U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

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June 21, 2011

MEMORANDUM

TO: Members of the Subcommittee on Water Resources and Environment

FR: Bob Gibbs
Subcommittee Chairman

RE: Hearing on "Running Roughshod Over States and Stakeholders: EPA's Nutrients Policies"

PURPOSE OF HEARING

The Water Resources and Environment Subcommittee is scheduled to meet on Friday, June 24, 2011, at 10:00 a.m., in Room 2167 of the Rayburn House Office Building, to receive testimony from State Water Quality regulators, a State Department of Agriculture and Consumer Services, and a municipal wastewater reclamation utility on the U.S. Environmental Protection Agency's ("EPA") nutrients policies and quest for States to adopt numerical nutrient water quality standards under the Federal Water Pollution Control Act (commonly referred to as the "Clean Water Act").

BACKGROUND

Nutrients.

Nutrients, especially nitrogen and phosphorus, are essential for life, and important for natural plant and animal growth. In excessive concentrations, however, nutrients can adversely affect aquatic life or human health. For example, excessive nitrate in waterbodies used for drinking water can affect infants. Elevated nutrient concentrations in streams can result in excessive, often unsightly, growth of algae and other nuisance aquatic plants (eutrophication). These plants can clog water intake pipes and filters and can interfere with recreational activities, such as fishing, swimming, and boating. High nutrient concentrations also can cause growth of harmful algae, which can be potentially toxic to fish and other organisms, including humans.

Subsequent decay of algae can result in foul odors, bad taste, and low dissolved oxygen in water (hypoxia), which can harm fish and shellfish that are economically and ecologically important.

Nutrients occur naturally in the environment, including from wildlife and nitrogen-fixing plants. However, concentrations above naturally occurring levels could result from some human activities. Human-related sources of nutrients to waterbodies could include sewage treatment plants, industrial facilities, livestock and pet wastes, septic systems, and use of fertilizers.

Water Quality Standards Under the Clean Water Act.

Section 303 of the Clean Water Act ("CWA") calls on States to establish water quality standards for the waterbodies in their States. Water quality standards are to serve as a mechanism to establish goals for the quality of the nation's waters and as a regulatory basis when standardized technology controls for point source discharges are determined to be inadequate to meet the water quality standards for a waterbody and water quality-based controls are to be developed. States are to periodically (at least once each three years) review their water quality standards and, as appropriate, modify and adopt new standards.

Water quality standards define the goals for a waterbody by designating its uses, setting water quality criteria to protect those uses, and establishing general policy provisions to protect water quality. Water quality criteria may be expressed as "narrative" statements of water quality objectives, or "numerical" criteria representing acceptable concentrations of a pollutant that will not result in unacceptable water quality levels for the designated use(s) of the waterbody.

When a State adopts a new or revised water quality standard, the State is to submit such standards to EPA for review and approval/disapproval. EPA is to review and approve/disapprove the standards based on whether the standards meet the requirements of the CWA. As a result of the EPA review process, EPA may approve, disapprove, or conditionally approve in whole or in part the submitted State water quality standards. If a State does not revise disapproved or conditionally approved standards in a timely fashion that satisfies EPA, then EPA may initiate proceedings to promulgate Federal standards in place of the State standards in question. Federally-promulgated standards supersede those State standards.

Water Quality Standards for Nutrients.

Narrative Standards.

Every State has narrative standards that protect the State's waters from excessive nutrients. The narrative standards may protect waters generally from objectionable conditions or ecological problems, including those caused by excessive nutrients, or may directly require that eutrophication or stimulation of excessive algal or plant growth be prevented.

Many of these narrative standards take the form of a narrative statement along the lines of, for example: "All waters shall be free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae" (Ohio); or "Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that

would cause or contribute to impairment of existing or designated uses and shall not exceed the site-specific criteria developed in a TMDL [total maximum daily load, or amount of pollution that is acceptable] or as otherwise established by the Department" (Massachusetts).

Numerical Standards.

In addition, many States have adopted some specific numerical standards for one or more nutrient parameters (e.g., total nitrogen, total phosphorus, water clarity, chlorophyll *a*) aimed at addressing particular named waterbodies, waterbody types, or designated uses, where the States deemed having numerical standards was necessary to protect those waters in question. However, most States rely primarily on applying their narrative standards to protect their waters from excessive nutrients.

STRATEGIES FOR ADDRESSING NUTRIENT POLLUTION ISSUES

Nutrients Present Unique Challenges.

Nutrient pollution presents unique challenges that are difficult to remedy through the CWA's traditional water quality based management approach of setting numerical water quality standards. This traditional approach, designed to control typical pollutants, especially those which are toxic at determinable levels in the environment, is not universally appropriate for substances like nutrients that are both widely variable, naturally occurring, ubiquitous, and a natural and necessary component of healthy ecosystems.

One reason for this is that the relationship between nutrient concentrations in water and adverse impacts on aquatic life is neither direct nor consistent from waterbody to waterbody. Water quality standards for most traditional pollutants are based on a toxicity threshold, where higher concentrations of a pollutant can be demonstrated to be harmful, and acceptable concentrations can be established at a specific level below which adverse responses are not observed.

In contrast, nutrients do not have a well-defined concentration-response relationship. This is because nutrients, themselves, are not generally toxic, but overenrichment of nutrients in water can affect an aquatic system, such as by depleting oxygen levels, and thus can cause detrimental impacts on organisms. Nutrients are not only present naturally in aquatic systems, they are absolutely necessary for the proper functioning of biological communities, and are sometimes moderated in their expression by many natural factors.

The extent to which nutrients' adverse effects (e.g., excess algae growth, dissolved oxygen depletion, pH increases) occur within a waterbody depends on a wide range of other critical factors such as sunlight, optimal substrate, flow, temperature, and background water chemistry, factors which are all very site-specific. Therefore, States have found that nutrient levels that may cause impairments in one stream under one set of conditions will not have the same negative impact in a different stream.

Appropriate water quality standards for nutrients need to take these sorts of factors into account when applying the standards under the CWA's total maximum daily load ("TMDL") and National Pollutant Discharge Elimination System ("NPDES") permitting provisions, or else excessively stringent regulatory requirements could end up being imposed on the regulated community and creating unnecessary economic impacts. EPA often has not taken these sorts of factors into account.

In addition, the endpoint of defining what is a "healthy" waterbody is highly variable and site-specific. Since nutrient impacts are dependent on a number of factors, there is a range of what conditions constitute a "healthy" aquatic ecosystem. Depending on a waterbody's characteristics, one waterbody may have higher natural biological productivity and therefore be able to support higher nutrient levels without deleterious impacts as compared to another waterbody with lower natural productivity. Therefore, expending resources to achieve a lower level of nutrients in a waterbody that functions at a higher natural level of biological productivity and supports higher nutrient levels would be inefficient and provide little to no added water quality benefit.

A scientifically robust assessment of causality needs to be made to identify waters that may be undesirably affected by excessive levels of nutrients or to determine that nutrients are the primary cause of aquatic impairment. Many State programs are doing this on a watershed-specific basis.

Because an aquatic ecosystem can be healthy under a wide variety of nutrient levels, nutrients require different management approaches than toxic pollutants which, as noted earlier, generally have clear and consistent thresholds over a broad range of aquatic systems and conditions. As a result, many States generally prefer narrative nutrient standards because such standards give them flexibility in dealing, on a site-specific basis, with a variety of nutrient-related water quality issues as they arise.

Unless numerical nutrient standards have been set based on waterbody-specific water quality and biological data that evidence a definitive cause-and-effect relationship between nutrient levels and a resulting deleterious response in that waterbody, that standard will have no definable relationship between nutrient levels and biological health in the waterbody in question, and will be meaningless as to whether any water quality benefits will be achieved.

EPA's Quest for Numerical Nutrient Standards.

One-Size-Fits-All.

Despite the unique nature of nutrients and the challenges numerical nutrient standards pose in managing water quality, EPA seeks to have set, one-size-fits-all numerical nutrient water quality standards drive water quality assessments and watershed protection management in the States, even if no waterbody-specific cause-and-effect data is available on which to base those standards.

EPA appears to take the view that "the lower the standard, the better." In the absence of waterbody-specific cause-and-effect data, EPA is pressing States to adopt numerical standards that are based on historical, empirical ambient nutrient water quality data collected from other waterbodies around the nation that may not have sufficiently comparable characteristics. To account for the uncertainty in using other waterbodies' historical data from elsewhere, EPA is pressing States to take a very precautionary approach and adopt, as their own standard, some of the most stringent empirical data values from those other waterbodies. These values generally represent conditions in the most "pristine" of those other waters that may not reflect conditions in the waterbody in question.

This approach will result, in many instances, in standards being set at levels far below where actual water quality impacts may occur, and may result in numerous waters being labeled as "impaired," even though they are not in actuality. This approach also may result in standards being set at levels that are so stringent that they are not attainable. This, in turn, will trigger TMDL development and unnecessarily stringent water quality based NPDES permit limits being written, thereby resulting in unnecessary regulatory burdens and costs on States, municipalities, wastewater utilities, industry, farmers, and others in the regulated community.

Standards that are tailored to, and therefore reflective of, the characteristics of a particular waterbody would not raise these sorts of concerns.

EPA's National Nutrients Strategy and National Database.

EPA has developed a national nutrients strategy and guidance on developing numerical nutrient criteria for incorporation into States' water quality standards. Associated with the strategy and guidance, EPA has assembled a "National Nutrients Database" which stores and analyzes historical nutrient water quality data from waterbodies around the nation, and has developed recommended national nutrient criteria numbers (based on that historical data) for the States to use. (*See, e.g.,* http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/; http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/databasefacts.cfm.)

In developing this database, EPA intended for the States to use the recommended, statistically-derived criteria and set State standards by adopting EPA's numbers in the absence of other State-specific information or approaches for establishing their own criteria using other scientifically defensible methods. Unlike most other water quality criteria that EPA has developed for other pollutants, these nutrients criteria did not follow EPA's own normal criteria development protocols. It appears that EPA is trying to change the acceptable level of data for criteria derivation to allow criteria to be developed using "best available" information, regardless of the scientific sufficiency of that information. EPA's National Guidelines do not allow this approach. (*See Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (EPA, 1985).)

As early as 1998, during the Clinton Administration, EPA began pressing States to adopt numerical nutrient standards, and threatened to begin promulgating Federal numerical standards for nutrients. (*See Clean Water Action Plan: Restoring and Protecting America's Waters* (EPA, 1998); *National Strategy for the Development of Regional Nutrient Criteria* (EPA, 1998).)

EPA still continues to press States to set schedules for numerical nutrients criteria development, and even in the absence of site-specific data, to set numerical standards based on "best available information," including from EPA's National Nutrients Database. (*See Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (EPA, March 16, 2011).)

EPA points to regulatory and enforcement expediency as a prime reason for why the Agency seeks to have States adopt numerical standards. For example, EPA has stated that "Numeric nutrient standards will facilitate more effective and efficient program implementation," including "easier and faster development of TMDLs," and "easier to write protective NPDES permits." (*See Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (EPA, March 16, 2011); http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/memo2007.cfm (section on "Why Numeric Criteria are Important?").) EPA does not seem to be concerned that TMDLs and NPDES permits based on scientifically insufficient water quality standards will themselves be insufficient.

States understand the appeal of a simple numerical water quality standard for nitrogen and phosphorus in implementation. However, States are concerned that this approach does not acknowledge the need for a more flexible system, which allows nutrient standards to be tailored in order to work effectively in the wide number of applications (e.g., NPDES permit limits and TMDLs for impaired waters) and waterbody types in which they are used by permitting authorities. States are concerned that a single, one-size-fits-all number is not often an accurate indicator of adverse ecological or water quality effects.

EPA's Science Advisory Board Has Concerns.

EPA's Science Advisory Board ("SAB") has recognized shortcomings in EPA's approaches for deriving numerical nutrients criteria for use in water quality standards, including EPA's advocated approach of deriving criteria from empirical data from other waterbodies. The SAB expressed concerns that, among other things, large uncertainties in EPA's data and the fact that the approach of using empirical data do not prove cause and effect can be problematic if this approach is used in isolation as a stand-alone method to develop water quality criteria. (*See SAB Review of Empirical Approaches for Nutrient Criteria Derivation*, EPA Science Advisory Board, Ecological Processes and Effects Committee (FY 2009), Augmented for Review of Nutrient Criteria Guidance (April 27, 2010).) The SAB also observed that statistical associations may not be biologically relevant and do not prove cause and effect, and that without a mechanistic understanding and a clear causative link between nutrient levels and impairment, there is no assurance that managing for particular nutrient levels will lead to the desired water quality outcome.

The SAB found that improvements in the guidance were needed to enable development of technically defensible criteria and to make the document more useful to States. The SAB recommended that EPA address: how to establish cause and effect relationships; the utility and limitations of using statistical methods; the supporting analyses and data needed to correctly

identify predictive relationships; the need for more guidance and examples to describe when and how to use various methods and approaches; and the linkages between attaining waterbodies' designated uses and nutrient levels. The SAB also recommended that EPA use a tiered approach that recognizes the uncertainties in data, and provides a means for establishing causal relationships between nutrients and their effects to help confirm whether and what level a waterbody is impaired. EPA has not taken any concrete steps to address the SAB's concerns.

Recognizing the above challenges, and an unwillingness on the part of EPA to give the States sufficient flexibility in setting and applying their standards, many States have taken to a site-specific approach to assess and manage nutrient pollution. However, this approach is highly resource intensive, and is further confounded by State budget constraints. The disconnect between the States, EPA, and other stakeholders is complicating the development and implementation of effective and flexible nutrient management policies.

Florida: A Case Study.

Florida currently uses a narrative nutrient standard to guide the management and protection of its waters. The standard states, among other things, that "in no case shall nutrient concentrations of body of water be altered so as to cause an imbalance in natural populations of flora or fauna." (*See* Rule 62-302.530, FAC.) The State has relied on this narrative for many years "because nutrients are unlike any other 'pollutant' regulated by the [CWA]." (*See* http://www.dep.state.fl.us/water/wqssp/nutrients/.)

Nevertheless, in response to EPA's quest for States to develop numerical water quality standards for nutrients, the State of Florida initiated an effort in 2001 to develop numerical nutrient standards for Florida waters. The State did not want to use EPA's recommended national criteria, as the State concluded that EPA's nutrient criteria were scientifically indefensible. Rather, the State initiated its own scientific research effort to develop numerical nutrient standards that are reflective of Florida waters. EPA approved of Florida's numerical nutrient criteria development plan in 2004, and its revised plan in 2007. The revised plan included a timeline with an anticipated completion date in 2011.

In the meantime, in 2008, environmental activist groups filed a CWA citizen lawsuit against EPA, alleging that it had a mandatory duty to adopt numerical nutrient standards in Florida, even though work was well underway by the State to collect and analyze scientific data to identify a cause-and-effect or concentration-response relationship between nutrient concentrations and biological response variables. EPA initially defended the lawsuit, but later abandoned its defense, and issued a "Necessity Determination" (in January 2009) under the CWA declaring that numerical nutrient criteria were necessary for Florida waters, and settled the lawsuit.

As a result, EPA proposed Federal numerical nutrient water quality standards for lakes, rivers, and streams in Florida in January 2010, and promulgated final Federal standards in November 2010. These standards are scheduled to become effective in Florida in March 2012. These Federally-promulgated standards, which establish benchmark nutrient values that all covered waters need to meet, are not linked to a cause-and-effect relationship indicating

impairment. Florida is concerned that the EPA-set standards were set at levels more stringent than necessary to protect the State's waters. EPA also is committed to propose numerical nutrient water quality standards for Florida's estuarine, coastal, and southern inland flowing waters by November 2011, and establish final standards by August 2012.

Despite EPA's Federal promulgation of nutrient standards in Florida, the State is continuing its work to develop its own, scientifically defensible numerical nutrient standards for the State.

Since promulgation of the Federal nutrient standards in Florida, numerous lawsuits have been filed, appealing those standards. Among other things, the State and stakeholders are concerned that the EPA-set standards, which are not based on thresholds of impairment, were set at levels more stringent than necessary to protect most State waters, and will result in costs and economic impacts for the State and stakeholders to comply with the Federal standards that will be substantially more than is needed to protect water quality. The lawsuits are pending.

In addition, on April 22, 2011, the Florida Department of Environmental Protection ("DEP") filed a petition with EPA, requesting that EPA withdraw its January 2009 "Necessity Determination" that numerical nutrient standards are necessary in Florida waters, rescind its Federally-promulgated rules, and restore to Florida the State's responsibility for the control of excess nutrients, including the pursuit of nutrient standards.

The petition stated that Florida has one of the strongest nutrient reduction programs in the nation when measured against eight "elements," outlined in a March 2011 EPA Memorandum, which EPA believes are necessary for a State program to effectively manage nutrient pollution. [1] (*See Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (EPA, March 16, 2011) regarding the eight elements.) The State pointed out, in its petition, how EPA has acknowledged that Florida is one of the few States that have in place a comprehensive program to address excess nutrients pollution in its waters.

The petition outlined plans and a rulemaking schedule by which the Florida DEP would complete development of and adopt numerical nutrient standards. The petition also documented how Florida has comprehensively addressed EPA's eight elements, and contended that EPA

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[1] The following are EPA's eight nutrient management program elements:

1. Prioritize Watersheds for Nitrogen and Phosphorus Loading Reductions.
2. Set Watershed Load Reduction Goals Based Upon Best Available Information.
3. Ensure Effectiveness of Point Source Permits in Targeted/Priority Sub-Watersheds.
4. Agricultural Areas - Target Most Effective, Innovative Practices.
5. Management of Stormwater and Septic Systems.
6. Accountability and Verification Measures.
7. Annual Public Reporting of Implementation Activities and Biannual Reporting of Load Reductions and Environmental Impacts Associated with Each Management Activity in Targeted Watersheds.
8. Develop Work Plan and Schedule for Numerical Criteria Development.

(*See Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (EPA, March 16, 2011).)

would not have made its original "Necessity Determination" if it had evaluated Florida's water quality program against those eight elements. If granted, this petition would enable Florida to return to developing scientifically defensible standards for the State. Florida requested a response from EPA within 30 days, by May 22, 2011.

After a period of negotiations between the State and EPA, EPA responded by letter to Florida's petition on June 13, 2011, calling it EPA's "initial response" to the petition. EPA said it was neither granting nor denying the petition, but said the agency is prepared to withdraw its Federal nutrients standards, and to delay promulgating estuarine criteria, in Florida if the State develops and adopts its own adequate standards. EPA said it was holding its final response to the petition "in abeyance," pending the outcome of the State's development of standards. EPA made it clear in its response that the agency "continue[s] to believe that numeric criteria are necessary." (*See* Letter, released June 13, 2011, from Nancy Stoner, EPA Acting Assistant Administrator for Water, to Herschel Vinyard, Jr., Secretary, Florida Department of Environmental Protection, responding to Florida's petition.)

Where Are We Headed?

EPA has received a lot of criticism from States and stakeholders for its decision to federally promulgate numerical nutrient standards in Florida. Since then, EPA has said the agency is not working to craft new numerical nutrient standards similar to the controversial measure the agency recently adopted for Florida waters. EPA Administrator Lisa Jackson told a House Agriculture Committee panel in March 2011 that EPA is not working on any Federal numerical nutrient limits, rejecting concerns that the agency is developing numerical nutrient limits to impose on other States as it has in Florida.

While EPA says it will not be imposing new nutrients standards on States as the agency did in Florida, EPA has begun pressing States in other ways to adopt numerical standards and translate narrative nutrient criteria into numerical limits in discharge permits. For example, in a March 2011 EPA guidance memorandum, EPA pressed the States to adopt a new "framework" for managing nutrients pollution, including crafting numerical nutrients criteria based on best available information, and setting strict numerical regulatory requirements, including numerical standards and TMDL load reduction goals. (*See Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions* (EPA, March 16, 2011).)

In addition, in New England, in Illinois and other States in the Mississippi River basin, and in other States, EPA has recently pressed the States to adopt stringent numerical nutrient standards and stringent effluent limits for nutrients in NPDES permits for municipal and other dischargers of nutrients, and in some instances had hinted that, if they do not, EPA may object to States' issuances of NPDES permits.[2]

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[2] For example, early in 2011, EPA's Region V wrote to the State of Illinois, instructing the State that EPA is requiring Illinois to ensure that State-issued NPDES permits contain numerical limits sufficiently stringent to prevent excursions from the State's narrative criteria, and to reconsider 20 existing discharge permits to ensure they include numerical limits that attain the State's narrative water quality criteria for nutrients. EPA also called on the State to provide EPA with copies of any permits it issues so EPA can ensure the permits include adequate numerical limits. EPA reminded the State of its position that States with delegated

Meanwhile, as EPA pushes States to address nutrient pollution through a variety of methods, including the adoption of numerical nutrient standards, environmental activists appear to be intensifying their efforts to press EPA to set numerical nutrient standards and to sue dischargers of nutrients in citizen suits. Not only have environmental activists sued EPA to set numerical standards for nutrients in Florida, discussed above, but activists filed at least one similar suit in Wisconsin, which was dropped when the State adopted EPA-approved numerical criteria in 2010. Additionally, several activist groups have separately petitioned EPA to set similar standards, as well a TMDL, for the Mississippi River and the Gulf of Mexico.

The activists' Mississippi River/Gulf petition was originally filed in July 2008. In April 2011, the activists sent a letter to EPA in followup to the petition, noting that EPA has not responded to the activists' 2008 petition within a reasonable amount of time, and threatened that if "EPA fails to respond to the petition by June 30, 2011, a full three years after it was filed, we will be forced to pursue legal remedies." (*See* Letter, dated April 11, 2011, from the Minnesota Center for Environmental Advocacy and eight other environmental groups, to Lisa Jackson, Administrator, EPA.)

Where Do We Need to Go?

Traditional water quality-based strategies rely on the development of numerical water quality standards, TMDLs, and related implementation plans. While this approach has proven effective for reducing non-stormwater point source loading of pollutants that have a demonstrable cause-effect relationship where a threshold can be established above which water quality impairment occurs, this approach may not be the quickest, most reliable, or most cost-effective path to nutrient reductions.

As already noted, the link between nutrient levels and adverse aquatic life impacts is complex, and even within a bioregion a range of nutrient loadings and ambient concentrations may be acceptable, or even natural. Hence, a single number or threshold criterion approach, unless derived on a site-specific basis (which is very resource intensive), can lead to endless debates about the scientific credibility of the number and can lead to erroneous regulatory decision-making.

Many States and other stakeholders believe that reliance on methods that do not account for the varying ecological effects of nutrient enrichment in waters, including misguided

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Clean Water Act permitting authority cannot issue permits in the face of an agency objection. (*See* Letter, dated Jan. 21, 2011, from Tinka Hyde, Director, Water Division, EPA Region V, to Marcia Willhite, Chief, Bureau of Water, Illinois EPA.)

In addition, in March 2011, EPA's Acting Assistant Administrator for Water wrote to the New England Interstate Water Pollution Control Commission ("NEIWPCC"), making it clear that EPA considers State adoption of numerical criteria for both nitrogen and phosphorus "a priority." EPA also said that State adoption of numerical standards based solely on waterbody-specific causal, response-based determinations of impairment may not be enough, and States may need to adopt still more stringent numerical standards in order to receive EPA's approval. EPA disagreed with NEIWPCC'S proposed approaches for developing numerical nutrients standards that are tailored to particular waterbodies' characteristics based on response-based determinations. (*See* Letter, dated March 1, 2011, from Nancy Stoner, EPA Acting Assistant Administrator for Water, to Ronald Poltak, Executive Director, NEIWPCC, responding to NEIWPCC letter to EPA expressing concern about EPA's emphasis on state adoption of numerical nutrient criteria for both nitrogen and phosphorus and EPA's position on independent applicability versus use of site-specific cause-and-effect data when assessing for use attainment and listing waters for nutrient impairment.)

standards development efforts and one-size-fits-all technology fixes, will result in major expenditures for pollutant sources with minimal or no improvement to water quality for many waters. Rather, they believe nutrient management and control call for a variety of solutions, and a comprehensive set of tools is needed in order to give States flexibility and equip them to achieve reliable reductions from pollutant sources in the shortest reasonable timeframe. States are currently using a variety of CWA tools to achieve nutrient reductions. Beyond water quality standards and TMDLs, these tools include best management practices (BMPs), nutrient trading, controlling other water quality parameters, and many innovative approaches.

Any strategy for controlling nutrient pollution needs to be flexible, needs to recognize the presence of human economic activity, and needs to recognize the ability of States and stakeholders to manage, and afford to manage, nutrients.

With the ongoing debate surrounding the development of nutrient criteria and the frustration with current efforts felt by stakeholders, a number of recommendations are being made regarding where future nutrient control efforts should be directed. Some of these recommendations include:

- Greater emphasis must be placed on evaluating the attainability and refinement of the designated uses of States' waterbodies, if needed, before criteria are developed and controls imposed.

- Water quality assessment and monitoring programs must be sufficiently comprehensive and robust to provide the information needed to support criteria development and document the need for controls to the extent any are required.

- Numerical nutrient water quality standards must be technically and scientifically defensible, developed to reflect the full range of biological, chemical, and physical properties of the waterbody, and protect designated uses.

- Numerical nutrient water quality standards must be based on a demonstrated and quantified cause-and-effect relationship and appropriately qualified by the uncertainty in those relationships.

- Numerical nutrient water quality standards must not be used as the basis for imposing nutrient controls unless a nutrient-caused biological impact has been confirmed or a potential for impact can be demonstrated through a nutrient-specific, technically/scientifically defensible reasonable potential evaluation.

- Flexibility, both in developing water quality standards and their implementation (e.g., better use of existing CWA tools like variances and permit expressions such as longer averaging periods), is needed to account for the uncertainty due to the unique ecological interactions between nutrients and designated uses.

- An adaptive, watershed management approach must be used to ensure continued progress toward long-term water quality goals.

- Any required nutrient controls must be technically and economically achievable, ensure that required investments are sustainable, and provide measurable benefit to the community.

- Water-quality based State strategies already being implemented should not be preempted by EPA.

- Cost-effectiveness should be a key consideration in developing a national strategy for nutrient reductions within the nation's watersheds. Long term sustainability and ease of implementation also need to be recognized.

WITNESSES

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