Maine Department of Environmental Protection
2021 Triennial Review of Water Quality Standards

Department Proposals for Changes to WQS

Department staff submitted 3 proposals to be considered for changes to water quality standards:

Update the Criteria for pH of Freshwaters due to Discharge of Pollutants

1. **Proposed change:** Maine statute (38 M.R.S. Section 464.4.A.5) stipulates that a discharge of pollutants may not cause the pH of freshwaters to fall outside of the 6.0 to 8.5 range. This proposal would increase the upper end of the criteria from 8.5 to 9.0. Please note that the Department is separately proposing to increase the lower end of this range from 6.0 to 6.5 as requested by EPA.

2. **Location of proposed change:** Statewide, for all permitted discharges (per 38 M.R.S. Section 464.4.A.5).

3. **Write a brief statement that justifies why the change should be considered.** EPA recommends a pH range of 6.5 to 9.0 as protective of freshwater aquatic life (EPA 1986). A recent study in Maine (McDonald, G.J. et al. 2019) characterized the natural geological influence on pH and determined that in certain areas in Maine, pH levels naturally rise above 8.5. This finding has been confirmed through routine Department water quality monitoring activities over the past several years (2016-present). A significant body of literature supports 9.0 as protective of trout/salmonids (Allen 2016; Daye and Garside 1975; Ye and Randall 1991).

4. **State how the proposed change will affect users of the State's surface waters, for example holders of wastewater or stormwater discharge permits or holders of land-development permits.** Increasing the upper end of the freshwater pH criterion from 8.5 to 9.0 will prevent any permitted discharges from raising the receiving waters above pH 9.0. Many current Maine wastewater discharge licenses include an upper pH limit of 9.0, which is considered best practicable treatment, and thus no impacts on licensees are anticipated.

References:

Allen, B. 2016. Finding Trout in All Conditions: A Guide to Understanding Nature's Forces for Better Production on the Water. 164 pp.

Daye, P.G. and Garside, E.T. 1975. Lethal levels of pH for brook trout, *Salvelinus fontinalis* (Mitchill). Canadian Journal of Zoology. 53(5): 639-641. https://doi.org/10.1139/z75-077

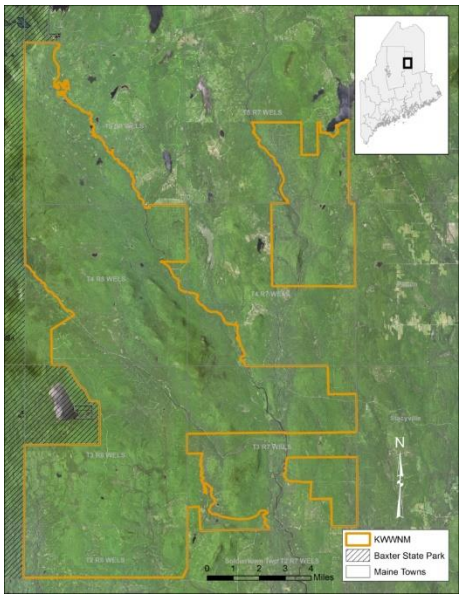
EPA 1986. Quality Criteria for Water (Gold Book). EPA 440/5-86-001.

McDonald, G.J., Norton, S.A., Fernandez, I.J, Hoppe, K.M., Dennis, J. and Amirbahman, A. 2019. Chemical controls on dissolved phosphorus mobilization a calcareous agricultural stream during base flow. Science of the Total Environment 660: 876-885.

Ye, X. and Randall, D.J. 1991. The effect of water pH on swimming performance in rainbow trout (*Salmo gairdneri*, Richardson). Fish Physiology and Biochemistry 9(1): 15-21.

Expand Definition Outstanding National Resource Waters

1. **Proposed change:** Include water bodies in national monuments in the definition of Outstanding National Resource Waters (ONRWs; 38 M.R.S. Section 464.4.F.2).



2. **Location of proposed change:** Statewide. However, because there is only one National Monument in Maine, the Katahdin Woods and Waters National Monument (KWWNM), the location of the change is currently limited to that area.

3. **Write a brief statement that justifies why the change should be considered.** Currently ONRWs include waterbodies in national and state parks, and other protected areas. Similar to those areas, national monuments are protected to ensure their natural, historical, cultural, or scientific values. With the creation of the KWWNM, it is desirable to extend ONRW status to that area.

4. **State how the proposed change will affect users of the State's surface waters, for example holders of wastewater or stormwater discharge permits or holders of land-development permits.** Except for certain cases as defined in Maine statutes, there may be no direct discharge of pollutants to ONRWs. *It is important to note that the current statutory allowance for stormwater discharges to ONRWs is under review with EPA (as a result of EPA's 6/5/15 decision letter to DEP Commissioner Patricia W. Aho, pp. 6 and 29) and may be amended or eliminated at some point in the future. Amendment or elimination of the current statutory allowance could limit or prohibit certain types of stormwater discharges and associated development in ONRW watersheds*. Hydroelectric power generation is not a designated use in these waters and inclusion of national monuments in Maine's definition of ONRWs will thus preclude future construction of water control structures in these areas. There are no pollutant discharge licenses to the waters within the KWWNM, and the Department is not aware of any anticipated construction projects for water control structures. More stringent limits may be placed on water withdrawal in ONRWs and this may affect agriculture

operations in these areas; the Department is not aware of any existing water withdrawal activities or permits within the KWWNM.

The East Branch Penobscot River within the KWWNM is currently Class AA and thus already qualifies as an ONRW; the same is true for certain tributaries. Other tributaries to the East or West Branches Penobscot River, or the Seboeis River, within the NM are currently Class A. All of these waters are proposed for an upgrade to Class AA during the triennial review.

Clarification of Narrative Aquatic Life Criteria for Water Quality Classes B, C, GPA, SB and SC

1. **Citation for standard or rule to be changed.** Certain subsections of 38 M.R.S. §§ 465 (for fresh surface waters which are not classified as great ponds, i.e. rivers and streams), 465-A (for lakes and ponds) and 465-B (for estuarine and marine waters) as shown below.

2. **Details of proposed change in standard or rule.** Proposed additions to 38 M.R.S. are shown with underlined text.

§ 465.3.B:

B. Class B waters must be of sufficient quality to support all aquatic species indigenous to those waters without detrimental changes in the resident biological community. The dissolved oxygen content of Class B waters may not be less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million and the one-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas. Between April 15th and October 31st, the number of Escherichia coli bacteria in these waters may not exceed a geometric mean of 64 CFU per 100 milliliters over a 90-day interval or 236 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval.

§ 465.4.B:

B. Class C waters must be of sufficient quality to support all species of fish indigenous to those waters and to maintain the structure and function of the resident biological community. The dissolved oxygen content of Class C water may not be less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. *(No other changes to this section are proposed.)* In order to provide additional protection for the growth of indigenous fish, the following standards apply. …

§ 465-A.1.B:

B. Class GPA waters must be described by their trophic state based on measures of the chlorophyll "a" content, Secchi disk transparency, total phosphorus content and other appropriate criteria. Class GPA waters must have a stable or decreasing trophic state, subject only to natural fluctuations, and must be free of culturally induced algal blooms that impair their use and enjoyment. The number of Escherichia coli bacteria in these waters may not exceed a geometric mean of 29 CFU per 100 milliliters over a 90-day interval or 194 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval. The aquatic life of Class GPA waters must be as naturally occurs.

§ 465-B.2.B:

B. Class SB waters must be of sufficient quality to support all estuarine and marine species indigenous to those waters without detrimental changes in the resident biological community. The dissolved oxygen content of Class SB waters may not be less than 85% of saturation. Between April 15th and October 31st, the number of enterococcus bacteria in these waters may not exceed a geometric mean of 8 CFU per 100 milliliters in any 90-day interval or 54 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval. The number of total coliform bacteria or other specified indicator organisms in samples representative of the waters in shellfish harvesting areas may not exceed the criteria recommended under the National Shellfish Sanitation Program, United States Food and Drug Administration.

§ 465-B.3.B:

B. Class SC waters must be of sufficient quality to support all species of fish indigenous to those waters and to maintain the structure and function of the resident biological community. The dissolved oxygen content of Class SC waters may not be less than 70% of saturation. Between April 15th and October 31st, the number of enterococcus bacteria in these waters may not exceed a geometric mean of 14 CFU per 100 milliliters in any 90-day interval or 94 CFU per 100 milliliters in more than 10% of the samples in any 90-day interval. The number of total coliform bacteria or other specified indicator organisms in samples representative of the waters in restricted shellfish harvesting areas may not exceed the criteria recommended under the National Shellfish Sanitation Program, United States Food and Drug Administration.

3. Provide a statement that justifies why the standard or rule should be changed as proposed.

Classes B, C, SB and SC

For these freshwater (B and C) and estuarine and marine classes (SB and SC) the language that is being proposed for addition is consistent with what already exists in relation to discharge provisions[1] and with the Department's existing and longstanding interpretations

[1] In 38 M.R.S. §§ 465.3.C, 465.4.C, 465-B.2.C and 465-B.3.C. Definitions of terms used in these sections are provided in 38 M.R.S. § 466, Rule Ch. 579 and Technical Bulletin 208, Biological Water Quality Standards to Achieve Biological Condition Goals in Maine Rivers and Streams: Science and Policy.

and practice with respect to the existing language. The Department has broadly interpreted and applied the term "discharge" and other existing language in those statutes as narrative aquatic life criteria in all classes. This is reflected in the Department's Rule Chapter 579 (*Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams*, 06-096 CMR 579; effective May 27, 2003), which describes how the Department evaluates rivers and streams to determine if they attain narrative aquatic life criteria for Classes AA, A, B, and C. Chapter 579 also establishes numeric aquatic life criteria for macroinvertebrate communities that occur in these waters. The Department does not have numeric criteria for biological communities in Class SB and SC waters at this time. Adding the proposed language presented above will further clarify these statutes consistent with the Department's existing practice and longstanding interpretations of the statutes, as reflected in Chapter 579, and will reaffirm that these statutory provisions already support and protect aquatic life communities through enforceable narrative aquatic life criteria for all Classes, including Classes B, C, SB, and SC.

Class GPA

The existing statute for lakes and ponds states that 'Class GPA waters must be of such quality that they are suitable … as habitat for fish and other aquatic life.', and that 'The habitat must be characterized as natural.'. The classification language implies aquatic life criteria but does not contain explicit aquatic life criteria language. Through its longstanding interpretation of these existing statutory provisions, the Department has treated the existing language in the statute as containing narrative aquatic life criteria for Class GPA waters. Accordingly, the addition of the language shown in item 2 above will clarify and reaffirm this approach consistent with the Department's existing and longstanding interpretations and practice.

4. **State how the proposed change will affect stakeholders, for example holders of wastewater or stormwater discharge permits or holders of land-development permits; municipalities; or the general public.** All of the proposed language additions shown in item 2 above are statutory clarifications and reaffirmations of existing and longstanding Department interpretations and practice with respect to existing statutory language. Therefore, the proposed changes are not expected to have any impacts on stakeholders.