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

MAR 0 9 2010

Ms. Coleen Sullins
Director
North Carolina Division of Water
NC Department of Environment and Natural Resources
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

SUBJECT: Approval of State of North Carolina's 2008 Section 303(d) List Submittal

Dear Ms. Sullins:

The U.S. Environmental Protection Agency (EPA), Region 4 has completed its review of the North Carolina Department of Environment and Natural Resources' Final 2008 Clean Water Act (CWA) section 303(d) list of water quality limited segments. EPA has determined that each of the water quality limited segments still requiring Total Maximum Daily Loads identified on the State's 2008 list, meets the requirements of the CWA section 303(d) and its implementing regulations, 40 CFR 130.7. EPA hereby approves the State of North Carolina's decision to include each of the waters designated by the State in its 2008 section 303(d) list. Enclosed for your information is the accompanying decision document for this approval action.

If you have questions concerning this matter, please contact me at (404) 562-9345 or Joanne Benante at (404) 562-9125.

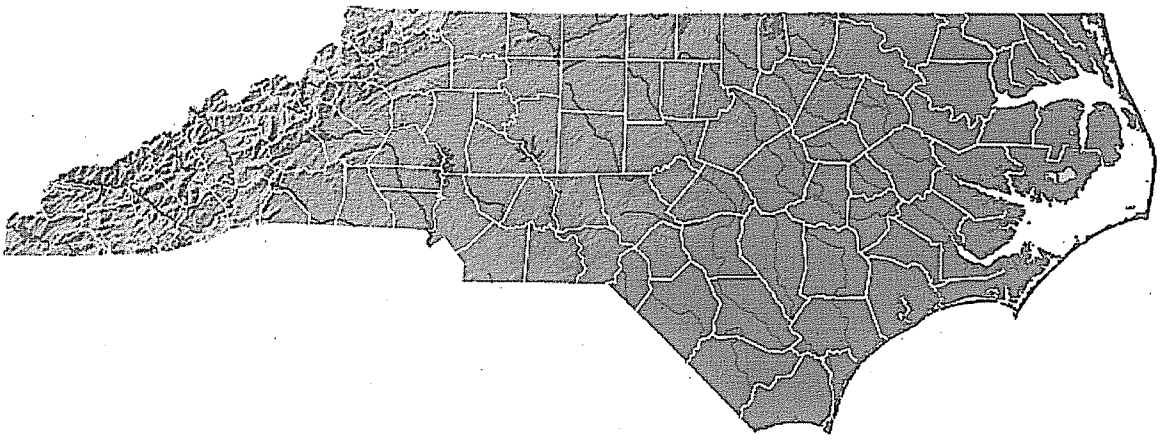
Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosure

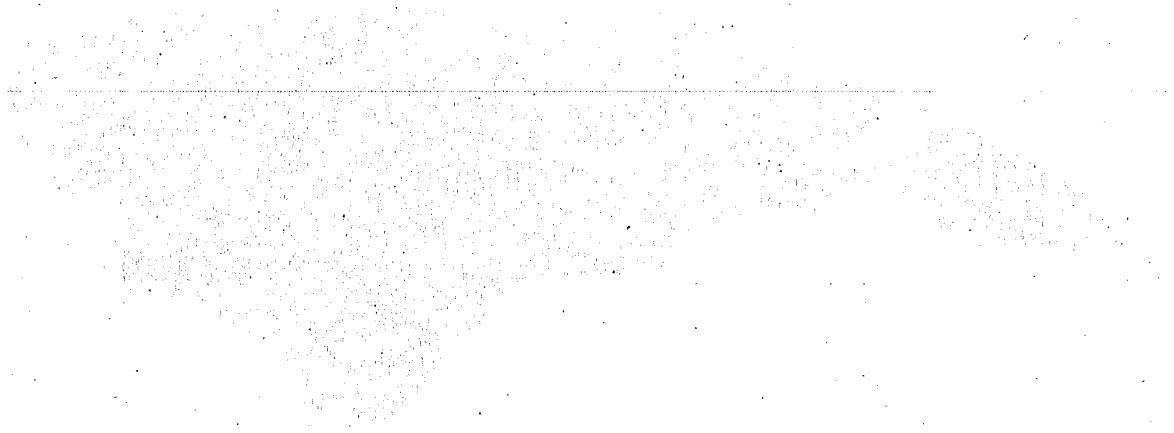
2043

DECISION DOCUMENT
FOR THE
APPROVAL OF THE
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES' 2008 SECTION 303(d) LIST SUBMITTED ON February 5, 2010



Prepared by the
U.S. Environmental Protection Agency, Region 4
Water Management Division

March 9, 2010



I. Executive Summary

On February 5, 2010, the North Carolina Department of Environment and Natural Resources, Division of Water Quality (DWQ), submitted its final 2008 integrated section 305(b) report and section 303(d) list of impaired waters to the Environmental Protection Agency (EPA) for review. After a thorough review of North Carolina's submittal, EPA is approving the State's section 303(d) list. This Decision Document summarizes EPA's review and the basis for the Agency's decision.

Section 303(d)(1) of the Clean Water Act (CWA or Act) directs states to identify those waters within their jurisdictions for which effluent limitations required by section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard (referred to as water quality limited segments, defined in Title 40 of the *Code of Federal Regulations* (CFR) § 130.7), and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The section 303(d) listing requirement applies to water quality limited segments impaired by pollutant loadings from both point and/or nonpoint sources. After a State submits its section 303(d) list to EPA, the Agency is required to approve or disapprove that list.

This report updates the State's most recently approved section 303(d) list, approved by EPA on May 7, 2007 (the 2006 list). North Carolina's initial Public Review Draft of the 2008 section 303(d) list was issued on January 10, 2008, with comments due February 15, 2008. The State issued a Final list on April 1, 2008. However, EPA could not conclude that the listing methodology used by the State properly implemented the State's water quality standards. Following extensive negotiations, DWQ revised their assessment methodology and issued a revised Draft section 303(d) list on December 21, 2009. North Carolina provided the draft for public review and comment; comments were due on January 25, 2010. The State submitted the Final list to EPA on February 5, 2010.

II. Statutory and Regulatory Background

A. Identification of Water Quality Limited Segments for Inclusion on the Section 303(d) List

Section 303(d)(1) of the Clean Water Act (Act) directs states to identify those waters within its jurisdictions for which effluent limitations required by sections 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of section 303(d).

EPA regulations at 40 CFR 130.7(b)(1) state, "Each State shall identify those water quality-limited segments still requiring TMDLs within its boundaries for which: (i) Technology-based effluent limitations required by sections 301(b), 306, 307, or other

sections of the Act; (ii) More stringent effluent limitations (including prohibitions) required by either State or local authority preserved by section 510 of the Act, or Federal authority (law, regulation, or treaty); and (iii) Other pollution control requirements (e.g., best management practices) required by local, State, or Federal authority are not stringent enough to implement any water quality standards (WQS) applicable to such waters." EPA regulations define water quality limited segment as "[a]ny segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by section 301(b) and section 306 of the Act." 40 CFR 130.2(j). Note: The term "water quality limited segment" as defined by federal regulations may also be referred to as "impaired waterbodies" or "impairments" throughout this decision document.

EPA's *2006 Integrated Water Quality Monitoring and Assessment Report Guidance* (July 29, 2005), recommends the use of five categories to classify the water quality standard attainment status for each waterbody segment, or assessment unit. North Carolina currently uses the five categories recommended by EPA plus some additional sub-categories within those categories.

Category 1: Attaining the water quality standard and no use is threatened. This category consists of those assessment units where all applicable use support categories are rated "Supporting." Data and information are available to support a determination that the water quality standards are attained and no use is threatened. Future monitoring data will be used to determine if the water quality standard continues to be attained. Because of the statewide fish consumption advice for mercury in North Carolina, there are no Category 1 waters.

Category 2: Supporting or not Impaired for all monitored uses. This category consists of those assessment units where at least one of the applicable use support categories are rated "Supporting" and the other use support categories are rated "Not Rated" or "No Data." Data and information are available to support a determination that some, but not all, uses are attained. Attainment status of the remaining uses is unknown because there are insufficient or no data or information. Future monitoring data will be used to determine if the uses previously found to be in attainment remain in attainment, and to determine the attainment status of those uses for which data and information were previously insufficient to make a determination.

Category 3: No data or insufficient information to determine if any designated use is attained. Supplementary data and information, or future monitoring, will be required to assess the attainment status.

North Carolina has added the following sub-categories to Category 3:

Subcategory 3a: Instream/monitoring data are inconclusive.

Subcategory 3c: No Data available for assessment.

Subcategory 3t: No Data available for assessment – assessment unit is in a watershed with an approved TMDL.

Category 4: Impaired or threatened for one or more designated uses but does not require the development of a TMDL because:

4a: A TMDL has been completed. This category consists of those assessment units for which EPA has approved or established a TMDL and water quality standards have not yet been achieved. Monitoring data will be considered before moving an assessment unit from Category 4a to Categories 1 or 2.

4b: Other pollution control requirements are reasonably expected to result in the attainment of the water quality standard in the near future. This category consists of those assessment units for which TMDLs will not be developed because other required regulatory controls (e.g., NPDES permit limits, Stormwater Program rules, implemented watershed plan, etc.) are expected to attain water quality standards within a reasonable amount of time. Future monitoring will be used to verify that the water quality standard is attained as expected.

4c: Impairment is not caused by a pollutant, but by pollution. This category consists of assessment units that are impaired by pollution, not by a pollutant. EPA defines pollution as "The man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of the water" See section 502(19) of the Clean Water Act. This category is primarily intended to be used for impairments related to water control structures such as dams. Future monitoring will be used to confirm that there continues to be an absence of pollutant-caused impairment and to support water quality management actions necessary to address the cause(s) of the impairment.

North Carolina has added the following sub-categories to Category 4:

Subcategory 4cr: Impaired - Loss of recreation use because swimming advisories were posted; however, no data is available for TMDL development.

Subcategory 4ct-Impaired assessment unit is in a watershed that is part of TMDL study area for the parameter of interest.

Subcategory 4s-Impaired ecological/biological integrity with a concurrent Category 5 aquatic life parameter of interest.

Category 5: Impaired for one or more designated uses by a pollutant(s), and requires a TMDL. This category consists of those assessment units that are impaired by a pollutant and the proper technical conditions exist to develop TMDLs. When more than one pollutant is associated with the impairment of a single assessment unit in this category, the assessment unit will remain in Category 5 until TMDLs for all listed pollutants have been completed and approved by the EPA. The North Carolina 2008 section 303(d) list consists of those waterbodies placed in Category 5.

North Carolina has added the following sub-categories to Category 5:

Subcategory 5s- (previously NC Category 6) Impaired ecological/biological integrity and stressor study does not indicate any aquatic life standard violations.

NC Subcategory 5cs - Impaired loss of use, shellfishing waters, no data for TMDL (non-approved area)

B. Consideration of Existing and Readily Available Water Quality Related Data and Information (40 CFR Part 130.7(b)(5)(i-iv))

In developing section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any section 319 nonpoint assessment submitted to EPA. See 40 CFR 130.7(b)(5). In addition to these minimum categories, states are required to consider any other water quality-related data and information that is existing and readily available. EPA's *1991 Guidance for Water Quality-Based Decisions* describes categories of water quality-related data and information that may be existing and readily available. See Appendix C of *Guidance for Water Quality-Based Decisions: The TMDL Process*, EPA Office of Water, 1991 ("EPA's 1991 Guidance"). While states are required to evaluate all existing and readily available water quality-related data and information, states may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require states to include, as part of its submissions to EPA, documentation to

support decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list, (2) a description of the data and information used to identify waters, (3) a rationale for any decision to not use any existing and readily available data and information, and (4) any other reasonable information requested by the Region.

C. Priority Ranking

EPA regulations also codify and interpret the requirement in section 303(d)(1)(A) of the Act that states establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b)(4) require states to prioritize waters on its section 303(d) lists for TMDL development, and also to identify those impaired waterbodies targeted for TMDL development in the next two years. In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. CWA § 303(d)(1)(A) As long as these factors are taken into account, the Act provides that states establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs; vulnerability of particular waters as aquatic habitats; recreational, economic, and aesthetic importance of particular waters; degree of public interest and support; and state or national policies and priorities.

III. Analysis of the North Carolina Submittal

A. Review of North Carolina's Identification of Waters (40 CFR 130.7(b)(6)(i - iv))

In reviewing North Carolina's submittal, EPA first reviewed the methodology used by the State to develop the list update in light of the State's approved water quality standards, and then reviewed the actual list of waters. This section describes the State's listing methodology and outlines EPA's evaluation of both that methodology and the actual list of impaired waterbodies included in the 2008 submittal. In cases where EPA could not determine if the State's listing methodology identified all impaired waterbodies for a given designated use or water quality criteria, EPA conducted a review of water quality data to determine whether any waterbodies should be added to the section 303(d) list.

Each of the assessment and listing methodologies contained in the 2008 Integrated Report are compared against the North Carolina water quality standards as found in the *North Carolina Division of Water Quality "Redbook" (Surface Waters and Wetlands Standards, North Carolina Administrative Code 15A NCAC 02B .0100, .0200 & .0300*; amended effective May 1, 2007, hereafter "North Carolina Water Quality Standards.") Information on monitoring procedures was obtained from the DWQ Monitoring Program Strategy (Version 2.0, March 2008), as well as DWQ's Basinwide Assessment Reports and Basinwide Water Quality Plans. The North Carolina 2008 section 303(d) list consists of those waterbodies placed in Category 5 (see Section IIA, above).

1. North Carolina's Water Quality Standards and Section 303(d) List Development

The Clean Water Act requires each State to identify and prioritize those waters where technology-based controls are inadequate to implement water quality standards:

> *Each State shall identify those waters within its boundaries for which the effluent limitations required by section 1311(b)(1)(A) and section 1311(b)(1)(B) of this title are not stringent enough to implement any water quality standards applicable to such waters.* 33 U.S.C. 1313(d)(1)(A); see also 40 CFR 130.7(b) (EPA section 303(d) listing regulations)

EPA regulations expressly provide that "[f]or purposes of listing waters under 130.7(b), the term 'water quality standard applicable to such waters' and 'applicable water quality standards' refer to those water quality standards established under section 303 of the Act, including numeric criteria, narrative criteria, water body uses, and anti-degradation requirements." 40 CFR 130.7(b)(3) EPA's review of the North Carolina section 303(d) list ensures that the list identifies water quality limited segments consistent with existing State standards.

Water quality criteria can be expressed either as narrative or numeric criteria. Numeric criteria typically establish either a maximum level or a range of levels of a pollutant which can be present in the waterbody while still attaining water quality standards. Narrative criteria typically describe a condition (e.g., waters shall be suitable for aquatic life propagation and maintenance of biological integrity) which must be met for the waterbody to meet water quality standards. Determining whether a waterbody is meeting water quality standards for narrative criteria requires the identification of reference points against which the waterbody can be evaluated. EPA defers to a State's interpretation of its water quality standards, including how narrative criteria should be interpreted, when that interpretation is consistent with the underlying narrative criteria and is a reasonable translation of those criteria.

Narrative Water Quality Criteria

The following is a list of the primary narrative criteria considered in North Carolina's water quality assessment. The sections below summarize EPA's review of the State's methodology against these narrative criteria.

- North Carolina Administrative Code (NCAC) 15A 02B .0208 (Narrative for toxics and temperature).
- NCAC 15A 02B .0211 (Several narratives relate to making all fresh waters suitable for aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation and agriculture).
- NCAC 15A 02B .0220 (Several narratives relate to making all salt waters suitable for aquatic life propagation and maintenance of biological integrity, wildlife, and secondary recreation).

- NCAC 02B 15A .0231 (Narratives related to wetlands).

Numeric Criteria

The primary numeric criteria related to water quality assessment in North Carolina are detailed in 15A NCAC 02B .0100 and .0200 (amended effective date August 1, 2004). The State expresses its numeric water quality criteria in a variety of ways, which are delineated for each parameter in the following sections. In general, numeric criteria are written as "maximum permissible levels" or values which "shall not be exceeded."

2. Consideration of Existing and Readily Available Water Quality-Related Data and Information

Federal regulations provide that each state "shall assemble and evaluate all existing and readily available water quality-related data and information to develop the list required by §§ 130.7(b)(1) and 130.7(b)(2)." 40 CFR 130.7(b)(5) The North Carolina DWQ collects a variety of biological, chemical, and physical data from six primary programs, including benthic macroinvertebrates, fish community, fish tissue, lake assessment, ambient monitoring, and aquatic toxicity monitoring.

Sources routinely used for data and information include the following: previous section 303(d) lists; Clean Water Act § 305(b) reports; Clean Water Act section 319 nonpoint source assessments; waterbodies where specific fishing or shellfish bans and/or advisories are currently in effect; waterbodies identified by the State as impaired in its most recent Clean Lake Assessment conducted under section 314 of the CWA; drinking water source water assessments under section 1453 of the Safe Drinking Water Act; trend analyses and predictive models used for determining designated use, numeric and narrative standard compliance; and data, information, and water quality problems reported from local, State, or Federal agencies, Tribal governments, members of the public, and academic institutions.

DWQ maintains a standing solicitation for data on their website (http://h2o.enr.state.nc.us/tmdl/General_303d.htm). For data to be used for impairment determinations, data must meet specific submission criteria, including quality assurance and quality control of the collection and analysis of the data.

In previous list cycles, DWQ assessed use support for each river basin according to a five-year rotating schedule, such that only a subset of basins were updated for a given cycle. For the 2008 section 303(d) list, use support was assessed for all basins statewide based on data collected in calendar years 2002 through 2006. Some waterbodies may have biological data collected earlier for waters that have not been re-sampled during this data window or where the current impairment is based on that sample.

According to DWQ's Use Assessment Methodology, a minimum of ten samples is needed to be considered for use support assessments. The Methodology states that if fewer than ten samples are collected and greater than ten percent of the samples exceed the numeric criteria, the assessment unit will be Not Rated and targeted for further sampling (Category 3a). DWQ's monitoring program routinely collects more than ten samples, with the exception, historically, for some lakes. Lakes are now targeted for more sampling.

EPA Conclusion

North Carolina's assessment methodology contains provisions, as described above, for limiting the use of data based on the age of data (five year window) and sample size (at least ten samples). North Carolina does include older data in their assessment when no current data is available. However, EPA recommends that older data not be automatically excluded, particularly when its inclusion could be used to augment small sets of more current data.

EPA identified the State's provisions as being overly restrictive and conducted a data review to determine if waters, which should be considered impaired, may have been omitted from the list due to these provisions. EPA conducted the review by reviewing all data received from DWQ for the applicable data window (2002 through 2006). Data sets which contained fewer than ten data points were examined to see if there were elevated levels of pollutants. EPA did not identify any waters that should be added to the 2008 section 303(d) list due to elevated levels in small data sets.

In order for EPA to conclude that the State's process is consistent with federal requirements for consideration of data and information, the State should revise its methodology to allow consideration of older data and data contained within smaller data sets for future section 303(d) lists.

3. Assessment Unit Delineation Approach / Geo-referencing

North Carolina maintains a water quality assessment database, which for each assessment unit provides a description, use support ratings, parameters of interest, potential stressors and sources as well as the capability to track changes through time. This database is linked with other North Carolina water quality databases including ambient, benthic and fish community data as well as the 1:24,000 hydrography. Assessment units are delineated to the 1:24,000 statewide hydrography and can be easily located using a Geographic Information System (GIS). The State has completed georeferencing statewide including indexing assessment units to the high resolution National Hydrography Dataset (NHD).

EPA Conclusion

The State provided a GIS dataset of the State's assessment units at NHD 1:24,000 scale. For the 2006 303(d) list, EPA contractor RTI geo-referenced this dataset to NHD

1:100,000 scale for inclusion in the EPA Reach Address Database. For the 2008 303(d) list DWQ posted draft GIS data on its website and will finalize the data on EPA approval (http://h2o.enr.state.nc.us/tmdl/General_303d.htm).

4. Aquatic Life Use Support

The State considers biological and ambient monitoring data in assessing the aquatic life use support category. EPA separated its review of North Carolina's assessment of aquatic life use support into five categories, as follows: waterbodies not listed due to natural conditions; assessment based on physical (naturally variable) parameters, nutrient enrichment in lakes and flowing waters, biological indicators; and toxic/non-conventional pollutants.

a. Waterbodies Not Listed Due to Natural Conditions

North Carolina may not list waterbodies where it determined that measured concentrations of pH (potential of Hydrogen ions, a measure of acidity or alkalinity) or dissolved oxygen (DO) did not meet the numeric criteria due to natural conditions. North Carolina's water quality standards address natural conditions, providing that "natural waters may on occasion, or temporarily, have characteristics outside of the normal range established by the standards. The adopted water quality standards relate to the condition of waters as affected by the discharge of sewage, industrial wastes or other wastes including those from nonpoint sources and other sources of water pollution. Water quality standards will not be considered violated when values outside the normal range are caused by natural conditions. Where wastes are discharged to such waters, the discharger will not be considered a contributor to substandard conditions provided maximum treatment in compliance with permit requirements is maintained and, therefore, meeting the established limits is beyond the discharger's control." (15A NCAC 02B .0205)

North Carolina has assigned a supplemental classification category for Swamp Waters (Sw) which is intended to recognize those waters that generally have naturally occurring very low velocities, low pH and low dissolved oxygen. State water quality standards acknowledge that DO and pH may be natural conditions that are outside the required standard range. For DO, 15A NCAC 02B .0211(3) (b) states, "swamp water, lake coves or backwaters, and the lake bottom waters may have lower values if caused by natural conditions." For pH, 15A NCAC 02B .0211(3) (g) states, "...swamp waters may have a pH as low as 4.3 if it is the result of natural conditions."

If DWQ identifies natural condition waters with point source discharges, DWQ conducts an analysis of the likely impact of the discharges. The waters will be listed if the discharges may contribute to the low DO or pH. For the 2008 section 303(d) list, DWQ's assessment methodology for classified swamp waters and for waters identified as swamp-like is as follows:

A classified swamp (Sw) AU was not rated for aquatic life when greater than 10% of DO samples were below 4 mg/l (5 for salt) for instantaneous samples (monthly) or when greater than 10% of samples were below a daily average of 5 mg/l (freshwater only). There is not a numerical standard for these water bodies and natural background conditions cannot be determined. This is a category 3a listing not requiring a TMDL.

A swamp like AU (not classified Sw) was not rated for aquatic life when greater than 10% of DO samples were below 4 mg/l (5 for saltwater) for instantaneous samples (monthly) or when greater than 10% of samples were below a daily average of 5mg/l (freshwater only) and when greater than 10% of samples were below a pH of 6.0 (SU) for freshwater or 6.8 (SU) for saltwater. Geographic location, biological data, tributary classifications, discharges and land use were considered when making use support determinations on waters considered to be swamp like or receiving significant swamp water input.

A classified swamp (Sw) AU was assessed as Impaired when greater than 10% of pH samples were below 4.3 (SU). A non-swamp water AU was assessed as Impaired for aquatic life when greater than 10% of samples were below a pH of 6.0 (SU) for freshwater or 6.8 (SU) for saltwater.

EPA Conclusion

DWQ has identified waterbodies containing low pH and DO which are due to natural conditions. For the 2008 list these are generally slow-moving blackwater streams, low-lying swamps and productive estuarine waters in the Coastal Plain. North Carolina's decision that these waterbodies should not be included on the State's section 303(d) list is reasonable.

b. Impairments Indicated by Physical Parameters

Naturally variable physical parameters are those that fluctuate in a waterbody due to non-anthropogenic influences such as rainfall/flow, depth, time of day, salinity, etc. Naturally variable parameters assessed by DWQ during this listing cycle include dissolved oxygen (DO), pH, temperature and turbidity. Comparison against the North Carolina water quality standards is as follows (note: mg/l is milligrams per liter).

Water Quality Standard	State Assessment Methodology
Freshwater Dissolved Oxygen NCAC 15A 02B .0211(3)(b)	
Dissolved oxygen: not less than 6.0 mg/l for trout water, not less than a daily average of 5.0 mg/l with a minimum instantaneous value of not less than 4.0	Minimum of 10 samples or 10 daily averages. Criterion exceeded ≤10%: Supporting Criterion exceeded >10%: Impaired If the 10% criterion was exceeded and fewer than

mg/l; swamp waters, lakes coves or backwaters, and lake bottom waters may have lower values if caused by natural conditions (see section 4a, above). **Saltwater Dissolved Oxygen** **NCAC 15A 02B .0220(3)(b)** Dissolved oxygen not less than 5.0 mg/l, except that swamp waters, poorly flushed ideally influenced streams or embayments, or estuarine bottom waters may have lower values if caused by natural conditions (see section 4a, above).	10 samples were collected the assessment unit was not rated and targeted for further sampling.
Freshwater pH **NCAC 15A 02B .0211 (3)(g)** pH shall be normal for the waters in the area, which generally shall range between 6.0 and 9.0 except that swamp waters may have a pH as low as 4.3 if it is the result of natural conditions (see section 4a, above). **Saltwater pH** **NCAC 15A 02B .0220(3)(g)** pH shall be normal for the waters in the area, which generally shall range between 6.8 and 8.5.	Minimum of 10 samples. Criterion exceeded ≤10%: Supporting Criterion exceeded >10%: Impaired If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling.
Freshwater Temperature **NCAC 15A 02B .0211 (3)(j)**: not to exceed 2.8° C above the natural water temperatures, and in no case to exceed 29° C for mountain and upper piedmont waters and 32° C for lower piedmont and coastal plain waters. The temperature for trout waters shall not be increased by more than 0.5° C due to the discharge of heated liquids but in no case to exceed 20° C. **Saltwater Temperature** **NCAC 15A 02B .0220(3)(k)** Temperature shall not be increased above the natural water temperature by more than 0.8° C during June, July and August nor more than 2.2° C during other months	Minimum of 10 samples. Criterion exceeded ≤10%: Supporting Criterion exceeded >10%: Impaired If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling. A trout water (Tr) AU was not rated for aquatic life when greater than 10% of samples were greater than 20° C. The presence of heated discharges was not determined. This is a Category 3a listing (instream data inconclusive). A waterbody that exceeds the above criteria may be not rated for aquatic life because of

and in no cases to exceed 32° C due to the discharge of heated liquids.	meteorological conditions that occur on a regular basis. These conditions must be documented and reassessment will occur after more normal conditions return. This is a category 3a listing (instream data inconclusive). Examples of extreme conditions may include extreme drought, reservoir drawdown, hurricane impacts and flooding, dam failure, and saltwater encroachment. Other extreme conditions may be documented as needed for future assessments.
Turbidity **NCAC 15A 02B .0211 (3)(k)** Turbidity in the receiving water shall not exceed 50 Nephelometric Turbidity Units (NTU) in streams not designated as trout waters and 10 NTU in streams, lakes or reservoirs designated as trout waters; for lakes and reservoirs not designated as trout waters the turbidity shall not exceed 25 NTU; if turbidity exceeds these levels due to natural conditions the existing turbidity level cannot be increased. (Additional information on Best Management Practices are listed, as well)	Minimum of 10 samples. Criterion exceeded ≤10%: Supporting Criterion exceeded >10%: Impaired If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling.

The State currently does not list trout waters for temperature excursions where thermal discharges are present because they have not determined background conditions. EPA recommends that the State begin a monitoring program to determine background conditions and to assess such waters.

The State's water quality standards for DO, pH and turbidity do not specify an allowable percent of samples outside of the criteria. However, North Carolina's use of a ten percent threshold for determining use support for naturally variable parameters is consistent with EPA's guidance (*2006 Integrated Water Quality Monitoring and Assessment Report Guidance,* July 29, 2005; and *Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement,* EPA-841-B-97-002B, p.3-17.) Other EPA guidance (*Consolidated Assessment and Listing Methodologies*, July 2002, "CALM") recommends that the "state's assessment and listing methodology should describe how chemical data are collected and how they are used to determine the attainment of WQS." The web page for DWQ's Ambient Monitoring System references a draft standard operating procedure (*Intensive Survey Unit Standard Operating Procedures*, August 2003) that provides additional information on the collection of samples which satisfies that provision.

EPA conclusion

DWQ's methodology for assessment of DO, pH, temperature and turbidity is consistent with North Carolina's existing, EPA-approved water quality standards and with EPA regulations. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data and minimum sample size did not result in DWQ failing to identify any waters not attaining DO, pH, temperature and turbidity standards. EPA is, therefore, approving DWQ's listing decisions for DO, pH, temperature and turbidity. For trout waters EPA recommends that the State begin a monitoring program for waters with thermal discharges.

c. Impairments Indicated by Nutrient Enrichment

North Carolina's water quality standards include a numeric criterion for chlorophyll *a*, which is used as an indicator of nutrient enrichment in waters of the State.

Water Quality Standard	**State Assessment Methodology**
NCAC 15A 2B .0211 (3) (a) "Chlorophyll *a*: not greater than 40 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation not designated as trout waters, and not greater than 15 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation designated as trout waters (n/a to lakes and reservoirs less than 10 acres in surface area)."	Minimum of 10 samples. Criterion exceeded ≤10%: Supporting Criterion exceeded >10%: Impaired If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling.

EPA conclusion

EPA has determined that North Carolina's use of a ten percent threshold for determining use support for chlorophyll *a* is consistent with North Carolina's existing, EPA-approved water quality standards. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data and minimum sample size did not result in DWQ failing to identify any waters not attaining chlorophyll *a* standards. EPA is, therefore, approving DWQ's listing decisions for chlorophyll *a*.

d. Impairments Indicated by Biological Information

EPA reviewed North Carolina's listing methodology for assessment of Aquatic Life designated use support indicated by biological monitoring. North Carolina's water quality standards include a narrative for biological integrity applicable to all Class C waters, as follows.

<table>
<tr><th>Water Quality Standard</th><th>State Assessment Methodology</th></tr>
<tr><td rowspan="2">NCAC 15A 2B .0211 (2)
"The waters shall be suitable for aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation and agriculture; sources of water pollution which preclude any of these uses on either a short-term or long-term basis shall be considered to be violating a water quality standard."

NCAC 15 A 2B .0202 (11)
Biological integrity is defined as "...the ability of an aquatic ecosystem to support and maintain a balanced and indigenous community of organisms having species composition, diversity, population densities and functional organization similar to that of reference conditions."</td><td>Benthic macroinvertebrate:
Bioclassifications assigned ranging from Poor to Excellent in flowing fresh waters based on the number of taxa present in the pollution intolerant aquatic insect groups and the North Carolina Biotic Index (NCBI).
Classifications are translated into use support categories. If the NCBI is Severe Stress (for Swamp waters), Fair or Poor, the waterbody is Impaired.</td></tr>
<tr><td>Fish community:
North Carolina Index of Biotic Integrity (NCIBI) used to assess a stream's biological integrity by examining the structure and health of its fish community. NCIBI is translated into use support categories. If the NCIBI is Severe, Poor or Fair, the waterbody is Impaired.</td></tr>
</table>

If an assessment unit is assessed as biologically impaired for aquatic life and there were other aquatic life standards violations, DWQ places this impairment in Category 4s for the biological impairment. This waterbody would be a Category 5 listing for the identified standards violation and would then require a TMDL.

Benthic macroinvertebrate and fish community assessments are completed by the DWQ Biological Assessment Unit. The most recent Standard Operating Procedures for macroinvertebrate and fish community assessment, data and scores and ratings are available on the DWQ website (http://h2o.enr.state.nc.us/esb/BAUwww/benthossop.pdf). If both macroinvertebrate and fish community data are available, both are used to evaluate use support. The State's use of multiple assemblages is in conformance with EPA's recommendation in the 2002 CALM guidance that the use of more than one biological index enhances "confidence in the assessment finding."

EPA Conclusion

The DWQ assessment listing methodology for biological data is consistent with North Carolina's existing, EPA-approved water quality standards and EPA regulations. EPA is approving DWQ's listing decisions based on biological data.

e. Impairments Indicated by Toxic and Non-Conventional Pollutants

Many pollutants which exert a toxic effect in water react and behave differently in the environment than the naturally variable pollutants discussed above. Unlike the naturally variable pollutants described above, toxic and non-conventional pollutants do not generally have wide variability in concentration under natural conditions that would still be protective of the designated use. Therefore, EPA carefully considered waterbodies with data related to toxic and non-conventional pollutants when reviewing North Carolina's section 303(d) list. In considering this data, EPA paid particular attention to the magnitude and duration of any exceedances, and also considered any compensating periods of time when no exceedances were observed. See the Technical Support Document for Water Quality-based Toxics Control, Appendix D - Duration and Frequency, U.S. Environmental Protection Agency, March 1991.

North Carolina's numeric water quality standards for toxic and non-conventional pollutants are listed as "maximum permissible levels to protect aquatic life applicable to all fresh surface waters" (NCAC 15A 02B .0211(3) (l)).

Parameter	**Water Quality Standard NCAC 15A 02B .0211(3)(l)**	**State Assessment Methodology**
Arsenic	50 ug/l	Minimum of 10 samples. An assessment unit was assessed as Impaired for aquatic life when greater than 10% of samples were greater than the above standards. If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling.
Chromium	50 ug/l (Total recoverable)	
Lead	25 ug/l (Total recoverable)	
Cadmium	0.4 ug/l for trout waters and 2.0 ug/l for non-trout waters.	
Nickel	88 ug/l Cadmium and Nickel criteria are based on total recoverable metals concentrations unless appropriate studies have been conducted to translate total recoverable metals to a toxic form.	

North Carolina's water quality standards include "Action Levels" for several toxic substances, including copper, iron, silver, and zinc. These compounds are considered to be non-bioaccumulative and have variable toxicity to aquatic life because of chemical form, solubility, stream characteristics or associated waste characteristics. Action levels have been typically used as a screen for potentially toxic impacts in receiving waters related to National Pollutant Discharge Elimination System (NPDES) permits (15A NCAC 02B .0211(4)). It should be noted, however, that the Action Level concept is intended to be used only for National Pollutant Discharge Elimination System (NPDES) permits. The North Carolina water quality standard goes on to state that, "[f]or purposes other than consideration of NPDES permitting of point source discharges…the Action Levels in this Rule…shall be considered as numerical ambient water quality standards."

Parameter	**Water Quality Standard 15A NCAC 02B .0211(4)**	**State Assessment Methodology**
Copper Iron Zinc Silver	7 ug/l 1.0 mg/l 50 ug/l 0.06 ug/l	Minimum of 10 samples. An assessment unit was assessed as Impaired for aquatic life when greater than 10% of samples were greater than the above standards. If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling. Iron was not assessed because the standard is being reevaluated and iron exceedances have been shown to be a natural condition. NC does not routinely monitor for silver. DWQ will review Copper and Zinc assessments that result in Category 5 listings to determine if the listing is appropriate. The review takes into account several lines of information including collocated biological ratings, quality of data and possibility of natural conditions.

"Ten percent" Methodology

For toxic pollutants, EPA guidance recommends use of one-exceedance-in-three-years frequency for listing decisions. According to the *Consolidated Assessment and Listing Methodology (CALM)–Toward a Compendium of Best Practices*, July 2002, EPA 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. The guidance states "EPA selected this frequency to provide a level of protection similar to the 7Q10 design flow or low-flow condition. The exceedance frequency recommendation is considered protective. Like the magnitude and duration components of the water quality criteria, it may also be revised to reflect site-specific information on exposure and response relationships." A state may use an alternative methodology to assess waters where the state has provided a scientifically defensible rationale that its methodology is no less stringent than EPA's recommended water quality standards. EPA has reviewed the justification North Carolina submitted supporting its listing methodology for toxic and non-conventional pollutants and does not believe the State has demonstrated that the frequency set out in its methodology is no less stringent than the frequency included in EPA's recommended water quality standards. Where other Region 4 states have used a ten percent exceedance criterion in their assessment methodologies for metals, the EPA Region 4 staff independently reviewed the data using the 1-in-3 method and determined there would be no additional listings.

For the 2008 section 303(d) list cycle, given the amount of data available in North Carolina, the ten percent exceedance methodology results in the same (or more) listings as the EPA-recommended frequency. For this list cycle, there are three new listings of impairments of arsenic, one cadmium, one lead and seven nickel (see section below on copper and zinc).

Action Level - Iron

DWQ provided USGS data to support the determination that high iron in many NC surface waters is a natural condition. EPA Region 4 analyzed the information and concurs that the levels of iron found do appear to be naturally occurring, related to the sediment in streams and the geochemistry of the ecoregions within the state.

Action Levels - Copper and Zinc

In the past, DWQ used their action level metals monitoring data only to screen waters for potential problems. For the NC 2006 section 303(d) list, DWQ did not assess use support for action level metals but committed to developing a scientifically defensible methodology for the 2008 list cycle. In the meantime, DWQ began the process to revise all of their metals standards.

The initial submittal of the 2008 section 303(d) list methodology for the action level metals stated that "exceedances of the 10% criterion were not adequate indicators of impacts to ecological / biological integrity in North Carolina waters due to high naturally

occurring levels and were not used to assess waters as Impaired." While the reasoning that elevated levels of iron in NC streams are naturally occurring may be based on scientific documentation, the same argument has not been made for copper and zinc.

In November 2008, DWQ proposed a revised methodology that placed more reliance on biological data. While EPA supports the use of a multiple line of evidence approach, DWQ's proposal placed an exceedingly high value on biological assessment over chemical data. EPA's *Policy on the Use of Biological Assessments and Criteria in the Water Quality Program* (Memorandum from T.T. Davis, Director, Office of Science and Technology to Water Management Division Directors, Regions 1-10, June 19, 1991) states: "Because biosurvey, chemical-specific and toxicity testing methods have unique as well as overlapping attributes, sensitivities, and program applications, no single approach for detecting impact should be considered uniformly superior to any other approach. EPA recognizes that each method can provide valid and independently sufficient evidence of aquatic life use impairment, irrespective of any evidence, or lack of it, derived from the other two approaches. The failure of one method to confirm an impact identified by another method would not negate the results of the initial assessment. This policy, therefore, states that appropriate action should be taken when any one of the three types of assessment determines that the standard is not attained. States are encouraged to implement and integrate all three approaches into their water quality programs and apply them in combination or independently as site-specific conditions and assessment objectives dictate." DWQ did not provide sufficient information to show the proposed combination of biological and chemical methods are protective.

EPA and DWQ subsequently came to an agreement which led to withdrawal of the initial submittal. DWQ submitted a revised methodology and 2008 section 303(d) list on February 5, 2010. In some cases when copper or zinc exceeded the criteria but biological sampling indicated no impairment (or in the absence of biological data), DWQ conducted additional reviews to determine use support of waters potentially impaired by these metals. The review consisted of an evaluation of all available relevant information, including, but not limited to, natural or background conditions, sample quality and representativeness of data.

Overall, DWQ's review resulted in 74 assessment units newly listed for copper and/or zinc (60 copper only, 5 zinc only and 9 copper/zinc combinations). A table of all new listings is provided in Appendix A. The review also resulted in a list of 17 assessment units which will require further investigation for potential impairments of copper and/or zinc. This list is provided in Appendix C.

EPA Conclusion

EPA Region 4 concurs that the levels of iron found appear to be naturally occurring. EPA recommends, and the state has agreed, that DWQ will continue to assess iron data to identify any waters with high levels not attributable to natural conditions.

DWQ and EPA Region 4 worked together to develop an acceptable methodology to assess copper and zinc. Follow-up monitoring is recommended for the 17 waterbodies identified as potentially impaired. Monitoring and assessment should be based on North Carolina's EPA-approved water quality standards.

For the reasons set out above, EPA has not determined that use of the "> 10% exceedence" test is a reasonable method for DWQ to assess toxic or non-conventional pollutants consistent with the State's currently applicable, EPA-approved water quality standards. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data, minimum sample size, and toxic or non-conventional pollutants did not result in DWQ failing to identify any waters not attaining toxic or non-conventional pollutant water quality standards. EPA is, therefore, approving DWQ's listing decisions for toxic and non-conventional pollutants.

5. Fish Consumption Use Support

Class C waters are freshwaters protected for several uses, including fishing. Class SC is saltwater protected for several uses including fishing. All waters in the state are protected at a minimum at the Class C or SC level. The fish consumption use support category is based on protecting human health, so these waters are assessed to determine whether humans can safely consume fish from a particular waterbody.

Water Quality Standard	State Assessment Methodology
15A NCAC 02B.0211(l)(ix) Mercury (maximum permissible level): 0.012 ug/l **NCAC 15A 02B .0208(a)(2) Standards for Toxic Substances and Temperature** Human Health Standards: The concentration of toxic substances will not exceed the level necessary to protect human health through exposure routes of fish (or shellfish) tissue consumption, water consumption, or other route identified as appropriate for the water body. (A) For non-carcinogens, WQS or criteria	Fish Consumption was assessed based on site-specific fish consumption advisories which were based on fish tissue data. Therefore, the impairments are based on standards violations. Because of the statewide Mercury advisory there were no cases for Supporting fish consumption. ***PCBs and Dioxin Assessment Criteria*** An assessment unit was assessed as Impaired when a site-specific advisory was posted for PCBs or dioxins, respectively. According to the *Neuse River Basin Assessment Report* (March 21, 2006), a value of 4.0 ppt for

used to calculate water quality based effluent limitations to protect human health for fish consumption. (See reg. for details on calculation.) (B) For carcinogens: WQS applicable to protect human health from carcinogens through the consumption of fish are: Beryllium: 117 ng/l Benzene: 71.4 ug/l Carbon tetrachloride: 4.42 ug/l Dioxin: 0.000014 ng/l Hexachlorobutadiene: 49.7 ug/l PCBs: 0.079 ng/l PAHs: 31.1 ng/l Tetrachloroethylene: 92.4 ug/l Trichloroethylene: 92.4 ug/l Vinyl chloride: 525 ug/l Aldrin: 0.136 ng/l Chlordane: 0.588 ng/l DDT: 0.591 ng/l Dieldrin: 0.144 ng/l Heptachlor: 0.214 ng/l	dioxin in fish tissue triggers an advisory. ***Mercury Assessment Criteria*** An assessment unit was assessed as Impaired for fish consumption when greater than 10% of samples were greater than 0.012 µg/l. A minimum of 10 samples was needed to rate the water as Impaired. If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling. This is a category 3a listing not requiring a TMDL. Statewide advice for Mercury in fish tissue was not assessed because it was not associated with a specific assessment unit but was applied to all waters of the State. Previous Category 5 listings for Mercury based on site specific advisories will remain in place.

The Monitoring Program Strategy states that DWQ conducts fish tissue testing for mercury, selenium, cadmium, PCBs and pesticides. Data are provided to the North Carolina Department of Health and Human Services (DHHS) for them to make the fish consumption advisory.

EPA Conclusion

North Carolina procedures for assessing waterbodies based on fish consumption advisories are generally consistent with North Carolina's existing, EPA-approved water quality standards. EPA agrees that North Carolina's listing methodology, as revised, provides for DWQ to make listing decisions based on fish tissue data and fishing advisories in a manner consistent with the state's currently applicable water quality standards and EPA regulations. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data and minimum sample size did not result in DWQ failing to identify any waters based on fish consumption use. EPA is approving DWQ's listing decisions for fish consumption use support based on that methodology.

6. Shellfish Consumption Use Support

The methodology for Shellfish Harvesting Use Support is applicable only to Class SA waters: tidal salt water bodies used for shellfish harvesting for market purposes.

Water Quality Standard	State Assessment Methodology
15A NCAC 02B .0221 Waters shall meet the current sanitary and bacteriological standards as adopted by the Commission for Health Services and shall be suitable for shellfish cultures...Quality standards applicable: (a) Floating solids; settleable solids; sludge deposits: none attributable to sewage, industrial or other wastes. (b) Sewage: None (c) Industrial Wastes or other wastes: none which are not effectively treated...in accordance with the requirements of the Division of Health Services. (d) Organisms of the coliform group: fecal coliform group not to exceed a median MF of 14/100 ml and not more than 10 percent of the samples shall exceed an MF count of 43/100 ml in those areas most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.	An assessment unit was assessed as Impaired when the geometric mean was greater than 14 colonies/100ml or greater than 10% of the samples were higher than 43 colonies/100ml. An assessment unit was assessed as Impaired when the DEH growing area classification was Prohibited or Conditionally approved. This is a Category 5 listing requiring a TMDL.

The North Carolina Division of Environmental Health (DEH) operates its monitoring program under guidelines outlined in the National Shellfish Sanitation Program's Guide for the Control of Molluscan Shellfish. When a condition or event occurs that impacts the open status of waters, DEH closes those waters to protect public health. According to the DEH website (http://www.deh.enr.state.nc.us/shellfish/shellfish.htm), conditionally approved "areas are generally open to shellfishing, but can be closed after a significant rainfall event due to the resultant runoff. The area will then remain closed until water sampling indicates a return to acceptable bacteria levels." By definition, conditionally approved areas do not meet the water quality criteria based on a sanitary survey involving detailed water quality assessments conducted under the national protocols. That is the reason EPA's guidance advises that all conditionally approved areas be listed on the 303(d) list.

EPA Conclusion

EPA agrees that North Carolina's listing methodology, as revised, provides for DWQ to make listing decisions based on bacteriological data and shellfish harvesting classification information and in a manner consistent with the state's currently applicable water quality standards and EPA regulations. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data and minimum sample size did not result in DWQ failing to identify any waters not attaining shellfish use. EPA is approving DWQ's listing decisions for shellfish use support based on that methodology.

7. Recreational Use Support

In addition to all Class C requirements, Primary Recreation Use Support (e.g., swimming, water-skiing, skin diving) is assessed for all Class B, SA and SB waters. Secondary Recreation Use Support (e.g., wading, boating) is assessed for all Class C, SC and WS waters. North Carolina bases its determination of use support on (1) fecal coliform bacteria water quality standard for fresh water and (2) the duration of swimming advisories issued by state and local health departments.

The water quality standard for fecal coliform is applicable to all Class C, SC and Class B, SA and SB waters, as follows.

Water Quality Standard	**State Assessment Methodology**
15A NCAC 2B .0211 (3)(e) (Class C) **15A NCAC 2B .0219 (3)(b) (Class B)** 15A NCAC .0220 (3)(e) Class SC Fresh Waters Organisms of the coliform group: fecal coliforms shall not exceed (1) a geometric mean of 200/100 ml. (MF count) based upon at least five consecutive samples examined during any 30 day period, nor exceed (2) 400/100 ml. in more than 20 percent of the samples examined during such period.	**Recreation Use Support** Fresh Waters Supporting: neither part of the standard (#1 and 2, at left) is exceeded. Impaired: either part of the standard (#1 and 2, at left) is exceeded. Not Rated: insufficient fecal coliform bacteria data (less than 5 samples in 30 days). This is a Category 3a listing (instream data inconclusive).

Coastal Waters Enterococcus, including *Enterococcus faecalis, Enterococcus faecium, Enterococcus avium* and *Enterococcus gallinarium*: not to exceed a geometric mean of 35 enterococci per 100 ml based upon a minimum of five samples within any consecutive 30 days.	Coastal Waters Impaired: geometric mean greater than 35 colonies/100ml. At least 5 samples must have been collected within the same 30-day period. Not Rated: geometric mean was greater than 35 colonies/100ml and samples were not collected in the same 30-day period. This is a Category 3a listing (instream data inconclusive). **Advisory Posting Assessment** An AU was assessed as Impaired when a swimming advisory was posted for greater than 61 days in any 5 year period (includes permanent postings).

DWQ conducts monthly fecal coliform bacteria testing as part of its ambient monitoring program for fresh waters. The North Carolina Division of Environmental Health (DEH) tests coastal recreation waters for Enterococcus levels. According to the 2006 IR and confirmed by recent discussions with DWQ staff, "Locations with annual geometric means greater than 200 colonies per 100 ml, or when more than 20 percent of the samples are greater than 400 colonies per 100 ml, are identified for potential follow-up monitoring conducted five times within 30 days as specified by the state fecal coliform bacteria standard. If bacteria concentrations exceed either portion of the state standard, the data are sent to DEH and the local county health director to determine the need for posting swimming advisories."

EPA Conclusion

Based on its review of DWQ's assessment submittals, EPA has determined that DWQ assessment methodology for recreational use is consistent with North Carolina's existing, EPA-approved water quality standards. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements.

The provisions of the State's methodology related to age of data and minimum sample size did not result in DWQ failing to identify any waters not attaining recreational use. EPA is approving DWQ's listing decisions for bacteria related to recreational use based on that methodology.

8. Drinking Water Use Support and Protection of Human Health

Water supply watersheds are classified as WS-I through WS-V waters. Water quality standards applicable to Class C waters also apply to Class WS-I through WS-V waters. The following WQS apply to surface waters within water supply watersheds.

Water Quality Standard	State Assessment Methodology
NCAC 15A 02B .0212, .0214, .0215, .0216, .0218 Waters of this class are protected by numerous management strategies including significantly limiting the point and non-point sources and imposing development management practices. Chloride: 250 mg/l Nickel: 25 ug/l Nitrate nitrogen: 10 mg/l Barium: 1.0 mg/l 2,4-D: 100 ug/l 2,4,5-TP (Silvex): 10 ug/l Sulfates: 250 mg/l	An assessment unit was assessed as Impaired for water supply when greater than 10% of samples were greater than these standards. A minimum of 10 samples was needed to rate the water as Impaired. If the 10% criterion was exceeded and fewer than 10 samples were collected the assessment unit was not rated and targeted for further sampling.
Coliforms: total coliforms not to exceed 50/100ml (MF count) as a monthly geometric mean value in watersheds serving as unfiltered water supplies (in Class WS-I only) TDS: not greater than 500 mg/l Total hardness: not greater than 100 mg/l as calcium carbonate Phenolic compounds: not greater than 1.0 ug/l Beryllium: 6.8 ng/l Benzene: 1.19 ug/l Carbon Tetrachloride: 0.254 ug/l Chlorinated benzenes: 488 ug/l Dioxin: 0.000013 ng/l Hexachlorobutadiene: 0.445 ug/l Polynuclear aromatic hydrocarbons: 2.8 ng/l Tetrachloroethane: 0.172 ug/l	The 2008 Use Support Methodology does not discuss an assessment methodology for these parameters. According to the North Carolina Monitoring Program Strategy (2005), "There are currently a number of indicators with associated standards or action levels that are not monitored or infrequently monitored, particularly pesticides and other organics. This is primarily due to expense of analysis or current analytical methods have reporting limits above the applicable standard..."

Tetrachloroethylene: 0.8 ug/l Trichloroethylene: 3.08 ug/l Vinyl Chloride: 2 ug/l Aldrin: 0.127 ng/l Chlordane: 0.575 ng/l DDT: 0.588 ng/l Dieldrin: 0.135 ng/l Heptachlor: 0.208 ng/l	

All Toxics are Maximum Permissible Concentrations to protect human health through water consumption and fish tissue consumption for carcinogens and non-carcinogens.

EPA Conclusion

In previous list cycles, DWQ relied entirely upon the seven regional water treatment plants for making the assessment determination for public water supplies. EPA guidance stresses the importance of full assessment of public water supply and so is pleased that beginning with the 2008 section 303(d) list cycle, DWQ began conducting its own assessment of water supplies.

DWQ's methodology to assess attainment of drinking water and human health uses for conventional pollutants is consistent with North Carolina's existing, EPA-approved water quality standards and with EPA regulations. EPA does not agree that provisions in the State's methodology related to age of data and minimum sample size are consistent with federal requirements. For the reasons set out in the section addressing assessment of section III.A.4.e above, EPA has not determined that use of the "> 10% exceedence" test is a reasonable method for DWQ to assess toxic or non-conventional pollutants

The provisions of the State's methodology related to age of data, minimum sample size, and toxic or non-conventional pollutants did not result in DWQ failing to identify any waters not attaining drinking water and human health uses. EPA is, therefore, approving DWQ's listing decisions for drinking water and human health uses.

9. Other Pollution Control Requirements (40 CFR 130.7(b)(1))

EPA's regulations provide that TMDLs are not required for waterbodies where "[o]ther pollution control requirements (e.g., best management practices) required by local, State, or Federal authority are stringent enough to implement any water quality standards [WQS] applicable to such waters." 40 C.F.R. section 130.7(b)(1)(iii). EPA's *2006 Integrated Water Quality Monitoring and Assessment Report Guidance* acknowledges that the most effective method for achieving water quality standards for some water quality impaired segments may be through controls developed and implemented without TMDLs (referred to as a "4b alternative"). EPA expects that these controls must be specifically applicable to the particular water quality problem and be

expected to result in standards attainment in the near future. EPA will evaluate on a case-by-case basis a state's decisions to exclude certain segment/pollutant combinations from Category 5 (the section 303(d) list) based on the 4b alternative. Monitoring should be scheduled for these assessment units to verify that the water quality standard is attained as expected.

EPA Region 4 and NCDWQ chose McDowell Creek in the Catawba River Basin in Mecklenburg County, North Carolina, as a priority watershed in 2006. Charlotte-Mecklenburg Storm Water Services (CMSWS) submitted the McDowell Creek Watershed Management Plan (MCWMP) to EPA and NCDWQ in 2007 and it became clear that McDowell Creek was a good candidate as a 303(d) category 4b demonstration. EPA Region 4 worked in cooperation with NCDWQ to develop a demonstration that summarizes the documentation supporting the 4b classification for McDowell Creek. This demonstration is included in the Administrative Record.

For all waterbodies identified in Section 4b of North Carolina's 2008 section 303(d) list, the State expects that other required regulatory controls (e.g., NPDES permit limits, Stormwater Program rules, buyout programs, etc.) will result in meeting standards within a reasonable period of time. Future monitoring will be used to verify standards achievement. EPA agrees with DWQ's listing decisions based on the applicability of other pollution control requirements.

B. North Carolina's 2008 Section 303(d) List of Impaired Waters (40 CFR 130.7(b)(4))

1. North Carolina's Addition of Water Quality Limited Segments

North Carolina identified additional water quality limited segments in its 2008 section 303(d) list submittal, consistent with section 303(d) and EPA's implementing regulations. EPA is approving the addition of those water quality limited segments to North Carolina's section 303(d) list. The newly listed waterbodies are identified in Appendix A.

2. North Carolina's 2008 Section 303(d) Delistings (40 CFR 130.7(b)(6)(iv))

North Carolina proposed to remove specific water quality limited segments from its 2008 section 303(d) list submittal, consistent with section 303(d) and EPA's implementing regulations. EPA has reviewed the good cause justification for those delisting requests and is approving the delisting of those water quality limited segments from North Carolina's section 303(d) list. The delisted waterbodies are identified in Appendix B.

C. Priority Ranking and Targeting (40 CFR 130.7(b)(4))

In previous Integrated Report submittals, DWQ provided a description of how water quality limited segments were prioritized for TMDL development. Prioritization was determined according to the severity of the impairment and the designated uses of the segment, taking into account the most serious water quality problems, most valuable and threatened resources, and risk to human health and aquatic life. According to EPA's *Final Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act; TMDL-01-03* dated July 21, 2003, "...States need not specifically identify each TMDL as high, medium or low priority. Instead, the schedule itself can reflect the State's priority ranking." The 2008 Integrated Report provides a Development Schedule (see below) as required but does not provide a description of the method used for prioritization.

D. Schedule for Development of TMDLs for Listed Waters and Pollutants

Pursuant to 40 CFR Section 130.7(b)(4), the state's submittal shall include "the identification of waters targeted for TMDL development in the next two years." The State has identified 15 waterbody-pollutant combinations that will be addressed over the next two years, as shown in Attachment D "Priority Ranking of Waterbodies for TMDL Development" of their 303(d) submittal. EPA has determined that the State's schedule for TMDL development represents adequate progress.

IV. Final Recommendation on North Carolina's 2008 Section 303(d) List Submittal

After careful review of the final section 303(d) list submittal package, the Water Management Division recommends that EPA Region 4 approve the State of North Carolina's 2008 section 303(d) list.

EPA's approval of North Carolina's section 303(d) list extends to all waterbodies on the list with the exception of those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove the State's list with respect to those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under section 303(d) for those waters.

Appendix A North Carolina's Addition of Waterbodies to the 2008 Section 303(d) List

Basin	ID	Waterbody Name	Cause for Listing
Broad	9-(22)b	BROAD RIVER	Biological Criteria Exceeded
Broad	9-(25.5)b	BROAD RIVER	Standard Violation Turbidity
Broad	9-53-(5)	Buffalo Creek	Standard Violation Turbidity
Broad	9-26b	Cleghorn Creek	Biological Criteria Exceeded
Broad	9-50-(1)	First Broad River	Standard Violation Low pH
Broad	9-50-(28)	First Broad River	Standard Violation Turbidity
Broad	9-41-13-3	Mill Creek	Biological Criteria Exceeded
Broad	9-46a	Sandy Run Creek	Biological Criteria Exceeded
Cape Fear	16-(37.5)b	Haw River (B. Everett Jordan Lake below normal pool elevation)	Standard Violation Turbidity *
Cape Fear	16-41-2-(9.5)	Morgan Creek (including the Morgan Creek Arm of New Hope River Arm of B. Everett Jordan Lake)	Standard Violation Turbidity
Cape Fear	16-41-1-(14)	New Hope Creek (including New Hope Creek Arm of New Hope River Arm of B. Everett Jordan Lake)	Standard Violation Turbidity
Cape Fear	16-41-(0.5)	New Hope River Arm of B. Everett Jordan Lake (below normal pool elevation)	Standard Violation Turbidity
Cape Fear	16-41-1-17-(0.7)b1	Northeast Creek	Standard Violation NO2+NO3-N
Cape Fear	16-41-1-17-(0.7)b2	Northeast Creek	Standard Violation * NO2+NO3-N
Cape Fear	16-41-1-12-(1)	Third Fork Creek	Standard Violation Low Dissolved Oxygen
Cape Fear	16-41-1-12-(2)	Third Fork Creek	Standard Violation Low Dissolved Oxygen
Cape Fear	16-12-1	Tickle Creek (Trickle Creek)	Biological Criteria Exceeded
Cape Fear	16-12	Travis Creek	Biological Criteria Exceeded
Cape Fear	17-(10.5)d1	DEEP RIVER	Standard Violation Chlorophyll a
Cape Fear	17-(10.5)d2	DEEP RIVER	Standard Violation Turbidity
Cape Fear	17-2-(0.7)	East Fork Deep River	Standard Violation Fecal Coliform (recreation)
Cape Fear	17-3-(0.3)	West Fork Deep River	Biological Criteria Exceeded
Cape Fear	18-4-(2)	Lick Creek	Standard Violation Turbidity*
Cape Fear	18-27-(3)cUT2	UT at Cross Creek POTW	Standard Violation Low Dissolved Oxygen
Cape Fear	18-(71)a	CAPE FEAR RIVER	Standard Violation Turbidity Standard Violation Nickel*
Cape Fear	18-(71)b	CAPE FEAR RIVER	Standard Violation Nickel
Cape Fear	18-(87.5)a	CAPE FEAR RIVER	Standard Violation Nickel

			Standard Violation Arsenic
Cape Fear	18-64	Livingston Creek (Broadwater Lake)	Standard Violation Turbidity
Cape Fear			Standard Violation Nickel
	18-88-2	Snows Marsh	Standard Violation Arsenic
Cape Fear	18-88-3.5	Southport Restricted Area	Standard Violation Nickel Standard Violation Arsenic
Cape Fear	18-74-39a	Burgaw Creek	Standard Violation Chlorophyll a
Catawba	11-(8)	CATAWBA RIVER (including backwaters of Lake James below elevation 1200)	Standard Violation Turbidity
Catawba	11-(117)	CATAWBA RIVER (Lake Wylie below elevation 570)	Standard Violation Low pH
Catawba	11-38-34	Wilson Creek	Standard Violation Low pH
Catawba	11-129-5-(9.5)	Clark Creek	Standard Violation Turbidity
Catawba	11-129-1-(12.5)b	Henry Fork	Standard Violation Low pH
Catawba	11-129-1-(12.5)c	Henry Fork	Standard Violation Turbidity
Catawba	11-129-15-(6)	Hoyle Creek	Biological Criteria Exceeded
Catawba	11-129-3-(0.7)	Pott Creek	Biological Criteria Exceeded
Catawba	11-129-(0.5)	South Fork Catawba River	Standard Violation Low pH
Catawba	11-129-(15.5)	South Fork Catawba River	Standard Violation Turbidity
Catawba	11-(123.5)b	CATAWBA RIVER (Lake Wylie South FK Catawba Arm) North Carolina portion	Standard Violation Turbidity
Catawba	11-137-1	Irwin Creek	Standard Violation Lead
Catawba	11-138	Twelvemile Creek	Standard Violation Turbidity
Chowan	25a2a	CHOWAN RIVER	Standard Violation Cadium*
Chowan	26	ALBEMARLE SOUND	Standard Violation Dioxin
Chowan	25c	CHOWAN RIVER	Standard Violation Dioxin
French Broad	6-34-(15.5)	Davidson River	Standard Violation Low pH
French Broad	6-(1)	FRENCH BROAD RIVER	Standard Violation Turbidity
French Broad	6-(54.5)c	FRENCH BROAD RIVER	Standard Violation Turbidity
French Broad	6-(54.5)d	FRENCH BROAD RIVER	Standard Violation Turbidity
French Broad	6-(54.5)f	FRENCH BROAD RIVER	Standard Violation Turbidity
French Broad	6-76d	Hominy Creek	Standard Violation Turbidity
French Broad	6-55-11-6	Lewis Creek	Biological Criteria Exceeded
French Broad	6-76-5b	South Hominy Creek	Biological Criteria Exceeded

French Broad	6-78d	Swannanoa River	Standard Violation Turbidity
French Broad	5-26-(7)	Jonathans Creek	Standard Violation Turbidity
French Broad	5-(7)c	PIGEON RIVER (Waterville Lake below elevation 2258)	Biological Criteria Exceeded
French Broad	7	NOLICHUCKY RIVER	Standard Violation Turbidity
French Broad	7-2-(21.5)	North Toe River	Standard Violation Turbidity
Hiwassee	1-63a	Persimmon Creek (Lake Cherokee)	Biological Criteria Exceeded
Hiwassee	1-52c	Valley River	Standard Violation Turbidity
Little Tennessee	2-79-36	Savannah Creek	Standard Violation Fecal Coliform (recreation)
Little Tennessee	2-79-39	Scott Creek	Standard Violation Fecal Coliform (recreation
Little Tennessee	2-79-(35.5)a	Tuckasegee River	Standard Violation Fecal Coliform (recreation
Little Tennessee	2-79-(35.5)b	Tuckasegee River	Standard Violation Fecal Coliform (recreation
Little Tennessee	2-79-(38)	Tuckasegee River	Standard Violation Fecal Coliform (recreation
Little Tennessee	2-(78)a	Tuckasegee River Arm of Fontana Lake, Little Tennessee River, below elevation 1708 MSL	Standard Violation Fecal Coliform (recreation)
Little Tennessee	2-190-(22)a	Cheoah River	Biological Criteria Exceeded
Lumber	14-10-5b	Little Raft Swamp	Biological Criteria Exceeded
Lumber	14-6	Mill Branch	Biological Criteria Exceeded
Lumber	14-27	Porter Swamp	Biological Criteria Exceeded
Lumber	15-25-13	Calabash River	Standard Violation Turbidity*
Lumber	15-25p	Intracoastal Waterway	Standard Violation Fecal Coliform (shellfish)
Lumber	15-25t	Intracoastal Waterway	Standard Violation Fecal Coliform (shellfish)
Lumber	15-25v	Montgomery Slough	Standard Violation Turbidity Standard Violation Low Dissolved Oxygen*
Neuse	27-149-4-1	Great Pond	Standard Violation Fecal Coliform (shellfish)
Neuse	27-45-(2)	Black Creek	Standard Violation Low Dissolved Oxygen
Neuse	27-33-4	Brier Creek	Standard Violation PCB
Neuse	27-33-(10)a	Crabtree Creek	Standard Violation PCB
Neuse	27-33-(10)b	Crabtree Creek	Standard Violation PCB*
Neuse	27-33-(10)c	Crabtree Creek	Standard Violation PCB
Neuse	27-33-(3.5)a	Crabtree Creek (Crabtree Lake)	Standard Violation Turbidity Standard Violation PCB
Neuse	27-33-(3.5)b	Crabtree Creek (Crabtree Lake)	Standard Violation PCB *
Neuse	27-3-(8)	Flat River	Standard Violation Low Dissolved Oxygen

Neuse	27-3-(9)	Flat River (including the Flat River Arm of Falls Lake)	Standard Violation Low Dissolved Oxygen
Neuse	27-33-4-1	Little Brier Creek	Standard Violation PCB
Neuse	27-9-(0.5)	Little Lick Creek	Standard Violation Turbidity*
Neuse	27-(38.5)	NEUSE RIVER	Standard Violation Turbidity
Neuse	27-(41.7)	NEUSE RIVER	Standard Violation Turbidity
Neuse	27-(1)	NEUSE RIVER (Falls Lake below normal pool elevation)	Standard Violation Turbidity Standard Violation Chlorophyll a
Neuse	27-(5.5)	NEUSE RIVER (Falls Lake below normal pool elevation)	Standard Violation Chlorophyll a
Neuse	27-23-(2)	Smith Creek	Ecological/biological Integrity Fish Community
Neuse	27-43-(1)d	Swift Creek	Biological Criteria Exceeded
Neuse	27-43-(5.5)a	Swift Creek (Lake Benson)	Biological Criteria Exceeded
Neuse	27-15-(1)	Upper Barton Creek	Biological Criteria Exceeded
Neuse	27-9-(0.5)ut2	UT2 to Little Lick Creek	Standard Violation Low Dissolved Oxygen
Neuse	27-9-(2)ut2	UT2 to Little Lick Creek (including portion of Little Lick Creek Arm of Falls Lake)	Standard Violation Low Dissolved Oxygen
Neuse	27-34-(4)b	Walnut Creek	Standard Violation Turbidity
Neuse	27-72-(0.1)	Bear Creek	Biological Criteria Exceeded
Neuse	27-90a2	Core Creek	Biological Criteria Exceeded
Neuse	27-(75.7)b	NEUSE RIVER	Standard Violation Low Dissolved Oxygen
Neuse	27-86-(7)b1	Contentnea Creek	Biological Criteria Exceeded
Neuse	27-86-2	Moccasin Creek (Bunn Lake)	Standard Violation Low Dissolved Oxygen
Neuse	27-86-3-(1)a2	Turkey Creek	Standard Violation Low Dissolved Oxygen
Neuse	27-128-3a	Back Creek (Black Creek)	Standard Violation Fecal Coliform (recreation)
Neuse	27-150-20a	Ball Creek	Standard Violation Fecal Coliform (shellfish)
Neuse	27-150-(9.5)a1	Bay River	Standard Violation Fecal Coliform (shellfish)
Neuse	27-150-(9.5)b2	Bay River	Standard Violation Enterrococcus
Neuse	27-125-(6)a	Dawson Creek	Standard Violation Fecal Coliform (shellfish) Standard Violation Enterrococcus
Neuse	27-125-2	Fork Run	Biological Criteria Exceeded
Neuse	27-152a	Jones Bay	Standard Violation Fecal Coliform (shellfish)
Neuse	27-101-17	Musselshell Creek	Biological Criteria Exceeded

Neuse	27-(104)a	NEUSE RIVER Estuary	Standard Violation High pH
Neuse	27-(104)b	NEUSE RIVER Estuary	Standard Violation High pH
Neuse	27-(118)a1a	NEUSE RIVER Estuary at Camp Don Lee	Standard Violation Enterrococcus
Neuse	27-150-3	South Prong Bay River	Standard Violation Fecal Coliform (shellfish)
New	10-1-3-(1)	East Fork South Fork New River	Biological Criteria Exceeded
New	10-1-3-(8)	East Fork South Fork New River	Biological Criteria Exceeded
New	10-1-(3.5)a	South Fork New River	Biological Criteria Exceeded
New	10-1-(3.5)b	South Fork New River	Biological Criteria Exceeded
Pasquotank	30d	ALBEMARLE SOUND	Standard Violation Enterrococcus
Pasquotank	30-16-(7)	Alligator River	Standard Violation Turbidity
Pasquotank	99-(7)b	Atlantic Ocean	Standard Violation Enterrococcus*
Pasquotank	99-(7)d	Atlantic Ocean	Standard Violation Enterrococcus*
Pasquotank	99-(7)f	Atlantic Ocean	Standard Violation Enterrococcus*
Pasquotank	99-(7)h	Atlantic Ocean	Standard Violation Enterrococcus*
Pasquotank	30-21-7a	Broad Creek	Standard Violation Fecal Coliform (shellfish)
Pasquotank	30-1-6b	Coinjock Bay	Standard Violation Enterrococcus
Pasquotank	30-19-1b	Colington Creek	Standard Violation Enterrococcus
Pasquotank	30-1a2	Currituck Sound	Standard Violation Enterrococcus
Pasquotank	30-1a3	Currituck Sound	Standard Violation Enterrococcus
Pasquotank	30-1b	Currituck Sound	Standard Violation Enterrococcus
Pasquotank	30-1c	Currituck Sound	Standard Violation Enterrococcus
Pasquotank	30-1-15b	Dowdys Bay (Poplar Branch Bay)	Standard Violation Enterrococcus
Pasquotank	30-9-(1)	Kendrick Creek (Mackeys Creek)	Standard Violation Nickel
Pasquotank	30-9-(2)	Kendrick Creek (Mackeys Creek)	Standard Violation Nickel
Pasquotank	30-21e2	Roanoke Sound	Standard Violation Enterrococcus
Pasquotank	30-1-11b	Sanders Bay	Standard Violation Enterrococcus
Pasquotank	30-16-12	Intracoastal Waterway (Pungo River-Alligator River Canal)	Standard Violation Turbidity
Roanoke	22-(31.5)a	DAN RIVER	Standard Violation Fecal Coliform (recreation)
Roanoke	22-(31.5)b	DAN RIVER	Standard Violation Fecal Coliform (recreation)
Roanoke	22-(38.5)	DAN RIVER	Standard Violation Fecal Coliform (recreation)
Roanoke	22-(1)b	DAN RIVER (North Carolina portion)	Standard Violation

			Turbidity
Roanoke	22-(39)a	DAN RIVER (North Carolina portion)	Standard Violation Fecal Coliform (recreation) Standard Violation Turbidity
Roanoke	22-30-(1)	Mayo River	Standard Violation Turbidity
Roanoke	22-40-(1)	Smith River	Standard Violation Fecal Coliform (recreation)*
Roanoke	22-40-(2.5)	Smith River	Standard Violation Fecal Coliform (recreation)*
Roanoke	22-40-(3)	Smith River	Standard Violation Fecal Coliform (recreation)*
Roanoke	22-(39)b	DAN RIVER (North Carolina portion)	Standard Violation Fecal Coliform (recreation) Standard Violation Turbidity
Roanoke	23-10-2	Newmans Creek (Little Deep Creek)	Biological Criteria Exceeded
Roanoke	23-(26)b3	ROANOKE RIVER	Standard Violation Low Dissolved Oxygen*
Tar-Pamlico	28-96	Greens Mill Run	Biological Criteria Exceeded
Tar-Pamlico	28-81	Hendricks Creek	Biological Criteria Exceeded
Tar-Pamlico	29-34-35-1-1	Acre Swamp	Biological Criteria Exceeded
Tar-Pamlico	29-19-(5.5)	Bath Creek	Standard Violation Chlorophyll a Standard Violation Enterrococcus
Tar-Pamlico	29-9	Blounts Bay (inside a line from Hill Point to Mauls Point) (PamlicoBlounts Bay Segment)	Standard Violation Chlorophyll a
Tar-Pamlico	29-29-5a	East Fork North Creek	Standard Violation Fecal Coliform (shellfish)
Tar-Pamlico	29-(5)b2	PAMLICO RIVER (Pamlico Bath Segment)	Standard Violation Chlorophyll a
Tar-Pamlico	29-(5)b1	PAMLICO RIVER (Pamlico Blounts Bay Segment)	Standard Violation Chlorophyll a
Tar-Pamlico	29-(1)	PAMLICO RIVER (Upper Pamilco Segment)	Standard Violation Enterrococcus
Tar-Pamlico	29-(5)a1	PAMLICO RIVER (Upper Pamilco Segment)	Standard Violation Enterrococcus
Tar-Pamlico	29-(5)b3	PAMLICO RIVER(Pamlico Middle Segment)	Standard Violation Chlorophyll a
Tar-Pamlico	29-34-(12)b	Pungo River	Standard Violation Enterrococcus
Tar-Pamlico	29-49a	Swanquarter Bay	Standard Violation Enterrococcus
Watauga	8-19	Beaverdam Creek	Biological Criteria Exceeded
White Oak	21-35-7-10-4	Broad Creek (Nelson Bay)	Standard Violation Turbidity
White Oak	21-35-7a4	Core Sound	Standard Violation Fecal Coliform (shellfish)
White Oak	99-(4)b	Atlantic Ocean	Standard Violation Enterrococcus*
White Oak	99-(4)d	Atlantic Ocean	Standard Violation Enterrococcus*

White Oak	20-36-(0.5)a2	Bogue Sound (Including Intracoastal Waterway)	Standard Violation Fecal Coliform (shellfish)
White Oak	20-36-(8.5)a1a	Bogue Sound (Including Intracoastal Waterway)	Standard Violation Fecal Coliform (shellfish)
White Oak	20-36-(8.5)a2	Bogue Sound (Including Intracoastal Waterway)	Standard Violation Fecal Coliform (shellfish)
White Oak	21-32	Calico Creek	Standard Violation Turbidity Standard Violation Low Dissolved Oxygen Standard Violation Chlorophyll a Standard Violation Fecal Coliform (recreation)
White Oak	21-35-7a1a	Core Sound	Standard Violation Fecal Coliform (shellfish)
White Oak	21-35-7a1b	Core Sound	Standard Violation Fecal Coliform (shellfish)
White Oak	20-36-1	Deer Creek	Standard Violation Fecal Coliform (shellfish)
White Oak	20-36-4b	Goose Creek	Standard Violation Fecal Coliform (shellfish)
White Oak	21-(17)d1	Newport River	Standard Violation Fecal Coliform (shellfish)
White Oak	21-(17)h	Newport River	Standard Violation Enterrococcus
White Oak	21-35-1b4	North River	Standard Violation Turbidity*
White Oak	21-35-1b7	North River	Standard Violation Enterrococcus
White Oak	21-23a	Oyster Creek	Standard Violation Enterrococcus
White Oak	21-35-1-7a	Ward Creek	Standard Violation Turbidity*
White Oak	21-25	Ware Creek	Standard Violation Fecal Coliform (shellfish)
White Oak	20-(18)a1	WHITE OAK RIVER	Standard Violation Fecal Coliform (shellfish)
White Oak	20-(18)e3	WHITE OAK RIVER	Standard Violation Fecal Coliform (shellfish)
White Oak	18-87-24-3	Banks Channel	Standard Violation Enterrococcus
White Oak	19-12	Brinson Creek	Standard Violation High pH Standard Violation Chlorophyll a*
White Oak	18-87-21c	Middle Sound	Standard Violation Fecal Coliform (shellfish)
White Oak	19-(10.5)	New River	Standard Violation High pH Standard Violation Enterrococcus
White Oak	19-14	Wilson Bay	Standard Violation High pH Standard Violation Enterrococcus
Yadkin	12-72-(4.5)b	Ararat River	Standard Violation Turbidity
Yadkin	12-102-13-(2)	Cedar Creek	Biological Criteria Exceeded
Yadkin	12-63-14	Cody Creek	Standard Violation Turbidity

Yadkin	12-94-(0.5)a	Muddy Creek	Biological Criteria Exceeded
Yadkin	12-94-(0.5)b	Muddy Creek	Biological Criteria Exceeded
Yadkin	12-84-1-(0.5)	North Deep Creek	Standard Violation Turbidity
Yadkin	12-46	Roaring River	Standard Violation Fecal Coliform (recreation)
Yadkin	12-84-2-(5.5)	South Deep Creek	Standard Violation Turbidity
Yadkin	12-(86.7)	YADKIN RIVER	Standard Violation Turbidity
Yadkin	12-(97.5)	YADKIN RIVER	Standard Violation Turbidity
Yadkin	12-108-18-(3)	Bear Creek	Biological Criteria Exceeded
Yadkin	12-108-16-(0.5)	Hunting Creek	Standard Violation Turbidity
Yadkin	12-108-9-(0.6)	Snow Creek	Biological Criteria Exceeded
Yadkin	12-108-20-4a	Third Creek	Standard Violation Turbidity
Yadkin	12-108-20-4b	Third Creek	Standard Violation Turbidity
Yadkin	12-119-(1)	Abbotts Creek	Biological Criteria Exceeded
Yadkin	12-119-(6)a	Abbotts Creek	Standard Violation Turbidity
Yadkin	12-118.5a	Abbotts Creek Arm of High Rock Lake	Standard Violation Chlorophyll a
Yadkin	12-118.5b	Abbotts Creek Arm of High Rock Lake	Standard Violation High pH Standard Violation Chlorophyll a
Yadkin	12-126-(3)	Lick Creek	Biological Criteria Exceeded
Yadkin	12-126-(4)	Lick Creek	Biological Criteria Exceeded
Yadkin	12-117-(3)	Second Creek Arm of High Rock Lake	Standard Violation High pH Standard Violation Chlorophyll a
Yadkin	12-(114)	YADKIN RIVER (including lower portion of High Rock Lake)	Standard Violation High pH Standard Violation Chlorophyll a
Yadkin	12-(124.5)a	YADKIN RIVER (including lower portion of High Rock Lake)	Standard Violation High pH Standard Violation Chlorophyll a
Yadkin	12-(108.5)b	YADKIN RIVER (including upper portion of High Rock Lake below normal operating level)	Standard Violation High pH *
Yadkin	13-(15.5)b	PEE DEE RIVER	Standard Violation Turbidity
Yadkin	13-17-7	Back Creek	Biological Criteria Exceeded
Yadkin	13-17-40-11	Beaverdam Creek	Standard Violation Low Dissolved Oxygen
Yadkin	13-17-8-5a	Caldwell Creek	Biological Criteria Exceeded
Yadkin	13-17-5-2	Clarks Creek	Biological Criteria Exceeded

Yadkin	13-17-17	Clear Creek	Standard Violation Turbidity
Yadkin	13-17-6-(0.5)	Coddle Creek	Biological Criteria Exceeded
Yadkin	13-17-6-(5.5)	Coddle Creek	Standard Violation Turbidity
Yadkin	13-17-9-4-(1.5)	Cold Water Creek	Standard Violation Turbidity
Yadkin	13-17-5-3	Doby Creek	Biological Criteria Exceeded
Yadkin	13-17-18-3	Duck Creek	Biological Criteria Exceeded
Yadkin	13-17-6-1	East Fork Coddle Creek	Biological Criteria Exceeded
Yadkin	13-17-9-(2)	Irish Buffalo Creek	Biological Criteria Exceeded
Yadkin	13-17-36-4-(0.5)	Little Richardson Creek (Lake Monroe)	Standard Violation Chlorophyll a
Yadkin	13-17-5b	Mallard Creek	Standard Violation Turbidity
Yadkin	13-17-8-4	McKee Creek	Biological Criteria Exceeded *
Yadkin	13-17-8	Reedy Creek	Biological Criteria Exceeded
Yadkin	13-17-36-(5)a1a	Richardson Creek	Standard Violation Turbidity
Yadkin	13-17-36-(3.5)	Richardson Creek (Lake Lee)	Standard Violation Chlorophyll a
Yadkin	13-17d	Rocky River	Standard Violation Turbidity
Yadkin	13-17-36-9-(1)	Stewarts Creek	Biological Criteria Exceeded
Yadkin	13-17-36-9-(4.5)	Stewarts Creek [Lake Twitty (Lake Stewart)]	Standard Violation Chlorophyll a
Yadkin	13-17-5-5	Stony Creek	Biological Criteria Exceeded
Yadkin	13-17-5-4	Toby Creek	Biological Criteria Exceeded

* Waterbody already on the 303(d) list; this is a new impairment.

Appendix B
North Carolina's Removal of Waterbodies from the 2008 Section 303(d) List

Assessment Unit Number	Waterbody Name	Basin	Impairment	Listing Year	Delist Reason
9-41-(24.7)	Second Broad River	Broad	Turbidity	2004	The assessment of new data documents that applicable water quality standards are being met
9-41-13-(6)a	Catheys Creek	Broad	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
9-41-13-7-(3)a	Hollands Creek	Broad	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
16-(1)d2	HAW RIVER	Cape Fear	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
16-(1)d2	HAW RIVER	Cape Fear	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
16-(37.5)a	Haw River (B. Everett Jordan Lake below normal pool elevation)	Cape Fear	Chlorophyll a	2006	TMDL completed and approved by EPA
16-11-14-2c	South Buffalo Creek	Cape Fear	Turbidity	2006	The assessment of new data documents that applicable water quality standards are being met
16-11-14-2a	South Buffalo Creek	Cape Fear	Turbidity	2006	The assessment of new data documents that applicable water quality standards are being met
16-30-(1.5)	Collins Creek	Cape Fear	Ecological/biological Integrity FishCom	2006	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-38-(3)b	Robeson Creek	Cape Fear	Aquatic Weeds	1998	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
16-38-(5)	Robeson Creek	Cape Fear	Ecological/biological Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-41-(0.5)	New Hope River Arm of B. Everett Jordan Lake (below normal pool elevation)	Cape Fear	Chlorophyll a	2006	TMDL completed and approved by EPA

16-41-(3.5)a	New Hope River Arm of B. Everett Jordan Lake (below normal pool elevation)	Cape Fear	Chlorophyll a	2006	TMDL completed and approved by EPA
16-41-1-(11.5)b	New Hope Creek	Cape Fear	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
16-41-1-(11.5)c	New Hope Creek	Cape Fear	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
16-41-1-(14)	New Hope Creek (including New Hope Creek Arm of New Hope River Arm of B. Everett Jordan Lake)	Cape Fear	Chlorophyll a	2006	TMDL completed and approved by EPA
16-41-1-12-(1)	Third Fork Creek	Cape Fear	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-41-1-15-(3)	Little Creek	Cape Fear	Ecological/biological Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-41-1-17-(0.7)b1	Northeast Creek	Cape Fear	Turbidity	2006	The assessment of new data documents that applicable water quality standards are being met
16-41-1-17-(0.7)b1	Northeast Creek	Cape Fear	Fecal Coliform (recreation)	2000	TMDL completed and approved by EPA
16-41-1-17-(4)	Northeast Creek	Cape Fear	Ecological/biological Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-41-2-(9.5)	Morgan Creek (including the Morgan Creek Arm of New Hope River Arm of B. Everett Jordan Lake)	Cape Fear	Chlorophyll a	2006	TMDL completed and approved by EPA
16-41-2-7	Meeting of the Waters	Cape Fear	Ecological/biological Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
16-6-(3)	Troublesome Creek	Cape Fear	Low Dissolved Oxygen	2006	The assessment of new data documents that applicable water quality standards are being met
17-(10.5)e1	DEEP RIVER	Cape Fear	Turbidity	2006	The assessment of new data documents that applicable water quality standards are being met

		Cape Fear			The assessment of new data documents that applicable
17-(10.5)e2	DEEP RIVER		Turbidity	2006	water quality standards are being met
17-(10.5)e2	DEEP RIVER	Cape Fear	Ecological/biological Integrity Benthos	2006	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
17-(3.3)	Deep River	Cape Fear	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
17-(3.7)	Deep River	Cape Fear	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
17-(32.5)	DEEP RIVER	Cape Fear	Chlorophyll a	2006	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
17-(4)a	DEEP RIVER	Cape Fear	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
17-2-(0.3)b	East Fork Deep River	Cape Fear	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
17-2-(0.3)b	East Fork Deep River	Cape Fear	Turbidity	1998	TMDL completed and approved by EPA
17-2-(0.3)b	East Fork Deep River	Cape Fear	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
17-2-(0.7)	East Fork Deep River	Cape Fear	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
17-8-(0.5)a	Reddicks Creek	Cape Fear	Ecological/biological Integrity Benthos	2006	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
17-8.5-(1)a	Hickory Creek	Cape Fear	Ecological/biological Integrity Benthos	2006	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met

17-8-2	Jenny Branch	Cape Fear	Ecological/biological Integrity Benthos	2006	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
18-(63)a	CAPE FEAR RIVER	Cape Fear	Ecological/biological Integrity Benthos	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
18-18-1-(2)	East Buies Creek	Cape Fear	Low Dissolved Oxygen	2008	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-20-(24.5)	Upper Little River	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-23-(10.7)	Little River (Lower Little River)	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-23-(24)	Little River (Lower Little River)	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-27-4-(1)b	Little Cross Creek (Bonnie Doone Lake, Kornbow Lake, Mintz p	Cape Fear	Ecological/biological Integrity Benthos	1998	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
18-27-4-(1)c	Little Cross Creek (Bonnie Doone Lake, Kornbow Lake, Mintz p	Cape Fear	Ecological/biological Integrity Benthos	1998	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
18-27-4-(1.5)	Little Cross Creek (Glenville Lake)	Cape Fear	Ecological/biological Integrity Benthos	1998	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
18-31-(12)	Rockfish Creek	Cape Fear	Low pH	2008	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-31-(15)	Rockfish Creek	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-31-(18)	Rockfish Creek [(Upchurches Pond, Old Brower Mill Pond (Number Two Lake)]	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.
18-31-(23)	Rockfish Creek	Cape Fear	Low pH	2006	Low pH and/or low DO standards violations due to natural conditions in the watershed.

		Cape Fear	Ecological/biological Integrity FishCom		Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
18-5-(1)a	Gulf Creek			1998	
18-68-12-1a	Black River (Little Black River)(Popes Lake-Rhodes Pond)	Cape Fear	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
18-74-29b	Rock Fish Creek (New Kirk Pond)	Cape Fear	Ecological/biological Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
18-87-(11.5)	Intracoastal Waterway	Cape Fear	Fecal Coliform (shellfish)	2006	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
18-87-(23.5)b	Intracoastal Waterway	Cape Fear	Fecal Coliform (shellfish)	2006	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
18-87-31a	Myrtle Sound Shellfishing Area	Cape Fear	Fecal Coliform (shellfish)	2006	The assessment of new data documents that applicable water quality standards are being met
18-88-9b	Intracoastal Waterway	Cape Fear	Low Dissolved Oxygen	2006	The assessment of new data documents that applicable water quality standards are being met
11-115-(1)	McDowell Creek	Catawba	Ecological/biological Integrity FishCom	1998	Watershed managment plan implementation will result in attainment of water quality standards
11-115-(1.5)a	McDowell Creek	Catawba	Ecological/biological Integrity FishCom	1998	Watershed managment plan implementation will result in attainment of water quality standards
11-115-(1.5)b	McDowell Creek	Catawba	Ecological/biological Integrity FishCom	2000	Watershed managment plan implementation will result in attainment of water quality standards
11-115-(5)	McDowell Creek	Catawba	Ecological/biological Integrity Benthos	2000	Watershed managment plan implementation will result in attainment of water quality standards
11-119-2-(0.5)b	Killian Creek	Catawba	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
11-129-1-(12.5)a	Henry Fork	Catawba	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
11-129-5-(9.5)	Clark Creek	Catawba	Ecological/biological Integrity Benthos	2002	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards

11-129-5-(9.5)	Clark Creek	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
11-135f	Crowders Creek	Catawba	Fecal Coliform (recreation)	2000	TMDL completed and approved by EPA
11-135f	Crowders Creek	Catawba	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
11-137b	Sugar Creek	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
11-137b	Sugar Creek	Catawba	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137b	Sugar Creek	Catawba	Turbidity	1998	TMDL completed and approved by EPA
11-137c	Sugar Creek	Catawba	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137c	Sugar Creek	Catawba	Turbidity	2000	TMDL completed and approved by EPA
11-137c	Sugar Creek	Catawba	Fecal Coliform (recreation)	2000	TMDL completed and approved by EPA
11-137-1	Irwin Creek	Catawba	Turbidity	2000	TMDL completed and approved by EPA
11-137-1	Irwin Creek	Catawba	Fecal Coliform (recreation)	2000	TMDL completed and approved by EPA
11-137-1	Irwin Creek	Catawba	Ecological/biological Integrity FishCom	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-8c	Little Sugar Creek	Catawba	Turbidity	1998	TMDL completed and approved by EPA
11-137-8c	Little Sugar Creek	Catawba	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-8c	Little Sugar Creek	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
11-137-9a	McAlpine Creek (Waverly Lake)	Catawba	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-9a	McAlpine Creek (Waverly Lake)	Catawba	Turbidity	1998	TMDL completed and approved by EPA
11-137-9a	McAlpine Creek (Waverly Lake)	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA

11-137-9d	McAlpine Creek (Waverly Lake)	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
11-137-9d	McAlpine Creek (Waverly Lake)	Catawba	Turbidity	1998	TMDL completed and approved by EPA
11-137-9d	McAlpine Creek (Waverly Lake)	Catawba	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-9b	McAlpine Creek (Waverly Lake)	Catawba	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
11-137-9b	McAlpine Creek (Waverly Lake)	Catawba	Turbidity	1998	TMDL completed and approved by EPA
11-137-9b	McAlpine Creek (Waverly Lake)	Catawba	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-9c	McAlpine Creek (Waverly Lake)	Catawba	Fecal Coliform (recreation)	2000	TMDL completed and approved by EPA
11-137-9c	McAlpine Creek (Waverly Lake)	Catawba	Turbidity	2000	TMDL completed and approved by EPA
11-137-9c	McAlpine Creek (Waverly Lake)	Catawba	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-137-9c	McAlpine Creek (Waverly Lake)	Catawba	Ecological/biological Integrity FishCom	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-24-(2.5)b	North Fork Catawba River	Catawba	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
11-32-1-4-1	Jacktown Creek	Catawba	Ecological/biological Integrity Benthos	2006	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
11-38-34-14	Harper Creek	Catawba	Sediment Historic Listing	1998	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
11-39-(0.5)a	Lower Creek	Catawba	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met

11-39-(0.5)b	Lower Creek	Catawba	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-39-(6.5)	Lower Creek	Catawba	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-39-(9)	Lower Creek	Catawba	Ecological/biological Integrity Benthos	2000	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
11-39-(9)	Lower Creek	Catawba	Turbidity	2000	TMDL completed and approved by EPA
11-39-1	Zacks Fork Creek	Catawba	Ecological/biological Integrity Benthos	2000	The assessment of new data documents that applicable water quality standards are being met
11-39-4a	Greasy Creek	Catawba	Ecological/biological Integrity Benthos	2000	The assessment of new data documents that applicable water quality standards are being met
11-69-(0.5)	Lower Little River	Catawba	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
25c	CHOWAN RIVER	Chowan	Nutrients-Historic Listing	1998	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
25b	CHOWAN RIVER	Chowan	Nutrients-Historic Listing	1998	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
25-4-8	Potecasi Creek	Chowan	Low pH	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
25-4-8	Potecasi Creek	Chowan	Low Dissolved Oxygen	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
25-4-8-10	Bells Branch	Chowan	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

		Chowan	Ecological/biolo		Flaws in the original analysis of data and information led to
25-4-8-5	Painter Swamp		gical Integrity Benthos	1998	the segment being incorrectly listed in Category 5
6-(54.5)d	FRENCH BROAD RIVER	French Broad	Ecological/biolo gical Integrity Benthos	2006	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
6-10-1b	Morgan Mill Creek (Kaiser Lake)	French Broad	Ecological/biolo gical Integrity Benthos	2000	The assessment of new data documents that applicable water quality standards are being met
6-47	Gash Creek	French Broad	Ecological/biolo gical Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
6-51	Mill Pond Creek	French Broad	Ecological/biolo gical Integrity Benthos	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
6-78c	Swannanoa River	French Broad	Ecological/biolo gical Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
6-78-23b	Ross Creek (Lake Kenilworth)	French Broad	Ecological/biolo gical Integrity Benthos	2000	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
6-84d	Newfound Creek	French Broad	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
6-84c	Newfound Creek	French Broad	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
6-84b	Newfound Creek	French Broad	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
6-96-10a	Little Ivy Creek (River)	French Broad	Ecological/biolo gical Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
14-(13)c	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(13)f	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(13)d	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(13)a	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(13)e	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(13)b	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(4.5)d	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA

14-(4.5)b	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(4.5)c	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-(7)	LUMBER RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-2-(1)a	Drowning Creek	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-2-(10.5)	Drowning Creek	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-2-(6.5)	Drowning Creek	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-2-11-(5)	Aberdeen Creek [Pages Lake (Aberdeen Lake)]	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-22b	Big Swamp	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-27	Porter Swamp	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-30b	Ashpole Swamp	Lumber	Mercury	1998	TMDL completed and approved by EPA
14-30a	Ashpole Swamp	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(1)a	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(1)e	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(1)d	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(1)b	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(1)c	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-(18)	WACCAMAW RIVER	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-2-6	Big Creek	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-4a	White Marsh	Lumber	Mercury	1998	TMDL completed and approved by EPA
15-4b	White Marsh	Lumber	Mercury	1998	TMDL completed and approved by EPA
27-(118)d	NEUSE RIVER Estuary	Neuse	Fecal Coliform (shellfish)	2004	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
27-(96)b1	NEUSE RIVER Estuary	Neuse	Chlorophyll a	2004	The assessment of new data documents that applicable water quality standards are being met
27-101-40-(1)	Brice Creek	Neuse	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

		Neuse			Flaws in the original analysis of data and information led to
27-128b	Adams Creek		Fecal Coliform (shellfish)	2004	the segment being incorrectly listed in Category 5
27-24a2	Toms Creek (Mill Creek)	Neuse	Ecological/biological Integrity Benthos	1998	Water quality standard assessed for Category 5 listing no longer applies due to a change in waterbody type
27-33-18	Pigeon House Branch	Neuse	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
27-4-(6)	Knap of Reeds Creek	Neuse	Ecological/biological Integrity Benthos	1998	Documentation that the state included on a previous section 303(d) list an impaired segment that was not required to be listed by EPA regulations
27-43-15-(1)a	Middle Creek	Neuse	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
27-45-(14)	Black Creek	Neuse	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
27-57-(20.2)a	Little River	Neuse	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
27-57-(8.5)b	Little River (Tarpleys Pond)	Neuse	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
27-57-16-(3)a	Buffalo Creek (Wendell Lake)	Neuse	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
27-68	Walnut Creek (Lake Wackena, Spring Lake)	Neuse	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
27-68	Walnut Creek (Lake Wackena, Spring Lake)	Neuse	Aquatic Weeds	1998	TMDL completed and approved by EPA
27-86-(1)a	Contentnea Cr (Buckhorn Reservoir)	Neuse	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
27-86-(1)b	Contentnea Cr (Buckhorn Reservoir)	Neuse	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
27-86-14	Nahunta Swamp	Neuse	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met

27-86-2-4	Little Creek (West Side)	Neuse	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
27-86-26	Little Contentnea Creek	Neuse	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
27-9-(2)	Little Lick Creek (including portion of Little Lick Creek Arm of Falls Lake)	Neuse	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
27-90b	Core Creek	Neuse	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
2-79-55-2a	Beech Flats Prong	Neuse	Ecological/biological Integrity Benthos	2002	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
27-97-(0.5)a2	Swift Creek	Neuse	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
27-97-5b	Clayroot Swamp	Neuse	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
27-97-5-3	Creeping Swamp	Neuse	Chlorophyll a	1998	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
10-1-(26)b	South Fork New River	New	Low pH	2006	The assessment of new data documents that applicable water quality standards are being met
10-1-35-3	Ore Knob Branch	New	Ecological/biological Integrity Benthos	2006	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
10-1-35-3	Ore Knob Branch	New	Iron-Historic Listing	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
10-1-35-3	Ore Knob Branch	New	Copper	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

		New			Flaws in the original analysis of data and information led to
10-1-35-3	Ore Knob Branch		Zinc	2000	the segment being incorrectly listed in Category 5
10-1-35-4	Little Peak Creek	New	Ecological/biological Integrity Benthos	2006	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
10-1-35-4	Little Peak Creek	New	Copper	2000	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
30-14-4-(1)	Scuppernong River	Pasquotank	Low Dissolved Oxygen	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
30-14-4-(1)	Scuppernong River	Pasquotank	Low pH	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
30-21-7b	Broad Creek	Pasquotank	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
30-22-2	Eagle Nest Bay	Pasquotank	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
30-22-9	Beach Slue	Pasquotank	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
30-5-(1)a	Little River	Pasquotank	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
30-5-(1)b	Little River	Pasquotank	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
30-5-(2)	Little River	Pasquotank	Low Dissolved Oxygen	2000	The assessment of new data documents that applicable water quality standards are being met
22-25a	Town Fork Creek	Roanoke	Ecological/biological Integrity Benthos	2002	The assessment of new data documents that applicable water quality standards are being met
22-58-12-6a	Marlowe Creek	Roanoke	Copper	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

23-(53)	ROANOKE RIVER	Roanoke	Dioxin	1998	TMDL completed and approved by EPA
23-10b	Smith Creek	Roanoke	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
23-8-(1)c	Nutbush Creek (Including Nutbush Creek Arm of John H. Kerr Reservoir below normal pool elevation)	Roanoke	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
28-(102.5)	TAR RIVER (River Segment)	Tar - Pamlico	Chlorophyll a	1998	The assessment of new data documents that applicable water quality standards are being met
28-(102.5)	TAR RIVER (River Segment)	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
28-101	Chicod Creek	Tar - Pamlico	Low Dissolved Oxygen	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
28-101	Chicod Creek	Tar - Pamlico	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
28-104	Kennedy Creek	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
28-11a	Fishing Creek	Tar - Pamlico	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
28-11b	Fishing Creek	Tar - Pamlico	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
28-87-1	Crisp Creek	Tar - Pamlico	Ecological/biological Integrity Benthos	2006	The assessment of new data documents that applicable water quality standards are being met
29-(1)	PAMLICO RIVER (Upper Pamilco Segment)	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
29-(1)	PAMLICO RIVER (Upper Pamilco Segment)	Tar - Pamlico	Chlorophyll a	1998	The assessment of new data documents that applicable water quality standards are being met
29-(40.5)b	PAMLICO RIVER AND PAMLICO SOUND	Tar - Pamlico	Fecal Coliform (shellfish)	2006	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
29-(40.5)c	PAMLICO RIVER AND PAMLICO SOUND	Tar - Pamlico	Fecal Coliform (shellfish)	2006	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

	PAMLICO RIVER	Tar - Pamlico			Flaws in the original analysis of data and information led to
29-(40.5)d	AND PAMLICO SOUND		Fecal Coliform (shellfish)	2006	the segment being incorrectly listed in Category 5
29-(5)a	PAMLICO RIVER (Upper Pamlico Segment)	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
29-12-4-(1)	Jack Creek	Tar - Pamlico	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
29-4-(2)	Rodman Creek	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
29-6-(1)	Chocowinity Bay	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
29-6-(5)	Chocowinity Bay	Tar - Pamlico	Chlorophyll a	1998	TMDL completed and approved by EPA
19-16-2	Little Northeast Creek	White Oak	Low Dissolved Oxygen	1998	Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status
19-39-(3.5)b1	Intracoastal Waterway	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
19-41-18b2	Bear Island ORW Area	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
19-41-2b	Mile Hammock Bay	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
20-36-(8.5)b1	Bogue Sound (Including Intracoastal Waterway to Beaufort Inl	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-(1.5)c	Back Sound	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-1b5	North River	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-1-12-1b	Sleepy Creek	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-1-12-2b	Whitehurst Creek	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5

21-35-1-13b	Brooks Creek	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-7-3b	Styron Bay	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
21-35-7-3-2	Annis Run	White Oak	Fecal Coliform (shellfish)	2002	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
13-2-(4.5)	Uwharrie River	Yadkin – Pee Dee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
12-108-20-4b	Third Creek	Yadkin Pee	Ecological/biological Integrity FishCom	2004	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
12-108-21a	Second Creek (North Second Creek)	Yadkin Pee	Ecological/biological Integrity Benthos	2004	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
12-110b	Grants Creek	Yadkin Pee	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
12-110b	Grants Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
12-110b	Grants Creek	Yadkin Pee	Turbidity	1998	TMDL completed and approved by EPA
12-110-3	Little Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
12-119-7a	Rich Fork	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
12-119-7a	Rich Fork	Yadkin Pee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
12-119-7-4	Hamby Creek	Yadkin Pee	Nutrients-Historic Listing	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
12-126-(3)	Lick Creek	Yadkin Pee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met

		Yadkin Pee			The assessment of new data documents that applicable
12-126-(4)	Lick Creek		Low Dissolved Oxygen	2004	water quality standards are being met
12-72-6	Faulkner Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
12-94-12-(4)	Salem Creek (Middle Fork Muddy Creek)	Yadkin Pee	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
12-94-9b	Reynolds Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
13-(15.5)a	PEE DEE RIVER	Yadkin Pee	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
13-(34)a	PEE DEE RIVER	Yadkin Pee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
13-17b	Rocky River	Yadkin Pee	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
13-17a	Rocky River	Yadkin Pee	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
13-17a	Rocky River	Yadkin Pee	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
13-17-18a	Goose Creek	Yadkin Pee	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA
13-17-31-4	Little Long Creek	Yadkin Pee	Sediment Historic Listing	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
13-17-40-6	Waxhaw Branch	Yadkin Pee	Ecological/biological Integrity Benthos	1998	The assessment and interpretation of more recent or more accurate data in the record demonstrate that the applicable water quality standard is being met
13-17-6-(5.5)	Coddle Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
13-17-8-4	McKee Creek	Yadkin Pee	Fecal Coliform (recreation)	1998	TMDL completed and approved by EPA

13-17-8-4-1	Clear Creek	Yadkin Pee	Ecological/biological Integrity Benthos	1998	Flaws in the original analysis of data and information led to the segment being incorrectly listed in Category 5
12-(114)	YADKIN RIVER (including lower portion of High Rock Lake)	Yadkin Pee-Dee	Turbidity	2004	The assessment of new data documents that applicable water quality standards are being met
12-(124.5)a	YADKIN RIVER (including lower portion of High Rock Lake)	Yadkin Pee-Dee	Turbidity	2004	The assessment of new data documents that applicable water quality standards are being met
12-(124.5)b	YADKIN RIVER (including upper portion of Tucktertown Lake)	Yadkin Pee-Dee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
12-108-20a1	Fourth Creek	Yadkin Pee-Dee	Turbidity	1998	The assessment of new data documents that applicable water quality standards are being met
13-20b	Brown Creek	Yadkin Pee-Dee	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
12-108-20a2	Fourth Creek	Yadkin Pee-Dee	Turbidity	1998	The assessment of new data documents that applicable water quality standards are being met
12-108-20a3	Fourth Creek	Yadkin Pee-Dee	Ecological/biological Integrity Benthos	1998	Pollutant causing impairment identified. TMDL implementation will result in attainment of water quality standards
12-119-7b	Rich Fork	Yadkin Pee-Dee	Low Dissolved Oxygen	2004	The assessment of new data documents that applicable water quality standards are being met
13-(15.5)b	PEE DEE RIVER	Yadkin Pee-Dee	Low Dissolved Oxygen	1998	The assessment of new data documents that applicable water quality standards are being met
13-17-36-(5)a2	Richardson Creek	Yadkin Pee-Dee	Ecological/biological Integrity Benthos	1998	The assessment of new data documents that applicable water quality standards are being met
28-78-1-(8)b2	Sandy Creek	Yadkin Pee-Dee	Ecological/biological Integrity Benthos	2000	The assessment of new data documents that applicable water quality standards are being met

APPENDIX C

ASSESSMENT UNITS WHERE FURTHER INVESTIGATION IS REQUIRED FOR POTENTIAL IMPAIRMENTS OF COPPER AND/OR ZINC

Assessment Unit Number	Waterbody Name	NC_Basin	Impairment	Review Notes
10b	New River (North Carolina Portion)	NEW	Copper	Benthos station KB34 colocated with K7900000 has had Excellent or Good bioclassifications since 1983. There are no identified sources of Copper or Zinc in the watershed upstream in Virginia -2008 NAIP. DWQ will pursue a natural conditions study for this
10b	New River (North Carolina Portion)	NEW	Zinc	Benthos station KB34 colocated with K7900000 has had Excellent or Good bioclassifications since 1983. There are no identified sources of Copper or Zinc in the watershed upstream in Virginia -2008 NAIP. DWQ will pursue a natural conditions study for this
12-(124.5)c	YADKIN RIVER (including Tuckertown Lake, Badin Lake)	YAD	Copper	Copper, chlorophyll a, and Turbidity exceedances not assessed in category 5 due to insufficient samples N<10.
12-108-21c	Second Creek (North Second Creek)	YAD	Copper	Benthos station QB504 colocated with Q4165000 has only been sampled once in 2008. There are no identified sources of Copper-2008 NAIP. DWQ will continue to monitor Copper to determine if the exceedances are regular and ongoing.
12-110b	Grants Creek	YAD	Copper	Copper or Zinc Assessment exceedances not assessed in category 5 due to insufficient samples N<10.
12-110b	Grants Creek	YAD	Zinc	Copper or Zinc Assessment exceedances not assessed in category 5 due to insufficient samples N<10.
13-17-40-(1)	Lanes Creek	YAD	Copper	Copper and Zinc exceedances not assessed in category 5 due to insufficient samples N<10.
13-17-40-(1)	Lanes Creek	YAD	Zinc	Copper and Zinc exceedances not assessed in category 5 due to insufficient samples N<10.
13-17-40-10	Barkers Branch	YAD	Copper	Copper exceedances not assessed in category 5 due to insufficient samples N<10.
13-2-3-3-(0.7)	Back Creek (Back Creek Lake)	YAD	Copper	Copper exceedances not assessed in category 5 due to insufficient samples N<10.

13-45-(1)	Marks Creek (Water Lake)	YAD	Copper	Chorophyll *a* and Copper exceedances not assessed in category 5 due to insufficient samples N<10.
16-(1)d2	HAW RIVER	CPF	Zinc	Zinc exceedances not assessed in category 5 due to insufficient samples N<10.
17-(4)b	DEEP RIVER	CPF	Zinc	Combined data are below 20% exceedance for fecal coliform
17-(4)b	DEEP RIVER	CPF	Zinc	Zinc exceedances not assessed in category 5 due to insufficient samples N<10.
22-58-12-6b	Marlowe Creek	ROA	Copper	Zinc and Copper exceedances not assessed in category 5 due to insufficient samples N<10.
22-58-12-6b	Marlowe Creek	ROA	Zinc	Zinc and Copper exceedances not assessed in category 5 due to insufficient samples N<10.
27-(118)a2	NEUSE RIVER Estuary	NEU	Copper	Copper exceeds by exactly 10% at nearby J9930000. J9810000 is a mid channel station with no nearby sources. Not 95% confident in 10% exceedance of standard. DWQ will continue to monitor.
27-(49.5)a	NEUSE RIVER	NEU	Copper	Benthos stationJB34 colocated with J5250000 has had Good bioclassifications since 1995. Do not have 95% confidence in Copper exceedance of standard. There are no identified sources of Copper in the watershed. DWQ will pursue a natural conditions study for this
27-(96)b2	NEUSE RIVER Estuary	NEU	Copper	J8900800 is a mid channel station with no nearby sources. DWQ will continue to monitor stations in immediate upstream freshwater do not exceed criteria.
27-23-(2)	Smith Creek	NEU	Zinc	Zinc exceedances not assessed in category 5 due to insufficient samples N<10.
27-33-(10)c	Crabtree Creek	NEU	Copper	Copper exceedances not assessed in category 5 due to insufficient samples N<10.
28-11e	Fishing Creek	TAR	Zinc	Do not have 95% confidence in Copper and Zinc Exceedances. Colocated Benthos at OB10 has remained stable or improved since 1990. Colocated fish community at OF17 has improved since 1992 and is currently Excellent.
28-11e	Fishing Creek	TAR	Copper	Do not have 95% confidence in Copper and Zinc Exceedances. Colocated Benthos at OB10 has remained stable or improved since 1990. Colocated fish community at OF17 has improved since 1992 and is currently Excellent.
29-6-(5)	Chocowinity Bay	TAR	Copper	O7710000 is a mid-channel station with no nearby sources. Immediate upstream freshwater stations do not exceed criteria DWQ will continue to monitor