Massachusetts Vision 2.0:
Clean Water Act Section 303(d) and
Total Maximum Daily Load Development



Commonwealth of Massachusetts
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https://www.mass.gov/total-maximum-daily-loads-tmdls

Massachusetts Department of Environmental Protection

The mission of the Massachusetts Department of Environmental Protection (MassDEP) is to protect and enhance the Commonwealth's natural resources – air, water, and land – to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth; provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives; and ensure a diverse workforce that reflects the communities we serve.

Watershed Planning Program

The mission of the Watershed Planning Program (WPP) in the Massachusetts Department of Environmental Protection is to protect, enhance, and restore the quality and value of the waters of the Commonwealth. Guided by the federal Clean Water Act, WPP implements this mission statewide through five Sections that each have a different technical focus: (1) Surface Water Quality Standards; (2) Surface Water Quality Monitoring; (3) Data Management and Water Quality Assessment; (4) Total Maximum Daily Load; and (5) Nonpoint Source Management. Together with other MassDEP programs and state environmental agencies, WPP shares in the duty and responsibility to secure the environmental, recreational, and public health benefits of clean water for all people of the Commonwealth.

Acknowledgements

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Disclaimer

References to trade names, commercial products, manufacturers, or distributors in this report constituted neither endorsement nor recommendation by MassDEP.

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Introduction

Recently, through a collaborative process with states, the United States Environmental Protection Agency (EPA) identified a long-term vision to enhance program efficiency, focus on state priority waters, provide flexibility to use tools beyond total maximum daily loads (TMDLs), and encourage states to develop new measures to track success.

States have been charged with developing their own strategy following the long-term vision and five goals identified by EPA to improve the implementation of CWA 303(d) programs.

EPA's five goals are:

- Data and Analysis Goal
- Planning and Prioritization Goal
- Restoration Goal
- Protection Goal
- Partnerships Goal

Massachusetts Vision Strategy

The Watershed Planning Program (WPP) in the Massachusetts Department of Environmental Protection (MassDEP) developed a strategy to prioritize impaired surface waters to support Clean Water Act objectives (such as TMDLs, watershed-based plans, and long-term control plans) that is adaptive, builds on and improves existing 303(d) program activities, and is based on quality assured data. Elements of the strategy will evolve over time as priorities change, technology improves, and information is updated. MassDEP's approach has three critical objectives that align with EPA's five goals:

1. Identify priority concerns;
2. Develop a process to assess, prioritize, evaluate, identify and fill information gaps;
3. Develop work plans and schedules to complete TMDLs or watershed plans (or other approaches where appropriate).

Priority Concerns

Priority concerns were determined by evaluating the type and relative frequency of impaired assessment units listed on the *Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle* (MassDEP 2021). This Integrated List was used for planning purposes as its release coincided with this prioritization effort. MassDEP's priority concerns for 2024-2032 are therefore impairments caused by nutrients (nitrogen and phosphorus) and pathogens that affect public health.

Purpose

The purpose of this document is to describe the MassDEP WPP approach to implementing EPA's new Vision for

CWA 303(d) Programs and provide guidance to assist WPP staff who are responsible for planning, developing, and executing the Clean Water Act (CWA) Section 303(d) program. Public input on the TMDL prioritization process is solicited.

Prioritization Process

The prioritization process is flexible so that metrics may be revised or weighted depending on the priority concern, type of waterbody, or other variables.

The process entails:

1. Ranking waterbodies by priority (specific for each waterbody type)
2. Evaluating the level of impairment
3. Selecting waterbodies
4. Soliciting public input
5. Assessing feasibility
6. Analyzing selected waterbodies

Metrics used to assess and score the impaired waterbodies were selected based on MassDEP's priority concerns and data accessibility. The prioritization approach is adapted to the different waterbody types (estuary, river/stream, lakes). Each waterbody type may have unique prioritization metrics.

Examples of prioritization metrics include:

- Severity of impairment
- Nutrient and chlorophyll-*a* concentrations
- Ecological importance
- Incidence of harmful algal blooms (HABs)
- Active public water supply
- Public access to the waterbody

A prioritization approach for each waterbody type was generated and evaluated.

Workplan Development

Workplan development will be completed as part of the biennial integrated list and Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) commitments. The purpose of this document is to identify the prioritization schema and to produce a preliminary short list of high priority waterbodies for restoration plan development, including TMDL development for 2024-2032. The feasibility of restoration plan development will depend on staffing levels, public engagement, and funding.

Overview of EPA's Clean Water Act 303(d) Program Vision

EPA has identified five goals that will help to strategically improve and protect water quality by enhancing Clean

Water Act (CWA) 303(d) program implementation [1]. The five goals are enumerated below:

1. **Data and Analysis Goal** - The CWA 303(d) program coordinates with other government and non-governmental stakeholders to facilitate data production and sharing, and effectively analyzes data and information necessary to fulfill its multiple functions.
2. **Planning and Prioritization Goal** - States, territories, and tribes develop a holistic strategy for implementation of Vision Goals and systematically prioritize waters or watersheds for TMDL and other plan development (restoration and/or protection) and report on the progress towards development of plans for priority waters.
3. **Restoration Goal** - States, territories, and tribes design TMDLs and other restoration plans to attain and maintain water quality standards, facilitate effective implementation, and drive restoration of impaired waters.
4. **Protection Goal** - In addition to recognizing the protection benefits that TMDLs and other restoration plans can provide; states, territories, and tribes may develop protection plans to prevent impairments and improve water quality, as part of a holistic watershed approach.
5. **Partnerships Goal** - The CWA 303(d) program meaningfully communicates and collaborates with other government programs and non-governmental stakeholders to effectively and sustainably restore and protect water quality.

In addition, EPA has identified four focus areas including:

- Program Capacity Building
- Environmental Justice
- Tribal Engagement
- Climate Change

MassDEP's Strategy to Implement EPA's Vision

MassDEP integrated EPA's five goals into an adaptive and systematic strategy to prioritize and develop restoration plans that will improve the quality of waterbodies included on the Massachusetts 303(d) list. MassDEP recognizes that elements of this strategy will evolve over time as priorities change.

The MassDEP strategy fosters opportunities for collaboration and integration with other CWA programs, particularly the nonpoint source (NPS) program, and has designed the approach to be flexible to meet the water quality priorities for restoration and protection. The TMDL Section and NPS Management Section, both within MassDEP's Watershed Planning Program (WPP), will work together to promote nine-element Watershed-Based Plans (WBPs) in areas where NPS pollution is the major cause of impairment. These nine-element WBPs can provide the foundation for an Advance Restoration Plan (ARP). An ARP is designed to address impairments for waters that will remain on the CWA 303(d) list (i.e., Category 5), as restoration activities are implemented prior to TMDL development. The purpose of ARP development is to encourage the use of the most effective and expeditious tool(s) to address water quality protection and restoration efforts and where possible, directly implement those efforts. While TMDLs remain the primary tool for addressing impaired waters, in certain cases there may be other restoration approaches in the near term that may achieve water quality goals as established in the Massachusetts Surface Water Quality Standards (SWQS, 314 CMR 4.00).

[1] see (EPA, 2022) for a detailed description of EPA's Vision for CWA 303(d) program

Stakeholder engagement is critical to all aspects of the MassDEP strategy. MassDEP's WPP organized a series of workshops in late 2016 and early 2017 and invited a wide variety of stakeholders to provide input on the development of a 10-year vision (the Vision) for the assessment, restoration, and protection of surface waters in Massachusetts. Four workshops were held, with the first three focusing on six elements of the Vision: prioritization, monitoring, assessment, alternatives, engagement, and integration.[2] The objective of the fourth workshop was to summarize stakeholder feedback received during the first three session. Stakeholders will continue to be engaged throughout this process as waterbodies are prioritized and selected and restoration plans are drafted.

In addition, MassDEP through this document seeks to solicit feedback on the identified prioritization approach, learn about specific waterbody concerns, evaluate data gaps, and gauge local interests to assess recovery potential.

Specifically, MassDEP may seek input from and, when possible, collaborate with multiple stakeholders, including, but not limited to:

- Local Municipalities
- Regional Planning Agencies
- Soil and Water Conservation Districts
- Community Watershed Groups
- Massachusetts Coastal Zone Management
- National Estuary Program
- EPA Southern New England Program
- Massachusetts Department of Fish and Game's Division of Ecological Restoration and other state environmental agencies

Prioritization is a key goal of the Vision and is inextricable from the other four goals. The overall approach to incorporate the Vision goals are enumerated below (see also Figure 1):

1. Determine priority concerns based on the types of impairments on the 303(d) list,
2. Group waterbodies by type (estuary, river/stream, lakes),
3. Develop a strategy to assess, prioritize, evaluate, identify, and fill information gaps, and
4. Develop work plans and schedules to complete TMDL or watershed plans (or other approaches where appropriate)

[2] For more information see Appendix A

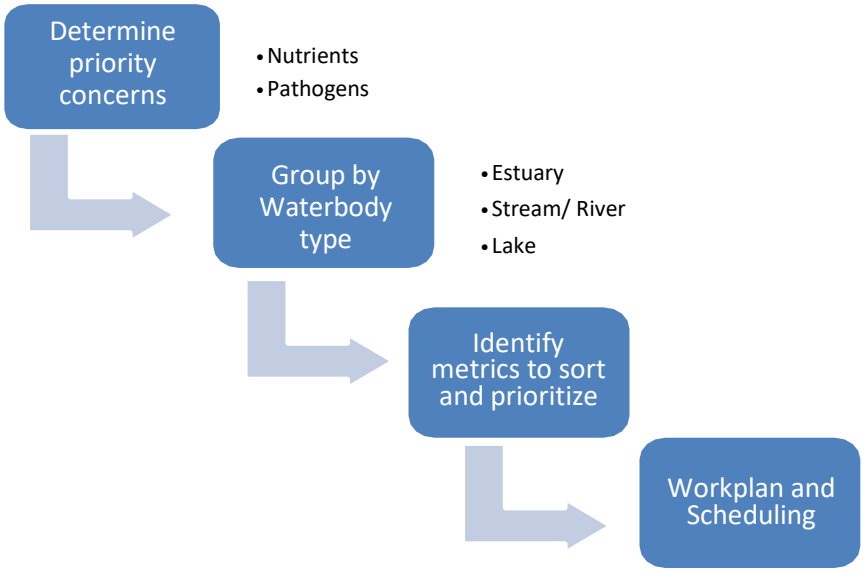

Figure 1 – An overview of MassDEP's strategy to implement EPA's new Vision for the CWA 303(d) program.

Determine Priority Concerns

Priority concerns were determined by evaluating the type and relative frequency of impaired segments listed on the 2018/2020 CWA 303(d) impaired waters list. There were 2742 listings with 72 possible impairment types. The 2742 listings were comprised of 1191 unique waterbody segments, including 618 segments that were listed for multiple impairments. Finally of the 2742 listings, 860 impaired segments currently have a TMDL.

Approximately 40% of the 1882 listings that require a TMDL are impaired due to nutrients while 12% were impaired due to pathogens (Figure 2). These impairments may be addressed at the watershed level where the likelihood of implementing a plan (or plans) that will achieve water quality improvements is greatest. The remaining 43% of the impairments are at the landscape level. These surface waters are polluted by legacy contamination (e.g., PCBs, metals, etc.), atmospheric deposition, or specific biological, habitat, and other impairments that are less suited for TMDL development.

MassDEP's priority concerns for 2024-2032 are impairments caused by nutrients (nitrogen and phosphorus) and pathogens that affect public health (Table 1, Table 2, and Table 3).

Table 1: Estuary Segment Impairments and TMDLs by Cause Group* and Area

Cause Group	Segment Count	Count of Segments with TMDL	Total Segment Size (square miles)	Total Segment Size with TMDL (square miles)	Area of Waterbodies Needing TMDL (square miles)
Nutrients	330	179	222.0	70.6	151.4
Toxics	54	0	122.7	-	122.7
Pathogens	265	227	253.8	216.7	37.1
Other	24	1	19.4	0.5	18.9
Metals	5	0	8.0	-	8.0
Petroleum/Oil	8	0	3.3	-	3.3
Biological	3	0	2.5	-	2.5
Temperature	3	0	0.4	-	0.4
Estuary Total	**692**	**407**	**632.2**	**287.8**	**344.5**

* A cause group organizes the approximately 70 distinct causes identified in Integrated List reporting to a smaller number of categories

Table 2: Lake Segment Impairments and TMDLs by Cause Group* and Area

Cause Group	Segment Count	Count of Segments with TMDL	Total Segment Size (acres)	Total Segment Size with TMDL (acres)	Area of Waterbodies Needing TMDL (acres)
Nutrients	454	81	43,660	7,172	36,488
Metals	161	107	54,579	47,732	6,847
Toxics	45	0	4,845	-	4,845
Pathogens	17	1	1,583	31	1,552
Aquatic Plants (Macrophytes)	47	6	1,473	180	1,293
Chloride	2	0	575	-	575
Biological	2	0	367	-	367
Other	4	0	235	-	235
Freshwater Lake Total	**732**	**195**	**107,317**	**55,115**	**52,202**

* A cause group organizes the approximately 70 distinct causes identified in Integrated List reporting to a smaller number of categories

Table 3: River Segment Impairments and TMDLs by Cause Group* and Length

Cause Group	Segment Count	Count of Segments with TMDL	Total Segment Size (miles)	Total Segment Size with TMDL (miles)	Length of Waterbodies Needing TMDL (miles)
Pathogens	418	169	1,824	580	1,244
Nutrients	323	86	1,566	493	1,073
Toxics	122	0	814	-	814
Other	121	2	504	5	499
Biological	117	0	491	-	491
Temperature	71	0	424	-	424
Metals	73	1	425	4	421
Habitat	30	0	108	-	108
Chloride	21	0	50	-	50
Petroleum/Oil	14	0	46	-	46
Aquatic Plants (Macrophytes)	8	0	42	-	42
River Total	**1,318**	**258**	**6,296**	**1,082**	**5,214**

* A cause group organizes the approximately 70 distinct causes identified in Integrated List reporting to a smaller number of categories

As illustrated in Figure 2, most impaired waters in Massachusetts are caused by excessive nutrients and pathogens. Given the priority concerns, waterbodies can be sorted by waterbody type to identify metrics best suited to rank and assess the waterbodies (Figure 1). For example, some metrics used to prioritize lakes were not applicable or meaningful for ranking estuarine waters. The next section includes a brief overview of the prioritization process. In addition, the Appendices provide the detailed prioritization analysis completed for each waterbody type.

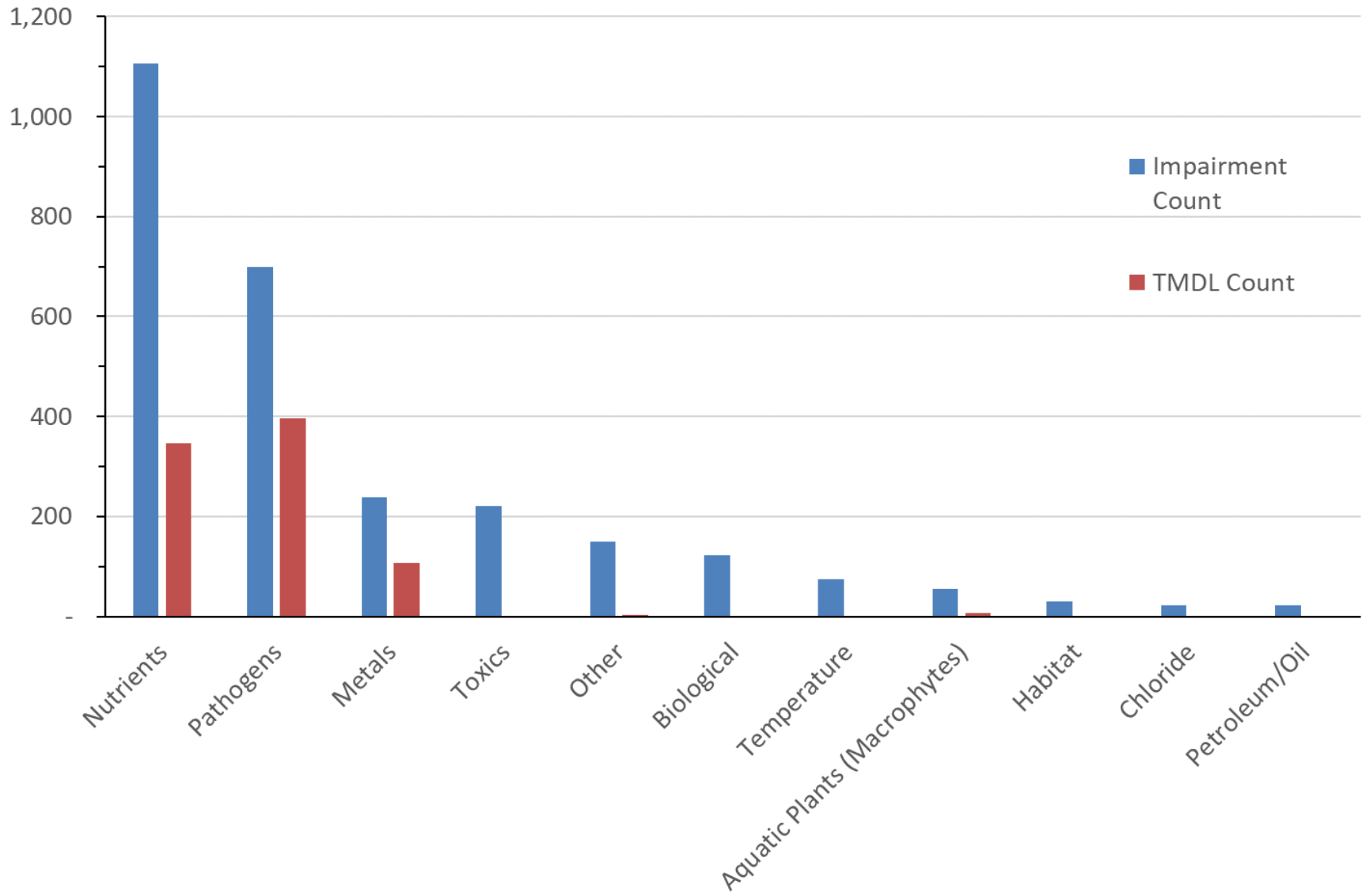

Figure 2. Count of Segment Impairments and TMDL Count by Cause Group (2018/2020 Integrated List of Waters)

Prioritization process

MassDEP developed a process to assess, evaluate, and identify data gaps and limitations to plan and schedule TMDL development. The process is flexible and will retain the ability to either update objectives or add weights to metrics dependent on the priority concern or type of waterbody.

The process includes:

1. Ranking waterbodies by priority (specific for each waterbody type)
2. Evaluating the level of impairment
3. Selecting waterbodies
4. Soliciting stakeholder input
5. Determining implementation feasibility
6. Analyzing selected waterbodies

An important step is to evaluate the level of impairment relative to the waterbodies within the classification. For example, a lake with a phosphorus concentration exceeding 50 µg/L may be ranked higher compared to a lake with a corresponding concentration of 25 µg/L.

The third step of the process involves reviewing and selecting from the ranked waterbody lists. This step may involve coordinating with other MassDEP programs, other state environmental programs, and interested stakeholders to identify the following: (1) data limitations and gaps; (2) partnership opportunities with other programs; (3) additional data sources; and (4) existing projects or activities. This information is documented for use in future planning.

In the fourth step, preliminary selected waterbodies are listed and public interest within these impaired watersheds is gauged. This step will require efforts to determine if existing plans or models are available, investigate other water quality activities within the waterbodies, and identify opportunities for collaboration.

After public interest is evaluated, the fifth step involves more detailed assessments that may include the following: (1) analysis of pollution sources; (2) identification of existing watershed plans or water quality improvement activities and (3) the available resources that could inform TMDL development feasibility.

See Appendix B, C and D for a more detailed description of the prioritization process steps and components for estuaries, lakes, and rivers respectively.

Public Participation

The release of the Vision 2.0 document was announced to the public on February 20th, 2024. This marked the beginning of the public comment period. The public comment period was extended through April 5th, 2004. All comments and responses to comments are included in Appendix E. MassDEP continues to seek further and continued feedback on specific waterbodies of interest and future feedback should be directed to Mr. Timothy Fox by email at timothy.m.fox@mass.gov .

TMDL Implementation and Partnerships

TMDLs are planning documents that identify pollutant sources and loads, and are not enforceable, in and of themselves. However, TMDLs provide information that may be incorporated into Comprehensive Water Resources Management Plans, or other planning documents. These measures, if adopted via National Pollutant Discharge Elimination System (NPDES) or Massachusetts Surface Water Discharge permits, may set water quality or technology-based effluent limits to control pollutants causing impairments. NPDES and Surface Water Discharge permits are enforceable. Waste load allocations in TMDLs can also be enforced in Municipal Separate Storm Sewer System (MS4) permits.

MassDEP has engaged in policy efforts to reduce nitrogen pollution and implement EPA-approved total nitrogen TMDLs on Cape Cod. In July 2023, MassDEP promulgated revisions to its septic system regulations (Title 5), 310 CMR 15.000, and new Watershed Permit regulations, 314 CMR 21.00, to compel nitrogen controls in 31 watersheds with EPA-approved TMDLs on Cape Cod. For more information see https://www.mass.gov/regulations/310-CMR-15000-septic-systems-title-5.

MassDEP prefers to work cooperatively with communities and stakeholders to protect and restore impaired waters. This is especially true for pollution deriving from nonpoint sources such as stormwater runoff and on-site wastewater disposal, and where solutions are less straightforward than additional treatment of a point source discharge. MassDEP has taken several steps to improve communication, including through the release of this document. See Appendix E for additional information on some of the recent efforts undertaken. Given the need to collaboratively work to restore water quality, MassDEP will continue to create partnerships to both create and implement TMDLs.

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MassDEP. 2021. Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle. CN 505.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA.

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Appendix A: Vision 1.0 Workshop

Four workshops were held between November 2016 and November 2017 to describe EPA's Vision process and to receive public feedback on priorities for protection and restoration of Massachusetts waterbodies. The speakers and case studies presented in the workshops were intended to inform attendees on a range of successful partnerships, projects, and opportunities for collaboration. The information gained from these prioritization discussions assisted MassDEP in determining the focus for future TMDL development and to identify improvement targets for protection efforts. The workshops also provided the Watershed Planning Program an opportunity to showcase and inform the public on current projects.

For the agenda, speaker slides, and a list of resources compiled for each workshop, refer to MassDEP's Watershed Planning Program webpage: https://www.mass.gov/info-details/watershed-planning-vision-process-workshops.

Workshop 1 –Elements of the CWA Vision - November 2016

The kick-off to the workshop series provided an introduction to the six elements of the Clean Water Act Vision. The half-day workshop included panel speakers presenting examples and experiences related to each of the Vision elements, followed by a question-and-answer session. The workshop concluded with a wrap-up discussion and a written survey questionnaire. The results of the discussion and survey informed the planning process for subsequent workshops. The survey indicated a clear preference for a future focus on prioritization and protection of our waterways. In addition, the consensus was a preference to continue the Vision process using small groups and workshops, and smaller break-out sessions, with more opportunities for discussion and learning.

Workshop 2 –Prioritization for Protection and Restoration and Alternatives to TMDLs - March 2017

Our next workshop included panel discussions and group break-out sessions in a full-day format. A panel of four speakers presented successful projects and explained their prioritization approach to restoration and protection. The case studies included prioritizing headwater stream restoration and protection projects and diadromous fish habitat restoration. The Mystic River Watershed Association also described how they were able to receive funding and resources for an alternative restoration plan; the City of Worcester outlined their stormwater management prioritization plan.

Small groups consisting of eight to ten people participated in breakout sessions designed to encourage interaction. The first session was used to identify priority waters for protection, to list perceived threats to those waters, and to brainstorm possible actions that may prevent impairment. The second breakout session was used to identify priority waters for restoration, and similarly, identify existing and potential threats and subsequent actions to restore those waters. See Table A1 and Table A2 for a summary of the two breakout sessions.

Workshop 3 – Monitoring, Assessment, Integration, and Engagement - April 2017

This all-day workshop began with a panel discussion on developing a balanced monitoring program. Subjects included the process of designing an appropriate sampling plan, the importance of a quality assurance project plan (QAPP) for data usability and sharing, and data analysis and reporting relative to the Massachusetts Surface

Water Quality Standards (314 CMR 4.00). The session emphasized that quality data are essential for understanding the condition of our waters.

Again, breakout sessions were organized with roughly eight to ten people in a group to get feedback as well as share problems and successes with the various monitoring programs. Questions asked during these sessions included: What questions are you trying to answer with your data? With whom do you share your data and how? What obstacles do you encounter? What successful strategies can you share with others? Furthermore, three case studies were presented to highlight successful partnerships and collaborations. Partnerships at many levels, including those among multiple government entities, universities, and environmental groups are essential to address the broad range of problems impacting our waterways.

Workshop 4- Rolling out the Draft Vision – November 2017

The last workshop in our series focused on summarizing and synthesizing the feedback from the previous two all day workshops and presenting it to the group for further refinement or input. Each comment made by the workshop participants in the previous two workshops was thoughtfully considered and grouped with similar responses.
Stakeholders attending the Vision workshops identified several broad categories of coastal marine and freshwaters for protection and more specifically those waters of high societal value:

- Drinking waters (e.g., Quabbin, Wachusett and Middlesex Reservoirs)
- Outstanding Resource Waters (ORWs)/high quality waters
- Recreational areas (bathing beaches, state parks, river ways with bike paths)
- Wild/Scenic/Undeveloped areas (e.g., Taunton and Westfield Rivers)
- Flood storage and floodplains (e.g., Charles River)
- Waters of historical/cultural value
- Waters for education

Note that the overall ***themes*** that developed from the brainstorming sessions were more important than the actual number, or ranking, of responses in each category.

Workshop attendees also identified the need to protect critical and natural flows, headwaters and waters with specific habitat functions. Specifically, waters needing protection included:

- Coldwater fisheries
- Critical habitats (e.g., vernal pools, waters in Areas of Critical Environmental Concern, habitat for sensitive, threatened or endangered species)
- Biodiversity/native species (e.g., native mussel streams, indigenous fish)
- Diadromous fish runs (e.g., herring and alewife runs)
- Migratory bird areas
- Wildlife corridors/stream connectivity
- Dynamic systems (e.g., flood plains and wetlands)

Potential threats to the protection of these sensitive waters were identified; these ranged from general (nonpoint sources) to more specific threats (invasive aquatic plants and invertebrates). Categories of threats include the following, in order from those most noted by workshop participants to the least:

- Unsustainable development
- NPS/Stormwater pollution

- Habitat loss
- Water/flow alteration
- Climate change
- Construction barriers
- Water quality degradation (e.g., litter, nutrients, bacteria)
- Inadequate resource management
- Agriculture
- Non-integrated/outdated regulations
- Invasives

Summaries of Vision break-out sessions during Workshops 2 and 3, and discussions from Workshop 4 are provided in the following tables and graphs below.

There was a clear message from the participants of our CWA Vision Workshops: they consider ***all*** waters of the Commonwealth to be a priority for Protection and Restoration; including freshwater rivers, lakes, marine coastal waters, and also critical habitats protecting biodiversity. Waters with potential high public impact and environmental justice related issues, such as urban waters, public spaces, parks and beaches were identified as a high priority for restoration.

The major threats to our waters in need of both restoration and protection were identified as nonpoint source pollution, urbanization and unsustainable development, and financial limitations. These problems were identified as the cause of continued habitat loss, flow alteration, and water quality degradation. Climate change impacts were also identified as threats to our waterways, suggesting the need to continue to prepare for increasingly varied weather patterns and the resulting impacts.

The group was asked to identify actions in the break-out sessions to address threats to our waterways. These included inadequate regulatory coverage and enforcement of existing regulations, land use planning and zoning as protective measures, and education and outreach to constituents.

Regulatory barriers were frequently identified as both a threat to our waters and a path to protecting and restoring waters. Several participants commented that the current regulatory framework should be reviewed to identify areas where there is inadequate, or possibly, no protection available. This would potentially include land use planning, review of local bylaws and regulations, revisions to the Wetlands Protection Act, and strengthening protection of resources such as floodplains and ACECs. Some participants felt that reductions in budgets and staffing in recent years have resulted in less regulatory enforcement. Regulatory action was identified as the principal path to restoration of impaired waters. It was also recognized that regulatory review and revision, although potentially providing a high degree of protection and restoration, is labor intensive and time consuming.

Workshop participants indicated that lack of environmental awareness, and insufficient education and outreach to the public, contribute to degradation of our waters. Residents and park users need to understand the impacts of their actions to the watershed and ultimately to our waterways. Education, demonstration projects, and building local capacity were identified as providing significant “return on investment,” or providing a high benefit for relatively low effort.

Table A1: Summary of Prioritization for Protection & Implementation Measures Breakout Session

Question(s) Asked:	Response	# of Mentions by Participants
What are the resources in your area that drive the need for protection? How do you/would you rank these?	Critical Habitat	15
	Stream & River Systems	14
	Cold Water Fisheries/ Headwaters	13
	Freshwater Lakes and Ponds	12
	Drinking Water Resources	11
	Coastal Resources	11
	Least Disturbed/ High Cultural Value	8
	High Recreational Value	7
	Native/Biodiverse	4
What are the threats to protection?	Habitat Loss	12
	NPS/Stormwater Pollution	11
	Unsustainable Development	9
	Water Quality Degradation	7
	Water/Flow Alteration	7
	Inadequate Resource Management	6
	Climate Change	5
What measures will achieve protection goals in your watersheds?	TMDLs and Land Use Planning	18
	Protective Actions	18
	Regulatory	16
	Collaboration and Advocacy	11
	Education and Communication	9
	Provide Resources	9
	Data Collection and Management	9

Table A2: Summary of Prioritization for Restoration & Implementation Alternatives Breakout Session

Question(s) Asked:	Response	# of Mentions by Participants
How do you/would you prioritize restoration efforts?	Public Impact and Environmental Justice	19
	Special Habitat	17
	Watershed Planning	16
	River Systems	14
	Marine Salt Marshes/Estuaries/ Diadromous Fish habitat	14
	Lakes and ponds, wetlands	13
	Flow-impaired or flow-sensitive streams and their sources	11
What are the threats to water quality in your area? What are the barriers to implementation?	Point and nonpoint sources	22
	Urbanization	17
	Regulatory barriers	15
	Flow alteration	10
	Resource limitations	10
	Lack of awareness/outreach/education	9
	Climate impacts	8
	Biological threats	8
	Chemical threats	8
Who will plan and implement restoration actions? Identify partnership opportunities?	Regulatory	23
	Restoration Projects	19
	Education and Communication	13
	Data Collection and Management	12
	Research	11
	Collaborations	11
	Advocacy	10
	Permitting	9
	Providing Resources	9
	TMDLs and Land Use Planning	9

Table A3: Summary of Monitoring & Assessment Breakout Session

Question(s) Asked:	Response	# of Mentions by Participants
What questions are you trying to answer through your monitoring program?	Assessment and Comparison to Standards	16
	Required Monitoring	14
	Analyze Watershed Impacts	11
	Planning Purposes	6
With whom do you share your data	State, Federal and Inter-Agency Sharing	9
	Direct communication with stakeholders	8
	Municipal Networks	5
	Educational Networks	3
How do you share your data?	Online notification	10
	Required Reporting	6
	Shared Databases	4
	Public outreach & education	3
	Partnerships	3
	Offline (mail and phone) notification	3
	States	1
	Watersheds	1
What works?	Communication and Outreach	7
	Established Sampling Protocols	7
	Resource Sharing	5
	Volunteer resources	4
	Regular Reporting and Analysis	3
	Goal Setting	2
What doesn't work?	Limited Resources ($$, equipment, lab capacity)	5
	Limitations of Data Management, Sharing and Analysis	4
	Limitations in Sampling and Methodology	4
	Limited QAPP Development Support	3

Appendix B: Estuary Prioritization

MassDEP has shown a long-term commitment to the restoration of impaired estuaries. Nutrients (phosphorus and nitrogen) support the growth of aquatic plants, which in turn provide food for fish, shellfish, and other organisms. However, excess nutrients can negatively impact coastal ecosystems. In 2001, the Massachusetts Estuary Project (MEP) was created to help determine current nitrogen loads to southeastern Massachusetts estuaries and evaluate reductions necessary to support healthy ecosystems. Through a collaborative effort between MassDEP, UMass-Dartmouth, and southeastern coastal communities, evaluations were completed for 68 coastal estuarine systems. EPA has approved nitrogen TMDLs for 51 of the estuarine systems, and seven nitrogen TMDLs are either in draft form or require additional information to complete the TMDLs. Ten of the technical evaluations determined that nitrogen concentrations and habitat health did not require development of TMDLs.

MassDEP has engaged in policy efforts to reduce nitrogen pollution and implement EPA-approved total nitrogen TMDLs on Cape Cod. In July 2023, MassDEP promulgated revisions to its septic system regulations (Title 5), 310 CMR 15.000, and new Watershed Permit regulations, 314 CMR 21.00, to compel nitrogen controls in 31 watersheds with EPA approved TMDLs on Cape Cod. MassDEP is working with municipalities to address nitrogen pollution in these watersheds through a variety of nutrient reduction strategies, including sewering, upgrades to septic systems to incorporate Best Available Nitrogen Reducing Technology (BANRT), permeable reactive barriers, restoration of wetlands to improve nitrogen attenuation, and other measures. MassDEP is engaged in planning efforts to address nitrogen pollution in other watersheds in estuarine waters.

Of the 222.0 square miles of estuarine area with a nutrient cause of impairment, approximately 70.6 square miles have a TMDL while approximately 151 square miles require a TMDL (Table 1). Any TMDL efforts will require adequate monitoring, data collection, and modeling to support a final TMDL document. This prioritization strategy will outline the rationale for the estuary TMDL prioritization and TMDL development strategy. The priority assigned in this document is only to provide indication of where WPP resources are first needed. The priority status may shift over time depending on complexities of the TMDL development process. MassDEP's Watershed Planning Program (WPP) will dedicate most focus and resources to the high priority embayments, but medium and low priorities will still require attention and resources.

In 2021, MassDEP worked with a consultant to investigate 19 estuarine systems. MassDEP's objective for this project was to compile existing data and information necessary to support the development of TMDLs or other restorative/protective plans for 19 estuarine systems that are potentially impacted by excess nutrients. These 19 systems can be organized in 17 clusters (Figure B1). Assembled data included nutrient related water quality data, bathymetric data, eelgrass habitat distribution, tidal fluctuations, and nitrogen land use loading including parcel specific information on wastewater treatment.

Based on a review of the existing data, a preliminary impairment status was identified and a recommended management approach (e.g., restorative TMDL, protective TMDL, alternative TMDL, TMDL not needed, etc.) was developed for each estuarine system. Data gaps were identified and modeling or other technical approaches to support the development of TMDLs or other plans were recommended for each estuarine system or group of systems.

By the end of the project a compilation of existing data from targeted estuaries, an evaluation of impairment

status, identification of data gaps, and modeling recommendations was completed. This work provided information in developing metrics TMDL staff then used to better prioritize next steps for TMDL development. All embayments identified in this strategy are targeted for restoration plan development. In general, based on compiled data, embayments fell into two categories: 1) insufficient data to determine impairment status or 2) data indicated impairment and TMDL or Advance Restoration Plan recommended (Table B1). Four waterbodies (Ellisville Harbor, Caleb's Pond, Oyster Pond, and Long Cove Pond) did not have sufficient data to prioritize and collecting additional information to assess water quality is needed.

An Advance Restoration Plan (ARP) is a plan designed to address impairments for waters that will remain on the CWA 303(d) list (i.e., Category 5), as restoration activities are implemented prior to TMDL development. While TMDLs remain the primary tool for addressing impaired waters, in certain cases there may be other restoration approaches that may meet water quality criteria established in the Massachusetts SWQS in the near term. Two systems (East Harbor Lagoon and James Pond) could potentially benefit from inlet stabilization and/or culvert enlargement (Advance Restoration Plan or Restorative TMDL recommended). For these two systems that could be considered for an Advance Restoration Plan, a hydrodynamic model will be necessary to evaluate the efficacy of water quality management actions (i.e., inlet stabilization, culvert development, and/or landscape nutrient management).

TMDL staff used the compiled data to develop an impairment score for each embayment to better evaluate the severity of the impairment. This included water quality data for dissolved oxygen, chlorophyll *a*, total nitrogen, and evaluation of percent eelgrass loss. Impairment scores for each embayment are included in Table B2. Embayments were clustered where combining assessment units (AUs) were appropriate. Impairment scores were averaged for embayment systems with multiple AUs in Table B3. Nitrogen loading estimates were calculated using GIS Land Use/Land Cover (MassGIS 2019), soil type (MassGIS 2021), and watershed delineation based on MEP. Nitrogen loading rates sourced from current Massachusetts MS4 general permit, Appendix F (EPA 2016), were used to calculate the loading and rates per embayment. The nitrogen loading numbers and loading rates were then divided into quartiles, with the highest loading rate scoring 4 and lowest scoring 1.

A TMDL priority designation of high, medium, or low was applied to each Coastal Cluster based on several factors, including: the watershed size, nitrogen loading estimates, cluster impairment score, hydrodynamic complexity, and consideration of ongoing TMDL development work by groups external to MassDEP (Table B3). High priority embayments are generally more impaired (greater eelgrass loss, lower DO, higher chlorophyll *a*, higher TN), and are reflected in the impairment score. These high priority embayments also have higher estimates of nitrogen loading. Low priority embayments for TMDL development are those embayments that have comparatively lower impairment severity scores, lower land-use derived TN loading estimates, or data gaps such that no impairment score was derived. WPP identified embayments as low priority for ongoing TMDL development work outside of WPP. For example, Pocasset Harbor is low priority as an external organization is working on a modeling effort in support of restoration plan development. Efforts will be made to coordinate WPP activities with external organizations, as possible.

It is the priority of WPP to address the more impaired waters first, while recognizing the priorities of municipalities, local watershed groups, or estuary programs are also factors in successful TMDL implementation. For this reason, local groups were consulted in the priority ranking and provided feedback on the initial priority status. The priority status designations were adjusted based on this local input and are reflected in Table B3.

Of the 17 embayment clusters, two embayment systems are assigned high priority. High priority systems include

the Onset Bay & Buttermilk Bay System and Weweantic River Estuary System both located in the Buzzards Bay watershed. While Edgartown Harbor Embayment System and Oyster Pond were identified as high priority when including local input, no waterbodies within these systems are currently listed as impaired (2018-2020 Integrated Report). Further work would be needed to ascertain the current assessment status of these waterbodies prior to TMDL development. Mattapoisett Harbor Embayment System (Mattapoisett Harbor and Eel Pond), Sippican Harbor Embayment System (Sippican "Inner" Harbor, Hammet Cove, Blankenship Cove, and Planting Island Cove), James Pond, and Clarks Cove are all medium priority. The remaining embayments are currently lower priority. This includes Apponagansett Harbor and Pocasset Harbor which are assigned low priority based on the work already in progress by Buzzards Bay Coalition, regardless of other scores indicating high priority. For a complete list of priorities see Table B3. The feasibility of TMDL and Advance Restoration Plan creation will depend on staffing levels, financial resources, policy initiatives, and stakeholder and public support.

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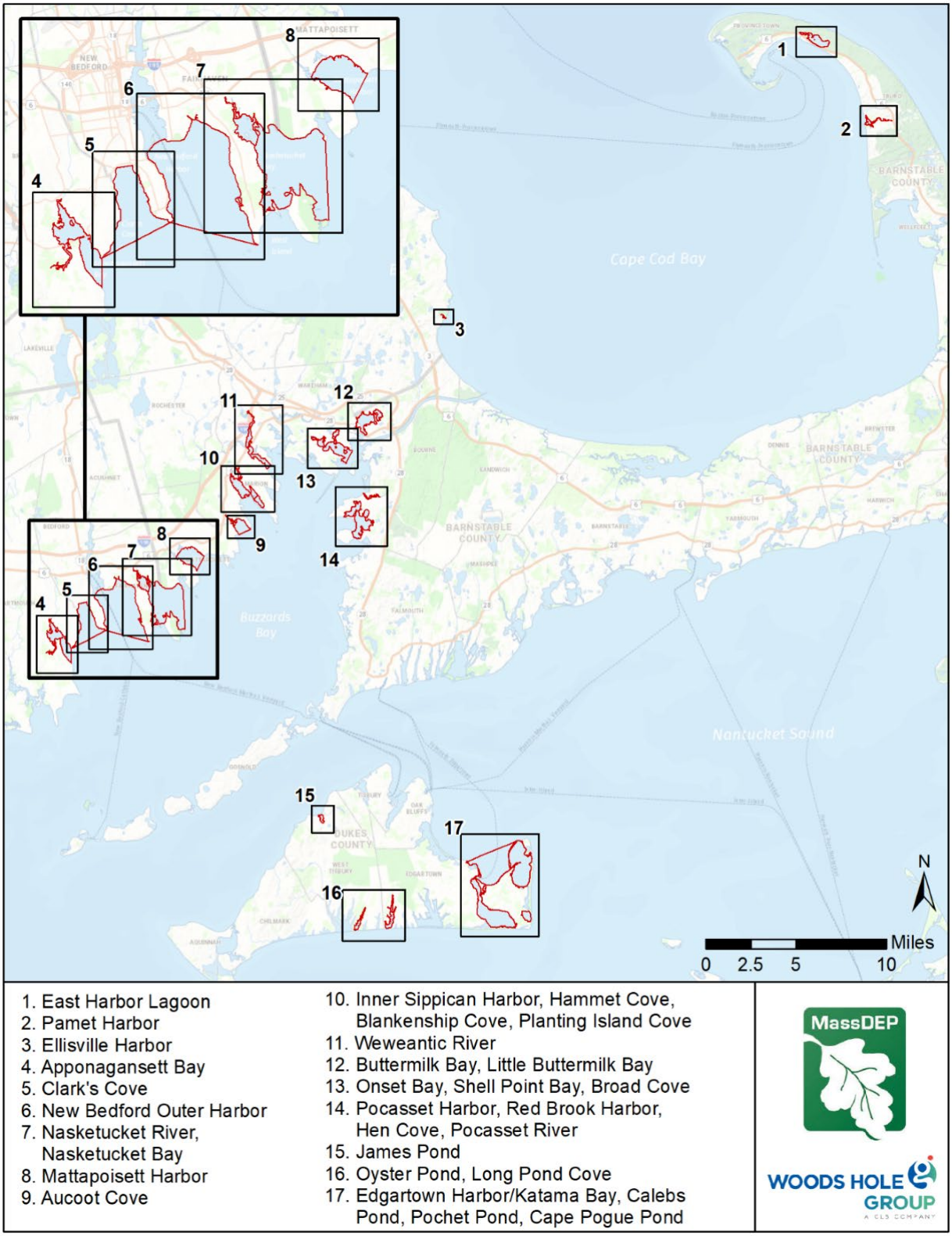

Figure B1. Embayment locations (excerpted from Woods Hole Group 2021)

Table B1: –Assessment Units and Recommended Restoration Action

AU ID*	Embayment(s)	Town	Major Basin	Recommended Restoration Action
MA95-39	Apponagansett Bay	Dartmouth	Buzzards Bay	Restorative
MA95-71	Aucoot Cove	Marion/Mattapoisett	Buzzards Bay	Restorative
MA96-83	East Harbor Lagoon (Pilgrim Lake)	Truro	Cape Cod	Restorative or Advance Restoration Plan
MA97-08	Cape Pogue Pond	Edgartown	Islands	Restorative
MA97-39	Calebs Pond	Edgartown	Islands	*Not enough data*
MA97-40	Pocha Pond	Edgartown	Islands	Restorative
MA97-16	Katama Bay/ Edgartown Harbor	Edgartown	Islands	Restorative
MA94-34	Ellisville Harbor	Plymouth	South Coastal	*Not enough data*
MA97-38	James Pond	West Tisbury	Islands	Restorative or Advance Restoration Plan
NO AU ID	Long Cove Pond	West Tisbury	Islands	*Not enough data*
MA95-35	Mattapoisett Harbor	Mattapoisett	Buzzards Bay	Restorative
MA95-61	Eel Pond	Mattapoisett	Buzzards Bay	Restorative
MA95-67	Nasketucket River	Fairhaven	Buzzards Bay	Restorative
MA95-38	Clark's Cove	New Bedford	Buzzards Bay	Restorative
MA95-63	New Bedford Outer Harbor	New Bedford	Buzzards Bay	Restorative
MA95-01	Buttermilk Bay	Bourne/Wareham	Buzzards Bay	Restorative
MA95-76	Little Buttermilk Bay	Bourne/Wareham	Buzzards Bay	Restorative
MA95-02	Onset Bay	Wareham	Buzzards Bay	Restorative
MA95-94	Shell Point Bay	Wareham	Buzzards Bay	Restorative
MA95-95	Broad Cove	Wareham	Buzzards Bay	Restorative
MA97-13	Oyster Pond	Edgartown	Islands	*Not enough data*
MA96-31	Pamet River/Harbor	Truro	Cape Cod	Restorative
MA95-17	Pocasset Harbor	Bourne	Buzzards Bay	Restorative
MA95-18	Red Brook Harbor	Bourne	Buzzards Bay	Restorative
MA95-18	Hen Cove	Bourne	Buzzards Bay	Restorative
MA95-16	Pocasset River	Bourne	Buzzards Bay	Restorative
MA95-70	Sippican "Inner" Harbor	Marion	Buzzards Bay	Restorative
MA95-56	Hammet Cove	Marion	Buzzards Bay	Restorative
MA95-100	Blankenship Cove	Marion	Buzzards Bay	Restorative
MA95-100	Planting Island Cove	Marion	Buzzards Bay	Restorative
MA95-05	Weweantic River	Wareham	Buzzards Bay	Restorative

*AU ID organized in order of grouping of embayments referred to as 'Coastal Clusters' shown in Table B2

Table B2. Coastal Clusters, Assessment Units, and Summary of Nutrient Associated Impairments

Coastal Cluster	AU ID	Embayment(s)	2018/2020 Integrated Report Nutrient Category 5	# of Seasons with > 10% DO <6 mg/l	# of Seasons with Chl-a >10 ug/l	# of Seasons with TN >0.5 mg/l	% Eelgrass Loss Since 1995	Impairment Score
Apponagansett Bay	MA95-39	Apponagansett Bay	Y	5/5	5/5	5/5	16%	0.79
Aucoot Cove	MA95-71	Aucoot Cove	Y	5/5	0/5	5/5	*NA*	0.50
East Harbor Lagoon (Pilgrim Lake)	MA96-83	East Harbor Lagoon (Pilgrim Lake)	N	5/6	0/6	5/5	*NA*	0.46
Edgartown Harbor System	MA97-08	Cape Pogue Pond	N	2/2	0/2	1/2	24%	0.44
	MA97-39	Calebs Pond	N	*NA*	*NA*	*NA*	*NA*	*NA*
	MA97-40	Pocha Pond	N	3/3	0/3	1/3	*NA*	0.33
	MA97-16	Katama Bay/Edgartown Harbor	N	4/5	3/5	1/5	*NA*	0.40
Ellisville Harbor	MA94-34	Ellisville Harbor	N	*NA*	*NA*	*NA*	*NA*	*NA*
James Pond (MV Ponds)	MA97-38	James Pond	N	4/4	3/4	4/4	*NA*	0.69
Long Cove Pond (MV Ponds)	NO AU ID	Long Cove Pond	N	*NA*	*NA*	*NA*	*NA*	*NA*
Mattapoisett Harbor System	MA95-35	Mattapoisett Harbor	Y	5/5	2/5	4/5	74%	0.79
	MA95-61	Eel Pond	Y	5/5	4/5	5/5	74%	0.89
Nasketucket Bay System	MA95-67	Nasketucket River	Y	5/5	5/5	5/5	*NA*	0.75
New Bedford Harbor & Clark's Cove	MA95-38	Clark's Cove	N	5/5	1/5	5/5	58%	0.70
	MA95-63	New Bedford Outer Harbor	Y	4/5	4/5	5/5	58%	0.80
Onset Bay & Buttermilk Bay System	MA95-01	Buttermilk Bay	Y	3/5	3/5	3/5	100%	0.80
	MA95-76	Little Buttermilk Bay	Y	2/5	4/5	4/5	100%	0.75
	MA95-02	Onset Bay	Y	0/5	0/5	1/5	47%	0.17
	MA95-94	Shell Point Bay	N	3/3	0/5	0/5	*NA*	0.25
	MA95-95	Broad Cove	N	2/5	0/5	3/5	98%	0.50
Oyster Pond (MV Ponds)	MA97-13	Oyster Pond	N	*NA*	*NA*	*NA*	*NA*	*NA*
Pamet Harbor	MA96-31	Pamet River/Harbor	N	6/6	3/6	4/5	*NA*	0.58
Pocasset Harbor Embayment System	MA95-17	Pocasset Harbor	Y	4/5	1/5	4/5	79%	0.65
	MA95-18	Red Brook Harbor	Y	5/5	2/4	3/4	100%	0.81
	MA95-18	Hen Cove	Y	2/5	0/4	3/4	100%	0.54
Pocasset River Estuary System	MA95-16	Pocasset River	N	5/5	0/5	5/5	*NA*	0.50
Sippican Harbor Embayment System	MA95-70	Sippican "Inner" Harbor	Y	5/5	4/5	4/5	50%	0.78
	MA95-56	Hammet Cove	Y	5/5	3/5	5/5	91%	0.88
	MA95-100	Blankenship Cove	N	4/5	*NA*	1/5	14%	0.29
	MA95-100	Planting Island Cove	N	4/5	0/5	2/5	-234%	0.30
Weweantic River Estuary System	MA95-05	Weweantic River	Y	5/5	5/5	5/5	78%	0.95

Table B3. Coastal Clusters, Estimated Nitrogen Loading, Complexity, and TMDL Priority

Coastal Cluster	# of Estuary AUs in Cluster	Cluster Watershed Area (acres)	Est. Nitrogen Loading (kg/year)	Est. Nitrogen Loading Rate (kg/acre/year)	N Loading Quartile	N Loading Rate Quartile	Average AU Impairment Score	Estimated Hydrodynamic Complexity	TMDL Priority
Apponagansett Bay	1	5,511	11,755	2.13	4	4	0.79	High	Low[1]
Aucoot Cove	1	3,136	4,584	1.46	2	3	0.50	Medium	Low
East Harbor Lagoon (Pilgrim Lake)	1	1,009	986	0.98	1	3	0.46	Medium	Low
Edgartown Harbor Embayment System	5	5,676	5,030	0.89	3	2	0.39	High	Med[2]
Ellisville Harbor	1	3,238	1,901	0.59	2	1	*NA*	High	Low
James Pond (MV Ponds)	1	414	159	0.38	1	1	0.69	Medium	Med[2]
Long Cove Pond (MV Ponds)	1	478	193	0.40	1	1	*NA*	Medium	Low
Mattapoisett Harbor System	2	20,408	27,446	1.34	4	3	0.84	High	Med[2]
Nasketucket Bay System	1	5,560	10,079	1.81	4	4	0.75	High	Med
New Bedford Harbor & Clark's Cove	2	2,709	8,364	3.09	3	4	0.75	High	Med[3]
Onset Bay & Buttermilk Bay System	5	10,785	9,861	0.91	3	2	0.49	High	High[2]
Oyster Pond (MV Ponds)	1	2,417	1,530	0.63	1	1	*NA*	Medium	Med[2]
Pamet Harbor	1	2,644	1,989	0.75	2	2	0.00	High	Low
Pocasset Harbor Embayment System	3	4,566	3,923	0.86	2	2	0.67	Medium	Low[1]
Pocasset River Estuary System	1	2,147	1,820	0.85	2	2	0.50	Low	Low
Sippican Harbor Embayment System	4	3,512	5,658	1.61	3	4	0.56	Medium	Med[2]
Weweantic River Estuary System	1	54,521	52,759	0.97	4	3	0.95	High	High

1- Low priority based on other work in support of TMDL development already in progress. Buzzards Bay Coalition is working on supporting work for Apponagansett Bay (SNEP funded) and Pocasset Harbor (CWA Section 604(b) funded). New Bedford Inner Harbor has MEP tech report and draft TMDL.

2- Local Input adjusted priority

3- Input from local groups indicated as medium priority therefore entire cluster will be considered medium. Future modeling efforts and current impairment status may impact whether the entire cluster or portions are done individually.

Appendix C: Lakes Prioritization

Nutrients are a priority concern for lake Total Maximum Daily Load (TMDL) development. There are approximately 43,660 acres of lakes impaired due to nutrient related causes, of which 7,172 acres have a TMDL and 36,488 acres require a TMDL (Table 2). To identify Massachusetts lakes in which to focus restoration planning and TMDL development, a preliminary prioritization effort was initiated. This project involved the creation of a prioritization tool, which provides TMDL analysts the ability to compare, contrast, and rank lakes by different metrics. Analyzed in the prioritization tool are 212 lakes and ponds which are listed as impaired due to nutrient pollution related causes within the Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle (MassDEP 2021a).

For the purposes of this prioritization analysis, a Nutrient Impaired Lake (NIL) is defined as a waterbody that has been listed as impaired for causes related to nutrient pollution in the Massachusetts Integrated List of Waters for the 2018/2020 Reporting Cycle (MassDEP, 2021a). Table C1 contains a complete list of the nutrient-related causes used in this analysis. Each waterbody in this prioritization effort is listed for one or more of these causes and was subsequently labeled as a category five: “Impaired or threatened for one or more uses and requiring a TMDL.”

Table C1. Causes Associated with Freshwater Nutrient Impairment

Cause	
- Algae	- Nutrients
- Chlorophyll-*a*	- Organic Enrichment (Sewage) Biological Indicators
- Dissolved Oxygen	- Phosphorus Total
- Dissolved Oxygen Supersaturation	- Total Suspended Solids (TSS)
- Harmful Algal Blooms	- Transparency / Clarity
- Nutrient/Eutrophication Biological Indicators	- Turbidity

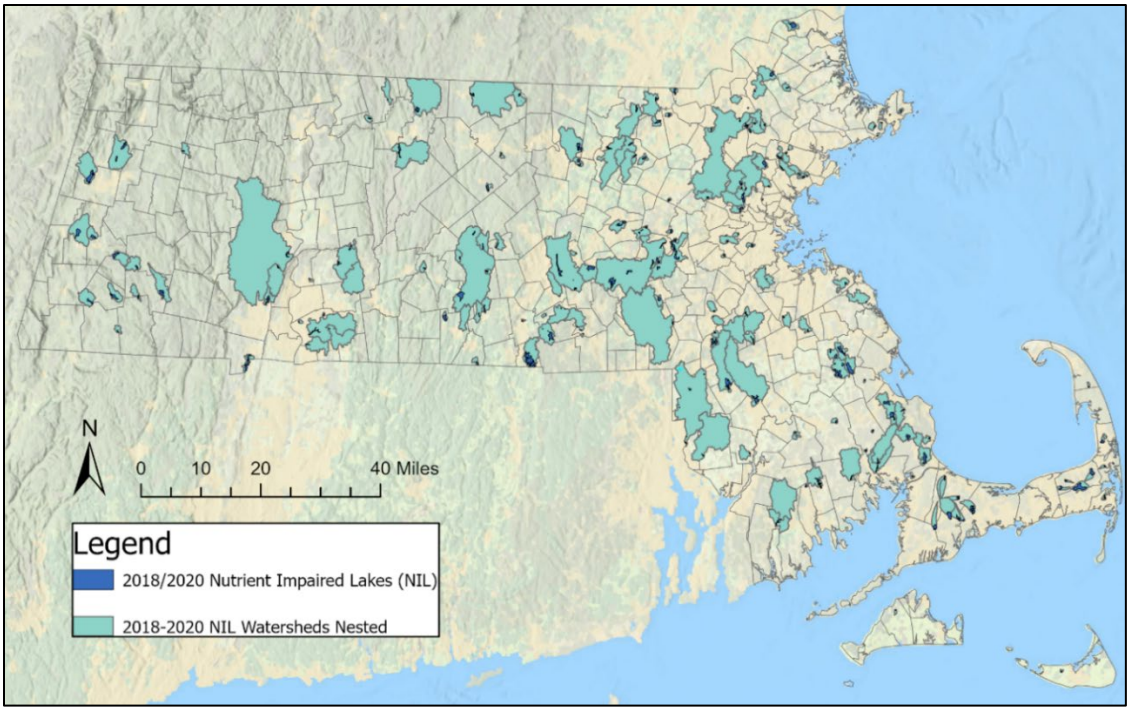

Figure C1. Location of Nutrient Impaired Lakes (NIL) and their associated Watersheds

The data collected for this prioritization effort reflect either the state of the waterbody, its watershed, or the surrounding community. Although TMDLs are written for a singular waterbody, characteristics in the surrounding area have a substantial impact on the TMDL implementation efforts and their potential for success. Accordingly, these characteristics must be considered. While each variable involved in the normalization schema was sourced and processed in an individual manner, there are seven main categories within which the data and metrics are grouped. The seven categories are:

1. Community Involvement
2. Impairment – Cause
3. Watershed Development
4. Waterbody Metrics
5. Water Quality Data
6. Watershed Metrics
7. Impairment – Use

The developed prioritization tool included 48 metrics across the seven groups that describe waterbody and watershed characteristics and allow analysts to rank waterbodies (MassDEP, unpublished). In addition, community involvement was gauged. Successful TMDL implementation almost always requires local involvement proceeding policy implementation, especially in areas with primarily nonpoint source pollution. Notably, local organizations and municipalities play a large role in implementing TMDL recommendations, through assisting in reducing pollutant loads. The level of community involvement surrounding water quality within each watershed was researched via a survey to help gauge which communities are prepared for TMDL implementation. One hundred and five organizations were contacted, and responses were received from 55 Non-Governmental Organizations (NGOs) and 24 towns.

Based on the results of this research, four metrics describing organizational involvement were included in the prioritization/ normalization process and are listed below.

- Waterbody/ watershed organization exists.
- Contact was made with organization.
- Organization preforms water quality monitoring.
- Organization preforms public outreach.

Amongst nutrient impaired lakes, there are a number of impairment causes that indicate nutrient pollution, and the type and number of impairment causes, may affect a lake's priority for TMDL development. An analysis of the count of impairment causes for the 212 NIL was conducted (Figure C2). Dissolved oxygen, turbidity, transparency, or total suspended solids (TSS) were the most common causes of impairment. Lakes with multiple impairments and those with total phosphorus, algae, chlorophyll a, and harmful algal bloom impairments were considered a higher priority for TMDL development.

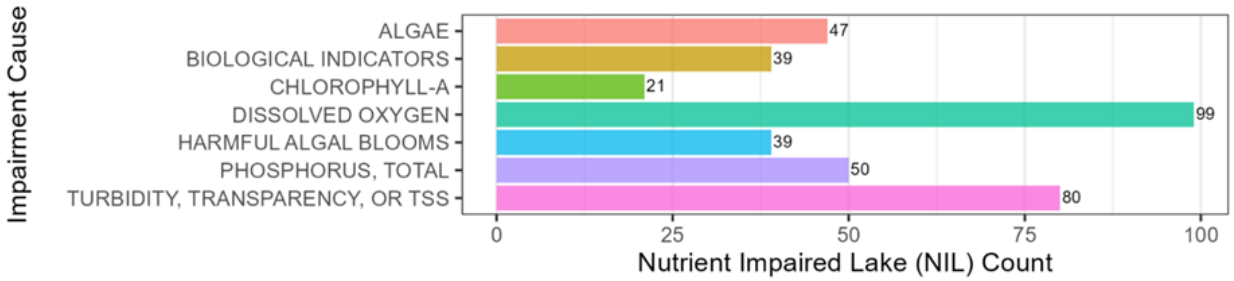

Figure C2. Count of impairment causes for 212 NIL

The state of a watershed's development provides crucial insight into the recoverability of a waterbody after TMDL implementation. In general, watersheds with greater human development can be more challenging to restore, while developed areas with larger amounts of forested or undeveloped areas may respond more readily to restoration efforts. However, water quality restoration in developed areas often benefits a larger population. An analysis of land use for NIL was conducted (Figure C3).

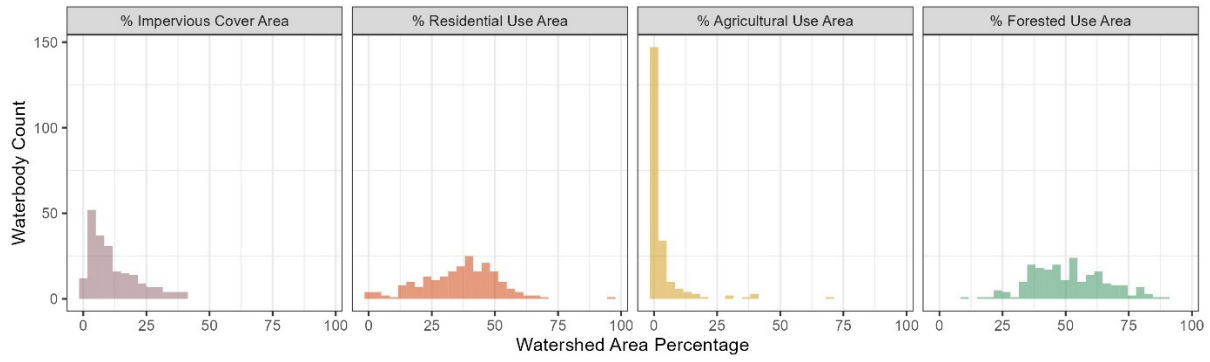

Figure C3. Select land cover and land use metrics for 212 NIL

A number of waterbody metrics were also considered including specific waterbody qualifiers in the Massachusetts Surface Water Quality Standards (SWQS) (MassDEP 2021b), such as Outstanding Resource Water

(ORW), Public Water Supply (PWS), High Quality Water (HQW) (Figure C4), and whether the waterbody had a dam or public access. The public access metric characterized waterbodies that possess some form of public access including boat launches, swimming beaches, or shore fishing locations. A total of 127 out of 212 waterbodies have some form of public access. Public access was considered as a positive factor in prioritizing TMDL development as many grant opportunities favor areas with public access.

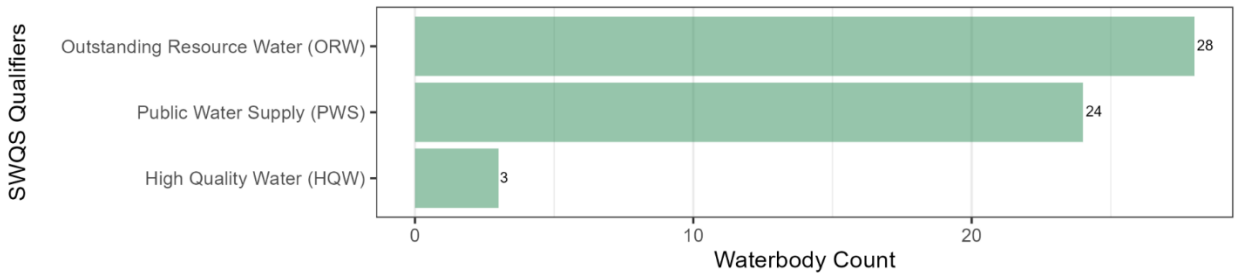

Figure C4. ORW, PWS, and HQW designations for 212 NIL

Water quality data were also investigated to describe the state of nutrient impairment for each waterbody. Understanding the level of pollution within a waterbody is crucial to understanding which lakes and ponds are in greatest need of water quality restoration plans. All water quality data variables were sourced from the MassDEP Watershed Planning Program (WPP) Water Quality Monitoring Program Data (MassDEP 2023). Metrics developed included: Total Phosphorus - Median Bottom Sample, Total Phosphorus - Median Surface Sample, Total Phosphorus - Median Bottom/Surface Difference, Chlorophyll *a* – Median Sample, Chlorophyll *a* - average sample, Secchi Depth – Median Observation, Secchi Depth – Average Observation. While potentially more challenging to restore water quality, waterbodies with greater total phosphorus concentrations, chlorophyll *a* levels and reduced Secchi depth could be considered more severely impacted and therefore a higher priority for restoration plan development efforts.

Several watershed metrics were also considered including watershed area, watershed to waterbody area ratio, the number of nutrient impaired lakes (NIL) upstream to each waterbody, the number of MassDEP registered National Pollution Discharge Elimination System (NPDES) discharge permits in each NIL watershed, jurisdictional complexity as measured by the number of towns in each watershed, a waterbody's location outside an existing TMDL coverage, the percentage of Municipal Separate Storm Sewer System (MS4) area, the percentage of Environmental Justice (EJ) areas in Massachusetts, and the percentage of EPA-defined disadvantaged community (DAC) area. For the 212 waterbodies, 33 waterbodies had less than 1% watershed MS4 area, while 85 waterbodies had greater than 99%. The median % MS4 watershed area is 81.85%. For the 212 waterbodies, 101 waterbodies had 0% watershed EJ area, 79 waterbodies had greater than 0% and less than 50%, while 32 waterbodies had greater than 50% watershed EJ area. For DAC areas, 185 waterbodies had 0% watershed DAC area, 27 waterbodies had greater than 7%, while only three waterbodies had above 90%. Figure C5 has histograms for the percent MS4 Area, percent EJ area and percent DAC area. In general waterbodies with NIL upstream, NPDES permits upstream, lower jurisdictional complexity, and that are located outside an existing TMDL coverage as well as having higher % MS4 area, higher % EJ area and higher % DAC area in their watersheds rank higher for TMDL prioritization.

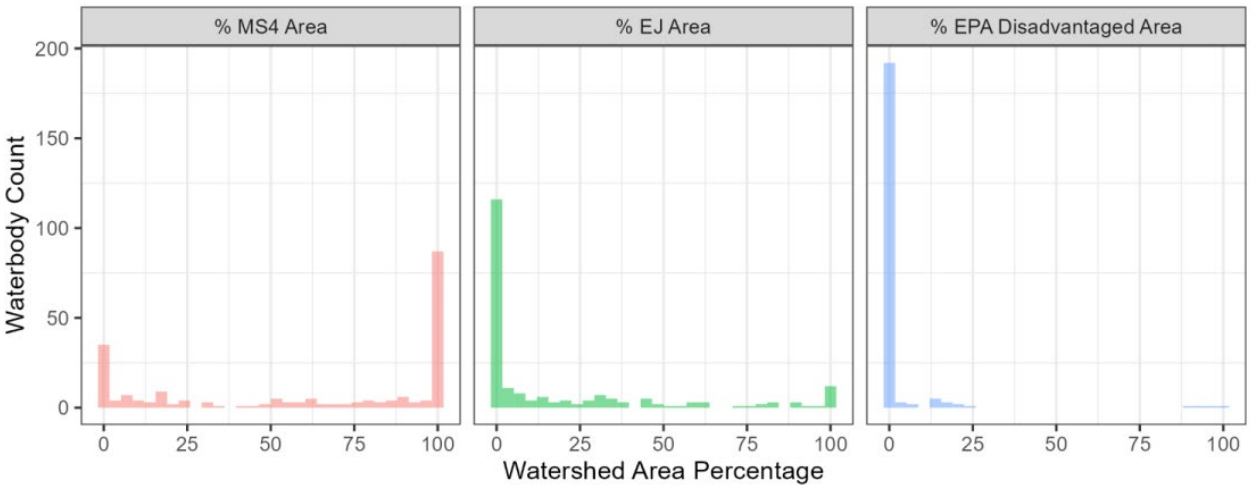

Figure C5. Distribution of MS4, EJ, and EPA disadvantaged community (DAC) watershed area percentages for NIL

While the 48 metrics in the developed prioritization tool could be used in an algorithmic fashion to create TMDL priority scores, this approach was not pursued as a more holistic consideration was deemed more appropriate. TMDL analysts in WPP used the prioritization tool independently to consider the factors above and individually prioritize waterbodies. TMDL staff then compared and discussed their prioritized waterbodies. The waterbodies identified in this document only provide an indication of where WPP resources could be first needed (Table C2). The priority status may shift over time depending on complexities of the TMDL development process, extent of local engagement, and TMDL development feasibility. Any TMDL effort will require adequate monitoring, data collection, and modeling to support a final TMDL document.

Table C2: Waterbodies for potential TMDL development

Major Watershed	Assessment Unit ID	Waterbody Name	Waterbody Description
Boston Harbor: Mystic	MA71040	Spy Pond	Arlington.
Boston Harbor: Mystic	MA71045	Wedge Pond	Winchester.
Boston Harbor: Mystic	MA71019	Horn Pond	Woburn.
Chicopee	MA36084	Lake Lorraine	Springfield.
North Coastal	MA93023	Flax Pond	Lynn.
Westfield	MA32021	Congamond Lakes	[Middle Basin] Southwick.
Shawsheen	MA83005	Fosters Pond	Andover/Wilmington.
Concord (SuAsCo)	MA82020	Lake Cochituate	[North Basin] Natick/Framingham/Wayland.
Concord (SuAsCo)	MA82125	Lake Cochituate	[Middle Basin] Natick/Wayland.
Concord (SuAsCo)	MA82127	Lake Cochituate	[South Basin] Natick.
Westfield	MA32012	Buck Pond	Westfield.
South Coastal	MA94007	Billington Sea	Plymouth.
Nashua	MA81122	Lake Shirley	Lunenburg/Shirley.
Concord (SuAsCo)	MA82112	Waushakum Pond	Framingham/Ashland.

Another potential restoration effort involves efforts by WPP to develop watershed-based plans which can be used as an Advance Restoration Plan (ARP). An ARP is a plan designed to address impairments for waters that will remain on the CWA 303(d) list (i.e., Category 5), as restoration activities are implemented prior to TMDL development. While TMDLs remain the primary tool for addressing impaired waters, in certain cases there may be other restoration approaches that may lead to compliance with the Massachusetts SWQS in the near term. A number of waterbodies were identified that may be better suited to watershed-based plan development (Table C3). Factors considered included the percent agriculture in a watershed, estimated TP loading, impairment cause(s), existence of a local watershed group, and WPP targeted assessment and monitoring schedule (Figure D1). The engagement of a local partner or interested party will be a key success factor in watershed-based plan development.

Table C3: Waterbodies for potential watershed-based plan development

Major Watershed	Assessment Unit	Waterbody Name	Waterbody Description
Connecticut	MA34099	Watershops Pond	Springfield.
Buzzards Bay	MA95080	Leonards Pond	Rochester.
South Coastal	MA94007	Billington Sea	Plymouth.
Hudson: Hoosic	MA11002	Cheshire Reservoir, North Basin	[North Basin] Cheshire.
Hudson: Hoosic	MA11019	Cheshire Reservoir, South Basin	[South Basin] Cheshire/Lanesborough.
Housatonic	MA21014	Lake Buel	Monterey/New Marlborough.
North Coastal	MA93060	Lake Quannapowitt	Wakefield.

References:

MassDEP. Unpublished. Review and Prioritization of Nutrient Impaired Lake Assessment Units for the Strategic Planning of TMDLs and other Restorative Actions: Phase 1 – Development of a Data Informed Ranking Tool (DIRT). Massachusetts Department of Environmental Protection, Division of Watershed Management. Worcester, MA.

MassDEP. 2021a. Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle. CN 505.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA.

MassDEP. 2021b. 314 CMR 4.00: Massachusetts Surface Water Quality Standards. Massachusetts Department of Environmental Protection, Boston, MA: Massachusetts Department of Environmental Protection. Retrieved from Massachusetts Department of Environmental Protection: https://www.mass.gov/doc/314-cmr-400/download

MassDEP. 2023. Water Quality Monitoring Program Data. Massachusetts Department of Environmental Protection, Division of Watershed Management. Worcester, MA. https://www.mass.gov/guides/water-quality-monitoring-program-data

Appendix D: Rivers Prioritization

Pathogens and nutrients remain a priority concern. There are approximately 1,824 miles of rivers with pathogen impairments, of which 580 miles have a TMDL and 1,244 miles require a TMDL. There are 1,566 miles impaired for nutrient related causes, of which 493 miles have a TMDL and 1,073 miles require a TMDL (Table 3). WPP has a Draft Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies that will cover 228 pathogen-impaired segments across 288 municipalities. This is also an area where WPP will look to build program capacity, especially regarding technologies such as R programming to automate some aspects of pathogen TMDL creation.

The MassDEP WPP has several ongoing river monitoring efforts in Massachusetts. Sampling includes targeted assessment monitoring and chloride sampling conducted by the Water Quality Monitoring Section in WPP and sampling in partnership with the United States Geological Survey (USGS). WPP's water quality monitoring activities are described in the *Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle* (MassDEP 2023). Activities in partnership with USGS include projects in the Merrimack River, Connecticut River, and Taunton River watersheds. While TMDL development associated with these projects is not currently planned, these studies will provide a greater understanding of current water quality conditions in these watersheds and potentially guide future water quality restoration measures.

Partnership with USGS

Through a joint funding agreement with USGS, WPP initiated a multi-year monitoring network in 2021 to estimate contaminant loadings in the Merrimack River Watershed in Massachusetts to inform updated water quality assessments and support future development and implementation of pollution control measures. This network consists of three (3) sampling sites on the mainstem Merrimack River and nine (9) sites on major tributary streams. These sites are described in the table below. Eleven (11) sites are sampled monthly year-round while a single open-water site in the Merrimack River estuary is sampled at the surface and off the bottom twice monthly from May to October. Standard field parameters are measured during each site visit and discrete water samples are collected for the analysis of nutrients, major ions, metals, and *E. coli*. Chlorophyll *a* and pheophytin analyses are added from May to September. During this same timeframe, continuous measurements of pH, specific conductance, temperature, and dissolved oxygen are collected at the open-water estuary site using multi-parameter sondes deployed near the surface and off the bottom. Finally, stream discharge measurements are performed at the time of sampling at four (4) sites that are not co-located or near established USGS stream gauges. This monitoring program is scheduled to continue through September 2024. A summary report, including annual loads of nutrients, and data release of water quality data collected at the monitored sites will be prepared in 2025.

During spring 2017, the USGS, in cooperation with MassDEP, established a monitoring station for streamflow and water quality on the Connecticut River at Northfield, Massachusetts near the Massachusetts/New Hampshire/Vermont border. In the fall of that year the USGS, MassDEP, and the Springfield Water and Sewer Commission began a cooperative project to initiate continuous monitoring in the mainstem Connecticut River at the new Northfield gauge site and at Thompsonville, Connecticut, just downstream from the Massachusetts border. The objective of the monitoring was to quantify the mass discharge of nitrogen and other constituents in the Connecticut River as it flows in and out of Massachusetts, and ultimately to Long Island Sound (LIS). Monitoring continued through the fall of 2021, resulting in four years of water quality data from the two border sites.

Through a separate joint-funding agreement, USGS performed discrete monthly sampling from 2019 – 2021 at

sites in four major watersheds draining to the Connecticut River in Massachusetts (Millers, Chicopee, Deerfield and Westfield), and at sites in four watersheds draining to Mount Hope Bay (Taunton, Mill, Three mile, and Segregansett). Data collected from this effort and from the monitoring described above for the Connecticut River border sites will be used for nutrient and organic carbon load estimation for the tributaries to the Connecticut River and Mount Hope Bay, and the mainstem Connecticut River as it flows in and out of Massachusetts. In addition, USGS will obtain loading data from wastewater treatment facilities (WWTFs) in Massachusetts from EPA's Enforcement and Compliance History Online (ECHO) database. By combining streamflow and instream water quality data with load data from WWTFs, pollutant loads from point and nonpoint sources will be quantified. The loading analysis will assist local, state, and federal water resource managers to prioritize areas for pollutant load reductions.

Chloride Monitoring

The presence of increased chloride concentrations in freshwater systems is a growing concern in Massachusetts. Chloride (Cl^-) is the anion formed when chloride-containing minerals (e.g. sodium chloride) are dissolved in water. While the presence of chloride in low concentrations is natural within freshwater systems, elevated concentrations can cause a range of detrimental ecological and environmental impacts and degrade the quality of water used for drinking, fishing, and irrigation. This process in which chloride and other dissolved salts accumulate is known as salinization.

At elevated concentrations exceeding the Massachusetts Surface Water Quality Standards (SWQS) numeric criteria (860mg/L acute and 230 mg/L chronic), chloride is a toxic contaminant that impacts aquatic life. The main source of excess chloride in rivers, lakes, wetlands and groundwater is deicing salts applied to roads, parking lots and walkways. Since 2015 MassDEP has been sampling selected Massachusetts rivers and streams as part of WPP's surface water monitoring program to collect chloride data. Between 2015 and 2020, sampling has included 40 sampling sites across 26 waterbodies. The results of sampling conducted between 2015 and 2020 has been summarized by WPP in a data report (MassDEP, in progress).

MassDEP is responsible for monitoring the waters of the Commonwealth, identifying those waters that are impaired, and developing a plan to achieve compliance with the Massachusetts SWQS. The Massachusetts 2018/2020 Integrated List of Waters listed 23 waterbodies as impaired for chloride (MassDEP 2021a). Of those 23 waterbodies, eleven are classified as public water supplies. Table D1 details the major watershed, class, and qualifiers for those waterbodies impaired for chloride in the 2018/2020 Integrated List.

Table D1**:** Chloride Impaired Waterbodies in Massachusetts

Watershed	Waterbody	Assessment Unit	Class	Qualifiers[1]
Blackstone	Dark Brook	MA51-16	B	
	Unnamed Tributary	MA51-08	B	WW, CSO
	Unnamed Tributary	MA51-38	B	
Boston Harbor: Mystic River	Aberjona River	MA71-01	B	WW
	Alewife Brook	MA71-20	B	WW, CSO
	Little River	MA71-21	B	
Charles	Beaver Brook	MA72-28	B	
	Cambridge Reservoir	MA72014	A	PWS, ORW
	Cambridge Reservoir, Upper Basin	MA72156	A	PWS, ORW

Watershed	Waterbody	Assessment Unit	Class	Qualifiers[1]
Charles	Hobbs Brook	MA72-45	A	PWS, ORW
	Hobbs Brook	MA72-46	A	PWS, ORW
	Sawmill Brook	MA72-23	B	
	Unnamed Tributary	MA72-47	A	PWS, ORW
	Unnamed Tributary	MA72-48	A	PWS, ORW
Concord (SuAsCo)	Coles Brook	MA82B-22	B	
Ipswich	Unnamed Tributary	MA92-26	B	
Merrimack	Fish Brook	MA84A-40	A	PWS, ORW
Nashua	Gates Brook	MA81-24	A	PWS, ORW
	Scarletts Brook	MA81-25	A	PWS, ORW
	Unnamed Tributary	MA81-49	A	PWS, ORW
	Unnamed Tributary	MA81-54	A	PWS, ORW
Shawsheen	Unnamed Tributary	MA83-15	B	
	Unnamed Tributary	MA83-20	B	
*Acronyms: *CSO = Combined Sewer Overflow, ORW = Outstanding Resource Water, PWS = Public Water Supply, WW = Warm Water*				

1 - *Qualifiers and descriptions of the current Massachusetts Surface Water Quality Standards (SWQS) regulation included in this document are provided for informational purposes only, see the SWQS (MassDEP, 2021b). The actual SWQS regulation shall control in the event of any discrepancy with the description provided. As a result, no person in any administrative or judicial proceeding shall rely upon the content of this document to create any rights, duties, obligations, or defenses, implied or otherwise, enforceable at law or in equity.*

WPP intends to investigate the feasibility of TMDL creation for chloride impaired waterbodies. Another potential restoration effort involves efforts by the nonpoint management program to develop watershed-based plans. Pilot TMDLs or watershed-based plans will be investigated. Waterbodies classified as public water supplies will be a higher priority for these restoration efforts.

Nutrients

WPP hopes to balance emerging concerns such as chloride with nutrient impairments. One way to prioritize potential nutrient TMDLs for rivers is investigating the listed cause of impairment. Impairment causes which could indicate a priority for nutrient TMDL development include: 'Algae', 'Chlorophyll-*a*', 'Dissolved Oxygen', 'Dissolved Oxygen Supersaturation', 'Estuarine Bioassessments', 'Harmful Algal Blooms', 'Nitrogen, Total', 'Nutrient/Eutrophication Biological Indicators', 'Nutrients', 'Phosphorus, Total', 'Transparency / Clarity'. There are 145 segments listed for these causes in *the Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle* (MassDEP 2021). A smaller subset that only includes segments impaired by excess Total Phosphorus includes 55 segments. The overall pollutant load of NPDES discharges and the percent MS4 area will also be considered with waterbodies that have higher wastewater loads and higher percent MS4 will be considered higher priorities. There has been a decline in phosphorus concentrations in multiple rivers in the state. This includes a documented decline in several rivers in Central Massachusetts (Wong *et al.* 2018). This highlights the need for updated assessments prior to TMDL development. TMDL development could also be coordinated with the targeted monitoring schedule (Figure D1).

The length of time since the most recent assessment, TMDL development feasibility and public engagement will also be considered.

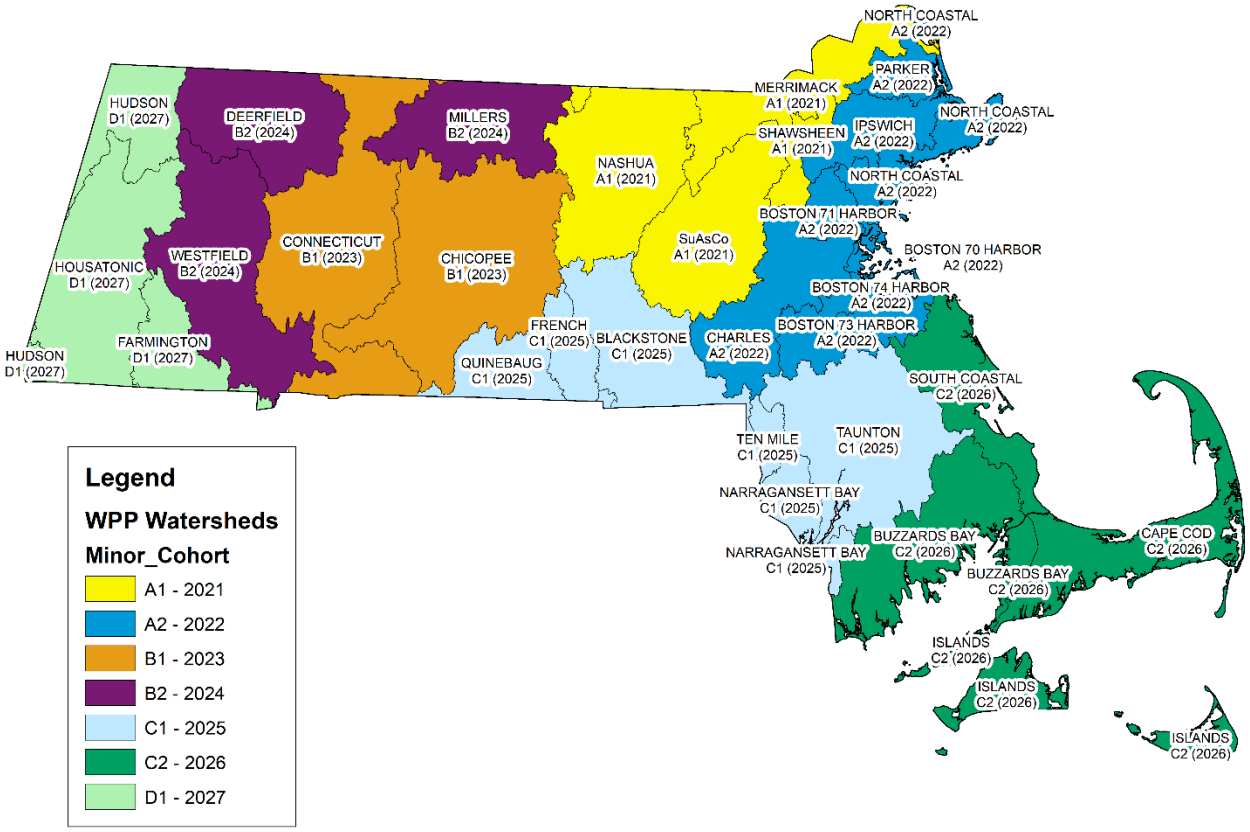

Figure D1. Rotating Basin Schedule for WPP Targeted Assessment Monitoring

References:

MassDEP. 2021a. Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle. CN 505.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA.

MassDEP. 2021b. 314 CMR 4.00: Massachusetts Surface Water Quality Standards. Massachusetts Department of Environmental Protection, Boston, MA: Massachusetts Department of Environmental Protection. Retrieved from Massachusetts Department of Environmental Protection: https://www.mass.gov/doc/314-cmr-400/download

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Wong, Wai Hing. J.J. Dudula, T. Beaudoin, K. Groff, W. Kimball, J. Swigor. 2018. *Declining ambient water*

phosphorus concentrations in Massachusetts' rivers from 1999 to 2013: Environmental protection works. In Water Research. Volume 139. pp 108-117. 26 March 2018. Available at https://doi.org/10.1016/j.watres.2018.03.053

Appendix E: Response to Comments

The Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load Development strategy (Massachusetts Vision 2.0) document was released for public comment on February 14, 2024. MassDEP received several comment letters submitted by the close of the comment period, April 5, 2024. All of the formal comment letters are included in the Responses to Comments in their entirety, along with MassDEP's responses to comments.

Several comments highlighted the importance of partnerships. MassDEP continues to identify opportunities to expand our partnerships and deliver our message through engagement of state and federal agencies, universities, volunteer groups, and municipalities. Through an established process, there will be a better alignment of MassDEP and stakeholder water quality goals and priorities, regular opportunities for feedback, and the inspiration of a shared commitment. MassDEP has taken concrete steps, since the completion of the *MassDEP Vision 1.0* Workshops, to improve communication and engagement with our stakeholders through the following:

- Established a partnership with the University of Massachusetts-Amherst to assist external groups with QAPP preparation and data quality reviews and approvals, as well as to assist them with data management.
- Developed a communication plan which includes:
  - WPP webpage on the MassDEP website,
  - WPP Newsletter, an email is sent to our partners and stakeholders on a variety of topics such as WPP project highlights, new publications, monitoring initiatives, and TMDL approvals.
  - Information sessions to relay timely information to targeted audiences.
  - Workshops to be held with stakeholders on various topics as needed. In furtherance of this goal several workshops have been held. In 2019 two workshops were held to provide training to watershed groups in QAPP development and data usability reviews. In 2021 a nine-element watershed-based plan training session was conducted. In 2023, an Introductory Workshop on Community-Based Social Marketing was offered to enhance the capacity of stakeholder organizations to target behaviors that can impact water quality in the Commonwealth.
  - Online Tools including a series of geospatial data viewers providing the public with detailed, user-friendly tools to examine their watersheds.

    Water Quality Data Viewer provides access to water quality information generated by the Watershed Planning Program for surface waters throughout the Commonwealth, including Surface Water Quality Standards (SWQS), water quality data and Clean Water Act (CWA) 305(b)/303(d) assessment & listing decisions.

    Total Maximum Daily Load (TMDL) Viewer developed by the Watershed Planning Program provides geospatial representation of EPA-approved TMDLs.

    INSPIRE (Ideas for Nonpoint Source Projects: Information, Resources, and Examples) is an online GIS-based capacity building tool. It shares information about the Clean Water Act (CWA) sections (§) 604(b) and 319 grants; showcases successful NPS-funded projects throughout the Commonwealth as examples; and presents a collection of geospatial layers as resources to help communities develop

new project ideas for competitive grant proposals.

- MassDEP solicited grant proposals to assist non-profit, volunteer monitoring groups. Over six years, the Water Quality Monitoring Grant program has awarded $1,349,143 to federally recognized Tribal Nations within the Commonwealth of Massachusetts and non-profit organizations with the ability to conduct surface water quality monitoring.

Letter from Buzzards Bay Coalition Page 1

By email

April 8, 2024

Timothy Fox
Massachusetts Department of Environmental Protection
Watershed Planning Program
Attn: Timothy Fox (Vision 2.0)
8 New Bond St.
Worcester, MA, 01606

Re: Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load Development

Dear Mr. Fox,

The Buzzards Bay Coalition (Coalition) has reviewed the *Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load Development* dated February 2024 and offers the following feedback.

In summary, the release of the *Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load Development* (Draft Vision) is a positive step forward in the process of developing restoration plans for impaired water bodies and the Coalition urges MassDEP to significantly speed up the process of developing and implementing restoration plans.

The Coalition is a membership-supported non profit organization dedicated to the restoration, protection and sustainable use and enjoyment of Buzzards Bay and its watershed including the watersheds of all three estuary systems. The Coalition is supported by more than 11,000 individuals, families, and businesses throughout the region.

Background:

The Federal Clean Water Act requires the Commonwealth of Massachusetts to identify waters that fail to meet water quality standards. The state is required to draft Total Maximum Daily Loads (TMDLs) establishing the maximum load (amount) of pollution from all sources that the identified water may receive and still meet water quality standards. The nitrogen capacity of many Southeastern Massachusetts estuaries was evaluated through the Massachusetts

Estuaries Project (MEP), which resulted in a number of TMDLs, particularly on Cape Cod. However, as the *Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load Development* (Draft Vision) describes, a large proportion of Buzzards Bay water bodies are impaired for nutrients and do not have TMDLs. Continued nitrogen pollution, primarily from residential wastewater will cause low dissolved oxygen levels, elevated algae levels, and decreased diversity and quantity of marine animals living on the seafloor. Without reduction, these nitrogen loads could lead to further water quality and habitat degradation including fish kills, unpleasant odors and scums, and loss of critical marine animal communities. It is essential that the MassDEP moves forward with actions to restore our rivers, streams, and coastal water bodies. These water bodies need plans that municipalities can implement to restore water quality. The Draft Vision describes MassDEP's plan for how to approach developing TMDLs.

The Draft Vision outlines a process whereby water bodies are 1) ranked by priority, 2) evaluated for level of impairment, 3) selected by MassDEP, 4) public input is requested on MassDEP's selection, 5) feasibility is assessed, and 6) selected water bodies are analyzed. Which water bodies are prioritized will be reviewed in concert with existing biennial integrated list and Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) commitments. The Draft Vision identifies high-priority water bodies for TMDL development in the 2024-2032 timeframe.

Priority Concerns:

The Coalition concurs with MassDEP that nutrient pollution should be a priority concern. Through our water quality monitoring program, the Coalition has observed the degradation of water quality due to nitrogen pollution and also the rebound of water quality when nitrogen pollution is reduced. Both nutrient pollution and bacteria pollution are also noted in the Buzzards Bay Comprehensive Conservation Management Plan (developed by the Buzzards Bay National Estuary Program). However, the Draft Vision shows that a higher proportion of water body segments already have pathogen TMDLs in place, so it is appropriate for MassDEP to focus its TMDL-development efforts on nitrogen TMDLs over pathogen TMDLs.

Prioritization Process:

The process described in the Draft Vision for prioritizing water bodies and reviewing this prioritization every two years is a reasonable approach for how to determine where MassDEP staff should focus their efforts. In addition to TMDLs, the Draft Vision describes the use of Advance Restoration Plans (ARPs), which are designed to address impaired waters while TMDL development is being planned or underway. The intent of the ARPs seems to be a way to begin restoration actions for water bodies that do not yet have a TMDL. This appears to be a recognition by MassDEP that the process for TMDL development is very slow. The Coalition appreciates that MassDEP is looking for ways to speed up restoration. We are concerned that

the ARPs could add an additional step in the process and thereby delay TMDL development. Delaying TMDL development may rob communities of opportunities to apply for federal and state revolving funds. The best way to speed up restoration would be to speed up TMDL development. We urge MassDEP to consider whether ARPs can be developed and released rapidly – if not, MassDEP should keep its focus on TMDL development. Delay in TMDL approval will postpone and hinder local action on nitrogen reductions, delay funding opportunities, and lead to further degradation of our coastal waters.

Estuary Prioritization:

The Coalition concurs that the Onset Bay & Buttermilk Bay System and the Weweantic River Estuary System are high priority estuaries that need immediate effort towards the development of nitrogen TMDLs. The Coalition will continue to provide data from our water quality monitoring program to MassDEP on these systems and is willing to provide local expertise to MassDEP as it develops these TMDLs.

The Coalition thinks that rather than deprioritizing estuaries where external organizations have efforts underway to develop necessary information for nitrogen TMDLs, MassDEP's priority should remain high for these estuaries. Though much of the work for developing nutrient threshold reports in these locations can be performed by external organizations, it is critical that MassDEP remain engaged in the efforts, which will enhance the useability of what the external organizations develop. Once nutrient threshold reports are developed be external organizations MassDEP should be ready to quickly use that information for developing a TMDL. Therefore, we urge MassDEP to list Apponagansett Bay and Red Brook Harbor as high priority estuaries.

Herring Brook in Falmouth and Aucoot Cove in Marion should also be listed as high priority estuaries. Both of these estuaries are receiving waters for municipal wastewater treatment plant discharges. Recent outside efforts notwithstanding, Herring Brook requires a thoughtful and careful assessment for nitrogen. Degraded water quality and loss of salt marsh habitat have been documented in Herring Brook through Coalition monitoring. With new proposals for wastewater disposal into the Herring Brook watershed, it is imperative that MassDEP has the information it needs when evaluating the discharge of additional nitrogen to this impaired water body. Similarly, Coalition monitoring in inner Aucoot Cove shows degraded water quality, and as the Town of Marion has to make decisions about how to manage and/or upgrade its wastewater treatment facilities, it would benefit from having information on what levels of nitrogen can be discharged while maintaining water quality standards.

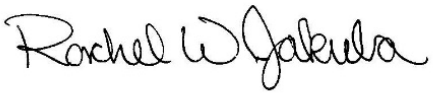
From the Coalition's perspective, all Buzzards Bay estuaries with impaired waters should be a high priority for TMDL development over the next 10 years. We encourage MassDEP to work with the towns to develop a timeframe for TMDL implementation for all water bodies. The

timeframe should lay out a set of milestone goals that the towns and MassDEP can work towards achieving and that can be used as benchmarks for progress by communities.

Summary:

The communities around Buzzards Bay deserve estuaries that meet water quality standards, yet far too many water bodies are degraded by nitrogen pollution. TMDLs are the primary tool described in the Clean Water Act for restoring water quality. We appreciate MassDEP's commitment to continuing to develop nitrogen TMDLs as described in the Draft Vision. However, it is essential that the process be hastened. Delays in TMDL development and approval will postpone and hinder local action on nitrogen reductions, delay funding opportunities, and lead to further degradation of our coastal waters. The Coalition urges MassDEP to significantly speed up the process of developing TMDLs so that the communities can move forward to implement nitrogen reductions.

Sincerely,



Rachel W. Jakuba, PhD.
Vice President of Bay Science
jakuba@savebuzzardsbay.org

***MassDEP response to the Buzzards Bay Coalition*:**

Thank you for your review of the Massachusetts Vision 2.0. In addition, thank you for your 30-year commitment to data collection efforts throughout Buzzards Bay. The importance of these data cannot be overstated. Your major comments are address below:

1. **Priority Concerns**

MassDEP response: *Thank you for your concurrence that restoring nutrient impaired surface waters should be a priority for MassDEP. In addition to the water body segments with a pathogen TMDL, MassDEP published a draft statewide TMDL for pathogens. This statewide TMDL goes even further to address surface waters impaired by pathogens. MassDEP has developed a statewide approach for addressing pathogen-impaired waters to improve efficiency in producing TMDLs. This improved program efficiency will allow us to give more attention to developing nutrient TMDLs for estuaries and lakes.*

2. **Prioritization Process:**

MassDEP response: *A primary objective of the MassDEP TMDL Section is to develop implementable TMDLs. MassDEP considers several factors when deciding whether to pursue an Advanced Restoration Plan (ARP) strategy or a full TMDL development strategy. ARPs address impairments for waters that will remain on the CWA 303(d) list as restoration activities are implemented prior to TMDL development. ARPs make use of the most effective and expeditious tools to address water quality protection and restoration efforts and where possible, directly implement those efforts. Given limited resources and the need for restoring impaired waters, implementing ARPs allows for earlier mitigation when immediate TMDL development is not feasible. Some watersheds are good candidates for ARPs, while others are not. The decision to move forward with an advanced restoration plan is not expected to delay TMDL development progress. For example, if the watershed of an impaired waterbody has no regulated point source dischargers and does not overlap with an municipal separate storm sewer systems (MS4 area), developing a TMDL may not be appropriate. Conversely, developing and implementing an ARP can be effective way to address nonpoint source pollution.*

3. **Estuary Prioritization:**

MassDEP response: *MassDEP agrees that all impaired sub-embayments in Buzzards Bay need to be restored to attain Surface Water Quality Standards. One of the goals of the Massachusetts Vision 2.0 is to outline a course of action that will maximize the results given limited resources. Apponagansett Bay, Red Brook Harbor, Herring Brook and Aucott Cove are still on the Massachusetts 303(d) list of impaired waters and MassDEP is obligated by law to prepare TMDLs for these surface waters. We believe that our work in preparing TMDLs for Onset Bay & Buttermilk Bay will lay the foundation for writing TMDLs for other impaired areas of Buzzards Bay. We will continue to work with BBC to develop restoration plans for Apponagansett Bay, Red Brook Harbor and other systems in the future.* Given limited resources, *MassDEP's Watershed Planning Program (WPP) will dedicate more focus and resources to the high priority embayments, but medium and low priorities will still require attention as resources allow.*

Letter from Charles River Watershed Association Page 1

Charles River Watershed Association

April 5, 2024

Via Email

Massachusetts Department of Environmental Protection
Watershed Planning Program
Attn: Timothy Fox (Vision 2.0)
8 New Bond St.
Worcester, MA, 01606

Re: Charles River Watershed Association's Comments on Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load (TMDL) Development

Dear Mr. Fox:

Charles River Watershed Association ("CRWA") appreciates the opportunity to comment on the draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load ("TMDL") Development ("Vision 2.0").

As one of the country's oldest watershed organizations, CRWA protects, preserves, and enhances the Charles River and its watershed through science, advocacy, and the law. Over the last five decades, our initiatives have dramatically improved water quality in the watershed, fundamentally changed approaches to water resource management, and protected the Charles River as a public resource for current and future generations. In 2005, CRWA was instrumental in the development of the phosphorous and nitrogen TMDL for the Charles River and in 2017, we were involved in the Vision 1.0 process.

Vision 2.0 responds to the Environmental Protection Agency's ("EPA") continued articulation of five key goals for state Clean Water Act ("CWA") Section 303(d) programs. EPA aims "to enhance program efficiency, focus on state priority waters, provide flexibility to use tools beyond TMDLs, and encourage states to develop new measures to track success." Vision 2.0 represents an exciting opportunity to clarify how the Massachusetts Department of Environmental Protection Watershed Planning Program ("MassDEP WPP") administers the Massachusetts Clean Water Act ("CWA") 303(d) impaired waters list. Furthermore, it is a chance to improve the MassDEP's prioritization procedures and processes by which TMDLs are developed for Massachusetts waterbodies.

CRWA has reviewed Vision 2.0 and believes it is a significant step in the right direction. To ensure it is as robust as possible, we submit the following comments.

Biodiversity

Governor Healey's 2023 Executive Order No. 618 emphasized the importance of supporting biodiversity in Massachusetts. This Executive Order applies to both aquatic and terrestrial habitats. Developing TMDLs that will safeguard the health of aquatic habitats has significant ramifications for biodiversity. Accordingly, Vision 2.0 should more squarely acknowledge the importance of TMDL development to biodiversity and the protection of critical habitat. In 2017 Vision 1.0 Workshop 4, "critical habitat"

received the most mentions as the resource that drove the need for protection, while "habitat loss" received the most mentions as the primary threat to protection. There are increasing threats to aquatic life, including emergent contaminants such as per- and poly-fluoroalkyl substances ("PFAS") that pose significant threats to aquatic ecosystems[1]. MassDEP should feel empowered by the Healey Administration's focus on biodiversity to make habitat health a primary aspect of TMDL selection and development.

Enforcement Authority

While the intent of Vision 2.0 is not to outline enforcement options for ensuring that TMDLs are observed in impaired waters, CRWA is concerned that Vision 2.0 does not place enough emphasis on ensuring that currently impaired waters with TMDLs for pollutants are protected. Ideally, Vision 2.0 would contain some discussion or placeholder section that recognizes the importance of developing more effective long-term enforcement for existing and newly developed TMDLs.

Relatedly, if MassDEP proceeds with alternative TMDLs or restoration approaches for any water bodies ("while TMDLs remain the primary tool for addressing impaired waters, in certain cases there may be other restoration approaches that may lead to compliance"), CRWA encourages consideration of whether these TMDLs can still be made enforceable through the state's municipal separate storm sewer system ("MS4") permit.

Environmental Justice

It is unclear how heavily environmental justice (EJ) is weighted in Vision 2.0. This is another area that was identified as a priority in 2017, and Vision 2.0 would benefit from a more extensive discussion of how important EJ considerations are to MassDEP as they develop TMDLs. CRWA understands the benefits of a flexible and holistic approach and that TMDL staff do take EJ into account when determining prioritization for TMDL development. However, EJ is both a priority for Massachusetts and for the Biden Administration. Greater discussion of EJ could help stakeholders and other public participants understand how to frame their comments in this area more effectively.

Chloride TMDLs in the Charles River Watershed

CRWA is glad that MassDEP acknowledges increased chloride concentrations as a growing concern and a threat to freshwater systems in Massachusetts. Beginning in the summer of 2022, CRWA began monitoring in-situ conductivity levels at several sites in the watershed to assess chloride levels and the impacts of road salt in the tributaries of our watershed. Generally, at the selected sites, we found that mean conductivity levels are higher downstream than upstream. In the summer, small amounts of rain increase the conductivity levels slightly and when a certain threshold of rain is received, conductivity decreases suddenly. The threshold is different for every site. In the winter, conductivity spikes are associated with precipitation under a certain threshold and then drops are associated with precipitation over a certain amount. One site at Stall Brook had particularly high conductivity levels, so CRWA

[1] EPA has released draft aquatic life criteria for perfluorooctanoic acid (PFOA), a PFAS compound, in 2022. https://www.epa.gov/wqc/aquatic-life-criteria-perfluorooctanoic-acid-pfoa.

monitored this tributary for another year to see if the 2022 drought affected it or if this is normal for the brook. We found that Stall Brook occasionally exceeded EPA's limit of 230 mg/L of chloride.

Given this data, as we did in 2016, CRWA emphasizes the importance of developing TMDLs for chloride, especially for smaller brooks, ponds, and tributaries. In New Hampshire, protective chloride TMDLs have been developed for a few brooks and lakes.[2] Chloride TMDL development here in Massachusetts can and should be modelled on those efforts.

Prioritization, Pace, and Selection of Water Bodies for TMDL Development

Relatedly, one result of the CWA Vision Workshops held by MassDEP in 2017 was an acknowledgment that participants considered "all waters of the Commonwealth to be a priority for Protection and Restoration." CRWA recognizes that prioritization is necessary given the workload involved with creating TMDLs, but we note that relatively few riverine TMDLs have been developed recently. CRWA encourages MassDEP and the WPP to include further discussion in the final Vision 2.0 document regarding the development of TMDLs for smaller tributaries, as well as reservoirs.

Finally, additional details regarding the pace at which MassDEP hopes to issue new TMDLs would likewise be very helpful as stakeholders evaluate this program and seek to provide feedback.

Massachusetts is ready for a more robust and responsive management approach to its impaired water list. CRWA deeply appreciates the efforts of EPA and the Massachusetts Department of Environmental Protection to improve the way that water bodies are selected for TMDL development in Massachusetts. As a potential partner in this work moving forward, we thank you for your consideration of these comments and for the effort that has clearly been put into the Vision 2.0 document.

Respectfully,

Zeus Smith, Esq.
Associate Attorney, CRWA

[2] https://www.epa.gov/tmdl/region-1-approved-tmdls-state#tmdl-nh.

***MassDEP response to the Charles River Watershed Association*:**
Thank you for your review of the Massachusetts Vision 2.0. In addition, thank you for your commitment to being longstanding stewards of the Charles River Watershed, and a valued partner in TMDL development and implementation. Your major comments are address below:

4. Biodiversity

MassDEP response: *MassDEP recognizes that restoring and protecting biodiversity is an essential component to attaining the aquatic life designated use. Many surface waters listed in the 303(d) report were identified using numeric aquatic life criteria. TMDL waste load and load allocations are calculated to meet these water quality criteria. Therefore, in many cases TMDLs are written to protect the biodiversity of aquatic ecosystems.*

In addition to using numeric criteria to identify impaired waters, Massachusetts Surface Water Quality Standards (SWQS) (314 CMR. 4.00) has narrative biological criteria that define biological integrity as "the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having species composition, diversity, and functional organization comparable to that of the natural habitat of the region." Through the development of an Index of Biotic Integrity (IBI) MassDEP is working to develop and refine numeric thresholds that can be used in the Consolidated Assessment and Listing Methodology (CALM) to interpret the narrative biological criteria in the SWQS. These thresholds improve MassDEP's diagnostic ability to identify degradation in biological integrity and water quality.

The WPP Nonpoint Source Program administers the Section 319 Nonpoint Source Pollution Competitive Grant Program and the Section 604(b) Water Quality Management Planning Grant Program, both of which include support for the development of nine (9)-element Watershed-Based Plans (WBP) for impaired and healthy waters. Watershed-based plans can be used to guide planning to protect healthy waters including biodiversity. The Section 319 Nonpoint Source Pollution Competitive Grant Program has includes several eligible project types in recent requests for proposals including a project category entitled: "Implementation Projects to Protect Healthy Waters". See https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality for more information.

5. Enforcement Authority

MassDEP response: *Please see section TMDL Implementation and Partnerships on page 15 for more information on TMDL enforcement authority and recent efforts to implement TMDLs. TMDL alternatives can also be made enforceable through future municipal separate storm sewer system (MS4) permits.*

6. Environmental Justice

MassDEP response: *The percentage of MassGIS designated Environmental Justice (EJ) area and percentage of EPA designated disadvantaged community area (DCA) are metrics that MassDEP is using to prioritize TMDL development for nutrient impaired lakes. MassDEP also recognizes the need to incorporate EJ and DCA in prioritizing TMDL development for streams and estuaries. EJ was identified as one of the four additional goals of developing a Vision strategy and will be used to prioritize efforts when applicable.*

7. Chloride TMDLs in the Charles River Watershed

MassDEP response: *MassDEP agrees that there is a need to develop chloride TMDLs. The Watershed Planning Program (WPP) been conducting extensive conductivity monitoring throughout the Commonwealth and continues to engage in internal planning for chloride TMDL development. Specifically, MassDEP and the Massachusetts Department of Transportation (MassDOT) are working together to find a solution to the problem of chloride contamination of our waterways due to the use of salt in roadway de-icing procedures. MassDEP has developed and validated a regression model using specific conductance values to estimate chloride concentrations. MassDEP also developed a Snow Disposal Mapping Tool for municipalities and businesses to help avoid potential contamination of wetlands, water supplies, and water bodies. In 2014, MassDOT implemented a series of BMPs including salt storage and housekeeping BMPs, annual training on proper management and maintenance of equipment, and evaluation of deicing chemical alternatives, new procedures and new technologies. MassDEP and MassDOT are sharing their respective data to improve our collective understanding of the water quality impacts of chloride.*

8. Prioritization, Pace, and Selection of Water Bodies for TMDL Development

MassDEP response: *MassDEP acknowledges that recently estuarine and lakes TMDLs have been the focus of TMDL development. It is important to note, however, that the waste load and load reductions required in estuarine and lake TMDLs often apply to upstream rivers. Furthermore, MassDEP encourages CRWA to provide input regarding riverine TMDL prioritization to WPP including specific waterbodies of concern. Regarding the pace at which MassDEP hopes to develop new TMDLs in the short term, WPP reports what TMDLs are prioritized or in development through our integrated reporting process every two years.*

Letter from Massachusetts Rivers Alliance Page 1

MASSACHUSETTS
Rivers Alliance
11 Curtis Avenue, Somerville, MA 02144
617-714-4272 • massriversalliance.org

April 5, 2024

Massachusetts Department of Environmental Protection
Watershed Planning Program
8 New Bond St.
Worcester, MA, 01606

Re. Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and
Total Maximum Daily Load (TMDL) Development (Vision 2.0)

timothy.m.fox@mass.gov

Dear Mr. Fox:

Thank you for the opportunity to review the Massachusetts Department of Environmental Protection's Vision 2.0 document. The Massachusetts Rivers Alliance (Mass Rivers) is a statewide organization with 85 member groups dedicated to protecting and restoring the rivers and streams of the Commonwealth.

We appreciate that MassDEP has laid out an eight-year (2024-2032) strategy to prioritize the restoration of impaired waterbodies in the Vision 2.0 document. According to the document, more specific workplans will be developed as part of the biennial integrated list and Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) commitments. This is a very important part of the process, and Mass Rivers and our member groups have been active participants.

MassDEP's Vision 2.0 approach has three critical objectives that align with EPA's 2022 Vision's five goals[1]:

1. Identify priority concerns;
2. Develop a process to assess, prioritize, evaluate, identify and fill information gaps;
3. Develop work plans and schedules to complete TMDLs or watershed plans (or other approaches where appropriate)

Despite extensive discussion of all five EPA goals in the Vision 1.0 process we are concerned that the Protection and Partnership goals receive virtually little emphasis in the Vision 2.0 document. As a statewide organization with many members active in watershed monitoring and protection, we believe that the Vision 2.0 should place greater emphasis on the Partnership Goal as part of the document to emphasize existing partnerships and encourage more going forward. We note that the Division of Fisheries and Wildlife was an important participant in the Vision 1.0 process, but they are not listed as a stakeholder in the document, nor is the Division of Marine Fisheries. That should be corrected as both agencies' expertise is used in the listing process and should be important in identifying protection and restoration strategies.

[1] EPA 2022 Vison goals include, Planning and Prioritization, Restoration, Protection, Data and Analysis and Partnerships https://www.epa.gov/system/files/documents/2022-9/CWA%20Section%20303d%20Vision_September%202022.pdf

Mass Rivers and several of its member organizations were active participants in the four workshops on Vision 1.0 which MassDEP held between November 2016 and November 2017. These four workshops covered each of the five EPA goals for states to use in developing statewide TMDL Vision Documents. Appendix 1 of the MassDEP Vision 2.0 document includes a summary of the four workshops and key recommendations from each.

> There was a clear message from the participants of our CWA Vision Workshops: they consider all waters of the Commonwealth to be a priority for Protection and Restoration; including freshwater rivers, lakes, marine coastal waters, and also critical habitats protecting biodiversity. Waters with potential high public impact and environmental justice related issues, such as urban waters, public spaces, parks and beaches were identified as a high priority for restoration. The major threats to our waters in need of both restoration and protection were identified as nonpoint source pollution, urbanization and unsustainable development, and financial limitations. These problems were identified as the cause of continued habitat loss, flow alteration, and water quality degradation. Climate change impacts were also identified as threats to our waterways, suggesting the need to continue to prepare for increasingly varied weather patterns and the resulting impacts
>
> Workshop attendees also identified the need to protect critical and natural flows, headwaters and waters with specific habitat functions. Specifically, waters needing protection included: • Coldwater fisheries • Critical habitats (e.g., vernal pools, waters in Areas of Critical Environmental Concern, habitat for sensitive, threatened or endangered species) • Biodiversity/native species (e.g., native mussel streams, indigenous fish) • Diadromous fish runs (e.g., herring and alewife runs) • Migratory bird areas • Wildlife corridors/stream connectivity • Dynamic systems (e.g., floodplains and wetlands).

In 2023, Governor Healey issued Executive Order No. 618: Biodiversity Conservation in Massachusetts[2]. The Executive Order, in part, orders all agencies to review existing efforts to support biodiversity conservation in Massachusetts. The Order applies to both terrestrial and aquatic habitats. Section 1 of the Order describes strategies to meet the goals of the executive order including "land protection" and "critical restoration activities." These activities/goals were important elements of the Vision 1.0 process and should be restored to the Vision 2.0 process.

Prioritization

The DEP Vision 2.0 document identifies MassDEP's priority concerns for 2024-2032 as impairments caused by nutrients (nitrogen and phosphorus) and pathogens that affect public health. Table 3 of the document identifies statewide river segment impairments and TMDLs by cause group and length. Pathogen and nutrient impairment cause the greatest miles of state waters to be impaired (over 3,300 miles together).

Mass Rivers support DEP's desire to focus its efforts on these impairments as a statewide priority. However, we believe that it should not be to the exclusion of other impairments on a watershed basis for the next eight years. For example, Table 3 identifies many miles where impairments are due to temperature and habitat causes. Mass Rivers believes that impaired waters such as these should still receive consideration for restoration during the biennial integrated list and Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) commitments.

Restoration

The EPA 2022 Vision Restoration goal is described restoration to "include[s], but is not limited to, waters assigned to Integrated Reporting Categories 5, 5r/5alt, 4b, and 4c." In the most recent

[2] Executive Order No. 618: Biodiversity Conservation in Massachusetts. September 21, 2023.

MassDEP Integrated Waters list, 4C waters are identified in a separate table. The 4C waters are those with an "Impairment not caused by a pollutant – TMDL not required." Impairments identified by DEP include "fish passage barrier" and flow regime modification." The MA Vision 2.0 focuses on Category 5 waters exclusively.

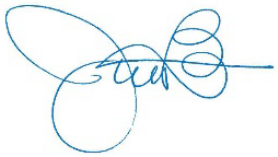
In its biennial review process MassDEP should leave open the possibility to restore those waters using existing authorities such as the Water Management Act, where appropriate, where waters are flow impaired due to operation of permitted diversions. and working with other state agencies to improve fish passage.

We understand and support the need to prioritize state resources to restore impaired waters. There are hundreds of potential TMDLs identified in the Vision 2.0 document. Over 1,800 impaired segments do not have a TMDL – 40% of them are impaired due to nutrients. Many other waters are identified as 4C impaired, not caused by a pollutant. As we have stated above, we believe that a comprehensive vision for impaired waters must include these as well and allow the opportunity during the biennial process for them to be considered.

We support overall the process of prioritization; however, it isn't clear how MassDEP will prioritize across impaired lake, river and estuarine segments over the next eight years. Mass Rivers notes that relatively few riverine TMDLs have been completed in recent years as compared to coastal/estuarine ones. We urge MassDEP to give strong consideration to doing more riverine TMDLs and hopefully increase the pace at which they, or alternative TMDLs, are produced.

Thank you for your time and consideration.

Sincerely,



Julia Blatt
Executive Director
Massachusetts Rivers Alliance
juliablatt@massriversalliance.org

***MassDEP response to the Massachusetts Rivers Alliance*:**
Thank you for your review of the Massachusetts Vision 2.0. In addition, thank you for your commitment to being an active partner in restoring and protecting Massachusetts' rivers, and being a valued partner in TMDL development and implementation. Your major comments are address below:

9. Emphasis on the Partnership Goal

MassDEP response: *The WPP will seek to work with other state environmental agencies such as Massachusetts Division of Fisheries and Wildlife and Division of Marine Fisheries as we are able. The WPP has made numerous efforts have been made to improve communication and foster partnerships in order to restore and protect water quality. These efforts are detailed at the beginning of this appendix. Regarding efforts to conserve and restore biodiversity, we feel that our current strategy of TMDL development prioritization works towards this objective. For example, the estuarine surface waters that are prioritized in the Massachusetts Vision 2.0 will work towards restoring the submerged aquatic vegetation that is critical to protecting and maintaining marine ecosystems. Other prioritized surface waters that have an aquatic life impairment will have waste load and load allocations written to meet numeric and narrative criteria for the protection of aquatic life. Please also refer to MassDEP response to comment 4 that addresses biodiversity.*

10. Prioritization

MassDEP response: *MassDEP agrees that all impaired Massachusetts surface waters need to be restored to attain the Massachusetts Surface Water Quality Standards (SWQS). One of the goals of the Massachusetts Vision 2.0 is to outline a course of action that will maximize the results given limited resources. Regardless of prioritization level however, MassDEP is obligated by law to prepare TMDLs for surface waters on the Massachusetts 303(d) list of impaired waters.*

11. Restoration

MassDEP response: *A surface water being listed on category 4C does not preclude it from being prioritized for restoration. However, given resource constraints it is necessary to prioritize surface waters that are listed as category 5. The NPS program consider implementation work that addresses water quality impairments listed in Categories 4a, 4c, and 5 of the Massachusetts 2022 Integrated List of Waters to be the highest NPS program priority. Nine-element watershed-based plans can be an effective planning tools to protect healthy waters and restore impaired waterbodies included those in category 4C. Please see the response to comment 4 above.*

Regarding how MassDEP will prioritize across impaired lake, river and estuarine segments over the next eight years, it will likely evolve based on staffing levels and financial resources, stakeholder input, and other factors. MassDEP recognizes that more estuarine and lake TMDLs have been approved in recent years, and we welcome input from Massachusetts River Alliance on future stream TMDL development, including specific waterbodies of concern.

Letter from OARS Page 1

FOR THE ASSABET SUDBURY & CONCORD RIVERS

23 Bradford Street · Concord, MA 01742
978 · 369 · 3956
office@oars3rivers.org

www.oars3rivers.org

March 18, 2024

Massachusetts Department of Environmental Protection
Watershed Planning Program
Attn: Timothy Fox (Vision 2.0)
8 New Bond St.
Worcester, MA, 01606

Re: Comments on Draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load (TMDL) Development

Dear Mr. Fox:

OARS appreciates the opportunity to comment on the draft Massachusetts Vision 2.0: Clean Water Act Section 303(d) and Total Maximum Daily Load (TMDL) Development. OARS is the watershed organization for the Concord basin, comprising the Sudbury, Assabet, and Concord rivers in a 400-square mile area west of Boston. A nonprofit organization founded in 1986, OARS works primarily through science-based advocacy and education to develop a scientific understanding of the causes of river degradation and works with communities to seek effective solutions. Its mission is "to protect, improve and preserve the Assabet, Sudbury, and Concord Rivers, their tributaries and watersheds, for public recreation, water supply, and wildlife habitat." We have a long-term quality-controlled water quality monitoring program and annually provide our data to the EPA and MassDEP through the EPA's WQX data portal.

We reviewed the TMDL vision strategy document and believe that the plan looks very good. We are pleased that Mass DEP is focused on expanding TMDL coverage. We agree with the continued focus on nutrients and pathogens (bacteria) as priority concerns, and we are encouraged that the plan specifically mentions a need for chloride TMDLs. We do have the following comments about some of the plan details:

- The plan does not emphasize enough the important current role being played by nonprofit watershed groups. It should recognize and incorporate the role that these groups play in providing supporting data and helping to prioritize waterbodies that need TMDLs. As you know, OARS provides to MassDEP the water quality data it collects for the Sudbury, Assabet, and Concord Rivers, and we plan to continue doing so for years to come. We fully support the Partnerships Goal (p.8), which states "the CWA 303(d) program meaningfully communicates and collaborates with other government programs and non-governmental stakeholders to effectively and sustainably restore and protect water quality." More can be said about this goal. OARS is such a stakeholder.
- It is important that MassDEP does not forget about, or even diminish the importance of, its enforcement role for existing TMDLs. Some new TMDLs are definitely needed, but existing TMDLs that have yet to achieve their goals need to be prioritized and completed ASAP. The 2004 Assabet River TMDL for Total Phosphorus is a good example of an existing TMDL that has yet to achieve its goals. Regarding that TMDL, Mass DEP needs to be aware of the negotiations about it that OARS had with EPA Region 1 in early 2023. Our letter from OARS to Ken Moraff EPA Region 1, dated Feb. 3, 2023, outlined a commitment by EPA and OARS to make more timely progress on the Assabet TMDL even though EPA has complicated this effort by including three out of four of the Assabet's wastewater treatment plants in its new General Permit for

medium-size treatment plants. That effort will require active, cooperative participation beginning in 2026 from not only EPA and OARS, but MassDEP as well. Accordingly, we strongly request that MassDEP make this a high priority.

- There is currently no limit on nitrogen in freshwater in rivers. We assume the new TMDLs for estuaries will include limits on nitrogen from rivers flowing into the estuaries, and that corresponding limits will be applied to the rivers.

We appreciate your focus on moving the TMDL development process forward and thank you for considering these comments. Please contact us if you have any questions.

Sincerely,

Benjamen Wetherill
OARS Staff Scientist

***MassDEP response to OARS*:**

Thank you for your review of the Massachusetts Vision 2.0. In addition, thank you for your commitment to being an active partner in protecting and improving the Sudbury, Assabet and Concord watersheds and providing long-term water quality data to MassDEP. Your major comments are address below:

12. Partnership Goal

MassDEP response: *MassDEP appreciates and supports the mission of OARS to protect, preserve and restore the Assabet, Sudbury, and Concord watersheds. We recognize the significant contribution OARS provides to MassDEP through collection and submittal of water quality data. The main purpose of the Massachusetts Vision 2.0 document is to provide a prioritization framework for TMDL development. WPP has made numerous efforts to improve communication and foster partnerships in order to restore and protect water quality. These efforts are detailed at the beginning of this appendix. The Partnerships Goal is imperative to the success of developing implementable TMDLs. We strive to build and strengthen partnerships through the TMDL development process as well as other cross-cutting Clean Water Act program goals tied to TMDL development and implementation.*

13. Enforcement of Existing TMDLs

MassDEP response: *The Massachusetts Vision 2.0 document provides a prioritization framework for TMDL development over the next eight years. MassDEP agrees that the successful implementation of existing TMDLs is important. Please see section TMDL Implementation and Partnerships on page 15 for more information on TMDL enforcement authority and recent efforts to implement TMDLs. The Watershed Planning Program continues to work with MassDEP permitting staff to support local planning, and implementation.*

14. Limits on Nitrogen in Freshwater Rivers

MassDEP response: *Total nitrogen TMDLs for estuaries require nitrogen reductions from all sources in the entire embayment system, this includes contributions from freshwater segments. In other words, the waste load and load reductions required in estuarine TMDLs apply to upstream watersheds including rivers. Therefore, the restoration of the estuary may result in improvement of the nutrient impacts to freshwater portions of the watershed but does not specifically set a specific nutrient target for the river itself.*

Letter from EPA Page 1

REGION 1
BOSTON, MA 02109

April 5, 2024

Mr. Timothy Fox
Watershed Planning Program
Massachusetts Department of Environmental Protection
8 New Bond St
Worcester, MA 01606

Dear Mr. Fox:

Thank you for the opportunity to comment on Massachusetts' draft "Vision 2.0" Prioritization Framework. The EPA Clean Water Act 303(d) "Vision" is designed to help coordinate and focus efforts to advance the effectiveness 303(d) program implementation in the coming decade. The 2022 Vision builds on the experience gained from implementing the 2013 Vision outlined in *A New Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program*. Long-term planning from fiscal year 2025 (FY25) to FY32 provides states, territories, and authorized tribes an opportunity to strategically focus their efforts and best use limited resources to demonstrate progress over time in achieving environmental results through the leveraging of partnerships and development of innovative solutions. It is important that the public understands Massachusetts will also identify specific plan development priorities in individual two-year increments. These two-year priority commitments under this Vision metric shall be selected considering the long-term planning documented in the Vision 2.0 Prioritization Framework.

Massachusetts Department of Environmental Protection (MassDEP developed) a process to assess, evaluate, and identify data gaps and limitations to plan and schedule TMDL development. MassDEP's approach for identification of long-term protection and restoration priorities addresses objectives that align with EPA's Vision goals. The draft Vision document and program priorities were developed as follows: 1) determined priority concerns based on the types of impairments on the 303(d) list; 2) grouped waterbodies by type (estuary, river/stream, lakes); 3) developed a strategy to assess, prioritize, evaluate, identify, and fill information gaps; and 4) evaluated the level of impairment across priority waters.

Priority concerns were determined by evaluating the type and relative frequency of impaired assessment units listed on the Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle. This Integrated List was used for planning purposes as its release coincided with this prioritization effort. Approximately 40% of the 1882 listings that require a TMDL are impaired

due to nutrients while 12% were impaired due to pathogens. MassDEP's priority concerns for 2024-2032 were therefore determined to be impairments caused by nutrients (nitrogen and phosphorus) and pathogens that affect public health. These impairments may be addressed at the watershed level where the likelihood of implementing a plan (or plans) that will achieve water quality improvements is greatest.

Strengths

The draft Framework was developed collaboratively with partners and stakeholders, in spirit with EPA's Partnership Goal. The intent of the Partnerships Goal is to encourage communication with governmental entities and non-governmental stakeholders in ways that lead to productive, sustained collaboration, and ultimately better water quality. The Goal consists of two distinct but related approaches: programmatic coordination, and stakeholder involvement and engagement. Stakeholder engagement opportunities were provided through four workshops held between November 2016 and November 2017 to describe EPA's Vision process and to receive public feedback on priorities for protection and restoration of Massachusetts waterbodies. The information gained from these prioritization discussions assisted MassDEP in determining the focus for future TMDL development and to identify improvement targets for protection efforts. The participants of the Vision Workshops reported they consider all waters of the Commonwealth to be a priority for protection and restoration, including freshwater rivers, lakes, marine coastal waters, and also critical habitats protecting biodiversity. Workshop attendees also identified the need to protect critical and natural flows, headwaters and waters with specific habitat functions.

The CWA Section 303(d) program seeks to coordinate with and complement efforts across CWA programs, other statutory programs, and the water quality efforts of other governmental departments and agencies to identify and achieve shared goals. This coordination can include, among other approaches, organizing and aligning processes with partner entities working on CWA implementation; generating plans that are user friendly and broadly implementable across programs; and identifying and drawing in additional programs, authorities, and resources across government entities (including tribes) and the research community to achieve water quality goals. MA Executive Order No. 618 "Biodiversity Conservation in Massachusetts", enacted 9/21/23, represents an opportunity for MassDEP to work collaboratively and in coordination with other related State programs to achieve some of the goals identified by stakeholders during the engagement process.

MassDEP has done a great job addressing Priority Setting in the context of EPA's Planning and Prioritization goal, particularly as it relates to estuarine nutrient impairments. This document provided a thorough description and analytical method to identify a prioritization schema and to produce a preliminary short list of high priority estuarine waterbodies for restoration plan development, including TMDL development, for 2024-2032. The discussion of watershed area land use and how that may influence restoration success and total benefits to stakeholders within the context of nutrient impaired lakes was an interesting one. MassDEP should consider how this analytical method/consideration might be applied to other waterbodies and pollutant types as well as how it could be used to drive Protection Planning.

Letter from EPA Page 3

Opportunities to Expand

The draft Framework provides a solid foundation upon which MassDEP can continue to build. The methods described and applied in the draft may be expanded to include assessment of additional pollutants or to examine other Goals of the Vision. MassDEP has previously included protective TMDL thresholds for unimpaired waters that are hydrologically connected to the impaired waterbody. The intent of the Protection Goal is to encourage a proactive and holistic consideration of management actions to protect healthy waters. For a specific waterbody, protection as defined as sustained minimization or avoidance of water quality degradation due to stressors and/or watershed alterations that would present threats to its current condition. Under the Vision, protection is oriented toward healthy waters, including, but not limited to those of high quality, simply unimpaired, or with limited impairments (to uses other than those for which protection is being sought). Setting CWA 303(d) Program priorities could involve consideration of the restoration potential of impaired waters adjacent or upstream to healthy watersheds. Such coordinated efforts could lead to realizing more effective results than isolated, individual protection or restoration actions. EPA encourages MassDEP to continue to prioritize the development of Protection Plans.

Four cross-cutting themes of national, regional, and local importance, consistent with national EPA priorities, to consider in CWA Section 303(d) program implementation were provided. MassDEP has incorporated Environmental Justice considerations in their methods for prioritization of nutrient impairments, however, there are additional focus areas that could be incorporated into the Framework. As states, territories, and authorized tribes identify priorities for TMDL development, they can consider whether there are impairments that may be particularly sensitive to changing climate conditions. The Recovery Potential Screening Tool and Watershed Index Online Indicator Library are tools that include indicators for projected hydrologic changes, precipitation, and temperature that can be used to support prioritization of impaired waters for TMDL development. EPA encourages MassDEP to consider how they might incorporate use of these tools in TMDL planning and development.

The abilities of staff (and resilience in the face of turnover) are vital to sustained program effectiveness. These abilities and resilience are developed through training new staff, supporting existing staff in expanding their technical skills and subject matter knowledge, providing an information-exchanging community of practitioners across jurisdictions and levels of government, and fostering diverse perspectives and an inclusive work environment. The objective of the Program Capacity Building Focus Area is to expand and build upon existing activities and resources to improve understanding of CWA Section 303(d) program foundations, familiarity with tools and various approaches to regular tasks and complex circumstances, and ability to accomplish statutory responsibilities and Vision Goals more efficiently and effectively. The MassDEP strategy fosters opportunities for collaboration and integration with other CWA programs, particularly the nonpoint source (NPS) program. The draft Framework promotes the development of nine-element Watershed-Based Plans (WBPs) in areas where NPS pollution is the major cause of impairment. These nine-element WBPs can provide the foundation for Advance Restoration Plans (ARPs), however, EPA recommends working with an even larger network of partners to leverage additional capacity for restoration and protection. ARPs may be identified as the most appropriate tool where there are unique local circumstances (e.g., the type of pollutant or source or the nature of the receiving

waterbody; presence of watershed groups or other parties interested in implementing the ARP; available funding opportunities for the ARP). While MassDEP understandably has prioritized nutrient and bacteria impairments in this planning cycle, there remain many other more local, landscape-level impairments that require attention. EPA encourages MassDEP to consider the co-location of additional impairments, such as (but not limited to) temperature, habitat alteration, or fish passage in the determination of where to allocate resources.

EPA appreciates the hard work of MassDEP staff and partners, both past and present, who contributed to this effort. We look forward to continuing to work together to protect Massacusetts' waters.

Sincerely,

IVY MLSNA Digitally signed by IVY MLSNA
Date: 2024.04.05 07:48:46 -04'00'

Ivy Mlsna
Senior Water Quality Scientist
US EPA Region 1

***MassDEP response*:**

Thank you for your review of the Massachusetts Vision 2.0. In addition, thank you for your support in our TMDL prioritization strategy. We appreciate your encouragement to expand the scope of our program. Your major comments are address below:

15. Protection Planning

MassDEP response: *MassDEP appreciates EPA's encouragement to prioritize the development of Protection Plans. MassDEP will consider coordinating efforts to maintain and protect the health of waters upstream or adjacent to impaired waters when creating TMDLs for impaired waterbodies.*

16. Program Capacity Building and Expanding Partnerships

MassDEP response: *MassDEP agrees that program capacity building is vital to sustained program effectiveness. Training new staff and supporting existing staff in expanding technical skills is a high priority for the MassDEP TMDL program. New TMDL staff recently participated in EPA's TMDL Foundations Training Pilot and welcome additional opportunities for staff development. Regional training on the Lake Loading Response Model (LLRM) would be of particular interest given our TMDL development priorities for nutrient impaired lakes. A regional training would help build and foster information-exchanging communities as highlighted in the 2022 Vision.*

MassDEP continues to identify opportunities to expand our partnerships and deliver our message through engagement of state and federal agencies, universities, volunteer groups, and municipalities. Through an established process, there will be a better alignment of MassDEP and stakeholder water quality goals and priorities, regular opportunities for feedback, and the inspiration of a shared commitment.

17. Climate Change Considerations and Additional Impairments

MassDEP response: *Focusing on additional impairments (temperature, habitat alteration, or fish passage) and further consideration of climate change sensitivity is beyond the capacity of the TMDL program at the moment. However, MassDEP will consider opportunities to address additional impairments co-located in prioritized areas and continue to consider the impact of changing environmental conditions when developing and implementing TMDLs.*