UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

DEC 19 2014

Mr. Tom Reeder
Director
Division of Water Resources
North Carolina Department of Environment
and Natural Resources
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

Dear Mr. Reeder:

The purpose of this letter is to transmit to you the final decision of the Environmental Protection Agency Region 4 to add fifty-one waterbody-pollutant combinations to North Carolina Department of Environment and Natural Resources' Final 2014 Clean Water Act (CWA) section 303(d) list of water quality limited segments. The EPA partially approved the state's 2014 section 303(d) list in its July 31, 2014, Decision Document. At the same time, the EPA identified fifty-two additional water quality limited segments to be included on the state's section 303(d) list and initiated a public comment period seeking comment on the additional listings. Due to a counting error, the partial approval document and public notices incorrectly specified fifty-*two* waters; the list itself, in Appendix D of the July 31st document has only fifty-*one* waters.

After considering the comments submitted during the public comment period, the EPA has not revised its decision to list the fifty-one waterbody-pollutant combinations. The Responsiveness Summary of comments received is enclosed.

The EPA would like to continue to work closely with your Division to successfully implement the CWA and achieve improvements in water quality. If you have questions, please contact me at (404) 562-9345 or Ms. Joanne Benante at (404) 562-9125.

Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosure

cc: Mr. Bennie Hutson, Chairman, NC Environmental Management Commission
Mr. Tom Fransen, Chief, Planning Section, NC Division of Water Resources
Ms. Kathy Stecker, Modeling & TMDL Unit Supervisor, NC Division of Water Resources

Responsiveness Summary to Comments
Regarding the EPA's July 31, 2014 Action to Add
Waters to North Carolina's 2014 Section 303(d) List

On July 31, 2014, the EPA partially approved the North Carolina (NC) Clean Water Act (CWA) section 303(d) list submittal for the 2014 listing cycle, approving NC's listing of waters, associated pollutants, and associated priority rankings for the state. The EPA also independently determined that fifty-one additional waterbody-pollutant combinations should be added to the state's list. On August 16, 2014, the EPA issued a public notice of the decision to add these waters to NC's 303(d) list. On September 16, 2014, the EPA issued an extension of the comment period with comments due on October 14, 2014. Due to a counting error, the partial approval document and public notices incorrectly specified fifty-*two* waters; the list itself, in Appendix D of the July 31st document, has only fifty-*one* waters.

During the comment period, we received 1,143 emails in support of the Agency's action to list these waterbodies. We received six detailed comment letters, of which two were in support of, three were opposed to, and one was outside the scope of this action. All comments are archived in the Administrative Record for this Agency action. The state submitted comments jointly from the NC Environmental Management Commission (EMC) and the NC Division of Water Resources (DWR). We commend the EMC and DWR staff for their diligent efforts to improve the water quality assessment process that supports the state's CWA sections 305(b) and 303(d) Integrated Report (IR). We note that the state and the EPA agreed on 230 of the state's delisting determinations, and 1,193 listed waterbody-pollutant combinations, identified in the 2014 303(d) list.

The EPA, after consideration of all comments received, is not changing its partial approval of the NC 303(d) list submittal for the 2014 listing cycle and is listing the fifty-one waterbody-pollutant combinations. Because the EPA received a significant number of similar comments on the proposed action, the comments and responses have been categorized and grouped under the following headings:

A. Comments related to the EPA's legal authority

B. Comments related to the validity of the 1-in-3 method for toxics

C. Comments related to the validity of the 10% / 90% methodology for toxics

D. Other / Miscellaneous comments

A. COMMENTS RELATED TO THE EPA'S LEGAL AUTHORITY

A1 Comment: The EPA's One in Three Policy Must Be Promulgated Through Rulemaking

Response: Section 303(d)(1)(A) of the CWA requires each state to identify those waters within its boundaries for which the effluent limitations required by the CWA are not

stringent enough to implement any water quality standard (WQS) applicable to such waters. Section 303(d)(2) requires each state to submit to the EPA Administrator for approval the waters identified under paragraph (1)(A). The Administrator shall either approve or disapprove such identification.

To assist in approval or disapproval of the submitted list, each state shall provide documentation to support the state's determination to list or not to list its waters and shall include at a minimum a description of the methodology used to develop the list, among others. See 40 CFR 130.7(b)(6). The methodology used is not required to be promulgated through rulemaking. In carrying out its CWA 303(d) responsibilities, the EPA reviews the state's assessment methodology to determine if it properly implements applicable WQSs and federal 303(d) regulations for each category of impairment. The state may use any scientifically defensible methodology if it can show that the methodology properly implements the WQS (40 CFR 131.11 (b)). When the EPA cannot conclude that the state's methodology properly implements the WQS, the EPA conducts an independent assessment and reviews water quality data for each relevant category to determine if additional impairments should be added to the 303(d) list. Since the EPA could not conclude that NC's ten percent exceedance frequency methodology was appropriate, the EPA conducted an independent assessment using the EPA recommended guidance.

For toxics, the EPA CWA section 304(a) recommended criteria was established through rulemaking and recommends that acute and chronic aquatic life criteria for toxics not be exceeded more than once every three-year period (1-in-3) on the average (EPA 1992). The scientific basis of this frequency recommendation is discussed in detail in section B, below.

With the concurrence of the EPA, states may adopt site-specific criteria, rather than national criteria, in their state standards. Such site-specific criteria may include not only site-specific concentrations, but also site-specific, and possibly pollutant-specific, durations of averaging periods and average frequencies of allowed excursions. If adequate justification is provided, site-specific and/or pollutant-specific concentrations, durations, and frequencies may be higher or lower than those given in national water quality criteria for aquatic life. (EPA 1991a).

Just as states are not required to promulgate their assessment methodology through rulemaking, there is no CWA requirement that the EPA promulgate its assessment methodology guidance. The 1-in-3 frequency for toxics is the recommended assessment methodology the EPA has shown as consistent with and protective of the CWA 304(a) toxic criteria. The 1-in-3 is protective of NC's criteria in the absence of another explicit, scientifically defensible frequency. NC may demonstrate why a different methodology is protective.

A2 Comment: The EPA Lacks Legal Authority to Impose the >1-in-3 Listing Method

Response: The EPA's statutory authority in CWA section 303(d)(2) includes approval or disapproval of the state's submission of a list of waters for which the effluent limitations

required by the CWA are not stringent enough to implement any WQS applicable to such waters. The EPA shall approve a list only if it meets the requirements of 40 CFR 130.7(b), as stated in 40 CFR 130.7(d)(2). The state documentation required in 40 CFR 130.7(b) includes a description of the methodology used to develop the list. The EPA does not approve the state's methodology, but rather considers the methodology as it assesses whether the state conducted an adequate review of all existing and readily available water quality-related information, whether the factors that were used to make listing and removal decisions were reasonable, whether the process for evaluating different kinds of water-quality related data and information is sufficient, and whether the process for resolving jurisdictional disagreements is sufficient. If the EPA finds that the state's methodology is inconsistent with its WQS, as it found NC's methodology for toxics, the EPA conducts an independent review.

In this review, the EPA used its recommended methodology to identify waters not meeting any applicable WQS that are not included in the state's submitted list. The state's methodology was not scientifically defensible as consistent with NC's WQS, therefore the EPA used its scientifically defensible methodology. The EPA has not imposed its recommended methodology on NC, but rather used the methodology when unable to determine that the state's methodology is scientifically defensible as consistent with its WQS. The EPA conducted an independent review using a scientifically defensible methodology within its authority to review the list for consistency with the relevant provisions of the CWA and the regulations. (EPA 2005)

B. COMMENTS REGARDING THE VALIDITY OF THE 1-IN-3 METHOD

B1 Comment: The 1-in-3 method is not appropriate because it ignores importance of sample size; the EPA should endorse statistical approaches, such as those recommended by the National Research Council.

Response: The EPA's recommended 1-in-3 frequency is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a toxic pollution event and is intended to ensure that aquatic communities are not constantly recovering from effects caused by exceedances of the criteria. Studies showed that even one toxic exceedance can cause damage if the magnitude was very high or the affected area was very large (EPA 1991a). Therefore, a statistical approach based on a percentage of exceedances, no matter the sample size, is not valid and would not protect the designated use.

The National Research Council (NRC) published a report in 2001 titled "Assessing the TMDL Approach to Water Quality Management" that analyzed the total maximum daily load (TMDL) program as well as statistical methods that can reduce uncertainties in water quality assessments. The report concluded with a call for an adaptive process that could balance between caution against listing in error that can trigger unnecessary TMDLs, and concern about unidentified impaired waters that could result in other adverse consequences (NRC 2001). The EPA's IR guidance published subsequent to the NRC report incorporates some of the NRC recommendations and clearly supports the use

of appropriate statistical approaches in attainment decisions, including the use of a binomial approach for conventional pollutants and consideration of sample size (EPA 2002, EPA 2003, EPA 2005).

At the heart of the EPA's action to list waters on the NC 2014 303(d) list is determining what an acceptable frequency of exceedance is for non-conventional, or toxic, pollutants. For NC's toxics criteria expressed as "maximum permissible levels," a ten percent exceedance has not been shown to be an acceptable frequency. The NRC report supports our position:

> *The choice of acceptable frequency of violation is also supposed to be related to whether the designated use will be compromised, which is clearly dependent on the pollutant and on waterbody characteristics such as flow rate. A determination of 10 percent cannot be expected to apply to all water quality situations. In fact, it is inconsistent with federal water quality criteria for toxics* ... (NRC 2001)

The EPA has consistently advised the state to include in its methodology a way to consider the importance of sample size. As we stated in the July 31, 2014, Partial Approval Decision Document, "the methodology should allow listing where data demonstrates sufficient exceedances of a criterion, even though the minimum sample size (>9 samples) has not yet been collected... Where a waterbody has 3 exceedances, regardless of the total number of samples, there is no need to collect the full 10 samples..." This holds true especially in the case of toxics assessment where more than one exceedance can indicate impairment. (EPA 2014a)

B2 Comment: The 1-in-3 method is not appropriate because it is not based on rigorous scientific analysis

Response: As described in the July 31, 2014, Partial Approval Decision Document (EPA 2014a), the EPA established the 1-in-3 frequency of criteria exceedance as part of the derivation of the nationally-recommended criteria for toxics. Section 304(a)(1) of the CWA requires the EPA to develop criteria for water quality that accurately reflects the latest scientific knowledge. These criteria are based solely on data and scientific judgments on pollutant concentrations and environmental or human health effects.

The EPA's recommended use of the 1 in 3 year maximum allowable excursion recurrence frequency for toxics was based on extensive scientific analyses, looking at recovery rates of ecosystems from various kinds of natural disturbances and anthropogenic stressors. The concentrations (or magnitudes), durations and frequencies specified in all aquatic life criteria are based on biological, ecological, and toxicological data, and are designed to protect aquatic organisms and their uses from unacceptable effects. This is documented in many places (EPA 1985a; EPA 1985b; EPA 1991a; EPA 1994) including most of the EPA's metals criteria documents (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm).

B3 Comment: The 1-in-3 method is not appropriate because it is overly conservative and based on studies that do not support the need for a three year recovery period for typical exceedances of toxics WQS which are much more likely to be marginal than large excursions

Response: The EPA's criteria development guidelines are designed to derive criteria that protect aquatic communities by protecting most of the species and their uses most of the time, but not necessarily all of the species all of the time (EPA 1985a). The EPA toxics criteria recommendations for magnitude, duration and frequency were based on toxicity test results in which aquatic organisms were exposed to metals under laboratory conditions. They are conservative estimates that are designed to be protective of aquatic communities in a wide range of water bodies. We agree that the criteria may, in some cases, be overprotective because they do not take into account site-specific characteristics such as water chemistry or the effects of marginal excursions. A state may choose to develop scientifically derived decision rules that address these factors (refer to response to comment C3, below).

The resilience of ecosystems and their ability to recover from toxic criteria exceedances differ greatly. For example, aquatic life typical of small headwater streams have often been found to recover more rapidly than 3 years. However, "recovery periods longer than 3 years may be necessary after multiple minor excursions or after a single major excursion or spill during a low-flow period in medium-to-large rivers, and up to 25 years where long-lived fish species are to be protected." This is described more fully in *Considerations for Proposing Site-Specific Increases or Decreases in the Average Frequency of Allowed Excursions* in Appendix D of the EPA's Technical Support Document for Water Quality Based Toxics Control (EPA 1991a).

The 1-in-3 method is the Agency's assessment of how long it will take an unstressed system to recover from an exceedance. Already stressed systems would be expected to require more time for recovery. We note that most of the NC waters we are listing for metals in this Agency action are, or have been in the past, identified as impaired for other pollutants and could be considered "stressed systems." Also, in our review of the assessment data, we found that over half of the waters we are listing included exceedances that are more than double the WQC.

The EPA responded to comments on the conservative nature of the 1-in-3 frequency in the *Responsiveness Summary* of the 1991 Technical Support Document for Water Quality Based Toxics Control. See that document for a full discussion, but we note here that, "in general, the EPA recommends that ecosystems not spend a substantial portion of time in a state of recovery from pollution stresses, and that pollution stresses not significantly increase the total stress experienced by organisms in the ecosystem. If the criteria are set appropriately, a marginal excursion might be expected to have little or no measurable impact, and little or no time period needed for recovery. The probability of a marginal criteria excursion nevertheless has a calculable relationship with the probabilities of severe criteria excursions. Consequently, a scientifically justified site-specific or state-wide frequency could be developed by considering (a) the probability (estimated by

simulation or by statistical calculation) of a range of excursions of differing severity, coupled with (b) the estimated ecological recovery period for the corresponding different degrees of impact. Based on the total period of recovery from a full range of possible events, compared with the sum of return intervals for such events, the allowable frequency for the marginal criteria excursion could be established." (EPA 1991a)

B4 Comment: The 1-in-3 method is not appropriate because samples were not collected using clean techniques

Response: The state's data validity is, and has been, ensured through consistent use of standard operating procedures and rigorous quality assurance and quality control processes which incorporate the appropriate the EPA analytical methods (NC 2004, NC 2011, NC 2012, NC 2013). According to DWR's website, "[g]enerally, analytical data generated by non-DWR parties for regulatory purposes will be required to meet the same data quality requirements as internal activities... In order to be usable by DWR for regulatory purposes, data must meet certain requirements AND undergo detailed review to evaluate the accuracy, precision, and representativeness of the data." (NC 2014a). We understand that the state's monitoring coalitions operate under mutually agreed upon Memoranda of Agreement that ensure that the data collected by the coalitions are of comparable quality to the data collected by DWR.

Field blanks are, and have been, routinely used to identify errors or contamination in sample collection and analysis. Where contamination or other analytical errors have been identified, data is "qualified," or "flagged," and are not used in use support decisions. In our independent review of the state's data, we acknowledged these qualifiers. We noted in our July 31, 2014, Partial Approval Decision Document that "[a] thorough review of the State's data also revealed an additional 153 waterbody-pollutant combinations with potential metals impairments. ... However, much of the data is qualified. ... The EPA recommends that these waterbodies remain or be placed in Category 3 and be given high priority for follow-up monitoring." (EPA 2014a) Therefore, the EPA fully considered data quality when making our final decision.

B5 Comment: The 1-in-3 method is not appropriate to apply against NC WQC because it was designed for chronic and acute criteria and averages over a prescribed time period, and because it is designed for dissolved metals.

Response: In the absence of an explicit averaging period, it is reasonable to assume that NC's WQCs are considered chronic criteria with no averaging period. In the absence of site specific information and decision rules for guidance, the EPA believes that the 1-in-3 method is appropriate based on grab (no averaging period) or composite (e.g., 4 day average) samples. From the EPA's 1997 305(b) guidance for use support determinations for toxicants, a water is "Fully Supporting" when "[f]or any one pollutant, no more than 1 exceedance of acute criteria (EPA's criteria maximum concentration or applicable State/Tribal criteria) within a 3-year period based on grab or composite samples and no more than 1 exceedance of chronic criteria (EPA's criteria continuous concentration or applicable State/Tribal criteria) within a 3-year period based on grab or composite samples." (EPA 1997) Also, see response to comment B6.

Before 1995, national criteria for metals were derived as total metals. In 1995, the EPA altered its national policy on the expression of aquatic life criteria for metals from the total form to the dissolved form. (EPA 1995) The EPA's 1-in-3 method was a recommended approach before and after this change. It applies to both total and dissolved metals data, and for both acute and chronic impacts. This is documented in many places (EPA 1985a; EPA 1985b; EPA 1991a; EPA 1994; EPA 1997; EPA 2007a) including the EPA's metals criteria documents (http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm).

B6 Comment: It is not appropriate to assume that single sample instantaneous results may be used to represent four-day parameter WQC.

Response: The EPA's 1997 water quality assessment guidance acknowledges "[t]he challenge in establishing assessment methods for chronic criteria lies in demonstrating that a chronic exposure has actually occurred. If at least four days of data are available within a seven-day period, one could use an average to determine whether an exceedance has occurred." However, few states "if any, are obtaining composite data over a 4-day sampling period for comparison to chronic criteria. The EPA believes that 4-day composites are not an absolute requirement for evaluating whether chronic criteria are being met. Grab and composite samples (including 1-day composites) can be used in water quality assessments if taken during stable conditions." (EPA 1997)

For criteria with multiple day averaging periods (such as the chronic criteria in NC's proposed metals WQS), states should develop scientifically derived decision rules for concluding impairment where information indicates a reasonable likelihood that the average was exceeded. For example, if conditions have remained fairly stable over the period of interest, it would be valid to use a grab sample to represent that time period. Some states [e.g., Arizona (AZ 2014), New Mexico (NM 2011)] have developed methods for determining chronic criteria exceedances based on grab samples, for use when multiple days of data are not available. Typically these methods assume that stable conditions were occurring at the time unless there is information to the contrary.

C. COMMENTS REGARDING THE VALIDITY OF THE 10% / 90% METHOD

C1 Comment: The 10% method is more appropriate because it reflects solid science and is statistically sound

Response: The EPA's mission of protecting human health and the environment dictates that the protection of aquatic life through proper assessment of WQC outweigh the desire to use an all-purpose, 'one-size-fits-all,' statistical approach. We have agreed that the state's use of the 10% method is consistent with the EPA's general recommendations for conventional pollutants. However, for toxics, in the absence of site-specific data to the contrary, science shows that aquatic life is likely not protected when subjected to more than one criteria exceedance over a three-year period (EPA 1991a). See Response to Comment B2, above.

The EPA's 2004 IR guidance clearly articulates why it is questionable to apply the 10% method to criteria that are expressed as maximum permissible levels: "The problem is that the 10% rule could be interpreted in such a way to allow the concentration of the pollutant in a water to be greater than the criterion concentration at some very high frequency–perhaps even once every 10 seconds. Such a high frequency of adverse diversions from the magnitude-duration-frequency scenario spelled out in the WQC provides strong evidence that the relevant designated use is impaired. Hence, if a state intends to use the "10%" rule in conjunction with WQC expressed as 'the instantaneous concentration of the pollutant shall not be greater than _ ug/L, at any time,' the state will need to provide a rationale for why such an application of the rule is a reasonable approach to evaluation of data against water quality standards." (EPA 2003) For guidance on developing a rationale, see *Considerations for Proposing Site-Specific Increases or Decreases in the Average Frequency of Allowed Excursions* in Appendix D of the EPA's 1991 Technical Support Document for Water Quality Based Toxics Control (EPA 1991a) See Response to Comment B3, above.

C2 Comment: The 10% method is more appropriate because it accounts for sampling and analytical errors, and addresses data validity

Response: Data validity is ensured through consistent use of standard operating procedures and rigorous quality assurance and quality control processes. See Response to Comment B4, above.

C3 Comment: The 10% method is more appropriate because it helps account for data variability (e.g., concerns with outliers, borderline impairments and to prevent occasional exceedances from the 'first flush" of stormwater)

Response: An appropriate way to account for data variability would be to develop scientifically derived decision rules. The EPA guidance discusses, and many states have included, decision rules that consider site specific issues like the magnitude of exceedance over water quality criteria (including outliers or borderline exceedances) and samples taken in unstable conditions. [e.g., Alabama (AL 2014), Arizona (AZ 2014), New Hampshire (NH 2014), New Mexico (NM 2011); also see EPA 1991a, EPA 2002, EPA 2005]

D. OTHER / MISCELLANEOUS COMMENTS

D1 Comment: Several commenters agreed that the 10% method is not an appropriate way to assess toxic impacts in NC and supported listing of the fifty-one waterbody-pollutant combinations. Many were concerned that "[t]oxic metals are damaging to aquatic life, and can increase treatment costs for downstream drinking water systems."

Response: Thank you for your support. The EPA, after consideration of all comments received, is not changing its decision. We have consistently communicated our reservations about the 10% frequency to the state and provided opportunities to suggest

alternatives for many 303(d) listing cycles. (EPA 2006, EPA 2007b, EPA 2007c, EPA 2009a, EPA 2009b, EPA 2010a, EPA 2010b, EPA 2011, EPA 2012a, EPA 2012b, EPA 2012c, EPA 2013, EPA 2014a)

D2 Comment: EPA has accepted listing methodologies in other southeastern states that are similar to that proposed by NC and allowed those jurisdictions to proceed without intervention.

Response: Some states, like NC, include in their listing methodology a 10% exceedance method for toxics. However, whenever the EPA cannot conclude that an assessment methodology is consistent with the state's applicable WQS, an independent review of data is done to determine whether all waterbody impairments are properly identified. The EPA Region 4 allowed the use of a 10% methodology for toxics in Florida because there were scientifically justified reasons for doing so. Please refer to the thorough discussion on this in our July 31, 2014, Partial Approval Decision Document. (EPA 2014a).

D3 Comment: NC has an extensive biological monitoring network and assessment approach that truly identifies areas exhibiting impacts [sic] the additive effects from toxics, sediment, habitat change and other potential causes. The impacted areas are included in the list based on the latest assessments – not a statistical measure related to water quality data.

Response: The state is commended for its robust biological monitoring network. However, we note that the validity of the results of one assessment approach does not depend on confirmation by another method. For more information see the EPA's *Final Policy on the Use of Biological Assessments and Criteria in the Water Quality Program* (EPA 1991b). We also commend DWR for its analysis of metals and biological integrity as part of the Random Ambient Monitoring System (RAMS), as published recently in the report *Total and Dissolved Metals in North Carolina Surface Waters: RAMS Data Exploration* (NC 2014b).

D4 Comment: The League and its members take seriously the responsibility to protect and enhance water quality. Cities and towns in NC are allocating tremendous amounts of resources for water quality management

Response: Comments noted. Thank you for your extremely important work in protecting and enhancing water quality.

D5 Comment: "EPA's decision to add the fifty-two waterbodies to NC's 2014 303(d) list represents an unnecessary action that places an additional burden on NC's water quality management program without any significant beneficial contribution in efforts to address real water quality impairment. ... The actions required to address the waters listed by NC are often significant and can result in the allocation of huge amounts of financial resources."

Response: The EPA notes that the scope of the 303(d) program focuses only on WQS attainment and identifying impaired waters. States are provided flexibility in determining

the most appropriate means of addressing water quality impairments. The state may prioritize its resources to address the most severe impairments first.

The CWA requires the EPA to ensure that impaired waters are properly identified. Proper identification of impaired waters supports the EPA's mission to protect human health, support economic and recreational activities, ensure safe drinking water, and provide healthy habitat for fish, plants, and wildlife.

As we note below in the response to comment D7, we are encouraged by the progress made by NC in adopting more up-to-date WQSs for metals. Renewal of the state's water quality monitoring for metals should also help identify the true condition of waters.

D6 Comment: Several commenters requested sampling of the waterbodies listed in this EPA action.

Response: We appreciate that NC has already begun sampling at several of the waters identified as metals-impaired. We note that we approved the delisting of five waterbody-pollutant combinations in the 2014 303(d) list cycle based on new metals data. Also, in their comments on this Agency action, the state committed to continue sampling of the listed waters.

D7 Comment: "The State is in the process of changing metals criteria and will subsequently adopt listing methods to properly assess the metals criteria. Until those standards changes are adopted the use of NC's current approach is more appropriate."

Response: Impaired waters assessment must be based on NC's EPA-approved WQS. Based on the information described above, we do not agree that the 10% approach is appropriate to assess the current WQS. We are encouraged by the progress made by NC in adopting more up-to-date WQSs for metals. Renewal of the state's water quality monitoring for metals should also help identify and address impairments.

D8 Comment: One comment letter received contested the EPA's decision to approve the delisting of six waters in the Neuse Estuary previously listed for impairment from chlorophyll-a. Numerous emails we received included the comment "Nitrogen and phosphorus pollution remain a major threat to our lakes and rivers, and EPA should not allow North Carolina to ignore these problems in the next assessment, in 2016."

Response: These comments are outside the scope of this Agency action. However, we note that the EPA included this comment to DWR on the 2016 303(d) Listing Methodology:

> Because the EPA Region 4 has received comments from numerous North Carolina citizens encouraging a closer look at assessing nutrient impairments, we would like to draw attention to the 2014 IR [Integrated Reporting] guidance *(Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions,* September 3, 2013*)*, which includes approaches to consider for identifying nutrient-related impaired waters for the

303(d) list based on narrative nutrient water quality criteria and/or direct evidence of failure to support designated uses. Also note that the EPA's 2016 IR Guidance is expected to be released in early 2015.

The EPA IR guidance is national in scope and, as nutrient over-enrichment is a significant national issue, the 2016 IR Guidance may contain additional information about assessing for nutrient impairments.

D9 Comment: We received several comments that expressed concern about a variety of legislative and regulatory issues in NC.

Response: These comments are outside the scope of this Agency action.

D10 Comment: "...for at least 130 of these impaired waters, the State made the delisting decision without any evidence that existing effluent limitations are sufficiently stringent to implement applicable water quality standards, defying the intent of 33 U.S.C. § 1313(d)(1)(A). The State offered no argument that the conditions that led to the original listing have changed; nor did the State argue that the initial listing decision was in error. The only justification provided for delisting these waters was the adoption of a new listing methodology."

Response: From the EPA 2006 IR guidance, "...if the state evaluates the pre-existing data and information using a new or revised methodology that accurately reflect the applicable WQS, and the results of that evaluation provide a 'good cause' basis for not including the segment on the 2006 section 303(d) list, the segment would no longer need to be included in Category 5. However, the delisting should only occur if it is determined that the basis for the decision is consistent with the state's applicable WQS and is reasonable." (EPA 2005) The EPA has commented consistently since the 2004 listing cycle that the NC assessment methodology for toxics (10% exceedance frequency) is not consistent with the state's WQS. See response to comment D1, above.

Comments on delistings other than the metals-impaired waters addressed above are outside the scope of this Agency action. However, as we noted in our comments to DWR on the 2016 303(d) Listing Methodology, in future assessments the NC approach should differentiate between listing and delisting and should fully describe all policy decisions implicit in the statistical analysis (e.g., the methodology should define null and alternative hypotheses, and Type I and Type II error thresholds for both listing and delisting). (EPA 2014b)

D11 Comment: One commenter asked for an investigation of campground septic systems overflowing in the summer into the head waters of the Catawba River's drinking water supply, Buck Creek, which runs along Highway 80; an engineering inspection was suggested but apparently no action has been taken.

Response: This comment is outside the scope of this Agency action. However, we did notify NC DWR staff who provided contacts at the local Health Department which

handles septic inspections. We encourage all citizens who observe sewer overflow events to contact the appropriate officials. We also recommend that the state follow up on this potential water quality issue.

CONCLUSION

The EPA, after consideration of all comments received, is not changing its decision regarding the listing of fifty-one waterbody-pollutant combinations. The EPA has determined that the state's 10% exceedance plus a 90% confidence level methodology for toxics does not properly implement the toxics WQC, as currently specified. DWR is not required to use the EPA-recommended 1-in-3 method. The state may use a scientifically defensible alternative methodology if they can show that it is no less stringent than the WQC (40 CFR 131.11(b)). However, DWR has not provided a scientifically defensible rationale to support the 10% methodology.

The EMC and DWR support NC's new methodology by stating that it was developed "with significant input and ultimate approval by the EMC after months of effort and discussion including the involvement of interested stakeholders." The EPA was aware of the state process whereby a new methodology was developed. The EPA submitted comments on the new methodology (EPA 2012b), and, as we have consistently done since the 2004 303(d) listing cycle, proposed the commonly used 1- in-3 exceedance frequency as a more appropriate way to assess toxics impairment. We appreciate the time and effort put into NC's methodology, however we cannot rely on EMC and stakeholder input as a scientific rationale to demonstrate the methodology properly assesses for impairment against NC's WQC.

REFERENCES

AL 2014. Alabama Final 2014 Water Quality Assessment and Listing Methodology. January 2014. Alabama Department of Environmental Management, Water Quality Branch. http://www.adem.state.al.us/programs/water/303d.cnt (71 pages, 554 kilobytes)

AZ 2014. Surface Water Assessment Methods and Technical Support. May 2014. Arizona Department of Environmental Quality, TMDL and Assessment Unit, Surface Water Section. http://www.azdeq.gov/environ/water/assessment/ (38 pages, 751 kilobytes)

EPA 1985a. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. January 1985. EPA 822/R-85-100. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratories in Duluth, Minnesota, Narragansett, Rhode Island and Corvallis, Oregon. http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/index.cfm (59 pages, 556 kilobytes)

EPA 1985b. Ambient Water Quality Criteria for Copper -1984. January 1985. EPA 440/5-84-031. U.S. Environmental Protection Agency, Office of Research and Development,

Environmental Research Laboratories in Duluth, Minnesota and Narragansett, Rhode Island. http://water.epa.gov/scitech/swguidance/standards/upload/2001_10_12_criteria_ambientwqc_copper1984.pdf (150 pages, 6.2 megabytes)

EPA 1991a. Technical Support Document for Water Quality Based Toxics Control. March 1991. EPA 505-2-90-001. U.S. Environmental Protection Agency, Office of Water Enforcement and Permits and Office of Water Regulations and Standards, Washington, DC. http://water.epa.gov/scitech/swguidance/standards/handbook/upload/2002_10_25_npdes_pubs_owm0264.pdf (335 pages, 26.55 megabytes)

EPA 1991b. Policy on the Use of Biological Assessments and Criteria in the Water Quality Program. May 1991. U.S. Environmental Protection Agency, Office of Science and Technology, Washington, DC. http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/biocriteria/upload/2002_10_24_npdes_pubs_owm0296.pdf (19 pages, 1.1 megabytes)

EPA 1992. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance. Tuesday, December 22, 1992. U.S. EPA. Volume 57 of the Federal Register, Issue 246, Page: 60848 (57 FR 60848). [Also known as the National Toxics Rule.]

EPA 1994. Water Quality Standards Handbook: Second Edition. Including Appendix H, *Derivation of the 1985 Aquatic Life Criteria*. 1994. EPA-823-B-12-002. U.S. Environmental Protection Agency, Office of Science and Technology, Washington, DC. http://water.epa.gov/scitech/swguidance/standards/handbook/ (Appendix H is 18 pages, 1.5 megabytes)

EPA 1995. *Stay of Federal Water Quality Criteria for Metals* and *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance—Revision of Metals Criteria*. May 4, 1995. U.S. Environmental Protection Agency. Volume 60 of the Federal Register pages 22228 and 22229. http://www.gpo.gov/fdsys/pkg/FR-1995-05-04/pdf/95-10147.pdf (2 pages, 147 kilobytes) and http://www.gpo.gov/fdsys/pkg/FR-1995-05-04/pdf/95-10148.pdf (9 pages, 249 kilobytes)

EPA 1997. Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates. September 1997. EPA-841-B-97-002A. U.S. Environmental Protection Agency, Office of Water, Office of Wetlands, Oceans, and Watersheds, Assessment and Watershed Protection Division, Washington, D.C. http://water.epa.gov/type/watersheds/monitoring/guidelines.cfm (293 pages, 646 kilobytes)

EPA 2002. Consolidated Assessment and Listing Methodology. July 2002. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, Washington, D.C. http://www.epa.gov/owow/monitoring/calm.html (358 pages, 3.4 megabytes)

EPA 2003. Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act. July 21, 2003. U.S. Environmental

Protection Agency, Office of Wetlands, Oceans and Watersheds, Washington, D.C. http://www.epa.gov/owow/tmdl/tmdl0103/index.html (38 pages, 312 kilobytes)

EPA 2005. July 29, 2005. Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act. U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, Washington, D.C. http://www.epa.gov/owow/tmdl/2006IRG/ (89 pages, 798 kilobytes)

EPA 2006. "Decision Document for the Approval/Partial Approval of the North Carolina Department of Environment and Natural Resources' 2004 §303(d) List Submitted on June 30, 2006." Prepared by the EPA Region 4 Water Management Division (WMD). November 20, 2006.

EPA 2007a. Aquatic Life Ambient Freshwater Quality Criteria – Copper. February 2007. EPA-822-R-07-001. US. EPA Office of Water, Office of Science and Technology, Washington, D.C. http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/upload/2009_04_27_criteria_copper_2007_criteria-full.pdf

EPA 2007b. Letter from James Giattina, Director, WMD, EPA Region 4, to Alan Klimek, Director, NC Division of Water Quality (DWQ), NC Department of Environment and Natural Resources (NCDENR). [To initiate the process for adoption and submittal of the 2008 CWA Section 303(d) lists in Region 4.] March 15, 2007.

EPA 2007c. "Decision Document for the Approval/Partial Approval of the North Carolina Department of Environment and Natural Resources' 2006 Section 303(d) List Submitted on August 1, 2006." Prepared by the EPA Region 4 WMD. May 17, 2007.

EPA 2009a. Letter from Jim Giattina, Director, WMD, EPA Region 4, to Coleen Sullins, Director, DWQ, NCDENR. [The EPA's response to DWQ's proposed assessment methodology revisions for metals which DWQ proposed in a November 19, 2008, letter to EPA Region 4 (which is included in the EPA's NC 2014 303(d) list administrative record).] February 2, 2009.

EPA 2009b. Letter from James Giattina, Director, WMD, EPA Region 4, to Coleen Sullins, Director, DWQ, NCDENR. [To initiate the process for submittal and approval of the 2010 IR.] June 29, 2009.

EPA 2010a. "Decision Document for the Approval/Partial Approval of the North Carolina Department of Environment and Natural Resources' 2008 Section 303(d) List Submitted on February 5, 2010." Prepared by the EPA Region 4 Water Protection Division (WPD), March 9, 2010.

EPA 2010b. "Decision Document for the Approval/Partial Approval of the North Carolina Department of Environment and Natural Resources' 2010 Section 303(d) List Submitted on March 29, 2010." Prepared by the EPA Region 4 WPD, August 31, 2010.

EPA 2011. Letter from James D. Giattina, Director, WPD, EPA Region 4, to Coleen Sullins, Director, DWQ NCDENR. [To initiate the process for submittal and approval of the 2012 IR.] July 13, 2011.

EPA 2012a. "Decision Document for the Partial Approval of the North Carolina Department of Environment and Natural Resources' 2012 Section 303(d) List Submitted on March 30, 2012." Prepared by the EPA Region 4 WPD, August 10, 2012.

EPA 2012b. Email from Marion Hopkins, Monitoring and Information Analysis Section, WPD, EPA Region 4, to Andy Painter, Modeling and TMDL Unit, Planning Section, DWQ NCDENR. [Comments in response to the DWQ's request for public comments on the 2014 303(d) assessment methodology.] (November 26, 2012).

EPA 2012c. Letter from James D. Giattina, Director, WPD, EPA Region 4, to Chuck Wakild, Director, DWQ, NCDENR. [Transmittal of final decision to add one waterbody pollutant combination to the NC Final 2012 303(d) List and Responsiveness Summary of comments received during the Public Comment Period.] November 27, 2012.

EPA 2013. Email from Marion Hopkins, Monitoring and Information Analysis Section, WPD, EPA Region 4, to Kathy Stecker, Supervisor, Modeling and TMDL Unit, Planning Section, DWR, NCDENR. [This email includes comments on the state's Assessment Methodology and 2014 303(d) list.] December 19, 2013.

EPA 2014a. "Decision Document for the Partial Approval of the North Carolina Department of Environment and Natural Resources' 2014 Section 303(d) List Submitted on March 31, 2014." Prepared by the EPA Region 4 WPD, July 31, 2014.

EPA 2014b. Email from Marion Hopkins, Monitoring and Information Analysis Section, WPD, EPA Region 4, to Andy Painter, Modeling and Assessment Branch, Planning Section, DWR NCDENR. [Initial comments on NC 2016 303(d) assessment methodology] (September 30, 2014).

NC 2004. Ambient Monitoring System Quality Assurance Project Plan. December 16, 2004. NCDENR, DWQ.

NC 2007. Classifications and Water Quality Standards Applicable to Surface Waters and Wetlands of NC (NC Administrative Code 15A NCAC 02B.0200). May 1, 2007. NCDENR, DWQ. http://portal.ncdenr.org/web/wq/ps/csu/swstandards.

NC 2011. Intensive Survey Unit Standard Operating Procedures Manual: Physical and Chemical Monitoring, Version 2.0. November, 2011. NCDENR, DWQ, Environmental Sciences Section.

NC 2012. Ambient Monitoring System Quality Assurance Project Plan, Version 1.1. July 2012. NCDENR, DWQ. http://portal.ncdenr.org/web/wq/ess/eco/ams/qapp

NC 2013. Intensive Survey Unit Standard Operating Procedures Manual: Physical and Chemical Monitoring, Version 2.1. December, 2013. NCDENR, DWR, Environmental Sciences Section. http://portal.ncdenr.org/web/wq/ess/isu

NC 2014a. North Carolina Department of Environment and Natural Resources, Division of Water Resource's website on Water Quality Data Assessment: Submittal Instructions Data for Potential Regulatory Use. Retrieved November 6, 2014, from http://portal.ncdenr.org/web/wq/ps/mtu/assessment#5

NC 2014b. Total and Dissolved Metals in North Carolina Surface Waters: RAMS Data Exploration January 2007 to June 2013. [RAMS is the state's Random Ambient Monitoring System.] November 7, 2014. NDENR, DWR, Water Sciences Section. http://portal.ncdenr.org/web/wq/ess/reports

NH 2014. State of New Hampshire 2012 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. January 2014. New Hampshire Department of Environmental Services. http://des.nh.gov/organization/divisions/water/wmb/swqa/

NM 2011. Procedures for assessing Water Quality Standards Attainment for the State of New Mexico CWA §303(d) /§305(b) Integrated Report: Assessment Protocol. May 6, 2011. New Mexico Environment Department, Surface Water Quality Bureau. http://www.nmenv.state.nm.us/swqb/protocols/

NRC 2001. Assessing the TMDL Approach to Water Quality Management. June 15, 2001. National Research Council, National Academy Press, Washington, D.C. http://www.nap.edu/catalog.php?record_id=10146

Incorporated by reference:

The EPA's metals criteria documents:
http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm