

BACKGROUND

Every three years the State is required by the Clean Water Act (CWA) to review its surface water quality standards and classifications to determine if any changes are needed, and, if necessary, to enact those changes. This review process is known as the "Triennial Review." In addition, as part of the Triennial Review the CWA also mandates a review of any variances to surface water quality standards that have been issued by the State. The current iteration of the Triennial Review that is the subject of this document covers the period 2000 to 2003.

The 2000-2003 Triennial Review was initiated in the Summer of 2001. A series of public meetings was conducted in September of that year to solicit comments from the public and to review DWQ's initial thoughts about possible water quality standard changes for this Triennial Review (Attachment 1, page 1). After receiving permission from the Water Quality Committee (WQC), a Notice of Rulemaking Proceedings (NRP) for the 2000-2003 Triennial Review was published in the November 1, 2001 edition of the *North Carolina Register* (Attachment 2, page 3). Another public meeting was conducted in March of 2002 to respond to public comments and to provide an update on the proposed standard changes (Attachment 3, page 5). Permission to proceed to public hearing with the final proposals was received from the Water Quality Committee and the Environmental Management Commission in April and May of 2002, respectively. The Notice of Text for these proceedings was published in the *North Carolina Register* on July 1, 2002 (Attachment 4, page 7). The hearing announcement was mailed either electronically or in hard copy form to all individuals on the Triennial Review mailing list and those on the Rulemaking Notice list (Attachment 5, page 33). In addition, notice was sent to several major newspapers throughout North Carolina (Attachment 6, page 35). A copy of the public information package that was developed for the public hearings is contained in Attachment 7, which begins on page 37. This package contains all the proposed standard changes and rule amendments, variances, and any other material that was the subject of public comment at the hearings. This package was made available to the public in an electronic form via the Internet. Written comments on this material were accepted until the close of the public comment period on August 15, 2002.

The five proposed water quality standard changes that were presented at the public hearings for the 2000-2003 Triennial Review are briefly summarized below:

1. A human health standard for arsenic of 10 ug/l would be established for all freshwaters of the State. In addition, an instream standard for arsenic of 10 ug/l would be established for all water supply (WS) classified waters of the State. The current arsenic standard for the affected waters is an aquatic life standard of 50 ug/l.
2. The current freshwater action level standard of 17 ug/l for total residual chlorine (TRC) would be removed and replaced with an instream surface water quality standard of 17 ug/l for TRC for all freshwaters of the State.

3. The existing freshwater cyanide standard of 5 ug/l would be modified to allow dischargers the option of developing a site-specific standard based upon the aquatic life at the site in accordance with EPA procedures.
4. A new surface water quality standard for methyl tert-butyl ether (MTBE) would be established. This standard is proposed to be 12 ug/l for all water supply (WS) classified waters of the State. In addition, a human health standard for MTBE of 1,158 ug/l would be established for all other waters of the State (both salt and fresh).
5. The existing methylene blue active substances (MBAS) surface water quality aquatic life standard of 500 ug/l would be removed and replaced with an aesthetic MBAS standard of 500 ug/l for water supply (WS) classified waters. Under this proposal the toxic constituents of MBAS would be covered under existing whole effluent toxicity (WET) testing.

In addition, public comment was solicited on the existing water quality and thermal variances and possible future changes to North Carolina's nutrient and bacteriological criteria.

THE PUBLIC HEARINGS AND A SUMMARY OF THE ORAL COMMENTS

Public hearings for the Triennial Review were conducted in Raleigh and Wilmington on July 30 and August 1, 2002, respectively. Jimmie Overton, Chief of DWQ's Environmental Sciences Branch, served as Hearing Officer (Attachment 8, page 67). 25 individuals attended the Raleigh hearing and 10 chose to make comments. 5 individuals attended the Wilmington hearing and none elected to make comments. A list of those attending the hearings is contained in Attachment 9, which begins on page 69. The Hearing Officer's remarks are presented in Attachment 10, which begins on page 71. A written transcript of the comments received at the hearings is contained in Attachment 11, which begins on page 77. A summary of the oral comments that were received at these hearings, along with a brief response are presented below.

Comment: Representatives from the City of Greensboro, the City of Mebane, and the City of Graham provided the following comments concerning the proposed TRC standard:

- *The monitoring associated with the 17 ug/l instream TRC standard will be far too costly, complex, and cumbersome for the small chlorine dischargers.*
- *The low-level TRC monitoring required by the 17 ug/l instream TRC standard will cost the NC Public School system \$700,000 in capital costs and approximately \$1,800,000 in operating costs. Other publicly funded institutions such as prisons, rest stops, etc... will also be affected with similar costs.*
- *The difficulty in performing the low-level TRC monitoring makes it far too cumbersome for the small dischargers to successfully complete.*

- *The TRC standard should allow monitoring results that indicate a value less than 50 ug/l to be considered non-detect.*
- *The water quality improvements that will be gained by adopting the new TRC instream standard do not justify the expense and difficulty it will cause to chlorine dischargers throughout the State.*
- *One part per billion is equivalent to one inch in 16,000 miles. Considering this scale, is it worthwhile to adopt a new TRC standard that will require monitoring and analysis down to 17 parts per billion?*
- *TRC dissipates quickly in the environment, so the new instream standard is unnecessary.*
- *Consider a phased approach for the implementation of the new TRC standard to lessen the impact.*

Response: The Division of Water Quality has proposed the new 17 ug/l instream TRC standard for adoption for a variety of reasons:

1. In response to requirements contained in a recent audit conducted by the EPA's Office of Inspector General of North Carolina's NPDES Enforcement and Region 4 Oversight, the Division agreed to require permittees to utilize more sensitive methods to measure TRC in order to more closely comply with the permit limits. In the case of TRC, the "action level" permit limit is 17 ug/l and a more sensitive measurement methodology was required in order to ensure that dischargers achieved this limit.
2. The whole effluent toxicity (WET) testing that is used to measure compliance with the 17 ug/l TRC action level standard is not an adequate indicator of toxicity as it relates to TRC. TRC has a very short hold time because it dissipates very rapidly. In order to be effectively measured, an effluent sample must be specifically collected and measured for TRC. Because composite sampling is used for WET tests, the levels of TRC in the effluent can be quite different than the concentrations in the lab upon the initiation of the WET test.
3. The Division has found that a number of chlorine dischargers have a tendency to overchlorinate their effluent in order to ensure adequate disinfection of their wastewater. Because chlorine is highly toxic, this overchlorination can have significant and deleterious effects on sensitive aquatic environments downstream of the discharge. Due to the inadequacy of the WET testing as it relates to TRC, which was noted above, this overchlorination has proven difficult to effectively curtail.
4. The 17 ug/l instream TRC standard has already been required for new and expanding chlorine dischargers since the mid-1990s.

Expense: Based on available information, DWQ is currently aware of two, affordable field-portable systems that can be utilized to demonstrate compliance with the proposed 17 ug/l instream TRC standard. Both these systems have a cost of approximately \$3000 per unit. The Division does not consider this capital cost to be overly-burdensome even to the small discharger. Furthermore, information available to DWQ indicates that the

sampling costs associated with this field-portable equipment is \$1 to \$2 per sample. For a small discharger with a twice per week sampling requirement, this equates to additional operating costs of \$104 to \$208 per year. This is also not deemed to be overly-burdensome to the permittee. Furthermore, the United States Fish and Wildlife Service (USFWS) has provided comments (see the written comments section) which indicate that the USFWS has enjoyed considerable success in employing field-portable TRC monitoring equipment to accurately measure levels as low as 10 ug/l.

In the case of the NC Public Schools, DWQ records indicate that there are approximately 120 public schools located in 40 counties that have discharge permits that would be affected by the proposed TRC instream standard. It is the opinion of the Division that the counties administering these 120 schools will be able to successfully comply with the new TRC requirement by purchasing only 1 sampling and monitoring unit per county. This means that, based upon the costs of procuring the field-portable equipment specified above, the total capital costs to the affected counties/school system statewide would be approximately \$120,000. Furthermore, at \$1 to \$2 per sample, and with a twice per week sampling requirement, the total operating costs to the affected counties/school systems statewide would be approximately \$12,500 to \$25,000 per year.

Implementation: DWQ understands the concerns regarding the implementation of the low-level TRC monitoring. In response the Division has already developed a phased implementation for this requirement for those new and expanding dischargers that already have a permit limit based on the 17 ug/l instream TRC standard. Accordingly, this phased approach will also be adopted for the implementation of the standard for those existing dischargers that will be affected by this proposed instream TRC limit. Existing TRC dischargers will not receive new permit limits based on the proposed standard until such time as their current NPDES permit is due for review/renewal. Following receipt of the new permit limit and the associated low-level sampling and monitoring requirements, and according to the DWQ implementation guidance, a small discharger will not be awarded civil penalties for discreet measurements < 100 ug/l TRC, but greater than their permit limit, for an 18 month transition period, which begins when the new permit limit and low-level monitoring/sampling requirement are received in the affected small facilities permit. Major facilities will not be awarded civil penalties for discreet measurements < 50 ug/l, but greater than their permit limit, for a 12 month transition period, beginning when the new permit limit and low-level monitoring/sampling requirement are received in the affected major facilities permit. This will provide an ample opportunity for the personnel at both the small and major affected facilities to become more proficient and familiar with the use and operation of the new low-level monitoring equipment and not unduly penalize facilities that are making an effort to comply with these new requirements.

Comment: Furthermore, representatives from the cities noted above made the following additional comment regarding the proposed TRC standard:

- *If the Commission adopts the new 17 ug/l instream TRC standard it will automatically make all the discharges currently deemed permitted under 2H .0106(f) no longer allowable because these activities would now be violating water quality*

standards. This is because normal tap water is chlorinated at a level far above 17 ug/l and therefore, under the new standard, an activity would not be allowed to discharge unaltered tap water.

Response: I am waiting on a response from Dave Goodrich concerning this issue.

Comment: A representative from the City of Mebane presented the Hearing Officer with an excerpt from the 18th Edition of the Standard Methods indicating that chlorine is very unstable in aqueous solution.

Response: This excerpt has been entered into the Hearing Record and is contained in Attachment 11 on page 97.

Comment: A representative for the Water and Sewer Authority of Cabarrus County supported the proposed revision of the MBAS standard and provided a written copy of her remarks.

Response: No response necessary. The written remarks are contained in Attachment 11 beginning on page 99.

Comment: A representative from Clean Water for North Carolina (CWFNC) and the Haw River Assembly and the Upper Neuse Riverkeeper urged the Commission to remove the Class C classification for North Carolina's waters and require all waters of the State to meet Class B standards for primary recreation.

Response: As this comment primarily deals with the development and establishment of bacteriological criteria for North Carolina's surface waters, this comment will be referred to those individuals responsible for the development of the State's new bacteriological (*E. coli* / enterococci) criteria. However, at present, the exiting bacteriological (fecal coliform) standard for both Class C and Class B waters in North Carolina is 200/100 ml.

Comment: Representatives from CWFNC and the Haw River Assembly, and the Upper Neuse Riverkeeper, urged the Commission to adopt and implement the EPA's ecoregion nutrient criteria as soon as possible and without further modification.

Response: This comment will be referred to those individuals responsible for the development of North Carolina's Nutrient Criteria Implementation Plan. This plan will detail North Carolina's management strategy for the control of nutrients in surface waters. In the course of the development of this plan, the EPA's ecoregion criteria will be evaluated as possible options for implementation as North Carolina's nutrient criteria.

Comment: CWFNC remarked that DWQ should regulate bioaccumulative toxins more restrictively by not allowing mixing zones these discharges.

Response: The DWQ NPDES Permitting Unit generally does not allow for mixing zones in discharge permits. Those mixing zones that are granted are provided on a case-by-case

basis after a thorough examination of the data. However, this comment will be forwarded to the NPDES Permitting Unit for further consideration.

Comment: CWFNC urged DWQ to implement the wetlands classifications contained in the DWQ rules.

Response: The Division of Water Quality believes that it can effectively enforce wetlands standards in any wetland in the State, even though that wetland may not be classified. The State would like to be able to go through and properly classify all the wetlands using all the wetlands classifications that are contained in DWQ rules, but this is an extremely lengthy process and due to the present cutbacks the Division does not possess the resources necessary to accomplish this task. However, DWQ has recently received an EPA grant that will permit the Agency to begin classifying wetlands under the UWL classification in the near future.

Comment: Representatives from CWFNC and the Rowan County Soil & Water Conservation District Board urged the Commission to adopt a statewide water quality color standard.

Response: This current iteration of the Triennial Review has progressed too far to include a color standard. However, the development of a surface water quality color standard for possible adoption in the next Triennial Review will be investigated and examined in detail by the Division.

Comment: A representative from CWFNC presented pictures and water samples that depicted discoloration in the Pigeon River and Third Creek.

Response: The articles were viewed by the Hearing Officer.

Comment: A representative from CWFNC urged the Commission to implement measures or standards that will clean-up the color, smell, and overall water quality of the Pigeon River. Do not delist the Pigeon River from the 303(d) List.

Response: The Pigeon River has been delisted from the 2002 303(d) List for dioxin, but remains listed for other pollutants. As a result of this listing, a Total Maximum Daily Load (TMDL) for the Pigeon River will be developed with the intent of removing many of the pollutants that cause its current problems. This comment has been referred to DWQ's TMDL Unit.

Comment: A representative from the Haw River Assembly urged the Commission to tighten and adopt all standards necessary to ensure that waters are cleaned to the level required by the Clean Water Act.

Response: The Division of Water Quality constantly strives to ensure that all its water quality standards and programs fully comply with the Clean Water Act.

Comment: A representative from the Haw River Assembly remarked that DWQ should act as an intermediary between businesses and the public to ensure that the public health and interest is protected in our waters.

Response: One of the primary goals of DWQ is to ensure the continued protection of the public health and public interest through the implementation of surface water quality programs.

Comment: A representative from the Haw River Assembly noted that the TRC standard should be lowered to 0 ug/l.

Response: Based on DWQ calculations, the proposed instream standard of 17 ug/l will be fully protective of both human health and aquatic life.

Comment: A representative from the Haw River Assembly commented that MTBE is insidious. DWQ should also consider a possible standard for ethyl tert butyl ether (ETBE).

Response: The Division has proposed a water quality MTBE standard for adoption that it believes will be fully protective of human health and the environment. ETBE will be examined by DWQ for possible adoption as a future water quality standard if available data indicate that this is necessary.

Comment: The Executive Director of the Haw River Assembly remarked that NC should do a better job of posting waters to protect its citizens from the health risks inherent to swimming in polluted waters.

Response: DWQ is currently in the process of reviewing its methodologies associated with the posting of waters that have been polluted by bacteriological pollutants. This comment will be referred to the individuals involved in that review.

Comment: The Executive Director of the Haw River Assembly noted that 80 – 90% of the Haw River has been through a WWTP at least one time. This causes too many nutrients in the water and nuisance alga blooms.

Response: The information concerning the Haw River is most interesting. This comment will be forwarded to those individuals involved with the development of North Carolina's Nutrient Criteria Implementation Plan.

Comment: The Executive Director of the Haw River Assembly provided the Hearing Officer with a December 2001 press release and photographs from December 2001 and June 2002. The press release and the photographs concerned the problems with alga blooms that have been encountered in the Haw River.

Response: These items have been entered in the Hearing Record and are contained in Attachment 11, beginning on page 101.

Comment: A Supervisor on the Rowan County Soil and Water Conservation District Board asked, "Why are municipalities provided permits to discharge pollutants when farmers must have no discharge?"

Response: Federal effluent guidelines mandate non-discharge permits for animal operations. This requirement is based on the fact that agricultural operations have available tracts of land on which to use their discharge for irrigation purposes. This not only makes sense from a conservation and water-reuse perspective, but also prevents increased degradation of waters from additional point-source discharges.

Comment: A Supervisor on the Rowan County Soil and Water Conservation District Board asked, "Is it safe to be using waters from the Third Creek to irrigate crops that will be sold to the consumer?"

Response: The Division of Water Quality believes that water from North Carolina's Class C waters is safe for the irrigation of crops.

SUMMARY OF THE WRITTEN COMMENTS RECEIVED

A total of 14 written comments were received prior to the close of the comment period on August 15. These written comments are contained in Attachment 12, which begins on page 105. The following is a brief summary of all the written comment received, along with a response:

Comment: The following two comments concerning the proposed cyanide standard appeared in a number of the written comments received:

- 1. The current approach of regulating cyanide as "total cyanide" is too conservative. Some forms of cyanide measured as total cyanide are not bioavailable. The cyanide standard should be based on the measurement of the bioavailable "free cyanide."*
- 2. Develop separate water quality standards for cyanide for trout and non-trout waters. The proposal to allow for the development of site-specific cyanide standards is not an adequate substitute for a dual standard based on free cyanide.*

Comment: Representatives from Alcoa Primary Metals (page 105) submitted written comments that suggested alternative cyanide analytical methods that they felt would be more appropriate than the existing total cyanide method.

Response: "Free cyanide" is the sum of the cyanide present as hydrocyanic acid (HCN) and as the cyanide ion (CN⁻). "Free cyanide" is the primary toxic agent, regardless of its origin. Total cyanide analysis measures all CN species in the water body, including free cyanide. Research has shown that some of the bound CN can be easily broken down in

the environment becoming free cyanide. The breakdown of total cyanides to free cyanides is unpredictable and problematic in waterbodies. Because of this, the chemical impact of cyanide in NC's rivers and streams is estimated by total cyanide analysis. This approach may be considered conservative, but it also ensures that North Carolina's cyanide standard is fully protective of human health and the environment.

For the 2000-2003 Triennial Review DWQ developed and originally proposed trout and non-trout waters cyanide standards. However, following a review, the Environmental Protection Agency deemed that the proposed non-trout waters cyanide standard would not be fully protective of NC's warm water sensitive species. Therefore, this standard was deemed to be unacceptable by the EPA.

The new analytical methodologies suggested by Alcoa will be investigated as possible alternatives to the existing free cyanide methodology for a future Triennial Review.

Comment: Officials with the City of Winston-Salem wastewater operations (page 109) oppose the proposed, instream TRC standard. They feel that the proposed, instream TRC standard is overly protective. The difficulty in performing the low-level TRC monitoring and analysis makes it far too expensive, difficult, and cumbersome for the most dischargers to successfully complete. The required equipment is not readily available in an affordable and usable fashion.

Comment: Several officials from the City of Burlington's Utilities Department and WWTP (page 113) went on record to oppose the proposed, instream TRC standard for the reasons previously mentioned in this report, including that the costs to implement this proposal will far outweigh the benefits.

Comment: Representative writing on behalf of the Yadkin/Pee-Dee River Basin Association (page 115) recommended that the EMC retain the current "Action-Level" TRC standard for many of the same reasons already noted in this report. In addition the Association noted that DWQ's policy imposing strict TRC permit limits on new and expanding chlorine dischargers is inconsistent with the regulation of TRC as an Action-Level standard. This policy requires the affected dischargers to use dechlorination techniques that have unknown effects on water quality and the public health.

Comment: Representatives from the City of Statesville (page 119) also submitted comments recommending that the EMC retain the current Action-Level standard for TRC for reasons similar to those already stated in this report.

Response: Please see the previous response concerning the proposed TRC standard addressed to similar comments that were received at the Public Hearings.

Comment: Furthermore, several of the written commenters noted above made the following additional remarks concerning the proposed instream TRC standard:

- *The proposed Total Residual Chlorine standard is inappropriate because it would apply equally to all forms of combined chlorine in discharges. Not all forms of chlorine are equally toxic and chlorine in a discharge often combines with nitrogen to form organochloramines, which are non-toxic or only marginally toxic. Therefore, the proposed TRC standard is invalid because this standard incorporates the measurement of the “non-toxic” chlorine compounds in determining if a facility is in compliance and these compounds present no threat to the environment.*

Response: The relative toxicity of free, available chlorine and chloramines appears to be related to rate of toxicity rather than any across the board higher degree of toxicity of free available chlorine. Chloramines apparently display a slower rate of toxicity than the relatively fast acting free forms but the former should in no way be considered non-toxic. Particularly among saltwater invertebrates, chloramines may indeed prove more toxic than free, available chlorine. In wastes/waters containing ammonia, much of the free, available chlorine is converted to mono- and dichloramine. A standard that considered only free, available chlorine would not consider nor protect against the potential toxicity of the combined forms of chlorine.

These comments often do not clearly distinguish arguments that some other organic chloramine exists that in some way generically interferes with the analytical method or categorically produces a non-toxic form of measurable chlorine. If such specifics exist, they should be considered on a case-by-case basis, both in the context of compound toxicity, and its risk to the environment by its being/not being covered by the WQ standard.

It is therefore important that the chlorine standard consider both free, available chlorine as well as combined chlorine as a measurement of, and standard for total residual chlorine.

This information is discussed by: USEPA.1984. Ambient Water Quality Criteria for Chlorine-1984. USEPA Office of Water Regulations and Standards. Washington, DC. EPA 440/5-84-030

A review article was written by: Brungs, William A. 1973. Effects of residual chlorine on aquatic life. JWPCF. Vol 45, no. 10, Oct. 1973.pp.2180-2193 that corroborates this information.

A thorough multi-species study of continuous and intermittent exposures to monochloramine is presented by:

Brook, Arthur S., Donald C. Szmania and Mark S. Goodrich. 1989. Special Report No. 39. A Comparison of Continuous and Intermittent Exposures of Four Species of Aquatic Organisms To Chlorine, March 1989. Final Research Report Submitted to Hunton and Williams on behalf of the Utility Water Act Group. Center for Great Lakes Studies and Dept. of Biological Sciences, Univ. of Wisconsin-Milwaukee. Milwaukee, WI.

This latter study corroborates the conclusion that chloramine toxicity must be considered in any standard for chlorine and demonstrates the effects that exposure duration/magnitude/frequency can have on results.

Comment: A number of written comments registered support for the proposed revision to the MBAS standard.

Response: No response necessary.

Comment: The Clean Water Fund for North Carolina (page 177) and the American Canoe Association (page 125) submitted a detailed methodology for the establishment of a numeric water quality color standard for North Carolina.

Response: The Classification and Standards Unit will conduct a comprehensive examination of this, and other color measurement, procedures to determine the appropriateness of proposing this methodology, or another suitable methodology, for inclusion in the next iteration of the Triennial Review.

Comment: The American Canoe Association (ACA) (page 125) submitted detailed remarks concerning the existing color variance in the NPDES permit for Blue Ridge Paper Products. In particular, the ACA noted that technically and economically feasible options do exist that could achieve compliance with the current water quality standard for color by the end of this permit term.

Response: The remarks will be referred to DWQ's NPDES permitting Unit for their review and consideration.

Comment: The ACA also provided detailed comments opposing the continuation of the temperature variance in Blue Ridge Paper Product's current NPDES Permit. These remarks note that, in the ACA's opinion, the variance is illegal because the existing temperature variance does not allow a balanced and indigenous species population to exist downstream of the discharge.

Response: The remarks will be referred to DWQ's NPDES permitting Unit for their review and consideration.

Comment: Clean Water for North Carolina (CWFNC) and the Southern Environmental Law Center (SELC) (page 129) do not support the proposal to allow the development of site-specific cyanide standards.

Response: DWQ firmly believes that the EPA-developed procedures that a discharger must comply with in order to gain approval of a site-specific cyanide standard are stringent enough to ensure that the affected waters will remain fully protective of all aquatic life. The USFWS and the EPA share this belief and support the proposed revision of the standard.

Comment: CWFNC and the SELC support the proposed revision of the TRC standard. CWFNC would also consider a phased implementation approach for the small dischargers to be reasonable.

Response: No response necessary.

Comment: CWFNC and the SELC encourage DWQ to adopt a more stringent MTBE standard for non-Water Supply (WS) waters than the proposed 1,158 ug/l standard.

Response: Based upon the toxicity data provided by Department of Health and Human Services, the proposed non-WS waters MTBE standard will be fully protective of both human health and aquatic life.

Comment: The SELC (page 129) encourages DWQ to adopt the proposed 10 ug/l arsenic standard for both saltwaters and freshwaters.

Response: The 10 ug/l arsenic standard was not proposed for the State's saltwaters because, to DWQ's knowledge, the current detection level for arsenic in saltwater is 40-50 ug/l. Therefore, it would be problematic to adopt a water quality standard that is below the current detection limit.

Comment: SELC encourages DWQ to establish the same water quality standards for Class C and Class B waters, thereby making all waters safe for primary recreation and removing this distinction of Class C and Class B waters. In addition, the SELC urged DWQ to adopt new bacteriological criteria based on E. coli or enterococci during the Triennial Review.

Response: DWQ is awaiting the results of a sampling study that will be concluded in the fall of 2002 before initiating rulemaking to switch the bacteriological criteria to either *E. coli* or enterococci. This is why the Division plans to initiate rulemaking in 2003 to accomplish this change. This comment will be referred to those individuals responsible for the development of the State's new bacteriological (*E. coli* / enterococci) criteria. However, at present, the exiting bacteriological (fecal coliform) standard for both Class C and Class B waters in North Carolina is 200/100 ml.

Comment: The SELC was disappointed in the fact that DWQ was not adopting nutrient criteria as part of this Triennial Review and recommended the adoption of the EPA's ecoregion criteria as an interim measure.

Response: DWQ is currently involved in the development of a comprehensive nutrient control strategy that will be delineated in the Nutrient Criteria Implementation Plan. The development of this plan, tailored to North Carolina's waters, has been both recommended and encouraged by the EPA. This comment will be referred to those individuals responsible for the development of North Carolina's Nutrient Criteria Implementation Plan.

Comment: The SELC urged the Division to commence enforcement of the State's numeric turbidity standard in order to restore and protect surface waters from the serious impacts caused by excessive sedimentation and turbidity.

Response: The Division has been reviewing the effectiveness of the current turbidity standard at the request of the EMC and has involved the Division of Land Resources and the Sedimentation and Control Commission in this review.

Comment: The SELC encouraged DWQ to adopt a standard for "minimum flow" that could be utilized during periods of drought, like the present time, to establish effluent limits, instead of the present 7Q10 flow. SELC states that the current flow in many waters is below 7Q10. This leads to higher concentrations of pollutants in these waters than was intended.

Response: This comment has been forwarded to the NPDES Permitting Unit for further review.

Comment: The United States Fish and Wildlife Service (USFWS) (page 133) commented that it supported the proposed revisions to the cyanide and TRC standards. In addition, the Service urged the State to utilize the latest information available from the USFWS concerning freshwater mussels' sensitivity to ammonia toxicity in NPDES permit issuance and renewal. Furthermore, the Service provided valuable information regarding the availability and use of field-potable low-level TRC sampling and analysis equipment.

Response: The Division appreciates the continued assistance and data support provided by the Fish and Wildlife Service throughout the entire Triennial Review process.

Comment: The Division received comprehensive comments concerning the proposed MTBE standard from representative of the North Carolina Petroleum Council (page 137) and the ExxonMobil Refining and Supply Company (page 175). These comments questioned the overall need for an MTBE standard in North Carolina's waters and the proposed level (12 ug/l) for the Water Supply waters MTBE standard. Although these comments are far too comprehensive to be reproduced here (these entire remarks are contained in Attachment 12), these remarks contained the following major issues:

- 1. The occurrence and concentration data for MTBE in surface water, both within North Carolina and nationwide, do not support the need for a surface water standard.*
- 2. Deriving an MTBE standard based on the assumption that it is a low-dose human carcinogen is contrary to the current scientific evidence.*
- 3. Setting MTBE standards that are neither needed nor appropriate could result in overly burdensome and unnecessary monitoring and testing requirements.*
- 4. If the State feels that an MTBE standard is an absolute necessity, then establish the WS waters standard at 70 ug/l, similar to the proposed groundwater standard.*

5. *If a standard is established, the NPDES Unit should be directed to issue NPDES Permits that contain a provision allowing the permittee to discontinue MTBE testing after three consecutive reports of a diminimus level of MTBE concentrations in the water discharge.*

Response: The decision to propose the adoption of instream surface water quality MTBE standards, and the levels at which these proposed standards would be set, was based upon toxicity data and calculations performed by the Occupational and Environmental Epidemiology Branch (OEEB) of the Division of Public Health, of the North Carolina Department of Health and Human Services. This supporting data and calculations are contained in Attachment 13, which begins on page 199. This is a document prepared by OEEB for the Groundwater Section of DWQ concerning acceptable MTBE limits in water intended for human consumption. Based on this data, and OEEB's determination that MTBE is either a Class B2 or Class C probable or possible human carcinogen, OEEB calculated that 11.6 ug/l MTBE would be an acceptable MTBE standard for groundwater that would be used for drinking water. The Division of Water Quality acted on this recommendation to propose an MTBE standard for Water Supply waters that would be fully protective of the public health. This is the derivation of the 12 ug/l WS waters standard. Furthermore, DWQ used the toxicity data developed by OEEB to further calculate safe levels of MTBE for non-water supply waters that would be protective of both human health and aquatic life. This is the proposed 1,158 ug/l standard. Based upon the information provided by the Division of Public Health, the Division feels that the proposed standards are an appropriate response in order to ensure that NC's waters remain fully protective of both human health and aquatic life.

Comment #5 above, will be referred to the NPDES Permitting Unit for further consideration.

Comment: Clean Water for North Carolina (CWFNC) (page 177) calls for DWQ to commit to a program of split sampling to confirm WET analyses in regards to the proposal to incorporate the toxic constituents of MBAS into WET testing.

Response: This comment will be referred to the NPDES Permitting Unit for further consideration.

Comment: CWFNC calls for the implementation of the EPA ecoregion nutrient criteria. CWFNC does not understand why, in light of current resource restraints, DWQ does not forgo the development of a "flexible" Nutrient Criteria Implementation Plan and simply adopt the EPA criteria.

Response: In numerous discussions with the EPA, the Agency has stressed to DWQ the importance of developing a Nutrient Criteria Implementation Plan specifically tailored to the waters of North Carolina. EPA understands that their proposed ecoregion criteria may not be the best approach to the management of nutrients in NC's waters and has strongly encouraged all the Region 4 states to develop plans that are site-specific and tailored to the waters of their particular state. To this end, the Agency has provided the

Division with a large amount of flexibility in developing a comprehensive, site-specific nutrient management strategy, and DWQ would like to avail itself of this opportunity in order to develop a plan that is best suited to the needs of the State.

Comment: CWFNC calls for DWQ to monitor for mercury and dioxin in sediment in order to accurately track the impact and risk of these pollutants to the environment.

Response: The Division has not implemented a wide scale sediment monitoring program throughout the State. However, an ongoing mercury study is performing some sampling of mercury in sediment in several eastern areas of North Carolina.

Comment: CWFNC remarks that Adsorbable Organic Halides (AOX) should be regulated instream at non-detect as well as “at the pipe” using a rigorous AOX effluent loading standard that places all pulp mills on a level regulatory playing field.

Response: AOX is a measure of the total amount of halogens (chlorine, bromine, & iodine). The reduction of chlorine use in pulp and paper industry and the implementation of the 17 ug/l instream chlorine standard should result in a decrease of AOX concentrations in North Carolina’s waters. DWQ will revisit this issue for the next Triennial Review.

Comment: CWFNC recommends the adoption and implementation of instream Biological and Chemical Oxygen Demand (BOD and COD) standards in order to fully protect aquatic respiration.

Response: Instream BOD and COD are presently considered and modeled as part of the TMDL development process for impaired waters.

Comment: CWFNC provided detailed comments regarding a proposal for a numeric color standard for North Carolina.

Response: The Division appreciates the effort that was required to develop this proposal. DWQ will examine this methodology in detail to determine its suitability for inclusion in the next iteration of the Triennial Review.

Comment: CWFNC recommends that DWQ establish citizen-panels downstream of water identified as potentially problematic for aesthetic parameters to evaluate instream conditions, such as odor, itching skin, and burning eyes, and the palatability of fish removed from these waters.

Response: Although the Division appreciates this innovative approach to control these problem parameters, the scope of this proposal is beyond the capability of the Division to accomplish under its existing budgetary and resource constraints.

Comment: CWFNC provided comprehensive comments supporting their recommendation that the Division remove the Class C designation and require all waters of the State to meet Class B requirements, at a minimum.

Response: These remarks will be considered during the development of the State's new bacteriological (*E. coli* / enterococci) criteria. However, at present, the exiting bacteriological (fecal coliform) standard for both Class C and Class B waters in North Carolina is 200/100 ml.

Comment: CWFNC provided detailed comments supporting their recommendation for implementing the more protective wetlands classifications of Class WL, SWL, and UWL.

Response: The Division of Water Quality believes that it can effectively enforce wetlands standards in any wetland in the State, even though that wetland may not be classified. The State would like to be able to go through and properly classify all the wetlands using all the wetlands classifications that are contained in DWQ rules, but this is an extremely lengthy process and due to the present cutbacks we do not possess the resources necessary to accomplish this task. However, DWQ has recently received an EPA grant that will permit the Agency to begin classifying wetlands under the UWL classification in the near future.

Comment: CWFNC remarked that the Division needed to ensure that it lists waters on the 303(d) List for all impaired pollutants and delists waters only when all pollutant impacts have been reduced to allow the fulfillment of all designated uses.

Response: According to the Division's TMDL and Modeling Unit, waters in North Carolina are listed for all pollutant impairments, based upon the available data, and delisted only when the data indicates that all these pollutants are meeting applicable standards.

Comment: CWFNC provided extensive and comprehensive remarks concerning the issuance of water quality variances in general, the color variance for Blue Ridge Paper Products, the temperature variance for Blue Ridge Paper Products, and the temperature variances for power generating plants.

Response: These comments will be referred to the NPDES Permitting Unit for further consideration and review as it relates to the future renewal of these variances.

Comment: CWFNC provided color photographs depicting discoloration of the Pigeon River downstream of Blue Ridge Paper Products and discoloration of Third Creek downstream of the Statesville Wastewater Treatment Plant. In addition, CWFNC provided a graph of the light absorbance spectrum of a water sample taken 1/2 mile downstream of the Statesville Wastewater Treatment Plant.

Response: These items have been entered into the Hearing Record and are included in Attachment 12, beginning on page 191.

Comment: The Dead Pigeon River Council (DPRC) (page 195) requested that the following actions in order to restore the Big Pigeon River:

- *Adopt a color standard.*
- *Do not remove the Pigeon River from the 303(d) List.*
- *Reconsider the granting of temperature and color variances that affect the river.*

Response: Please refer to the previous responses that already addressed these specific issues in this Hearing Record.

Comment: The DPRC provided a short videotape that documented the comments of several concerned individuals regarding the water quality of the Pigeon River.

Response: This videotape has been entered into the Hearing Record and will be maintained on file in the DWQ Planning Branch for anyone wishing to view it.

Comment: J. A. Perry, a concerned citizen (page 197), submitted remarks supporting the CWFNC comments regarding the adoption of a water quality color standard and the establishment of citizen panels to evaluate aesthetic parameters and the palatability of fish.

Response: Please refer to the previous responses that already addressed these specific issues in this Hearing Record.

RECOMMENDATIONS

Following a careful and comprehensive review of all the submitted written and oral comments, supporting data, and attachments to this record, the Hearing Officer makes the following recommendations to the Environmental Management Commission (EMC):

1. That the EMC adopt the changes to the surface water quality standards as proposed in the Notice of Text and as incorporated into the proposed rule amendments contained in Attachment 14, which begins on page 205 of this document. The standard changes recommended for adoption are summarized below:
 - A human health standard for arsenic of 10 ug/l would be established for all freshwaters of the State. In addition, an instream standard for arsenic of 10 ug/l would be established for all water supply (WS) classified waters of the State. The current arsenic standard for the affected waters is an aquatic life standard of 50 ug/l.
 - The current freshwater action level standard of 17 ug/l for total residual chlorine (TRC) would be removed and replaced with an instream surface water quality standard of 17 ug/l for TRC for all freshwaters of the State.

- The existing freshwater cyanide standard of 5 ug/l would be modified to allow dischargers the option of developing a site-specific standard based upon the aquatic life at the site in accordance with EPA procedures.
 - A new surface water quality standard for methyl tert-butyl ether (MTBE) would be established. This standard is proposed to be 12 ug/l for all water supply (WS) classified waters of the State. In addition, a human health standard for MTBE of 1,158 ug/l would be established for all other waters of the State (both salt and fresh).
 - The existing methylene blue active substances (MBAS) surface water quality aquatic life standard of 500 ug/l would be removed and replaced with an aesthetic MBAS standard of 500 ug/l for water supply (WS) classified waters. Under this proposal the toxic constituents of MBAS would be covered under existing whole effluent toxicity (WET) testing.
2. That all the submitted comments regarding water quality and thermal variances be forwarded to the NPDES Permitting Unit of DWQ for further review and consideration by appropriate parties at the time of the next scheduled renewal of these variances.
 3. That all the submitted comments concerning the implementation of nutrient criteria and the establishment of new (*E. coli* or enterococci) bacteriological criteria be forwarded to the appropriate individuals for further review and consideration at the time these criteria are developed.
 4. That the Division of Water Quality review available options for the development of a numeric statewide color standard for inclusion in the next iteration of the Triennial Review.