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Pennsylvania Fish & Boat Commission

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August 14, 2012

DEP POLICY OFFICE
AUG 20 2012
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Environmental Quality Board
Post Office Box 8477
Harrisburg, PA 17105-8477

Re: Comments on Proposed Rulemaking Associated with Triennial Review of Water Quality Standards

Dear Board Members:

The Pennsylvania Fish and Boat Commission (PFBC) appreciates the opportunity to provide comments on the water quality standard changes proposed as part of the Triennial Review of Water Quality Standards. These standards are critical to our agency's mission to protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities. Our partnership with the Pennsylvania Department of Environmental Protection to protect Commonwealth waters has been enhanced by water quality criteria based on sound scientific research.

Our staff has reviewed the proposed rulemaking and offer these specific comments:

CHLORIDE CRITERIA

The PFBC supports the addition of chloride criteria for the water uses CWF, WWF, TSF, and MF. Recent scientific evidence suggests that a chloride criterion should be based on aquatic life toxicity data. The Department has proposed the Iowa Equation-Based Aquatic Life Chloride Criteria for inclusion into Title 25 Chapter 93 Water Quality Standards, which states as follows:

Ch_2 May not exceed, in freshwater, the concentration calculated (in mg/l) by the following equations: **CWF, WWF, TSF, MF**

1-hour average Criteria Maximum Concentration (CMC) criterion:
$CMC = 287.8(Hardness)^{0.205797}(Sulfate)^{-0.07452}$

4-day average Criteria Continuous Concentration (CCC) criterion:
$CCC = 177.87(Hardness)^{0.205797}(Sulfate)^{-0.07452}$

Hardness (in mg/l as $CaCO_3$) and sulfate (in mg/l) values shall be based on receiving water natural quality.

The PFBC has reviewed and evaluated the Iowa Equation-Based Aquatic Life Chloride Criteria for waters of the Commonwealth. Based on our analysis of PFBC water quality data, we support and recommend the calculation of the 1-hour average CMC. We believe this calculation is appropriate and will provide necessary protection for aquatic communities throughout the Commonwealth.

We also support the science based approach for the CCC criterion; however, our analysis of PFBC water quality data suggests that this criterion would be less protective to aquatic life than the EPA 1988 National Aquatic Life Criteria for chloride. We recommend that the Department review water quality data sets that may refine and improve the validity of the CCC equation that would be applicable to Commonwealth waters.

DISSOLVED OXYGEN
The Department is proposing the following dissolved oxygen (DO) criteria:

DO_1	**For flowing waters, 7-day average 6.0 mg/l; minimum 5.0 mg/l. For Salmonid early life stages, 7-day average 9.0 mg/l; minimum 8.0 mg/l. For lakes, ponds and impoundments, minimum 5.0 mg/l.**	**CWF**
DO_2	**7-day average 5.5 mg/l; minimum 5.0 mg/l.**	**WWF**
DO_3	**For the period February 15 to July 31 of any year, 7-day average 6.0 mg/l; minimum 5.0 mg/l. For the remainder of the year, 7-day average 5.5 mg/l; minimum 5.0 mg/l.**	**TSF**

The inclusion of additional protection for the early life stages of salmonid species for CWF waters was historically reviewed and supported by the PFBC.

The PFBC supports the DO criteria that are being proposed for water use WWW. Increasing the minimum value from 4.0 mg/L to 5.0 mg/L will be more protective to aquatic life within the Commonwealth. A dissolved oxygen literature review and evaluation of available research, mostly pertaining to basses and warmwater fishes, was conducted by the PFBC in 2009. A brief summary of those results, conclusions, and interpretations in relation to DO criteria is provided herein. In general, sublethal and lethal effects to fishes were inversely correlated with DO concentration while directly correlated to temperature and exposure period. This exposure period may only be hours. Environmental degradation may significantly complicate and/or raise sublethal and lethal threshold values of DO for fishes. At or below dissolved oxygen concentrations of 4.5 mg/L, smallmouth bass hatching and larvae survival were observed to be significantly reduced. Most species tested in laboratory settings exhibited sublethal effects at 3.0 mg/L DO. As DO dropped below 3.0 mg/L, ventilation rates and amplitudes increased rapidly, activity decreased, normal colors faded, and fish became less responsive to stimuli. Lethal DO levels for smallmouth bass ranged from 0.5 - 2.0 mg/L. Fish populations from the Wisconsin River were related to DO and it was found that percent sport fish, percent walleyes and yellow perch, percent centrarchids, number of fish species, and number of sport fish species were all greater at sites where the average summer DO concentration exceeded 5.0 mg/L. Data published

by researchers and conclusions presented by literature reviewers all bottle neck toward a common threshold value of approximately 5.0 mg/L for freshwater fishes. Stressors such as pollutions and increased water temperatures during low flow periods would increase this DO threshold; therefore, 5.0 mg/L should be viewed as a value providing a minimal margin of protection to a multi-species warm water fishery throughout all life stages.

The PFBC acknowledges that the Department is proposing to eliminate **DO4** (minimum 7.0 mg/l for HQ-CWF) for the following reason: "*Revisions to D.O. criteria do not include specific minima for high quality streams. As stated in chapter 93, the water quality of High Quality Waters shall be maintained and protected, except as provided in §93.4c.(b)(1)(iii). Since existing quality must be maintained, a D.O. criterion for these streams is unnecessary.*" We support the maintenance of existing water quality and conclude this change as being a more protective criterion for our high quality waterways within the Commonwealth.

Throughout the temperature and dissolved oxygen sections of the triennial review document, the term "Salmonid" has been used. This term has been converted into English from Salmonidae and is no longer a proper noun and should not be capitalized – salmonid should be used.

SULFATE
The PFBC has reviewed the Illinois Natural History Survey publication documenting sulfate toxicity to aquatic life and concurs with the findings. In addition, previous water quality standards for Pennsylvania were restricted to potable water supplies and the proposed sulfate criterion expands sulfate protections to all waters within the Commonwealth. We support the addition of these sulfate criteria.

CHROMIUM III
We recognize that the conversion factors proposed for chronic and acute chromium III are the same as the U.S. EPA's National Recommended Water Quality Criteria, which are supported by scientific literature. The use of these conversion factors allows consideration of hardness of specific Commonwealth waters that can greatly affect toxicity of this constituent. We support the addition of these chromium III conversion factors to Chapter 93 criteria.

ACROLEIN
One use of acrolein is listed as an aquatic herbicide. PFBC reports that no use of Magnacide H or any aquatic pesticide containing acrolein has been known to occur in Pennsylvania according to our records. The material safety data sheet for Magnacide H indicates that acrolein has a high level of toxicity to humans and aquatic life. It is a restricted use pesticide only able to be handled by certified applicators. The MSDS toxicity data indicates that the water quality criteria proposed should be protective of aquatic life and human health. PFBC supports the proposed acrolein criteria.

BENZENE METASULFONIC ACID
BENZENE MONOSULFONIC ACID
P-PHENOL SULFONIC ACID
RESORCINOL
Our staff have reviewed the document on which the proposed criteria are based; AMEC's 2008 report entitled "Development of Ambient Water Quality Criteria for Benzene Metadisulfonic Acid, Benzene Monosulfonic Acid, p-Phenol Sulfonic Acid, and Resorcinol." We note that

acute and chronic responses of the midge larvae *Chironomus* and the rotifer *Brachionus* are addressed in the criteria proposed for Resorcinol. Criteria for benzene metasulfonic acid, benzene nonosulfonic acid and p-phenol sulfonic acid vary slightly from those proposed by AMEC. The differences are apparently due to rounding and do not exceed 4.1%. The PFBC does not object to this change, but suggests that the differences between proposed criteria and those in the AMEC (2008) document be described, since this is the sole document upon which criteria are said to be based.

MOLYBDENUM

The PFBC believes that the proposed chronic molybdenum water quality criterion of 1900µg/l is not adequately protective of aquatic life. We support the 6000 µg/l acute criterion. Our staff has reviewed the Tetra Tech, Inc. (2008) report that provided the basis for Nevada water quality criteria development for molybdenum. The document was incorrectly cited in the background Pennsylvania Bulletin documentation as 2009 publication. Tetra Tech's analysis supported a Nevada chronic water quality criterion of 1.65 mg/l (1650 µg/l). We also note that a sensitive test organism, white sucker, *Catostomus commersonii*, is very common in Pennsylvania waters. Larval white sucker growth lowest effect observed concentration was documented as a chronic molybdenum toxicity of 1.7 mg/l (1700 mg/l). Northern pike, *Esox lucius*, had very similar sensitivity. Based on this information, our agency recommends adoption of a 1650 µg/l chronic water quality criterion as proposed by Tetra Tech, Inc (2008) and subsequently adopted by the state of Nevada to protect sensitive fish. We also note that amphibians may have low molybdenum tolerance and additional toxicity work is desirable to define an appropriate level of protection.

NONYLPHENOL

Our agency recognizes that the proposed criteria reflect the current U.S. EPA National Recommended Water Quality Criteria. We support the nonylphenol criteria.

1,2 cis-DICHLOROETHYLENE
ACRYLAMIDE
BENZYL CHLORIDE
2-BUTOXY ETHANOL
CYCLOHEXYLAMINE
1,4-DIOXANE
STRONTIUM
1,2,4-TRIMETHYLBENZENE
1,3,5-TRIMETHYLBENZENE

The PFBC recognizes that human health criteria are important aspects of water quality criteria that help protect anglers and boaters as well as the general public. We defer to DEP staff and their coordination with the U.S. EPA to evaluate human health risks and establish human health criteria for these constituents.

Section 93.9b. Drainage List B.

Indian Orchard Brook and Holberts Creek (tributaries to the Lackawaxen River) need to be listed within Section 93.b. The PFBC has forwarded to DEP the necessary information to support this recommendation.

Section 93.9c. Drainage List C.
Little Pocono Creek (tributary to Pocono Creek) needs to be listed within Section 93.c. The PFBC has forwarded to DEP the necessary information to support this recommendation.

Section 93.9k. Drainage List K.
PFBC fisheries biologists surveyed 13 named tributaries to the North Branch Susquehanna River in sub-subbasin 05E during August and September 2011 as part of the PFBC statewide unassessed waters study. The majority of streams supported transitional fish communities and sport fish populations were limited. Wild trout were present in four streams but only two qualified for the PFBC list of stream sections that support natural reproduction of trout. Packers, Raups, Gaskins, and Kipps Runs are currently omitted from the listing of streams within Section 93.k. The PFBC recently submitted to DEP the biological report which recommends the listing of these waterways as Cold Water Fishes and Migratory Fishes (CWF, MF) in the 25 PA Code Chapter 93 Water Quality Standards, Section 93.k.

Thank you for considering our comments. If you have any questions or desire additional discussion, please contact David Spotts, Chief, Division of Environmental Services at (814) 359-5115 or by e-mail at dspotts@pa.gov.

Sincerely,

John A. Arway
Executive Director