria for lakes in 1997, also prior to EPA's National Strategy.¹¹⁵ In 2007, the Rhode Island Department of Environmental Management

¹⁰⁵ See U.S. Env'tl. Prot. Agency, State Progress Toward Developing Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus, <https://www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria> (last visited June 7, 2019) ("EPA State Progress"). For the purpose of EPA's maps and tables that track state progress on numeric nutrient criteria, "watertypes" only refers to lakes/reservoirs, rivers/streams, and estuaries.

¹⁰⁶ *Id.* Notably, Hawaii only has two listed watertypes: rivers/streams and estuaries, *id.*, and it already had statewide numeric nitrogen and phosphorus criteria in place for those watertypes prior to the rollout of EPA's 1998 National Strategy. See 2008 EPA Report, *supra* note 61, at A-17. Like Hawaii, the U.S. territories have also made significant progress in developing numeric standards, as American Samoa, the Commonwealth of Northern Marianas, and Guam all have a complete set of nitrogen and phosphorus criteria for all of their watertypes. EPA State Progress, *supra* note 105.

¹⁰⁷ EPA State Progress, *supra* note 105. Florida also has partial criteria for the third watertype. *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* As with nitrogen and phosphorus, Florida has partial chlorophyll a criteria for the third watertype. *Id.*

¹¹⁰ *Id.*

¹¹¹ N.J. Dep't of Env'tl. Prot., *New Jersey Nutrient Criteria Enhancement Plan 5* (2013), available at https://www.state.nj.us/dep/wms/bears/docs/2013_final_nutrient_plan.pdf ("NJ Nutrient Criteria Plan"); see also, 2008 EPA Report, *supra* note 61, at A-36; EPA State Progress, *supra* note 105.

¹¹² NJ Nutrient Criteria Plan, *supra* note 111, at 3.

¹¹³ *Id.* at 14, 18, 20, 22.

¹¹⁴ *Id.* The NJDEP apparently missed its target date of December 2016 for updating the state's plan. *Id.* at 11.

¹¹⁵ R.I. Dep't of Env'tl. Mgmt., *Plan for Development and Adoption of Nutrient Criteria for Lakes/Ponds and Rivers/Streams* 9 (Mar. 2007), available at <https://cfpub.epa.gov/wqsits/nnc-development/ncdp/riplan2007.pdf> ("RI Nutrient Criteria Plan"); see also, 2008 EPA Report, *supra* note 61, at A-46; EPA State Progress, *supra* note 105.

(“RIDEM”) issued its numeric nutrient criteria plan, proposing a phased approach for the development of criteria for rivers and streams.¹¹⁶ The plan also contemplates the development of total nitrogen, chlorophyll a, and secchi depth criteria for lakes.¹¹⁷ While RIDEM anticipated proposing additional criteria by mid-2004,¹¹⁸ it has yet to promulgate any new standards.¹¹⁹

Massachusetts and Vermont have both adopted partial nutrient criteria for some of their watertypes.¹²⁰ Massachusetts has partial phosphorus criteria for lakes/reservoirs, as well as partial nitrogen criteria for estuaries. Vermont has partial phosphorus criteria for lakes/reservoirs and rivers/streams.¹²¹ According to EPA, New Jersey is the only state in the Northeast with partial chlorophyll a criteria for even one watertype, lakes/reservoirs.¹²²

In 2011, the Northeast states—Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont—collectively expressed their concerns regarding EPA’s position that states should adopt independently applicable nitrogen and phosphorus criteria for all watertypes.¹²³ In a letter addressed to then-EPA Administrator Lisa Jackson, the New England Interstate Water Pollution Control Commission (“NEIWPC”) advocated for an approach that relies on environmental response indicators to measure nutrient impairment:

The technical approach favored by many states bases criteria on strong scientific evidence using stressor-response relationships, where nitrogen and phosphorus are the stressors and environmental indicators are the response (e.g., chlorophyll-a, Secchi disk, indices of biological health). Because the relationship between nutrients and environmental responses is based on many site-specific factors and varies from waterbody to waterbody, these responses consolidate the many site-specific factors that must be considered for efficient application of criteria, and therefore are the most appropriate indicators of a waterbody’s impairment status.¹²⁴

¹¹⁶ RI Nutrient Criteria Plan, *supra* note 115, at 6–7.

¹¹⁷ *Id.* at 10.

¹¹⁸ *Id.* at 12.

¹¹⁹ According to Rhode Island’s 2016 Water Quality Management Plan, RIDEM reiterated its continuing work to develop numeric nutrient standards. R.I. Dep’t of Admin., Div. of Planning, Water Quality 2035: Rhode Island Water Quality Management Plan 4 - 4-4 - 5 (Oct. 13, 2016), <http://www.dem.ri.gov/programs/benviron/water/quality/pdf/wqmp2035.pdf>.

¹²⁰ EPA State Progress, *supra* note 105.

¹²¹ *Id.*

¹²² *Id.*

¹²³ Letter from Ronald Poltak, Executive Dir., New England Interstate Water Pollution Control Comm’n to Lisa Jackson, Adm’r, U.S. Env’tl. Prot. Agency 2 (Jan. 3, 2011), http://click.neiwpc.org/neiwpc_docs/NEIWPCCommentLetteronNutrientCriteria1-3-11.pdf.

¹²⁴ *Id.* at 1.

The Northeast states took the position that that a waterway should not automatically be considered impaired based on high levels of nutrients.¹²⁵ Rather, a waterway should only be considered impaired when those high levels cause a negative environmental response.¹²⁶

In replying to NEIWPC, EPA reiterated its position that states should adopt numeric criteria for nitrogen and phosphorus, and that “relying solely on a response parameter and/or biological assessment to determine impairment may not protect all waters.”¹²⁷ The approach suggested by the Northeast states would allow excessive nutrient loadings go unaddressed until visible or biological responses are present:

It takes a significant amount of time and resources for a waterbody to recover once visible signs of nitrogen and phosphorus enrichment are demonstrated. Assessing for nutrient causal parameters, and implementing the necessary controls if the causal criteria values are, or have the potential to be, exceeded, will help prevent a nutrient response.¹²⁸

In short, EPA made it clear that it expects states to adopt comprehensive numeric criteria for nitrogen and phosphorus to protect and improve water quality.¹²⁹

V. Numeric Nutrient Criteria in New York

A. Existing Water Quality Standards and Guidance Values

New York has a narrative water quality standard for nitrogen and phosphorus, which is applicable to nearly all surface waters in the state.¹³⁰ It reads: “None in amounts that result in the growths of algae, weeds and slimes that will impair the waters for their best usages.”¹³¹

New York also has a statewide guidance value for phosphorus that is applicable to certain classes and types of waterways. Specifically, a phosphorus guidance value of 20 µg/L exists to protect the recreational use of ponds, lakes, and reservoirs that are designated Classes A, AA, A-S, AA-

¹²⁵ *Id.* at 1–2.

¹²⁶ *Id.* A white paper prepared for the Massachusetts Coalition for Water Resources Stewardship issued in October 2011 described a similar approach taken by the Massachusetts Department of Environmental Protection. Hall & Associates, *Evaluation of Massachusetts Water Quality Criteria for Nutrients, Bacteria, and Metals* 3–4 (Oct. 31, 2011), available at <http://mcwrs.org/Documents/WQSWhitePaper.pdf>.

¹²⁷ Letter from Nancy Stoner, Acting Assistant Adm’r, U.S. Evtl. Prot. Agency to Ronald Poltak, Executive Dir., New England Interstate Water Pollution Control Comm’n 1–2 (Mar. 1, 2011), <https://www.epa.gov/sites/production/files/2015-01/documents/newengland-interstate-nutrients-letter.pdf>.

¹²⁸ *Id.* at 2.

¹²⁹ *See id.* at 1–3.

¹³⁰ 6 NYCRR § 703.2.

¹³¹ *Id.*

S, and B waters.¹³² In addition, New York has the following waterbody-specific phosphorus values:¹³³

Table 3: Waterbody-Specific Phosphorus Values

Waterbody	Phosphorus Value
Lake Erie	Western Basin: 15 µg/L Central & Eastern Basins: 10 µg/L
Lake Ontario	Target: 10 µg/L
Lake Champlain (NY side)	Main Lake: 10 µg/L South Lake: 25-54 µg/L Remainder: 14 µg/L
New York City Watershed Reservoirs	Terminal Reservoirs: 15 µg/L

DEC characterizes guidance values as “numerical translations of New York’s existing narrative standards” that are “used as an equivalent to water quality standards.”¹³⁴ In New York, water quality standards and guidance values do share certain characteristics.¹³⁵ For example, both values are intended to protect the relevant waterways, are derived using the same procedures, and serve as the basis for effluent limitations in discharge permits.¹³⁶ However, important distinctions exist. DEC has explained that “[a] standard is a water quality criterion that has been adopted into regulation. A guidance value is a water quality criterion that has been derived in the same manner as a standard, but has not yet been adopted into regulation, or subjected to public review and comment.”¹³⁷ In other words, while both values serve similar functions, water quality standards have been vetted through the regulatory process and guidance values have not.

B. Status of Numeric Nutrient Criteria

DEC recognizes that, unlike descriptive narrative standards, numeric criteria provide specific threshold levels for pollutants.¹³⁸ The current New York State Nutrient Standards Plan, revised in 2011 (“2011 NYS Plan”), sets forth DEC’s proposal to establish numeric nutrient criteria that

¹³² N.Y. Dep’t of Env’tl. Conservation, Div. of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and guidance Values and Groundwater Effluent Limitations 54 (Oct. 22, 1993), https://www.dec.ny.gov/docs/water_pdf/togs111.pdf (“TOGS 1.1.1”); N.Y. Dep’t of Env’tl. Conservation, *New York State Nutrient Standards Plan 2* (July 7, 2011), available at https://www.dec.ny.gov/docs/water_pdf/statenutriestandards.pdf. (“NY Nutrient Standards Plan”).

¹³³ NY Nutrient Standards Plan, *supra* note 132, at 2.

¹³⁴ *Id.* at 1.

¹³⁵ TOGS 1.1.1, *supra* note 132, at 4.

¹³⁶ *Id.* at 4, 10; 6 NYCRR Part 702(a).

¹³⁷ N.Y. Dep’t of Env’tl. Conservation, Technical Guidance for Screening Contaminated Sediments 3 n.1 (Nov. 22, 1993), https://www.lm.doe.gov/cercla/documents/rockyflats_docs/SW/SW-A-006230.pdf.

¹³⁸ N.Y. Dep’t of Env’tl. Conservation, Nutrient Criteria, <https://www.dec.ny.gov/chemical/77704.html> (last visited June 7, 2019).

protect the uses of the state’s waterways.¹³⁹ “At least initially,” DEC expects to develop the criteria as guidance values.¹⁴⁰

The 2011 NYS Plan calls for numeric nitrogen and phosphorus criteria applicable to each of the following watertypes: rivers and streams; lakes and reservoirs; and estuaries.¹⁴¹ For flowing waters and lakes and reservoirs, the 2011 NYS Plan reflects DEC’s intent to develop criteria that would protect both human health and aquatic life.¹⁴² It also emphasizes the importance of response variables, stating that “nutrient criteria development should go beyond a focus on just the causal stressors of phosphorus and nitrogen, and also incorporate appropriate response variables, such as chlorophyll *a*, water clarity, and measures of biological impact.”¹⁴³ According to the Table of Milestones in the 2011 NYS Plan, nitrogen and phosphorus criteria for rivers and streams, as well as phosphorus criteria for lakes and reservoirs, should have been adopted by 2013, and nitrogen criteria for estuaries should have been adopted by 2016.¹⁴⁴

DEC revised the Table of Milestones in 2012, distinguishing between the goal of the criteria—to protect human health or to protect aquatic life—and extending the dates of adoption.¹⁴⁵ The anticipated dates of adoption for phosphorus criteria that protects aquatic life in rivers and streams and for phosphorus criteria that protects human health in lakes and reservoirs were extended to 2014.¹⁴⁶ DEC did not set a target date for the adoption of any other phosphorus criteria for those watertypes until “2014 or beyond” and omitted the adoption date for nitrogen criteria in rivers and streams altogether.¹⁴⁷ The anticipated date of adoption for nitrogen criteria in estuaries remained the same.¹⁴⁸

DEC revised the Table of Milestones again in 2015, extending the date of adoption for any nitrogen and phosphorus criteria in rivers and streams to 2017.¹⁴⁹ The dates of adoption for phosphorus criteria in lakes and reservoirs and nitrogen criteria in estuaries were also extended, to 2019 and 2020, respectively.¹⁵⁰ While the 2015 Table of Milestones remains on DEC’s website, the agency has drafted at least one revision since then, which contemplated extending the anticipated date of adoption for nitrogen and phosphorus criteria in rivers and streams to 2018.¹⁵¹ It also would have abbreviated the deadline for phosphorus criteria in lakes and reservoirs to 2018, while keeping the deadline for nitrogen criteria in estuaries the same.¹⁵²

¹³⁹ NY Nutrient Standards Plan, *supra* note 132.

¹⁴⁰ *Id.* at 1.

¹⁴¹ *Id.* at 5.

¹⁴² *Id.* at 3–4.

¹⁴³ *Id.* at 6.

¹⁴⁴ *Id.* at 5. The 2011 NYS Plan did not include milestone dates for the adoption of nitrogen criteria for lakes and reservoirs or phosphorus criteria for estuaries. *Id.*

¹⁴⁵ N.Y. Dep’t of Env’tl. Conservation, Table of Milestones (Aug. 31, 2012) (on file with author).

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ N.Y. Dep’t of Env’tl. Conservation, Table of Milestones (June 16, 2015), <https://www.dec.ny.gov/chemical/89297.html> (last visited June 7, 2019) (“2015 Table of Milestones”).

¹⁵¹ N.Y. Dep’t of Env’tl. Conservation, Draft Table of Milestones (Oct. 24, 2016) (on file with author).

¹⁵² *Id.*

In addition to adopting numeric criteria—the final step of the process—DEC’s Tables of Milestones include the following prerequisites: creating a plan for collection of data; collecting information and data; deriving draft criteria/targets; conducting regulatory impact assessments; and proposing criteria.¹⁵³ DEC has made some progress in gathering and analyzing data and developing draft criteria, but it has yet to meet any of its original or revised milestone dates for proposing numeric nitrogen or phosphorus criteria for any of the watertypes identified in the 2011 NYS Plan. In 2015, EPA expressed disappointment with DEC’s failure to meet target dates for proposing nutrient criteria, and urged the agency to meet revised dates in the future.¹⁵⁴

Despite several rounds of revisions and missed deadlines, DEC’s stated priorities for the development of nutrient criteria have remained consistent:

DEC believes that criteria for phosphorus in freshwaters should be the first priority for our limited resources, given that virtually all freshwater lakes and reservoirs are phosphorus-limited. Criteria will be developed for nitrogen in freshwaters as resources permit ... For saline water estuaries, nitrogen is more typically the limiting nutrient. Therefore, criteria for nitrogen are a higher priority for estuaries, with criteria for phosphorus to be developed as resources permit.¹⁵⁵

In the 2011 NYS Plan, DEC emphasizes the importance of preparing “supporting technical documents (‘Fact Sheets’) that describe the basis and derivation for its numerical water quality standards and guidance values.”¹⁵⁶ Documents produced by DEC in response to a 2018 Freedom of Information Law request (“2018 FOIL Request”) indicate that the agency has drafted several fact sheets for nutrients in freshwaters, in line with its stated priorities.¹⁵⁷ In commenting on the fact sheets in 2011, EPA made it clear that the agency expects DEC’s “guidance values” or “ambient water quality values” to be treated as water quality standards and that EPA intends to take action on them accordingly under section 303 of the CWA.¹⁵⁸ In addition, EPA emphasized the need for independently applicable criteria, meaning that each parameter, whether it be phosphorus, chlorophyll a, or another measure of nutrient pollution, should be “treated as a separate water quality standard.”¹⁵⁹ According to the 2011 NYS Plan, the fact sheets would be revised based on the feedback that DEC received from EPA and from its peer review process.¹⁶⁰

¹⁵³ See, e.g., 2015 Table of Milestones, *supra* note 150.

¹⁵⁴ Letter from Jeffrey Gratz, Deputy Dir., U.S. Env’tl. Prot. Agency Region 2 to Mark Klotz, Dir., N.Y. Dep’t of Env’tl. Conservation (Aug. 7, 2015) (on file with author).

¹⁵⁵ 2015 Table of Milestones, *supra* note 150; see also, NY Nutrient Standards Plan, *supra* note 132, at 4 (describing phosphorus as “the critical or limiting nutrient for inland waters.”).

¹⁵⁶ NY Nutrient Standards Plan, *supra* note 132, at 3.

¹⁵⁷ See U.S. Env’tl. Prot. Agency, Region 2 Comments on NYS Fact Sheets for Nutrient Ambient Water Quality Values (AWQV) (Jan. 2011) (providing comments on, *inter alia*, the following fact sheets: Ambient Water Quality Nutrient Values for Protection of Sources of Potable Waters (Ponded Waters); Ambient Water Quality Nutrient Values for Protection of Recreation in Ponded Waters; Ambient Water Quality Nutrient Values for Protection of Aquatic Life in Flowing Waters) (on file with author).

¹⁵⁸ *Id.* at 1.

¹⁵⁹ *Id.*

¹⁶⁰ NY Nutrient Standards Plan, *supra* note 132, at 3.

DEC produced only one draft fact sheet that post-dates the 2011 NYS Plan: Ambient Water Quality Values for the Protection of Aquatic Life in Flowing Waters.¹⁶¹ As of DEC's response to the 2018 FOIL Request, this draft fact sheet and the draft 2016 Table of Milestones mark the last indications of progress that New York State has made toward promulgating numeric nutrient criteria.

VI. Recommendations

Nutrient pollution is a serious problem in New York State and it requires immediate action from DEC. Over the past several years, DEC has repeatedly failed to meet important milestones and it has yet to propose or adopt any statewide numeric nutrient criteria. To protect and restore the state's waterways, DEC must:

1. Immediately issue a revised New York State Nutrient Standards Plan and Table of Milestones that include anticipated dates for the publication and adoption of statewide numeric nutrient criteria for the following parameters, applicable to all watertypes: nitrogen, phosphorus, chlorophyll a, and turbidity.

In light of the agency's current, previous, and draft Tables of Milestones, DEC should set publication and adoption dates of 2019 and 2020, respectively, for the following criteria:

- a. Total phosphorus in rivers and streams;
 - b. Total nitrogen in rivers and streams;
 - c. Total phosphorus in lakes and reservoirs; and
 - d. Total nitrogen in estuaries.
2. Meet all future publication and adoption dates for numeric nutrient criteria.
 3. Commit to promulgating water quality criteria, rather than guidance values, for all of the above-mentioned nutrient parameters to ensure that the criteria are properly vetted, subject to public review, and have the full force and effect of regulation.
 4. Ensure that all numeric nutrient criteria are independently applicable so that waterways are appropriately identified as impaired and included on the state's Section 303(d) List of Impaired Waters for exceedances of any one of the above-mentioned nutrient parameters.
 5. Convene an independent technical advisory board to review any proposed criteria and ensure that they are sufficiently protective of the state's waterways.
 6. Create a publicly-available online document repository containing records related to DEC's efforts to develop numeric nutrient criteria.

¹⁶¹ N.Y. Dep't of Env'tl. Conservation, New York State Aquatic Fact Sheet, Ambient Water Quality Values for the Protection of Aquatic Life in Flowing Waters (June 14, 2016) (on file with author).