



REGION 1

BOSTON, MA 02109

Dated via electronic signature

Bonnie Heiple, Commissioner
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Commissioner Heiple:

In a July 17, 2023 letter, the Ipswich River Watershed Alliance, Parker River Clean Water Association, and Massachusetts Rivers Alliance (collectively, “Environmental Groups”), informed the Environmental Protection Agency (“EPA”) of their intent to sue on the basis of the EPA’s alleged failure to review the Massachusetts Water Management Act (“MWMA”), Mass. Gen. Laws Ch. 21G, § 1 et seq., and its implementing regulations, 310 Code of Massachusetts Regulations §§ 36.01–36.44, for consistency with applicable requirements of the Clean Water Act (“CWA” or “the Act”), in violation of Section 303(c) of the Act. 33 U.S.C. § 1313(c). The Environmental Groups allege that certain provisions of the MWMA and its implementing regulations constitute water quality standards (“WQS”) under the CWA.

The EPA has considered the concerns raised and discussed them separately with your staff and the Environmental Groups. Whether provisions of the MWMA and its implementing regulations constitute WQS involves a complex legal analysis, and the EPA is not addressing the merits of the Environmental Groups’ legal allegations at this time. However, the petition raises significant environmental concerns with the MWMA and its implementing regulations, as detailed below. We recognize the technical complexity and practical challenges presented by these issues, and that protecting the Commonwealth’s water resources while also meeting water supply needs is no simple task. The EPA appreciates the significant resources that Department of Environmental Protection (“DEP”) dedicated to the development of and the ongoing implementation of the program. We also understand that, under state law, DEP has limited ability to regulate some withdrawals. At the same time, water withdrawals continue to contribute to low stream flows, causing environmental challenges in the Commonwealth’s waters. We propose exploring a practical and impactful path forward to address these concerns and forestall the need to resolve the petition.

As you know, the MWMA was enacted in 1985 and directs the DEP and the “water resources commission” to cooperate “in the planning, establishment and management of programs to assess the uses of water in the commonwealth and to plan for future water needs.”¹ DEP, in part, “shall adopt such regulations as it deems necessary to carry out the purposes of [the MWMA], establishing a

¹ MGL Ch. 21G §3.

mechanism for managing ground and surface water in the commonwealth as a single hydrological system and ensuring, where necessary, a balance among competing water withdrawals and uses.”² The Act allows for the withdrawal of water by private and public water suppliers in two ways: (1) by registration, and (2) by permit.

DEP has since issued implementing regulations on multiple occasions, including most recently in 2014 after completion of a multi-stakeholder process called the Sustainable Water Management Initiative (“SWMI”).³ DEP states that it developed the regulations “to establish enforceable standards, criteria and procedures that will enable the Department to comprehensively manage withdrawals above the threshold volume throughout the Commonwealth to ensure an appropriate balance among competing water withdrawals and uses and the preservation of the water resource.” 310 CMR § 36.02.

The Environmental Groups allege that, at a minimum, the “safe yield” provisions and the “streamflow criteria” provisions in the MWMA and in the implementing regulations establish WQS. They assert that the EPA should review the provisions as WQS and disapprove them as not based on sound science. CWA Section 303(c)(2) requires states to submit new or revised WQS to the EPA. CWA Section 303(c)(3) provides for EPA review of such WQS. The EPA’s authority and duty to approve or disapprove a new or revised WQS is not dependent upon whether the provision was submitted to the EPA for review.

Both the Parker and Ipswich rivers, the focus of the Environmental Groups’ concerns, are listed as impaired due to “dewatering” on the State’s 303(d) list. A total of 43 waterbodies in the Commonwealth are listed as impaired due to “dewatering.” Additionally, nearly the entire eastern half of the Commonwealth has been designated in the Biological Category 4 or 5 for the SWMI, meaning DEP has determined that fluvial fish abundance has been altered by at least 35% as a result of flow impacts in these subbasins. Many factors may contribute to low water levels, but permitted water withdrawals are certainly a factor in the lack of adequate flow in some water bodies.

We suggest that discussions to improve the operation of the water withdrawal program could focus on: (1) use of annualized Q90 streamflows and flow data that do not recognize within-year variability of flows for setting Safe Yields; (2) use of river body-wide data rather than segment-specific data; and (3) use of Biological Category 4 and 5 safe yield criteria.

1. Concerns with Annualized Flow

Because the annualized Q90 streamflow is a statistical value not correlated with how much water is actually in the waterbody at any given time, the calculated Safe Yield may be greater than the amount of water in a river or stream at certain times of the year. In those instances where a withdrawer is only subject to the Safe Yield provision and not required to meet any minimum instream flow, there are no minimum amounts of water required to be left instream. Therefore, withdrawing the entire Safe Yield could allow removal of all the water in a waterbody at some times of the year and negatively impact aquatic life, particularly during natural low flow and high usage seasons.

² *Id.*

³ See Sustainable Water Management Initiative (SWMI) Technical Resources, available at <https://www.mass.gov/guides/sustainable-water-management-initiative-swmi-technical-resources>.

There are also significant questions about the derivation of the threshold of 55% of Q90 as the Safe Yield. The SWMI Framework Summary dated November 28, 2012, states that it seeks to “protect quality habitats and avoid further degrading unhealthy aquatic habitats,” and that flow alterations greater than 25% of median flows (Q50) were expected to cause significant impact. Finding that 25% of the Q50 is “roughly equivalent” to 60% of the Q90 “on average,” the authors applied an “additional protection factor” to arrive at the threshold of 55% of Q90. Given the proximity to an identified level of harm and the acknowledged variability, the EPA is concerned this approach could allow a significant impact on the relative abundance of fluvial fish (an indicator of aquatic habitat quality).

Table 1 of the SWMI Framework Summary shows the total annualized authorized water withdrawals exceed the draft Safe Yield for the Ipswich River Basin, two segments of which are listed as impaired for dewatering on the state’s 2022 303(d) list.⁴ Comparison to a USGS gage in Ipswich, MA, which we appreciate is not exact because of differences in drainage areas, shows that total annual authorized water withdrawals for the basin almost always exceed the Safe Yield for at least one month a year, including the summer months in 2024. Table 1 reflects a similar scenario for the Ten Mile River.⁵

2. Concerns with Basin-wide Safe Yield calculations

As flow levels and rates vary across different waterbodies, and in different sections within the same waterbody, it is important to look at the smallest geographical scale possible when determining the quantity of available water. Using an overly broad geographic scale can undermine the accuracy of Safe Yield provisions, leading to a methodology that may not be protective. MWMA’s provisions relate to basin-wide data for Safe Yield calculations and may lead to withdrawals that are too large for smaller sub-basins to produce, potentially leading to dewatering of certain streams or tributaries.

3. Concerns with Category 4 and Category 5 Streamflow Criteria

For registered permittees seeking to withdraw beyond their registered amount but within the Safe Yield amounts, 310 CMR 36.14 contains an additional “streamflow criteria” provision, which states:

Withdrawals that contribute to a subbasin changing to a more altered category do not meet streamflow criteria and will only be permitted if the permittee demonstrates that there is no feasible alternative available to meet demonstrated water needs, and the permittee undertakes mitigation commensurate with the impacts of the withdrawal to the greatest extent feasible.

This provision offers a degree of protection for waterbodies in the higher categories (1, 2, 3, and 4), but category 5 waters cannot “[change] to a more altered [biological] category.”⁶ Existing withdrawals in these category 5 waters could avoid mitigation requirements even if they further degrade the water body, as that degradation would not shift the water body to a “more altered category.”

⁴ MassDEP. 2023. Final Massachusetts Integrated List of Waters for the CWA 2022 Reporting Cycle. CN-568.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program, Worcester, MA.

⁵ This may understate potential withdrawals since withdrawals below 100,000 gpd from a single water source only had to submit a voluntary registration on or before July 1, 1991.

⁶ 310 CMR 36.14(1).

As stated in the SWMI, the development of these biological categories was based on the Biological Condition Gradient (BCG), a descriptive model that categorizes water quality into six tiers.⁷ These six BCG tiers generally align with the five biological categories in 310 CMR 36.14. Additionally, while the EPA has recognized a consensus in the scientific community that “levels 1, 2, 3 and either some or all of BCG level 4 characteristics” are “generally compatible” with protection of aquatic life, the EPA has also recognized “unanimous” agreement that levels 5 and 6 are incompatible with such protection.⁸ The streamflow provisions in 310 CMR 36.14(1)(a) for part of the level 4 category and all of level 5 may result in insufficient flow to support aquatic life.

In summary, EPA recommends convening discussions among EPA, DEP, and the petitioners to consider whether improvements to the Water Management Act program could be made to obviate the need to resolve the petition. Key issues that could be addressed in those discussions include:

- Revisions to DEP’s Safe Yield calculations to account for the issues summarized above and including consideration of the following:
 - o Updated stream flow data that can be used to update Safe Yield calculations, such as work we understand the Commonwealth is doing with the USGS to conduct echohydrology and determine low-flow stream statistics throughout the State, and to develop regional regression equations for estimating selected low-flow statistics at ungaged sites in Massachusetts;
 - o The specific components of the natural flow regime (that is, magnitude, duration, frequency, rate of change, and timing) in the development of the Safe Yield calculation rather than relying on the more general annualized flow level; and
 - o Where the data are available, calculation of the Safe Yield with specificity to different segments within waterbodies (e.g., the Safe Yield at the headwaters of a river may be significantly different than the Safe Yield at the mouth of the river).
- Amendments to DEP’s Streamflow Criteria such that withdrawals trigger meaningful mitigation requirements for all alterations (lowering) of the Biological Category, particularly for Biological Categories 4 and 5.⁹

It is the EPA’s hope that we can work with you and the petitioners to be a partner in addressing the concerns raised. Ken Moraff, EPA Region 1 Water Division Director, will contact Kathleen Baskin, DEP

⁷ Davies SP, Jackson SK. The biological condition gradient: a descriptive model for interpreting change in aquatic ecosystems. *Ecol Appl.* 2006 Aug;16(4):1251-66.

⁸ U.S. EPA, EPA Pub. No. 842-R-16-001, A Practitioner’s Guide to the Biological Condition Gradient: A Framework to Describe Incremental Change in Aquatic Ecosystems 28 (2016), *available at* <https://www.epa.gov/sites/default/files/2016-02/documents/bcg-practioners-guide-report.pdf>.

⁹ The EPA notes that since 1996 it has encouraged all New England states to adopt streamflow WQS. Since then, New Hampshire, Rhode Island, and Vermont have adopted flow WQS and the call for such standards has only grown more urgent with altered flow regimes and increased intensity of droughts. The EPA is prepared to provide technical assistance to DEP in the development of flow WQS.

Assistant Commissioner for the Bureau of Water Resources, to identify next steps.

Sincerely,

Karen McGuire
Deputy Regional Administrator

Enclosures

cc: John Beling, MassDEP
Kathleen Baskin, MassDEP