

## **Painter, Andy**

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**From:** Bill Floyd <wcbfloyd@ix.netcom.com>  
**Sent:** Wednesday, March 30, 2016 6:08 AM  
**To:** 2016draft303d@lists.ncmail.net  
**Cc:** wcbfloyd@ix.netcom.com; Patt, Heather  
**Subject:** [2016draft303d] Water Quality Impaired Segment of the Chattooga River  
iReaching From Green Creek confluence downstream to confuence of Cane Creek  
FLOYD PICTURES EXHIBIT A SEDIMENT v12142015.pdf; Exh B HOW CREEK BOATING  
DEGRADES THE WATER QUALITY OF THECHATTOOGA IN NORTH CAROLINA.pdf;  
ATT00001.txt

**Attachments:**

**Importance:** High

**Categories:** 2016 303d Comment

**Since November 2014**, I have complained to multiple employees of NC DEQ about a lengthy segment of the Chattooga River being a water quality limited segment—due to the deposition of an excessive amount of embedded sediment *which is bank to bank and over a foot deep in places*. I have provided NC DEQ with multiple photographs and latitude and longitude coordinates for where this water quality degradation is occurring.

Attached *again* are three photographs that tell the tale—Floyd Pictures Exhibit A Sediment.

This excessive amount of embedded sandy sediment has filled in most, if not all, of the interstitial spaces which are critical to preventing a decline in wild trout population survival. Most importantly, this excessive embedded sediment has degraded both the quality as well as the quantity of streambed habitat which remains suitable for the successful spawning of wild trout.

Despite claims to contrary, this embedded sediment problem does not constitute the normal background condition of this Outstanding Resource Water. Decades of experience of having walked and waded every inch of this streambed (including the gorge beside the Chattooga Cliffs below Cane Creek) advise that these conditions are anything but normal conditions. These conditions constitutes the canary in the coal mine for management failures by somebody—either the United States Forest Service or the state of North Carolina. Unfortunately, my concerns have been left to fall between the cracks *or have been dismissed outright by the United States Forest Service*.

Unfortunately, NC DEQ has *only* been conducting bug monitoring for the purposes of compiling the Section 303(d) list at two roadside locations, which are convenient to access, *but which are also unfortunately miles above, and miles below the location of this water quality limited segment*. This water quality limited segment stretches from just below the confluence of Green Creek downstream to the confluence of Cane Creek. It is a remote section of the river that takes time to access. There is no trail that runs conveniently along the riverbank. To see the problem, you have to wade the river.

In short, the section of the Chattooga River which is being choked has simply gone unmonitored by NC DEQ—and where there is excessive sediment, bug studies alone are not sufficient to conclude that the trout habitat has not been degraded in violation of North Carolina water quality standards.

This failure to monitor is critical because the Forest Service has claimed a right to rely on NC DEQ water quality assessments. Using North Carolina's reports, the Forest Service denies the existence of any problem—despite having been provided with credible photographic evidence of its existence. The Forest Service has specifically pointed the finger of responsibility for addressing any sedimentation problem at the state of North Carolina. See the Forest Service's Environmental Assessment dated May 2015.

In July 2015, the USFS was formally advised, for the *second time*, of the existence of this excessive embedded sedimentation problem. The Forest Service was also advised *how this water pollution problem was being exacerbated* by its continued promotion of a highly incompatible recreational use of this particular section of the Chattooga: *creek boating*. The Forest Service was provided with photographic evidence of how the soils on the top of the river's banks were being visibly displaced and pushed into the river as a consequence of creek boater's "seal launching" into the creek at multiple "portage" locations. In addition to creating new chronic erosion sites, the USFS was advised that creek boaters had unlawfully cut down rhododendron *within North Carolina's trout buffer* in order to create greater convenience of portage trails (trails which the USFS own inventory of erosion sites confirms did not exist prior to the introduction of creek boating in 2012). The Forest Service was shown how paddlers were also creating specific point sources of water pollution when they evacuate the river.

Attached as Exhibit B are a second set of photographs, along with a narrative explaining the significance of these photos, that document how the Forest Service's promotion of this recreational use is causing the degradation of North Carolina's water quality. In one of the pictures, if you look closely, you can see how creek boaters have *actually excavated* a narrow slide in the bank to facilitate their boat launch. These annotated photographs demonstrate how the damage being done has exponentially increased during the current boating season—without any response by the Forest Service.

Unfortunately, the USFS has refused to monitor and study the physical conditions of the stream bed, or to assess the condition of the trout population. Despite the fact that the wild trout population constitutes the primary aquatic management indicator species ("MIS") for the Chattooga River under the Nantahala National Forest's ("NNF") current Land Resource Management Plan, the USFS has instead opted to reference and to rely *exclusively* on literature relating to geographically irrelevant and out of date fish population studies conducted much further downstream in South Carolina and Georgia.

Furthermore, the USFS refusal to act, coupled with its finger pointing towards the state of North Carolina, suggests that the USFS believes that the results of the state of North Carolina's two bug sampling sites on the Chattooga constitute a sufficient proxy for refuting any concerns that sediment may be adversely impacting either the trout habitat or the health of trout populations themselves---despite the fact that the Forest Service has contemporaneously sworn in North Carolina Federal District Court that similar bug studies were insufficient and "*generally poor indicators of ecosystem stress due to sedimentation*" in evaluating the impacts of sedimentation on the Tellico River. See *Southern Four Wheel Drive Association v United States Forest Service*, Case 2:10-cv-00015, Document #39, page 27 (emphasis added).

*In fact, the Forest Service attributes this assertion to the NC DEQ.*

Such inconsistent explanations must not be allowed to justify the USFS management actions that are now causing additional damage to the state of North Carolina's water quality and the condition of the Chattooga's trout buffer. The actions of the USFS violate North Carolina's antidegradation policy. 15A NCAC 02B.0201 and 40 CFR 131.12.

Despite the difficulty of accessing the current habitat conditions of this remote location, the only scientific way to understand the scope of this sediment problem is to commit sufficient time and resources to physically wade and boulder hop the entire stream bed while conducting fish monitoring and habitat assessments and stream

sediment studies. Unfortunately, the USFS has chosen to ignore this water quality problem while pushing forward with the introduction of a new recreational use on this segment of the Chattooga.

I remain dedicated to seeing a positive end result for this problem. I remain willing to lend arms and legs to assist NC DEQ in investigating and bringing an appropriate solution to this problem—other than the acceptance of the denial so loudly pronounced by the United States Forest Service. Please advise how we can work together. I have prepared a virtual tour through photographs and narrative that might be used to become more familiar with the terrain and where the problem is specifically occurring.

Sincerely,

William Floyd  
704 562 7834

March 29, 2016

*Via Electronic Mail*

N.C. Department of Environmental Quality  
Division of Water Resources  
1611 Mail Service Center  
Raleigh, NC 27699-1611  
2016draft303d@lists.ncmail.net

Re: Request to list Stocking Head Creek on North Carolina's Draft 2016 §303(d) List

To Whom It May Concern:

Cape Fear River Watch was founded twenty years ago to protect and improve the water quality of the Cape Fear River Basin. We have nearly a thousand active members across the watershed. On behalf of our Board of Directors, Waterkeeper Alliance and our membership, we urge you to classify Stocking Head Creek as impaired for nutrients and fecal coliform on the 2016 303(d) list. Our organizations collectively represent thousands of North Carolinians who drink, fish, swim, paddle, and earn a living on our state's rivers, lakes, reservoirs, and estuaries and whose use of these waters have been adversely impacted by bacteria and nutrient pollution that is being inadequately addressed.

Every two years, each state is required by Section 303(d) of the Clean Water Act (the "Act") to identify waters within its jurisdiction for which required effluent limitations are not stringent enough to implement applicable water quality standards or for which 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.<sup>1</sup> Federal regulations require that North Carolina "assemble and evaluate *all* existing and readily available water quality-related data and information" to develop the 303(d) list.<sup>2</sup> EPA regulations further provide that, in compiling the 303(d) list, the state must consider "[w]aters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions."<sup>3</sup> Under EPA regulations, "[f]or the 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

<sup>1</sup> 33 U.S.C. § 1313(d)(1)(A); 40 C.F.R. § 130.7(b)(1).

<sup>2</sup> 40 C.F.R. § 130.7(b)(5) (emphasis added).

<sup>3</sup> 40 C.F.R. § 130.7(b)(5)(iii).

standards established under section 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements.”<sup>4</sup> Once waters are identified as impaired on the 303(d) List, the Clean Water Act requires the State to establish a total maximum daily load (“TMDL”) to further limit the presence of the pollutant or pollutants that cause the impairment.<sup>5</sup>

In 2013, Cape Fear Riverkeeper and Waterkeeper Alliance asked Michael A. Mallin, Ph.D., Matthew R. McIver, Anna R. Robuck and Amanda Kahn Dickens, Ph.D. at the Center for Marine Sciences, University of North Carolina at Wilmington, to evaluate water quality conditions in the Stocking Head Creek subwatershed of the Cape Fear River. Their analysis of water quality data demonstrates that Stocking Head Creek is impaired by nutrients and bacteria.

Stocking Head Creek is a 2<sup>nd</sup> order stream located in the Northeast Cape Fear River basin on the Coastal Plain of North Carolina. It lies within 8-digit Hydrologic Unit Code 003030007, and is classified as C Sw waters by North Carolina Division of Water Resources. Catchment area is 4,893 acres (1,980 ha) and stream length to the Northeast Cape Fear River is 13.7 mi (22.1 km). The Northeast Cape Fear River is a 5<sup>th</sup> order tributary of the 6<sup>th</sup> order Cape Fear River, the watershed of which contains approximately half of the 9,000,000-plus swine produced in North Carolina. It is estimated that the Cape Fear River basin produced (in 1995) 82,700 metric tons of nitrogen and 26,000 metric tons of phosphorus as waste in this watershed.

Monitoring of Stocking Head Creek by Michael A. Mallin, Ph.D., Matthew R. McIver, Anna R. Robuck and Amanda Kahn Dickens, Ph.D., Center for Marine Sciences at the University of North Carolina at Wilmington supports our request to have Stocking Head Creek added to the 2016 303(d) list of impaired waterways. Dr. Mallin reported that nutrient and biologic parameters consistently far exceed generally accepted water quality standards and other measures of water quality and use support for C Sw waterways.

These parameters include (as documented in the attached report):

- Ammonium: Ammonium is a form of chemically reduced inorganic nitrogen that is often associated with fresh human sewage or animal manure. It is readily taken up by visible plants, algae and bacteria for growth. When exposed to dissolved oxygen in the presence of nitrifying bacteria it is converted to nitrate by the process of nitrification. There is no ambient ammonium standard for North Carolina waters. However, academic research has indicated that ammonium concentrations of 0.5 mg/L (ppm) and greater stimulate algae blooms in blackwater streams (Mallin et al. 2001; 2002;

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<sup>4</sup> 40 C.F.R. § 130.7(b)(3).

<sup>5</sup> 33 U.S.C. § 1313(d)(1)(C).

2004). Additionally, since ammonium is a chemically reduced form of nitrogen, during the nitrification process it can exert a chemical oxygen demand on waters receiving sewage or animal waste inputs, contributing to lowered dissolved oxygen. Thus its concentration in sewage outfalls is regulated by NPDES permits for point-source discharges.

Ammonium in Stocking Head Creek during the 10 sample trips ranged from the detection limit (0.05 mg/L) to 37.8 mg/L (Table 1). Highest ammonium concentrations were found at Station TR-SDCR, followed by Station SHC-SHCR. The ammonium concentrations found at those sites were well in excess of ammonium concentrations found in many other creeks in the Northeast Cape Fear and Black River watersheds (Mallin et al. 2004; 2006). Only during swine lagoon breaches have such concentrations been found in blackwater streams (Burkholder et al. 1997; Mallin 2000). The presence of elevated ammonium indicates periodic loading to the stream of fresh inputs.

- Nitrate: Nitrate is a chemically oxidized form of inorganic nitrogen, and is used by visible plants and algae for growth. It is very mobile in soils and readily moves through the water table to enter streams. Sources are sewage, animal wastes, and fertilizers, as well as atmospheric deposition generated (even far away) from power plants and internal combustion engines. There are no ambient nitrate standards in North Carolina. However, academic research has indicated that nitrate concentrations of 0.5 mg/L (ppm) and greater can stimulate algae blooms in blackwater streams (Mallin et al. 2001; 2002; 2004). There is a US EPA well water standard for drinking of 10 mg/L to prevent blue-baby syndrome (also called methemoglobinemia).

Nitrate concentrations in Stocking Head Creek were very high (Table 2). Whereas the highest ammonium concentrations were found at two sites, several sites showed high nitrate. Concentrations ranged from 0.08-13.60 mg-N/L, with station means ranging from 0.30-7.94 mg-N/L (Table 2). Particularly high nitrate concentrations were seen at these four sites: SHC-GDR, SHC-CSR, SHC-SDCR and SHC-SHCR; lowest concentrations were at MC-50. Average concentrations at all stations except SHC-50 were at levels known to lead to elevated BOD in blackwater streams (Mallin et al. 2004). The concentrations seen in this creek were well in excess of numerous creeks this laboratory has studied in the Cape Fear River basin, except for a couple that were impacted by faulty point-source sewage effluent discharges (Mallin et al. 2004; 2006). It is notable that on two occasions even the 10 mg/L standard for drinking well water was exceeded (Table 2).

- Total Nitrogen (TN): TN is the total combined organic and inorganic nitrogen in the water. There are no ambient standards for TN in North Carolina waterways. For the

combined sampling periods TN concentrations ranged from 0.11-46.70 mg-N/L, while station averages ranged from 0.54 mg-N/L at SHC-50 to 15.71 mg-N/L at TR-SDCR. The TN values were dominated by inorganic nitrogen (i.e. nitrate and ammonium) rather than organic nitrogen, as is frequently the case in blackwater streams in North Carolina (Mallin et al. 2004; 2006). The TN concentrations in Stocking Head Creek are very high compared to a wide range of blackwater Coastal Plain streams as sampled by the Lower Cape Fear River Program (<http://www.uncw.edu/cms/aelab/LCFRP/index.htm>) as well as values reported in the literature. To provide a wider perspective, using a large data set of 1,070 streams Dodds et al. (1998) determined that TN concentrations > 1.5 mg/L were characteristic of eutrophic conditions.

- Orthphosphate: Orthophosphate is the most common form of inorganic phosphorus. Sources are fertilizers, human sewage and animal manures. There are no ambient orthophosphate standards for North Carolina waterways. Orthophosphate concentrations in Stocking Head Creek in July and August ranged from 0.07 – 2.02 mg-P/L, with station means ranging from 0.13 – 0.63 mg-P/L. The station means generally ranged from 2-10X the average levels found in a selection of blackwater coastal plain streams (Mallin et al. 2006). As a comparison with another CAFO-rich watershed, in the Herrings Marsh Run study (Stone et al. 1995) average orthophosphate concentrations in a stream section draining intensive swine and poultry operations were 0.68 mg-P/L, and average orthophosphate of 0.78 mg-P/L were in the stream station exiting the watershed. It is notable that orthophosphate is not very mobile in soils, as it has a strong affinity for soil particles, especially clays.
- Total Phosphorus (TP): TP is the total of inorganic plus organic phosphorus in the water column. There are no ambient standards for North Carolina waterways. However, bacteria require P both structurally and energetically (Kirchman 1994), and fecal bacteria in stream sediments can be stimulated by inputs of phosphate (Toothman et al. 2004; Cahoon et al. 2007). Also, fecal coliform bacteria in the water column are stimulated by organic and inorganic inputs, increasing survival and reproduction (Chudoba et al. 2013). Concentrations of TP of 0.50 mg-P/L or greater can increase biochemical oxygen demand (BOD) in blackwater streams by serving as a substrate assimilated by ambient bacteria in the stream (Mallin et al. 2001; 2002; 2004). TP ranged from 0.050 – 10.70 mg-P/L, and station means ranged from 0.15 at SHC-GDR to 2.83 mg-P/L at TR-SDCR. Station TR-SDCR had the highest concentrations, followed by SHC-SHCR (Table 5). On 11 of the 70 samples, TP was higher than 0.50 mg-P/L, above which BOD was found to increase significantly over control in nutrient addition experiments for several blackwater streams (Mallin et al. 2004). With the exception of TR-SDCR, TP at the other stations were in the range of subsurface drainage plots to which swine waste lagoon liquid were applied, which averaged TP

ranging from 0.20 to 0.50 mg-P/L, depending upon application rate (Evans et al. 1984). Again looking a broader perspective, using data from 1,366 streams Dodds et al. (1998) concluded that TP concentrations > 0.075 mg/L were characteristic of eutrophic stream.

- Chlorophyll a: Chlorophyll *a* represents the amount of suspended micro-algal material found in a sample of water. North Carolina has a chlorophyll *a* standard of 40 µg/L (ppb) above which waters are considered eutrophic, or impaired by excessive algal blooms. All summer samples were below the standard, except one sample at TR-SDCR on July 29 which was 40 µg/L. In fall a bloom of 44 µg /L occurred at TR-SDCR on September 18, and smaller blooms of 25 µg/L occurred at SHC-50 on September 18 and 28 µg/L at SHC-GDR on September 24. Thus, algal blooms occurred within Stocking Head Creek, but were inconsistent in time and among sampling sites.
- Biochemical Oxygen Demand (BOD): Biochemical oxygen demand (BOD) is a measure of the organic matter available for consumption by the bacteria in a body of water during respiration. As the bacteria consume organic material that has entered the water (via the process of respiration) they use up dissolved oxygen in the water; in extreme cases lowering DO to levels dangerous to fish and invertebrates. One cause of BOD are algal blooms, which eventually die, and this creates a mass of labile (easily-digested) organic matter for the bacteria to consume, and dissolved oxygen in doing so. Another common cause of BOD is the introduction of labile organic materials such as human sewage or animal waste into the water. There are no ambient standards for BOD in North Carolina stream waters; however, comparison of BOD from many streams, creeks and rivers in North Carolina indicate that concentrations of 1 to 2 mg/L can be considered normal (Mallin et al. 2006).

Five-day BOD (BOD5) ranged widely (Table 7), from background concentrations of 1.0 mg/L all the way up to a maximum of 88 mg/L at Station TR-SDCR on September 16. That station maintained the highest overall concentrations (Table 7), reaching or exceeding 10 mg/L on six of 10 occasions. Station SHC-SHCR exceeded 10 mg/L on three occasions, with a peak of 25 mg/L on August 18. Other stations (SHC-PBR, SHC-CSR) did not show unusually high concentrations. The stream stations with the highest BOD concentrations were those in closest proximity to swine waste sprayfields (Plates 4A and 4B; 9A and 9B).

Based on these results, we request that you list Stocking Head Creek as a Category 5 water to the North Carolina 2016 303(d) List based on these indicators of water quality degradation, use impairment, and nutrient pollution in violation of state water quality standards, and that a TMDL be developed for this waterbody.

Additionally, an extensive analysis of the fecal coliform levels in Stocking Head Creek in relation to water quality criteria was prepared by Michael A. Mallin, Ph.D., Center for Marine Sciences University of North Carolina Wilmington, on January 28, 2014 and is attached hereto. The analysis presented demonstrates that:

Seven stations in Stocking Head Creek, Duplin County, North Carolina, were sampled on five occasions within 30 days in both summer and fall 2013. The data indicates that Stocking Head Creek is highly polluted by fecal bacteria, by both measures of the NC criteria. The upper five stations exceeded 400 CFU/100 ml 96-100% of the time sampled, and six of seven stations exceeded a geometric mean of 200 CFU/10 mL for five samples in both 30 day periods. Elevated fecal coliform counts occurred during both wet and dry periods; this creek is chronically polluted by fecal bacteria.

Accordingly, we request that you add Stocking Head Creek as a Category 5 water to the North Carolina 2016 303(d) List for fecal coliform violations, and that a TMDL be developed for this waterbody.

Consistent with NCDEQ's guidelines for submission of data for regulatory use, all of the data collected by Dr. Mallin meet the same data quality requirements as for internal NCDEQ activities.<sup>6</sup> Additional information to support this request for listing Stocking Head Creek is available in any format requested by the NCDEQ and the data is of acceptable quality. The methodology is described in detail in the attached document. The research and analysis has also been published in a peer-reviewed journal, a copy of which is attached to this correspondence.<sup>7</sup>

Notably, this request, accompanied by the same data and analysis conducted by Dr. Mallin, was submitted to NCDEQ during the previous 303(d) public comment period in March 2014. Despite the requirement to "assemble and evaluate *all* existing and readily available water quality-related data and information" to develop the 303(d) list,<sup>8</sup> NCDEQ rejected this data from evaluation because it fell outside of the arbitrary "data window" established by NCDEQ, which for the 2014 303(d) list was 2008 to 2012. Although we reiterate our position that the establishment of arbitrary data windows is a violation of the clear federal mandate to evaluate all existing and available data, NCDEQ should now fully consider this data and grant our request to list Stocking Head Creek on the 2016 303(d) List.

In the event that NCDEQ decides not to list Stocking Head Creek on the 2016 303(d) List, it is required under 40 C.F.R. § 130.7(b)(6) to provide documentation to the Regional

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<sup>6</sup> [http://portal.ncdenr.org/c/document\\_library/get\\_file?p\\_l\\_id=1169848&folderId=689969&name=DLFE-72004.pdf](http://portal.ncdenr.org/c/document_library/get_file?p_l_id=1169848&folderId=689969&name=DLFE-72004.pdf)

<sup>7</sup> Mallin et al., "Industrial Swine and Poultry Production Causes Chronic Nutrient and Fecal Microbial Stream Pollution," Water Air Soil Pollut 2015 Nov;226: 407.

<sup>8</sup> 40 C.F.R. § 130.7(b)(5) (emphasis added).

Administrator to support the State's determination, including "[a] rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in" section 130.5(b)(5).

We request the opportunity to review this data and analysis with you prior to your making a listing decision to answer any questions or concerns that may arise. We believe that the data analysis demonstrate that Stocking Head Creek is impaired by nutrients and fecal coliform in violation of North Carolina's water quality standards, and as a result, must be listed on the North Carolina 2016 303(d) List. Stocking Head Creek must be placed in Category 5 because "[a]vailable data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed."<sup>9</sup> In the event you disagree, we would welcome the opportunity to further discuss your concerns prior to your making a final listing decision.

Thank you for your consideration of this request. If you have any questions, please contact either Kemp Burdette or Gray Jernigan using the contact information listed below.

Sincerely,

Kemp Burdette, Riverkeeper  
Cape Fear River Watch  
617 Surry Street  
Wilmington, North Carolina 28401  
(910) 762-5606  
[kemp@cfrw.us](mailto:kemp@cfrw.us)

Gray Jernigan, Staff Attorney  
Waterkeeper Alliance  
19 West Hargett Street, Suite 206  
Raleigh, North Carolina 27601  
(919) 839-6011  
[gjernigan@waterkeeper.org](mailto:gjernigan@waterkeeper.org)

CC: Marion Hopkins, EPA Region 4 (via email)

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<sup>9</sup> U.S. EPA, Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act.

## **Painter, Andy**

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**From:** Chad Ham <chad.ham@faypwc.com>  
**Sent:** Tuesday, March 29, 2016 8:52 AM  
**To:** 2016draft303d@lists.ncmail.net  
**Cc:** Bill.Kreutzberger@CH2M.com; Mick Noland; Donald Smith; Sydney Miller  
**Subject:** [2016draft303d] Comments  
**Attachments:** ATT00001.txt

**Categories:** 2016 303d Comment

To: [2016draft303d@lists.ncmail.net](mailto:2016draft303d@lists.ncmail.net)

The purpose of this email is to provide comments on the draft 2016 303(d) list.

The Public Works Commission (PWC) of the City of Fayetteville closely monitors water quality conditions and activities that can influence water quality in the Cape Fear River since it is a vital resource for our region and our principal source of water supply. We have been a member of the Middle Cape Fear Basin Association (MCFBA) since its inception in mid-1998. The MCFBA has been conducting monitoring of the river since mid-1998 at between 30 and 35 stations in the middle portions of the Cape Fear River basin as part of the Division of Water Resources' (DWR) coalition monitoring programs. The MCFBA has taken the approach of taking water quality samples on a consistent (monthly) – year-round basis with the exception of additional collection of field parameters during summer periods.

In the draft 303d list – new Category 5 Assessment listings – DWR has included a segment of the Cape Fear River “From NC Hwy 42 to a point 0.6 mile downstream of mouth of Daniels Creek” as being impaired based on exceedances of the water quality standard for chlorophyll *a*. This listing seemed unusual since the MCFBA data for a station at highway 42 on the Cape Fear River from 2010 through 2014 showed only 2 samples out of 60 monthly samples exceeding the chlorophyll *a* standard. This would be insufficient to identify the segment as impaired. After inquiring to DWR, it was explained that this segment was listed based on data collected during special studies conducted in 2010 and 2013 where samples were collected downstream of Hwy 42 – immediately above the Buckhorn Dam. Five samples were collected between May and September 2013 and five were collected between July and October 2010. Of these 10 samples, four exceeded the chlorophyll *a* water quality standard. Although both the MCFRA and DWR data were both collected in the impounded portion of the river behind Buckhorn Dam, these were treated as independent data sets for assessment purposes. In discussion with DWR staff, they indicated that they are required to assess these sites independently because they were separate stations. DWR Staff agreed that the segment listing should end at Buckhorn Dam and not include the area below the dam to below the mouth of Daniels Creek since this was a free flowing portion of the river and the data behind the dam was probably not representative of free-flowing riverine conditions. They also agreed to assess this area as an acreage impaired rather than as a river segment since this area was technically an impoundment.

PWC greatly appreciates DWR’s willingness to discuss the listing and to make changes. However, these results point to a number of issues with the methodology uses to assess impairment as noted below:

- First, the methodology allows the use of “selective sampling data” for the purposes of assessment as long as there are at least 10 samples. DWR special studies were conducted in association with investigations of algal blooms on the Cape Fear River and only sampled periods were conditions were likely to be conducive to algal growth.
- Second, the distance between the MCFRA site at Hwy 42 and the DWR site at Buckhorn dam is about 2 miles. Since both these sites are in impounded portions of the Cape Fear River, it would seem logical to combine these data sets in assessing the impairment status of the impoundment; especially since one data set (the MCFBA data) is collected in a regularly scheduled, non-selective approach.

- Third, this example also points to the inappropriateness of having an instantaneous standard (that is currently applicable year-round), rather than a seasonable standard based on some measure of central tendency – such as a mean or geometric value. If this was a seasonal standard based on average conditions – with a required minimum number of samples and reasonable distribution of samples during the season – selective data such as what is used in the DWR lake sampling program would be more appropriate for assessment purposes.
- Finally, DWR is currently in the process of developing nutrient criteria for this portion of the Cape Fear basin. Although it will be several years before these criteria are adopted, we suggest it might be appropriate to consider the consequences of listing this segment as impaired based on the conflicting assessments from two closely located sampling sites (with MCFBA site having substantially more, regularly collected data) and the current water quality standard when the standard will likely change. One possible change could be a seasonal average, which might result in a different use attainment outcome. If that were to occur, DWR would have a stream that was listed based on an outdated water quality standard similar to the situation that has occurred with the metals data, i.e., impairments that result in major sampling and expense to remove them from the list when they were not really impaired to begin with.

PWC is committed to appropriate assessment and protection of water quality in the Cape Fear River basin. We hope these comments are useful for the 2016 303(d) list and future assessment efforts.

Sincerely

W/R Environmental Programs Manager  
Fayetteville Public Works Commission  
PO Box 1089  
Fayetteville, NC 28302  
910-223-4702  
910-797-4203 (mobile)

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March 29, 2016

Mr. Andy Painter  
Planning Section  
NC Division of Water Resources  
1617 Mail Service Center  
Raleigh, NC 27699-1617

RE: Comments on Draft 2016 303(d) listing

Dear Mr. Painter:

The City of Greensboro Water Resources Department is pleased to provide comments on the draft 2016 New Category 5 Assessments 303(d) List. The draft list was provided for public notice on February 26, 2016, with all comments due back by March 29, 2016. As a Phase I National Pollutant Discharge Elimination System (NPDES) permittee, the City of Greensboro is required to develop implementation plans for surface waters with a US Environmental Protection Agency (EPA) approved Total Maximum Daily Load (TMDL). Therefore, the City appreciates the opportunity to provide feedback and also realizes the significant need to examine any new listings on the 303(d) list that are located in or near our jurisdictional boundaries.

The City has carefully reviewed each new listing. This review has focused on related local, state, or federal regulations; City monitoring data; and any mitigating conditions that are beyond the control of the City's regulatory authority. Listed below you will find the City's response to specific water body listings. Supporting information (regulations, monitoring data, etc.) is included as attachments.

#### **1. North Buffalo Creek {16-11-14-1a1} – From source to Philadelphia Lake {WS-V;NSW}**

This water body has been added to the 2016 draft list for exceeding the >10% and >90% confidence interval for hardness (100mg/L, WS, WS). The City of Greensboro believes this listing is incorrect and should be removed from the list of impaired waters. The reason for the City's position is based on the improper application of the water supply criteria.

The monitoring location on North Buffalo Creek is located on a water body that was reclassified from Class C; NSW to WS-V; NSW as part of the Jordan Lake Nutrient Management Strategy rules and is subject to Session Law 2012-187, Section 12.1. (See Attachment #1). The specific language pertinent of this Session Law is as follows:

Rules adopted by the Environmental Management Commission pursuant to S.L. 2009-216 and S.L. 2009-486 to implement nutrient management strategies for the B. Everett Jordan Reservoir and the Falls of the Neuse Reservoir watersheds **shall not be interpreted to apply surface water quality standards set out in 15A NCAS 2B .0218(3)(e) through (3)(h) to waters designated in the nutrient management rules as WS-V except where:** (i) the designation of WS-V is associated with a water supply intake used by an industry to supply drinking water for their employees; or (ii) standards set out in 15A NCAC 02B .0218(3)(e) through (3)(h) are violated at the upstream boundary of waters within those watersheds that are classified as WS-II, WS-III, or WS-IV. This section shall not be construed to alter the nutrient reduction requirements set out in 15A NCAC 2B .0262(5) or 15A NCAC 2B .0275(3).

**2. Reedy Fork {16-11-(1)a} – From source to UT 0.7 miles downstream of SR 2128 {WS-III;NSW}**

This water body has been added to the 2016 draft list for a Fair rating for the benthic macroinvertebrate community. As part of a comprehensive water quality monitoring program, the City of Greensboro Stormwater Management Division has been sampling benthic macroinvertebrates in numerous stream sections since 1999. Sampling is conducted by City staff and specifically follows procedures as outlined in the NC DEQ Standard Operating Procedures for Collection and Analysis of Benthic Macroinvertebrates that was developed by the Biological Assessment Branch (BAB) of the North Carolina Division of Water Resources (DWR). After collection and preservation, benthos samples are then identified and analyzed by a North Carolina certified private contractor (entomologist). For many years the City has retained the services of Lenat Consulting Services, Inc. (Dave Lenat) to perform all analysis of collected samples.

As part of this comprehensive macroinvertebrate sampling program, Reedy Fork Creek {16-11-(1)a} has been sampled on a three (3) year rotation since 1999 and has never received a final bioclassification score below a Good-Fair rating (Attachment #2). The location of the City's sampling location is upstream of the bridge on Bunch Road (SR 2128) and the USGS stream gauge (#02093800). Based on the historical and current data, Reedy Fork Creek is meeting the use support rating for benthic macroinvertebrates and the City of Greensboro is requesting this water body be taken off the 2016 draft 303(d) list.

**3. Reedy Fork (Hardy's Mill Pond) {16-11-(9)a2} – From UT at SR2782 to UT at SR 2778 {WS-V;NSW}\***

This water body has been added to the 2016 draft list for a Fair rating for the benthic macroinvertebrate community. In the summer of 2015 the City of Greensboro entered into a contractual agreement with Acer Environmental, LLC, and Penrose Environmental, Inc., for a habitat restoration project on several small streams located on South Buffalo Creek. As a part of this project, Mr. Dave Penrose from Penrose Environmental, Inc. sampled Reedy Fork Creek upstream of the bridge located on Friendship Church Road. According to the listing for Reedy Fork (Hardy's Mill Pond) 16-11-(9)a2, the site location sampled by Penrose Environmental, Inc., is located within this stream section. The site was sampled on 6/30/2015 and received a final

bioclassification score of Good-Fair (Attachment #3). Based on the most recent data, Reedy Fork Creek is meeting the use support rating for benthic macroinvertebrates and the City of Greensboro is requesting this water body be taken off the 2016 draft 303(d) list.

*\*Note: The City of Greensboro believes this stream segment is labeled incorrectly and should not include Hardy's Mill Pond in the AU Name. DWR's sampling site, the location description, and the map that depicts this water body/stream segment are all located upstream of Hardy's Mill Pond. It is not clear to the City why 'Hardy's Mill Pond' is included in the impairment listing, and we feel the reference to Hardy's Mill Pond should be removed from the AU Name.*

**4. Brush Creek {16-11-4-(1)b} – From source to a point 0.5 mile downstream of Guilford County SR 2190 {WS-III;NSW}**

This water body has been added to the 2016 draft list for exceeding the >10% and >90% confidence interval for chlorophyll a (40 µg/L, AL, NC). The Water Supply Division of the Water Resources Department conducts lake sampling on the three City-owned water supply lakes (Higgins, Brandt, and Townsend) at different sampling locations on a monthly basis. Attachment #4 shows the chlorophyll a sampling results for the City's Site #3 on Lake Higgins, which is located in close proximity to NC DEQ's sampling point. The City has included monthly sampling data from 1/20/2011 to 12/16/2015. During this time period, the City data only shows one exceedance of the 40 µg/L standard (41.24 mg/m<sup>3</sup> on 12/11/2012). Based on the historic and most recent data, Brush Creek (Lake Higgins) 16-11-4-(1)b is meeting the use support rating for chlorophyll a, and the City of Greensboro is requesting this water body be taken off the 2016 draft 303(d) list.

**5. Reedy Fork (including Lake Brandt) {16-11-(3.5)b1} – Lake Townsend above first Bridge {WS-III;NSW, CA}\***

This water body has been added to the 2016 draft list for exceeding the >10% and >90% confidence interval for chlorophyll a (40 µg/L, AL, NC). Attachment #5 shows the chlorophyll sampling results for the City's Site #1 on Lake Townsend, which is located in close proximity to NC DEQ's sampling point. The City has included monthly sampling data going back to 1/27/2011 up to 12/16/2015. During this time period the City data shows no exceedance of the 40 µm/L standard. Based on the historic and most recent data, Reedy Fork 16-11-3.5(b1) is meeting the use support rating for chlorophyll a and the City of Greensboro is requesting this water body be taken off the 2016 draft 303(d) list.

*\*Note: The City of Greensboro believes this stream segment is labeled incorrectly and should not include Lake Brandt in the AU Name. DWR's sampling site, the location description, and the map that depicts this water body/stream segment are all located downstream of Lake Brandt. It is not clear to the City why 'Lake Brandt' is included in the impairment listing, and we feel the reference to Lake Brandt should be removed from the AU Name.*

**6. Reedy Fork (including Lake Brandt) {16-11-(3.5)b1} – Lake Townsend above first Bridge {WS-III;NSW, CA}\***

This water body has been added to the 2016 draft list for exceeding the >10% and >90% confidence interval for turbidity (25 NTU, AL, FW acres & SW). Attachment #5 shows the

Mr. Painter  
3/29/2016  
pg. 4

turbidity sampling results for the City's Site #1 on Lake Townsend, which is located in close proximity to NC DEQ's sampling point. The City has included monthly sampling data from 1/27/2011 to 12/16/2015. During this time period the City data shows no exceedance of the turbidity 25 NTU standard. Based on the historic and most recent data, Reedy Fork 16-11-(3.5)b1 is meeting the use support rating for turbidity and the City of Greensboro is requesting this water body be taken off the 2016 draft 303(d) list.

*\*Note: The City of Greensboro believes this stream segment is labeled incorrectly and should not include Lake Brandt in the AU Name. DWR's sampling site, the location description, and the map that depicts this water body/stream segment are all located downstream of Lake Brandt. It is not clear to the City why 'Lake Brandt' is included in the impairment listing, and we feel the reference to Lake Brandt should be removed from the AU Name.*

In conclusion, the City of Greensboro appreciates the opportunity to provide feedback on the draft 2016 New Category 5 Assessments 303(d) List. If you have any questions about the enclosed comments, please contact me at peter.schneider@greensboro-nc.gov or (336) 373-2737 and/or Stormwater Division Manager, David Phlegar, at david.phlegar@greensboro-nc.gov or (336) 373-2707.

Sincerely,



Peter W. Schneider, Water Quality Supervisor  
Stormwater Management Division, City of Greensboro

cc: Steven Drew, Director of Water Resources Department  
Mike Borchers, P.E., Deputy Director of Water Resources Department  
David Phlegar, Manager of Stormwater Division  
Barry Parsons, Manager of Water Supply Division  
Elijah Williams, P.E., Manager of Water Reclamation Division  
Martie Groome, Industrial Waste Services Supervisor  
Marie Shandor, Water Supply Laboratory Supervisor  
Debbie Shoffner, Water Quality Analyst  
Jennifer Schneier, Associate City Attorney

Mr. Painter

3/29/2016

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DURHAM



CITY OF DURHAM

Department of Public Works

101 City Hall Plaza | Durham, NC 27701  
919.560.4326 | F 919.560.4316

[www.durhamnc.gov](http://www.durhamnc.gov)

1869  
CITY OF MEDICINE

March 29, 2016

Mr. Andy Painter  
Water Planning Section  
NC Division of Water Resources  
1611 Mail Service Center  
Raleigh, NC 27699-1611

Dear Mr. Painter:

The City of Durham Public Works Department appreciates the opportunity to provide comments on the draft 2016 North Carolina 303(d) List. The City of Durham holds a National Pollutant Discharge Elimination System (NPDES) Stormwater Permit and is a Phase I city. The City's stormwater NPDES permit requires the development of response plans for all EPA approved Total Maximum Daily Loads (TMDLs). This requirement makes the 303(d) list, and other lists that include waters not currently meeting water quality standards, important to the operation of the stormwater program.

As mentioned in past comment letters, the Public Works Department supports the availability of all impaired waters lists, whether or not a TMDL is required. The NC Division of Water Resources (DWR) website should not only include the 303(d) list, but other sections of the Integrated 305(b) and 303(d) report that include waters that are not meeting water quality standards but don't require a TMDL. The City of Durham is subject to a variety of regulations related to stormwater control including nutrient management strategy requirements, water supply watershed requirements, and addressing pollutant loads to impaired waters. In some cases, these programs are implemented through the joint City/County Unified Development Ordinance, which provides stormwater control guidelines and goals for developers. Listing all impaired stream segments, whether or not a TMDL is required, will support the development community as they comply with the Unified Development Ordinance.

The City of Durham believes that the 303(d) listing methodology should be revised and re-approved in order to include monitoring data collected in a manner differently than defined in DWR standard operating procedures and quality assurance project plans (for example, the Intensive Survey Branch Standard Operating Procedures Manual: Physical and Chemical Monitoring, 2013). The methodology and monitoring data used to determine the appropriate Integrated 305(b) and 303(d) listing of segments of Falls Lake (Neuse River Basin) was modified for the 2016 303(d) list. In the past, an implicit assumption for evaluating all lakes and reservoirs in the state was to use monitoring data collected from the entire photic zone. This implicit assumption was in place primarily because all of the data used for lake use support decisions was collected by DWR and DWR defines the photic zone as twice the Secchi depth (ISU SOP 2013, page 106). The use of photic zone composite samples, collected from twice the Secchi depth, from sources other than DWR is acceptable to the City of Durham. During this listing cycle, however, it appears that data collected from one-half of the photic zone, or depth averaged to the Secchi depth, was used for the Integrated 305(b) and 303(d) Report. This is a

substantive change to the 303(d) listing methodology which has previously implicitly referenced reservoir photic zone composite samples as defined by DWR. If it is DWR's intent to allow data other than photic zone composite samples in the assessment of Falls Lake, the methodology should explicitly describe how such data will be used in any reservoir, lake or estuary.

The Public Works Department supports the use of the recently adopted hardness-dependent dissolved metals water quality standards. We request that any information on the monitoring and assessment methods to be used with these new standards be made available for public comment as soon as possible. The City of Durham has long understood the link between water hardness and metal toxicity. As a result, the City's ambient monitoring program is designed to evaluate the EPA Criteria Continuous Concentration (CCC) and CMC (Criteria Maximum Concentration) using monthly grab samples. Two Durham creeks that are currently included on the 303(d) list are Third Fork Creek and Northeast Creek. Based on our information, the zinc CCC was not exceeded in Third Fork or Northeast Creek during the 2010-2014 assessment period, nor in the time since.

Water quality in two City of Durham creeks appears to have improved since the assessment period. Dissolved oxygen in Third Fork Creek in the later years of the assessment period improved and suggests that the creek should be reassessed. Third Fork Creek from a point 2.0 miles upstream of NC Hwy 54 to New Hope Creek (Assessment unit 16-41-1-12-(2)) is sampled by the Upper Cape Fear River Basin Association (UCFRBA) at station B3025000. Data collected by UCFRBA during the assessment period 2010-2014, only years 2013 and 2014 have met state standards for DO. The City of Durham monitors water quality in Third Fork Creek at Hwy 751 south of Hwy 54 and north of I-40 (TF0.0TC). This monitoring station is less than 1 mile downstream of B3025000 and approximately 0.5 miles upstream of where New Hope Creek connects. During the assessment period 2010-2014, DO at TF0.0TC has consistently met state standard from 2011 through 2014, and in 2015.

Ellerbe Creek, from a point 0.2 mile upstream of Durham County SR 1336 to Falls Lake (Assessment unit 27-5-(2)), should be reassessed for benthic macroinvertebrate (benthos) community impairment during the next 303(d) list assessment period. Ellerbe Creek was listed as impaired for benthos in 2008. Benthos data collected by the City in 2015 has shown an improvement in the biotic rating. The biotic rating was "Good/Fair" in 2015.

The City of Durham Public Works Department continues to be proactive in water quality issues. We appreciate the opportunity to provide comments to NC DWR. If you have any questions about these comments, please contact me at 919-560-4326, extension 30219 or Danielle Mir at extension 30241.

Sincerely,



Michelle Woolfolk  
Assistant Water Quality Manager

c: Paul Wiebke, Assistant Director of Public Works  
John Cox, Water Quality Manager of Public Works  
Marvin Williams, Director of Public Works  
Don O'Toole, Senior Assistant City Attorney





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

MAR 29 2016

Mr. Tom Fransen, Chief  
Water Planning Section  
Division of Water Resources  
North Carolina Department of Environmental Quality  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

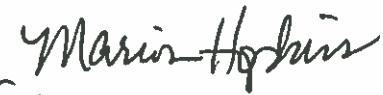
Dear Mr. Fransen:

The EPA Region 4 has reviewed North Carolina's 2016 Clean Water Act draft Section 303(d) list, proposed by the Division of Water Resources for public review and comment on February 26, 2016. As stated in correspondence related to previous 303(d) lists and review of the State's 2016 303(d) Listing Methodology, the EPA continues to have significant concerns about the State's listing process. The State has not provided adequate documentation to support some of its listing and delisting decisions, notably on these key issues:

- For assessments made based on a binomial distribution method, the procedure for delisting requires stronger evidence and a larger sample size than for listing, *if the same level of confidence is required*. By using the same procedure for delisting as listing, the State has selected a lower confidence level for delisting decisions. The rationale for this should be transparent, scientifically defensible, and presented in the Listing Methodology.
- For toxics criteria assessment in ambient water, the State must provide a scientifically defensible rationale to demonstrate that a ten percent exceedance frequency properly implements the water quality criteria.

We are enclosing previous correspondence where we identified these issues in detail and, for your convenience, have highlighted pertinent sections. Please note that if the above concerns are not adequately addressed and we must conduct independent assessments, action on the State's 303(d) list may be delayed. If you have questions, please contact me at (404) 562-9119 or Ms. Marion Hopkins of my staff at (404) 562-9481.

Sincerely,

  
for Gracy R. Danois, Chief  
Assessment, Listing and TMDL Section  
Water Quality Planning Branch  
Water Protection Division

Enclosures

Internet Address (URL) • <http://www.epa.gov>

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- 1) EPA Region 4 Comments on the North Carolina 2016 303(d) Assessment Methodology; email dated September 30, 2014.
- 2) EPA Region 4 Final decision to add fifty-one waterbody-pollutant combinations to North Carolina Final 2014 Section 303(d) list; letter dated December 19, 2014.
- 3) EPA Region 4 Letter initiating the process for submittal/approval of the 2016 303(d) list; letter dated September 28, 2015.

cc: Jeff Manning, NC Division of Water Resources, Classification & Standards Branch  
Andy Painter, NC Division of Water Resources, Modeling and Assessment Branch  
Cam McNutt, NC Division of Water Resources, Modeling and Assessment Branch  
Via email to: [2016draft303d@lists.ncmail.net](mailto:2016draft303d@lists.ncmail.net)

## Hopkins, Marion

---

**From:** Hopkins, Marion  
**Sent:** Tuesday, September 30, 2014 2:12 PM  
**To:** Andy Painter (andy.painter@ncdenr.gov)  
**Cc:** 'Stecker, Kathy'; Zimmer, Andrea; Wetherington, Michele; Singh-White, Alya; Gordon, Lisa Perras  
**Subject:** EPA Region 4 Comments on the NCDWR 2016 303(d) Assessment Methodology

Andy,

This is our initial response to the North Carolina Division of Water Resources' (DWR) request for public comment on its Clean Water Act 303(d) Listing Methodology. In general, we recommend that the States prepare their Integrated Reports (IR), including their consolidated assessment and listing methodology, consistent with EPA's IR guidance including the 2006 IR Guidance, which is supplemented by EPA's 2008, 2010, 2012 and 2014 IR memos available at [EPA Guidance](#). Because EPA Region 4 has received comments from numerous North Carolina citizens encouraging a closer look at assessing nutrient impairments, we would like to draw attention to the 2014 IR guidance (*Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions*, September 3, 2013), which includes approaches to consider for identifying nutrient-related impaired waters for the 303(d) list based on narrative nutrient water quality criteria and/or direct evidence of failure to support designated uses. Also note that EPA's 2016 IR Guidance is expected to be released in early 2015.

EPA Region 4 made extensive comments on the State's 2014 303(d) Listing Methodology in our *Decision Document for the Partial Approval of the North Carolina Department of Environment and Natural Resources' Section 303(d) List Submitted on March 31, 2014*, dated July 31, 2014. We concluded that the assessment methodology did not properly implement the State's water quality standards for metals, conducted an independent assessment of the data and subsequently added 52 waterbody-pollutant combinations to the State's 303(d) list. We are still receiving and considering comments on this Agency action; nevertheless, our comments in the *Decision Document* are applicable. In particular, the use of the "greater than ten percent exceedence" test as a method to assess toxic pollutants and provisions that may limit the use of data based on sample size continue to be at issue. Please refer to the *Decision Document* for detailed comments.

### Use of a nonparametric hypothesis testing approach

North Carolina's current Listing Methodology uses a nonparametric hypothesis testing approach based on the binomial distribution to assess these parameters: chlorophyll-a, dissolved oxygen, methylene blue active substances assay (MBAS), nitrate/nitrite, pH, temperature, and turbidity. From the 2014 303(d) Listing Methodology: "The binomial method allows a quantifiable level of statistical confidence (90%) for listing decisions, which provides a 10% probability of listing an assessment unit when it should not be listed." The State indicated in its 2014 303(d) list submittal (*Justification for Changes to the 10% Listing Method*) that this approach is similar to the one outlined in *A Nonparametric Procedure for Listing and Delisting Impaired Waters Based on Criterion Exceedances* (Lin, et al, 2000). We note that the North Carolina approach is dissimilar to the method proposed by Lin, et al., in that North Carolina does not differentiate between listing and delisting. This is a critical omission from North Carolina's methodology as "[t]he problem of deciding by a statistical procedure whether or not to delist a body of water that has already been designated as 'impaired' is not the same thing as deciding to list an impaired water." (from Section 4, *Delisting Procedure*, of the Lin, et al., paper.)

With the introduction of the binomial approach to the use support method, the State has the opportunity to recognize and manage uncertainties. As North Carolina's method states "the degree of uncertainty depends on the sample size." Indeed, as Lin, et al., describe:

"... the same sample size could be used for listing and delisting at the expense of a lesser confidence level for delisting. As already demonstrated, we may use  $n = 10$  samples for both listing and delisting. With three exceedances, the water body reach is listed as impaired with 92.98% confidence (from Table 2), while with no exceedance observed, out of the ten sample measurements, the water body is removed from the impaired water list with only 65.13% confidence (from Table 4). However, any statistical conclusion that has a confidence level of less than 90% is considered not acceptable by most statistics practitioners."

The uncertainties also depend on the decision rules (or null hypotheses) chosen. An article from the Journal of Water Resources Planning and Management, *Implications of Applying Statistically Based Procedures for Water Quality Assessment* (Shabman and

Smith, 2003), illustrates these tradeoffs clearly: “Treating assessment as a hypothesis-testing problem allows the water quality assessor to convey, and stakeholders to better understand and debate, the benefits and costs of listing and delisting decisions. The assessor must clearly state the error rates selected for the chosen null hypothesis. In turn, decision makers must be cognizant of the possibility of Type I and Type II errors.”

As noted, the State’s Listing Methodology “provides a 10% probability of listing an assessment unit when it should not be listed.” When picking the decision rules and statistical methods in use support assessment, one should attempt to minimize the chances of making either of the two following errors:

1. Concluding the segment is impaired, when it is not (a ‘false’ listing), and
2. Deciding not to declare a segment impaired, when it is impaired.

In statistical hypothesis testing, errors are the incorrect rejection of a true null hypothesis (a Type I error as described in #1 above) and incorrect failure to reject a false null hypothesis (a Type II error in #2 above). The null hypothesis, as described in *Statistical Methods in Water Resources* (USGS; Helsel and Hirsch, 2002, p 104), “is what is assumed to be true about the system under study prior to data collection, until indicated otherwise.”

If the null hypothesis is that the waterbody is **not** impaired, a Type I error is detecting an impairment that is not present (‘false’ listing), while a Type II error is failing to detect an impairment that is present. According to the State’s 2014 Listing Methodology, the “null hypothesis is that the overall exceedance probability is less than or equal to the 10% exceedance allowance.” That is, the null hypotheses is that the waterbody is not impaired.

Once a waterbody is 303(d) listed, however, the null hypothesis should be reversed. As Shabman and Smith (2003) put it, “[u]sing a statistical approach allows the water quality assessor to explicitly change the null hypothesis to be consistent with the decision problem.” If the null hypothesis is that the waterbody **is** impaired, then the Type I error is concluding a waterbody meets standards when it is not, while the Type II error is failing to delist when it should be. In that instance, the errors, listed above, would be swapped:

1. Deciding not to declare a segment impaired, when it is in fact impaired (a ‘false’ delisting), and
2. Concluding the segment is impaired, when in fact it is not.

Error rates and sample size are mathematically linked. There is less chance of making either type of error as the amount of monitoring data increases. According to Shabman and Smith (2003), “[i]n statistical hypothesis testing, the user determines acceptable error rates; then, the cutoff is selected to bound the false rejection rate (Type I error) and sample size is selected to try to bound the false acceptance error rate (Type II error).” And from Lin, et al.: “The proposed delisting procedure requires stronger evidence and more information from sample [sic] than the listing procedure, if the same level of confidence is required.”

We note that other states that use the binomial method to assess conventional pollutants do consider error rates and sample size in delisting as well as listing decisions (Alabama, Arizona, California and Florida are just four examples). We also note that at least two states, New Hampshire and Washington, discontinued the use of a binomial method due to the concern that some waterbodies were not being listed which were actually impaired.

EPA recommends that all policy decisions implicit in the statistical analysis be presented in North Carolina’s assessment methodology. Per the 2004 IR guidance, “[t]he methodology should provide a clear explanation of which analytic tool the state intends to use and under which circumstances. This documentation should be especially clear in the case where the State’s [water quality standard] regulations ... [don’t] explicitly address issues such as the selection of key sample statistics..., null and alternative hypotheses, samples sizes, confidence intervals, and Type I and Type II error thresholds.”

Lin, Pi-Erh, Duane Meeter and Xu-Feng Niu. 2000. A Nonparametric Procedure for Listing and Delisting Impaired Waters Based on Criterion Exceedances. Technical Report. Department of Statistics, Florida State University, Tallahassee, FL.

Shabman, L. and Smith, E.,2003. "Implications of Applying Statistically Based Procedures for Water Quality Assessment." *J. Water Resour. Plann. Manage.*, 129(4), 330–336.

Helsel, D.R. and R. M. Hirsch, 2002. Statistical Methods in Water Resources Techniques of Water Resources Investigations, Book 4, chapter A3. U.S. Geological Survey.

Thank you for the opportunity to comment. Contact me if you have any questions.

Marion Hopkins  
US EPA Region 4  
Water Protection Division  
Monitoring and Information Analysis Section  
404.562.9481



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

DEC 19 2014

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

Dear Mr. Reeder:

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "James D. Giattina".  
James D. Giattina  
Director  
Water Protection Division

Enclosure

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

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

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

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

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

- A. Comments related to the EPA's legal authority
- B. Comments related to the validity of the 1-in-3 method for toxics
- C. Comments related to the validity of the 10% / 90% methodology for toxics
- D. Other / Miscellaneous comments

**A. COMMENTS RELATED TO THE EPA'S LEGAL AUTHORITY**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### **D. OTHER / MISCELLANEOUS COMMENTS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## CONCLUSION

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

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

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[http://www.nap.edu/catalog.php?record\\_id=10146](http://www.nap.edu/catalog.php?record_id=10146)

**Incorporated by reference:**

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



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

SEP 28 2015

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

Dear Mr. Zimmerman:

This letter initiates the process for submittal of the 2016 Integrated Reports (IRs) and approval of the Section 303(d) lists in the United States Environmental Protection Agency Region 4. Our goal is for all IRs to be submitted in final form by April 1, 2016, with subsequent Region 4 review and action within thirty days of submittal. Early discussion and agreement between Region 4 and the states to address listing issues is essential for us to reach this goal. Ideally, we would like issues to be resolved prior to public notice of the lists. Region 4 is committed to providing assistance and, to this end, would like to set up meetings in the coming months with your assessment staff.

The following paragraphs address several national and regional topics identified in previous listing cycles, as well as topics specific to the state of North Carolina. Enclosure 1 contains details and suggestions concerning these topics and other areas of concern to Region 4, and identifies Region 4 staff who can be contacted if further information or clarification on these topics is desired. Enclosure 2 includes an example of a re-segmentation crosswalk.

National / Regional Topics

States are encouraged to work with Region 4 to identify and resolve any possible issues with state assessment methodologies in advance of the IR submittal. When Region 4 can conclude that the state's assessment methodology properly implements effective water quality standards (WQS) and federal 303(d) regulations for each category of impairment, the methodology will be used as the basis for approval. When that conclusion cannot be made, Region 4 will conduct an independent assessment and review water quality data for each relevant category to determine if additional impairments should be added to the 303(d) list. Please note that if Region 4 must conduct independent assessments, this will likely hinder our goal to take action on the 303(d) list within thirty days of submittal.

The submission of draft IR documentation for delisted waterbodies, waters proposed for Category 4b, and Total Maximum Daily Load (TMDL) reports to Region 4 will contribute to the timely review of the final IR package. Also, to help ensure timely and accurate review of the 303(d) list, we request that states enter all monitoring data (chemical, physical, habitat and biological) into the STORET data warehouse via the Water Quality Exchange Network no later than December 31, 2015.

The EPA encourages all states to submit complete IR packages, both in draft and final form. Details regarding the necessary components of a complete IR package are located in Enclosure 1 and additional guidance regarding the bulleted items listed below is provided in the memorandum entitled “*Information Concerning 2016 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions*” located at [http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2016-IR-Memo-and-Cover-Memo-8\\_13\\_2015.pdf](http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2016-IR-Memo-and-Cover-Memo-8_13_2015.pdf):

- *Implementation of the Clean Water Act 303(d) Program Vision*
- *Identifying nutrient-impacted waters for the Section 303(d) list for States without numeric nutrient water quality criteria*
- *Implementation of the Water Quality Framework: Assessment and Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS)*
- *Clarification on the assessment and assignment of waters to Category 4C*

Please note, the final topic listed above, was developed by a national workgroup led by Region 4 with significant input from Region 4 states. The new guidance articulates Region 4’s position that, “[a]s the nation’s waters face an increasing degree of stress from anthropogenic influences, it will become important to more fully understand the impacts and causes of all types of pollution on our nation’s waters.” This includes the impacts from pollution not caused by a pollutant, such as hydrologic or habitat alteration, (e.g., water withdrawals, impoundments or extreme high flows that scour out stream beds, or cause a loss of habitat.) As stated in the guidance, “...the effects of this type of pollution can be extensive and may be a primary cause of ecological impairment.” Therefore, the Region encourages States to more fully monitor, assess, and report the impacts of all types of pollution as outlined in this section of the guidance so that we may improve the opportunities to increase resiliency and restore these waters. We look forward to working with each of our states and tribes to implement this guidance.

Region 4 is prepared to work with states to certify that their IR submittals in hard copy and electronic form match. To help eliminate discrepancies, Region 4 asks that all states generate the hard copy 303(d) list directly from the Assessment Database (ADB) or ADB-compatible file submitted to the Region. The certification will help to ensure confidence in the accuracy of the data submitted. This is a vital step since the electronic listing, de-listing, GIS, and monitoring data is used to populate national websites, national databases and in reports to Congress. In addition, the IR electronic file is used as a component in the allocation of Clean Water Act Section 106 Water Pollution Control grants to the states.

### North Carolina-Specific Topics

**Issue:** On May 14, 2015, the North Carolina Environmental Management Commission voted to approve a 303(d) Listing Methodology in which a nonparametric statistical approach will be used to assess many parameters. The methodology does not provide transparency or a rationale in the selection of key sample statistics, including differentiation between listing and delisting analyses. Also, the provisions that may limit the use of data based on sample size are overly restrictive. We provided comments on this during the public review period for the 2016 Methodology (email dated September 30, 2014; Enclosure 3) and in the EPA Decision Document for the Partial Approval of the 2014 303(d) list (July 31, 2014; available online at <http://www.epa.gov/region4/water/tmdl/northcarolina/index.html>). We recommend that all policy decisions implicit in the statistical analysis be presented in the State’s IR. Also, as in previous listing cycles, the EPA will conduct a data review to determine if waters, which should be considered impaired, may have been omitted from the list due to the sample size provisions.

In the Agency decision on the North Carolina's 2014 303(d) list, we concluded that the State's allowable frequency of exceedance for metals, as presented in the listing methodology, did not properly implement the State's WQS for metals. The EPA subsequently added 51 waterbody-pollutant combinations to the State's 303(d) list and provided support for this action in a *Responsiveness Summary*, dated December 19, 2014. After these actions, the State revised their water quality criteria for metals. However, the new criteria are silent on allowable frequency of exceedance, and the applicable part of the methodology remains unchanged.

**Recommendation:** The State should provide a scientifically defensible rationale to demonstrate that its listing methodology, currently allowing a ten percent exceedance frequency for toxics, properly implements the new criteria. For detailed comments, please refer to the Agency's Decision Documents and *Responsiveness Summary*, both available online at the link referenced above.

**Issue:** Several waterbodies on North Carolina's 2014 Integrated Report are listed in Category 4b, indicating waters where other required control measures are expected to result in the attainment of an applicable water quality standard. For these waters, we understand that the State expects that other required regulatory controls (e.g., NPDES permit limits, Stormwater Program Rules, Nutrient Management Rules, etc.) will result in compliance with standards within a reasonable period of time.

**Recommendation:** The EPA requests that the State provide, for waters in Category 4b, a summary of the status of ongoing activities, and whether or not the control measures implemented have resulted in the attainment of WQS or are not expected to in the near future. Where the required control measures have been modified, the State should identify the changes to the pollution controls, and any other element of the original demonstration, and report these to the public and the EPA. Refer to the EPA 2008 Integrated Reporting memorandum for further guidance; available online at [http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2008\\_ir\\_memorandum.cfm](http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2008_ir_memorandum.cfm).

Ms. Gracy R. Danois of my staff will contact your management team to initiate discussions on the issues outlined in this letter. In the meantime, if you have immediate questions, please contact Ms. Marion Hopkins, North Carolina's Assessment and Listing Coordinator, at (404) 562-9481, or Ms. Danois at (404) 562-9119.

Sincerely,



James D. Giattina  
Director  
Water Protection Division

**Enclosures**

- 1) 2016 Integrated Report - Detailed Suggestions and List of EPA Region 4 Contacts
- 2) Table 1: Example: Table of Segmentation Changes
- 3) EPA Region 4 Comments on the NC 2016 303(d) Assessment Methodology

cc: Tom Fransen, NC Division of Water Resources, Planning Division  
Jeff Manning, NC Division of Water Resources, Classification & Standards Branch  
Andy Painter, NC Division of Water Resources, Modeling and Assessment Branch  
Cam McNutt, NC Division of Water Resources, Modeling and Assessment Branch

***Lower Neuse Basin Association®***  
***Neuse River Compliance Association®***  
Post Office Box 1410  
Clayton, North Carolina 27528 – 1410

March 29, 2016

Mr. Jay Zimmerman, Director  
Division of Water Resources, NCDEQ  
1611 Mail Service Center  
Raleigh, N.C. 27699 - 1611

Dear Mr Zimmerman:

On behalf of the Lower Neuse Basin Association (“LNBA”) and the Neuse River Compliance Association (NRCA) we respectfully submit the attached comments and concerns regarding your request for comments on the Draft 2016 303(d) list as required by the Clean Water Act (CWA). This year represents the 22<sup>nd</sup> year the LNBA has participated in the voluntary NPDES coalition program based on cooperation between the Division of Water Resources (DWR) and the members of our coalition. The LNBA’s extensive water quality monitoring data has been collected and analyzed in concert with the extensive coordination of your staff. In addition, the LNBA has expended extensive resources supporting the data collection efforts of the UNC Institute of Marine Sciences’ ModMon program in the Neuse River estuary. The attached comments and concerns are focused on the Neuse River Basin as a result of the EPA approved TMDL for the estuary.

The NRCA members have expended hundreds of millions of dollars to successfully meet and exceed the point source nutrient loading reductions required for the attainment of the *chlorophyll a* water quality standard in the Neuse River estuary. This successful effort has been quantitatively reported to the DWR for many years. It is unfortunate that similarly quantified efforts have not been possible for the calculation of non-point source nutrient load reductions. The attached comments and concerns are applicable to both the CWA 303(d) and the CWA 305(b) water quality assessment lists and reports.

Thank you for the opportunity to provide comments on these reports. If you require additional information please contact me or Haywood Phthisic, our Executive Director.

Sincerely,



Daniel F. McLawhorn, Chair

cc: LNBA/NRCA Boards  
Haywood Phthisic

## **Lower Neuse Basin Association/Neuse River Compliance Association Membership**

Town of Apex	City of Goldsboro
Town of Benson	Town of Havelock
Town of Cary	Johnston County
Town of Clayton	Town of Kenly
Contentnea MSD	Town of LaGrange
Town of Farmville	City of New Bern
Dupont-Kinston	City of Raleigh
Duke Energy Progress	City of Wilson
Town of Fuquay-Varina	City of Kinston
Aqua, North Carolina	Marine Corp Air Station - Cherry Point
Craven County	Utilities, Inc.
South Granville Water and Sewer Authority	

LNBA and NRCA Comments and Concerns on the DWR Draft 2016 303(d) list and the preparation of the 305(b) report which when combined are often called the Integrated Water Quality Assessment Report:

- 1) The Neuse River estuary was listed on the 303(d) list and subsequently a TMDL was developed by the state and eventually approved by EPA in 2002. The TMDL was designed to achieve the standard for *chlorophyll a* and the NPDES point sources have collectively achieved nutrient load reductions to sustain the attainment of that water quality standard. However, under the TMDL the Neuse River Estuary is no longer on the 303(d) list. Therefore, the pending Integrated Report (IR) list is of great interest to the LNBA. We suggest that the IR be made available to the public for comment. We obtained Neuse River Basin water quality assessment Fact Sheets from DWR staff to assist in the construction of our comments. These Fact Sheets were most helpful as was the new web based assessment mapping tools.
- 2) The LNBA/NRCA and our members have actively participated in the state's development of the 303(d) listing methodology and we support the EMC's decision to include a confidence factor as part of the listing methodology because the risk and consequences of DWR's 303(d) decisions make it essential that our citizens have a high degree of confidence that actual water quality problems are documented. Therefore, the LNBA requests DWR to consider the potential consequences of its listing decisions before making unnecessary additions to these reports. We generally support the EMC's adoption of water quality 303(d) listing methods that realistically evaluate water quality impairment assessments in N.C. This is in concert with the authority of the EMC provided by NC General Statutes. Consistent with this overall comment we would like to draw your attention specifically to our comments on the *chlorophyll a* sampling methodology. The LNBA/NRCA remains interested in the methods DWR intends to use for determining the successful attainment of water quality standards under the Neuse TMDL and other regulatory management strategies. Our comment number 10 provides an example for consideration. Using this DWR proposed scenario, one station location JA112 (using non-standardized collection methods) with 7 observations exceeding the *chlorophyll a* standard seems to overrule the collective results from 5 stations with 294 total observations.
- 3) At our request DWR provided detailed fact sheets on the Neuse River Basin that helped to clarify who contributed data to the assessment process. The fact sheets are very helpful and provide a level of detail that greatly enhances the assessment understanding. DWR staff should be commended for providing this information in a timely manner. It is unfortunate that the process does not consider the magnitude of values above the water quality standard, only the frequency of exceeding the standard. Thus, waterbodies with a 15% exceedance frequency are rated the same even if one water body exceeded the standard value by 300% and the other waterbody exceeded the standard by 1%.
- 4) Benthic Macroinvertebrate monitoring for aquatic life support assessment is at times based on a single sample. Monitoring strategies and field work schedules should be developed and prioritized to revisit all locations with a single impaired sample prior to the conclusion of the five year assessment window. This would greatly increase the confidence of a 303(d) determination. If the two biological assessments do not agree then the water segment could be placed in category 3.
- 5) There is only one new listing for the 2016 draft 303(d) report in the Neuse Basin downstream of Falls of the Neuse Reservoir. This listing is for Little Swamp from source to Contentnea Creek segment 27-86-5.2. The segment is listed for non-attainment of the dissolved oxygen water quality standard. It is suggested that DWR review the classification for this stream segment as it is not classified as Swamp waters despite the name of the stream.

- 6) There are a number of stream segments proposed for 303(d) delisting in the Neuse River Basin. The LNBA/NRCA are familiar with the state's new metals water quality standards effective January 1, 2015. However, it has now been over a year since the North Carolina effective date and EPA has yet to act on the approval or disapproval of the water quality standards for NPDES purposes. Are the proposed draft 2016 303(d) delistings for metals related to a decision by EPA? The LNBA and the NRCA are highly interested in any NPDES decisions related to the enforcement of the new metals standards and would appreciate an opportunity to hear from the DWR on the status of these related issues.
- 7) The 2016 Neuse River Basin Fact Sheets indicated that segment 27-34-(1.5) Walnut Creek (Lake Johnson) was listed in Category 3a – *for chlorophyll a*. However, with a total of two locations and ten samples and only 1>40ug/L why is this lake not considered in Category 1 – meeting criteria?

Station	Parameter	N	N>EL
NEU042C	Chla	5	1
NEU0431A	Chla	5	0

- 8) The LNBA/NRCA was pleased to see the progress of segment 27-97-5-3 Creeping Swamp from the source to Clayroot Swamp in attaining the water quality standard for *chlorophyll a*. In the 2014 water quality assessment this was placed in category 3a1 and in the 2016 fact sheets this was placed in category 1 – meeting the water quality standard based on the following information:

Station	Parameter	N	N>EL	% >EL
J8150000	Chla	56	5	8.9

9) **The Neuse River Estuary**

The LNBA/NRCA would like to offer a number of general comments on the Neuse River Estuary and the apparent departure from the established sampling and reporting methodology used by the DWR in making listing decisions as related to the attainment of the water quality standard for *chlorophyll a*. The LNBA/NRCA request DWR to reexamine the analysis of the entire Neuse Estuary based on these comments. As the Neuse River Estuary is no longer listed on the 303(d) list because of a TMDL management strategy DWR has ample time to review these comments and evaluate their water quality assessments for the IR and fact sheets appropriately.

#### **Neuse River Estuary Station Identifiers**

Conducting a careful review of the assessments in the Neuse River estuary has been difficult for the 2016 reporting cycle. To the best of our knowledge, this is the second cycle to include *chlorophyll a* data assessments from the NCSU CAAE program. Unfortunately, the LNBA did not have access to an approved NCSU QAPP for the 2014 cycle in order to review sampling methods. The 2016 fact sheets requested from DWR included DWR ambient monitoring data, LNBA data, UNC IMS ModMon data, and NCSU CAAE data as well as a 2016 QAPP from NSCU. Several issues made this review a bit challenging. Station summaries did not maintain the station nomenclature integrity used by the sampling agency. Different station locations of the UNC ModMon program were merged (obliterated) into the same station names as the DWR ambient monitoring program as locations were in “close proximity”. ModMon station identifiers like “50” or “30” were altered into DWR location station nomenclature like J8290000. This practice made it extremely difficult to identify which data was contributed by which agency. A careful review of the NCSU CAAE data used by the DWR analyst was difficult because of inconsistent use of station identifiers. Sometimes stations were identified by the descriptors used in the NCSU CAAE QAPP – for example: BOA, BOM, FSH, 37, BRD, 35, CHM, 34, 33, CLP, BB2, JPM, MB2, RR1. However, DWR staff altered these station names using replacement

numbers like JA100, JA101, JA102, JA103, JA104, JA105, JA107, JA108, JA110, JA111, JA112, JA113, JA114, JA115, JA116. At other times DWR altered stations numbers and incorporated sampling methods like 33U, 33L, 34U, 34L, 35U, 35L, BB2I, etc. Station numbering is critically important because there is the possibility of extreme differences in sampling methodology between agencies. The ModMon program collects *chlorophyll a* samples in a number of different ways including surface grabs, bottom grabs, and a photic zone composite (which is consistent with the statewide DWR practice of more than 35 years). It appears that only UNC ModMon photic zone samples were used but it is difficult to be absolutely sure that DWR data analyst did not use ModMon data from grab samples in this analysis because ModMon stations were not distinguished from DWR locations.

### ***Methodology Chlorophyll a sampling of the photic zone***

The 2014 reporting cycle included assessment data for *chlorophyll a* from the LNBA, the DWR, and the ModMon program all based on the assessment of the photic zone. All of these programs use a collection method that composites the water column of the entire photic zone as defined as a depth of twice the secchi value. Although DWR utilized NCSU CAAE monitoring in the Neuse estuary for the 2014 water quality assessment the January 2016 NCSU QAPP indicated that NCSU did not utilize a sample collection method consistent with the DWR and UNC IMS ModMon practice of collecting a composite sample of the entire photic zone. This long standing DWR standard method (35+ years) has been consistent across the state for both lakes and estuaries. The NCSU CAAE program is designed with a station specific sampling approach for *chlorophyll a* according to their 2016 QAPP. NCSU CAAE collects *chlorophyll a* samples in the Neuse using a unique station specific method identified as Upper/Lower/Integrated (U/L/I) Water Column. At each field collection site, a 3 meter water column tube sampler is lowered into the water column with a side-arm ball valve closed until the top of the sampler is just at the surface or sooner depending on site depth. A water sample is then transferred into a water pitcher. A release valve then allows the lower 1.5 meters of the water column to go into the ‘lower’ pitcher and the remaining 1.5 meters of the column sampler goes into the ‘upper’ pitcher. In shallow water (<1.5 m) a single integrated column sample— no upper or lower is collected. Sampling depth is not adjusted based on the photic zone as indicated by secchi depth. This method does not appear to be consistent with the long established DWR photic zone standard collection practice for all lakes and estuaries. Nor is it consistent with the UNC IMS ModMon photic zone sample. It remains uncertain if DWR used IMS ModMon surface chlorophyll samples for the 2016 draft assessment. But at the end of the day, after deciphering all of the NCSU CAAE data it appears that DWR used *chlorophyll a* data from the “upper” half of the water column sampler and at other locations used a single integrated sample if the station was 1.5 meters deep or less. It appears that DWR did not use the *chlorophyll a* data from the lower half of the column sample at locations where the water column was split into two samples.

The relative quantitative effect on any differences this method may have with chlorophyll a concentration values is unknown. CAAE may have very good reasons for this sampling methodology but DWR should consider if this methodology should be used to establish testing criteria for the chlorophyll a water quality standard for 303(d) purposes. NCSU CAAE data collected as a composite of the entire photic zone would be a beneficial addition to the review of standards attainment. There is sufficient data in the Neuse Estuary for determining the attainment of the water quality standard for *chlorophyll a* using the decades old standard collection practice of a composite of the photic zone. Opening the opportunity to

alter the standard collection practice creates a potentially unmanageable number of options with unknown effects. That is why there is a standard collection practice.

### Significant Figures

*Chlorophyll a* results reported beyond the decimal place should not be utilized for comparison to the water quality standard. The laboratory methods for reporting results beyond the decimal place do not have the precision and accuracy to support this decision. The PQL for this procedure is 1ug/L. Thus results of 40.0ug/L, 40.4ug/L, and 40.3ug/L should NOT be considered exceeding the WQS for purposes of 303(d) and IR. DWR calculations did include this error in their quantification. This error has been made on DWR laboratory data as well as data reported by UNC IMS. These reporting errors should not be compounded and magnified through the use of decimal places to count standard exceedances. Regardless of the source of the data chlorophyll a values of 40.1, 40.2, 40.3, 40.4 etc should not be considered exceedances of the standard. This comment is further supported by the DWR laboratory SOP for *chlorophyll a* as follows: *Report as µg chlorophyll a/L by EPA Method 445.0 modified option.*

12.6.1 Report results < 1 µg chlorophyll a/L as 1 U.

12.6.2 Report results >1.0 and <10 µg chlorophyll a/L to the nearest tenth (0.1 ug).

12.6.3 Report results >10 µg chlorophyll a/L results to two significant figures.

- 10) Segment 27-(96)b1 Neuse River Estuary From Bachelor Creek to the Trent River (River and part of Upper Model segment). In the 2014 water quality assessment this was placed in Category 1t- meeting the water quality standard for *chlorophyll a*. The DWR 2016 fact sheets change this to Category 3t. This appears to be in error. There are 212 observations for *chlorophyll a* in this segment using the photic zone standard method. Fifteen of these or 7% exceed the criteria. This segment should be placed in Category 1. Even if you include the NCSU non-standard collection methods there are 294 total observations with 25 exceeding = 8.5%. The 2016 Category 3t listing is likely an error. Did DWR place this in category 3 because of a single NCSU CAAE station using non-standard collection methods? If so, why do we even have segments?

Station	Parameter	N	N>EL	% >EL	Conf
JA112	Chla	52	7	13	0.738 NCSU
RR1	Chla	30	3	10	0.411NCSU
J8290000	Chla	55	2	3.6	0.022
J8570000	Chla_IWS	102	8	7.8	0.188
J8570000	Chla	55	5	9	0.344

- 11) **Segment 27-(104)b Neuse River Estuary** From a line across Neuse River from 1.2 miles upstream of Slocum Creek to 0.5 miles upstream of Beard Creek to a line across Neuse River from Wilkinson Point to Cherry Point (bend model segment) the 2014 assessment listed this in Category 1t. The 2016 assessment listed this in Category 4t – a significant change in status for chlorophyll a. The assessment appears to have used no Chlorophyll data from station J9431500 or J8925000. All locations listed on the fact sheet in this segment are based on NCSU stations. Are there no ModMon or DWR locations with chlorophyll a data in this segment? Perhaps ModMon location 120 is in this segment as well as J9530000. It is suggested that this segment needs additional review by DWR.

Station	Parameter	N	N>EL	% >EL	Conf
JA104	Chla	80	14	17.5	0.973 NCSU
JA100	Chla	82	9	10.9	0.562 NCSU
JA111	Chla	81	15	18.5	0.986 NCSU
JA101	Chla	81	13	16.0	0.941 NCSU
JA107	Chla	78	15	19.2	0.990 NCSU

- 12) Segment 27-(118)a1 Neuse River Estuary From a line across Neuse River from Wilkinson Point to Cherry Point to a line across the river From Adams Creek to Wiggins Point (part of lower model segment) This segment was Category 1t in 2014 and now in 2016 is found in Category 4t. Recall the comment about counting decimal places as exceeding criteria. Edits are shown in this case as an example strike thru.

Station	Parameter	N	N>EL	% >EL	Conf
J9530000	Chla	52	7	13.4	0.738
J9530000	Chla_IWS	101	22-20	21.7 19.8	1.000

Again we should not loose collector integrity by joining divergent data sets under the same station numbers. Review of ModMon data from station 120 suggest a count of 101 chlorophyll a samples collected by photic zone composite with 20 samples >40. Here the number of observations exceeding the standard count does not include two values of 40.417, 40.347 which were obviously included by DWR as exceeding the chlorophyll a standard. This is an insignificant error made by DWR – or perhaps their programming. Perhaps an esoteric error in this case but an error non-the-less. Perhaps it is not esoteric in other cases. Laboratories may be reporting three significant figures beyond the analytical limits of this test. **The limit of reporting should be 1ug/L.** There should be no decimals after the 40 and thus these two observations and perhaps others at other locations are not an exceedance of the 40ug/L standard. It appears DWR is counting these decimal places in order to maximize the number of exceedances in an inappropriate manner.

# SOUTHERN ENVIRONMENTAL LAW CENTER

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March 29, 2016

***Via Email***

N.C. Department of Environmental Quality  
Division of Water Resources, Planning Section  
1617 Mail Service Center  
Raleigh, NC 27699-1167  
2016draft303d@lists.ncmail.net

**Re: North Carolina's Draft 2016 §303(d) List**

The Southern Environmental Law Center appreciates the opportunity to comment on the above-referenced list on behalf of American Rivers, the Catawba Riverkeeper Foundation, Cape Fear River Watch, the Haw River Assembly, the North Carolina Chapter of the Sierra Club, the River Guardian Foundation, Sound Rivers, the Winyah Rivers Foundation, and the Waterkeeper Alliance. The following comments object to the State's continued defiance of recommendations made by the U.S. Environmental Protection Agency (EPA), identify examples of objectionable proposed listing decisions, and suggest revisions to the draft 2016 §303(d) list.

I. The Clean Water Act and the § 303(d) List: Combating Water Pollution

The goal of the Clean Water Act is to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”<sup>1</sup> To achieve this goal, the Act requires the establishment of direct limitations on the discharge of pollutants—i.e., “effluent limitations,”<sup>2</sup> provides for the issuance of permits incorporating these limitations, and forbids the discharge of pollutants without such a permit.<sup>3</sup> The Act also recognizes the need for additional protective measures when effluent limitations prove insufficient to ensure water quality. Accordingly, every two years, each state is required by Section 303(d) of the Act to identify waters within its jurisdiction for which required effluent limitations are insufficiently stringent to implement applicable water quality standards.<sup>4</sup> The resulting compilation of impaired waters is known as

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<sup>1</sup> 33 U.S.C. § 1251(a).

<sup>2</sup> 33 U.S.C. § 1311(b)(1)(A), (B); *see also* N.C. Gen. Stat. § 143-215 (discussing North Carolina’s establishment of effluent limitations). The Clean Water Act was amended in 1972 to emphasize this approach to water pollution. *See Friends of the Earth, Inc. v. Gaston Copper Recycling Corp.*, 204 F.3d 149, 151 (4th Cir. 2000) (“Prior to 1972, the focus of federal efforts to abate water pollution was measurement of the quality of receiving waters.” (citing Water Quality Act of 1965, Pub. L. No. 89–234, 79 Stat. 903)).

<sup>3</sup> 33 U.S.C. § 1311(a).

<sup>4</sup> 33 U.S.C. § 1313(d)(1)(A).

the “303(d) list.” Once these waters are identified as impaired, the Act requires the state to establish a total maximum daily load (“TMDL”) to further limit the presence of the pollutant or pollutants that cause the impairment.<sup>5</sup>

Thus, the proper identification of impaired waters and the prompt development of responsive TMDLs are essential to improving the quality, and preserving the best use, of the State’s waters. Unfortunately, the draft 303(d) list proposed by North Carolina fails to identify properly the State’s impaired waters or ensure the development and implementation of necessary TMDLs. Contrary to EPA guidance, the State continues to employ a listing methodology that under-identifies impaired waters and thereby deprives North Carolina’s waters of the additional protection required by the Act.<sup>6</sup> Of particular concern is the use of an objectionable methodology to assess impairment by toxic pollutants,<sup>7</sup> since “control of toxic pollutants in surface waters is an important priority to achieve the Clean Water Act’s goals and objectives.”<sup>8</sup>

## II. An Indefensible Listing Methodology for Toxic Pollutants

In North Carolina, the Environmental Management Commission (EMC) is statutorily required to “implement the provisions of subsections (d) and (e) of 33 U.S.C. § 1313 [Clean Water Act §303] by identifying and prioritizing impaired waters and by developing appropriate total maximum daily loads of pollutants for those impaired waters.”<sup>9</sup> Fortunately, the United States Environmental Protection Agency (“EPA”) reviews the list drafted by the State. “The 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.”<sup>10</sup>

In previous years, EPA has questioned the methodology approved by the EMC to create the 303(d) list and repeatedly expressed reservations about how the State assesses attainment of numeric water quality standards. Prior to 2013, 303(d) listing decisions related to numeric water quality standards were made using the “10% rule”: if more than 10% of samples exceeded the numeric standard for a specific pollutant, the water body was listed as impaired by that pollutant,

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<sup>5</sup> 33 U.S.C. § 1313(d)(1)(C). A TMDL may also be required when application of pollution controls beyond technology-based effluent limitations, such as water-quality based effluent limitations or other pollutant control requirements, are insufficiently stringent to implement applicable water quality standards. See 40 C.F.R. § 130.7(b)(1).

<sup>6</sup> As stated by the EPA, the “methodology is the key to improving the validity of State categorizations of water quality.” U.S. EPA, GUIDANCE FOR 2006 ASSESSMENT, LISTING AND REPORTING REQUIREMENTS PURSUANT TO SECTIONS 303(d), 305(b) AND 214 OF THE CLEAN WATER ACT 39 (July 29, 2005) (hereinafter “2006 Guidance”).

<sup>7</sup> The Clean Water Act directs EPA to maintain a list of toxic pollutants or combination of pollutants. 33 U.S.C. § 1317(a)(1); see also 40 C.F.R. 401.15 (listing toxic pollutants designated pursuant to 33 U.S.C. § 1317(a)(1)).

<sup>8</sup> Water Quality Standards for Priority Toxic Pollutants, 57 Fed. Reg. 60848 (Dec. 22, 1992).

<sup>9</sup> N.C. Gen. Stat. § 143B-282(c).

<sup>10</sup> EPA, REGION 4, PARTIAL APPROVAL OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES’ 2014 SECTION 303(D) LIST SUBMITTED ON MARCH 31, 2014 at 7 (July 2014) (hereinafter “Partial Approval 2014”).

as long as at least 10 samples were taken within the assessment period.<sup>11</sup> EPA has consistently warned against using the 10% rule to assess attainment of numeric water quality standards for toxic substances.<sup>12</sup>

For toxic pollutants, EPA guidance recommends use of the 1-in-3 rule: if more than 1 sample collected in a water body during any three year period shows an exceedance of the numeric standards for a toxic pollutant, the water body should be included on the 303(d) list.<sup>13</sup> According to EPA, “[i]n the case of aquatic life, more frequent violations . . . would result in diminished vitality of stream ecosystem characteristics by the loss of desired species.”<sup>14</sup> Notwithstanding, North Carolina has refused to employ the 1-in-3 rule to assess impairment by toxic pollutants.

“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.”<sup>15</sup> In 2010, EPA “reviewed the justification North Carolina submitted supporting its listing methodology for toxic and non-conventional pollutants” and the agency stated it “does not believe the State has demonstrated that the ten percent frequency methodology for toxics is no less stringent than the 1-in-3 frequency methodology recommended in EPA’s assessment guidance.”<sup>16</sup> EPA also objected in 2012 to North Carolina’s use of the 10% rule in the assessment methodology for toxic pollutants.<sup>17</sup> EPA once again expressly stated that North Carolina had failed to “demonstrate that the ten percent frequency methodology for toxics is no less stringent than the 1-in-3 frequency methodology recommended in EPA’s assessment guidance.”<sup>18</sup>

The EMC had an opportunity, when adopting a new methodology for use in crafting the 2014 303(d) list, to fix the problems with the 10% rule. Instead, the EMC approved a listing methodology that was even more objectionable because it employed a 90% statistical confidence

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<sup>11</sup> For instance, under the 10% rule, if 60 samples were taken during the five-year assessment window, an assessment unit would only be listed if seven or more samples exceeded limits for a given criterion.

<sup>12</sup> 2006 Guidance, *supra* note 6, at 39; 2004 Guidance, *supra* note 13, at 30 (“Use of the 10% rule when performing attainment determinations regarding effects of toxics is not appropriate unless the State’s WQS regulations or WQS guidance specifically authorizes use of this rule for such pollutants.”).

<sup>13</sup> EPA, REGION 4, APPROVAL OF THE STATE OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES’ 2010 SECTION 303(D) LIST SUBMITTED ON MARCH 29, 2010 at 17 (AUGUST 2010); *see also* U.S. EPA, GUIDANCE FOR 2004 ASSESSMENT, LISTING AND REPORTING REQUIREMENTS PURSUANT TO SECTIONS 303(d), 305(b) AND 214 OF THE CLEAN WATER ACT 26-27 (July 21, 2003) (hereinafter “2004 Guidance”) (explaining EPA’s preference for the 1-in-3 frequency methodology).

<sup>14</sup> 57 Fed. Reg. 60870.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> EPA REGION 4, PARTIAL APPROVAL OF THE STATE OF NORTH CAROLINA’S 2012 303(D) LIST SUBMITTAL 14-15 (Aug. 10, 2012) (hereinafter “Partial Approval 2012”), *available at*

<sup>18</sup> *Id.* at 14; *see also* 2004 Guidance, *supra* note 13, at 26-27 (explaining EPA’s preference for the 1-in-3 frequency methodology).

component.<sup>19</sup> Under the new methodology, even *more* samples showing exceedance of water quality standards are necessary for the State to recognize impairment.<sup>20</sup> The EMC sought to defend this approach by referencing a similar listing methodology employed by Florida, claiming the change was necessary to “provide more statistical confidence that standards were exceeded in at least 10 percent of samples by taking sample size into account.”<sup>21</sup> However, EPA observed that Florida’s use of a statistical confidence measure was necessary “to account for uncertainty in data quality” and noted that “in North Carolina, data validity is ensured through consistent use of standard operating procedures and rigorous quality assurance and quality control processes.”<sup>22</sup> In light of the “different circumstances in North Carolina,” the EPA emphasized that the federal agency “does not agree with the use of a ten percent exceedance approach with ninety percent confidence for metals use support assessment.”<sup>23</sup>

When EPA conducted an independent assessment, using a scientifically defensible listing methodology to assess impairment by toxic and non-conventional pollutants, the result was dramatic: 51 waters were added to North Carolina’s 303(d) list.<sup>24</sup>

### **III. NC Should Not Make Listing Decisions Based on a Repeatedly Rejected Methodology**

Notwithstanding, North Carolina employed the same methodology to draft the 2016 list as the one rejected in 2014. The State continued to ignore EPA’s concerns about the use of the 10% rule and the new requirement of 90% statistical confidence to assess impairment for toxic pollutants. The State now proposes to de-list 47 of the 51 water bodies that EPA re-listed in 2014. And, in a remarkable show of defiance, the State claims each of these de-listings is justified because the previous listing (i.e., the one commanded by EPA) was “inconsistent with

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<sup>19</sup> The 2014 listing methodology was approved on March 14, 2013 and amended on January 13, 2014 to reflect the consolidation of the Division of Water Quality into the Division of Water Resources.

<sup>20</sup> For instance, consider a sample size of 36, which correlates to monthly samples taken during three years. Whereas the 10% rule would require four samples showing an exceedance to classify the sampled water body as impaired and put it on the 303(d) list, the new methodology requires 7 samples showing an exceedance to ensure 90% statistical confidence.

<sup>21</sup> Partial Approval 2014, *supra* note 10, at 16 (quoting North Carolina’s “Justification for Changes to the 10% Listing Method”).

<sup>22</sup> Partial Approval 2014, *supra* note 10, at 17. In order to be considered for 303(d) listing purposes in NC, “data must meet certain requirements” and “undergo detailed review to evaluate [its] accuracy, precision, and representativeness.” N.C. DEQ, Submittal Instructions: Data for Potential Regulatory Use, *available at* <https://ncdenr.s3.amazonaws.com/s3fs-public/Water%20Quality/Planning/TMDL/Data/Submittal%20Instructions3.pdf> As stated by DEQ,

Generally, analytical data generated by non-DWR parties for regulatory purposes will be required to meet the same data quality requirements as internal activities. SOPs for collection and analysis must be available and must be consistent with DWR SOPs. Any laboratory generating data that are offered for DWR’s regulatory consideration must have an established Quality Program appropriate for the expected data use. The laboratory must be certified for all parameters by EPA or DWR, where such certification exists. The data received must be in a format specified by DWR and must be of acceptable quality.

<sup>23</sup> Partial Approval 2014, *supra* note 10, at 17.

<sup>24</sup> Letter from James D. Giattina, EPA, Region 4, to Tom Reeder, DENR (Dec. 19, 2014), *available at* <https://archive.epa.gov/pesticides/region4/water/tmdl/web/pdf/nc-2014-303d-final-action.pdf>.

the assessment methodology.”<sup>25</sup> DEQ’s disagreement with EPA does not constitute “good cause” for removing these waters from the 303(d) list.<sup>26</sup>

Indeed, according to the EPA, “[w]aters should generally remain in Category 5 until a TMDL is established unless there is reason to believe that conditions that led to the initial listing have changed (WQSs are attained, actions justifying inclusion in Category 4, etc.), or that the basis for the initial listing was in error.”<sup>27</sup> The State has offered no argument that the conditions that led to the listing have changed for any of the 47 water bodies proposed to be de-listed. Indeed, for most of the water bodies in question, the State has not collected the data necessary to make such a determination. Apparently, the only justification provided for de-listing was that EMC refused to accept the EPA’s decision. North Carolina should not move these waters from Category 5 to Category 3 when the State’s only justification is its persistent disagreement with the federal agency authorized to review and approve the list.<sup>28</sup>

In addition, we recommend that the State re-evaluate data samples collected for toxic pollutants and, where possible, apply the federally recommended, scientifically defensible 1-in-3 rule. A comprehensive evaluation is impossible to conduct on the basis of the data made publicly available by the State, which only appears to report the concentration of toxic pollutants in samples collected in 2013 and 2014.<sup>29</sup> Regardless, the citizens of North Carolina should not be forced to rely on EPA to protect North Carolina’s waters; that should be the priority of the State environmental agency.

#### **IV. Conclusion and Recommendations for Improvement**

As detailed above, the methodology used by North Carolina to create the draft 303(d) list is deeply flawed and has resulted in numerous unjustified proposed de-listings. To prevent such

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<sup>25</sup> N.C. DEQ, Draft 2016 Assessments Removed from Category 5- 303(d) List (Feb. 21, 2016). For the other 4 de-listed water bodies, the State collected new data and reportedly found no exceedances.

<sup>26</sup> See 40 C.F.R. § 130.7 (“Good cause includes, but is not limited to, more recent or accurate data; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed in the categories in § 130.7(b)(5); or changes in conditions, e.g., new control equipment, or elimination of discharges.”). EPA may require the State to demonstrate “good cause” for its listing decisions. *Id.*

<sup>27</sup> 2004 Guidance, *infra* note 15, at 9; *see also* 40 C.F.R. § 130.7(b)(6)(iv) (“Upon request by the Regional Administrator, each State must demonstrate good cause for not including a water or waters on the list. Good cause includes, but is not limited to, more recent or accurate data; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed in the categories in § 130.7(b)(5); or changes in conditions, e.g., new control equipment, or elimination of discharges.”).

<sup>28</sup> U.S. EPA, INFORMATION CONCERNING 2010 CLEAN WATER ACT SECTIONS 303(d), 305(b), AND 314 INTEGRATED REPORTING AND LISTING DECISIONS 6 (May 5, 2009) (“EPA also expects that waters identified as impaired and listed on the 303(d) list in the previous reporting cycle will not be removed from the list and placed into Category 3 in the subsequent listing cycle unless the State can demonstrate good cause for doing so, consistent with EPA regulations (40 CFR § 130.7(b)(6)(iv)). The State should explain why the data and information that formed the basis for the original listing is no longer sufficient for determining that the water is still impaired.”).

<sup>29</sup> While we applaud the decision to make data publicly available, we recommend including 3 years of sampling data for toxic pollutants, so that the public can compare the protection afforded by the State to that recommended by EPA.

harmful decisions in the future, the EMC should formally delegate to DWR the responsibility for developing the listing methodology. This will increase the likelihood that scientific expertise informs the identification of waters in need of additional pollution protection.

Regardless of who develops the methodology, it should be substantially revised. When assessing compliance with numeric water quality criteria expressed as maximum levels, the preferred methodology, according to the EPA, is the 1-in-3 frequency method.<sup>30</sup> If, instead, the State wishes to continue use of the 10% rule, it should at least follow EPA guidance, which cautions that the 10% rule should not be applied to assess impairment by toxics and other non-conventional pollutants.<sup>31</sup>

If the State insists on retaining its current methodology, it must, at a minimum, proffer an acceptable scientific defense for its continued defiance of EPA. Specifically, the State should explain to EPA and the public why it believes the application of the methodology constitutes good cause for making listing decisions that define the level of protection afforded to North Carolina's waters. Because EPA has rejected all previous attempts to justify use of the methodology to assess impairment by toxics, all waters removed from the list for no other reason than the application of the rejected methodology should be returned to the 303(d) list and afforded the protection contemplated for such impaired waters under the Clean Water Act.

Respectfully,



Will Hendrick  
Associate Attorney  
Southern Environmental Law Center

cc (via email):

Marion Hopkins, EPA Region 4  
Peter Raabe, American Rivers  
Elaine Chiosso, Haw River Assembly  
Kemp Burdette, Cape Fear River Watch  
Gray Jernigan, Waterkeeper Alliance  
Molly Diggins, NC Chapter of the Sierra Club  
Harrison Marks, Sound Rivers  
George Matthis, River Guardian Foundation  
Emilee Syrewicze, Catawba Riverkeeper Foundation  
Christine Ellis, Winyah Rivers Foundation

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<sup>30</sup> 2004 Guidance, *supra* note 13, at 26-27 (explaining EPA's preference for the 1-in-3 frequency methodology).

<sup>31</sup> 2006 Guidance, *supra* note 6, at 39; 2004 Guidance, *supra* note 13, at 30.



March 22, 2016

Mr. S. Jay Zimmerman  
Director, NC Division of Water Resources  
1611 Mail Service Center  
Raleigh, NC 27699-1611

Reference: Comments on NC 2016 draft CWA Section 303(d) lists

Dear Mr. Zimmerman:

The purpose of this letter is to provide comments on the NC Draft 2016 Clean Water Act (CWA) 303(d) lists as well as the pending 2016 CWA NC Water Quality Assessment Integrated Report (also referred to as the IR). The UNRBA is a member organization based on cooperation regarding water quality management and water resource planning within the 770-square-mile Falls Lake watershed. Seven municipalities, six counties, a water and wastewater public utility, and local Soil and Water Conservation Districts voluntarily formed the Association in 1996. Today, the UNRBA is striving to address water quality in Falls Reservoir (Falls Lake) through innovative and cost-effective pollution reduction strategies. The UNRBA is investing millions of dollars for collecting and analyzing information that can be used to improve existing approaches to the management of point and non-point impacts in the watershed. In addition, there are significant chemical and biological processes within the Lake that must be better understood for the Association to develop a scientifically sound reexamination of the Falls Lake Nutrient Management Strategy.

The UNRBA members have been and will continue to be severely impacted now and in the future by decisions made concerning the 303(d) process for Falls Lake and its watershed. The establishment of the state's impaired waters list for this drainage is central in the state's efforts related to management of eutrophication in the lake. Falls of the Neuse Reservoir (Falls Lake) was initially placed on the 303(d) 2008 list for non-attainment of the *chlorophyll a* water quality standard. Thus, our 303(d) comments are focused on *chlorophyll a*. The 2008 303(d) list first divided the lake into two assessment units – above Interstate Highway I-85 and below Interstate Highway I-85. Subsequently, through both expedited legislative and rule-making action, a watershed management strategy was developed with extremely stringent reduction targets for both nitrogen and phosphorus throughout the watershed. Because of the high degree of uncertainty associated with the water quality model predictions and the expedited development of the Falls Lake management strategy, additional provisions were added in the rules to allow adaptive review and management.

The UNRBA is developing, under this provision, a reexamination of this strategy through enhanced monitoring and modeling to optimize the scientific understanding and the most cost effective strategies for improving *chlorophyll a* water quality in Falls Lake. Because Falls Lake has a water quality management strategy, it is no longer “technically” listed on the draft NC 303(d) list. Rather, based on existing data, the water quality standard for *chlorophyll a* has yet to be fully attained for all segments. Therefore, Falls Lake is proposed for listing on the 2016 NC Integrated Water Quality Report in Category 4 – not attaining the *chlorophyll a* standard, but under a water quality management strategy. The UNRBA has been informed by DWR staff that the state is required to seek public comment on the draft 303(d) list category 5 waters but that there is no requirement to seek comment on the draft listings associated with the 2016 Integrated Report (IR). Because the members of the UNRBA are impacted by all of these type regulatory decisions, is investing significant resources to reexamine the current rules, and to implement the requirements of the Falls Lake Strategy, the 2016 Integrated Report (IR) is of keen importance to the UNRBA. It is within the IR that listing decisions will be made on whether or not segments of the Falls Lake will be considered impaired or attaining water quality standards - category - 1 (attaining), 3 (uncertain), and 4 (not attaining—with a strategy or TMDL—Total Maximum Daily Load as defined in the Federal Clean Water Act). The Association requests that the Division consider our comments on the IR and that they be used to revise the report before it is finalized.

Even within the IR, the consequences of listing a water body as impaired can be dramatic to those jurisdictions tasked with meeting specific reductions. The rules implementing the Falls Lake Strategy state that compliance with the reduction requirements will have been met when specific segments have resulted in attaining water quality standards for *chlorophyll a* for two consecutive listing cycles. As a result, the IR lists and the 303(d) lists are of equal interest to the UNRBA and others who are operating under a TMDL or management strategy. We believe that the IR should be considered available for public comment. Certainly, as noted, we respectfully request that DWR take into consideration the information we are providing in this communication. The UNRBA comments attached to this letter are applicable to both the 303(d) list and the NC IR. NC’s water quality standards include significant safety factors for the protection of designated uses. However, the standards rarely provide explicit details on acceptable numeric levels of parameter duration, frequency, magnitude and extreme climatic episodes. Thus, DWR staff must make judgmental water quality assessment decisions for these CWA reports.

The UNRBA and its representatives have been engaged in the state’s development of the 303(d) listing methodology which is also tied to the IR listing methodology. The consequences of DWR’s 303(d) and IR listing decisions on our local governments and citizens make it absolutely essential that the regulatory agencies and regulated entities alike have a high degree of confidence that actual water quality problems exist before requiring local governments to undertake comprehensive, technically difficult and costly actions. Therefore, the UNRBA asks DWR to carefully consider the potential consequences of its listing decisions and its assessment unit divisions prior to finalizing these reports. Because of the significant ramifications involved in making water quality assessment decisions, we urge you to establish a multi-disciplinary review team in DWR to incorporate detailed knowledge on scientific monitoring and analysis, management rules and regulations, as well as database administration prior to listing waters as

impaired (category 4 &5). Our detailed comments follow this letter. For reference purposes, our comments address the following key points:

1. The UNRBA is concerned with the 303(d) new listing of 27-12-(0.7)b Beaverdam Reservoir to the list of waters impaired by *chlorophyll a* needing a TMDL or management strategy. As a result, the UNRBA believes that it is unnecessary to divide assessment unit 27-12-(0.7) and it is inappropriate to list the lower reservoir as impaired.
2. We strongly recommend that only *chlorophyll a* analytical results reported in accordance with established sample result reporting procedures be used for determining listing status.
3. The UNRBA concurs with the inclusion of data collected in accordance with standard collection protocols.
4. The UNRBA has significant concerns with the use of data for 303(d) and IR purposes that is collected using alternate monitoring procedures that are not consistent with established standardized monitoring protocols.
5. The UNRBA objects to the IR re-segmentation of the lower Falls Lake.

The UNRBA appreciates the opportunity to comment on this draft 303(d) notice and the pending IR. The consequences of decisions made in finalizing these reports must be considered before they are issued. The UNRBA is certainly available to meet with you and your staff to discuss our concerns. If you have any questions or would like to set up a meeting, please contact our Executive Director, Forrest Westall, using the contact information on our letterhead.

Sincerely,



Pam Hemminger

Chair

Cc: [2016draft303d@lists.ncmail.net](mailto:2016draft303d@lists.ncmail.net).

**The following are expanded discussions of the comment areas identified in the letter as offered by the UNRBA on the NC draft 2016 303(d) listings as well as pending portions of the 2016 IR as provided to UNRBA by DWR staff and as obtained from the DWR web site.**

1. The UNRBA is concerned with the 303(d) new listing of 27-12-(0.7)b Beaverdam Reservoir to the list of waters impaired by *chlorophyll a* needing a TMDL or management strategy. As a result, the UNRBA believes that it is unnecessary to divide assessment unit 27-12-(0.7) and it is inappropriate to list the lower reservoir as impaired. The Beaverdam Reservoir and its drainage is already covered under the Falls Lake Nutrient Management Strategy.

The NC Draft 303(d) list indicates Beaverdam Reservoir segment 27-12-(0.7) has now been split into two segments 27-12-(0.7)a and 27-12-(0.7)b. This split was apparently based on the proposed impairment of the lower Beaverdam Reservoir for *chlorophyll a*. This proposed change is based on data collected by NCSU's Center for Applied Aquatic Ecology (CAAE) at one location. A review of the data for this location indicates samples were collected using protocols not consistent with DWR standard collection methods for *chlorophyll a* for lakes and estuaries. DWR has established a sampling protocol of collecting *chlorophyll a* samples using an integrated water column sample of the entire photic zone collected over a depth composite equal to twice the depth of the recorded secchi value. This 35+ year old collection method was developed so that consistent collection methods could be applied across the entire state for both estuaries and lakes. This approach allows for consistent evaluation of the water quality standard for *chlorophyll a* and to establish the relative trophic classification of the state's waters under the CWA Section 314. The DWR standard collection method using a composite sample of the entire photic zone is consistent with the USEPA National Assessment of Lakes field manual of 2012.

The results being used by the Division for its proposed listing of lower Beaverdam Reservoir were collected using a composite sample of the water column reflecting only the upper photic zone. These samples are labeled UPZ on data values utilized by DWR. Only *chlorophyll a* samples conforming to the standard collection method of water column integrated composites of the entire photic zone (twice-secchi depth) should be considered for the 303(d) and IR categorical listings. It should be noted that most NCSU CAAE sampling locations within Falls Lake are collected consistent with the DWR entire photic zone (twice-secchi) standard protocol. We support use of data generated using the established standard full photic zone protocol.

The use of data collected using alternate sampling procedures for use-support determinations would be an unevaluated "mixing" of results. To our knowledge there has not been an analysis of the impacts of using data generated by this alternate sampling protocol, nor any

consideration of the potential for significantly different results using the alternate procedure as compared with those produced from the established protocol. The UNRBA believes that it would be prudent to exclude this data at this time. If future application of this data is to be considered, we recommend that a careful evaluation of the impact of its inclusion for important standard compliance and use-support assessments be completed and reviewed by the interested public before any specific agency decision is made. The NCSU CAAE collection methods are site specific and project specific as indicated in their 2016 QAAP. The actual *chlorophyll a* results are certainly valid and can be used for research and evaluation purposes other than regulatory use-support decisions.

An additional consideration in the use of this data is sample location. Based on the information available, samples taken at this location are apparently collected from a near shore pier. For 303(d) and IR purposes we recommend that DWR avoid making listing decisions using "near shore" sampling results or from areas affected by physical obstructions to free water circulation as these areas are not typically representative of larger waterbodies.

It is our understanding that DWR has scheduled Beaverdam Reservoir for water quality monitoring and trophic evaluation this year. This evaluation will be performed using standardized methods at multiple locations consistent with DWR protocols.

2. It is recognized that DWR and the NCSU CAAE and other certified laboratories and researchers have well qualified staff and well-qualified certified laboratories for *chlorophyll a* analysis. However, *chlorophyll a* results reported beyond the decimal place should not be utilized for comparison to the water quality standard. The laboratory methods for reporting results beyond the decimal place do not have the precision and accuracy to support this decision. The PQL for this procedure is 1ug/L. Thus results of 40.0ug/L, 40.4ug/L, and 40.3ug/L should not be considered exceeding the standard for purposes of 303(d) and IR. The UNRBA review indicates DWR calculations did include these values in their quantification. This has been done with DWR laboratory data as well. Regardless of the source of the data, chlorophyll a values of 40.1, 40.2, 40.4 etc should not be considered exceedances. This comment is further supported by the DWR laboratory SOP for *chlorophyll a* as follows:

*Report as µg chlorophyll a/L by EPA Method 445.0 modified option.*

*12.6.1 Report results < 1 µg chlorophyll a/L as 1 U.*

*12.6.2 Report results >1.0 and <10 µg chlorophyll a/L to the nearest tenth (0.1 ug).*

*12.6.3 Report results >10 µg chlorophyll a/L results to two significant figures*

3. The UNRBA endorses the use of NCSU CAAE *chlorophyll a* samples collected at locations FL1C, FL6C, FL7C, FL8C, FL9C, FL10C, FL11C, FLINC, FL50C, FL85C, LC1, and LC2. Based on our review this data was not collected from shore and is collected as a photic zone composite sample as describes in the CAAE QAPP January 2016. Please see discussion in item 1 for additional background on this comment.
4. For purposes of 303(d) and IR listings the UNRBA is concerned with using NCSU CAAE *chlorophyll a* data from locations FL1, FL2, FL3, FL4, FL5, FL6, RV1, and RV2 because these collections for *chlorophyll a* do not use a composite water column of the entire photic zone (twice-secchi depth). NCSU CAAE sampling collection practices for these specific locations in Falls Lake for *chlorophyll a* are not consistent DWR established collection methods using a composite of the photic zone defined as a depth integrated sample of twice-secchi (see item 1 for additional discussion). *Chlorophyll a* data from these specific locations may provide valuable information for modeling or purposes other than listing of impaired waters. However, as noted in item 1, the UNRBA believes that before using this data for standard compliance and use-support decisions, DWR should evaluate the impacts of this sample collection protocol on these important regulatory decisions and carefully vet any proposed change by those affected by such a change.
5. The UNRBA objects to the proposed additional segmentation of Segment 27-(5.5)b4 Falls Lake From Lick Creek Arm to Falls Dam. The critically important reasons for this position is that it is inappropriate due to the extensive efforts underway to implement the Falls Lake Rules, the compliance provision of the Falls Lake Rules, the extensive work underway to reexamine the nutrient strategy and the physical characteristics of the reservoir.

As a practical consideration, the UNRBA is making extensive efforts are to re-examine the entire Falls Lake strategy. Also, the jurisdictions in the watershed have implemented the New Development requirements and are in the midst of implementing Stage I Existing Development. These actions by themselves argue strongly against revision of the use-support segment in the lower part of the reservoir at this time. Clearly, change isn't appropriate while these important activities are underway. Because of the compliance provisions of the Falls Lake Rules, it is completely inappropriate to consider re-segmentation of this portion of the reservoir at this time.

The proposed change unnecessarily divides this one existing segment into 5 different segments. This change may be based on the inaugural use of NCSU CAAE *chlorophyll a* data from Falls Lake for 303(d) and IR listing purposes. The UNRBA acknowledges the efficacy of considering all availability data collected using established protocols and covered under an

agency-approved QAPP from Falls Lake. The UNRBA recognizes that with the additional monitoring results there is an abundance of data for this segment. However, the lower Falls Lake is very narrow and constrained, representing essentially a riverine system. There is no strong physical characteristic change basis for breaking up this segment into multiple assessment areas.

There are 11 sampling locations appropriate for consideration in this segment. This is a robust dataset. Assessment determinations should certainly be supplemented by this robust dataset as applied to segment 27-(5.5)b4, but should not be used to splinter the assessment segments in the lower lake. Specifically, just because of additional data or perhaps even new locations it is not appropriate to over-segment this assessment unit.

Current assessment Unit 27-(5.5)b4 was apparently not broken into additional segments because of limnology, hydrodynamics, or geography. The existing segment designation is harmonious with the Falls Rules implementation strategy. It should remain intact while the UNRBA is evaluating the most effective management strategies for the lake and its watershed. In the meantime, the UNRBA is conducting the most aggressive and intensive examination of nutrient dynamics in any reservoir in NC. UNRBA reexamination results and the extensive analysis and knowledge gained by this effort may provide a basis for evaluating use-support assessment units, but it is not appropriate at this time.



To: N.C. Division of Water Resources, N. C. Department of Environmental Quality  
From: Yadkin Riverkeeper  
Date: March 29, 2015  
RE: Proposed 2016 Section 303(d) Copper Delisting in the Yadkin Watershed of North Carolina

Dear Sir,

Yadkin Riverkeeper is a 501c3 membership based water protection organization based out of Winston-Salem North Carolina. Our membership is spread throughout the Yadkin Pee Dee watershed, including the Yadkin, South Yadkin and Rocky River subbasins. Our mission is to measurably improve water quality throughout the Yadkin Pee Dee watershed and achieve fishable, swimmable, drinkable water throughout our river basin. Since our founding in 2008 we have worked to do just that, participating in watershed planning process, NPDES permit cycles, Clean Water Act citizen suit law enforcement and a variety of state administrative and planning processes. We write today on behalf of our members who fish, swim, recreate and get their drinking water from the surface waters in watersheds that are among those proposed to be delisted as part of the 2016 303d process.

We object in particular to the delisting of fifteen segments of streams in the Yadkin, South Yadkin & Rocky river watersheds that are currently on the 303d list for copper impairment. As NCDEQ's draft delistings make clear, these segments would be delisted not because they are no longer impaired according to the criteria prescribed by EPA in 2014. Instead, all fifteen segments would be delisted because their impaired status is, "inconsistent with the assessment methodology. Available data insufficient to determine attainment status."<sup>1</sup> Such delisting would be inconsistent with EPA's previous objections to NCDEQ's assessment methodology and deprive Yadkin Riverkeeper and our members of the protection of the Act and the opportunities for remediation afforded by 303d listing. We urge NCDEQ to provide evidence of how its > 10% exceedance method and 90% statistical confidence requirements are preferable to EPA's suggested methodology.

#### ***I. History of Delisting Copper Impaired Waterbodies:***

Over the past two section 303(d) listing cycles EPA has questioned the State's assessment methodology for toxics and decision to delist copper impaired waterbodies in the Yadkin Pee Dee River Basin. Before "the 2008 303(d) list cycle, North Carolina was not

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<sup>1</sup> Draft 2016 Assessments Removed from Category 5 -303(d) List 2/21/2016  
[https://ncdenr.s3.amazonaws.com/s3fs-public/Water%20Quality/Planning/TMDL/303d/2016/2016\\_Delistings.pdf](https://ncdenr.s3.amazonaws.com/s3fs-public/Water%20Quality/Planning/TMDL/303d/2016/2016_Delistings.pdf)

consistently assessing for impairments of metals, particularly ‘action level’ metals, i.e., copper and zinc.”<sup>2</sup> It was not until 2010 that “limited metals monitoring was resumed[,] … [albeit leaving] the 2012 and 2014 cycles … [with] very little new metals data.”<sup>3</sup> Yet, even with little data, “EPA’s independent assessment of metals data for the 2008 and 2010 lists … resulted in a list of 23 waterbody-pollutant combinations requiring further investigation for potential impairments of copper and/or zinc.”<sup>4</sup> For one waterbody in 2012 “the State failed to adequately demonstrate good cause for delisting of the copper impairment”<sup>5</sup> because EPA found “DWQ’s methodology (> 10% exceedance) is not consistent with EPA guidance (>one-exceedance-in-3 years).”<sup>6</sup>

## ***II. History of Issues with Assessment Methodology:***

While DWR modified its methodology after the 2012 listing cycle, EPA’s 2014 response to the State’s 303(d) list reiterated that “EPA is not satisfied that the State’s methodology for toxics properly implements the currently applicable water quality standards.”<sup>7</sup> As evidence to the insufficiency of DWR’s assessment methodology, an EPA independent assessment revealed that the State failed to list 51waterbody-pollutant combinations in 2014, because EPA did not find DWR’s change in assessment methodology a sufficient reason to delist.<sup>8</sup> Now in 2016, DWR proposes to delist copper impaired waterbodies in the Yadkin Pee Dee River Basin which “are all metals that EPA added back to the 2014 303(d) list”<sup>9</sup> because the listings were “not consistent with the EMC approved method[.]”<sup>10</sup>

Empirically, EPA has “consistently communicated … reservations about the 10% frequency to the state and provided opportunities to suggest alternatives for many 303(d) listing cycles.”<sup>11</sup> However, the State still relies upon a substantially similar version of its 2014, “10 percent exceedance method with 90% statistical confidence”<sup>12</sup> rather than EPA’s suggested one in three exceedance assessment method. The State’s 2016 assessment method does add the language, “[w]here applicable, biological rating is also considered for assessment of metals.”<sup>13</sup> Yet, it is unclear whether this addition saves DWR’s assessment methodology and delisting

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<sup>2</sup> U.S. EPA, *The EPA’s Partial Approval of the State of North Carolina’s 2014 303(d) List Submittal*, Jul. 31, 2014, [https://www.ncdm.org/SiteCollectionDocuments/Legislative/EPA%20Partial%20Approval%20-%20303\(d\).pdf](https://www.ncdm.org/SiteCollectionDocuments/Legislative/EPA%20Partial%20Approval%20-%20303(d).pdf)

<sup>3</sup> *Id.*

<sup>4</sup> *Id.* at 19.

<sup>5</sup> U.S. EPA, *Partial Approval of the State of North Carolina’s 2012 303(d) List Submittal*, Aug. 10, 2012, <https://archive.epa.gov/pesticides/region4/water/tmdl/web/pdf/20120808-nc-303d-listapproval-decisiondocument.pdf>

<sup>6</sup> *Id.*

<sup>7</sup> U.S. EPA, *The EPA’s Partial Approval of the State of North Carolina’s 2014 303(d) List Submittal*, Jul. 31, 2014, [https://www.ncdm.org/SiteCollectionDocuments/Legislative/EPA%20Partial%20Approval%20-%20303\(d\).pdf](https://www.ncdm.org/SiteCollectionDocuments/Legislative/EPA%20Partial%20Approval%20-%20303(d).pdf)

<sup>8</sup> *Id.*

<sup>9</sup> SELC Email with Cam McNutt

<sup>10</sup> *Id.*

<sup>11</sup> U.S. EPA, *Responsiveness Summary to Comments Regarding the EPA’s July 31, 2014 Action to Add Waters to North Carolina’s 2014 Section 303(d) List*, Dec. 19, 2014, 8-9, <https://archive.epa.gov/pesticides/region4/water/tmdl/web/pdf/nc-2014-303d-final-action.pdf>

<sup>12</sup> NC DENR, *2016 303(d) Listing Methodology*, 4, <https://ncdenr.s3.amazonaws.com/s3fs-public/Water%20Quality/Planning/TMDL/303d/2016/2016%20Listing%20Methodology%20approved%20by%20EMC%20May%202015.pdf>

<sup>13</sup> *Id.*

proposal from close scrutiny, as the State's 2016 303(d) Listing Methodology provides no defense for why the > 10% exceedance is preferable to EPA's >one-exceedance-in-3 years method.

### ***III. Trend of Neglecting Copper Impairments:***

Many of the waterbodies at issue have been on the State's 303(d) list since 2010 or earlier. While "typically a TMDL is developed for each waterbody/pollutant combination,"<sup>14</sup> the State has only ever created one TMDL for copper.<sup>15</sup> Such little effort by the State to address copper impairments is curious, given that EPA ranks metals as North Carolina's third largest 'cause of impairment group' at 114 of 1,323 and there are more copper impairments reported (84) than all of the other metals combined.<sup>16</sup> In light of the evidence outlined above, DWR seems to demonstrate a trend of repeatedly delisting copper impaired waterbodies identified by EPA as necessary additions to the State's section 303(d) list. Moreover, DWR has repeatedly declined to either accept EPA's >one-exceedance-in-3 years method or provide evidence that demonstrates the State's > 10% exceedance is preferable with respect to assessing toxics.

### ***IV. EPA Guidance on Delisting:***

EPA issued a guidance document in 2003, *Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act*, that specifically responds to a situation where a State proposes to delist previously listed segments. Specifically, the guidance document posits the question: "[c]an previously listed segments (without new data or information) be delisted solely because they have not yet been assessed with a new methodology?"<sup>17</sup> The guidance document provides the following response:

"EPA does not believe it would be appropriate to delist previously listed segments (without new data or information) solely because they have not yet been assessed with a new methodology. The State must provide, at the request of the Regional Administrator, good cause for not including a previously listed segment on its new 2004 Section 303(d) list. There are some situations where a previously listed segment may be delisted without relying on data and information collected after the date of the previous list. For example, if the State evaluates the pre-existing data and information using a methodology that EPA has determined to be technically reasonable, and the results of that evaluation provide a "good cause" basis for not including the segment on the 2004 list, the segment would no longer need to be included in Category 5. However, the delisting should only occur if it is determined by EPA that the new methodology is technically sound, consistent with the State's WQSSs, and is deemed statistically reasonable."

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<sup>14</sup> U.S. EPA, *Program Overview: Total Maximum Daily Loads (TMDL)*, Dec. 1, 2015, <https://www.epa.gov/tmdl/program-overview-total-maximum-daily-loads-tmdl>

<sup>15</sup> U.S. EPA, *North Carolina Water Quality Assessment Report*, Mar. 21, 2016, [https://iaspub.epa.gov/waters10/attains\\_index.control?p\\_area=NC#wqs\\_attainment](https://iaspub.epa.gov/waters10/attains_index.control?p_area=NC#wqs_attainment)

<sup>16</sup> *Id.*

<sup>17</sup> U.S. EPA, *Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act; TMDL-01-03*, Jul. 21, 2003, [https://www.epa.gov/sites/production/files/2015-10/documents/2003\\_07\\_23\\_tmdl\\_tmdl0103\\_2004rpt\\_guidance.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/2003_07_23_tmdl_tmdl0103_2004rpt_guidance.pdf)

In light of EPA's scope of analysis for proposed section 303(d) delisting provided above, coupled with DWR's history of delisting requests and assessment methodology, it seems as though EPA should conduct an independent assessment and request DWR provide evidence of how its > 10% exceedance method is preferable to EPA suggestions.

#### ***V. Proposed 2016 Copper Delistings in the Yadkin Watershed***

NCDEQ's proposed 2016 delisting include the following 15 segments in the Yadkin Pee Dee River Watershed:

##### Rocky River Subbasin

Beaverdam Creek, 13-17-4011-11 From source to Lanes Creek  
Irish Buffalo Creek 13-17-9-(2) From Kannapolis Water Supply Dam to Rocky River  
Mallard Creek 13-17-5a source to mouth  
Richardson Creek 13-17-36-(5)a2 From Watson Creek to Salem Creek  
Rocky River 13-17d From the Lanes Creek to the Pee Dee River  
Rocky River 13-17c3 From Anderson Creek to Lanes Creek  
Rocky River 13-17c2 From Hamby Branch to Anderson Creek  
Rocky River 13-17c3 From Anderson Creek to Lanes Creek

##### South Yadkin Subbasin:

Bear Creek 12-108-18-(3) From a point 0.2 miles downstream of U.S. Highway 64 to South Yadkin River

##### Yadkin River Subbasin

Yadkin River, (12-108.5)b1 From the mouth of Grants Creek to Buck Steam Station  
Muddy Creek, 12-94-(0.5)b2b From Silas Creek to State Road 2995  
Salem Creek (Middle Fork Muddy Creek) 12-94-12-4(b) From Burke Creek to State Road 1120  
Salem Creek(Middle Fork Muddy Creek) 12-94-12-(4)c From State Road 1120 to Muddy Creek  
Yadkin River, 12-(38)b from Reddies River to Mulberry Creek

The justification for each delisting was the same :

"Previous listing in Category 5 was inconsistent with the assessment methodology. Available data insufficient to determine attainment status"

As demonstrated above, the assessment methodology provided for all copper delistings in the Yadkin watershed does not satisfy previous methodological concerns voiced by EPA during the 2014 listing process. None of the copper delistings in the Yadkin watershed were based on the assessment or interpretation of more recent or more accurate data concerning the parameter of interest. That is, we have no evidence that the levels of copper in any of these waterbodies has declined below levels which EPA previously deemed sufficient to warrant 303(d) listing.

Instead of attempting to lessen the metals concentrations in these waters, DEQ continues to prosecute a methodological argument rejected in the previous 303(d) listing cycle. To allow such delisting without data would be a disservice to our members who fish, swim and paddle these waters.

Sincerely,

Will Scott, Yadkin Riverkeeper

Nicholas Griffin, Yadkin Riverkeeper JD/MA Student Intern, Wake Forest University