

**Draft Massachusetts Integrated List of Waters for the  
Clean Water Act 2024/2026 Reporting Cycles**

**Appendix 26  
Merrimack River Basin and Coastal Drainage Area  
Assessment and Listing Decision Summary**

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## **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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[This report is available on the Massachusetts Department of Environmental Protection website.](#)

## Overview of Appendix Contents

This Integrated Report (IR) Appendix functions as a watershed-based Assessment and Listing Decision Summary that catalogs the most recent assessment decisions for each assessment unit (AU) that was updated as part of the 2024/2026 IR cycle.

The appendix begins with 2024/26 Cycle Impairment Changes, a comprehensive table summarizing all impairments that were either added, removed, changed, or unchanged between the 2022 and 2024/2026 reporting cycles. This table presents the overall impairment status at the waterbody scale, across all designated uses. The table does not detail use-specific impairment changes; those details are provided in subsequent sections of the appendix.

Following 2024/26 Cycle Impairment Changes, the appendix provides an individual section for each AU updated during the 2024/2026 cycle. Each AU section details the supporting data and rationale for each designated use attainment determination, including any associated impairment removal decisions. Changes in impairment status at the designated use level are documented in full within the corresponding Designated Use Attainment Decision. AUs where no usable data were available for the 2024/2026 IR cycle are included, but with the assessment information from the 2022 cycle is carried forward.

The following abbreviations are used when referencing designated uses:

- ALU - Aquatic Life Use
- FC - Fish Consumption Use
- SH - Shellfish Harvesting Use
- AES - Aesthetic Use
- PCR - Primary Contact Recreation Use
- SCR - Secondary Contact Recreation Use

When listing an impairment, parentheses and an asterisk (\*) are utilized to denote “pollution” or non-pollutant impairments that do not require the development of a Total Maximum Daily Load (TMDL). Where applicable, further explanation of the ATTAINS impairment code is provided within square brackets [].

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## 2024/26 Cycle Impairment Changes

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Back River	MA84A-16	5	5	(Fish Passage Barrier*)	--	Unchanged
Back River	MA84A-16	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Back River	MA84A-16	5	5	Sedimentation/Siltation	--	Unchanged
Back River	MA84A-16	5	5	Turbidity	--	Unchanged
Bailey Pond	MA84003	3	3	None	--	Unchanged
Bare Meadow Brook	MA84A-18	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Bare Meadow Brook	MA84A-18	5	5	Sedimentation/Siltation	--	Unchanged
Bare Meadow Brook	MA84A-18	5	5	Turbidity	--	Unchanged
Bartlett Brook	MA84A-36	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Beaver Brook	MA84A-11	5	5	(Debris*)	--	Unchanged
Beaver Brook	MA84A-11	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Beaver Brook	MA84A-11	5	5	Benthic Macroinvertebrates	--	Unchanged
Beaver Brook	MA84A-11	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Beaver Brook	MA84A-11	5	5	Odor	--	Unchanged



Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Beaver Brook	MA84A-11	5	5	Trash	--	Unchanged
Beaver Brook	MA84A-11	5	5	Turbidity	--	Unchanged
Beaver Brook	MA84B-02	5	5	Dissolved Oxygen	--	Unchanged
Beaver Brook	MA84B-02	5	5	Fecal Coliform	--	Unchanged
Beaver Brook	MA84B-02	5	5	pH, Low	--	Unchanged
Beaver Brook	MA84B-02	5	5	Total Suspended Solids (TSS)	--	Unchanged
Beaver Brook	MA84B-05	3	3	None	--	Unchanged
Bennetts Brook	MA84B-06	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Black Brook	MA84A-17	5	5	(Debris*)	--	Unchanged
Black Brook	MA84A-17	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Black Brook	MA84A-17	5	5	Benthic Macroinvertebrates	--	Unchanged
Black Brook	MA84A-17	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Black Brook	MA84A-17	5	5	Fish Bioassessments	--	Unchanged
Black Brook	MA84A-17	5	5	Sedimentation/Siltation	--	Unchanged
Black Brook	MA84A-17	5	5	Trash	--	Unchanged
Black Brook	MA84A-17	5	5	Turbidity	--	Unchanged
Bridge Meadow Brook	MA84A-34	3	3	None	--	Unchanged
Chadwicks Pond	MA84006	5	5	Mercury in Fish Tissue	--	Unchanged
Clarks Pond	MA84007	--	3	None	--	Unchanged
Cobbler Brook	MA84A-22	5	5	(Debris*)	--	Unchanged

<b>Waterbody</b>	<b>AU_ID</b>	<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
Cobbler Brook	MA84A-22	5	5	Benthic Macroinvertebrates	--	Unchanged
Cobbler Brook	MA84A-22	5	5	Dissolved Oxygen	--	Unchanged
Cobbler Brook	MA84A-22	5	5	Escherichia Coli (E. Coli)	--	Added
Cobbler Brook	MA84A-22	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Cobbler Brook	MA84A-22	5	5	Temperature	--	Unchanged
Cobbler Brook	MA84A-22	5	5	Trash	--	Unchanged
Cow Pond Brook	MA84A-41	3	2	None	--	Unchanged
Creek Brook	MA84A-37	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Crooked Springs Brook	MA84B-09	2	2	None	--	Unchanged
Crystal Lake	MA84010	5	5	(Aquatic Plants (Macrophytes)*)	--	Added
Crystal Lake	MA84010	5	5	Mercury in Fish Tissue	--	Unchanged
Deep Brook	MA84A-21	5	5	(Habitat Assessment*)	--	Unchanged
Deep Brook	MA84A-21	5	5	Benthic Macroinvertebrates	--	Unchanged
Deep Brook	MA84A-21	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Deep Brook	MA84A-21	5	5	Lack of a Coldwater Assemblage	--	Unchanged
Deep Brook	MA84A-21	5	5	Sedimentation/Siltation	--	Unchanged
Deep Brook	MA84A-21	5	5	Temperature	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
East Meadow River	MA84A-39	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Fish Brook	MA84A-40	5	5	Chloride	--	Unchanged
Fish Brook	MA84A-40	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Flint Pond	MA84012	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Flint Pond	MA84012	5	5	(Brittle Naiad, Najas Minor*)	--	Unchanged
Flint Pond	MA84012	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Flint Pond	MA84012	5	5	Mercury in Fish Tissue	33880	Unchanged
Flint Pond	MA84012	5	5	Nutrient/Eutrophication Biological Indicators	--	Added
Flint Pond	MA84012	5	5	PFAS in Fish Tissue	--	Added
Forest Lake	MA84014	5	5	Mercury in Fish Tissue	--	Unchanged
Forge Pond	MA84015	4a	5	(Curly-leaf Pondweed*)	--	Unchanged
Forge Pond	MA84015	4a	5	(Fanwort*)	--	Unchanged
Forge Pond	MA84015	4a	5	(Water Chestnut*)	--	Unchanged
Forge Pond	MA84015	4a	5	Mercury in Fish Tissue	33880	Unchanged
Forge Pond	MA84015	4a	5	PFAS in Fish Tissue	--	Added
Haggets Pond	MA84022	5	5	Mercury in Fish Tissue	--	Unchanged
Hoveys Pond	MA84025	5	5	Mercury in Fish Tissue	--	Unchanged
Johnson Creek	MA84A-15	2	5	Escherichia Coli (E. Coli)	--	Added
Johnsons Pond	MA84027	5	5	Dissolved Oxygen	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Johnsons Pond	MA84027	5	5	Mercury in Fish Tissue	--	Unchanged
Joint Grass Brook	MA84A-32	3	3	None	--	Unchanged
Kenoza Lake	MA84028	5	5	Mercury in Fish Tissue	--	Unchanged
Knops Pond/Lost Lake	MA84084	4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Knops Pond/Lost Lake	MA84084	4a	4a	(Fanwort*)	--	Unchanged
Knops Pond/Lost Lake	MA84084	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Knops Pond/Lost Lake	MA84084	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Lake Attitash	MA84002	5	5	Harmful Algal Blooms	--	Unchanged
Lake Attitash	MA84002	5	5	Mercury in Fish Tissue	--	Unchanged
Lake Attitash	MA84002	5	5	PFAS in Fish Tissue	--	Added
Lake Cochichewick	MA84008	5	5	Mercury in Fish Tissue	--	Unchanged
Lake Cochichewick	MA84008	5	5	PFAS in Fish Tissue	--	Added
Lake Gardner	MA84018	4c	4c	(Fish Passage Barrier*)	--	Unchanged
Lake Mascuppic	MA84037	4c	5	(Curly-leaf Pondweed*)	--	Unchanged
Lake Mascuppic	MA84037	4c	5	(Fanwort*)	--	Unchanged
Lake Mascuppic	MA84037	4c	5	PFAS in Fish Tissue	--	Added
Lake Pentucket	MA84051	5	5	Mercury in Fish Tissue	--	Unchanged
Lake Saltonstall	MA84059	5	5	Mercury in Fish Tissue	--	Unchanged
Lawrence Brook	MA84A-20	3	3	None	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Little River	MA84A-09	5	5	(Debris*)	--	Unchanged
Little River	MA84A-09	5	5	(Habitat Assessment*)	--	Unchanged
Little River	MA84A-09	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Little River	MA84A-09	5	5	Trash	--	Unchanged
Locust Pond	MA84031	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Long Pond	MA84032	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Long Pond	MA84032	5	5	Harmful Algal Blooms	--	Unchanged
Long Pond	MA84032	5	5	Mercury in Fish Tissue	33880	Unchanged
Long Sought-for Pond	MA84033	--	5	Mercury in Fish Tissue	--	Added
Lowell Canals	MA84A-29	5	5	DDT in Fish Tissue	--	Unchanged
Lowell Canals	MA84A-29	5	5	Escherichia Coli (E. Coli)	--	Added
Lowell Canals	MA84A-29	5	5	Lead	--	Unchanged
Lowell Canals	MA84A-29	5	5	Mercury in Fish Tissue	--	Unchanged
Lowell Canals	MA84A-29	5	5	PCBs in Fish Tissue	--	Unchanged
Martins Pond Brook	MA84A-19	3	3	None	--	Unchanged
Massapoag Pond	MA84087	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Massapoag Pond	MA84087	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Massapoag Pond	MA84087	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Massapoag Pond	MA84087	5	5	Dissolved Oxygen	--	Unchanged
Massapoag Pond	MA84087	5	5	Mercury in Fish Tissue	33880	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Merrimack River	MA84A-01	5	5	(Fish Passage Barrier*)	--	Unchanged
Merrimack River	MA84A-01	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Merrimack River	MA84A-01	5	5	Fecal Coliform	R1_MA_2024_04	Changed
Merrimack River	MA84A-01	5	5	Harmful Algal Blooms	--	Added
Merrimack River	MA84A-01	5	5	Mercury in Fish Tissue	--	Unchanged
Merrimack River	MA84A-01	5	5	PFAS in Fish Tissue	--	Added
Merrimack River	MA84A-02	5	5	(Dewatering*)	--	Unchanged
Merrimack River	MA84A-02	5	5	(Fish Passage Barrier*)	--	Unchanged
Merrimack River	MA84A-02	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Merrimack River	MA84A-02	5	5	Mercury in Fish Tissue	--	Unchanged
Merrimack River	MA84A-02	5	5	PFAS in Fish Tissue	--	Added
Merrimack River	MA84A-02	5	5	Phosphorus, Total	--	Unchanged
Merrimack River	MA84A-03	5	5	(Fish Passage Barrier*)	--	Unchanged
Merrimack River	MA84A-03	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Merrimack River	MA84A-03	5	5	Mercury in Fish Tissue	--	Unchanged
Merrimack River	MA84A-03	5	5	PCBs in Fish Tissue	--	Unchanged
Merrimack River	MA84A-03	5	5	PFAS in Fish Tissue	--	Added
Merrimack River	MA84A-03	5	5	Phosphorus, Total	--	Unchanged
Merrimack River	MA84A-04	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Merrimack River	MA84A-04	5	5	PCBs in Fish Tissue	--	Unchanged
Merrimack River	MA84A-04	5	5	Phosphorus, Total	--	Unchanged
Merrimack River	MA84A-05	5	5	Enterococcus	R1_MA_2024_04	Changed

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Merrimack River	MA84A-05	5	5	PCBs in Fish Tissue	--	Unchanged
Merrimack River	MA84A-06	5	5	Enterococcus	R1_MA_2024_04	Changed
Merrimack River	MA84A-06	5	5	Fecal Coliform	R1_MA_2024_04	Changed
Merrimack River	MA84A-06	5	5	PCBs in Fish Tissue	--	Unchanged
Merrimack River	MA84A-26	5	4a	Fecal Coliform	R1_MA_2024_04	Changed
Mill Pond	MA84038	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Mill Pond	MA84038	5	5	Nutrient/Eutrophication Biological Indicators	--	Added
Mill Pond	MA84039	3	3	None	--	Unchanged
Mill Pond	MA84081	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Mill Pond	MA84081	5	5	Nutrient/Eutrophication Biological Indicators	--	Added
Millvale Reservoir	MA84041	5	5	Mercury in Fish Tissue	--	Unchanged
Nabnasset Pond	MA84044	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Nabnasset Pond	MA84044	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Nabnasset Pond	MA84044	5	5	Harmful Algal Blooms	--	Unchanged
Nabnasset Pond	MA84044	5	5	Mercury in Fish Tissue	33880	Unchanged
Newfield Pond	MA84046	5	5	(Aquatic Plants (Macrophytes)*)	--	Added
Newfield Pond	MA84046	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Newfield Pond	MA84046	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged

<b>Waterbody</b>	<b>AU_ID</b>	<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
Newfield Pond	MA84046	5	5	(Fanwort*)	--	Unchanged
Newfield Pond	MA84046	5	5	(Non-Native Aquatic Plants*)	--	Removed
Newfield Pond	MA84046	5	5	Dissolved Oxygen	--	Unchanged
Newfield Pond	MA84046	5	5	Mercury in Fish Tissue	33880	Unchanged
Peppermint Brook	MA84A-35	5	5	(Debris*)	--	Unchanged
Peppermint Brook	MA84A-35	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Peppermint Brook	MA84A-35	5	5	Trash	--	Unchanged
Plum Island River	MA84A-27	5	4a	Fecal Coliform	R1_MA_2024_04	Changed
Powwow River	MA84A-08	5	5	Escherichia Coli (E. Coli)	--	Unchanged
Powwow River	MA84A-25	5	5	(Fish Passage Barrier*)	--	Unchanged
Powwow River	MA84A-25	5	5	Escherichia Coli (E. Coli)	--	Unchanged
Powwow River	MA84A-28	5	4c	(Fish Passage Barrier*)	--	Unchanged
Powwow River	MA84A-28	5	4c	Fecal Coliform	--	Removed
Powwow River	MA84A-28	5	4c	Total Suspended Solids (TSS)	--	Removed
Powwow River	MA84A-28	5	4c	Turbidity	--	Removed
Reed Brook	MA84B-08	3	3	None	--	Unchanged
Richardson Brook	MA84A-12	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Salmon Brook	MA84A-33	3	2	None	--	Unchanged
South Branch Souhegan River	MA84A-31	5	5	Benthic Macroinvertebrates	--	Unchanged



<b>Waterbody</b>	<b>AU_ID</b>	<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
South Branch Souhegan River	MA84A-31	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
South Branch Souhegan River	MA84A-31	5	5	Temperature	--	Unchanged
Spectacle Pond	MA84089	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Spectacle Pond	MA84089	5	5	(Fanwort*)	--	Unchanged
Spectacle Pond	MA84089	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Spectacle Pond	MA84089	5	5	(Water Chestnut*)	--	Unchanged
Spectacle Pond	MA84089	5	5	Dissolved Oxygen	--	Unchanged
Spicket River	MA84A-42	--	5	(Debris*)	--	Unchanged
Spicket River	MA84A-42	--	5	(Fish Passage Barrier*)	--	Unchanged
Spicket River	MA84A-42	--	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Spicket River	MA84A-42	--	5	Benthic Macroinvertebrates	--	Unchanged
Spicket River	MA84A-42	--	5	Copper	--	Unchanged
Spicket River	MA84A-42	--	5	DDT in Fish Tissue	--	Unchanged
Spicket River	MA84A-42	--	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Spicket River	MA84A-42	--	5	Mercury in Fish Tissue	--	Unchanged
Spicket River	MA84A-42	--	5	Nutrients	--	Unchanged
Spicket River	MA84A-42	--	5	Trash	--	Unchanged
Spicket River	MA84A-43	--	5	(Debris*)	--	Unchanged
Spicket River	MA84A-43	--	5	(Fish Passage Barrier*)	--	Unchanged

<b>Waterbody</b>	<b>AU_ID</b>	<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
Spicket River	MA84A-43	--	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Spicket River	MA84A-43	--	5	Benthic Macroinvertebrates	--	Unchanged
Spicket River	MA84A-43	--	5	Copper	--	Unchanged
Spicket River	MA84A-43	--	5	DDT in Fish Tissue	--	Removed
Spicket River	MA84A-43	--	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Spicket River	MA84A-43	--	5	Mercury in Fish Tissue	--	Removed
Spicket River	MA84A-43	--	5	Nutrients	--	Unchanged
Spicket River	MA84A-43	--	5	Trash	--	Unchanged
Stevens Pond	MA84064	5	5	Harmful Algal Blooms	--	Unchanged
Stevens Pond	MA84064	5	5	Mercury in Fish Tissue	--	Unchanged
Stodge Meadow Pond	MA84095	--	2	None	--	Unchanged
Stony Brook	MA84B-03	5	5	Benthic Macroinvertebrates	--	Unchanged
Stony Brook	MA84B-03	5	5	Fecal Coliform	--	Removed
Stony Brook	MA84B-03	5	5	Turbidity	--	Unchanged
Stony Brook	MA84B-04	5	5	(Dewatering*)	--	Unchanged
Stony Brook	MA84B-04	5	5	Benthic Macroinvertebrates	--	Unchanged
Stony Brook	MA84B-04	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Tadmuck Brook	MA84B-07	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

<b>Waterbody</b>	<b>AU_ID</b>	<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
Trout Brook	MA84A-13	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Trull Brook	MA84A-14	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Unnamed Tributary	MA84A-30	5	5	Escherichia Coli (E. Coli)	--	Unchanged
Unnamed Tributary	MA84A-38	3	3	None	--	Unchanged
Unnamed Tributary	MA84B-01	5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
Unnamed Tributary	MA84B-01	5	5	Fecal Coliform	--	Unchanged
Upper Artichoke Reservoir	MA84071	--	4c	(Aquatic Plants (Macrophytes)*)	--	Added
Uptons Pond	MA84075	3	3	None	--	Unchanged
Ward Pond	MA84096	5	5	Dissolved Oxygen	--	Unchanged

## Back River (MA84A-16)

<b>Location:</b>	New Hampshire state line, Amesbury to inlet Clarks Pond, Amesbury (prior to 2010 this segment extended to confluence with Powwow River).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.7 MILES
<b>Classification/Qualifier:</b>	B

### Back River (MA84A-16)

Watershed Area: 6.22 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	2.97	2.97	0.90	0.90
Agriculture	20.3%	20.3%	14.2%	14.2%
Developed	16.5%	16.5%	12.3%	12.3%
Natural	54.8%	54.8%	52.9%	52.9%
Wetland	8.4%	8.4%	20.6%	20.6%
Impervious	6.4%	6.4%	5.2%	5.2%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Sedimentation/Siltation	--	Unchanged
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Sedimentation/Siltation	Source Unknown (N)	X	--	--	--	--
Sedimentation/Siltation	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X	--	X	X	X
Turbidity	Source Unknown (N)	X	--	X	X	X
Turbidity	Unspecified Urban Stormwater (Y)	X	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	No
<b>2024/26 Use Attainment Summary</b>	

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Back River (MA84A-16) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Aesthetics Use for Back River (MA84A-16) continues to be assessed as Not Supporting, with the Turbidity impairment being carried forward. The prior Alert identified for Turbidity is being removed in light of the impairment for the same concern. No new data are available to evaluate the Aesthetics Use for this Back River AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for the Back River (MA84A-16) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward and the prior Turbidity impairment (from the Aesthetics Use) is being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Back River (MA84A-16) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on historical bacteria data not meeting the threshold at W1212. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. MassDEP staff collected *E. coli* bacteria samples in the downstream quarter of the Back River (MA84A-16) at W1212 [Clinton St crossing, Amesbury] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1212 indicated 100% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 861 CFU/100ml. Historic *E. coli* data from W1212 are indicative of an *E. coli* impairment.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1212	MassDEP	Water Quality	Back River	[Clinton Street crossing, Amesbury]	42.866762	-70.920693

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

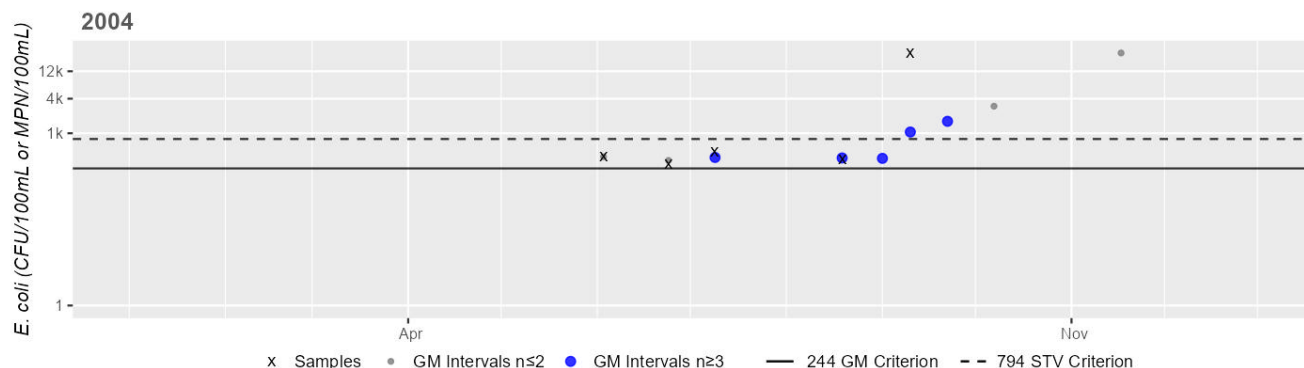
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1212	MassDEP	E. coli	06/02/04	09/09/04	5	290	25000	861

#### Station MASSDEP\_W1212 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	861
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance

Historic (1997-2010)

100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;

%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;

"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Bailey Pond (MA84003)

<b>Location:</b>	Amesbury.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	13 ACRES
<b>Classification/Qualifier:</b>	B

No usable data were available for Bailey Pond (MA84003) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
3	3	None	--	Unchanged



## Bare Meadow Brook (MA84A-18)

<b>Location:</b>	Headwaters, Methuen to confluence with Merrimack River, Methuen.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3 MILES
<b>Classification/Qualifier:</b>	B

### Bare Meadow Brook (MA84A-18)

Watershed Area: 7.83 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	7.66	7.56	1.99	1.99
Agriculture	1.6%	1.6%	0.9%	0.9%
Developed	29%	29.1%	18.7%	18.7%
Natural	56.1%	56%	51.5%	51.5%
Wetland	13.3%	13.3%	29%	29%
Impervious	13.7%	13.8%	8.8%	8.8%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Sedimentation/Siltation	--	Unchanged
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Sedimentation/Siltation	Source Unknown (N)	X	--	--	--	--
Sedimentation/Siltation	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Turbidity	Source Unknown (N)	X	--	--	--	--
Turbidity	Unspecified Urban Stormwater (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bare Meadow Brook (MA84A-18) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
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No data are available, so the Aesthetics Use for Bare Meadow Brook (MA84A-18) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Bare Meadow Brook (MA84A-18) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Bare Meadow Brook (MA84A-18) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical *E. coli* bacteria samples toward the downstream end of Bare Meadow Brook (MA84A-18) at W1195 [Refrew St crossing, Methuen] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1195 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 323 CFU/100ml. Historic *E. coli* data from W1195 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Bare Meadow Brook.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1195	MassDEP	Water Quality	Bare Meadow Brook	[Refrew Street crossing, Methuen]	42.756559	-71.133088

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

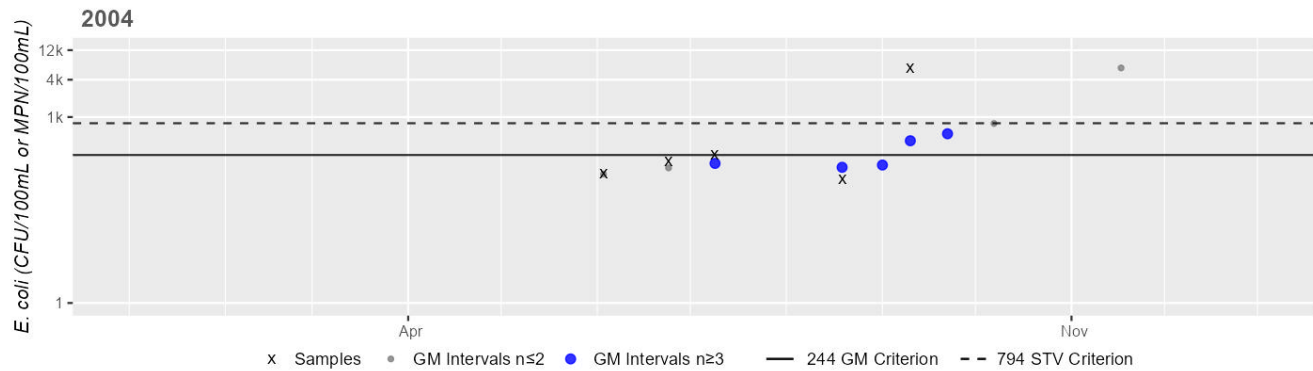
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1195	MassDEP	E. coli	06/02/04	09/09/04	5	100	6200	323

### Station MASSDEP\_W1195 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	323
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
40%

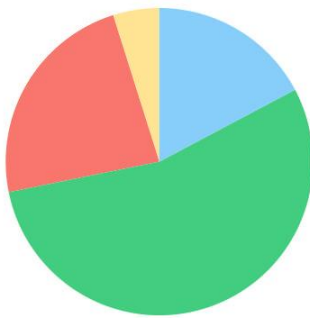
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Bartlett Brook (MA84A-36)

<b>Location:</b>	New Hampshire state line, Dracut to inlet Mill Pond, Methuen.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3.7 MILES
<b>Classification/Qualifier:</b>	B

### Bartlett Brook (MA84A-36)

Watershed Area: 6.79 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	5.57	5.57	2.23	2.23
Agriculture	4.9%	4.9%	6.3%	6.3%
Developed	23.3%	23.3%	17.7%	17.7%
Natural	54.6%	54.6%	49.3%	49.3%
Wetland	17.2%	17.2%	26.7%	26.7%
Impervious	10.5%	10.5%	8.4%	8.4%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bartlett Brook (MA84A-36) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Bartlett Brook (MA84A-36) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Bartlett Brook (MA84A-36) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Bartlett Brook (MA84A-36) is assessed as Not Supporting. An *Escherichia coli* (*E. coli*) impairment is being added based on a re-evaluation of historical bacteria data not meeting the threshold at W1202. MassDEP staff collected historical *E. coli* bacteria samples at the downstream end of Bartlett Brook (MA84A-36) at W1202 [Rt. 113 (N Lowell St) crossing, Methuen] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1202 indicated 100% of intervals had GMs >244 CFU/100ml, 2 samples exceeded the 794 CFU/100ml STV, and the overall GM was 344 CFU/100ml. Historic *E. coli* data from W1202 are indicative of an *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1202	MassDEP	Water Quality	Bartlett Brook	[Route 113 (North Lowell Street) crossing, Methuen]	42.704328	-71.223607

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

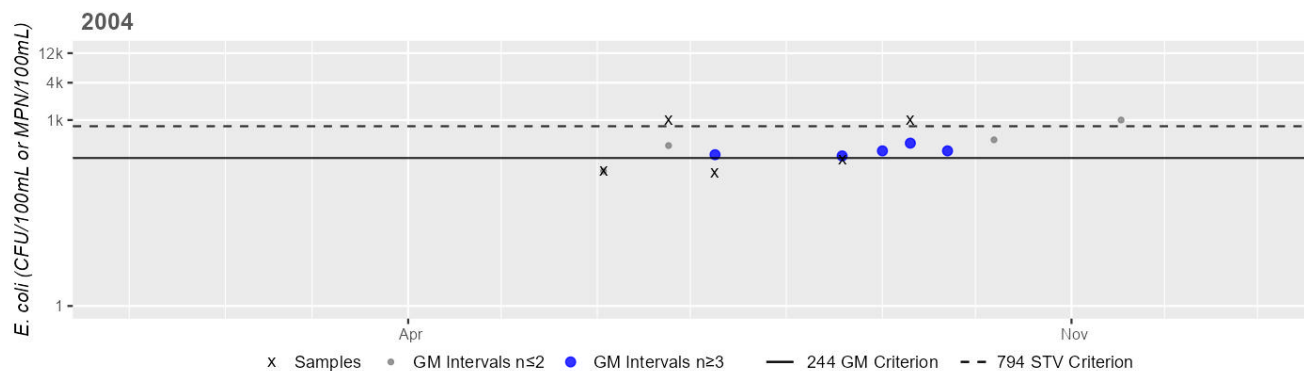
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1202	MassDEP	E. coli	06/02/04	09/09/04	5	140	1000	344

# Station MASSDEP\_W1202 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	344
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	40%

Cumulative %GMI Exceedance

Historic (1997-2010)

100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.



## Beaver Brook (MA84A-11)

<b>Location:</b>	New Hampshire state line, Dracut to confluence with Merrimack River, Lowell.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.8 MILES
<b>Classification/Qualifier:</b>	B: CWF

### Beaver Brook (MA84A-11)

Watershed Area: 94.41 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	9.69	8.34	2.43	1.94
Agriculture	4.4%	4.6%	2.2%	2.5%
Developed	40.6%	42.3%	28.2%	30.1%
Natural	45.3%	42.6%	50.1%	44.3%
Wetland	9.7%	10.5%	19.5%	23%
Impervious	20.4%	21.3%	14.7%	15.7%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)	--	Unchanged
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Odor	--	Unchanged
5	5	Trash	--	Unchanged
5	5	Turbidity	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (N)	--	--	X	X	X
(Physical Substrate Habitat Alterations*)	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Odor	Combined Sewer Overflows (N)	--	--	X	X	X
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (N)	--	--	X	X	X
Turbidity	Combined Sewer Overflows (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Beaver Brook AU (MA84A-11) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
<p>The Aesthetics Use for this Beaver Brook AU (MA84A-11) continues to be assessed as Not Supporting, with the prior impairments for Trash, Debris, Odor and Turbidity being carried forward. MassDEP staff recorded aesthetics observations as part of the MAP2 wadeable streams monitoring project, in summer 2015 at two stations in Dracut, for this Beaver Brook AU; half-way down the AU ~4800 feet downstream/south of Lakeview Avenue (W2510, n=5) and close to the downstream end of the AU ~50 feet downstream/east of Park Avenue (W2533, n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded at either site, though field staff noted trash on three occasions at W2510 and six occasions at W2533 (one of which was described as “very heavy trash” and staff noted an aesthetics impairment flag on that sampling date (MassDEP Undated 7); this is reflective of the existing impairment) and dense aquatic plants were noted on two occasions at W2510. Additionally, W2510 and W2533 were located upstream of the station (downstream of Pleasant St in Dracut) where “erosion/sedimentation, instream and riparian trash deposits of construction related material and other anthropogenic debris” were observed in 1999, as well as a petroleum odor (downstream of the Peppermint Brook confluence) (Kennedy, Kiras and McVoy 2001), so the aesthetics impairments cannot be delisted. Additionally, an active CSO (LOW007) is also located further downstream in this Beaver Brook AU (MA84A-11).</p>	

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2510	MassDEP	Water Quality	Beaver Brook	[approximately 4800 feet downstream/south of Lakeview Avenue, Dracut]	42.671844	-71.344448
W2533	MassDEP	Water Quality	Beaver Brook	[approximately 50 feet downstream/east of Park Avenue, Dracut]	42.668178	-71.326335

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2510	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2510 on Beaver Brook (MA84A-11) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=3) and dense/very dense aquatic plants (n=2).
W2533	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2533 on Beaver Brook (MA84A-11) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted an aesthetics impairment flag (n=1), objectionable deposits (n=5), and abundant trash (n=1).

### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2510	2015	5	5	0
W2533	2015	5	3	0

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2510	Beaver Brook	2015	Aesthetics Impaired?	No	5	5
W2510	Beaver Brook	2015	Aquatic Plant Density, Overall	Dense	2	5
W2510	Beaver Brook	2015	Aquatic Plant Density, Overall	Sparse	3	5
W2510	Beaver Brook	2015	Color	Light Yellow/Tan	5	5
W2510	Beaver Brook	2015	Objectionable Deposits	No	2	5
W2510	Beaver Brook	2015	Objectionable Deposits	Yes	3	5
W2510	Beaver Brook	2015	Odor	None	5	5
W2510	Beaver Brook	2015	Periphyton Density, Filamentous	None	5	5
W2510	Beaver Brook	2015	Periphyton Density, Film	Moderate	1	5
W2510	Beaver Brook	2015	Periphyton Density, Film	None	4	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2510	Beaver Brook	2015	Scum	No	5	5
W2510	Beaver Brook	2015	Turbidity	None	3	5
W2510	Beaver Brook	2015	Turbidity	Slightly Turbid	2	5
W2533	Beaver Brook	2015	Aesthetics Impaired?	No	4	5
W2533	Beaver Brook	2015	Aesthetics Impaired?	Yes	1	5
W2533	Beaver Brook	2015	Aquatic Plant Density, Overall	Dense	1	5
W2533	Beaver Brook	2015	Aquatic Plant Density, Overall	Moderate	2	5
W2533	Beaver Brook	2015	Aquatic Plant Density, Overall	Sparse	1	5
W2533	Beaver Brook	2015	Aquatic Plant Density, Overall	Unobservable	1	5
W2533	Beaver Brook	2015	Color	Light Yellow/Tan	4	5
W2533	Beaver Brook	2015	Color	None	1	5
W2533	Beaver Brook	2015	Objectionable Deposits	Yes	5	5
W2533	Beaver Brook	2015	Odor	Musty (Basement)	1	5
W2533	Beaver Brook	2015	Odor	None	4	5
W2533	Beaver Brook	2015	Periphyton Density, Filamentous	None	1	5
W2533	Beaver Brook	2015	Periphyton Density, Filamentous	Sparse	2	5
W2533	Beaver Brook	2015	Periphyton Density, Filamentous	Unobservable	2	5
W2533	Beaver Brook	2015	Periphyton Density, Film	None	2	5
W2533	Beaver Brook	2015	Periphyton Density, Film	Sparse	1	5
W2533	Beaver Brook	2015	Periphyton Density, Film	Unobservable	2	5
W2533	Beaver Brook	2015	Scum	No	3	5
W2533	Beaver Brook	2015	Scum	Yes	2	5
W2533	Beaver Brook	2015	Turbidity	None	3	5
W2533	Beaver Brook	2015	Turbidity	Slightly Turbid	2	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Primary Contact Recreation Use for this Beaver Brook AU (MA84A-11) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on bacteria data not meeting the threshold at W2510. The prior Debris, Odor, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward. MassDEP and USGS staff collected *E. coli* bacteria samples in Beaver Brook (MA84A-11) from 2015-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: half-way down the AU at W2510 [~4800 ft downstream/S of Lakeview Avenue, Dracut] from May-Sep 2015 (n=5), and close to the downstream end of the AU at W2533 [~50 ft downstream/E of Park Avenue, Dracut] from May-Sep 2015 (n=5) and USGS-01096598 [Beaver Brook At Lowell, MA] from 2021-2022 (n=3-7/yr). Analysis of the single year limited frequency *E. coli* dataset from W2510 indicated 100% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 159 CFU/100ml. Analysis of the single year limited frequency *E. coli* dataset from W2533 indicated 66% of intervals had GMs >126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV, and the seasonal GM was 183 CFU/100ml. Analysis of the single year moderate frequency *E. coli* dataset from USGS-01096598 indicated 0% of intervals had GMs >126 CFU/100ml and 2 samples exceeded the 410 CFU/100ml STV. While *E. coli* data from W2533 and USGS-01096598 meet 2024 CALM guidance, data from W2510 are indicative of an *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2510	MassDEP	Water Quality	Beaver Brook	[approximately 4800 feet downstream/south of Lakeview Avenue, Dracut]	42.671844	-71.344448
W2533	MassDEP	Water Quality	Beaver Brook	[approximately 50 feet downstream/east of Park Avenue, Dracut]	42.668178	-71.326335
USGS-01096598	USGS Massachusetts Water Science Center	Water Quality	Beaver Brook	Beaver Brook At Lowell, MA	42.660091	-71.318950

### Bacteria Data

#### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4) (USGS 2024) (MassDEP Undated 2)

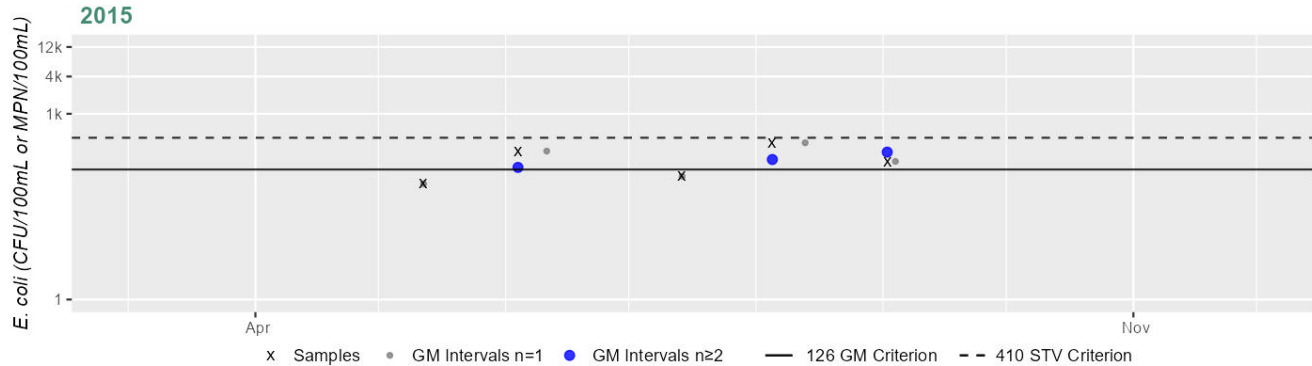
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2510	MassDEP	E. coli	05/12/15	09/02/15	5	74	340	159
W2533	MassDEP	E. coli	05/12/15	09/02/15	5	31	6000	183
USGS-01096598	USGS Massachusetts Water Science Center	E. coli	04/06/21	10/06/21	7	30	2400	172

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01096598	USGS Massachusetts Water Science Center	E. coli	04/04/22	07/14/22	3	43	390	102

### Station MASSDEP\_W2510 - Escherichia coli

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	159
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	0
%n>STV	0%

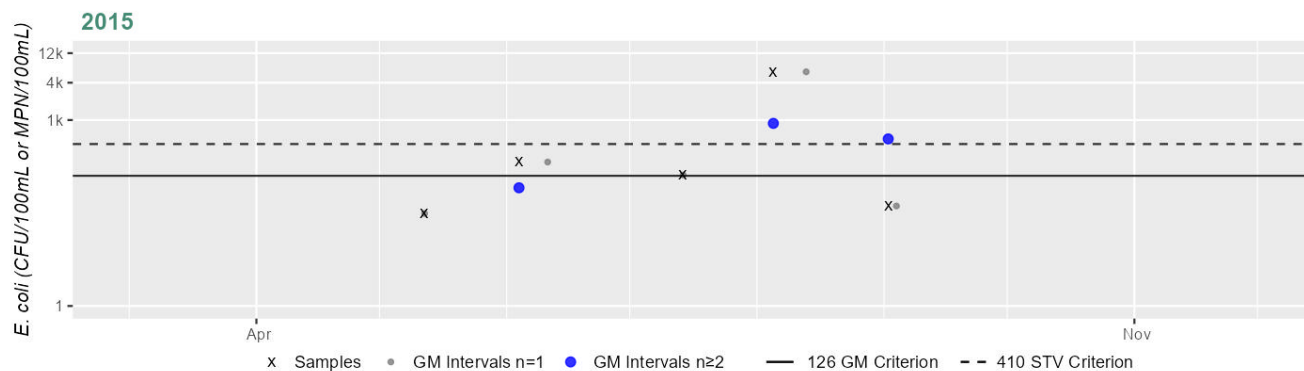
#### Cumulative %GMI Exceedance

Current (2011-2022)  
100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2533 - *Escherichia coli*

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	183
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

#### Cumulative %GMI Exceedance

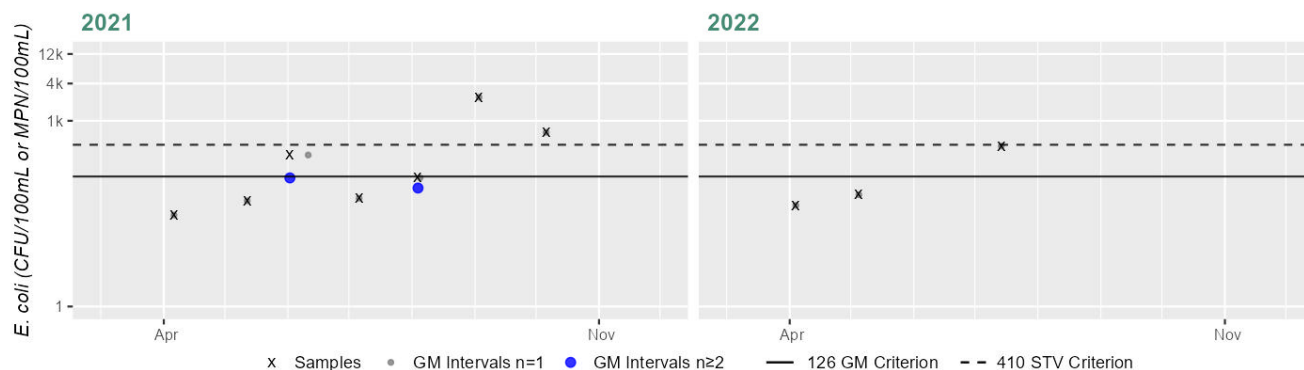
Current (2011-2022)

66%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station USGS-01096598 - *Escherichia coli*

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	7
SeasGM	172
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	3
SeasGM	102
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.



## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for this Beaver Brook AU (MA84A-11) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> (<i>E. coli</i>) impairment is being carried forward (some elevated <i>E. coli</i> data from W2533 and USGS-01096598 are reflective of the existing impairment). The prior Debris, Odor, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward. MassDEP and USGS staff collected <i>E. coli</i> bacteria samples in Beaver Brook (MA84A-11) from 2015-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: half-way down the AU at W2510 [~4800 ft downstream/S of Lakeview Avenue, Dracut] from May-Sep 2015 (n=5), and close to the downstream end of the AU at W2533 [~50 ft downstream/E of Park Avenue, Dracut] from May-Sep 2015 (n=5) and USGS-01096598 [Beaver Brook At Lowell, MA] from 2021-2022 (n=6-9/yr). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2510 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 159 CFU/100ml. Analysis of the single year limited frequency <i>E. coli</i> dataset from W2533 indicated 75% of intervals had GMs &gt;244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 183 CFU/100ml. Analysis of the multi-year moderate/limited frequency <i>E. coli</i> dataset from USGS-01096598 indicated 1 out of 2 sufficient data years had intervals where &gt;20% of the GMs were &gt;244 CFU/100ml (2021, 37%), 0 years had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 23% of intervals had GMs &gt;244 CFU/100ml. Although <i>E. coli</i> data from all three stations meet 2024 CALM guidance, elevated <i>E. coli</i> samples from W2533 and USGS-01096598 are reflective of the existing impairment (max = 6000 CFU/100ml) and the prior <i>E. coli</i> impairment is being carried forward.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2510	MassDEP	Water Quality	Beaver Brook	[approximately 4800 feet downstream/south of Lakeview Avenue, Dracut]	42.671844	-71.344448
W2533	MassDEP	Water Quality	Beaver Brook	[approximately 50 feet downstream/east of Park Avenue, Dracut]	42.668178	-71.326335
USGS-01096598	USGS Massachusetts Water Science Center	Water Quality	Beaver Brook	Beaver Brook At Lowell, MA	42.660091	-71.318950

## Bacteria Data

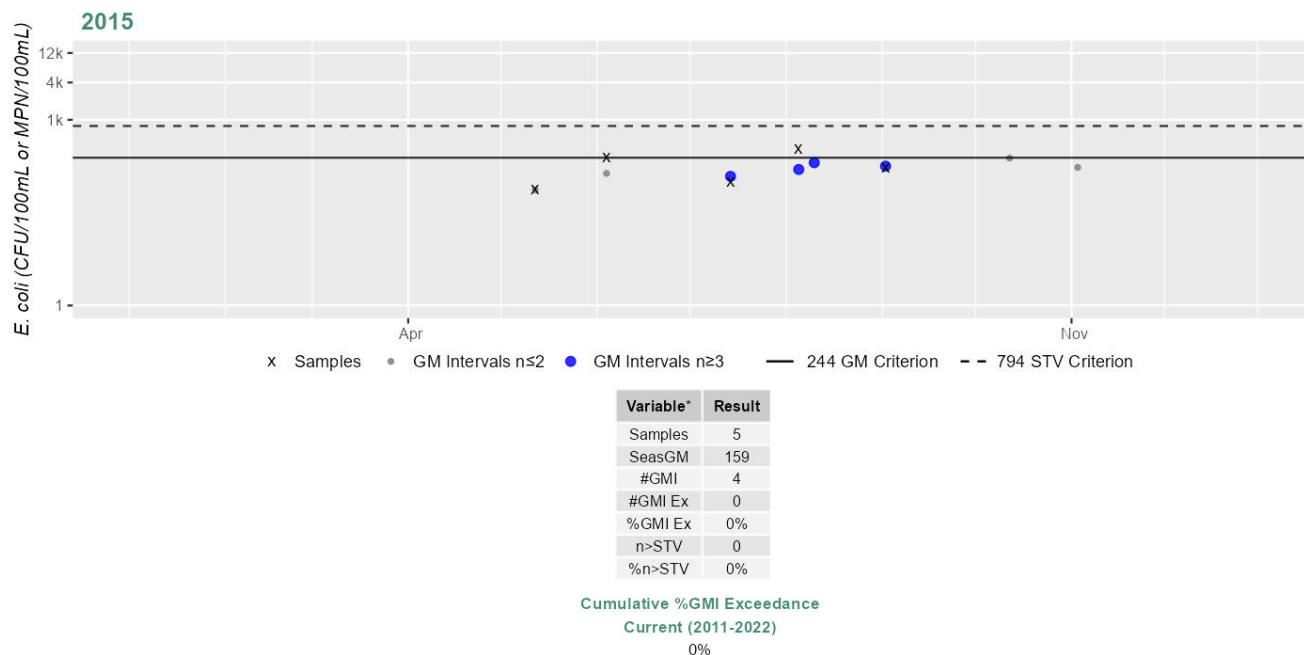
**Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)**  
(MassDEP Undated 7) (MassDEP Undated 3) (USGS 2024) (MassDEP Undated 1)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2510	MassDEP	E. coli	05/12/15	09/02/15	5	74	340	159
W2533	MassDEP	E. coli	05/12/15	09/02/15	5	31	6000	183
USGS-01096598	USGS Massachusetts Water Science Center	E. coli	04/06/21	12/07/21	9	30	2400	150
USGS-01096598	USGS Massachusetts Water Science Center	E. coli	01/26/22	07/14/22	6	39	390	70

### Station MASSDEP\_W2510 - Escherichia coli

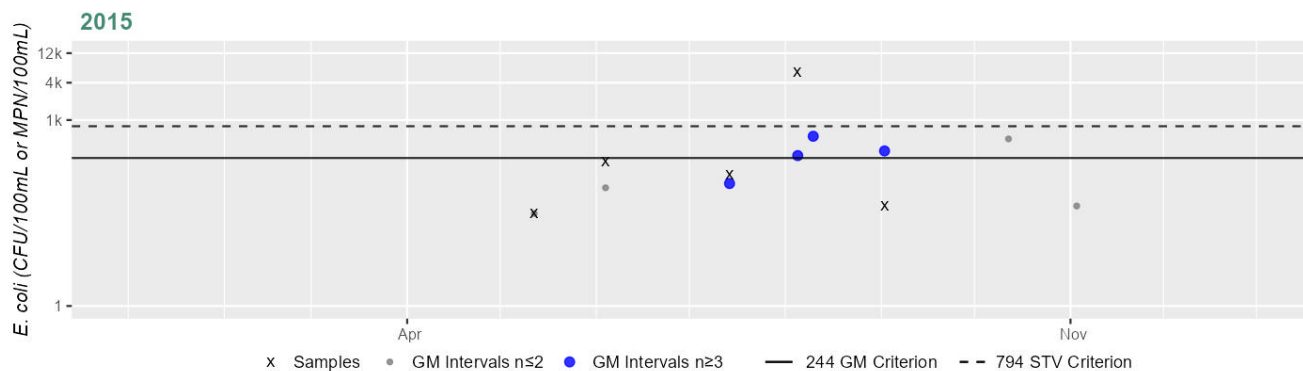
Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2533 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	183
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	20%

#### Cumulative %GMI Exceedance

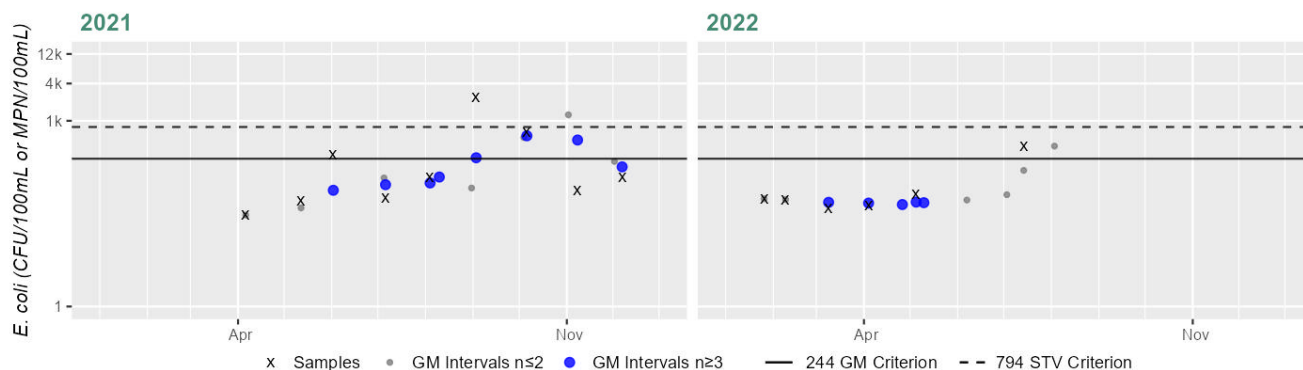
Current (2011-2022)

75%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station USGS-01096598 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	9
SeasGM	150
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	6
SeasGM	70
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

23%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Beaver Brook (MA84B-02)

<b>Location:</b>	Outlet Mill Pond, Littleton to inlet Forge Pond, Westford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.9 MILES
<b>Classification/Qualifier:</b>	B

No usable data were available for Beaver Brook (MA84B-02) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Dissolved Oxygen	--	Unchanged
5	5	Fecal Coliform	--	Unchanged
5	5	pH, Low	--	Unchanged
5	5	Total Suspended Solids (TSS)	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Dissolved Oxygen	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Fecal Coliform	Unspecified Urban Stormwater (Y)	--	--	--	X	--
pH, Low	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Total Suspended Solids (TSS)	Unspecified Urban Stormwater (Y)	X	--	--	--	--

## Beaver Brook (MA84B-05)

<b>Location:</b>	Headwaters, outlet of "Wolf Swamp", Boxborough to inlet of Mill Pond, Littleton.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	5.5 MILES
<b>Classification/Qualifier:</b>	B

No usable data were available for Beaver Brook (MA84B-05) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

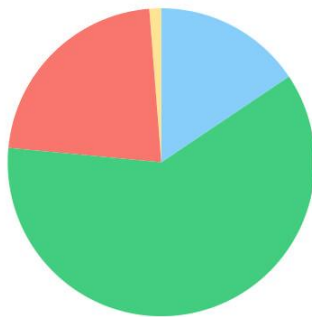
<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
3	3	None	--	Unchanged

## Bennetts Brook (MA84B-06)

<b>Location:</b>	Headwaters, north of Route 2, Harvard to the inlet of Spectacle Pond, Ayer/Littleton.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.3 MILES
<b>Classification/Qualifier:</b>	B

### Bennetts Brook (MA84B-06)

Watershed Area: 4.66 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.66	4.16	1.09	1.07
Agriculture	1.3%	0.9%	0%	0%
Developed	22.3%	23.1%	17.2%	17.1%
Natural	60.9%	59.7%	46.7%	46.8%
Wetland	15.6%	16.4%	36.1%	36%
Impervious	9.7%	10.2%	9.2%	9.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Wet Weather Discharges (Non-Point Source) (Y)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bennetts Brook (MA84B-06) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Bennetts Brook (MA84B-06) is Not Assessed.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Bennetts Brook (MA84B-06) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
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Not Assessed	NO
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### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Bennetts Brook (MA84B-06) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical *E. coli* bacteria samples in the downstream third of Bennetts Brook (MA84B-06) at W1200 [Willow Rd crossing, Ayer] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1200 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 396 CFU/100ml. Historic *E. coli* data from W1200 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1200	MassDEP	Water Quality	Bennetts Brook	[Willow Road crossing, Ayer]	42.552745	-71.537206

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

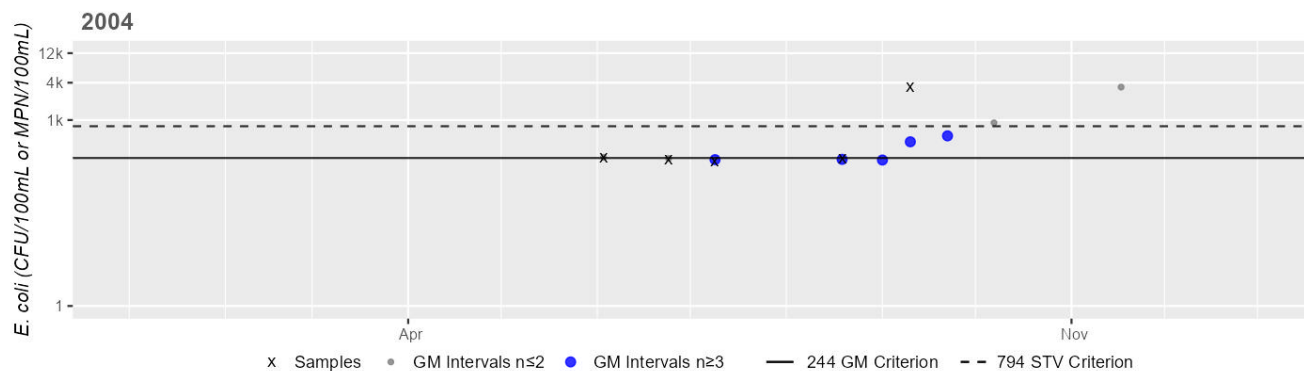
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1200	MassDEP	E. coli	06/02/04	09/09/04	5	210	3400	396



# Station MASSDEP\_W1200 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	396
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
40%

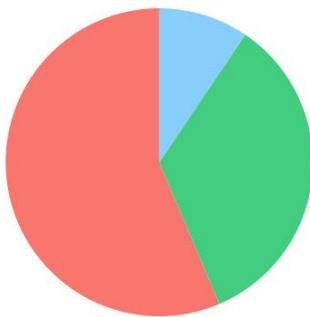
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Black Brook (MA84A-17)

<b>Location:</b>	Headwaters, Chelmsford to confluence with Merrimack River, Lowell (approximately 500 feet culverted near mouth).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.3 MILES
<b>Classification/Qualifier:</b>	B

### Black Brook (MA84A-17)

Watershed Area: 3.28 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.28	3.28	0.69	0.69
Agriculture	0%	0%	0%	0%
Developed	56.4%	56.4%	50%	50%
Natural	34.1%	34.1%	30.7%	30.7%
Wetland	9.5%	9.5%	19.3%	19.3%
Impervious	30.7%	30.7%	27.7%	27.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)	--	Unchanged
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Fish Bioassessments	--	Unchanged
5	5	Sedimentation/Siltation	--	Unchanged
5	5	Trash	--	Unchanged
5	5	Turbidity	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X
(Debris*)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
(Physical Substrate Habitat Alterations*)	Source Unknown (N)	X	--	--	--	--
Benthic Macroinvertebrates	Golf Courses (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Landfills (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	--
Fish Bioassessments	Source Unknown (N)	X	--	--	--	--
Sedimentation/Siltation	Source Unknown (N)	X	--	--	--	--
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X
Trash	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Turbidity	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	X
Turbidity	Unspecified Urban Stormwater (Y)	--	--	X	X	X

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Black Brook (MA84A-17) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
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The Aesthetics Use for Black Brook (MA84A-17) continues to be assessed as Not Supporting, with the Trash, Turbidity and Debris impairments being carried forward. No new data are available to evaluate the Aesthetics Use for this Black Brook AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Black Brook (MA84A-17) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward and the prior Debris, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Black Brook (MA84A-17) continues to be assessed as Not Supporting. The prior Debris, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward. MassDEP staff collected historical *E. coli* bacteria samples in the middle of the Black Brook AU (MA84A-17) at W1191 [Westford St crossing, Lowell] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1191 indicated 60% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 302 CFU/100ml. Historic *E. coli* data from W1191 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) the Secondary Contact Recreation Use cannot be positively assessed using bacteria data.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1191	MassDEP	Water Quality	Black Brook	[Westford Street crossing, Lowell]	42.629872	-71.349155

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

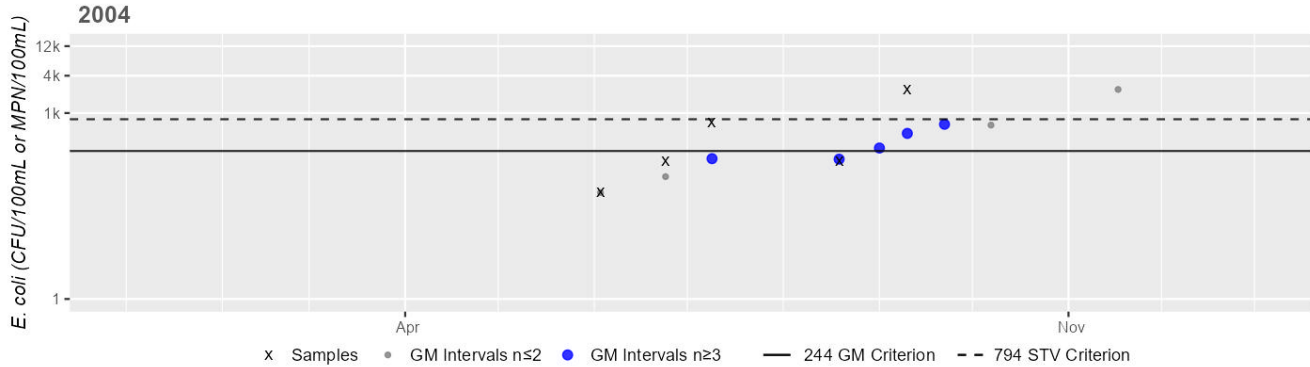
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1191	MassDEP	E. coli	06/02/04	09/09/04	5	52	2400	302

**Station MASSDEP\_W1191 - Escherichia coli**

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	302
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
60%

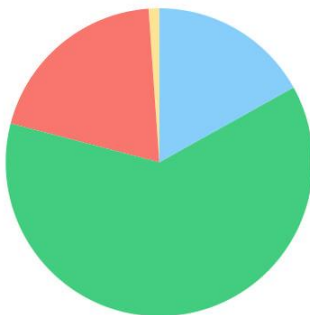
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Bridge Meadow Brook (MA84A-34)

<b>Location:</b>	Headwaters, north of Chestnut Road, Tyngsborough to inlet Flint Pond, Tyngsborough.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4 MILES
<b>Classification/Qualifier:</b>	B

### Bridge Meadow Brook (MA84A-34)

Watershed Area: 5.89 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	5.89	5.89	1.65	1.65
Agriculture	1.1%	1.1%	0.7%	0.7%
Developed	19.8%	19.8%	14.6%	14.6%
Natural	62.1%	62.1%	57.3%	57.3%
Wetland	16.9%	16.9%	27.4%	27.4%
Impervious	9%	9%	6.8%	6.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Bridge Meadow Brook (MA84A-34) is Not Assessed.	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Bridge Meadow Brook (MA84A-34) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Bridge Meadow Brook (MA84A-34) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
<p>No bacteria or other indicator data for Bridge Meadow Brook (MA84A-34) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected <i>E. coli</i> bacteria samples halfway down Bridge Meadow Brook (MA84A-34) at W1207 [downstream/NE of the unnamed school access Rd crossing N off Westford Avenue between the localities of Hayward Corner and Swan Corner, Tyngsborough] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1207 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 50 CFU/100ml. Historic <i>E. coli</i> data from W1207 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Bridge Meadow Brook.</p>	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1207	MassDEP	Water Quality	Bridge Meadow Brook	[downstream/northeast of the unnamed school access road crossing north off Westford Avenue between the localities of Hayward Corner and Swan Corner, Tyngsborough]	42.652848	-71.442645



## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

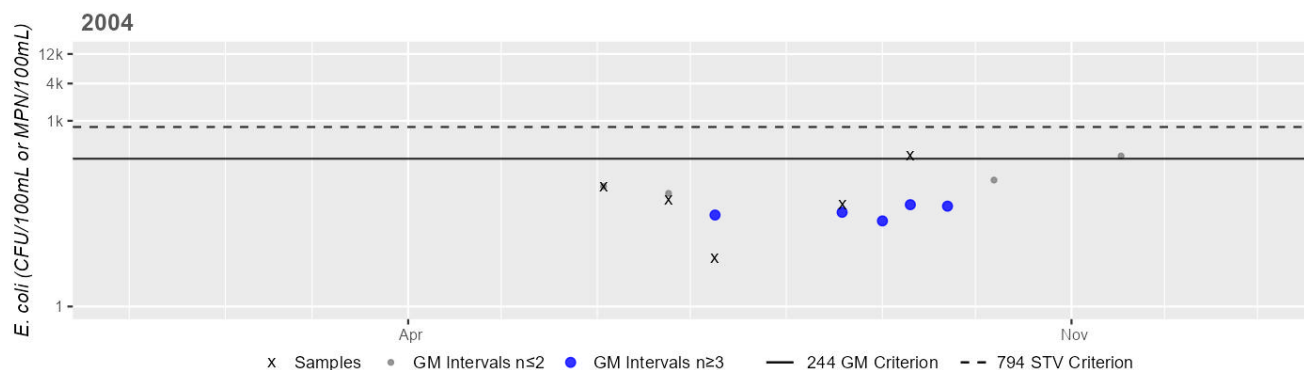
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1207	MassDEP	E. coli	06/02/04	09/09/04	5	6	270	50

#### Station MASSDEP\_W1207 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	50
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Chadwicks Pond (MA84006)

<b>Location:</b>	Haverhill/Boxford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	173 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
<p>The Fish Consumption Use for Chadwicks Pond (MA84006) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Chadwicks Pond (MA84006) at station F0066 in 2019 and 2022 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Chadwicks Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

## ***Fish Consumption Advisories***

### **Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP Undated 6)**

<b>Summary Statement</b>
Fish toxics sampling was conducted in Chadwicks Pond (MA84006) at station F0066 in 2019 and 2022 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Chadwicks Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Chadwicks Pond (MA84006).

## **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No data are available, so the Aesthetics Use for Chadwicks Pond (MA84006) is Not Assessed.	

## **Primary Contact Recreation**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No bacteria or other indicator data for Chadwicks Pond (MA84006) are available, so the Primary Contact Recreation Use is Not Assessed.	

## **Secondary Contact Recreation**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No bacteria or other indicator data for Chadwicks Pond (MA84006) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	

## Clarks Pond (MA84007)

<b>Location:</b>	Amesbury.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	7 ACRES
<b>Classification/Qualifier:</b>	B

No usable data were available for Clarks Pond (MA84007) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

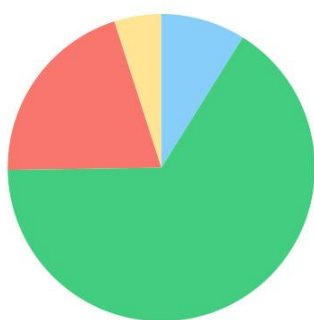
<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
--	3	None	--	Unchanged

## Cobbler Brook (MA84A-22)

<b>Location:</b>	Headwaters, Merrimac to confluence with Merrimack River, Merrimac.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.4 MILES
<b>Classification/Qualifier:</b>	B: CWF

### Cobbler Brook (MA84A-22)

Watershed Area: 3.43 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	3.40	3.17	0.99	0.93
Agriculture	5%	4.8%	4.3%	4.6%
Developed	20.3%	20.9%	17%	17.6%
Natural	65.9%	65.9%	62.1%	61.6%
Wetland	8.9%	8.5%	16.7%	16.3%
Impervious	11.3%	11.8%	9.6%	10.1%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	Temperature	--	Unchanged
5	5	Trash	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X
Benthic Macroinvertebrates	Dam or Impoundment (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Loss of Riparian Habitat (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Dissolved Oxygen	Dam or Impoundment (Y)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Lack of a Coldwater Assemblage	Dam or Impoundment (Y)	X	--	--	--	--
Lack of a Coldwater Assemblage	Loss of Riparian Habitat (Y)	X	--	--	--	--
Lack of a Coldwater Assemblage	Source Unknown (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Loss of Riparian Habitat (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X

## Recommendations

### 2024/26 Recommendations

2024/2026 IR [AESTHETICS, MEDIUM]. It is recommended that additional aesthetics observations be recorded for this Cobbler Brook AU (MA84A-22). Additional data should at least be collected at the upstream end and middle of the AU to see if conditions have improved enough to remove the Trash and Debris impairments (the prior impairments were originally based on observations of Trash and Debris along the majority of the shoreline in 1999 (Kennedy, Kiras and McVoy 2001) but note that there were generally no persistent objectionable conditions recorded at W2532 in the downstream part of the AU in 2015). {upstream and middle of MA84A-22}

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Cobbler Brook (MA84A-22) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
The Aesthetics Use for Cobbler Brook (MA84A-22) continues to be assessed as Not Supporting, with the prior impairments for Trash and Debris being carried forward. MassDEP staff recorded aesthetics observations as part of the MAP2 wadeable streams monitoring project in summer 2015 at the downstream end of the AU ~100 feet upstream/north of River Road, Merrimac (W2532, n=5). While there were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded at this station in 2015, there is insufficient evidence to remove the Trash and Debris impairments since the prior impairments were originally based on observations of Trash and Debris along the majority of the shoreline in 1999 (Kennedy, Kiras and McVoy 2001). It is recommended that additional aesthetics observations be recorded for this Cobbler Brook AU (additional data should at least be collected at the upstream end and middle of the AU) to see if conditions have improved enough to remove the Trash and Debris impairments.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2532	MassDEP	Water Quality	Cobbler Brook	[approximately 100 feet upstream/north of River Road, Merrimac]	42.826111	-70.984012

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2532	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2532 on Cobbler Brook (MA84A-22) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2532	2015	5	3	0

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2532	Cobbler Brook	2015	Aesthetics Impaired?	No	5	5
W2532	Cobbler Brook	2015	Aquatic Plant Density, Overall	None	3	5
W2532	Cobbler Brook	2015	Aquatic Plant Density, Overall	Unobservable	2	5
W2532	Cobbler Brook	2015	Color	Light Yellow/Tan	5	5
W2532	Cobbler Brook	2015	Objectionable Deposits	No	3	5
W2532	Cobbler Brook	2015	Objectionable Deposits	Unobservable	1	5
W2532	Cobbler Brook	2015	Objectionable Deposits	Yes	1	5
W2532	Cobbler Brook	2015	Odor	None	5	5
W2532	Cobbler Brook	2015	Periphyton Density, Filamentous	None	3	5



Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2532	Cobbler Brook	2015	Periphyton Density, Filamentous	Unobservable	2	5
W2532	Cobbler Brook	2015	Periphyton Density, Film	None	3	5
W2532	Cobbler Brook	2015	Periphyton Density, Film	Unobservable	2	5
W2532	Cobbler Brook	2015	Scum	No	2	5
W2532	Cobbler Brook	2015	Scum	Yes	3	5
W2532	Cobbler Brook	2015	Turbidity	Moderately Turbid	1	5
W2532	Cobbler Brook	2015	Turbidity	None	2	5
W2532	Cobbler Brook	2015	Turbidity	Slightly Turbid	2	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for Cobbler Brook (MA84A-22) continues to be assessed as Not Supporting. The prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward. An <i>Escherichia coli</i> (<i>E. coli</i>) impairment is being added due to bacteria data not meeting the threshold at W2532. MassDEP staff collected <i>E. coli</i> bacteria samples at the downstream end of Cobbler Brook (MA84A-22) at W2532 [~100 ft upstream/N of River Rd, Merrimac] from May-Sep 2015 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2532 indicated 100% of intervals had GMs &gt;126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV, and the seasonal GM was 151 CFU/100ml. Data from W2532 are indicative of an <i>E. coli</i> impairment.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2532	MassDEP	Water Quality	Cobbler Brook	[approximately 100 feet upstream/north of River Road, Merrimac]	42.826111	-70.984012

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

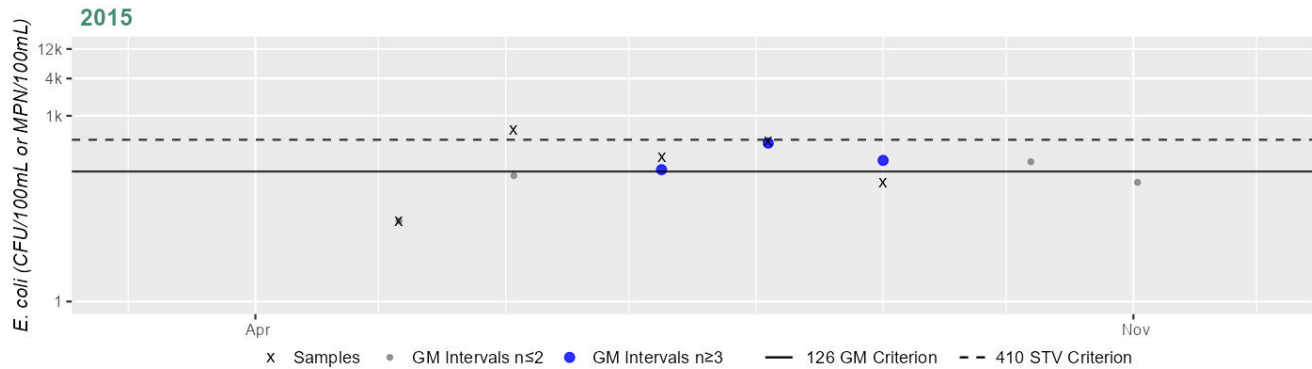
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2532	MassDEP	E. coli	05/06/15	09/01/15	5	20	580	151

### Station MASSDEP\_W2532 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	151
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	20%

#### Cumulative %GMI Exceedance

Current (2011-2022)

100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
--------------------------------

The Secondary Contact Recreation Use for Cobbler Brook (MA84A-22) continues to be assessed as Not Supporting. The prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward. MassDEP staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Cobbler Brook (MA84A-22) from 2010-2015 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W2160 [E of Hansom Drive, ~4100 ft downstream of Harriman Rd, Merrimack] from May-Oct 2010 (n=6) and at the downstream end of the AU at W2532 [~100 ft upstream/N of River Rd, Merrimack] from May-Sep 2015 (n=5). Since bacteria data from the historic IR window are indicative of good water quality conditions, only the analysis from the current IR window will be summarized here. Analysis of the current single year limited frequency *E. coli* dataset from W2532 indicated 33% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 151 CFU/100ml. *E. coli* data from W2532 meet 2024 CALM guidance.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2160	MassDEP	Water Quality	Cobbler Brook	[east of Hansom Drive, approximately 4100 feet downstream of Harriman Road, Merrimack]	42.843884	-71.004699
W2532	MassDEP	Water Quality	Cobbler Brook	[approximately 100 feet upstream/north of River Road, Merrimack]	42.826111	-70.984012

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

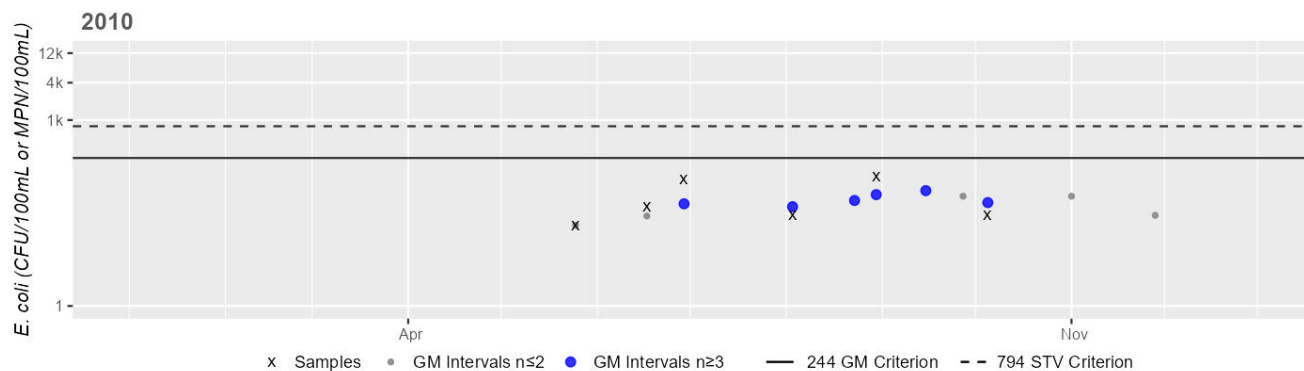
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2160	MassDEP	E. coli	05/25/10	10/05/10	6	20	120	45
W2532	MassDEP	E. coli	05/06/15	09/01/15	5	20	580	151

### Station MASSDEP\_W2160 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



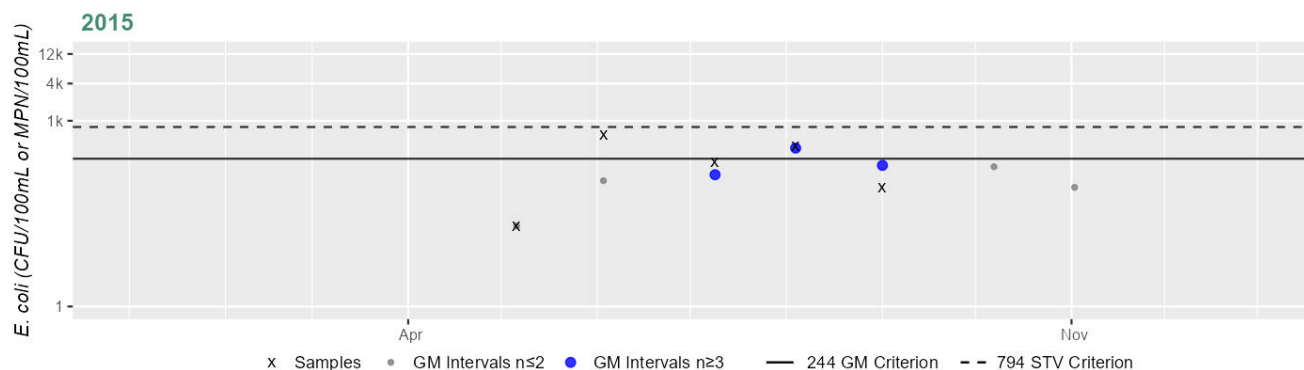
Variable*	Result
Samples	6
SeasGM	45
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2532 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	151
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Current (2011-2022)  
33%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Cow Pond Brook (MA84A-41)

<b>Location:</b>	Headwaters outlet Whitney Pond, Groton to mouth at inlet Upper Massapoag Pond, Groton.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.3 MILES
<b>Classification/Qualifier:</b>	B

### Cow Pond Brook (MA84A-41)

Watershed Area: 9.94 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	9.94	6.48	2.67	1.84
Agriculture	3.7%	2.9%	1.3%	1.3%
Developed	12.5%	11.4%	9.4%	7.8%
Natural	69%	69.3%	71.3%	68.8%
Wetland	14.8%	16.4%	17.9%	22%
Impervious	5.5%	5%	4.8%	4.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	2	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Cow Pond Brook (MA84A-41) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Cow Pond Brook (MA84A-41) is assessed as Fully Supporting based on the lack of any objectionable conditions documented by MassDEP staff during the summer of 2015. MassDEP staff recorded aesthetics observations as part of the MAP2 Wadeable Streams Monitoring project in summer 2015, at one station three-quarters of the way down this Cow Pond Brook AU ~1200 feet downstream/north of Bridge Street, Groton (W2529, n=5). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed during any of the surveys.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2529	MassDEP	Water Quality	Cow Pond Brook	[approximately 1200 feet downstream/north of Bridge Street, Groton]	42.629730	-71.506158

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2529	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2529 on Cow Pond Brook (MA84A-41) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2529	2015	5	5	0

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2529	Cow Pond Brook	2015	Aesthetics Impaired?	No	5	5
W2529	Cow Pond Brook	2015	Aquatic Plant Density, Overall	Dense	1	5
W2529	Cow Pond Brook	2015	Aquatic Plant Density, Overall	Moderate	2	5
W2529	Cow Pond Brook	2015	Aquatic Plant Density, Overall	NR	1	5
W2529	Cow Pond Brook	2015	Aquatic Plant Density, Overall	Sparse	1	5
W2529	Cow Pond Brook	2015	Color	Light Yellow/Tan	5	5
W2529	Cow Pond Brook	2015	Objectionable Deposits	No	5	5
W2529	Cow Pond Brook	2015	Odor	None	5	5
W2529	Cow Pond Brook	2015	Periphyton Density, Filamentous	Moderate	1	5
W2529	Cow Pond Brook	2015	Periphyton Density, Filamentous	None	4	5
W2529	Cow Pond Brook	2015	Periphyton Density, Film	None	3	5
W2529	Cow Pond Brook	2015	Periphyton Density, Film	Sparse	1	5
W2529	Cow Pond Brook	2015	Periphyton Density, Film	Unobservable	1	5
W2529	Cow Pond Brook	2015	Scum	No	4	5
W2529	Cow Pond Brook	2015	Scum	Yes	1	5
W2529	Cow Pond Brook	2015	Turbidity	None	4	5
W2529	Cow Pond Brook	2015	Turbidity	Slightly Turbid	1	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for Cow Pond Brook (MA84A-41) is assessed as Fully Supporting. MassDEP staff collected <i>E. coli</i> bacteria samples three-quarters of the way down Cow Pond Brook (MA84A-41) at W2529 [~1200 ft downstream/N of Bridge St, Groton] from May-Sep 2015 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2529 indicated 0% of intervals had GMs &gt;126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 53 CFU/100ml. <i>E. coli</i> data from W2529 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2529	MassDEP	Water Quality	Cow Pond Brook	[approximately 1200 feet downstream/north of Bridge Street, Groton]	42.629730	-71.506158

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

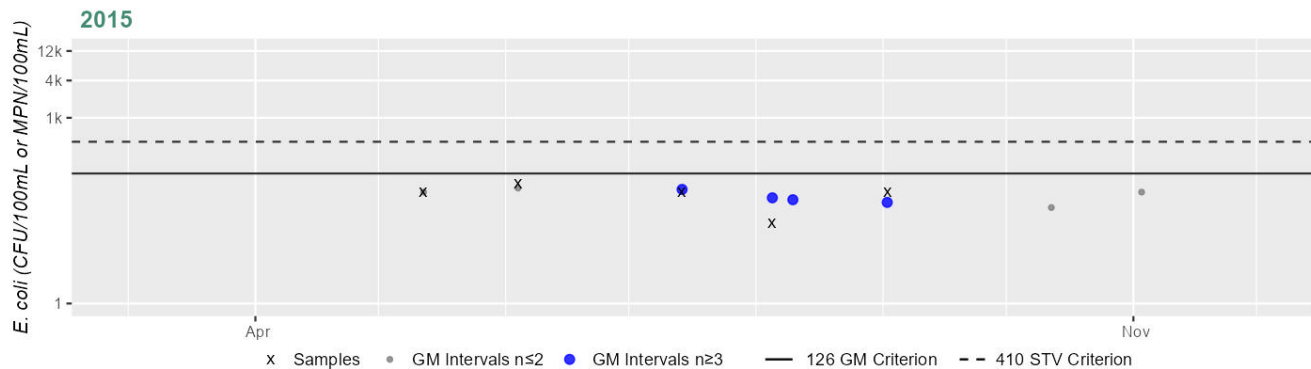
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2529	MassDEP	E. coli	05/12/15	09/02/15	5	20	85	53

#### Station MASSDEP\_W2529 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	53
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO



### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Cow Pond Brook (MA84A-41) is assessed as Fully Supporting. MassDEP staff collected *E. coli* bacteria samples three-quarters of the way down Cow Pond Brook (MA84A-41) at W2529 [~1200 ft downstream/N of Bridge St, Groton] from May-Sep 2015 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2529 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 53 CFU/100ml. *E. coli* data from W2529 meet 2024 CALM guidance.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2529	MassDEP	Water Quality	Cow Pond Brook	[approximately 1200 feet downstream/north of Bridge Street, Groton]	42.629730	-71.506158

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

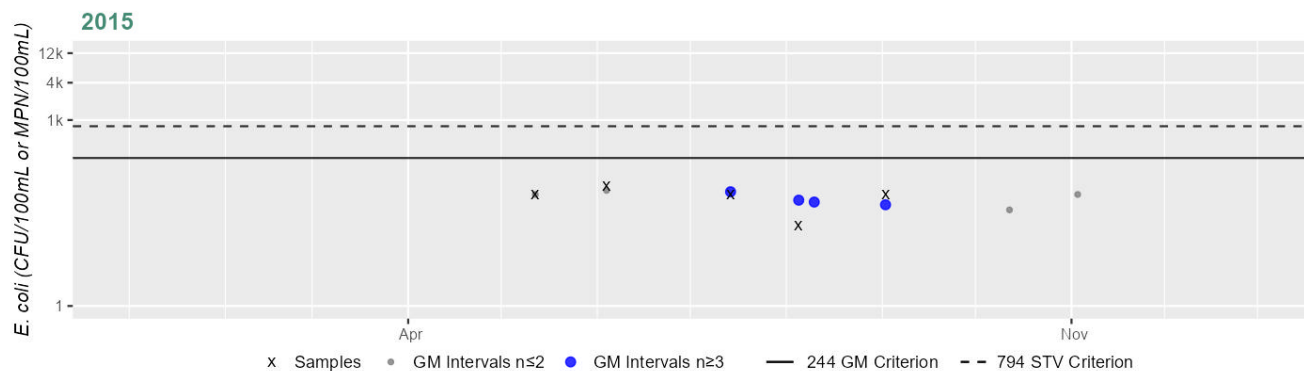
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2529	MassDEP	E. coli	05/12/15	09/02/15	5	20	85	53

# Station MASSDEP\_W2529 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	53
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

## Cumulative %GMI Exceedance

Current (2011-2022)

0%

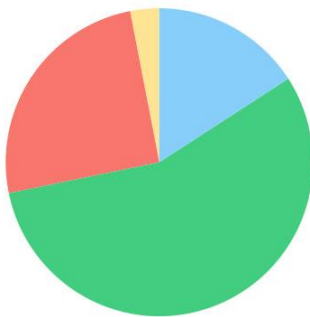
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Creek Brook (MA84A-37)

<b>Location:</b>	Headwaters, outlet Crystal Lake, Haverhill to confluence with Merrimack River, Haverhill.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.3 MILES
<b>Classification/Qualifier:</b>	B

### Creek Brook (MA84A-37)

Watershed Area: 5.54 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	4.99	4.99	1.96	1.96
Agriculture	3.1%	3.1%	1.5%	1.5%
Developed	25.2%	25.2%	14.5%	14.5%
Natural	55.9%	55.9%	60.9%	60.9%
Wetland	15.9%	15.9%	23.1%	23.1%
Impervious	11.2%	11.2%	5.9%	5.9%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Creek Brook (MA84A-37) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Creek Brook (MA84A-37) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Creek Brook (MA84A-37) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Creek Brook (MA84A-37) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical *E. coli* bacteria samples toward the downstream end of Creek Brook (MA84A-37) at W1203 [W Lowell Avenue crossing, Haverhill] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1203 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 331 CFU/100ml. Historic *E. coli* data from W1203 meet 2024 CALM guidance. However, since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Creek Brook.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1203	MassDEP	Water Quality	Creek Brook	[West Lowell Avenue crossing, Haverhill]	42.776894	-71.128298

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

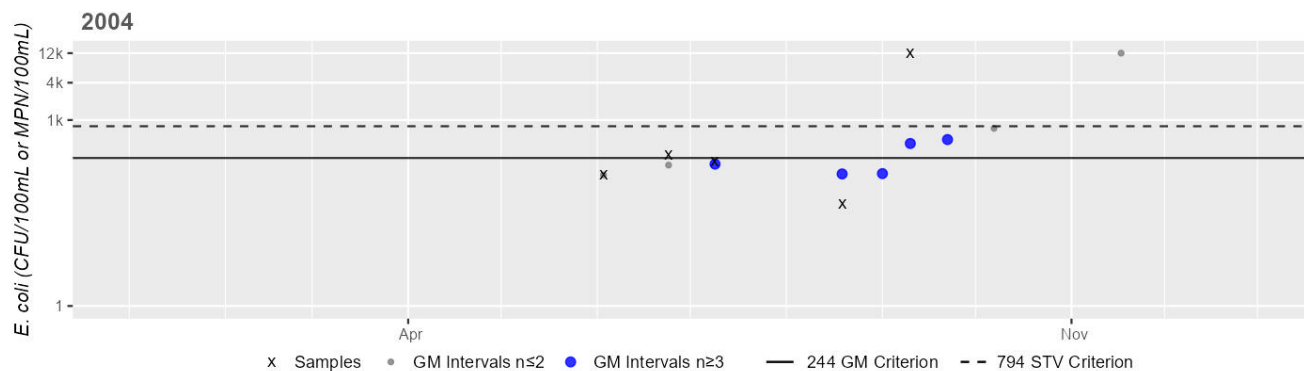
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1203	MassDEP	E. coli	06/02/04	09/09/04	5	45	12000	331

# Station MASSDEP\_W1203 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	331
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance

Historic (1997-2010)

40%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Crooked Springs Brook (MA84B-09)

<b>Location:</b>	Headwaters, perennial portion east of School Street, Chelmsford to mouth at confluence with Stony Brook, Chelmsford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.1 MILES
<b>Classification/Qualifier:</b>	B: CWF

No usable data were available for Crooked Springs Brook (MA84B-09) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
2	2	None	--	Unchanged

## Crystal Lake (MA84010)

<b>Location:</b>	Haverhill.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	161 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Added
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Recommendations

<b>2024/26 Recommendations</b>
2024/2026 IR [E. COLI, MEDIUM] Additional <i>E. coli</i> sampling is requested in Crystal Lake (MA84010) at {W2679} which had one <i>E. coli</i> sample extremely over the STV (9200 CFU/100ml) in 2017 for both Primary and Secondary Contact Recreational Uses.

## Designated Use Attainment Decisions



## Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Crystal Lake (MA84010) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Crystal Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Crystal Lake (MA84010) is assessed as Not Supporting based on the observations from the MassDEP MAP2 macrophyte mapping survey in 2017, with an Aquatic Plants (Macrophytes) impairment being added. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Haverhill, for this Crystal Lake AU: at the eastern edge of western lobe, off Crystal Shores Conservation Area trail, east of Crystal Street (W2679/MAP2L-136S, n=5) and at the index site, southeastern lobe of lake (W2678/MAP2L-136, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). However, during the MAP2 macrophyte mapping survey in Aug 2017 (n=1), greater than 25% (27.8%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2678	MassDEP	Water Quality	Crystal Lake	[index site, southeastern lobe of lake, Haverhill]	42.798636	-71.143947
W2679	MassDEP	Water Quality	Crystal Lake	[eastern edge of western lobe, off Crystal Shores Conservation Area trail, east of Crystal Street, Haverhill]	42.803970	-71.155970

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2678	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2678 (MAP2L-136) on Crystal Lake (MA84010) during 3 site visits between Jul 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, greater than 25% (27.8%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Aesthetics Use impairment.
W2679	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2679 (MAP2L-136S) on Crystal Lake (MA84010) during 5 site visits between May 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

**MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)**

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2678	Crystal Lake	2017	Aesthetics Impaired?	No	3	3
W2678	Crystal Lake	2017	Aquatic Plant Density, Overall	None	2	3
W2678	Crystal Lake	2017	Aquatic Plant Density, Overall	NR	1	3
W2678	Crystal Lake	2017	Color	Light Yellow/Tan	2	3
W2678	Crystal Lake	2017	Color	None	1	3
W2678	Crystal Lake	2017	Objectionable Deposits	No	3	3
W2678	Crystal Lake	2017	Odor	None	3	3
W2678	Crystal Lake	2017	Scum	No	3	3
W2678	Crystal Lake	2017	Turbidity	None	2	3
W2678	Crystal Lake	2017	Turbidity	Slightly Turbid	1	3
W2679	Crystal Lake	2017	Aesthetics Impaired?	No	5	5
W2679	Crystal Lake	2017	Color	Light Yellow/Tan	1	5
W2679	Crystal Lake	2017	Color	None	4	5
W2679	Crystal Lake	2017	Objectionable Deposits	No	4	5
W2679	Crystal Lake	2017	Objectionable Deposits	Yes	1	5
W2679	Crystal Lake	2017	Odor	None	5	5
W2679	Crystal Lake	2017	Scum	No	5	5
W2679	Crystal Lake	2017	Turbidity	Moderately Turbid	1	5
W2679	Crystal Lake	2017	Turbidity	None	4	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for Crystal Lake (MA84010) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for <i>Escherichia coli</i> (<i>E. coli</i>) and additional sampling is recommended for this AU.</p> <p>In Crystal Lake (MA84010) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2678 [MAP2L-136, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2679 [MAP2L-136S, Shoreline]. At station W2678 (station depth=15.5 m) the Secchi depth measurements ranged from 4.6-5.5 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2679 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected <i>E. coli</i> bacteria samples in Crystal Lake (MA84010) at W2679 [eastern edge of western lobe, off Crystal Shores Conservation Area trail, E of Crystal St, Haverhill] from May-Sep 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2679 indicated 0% of intervals had GMs &gt;126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV, and the seasonal GM was 39 CFU/100ml. <i>E. coli</i> data from W2679 are inconclusive according to the 2024 CALM because this single year, limited frequency dataset with GMs below the threshold included an STV exceedance and the seasonal GM was low. An Alert is being identified for <i>Escherichia coli</i> at W2679 due to the highly elevated STV exceedance (max = 9200 CFU/100ml).</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2678	MassDEP	Water Quality	Crystal Lake	[index site, southeastern lobe of lake, Haverhill]	42.798636	-71.143947
W2679	MassDEP	Water Quality	Crystal Lake	[eastern edge of western lobe, off Crystal Shores Conservation Area trail, east of Crystal Street, Haverhill]	42.803970	-71.155970

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

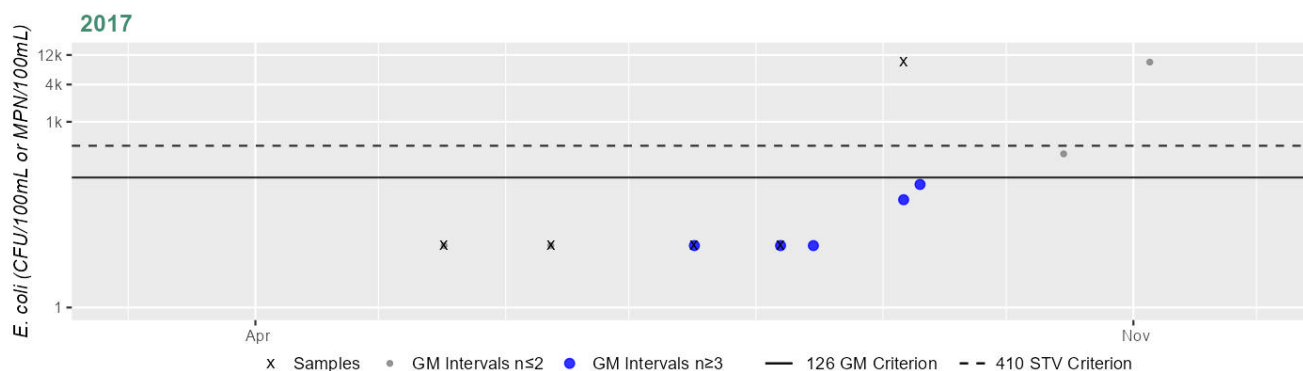
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2679	MassDEP	E. coli	05/17/17	09/06/17	5	10	9200	39

### Station MASSDEP\_W2679 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	39
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Other Indicators

### Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data

(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Crystal Lake (MA84010) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2678 [MAP2L-136, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2679 [MAP2L-136S, Shoreline]. At station W2678 (station depth=15.5 m) the Secchi depth measurements ranged from 4.6-5.5 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2679 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

### MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2678	Crystal Lake	Index	2017	3	0	NA
W2679	Crystal Lake	Shoreline	2017	3	0	NA

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for Crystal Lake (MA84010) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for <i>Escherichia coli</i> (<i>E. coli</i>) and additional sampling is recommended for this AU.</p> <p>In Crystal Lake (MA84010), MassDEP collected cyanobacteria cell count data at W2678 [MAP2L-136, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2679 [MAP2L-136S, Shoreline] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2679 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected <i>E. coli</i> bacteria samples in Crystal Lake (MA84010) at W2679 [eastern edge of western lobe, off Crystal Shores Conservation Area trail, E of Crystal St, Haverhill] from May-Sep 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2679 indicated 0% of intervals had GMs &gt;244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 39 CFU/100ml. <i>E. coli</i> data from W2679 are inconclusive according to the 2024 CALM because this single year, limited frequency dataset with GMs below the threshold included an STV exceedance and the seasonal GM was low. An Alert is being identified for <i>Escherichia coli</i> at W2679 due to the highly elevated STV exceedance (max = 9200 CFU/100ml).</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2679	MassDEP	Water Quality	Crystal Lake	[eastern edge of western lobe, off Crystal Shores Conservation Area trail, east of Crystal Street, Haverhill]	42.803970	-71.155970

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

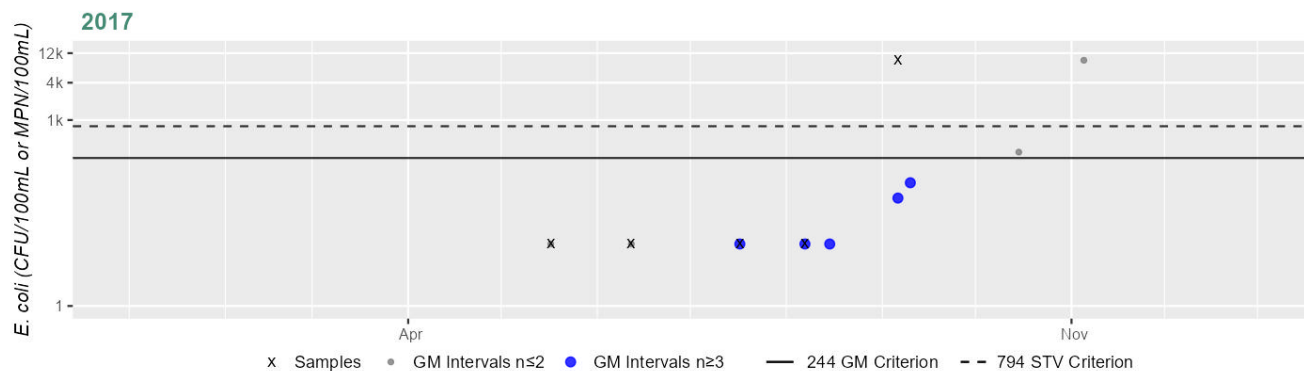
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2679	MassDEP	E. coli	05/17/17	09/06/17	5	10	9200	39

# Station MASSDEP\_W2679 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	39
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

## Cumulative %GMI Exceedance

Current (2011-2022)

0%

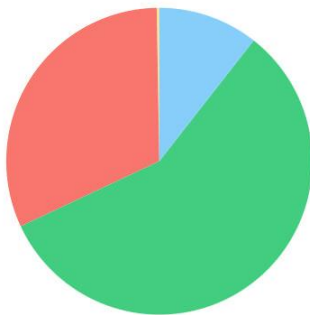
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Deep Brook (MA84A-21)

<b>Location:</b>	Headwaters east of Everett Turnpike, Tyngsborough to confluence with Merrimack River, Chelmsford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.9 MILES
<b>Classification/Qualifier:</b>	B

### Deep Brook (MA84A-21)

Watershed Area: 2.62 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.62	2.62	0.81	0.81
Agriculture	0.3%	0.3%	0.9%	0.9%
Developed	31.7%	31.7%	24.8%	24.8%
Natural	57.5%	57.5%	54.3%	54.3%
Wetland	10.6%	10.6%	20%	20%
Impervious	13.1%	13.1%	12%	12%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Habitat Assessment*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Lack of a Coldwater Assemblage	--	Unchanged
5	5	Sedimentation/Siltation	--	Unchanged
5	5	Temperature	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Habitat Assessment*)	Source Unknown (N)	X	--	--	--	--
(Habitat Assessment*)	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Benthic Macroinvertebrates	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Lack of a Coldwater Assemblage	Source Unknown (N)	X	--	--	--	--
Lack of a Coldwater Assemblage	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Sedimentation/Siltation	Source Unknown (N)	X	--	--	--	--
Sedimentation/Siltation	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--
Temperature	Unspecified Urban Stormwater (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)



## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Deep Brook (MA84A-21) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Deep Brook (MA84A-21) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Deep Brook (MA84A-21) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Secondary Contact Recreation Use for Deep Brook (MA84A-21) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on historical bacteria data not meeting the threshold at W2159.

MassDEP staff collected historical *E. coli* bacteria samples in the middle of the Deep Brook AU (MA84A-21) from 2004-2010 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: W1190 [Ledge Rd crossing, Chelmsford] from Jun-Sep 2004 (n=5) and W2159 [~500 ft downstream of Ledge Rd, Chelmsford] from May-Sep 2010 (n=6). Analysis of this historic single year limited frequency *E. coli* dataset from W1190 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 364 CFU/100ml. Analysis of this historic single year limited frequency *E. coli* dataset from W2159 indicated 100% of intervals had GMs >244 CFU/100ml, 2 samples exceeded the 794 CFU/100ml STV, and the overall GM was 705 CFU/100ml. Historic *E. coli* data from the downstream station W2159 are reflective of the existing *E. coli* impairment.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1190	MassDEP	Water Quality	Deep Brook	[Ledge Road crossing, Chelmsford]	42.646874	-71.406741
W2159	MassDEP	Water Quality	Deep Brook	[approximately 500 feet downstream of Ledge Road, Chelmsford]	42.646418	-71.405037

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

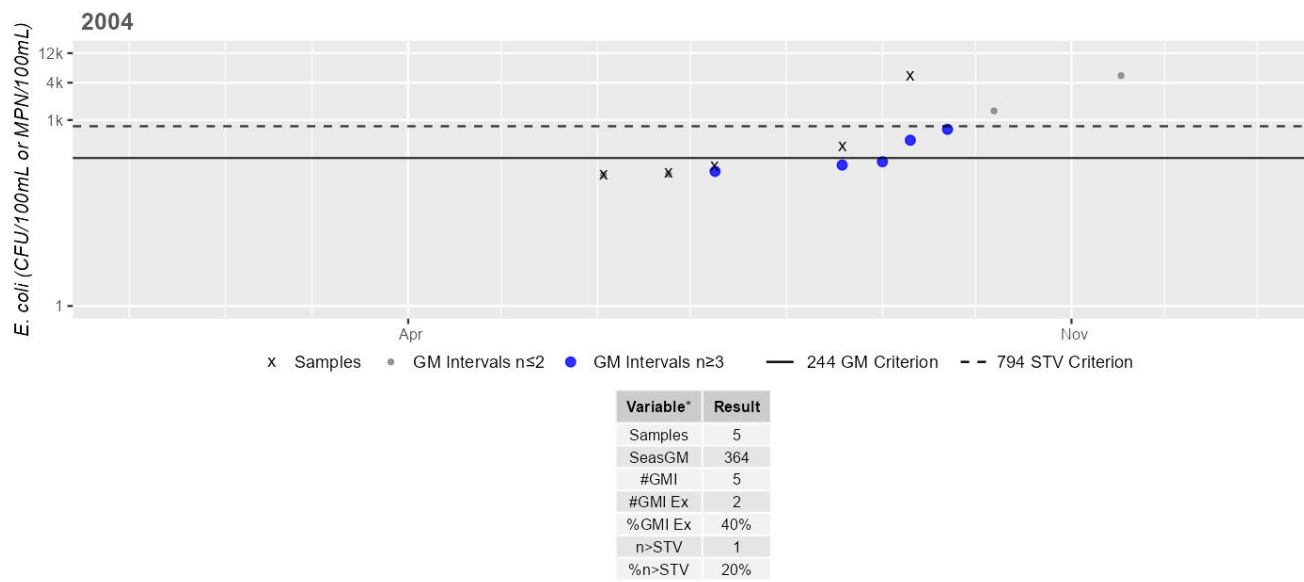
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1190	MassDEP	E. coli	06/02/04	09/09/04	5	130	5200	364
W2159	MassDEP	E. coli	05/18/10	09/29/10	6	220	6800	705

### Station MASSDEP\_W1190 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season

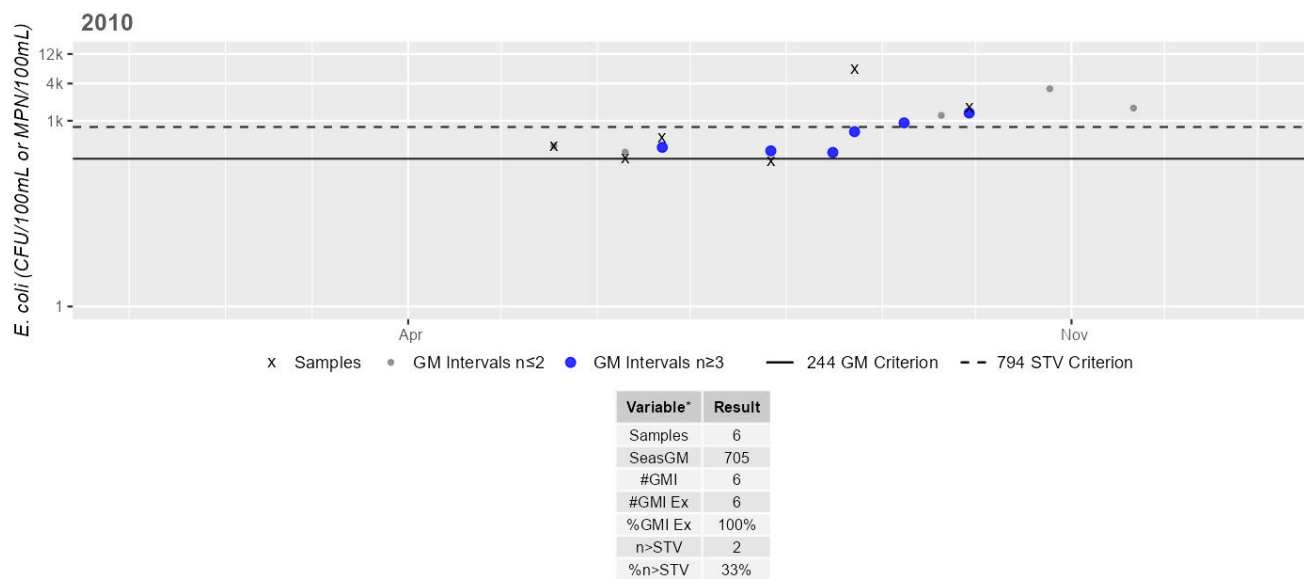


Cumulative %GMI Exceedance  
Historic (1997-2010)  
40%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2159 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Cumulative %GMI Exceedance  
Historic (1997-2010)  
100%

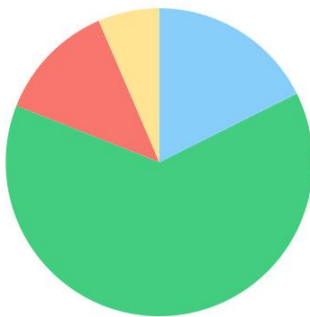
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## East Meadow River (MA84A-39)

<b>Location:</b>	Headwaters, outlet Neal Pond, Haverhill to inlet Millvale Reservoir, Haverhill.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3 MILES
<b>Classification/Qualifier:</b>	A: PWS, ORW (Tributary)

### East Meadow River (MA84A-39)

Watershed Area: 7.12 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	5.86	5.69	3.49	3.38
Agriculture	6.5%	6.4%	5.2%	5.1%
Developed	12.6%	12.7%	11.3%	11.3%
Natural	63.3%	63%	57%	56.5%
Wetland	17.6%	17.9%	26.6%	27%
Impervious	5.8%	5.9%	5.4%	5.4%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Recommendations

2024/26 Recommendations
2016 IR [E. COLI, MEDIUM] Conduct additional bacteria monitoring. The watershed is not urbanized and <i>E. coli</i> data barely violates criteria so it is likely that the segment can be delisted with a spatially larger dataset.

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for East Meadow River (MA84A-39) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for East Meadow River (MA84A-39) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

No bacteria or other indicator data for the East Meadow River (MA84A-39) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
<p>No bacteria or other indicator data for the East Meadow River (MA84A-39) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical <i>E. coli</i> bacteria samples toward the downstream end of the East Meadow River (MA84A-39) at W1213 [Thompson Rd crossing, Haverhill] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1213 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 127 CFU/100ml. Historic <i>E. coli</i> data from W1213 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of the East Meadow River.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1213	MassDEP	Water Quality	East Meadow River	[Thompson Road crossing, Haverhill]	42.798701	-71.027599

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

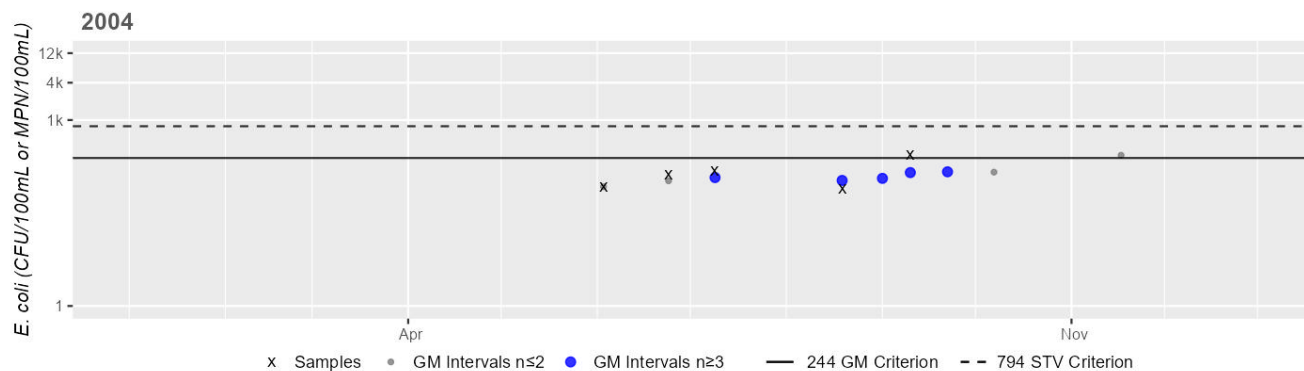
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1213	MassDEP	E. coli	06/02/04	09/09/04	5	77	270	127

# Station MASSDEP\_W1213 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	127
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

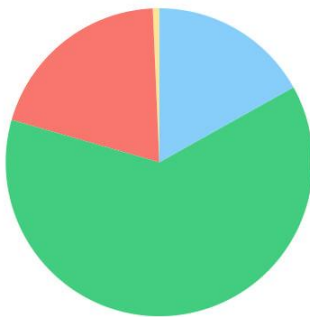
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Fish Brook (MA84A-40)

<b>Location:</b>	Headwaters, east of Greenwood Road, Andover to confluence with Merrimack River at Fish Brook Dam (NATID: MA02265), Andover.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.1 MILES
<b>Classification/Qualifier:</b>	A: PWS, ORW

### Fish Brook (MA84A-40)

Watershed Area: 6.06 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	6.06	4.59	3.39	2.61
Agriculture	0.7%	0.7%	0.6%	0.8%
Developed	19.9%	15.1%	14.5%	10.1%
Natural	62.5%	65.5%	60.6%	62.4%
Wetland	16.9%	18.8%	24.2%	26.7%
Impervious	10%	7.8%	6.7%	5.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Salt Storage Sites (Y)	X	--	--	--	--



Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Recommendations

2024/26 Recommendations
2016 IR [E. COLI, MEDIUM] Conduct additional bacteria monitoring. <i>E.coli</i> criteria barely violated so a spatially larger dataset could potentially delist the segment. Investigate if impairment is natural due to wildlife (i.e. significant riparian wetlands and potential waterfowl).

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Fish Brook (MA84A-40) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Fish Brook (MA84A-40) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Fish Brook (MA84A-40) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Fish Brook (MA84A-40) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical <i>E. coli</i> bacteria samples in the downstream quarter of Fish Brook (MA84A-40) at W1206 [River Rd crossing, Andover] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1206 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 162 CFU/100ml. Historic <i>E. coli</i> data from W1206 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Fish Brook.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1206	MassDEP	Water Quality	Fish Brook	[River Road crossing, Andover]	42.679666	-71.218321

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

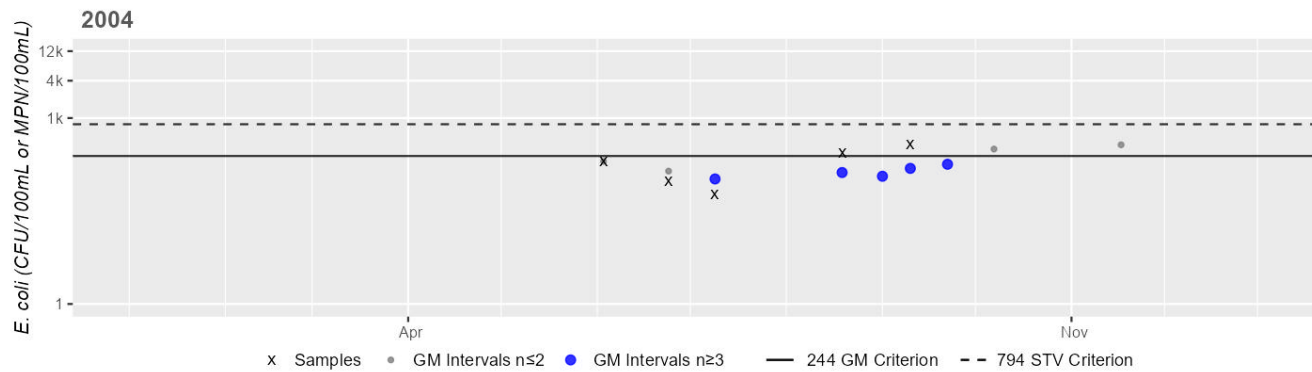
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1206	MassDEP	E. coli	06/02/04	09/09/04	5	58	370	162

#### Station MASSDEP\_W1206 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	162
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Flint Pond (MA84012)

<b>Location:</b>	Tyngsborough.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	72 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Brittle Naiad, Najas Minor*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Added
5	5	PFAS in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Brittle Naiad, Najas Minor*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Flint Pond (MA84012) was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The data used to make the original impairment were not located, but during an August 1999 baseline lakes survey conducted by MassDEP staff, it was noted that at least 80% of the pond was covered with dense/very dense aquatic plants, including the non-rooted, floating species, <i>Utricularia vulgaris</i> (MassDEP 1999, MassDEP 2002). Google Earth images from September 2014, June 2015, and October 2020 show dense amounts of plant coverage (covering >33% to >50% of the pond) (Google Earth Pro Undated). Nutrient/ Eutrophication Biological Indicators is being added as an impairment based on the presence of a non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and

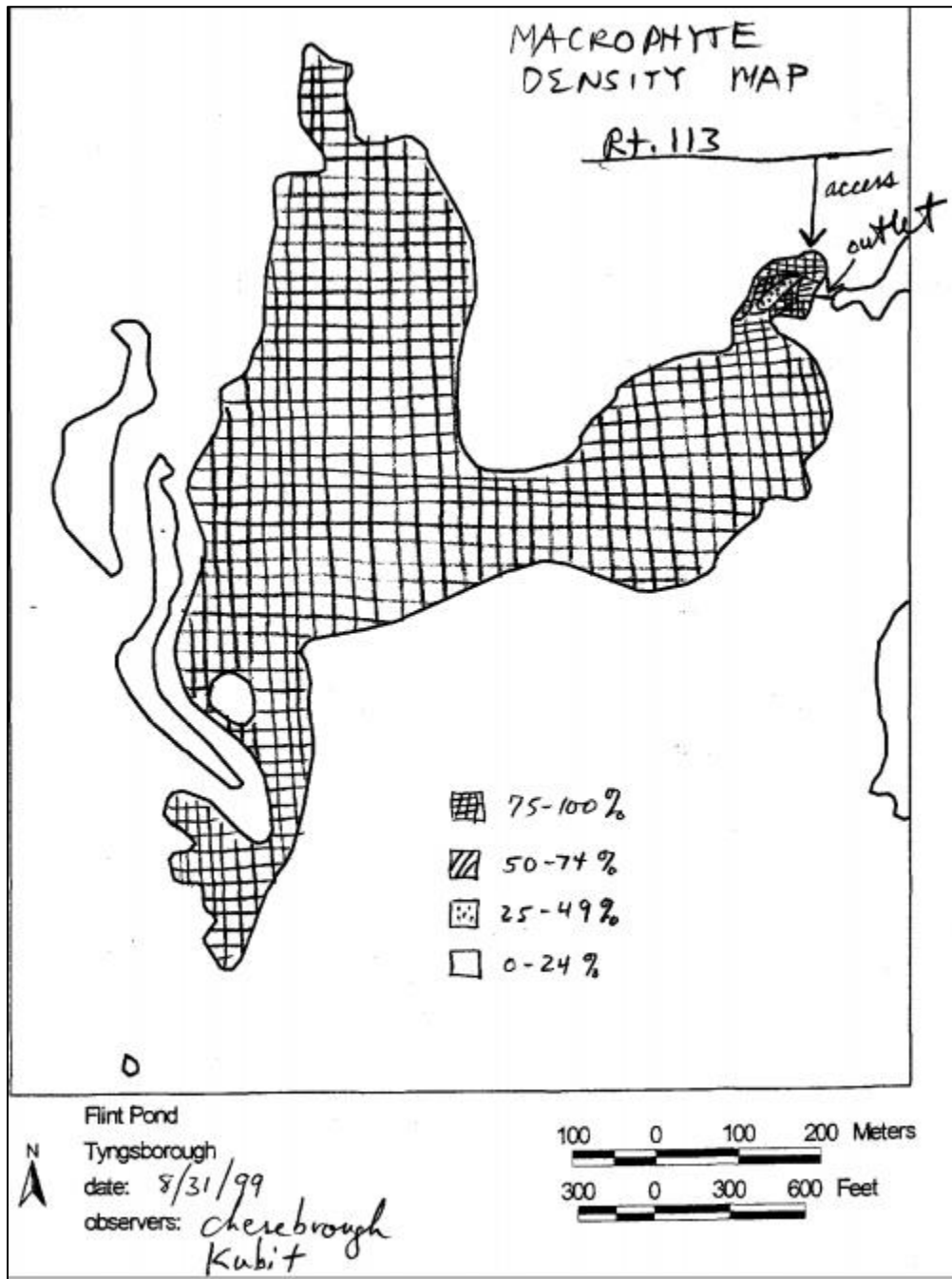
2022 Removed Impairment	Removal Reason	Removal Comment
		<p>added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Flint Pond will remain an impaired lake segment for the 2024 cycle, however it is very shallow (~1.7 m at the deep hole) and likely should not be represented as a lake segment (From the 314 CMR 4.0 Definition for Lakes and Ponds- waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody is often partially filled in with macrophytes during the growing season, is shallow in depth, and the northwestern part of the main arm is classified as deep marsh habitat, so it should likely more appropriately be described as a wetland rather than a lake.</p>

# Aquatic Plants (Macrophytes)

1994/1996 WBS Coding Sheet (MassDEP 2002):

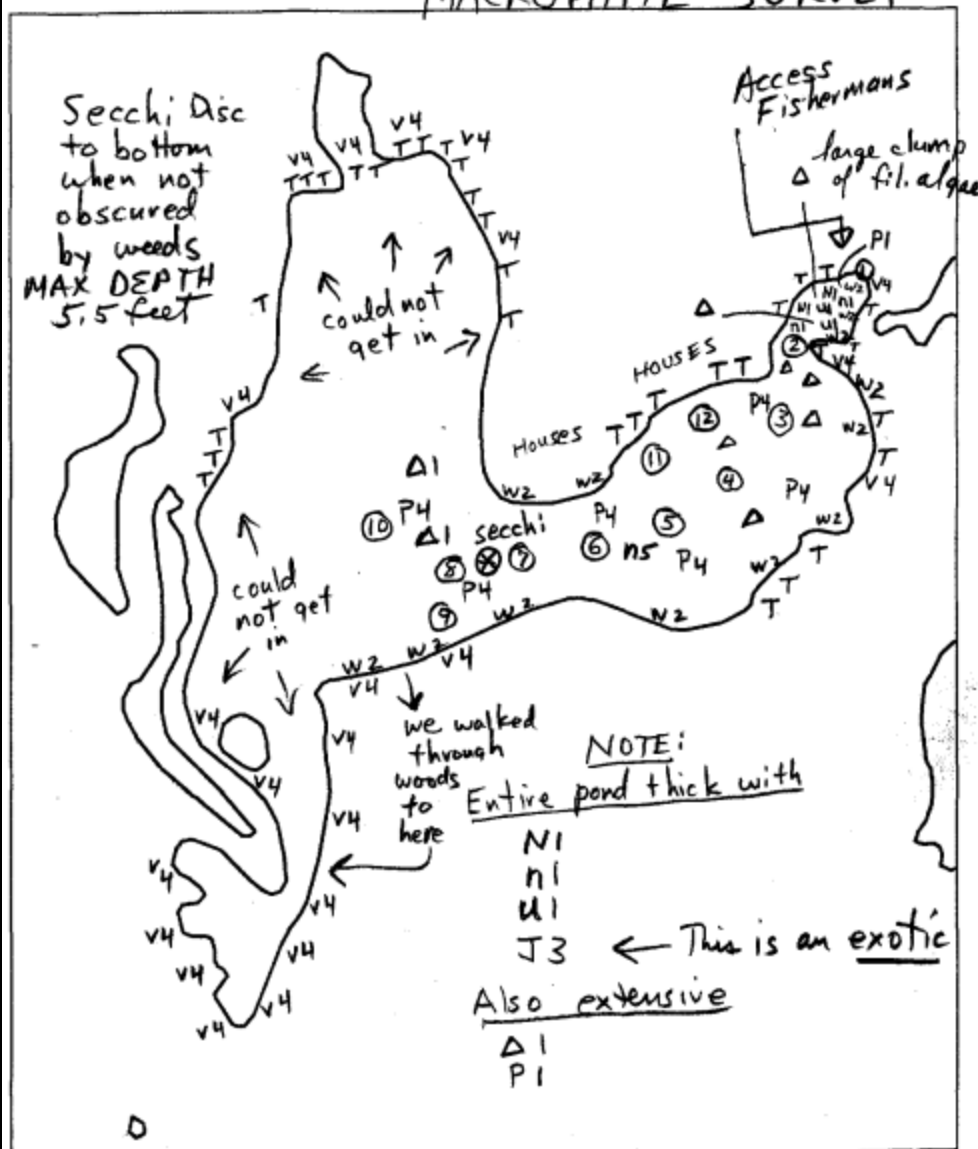
<b>WBID:</b> MA84012		<b>WATERSHED:</b> Merrimack(84)		(Printed 09/11/96)	
<b>NAME:</b> Flint Pond		<b>TYPE:</b> Lake/Pond		<b>CLASS:</b> B	
<b>CODE:</b> 84012		<b>SIZE:</b> 61.00(acres)		<b>ORW?:</b> Yes or No	
<b>Water Supply?:</b> Yes or No					
<b>LATITUDE:</b>					
<b>LONGITUDE:</b>		(424025/712550)			
<b>Lake/Pond Name:</b> Flint Pond, Tyngsborough					
<b>Ecoregion Name:</b> ()					
<b>Description:</b>					
<b>Assessment Date:</b> 91129609		<b>Begin Sampling:</b> 8908		<b>Water Quality Limited?:</b> YES or NO	
<b>Cycle:</b> 94 96		<b>End Sampling:</b> 8908		<b>303(d) List?:</b> YES or NO	
<b>Lake Specific Information</b>					
<b>1996</b>		<b>1996</b>			
Significantly Publicly Owned: Y		Significantly Publicly Owned: Y or N			
Trophic Status: H		Trophic Status: O M E H D U			
Trophic Trend:		Trophic Trend: I S D U			
Acidity/Toxics Trend:		Acidity/Toxics Trend: I S D U			
Acidity Effects:		Acidity Effects: I V N U			
<b>Uses</b>	<b>Support</b>	<b>Threat</b>	<b>Partial</b>	<b>Non-Sup</b>	<b>Not-Asses</b>
OVERALL USE SUPPORT			61.00 40.0		21.0
ALUS	61.00				61.0
FISH CONSUMPTION					61.00
PRIMARY CONTACT			61.00 40.0		21.0
SECONDARY CONTACT		21.00	40.00		21.0
Aesthetics		21.00	40.00		61.0
<b>Nonattainment Causes</b>					
<b>Code</b>	<b>Size</b>	<b>Magnitude</b>	<b>1996 Code</b>	<b>Size</b>	<b>Magnitude</b>
2200- Noxious aquatic plants	61.00	H	2200	40.0	M
<b>Nonattainment Sources</b>					
<b>Code</b>	<b>Size</b>	<b>Magnitude</b>	<b>1996 Code</b>	<b>Size</b>	<b>Magnitude</b>
9000- SOURCE UNKNOWN	61.00	H	9000	40.0	M
<b>Assessment Type</b>					
(Assessment Category = > Monitored )		<b>1996 Assessment Category = &gt; M E NA</b>			
R15, R20					
<b>Media/Pollutants Assessed</b> (Toxics Monitoring = > Y)					
03 - Organics in fish tissue		<b>1996 Toxics Monitoring = &gt; YES or NO</b>			
09 - Metals in water column		10 - metals in sed.			
10 - Metals in sediments					
11 - Metals in fish tissue					
<b>Comments:</b>					
TRANSPARENCY BELOW THE SAFETY CRITERIA (4 FT. SECCHI DISK). VERY DENSE GROWTHS OF AQUATIC MACROPHYTES (PRIMARILY NYMPHAEA SP. AND UTRICULARIA SPP.) COVER MOST OF THE NORTHWESTERN EMBAYMENT AND THE LITTORAL ZONE THROUGHOUT THE REST OF THE POND.					
1996 - ONLY MACROPHYTE DATA USED FOR ASSESSMENT.					
E: R500 10/31/96					

1999 Baseline Lakes Survey Field Sheets (note the maximum depth on the 2<sup>nd</sup> image) (MassDEP 1999):





# MACROPHYTE SURVEY



Flint Pond

Tyngsborough

date: 8/31/99

observers: chesbrough  
Kubif

DWM AQUATIC MACROPHYTE  
OBSERVATION TALLY SHEET

LAKE/POND: Flint Pond Town Tyrasborough PALIS \_\_\_\_\_  
COLLECTORS: Chesebro-Kubit DATE: 8/31/99  
TOTAL OBSERVATIONS: 12

SPECIES NAME	OBSERVATION TALLYS	TOTAL
N1 Nymphaea sp.	+++ ++ 11	12
T Typha latifolia	along shore / covers	
W2 Pontederia cordata	+++ III	8
n1 Brasenia schreberi	+++ ++ 11	12
U1 Utricularia vulgaris	+++ IIII	9
Y4 Lythrum salicaria	+++ starting to dry up	6
P1 Potamogeton amplifolius	+++ III	8
h4 Myriophyllum heterophyllum	+++ II	7
J3 Najas minor	+++ ++ 11	12
N5 Nuphar sp.	II	2
P4 Potamogeton robbinsii	+++	5
Δ1 Chara (maybe Nitella)	+++	5
Δ fil algae but it stunk)	+++	5

Did 12 sites - The pond was stuffed with weeds - any more sites seemed unwarranted.

LAKE/POND: Flint Pond SIZE (acres): \_\_\_\_\_ PALIS NO. 84012  
 TOWN/CITY: Tyngsborough USGS TOPO. SHEET: \_\_\_\_\_  
 DATE: 8/31/99 WATERSHED: Merrimack OBSERVERS: Cheebro/Kubit

**ACCESS** - Location (describe each observation site and assign sequential numbers (1, 2, 3, etc.) to use in subsequent records; be specific in descriptions (e.g., public boat ramp at west cove area off Simpson St., etc.))  
 Site (1) Fisherman's access off Rt. 113 - Boat ramp  
 Site (2) \_\_\_\_\_  
 Site (3) \_\_\_\_\_

**ACCESS** - Type (for multiple observation sites use numbers in boxes that apply)  
 Formal Boat Ramp ☒ and/or Beach ☐ Informal Boat Ramp ☐ and/or Beach ☐  
 Park ☐ Conservation Area ☐ Right-of-Way: Road ☐ Other ☐  
 Other (describe): ☐  
☐  
☐

**ACCESS** - Ownership (for multiple observation sites use numbers in boxes that apply)  
 Public ☒ Private ☐ Uncertain ☐  
 Names of Owners ☐ No. & Street Name ☐  
☐ No. & Street Name ☐  
☐ No. & Street Name ☐

**SIGN POSTINGS** -  
☐ Warning: Stop Aquatic Plant Spread ☐ Fishing Advisory or Ban  
☒ Public Access without Restrictions ☐ Public Access with Restrictions  
 Describe any restrictions (or other notes) ☐  
☐

**WATER/LAKE QUALITY OBSERVATIONS** -  
 Turbidity: ☒ Slight ☐ Moderate ☐ Excessive Transparency: ☐ < 1.2 m. (4 ft.) ☒ > 1.2 m. (4 ft.)  
☐ Estimated visually  
 Diss. Organics: ☒ Slight ☐ Moderate ☐ Dark ☒ Measured w/ Secchi Disk \_\_\_\_\_ meters  
to bottom \_\_\_\_\_ meters  
 Algal Bloom: ☒ Slight ☐ Moderate ☐ Dense \_\_\_\_\_ meters  
 Bottom Type: ☐ Undecomposed matter ☒ Muck/silt ☐ Sand ☐ Gravel ☐ Cobble ☐ Boulders  
☐ Vegetation Other ☐ \_\_\_\_\_  
 Other Observations: ☐  
☐  
☐

**AESTHETICALLY OBJECTIONABLE** - Substances attributable to wastewater or other discharges (point or nonpoint) that:  
☒ Settle to form objectionable deposits ☐ Float as debris, scum or other matter to form a nuisance  
 Describe: weeds covered with brown scum Describe: \_\_\_\_\_  
☐ Produce objectionable odor, color, taste, or turbidity ☐ Produce undesirable nuisance species of aquatic life  
 Describe: \_\_\_\_\_ Describe: \_\_\_\_\_

NON-NATIVE WETLANDS SPECIES PRESENT: ☒ *Lythrum Salicaria* ☐ *Phragmites* sp.  
NON-NATIVE AQUATIC SPECIES PRESENT: ☐ *Butomus umbellatus* ☐ *Cabomba caroliniana* ☐ *Egeria densa*  
☐ *Eichornia crassipes* ☐ *Hydrilla verticillata* ☐ *Hydrocharis morsus-ranae* ☐ *Marsilea quadrifolia*  
☐ *Myriophyllum aquaticum* ☒ *Myriophyllum heterophyllum* ☐ *Myriophyllum spicatum*  
☐ *M. sp.* (*M. heterophyllum* requiring further confirmation when flowering heads are evident) \_\_\_\_\_  
☒ *Najas minor* ☐ *Nelumbo lutea* ☐ *Nymphoides peltata* ☐ *Potamogeton crispus* ☐ *Trapa natans*  
NATIVE SPECIES POPULATIONS:

[illegible]

Percent of surface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ % ☐ % ☐ %  
Forms [(E)mergent, (F)loating, or (S)ubmergent] present ☐ ☐ ☐

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ % ☐ % ☐ %  
Forms [(E)mergent, (F)loating, or (S)ubmergent] present ☐ ☐ ☐

Percent of entire lake surface covered with dense or very dense aquatic plants 80 % Forms \_\_\_\_\_

Describe locations of dense and/or very dense plant beds If all weeds projected to surface you get 100%

Loss of open water habitat over entire lake (estimated): ☒ >90 - 100 % ☐ >60 - 90 % ☐ >25 - 60 % ☐ ≤25 %

TROPHIC STATUS ESTIMATE: ☐ Oligotrophic ☐ Mesotrophic ☒ Eutrophic ☐ Hypereutrophic ☐ Dystrophic ☐ Undetermined

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life						
Fish Consumption						
Primary Contact						
Secondary Contact						
Aesthetics						

SOURCES: Describe any obvious sources of impairment \_\_\_\_\_

Google Earth image of Flint Pond while clear, 4/9/2008 (Google Earth Pro Undated):



Google Earth image of Flint Pond, 9/27/2014 (Google Earth Pro Undated):





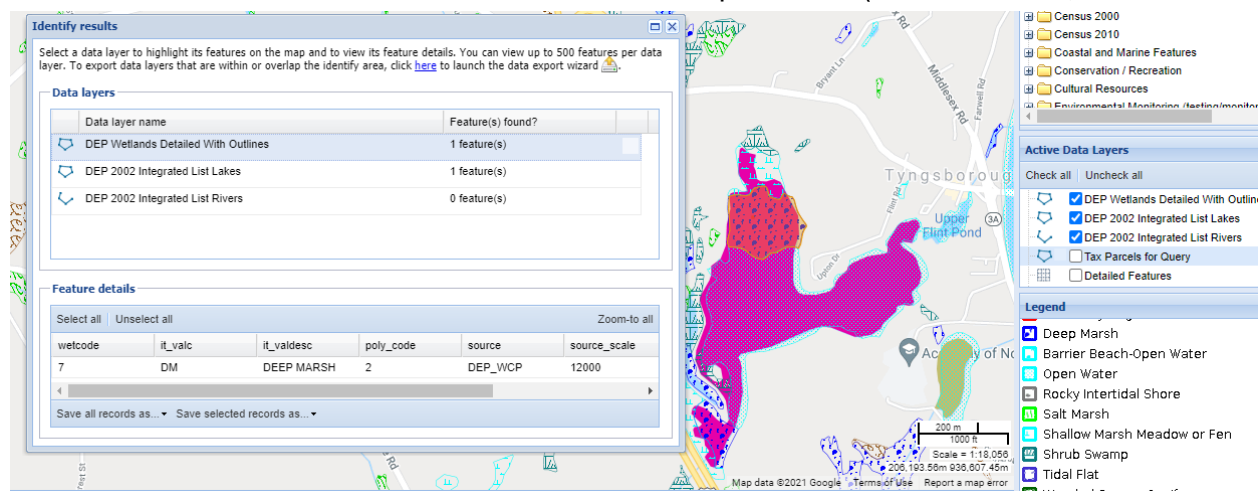
Google Earth image of Flint Pond, 6/6/2015 (Google Earth Pro Undated):



Google Earth image of Flint Pond, 10/17/2020 (Google Earth Pro Undated):



Wetlands information for Flint Pond- the northern arm (in red with blue dots) is classified as deep marsh habitat while most of the rest is considered open water (MassGIS 2019, MassGIS Undated):



## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
<p>The Fish Consumption Use for Flint Pond (MA84012) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Flint Pond (MA84012) at station F0253 (PFAS Study ID 1) on 06/02/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Flint Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.</p>

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0253	MassDEP	Fish Toxics	Flint Pond	[Tyngsboro (impounded by Upper Flint Pond Dam, NAT ID: MA01001)]	42.672443	-71.430645

## Fish Tissue Data

### Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
Fish toxics sampling was conducted in Flint Pond (MA84012) at station F0253 (PFAS Study ID 1) on 06/02/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Flint Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Flint Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for Flint Pond (MA84012).

### MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: B = bluegill, LMB = largemouth bass, YP = yellow perch]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0253	1	06/02/2022	B	ND	0.19	ND	31.00	PFNA
F0253	1	06/02/2022	LMB	ND	0.11	ND	65.67	PFNA
F0253	1	06/02/2022	YP	0.05	0.51	ND	53.00	PFHxS & PFNA

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	



The Aesthetics Use for Flint Pond (MA84012) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. Additionally, a Nutrient/Eutrophication Biological Indicators impairment is being added. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Flint Pond was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The data used to make the original impairment were not located, but during an August 1999 baseline lakes survey conducted by MassDEP staff, it was noted that at least 80% of the pond was covered with dense/very dense aquatic plants, including the non-rooted, floating species, *Utricularia vulgaris* (MassDEP 1999, MassDEP 2002). Google Earth images from September 2014, June 2015, and October 2020 show dense amounts of plant coverage (covering >33% to >50% of the pond) (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of a non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Flint Pond will remain an impaired lake segment for the 2022 cycle, however it is very shallow (~1.7 m at the deep hole) and likely should not be represented as a lake segment (From the 314 CMR 4.0 Definition for Lakes and Ponds- waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody is often partially filled in with macrophytes during the growing season, is shallow in depth, and the northwestern part of the main arm is classified as deep marsh habitat, so it should likely more appropriately be described as a wetland rather than a lake. No new data are available to evaluate the Aesthetics Use for this Flint Pond AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Flint Pond (MA84012) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed since it was removed from the Aesthetics Use. A non-pollutant Aquatic Plants (Macrophytes) impairment and a pollutant Nutrient/Eutrophication Biological Indicators impairment are being added (both from the Aesthetics Use). Surface water sampling was conducted in Flint Pond (MA84012) at station W3259 (PFAS Study ID 1) on 06/02/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3259	MassDEP	Water Quality	Flint Pond	[the default location representing co-located water/fish PFAS sampling, Tyngsboro]	42.672443	-71.430645

## Other Indicators

### Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Flint Pond (MA84012) at station W3259 (PFAS Study ID 1) on 06/02/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

### MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3259	1	06/02/2022	30	22	4.2	4.8	6.7j	3.9	<2.3	73.7

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Flint Pond (MA84012) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed since it was removed from the Aesthetics Use. A non-pollutant Aquatic Plants (Macrophytes) impairment and a pollutant Nutrient/Eutrophication Biological Indicators impairment are being added (both from the Aesthetics Use).

## Forest Lake (MA84014)

<b>Location:</b>	Methuen.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	48 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
<p>The Fish Consumption Use for Forest Lake (MA84014) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Forest Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Forest Lake (MA84014) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Forest Lake (MA84014) are available, so the Primary Contact Recreation Use is Not Assessed.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Forest Lake (MA84014) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

## Forge Pond (MA84015)

<b>Location:</b>	Westford/Littleton.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	203 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
4a	5	(Curly-leaf Pondweed*)	--	Unchanged
4a	5	(Fanwort*)	--	Unchanged
4a	5	(Water Chestnut*)	--	Unchanged
4a	5	Mercury in Fish Tissue	33880	Unchanged
4a	5	PFAS in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Forge Pond (MA84015) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Forge Pond (MA84015) at station F0140 (PFAS Study ID 12) on 07/23/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Forge Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0140	MassDEP	Fish Toxics	Forge Pond	[Westford/Littleton (impounded by Murray Printing Company Dam, NAT ID: MA00130)]	42.576328	-71.490090

### Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
Fish toxics sampling was conducted in Forge Pond (MA84015) at station F0140 (PFAS Study ID 12) on 07/23/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Forge Pond in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Forge Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for Forge Pond (MA84015).

**MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were

calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: AE = American eel, BC = black crappie, P = pumpkinseed]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0140	12	07/23/2022	AE	ND	0.33	ND	21.50	PFNA & PFOS
F0140	12	07/23/2022	BC	0.06	0.48	ND	17.50	PFHxS, PFNA, PFOS
F0140	12	07/23/2022	P	0.06	0.13	ND	7.93	PFHxS, PFNA, PFOS

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Forge Pond (MA84015) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Forge Pond (MA84015) so it is assessed as having Insufficient Information. Surface water sampling was conducted in Forge Pond (MA84015) at station W3272 (PFAS Study ID 12) and W3273 (PFAS Study ID 12B) on 07/23/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3272	MassDEP	Water Quality	Forge Pond	[the default location representing co-located water/fish PFAS sampling, Westford/Littleton]	42.576328	-71.490090
W3273	MassDEP	Water Quality	Forge Pond	[beach on northern edge of pond, Westford]	42.578284	-71.490462

## Other Indicators

### Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Forge Pond (MA84015) at station W3272 (PFAS Study ID 12) on 07/23/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.
Surface water sampling was conducted in Forge Pond (MA84015) at station W3273 (PFAS Study ID 12B), the beach on the northern edge of the pond, on 07/23/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

### MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3272	12	07/23/2022	7.4	3.6	0.8j	2.1	3.8j	2.2	<1.9	17.7*
W3273	12B	07/23/2022	5.7	4.2	0.86j	1.8j	3.8j	2.9	<2	15.7*

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Forge Pond (MA84015) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	



## Haggets Pond (MA84022)

<b>Location:</b>	Andover.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	211 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No
<b>2024/26 Use Attainment Summary</b>	

The Fish Consumption Use for Haggets Pond (MA84022) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Haggets Pond (MA84022) at station F0361 in 2021 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Haggets Pond (referred to by MDPH as "Haggetts Pond") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### ***Fish Consumption Advisories***

**Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP Undated 6)

<b>Summary Statement</b>
Fish toxics sampling was conducted in Haggets Pond (MA84022) at station F0361 in 2021 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Haggets Pond (referred to by MDPH as Haggetts Pond) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Haggets Pond (MA84022).

### **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Insufficient Information	NO

<b>2024/26 Use Attainment Summary</b>
Too limited data are available to assess the Aesthetics Use for Haggetts Pond (MA84022), so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Haggets Pond were reported to MDPH based on visual observations for 7 days in 2019 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

### ***Algal Bloom Information***

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

<b>C-HAB Summary Statement</b>
During the period 2015 through 2022, C-HAB postings for Haggets Pond (MA84022) were reported to MDPH based on visual observations for 7 days in 2019. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023)  
(MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

		Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
DEP Waterbody (DPH Waterbody)	DPH Town								
Haggets Pond	Andover					7			

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Primary Contact Recreation Use for Haggets Pond (MA84022) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Haggets Pond (MA84022) were reported to MDPH based on visual observations for 7 days in 2019. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Haggets Pond (MA84022) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Haggets Pond (MA84022) were reported to MDPH based on visual observations for 7 days in 2019. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

## Hoveys Pond (MA84025)

<b>Location:</b>	Boxford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	36 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
The Fish Consumption Use for Hoveys Pond (MA84025) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Hoveys Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Hoveys Pond (MA84025) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Hoveys Pond (MA84025) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

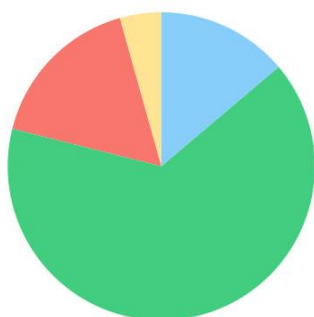
2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Hoveys Pond (MA84025) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	

## Johnson Creek (MA84A-15)

<b>Location:</b>	Headwaters, Groveland (excluding intermittent portion) to confluence with Merrimack River, Groveland/Haverhill.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.1 MILES
<b>Classification/Qualifier:</b>	B

### Johnson Creek (MA84A-15)

Watershed Area: 9.52 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	9.52	9.28	4.56	4.39
Agriculture	4.4%	4.4%	5%	5.1%
Developed	16.7%	16.9%	12.6%	12.8%
Natural	65.1%	64.7%	65.6%	65%
Wetland	13.8%	13.9%	16.9%	17.1%
Impervious	6.2%	6.2%	4.3%	4.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	5	Escherichia Coli (E. Coli)	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	--	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	--	X

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Johnson Creek (MA84A-15) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Johnson Creek (MA84A-15) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Johnson Creek (MA84A-15) are available, so the Primary Contact Recreation Use is Not Assessed.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Secondary Contact Recreation Use for Johnson Creek (MA84A-15) is assessed as Not Supporting. An *Escherichia coli* (*E. coli*) impairment is being added based on a re-evaluation of bacteria data not meeting the threshold at W1197. MassDEP staff collected historical *E. coli* bacteria samples in Johnson Creek (MA84A-15) from 2004-2010 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: at the upstream end of the AU at W1197 [Center St crossing, Groveland] from Jun-Sep 2004 (n=5) and roughly 1/3 of the way down the AU at W2161 [~1280 ft upstream of Main St, Groveland] from May-Oct 2010 (n=6). Analysis of this historic single year limited frequency *E. coli* dataset from W1197 indicated 60% of intervals had GMs >244 CFU/100ml, 2 samples exceeded the 794 CFU/100ml STV, and the overall GM was 309 CFU/100ml. Analysis of this historic single year limited frequency *E. coli* dataset from W2161 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 56 CFU/100ml. While Historic data from W2161 meet 2024 CALM guidance, historic data from W1197 are indicative of an *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1197	MassDEP	Water Quality	Johnson Creek	[Center Street crossing, Groveland]	42.742667	-71.039207
W2161	MassDEP	Water Quality	Johnson Creek	[approximately 1280 feet upstream of Main Street, Groveland]	42.746485	-71.040708

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3)

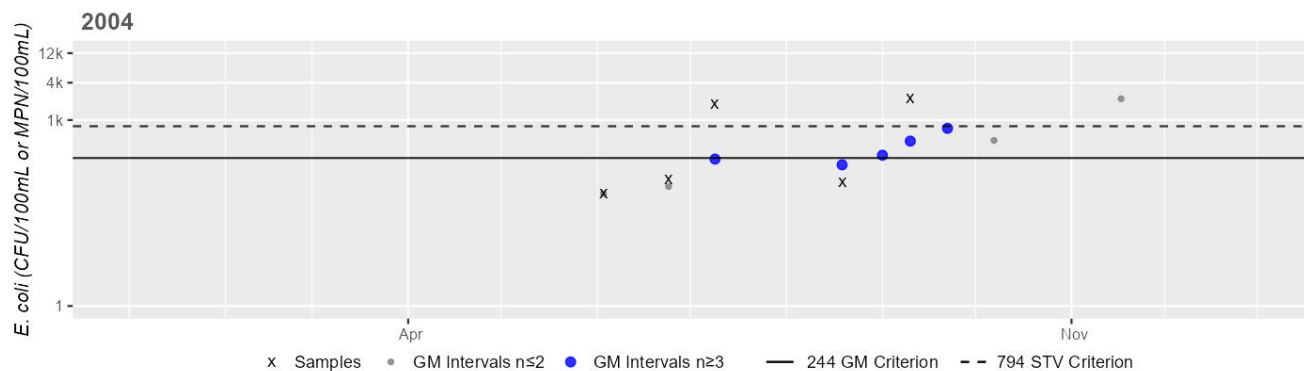
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1197	MassDEP	E. coli	06/02/04	09/09/04	5	65	2200	309
W2161	MassDEP	E. coli	05/25/10	10/05/10	6	10	240	56



### Station MASSDEP\_W1197 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



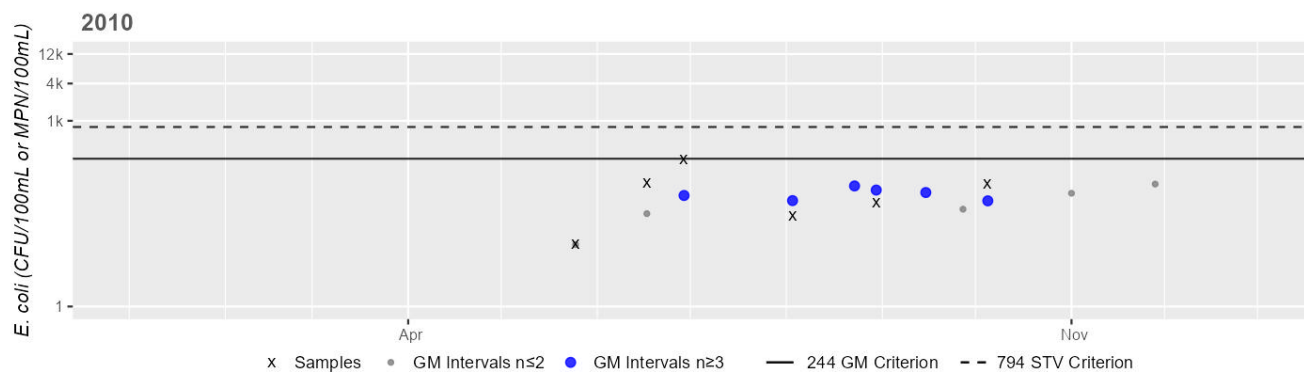
Variable*	Result
Samples	5
SeasGM	309
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	40%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
60%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2161 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	56
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Johnsons Pond (MA84027)

<b>Location:</b>	Groveland/Boxford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	194 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Dissolved Oxygen	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No
<b>2024/26 Use Attainment Summary</b>	

The Fish Consumption Use for Johnsons Pond (MA84027) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Johnsons Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Johnsons Pond (MA84027) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Johnsons Pond (MA84027) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

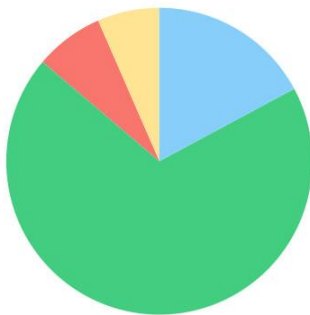
2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Johnsons Pond (MA84027) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	

## Joint Grass Brook (MA84A-32)

<b>Location:</b>	Headwaters, between Hollis Street and Hawk Swamp, Dunstable to the confluence with Salmon Brook, Dunstable.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3.2 MILES
<b>Classification/Qualifier:</b>	B

### Joint Grass Brook (MA84A-32)

Watershed Area: 2.90 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	2.81	2.81	0.82	0.82
Agriculture	6.6%	6.6%	4.6%	4.6%
Developed	7.2%	7.2%	5.2%	5.2%
Natural	69%	69%	60.6%	60.6%
Wetland	17.2%	17.2%	29.5%	29.5%
Impervious	2.6%	2.6%	2%	2%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Joint Grass Brook (MA84A-32) is Not Assessed.	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Joint Grass Brook (MA84A-32) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Joint Grass Brook (MA84A-32) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
<p>No bacteria or other indicator data for Joint Grass Brook (MA84A-32) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.</p> <p>MassDEP staff collected historical <i>E. coli</i> bacteria samples in the middle of the Joint Grass Brook AU (MA84A-32) at W1208 [downstream/E of Main St crossing (below confluence of unnamed tributary), Dunstable] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1208 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 74 CFU/100ml. Historic <i>E. coli</i> data from W1208 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Joint Grass Brook.</p>	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1208	MassDEP	Water Quality	Joint Grass Brook	[downstream/east of Main Street crossing (below confluence of unnamed tributary), Dunstable]	42.688159	-71.505379

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

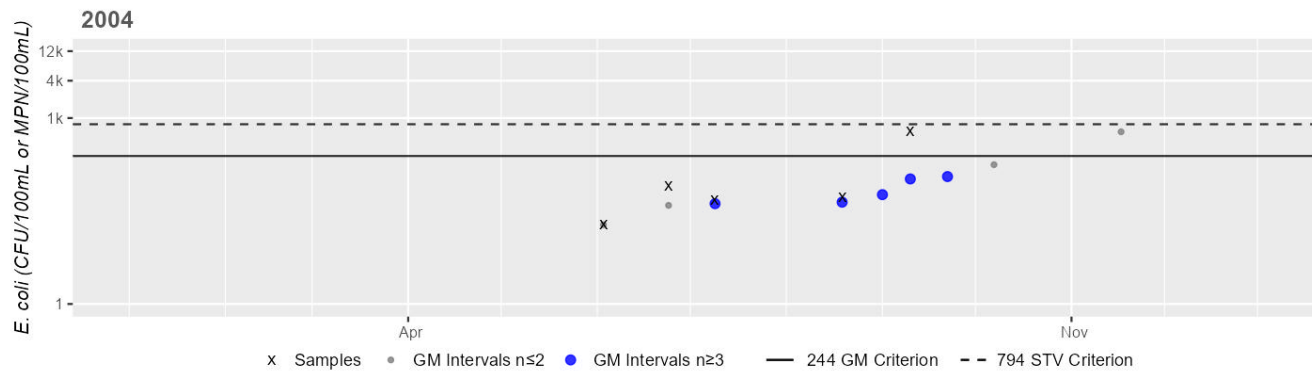
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1208	MassDEP	E. coli	06/02/04	09/09/04	5	19	600	74

#### Station MASSDEP\_W1208 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	74
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Kenoza Lake (MA84028)

<b>Location:</b>	Haverhill.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	240 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
<p>The Fish Consumption Use for Kenoza Lake (MA84028) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Kenoza Lake (MA84028) in 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific advisory for Kenoza Lake in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

## ***Fish Consumption Advisories***

**Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP Undated 6)

<b>Summary Statement</b>
Fish toxics sampling was conducted in Kenoza Lake (MA84028) in 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Kenoza Lake in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Kenoza Lake (MA84028).

## **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No data are available, so the Aesthetics Use for Kenoza Lake (MA84028) is Not Assessed.	

## **Primary Contact Recreation**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No bacteria or other indicator data for Kenoza Lake (MA84028) are available, so the Primary Contact Recreation Use is Not Assessed.	

## **Secondary Contact Recreation**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	NO
<b>2024/26 Use Attainment Summary</b>	
No bacteria or other indicator data for Kenoza Lake (MA84028) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	



## Knops Pond/Lost Lake (MA84084)

<b>Location:</b>	Groton.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	187 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4a	4a	(Fanwort*)	--	Unchanged
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Knops Pond/Lost Lake (MA84084) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Knops Pond/Lost Lake (referred to by MDPH as "Knops Pond" or "Lost Lake") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Knops Pond/Lost Lake (MA84084) is Not Assessed.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Knops Pond/Lost Lake (MA84084) are available, so the Primary Contact Recreation Use is Not Assessed.

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Knops Pond/Lost Lake (MA84084) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

## Lake Attitash (MA84002)

<b>Location:</b>	Amesbury/Merrimac.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	369 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Harmful Algal Blooms	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

### 2024/26 Use Attainment Summary

The Fish Consumption Use for Lake Attitash (MA84002) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Lake Attitash (MA84002) at station F0364 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. Additionally, fish toxics sampling was conducted in Lake Attitash (MA84002) at station F0364 (PFAS Study ID 16) on 07/27/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Lake Attitash (referred to by MDPH as "Attitash, Lake") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0364	MassDEP	Fish Toxics	Lake Attitash	[Amesbury/Merrimac (impounded by Lake Attitash Dam, NAT ID: MA01212)]	42.851000	-70.983000

### Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
Fish toxics sampling was conducted in Lake Attitash (MA84002) at station F0364 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. Additionally, fish toxics sampling was conducted in Lake Attitash (MA84002) at station F0364 (PFAS Study ID 16) on 07/27/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Lake Attitash (referred to by MDPH as Attitash, Lake) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Lake Attitash (referred to by MDPH as Attitash, Lake) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for Lake Attitash (MA84002).

**MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a

mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BB = brown bullhead, P = pumpkinseed, YP = yellow perch]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0364	16	07/27/2022	BB	ND	ND	ND	1.31	PFOS
F0364	16	07/27/2022	P	ND	0.23	ND	2.50	PFNA
F0364	16	07/27/2022	YP	ND	0.15	ND	6.75	PFNA

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Lake Attitash (MA84002) continues to be assessed as Not Supporting, with the prior impairment for Harmful Algal Blooms being carried forward since blooms were reported in 2015. During the period 2015 through 2022, C-HAB postings for Lake Attitash were reported to MDPH based on visual observations for 85 days in 2015 and no blooms were reported in other years. Since blooms were reported in a recent year this is reflective of the existing Harmful Algal Blooms impairment for Lake Attitash.

## Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Lake Attitash (MA84002) were reported to MDPH based on visual observations for 85 days in 2015. No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Bloom impairment is being carried forward and the Aesthetics Use and Primary/Secondary Contact Recreational Uses continue to be assessed as Not Supporting.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Lake Attitash	Amesbury/Merrimac	85							

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for Lake Attitash (MA84002) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward based on the occurrence of C-HAB postings extending &gt;20 days in a recent year. During the period 2015 through 2022, C-HAB postings for Lake Attitash (MA84002) were reported to MDPH based on visual observations for 85 days in 2015. No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Blooms impairment is being carried forward and the C-HAB data continues to be indicative of a Harmful Algal Blooms impairment. Surface water sampling was conducted in Lake Attitash (MA84002) at station W3277 (PFAS Study ID 16) on 07/27/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3277	MassDEP	Water Quality	Lake Attitash	[the default location representing co-located water/fish PFAS sampling, Amesbury/Merrimac]	42.851000	-70.983000

## Other Indicators

### Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
<p>Surface water sampling was conducted in Lake Attitash (MA84002) at station W3277 (PFAS Study ID 16) on 07/27/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.</p>

### MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3277	16	07/27/2022	4.7	1.6j	0.76j	0.91j	3.4j	3.5	<2	11.0*

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for Lake Attitash (MA84002) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward based on the occurrence of C-HAB postings extending &gt;20 days in a recent year. During the period 2015 through 2022, C-HAB postings for Lake Attitash (MA84002) were reported to MDPH based on visual observations for 85 days in 2015. No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Blooms impairment is being carried forward and the C-HAB data continues to be indicative of a Harmful Algal Blooms impairment.</p>

## Lake Cochichewick (MA84008)

<b>Location:</b>	North Andover.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	575 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Recommendations

<b>2024/26 Recommendations</b>
2024 IR [CYANOBACTERIA CELL COUNT, MEDIUM] Follow-up monitoring should be conducted in Lake Cochichewick (MA84008) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH. {Lake Cochichewick (MA84008)}

## Designated Use Attainment Decisions



## Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
<p>The Fish Consumption Use for Lake Cochichewick (MA84008) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Lake Cochichewick (MA84008) at station F0069 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. Additionally, fish toxics sampling was conducted in Lake Cochichewick (MA84008) at station F0069 (PFAS Study ID 53) on 11/14/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Lake Cochichewick (referred to by MDPH as "Cochichewick, Lake") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0069	MassDEP	Fish Toxics	Lake Cochichewick	[North Andover (impounded by Lake Cochichewick Outlet Dam, NAT ID: MA00278)]	42.703326	-71.095554

## Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
<p>Fish toxics sampling was conducted in Lake Cochichewick (MA84008) at station F0069 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. Additionally, fish toxics sampling was conducted in Lake Cochichewick (MA84008) at station F0069 (PFAS Study ID 53) on 11/14/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Lake Cochichewick (referred to by MDPH as Cochichewick, Lake) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Lake Cochichewick (referred to by MDPH as Cochichewick, Lake) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for Lake Cochichewick (MA84008).</p>

**MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: LMB = largemouth bass, P = pumpkinseed, YP = yellow perch]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0069	53	11/14/2022	LMB	ND	ND	ND	6.55	
F0069	53	11/14/2022	P	ND	ND	ND	3.15	
F0069	53	11/14/2022	YP	ND	ND	ND	2.30	

## Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Lake Cochichewick (MA84008), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of >15 days in duration) were reported to MDPH for 2020. During the period 2015 through 2022, C-HAB postings for Lake Cochichewick were reported to MDPH based on visual observations for 22 days in 2020 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

## Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Lake Cochichewick (MA84008) were reported to MDPH based on visual observations for 22 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Lake Cochichewick	North Andover						22		

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
<p>No bacteria data are available to assess the Primary Contact Recreation Use for Lake Cochichewick (MA84008) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.</p> <p>Surface water sampling was conducted in Lake Cochichewick (MA84008) at station W3318 (PFAS Study ID 53) on 11/14/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value. During the period 2015 through 2022, C-HAB postings for Lake Cochichewick (MA84008) were reported to MDPH based on visual observations for 22 days in 2020. No blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3318	MassDEP	Water Quality	Lake Cochichewick	[the default location representing co-located water/fish PFAS sampling, North Andover]	42.703326	-71.095554

## Other Indicators

**Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data** (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Lake Cochichewick (MA84008) at station W3318 (PFAS Study ID 53) on 11/14/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

**MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3318	53	11/14/2022	3.6	2.1	0.54j	1.1j	2.7j	1j	<2	10.1*

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Lake Cochichewick (MA84008) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Lake Cochichewick (MA84008) were reported to MDPH based on visual observations for 22 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

## Lake Gardner (MA84018)

<b>Location:</b>	Amesbury (size indicates portion in Massachusetts) (formerly part of 2000 segment: Powwow River MA84A-07).
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	96 ACRES
<b>Classification/Qualifier:</b>	B

No usable data were available for Lake Gardner (MA84018) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
4c	4c	(Fish Passage Barrier*)	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--

## Lake Mascuppic (MA84037)

<b>Location:</b>	Tyngsborough/Dracut.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	210 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
4c	5	(Curly-leaf Pondweed*)	--	Unchanged
4c	5	(Fanwort*)	--	Unchanged
4c	5	PFAS in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

### 2024/26 Use Attainment Summary

The Fish Consumption Use for Lake Mascuppig (MA84037) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Lake Mascuppig (MA84037) at station F0479 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM); no advisory was issued by MDPH. Additionally, fish toxics sampling was conducted in Lake Mascuppig (MA84037) at station F0479 (PFAS Study ID 25) on 07/26/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in Lake Mascuppig (referred to by MDPH as "Mascuppig Lake") in their May 2024 Freshwater Fish Consumption Advisory List and retained it in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0479	MassDEP	Fish Toxics	Lake Mascuppig	[Tyngsborough/Dracut (impounded by Mascuppig Lake Dam NAT ID: MA01225)]	42.677127	-71.384279

### Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Lake Mascuppig (MA84037) at station F0479 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM); no advisory was issued by MDPH. Additionally, fish toxics sampling was conducted in Lake Mascuppig (MA84037) at station F0479 (PFAS Study ID 25) on 07/26/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for Lake Mascuppig (referred to by MDPH as Mascuppig Lake) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for PFAS in Fish Tissue for Lake Mascuppig (MA84037).

**MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BB = brown bullhead, CP = chain pickerel, LMB = largemouth bass]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with $\geq 1$ Sample Qualified
F0479	25	07/26/2022	BB	ND	ND	ND	1.35	
F0479	25	07/26/2022	CP	ND	ND	ND	13.10	
F0479	25	07/26/2022	LMB	ND	ND	ND	22.00	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Lake Mascuppig (MA84037) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO
2024/26 Use Attainment Summary	
No bacteria data are available to assess the Primary Contact Recreation Use for Lake Mascuppig (MA84037) so it is assessed as having Insufficient Information. Surface water sampling was conducted in Mascuppig Lake (MA84037) at station W3288 (PFAS Study ID 25) on 07/26/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3288	MassDEP	Water Quality	Lake Mascuppig	[the default location representing co-located water/fish PFAS sampling, Tyngsborough/Dracut]	42.677127	-71.384279

## Other Indicators

Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)



<b>Summary</b>
Surface water sampling was conducted in Mascuppic Lake (MA84037) at station W3288 (PFAS Study ID 25) on 07/26/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

**MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters** (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3288	25	07/26/2022	11	<0.49	1j	2.5	3.8j	3.4	<2	19.9*

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Mascuppic (MA84037) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

## Lake Pentucket (MA84051)

<b>Location:</b>	Haverhill.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	38 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
<p>The Fish Consumption Use for Lake Pentucket (MA84051) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Lake Pentucket (referred to by MDPH as "Pentucket, Lake") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Lake Pentucket (MA84051) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Lake Pentucket (MA84051) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Lake Pentucket (MA84051) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.	

## Lake Saltonstall (MA84059)

<b>Location:</b>	Haverhill.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	44 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
<p>The Fish Consumption Use for Lake Saltonstall (MA84059) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Lake Saltonstall (referred to by MDPH as "Saltonstall, Lake") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Lake Saltonstall (MA84059) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Saltonstall (MA84059) are available, so the Primary Contact Recreation Use is Not Assessed.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Saltonstall (MA84059) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

# Lawrence Brook (MA84A-20)

<b>Location:</b>	Headwaters, Tyngsborough (excluding intermittent portion) to confluence with Merrimack River, Tyngsborough.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2 MILES
<b>Classification/Qualifier:</b>	B

## Lawrence Brook (MA84A-20)

Watershed Area: 3.38 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.38	3.38	1.30	1.30
Agriculture	2%	2%	3.4%	3.4%
Developed	28%	28%	17.3%	17.3%
Natural	60%	60%	66.4%	66.4%
Wetland	10%	10%	13%	13%
Impervious	12.7%	12.7%	8.7%	8.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Lawrence Brook (MA84A-20) is Not Assessed.	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Lawrence Brook (MA84A-20) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Lawrence Brook (MA84A-20) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Lawrence Brook (MA84A-20) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical <i>E. coli</i> bacteria samples toward the downstream end of Lawrence Brook (MA84A-20) at W1189 [~130 ft downstream/S of Sherburne Avenue, Tyngsborough] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1189 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 100 CFU/100ml. Historic <i>E. coli</i> data from W1189 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Lawrence Brook.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1189	MassDEP	Water Quality	Lawrence Brook	[approximately 130 feet downstream/south of Sherburne Avenue, Tyngsborough]	42.671634	-71.411818

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

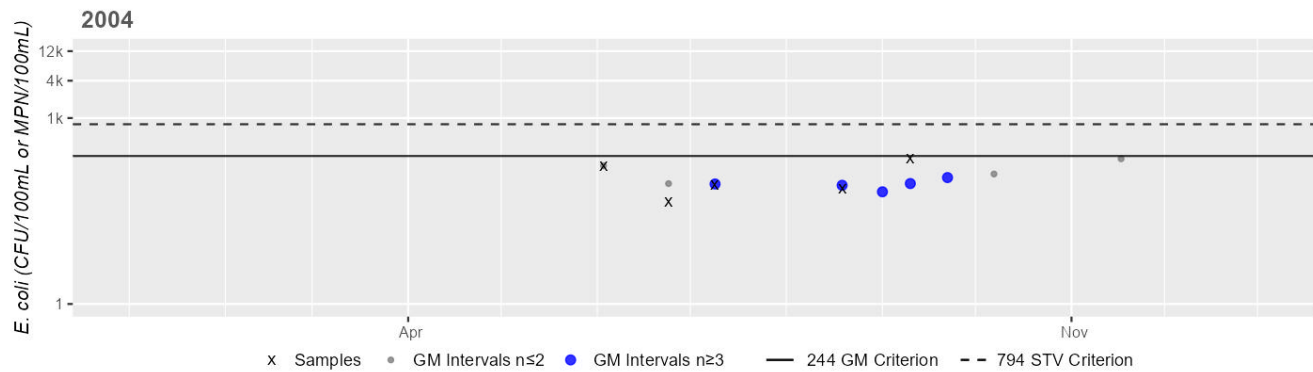
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1189	MassDEP	E. coli	06/02/04	09/09/04	5	45	220	100

#### Station MASSDEP\_W1189 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	100
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.



## Little River (MA84A-09)

<b>Location:</b>	New Hampshire state line, Haverhill to confluence with Merrimack River, Haverhill (approximately 200 feet culverted at mouth).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.6 MILES
<b>Classification/Qualifier:</b>	B: WWF

### Little River (MA84A-09)

Watershed Area: 28.12 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	6.59	5.13	1.53	1.12
Agriculture	3.4%	1.7%	4.3%	3%
Developed	36.8%	44.7%	20.2%	26.2%
Natural	49.8%	45.4%	50.5%	46.7%
Wetland	10%	8.2%	25%	24.1%
Impervious	22.3%	27.7%	11.6%	15.4%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)	--	Unchanged
5	5	(Habitat Assessment*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Trash	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Habitat Assessment*)	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	X	X
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	No

<b>2024/26 Use Attainment Summary</b>
---------------------------------------

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Little River (MA84A-09) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Aesthetics Use for Little River (MA84A-09) continues to be assessed as Not Supporting with the prior Debris and Trash impairments being carried forward. No new data are available to evaluate the Aesthetics Use for this Little River AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for the Little River (MA84A-09) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward and the prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for the Little River (MA84A-09) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward and the prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward. MassDEP staff collected historical *E. coli* bacteria samples in the Little River (MA84A-09) from 2004-2010 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W2162 [~1000 ft upstream of Rt. 495, Haverhill] from May-Oct 2010 (n=6) and toward the downstream end of the AU at W1210 [downstream/S at Winter St crossing, Haverhill] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W2162 indicated 33% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 192 CFU/100ml. Analysis of this historic single year limited frequency *E. coli* dataset from W1210 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 428 CFU/100ml. Historic *E. coli* data from W2162 and W1210 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of the Little River (MA84A-09).

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1210	MassDEP	Water Quality	Little River	[downstream/south at Winter Street crossing, Haverhill]	42.777372	-71.088368
W2162	MassDEP	Water Quality	Little River	[approximately 1000 feet upstream of Route 495, Haverhill]	42.798020	-71.104554

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

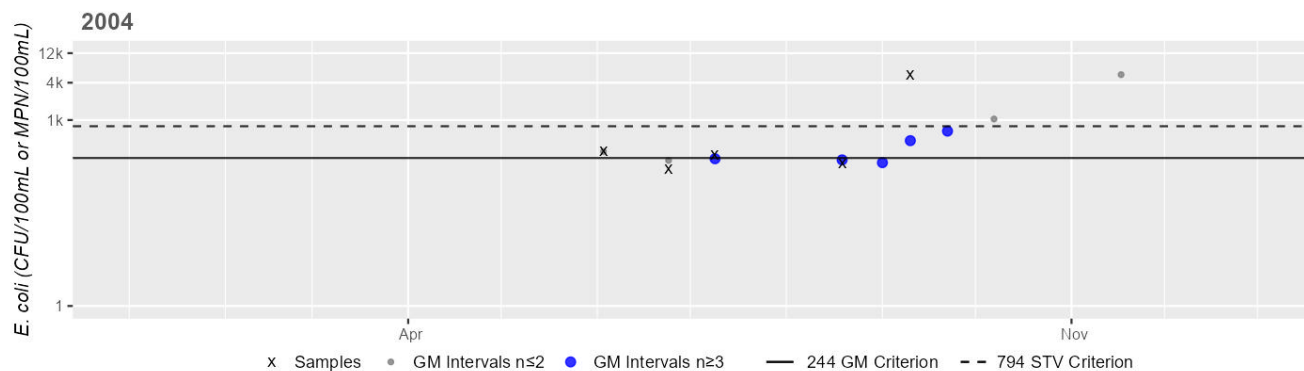
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1210	MassDEP	E. coli	06/02/04	09/09/04	5	160	5400	428
W2162	MassDEP	E. coli	05/25/10	10/05/10	6	81	380	192

### Station MASSDEP\_W1210 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



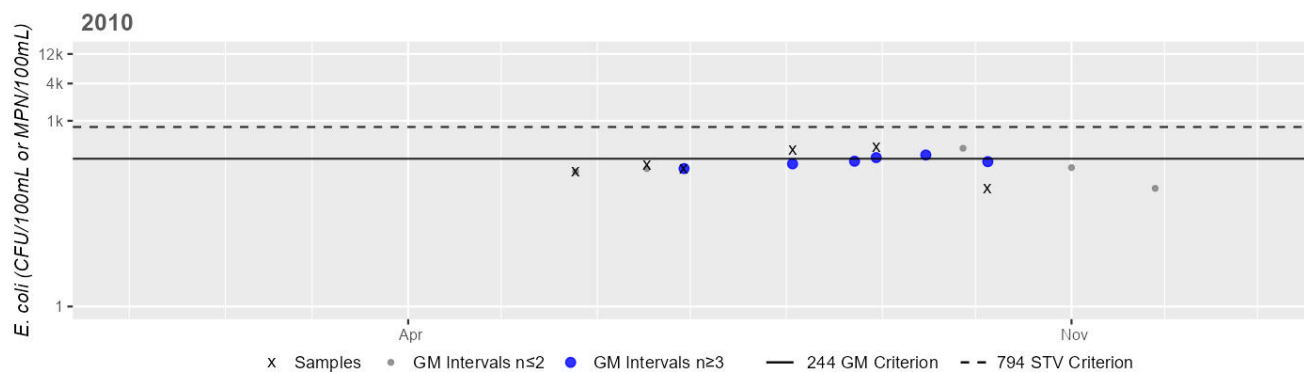
Variable*	Result
Samples	5
SeasGM	428
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
40%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2162 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	192
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
33%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Locust Pond (MA84031)

<b>Location:</b>	Tyngsborough.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	16 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
4a	4a	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
The Fish Consumption Use for Locust Pond (MA84031) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Locust Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Locust Pond (MA84031) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Locust Pond (MA84031) are available, so the Primary Contact Recreation Use is Not Assessed.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Locust Pond (MA84031) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

## Long Pond (MA84032)

<b>Location:</b>	Dracut/Tyngsborough (size indicates portion in Massachusetts).
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	137 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	Harmful Algal Blooms	--	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
Harmful Algal Blooms	Upstream Source (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--



# Recommendations

2024/26 Recommendations
2024 IR [CYANOBACTERIA CELL COUNT, LOW] Follow-up monitoring should be conducted in Long Pond (MA84032) to confirm the existing Harmful Algal Blooms impairment to the Recreational and Aesthetic uses. Monitoring should focus on the collection of cyanobacteria cell count data. {Long Pond (MA84032)}

# Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Long Pond (MA84032) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Long Pond (MA84032) at station F0369 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Long Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Fish Consumption Advisories

Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP Undated 6)

Summary Statement
Fish toxics sampling was conducted in Long Pond (MA84032) at station F0369 in 2020 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Long Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Long Pond (MA84032).

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
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The Aesthetics Use for Long Pond (MA84032) continues to be assessed as Not Supporting, with the prior impairment for Harmful Algal Blooms being carried forward. During the period 2015 through 2022, C-HAB postings for Long Pond were reported to MDPH based on cell count data for 38 days in 2022 (but cell count concentrations were not reported to MDPH). No blooms were reported in other years. Since blooms were reported in a recent year this is reflective of the existing Harmful Algal Blooms impairment for Long Pond. However, since the existing Harmful Algal Blooms impairment was based on reports where cell count concentration data were not reported, a recommendation is being made to confirm the impairment with cyanobacteria cell count concentration data.

### Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Long Pond (MA84032) were reported to MDPH based on cell count data for 38 days in 2022 (but cell count concentrations were not reported to MDPH). No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Bloom impairment is being carried forward and the Aesthetics Use and Primary/Secondary Contact Recreational Uses continue to be assessed as Not Supporting. However, since the existing Harmful Algal Blooms impairment was based on reports where cell count concentration data were not reported, a recommendation is being made to confirm the impairment with cyanobacteria cell count concentration data.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Long Pond	Dracut/Tyngsborough								38

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Primary Contact Recreation Use for Long Pond (MA84032) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward based on the occurrence of C-HAB postings extending >20 days in a recent year.

During the period 2015 through 2022, C-HAB postings for Long Pond (MA84032) were reported to MDPH based on cell count data for 38 days in 2022 (but cell count concentrations were not reported to MDPH). No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Blooms impairment is being carried forward and the C-HAB data continues to be indicative of a Harmful Algal Blooms impairment. However, since the existing Harmful Algal Blooms impairment was based on reports where cell count concentration data were not reported, a recommendation is being made to confirm the impairment with cyanobacteria cell count concentration data. In Long Pond (MA84032), EPA (NARS\_WQX) collected Secchi, cyanobacteria cell count, and cyanotoxin data at NARS\_WQX-NLA12\_MA-104 [42.693942, -71.370316, NLA12\_MA-104] (2012). Secchi depth data were too limited (n <3 or missing station depth) to evaluate water clarity using data from NARS\_WQX-NLA12\_MA-104 in 2012 (n=1, 0.85m). The cyanobacteria cell count did not exceed 70,000 cells/ml in the single water sample in 2012 (n=1). Analysis of microcystins samples from NARS\_WQX-NLA12\_MA-104 in 2012 (n=1) indicated that the concentrations did not exceed the threshold of 8 µg/L.

### Other Indicators

#### Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data (NWQMC 2025) (MassDEP Undated 2)

Data Year(s)	Summary
2012	In Long Pond (MA84032), US Environmental Protection Agency (NARS_WQX) collected Secchi, cyanobacteria cell count, and cyanotoxin data at NARS_WQX-NLA12_MA-104 [42.693942, -71.370316, NLA12_MA-104] (2012). In 2012 at station NARS_WQX-NLA12_MA-104 (station depth=not recorded) the Secchi depth (n=1) was measured to be 0.85 m on Sep 12, 2012. There was insufficient information to assess water clarity without a recorded station depth. The cyanobacteria cell count did not exceed 70,000 cells/ml in the single water sample in 2012 (n=1). Analysis of microcystins samples from NARS_WQX-NLA12_MA-104 in 2012 (n=1) indicated that the concentrations did not exceed the threshold of 8 µg/L.

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Secondary Contact Recreation Use for Long Pond (MA84032) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward based on the occurrence of C-HAB postings extending >20 days in a recent year. During the period 2015 through 2022, C-HAB postings for Long Pond (MA84032) were reported to MDPH based on cell count data for 38 days in 2022 (but cell count concentrations were not reported to MDPH). No blooms were reported in other years. Since blooms were reported in a recent year, a prior Harmful Algal Blooms impairment is being carried forward and the C-HAB data continues to be indicative of a Harmful Algal Blooms impairment. However, since the existing Harmful Algal Blooms impairment was based on reports where cell count concentration data were not reported, a recommendation is being made to confirm the impairment with cyanobacteria cell count concentration data. In Long Pond (MA84032), EPA (NARS\_WQX) collected cyanobacteria cell count and cyanotoxin data at NARS\_WQX-NLA12\_MA-104 [42.693942, -71.370316, NLA12\_MA-104] (2012). The cyanobacteria cell count did not exceed 70,000 cells/ml in the single water sample in 2012 (n=1). Analysis of microcystins samples from NARS\_WQX-NLA12\_MA-104 in 2012 (n=1) indicated that the concentrations did not exceed the threshold of 8 µg/L.

## Long Sought-for Pond (MA84033)

<b>Location:</b>	Westford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	107 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
--	5	Mercury in Fish Tissue	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No
<b>2024/26 Use Attainment Summary</b>	

The Fish Consumption Use for Long Sought-for Pond (MA84033) is assessed as Not Supporting with a new impairment being added for Mercury in Fish Tissue. Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Long Sought-for Pond (MA84033) at station F0498 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). MDPH issued a site-specific advisory for Mercury in Long Sought-for Pond (referred to by MDPH as "Long Sought-For Pond") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. The likely source of Mercury, although not confirmed, is atmospheric deposition.

### ***Fish Consumption Advisories***

**Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP Undated 6)

<b>Summary Statement</b>
Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Long Sought-for Pond (MA84033) at station F0498 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). Because of elevated Mercury measured in fish filets, MDPH issued site-specific fish consumption advisories for Long Sought-for Pond (referred to by MDPH as Long Sought-For Pond) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Long Sought-for Pond (MA84033).

### **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Insufficient Information	NO
<b>2024/26 Use Attainment Summary</b>	
Too limited data are available to assess the Aesthetics Use for Long Sought-for Pond (MA84033), so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Long Sought-for Pond were reported to MDPH based on visual observations for 14 days in 2021 and no blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.	

### ***Algal Bloom Information***

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

**C-HAB Summary Statement**

During the period 2015 through 2022, C-HAB postings for Long Sought-for Pond (MA84033) were reported to MDPH based on visual observations for 14 days in 2021. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023)  
(MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Long Sought-for Pond	Westford							14	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

No bacteria data are available to assess the Primary Contact Recreation Use for Long Sought-for Pond (MA84033) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Long Sought-for Pond (MA84033) were reported to MDPH based on visual observations for 14 days in 2021. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for Long Sought-for Pond (MA84033) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. During the period 2015 through 2022, C-HAB postings for Long Sought-for Pond (MA84033) were reported to MDPH based on visual observations for 14 days in 2021. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

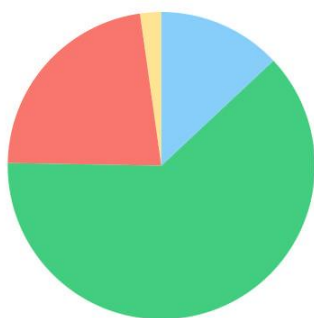


## Lowell Canals (MA84A-29)

<b>Location:</b>	Canal system near Pawtucket Falls, Lowell.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	4.9 MILES
<b>Classification/Qualifier:</b>	B: TWS, WWF, CSO

### Lowell Canals (MA84A-29)

Watershed Area: 361.75 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	107.55	6.25	33.73	2.35
Agriculture	2.2%	0.1%	1.8%	0%
Developed	22.5%	54%	17.4%	45.1%
Natural	62.3%	35.9%	58.9%	39.9%
Wetland	13%	10%	22%	15%
Impervious	10.8%	36.7%	8.8%	30.2%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Lead	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Lead	Source Unknown (N)	--	X	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Lowell Canals (MA84A-29) continues to be assessed as Not Supporting and the prior Lead, Mercury in Fish Tissue, DDT in Fish Tissue, and PCBs in Fish Tissue impairment is being carried forward. MDPH included site-specific advisories for Lowell Canals in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Lowell Canals (MA84A-29) is Not Assessed.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
--------------------------------

The Primary Contact Recreation Use for Lowell Canals (MA84A-29) is assessed as Not Supporting. A presumptive *Escherichia coli* (*E. coli*) impairment is being added due to the presence of an active CSO outfall immediately upstream of the Pawtucket Canal diversion on the Merrimack River (MA84A-01) which feeds the Lowell Canals.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

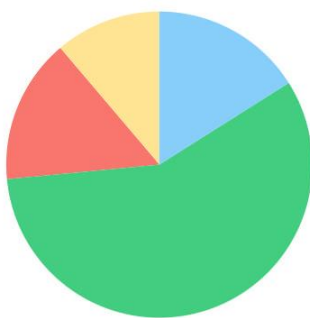
The Secondary Contact Recreation Use for Lowell Canals (MA84A-29) is assessed as Not Supporting. A presumptive *Escherichia coli* (*E. coli*) impairment is being added due to the presence of an active CSO outfall immediately upstream of the Pawtucket Canal diversion on the Merrimack River (MA84A-01) which feeds the Lowell Canals

# Martins Pond Brook (MA84A-19)

<b>Location:</b>	Headwaters outlet Martins Pond, Groton to inlet Lost Lake, Groton.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.3 MILES
<b>Classification/Qualifier:</b>	B

## Martins Pond Brook (MA84A-19)

Watershed Area: 2.10 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.10	2.10	0.51	0.51
Agriculture	11.2%	11.2%	4%	4%
Developed	15.3%	15.3%	10.8%	10.8%
Natural	57.4%	57.4%	59.2%	59.2%
Wetland	16%	16%	26.1%	26.1%
Impervious	5.6%	5.6%	4.5%	4.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Martins Pond Brook (MA84A-19) is Not Assessed.	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Martins Pond Brook (MA84A-19) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Martins Pond Brook (MA84A-19) are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Martins Pond Brook (MA84A-19) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical <i>E. coli</i> bacteria samples in the downstream quarter of Martins Pond Brook (MA84A-19) at W1188 [~180 ft downstream from washed out culvert crossing of Loomis Lane, Groton] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1188 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 76 CFU/100ml. Historic <i>E. coli</i> data from W1188 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Martins Pond Brook.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1188	MassDEP	Water Quality	Martins Pond Brook	[approximately 180 feet downstream from washed out culvert crossing of Loomis Lane, Groton]	42.603883	-71.527842

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

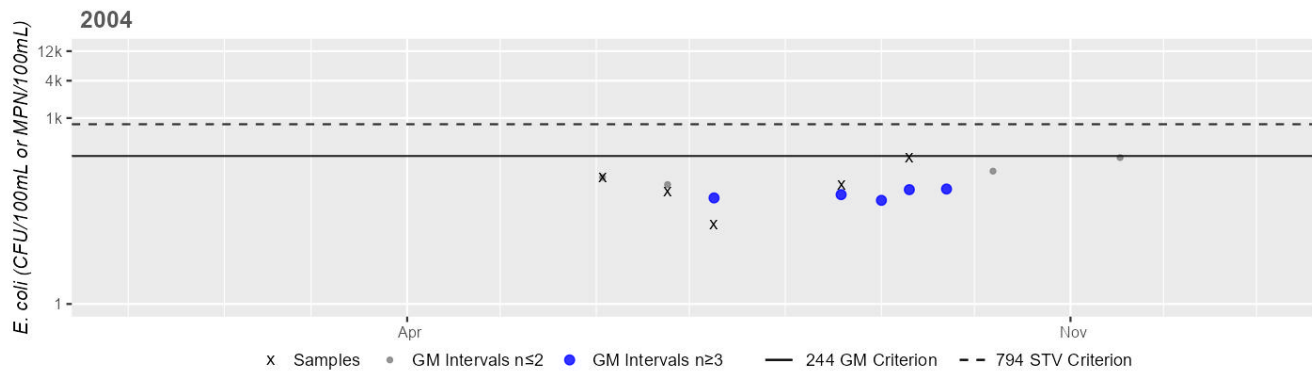
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1188	MassDEP	E. coli	06/02/04	09/09/04	5	19	230	76

Station MASSDEP\_W1188 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	76
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Massapoag Pond (MA84087)

<b>Location:</b>	Dunstable/Groton/Tyngsborough.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	111 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	<p>As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Massapoag Pond (MA84087) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on a September 1999 baseline lake survey conducted by MassDEP staff in which it was noted that dense/very dense aquatic macrophytes covered the perimeter and western arm of the pond (60/113 acres, &gt;50% surface area); among the plants on the species list were the non-rooted, floating species, <i>Ceratophyllum demersum</i> and <i>Utricularia</i> sp. (MassDEP 1999, MassDEP 2002). Although subsequent Google Earth images of Massapoag Pond were often quite clear, images from October 2020 and October 2021 show some vegetation patches in the western basin and some turbidity or scum in the main basin (Google Earth Pro Undated). Since it is not clear whether there were some aquatic plant patches of significant size in satellite images from 2008 and 2019, the Aquatic Plants (Macrophytes) impairment is being delisted as a pollutant and added again as a non-pollutant. Field surveys should be conducted to collect water quality, bathymetric, and aquatic plant density information to reevaluate use attainment in Massapoag Pond.</p>



## Aquatic Plants (Macrophytes)

### 2002 WBS Coding Sheet (MassDEP 2002):

WBID: **MA84087** WATERSHED: **Merrimack (84)** (Printed 05/17/01)  
 NAME: **Massapoag Pond** TYPE: **Lake/Pond**  
 CODE: **84087** SIZE: **113.00(acres)** CLASS: **B**

LATITUDE: **42.65000**  
 LONGITUDE: **71.49583** (423900/712945)  
 Lake/Pond Name: **Massapoag Pond, Dunstable/Groton/Tyngsborough**  
 Ecoregion Name: **()**  
 Description:

Assessment Date: **98020107** Begin Sampling: **9907**  
 Cycle: **9902** End Sampling: **9909** (Assessment Category => Not-assessed)

#### Lake Specific Information

Lake size greater than 10 acres?: **Yes** ✓  
 Significantly Publicly Owned: **xxxx**  
 Trophic Status: **Eutrophic** ✓  
 Trophic Trend: **Unknown** ✓  
 Acidity/Toxics Trend: **Unknown** ✓  
 Acidity Effects: **Unknown** ✓

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				113.0 ✓	113.00	
ALUS			113.0 ✓		113.00	
FISH CONSUMPTION				113.0 ✓	113.00	
PRIMARY CONTACT				60.0 ✓	113.00	
SECONDARY CONTACT	53.0 ✓			60.0 ✓	113.00	
Aesthetics	53.0 ✓			60.0 ✓	113.00	

#### Nonattainment Causes

Code	Size	Magnitude	"New" Code	Size	Magnitude
0500	113.0	M	2600	113.0	M
0501	113.0	M	2200	60.0	M
2400	113.0	M			

#### Nonattainment Sources

Code	Size	Magnitude	"New" Code	Size	Magnitude
			8100	113.0	M
			9000	113.0	M

#### Assessment Type

(Assessment Category => Not-assessed)

"New" Assessment Category => M, E, NA

POS, BOS, BZS, C1S, C3S, R20, R35, R45

#### Media/Pollutants Assessed

(Toxics Monitoring => )

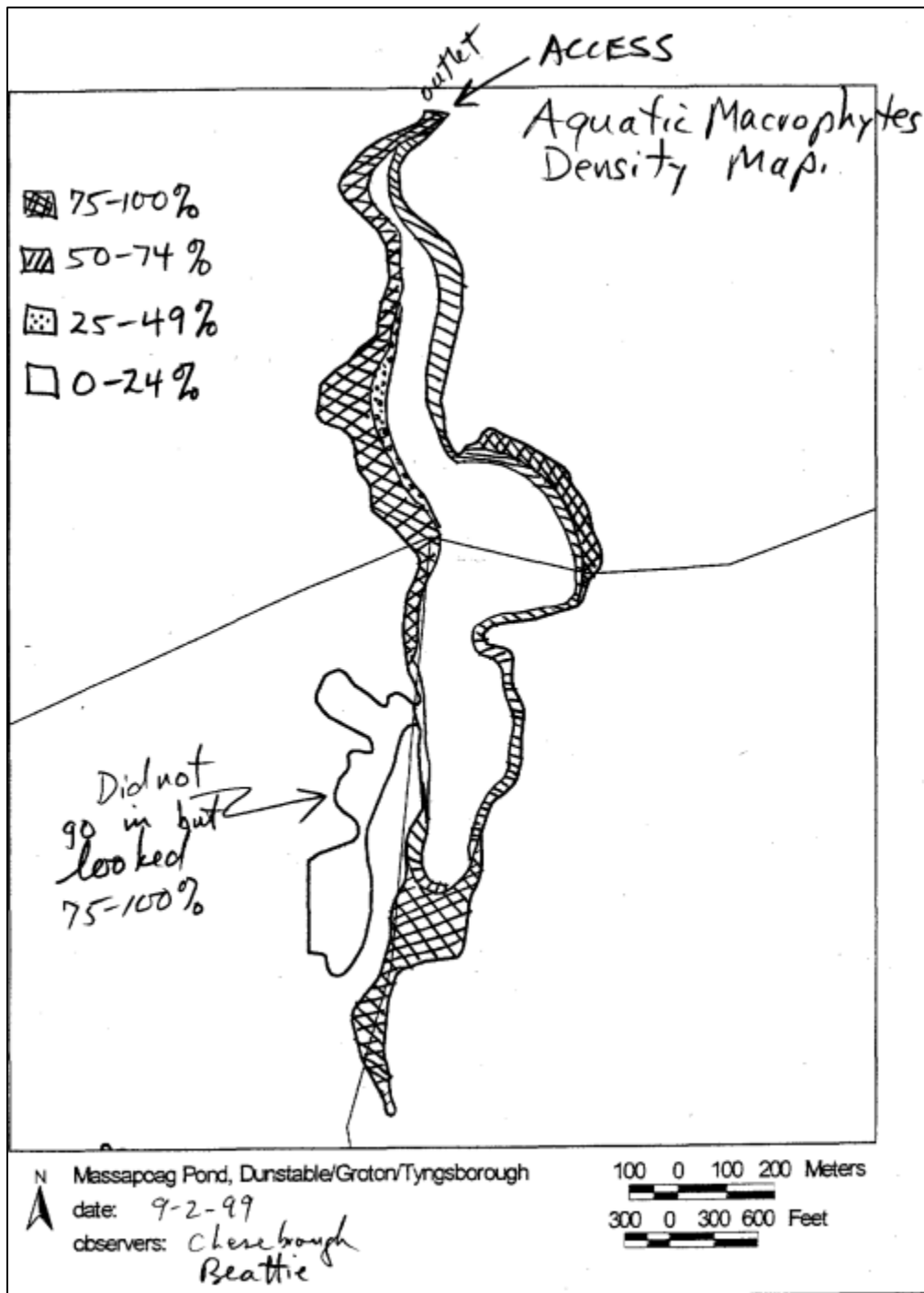
"New" Toxics Monitoring => YES or NO

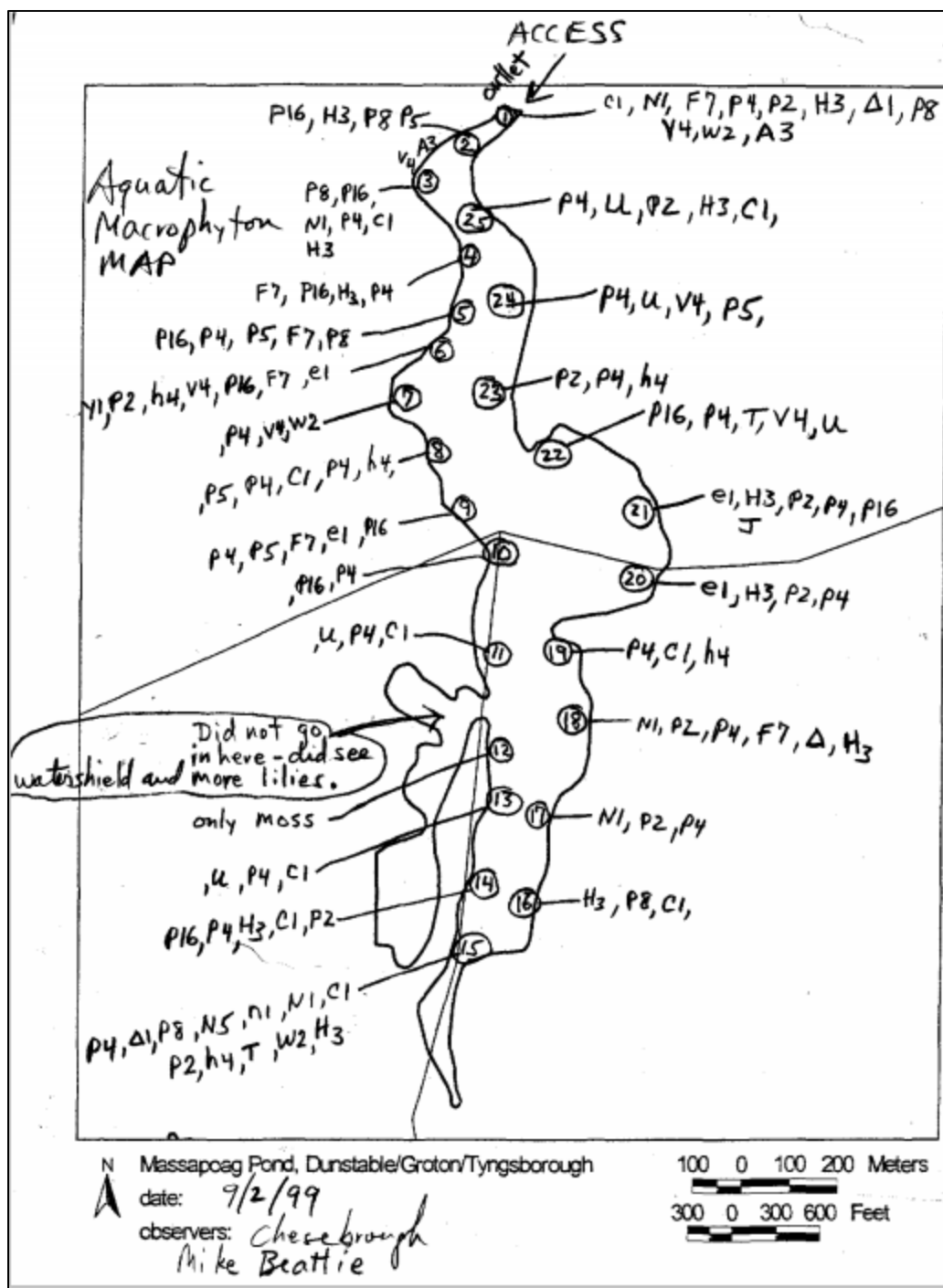
11

#### Comments:

2002; Sampled by Normandeau Associates in 1999 as part of the ORS mercury study. DPH Fish Consumption Advisory due to mercury in fish flesh. Very dense submergent and floating leaf vegetation were noted observed around the entire shoreline and within the western basin (about 60 acres total). Two non-native species, *Myriophyllum heterophyllum* and *Potamogeton crispus*, were also observed. Dissolved oxygen profiles in July, August, and September indicated oxygen depletion below criteria from about 4.5 meters down; present representing about 20 acres of the pond.

1999 Baseline Lakes Survey Field Sheets (MassDEP 1999):





DWM AQUATIC MACROPHYTE  
OBSERVATION TALLY SHEET

LAKE/POND: Massapoag Town Dunstable PALIS Groton  
COLLECTORS: Tyler Harvey DATE: 5/4/99  
TOTAL OBSERVATIONS: 25

SPECIES NAME	OBSERVATION TALLYS	TOTAL
C1 Ceratophyllum demersum	III III	10
N1 Nymphaea sp.	IIII	4
F7 Gratiola sp.	III I	6
P4 Potamogeton robbinsii	III III III III III	23
P2 Potamogeton crispus	III III I	11
H3 Elodea <del>nuttallii</del> sp.	III III II	12
A1 Chara	II	2
P8 Potamogeton natans	III I	6
Y4 Lythrum salicaria	III	5
W2 Pontederia cordata	III	3
A3 Sagittaria sp.	I	1
P16 Potamogeton pectinatus	III III I	11
P5 Potamogeton epiphyteus	III	5
E1 Eriocaulum sp.	III	5
H4 Myriophyllum heterophyllum	III	5
Y1 Cyperus sp.	I	1
U Utricularia sp.	III	5
N1 Brasenia schreberi	II	2
N5 Nuphar sp.	I	1
T Typha latifolia	II	2
MOSS	I	1
Δ filamentous algae	I	1
J Najas sp.	I	1

LAKE/POND: Massapoag SIZE (acres): \_\_\_\_\_ PALIS NO. 84087  
TOWN/CITY: Dunstable/Grafton/Tyngsborough USGS TOPO. SHEET: \_\_\_\_\_  
DATE: 9/2/99 WATERSHED: Merrimack OBSERVERS: Chenbrough/Beattie

**ACCESS** - Location [describe each observation site and assign sequential numbers (1, 2, 3, etc.) to use in subsequent records; be specific in descriptions (e.g., public boat ramp at west cove area off Simpson St., etc.)]  
Site (1) Dirt road to outlet  
Site (2) \_\_\_\_\_  
Site (3) \_\_\_\_\_

**ACCESS** - Type (for multiple observation sites use numbers in boxes that apply)  
Formal Boat Ramp ☐☐☐ and/or Beach ☐☐☐ Informal Boat Ramp ☐☐☐ and/or Beach ☐☐☐  
Park ☐☐☐ Conservation Area ☐☐☐ Right-of-Way: Road ☒☐☐ Other ☐☐☐  
Other (describe): ☐ \_\_\_\_\_  
☐ \_\_\_\_\_  
☐ \_\_\_\_\_

**ACCESS** - Ownership (for multiple observation sites use numbers in boxes that apply)  
Public ☒☐☐ ROW Private ☐☐☐ Uncertain ☐☐☐  
Names of Owners ☐ \_\_\_\_\_ No. & Street Name ☐ \_\_\_\_\_  
☐ \_\_\_\_\_ No. & Street Name ☐ \_\_\_\_\_  
☐ \_\_\_\_\_ No. & Street Name ☐ \_\_\_\_\_

**SIGN POSTINGS** -  
☐☐☐ Warning: Stop Aquatic Plant Spread ☒☐☐ Fishing Advisory or Ban Mercury  
☐☐☐ Public Access without Restrictions ☐☐☐ Public Access with Restrictions  
Describe any restrictions ☐ \_\_\_\_\_  
(or other notes) ☐ \_\_\_\_\_  
☐ \_\_\_\_\_

**WATER/LAKE QUALITY OBSERVATIONS** -  
Turbidity: ☐☐☐ Slight ☒☐☐ Moderate ☐☐☐ Excessive Transparency: did not do ☐☐☐ < 1.2 m. (4 ft.) ☐☐☐ > 1.2 m. (4 ft.)  
Diss. Organics: ☒☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark ☐☐☐ Estimated visually \_\_\_\_\_ meters  
Algal Bloom: ☐☐☐ Slight ☒☐☐ Moderate ☐☐☐ Dense ☐☐☐ Measured w/ Secchi Disk \_\_\_\_\_ meters  
Bottom Type: ☐☐☐ Undecomposed matter ☒☐☐ Muck/silt ☒☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders  
☐☐☐ Vegetation Other ☐ \_\_\_\_\_ ☐ \_\_\_\_\_  
Other Observations: ☐ \_\_\_\_\_  
☐ \_\_\_\_\_  
☐ \_\_\_\_\_

**AESTHETICALLY OBJECTIONABLE** - Substances attributable to wastewater or other discharges (point or nonpoint) that:  
☐☐☐ Settle to form objectionable deposits ☐☐☐ Float as debris, scum or other matter to form a nuisance  
Describe: \_\_\_\_\_ Describe: \_\_\_\_\_  
☐☐☐ Produce objectionable odor, color, taste, or turbidity ☐☐☐ Produce undesirable nuisance species of aquatic life  
Describe: \_\_\_\_\_ Describe: \_\_\_\_\_

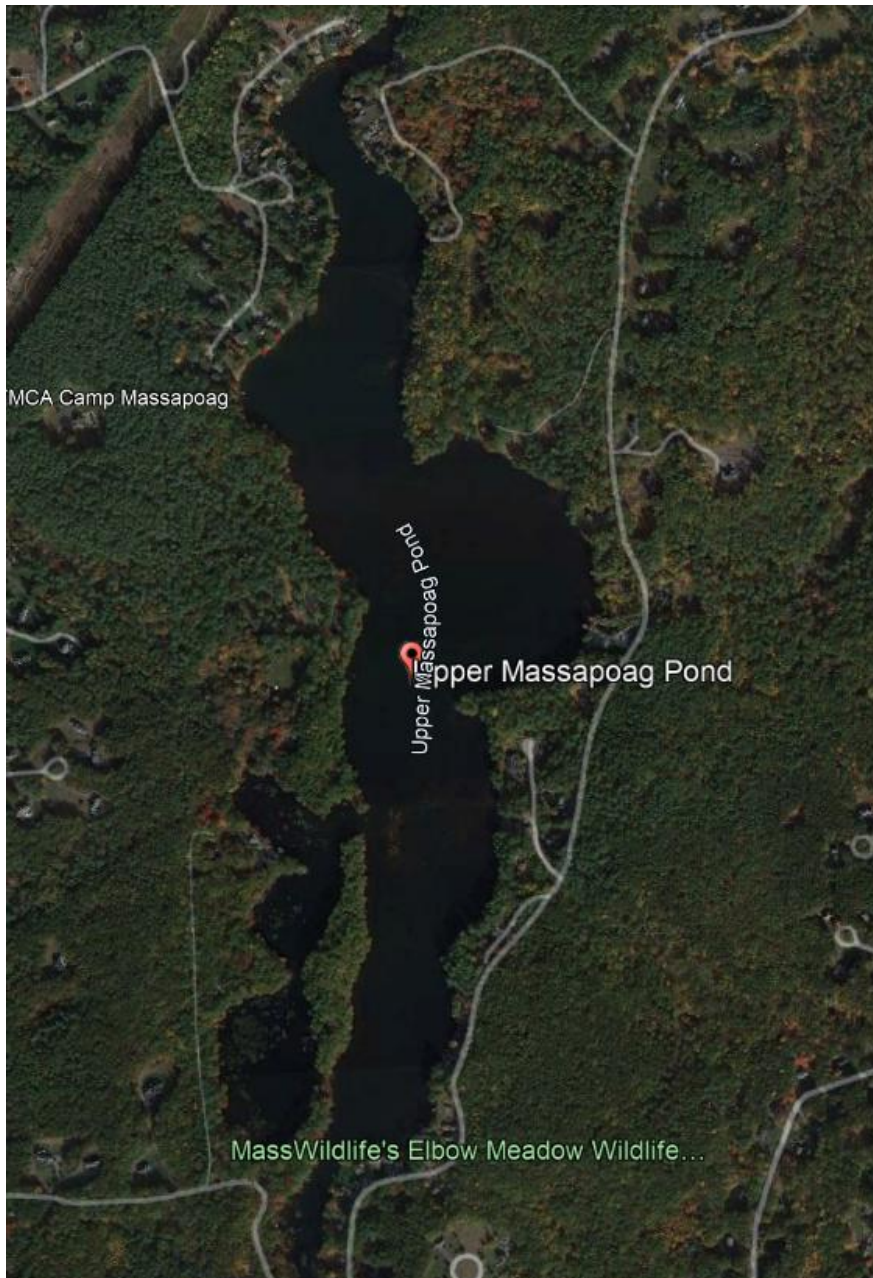




Google Earth image of Massapoag Pond while clear, 4/9/2008 (Google Earth Pro Undated):

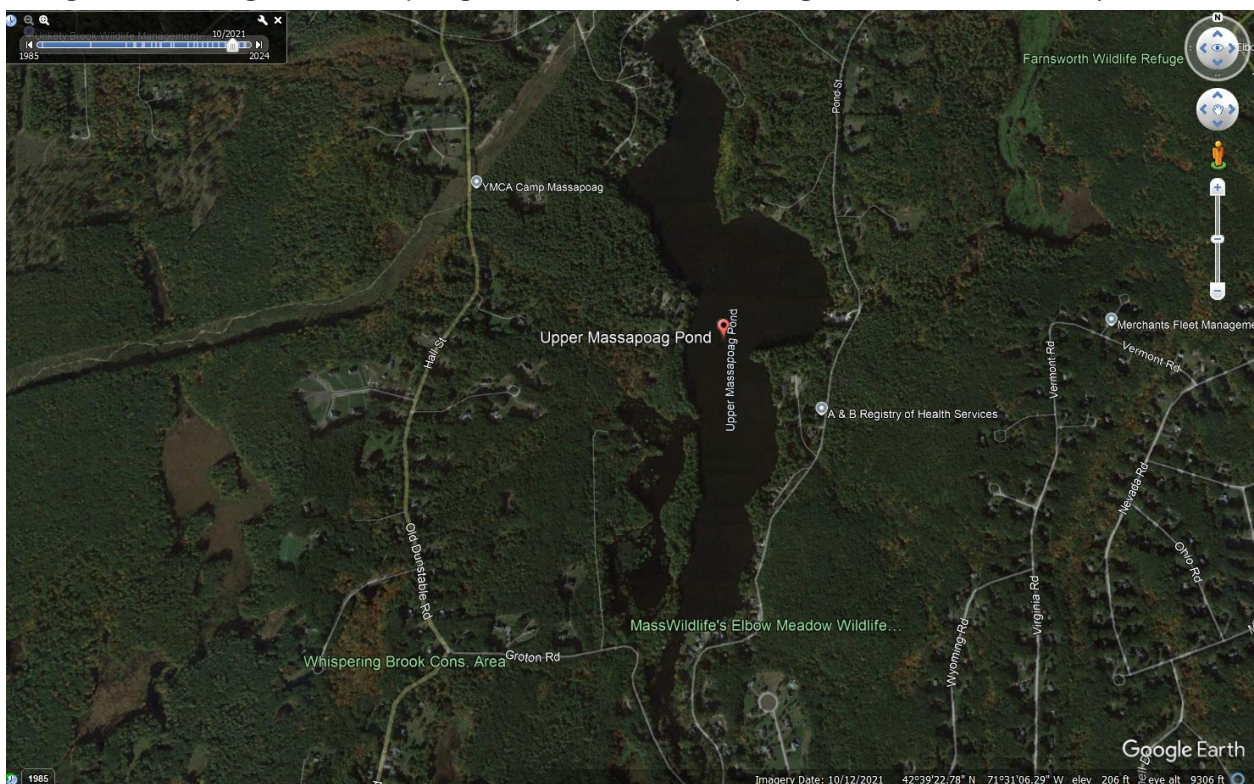


Google Earth image of Massapoag Pond, 10/17/2020 (Google Earth Pro Undated):





Google Earth image of Massapoag Pond, 10/12/2021 (Google Earth Pro Undated):



# Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No
2024/26 Use Attainment Summary	
<p>The Fish Consumption Use for Massapoag Pond (MA84087) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Massapoag Pond (MA84087) at station F0371 in 2021 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Massapoag Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>	

## Fish Consumption Advisories

Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP Undated 6)

<b>Summary Statement</b>
Fish toxics sampling was conducted in Massapoag Pond (MA84087) at station F0371 in 2021 and 2023 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Massapoag Pond in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Massapoag Pond (MA84087).

## Aesthetic

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO

<b>2024/26 Use Attainment Summary</b>
<p>The Aesthetics Use for Massapoag Pond (MA84087) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment.</p> <p>As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Massapoag Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). The original impairment was based on a September 1999 baseline lake survey conducted by MassDEP staff in which it was noted that dense/very dense aquatic macrophytes covered the perimeter of the pond and western arm of the pond (60/113 acres, &gt;50% surface area); among the plants on the species list were the non-rooted, floating species, <i>Ceratophyllum demersum</i> and <i>Utricularia sp.</i> (MassDEP 1999, MassDEP 2002). Although subsequent Google Earth images of Massapoag Pond were often quite clear, images from June 2019 and October 2021 show some vegetation patches in the western basin and some turbidity or scum in the main basin (Google Earth Pro Undated). Since it is not clear whether there were some aquatic plant patches of significant size in satellite images from 2008 and 2019, the Aquatic Plants (Macrophytes) impairment is being delisted as a pollutant and added again as a non-pollutant. Field surveys should be conducted to collect water quality, bathymetric, and aquatic plant density information to reevaluate use attainment in Massapoag Pond. No new data are available to evaluate the Aesthetics Use for this Massapoag Pond AU.</p>

## Primary Contact Recreation

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO

<b>2024/26 Use Attainment Summary</b>
---------------------------------------

No bacteria or other indicator data for Massapoag Pond (MA84087) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (based on what was done for the Aesthetics Use).

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

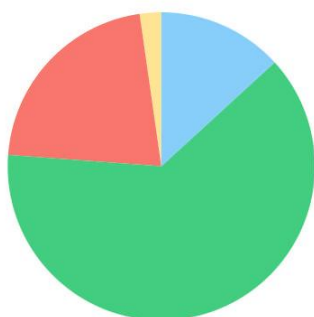
No bacteria or other indicator data for Massapoag Pond (MA84087) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (based on what was done for the Aesthetics Use).

# Merrimack River (MA84A-01)

<b>Location:</b>	State line at Hudson, NH/Tyngsborough, MA to Pawtucket Dam (NATID: MA00837), Lowell.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	9 MILES
<b>Classification/Qualifier:</b>	B: TWS, WWF, CSO

## Merrimack River (MA84A-01)

Watershed Area: 360.09 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	105.89	10.58	33.08	3.62
Agriculture	2.3%	0.3%	1.8%	0.5%
Developed	21.6%	41.1%	16.2%	29.7%
Natural	63%	47%	59.6%	52.9%
Wetland	13.2%	11.6%	22.4%	16.9%
Impervious	9.9%	21.9%	7.8%	16%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Fecal Coliform	R1_MA_2024_04	Changed
5	5	Harmful Algal Blooms	--	Added
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Fecal Coliform	Combined Sewer Overflows (Y)	--	--	--	X	--
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No
<b>2024/26 Use Attainment Summary</b>	

The Fish Consumption Use for this Merrimack River AU (MA84A-01) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in a downstream Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in the same downstream Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Merrimack River (referred to by MDPH as "Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

### ***Fish Tissue Data***

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023)  
(MassDEP Undated 6)

<b>Summary</b>
Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in a downstream Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in the same downstream Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for this Merrimack River AU (MA84A-01).

### **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO
<b>2024/26 Use Attainment Summary</b>	

The Aesthetics Use for this Merrimack River AU (MA84A-01) is assessed as Not Supporting with a Harmful Algal Blooms impairment being added, based on a C-HAB posting reported to MDPH in 2020. During the period 2015 through 2022, C-HAB postings for this Merrimack River AU were reported to MDPH by DCR for 64 days in 2020 and no blooms were reported in other years. Since extended blooms (>20 days in duration) were reported in a recent year, the Aesthetics Use is assessed as Not Supporting.

### Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for this Merrimack River AU (MA84A-01) were reported to MDPH by DCR for 64 days in 2020. No blooms were reported in other years. Since extended blooms (>20 days in duration) were reported in a recent year, the Aesthetics Use and Primary/Secondary Contact Recreational Uses are assessed as Not Supporting.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Merrimack River	Tyngsborough						64		

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for this Merrimack River AU (MA84A-01) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> (<i>E. coli</i>) impairment is being carried forward based on a presumptive impairment due to the presence of CSOs. The prior Fecal Coliform impairment is being carried forward and a Harmful Algal Blooms impairment is being added due to the occurrence of C-HAB postings extending &gt;20 days in a recent year.</p> <p>During the period 2015 through 2022, C-HAB postings for this Merrimack River AU (MA84A-01) were reported to MDPH by DCR for 64 days in 2020. No blooms were reported in other years. Since extended blooms (&gt;20 days in duration) were reported in a recent year, the C-HAB data are indicative of a Harmful Algal Blooms impairment.</p>

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-01) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> (<i>E. coli</i>) impairment is being carried forward based on a presumptive impairment due to the presence of CSOs. A Harmful Algal Blooms impairment is being added due to the occurrence of C-HAB postings extending &gt;20 days in a recent year.</p> <p>During the period 2015 through 2022, C-HAB postings for this Merrimack River AU (MA84A-01) were reported to MDPH by DCR for 64 days in 2020. No blooms were reported in other years. Since extended blooms (&gt;20 days in duration) were reported in a recent year, the C-HAB data are indicative of a Harmful Algal Blooms impairment.</p>

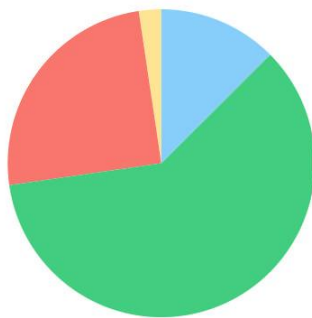


## Merrimack River (MA84A-02)

<b>Location:</b>	Pawtucket Dam (NATID: MA00837), Lowell to Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3.2 MILES
<b>Classification/Qualifier:</b>	B: TWS, WWF, CSO

### Merrimack River (MA84A-02)

Watershed Area: 458.96 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	120.03	9.09	36.74	2.60
Agriculture	2.4%	2%	1.8%	0.6%
Developed	24.9%	58.4%	18.5%	46.2%
Natural	60.2%	33.4%	58.3%	41.5%
Wetland	12.5%	6.2%	21.5%	11.7%
Impervious	12.3%	39.1%	9.5%	32.8%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Dewatering*)	--	Unchanged
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Dewatering*)	Impacts from Hydrostructure Flow Regulation/Modification (Y)	X	--	--	--	--
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Unspecified Urban Stormwater (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
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Not Supporting	No
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#### 2024/26 Use Attainment Summary

The Fish Consumption Use for this Merrimack River AU (MA84A-02) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in the next downstream Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in the same downstream Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Merrimack River (referred to by MDPH as "Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing mercury advisory in the January 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.

#### Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

Summary
Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in the next downstream Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in the same downstream Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with the Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for this Merrimack River AU (MA84A-02).

#### Aesthetic

2024/26 Use Attainment	Alert
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Not Assessed	NO
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#### 2024/26 Use Attainment Summary

There are no data available to assess the status of the Aesthetics Use for this Merrimack River AU (MA84A-02), so it is Not Assessed. The Alert previously identified for CSO discharges to this Merrimack River AU is being removed from the Aesthetics Use (due to redundant duplication across multiple Uses). The CSO related impairment for this Merrimack River AU will be maintained under the Primary Contact Recreation use as an *E. coli* impairment.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

#### 2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Merrimack River AU (MA84A-02) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on a presumptive impairment due to the presence of CSOs. Although bacteria data from USGS-01100000 meet 2024 CALM guidance one of the metrics of the data is reflective of the existing *Escherichia coli* (*E. coli*) impairment- see discussion below. Surface water sampling was conducted by the USGS upstream of the Lowell WWTF discharge on the Merrimack River (MA84A-02) at station USGS\_01100000 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study). USGS staff collected *E. coli* bacteria samples toward the downstream end of this Merrimack River AU (MA84A-02) at USGS-01100000 [Merrimack River Bl Concord River at Lowell, MA] from 2021-2022 (n=4-7/yr). Analysis of the multi-year moderate/limited frequency *E. coli* dataset from USGS-01100000 indicated 1 out of 2 sufficient data years had intervals where >20% of the GMs were >126 CFU/100ml (2021, 50%), 0 years had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 40% of intervals had GMs >126 CFU/100ml. The elevated cumulative GM exceedances for *E. coli* data from USGS-01100000 are reflective of the prior impairment and the prior *E. coli* impairment is being carried forward.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01100000	USGS Massachusetts Water Science Center	Water Quality	Merrimack River	MERRIMACK RIVER BL CONCORD RIVER AT LOWELL, MA; upstream of Lowell WWTF	42.645925	-71.298394

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)

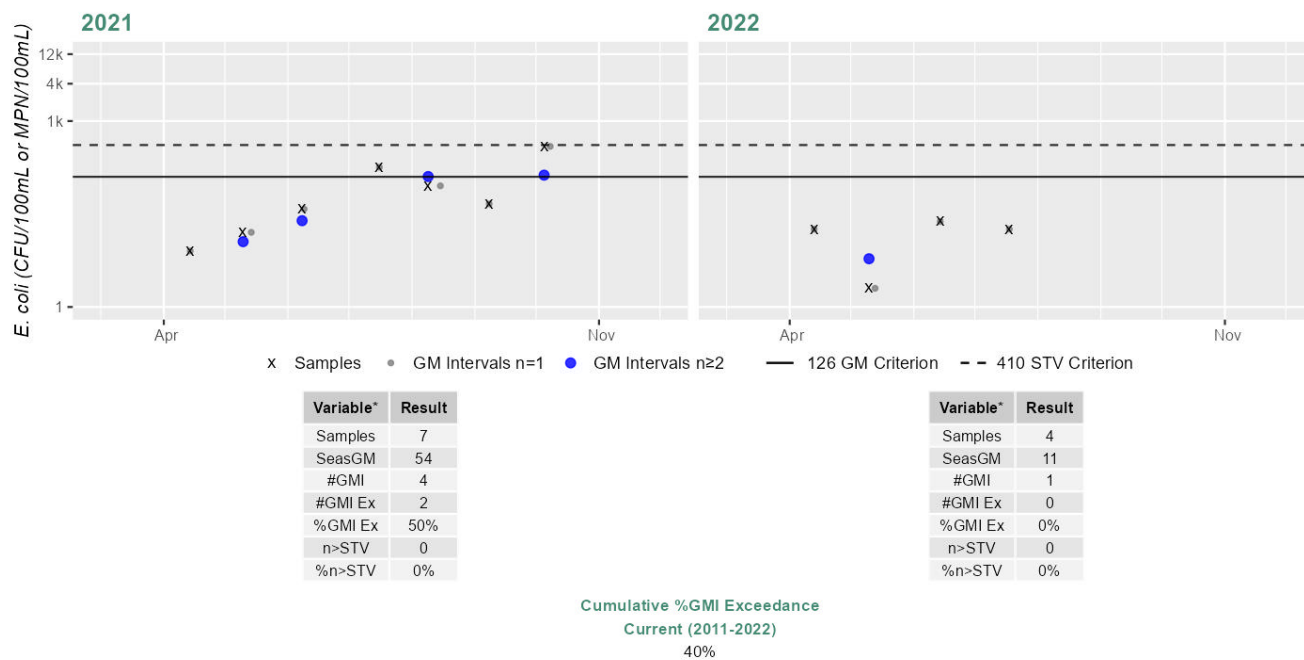
(USGS 2024) (MassDEP Undated 2)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01100000	USGS Massachusetts Water Science Center	E. coli	04/14/21	10/05/21	7	8	390	54
USGS-01100000	USGS Massachusetts Water Science Center	E. coli	04/13/22	07/18/22	4	2	24	11

#### Station USGS-01100000 - *Escherichia coli*

Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Other Indicators

### Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

### Summary

Surface water sampling was conducted by the USGS upstream of the Lowell WWTF discharge on the Merrimack River (MA84A-02) at station USGS\_01100000 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

### USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The ΣPFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). \* indicates the ΣPFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the ΣPFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	ΣPFAS6 ng/L
USGS-01100000	8/31/2020	6.85	4.31	E0.878	E1.55	2.7	2.5	16.6*
USGS-01100000	9/28/2020	7.92	E4.37	E0.746	2.45	4.22	3.64	19.5*
USGS-01100000	10/26/2020	2.87	E1.62	E0.379	E0.484	1.95	E1.26	8.7*

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

#### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-02) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on the presence of CSOs. USGS staff collected *E. coli* bacteria samples toward the downstream end of this Merrimack River AU (MA84A-02) at USGS-01100000 [Merrimack River Bl Concord River at Lowell, Ma] from 2021-2022 (n=6-9/yr). Analysis of the multi-year moderate/limited frequency *E. coli* dataset from USGS-01100000 indicated 0 out of 2 sufficient data years had intervals where >20% of the GMs were >244 CFU/100ml, 0 years had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. *E. coli* data from USGS-01100000 meet 2024 CALM guidance; however, there is a presumptive *Escherichia coli* (*E. coli*) impairment decision in place due to the presence of active CSO outfalls.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01100000	USGS Massachusetts Water Science Center	Water Quality	Merrimack River	MERRIMACK RIVER BL CONCORD RIVER AT LOWELL, MA; upstream of Lowell WWTF	42.645925	-71.298394

# Bacteria Data

## Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

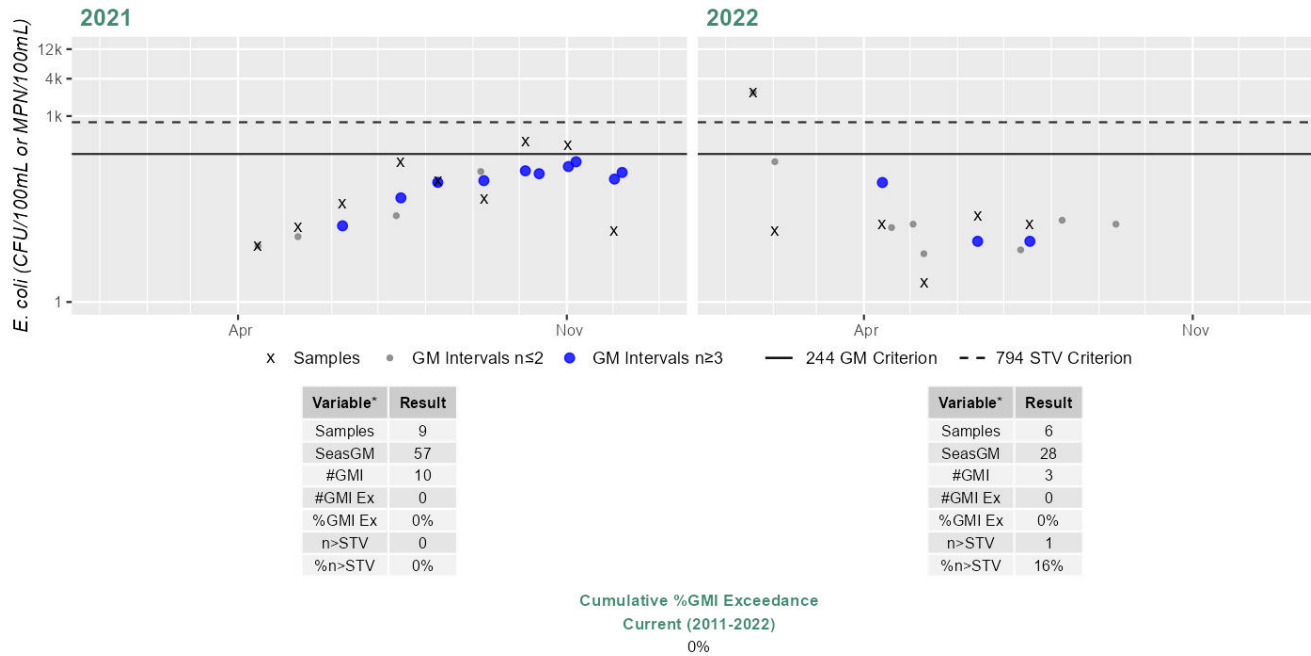
(USGS 2024) (MassDEP Undated 1)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01100000	USGS Massachusetts Water Science Center	E. coli	04/14/21	12/02/21	9	8	390	57
USGS-01100000	USGS Massachusetts Water Science Center	E. coli	01/19/22	07/18/22	6	2	2400	28

## Station USGS-01100000 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



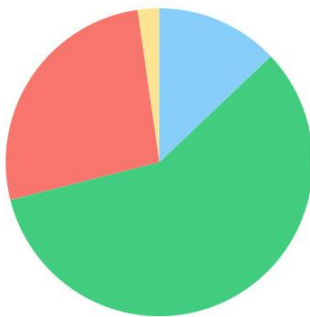
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

# Merrimack River (MA84A-03)

<b>Location:</b>	Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell to Essex Dam (NATID: MA00234), Lawrence.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	8.8 MILES
<b>Classification/Qualifier:</b>	B: TWS, WWF, CSO

## Merrimack River (MA84A-03)

Watershed Area: 494.30 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	154.15	8.73	50.39	3.19
Agriculture	2.3%	0.3%	1.9%	0.6%
Developed	26.7%	44.3%	19%	22.7%
Natural	58.1%	46.2%	57.4%	58.3%
Wetland	12.9%	9.2%	21.7%	18.4%
Impervious	13.4%	29.1%	9.6%	14.2%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--



<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	X	--	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Phosphorus, Total	Upstream/Downstream Source (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
<p>The Fish Consumption Use for this Merrimack River AU (MA84A-03) continues to be assessed as Not Supporting. The prior Mercury in Fish Tissue impairment is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in this Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in this Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MDPH issued a site-specific advisory for PFAS in the Merrimack River (referred to by MDPH as "Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing Mercury advisory in the 2025 list. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations. No source of PFAS has been identified at this time.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
F0481	MassDEP	Fish Toxics	Merrimack River	[west/upstream of Interstate 93, Methuen/Andover]	42.701441	-71.212843

## Fish Tissue Data

**Summary of Fish Tissue Data and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 6)

### Summary

Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in this Merrimack River AU (MA84A-03) at station F0083 in 2019 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. Additionally, fish toxics sampling was conducted in this Merrimack River AU (MA84A-03) at station F0481 (PFAS Study ID 30) [west/upstream of Interstate 93, Methuen/Andover] on 08/04/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MDPH issued site-specific fish consumption advisories for the Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MDPH retained the existing site-specific fish consumption advisories for Mercury associated with the Merrimack River (referred to by MDPH as Merrimack River (from the MA/NH state line to Broadway Dam in Lawrence)) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of Fish Consumption Use impairments for PFAS in Fish Tissue and Mercury in Fish Tissue for this Merrimack River AU (MA84A-03).

### MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 6) (MA DPH 2023)

[ng/g = ppb. All PFBA, PFBS, and HFPO-DA (Genx) concentrations <MDL. ND indicates that the PFAS analyte was not detected in any of the composite samples (i.e., it was <MDL). Means weighted by the number of fish in the contributing composites were calculated for any PFAS analyte – waterbody – species combination where an analyte was detected in at least one sample; if a sample did not have the analyte detected, the concentration for that sample was set to ½\*MDL for the purposes of calculating a mean. Data are highlighted red per the fish consumption advisory thresholds summarized in Table 4.2 of MDPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BB = brown bullhead, LMB = largemouth bass]

Station Code	PFAS Study ID	Sample Date	Species	Mean PFHxS ng/g	Mean PFNA ng/g	Mean PFOA ng/g	Mean PFOS ng/g	Analytes with ≥ 1 Sample Qualified
F0481	30	08/04/2022	BB	ND	ND	ND	1.42	
F0481	30	08/04/2022	LMB	ND	ND	ND	22.00	

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

### 2024/26 Use Attainment Summary

No data are available, so the Aesthetics Use for this Merrimack River AU (MA84A-03) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Merrimack River AU (MA84A-03) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward. Surface water sampling was conducted in the downstream third of this Merrimack River AU (MA84A-03) at station W3292 (PFAS Study ID 30) on 08/04/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W3292	MassDEP	Water Quality	Merrimack River	[the default location representing co-located water/fish PFAS sampling, west/upstream of Interstate 93, Methuen/Andover]	42.701441	-71.212843
USGS-01100475	USGS Massachusetts Water Science Center	Water Quality	Merrimack River	MERRIMACK R AT ABE BASHARA BOAT HOUSE LAWRENCE, MA; downstream of Lowell WWTF	42.693000	-71.177000

## Other Indicators

### Summary Statement(s) for MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in Merrimack River (MA84A-03) at station W3292 (PFAS Study ID 30) on 08/04/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS, HFPO-DA/GenX) were all less than the 90 ng/L (ppt) recreational screening value.

### MassDEP 2022 PFAS in Water Column Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 4)

[HFPO-DA is also known as GenX; the  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); \* indicates the  $\Sigma$ PFAS6 concentration was qualified since data for one or more individual PFAS6 analytes were qualified; b = blank contamination qualifier, d = qualifier indicating precision of field duplicates did not meet project data quality objectives; j = 'estimated' value qualifier; ## = censored data.]

Station Code	PFAS Study ID	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	HFPO-DA ng/L	$\Sigma$ PFAS6 ng/L
W3292	30	08/04/2022	6.9	4.5	0.95j	1.5j	3.4j	3.1	<2.2	17.0*

### Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

### Summary

Surface water sampling was conducted by the USGS downstream of the Lowell WWTF discharge on the Merrimack River (MA84A-03) at station USGS\_01100475 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

### USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). \* indicates the  $\Sigma$ PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the  $\Sigma$ PFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	$\Sigma$ PFAS6 ng/L
USGS-01100475	8/31/2020	24.2	4.67	E0.842	E1.73	2.65	2.48	34.6*
USGS-01100475	9/28/2020	8.91	E5.35	E1.06	2.52	4.93	3.73	22.3*
USGS-01100475	10/26/2020	3.01	E1.66	E0.467	E0.59	2.02	E1.28	9.1*

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

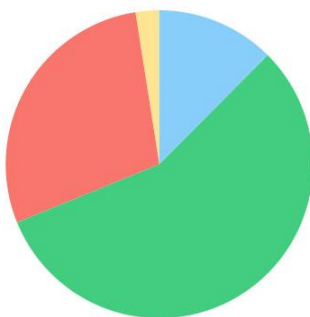
The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-03) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward.

# Merrimack River (MA84A-04)

<b>Location:</b>	Essex Dam (NATID: MA00234), Lawrence to confluence with Little River, Haverhill.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	10 MILES
<b>Classification/Qualifier:</b>	B: WWF, CSO

## Merrimack River (MA84A-04)

Watershed Area: 604.76 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	197.90	9.94	66.33	3.31
Agriculture	2.5%	5.7%	2.1%	4.8%
Developed	28.7%	34.9%	19.8%	21.2%
Natural	56.4%	52.5%	57.1%	60.5%
Wetland	12.5%	7%	21%	13.5%
Impervious	15%	20.1%	10.5%	12%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	Phosphorus, Total	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
PCBs in Fish Tissue	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Phosphorus, Total	Upstream/Downstream Source (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Merrimack River AU (MA84A-04) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

#### 2024/26 Use Attainment Summary

No data are available, so the Aesthetics Use for this Merrimack River AU (MA84A-04) is Not Assessed.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

#### 2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Merrimack River AU (MA84A-04) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on a presumptive impairment due to the presence of CSOs. Surface water sampling was conducted by the USGS upstream of the Lawrence WWTF discharge on the Merrimack River (MA84A-04) at station USGS\_01100500 and downstream of the Lawrence WWTF discharge on the Merrimack River (MA84A-04) at station USGS\_011006712 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01100500	USGS Massachusetts Water Science Center	Water Quality	Merrimack River	MERRIMACK RIVER AT LAWRENCE, MA; upstream of Lawrence WWTF	42.705000	-71.153000
USGS-011006712	USGS Massachusetts Water Science Center	Water Quality	Merrimack River	MERRIMACK RIVER NEAR HAVERHILL, MA; downstream of Lawrence WWTF	42.770000	-71.087000

### Other Indicators

#### Summary Statement(s) for USGS 2020 PFAS in Water Column Data (Savoie and Argue 2023) (MassDEP Undated 2)

Summary
Surface water sampling was conducted by the USGS upstream of the Lawrence WWTF discharge on the Merrimack River (MA84A-04) at station USGS_01100500 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).



### Summary

Surface water sampling was conducted by the USGS downstream of the Lawrence WWTF discharge on the Merrimack River (MA84A-04) at station USGS\_011006712 on three dates during August to October 2020 as part of a MassDEP funded project to evaluate 24 PFAS analytes in ambient water samples upstream and downstream of wastewater treatment facilities. The concentrations of six of the seven analytes with individual toxicity criteria (PFOA, PFOS, PFNA, PFHxS, PFBA, PFBS) were all less than the 90 ng/L (ppt) recreational screening value (HFPO-DA/GenX was not analyzed in this study).

### USGS 2020 PFAS in Water Column Data Collected Upstream and Downstream of Wastewater Treatment Facilities (Savoie and Argue 2023) (MassDEP Undated 2)

[The  $\Sigma$ PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). \* indicates the  $\Sigma$ PFAS6 concentration is qualified since data for one or more individual PFAS6 analytes were qualified. A concentration with a "<" was less than the reporting detection limit (RDL) and the RDL was used to calculate the  $\Sigma$ PFAS6. E = qualifier "value is estimated"; V = qualifier "value affected by field or laboratory contamination"]

Station Code	Sample Date	PFOA ng/L	PFOS ng/L	PFNA ng/L	PFHxS ng/L	PFBA ng/L	PFBS ng/L	$\Sigma$ PFAS6 ng/L
USGS-01100500	8/28/2020	E7.7	<50	<50	<50	<50	<50	257.7*
USGS-01100500	9/24/2020	7.46	E5.07	E0.917	E1.81	3.25	3.27	19.0*
USGS-01100500	10/27/2020	3.31	E1.84	E0.498	E0.672	2.05	E1.38	9.7*
USGS-011006712	8/28/2020	6.42	5.1	E0.885	E1.9	3.91	E2.52	21.3*
USGS-011006712	9/24/2020	7.74	E5.97	E1.03	E2.1	3.44	3.43	20.8*
USGS-011006712	10/27/2020	3.58	E2.18	E0.498	E0.83	2.32	E1.56	10.5*

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-04) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward based on a presumptive impairment due to the presence of CSOs.	

## Merrimack River (MA84A-05)

<b>Location:</b>	Confluence Little River, Haverhill to confluence Indian River, West Newbury/Amesbury.
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	1.83 SQUARE MILES
<b>Classification/Qualifier:</b>	SB: SFR, CSO

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	R1_MA_2024_04	Changed
5	5	PCBs in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	SH	AES	PCR	SCR
Enterococcus	Combined Sewer Overflows (Y)	--	--	--	--	X	X
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	--	X	X
Enterococcus	Source Unknown (N)	--	--	--	--	X	X
PCBs in Fish Tissue	Source Unknown (N)	X	--	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Merrimack River AU (MA84A-05) is Not Assessed.

### Shellfish Harvesting

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
Merrimack River (MA84A-05): There are no shellfish growing area classifications within this AU, therefore the Shellfish Harvesting Use is not assessed for 2024.

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for this Merrimack River AU (MA84A-05) is Not Assessed.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for this Merrimack River AU (MA84A-05) continues to be assessed as Not Supporting. The prior <i>Enterococcus</i> impairment is being carried forward based on a presumptive impairment due to the presence of CSOs.

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
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Not Supporting	NO
<b>2024/26 Use Attainment Summary</b>	
<p>The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-05) continues to be assessed as Not Supporting. The prior <i>Enterococcus</i> impairment is being carried forward based on a presumptive impairment due to the presence of CSOs.</p>	

## Merrimack River (MA84A-06)

<b>Location:</b>	Confluence Indian River, West Newbury/Amesbury to mouth at Atlantic Ocean, Newburyport/Salisbury (includes Back River, Salisbury).
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	4.46 SQUARE MILES
<b>Classification/Qualifier:</b>	SB: SFR, CSO

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Enterococcus	R1_MA_2024_04	Changed
5	5	Fecal Coliform	R1_MA_2024_04	Changed
5	5	PCBs in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>SH</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	--	X	--
Enterococcus	Source Unknown (N)	--	--	--	--	X	--
Enterococcus	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	--	--	X	--
Fecal Coliform	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	--	--	--
Fecal Coliform	Source Unknown (N)	--	--	X	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	SH	AES	PCR	SCR
Fecal Coliform	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	X	--	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Enterococcus	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Merrimack River AU (MA84A-06) is Not Assessed.

### Shellfish Harvesting

2024/26 Use Attainment	Alert
Not Supporting	NO

**2024/26 Use Attainment Summary**

Merrimack River (MA84A-06): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 3.5173 sq mi (79%). The sum of the approved, conditionally approved, and restricted shellfish growing areas represents 0 sq mi (0%). The conditionally restricted shellfish growing area represents 1.6729 sq mi (37%). The Shellfish Harvesting Use is assessed as not supporting because the growing areas (normalized to the AU area) are < 100% approved, conditionally approved, and/or restricted. Based on the new growing area classifications and the prior classifications, the existing Fecal Coliform impairment is being retained.

**Shellfish Growing Area Classifications**

**MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N2.0	Merrimack River - the main stem	Prohibited	1.84440	41.3%
N2.1	Merrimack River Estuary & Northern Plum Island River	Conditionally Restricted	1.67197	37.5%
N2.2	Middle and Morrill Creeks	Conditionally Restricted	0.00091	0.0%

**Aesthetic**

2024/26 Use Attainment	Alert
Not Assessed	NO

**2024/26 Use Attainment Summary**

No data are available, so the Aesthetics Use for this Merrimack River AU (MA84A-06) is Not Assessed.

**Primary Contact Recreation**

2024/26 Use Attainment	Alert
Not Supporting	NO

**2024/26 Use Attainment Summary**

The Primary Contact Recreation Use for this Merrimack River AU (MA84A-06) continues to be assessed as Not Supporting. The prior *Enterococcus* impairment is being carried forward. The Merrimack River (MA84A-06) has 2 beaches with DPH Beach Closure data: Plum Island - end of island 2 [Beach ID: 5636] and Plum Island Point [Beach ID: 3030] beaches in Newburyport. All beaches were rarely, if at all, posted for swimming from 2018-2022. Although beach posting data were indicative of good conditions, the existing *Enterococcus* impairment was made based on historical data collected throughout the AU (CDM 2006), so the beach posting data are not sufficient to remove the *Enterococcus* impairment. The shellfish growing areas (3.5173 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess the Primary Contact Recreation Use of this Merrimack River AU (MA84A-06).

### Beach Postings

**MDPH Beach Posting Data Summary (% Bathing Season Posted 2014-2022)** (Bailey, Logan Feb. 2, 2021) (Bailey Sept. 10, 2023) (MassDEP Undated 2)

Beach ID	Beach Name/ Town	Left Border (Lat., Long.)	Right Border (Lat., Long.)	2014	2015	2016	2017	2018	2019	2020	2021	2022	# years >10%
3030	Plum Island Point/ Newburyport	42.81787, - 70.81740	42.81685, - 70.81980	0%	0%	0%	0%	0%	0%	0%	8%	0%	0
5636	Plum Island - end of island 2/ Newburyport	42.81477, - 70.80990	42.81787, - 70.81740	0%	0%	0%	0%	0%	0%	0%	0%	0%	0

### Shellfish Growing Area Classifications

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Summary
Merrimack River (MA84A-06): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 3.5173 sq mi (79%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO
2024/26 Use Attainment Summary	



The Secondary Contact Recreation Use for this Merrimack River AU (MA84A-06) is assessed as Fully Supporting. This Merrimack River AU (MA84A-06) has 2 beaches with DPH Beach Closure data: Plum Island - end of island 2 [Beach ID: 5636] and Plum Island Point [Beach ID: 3030] beach in Newburyport. All beaches were rarely, if at all, posted for swimming from 2018-2022 so they are meeting 2024 CALM thresholds. The shellfish growing areas (3.5173 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess the Secondary Contact Recreation Use of this Merrimack River AU (MA84A-06).

### ***Shellfish Growing Area Classifications***

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

<b>Summary</b>
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Merrimack River (MA84A-06): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 3.5173 sq mi (79%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.
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## Merrimack River (MA84A-26)

<b>Location:</b>	The Basin in the Merrimack River Estuary, Newbury/Newburyport.
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	0.17 SQUARE MILES
<b>Classification/Qualifier:</b>	SA: SFO

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	4a	Fecal Coliform	R1_MA_2024_04	Changed

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>SH</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Fecal Coliform	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (Y)	--	--	X	--	--	--
Fecal Coliform	Source Unknown (N)	--	--	X	--	--	--

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Merrimack River AU (MA84A-26) is Not Assessed.	

## Shellfish Harvesting

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
Merrimack River (MA84A-26): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1642 sq mi (96%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing Fecal Coliform impairment is being retained.	

## Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (MassGIS 2024) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N2.1	Merrimack River Estuary & Northern Plum Island River	Conditionally Restricted	0.02131	12.4%
N2.6	Basin Mooring Area	Conditionally Restricted	0.14293	83.1%

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for this Merrimack River AU (MA84A-26) is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO
2024/26 Use Attainment Summary	

No bacteria data are available to assess the Primary Contact Recreation Use for this Merrimack River AU (MA84A-26) so it is assessed as having Insufficient Information. The shellfish growing areas (0.1642 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess the Primary Contact Recreation Use of this Merrimack River AU (MA84A-26).

### ***Shellfish Growing Area Classifications***

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Summary
Merrimack River (MA84A-26): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1642 sq mi (96%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.

### **Secondary Contact Recreation**

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for this Merrimack River AU (MA84A-26) so it is assessed as having Insufficient Information. The shellfish growing areas (0.1642 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess the Secondary Contact Recreation Use of this Merrimack River AU (MA84A-26).

### ***Shellfish Growing Area Classifications***

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Summary
Merrimack River (MA84A-26): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1642 sq mi (96%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.

## Mill Pond (MA84038)

<b>Location:</b>	[North Basin] Littleton.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	30 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	Nutrient/Eutrophication Biological Indicators	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being

2022 Removed Impairment	Removal Reason	Removal Comment
		<p>reevaluated. The North Basin of Mill Pond (MA84038, Littleton) was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). Although the data leading to the original impairment could not be located, a 1999 diagnostic and feasibility study (ESS 1999) was reviewed as follows. ESS conducted an aquatic macrophyte survey of both Mill Pond AUs from August 14-18, 1998. The north basin AU MA84038 had plant coverage of 76-100% density in 24% of Basin 0 (the name ESS gave the northeastern basin of AU MA84038) and 95% of Basin 1 (the name ESS gave the main basin). The north basin AU contained multiple non-rooted, floating plants, including <i>Ceratophyllum demersum</i>, <i>Lemna minor</i>, <i>Wolffia</i> sp., and multiple species of <i>Utricularia</i> spp. The maximum measured depth in Basin 0 was 6.5 ft (2.0 m), and in Basin 1 it was 7.2 ft (2.2 m). More recently, Google Earth images from August 2013, September 2014 and June 2019 show high amounts of plant coverage over more than half of the pond (Google Earth Pro Undated).</p> <p>Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of multiple non-rooted, floating, aquatic macrophyte species in Mill Pond (North Basin) (MA84038). Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Mill Pond (North Basin) will remain an impaired lake segment for the 2022 cycle. However, since it is very shallow (roughly 7.2 ft or 2.2 m) (ESS 1999), it is unclear whether it should be represented as a lake segment (From 314 CMR 4.0 Definition for Lakes and Ponds – lakes are waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will</p>

2022 Removed Impairment	Removal Reason	Removal Comment
		require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody should be reevaluated as to whether it is a lake or a wetland since it is so shallow, a large percentage of it is often filled in with macrophytes during the growing season, and a portion of the pond maps as deep marsh wetland habitat (MassGIS 2019).

### Aquatic Plants (Macrophytes)

1994/1996 WBS Coding Sheet (MassDEP 2002):

WBID: **MA84038**  
NAME: **Mill Pond**  
CODE: **84038**

WATERSHED: **Merrimack(84)**  
TYPE: **Lake/Pond**  
SIZE: **22.00(acres)**

(Printed 09/11/96)

CLASS: **B**  
ORW?: Yes or No  
Water Supply?: Yes or No

LATITUDE: **42.51111**  
LONGITUDE: **71.54111** (423040/713228)  
Lake/Pond Name: **Mill Pond [ North Basin ], Littleton**  
Ecoregion Name: **()**  
Description:

Assessment Date: **9312 9609** Begin Sampling: **8706** Water Quality Limited?: **YES** or NO  
Cycle: **94 96** End Sampling: **8709** 303(d) List?: **YES** or NO

**Lake Specific Information**

Significantly Publicly Owned: **Y**  
Trophic Status: **H**  
Trophic Trend:  
Acidity/Toxics Trend:  
Acidity Effects:

**1996**

Significantly Publicly Owned: **Y** or **N**  
Trophic Status: **O M E H D U**  
Trophic Trend: **I S D U**  
Acidity/Toxics Trend: **I S D U**  
Acidity Effects: **I V N U**

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT			22.00		22.0	
ALUS					22.00	
FISH CONSUMPTION					22.00	
PRIMARY CONTACT			22.00		22.0	
SECONDARY CONTACT			22.00		22.0	
Aesthetics					22.00	

**Nonattainment Causes**

Code	Size	Magnitude	1996 Code	Size	Magnitude
2200- Noxious aquatic plants	22.00	H			

**Nonattainment Sources**

Code	Size	Magnitude	1996 Code	Size	Magnitude
9000- SOURCE UNKNOWN	22.00	H			

**Assessment Type**

(Assessment Category => Evaluated )

**1996** Assessment Category => **M E NA**

**Media/Pollutants Assessed**

10 - Metals in sediments (Toxics Monitoring => Y )

**1996** Toxics Monitoring => **YES** or NO

**Comments:**

HISTORICALLY VERY HIGH TOTAL PHOSPHORUS LEVELS, SURFACE DISSOLVED OXYGEN EXTREMELY VARIABLE (SUPERSATURATION TO LOW SATURATION), TRANSPARENCY FREQUENTLY BELOW THE SAFETY CRITERIA (4 FT. SECCHI DISK), AND OCCASIONAL ALGAL BLOOMS, BUT THIS INFORMATION WAS CONSIDERED TOO OLD TO USE FOR MAKING ASSESSMENTS. HISTORICALLY VERY DENSE AQUATIC VEGETATION (PRIMARILY CERATOPHYLLUM DEMERSUM AND LEMNA SP.) ASSUMED TO STILL CAUSE IMPAIRMENT.

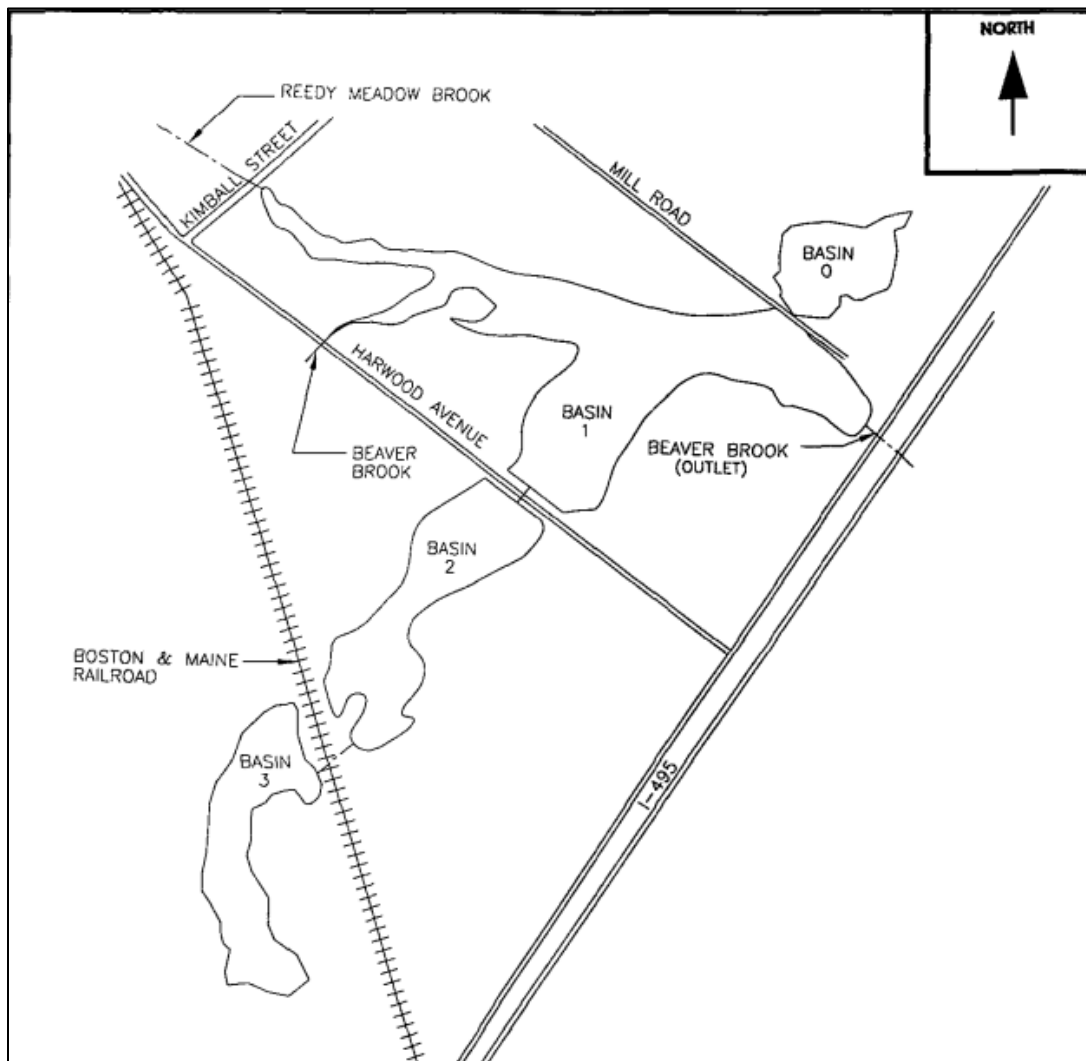
RE: RST  
01/31/96

Aquatic macrophyte data from the 1999 diagnostic and feasibility study of Mill Pond (ESS 1999):



ESS conducted an aquatic macrophyte survey of the two Mill Pond AUs from August 14-18, 1998. Plant coverage of 24% of Basin 0 was at 76-100% density, while 95% of Basin 1 had 76-100% plant density (Basin 0 and 1 in screen captures below are equivalent to DEP's north basin AU MA84038). The north basin contained multiple non-rooted, floating plants, including *Ceratophyllum demersum*, *Lemna minor*, *Wolffia* sp., and multiple species of *Utricularia* spp. The maximum measured depth in Basin 0 was 6.5 ft (2.0 m), and in Basin 1 it was 7.2 ft (2.2 m). Note that the non-native species, *Potamogeton crispus* was recorded in Basin 1.

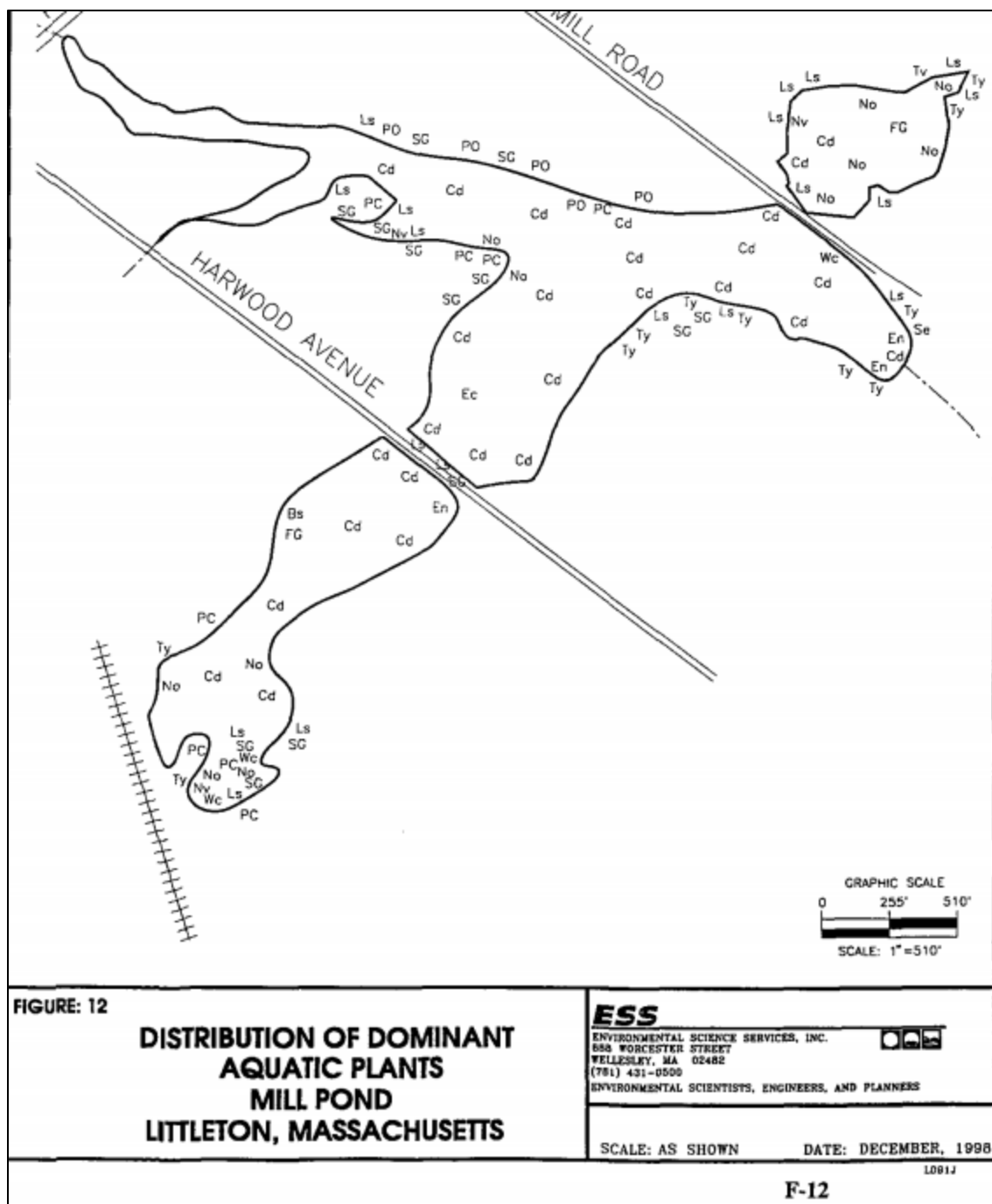
Note that Basin 0 and 1 are equivalent to DEP's north basin AU MA84038, and that Basin 2 is equivalent to DEP's south basin AU MA84081.



## Plant Community Information

**Table 17. Plant community of Mill Pond, August 14, 1998**

Common Name	Scientific Name	Symbol
Watershield	<i>Brasenia schrieberi</i>	Bs
Blue green algae	<i>Cyanobacteria</i>	BG
Coontail	<i>Ceratophyllum demersum</i>	Cd
Waterweed	<i>Elodea canadensis</i>	Ec
Waterweed	<i>Elodea nuttallii</i>	En
Filamentous green algae	<i>Various species</i>	FG
Duckweed	<i>Lemna minor</i>	Lm
White water lily	<i>Nymphaea odorata</i>	No
Yellow water lily	<i>Nuphar variegatum</i>	Nv
Smartweed	<i>Polygonum sp.</i>	PO
Pickerselweed	<i>Pontederia cordata</i>	PC
Pondweed	<i>Potamogeton crispus</i>	Pc
Pondweed	<i>Potamogeton oakesianus</i>	Po
Arrowhead	<i>Sagittaria sp.</i>	SG
Water chestnut	<i>Trapa natans</i>	Tn
Bladderwort	<i>Utricularia minor</i>	Um
Bladderwort	<i>Utricularia purpurea</i>	Up
Bladderwort	<i>Utricularia vulgaris</i>	Uv
Watermeal	<i>Wolffia columbiana</i>	Wc



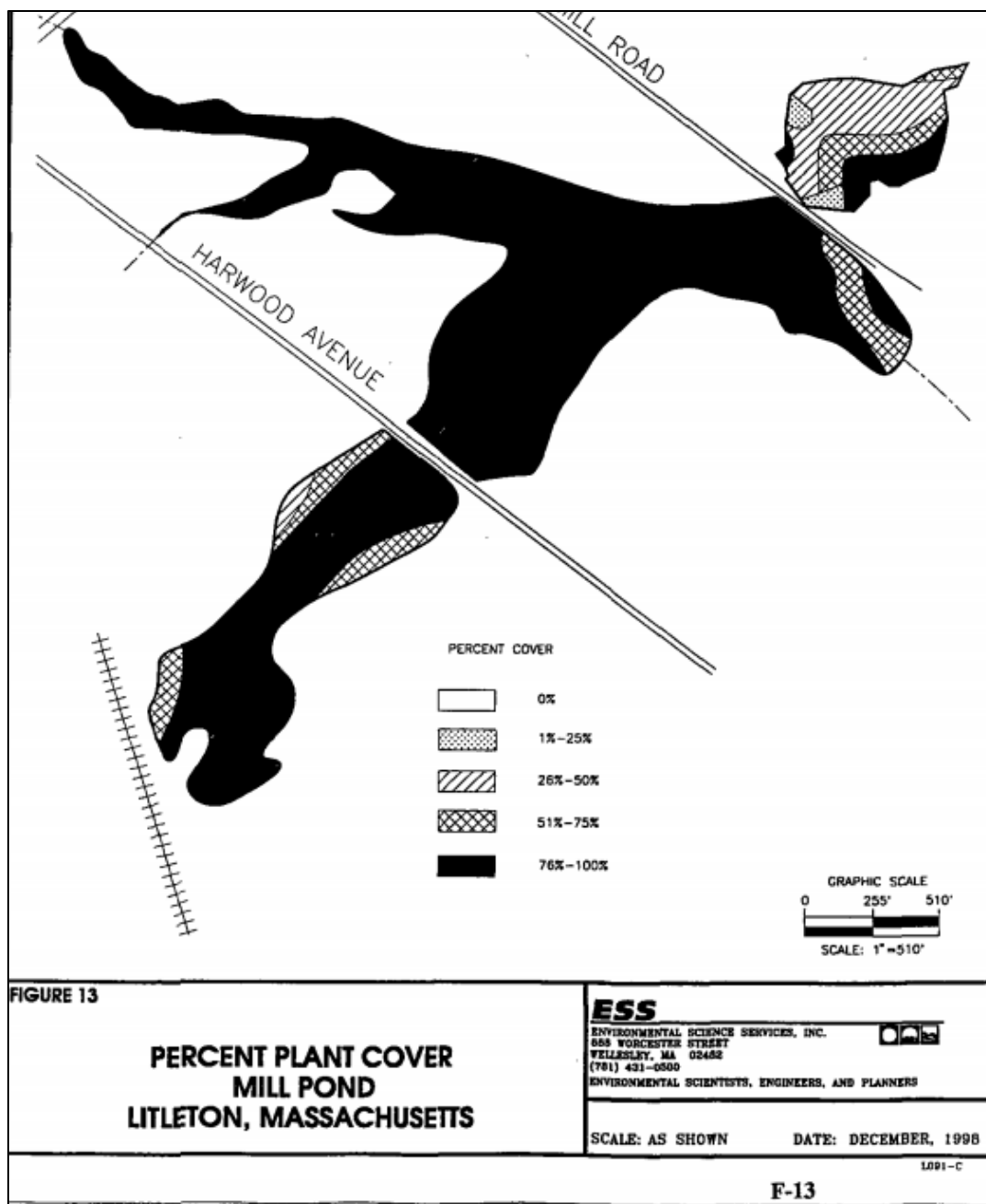
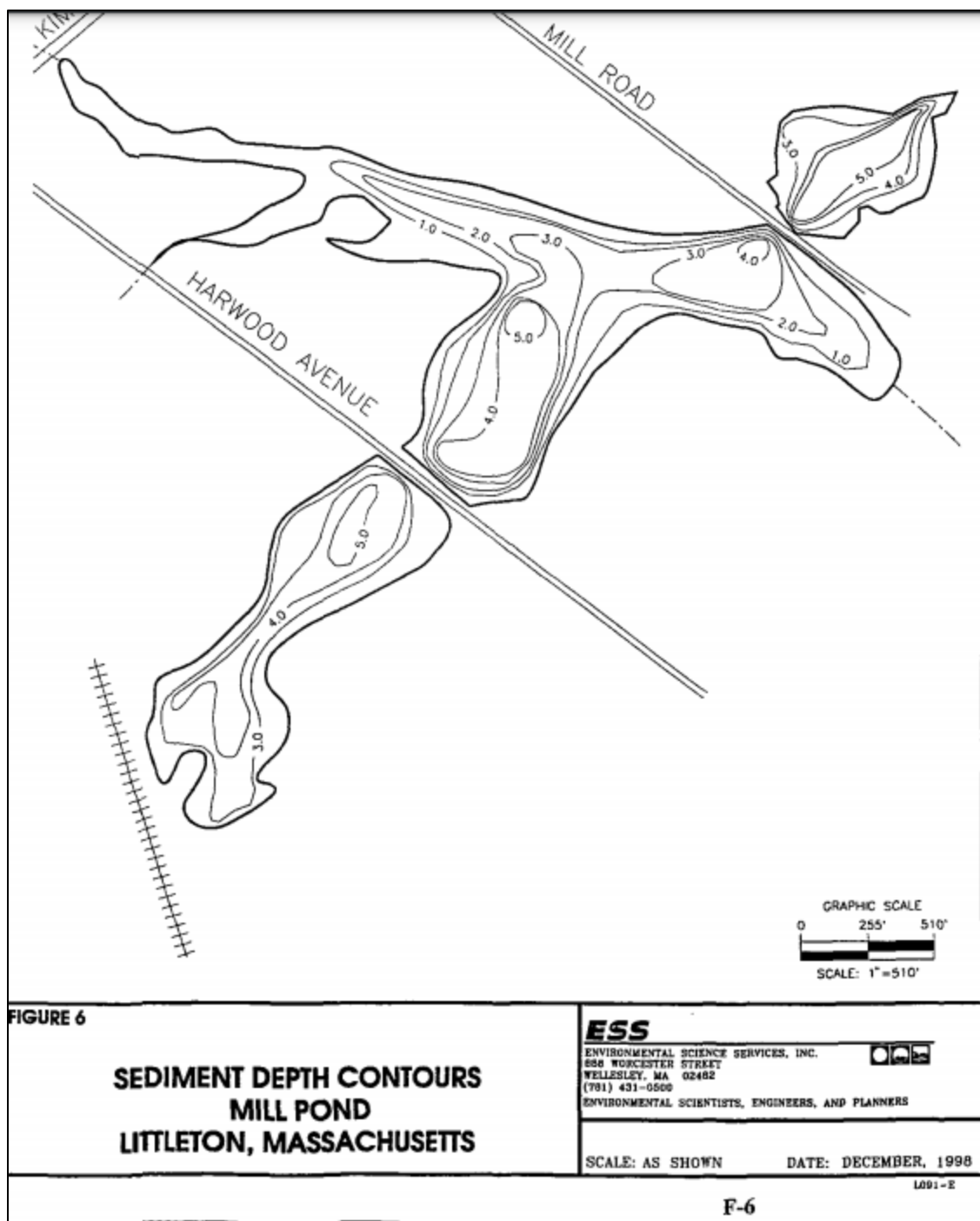


Table 18. Area of plant coverage for Mill Pond, August 1998

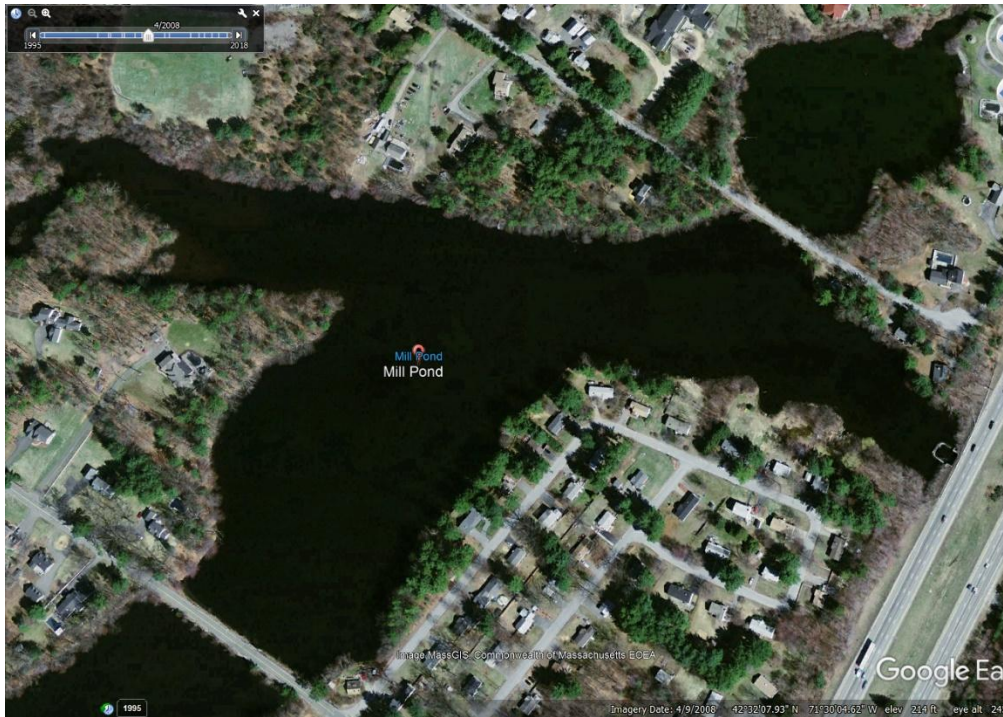
Plant Cover*	Basin 0 (acres)	Basin 1 (acres)	Basin 2 (acres)	Total Area (acres)	Percent of Pond
76-100%	1.3	28.3	10.5	40.0	83.7
51-75%	1.2	1.4	1.9	4.4	9.3
26-50%	2.7	0.0	0.4	3.1	6.5
1-25%	0.3	0.0	0.0	0.3	0.6
0%	0.0	0.0	0.0	0.0	0.0
<b>Basin Totals</b>	<b>5.5</b>	<b>29.7</b>	<b>12.7</b>	<b>47.9</b>	<b>100.0</b>

\* Percent cover given as % area covered

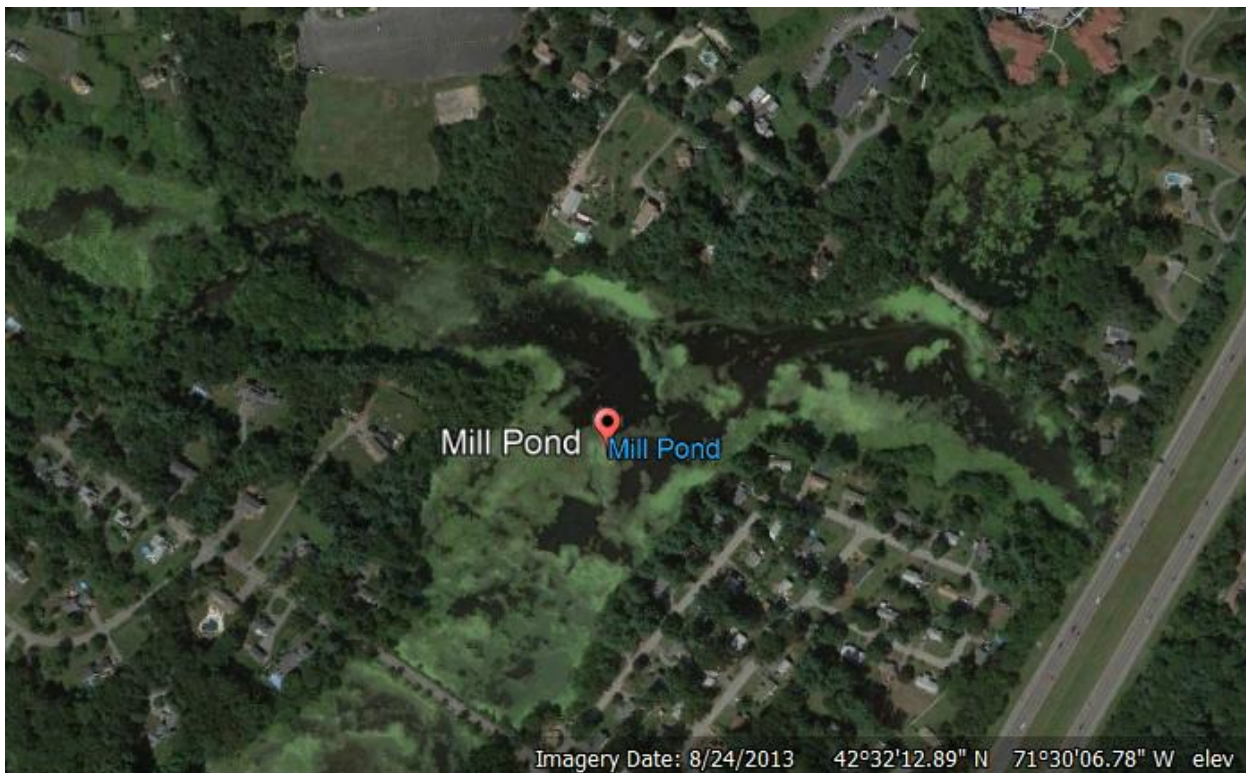


\* Maximum water depth in Basin 0 was 6.5 ft (2.0 m) and in Basin 1 (both part of DEP's North Basin) it was 7.2 ft (2.2 m).

Google Earth image of Mill Pond (MA84038, north basin), Littleton, when relatively clear, 4/9/2008  
(Google Earth Pro Undated):

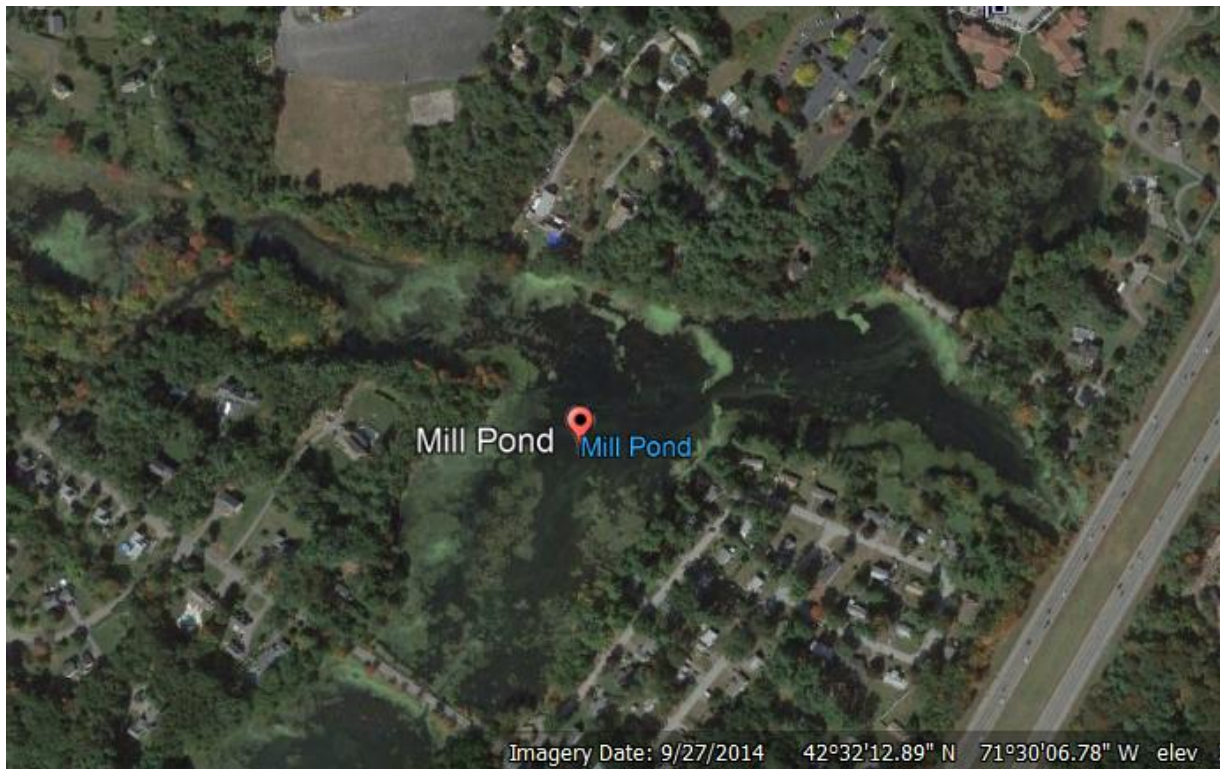


Google Earth image of Mill Pond (MA84038, north basin), Littleton, 8/24/2013 (Google Earth Pro Undated):

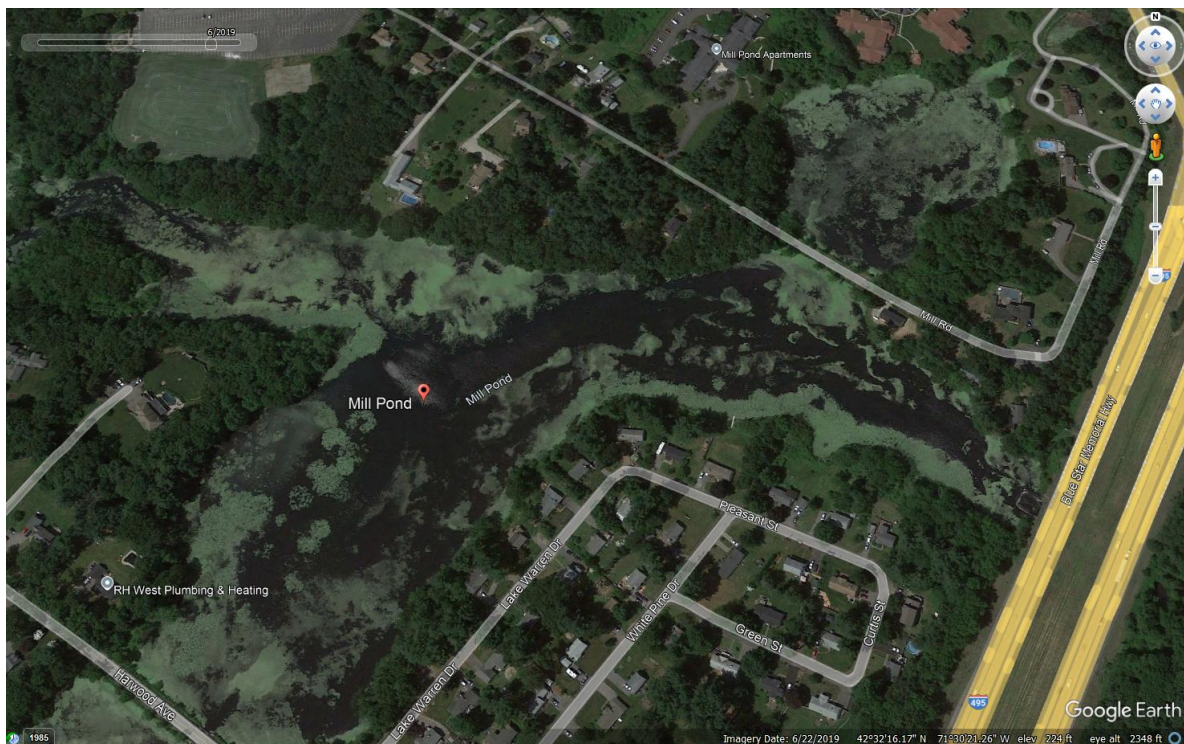




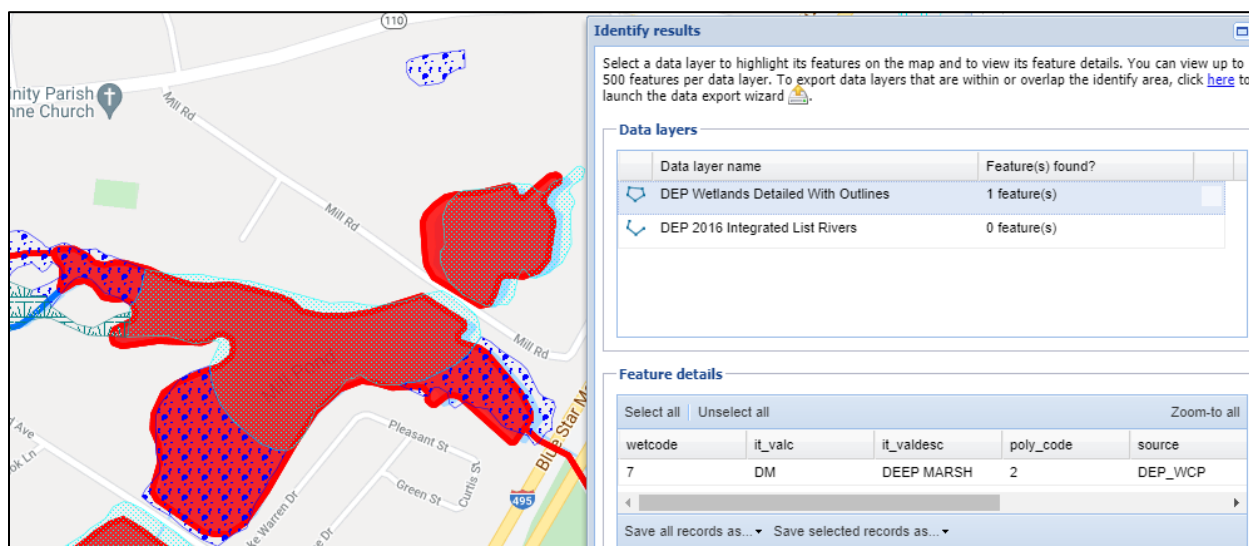
Google Earth image of Mill Pond (MA84038, north basin), Littleton, 9/27/2014 (Google Earth Pro Undated):



Google Earth image of Mill Pond (MA84038, north basin), Littleton, 6/22/2019 (Google Earth Pro Undated):



A portion of the Mill Pond (North Basin) shown with larger blue speckles maps as deep marsh wetland habitat (MassGIS 2019, MassGIS Undated):



## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Mill Pond AU (MA84038) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	



The Aesthetics Use for this Mill Pond AU (MA84038) [North Basin] continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. Additionally, a Nutrient/ Eutrophication Biological Indicators impairment is being added.

As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. The North Basin of Mill Pond (MA84038, Littleton) was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). Although the data leading to the original impairment could not be located, a 1999 diagnostic and feasibility study (ESS 1999) was reviewed as follows. ESS conducted an aquatic macrophyte survey of both Mill Pond AUs from August 14-18, 1998. The north basin AU MA84038 had plant coverage of 76-100% density in 24% of Basin 0 (the name ESS gave the northeastern basin of AU MA84038) and 95% of Basin 1 (the name ESS gave the main basin). The north basin AU contained multiple non-rooted, floating plants, including *Ceratophyllum demersum*, *Lemna minor*, *Wolffia sp.*, and multiple species of *Utricularia spp.* The maximum measured depth in Basin 0 was 6.5 ft (2.0 m), and in Basin 1 it was 7.2 ft (2.2 m). More recently, Google Earth images from August 2013, September 2014 and June 2019 show high amounts of plant coverage over more than half of the pond (Google Earth Pro Undated).

Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of multiple non-rooted, floating, aquatic macrophyte species in Mill Pond (North Basin) (MA84038). Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Mill Pond (North Basin) will remain an impaired lake segment for the 2024 cycle. However, since it is very shallow (roughly 7.2 ft or 2.2 m) (ESS 1999), it is unclear whether it should be represented as a lake segment (From 314 CMR 4.0 Definition for Lakes and Ponds – lakes are waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance. No new data are available to evaluate the Aesthetics Use for this Mill Pond AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for this Mill Pond AU (MA84038) [North Basin] are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (as was done for the Aesthetics Use). Additionally, a Nutrient/ Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use).	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for this Mill Pond AU (MA84038) [North Basin] are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (as was done for the Aesthetics Use). Additionally, a Nutrient/ Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use).

## Mill Pond (MA84039)

<b>Location:</b>	West Newbury.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	18 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
3	3	None	--	Unchanged

## Recommendations

<b>2024/26 Recommendations</b>
2024/2026 IR [CYANOBACTERIA CELL COUNT, MEDIUM] Follow-up monitoring should be conducted in Mill Pond (MA84039) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses. Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH (note that a 21 day bloom was reported to MDPH based on visual evidence in 2019, triggering an Alert in the 2024/2026 IR). {Mill Pond (MA84039)}

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	No

<b>2024/26 Use Attainment Summary</b>
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Mill Pond AU (MA84039) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
<p>Too limited data are available to assess the Aesthetics Use for this Mill Pond AU (MA84039), so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of &gt;15 days in duration) were reported to MDPH for 2019.</p> <p>During the period 2015 through 2022, C-HAB postings for Mill Pond were reported to MDPH based on visual observations for 21 days in 2019 and no blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.</p>

## Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
<p>During the period 2015 through 2022, C-HAB postings for Mill Pond (MA84039) were reported to MDPH based on visual observations for 21 days in 2019. No blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.</p>

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Mill Pond	West Newbury					21			

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
--------------------------------

No bacteria data are available to assess the Primary Contact Recreation Use for this Mill Pond AU (MA84039) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.

During the period 2015 through 2022, C-HAB postings for Mill Pond (MA84039) were reported to MDPH based on visual observations for 21 days in 2019. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

### 2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for this Mill Pond AU (MA84039) and other available indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.

During the period 2015 through 2022, C-HAB postings for Mill Pond (MA84039) were reported to MDPH based on visual observations for 21 days in 2019. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.

## Mill Pond (MA84081)

<b>Location:</b>	[South Basin] Littleton.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	12 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	Nutrient/Eutrophication Biological Indicators	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being

2022 Removed Impairment	Removal Reason	Removal Comment
		<p>reevaluated. The South Basin of Mill Pond (MA84081, Littleton) was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). Although the data leading to the original impairment could not be located, a 1999 diagnostic and feasibility study (ESS 1999) was reviewed as follows. ESS conducted an aquatic macrophyte survey of both Mill Pond AUs from August 14-18, 1998. The south basin AU MA84081 (called Basin 2 by ESS) had plant coverage of 76-100% density in 83% of its area. The south basin contained multiple non-rooted, floating plants, including <i>Ceratophyllum demersum</i>, <i>Lemna minor</i>, <i>Wolffia</i> sp., and <i>Utricularia vulgaris</i>. The maximum measured depth in the south basin/Basin 2 was 5.4 ft (1.6 m). More recently, Google Earth images from September 2014, June 2015 and June 2019 show high amounts of plant coverage in most of the pond (Google Earth Pro Undated).</p> <p>Nutrient/Eutrophication Biological Indicators is being added as an impairment for Mill Pond (South Basin) (MA84081) based on the presence of multiple non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Mill Pond (South Basin) will remain an impaired lake segment for the 2024 cycle. However, since it is very shallow (roughly 5.4 ft or 1.6 m) (ESS 1999), it likely should not be represented as a lake segment (From 314 CMR 4.0 Definition for Lakes and Ponds – lakes are waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody should be reevaluated as</p>

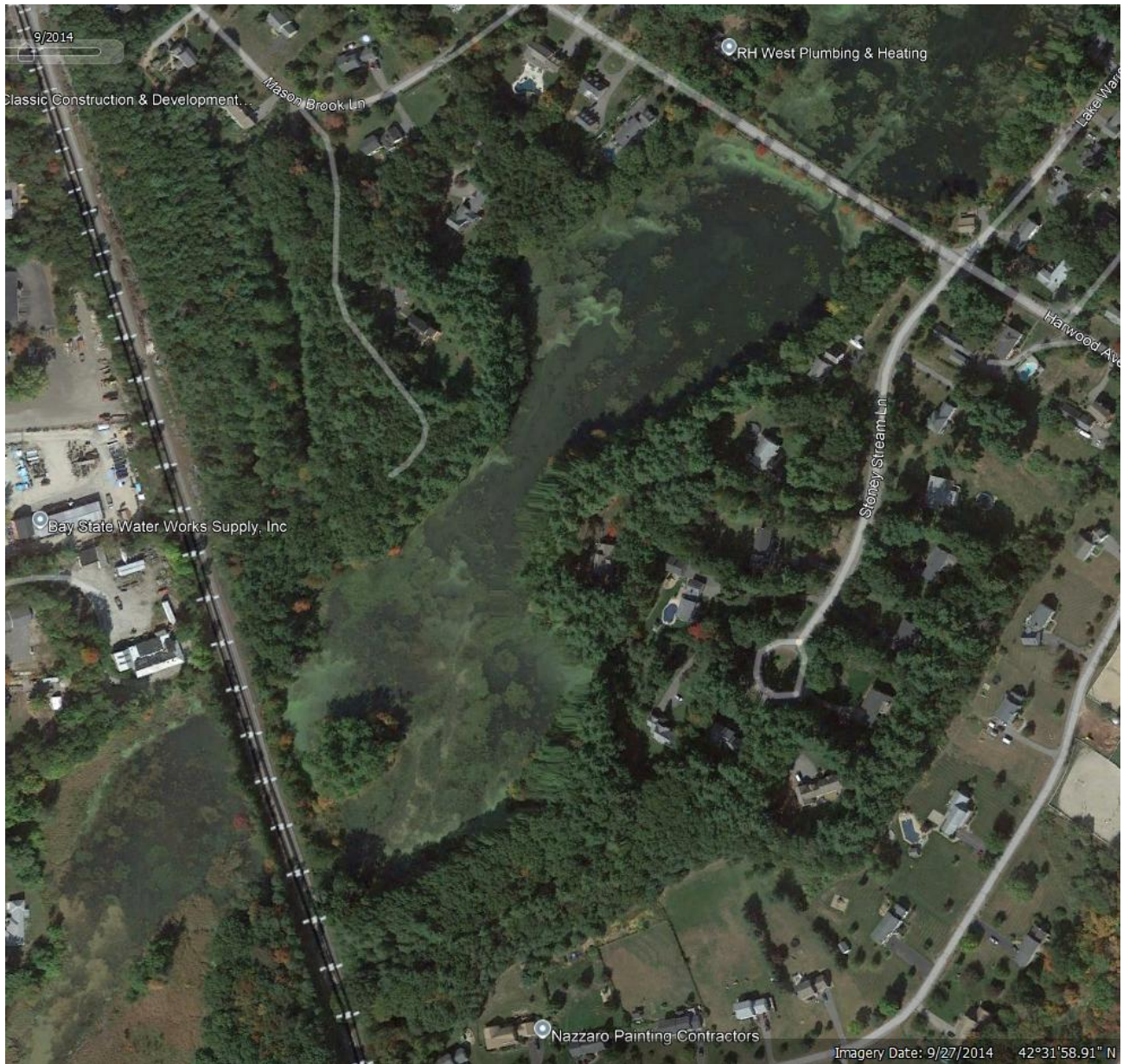
2022 Removed Impairment	Removal Reason	Removal Comment
		to whether it is a lake or a wetland since it is so shallow, a large percentage of it is often filled in with macrophytes during the growing season, and roughly half of the pond maps as deep marsh wetland habitat (MassGIS 2019).

## Aquatic Plants (Macrophytes)

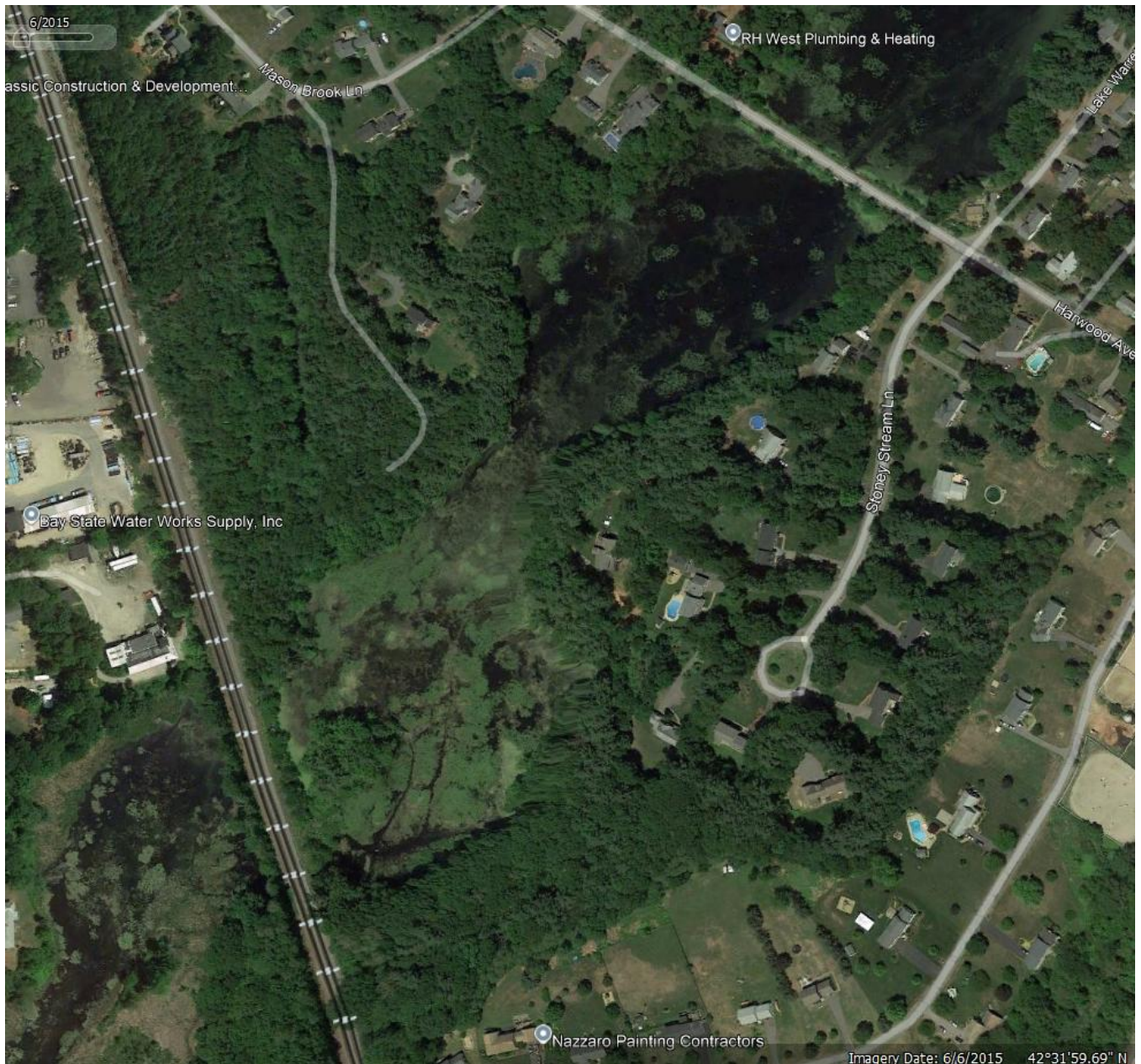
**Mill Pond [South Basin] (MA84081) Google Earth Imagery: Pond Outline (April 2018) Followed by Imagery from September 2014, June 2015, and June 2019 Showing Dense/Very Dense Vegetation Covering >25% of the Pond's Surface (Google Earth Pro Undated)**



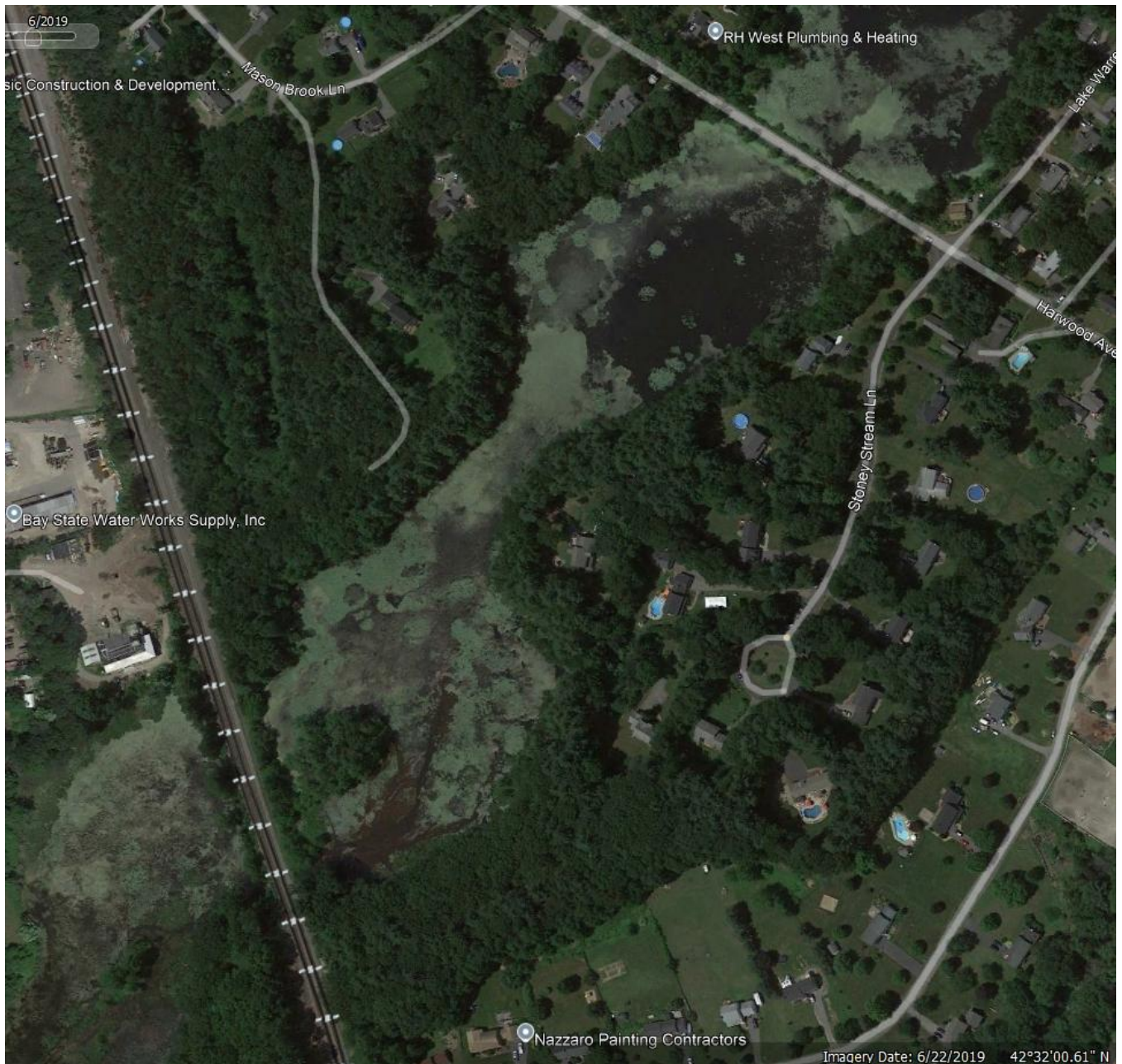












# Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Mill Pond AU (MA84081) [South Basin] is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Aesthetics Use for this Mill Pond AU (MA84081) continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment. Additionally, a Nutrient/Eutrophication Biological Indicators impairment is being added.

As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. The South Basin of Mill Pond (MA84081, Littleton) was first listed as impaired for Noxious Aquatic Plants in 1992 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2010 IR cycle (MassDEP 2024). Although the data leading to the original impairment could not be located, a 1999 diagnostic and feasibility study (ESS 1999) was reviewed as follows. ESS conducted an aquatic macrophyte survey of both Mill Pond AUs from August 14-18, 1998. The south basin AU MA84081 (called Basin 2 by ESS) had plant coverage of 76-100% density in 83% of its area. The south basin contained multiple non-rooted, floating plants, including *Ceratophyllum demersum*, *Lemna minor*, *Wolffia sp.*, and *Utricularia vulgaris*. The maximum measured depth in the south basin/Basin 2 was 5.4 ft (1.6 m). More recently, Google Earth images from September 2014, June 2015 and June 2019 show high amounts of plant coverage in most of the pond (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment for Mill Pond (South Basin) (MA84081) based on the presence of multiple non-rooted, floating, aquatic macrophyte species. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond was covered in aquatic macrophytes in recent years. Note: Mill Pond (South Basin) will remain an impaired lake segment for the 2024 cycle. However, since it is very shallow (roughly 5.4 ft or 1.6 m) (ESS 1999), it likely should not be represented as a lake segment (From 314 CMR 4.0 Definition for Lakes and Ponds – lakes are waterbodies having open water, situated in a topographical depression, generally with a maximum depth of greater than two meters). The topic of lake vs. wetland will require a structured evaluation procedure likely to be developed as part of a future CALM guidance manual. This waterbody should be reevaluated as to whether it is a lake or a wetland since it is so shallow, a large percentage of it is often filled in with macrophytes during the growing season, and roughly half of the pond maps as deep marsh wetland habitat (MassGIS 2019).

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

<b>2024/26 Use Attainment Summary</b>
No bacteria or other indicator data for this Mill Pond AU (MA84081) [South Basin] are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (as was done for the Aesthetics Use). Additionally, a Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use).

## Secondary Contact Recreation

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO

<b>2024/26 Use Attainment Summary</b>
No bacteria or other indicator data for this Mill Pond AU (MA84081) [South Basin] are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior pollutant Aquatic Plants (Macrophytes) impairment is being removed and replaced with a non-pollutant Aquatic Plants (Macrophytes) impairment (as was done for the Aesthetics Use). Additionally, a Nutrient/Eutrophication Biological Indicators impairment is being added (from the Aesthetics Use).

## Millvale Reservoir (MA84041)

<b>Location:</b>	Haverhill.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	44 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Mercury in Fish Tissue	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	No

<b>2024/26 Use Attainment Summary</b>
The Fish Consumption Use for Millvale Reservoir (MA84041) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Millvale Reservoir in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Millvale Reservoir (MA84041) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Millvale Reservoir (MA84041) are available, so the Primary Contact Recreation Use is Not Assessed.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Millvale Reservoir (MA84041) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

## Nabnasset Pond (MA84044)

<b>Location:</b>	Westford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	134 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Harmful Algal Blooms	--	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--



## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Nabnasset Pond (MA84044) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Nabnasset Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Nabnasset Pond (MA84044) continues to be assessed as Not Supporting, with the prior impairment for Harmful Algal Blooms being carried forward. Aesthetic observations were made by MassDEP field sampling crews as part of the MAP2 lake monitoring project, during the summer of 2017 at two stations in Westford for this Nabnasset Pond AU; at the deep hole index site, north of Lake Shore Drive (W2674/MAP2L-132, n=3) and at the southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue) (W2675/MAP2L-132S, n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded at either location. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots and during the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (17.1%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2674	MassDEP	Water Quality	Nabnasset Pond	[index site, north of Lake Shore Drive, Westford]	42.616775	-71.427940
W2675	MassDEP	Water Quality	Nabnasset Pond	[southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue), Westford]	42.616575	-71.419469

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2674	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2674 (MAP2L-132) on Nabnasset Pond (MA84044) during 3 site visits between Jun 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, less than 25% (17.1%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2675	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2675 (MAP2L-132S) on Nabnasset Pond (MA84044) during 5 site visits between May 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2674	Nabnasset Pond	2017	Aesthetics Impaired?	No	3	3
W2674	Nabnasset Pond	2017	Aquatic Plant Density, Overall	None	2	3
W2674	Nabnasset Pond	2017	Aquatic Plant Density, Overall	NR	1	3
W2674	Nabnasset Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	1
W2674	Nabnasset Pond	2017	Color	Brownish	1	3
W2674	Nabnasset Pond	2017	Color	Light Yellow/Tan	2	3
W2674	Nabnasset Pond	2017	Duckweed Density, Whole Lake	None	1	1
W2674	Nabnasset Pond	2017	Objectionable Deposits	No	3	3
W2674	Nabnasset Pond	2017	Odor	None	3	3
W2674	Nabnasset Pond	2017	Scum	No	2	3
W2674	Nabnasset Pond	2017	Scum	Yes	1	3
W2674	Nabnasset Pond	2017	Turbidity	Slightly Turbid	3	3
W2675	Nabnasset Pond	2017	Aesthetics Impaired?	No	5	5
W2675	Nabnasset Pond	2017	Color	None	4	5
W2675	Nabnasset Pond	2017	Color	NR	1	5
W2675	Nabnasset Pond	2017	Objectionable Deposits	No	5	5
W2675	Nabnasset Pond	2017	Odor	None	5	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2675	Nabnasset Pond	2017	Scum	No	4	5
W2675	Nabnasset Pond	2017	Scum	Yes	1	5
W2675	Nabnasset Pond	2017	Turbidity	None	4	5
W2675	Nabnasset Pond	2017	Turbidity	Slightly Turbid	1	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for Nabnasset Pond (MA84044) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward. In Nabnasset Pond (MA84044), MassDEP collected Secchi and cyanobacteria cell count data at W2674 [MAP2L-132, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2675 [MAP2L-132S, Shoreline] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2674 in 2017 (n=3, 3.5-4.9m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2675 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected <i>E. coli</i> bacteria samples in Nabnasset Pond (MA84044) at W2675 [southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue), Westford] from May-Sep 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2675 indicated 0% of intervals had GMs &gt;126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 19 CFU/100ml. <i>E. coli</i> data from W2675 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2674	MassDEP	Water Quality	Nabnasset Pond	[index site, north of Lake Shore Drive, Westford]	42.616775	-71.427940
W2675	MassDEP	Water Quality	Nabnasset Pond	[southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue), Westford]	42.616575	-71.419469

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

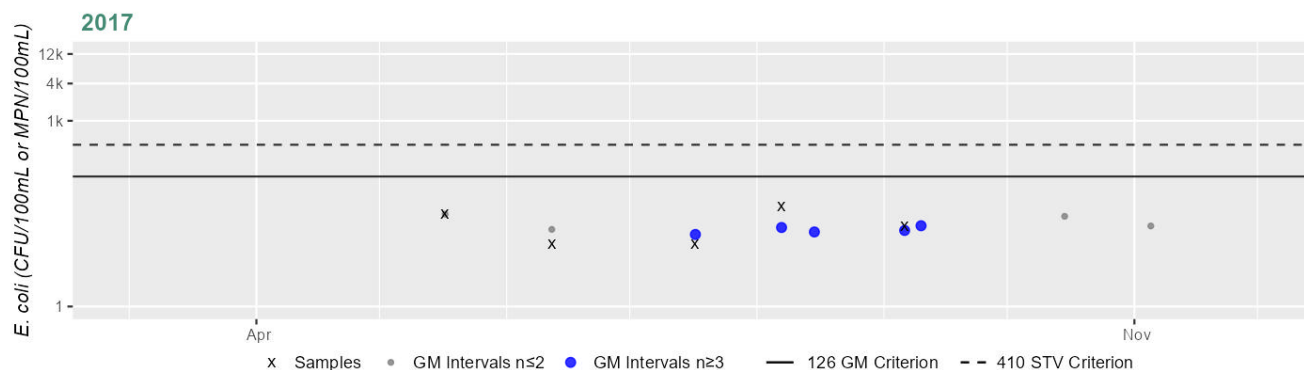
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2675	MassDEP	E. coli	05/17/17	09/06/17	5	10	41	19

#### Station MASSDEP\_W2675 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	19
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Other Indicators

### Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data

(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Nabnasset Pond (MA84044) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2674 [MAP2L-132, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2675 [MAP2L-132S, Shoreline]. At station W2674 (station depth=7.5 m) the Secchi depth measurements ranged from 3.5-4.9 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2675 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

**MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018)** (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2674	Nabnasset Pond	Index	2017	3	0	NA
W2675	Nabnasset Pond	Shoreline	2017	3	0	NA

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for Nabnasset Pond (MA84044) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward. In Nabnasset Pond (MA84044), MassDEP collected cyanobacteria cell count data at W2674 [MAP2L-132, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2675 [MAP2L-132S, Shoreline] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2675 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected <i>E. coli</i> bacteria samples in Nabnasset Pond (MA84044) at W2675 [southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue), Westford] from May-Sep 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2675 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 19 CFU/100ml. <i>E. coli</i> data from W2675 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2675	MassDEP	Water Quality	Nabnasset Pond	[southeastern edge of pond at Edwards Beach (off northern end of Williams Avenue), Westford]	42.616575	-71.419469

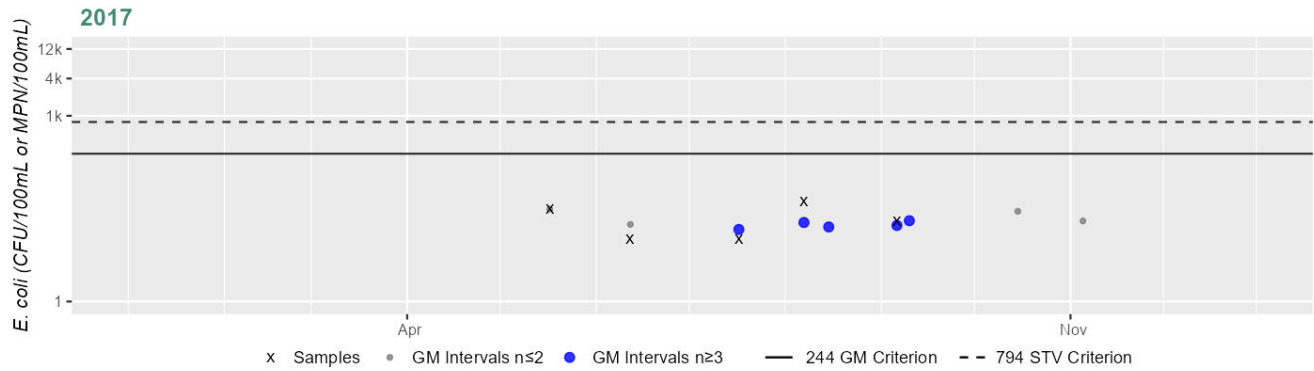
## Bacteria Data

**Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)**  
(MassDEP Undated 7) (MassDEP Undated 3)  
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2675	MassDEP	E. coli	05/17/17	09/06/17	5	10	41	19

# Station MASSDEP\_W2675 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	19
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

## Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Newfield Pond (MA84046)

<b>Location:</b>	Chelmsford.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	77 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Aquatic Plants (Macrophytes)*)	--	Added
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Removed
5	5	Dissolved Oxygen	--	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Non-Native Aquatic Plants	Clarification of listing cause	The Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use to be consistent with a “Clarification of Listing Cause” under the Aquatic Life Use submitted for the 2018/201R, where it was identified that the generic “Non-Native Aquatic Plants” cause was not needed since a number of specific non-native plant species causes were already being utilized, including the “ <i>Eurasian water milfoil (Myriophyllum spicatum)</i> ”.

### Non-Native Aquatic Plants

Please see removal comment above.

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No
2024/26 Use Attainment Summary	



The Fish Consumption Use for Newfield Pond (MA84046) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. Fish toxics sampling was conducted in Newfield Pond (MA84046) at station F0374 in 2018 and 2022 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH included a site-specific advisory for Newfield Pond (referred to by MDPH as "Freeman Lake") in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### ***Fish Consumption Advisories***

**Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories** (MA DPH 2025) (MassDEP Undated 6)

Summary Statement
Fish toxics sampling was conducted in Newfield Pond (MA84046) at station F0374 in 2018 and 2022 as part of the MassDEP Office of Research and Standards Mercury Initiative. MDPH retained the existing site-specific fish consumption advisories for Mercury associated with Newfield Pond (referred to by MDPH as Freeman Lake) in their January 2025 Freshwater Fish Consumption Advisory List. The site-specific DPH advisories are indicative of a Fish Consumption Use impairment for Mercury in Fish Tissue for Newfield Pond (MA84046).

### **Aesthetic**

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

The Aesthetics Use for Newfield Pond (MA84046) continues to be assessed as Not Supporting, with an Aquatic Plants (Macrophytes) non-pollutant impairment being added. Since the Eurasian Water Milfoil (*Myriophyllum Spicatum*) impairment was redundantly duplicated across multiple uses for this waterbody, this impairment is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use. The Non-Native Aquatic Plants impairment will also be removed from the Aesthetics Use to be consistent with a “Clarification of Listing Cause” under the Aquatic Life Use submitted for the 2018/201R, where it was identified that the generic “Non-Native Aquatic Plants” cause was not needed since a number of specific non-native plant species causes were already being utilized, including the “Eurasian water milfoil (*Myriophyllum spicatum*)”. MassDEP staff previously noted approximately 27 acres (out of 77 total acres), primarily along the western portion of Newfield Pond, were densely to very densely covered (~35% coverage) with submergent vegetation during a 1999 survey (Kennedy, Kiras and McVoy 2001). In addition there has been recent concern from local residents who recreate at the Varney beach area (North west shore) about the “weeds”, resulting in a “hand pulling effort” of weeds in the beach area in summer 2021 and 2023 to keep the beach open (Town of Chelmsford 2023). Since submerged aquatic macrophyte coverage is apparently very dense in Newfield Pond (>25% coverage overall) an Aquatic Plants (Macrophytes) non-pollutant impairment is being added in the place of the Eurasian Water Milfoil (*Myriophyllum Spicatum*) and Non-Native Aquatic Plants impairments at this time. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Newfield Pond AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Newfield Pond (MA84046) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. An Aquatic Plants (Macrophytes) non-pollutant impairment is being added (from the Aesthetics Use). Since the Eurasian Water Milfoil ( <i>Myriophyllum spicatum</i> ) and Non-Native Aquatic Plants impairments are being removed from the Aesthetics Use this cycle, these impairments are also being removed from the Primary Contact Recreation Use.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	

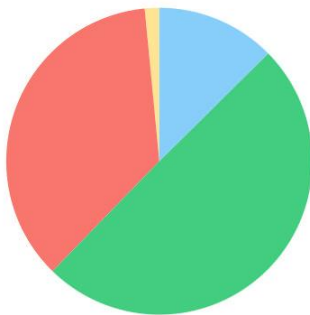
No bacteria or other indicator data for Newfield Pond (MA84046) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. An Aquatic Plants (Macrophytes) non-pollutant impairment is being added (from the Aesthetics Use). Since the Eurasian Water Milfoil (*Myriophyllum spicatum*) and Non-Native Aquatic Plants impairments are being removed from the Aesthetics Use this cycle, these impairments are also being removed from the Secondary Contact Recreation Use.

## Peppermint Brook (MA84A-35)

<b>Location:</b>	Headwaters, outlet of unnamed pond east of Route 38, Dracut to confluence with Beaver Brook, Dracut.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.7 MILES
<b>Classification/Qualifier:</b>	B

### Peppermint Brook (MA84A-35)

Watershed Area: 1.80 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.80	1.80	0.53	0.53
Agriculture	1.5%	1.5%	0%	0%
Developed	36.2%	36.2%	34.1%	34.1%
Natural	49.7%	49.7%	47.2%	47.2%
Wetland	12.6%	12.6%	18.7%	18.7%
Impervious	16.4%	16.4%	17%	17%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Debris*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Trash	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (Y)	--	--	X	X	X

## Supporting Information for Removed Impairments

<b>2022 Removed Impairment</b>	<b>Removal Reason</b>	<b>Removal Comment</b>
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Assessed	No

<b>2024/26 Use Attainment Summary</b>
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Peppermint Brook (MA84A-35) is Not Assessed.

### Aesthetic

<b>2024/26 Use Attainment</b>	<b>Alert</b>
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Not Supporting	NO
<b>2024/26 Use Attainment Summary</b>	
The Aesthetics Use for Peppermint Brook (MA84A-35) continues to be assessed as Not Supporting, with the prior impairments for Trash and Debris being carried forward. No new data are available to evaluate the Aesthetics Use for this Peppermint Brook AU.	

## Primary Contact Recreation

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO
<b>2024/26 Use Attainment Summary</b>	
No bacteria or other indicator data for Peppermint Brook (MA84A-35) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward and the prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward.	

## Secondary Contact Recreation

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Not Supporting	NO
<b>2024/26 Use Attainment Summary</b>	
The Secondary Contact Recreation Use for Peppermint Brook (MA84A-35) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward based on historical bacteria data not meeting the threshold at W1211. The prior Debris and Trash impairments (from the Aesthetics Use) are also being carried forward. MassDEP staff collected historical <i>E. coli</i> bacteria samples toward the downstream end of Peppermint Brook (MA84A-35) at W1211 [Lakeview Avenue crossing, Dracut] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1211 indicated 100% of intervals had GMs >244 CFU/100ml, 2 samples exceeded the 794 CFU/100ml STV, and the overall GM was 1020 CFU/100ml. Historic <i>E. coli</i> data from W1211 are indicative of an <i>E. coli</i> impairment.	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1211	MassDEP	Water Quality	Peppermint Brook	[Lakeview Avenue crossing, Dracut]	42.663254	-71.320202

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

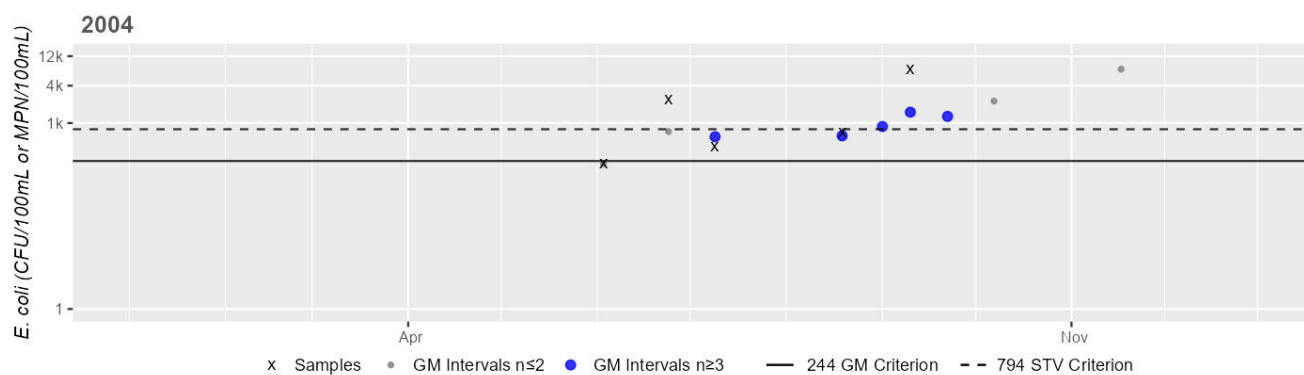
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1211	MassDEP	E. coli	06/02/04	09/09/04	5	220	7400	1020

#### Station MASSDEP\_W1211 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	1020
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	40%

Cumulative %GMI Exceedance

Historic (1997-2010)  
100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Plum Island River (MA84A-27)

<b>Location:</b>	From Chaces Island, Merimack River Estuary, to the "high sandy" sand bar just north of the confluence with Pine Island Creek, Newbury (formerly part of 2000 segment: Plum Island River MA84A-23).
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	0.13 SQUARE MILES
<b>Classification/Qualifier:</b>	SA: ORW, SFO

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Fecal Coliform	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	SH	AES	PCR	SCR
Fecal Coliform	Source Unknown (N)	--	--	X	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions



## Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Plum Island River (MA84A-27) is Not Assessed.

## Shellfish Harvesting

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
Plum Island River (MA84A-27): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1151 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). The Shellfish Harvesting Use is assessed as not supporting because the growing area (normalized to the AU area) is < 100% approved. Based on the new growing area classifications and the prior classifications, the existing Fecal Coliform impairment is being retained.

## Shellfish Growing Area Classifications

MassDFG-Division of Marine Fisheries Shellfish Growing Area Classification Data (MassGIS 2024) (MassDEP Undated 5)

Area Name	Waterbody/Area Description	Classification	Area (Sq. Mi.)	Area (% of AU)
N2.1	Merrimack River Estuary & Northern Plum Island River	Conditionally Restricted	0.11504	86.1%
N4.0	Plum Island Sound	Conditionally Approved	0.00004	0.0%

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No data are available, so the Aesthetics Use for Plum Island River (MA84A-27) is Not Assessed.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
--------------------------------

No bacteria data are available to assess the Primary Contact Recreation Use for the Plum Island River (MA84A-27) so it is assessed as having Insufficient Information. The shellfish growing areas (0.1151 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess the Primary Contact Recreation Use of the Plum Island River (MA84A-27).

### ***Shellfish Growing Area Classifications***

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Summary
Plum Island River (MA84A-27): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1151 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Primary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.

### **Secondary Contact Recreation**

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for the Plum Island River (MA84A-27) so it is assessed as having Insufficient Information. The shellfish growing areas (0.1151 sq mi) in this AU are less than 100% approved (0 sq mi, 0%) so the shellfish classification data cannot be used to assess Secondary Contact Recreation Use of the Plum Island River (MA84A-27).

### ***Shellfish Growing Area Classifications***

**Summary Statement for MassDFG Shellfish Growing Area Classification Data** (MassGIS 2024) (MassDEP Undated 5)

Summary
Plum Island River (MA84A-27): The total of all shellfish growing area classifications (MassGIS, 2024) within this AU is 0.1151 sq mi (86%). The approved shellfish growing area represents 0 sq mi (0%). Because the total of all shellfish growing area classifications is anything less than “approved”, the Secondary Contact Recreational Use cannot be assessed for 2024 using the shellfish classification data.

## Powwow River (MA84A-08)

<b>Location:</b>	Tidal portion, just downstream of Main Street, Amesbury to confluence with Merrimack River, Amesbury.
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	0.06 SQUARE MILES
<b>Classification/Qualifier:</b>	SB: SFR

No usable data were available for Powwow River (MA84A-08) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Escherichia Coli (E. Coli)	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>SH</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	--	X	--

## Powwow River (MA84A-25)

<b>Location:</b>	Outlet of Lake Gardner, Amesbury to tidal portion, just downstream of Main Street, Amesbury (formerly part of 2000 segment: Powwow River MA84A-07).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	0.6 MILES
<b>Classification/Qualifier:</b>	B: WWF

No usable data were available for Powwow River (MA84A-25) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Unchanged

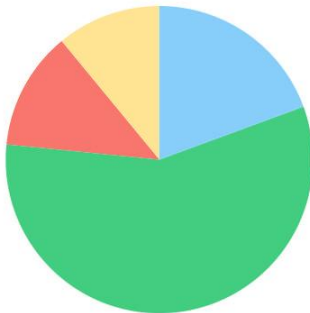
<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	--

## Powwow River (MA84A-28)

<b>Location:</b>	Outlet Tuxbury Pond, Amesbury to New Hampshire state line, Amesbury (A/PWS/ORW only applies to upper approximate 1 mile reach; to the Amesbury DPW Water Division intake (Source ID 3007000-01S) (formerly part of 2000 segment: Powwow River MA84A-07).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.9 MILES
<b>Classification/Qualifier:</b>	A: PWS, ORW ('A' applies to upper third, to water supply intake)

### Powwow River (MA84A-28)

Watershed Area: 48.85 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	5.50	5.18	3.13	2.96
Agriculture	11%	10.6%	8.7%	8.4%
Developed	12.4%	12.3%	9.3%	9.3%
Natural	57.2%	57.4%	58.7%	59.1%
Wetland	19.4%	19.8%	23.2%	23.2%
Impervious	5.5%	5.6%	4.4%	4.5%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4c	(Fish Passage Barrier*)	--	Unchanged
5	4c	Fecal Coliform	--	Removed
5	4c	Total Suspended Solids (TSS)	--	Removed
5	4c	Turbidity	--	Removed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	Applicable WQS attained, due to change in WQS	<p>MA84A-28 was originally listed for Pathogens in the 1992 cycle as part of segment MA84A-07 (MassDEP 2002) (Headwaters at outlet Tuxbury Pond to tidal portion, Amesbury. Miles 6.4-1.3). In the 2002 cycle, MA84A-07 was split into MA84A-28 (Headwaters - Outlet Tuxbury Pond, Amesbury to inlet Lake Gardner, South Hampton, New Hampshire) and MA84A-25 (Outlet of Lake Gardner to tidal portion just east/downstream of Main St, Amesbury). In the 2010 IR cycle the Pathogens impairment was replaced with the more specific Fecal Coliform impairment. The documentation of the original listing decision is limited. The Fecal Coliform impairment is being removed because the freshwater pathogen indicator changed from Fecal Coliform to <i>E. coli</i>/<i>Enterococcus</i> in the 2007 Massachusetts SWQS (310 CMR 4.00) and the <i>E. coli</i> data from May-Sep 2015 (n=5) used for assessing this water body meet the Primary Contact Recreation Use criteria at station W2512 [Lat/Long: 42.865929 deg, -70.961591 deg]. Analysis of the single year limited frequency <i>E. coli</i> dataset from three-quarters of the way down the AU at W2512 indicated 0% of intervals had GMs &gt;126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 49 CFU/100ml. Google Earth images from May 2015 and April 2023 (Google Earth Pro Undated) generally show no significant changes in land use in the MA84A-28 proximal watershed since 2015 (with one exception being the expansion of one property at approximately 22 Newton Rd in Amesbury). Therefore, the data from 2015 are considered appropriate to use to justify the delisting of Fecal Coliform for this Powwow River AU (MA84A-28).</p>

Turbidity	Applicable WQS attained; based on new data	<p>MA84A-28 was originally listed for Turbidity and Total Suspended Solids (TSS) in the 1992 cycle as part of segment MA84A-07 (MassDEP 2002) (Headwaters at outlet Tuxbury Pond to tidal portion, Amesbury. Miles 6.4-1.3). In the 2002 cycle, MA84A-07 was split into MA84A-28 (Headwaters - Outlet Tuxbury Pond, Amesbury to inlet Lake Gardner, South Hampton, New Hampshire) and MA84A-25 (Outlet of Lake Gardner to tidal portion just east/downstream of Main St, Amesbury). The documentation of the original listing decision is limited, but based on information in the 1999 Water Quality Assessment Report for the Merrimack basin (Kennedy, Kiras and McVoy 2001), it is possible the Turbidity and Total Suspended Solids impairments were identified based on sporadic total suspended solids and settleable solids violations of the NPDES permit for the Amesbury Water Treatment Facility over the preceding years. However, according to EPA's Enforcement and Compliance History Online (ECHO) database for NPDES permittees, the Amesbury Water Treatment Plant (MAG640065) has not had any Total Suspended Solids violations of its permit between Sep 2020 and 2025 (EPA 2025). Additionally, MassDEP staff recorded aesthetics observations for this Powwow River AU as part of the MAP2 wadeable streams monitoring project in summer 2015 approximately three-quarters of a mile downstream from the Amesbury WTP (W2512, n=5). There were no observations of high turbidity recorded among the 5 site visits. Google Earth images from May 2015 and April 2023 (Google Earth Pro Undated) generally show no significant changes in land use in the MA84A-28 proximal watershed since 2015 (with one exception being the expansion of one property at approximately 22 Newton Rd in Amesbury). Therefore, the data from 2015 are considered appropriate to use, along with the recent data from the Amesbury Water Treatment Plant, to justify the delisting of Turbidity for this Powwow River AU (MA84A-28).</p>
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Total Suspended Solids (TSS)	Applicable WQS attained; based on new data	<p>[Note: the MA SWQS do not have numeric criteria for total suspended solids.] MA84A-28 was originally listed for Turbidity and Total Suspended Solids (TSS) in the 1992 cycle as part of segment MA84A-07 (MassDEP 2002) (Headwaters at outlet Tuxbury Pond to tidal portion, Amesbury. Miles 6.4-1.3). In the 2002 cycle, MA84A-07 was split into MA84A-28 (Headwaters - Outlet Tuxbury Pond, Amesbury to inlet Lake Gardner, South Hampton, New Hampshire) and MA84A-25 (Outlet of Lake Gardner to tidal portion just east/downstream of Main St, Amesbury). The documentation of the original listing decision is limited, but based on information in the 1999 Water Quality Assessment Report for the Merrimack basin (Kennedy, Kiras and McVoy 2001), it is possible the Turbidity and Total Suspended Solids impairments were identified based on sporadic total suspended solids and settleable solids violations of the NPDES permit for the Amesbury Water Treatment Facility over the preceding years. However, according to EPA's Enforcement and Compliance History Online (ECHO) database for NPDES permittees, the Amesbury Water Treatment Plant (MAG640065) has not had any Total Suspended Solids violations of its permit between Sep 2020 and 2025 (EPA 2025). Additionally, MassDEP staff recorded aesthetics observations for this Powwow River AU as part of the MAP2 wadeable streams monitoring project in summer 2015 approximately three-quarters of a mile downstream from the Amesbury WTP (W2512, n=5). There were no observations of high turbidity recorded among the 5 site visits. Google Earth images from May 2015 and April 2023 (Google Earth Pro Undated) generally show no significant changes in land use in the MA84A-28 proximal watershed since 2015 (with one exception being the expansion of one property at approximately 22 Newton Rd in Amesbury). Therefore, the data from 2015 are considered appropriate to use, along with the recent data from the Amesbury Water Treatment Plant, to justify the delisting of Total Suspended Solids for this Powwow River AU (MA84A-28).</p>
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## Fecal Coliform

### 1992 and 2002 WBS Coding Sheets (MassDEP 2002)

MA84A-07 Powwow River (8450300) Size: 5.10M, R

Class: B/WWF

Inlet Lake Gardner to tidal portion, Amesbury. Miles 6.4-1.3

Assessment Date: 9112      Begin Sampling: 0      Toxics Monitored: N  
Cycle: 92      End Sampling: 0      Assessment Category: Evaluated

Uses	Support	Threat	Partial	Non-Sup	Not-Asses
Overall Use Support					
Aquatic Life	5.1			5.1	
Fish Consumption					
Warm Water Fishery					5.1
Swimmable					
Secondary Contact Rec	5.1			5.1	
Aesthetics					
Dummy AL Bio				5.1	
Dummy AL Chem	5.1				5.1

Media/Pollutants Assessed      Toxics Monitoring = > N

Assessment Type      Assessment Category = > Evaluated  
120- Surveys of fish and game biologists/other professionals  
150- Monit'g data more than 5 years old

#### Aquatic Contamination

Nonattainment Causes		Nonattainment Sources	
1700- Pathogens	5.10 M	4000- URBAN RUNOFF/STORM SEWERS (NPS)	5.10 H
2100- Suspended solids	5.10 S	-9 -	
2200- Noxious aquatic plants	5.10 M	8600- Natural	5.10 M
2500- Turbidity	5.10 S	-9 -	

#### Comments:

1990: BASED ON COLIFORM

1992 Very weedy - based on JS observations summer of 1990.

*split into 84A-24 and 84A-25  
Class A 23 Class B*

**WBID:** MA84A-07 **WATERSHED:** Merrimack (84) **NAME:** Powwow River **TYPE:** River **CODE:** 8450300 **SIZE:** 5.10(miles) **CLASS:** B/WWF Deleted  
7/20 6/21/02 (Printed 05/17/01)

**Description:** Headwaters at outlet Tuxbury Pond to tidal portion, Amesbury. Miles 6.4-1.3

**Assessment Date:** 96090107 **Begin Sampling:** **Cycle:** 9902 **End Sampling:** (Assessment Category => Not-assessed )

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT					5.10	
ALUS					5.10	
FISH CONSUMPTION					5.10	
PRIMARY CONTACT					5.10	
SECONDARY CONTACT					5.10	
Aesthetics					5.10	
ALUS Bio					5.10	
ALUS Chem/Phys					5.10	
ALUS Toxicity					5.10	

<b>Nonattainment Causes</b>		<b>"New"</b>	
Code	Size Magnitude	Code	Size Magnitude

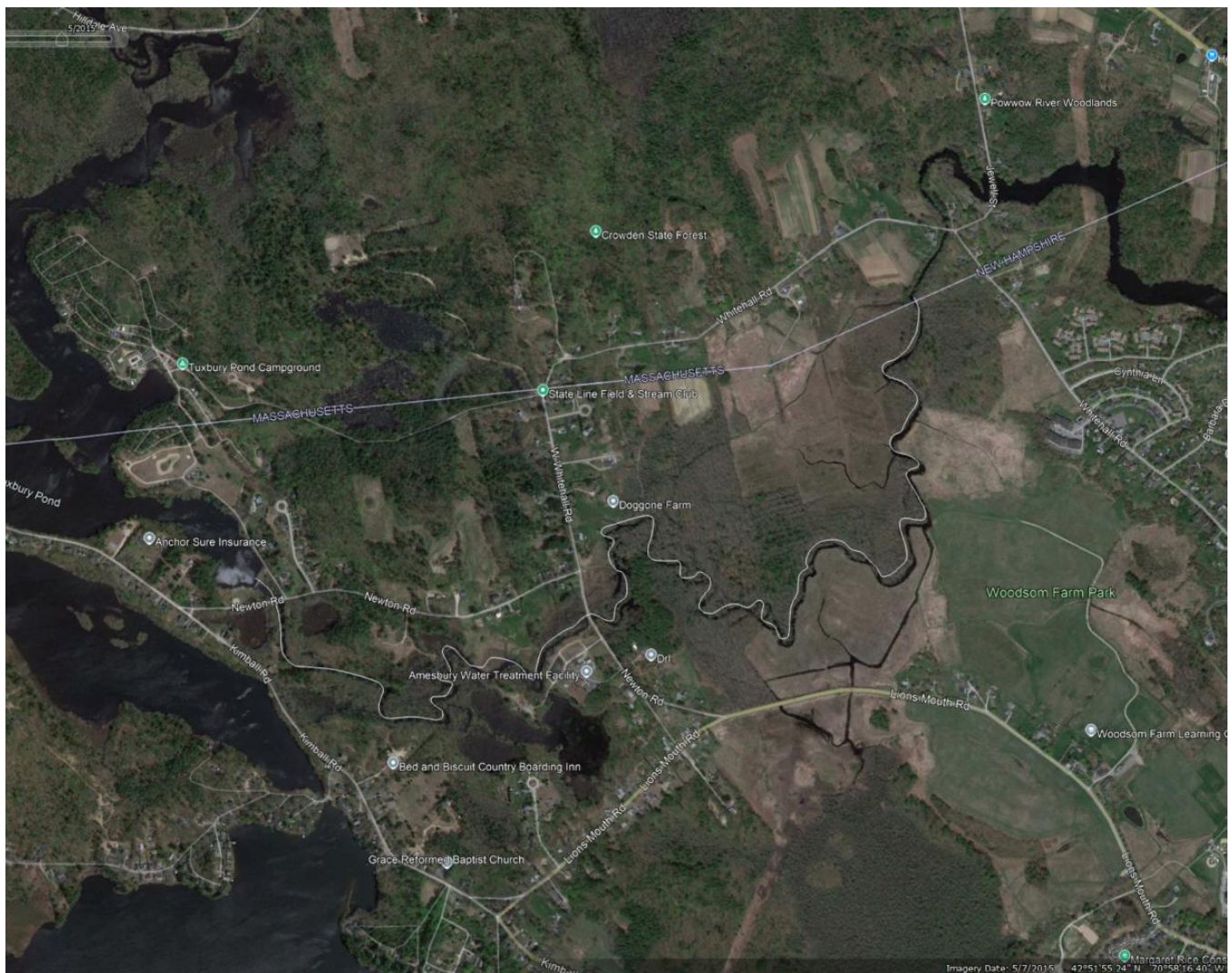
<b>Nonattainment Sources</b>		<b>"New"</b>	
Code	Size Magnitude	Code	Size Magnitude

**Assessment Type** (Assessment Category => Not-assessed ) **"New" Assessment Category => M E NA**

<b>Media/Pollutants Assessed</b>	(Toxics Monitoring => )	<b>"New" Toxics Monitoring =&gt; YES or NO</b>

**Comments:**

**Google Earth images of the MA84A-28 watershed area in May 2015 and April 2023.** Segment MA84A-28 extends from Outlet Tuxbury Pond, Amesbury to New Hampshire state line, Amesbury (Google Earth Pro Undated):

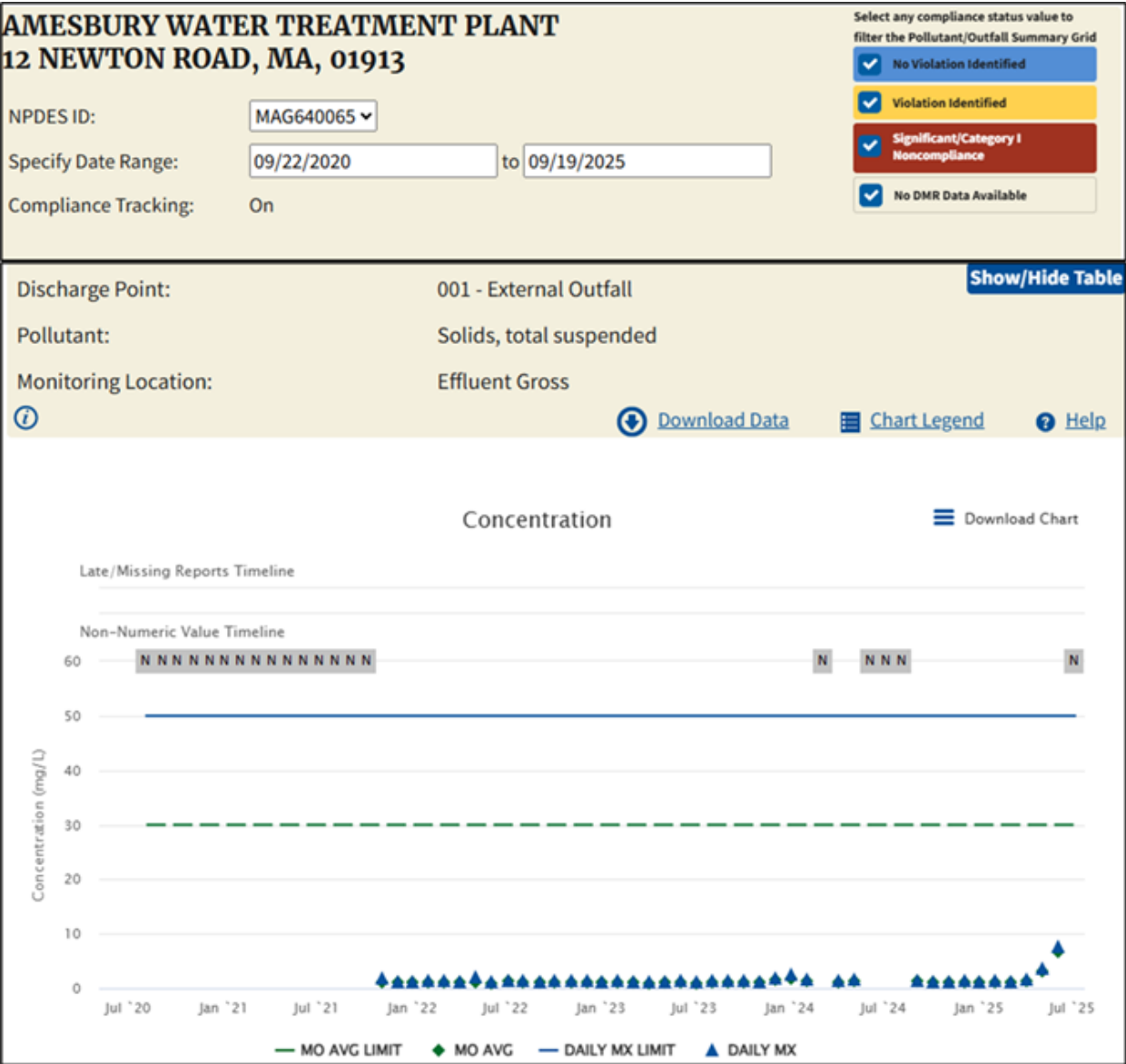






## Total Suspended Solids (TSS)

**Screen captures from EPA's ECHO database of NPDES effluent data from the Amesbury Water Treatment Plant (MAG640065).** Note that there were no violations for total suspended solids between Sept, 2020 and Sept, 2025. (EPA 2025)



### Turbidity

Please see information in the Fecal Coliform and Total Suspended Solids sections above.

### Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	

Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Powwow River AU (MA84A-28) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

### 2024/26 Use Attainment Summary

The Aesthetics Use for this Powwow River AU (MA84A-28) is assessed as Fully Supporting based on observations made by MassDEP field staff during the summer of 2015. The prior impairments for Total Suspended Solids (TSS) and Turbidity are being removed (see delisting statement). MassDEP staff recorded aesthetics observations for this Powwow River AU as part of the MAP2 wadeable streams monitoring project in summer 2015 three-quarters of the way down the AU [Lat/Long : 42.865929 deg, -70.961591 deg] at W2512 (n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2512	MassDEP	Water Quality	Powwow River	[approximately 7200 feet upstream of Newton Road, Amesbury]	42.865929	-70.961591

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2512	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2512 on Powwow River (MA84A-28) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2512	2015	5	2	0

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2512	Powwow River	2015	Aesthetics Impaired?	No	5	5
W2512	Powwow River	2015	Aquatic Plant Density, Overall	Dense	1	5
W2512	Powwow River	2015	Aquatic Plant Density, Overall	Moderate	2	5
W2512	Powwow River	2015	Aquatic Plant Density, Overall	Unobservable	2	5
W2512	Powwow River	2015	Color	Light Yellow/Tan	5	5
W2512	Powwow River	2015	Objectionable Deposits	No	3	5
W2512	Powwow River	2015	Objectionable Deposits	Unobservable	1	5
W2512	Powwow River	2015	Objectionable Deposits	Yes	1	5
W2512	Powwow River	2015	Odor	None	4	5
W2512	Powwow River	2015	Odor	NR	1	5
W2512	Powwow River	2015	Periphyton Density, Filamentous	Sparse	2	5
W2512	Powwow River	2015	Periphyton Density, Filamentous	Unobservable	3	5
W2512	Powwow River	2015	Periphyton Density, Film	None	2	5
W2512	Powwow River	2015	Periphyton Density, Film	Unobservable	3	5
W2512	Powwow River	2015	Scum	No	3	5
W2512	Powwow River	2015	Scum	Yes	2	5
W2512	Powwow River	2015	Turbidity	None	1	5
W2512	Powwow River	2015	Turbidity	Slightly Turbid	2	5
W2512	Powwow River	2015	Turbidity	Unobservable	2	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO
2024/26 Use Attainment Summary	

The Primary Contact Recreation Use for this Powwow River AU (MA84A-28) is assessed as Fully Supporting. The Total Suspended Solids (TSS) and Turbidity impairments are being removed since they were removed from the Aesthetics Use. The Fecal Coliform impairment is being removed because the freshwater pathogen indicator changed from Fecal Coliform to *E. coli*/Enterococcus in the 2007 Massachusetts SWQS (310 CMR 4.00) and the *E. coli* data used for assessing this water body meet the use criteria (see the delisting statement for more information).

MassDEP staff collected *E. coli* bacteria samples in the Powwow River (MA84A-28) three-quarters of the way down the AU [Lat/Long : 42.865929 deg, -70.961591 deg] at W2512 from May-Sep 2015 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2512 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 49 CFU/100ml. *E. coli* data from W2512 meet 2024 CALM guidance.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2512	MassDEP	Water Quality	Powwow River	[approximately 7200 feet upstream of Newton Road, Amesbury]	42.865929	-70.961591

### Bacteria Data

#### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 4)

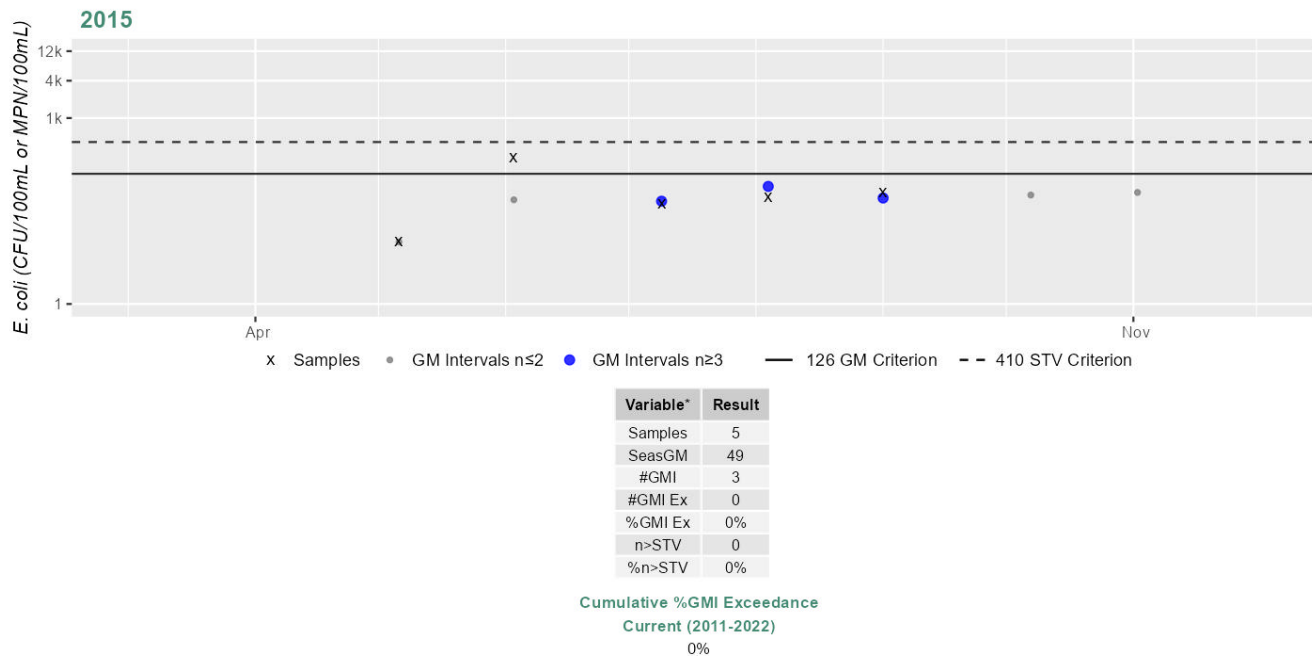
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2512	MassDEP	E. coli	05/06/15	09/01/15	5	10	230	49



### Station MASSDEP\_W2512 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for this Powwow River AU (MA84A-28) is assessed as Fully Supporting. The Total Suspended Solids (TSS) and Turbidity impairments are being removed since they were removed from the Aesthetics Use.</p> <p>MassDEP staff collected <i>E. coli</i> bacteria samples in the Powwow River (MA84A-28) three-quarters of the way down the AU [Lat/Long : 42.865929 deg, -70.961591 deg] at W2512 from May-Sep 2015 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2512 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 49 CFU/100ml. <i>E. coli</i> data from W2512 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2512	MassDEP	Water Quality	Powwow River	[approximately 7200 feet upstream of Newton Road, Amesbury]	42.865929	-70.961591

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

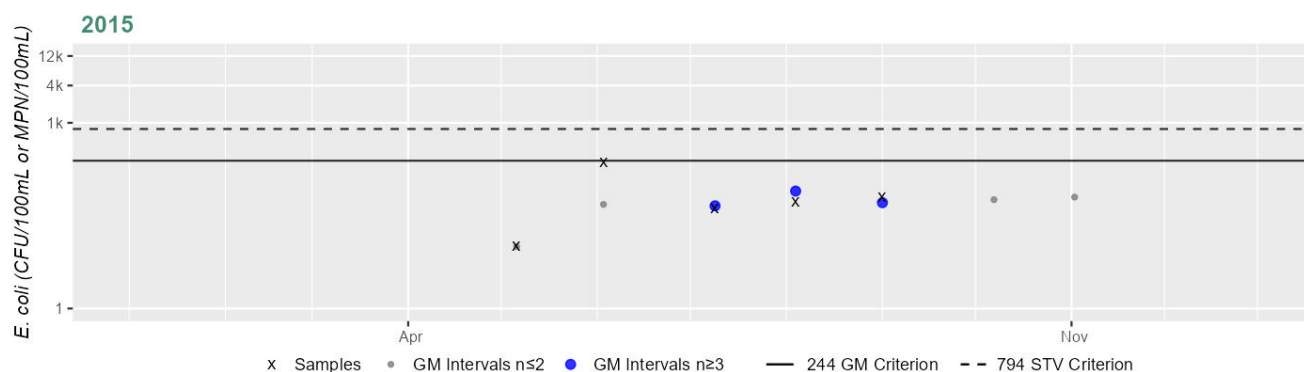
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2512	MassDEP	E. coli	05/06/15	09/01/15	5	10	230	49

#### Station MASSDEP\_W2512 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	49
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Reed Brook (MA84B-08)

<b>Location:</b>	Headwaters, south of the West Street/Cowdry Hill Road intersection, Westford to the confluence with Stony Brook, Westford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	0.6 MILES
<b>Classification/Qualifier:</b>	B: CWF

No usable data were available for Reed Brook (MA84B-08) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

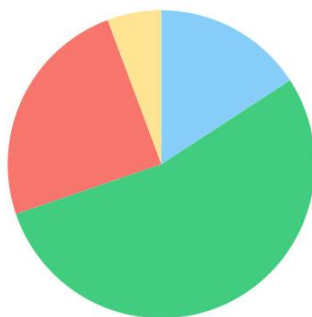
<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
3	3	None	--	Unchanged

# Richardson Brook (MA84A-12)

<b>Location:</b>	Headwaters, Dracut (excluding intermittent portion) to confluence with Merrimack River, Dracut.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.9 MILES
<b>Classification/Qualifier:</b>	B

## Richardson Brook (MA84A-12)

Watershed Area: 4.26 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.26	4.26	1.62	1.62
Agriculture	5.7%	5.7%	5%	5%
Developed	24.6%	24.6%	16.1%	16.1%
Natural	53.9%	53.9%	53.8%	53.8%
Wetland	15.8%	15.8%	25.1%	25.1%
Impervious	9.4%	9.4%	6.5%	6.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Recommendations

2024/26 Recommendations
2024/2026 IR [E. coli, medium] Conduct follow-up <i>E. coli</i> monitoring in Richardson Brook (MA84A-12) in the vicinity of W1192 since one historical <i>E. coli</i> sample collected during summer 2004 was excessively elevated (6,600 CFU/100ml). This data was summarized during the 2024/2026 IR as part of the re-evaluation of data for the Secondary Contact Recreation Use. {W1192}

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Richardson Brook (MA84A-12) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Richardson Brook (MA84A-12) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Richardson Brook (MA84A-12) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Richardson Brook (MA84A-12) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical <i>E. coli</i> bacteria samples in the downstream quarter of Richardson Brook (MA84A-12) at W1192 [Methuen St crossing, Dracut] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1192 indicated 20% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 161 CFU/100ml. Historic <i>E. coli</i> data from W1192 are inconclusive according to the 2024 CALM to assess the Secondary Contact Recreation Use because this single year, limited frequency dataset with GMs below the threshold had an STV exceedance and an overall GM below the threshold. Additionally, since these data were collected prior to the current IR window (2011-2022), they cannot be used to assess the Secondary Contact Recreation Use of Richardson Brook. Note that since the maximum historical <i>E. coli</i> concentration was excessively elevated (6,600 CFU/100ml), a recommendation will be made to conduct follow-up sampling in Richardson Brook.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1192	MassDEP	Water Quality	Richardson Brook	[Methuen Street crossing, Dracut]	42.663217	-71.267020

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

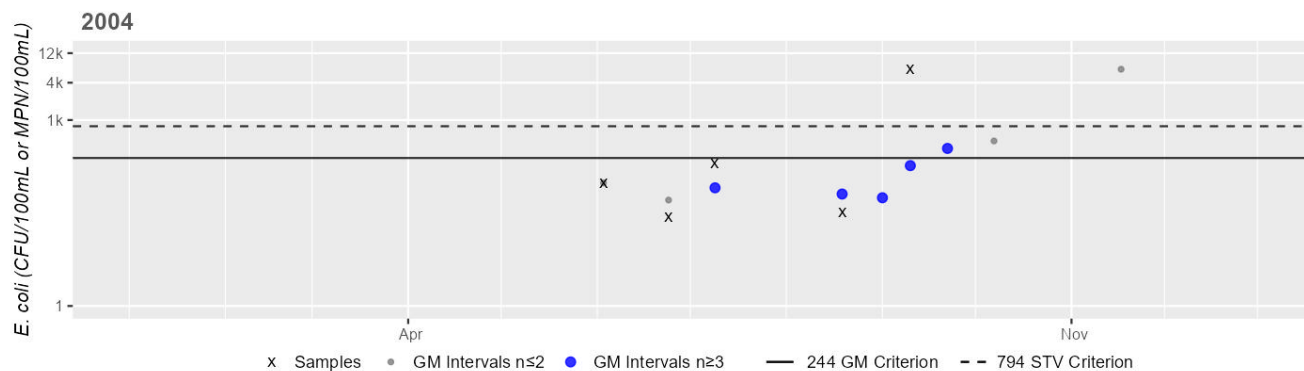
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1192	MassDEP	E. coli	06/02/04	09/09/04	5	27	6600	161

# Station MASSDEP\_W1192 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	161
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	20%

## Cumulative %GMI Exceedance

Historic (1997-2010)

20%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Salmon Brook (MA84A-33)

<b>Location:</b>	Headwaters, outlet Lower Massapoag Pond, Dunstable to New Hampshire state line, Dunstable.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.9 MILES
<b>Classification/Qualifier:</b>	B

### Salmon Brook (MA84A-33)

Watershed Area: 22.16 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	22.06	8.59	6.36	2.37
Agriculture	3.8%	5.4%	2.5%	5.3%
Developed	11.8%	11.2%	8.7%	7.2%
Natural	69.2%	66%	66.1%	55.8%
Wetland	15.2%	17.4%	22.6%	31.6%
Impervious	4.9%	4%	4%	2.6%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	2	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Salmon Brook (MA84A-33) is Not Assessed.	



## Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Salmon Brook (MA84A-33) is assessed as Fully Supporting based on the lack of any objectionable conditions documented by MassDEP staff during the summers of 2015 and 2016. MassDEP staff recorded aesthetics observations at one station close to the downstream end of this Salmon Brook AU ~325 feet upstream/south of the Massachusetts/New Hampshire border, west of High Street, Dunstable (W2540), during the summers of 2015 and 2016 as part of the Reference Site Network monitoring project (n=4/yr). No objectionable conditions (i.e., odors, deposits, growths, or turbidity) were observed during any of the surveys.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2540	MassDEP	Water Quality	Salmon Brook	[approximately 325 feet upstream/south of the Massachusetts/New Hampshire border, west of High Street, Dunstable]	42.700651	-71.487647

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2540	2015	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2540 on Salmon Brook (MA84A-33) during 4 site visits between May 2015 and Aug 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2540	2016	4	Aesthetic observations were made by MassDEP field sampling crews at Station W2540 on Salmon Brook (MA84A-33) during 4 site visits between May 2016 and Aug 2016. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2540	2015	4	2	0

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2540	2016	4	3	0

**MassDEP Aesthetics Observations (2011-2020)** (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2540	Salmon Brook	2015	Aesthetics Impaired?	No	4	4
W2540	Salmon Brook	2015	Aquatic Plant Density, Overall	Sparse	4	4
W2540	Salmon Brook	2015	Color	Light Yellow/Tan	3	4
W2540	Salmon Brook	2015	Color	NR	1	4
W2540	Salmon Brook	2015	Objectionable Deposits	No	4	4
W2540	Salmon Brook	2015	Odor	None	3	4
W2540	Salmon Brook	2015	Odor	Rotting Vegetables	1	4
W2540	Salmon Brook	2015	Periphyton Density, Filamentous	None	2	4
W2540	Salmon Brook	2015	Periphyton Density, Filamentous	NR	1	4
W2540	Salmon Brook	2015	Periphyton Density, Filamentous	Unobservable	1	4
W2540	Salmon Brook	2015	Periphyton Density, Film	None	2	4
W2540	Salmon Brook	2015	Periphyton Density, Film	NR	1	4
W2540	Salmon Brook	2015	Periphyton Density, Film	Unobservable	1	4
W2540	Salmon Brook	2015	Scum	No	3	4
W2540	Salmon Brook	2015	Scum	Yes	1	4
W2540	Salmon Brook	2015	Turbidity	None	3	4
W2540	Salmon Brook	2015	Turbidity	Slightly Turbid	1	4
W2540	Salmon Brook	2016	Aesthetics Impaired?	No	4	4
W2540	Salmon Brook	2016	Aquatic Plant Density, Overall	Dense	1	4
W2540	Salmon Brook	2016	Aquatic Plant Density, Overall	Moderate	2	4
W2540	Salmon Brook	2016	Aquatic Plant Density, Overall	Sparse	1	4
W2540	Salmon Brook	2016	Color	Brownish	1	4
W2540	Salmon Brook	2016	Color	Light Yellow/Tan	3	4
W2540	Salmon Brook	2016	Objectionable Deposits	No	4	4
W2540	Salmon Brook	2016	Odor	None	4	4
W2540	Salmon Brook	2016	Periphyton Density, Filamentous	None	2	4

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2540	Salmon Brook	2016	Periphyton Density, Filamentous	Sparse	1	4
W2540	Salmon Brook	2016	Periphyton Density, Filamentous	Unobservable	1	4
W2540	Salmon Brook	2016	Periphyton Density, Film	None	3	4
W2540	Salmon Brook	2016	Periphyton Density, Film	Unobservable	1	4
W2540	Salmon Brook	2016	Scum	No	2	4
W2540	Salmon Brook	2016	Scum	Yes	2	4
W2540	Salmon Brook	2016	Turbidity	Moderately Turbid	2	4
W2540	Salmon Brook	2016	Turbidity	None	1	4
W2540	Salmon Brook	2016	Turbidity	Slightly Turbid	1	4

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

No bacteria data are available to assess the Primary Contact Recreation Use for Salmon Brook (MA84A-33) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

No bacteria data are available to assess the Secondary Contact Recreation Use for Salmon Brook (MA84A-33) and available aesthetics observations for this AU did not result in any impairment, so it is assessed as having Insufficient Information. MassDEP staff collected historical *E. coli* bacteria samples in Salmon Brook downstream of the MA84A-33 AU at W1199 [Ridge Rd crossing, Nashua, New Hampshire] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1199 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 81 CFU/100ml. Historic *E. coli* data from W1199 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Salmon Brook.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1199	MassDEP	Water Quality	Salmon Brook	[Ridge Road crossing, Nashua, New Hampshire]	42.706645	-71.489182

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

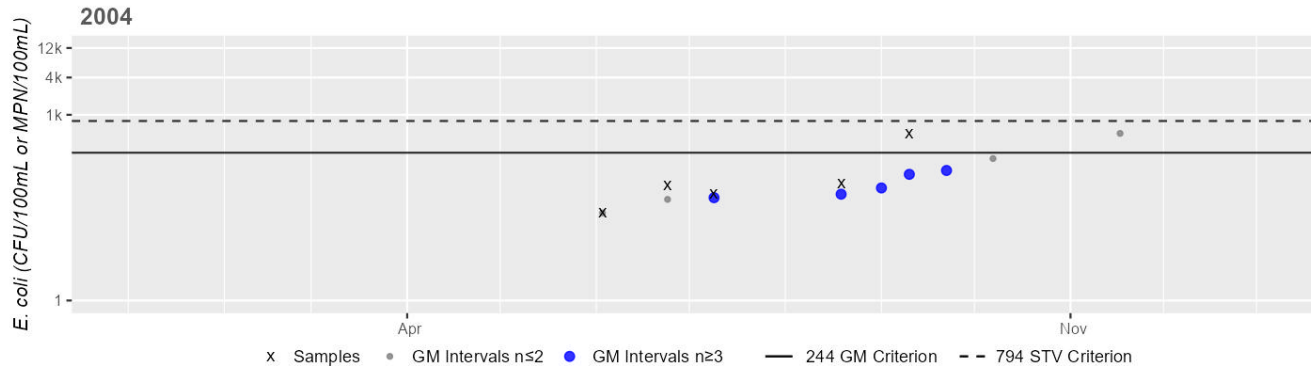
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1199	MassDEP	E. coli	06/02/04	09/09/04	5	26	500	81

#### Station MASSDEP\_W1199 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	81
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## South Branch Souhegan River (MA84A-31)

<b>Location:</b>	Headwaters, outlet Watatic Pond, Ashburnham to New Hampshire state line, Ashby.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3 MILES
<b>Classification/Qualifier:</b>	B

### South Branch Souhegan River (MA84A-31)

Watershed Area: 8.65 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	8.60	6.93	2.36	1.92
Agriculture	3%	3%	4.4%	4.4%
Developed	7.2%	7.4%	8.7%	8.6%
Natural	83.7%	84.3%	75.3%	74.3%
Wetland	6.1%	5.3%	11.6%	12.7%
Impervious	3%	3%	4.2%	3.8%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Dam or Impoundment (N)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for South Branch Souhegan River (MA84A-31) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for South Branch Souhegan River (MA84A-31) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
------------------------	-------

Not Supporting	NO
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#### 2024/26 Use Attainment Summary

No bacteria or other indicator data for the South Branch Souhegan River (MA84A-31) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

#### 2024/26 Use Attainment Summary

No bacteria or other indicator data for the South Branch Souhegan River (MA84A-31) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical *E. coli* bacteria samples at the downstream end of the South Branch Souhegan River (MA84A-31) at W2158 [~2200 ft downstream of Jones Hill Rd, Ashby] from May-Sep 2010 (n=6). Analysis of this historic single year limited frequency *E. coli* dataset from W2158 indicated 0% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 132 CFU/100ml. Historic *E. coli* data from W2158 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of the South Branch Souhegan River.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2158	MassDEP	Water Quality	South Branch Souhegan River	[approximately 2200 feet downstream of Jones Hill Road, Ashby]	42.709754	-71.851700

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

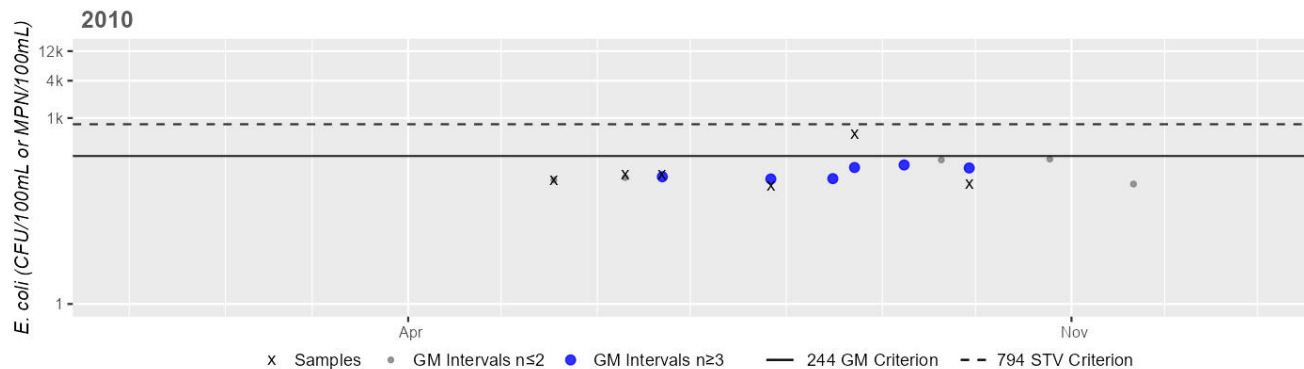
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2158	MassDEP	E. coli	05/18/10	09/29/10	6	81	550	132

# Station MASSDEP\_W2158 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	6
SeasGM	132
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.



## Spectacle Pond (MA84089)

<b>Location:</b>	Littleton/Ayer.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	79 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Spectacle Pond (MA84089) is Not Assessed.

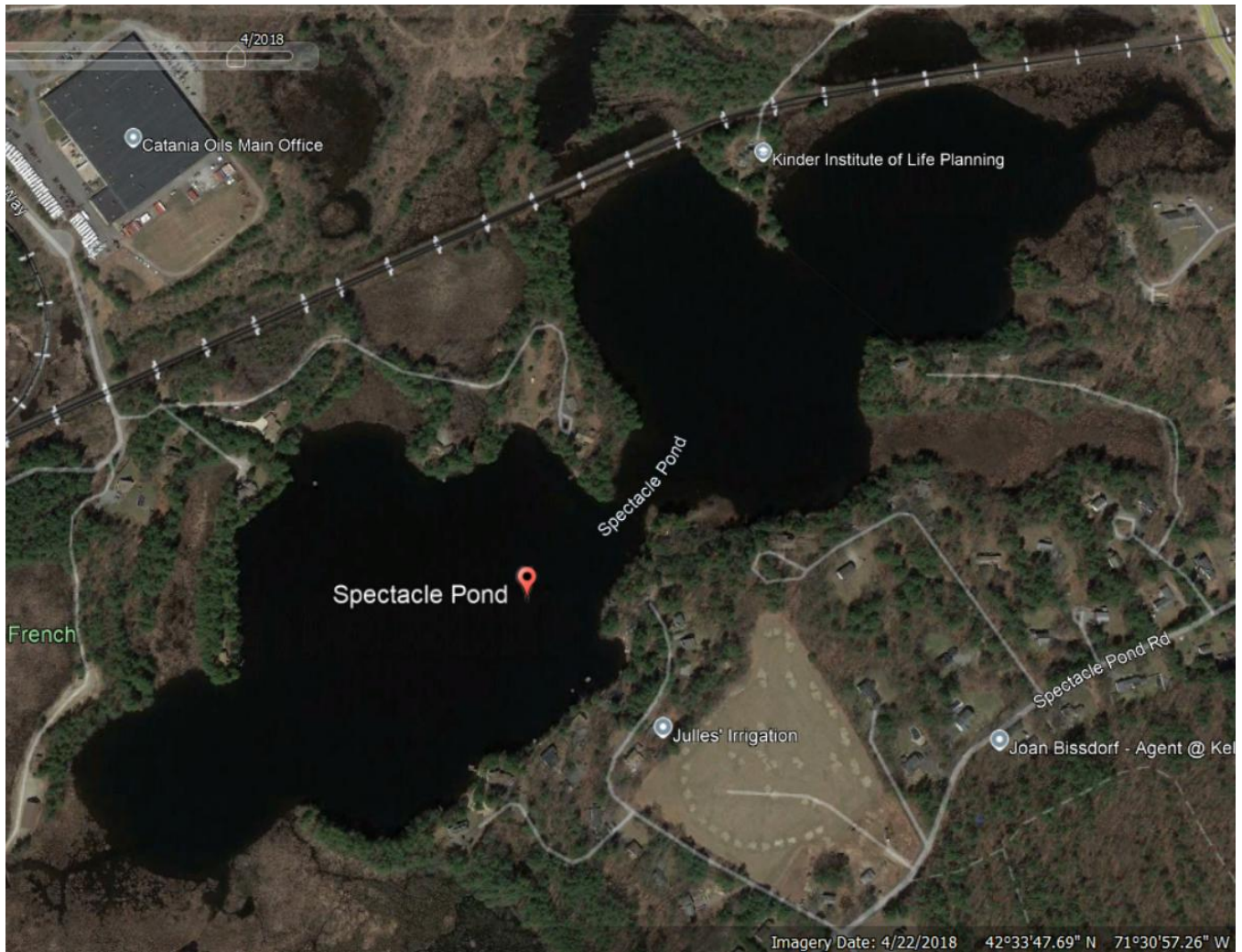
### Aesthetic

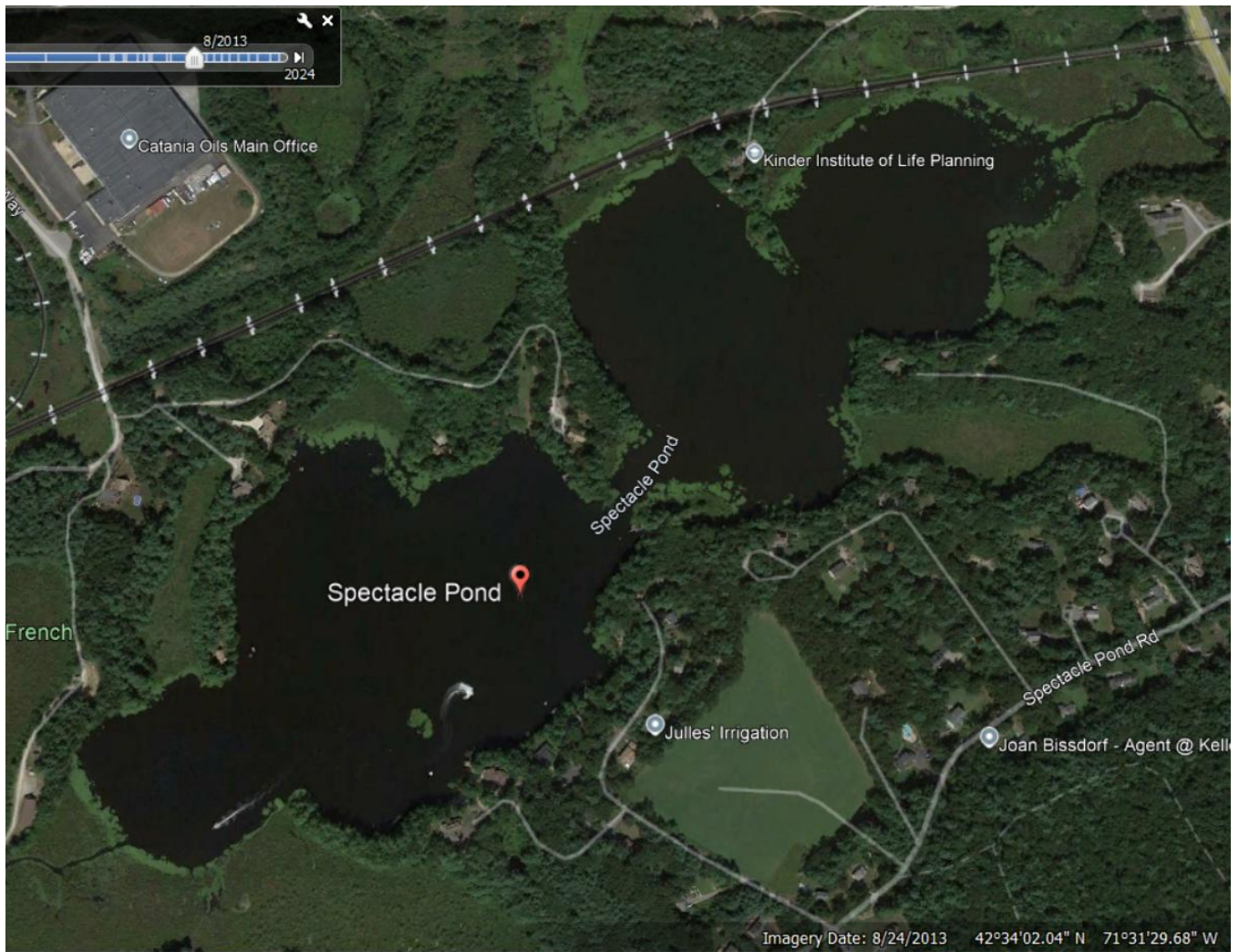
2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
<p>The Aesthetics Use for Spectacle Pond (MA84089) is assessed as having Insufficient Information. Since the Non-Native Aquatic Plants impairment was redundantly duplicated across multiple uses for this waterbody, the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use. MassDEP staff previously reported that approximately 30 acres (out of 79 total acres), primarily along the entire shoreline of Spectacle Pond, were densely to very densely covered with submergent and floating leaf vegetation during a diagnostic/feasibility survey conducted by ESS in 2001 (Kennedy, Kiras and McVoy 2001). However, current Google Earth images from August 2013, June 2015, June 2019 and October 2021 (Google Earth Pro Undated) also show &lt;25% of the surface area is covered by dense vegetation. Additionally, based on MassDEP Wetlands dataset, the northeastern portion of the waterbody is dominated by wetlands, specifically deep marsh and wooded deciduous swamp. Since recent imagery show &lt;25% of the surface with denser vegetation, an Aquatic Plants (Macrophytes) non-pollutant impairment is not needed at this time. No new data are available to evaluate the Aesthetics Use for this Spectacle Pond AU.</p>

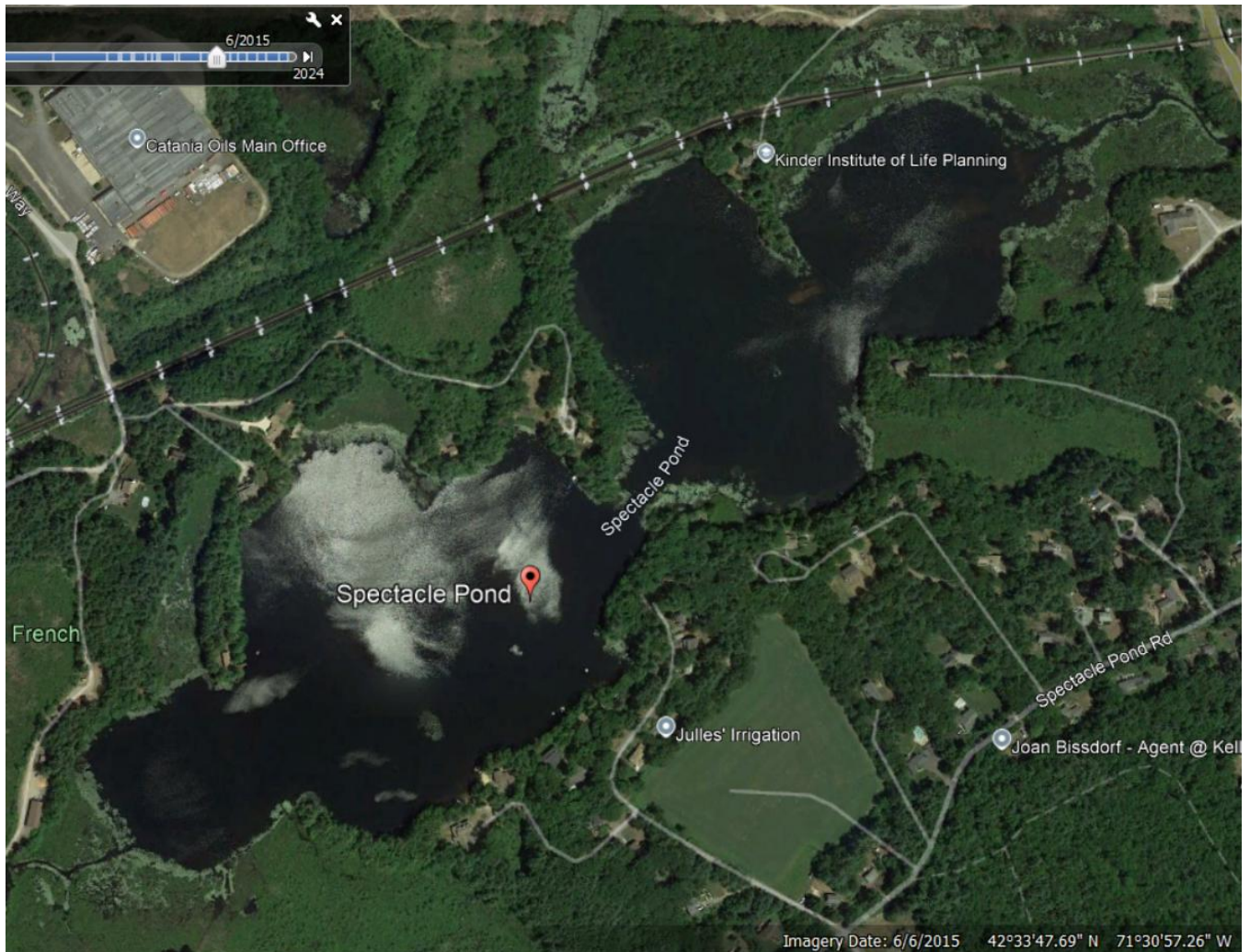
## ***Aesthetic Observations***

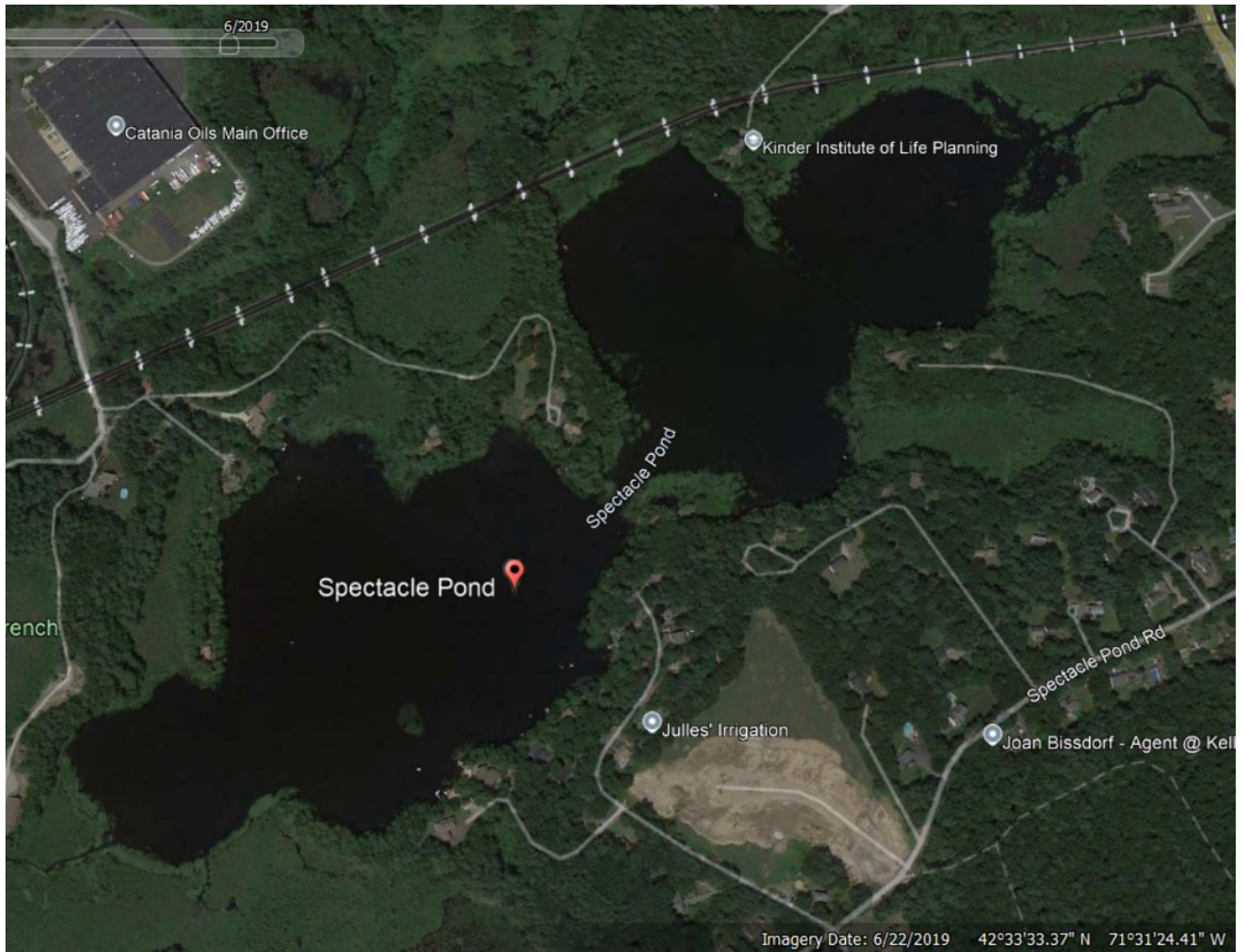
**Spectacle Pond (MA84089) Google Earth Imagery: Pond Outline (April 2018) Followed by Imagery from August 2013, June 2015, June 2019 and October 2021 Showing Dense/Very Dense Vegetation Covering >25% of the Pond's Surface (Google Earth Pro Undated)**



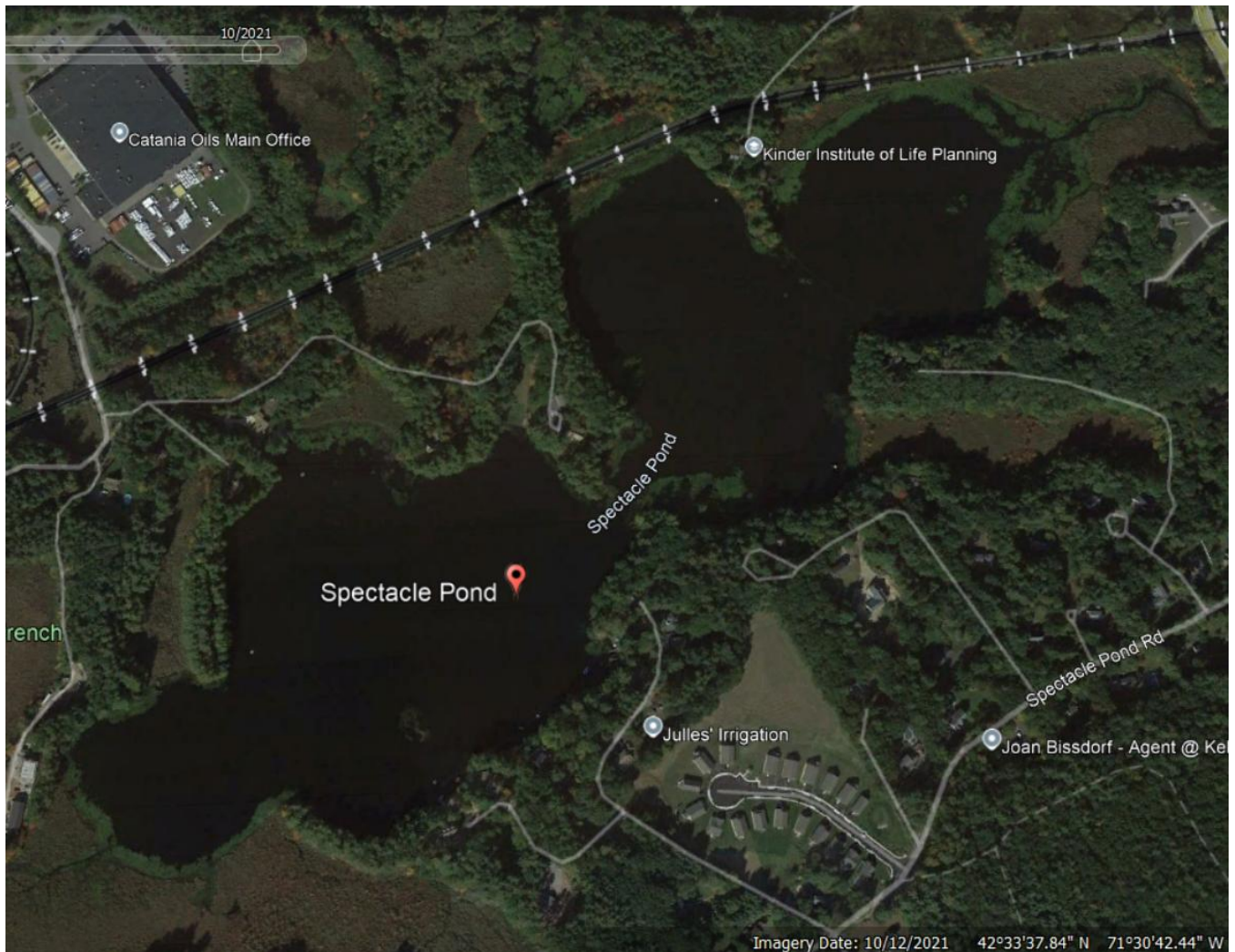












## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

Spectacle Pond (MA84089) is assessed as having Insufficient Information. Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Primary Contact Recreation Use. No new data are available to evaluate the Primary Contact Recreation Use for this Spectacle Pond AU.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

### 2024/26 Use Attainment Summary

Spectacle Pond (MA84089) is assessed as having Insufficient Information. Since the Non-Native Aquatic Plants impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use. No new data are available to evaluate the Secondary Contact Recreation Use for this Spectacle Pond AU.



## Spicket River (MA84A-42)

<b>Location:</b>	New Hampshire state line, Methuen to General Street bridge, Lawrence (formerly part of 2022 segment: Spicket River MA84A-10).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	5.4 MILES
<b>Classification/Qualifier:</b>	B: WWF

### Spicket River (MA84A-42)

Watershed Area: 77.29 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	11.28	5.71	3.31	1.45
Agriculture	1%	0%	0.9%	0%
Developed	41.8%	57.9%	29.2%	43.5%
Natural	41%	33.8%	38.4%	33%
Wetland	16.2%	8.4%	31.5%	23.6%
Impervious	26.3%	39.8%	19%	30.8%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	5	(Debris*)	--	Unchanged
--	5	(Fish Passage Barrier*)	--	Unchanged
--	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
--	5	Benthic Macroinvertebrates	--	Unchanged
--	5	Copper	--	Unchanged
--	5	DDT in Fish Tissue	--	Unchanged
--	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
--	5	Mercury in Fish Tissue	--	Unchanged
--	5	Nutrients	--	Unchanged
--	5	Trash	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Debris*)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Channelization (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Channelization (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Loss of Riparian Habitat (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Municipal Point Source Discharges (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Copper	Combined Sewer Overflows (Y)	X	--	--	--	--
Copper	Unspecified Urban Stormwater (Y)	X	--	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrients	Combined Sewer Overflows (Y)	X	--	--	--	--
Nutrients	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Trash	Unspecified Urban Stormwater (Y)	--	--	X	X	X

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
<p>The Fish Consumption Use for this Spicket River AU (MA84A-42) is assessed as Not Supporting. MDPH issued site-specific advisories for Mercury and DDT in the Spicket River (referred to by MDPH as "Stevens Pond &amp; Spicket River (from Stevens Pond to Music Hall Dam in Methuen)"; note that this description describes the downstream and then the upstream landmark) in their Pre-2018 Freshwater Fish Consumption Advisory List. Note that for this cycle, the former MA84A-10 AU was split into two Spicket River AUs, MA84A-42 (which runs from the NH state line to the General St bridge in Lawrence; General St is downstream of Stevens Pond), and MA84A-43. The prior impairments for Mercury in Fish Tissue and DDT in Fish Tissue, which were originally identified for the former MA84A-10 Spicket River AU, are being carried over to this new MA84A-42 AU. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.</p>

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Aesthetics Use for this Spicket River AU (MA84A-42) continues to be assessed as Not Supporting. Since this AU previously constituted the upper section of the former 2022 segment "Spicket River MA84A-10", the prior impairments for Debris and Trash associated with MA84A-10, will be carried forward to MA84A-42 because aesthetics conditions were previously "considered to be problematic throughout the lower 3.8 mile reach (where the Spicket River flows through the city of Lawrence)" with "astronomical amounts of debris and trash" historically reported to have been dumped into the river within Lawrence" (Kennedy, Kiras and McVoy 2001). No new data are available to assess the Aesthetics Use for the Spicket River (MA84A-42).</p>

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
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The Primary Contact Recreation Use for this Spicket River AU (MA84A-42) continues to be assessed as Not Supporting. This AU is new this cycle and was previously the upper section of the former 2022 segment “Spicket River MA84A-10.” The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on bacteria data not meeting the threshold at USGS-01100564. The prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward. USGS staff collected *E. coli* bacteria samples in the Spicket River (MA84A-42) at USGS-01100564 [Spicket River at Short St, Lawrence, MA] from 2021-2022 (n=4-6/yr). Analysis of the multi-year limited frequency *E. coli* dataset from USGS-01100564 indicated 2 out of 2 sufficient data years had intervals where >20% of the GMs were >126 CFU/100ml (2021 and 2022, 100 & 100%), 0 years had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 100% of intervals had GMs >126 CFU/100ml. Data from USGS-01100564 reflect the existing *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01100564	USGS Massachusetts Water Science Center	Water Quality	Spicket River	Spicket River At Short Street, Lawrence, MA	42.713550	-71.160839

### Bacteria Data

#### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

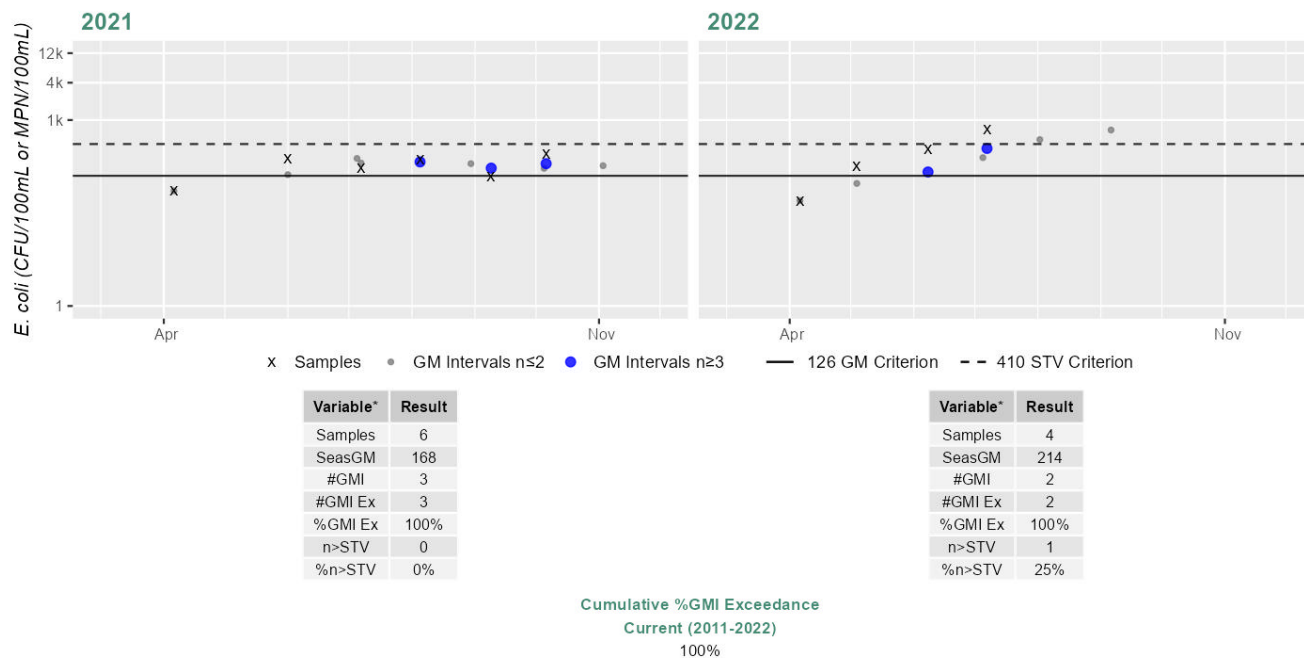
(USGS 2024) (MassDEP Undated 2)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01100564	USGS Massachusetts Water Science Center	E. coli	04/06/21	10/06/21	6	72	280	168
USGS-01100564	USGS Massachusetts Water Science Center	E. coli	04/06/22	07/07/22	4	50	690	214

### Station USGS-01100564 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for this Spicket River AU (MA84A-42) continues to be assessed as Not Supporting. This AU is new this cycle and was previously the upper section of the former 2022 segment "Spicket River MA84A-10." The prior Debris and Trash impairments (from the Aesthetics Use) are being carried forward. USGS staff collected <i>E. coli</i> bacteria samples in the Spicket River (MA84A-42) at USGS-01100564 [Spicket River at Short St, Lawrence, MA] from 2021-2022 (n=7-8/yr). Analysis of the multi-year moderate frequency <i>E. coli</i> dataset from USGS-01100564 indicated 0 out of 2 sufficient data years had intervals where &gt;20% of the GMs were &gt;244 CFU/100ml, 0 years had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 7% of intervals had GMs &gt;244 CFU/100ml. <i>E. coli</i> data from USGS-01100564 meet 2024 CALM guidance. The prior <i>E. coli</i> impairment was a presumptive impairment due to the presence of a CSO outfall that now applies only to the new downstream MA84A-43 AU (the GLSD006 CSO outfall is located at the upstream end of the MA84A-43 AU) so the prior <i>E. coli</i> impairment is being removed from the Secondary Contact Recreation Use of this Spicket River AU (MA84A-42).</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
USGS-01100564	USGS Massachusetts Water Science Center	Water Quality	Spicket River	Spicket River At Short Street, Lawrence, MA	42.713550	-71.160839

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

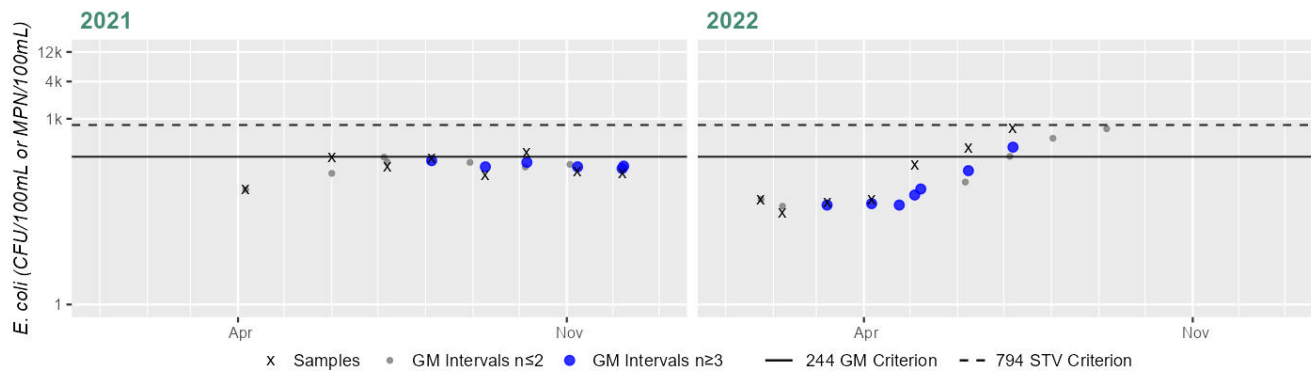
(USGS 2024) (MassDEP Undated 1)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01100564	USGS Massachusetts Water Science Center	E. coli	04/06/21	12/07/21	8	72	280	159
USGS-01100564	USGS Massachusetts Water Science Center	E. coli	01/24/22	07/07/22	7	30	690	104

### Station USGS-01100564 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	159
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	104
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

7%

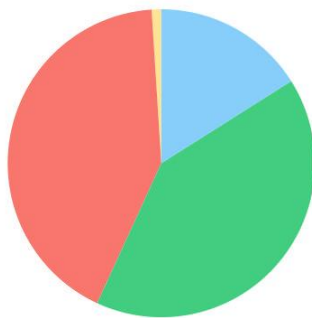
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Spicket River (MA84A-43)

<b>Location:</b>	From General Street bridge, Lawrence to mouth at confluence with the Merrimack River, Lawrence (formerly part of 2022 segment: Spicket River MA84A-10).
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	0.4 MILES
<b>Classification/Qualifier:</b>	B: WWF, CSO

### Spicket River (MA84A-43)

Watershed Area: 77.41 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area* (square miles)	11.40	4.91	3.37	1.17
Agriculture	1%	0%	0.9%	0%
Developed	42.1%	61.6%	30.1%	50.3%
Natural	40.8%	32.5%	38%	33.4%
Wetland	16%	5.8%	31%	16.3%
Impervious	26.7%	43.4%	19.8%	36.3%

\*Land cover analysis only includes watershed area within Massachusetts.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	5	(Debris*)	--	Unchanged
--	5	(Fish Passage Barrier*)	--	Unchanged
--	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
--	5	Benthic Macroinvertebrates	--	Unchanged
--	5	Copper	--	Unchanged
--	5	DDT in Fish Tissue	--	Removed
--	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
--	5	Mercury in Fish Tissue	--	Removed
--	5	Nutrients	--	Unchanged
--	5	Trash	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Debris*)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Channelization (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Channelization (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Loss of Riparian Habitat (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Municipal Point Source Discharges (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Copper	Combined Sewer Overflows (Y)	X	--	--	--	--
Copper	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Nutrients	Combined Sewer Overflows (Y)	X	--	--	--	--
Nutrients	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Trash	Unspecified Urban Stormwater (Y)	--	--	X	X	X



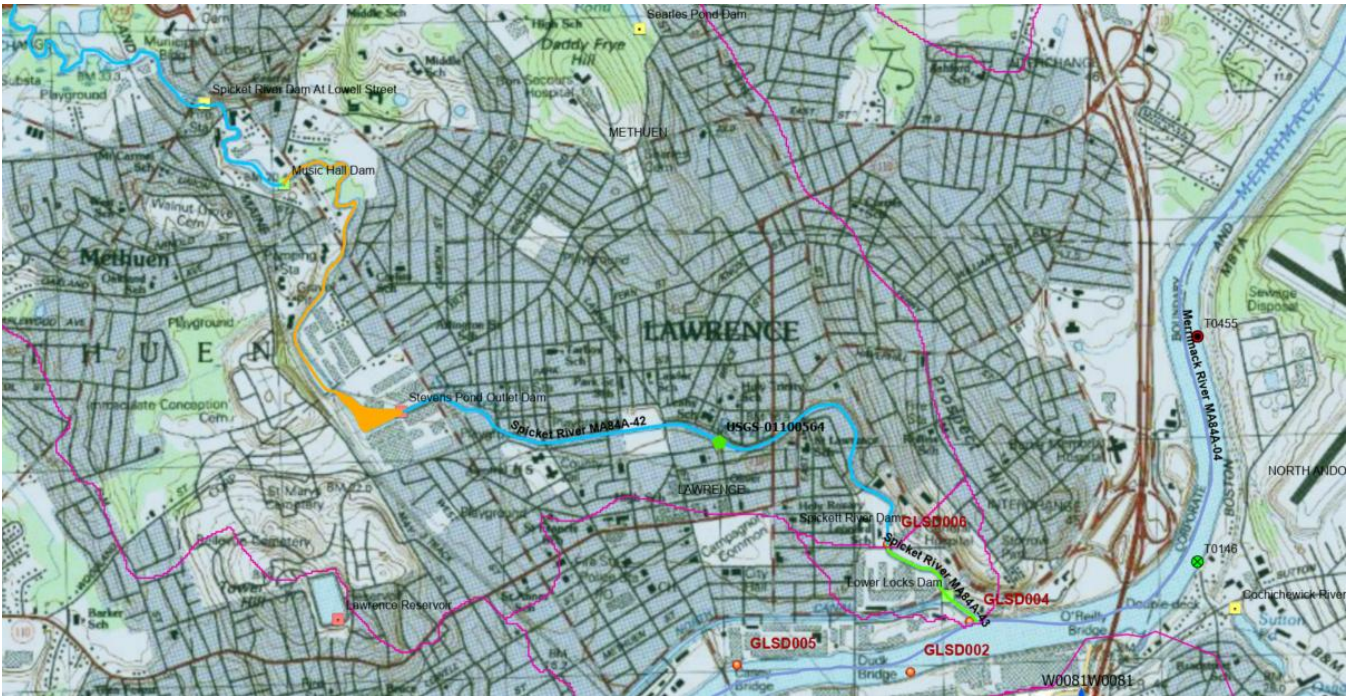
## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Mercury in Fish Tissue	Data and/or information lacking to determine WQ status; original basis for listing was incorrect	Note: New segmentation for 2024/2026 (prior impairments were automatically applied to the new AUs): The former MA84A-10 was removed and split into 2 new Spicket River segments, MA84A-42 (which runs to the General St bridge in Lawrence), and this MA84A-43 AU (which runs from the General St bridge to the mouth at the confluence with the Merrimack River in Lawrence). The current site-specific fish consumption advisory, issued by MDPH, only applies to the area from the Music Hall Dam in Methuen down to Stevens Pond in Lawrence, which is located within the new MA84A-42 AU and should not apply to this downstream MA84A-43 AU. Therefore, the Mercury in Fish Tissue impairment is being delisted from this downstream Spicket River MA84A-43 AU.
DDT in Fish Tissue	Data and/or information lacking to determine WQ status; original basis for listing was incorrect	Note: New segmentation for 2024/2026 (prior impairments were automatically applied to the new AUs): The former MA84A-10 was removed and split into 2 new Spicket River segments, MA84A-42 (which runs to the General St bridge in Lawrence), and this MA84A-43 AU (which runs from the General St bridge to the mouth at the confluence with the Merrimack River in Lawrence). The current site-specific fish consumption advisory, issued by MDPH, only applies to the area from the Music Hall Dam in Methuen down to Stevens Pond in Lawrence, which is located within the new MA84A-42 AU and should not apply to this downstream MA84A-43 AU. Therefore, the DDT in Fish Tissue impairment is being delisted from this downstream Spicket River MA84A-43 AU.

### Mercury in Fish Tissue

Current location of new Spicket River AUs, MA84A-42 (blue line; upstream reach not visible) and MA84A-43 (green line), with the extent of the site-specific Mercury and DDT fish

consumption advisories depicted as the orange line between Music Hall Dam and Stevens Pond Outlet Dam (MassDEP Undated 7)



**DDT in Fish Tissue**

Please see map above under the Mercury in Fish Tissue section of the current location of the new Spicket River AUs, MA84A-42 and MA84A-43, with the extent of the site-specific Mercury and DDT fish consumption advisories depicted.

**Designated Use Attainment Decisions**

**Fish Consumption**

2024/26 Use Attainment	Alert
Insufficient Information	No
2024/26 Use Attainment Summary	

There is Insufficient Information to assess the Fish Consumption Use for this Spicket River AU (MA84A-43) since the prior Mercury in Fish Tissue and DDT in Fish Tissue impairments are being delisted. Note that for this cycle, the former MA84A-10 AU was split into two Spicket River AUs, MA84A-42 (which runs to the General St bridge in Lawrence), and this MA84A-43 AU (which runs from the General St bridge to the mouth at the confluence with the Merrimack River in Lawrence). MDPH lists site-specific advisories for the Spicket River for Mercury and DDT in the Jan 2025 Freshwater Fish Consumption Advisory List, but these only apply from the Music Hall Dam in Methuen down to Stevens Pond in Lawrence- this area is in the upstream AU. Therefore, the Mercury in Fish Tissue and DDT in Fish Tissue impairments, which were automatically applied to this Spicket River MA84A-43 AU, are being delisted.

## Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Aesthetics Use for this Spicket River AU (MA84A-43) continues to be assessed as Not Supporting. This AU is new this cycle and was previously the downstream section of the former 2022 segment “Spicket River MA84A-10.” The prior impairments for Debris and Trash associated with MA84A-10, will be carried forward to MA84A-43 because aesthetics conditions were previously “considered to be problematic throughout the lower 3.8 mile reach (where the Spicket River flows through the city of Lawrence)” with “astronomical amounts of debris and trash” historically reported to have been dumped into the river within Lawrence” (Kennedy, Kiras and McVoy 2001). No new data are available to assess the Aesthetics Use for this Spicket River AU.

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Spicket River AU (MA84A-43) is assessed as Not Supporting. This AU is new this cycle and was previously the downstream section of the former 2022 segment “Spicket River MA84A-10.” The prior *Escherichia coli* (*E. coli*) impairment is being retained as a presumptive impairment due to the presence of a CSO (GLSD006 is located at the upstream end of this AU). The Debris and Trash impairments (from the Aesthetics Use) are being carried forward.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

**2024/26 Use Attainment Summary**

The Secondary Contact Recreation Use for this Spicket River AU (MA84A-43) is assessed as Not Supporting. This AU is new this cycle and was previously the downstream section of the former 2022 segment “Spicket River MA84A-10.” The prior *Escherichia coli* (*E. coli*) impairment is being retained as a presumptive impairment due to the presence of a CSO (GLSD006 is located at the upstream end of this AU). The Debris and Trash impairments (from the Aesthetics Use) are being carried forward.

## Stevens Pond (MA84064)

<b>Location:</b>	North Andover.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	23 ACRES
<b>Classification/Qualifier:</b>	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Harmful Algal Blooms	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	X	X	X
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--

## Recommendations

2024/26 Recommendations
2024 IR [CYANOBACTERIA CELL COUNT, MEDIUM] Follow-up monitoring should be conducted in Stevens Pond (MA84064) to confirm the existing Harmful Algal Blooms impairment to the Recreational and Aesthetic uses (which was previously made based on visual evidence). Monitoring should focus on the collection of cyanobacteria cell count data. {Stevens Pond (MA84064)}

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Stevens Pond (MA84064) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MDPH included a site-specific advisory for Stevens Pond in their January 2025 Freshwater Fish Consumption Advisory List. The public should refer to the most recent DPH Freshwater Fish Consumption Advisory List for the most up to date meal advice for sensitive and general populations.

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Stevens Pond (MA84064) continues to be assessed as Not Supporting, with the Harmful Algal Blooms impairment being carried forward. Since the existing Harmful Algal Blooms impairment for Stevens Pond was based on visual observations, a recommendation is being made to confirm the impairment with cyanobacteria cell count data.

### Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
Since the existing Harmful Algal Blooms impairment for Stevens Pond (MA84064) was based on visual observations, a recommendation is being made to confirm the impairment with cyanobacteria cell count data.

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
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The Primary Contact Recreation Use for Stevens Pond (MA84064) continues to be assessed as Not Supporting. Since the existing Harmful Algal Blooms impairment for Stevens Pond (MA84064) was based on visual observations, a recommendation is being made to confirm the impairment with cyanobacteria cell count data.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Stevens Pond (MA84064) continues to be assessed as Not Supporting. Since the existing Harmful Algal Blooms impairment for Stevens Pond (MA84064) was based on visual observations, a recommendation is being made to confirm the impairment with cyanobacteria cell count data.

## Stodge Meadow Pond (MA84095)

<b>Location:</b>	Ashburnham.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	126 ACRES
<b>Classification/Qualifier:</b>	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	2	None	--	Unchanged

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Stodge Meadow Pond (MA84095) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
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The Aesthetics Use for Stodge Meadow Pond (MA84095) is assessed as Fully Supporting based on the observations from the MassDEP MAP2 surveys in summer 2017. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Ashburnham, for this Stodge Meadow Pond AU, at the northeastern edge of pond, ~300 feet south of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet (W2697/MAP2L-151S, n=5) and at the deep hole index site at the southeastern lobe of pond (W2696/MAP2L-151, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey in Jul 2017 (n=1), less than 25% (0.8%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

### **Monitoring Stations**

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2696	MassDEP	Water Quality	Stodge Meadow Pond	[index site, southeastern lobe of pond, Ashburnham]	42.661400	-71.882512
W2697	MassDEP	Water Quality	Stodge Meadow Pond	[northeastern edge of pond, approximately 300 feet south of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet, Ashburnham]	42.669171	-71.881439

### **Aesthetic Observations**

#### **Aesthetics Summary Statements for MassDEP Stations (2011-2020)** (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2696	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2696 (MAP2L-151) on Stodge Meadow Pond (MA84095) during 3 site visits between Jun 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 macrophyte mapping survey (n=1) in Jul 2017, less than 25% (0.8%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2697	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2697 (MAP2L-151S) on Stodge Meadow Pond (MA84095) during 5 site visits between May 2017 and Aug 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

#### **MassDEP Aesthetics Observations (2011-2020)** (MassDEP Undated 7)

<b>Station Code</b>	<b>Waterbody</b>	<b>Data Year</b>	<b>Parameter</b>	<b>Result</b>	<b>Result Count</b>	<b>Total Field Sheet Count</b>
W2696	Stodge Meadow Pond	2017	Aesthetics Impaired?	No	3	3
W2696	Stodge Meadow Pond	2017	Aquatic Plant Density, Overall	None	2	3
W2696	Stodge Meadow Pond	2017	Aquatic Plant Density, Overall	Unobservable	1	3
W2696	Stodge Meadow Pond	2017	Aquatic Plant Density, Whole Lake	None	1	2
W2696	Stodge Meadow Pond	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2696	Stodge Meadow Pond	2017	Color	Light Yellow/Tan	2	3
W2696	Stodge Meadow Pond	2017	Color	None	1	3
W2696	Stodge Meadow Pond	2017	Duckweed Density, Whole Lake	None	2	2
W2696	Stodge Meadow Pond	2017	Objectionable Deposits	No	3	3
W2696	Stodge Meadow Pond	2017	Odor	None	3	3
W2696	Stodge Meadow Pond	2017	Scum	No	3	3
W2696	Stodge Meadow Pond	2017	Turbidity	None	3	3
W2697	Stodge Meadow Pond	2017	Aesthetics Impaired?	No	5	5
W2697	Stodge Meadow Pond	2017	Color	Light Yellow/Tan	2	5
W2697	Stodge Meadow Pond	2017	Color	None	3	5
W2697	Stodge Meadow Pond	2017	Objectionable Deposits	No	5	5
W2697	Stodge Meadow Pond	2017	Odor	None	5	5
W2697	Stodge Meadow Pond	2017	Scum	No	5	5
W2697	Stodge Meadow Pond	2017	Turbidity	None	4	5
W2697	Stodge Meadow Pond	2017	Turbidity	Slightly Turbid	1	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

### 2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Stodge Meadow Pond (MA84095) is assessed as Fully Supporting. In Stodge Meadow Pond (MA84095), MassDEP collected Secchi and cyanobacteria cell count data at W2696 [MAP2L-151, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2697 [MAP2L-151S, Shoreline] (2017). Secchi depth data indicated water clarity meeting the 1.2m (4ft) threshold at W2696 (station depth=3 m) in 2017 (n=3, 2.1-2.5m). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2697 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected *E. coli* bacteria samples in Stodge Meadow Pond (MA84095) at W2697 [northeastern edge of pond, ~300 ft S of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet, Ashburnham] from May-Aug 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2697 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 12 CFU/100ml. *E. coli* data from W2697 meet 2024 CALM guidance.

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2696	MassDEP	Water Quality	Stodge Meadow Pond	[index site, southeastern lobe of pond, Ashburnham]	42.661400	-71.882512
W2697	MassDEP	Water Quality	Stodge Meadow Pond	[northeastern edge of pond, approximately 300 feet south of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet, Ashburnham]	42.669171	-71.881439

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

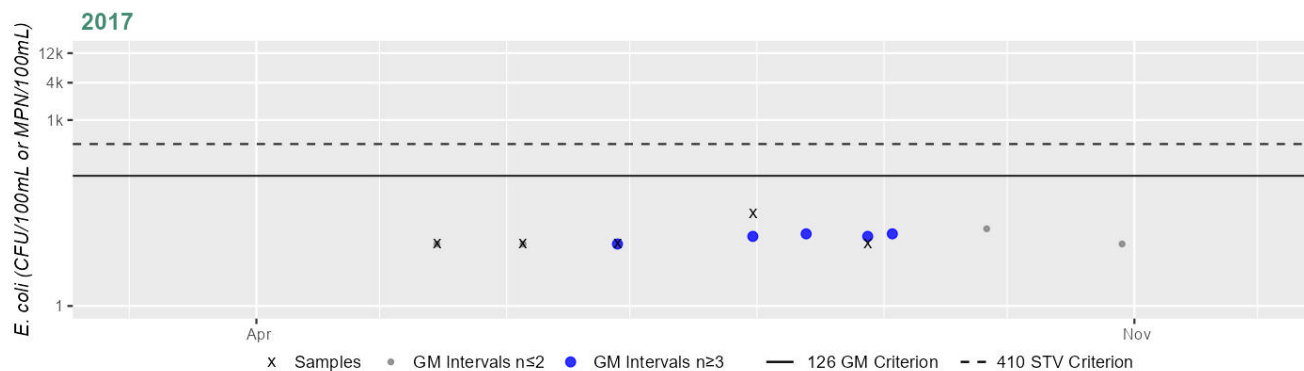
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2697	MassDEP	E. coli	05/15/17	08/28/17	5	10	31	12

### Station MASSDEP\_W2697 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	12
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Other Indicators

### Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data

(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Stodge Meadow Pond (MA84095) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2696 [MAP2L-151, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2697 [MAP2L-151S, Shoreline]. At station W2696 (station depth=3 m) the Secchi depth measurements ranged from 2.1-2.5 m (n=3) indicating water clarity meeting the 1.2 m (4 ft) threshold. The cyanobacteria cell count did not exceed 70,000 cells/mL in any of the water samples (n=6). Analysis of microcystins and cylindrospermopsin samples from the shoreline station W2697 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

### MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2696	Stodge Meadow Pond	Index	2017	3	0	NA
W2697	Stodge Meadow Pond	Shoreline	2017	3	0	NA

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for Stodge Meadow Pond (MA84095) is assessed as Fully Supporting. In Stodge Meadow Pond (MA84095), MassDEP collected cyanobacteria cell count data at W2696 [MAP2L-151, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxins data at W2697 [MAP2L-151S, Shoreline] (2017). The cyanobacteria cell count did not exceed 70,000 cells/ml in any of the water samples in 2017 (n=6). Analysis of microcystins and cylindrospermopsin samples from W2697 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L. MassDEP staff collected <i>E. coli</i> bacteria samples in Stodge Meadow Pond (MA84095) at W2697 [northeastern edge of pond, ~300 ft S of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet, Ashburnham] from May-Aug 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2697 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 12 CFU/100ml. <i>E. coli</i> data from W2697 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2697	MassDEP	Water Quality	Stodge Meadow Pond	[northeastern edge of pond, approximately 300 feet south of Stodge Meadow Pond Dam (NAT ID: MA00009) outlet, Ashburnham]	42.669171	-71.881439

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

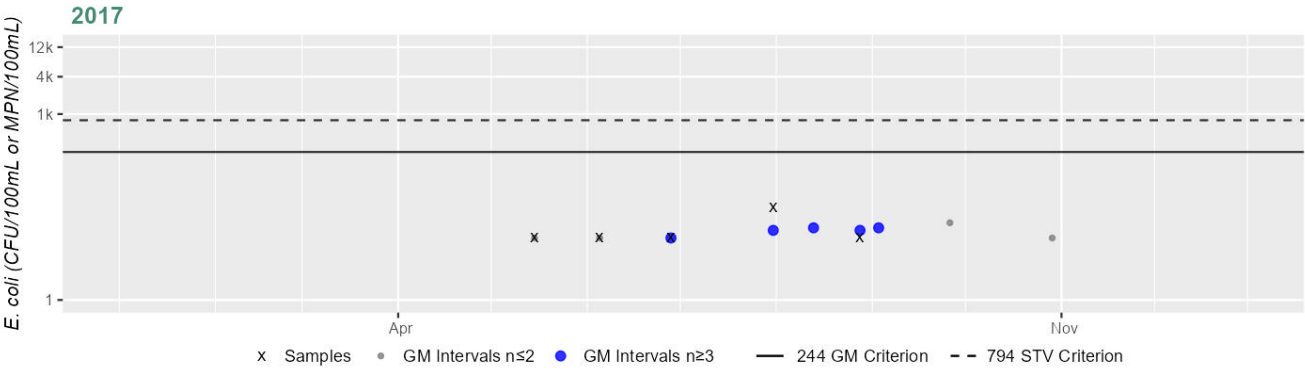
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2697	MassDEP	E. coli	05/15/17	08/28/17	5	10	31	12

Station MASSDEP\_W2697 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	12
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

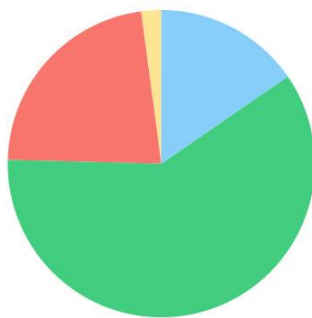
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Stony Brook (MA84B-03)

<b>Location:</b>	Headwaters outlet Forge Pond, Westford to Brookside Road, Westford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	6.5 MILES
<b>Classification/Qualifier:</b>	B: WWF

### Stony Brook (MA84B-03)

Watershed Area: 37.80 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	37.80	8.79	11.35	3.22
Agriculture	2.1%	1.1%	1.6%	0.8%
Developed	22.5%	22.7%	15.5%	15.2%
Natural	60%	60.7%	52.7%	55.4%
Wetland	15.4%	15.5%	30.3%	28.6%
Impervious	10%	10.3%	6.9%	7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Fecal Coliform	--	Removed
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Industrial Point Source Discharge (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Turbidity	Industrial Point Source Discharge (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Turbidity	Source Unknown (N)	X	--	--	--	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Fecal Coliform	Applicable WQS attained; original basis for listing was incorrect	The upstream Stony Brook AU (MA84B-03) was originally listed for Pathogens in the 1992 IR cycle, and this impairment was replaced with the more specific Fecal Coliform impairment in the 2010 IR cycle (MassDEP 2024). The original listing was based on fecal coliform data collected between June and September 1989 (MassDEP 2002). It appears the listing was applied to the MA84B-03 AU in error, as the elevated fecal coliform data from the 1989 study were collected toward the downstream end of the downstream Stony Brook (MA84B-04) AU at station SB01 (Rt 3A, Chelmsford) (Hanley 1990). The historical Fecal Coliform impairment is being removed since it was originally applied to this upstream Stony Brook (MA84B-03) AU in error.

## Fecal Coliform

### 1992 WBS Coding Sheet\* (MassDEP 2002)

[\*Note that the current AU description of “Headwaters outlet Forge Pond, Westford to Brookside Road, Westford” is actually very similar to the historical description below of “Concord Road (route 225) to Chamberlin Road, Westford”. Rt 225 is immediately downstream of Forge Pond, and Brookside Road is the same as Chamberlin Road.]



MA84B-03Stony Brook (8451200) Size: 7.00M, R

Class: B/WWF

347

Concord Road (route 225) to Chamberlin Road, Westford.

Assessment Date: 9112      Begin Sampling: 8906      Toxics Monitored: Y  
 Cycle: 92      End Sampling: 8909      Assessment Category: Monitored

Uses	Support	Threat	Partial	Non-Sup	Not-Asses
Overall Use Support				7.0	
Aquatic Life		7.0			
Fish Consumption					7.0
Warm Water Fishery					
Swimmable				7.0	
Secondary Contact Rec		7.0			
Aesthetics		7.0			
Dummy AL Bio					7.0
Dummy AL Chem		7.0			

**Media/Pollutants Assessed**      Toxics Monitoring = > Y

04 - Organics in discharges  
 09 - Metals in water column  
 12 - Metals in discharges  
 13 - Other inorganics in water col  
 14 - Other inorganics in discharges  
 17 - Toxicity testing of discharges

**Assessment Type**      Assessment Category = > Monitored

230 - Fixed station chemical/physical, conventional and toxics  
 510 - Effluent toxicity testing, acute

**Aquatic Contamination**

**Nonattainment Causes**

1000- pH      7.00 S  
 1200- Organic enrichment/DO      7.00 S  
 1700- Pathogens      7.00 M  
 2500- Turbidity      7.00 S

**Nonattainment Sources**

-9 -  
 8600- Natural      7.00 S  
 4000- URBAN RUNOFF/STORM SEWERS (NPS)      7.00 M  
 -9 -

**Comments:**

1990: WESTFORD ANODIZING NON-ACUTELY TOXIC TO MICROTOX. BASED ON FECAL DATA

1992: Point Source - Westford Anodizing MA0024414

Westford Anodizing Non-Acutely Toxic to Microtox

Assessment based on Fecal Coli data. DMR data suggest very acutely toxic discharge, however, no instream biological data available: not assessed.

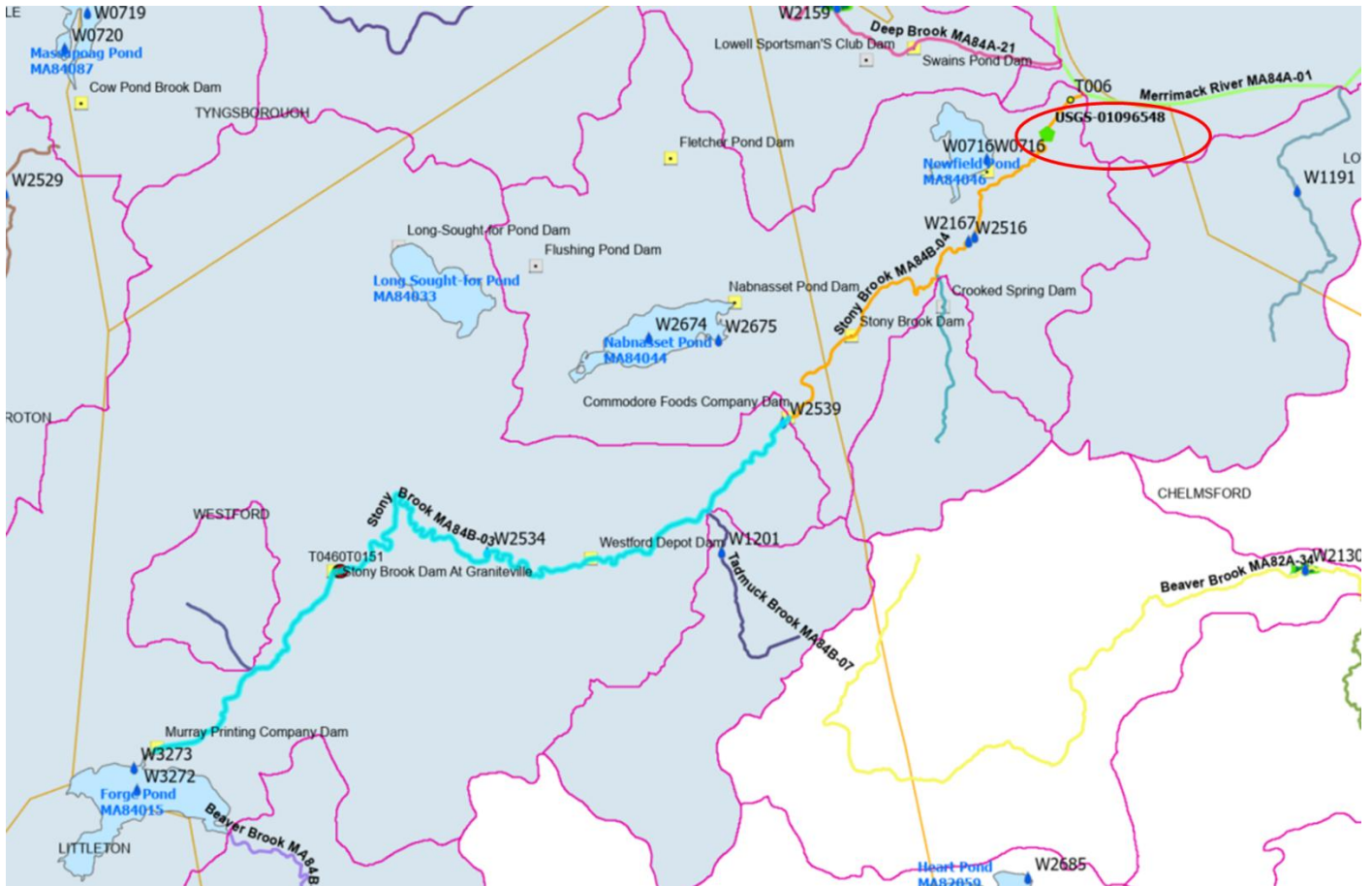
**Station Descriptions from 1989 Survey (Hanley 1990)**

TABLE 2  
MERRIMACK RIVER SURVEY - 1989  
LOCATION OF SAMPLING STATIONS

<u>STATION NUMBER</u>	<u>WATER BODY</u>	<u>LOCATION</u>
SB01	Stony Brook	Rt. 3A, Chelmsford
MR01	Merrimack	Rt. 113 bridge, Tyngsborough
MR02	Merrimack	Lowell water supply intake, Lowell
MR03	Merrimack	Inlet to Pawtucket Canal, Lowell
MR04	Merrimack	Ouelette Bridge, Aiken St., Lowell
MR05	Merrimack	Hunts Falls Bridge, Lowell
CO02	Concord	Concord River, E. Merrimack St., Lowell
MR09	Merrimack	Tewksbury Water Supply, Tewksbury
MR11	Merrimack	Methuen Water Supply, Methuen
MR15	Merrimack	Union Street, Duck Bridge, Lawrence
SR01	Spicket	Spicket River, Garden Street, Lawrence
MR16	Merrimack	Off Ayer Street, Methuen
MR16.5	Merrimack	Discharge pipe, 0.1 mi. downstream of MR16
MR17	Merrimack	Rt. 125 bridge, Haverhill
MR50Q	--	Distilled Water Blank

**Screen capture showing extent of MA84B-03 AU (in turquoise) and MA84B-04 AU (in orange) with approximate location of historical SB01 location (circled in red).** (MassDEP Undated 7, Hanley 1990)

[Note that SB01 is located just downstream of the USGS-01096548 station (green hexagon circled in red)]



# Recommendations

2024/26 Recommendations
2024 IR [TRASH AND DEBRIS, LOW] Prior Trash and Debris alerts are being carried forward with recommendations for additional monitoring on this Stony Brook AU (MA84B-03). {Stony Brook (MA84B-03)}

# Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Insufficient Information	No
2024/26 Use Attainment Summary	

There is Insufficient Information to assess the Fish Consumption Use for this Stony Brook AU (MA84B-03). Fish toxics sampling was performed by MassDEP WPP biologists in Stony Brook (MA84B-03) at station F0499 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). However, no site-specific fish consumption advisory was issued by MDPH.

### ***Fish Consumption Advisories***

#### **Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MassDEP Undated 6)**

<b>Summary Statement</b>
Fish toxics sampling was performed by MassDEP WPP biologists in this Stony Brook AU (MA84B-03) at station F0499 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). No site-specific fish consumption advisory was issued by MDPH.

### **Aesthetic**

<b>2024/26 Use Attainment</b>	<b>Alert</b>
Fully Supporting	YES

<b>2024/26 Use Attainment Summary</b>
The Aesthetics Use for this Stony Brook AU (MA84B-03) is assessed as Fully Supporting. MassDEP staff recorded aesthetics observations as part of the MAP2 wadeable streams monitoring project in summer 2015 at two stations in Westford for this Stony Brook AU; half-way down the AU ~5000 feet upstream/west of Depot Street (W2534, n=5) and close to the downstream end of the AU ~200 feet upstream/west of Brookside Road (W2539, n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded at either site, though field staff noted minor trash on two occasions at W2539. The prior Alerts for Trash and Debris are being carried forward.

### ***Monitoring Stations***

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2534	MassDEP	Water Quality	Stony Brook	[approximately 5000 feet upstream/west of Depot Street, Westford]	42.597591	-71.447571
W2539	MassDEP	Water Quality	Stony Brook	[approximately 200 feet upstream/west of Brookside Road, Westford]	42.609184	-71.411679

### ***Aesthetic Observations***

#### **Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)**

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2534	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2534 on Stony Brook (MA84B-03) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.
W2539	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2539 on Stony Brook (MA84B-03) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted objectionable deposits (n=2).

**Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020)** (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2534	2015	5	5	0
W2539	2015	5	5	1

**MassDEP Aesthetics Observations (2011-2020)** (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2534	Stony Brook	2015	Aesthetics Impaired?	No	5	5
W2534	Stony Brook	2015	Aquatic Plant Density, Overall	Dense	1	5
W2534	Stony Brook	2015	Aquatic Plant Density, Overall	Moderate	2	5
W2534	Stony Brook	2015	Aquatic Plant Density, Overall	Sparse	2	5
W2534	Stony Brook	2015	Color	Light Yellow/Tan	5	5
W2534	Stony Brook	2015	Objectionable Deposits	No	5	5
W2534	Stony Brook	2015	Odor	None	5	5
W2534	Stony Brook	2015	Periphyton Density, Filamentous	None	4	5
W2534	Stony Brook	2015	Periphyton Density, Filamentous	Sparse	1	5
W2534	Stony Brook	2015	Periphyton Density, Film	None	5	5
W2534	Stony Brook	2015	Scum	No	3	5
W2534	Stony Brook	2015	Scum	Yes	2	5
W2534	Stony Brook	2015	Turbidity	None	3	5
W2534	Stony Brook	2015	Turbidity	Slightly Turbid	2	5
W2539	Stony Brook	2015	Aesthetics Impaired?	No	5	5
W2539	Stony Brook	2015	Aquatic Plant Density, Overall	None	2	5
W2539	Stony Brook	2015	Aquatic Plant Density, Overall	Sparse	3	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2539	Stony Brook	2015	Color	Light Yellow/Tan	4	5
W2539	Stony Brook	2015	Color	None	1	5
W2539	Stony Brook	2015	Objectionable Deposits	No	3	5
W2539	Stony Brook	2015	Objectionable Deposits	Yes	2	5
W2539	Stony Brook	2015	Odor	None	5	5
W2539	Stony Brook	2015	Periphyton Density, Filamentous	None	5	5
W2539	Stony Brook	2015	Periphyton Density, Film	Dense	1	5
W2539	Stony Brook	2015	Periphyton Density, Film	None	4	5
W2539	Stony Brook	2015	Scum	No	5	5
W2539	Stony Brook	2015	Turbidity	None	5	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for this Stony Brook AU (MA84B-03) is assessed as Fully Supporting based on <i>E. coli</i> data collected at 2 stations in 2015. The historical Fecal Coliform impairment is being removed since it was originally applied to this AU in error (see “Supporting Information for Removed Impairments” for more information.</p> <p>MassDEP staff collected <i>E. coli</i> bacteria samples at 2 stations in Stony Brook (MA84B-03) in 2015. Samples were collected from the following stations/sample years from upstream to downstream: half-way down the AU at W2534 [~5000 ft upstream/W of Depot St, Westford] from May-Sep 2015 (n=5) and close to the downstream end of the AU at W2539 [~200 ft upstream/W of Brookside Rd, Westford] from May-Sep 2015 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2534 indicated 0% of intervals had GMs &gt;126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 59 CFU/100ml. Analysis of the single year limited frequency <i>E. coli</i> dataset from W2539 indicated 0% of intervals had GMs &gt;126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 104 CFU/100ml. <i>E. coli</i> data from W2534 and W2539 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2534	MassDEP	Water Quality	Stony Brook	[approximately 5000 feet upstream/west of Depot Street, Westford]	42.597591	-71.447571

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2539	MassDEP	Water Quality	Stony Brook	[approximately 200 feet upstream/west of Brookside Road, Westford]	42.609184	-71.411679

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

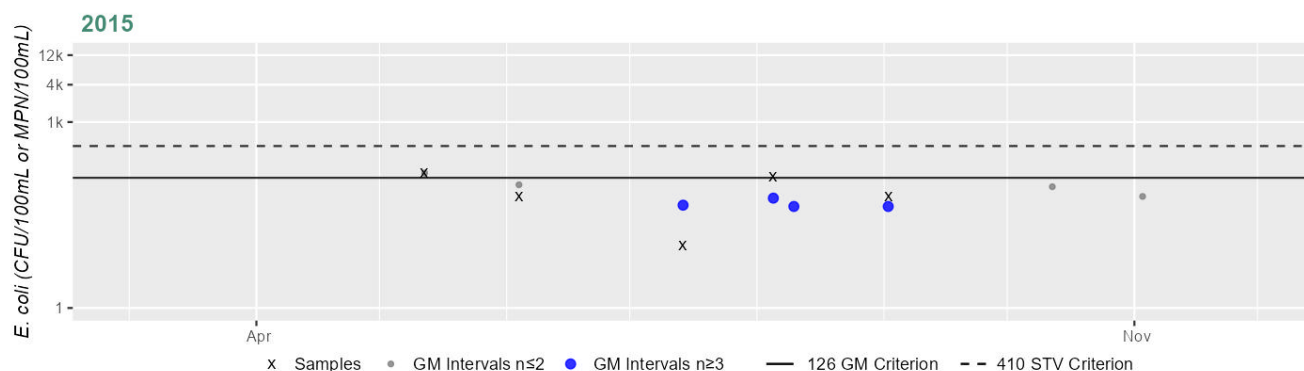
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2534	MassDEP	E. coli	05/12/15	09/02/15	5	10	150	59
W2539	MassDEP	E. coli	05/12/15	09/02/15	5	85	120	104

#### Station MASSDEP\_W2534 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	59
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

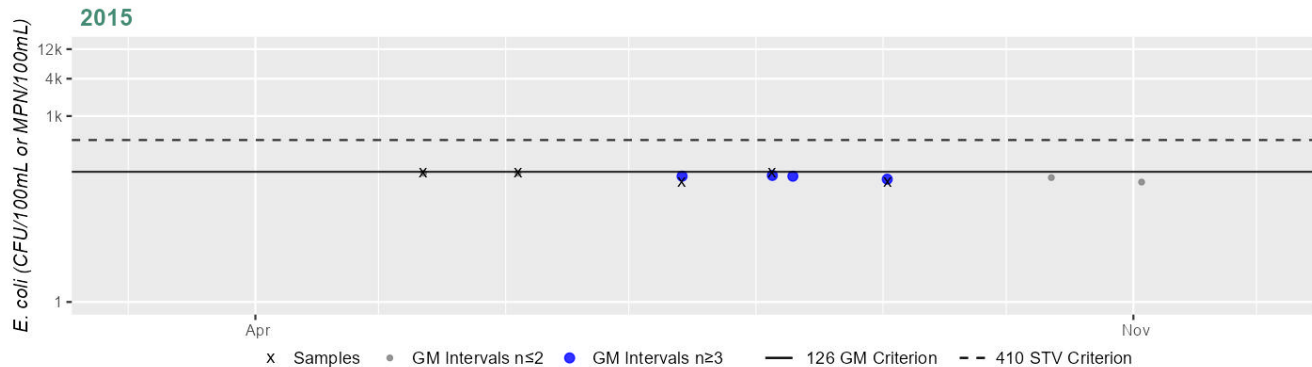
Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2539 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	104
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for this Stony Brook AU (MA84B-03) is assessed as Fully Supporting.</p> <p>MassDEP staff collected <i>E. coli</i> bacteria samples at 2 stations in Stony Brook (MA84B-03) in 2015. Samples were collected from the following stations/sample years from upstream to downstream: half-way down the AU at W2534 [~5000 ft upstream/W of Depot St, Westford] from May-Sep 2015 (n=5) and close to the downstream end of the AU at W2539 [~200 ft upstream/W of Brookside Rd, Westford] from May-Sep 2015 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2534 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 59 CFU/100ml. Analysis of the single year limited frequency <i>E. coli</i> dataset from W2539 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 104 CFU/100ml. <i>E. coli</i> data from W2534 and W2539 meet 2024 CALM guidance.</p>

## Monitoring Stations



Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2534	MassDEP	Water Quality	Stony Brook	[approximately 5000 feet upstream/west of Depot Street, Westford]	42.597591	-71.447571
W2539	MassDEP	Water Quality	Stony Brook	[approximately 200 feet upstream/west of Brookside Road, Westford]	42.609184	-71.411679

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

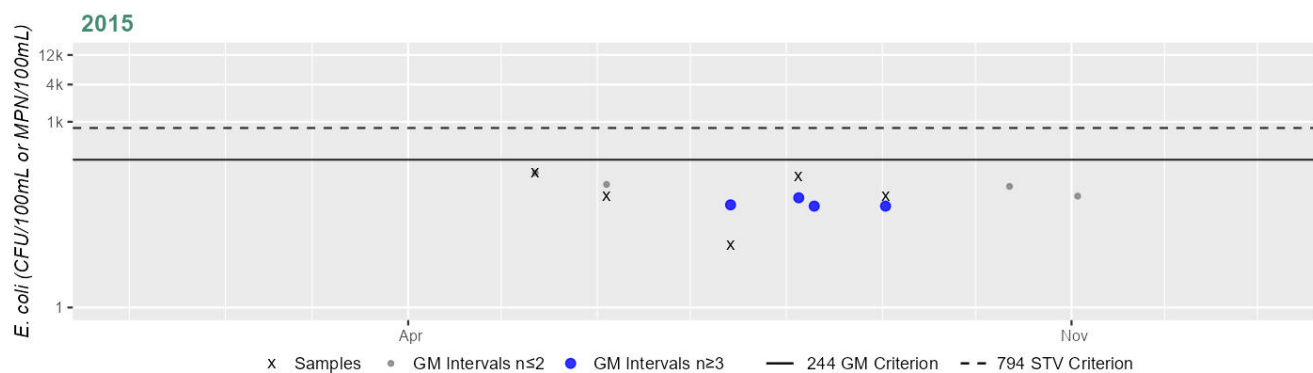
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2534	MassDEP	E. coli	05/12/15	09/02/15	5	10	150	59
W2539	MassDEP	E. coli	05/12/15	09/02/15	5	85	120	104

#### Station MASSDEP\_W2534 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	59
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

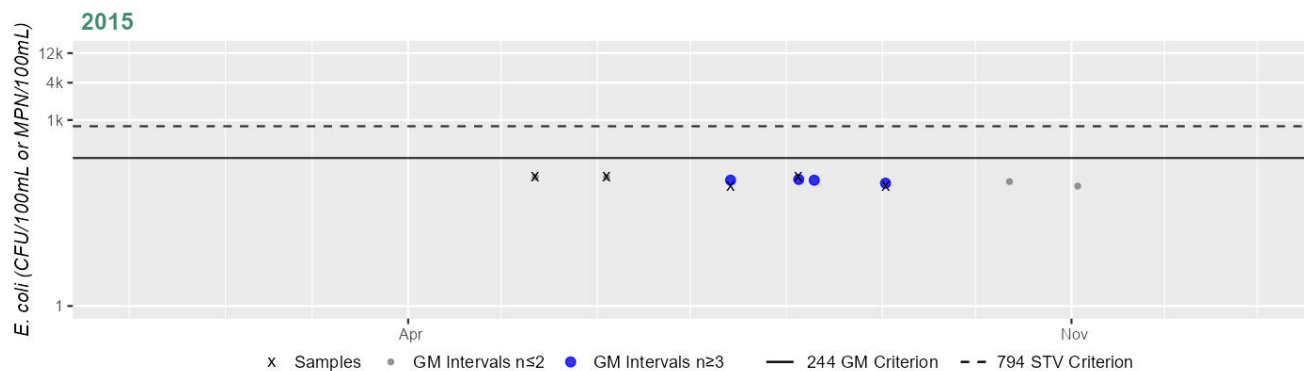
Cumulative %GMI Exceedance  
Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

# Station MASSDEP\_W2539 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	104
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

## Cumulative %GMI Exceedance

Current (2011-2022)

0%

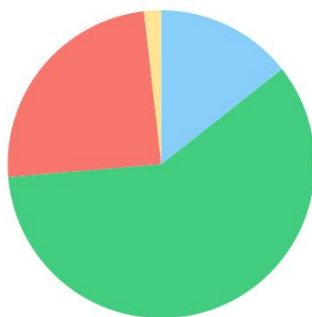
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

# Stony Brook (MA84B-04)

<b>Location:</b>	Brookside Road, Westford to confluence with Merrimack River, Chelmsford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	3.4 MILES
<b>Classification/Qualifier:</b>	B: WWF

## Stony Brook (MA84B-04)

Watershed Area: 45.32 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	45.32	6.44	14.32	2.54
Agriculture	1.8%	0.3%	1.3%	0.5%
Developed	24.5%	37.3%	17.1%	25.5%
Natural	59.3%	53.5%	54.1%	57.5%
Wetland	14.4%	8.9%	27.5%	16.5%
Impervious	10.9%	16.6%	7.7%	11.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Dewatering*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	--

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Stony Brook AU (MA84B-04) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
--------------------------------

The Aesthetics Use for this Stony Brook AU (MA84B-04) is assessed as Fully Supporting based on the lack of any objectionable conditions documented by MassDEP staff during the summer of 2015. MassDEP staff recorded aesthetics observations as part of the MAP2 Wadeable Streams Monitoring project in summer 2015, at one station halfway down this Stony Brook AU ~450 feet upstream/south of Rt. 3, Chelmsford (W2516, n=5). There were generally no persistent objectionable conditions (i.e., odors, deposits, growths, or turbidity) observed during any of the surveys.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2516	MassDEP	Water Quality	Stony Brook	[approximately 450 feet upstream/south of Route 3, Chelmsford]	42.625394	-71.389087

### Aesthetic Observations

#### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2516	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2516 on Stony Brook (MA84B-04) during 5 site visits between May 2015 and Sep 2015. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded.

#### Observations of Filamentous/Film Algae at MassDEP Stations (2011-2020) (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Data Year	Field Sheet Count	Field Sheet Count w/ Film & Filamentous Algae Observations	Dense/ Very Dense Film/ Filamentous Algae
W2516	2015	5	5	1

#### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2516	Stony Brook	2015	Aesthetics Impaired?	No	5	5
W2516	Stony Brook	2015	Aquatic Plant Density, Overall	None	4	5
W2516	Stony Brook	2015	Aquatic Plant Density, Overall	Sparse	1	5
W2516	Stony Brook	2015	Color	Light Yellow/Tan	5	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2516	Stony Brook	2015	Objectionable Deposits	No	4	5
W2516	Stony Brook	2015	Objectionable Deposits	Yes	1	5
W2516	Stony Brook	2015	Odor	None	5	5
W2516	Stony Brook	2015	Periphyton Density, Filamentous	None	5	5
W2516	Stony Brook	2015	Periphyton Density, Film	Dense	1	5
W2516	Stony Brook	2015	Periphyton Density, Film	None	3	5
W2516	Stony Brook	2015	Periphyton Density, Film	Sparse	1	5
W2516	Stony Brook	2015	Scum	No	5	5
W2516	Stony Brook	2015	Turbidity	None	4	5
W2516	Stony Brook	2015	Turbidity	Slightly Turbid	1	5

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
<p>The Primary Contact Recreation Use for this Stony Brook AU (MA84B-04) continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> (<i>E. coli</i>) impairment is being carried forward based on bacteria data not meeting the threshold at W2516.</p> <p>MassDEP and USGS staff collected <i>E. coli</i> bacteria samples in this Stony Brook AU (MA84B-04) from 2015-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at W2516 [~450 ft upstream/S of Rt. 3, Chelmsford] from May-Sep 2015 (n=5) and toward the downstream end of the AU at USGS-01096548 [Stony Brook at N Chelmsford, MA] from 2021-2022 (n=4-6/yr). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2516 indicated 100% of intervals had GMs &gt;126 CFU/100ml, 1 sample exceeded the 410 CFU/100ml STV, and the seasonal GM was 272 CFU/100ml. Analysis of the multi-year limited frequency <i>E. coli</i> dataset from USGS-01096548 indicated 0 out of 2 sufficient data years had intervals where &gt;20% of the GMs were &gt;126 CFU/100ml, 0 years had ≥2 samples exceed the 410 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs &gt;126 CFU/100ml. While data from USGS-01096548 meet 2024 CALM guidance, data from W2516 reflect the existing <i>E. coli</i> impairment.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2516	MassDEP	Water Quality	Stony Brook	[approximately 450 feet upstream/south of Route 3, Chelmsford]	42.625394	-71.389087
USGS-01096548	USGS Massachusetts Water Science Center	Water Quality	Stony Brook	Stony Brook At N Chelmsford, MA	42.635058	-71.379536

## Bacteria Data

### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

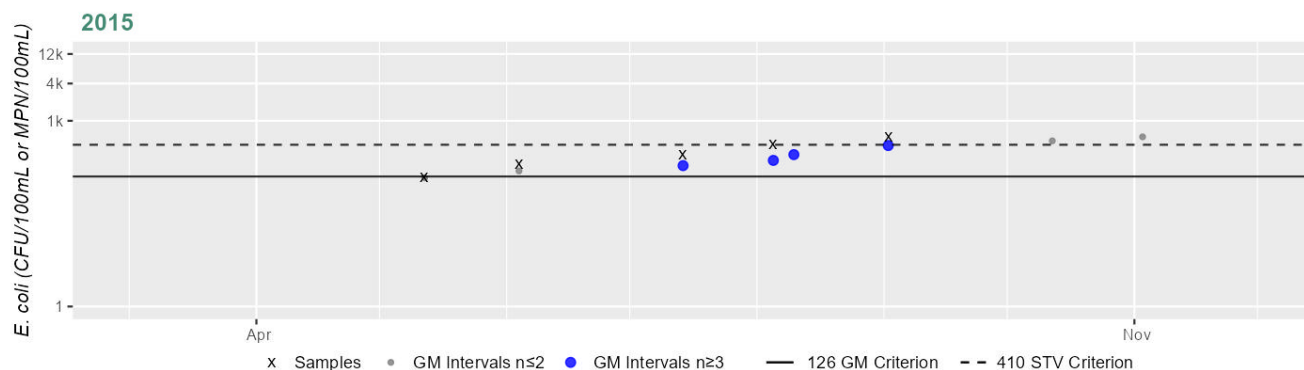
(MassDEP Undated 7) (MassDEP Undated 4) (USGS 2024) (MassDEP Undated 2)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2516	MassDEP	E. coli	05/12/15	09/02/15	5	120	550	272
USGS-01096548	USGS Massachusetts Water Science Center	E. coli	04/07/21	10/12/21	6	41	150	88
USGS-01096548	USGS Massachusetts Water Science Center	E. coli	04/04/22	07/14/22	4	12	340	60

### Station MASSDEP\_W2516 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	272
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	20%

#### Cumulative %GMI Exceedance

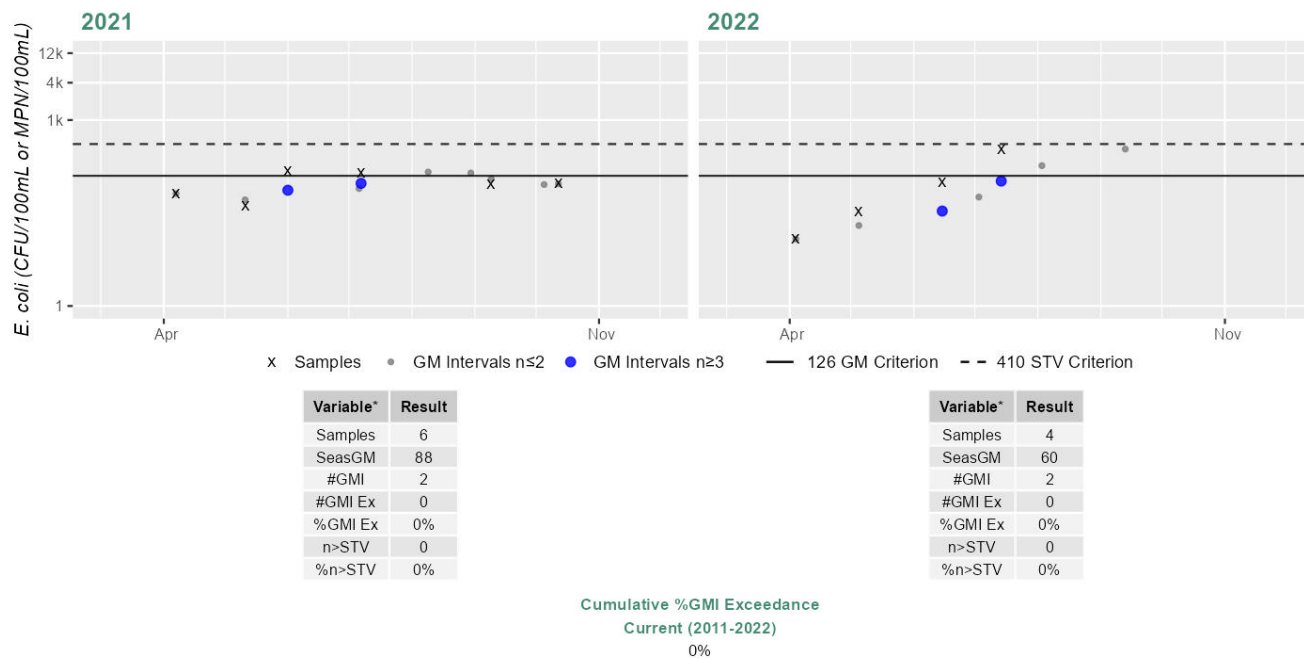
Current (2011-2022)

100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station USGS-01096548 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO
2024/26 Use Attainment Summary	



The Secondary Contact Recreation Use for this Stony Brook AU (MA84B-04) is assessed as Fully Supporting. MassDEP and USGS staff collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Stony Brook (MA84B-04) from 2010-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: halfway down the AU at W2516 [~450 ft upstream/S of Rt. 3, Chelmsford] from May-Sep 2015 (n=5), roughly 200 ft farther downstream at W2167 [~240 ft upstream of Rt. 3, Chelmsford] from May-Jun 2010 (n=3), and toward the downstream end of the AU at USGS-01096548 [Stony Brook at N Chelmsford, MA] from 2021-2022 (n=7-8/yr). Analysis of the single year limited frequency *E. coli* dataset from W2516 indicated 50% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 272 CFU/100ml. Analysis of this historic single year limited frequency *E. coli* dataset from W2167 indicated 100% of intervals had GMs >244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 374 CFU/100ml. Analysis of the multi-year moderate frequency *E. coli* dataset from USGS-01096548 indicated 0 out of 2 sufficient data years had intervals where >20% of the GMs were >244 CFU/100ml, 0 years had ≥2 samples exceed the 794 CFU/100ml STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100ml. While historic single year limited frequency *E. coli* data from W2167 (n=3) are indicative of an *E. coli* impairment, current *E. coli* data from nearby site W2516 (~200 ft from W2167, n=5) meet 2024 CALM guidance, as well as the downstream current data from USGS-01096548 (n=7-8/yr). The AU is assessed as Fully Supporting.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2167	MassDEP	Water Quality	Stony Brook	[approximately 240 feet upstream of Route 3, Chelmsford]	42.625808	-71.388352
W2516	MassDEP	Water Quality	Stony Brook	[approximately 450 feet upstream/south of Route 3, Chelmsford]	42.625394	-71.389087
USGS-01096548	USGS Massachusetts Water Science Center	Water Quality	Stony Brook	Stony Brook At N Chelmsford, MA	42.635058	-71.379536

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

(MassDEP Undated 7) (MassDEP Undated 3) (USGS 2024) (MassDEP Undated 1)

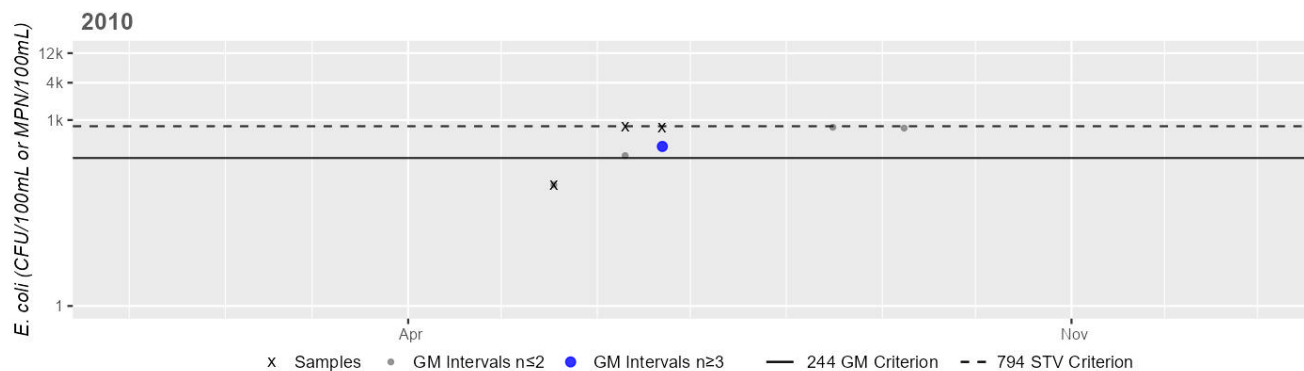
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2167	MassDEP	E. coli	05/18/10	06/22/10	3	90	790	374
W2516	MassDEP	E. coli	05/12/15	09/02/15	5	120	550	272

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
USGS-01096548	USGS Massachusetts Water Science Center	E. coli	04/07/21	12/09/21	8	28	150	71
USGS-01096548	USGS Massachusetts Water Science Center	E. coli	01/26/22	07/14/22	7	12	340	53

### Station MASSDEP\_W2167 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



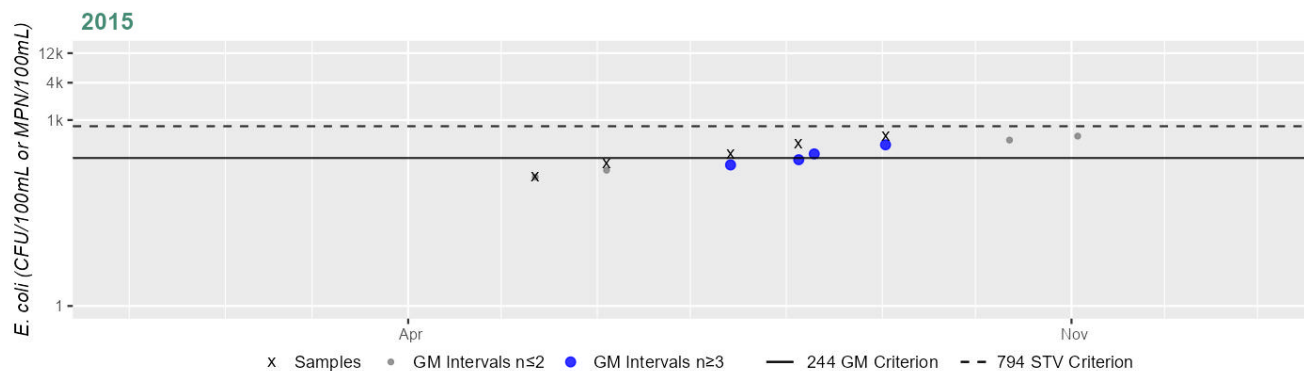
Variable*	Result
Samples	3
SeasGM	374
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station MASSDEP\_W2516 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	272
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

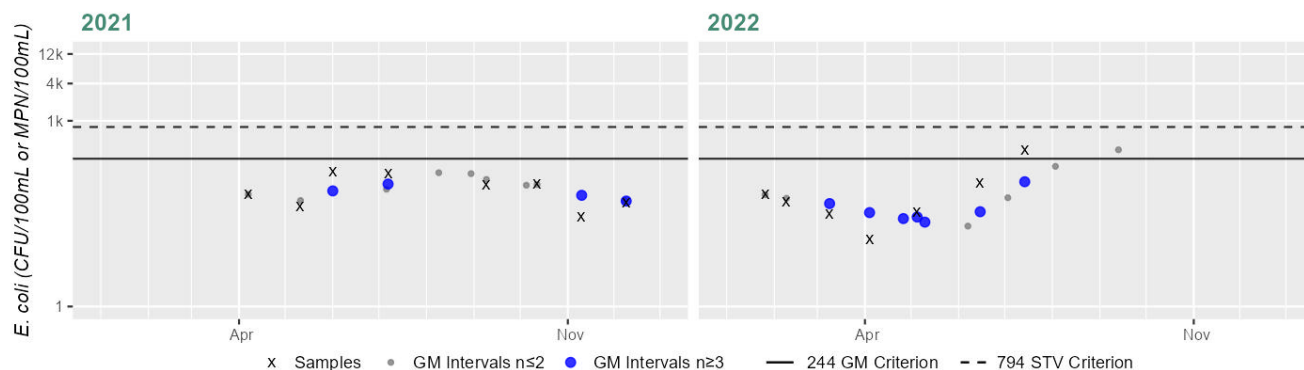
Current (2011-2022)

50%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

### Station USGS-01096548 - *Escherichia coli*

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	8
SeasGM	71
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

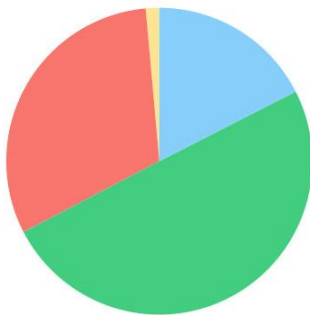
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Tadmuck Brook (MA84B-07)

<b>Location:</b>	Headwaters south of Main Street, Westford to confluence with Stony Brook, Westford.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.4 MILES
<b>Classification/Qualifier:</b>	B

### Tadmuck Brook (MA84B-07)

Watershed Area: 1.99 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.99	1.99	0.77	0.77
Agriculture	1.4%	1.4%	1.4%	1.4%
Developed	31.2%	31.2%	20.3%	20.3%
Natural	49.9%	49.9%	44%	44%
Wetland	17.5%	17.5%	34.4%	34.4%
Impervious	13%	13%	8.6%	8.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Tadmuck Brook (MA84B-07) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Tadmuck Brook (MA84B-07) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Tadmuck Brook (MA84B-07) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Tadmuck Brook (MA84B-07) is assessed as Not Supporting. An *Escherichia coli* (*E. coli*) impairment is being added based on a re-evaluation of bacteria data not meeting the threshold at W1201. MassDEP staff collected historical *E. coli* bacteria samples in the downstream third of Tadmuck Brook (MA84B-07) at W1201 [Lowell Rd crossing, Westford] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1201 indicated 100% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 534 CFU/100ml. The historic *E. coli* data from W1201 are indicative of an *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1201	MassDEP	Water Quality	Tadmuck Brook	[Lowell Road crossing, Westford]	42.597580	-71.419115

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

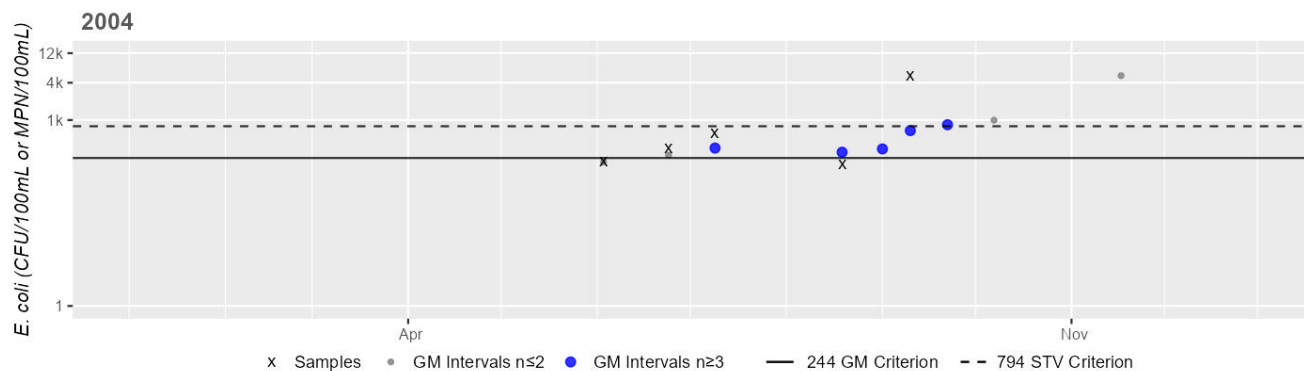
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1201	MassDEP	E. coli	06/02/04	09/09/04	5	190	5200	534

# Station MASSDEP\_W1201 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	534
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	20%

## Cumulative %GMI Exceedance

Historic (1997-2010)

100%

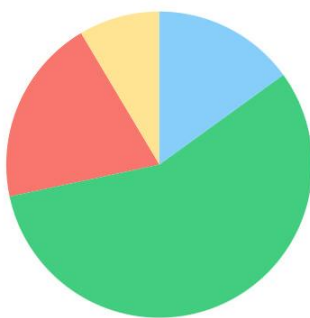
\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Trout Brook (MA84A-13)

<b>Location:</b>	Headwaters, Dracut to confluence with Richardson Brook, Dracut.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.6 MILES
<b>Classification/Qualifier:</b>	B

### Trout Brook (MA84A-13)

Watershed Area: 2.42 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.42	2.42	0.96	0.96
Agriculture	8.6%	8.6%	6.3%	6.3%
Developed	19.8%	19.8%	12.8%	12.8%
Natural	56.6%	56.6%	57.3%	57.3%
Wetland	15%	15%	23.6%	23.6%
Impervious	7%	7%	5.2%	5.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--



## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Trout Brook (MA84A-13) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Trout Brook (MA84A-13) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Trout Brook (MA84A-13) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

### 2024/26 Use Attainment Summary

No bacteria or other indicator data for Trout Brook (MA84A-13) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. MassDEP staff collected historical *E. coli* bacteria samples a little over halfway down Trout Brook (MA84A-13) at W1193 [Kenwood Rd crossing, Dracut] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1193 indicated 40% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 353 CFU/100ml. Historic *E. coli* data from W1193 meet 2024 CALM guidance. Since these data were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Trout Brook.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1193	MassDEP	Water Quality	Trout Brook	[Kenwood Road crossing, Dracut]	42.676767	-71.269802

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

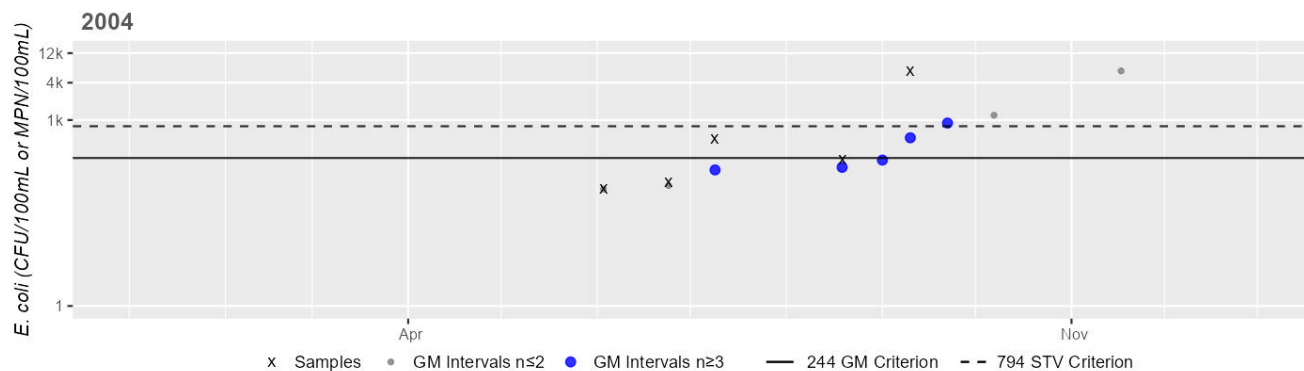
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1193	MassDEP	E. coli	06/02/04	09/09/04	5	77	6200	353

# Station MASSDEP\_W1193 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	353
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance

Historic (1997-2010)

40%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
 %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
 "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Trull Brook (MA84A-14)

<b>Location:</b>	Source, Tewksbury (excluding intermittent portion) to confluence with Merrimack River, Tewksbury.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	2.1 MILES
<b>Classification/Qualifier:</b>	B

### Trull Brook (MA84A-14)

Watershed Area: 4.81 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.81	4.74	1.30	1.28
Agriculture	0%	0%	0%	0%
Developed	42.2%	42.6%	29.4%	29.8%
Natural	34.4%	34.3%	31.8%	31.9%
Wetland	23.4%	23.1%	38.7%	38.3%
Impervious	23%	23.2%	13.7%	13.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X

## Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Escherichia Coli (E. Coli)	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Massachusetts Statewide TMDL for Pathogen-Impaired Waterbodies (Report CN 515.1, approved 2/13/2024, ATTAINS Action ID: R1_MA_2024_04)

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No
2024/26 Use Attainment Summary	
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Trull Brook (MA84A-14) is Not Assessed.	

### Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for Trull Brook (MA84A-14) is Not Assessed.	

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for Trull Brook (MA84A-14) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior <i>Escherichia coli</i> ( <i>E. coli</i> ) impairment is being carried forward.	

### Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

### 2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Trull Brook (MA84A-14) continues to be assessed as Not Supporting. The prior *Escherichia coli* (*E. coli*) impairment is being carried forward based on historical bacteria data not meeting the threshold at W1194. MassDEP staff collected historical *E. coli* bacteria samples in the downstream quarter of Trull Brook (MA84A-14) at W1194 [~230 ft downstream/N of River Rd, Tewksbury] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset from W1194 indicated 100% of intervals had GMs >244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 739 CFU/100ml. Historic *E. coli* data from W1194 reflect the existing *E. coli* impairment.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1194	MassDEP	Water Quality	Trull Brook	[approximately 230 feet downstream/north of River Road, Tewksbury]	42.650126	-71.260024

### Bacteria Data

#### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

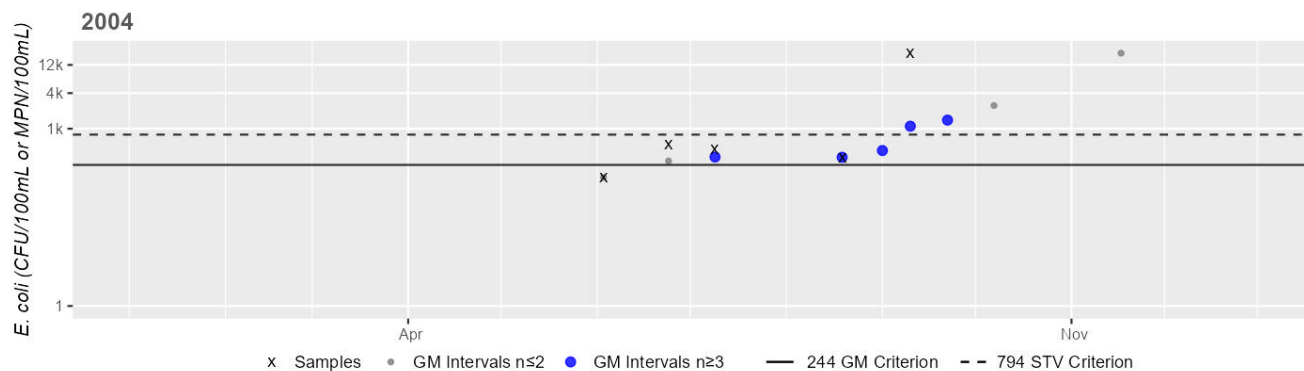
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1194	MassDEP	E. coli	06/02/04	09/09/04	5	150	19000	739

# Station MASSDEP\_W1194 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	739
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance  
Historic (1997-2010)  
100%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances;  
%GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV;  
"Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Unnamed Tributary (MA84A-30)

<b>Location:</b>	Unnamed tributary to Powwow River locally considered portion of Back River from outlet of Clarks Pond, Amesbury to confluence with Powwow River, Amesbury (formerly part of 2008 segment: Back River MA84A-16).
<b>AU Type:</b>	ESTUARY
<b>AU Size:</b>	0.003 SQUARE MILES
<b>Classification/Qualifier:</b>	SA: SFO

No usable data were available for Unnamed Tributary (MA84A-30) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Escherichia Coli (E. Coli)	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>SH</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	--	X	--
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (N)	--	--	--	--	X	--



# 

<b>Location:</b>	(Locally known as Argilla Brook) Unnamed tributary to Johnson Creek (excluding intermittent portion) from Center Street, Groveland to confluence with Johnson Creek, Groveland.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.3 MILES
<b>Classification/Qualifier:</b>	B

### 

Watershed Area: 2.25 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.25	2.25	0.51	0.51
Agriculture	0.9%	0.9%	1.8%	1.8%
Developed	18.9%	18.9%	17.9%	17.9%
Natural	57.3%	57.3%	51%	51%
Wetland	22.9%	22.9%	29.3%	29.3%
Impervious	9.4%	9.4%	7.4%	7.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

## 

### 

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for this Unnamed Tributary (MA84A-38), locally known as Argilla Brook, is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No data are available, so the Aesthetics Use for this Unnamed Tributary (MA84A-38), locally known as Argilla Brook, is Not Assessed.	

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
No bacteria or other indicator data for this Unnamed Tributary (MA84A-38), locally known as Argilla Brook, are available, so the Primary Contact Recreation Use is Not Assessed.	

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO
2024/26 Use Attainment Summary	
<p>No bacteria or other indicator data for this Unnamed Tributary (MA84A-38), locally known as Argilla Brook, are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.</p> <p>MassDEP staff collected historical <i>E. coli</i> bacteria samples a little over halfway down this Unnamed Tributary (MA84A-38) at W1209 [unnamed tributary to Johnson Creek, locally known as Argilla Brook, W off Baldwin Terrace ~1400 ft upstream/E of Main St crossing, Groveland] from Jun-Sep 2004 (n=5). Analysis of this historic single year limited frequency <i>E. coli</i> dataset from W1209 indicated 0% of intervals had GMs &gt;244 CFU/100ml, 1 sample exceeded the 794 CFU/100ml STV, and the overall GM was 118 CFU/100ml. Historic <i>E. coli</i> data from W1209 are inconclusive according to the 2024 CALM to assess the Secondary Contact Recreation Use because this single year, limited frequency dataset with GMs below the threshold had an STV exceedance and an overall GM below the threshold. Since no impairment was identified based on historical <i>E. coli</i> data, the Secondary Contact Recreation Use is Not Assessed.</p>	

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1209	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to Johnson Creek, locally known as Argilla Brook, west off Baldwin Terrace approximately 1400 feet upstream/east of Main Street crossing, Groveland]	42.751125	-71.034588

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

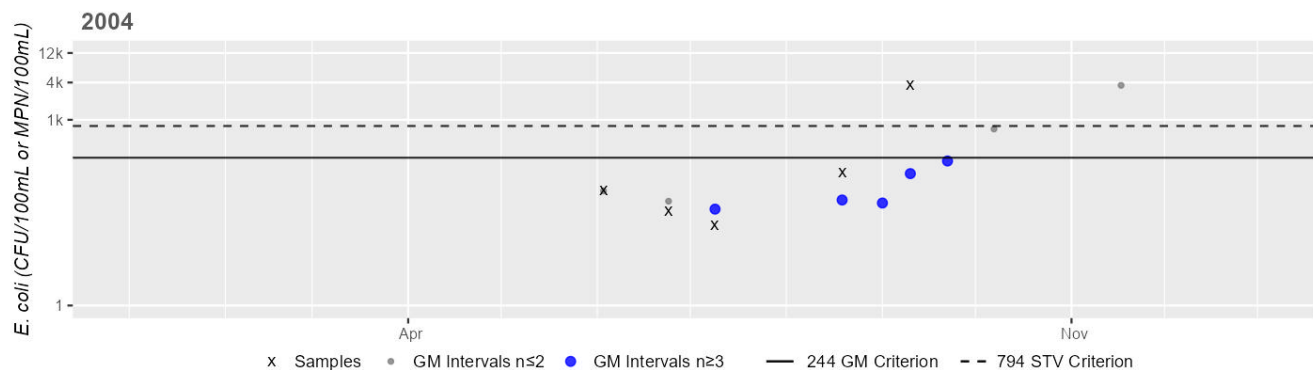
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W1209	MassDEP	E. coli	06/02/04	09/09/04	5	20	3600	118

#### Station MASSDEP\_W1209 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	118
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

#### Cumulative %GMI Exceedance

Historic (1997-2010)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Unnamed Tributary (MA84B-01)

<b>Location:</b>	(Locally known as Reedy Meadow Brook) Headwaters, outlet of small unnamed impoundment upstream of Bruce Street, Littleton to inlet Mill Pond, Littleton.
<b>AU Type:</b>	RIVER
<b>AU Size:</b>	1.5 MILES
<b>Classification/Qualifier:</b>	B

No usable data were available for Unnamed Tributary (MA84B-01) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
5	5	Fecal Coliform	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Ambient Bioassays - Chronic Aquatic Toxicity	Source Unknown (N)	X	--	--	--	--
Fecal Coliform	Source Unknown (N)	--	--	--	X	X
Fecal Coliform	Unspecified Urban Stormwater (Y)	--	--	--	X	X

## Upper Artichoke Reservoir (MA84071)

<b>Location:</b>	West Newbury.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	123 ACRES
<b>Classification/Qualifier:</b>	A: PWS, ORW

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
--	4c	(Aquatic Plants (Macrophytes)*)	--	Added

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X

## Recommendations

<b>2024/26 Recommendations</b>
2024/2026 IR [CYANOBACTERIA CELL COUNT, MEDIUM] Follow-up monitoring should be conducted in Upper Artichoke Reservoir (MA84071) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses (note that an Alert was identified for this waterbody in the 2024/2026 IR because postings were reported to MDPH based on visual observations for 44 days in 2020). Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH. {Upper Artichoke Reservoir (MA84071)}

## Designated Use Attainment Decisions

### Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Upper Artichoke Reservoir (MA84071) is Not Assessed.

### Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
<p>The Aesthetics Use for Upper Artichoke Reservoir (MA84071) is assessed as Not Supporting, with an Aquatic Plants (Macrophytes) non-pollutant impairment being added, based on observations collected during a 2017 macrophyte mapping survey. Additionally, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of &gt;15 days in duration) were reported to MDPH for 2020. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in West Newbury in this Upper Artichoke Reservoir AU; at the northwestern side of reservoir, off Withers Conservation Area trail, south of Middle Street (W2681/MAP2L-137S, n=5) and at the deep hole index site (W2680/MAP2L-137, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, or littoral zone duckweed recorded in ten shoreline plots (n=1), though field staff noted green and grey water color in the reservoir on two separate occasions in August. However, during the MAP2 macrophyte mapping survey in Aug 2017 (n=1), greater than 25% (93.7%) of the waterbody was determined to have an aquatic macrophyte biovolume &gt;50%.</p> <p>During the period 2015 through 2022, C-HAB postings for Upper Artichoke Reservoir were reported to MDPH based on visual observations for 44 days in 2020 and no blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms in this waterbody and a recommendation for follow-up sampling will be made.</p>

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2680	MassDEP	Water Quality	Upper Artichoke Reservoir	[index site, West Newbury]	42.798955	-70.932592
W2681	MassDEP	Water Quality	Upper Artichoke Reservoir	[northwestern side of reservoir, off Withers Conservation Area trail, south of Middle Street, West Newbury]	42.801340	-70.932340

## Aesthetic Observations

### Aesthetics Summary Statements for MassDEP Stations (2011-2020) (MassDEP Undated 4)

[Note: scums of natural origins (e.g. pollen blankets or natural foams) are excluded.]

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2680	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2680 (MAP2L-137) on Upper Artichoke Reservoir (MA84071) during 3 site visits between Jul 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted green water color (n=1) and high turbidity (n=1). During the MAP2 macrophyte mapping survey (n=1) in Aug 2017, greater than 25% (93.7%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Aesthetics Use impairment.
W2681	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2681 (MAP2L-137S) on Upper Artichoke Reservoir (MA84071) during 5 site visits between May 2017 and Sep 2017. There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted grey water color (n=1). During the MAP2 littoral survey (n=1), duckweed was not noted in any of the 10 shoreline plots.

### MassDEP Aesthetics Observations (2011-2020) (MassDEP Undated 7)

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2680	Upper Artichoke Reservoir	2017	Aesthetics Impaired?	No	3	3
W2680	Upper Artichoke Reservoir	2017	Aquatic Plant Density, Overall	Moderate	1	3
W2680	Upper Artichoke Reservoir	2017	Aquatic Plant Density, Overall	None	1	3
W2680	Upper Artichoke Reservoir	2017	Aquatic Plant Density, Overall	NR	1	3

<b>Station Code</b>	<b>Waterbody</b>	<b>Data Year</b>	<b>Parameter</b>	<b>Result</b>	<b>Result Count</b>	<b>Total Field Sheet Count</b>
W2680	Upper Artichoke Reservoir	2017	Color	Greenish	1	3
W2680	Upper Artichoke Reservoir	2017	Color	Light Yellow/Tan	2	3
W2680	Upper Artichoke Reservoir	2017	Objectionable Deposits	No	2	3
W2680	Upper Artichoke Reservoir	2017	Objectionable Deposits	NR	1	3
W2680	Upper Artichoke Reservoir	2017	Odor	None	3	3
W2680	Upper Artichoke Reservoir	2017	Scum	No	2	3
W2680	Upper Artichoke Reservoir	2017	Scum	NR	1	3
W2680	Upper Artichoke Reservoir	2017	Turbidity	Highly Turbid	1	3
W2680	Upper Artichoke Reservoir	2017	Turbidity	None	2	3
W2681	Upper Artichoke Reservoir	2017	Aesthetics Impaired?	No	5	5
W2681	Upper Artichoke Reservoir	2017	Color	Greyish	1	5
W2681	Upper Artichoke Reservoir	2017	Color	Light Yellow/Tan	3	5
W2681	Upper Artichoke Reservoir	2017	Color	None	1	5
W2681	Upper Artichoke Reservoir	2017	Objectionable Deposits	No	4	5
W2681	Upper Artichoke Reservoir	2017	Objectionable Deposits	Yes	1	5
W2681	Upper Artichoke Reservoir	2017	Odor	None	4	5
W2681	Upper Artichoke Reservoir	2017	Odor	NR	1	5
W2681	Upper Artichoke Reservoir	2017	Scum	No	5	5
W2681	Upper Artichoke Reservoir	2017	Turbidity	None	2	5
W2681	Upper Artichoke Reservoir	2017	Turbidity	Slightly Turbid	2	5



Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2681	Upper Artichoke Reservoir	2017	Turbidity	Unobservable	1	5

### Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Upper Artichoke Reservoir (MA84071) were reported to MDPH based on visual observations for 44 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]

DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Upper Artichoke Reservoir	Newburyport						44		

### Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES
2024/26 Use Attainment Summary	

The Primary Contact Recreation Use for Upper Artichoke Reservoir (MA84071) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.

During the period 2015 through 2022, C-HAB postings for Upper Artichoke Reservoir (MA84071) were reported to MDPH based on visual observations for 44 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

In Upper Artichoke Reservoir (MA84071), MassDEP collected Secchi and cyanobacteria cell count data at W2680 [MAP2L-137, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2681 [MAP2L-137S, Shoreline] (2017). Secchi depth data are generally indicative of water clarity meeting the 1.2m (4ft) threshold at W2680 (station depth=2.75 m) in 2017 (n=3, 1-2.14m). The cyanobacteria cell count exceeded 70,000 cells/ml for a single sample on Aug 07, 2017 (n=6). The elevated cyanobacteria cell count measurement is also indicative of a Harmful Algal Blooms Alert. Analysis of microcystins and cylindrospermopsin samples from W2681 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

MassDEP staff also collected *E. coli* bacteria samples in Upper Artichoke Reservoir (MA84071) at W2681 [northwestern side of reservoir, off Withers Conservation Area trail, S of Middle St, W Newbury] from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset from W2681 indicated 0% of intervals had GMs >126 CFU/100ml, no samples exceeded the 410 CFU/100ml STV, and the seasonal GM was 20 CFU/100ml. *E. coli* data from W2681 meet 2024 CALM guidance.

### Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2680	MassDEP	Water Quality	Upper Artichoke Reservoir	[index site, West Newbury]	42.798955	-70.932592
W2681	MassDEP	Water Quality	Upper Artichoke Reservoir	[northwestern side of reservoir, off Withers Conservation Area trail, south of Middle Street, West Newbury]	42.801340	-70.932340

### Bacteria Data

#### Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)

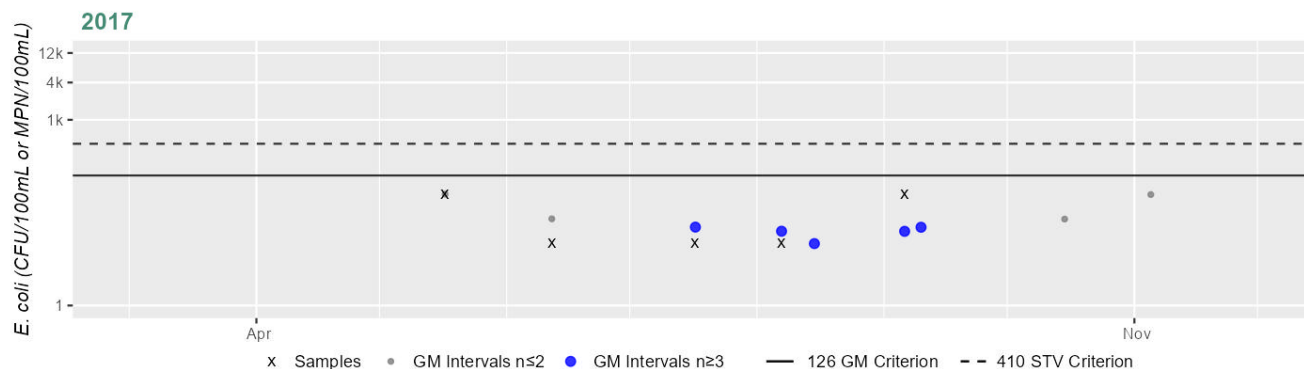
(MassDEP Undated 7) (MassDEP Undated 4)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2681	MassDEP	E. coli	05/17/17	09/06/17	5	10	63	20

### Station MASSDEP\_W2681 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	20
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Other Indicators

### Summary Statement for 2011-2022 Cyanobacteria Cell Count and Cyanotoxin Data, and Secchi Depth Data

(MassDEP Undated 7) (MassDEP Undated 4)

Data Year(s)	Summary
2017	In Upper Artichoke Reservoir (MA84071), MassDEP collected Secchi and cyanobacteria cell count data at W2680 [MAP2L-137, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2681 [MAP2L-137S, Shoreline] (2017). In 2017 at station W2680 (station depth=2.75 m) the Secchi depth measurements ranged from 1-2.14 m (n=3) with 1 measurement taken on Aug 15, 2017 that was less than the 1.2 m (4 ft) threshold. The cyanobacteria cell count exceeded 70,000 cells/ml for a single sample on Aug 07, 2017 in 2017 (n=6). The elevated cyanobacteria cell count measurement is indicative of a Harmful Algal Blooms Alert. Analysis of microcystins and cylindrospermopsin samples from W2681 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.

**MassDEP Cyanobacteria Cell Count Data Collected at Lakes and Impoundments (2016-2018)** (MassDEP Undated 7) (MassDEP Undated 4)

Station Code	Waterbody	Station Type	Data Year	Sample Count	Count >70,000 cells/mL	Exceedance Date(s)
W2680	Upper Artichoke Reservoir	Index	2017	3	0	NA
W2681	Upper Artichoke Reservoir	Shoreline	2017	3	1	8/7/2017

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
<p>The Secondary Contact Recreation Use for Upper Artichoke Reservoir (MA84071) is assessed as Not Supporting. An Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.</p> <p>During the period 2015 through 2022, C-HAB postings for Upper Artichoke Reservoir (MA84071) were reported to MDPH based on visual observations for 44 days in 2020. No blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made. In Upper Artichoke Reservoir (MA84071), MassDEP collected cyanobacteria cell count data at W2680 [MAP2L-137, Index-deep hole] (2017) and cyanobacteria cell count and cyanotoxin data at W2681 [MAP2L-137S, Shoreline] (2017). The cyanobacteria cell count exceeded 70,000 cells/ml for a single sample on Aug 07, 2017 (n=6). The elevated cyanobacteria cell count measurement is also indicative of a Harmful Algal Blooms Alert. Analysis of microcystins and cylindrospermopsin samples from W2681 in 2017 (n=6) indicated that the cyanotoxin concentrations did not exceed their respective thresholds of 8 µg/L and 15 µg/L.</p> <p>MassDEP staff also collected <i>E. coli</i> bacteria samples in Upper Artichoke Reservoir (MA84071) at W2681 [northwestern side of reservoir, off Withers Conservation Area trail, S of Middle St, W Newbury] from May-Sep 2017 (n=5). Analysis of the single year limited frequency <i>E. coli</i> dataset from W2681 indicated 0% of intervals had GMs &gt;244 CFU/100ml, no samples exceeded the 794 CFU/100ml STV, and the overall GM was 20 CFU/100ml. <i>E. coli</i> data from W2681 meet 2024 CALM guidance.</p>

## Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2681	MassDEP	Water Quality	Upper Artichoke Reservoir	[northwestern side of reservoir, off Withers Conservation Area trail, south of Middle Street, West Newbury]	42.801340	-70.932340

## Bacteria Data

### Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)

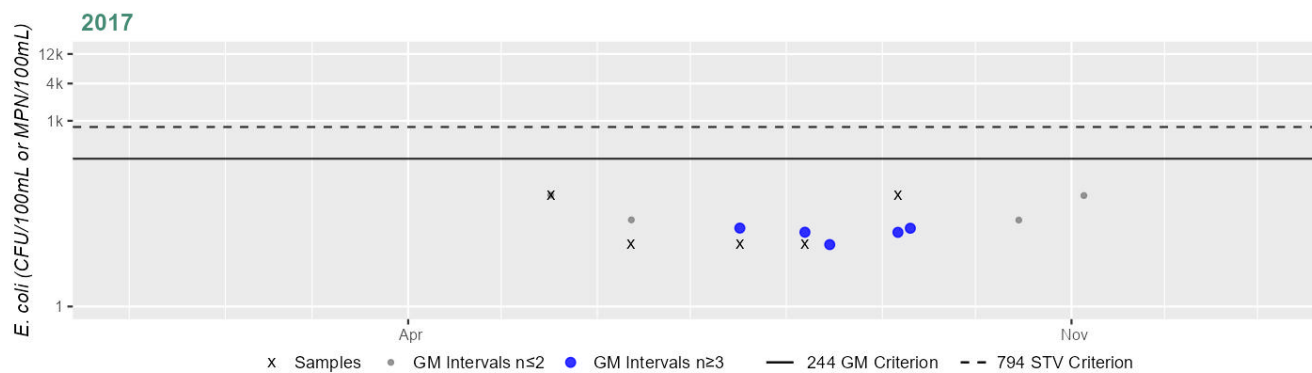
(MassDEP Undated 7) (MassDEP Undated 3)

[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2681	MassDEP	E. coli	05/17/17	09/06/17	5	10	63	20

#### Station MASSDEP\_W2681 - Escherichia coli

Daily Maximum Samples & 90 Day Geometric Means within the Secondary Contact Recreation Season



Variable*	Result
Samples	5
SeasGM	20
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

#### Cumulative %GMI Exceedance

Current (2011-2022)

0%

\*Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exceedances; %GMI Ex = % GMI Exceedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes years without GMI meeting the minimum sample size.

## Uptons Pond (MA84075)

<b>Location:</b>	Tyngsborough.
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	6 ACRES
<b>Classification/Qualifier:</b>	B

No usable data were available for Uptons Pond (MA84075) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
3	3	None	--	Unchanged

## Ward Pond (MA84096)

<b>Location:</b>	Ashburnham (formerly reported as 1996 segment: Ward Pond MA35094).
<b>AU Type:</b>	FRESHWATER LAKE
<b>AU Size:</b>	54 ACRES
<b>Classification/Qualifier:</b>	B

<b>AU Category 2022</b>	<b>AU Category 2024/26</b>	<b>Impairment</b>	<b>ATTAINS Action ID</b>	<b>Impairment Change Summary</b>
5	5	Dissolved Oxygen	--	Unchanged

<b>Impairment</b>	<b>Source (Confirmed Y/N)</b>	<b>ALU</b>	<b>FC</b>	<b>AES</b>	<b>PCR</b>	<b>SCR</b>
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--

## Recommendations

<b>2024/26 Recommendations</b>
2024/2026 IR [CYANOBACTERIA CELL COUNT, MEDIUM] Follow-up monitoring should be conducted in Ward Pond (MA84096) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses (an Alert was identified in the 2024/2026 IR since C-HAB postings were reported to MDPH based on visual observations for 78 days in 2020). Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH. {Ward Pond (MA84096)}

## Designated Use Attainment Decisions

## Fish Consumption

2024/26 Use Attainment	Alert
Not Assessed	No

2024/26 Use Attainment Summary
Fish toxics sampling has not been conducted recently, so the Fish Consumption Use for Ward Pond (MA84096) is Not Assessed.

## Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
<p>Too limited data are available to assess the Aesthetics Use for Ward Pond (MA84096) so it is assessed as having Insufficient Information. However, an Alert is being identified for Harmful Algal Blooms in this waterbody since C-HAB postings (blooms of &gt;15 days in duration) were reported to MDPH for 2020.</p> <p>During the period 2015 through 2022, C-HAB postings for Ward Pond (MDPH name Billy Ward Pond) were reported to MDPH based on visual observations for 78 days in 2020 and no blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for Harmful Algal Blooms in this waterbody and a recommendation for follow-up sampling will be made.</p>

## Algal Bloom Information

**Cyanobacteria Harmful Algal Bloom (C-HAB) Summary Statements for 2015-2022 MDPH Data** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

C-HAB Summary Statement
During the period 2015 through 2022, C-HAB postings for Ward Pond (MDPH name Billy Ward Pond) (MA84096) were reported to MDPH based on visual observations for 78 days in 2020. No blooms were reported in other years. Since no extended blooms (>20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings. However, an Alert is being identified for C-HABs in this waterbody and a recommendation for follow-up sampling will be made.

**Cyanobacteria Harmful Algal Bloom (C-HAB) Data (2015-2022) Provided by MDPH** (Bailey, Logan April 26, 2023) (MassDEP Undated 1)

[\* indicates a C-HAB posting of unknown duration]



DEP Waterbody (DPH Waterbody)	DPH Town	Posting Days 2015	Posting Days 2016	Posting Days 2017	Posting Days 2018	Posting Days 2019	Posting Days 2020	Posting Days 2021	Posting Days 2022
Ward Pond (MDPH name Billy Ward Pond)	Ashburnham						78		

## Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
<p>No bacteria data are available to assess the Primary Contact Recreation Use for Ward Pond (MA84096) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.</p> <p>During the period 2015 through 2022, C-HAB postings for Ward Pond (MDPH name Billy Ward Pond) (MA84096) were reported to MDPH based on visual observations for 78 days in 2020. No blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.</p>

## Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

2024/26 Use Attainment Summary
<p>No bacteria data are available to assess the Secondary Contact Recreation Use for Ward Pond (MA84096) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU.</p> <p>During the period 2015 through 2022, C-HAB postings for Ward Pond (MDPH name Billy Ward Pond) (MA84096) were reported to MDPH based on visual observations for 78 days in 2020. No blooms were reported in other years. Since no extended blooms (&gt;20 days in duration) based on cell count data were reported in recent years, an impairment decision will not be made at this time based on C-HAB postings.</p>

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