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

Appendix 13
Charles River Basin
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.

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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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Notice of Availability

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 [].

Table of Contents

2024/26 Cycle Impairment Changes 1
Alder Brook (MA72-22) 22
Supporting Information for Removed Impairments 23
Designated Use Attainment Decisions 23
Beaver Brook (MA72-12) 26
Supporting Information for Removed Impairments 27
Designated Use Attainment Decisions 27
Beaver Brook (MA72-28) 30
Designated Use Attainment Decisions 32
Beaver Pond (MA72004) 42
Designated Use Attainment Decisions 42
Beaver Pond (MA72006) 44
Bogastow Brook (MA72-16) 45
Recommendations 46
Designated Use Attainment Decisions 46
Brookline Reservoir (MA72010) 58
Designated Use Attainment Decisions 58
Bulloughs Pond (MA72011) 61
Bush Pond (MA72012) 62
Designated Use Attainment Decisions 62
Cambridge Reservoir (MA72014) 64
Designated Use Attainment Decisions 64
Cambridge Reservoir, Upper Basin (MA72156) 72
Supporting Information for Removed Impairments 73
Recommendations 80
Designated Use Attainment Decisions 80
Cedar Swamp Pond (MA72016) 83
Recommendations 84

Designated Use Attainment Decisions 84
Chandler Pond (MA72017) 86
Designated Use Attainment Decisions 87
Charles River (MA72-01) 89
Designated Use Attainment Decisions 90
Charles River (MA72-03) 93
Designated Use Attainment Decisions 95
Charles River (MA72-04) 102
Designated Use Attainment Decisions 103
Charles River (MA72-05) 126
Supporting Information for Removed Impairments 129
Designated Use Attainment Decisions 129
Charles River (MA72-06) 160
Designated Use Attainment Decisions 162
Charles River (MA72-07) 184
Designated Use Attainment Decisions 186
Charles River (MA72-33) 255
Designated Use Attainment Decisions 256
Charles River (MA72-36) 264
Designated Use Attainment Decisions 268
Charles River (MA72-38) 341
Designated Use Attainment Decisions 346
Cheese Cake Brook (MA72-29) 437
Designated Use Attainment Decisions 438
Cherry Brook (MA72-53) 446
Chestnut Hill Reservoir (MA72023) 447
Designated Use Attainment Decisions 447
Chicken Brook (MA72-34) 450
Supporting Information for Removed Impairments 451

Designated Use Attainment Decisions 451
Crystal Lake (MA72030) 459
Designated Use Attainment Decisions 459
Dix Brook (MA72-56) 462
Dopping Brook (MA72-40) 463
Designated Use Attainment Decisions 463
Dug Pond (MA72034) 467
Designated Use Attainment Decisions 467
Echo Lake (MA72035) 469
Designated Use Attainment Decisions 469
Factory Pond (MA72037) 471
Supporting Information for Removed Impairments 472
Designated Use Attainment Decisions 478
Farm Pond (MA72039) 481
Recommendations 481
Designated Use Attainment Decisions 481
Franklin Reservoir Northeast (MA72095) 484
Supporting Information for Removed Impairments 485
Designated Use Attainment Decisions 493
Franklin Reservoir Southwest (MA72032) 497
Supporting Information for Removed Impairments 497
Designated Use Attainment Decisions 506
Fuller Brook (MA72-18) 510
Designated Use Attainment Decisions 511
Godfrey Brook (MA72-51) 517
Designated Use Attainment Decisions 518
Halls Pond (MA72043) 521
Hammond Pond (MA72044) 522
Hardys Pond (MA72045) 523

Recommendations 524
Designated Use Attainment Decisions 524
Hobbs Brook (MA72-45) 527
Hobbs Brook (MA72-46) 528
Hopping Brook (MA72-35) 529
Supporting Information for Removed Impairments 530
Designated Use Attainment Decisions 530
Houghton Pond (MA72050) 534
Designated Use Attainment Decisions 534
Hurd Brook (MA72-52) 540
Designated Use Attainment Decisions 541
Jamaica Pond (MA72052) 546
Designated Use Attainment Decisions 547
Jennings Pond (MA72053) 551
Kendrick Street Pond (MA72055) 552
Recommendations 552
Designated Use Attainment Decisions 552
Kingsbury Pond (MA72056) 556
Lake Archer (MA72002) 557
Recommendations 557
Designated Use Attainment Decisions 558
Lake Pearl (MA72092) 561
Recommendations 562
Designated Use Attainment Decisions 562
Lake Waban (MA72125) 570
Lake Winthrop (MA72140) 571
Supporting Information for Removed Impairments 572
Designated Use Attainment Decisions 578
Linden Pond (MA72063) 583

Supporting Information for Removed Impairments 584
Designated Use Attainment Decisions 589
Little Farm Pond (MA72064) 592
Louisa Lake (MA72068) 593
Lymans Pond (MA72070) 594
Supporting Information for Removed Impairments 595
Designated Use Attainment Decisions 601
Mill Brook (MA72-39) 603
Designated Use Attainment Decisions 603
Mill River (MA72-15) 606
Designated Use Attainment Decisions 607
Mine Brook (MA72-14) 612
Supporting Information for Removed Impairments 613
Recommendations 613
Designated Use Attainment Decisions 614
Mirror Lake (MA72078) 621
Designated Use Attainment Decisions 621
Morses Pond (MA72079) 623
Designated Use Attainment Decisions 624
Muddy River (MA72-11) 626
Designated Use Attainment Decisions 629
Noanet Brook (MA72-54) 636
Noannet Pond (MA72084) 637
Nonesuch Pond (MA72085) 638
Norumbega Reservoir (MA72086) 639
Norumbega Reservoir (MA72087) 640
Populatic Pond (MA72096) 641
Designated Use Attainment Decisions 642
Powissett Brook (MA72-20) 650

Designated Use Attainment Decisions 651
Rock Meadow Brook (MA72-21) 654
Supporting Information for Removed Impairments 655
Designated Use Attainment Decisions 655
Rosemary Brook (MA72-25) 659
Recommendations 660
Designated Use Attainment Decisions 660
Sandy Pond (MA72105) 666
Sawmill Brook (MA72-23) 667
Designated Use Attainment Decisions 668
Scarboro Golf Course Pond (MA72107) 672
Recommendations 672
Designated Use Attainment Decisions 673
Seaverns Brook (MA72-44) 675
Supporting Information for Removed Impairments 676
Designated Use Attainment Decisions 676
Sewall Brook (MA72-49) 679
Designated Use Attainment Decisions 679
Shepards Brook (MA72-50) 682
South End Pond (MA72109) 683
South Meadow Brook (MA72-24) 684
Designated Use Attainment Decisions 686
Stall Brook (MA72-55) 693
Stony Brook (MA72-26) 694
Designated Use Attainment Decisions 694
Stony Brook (MA72-37) 698
Stony Brook Reservoir (MA72114) 699
Stop River (MA72-09) 700
Recommendations 701

Designated Use Attainment Decisions 701
Stop River (MA72-10) 704
Designated Use Attainment Decisions 705
Todd Pond (MA72117) 713
Trout Brook (MA72-19) 714
Designated Use Attainment Decisions 715
Uncas Pond (MA72122) 718
Unnamed Tributary (MA72-27) 719
Designated Use Attainment Decisions 720
Unnamed Tributary (MA72-30) 723
Designated Use Attainment Decisions 725
Unnamed Tributary (MA72-31) 728
Supporting Information for Removed Impairments 731
Designated Use Attainment Decisions 732
Unnamed Tributary (MA72-32) 734
Unnamed Tributary (MA72-41) 735
Supporting Information for Removed Impairments 736
Designated Use Attainment Decisions 736
Unnamed Tributary (MA72-42) 739
Designated Use Attainment Decisions 740
Unnamed Tributary (MA72-43) 743
Supporting Information for Removed Impairments 744
Designated Use Attainment Decisions 744
Unnamed Tributary (MA72-47) 747
Unnamed Tributary (MA72-48) 748
Waban Brook (MA72-17) 749
Recommendations 750
Designated Use Attainment Decisions 750
Walker Pond (MA72126) 753

Waseeka Sanctuary Pond (MA72155) 754
Weld Pond (MA72131) 755
Weston Reservoir (MA72134) 756
Weston Station Pond (MA72135) 757
Data Sources 758

2024/26 Cycle Impairment Changes

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Alder Brook	MA72-22	5	4a	Benthic Macroinvertebrates	40317	Changed
Alder Brook	MA72-22	5	4a	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Beaver Brook	MA72-12	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Beaver Brook	MA72-28	5	5	(Flow Regime Modification*)	--	Unchanged
Beaver Brook	MA72-28	5	5	(Other Anthropogenic substrate Alterations*)	--	Unchanged
Beaver Brook	MA72-28	5	5	(Water Chestnut*)	--	Unchanged
Beaver Brook	MA72-28	5	5	Algae	40317	Unchanged
Beaver Brook	MA72-28	5	5	Chloride	--	Unchanged
Beaver Brook	MA72-28	5	5	Dissolved Oxygen	40317	Unchanged
Beaver Brook	MA72-28	5	5	Escherichia Coli (E. Coli)	32379	Unchanged
Beaver Brook	MA72-28	5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
Beaver Brook	MA72-28	5	5	Phosphorus, Total	40317	Unchanged
Beaver Brook	MA72-28	5	5	Sedimentation/Siltation	--	Unchanged
Beaver Pond	MA72004	4a	4a	Mercury in Fish Tissue	42394	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Beaver Pond	MA72006	4c	4c	(Fanwort*)	--	Unchanged
Beaver Pond	MA72006	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Bogastow Brook	MA72-16	4a	4a	(Dewatering*)	--	Unchanged
Bogastow Brook	MA72-16	4a	4a	Escherichia Coli (E. Coli)	32373	Unchanged
Bogastow Brook	MA72-16	4a	4a	Fecal Coliform	32373	Unchanged
Brookline Reservoir	MA72010	3	5	Harmful Algal Blooms	--	Added
Bulloughs Pond	MA72011	5	5	Algae	--	Unchanged
Bulloughs Pond	MA72011	5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
Bush Pond	MA72012	--	3	None	--	Unchanged
Cambridge Reservoir	MA72014	5	5	Chloride	--	Unchanged
Cambridge Reservoir, Upper Basin	MA72156	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Cambridge Reservoir, Upper Basin	MA72156	5	5	Chloride	--	Unchanged
Cambridge Reservoir, Upper Basin	MA72156	5	5	Turbidity	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Cedar Swamp Pond	MA72016	4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Cedar Swamp Pond	MA72016	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Cedar Swamp Pond	MA72016	4a	4a	Dissolved Oxygen	40319	Unchanged
Cedar Swamp Pond	MA72016	4a	4a	Mercury in Fish Tissue	42395	Unchanged
Chandler Pond	MA72017	5	5	Algae	--	Unchanged
Chandler Pond	MA72017	5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
Chandler Pond	MA72017	5	5	Phosphorus, Total	--	Unchanged
Chandler Pond	MA72017	5	5	Transparency / Clarity	--	Unchanged
Charles River	MA72-01	4a	4a	(Dewatering*)	--	Unchanged
Charles River	MA72-01	4a	4a	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-01	4a	4a	Dissolved Oxygen	40318	Unchanged
Charles River	MA72-03	5	5	Algae	40317	Unchanged
Charles River	MA72-03	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-03	5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
Charles River	MA72-03	5	5	Escherichia Coli (E. Coli)	32365	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-03	5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
Charles River	MA72-03	5	5	Phosphorus, Total	40317	Unchanged
Charles River	MA72-04	5	5	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-04	5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
Charles River	MA72-04	5	5	Chlordane in Fish Tissue	--	Unchanged
Charles River	MA72-04	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-04	5	5	Escherichia Coli (E. Coli)	32366	Unchanged
Charles River	MA72-04	5	5	Fish Bioassessments	--	Unchanged
Charles River	MA72-04	5	5	Mercury in Fish Tissue	--	Unchanged
Charles River	MA72-04	5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
Charles River	MA72-04	5	5	Phosphorus, Total	--	Unchanged
Charles River	MA72-04	5	5	Temperature	--	Unchanged
Charles River	MA72-05	5	5	(Fanwort*)	--	Unchanged
Charles River	MA72-05	5	5	(Water Chestnut*)	--	Unchanged
Charles River	MA72-05	5	5	Algae	40317	Unchanged
Charles River	MA72-05	5	5	Benthic Macroinvertebrates	40317	Changed
Charles River	MA72-05	5	5	Chlordane in Fish Tissue	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-05	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-05	5	5	Dissolved Oxygen	40317	Unchanged
Charles River	MA72-05	5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
Charles River	MA72-05	5	5	Escherichia Coli (E. Coli)	--	Added
Charles River	MA72-05	5	5	Mercury in Fish Tissue	--	Unchanged
Charles River	MA72-05	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Charles River	MA72-05	5	5	Phosphorus, Total	40317	Unchanged
Charles River	MA72-05	5	5	Turbidity	40317	Unchanged
Charles River	MA72-06	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Charles River	MA72-06	5	5	(Fanwort*)	--	Unchanged
Charles River	MA72-06	5	5	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-06	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Charles River	MA72-06	5	5	(Water Chestnut*)	--	Unchanged
Charles River	MA72-06	5	5	Algae	40317	Unchanged
Charles River	MA72-06	5	5	Cause Unknown [Fish Population Imbalance]	--	Unchanged
Charles River	MA72-06	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-06	5	5	Fish Bioassessments	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-06	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Charles River	MA72-06	5	5	PCBs in Fish Tissue	--	Unchanged
Charles River	MA72-06	5	5	PFAS in Fish Tissue	--	Added
Charles River	MA72-06	5	5	Phosphorus, Total	40317	Unchanged
Charles River	MA72-07	5	5	(Aquatic Plants (Macrophytes)*)	--	Added
Charles River	MA72-07	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Charles River	MA72-07	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Charles River	MA72-07	5	5	(Fish Passage Barrier*)	--	Unchanged
Charles River	MA72-07	5	5	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-07	5	5	(Water Chestnut*)	--	Unchanged
Charles River	MA72-07	5	5	Benthic Macroinvertebrates	--	Unchanged
Charles River	MA72-07	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-07	5	5	Escherichia Coli (E. Coli)	32370	Unchanged
Charles River	MA72-07	5	5	Fish Bioassessments	--	Unchanged
Charles River	MA72-07	5	5	Harmful Algal Blooms	40317	Unchanged
Charles River	MA72-07	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Charles River	MA72-07	5	5	PCBs in Fish Tissue	--	Unchanged
Charles River	MA72-07	5	5	PFAS in Fish Tissue	--	Added

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-07	5	5	Phosphorus, Total	40317	Unchanged
Charles River	MA72-07	5	5	Temperature	--	Unchanged
Charles River	MA72-33	4a	4a	(Physical Substrate Habitat Alterations*)	--	Unchanged
Charles River	MA72-33	4a	4a	Escherichia Coli (E. Coli)	32364	Unchanged
Charles River	MA72-33	4a	4a	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Charles River	MA72-36	5	5	(Fish Passage Barrier*)	--	Unchanged
Charles River	MA72-36	5	5	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-36	5	5	(Non-Native Fish/Shellfish/Zooplankton*)	--	Unchanged
Charles River	MA72-36	5	5	(Water Chestnut*)	--	Unchanged
Charles River	MA72-36	5	5	Chlorophyll-a	33826	Unchanged
Charles River	MA72-36	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-36	5	5	Dissolved Oxygen	--	Unchanged
Charles River	MA72-36	5	5	Enterococcus	--	Added
Charles River	MA72-36	5	5	Escherichia Coli (E. Coli)	32371	Unchanged
Charles River	MA72-36	5	5	Fish Bioassessments	--	Unchanged
Charles River	MA72-36	5	5	Harmful Algal Blooms	33826	Unchanged
Charles River	MA72-36	5	5	Nutrient/Eutrophication Biological Indicators	33826	Unchanged
Charles River	MA72-36	5	5	Oil and Grease	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-36	5	5	PCBs in Fish Tissue	--	Unchanged
Charles River	MA72-36	5	5	PFAS in Fish Tissue	--	Added
Charles River	MA72-36	5	5	pH, High	--	Unchanged
Charles River	MA72-36	5	5	Phosphorus, Total	33826	Unchanged
Charles River	MA72-36	5	5	Sediment Bioassay [Acute Toxicity Freshwater]	--	Unchanged
Charles River	MA72-36	5	5	Transparency / Clarity	33826	Unchanged
Charles River	MA72-36	5	5	Unspecified Metals in Sediment	--	Unchanged
Charles River	MA72-38	5	5	(Fish Passage Barrier*)	--	Unchanged
Charles River	MA72-38	5	5	(Flow Regime Modification*)	--	Unchanged
Charles River	MA72-38	5	5	Cause Unknown [Sediment Screening Value (Exceedance)]	--	Unchanged
Charles River	MA72-38	5	5	Chlorophyll-a	33826	Unchanged
Charles River	MA72-38	5	5	Combined Biota/Habitat Bioassessments	--	Unchanged
Charles River	MA72-38	5	5	DDT in Fish Tissue	--	Unchanged
Charles River	MA72-38	5	5	Dissolved Oxygen	--	Unchanged
Charles River	MA72-38	5	5	Dissolved Oxygen Supersaturation	33826	Unchanged
Charles River	MA72-38	5	5	Enterococcus	--	Added

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Charles River	MA72-38	5	5	Escherichia Coli (E. Coli)	32371	Unchanged
Charles River	MA72-38	5	5	Harmful Algal Blooms	33826	Unchanged
Charles River	MA72-38	5	5	Nutrient/Eutrophication Biological Indicators	33826	Unchanged
Charles River	MA72-38	5	5	Odor	33826	Unchanged
Charles River	MA72-38	5	5	Oil and Grease	--	Unchanged
Charles River	MA72-38	5	5	PCBs in Fish Tissue	--	Unchanged
Charles River	MA72-38	5	5	PFAS in Fish Tissue	--	Added
Charles River	MA72-38	5	5	Phosphorus, Total	33826	Unchanged
Charles River	MA72-38	5	5	Salinity	--	Unchanged
Charles River	MA72-38	5	5	Temperature	--	Unchanged
Charles River	MA72-38	5	5	Transparency / Clarity	33826	Unchanged
Cheese Cake Brook	MA72-29	5	5	(Alteration in Stream-side or Littoral Vegetative Covers*)	--	Unchanged
Cheese Cake Brook	MA72-29	5	5	(Other Anthropogenic substrate Alterations*)	--	Unchanged
Cheese Cake Brook	MA72-29	5	5	Algae	40317	Unchanged
Cheese Cake Brook	MA72-29	5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
Cheese Cake Brook	MA72-29	5	5	Escherichia Coli (E. Coli)	32380	Unchanged
Cheese Cake Brook	MA72-29	5	5	Fish Bioassessments	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Cheese Cake Brook	MA72-29	5	5	Phosphorus, Total	40317	Unchanged
Cherry Brook	MA72-53	--	3	None	--	Unchanged
Chestnut Hill Reservoir	MA72023	3	5	Harmful Algal Blooms	--	Added
Chicken Brook	MA72-34	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Crystal Lake	MA72030	5	5	Harmful Algal Blooms	--	Unchanged
Dix Brook	MA72-56	--	3	None	--	Unchanged
Dopping Brook	MA72-40	2	2	None	--	Unchanged
Dug Pond	MA72034	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
Echo Lake	MA72035	4a	4a	Mercury in Fish Tissue	33880	Unchanged
Factory Pond	MA72037	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
Factory Pond	MA72037	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Factory Pond	MA72037	4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
Farm Pond	MA72039	3	3	None	--	Unchanged
Franklin Reservoir Northeast	MA72095	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
Franklin Reservoir Northeast	MA72095	4a	4a	(Water Chestnut*)	--	Unchanged
Franklin Reservoir Northeast	MA72095	4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Franklin Reservoir Northeast	MA72095	4a	4a	Turbidity	40319	Unchanged
Franklin Reservoir Southwest	MA72032	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
Franklin Reservoir Southwest	MA72032	4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
Franklin Reservoir Southwest	MA72032	4a	4a	Turbidity	40319	Unchanged
Fuller Brook	MA72-18	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Fuller Brook	MA72-18	5	5	Escherichia Coli (E. Coli)	32374	Unchanged
Fuller Brook	MA72-18	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Fuller Brook	MA72-18	5	5	Sedimentation/Siltation	--	Unchanged
Godfrey Brook	MA72-51	2	5	Escherichia Coli (E. Coli)	--	Added
Halls Pond	MA72043	3	3	None	--	Unchanged
Hammond Pond	MA72044	3	3	None	--	Unchanged
Hardys Pond	MA72045	4a	4a	(Water Chestnut*)	--	Unchanged
Hardys Pond	MA72045	4a	4a	Algae	40319	Unchanged
Hardys Pond	MA72045	4a	4a	Phosphorus, Total	40319	Unchanged
Hardys Pond	MA72045	4a	4a	Turbidity	40319	Unchanged
Hobbs Brook	MA72-45	5	5	Chloride	--	Unchanged
Hobbs Brook	MA72-46	5	5	Chloride	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Hopping Brook	MA72-35	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Houghton Pond	MA72050	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Added
Houghton Pond	MA72050	4a	4a	Algae	40319	Unchanged
Houghton Pond	MA72050	4a	4a	Turbidity	40319	Unchanged
Hurd Brook	MA72-52	--	5	Escherichia Coli (E. Coli)	--	Added
Jamaica Pond	MA72052	5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Jamaica Pond	MA72052	5	5	Dissolved Oxygen	--	Unchanged
Jamaica Pond	MA72052	5	5	Harmful Algal Blooms	--	Added
Jamaica Pond	MA72052	5	5	PFAS in Fish Tissue	--	Added
Jamaica Pond	MA72052	5	5	Phosphorus, Total	--	Unchanged
Jennings Pond	MA72053	3	3	None	--	Unchanged
Kendrick Street Pond	MA72055	5	5	Turbidity	--	Unchanged
Kingsbury Pond	MA72056	4c	4c	(Dewatering*)	--	Unchanged
Lake Archer	MA72002	4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Archer	MA72002	4c	5	Harmful Algal Blooms	--	Added
Lake Pearl	MA72092	4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Lake Pearl	MA72092	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Pearl	MA72092	4a	4a	Dissolved Oxygen	40319	Unchanged
Lake Waban	MA72125	4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Lake Waban	MA72125	4c	4c	(Fanwort*)	--	Unchanged
Lake Waban	MA72125	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Winthrop	MA72140	5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
Lake Winthrop	MA72140	5	5	(Fanwort*)	--	Unchanged
Lake Winthrop	MA72140	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Lake Winthrop	MA72140	5	5	2,3,7,8-Tetrachlorodibenzo-p-dioxin	--	Unchanged
Linden Pond	MA72063	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
Linden Pond	MA72063	4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
Linden Pond	MA72063	4a	4a	Turbidity	40319	Unchanged
Little Farm Pond	MA72064	3	3	None	--	Unchanged
Louisa Lake	MA72068	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Lymans Pond	MA72070	4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
Lymans Pond	MA72070	4a	4a	Turbidity	40319	Unchanged
Mill Brook	MA72-39	2	2	None	--	Unchanged
Mill River	MA72-15	5	5	(Curly-leaf Pondweed*)	--	Unchanged
Mill River	MA72-15	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Mill River	MA72-15	5	5	Temperature	--	Unchanged
Mine Brook	MA72-14	5	5	(Habitat Assessment*)	--	Unchanged
Mine Brook	MA72-14	5	5	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Mine Brook	MA72-14	5	5	Temperature	--	Unchanged
Mirror Lake	MA72078	4a	4a	(Curly-leaf Pondweed*)	--	Unchanged
Mirror Lake	MA72078	4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Unchanged
Mirror Lake	MA72078	4a	4a	Phosphorus, Total	40319	Unchanged
Mirror Lake	MA72078	4a	4a	Transparency / Clarity	40319	Unchanged
Morses Pond	MA72079	4c	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
Morses Pond	MA72079	4c	5	(Fanwort*)	--	Unchanged
Morses Pond	MA72079	4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
Morses Pond	MA72079	4c	5	Mercury in Fish Tissue	--	Added
Muddy River	MA72-11	5	5	(Bottom Deposits*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Muddy River	MA72-11	5	5	(Flow Regime Modification*)	--	Unchanged
Muddy River	MA72-11	5	5	(Non-Native Aquatic Plants*)	--	Unchanged
Muddy River	MA72-11	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Muddy River	MA72-11	5	5	DDT in Fish Tissue	--	Unchanged
Muddy River	MA72-11	5	5	Dissolved Oxygen	--	Unchanged
Muddy River	MA72-11	5	5	Escherichia Coli (E. Coli)	32383	Unchanged
Muddy River	MA72-11	5	5	Odor	--	Unchanged
Muddy River	MA72-11	5	5	Oil and Grease	--	Unchanged
Muddy River	MA72-11	5	5	PCBs in Fish Tissue	--	Unchanged
Muddy River	MA72-11	5	5	Phosphorus, Total	--	Unchanged
Muddy River	MA72-11	5	5	Turbidity	--	Unchanged
Muddy River	MA72-11	5	5	Unspecified Metals in Sediment	--	Unchanged
Noanet Brook	MA72-54	--	3	None	--	Unchanged
Noannet Pond	MA72084	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Nonesuch Pond	MA72085	4c	4c	(Curly-leaf Pondweed*)	--	Unchanged
Norumbega Reservoir	MA72086	3	3	None	--	Unchanged
Norumbega Reservoir	MA72087	3	3	None	--	Unchanged
Populatic Pond	MA72096	5	5	Algae	40319	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Populatic Pond	MA72096	5	5	Chlordane in Fish Tissue	--	Unchanged
Populatic Pond	MA72096	5	5	DDT in Fish Tissue	--	Unchanged
Populatic Pond	MA72096	5	5	Dissolved Oxygen	40319	Unchanged
Populatic Pond	MA72096	5	5	Dissolved Oxygen Supersaturation	40319	Unchanged
Populatic Pond	MA72096	5	5	Mercury in Fish Tissue	33880	Unchanged
Populatic Pond	MA72096	5	5	Nutrient/Eutrophication Biological Indicators	40319	Unchanged
Powissett Brook	MA72-20	5	5	Combined Biota/Habitat Bioassessments	--	Unchanged
Rock Meadow Brook	MA72-21	5	5	Algae	40317	Unchanged
Rock Meadow Brook	MA72-21	5	5	Benthic Macroinvertebrates	40317	Changed
Rock Meadow Brook	MA72-21	5	5	Dissolved Oxygen	40317	Unchanged
Rock Meadow Brook	MA72-21	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Rock Meadow Brook	MA72-21	5	5	Organic Enrichment (Sewage) Biological Indicators	--	Unchanged
Rock Meadow Brook	MA72-21	5	5	Phosphorus, Total	40317	Unchanged
Rosemary Brook	MA72-25	4a	4a	Dissolved Oxygen	40317	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Rosemary Brook	MA72-25	4a	4a	Phosphorus, Total	40317	Unchanged
Sandy Pond	MA72105	3	3	None	--	Unchanged
Sawmill Brook	MA72-23	5	5	Chloride	--	Unchanged
Sawmill Brook	MA72-23	5	5	Dissolved Oxygen	40317	Unchanged
Sawmill Brook	MA72-23	5	5	Escherichia Coli (E. Coli)	32376	Unchanged
Sawmill Brook	MA72-23	5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
Sawmill Brook	MA72-23	5	5	Phosphorus, Total	40317	Unchanged
Scarboro Golf Course Pond	MA72107	4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged
Seaverns Brook	MA72-44	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Sewall Brook	MA72-49	3	3	None	--	Unchanged
Shepards Brook	MA72-50	2	2	None	--	Unchanged
South End Pond	MA72109	3	3	None	--	Unchanged
South Meadow Brook	MA72-24	5	5	(Bottom Deposits*)	--	Unchanged
South Meadow Brook	MA72-24	5	5	(Debris*)	--	Unchanged
South Meadow Brook	MA72-24	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
South Meadow Brook	MA72-24	5	5	Dissolved Oxygen	40317	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
South Meadow Brook	MA72-24	5	5	Escherichia Coli (E. Coli)	32377	Unchanged
South Meadow Brook	MA72-24	5	5	Fish Bioassessments	--	Unchanged
South Meadow Brook	MA72-24	5	5	Phosphorus, Total	40317	Unchanged
South Meadow Brook	MA72-24	5	5	Trash	--	Unchanged
South Meadow Brook	MA72-24	5	5	Turbidity	40317	Unchanged
Stall Brook	MA72-55	--	3	None	--	Unchanged
Stony Brook	MA72-26	5	5	Temperature	--	Unchanged
Stony Brook	MA72-37	3	3	None	--	Unchanged
Stony Brook Reservoir	MA72114	3	3	None	--	Unchanged
Stop River	MA72-09	5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
Stop River	MA72-09	5	5	Dissolved Oxygen	40317	Unchanged
Stop River	MA72-09	5	5	Phosphorus, Total	40317	Unchanged
Stop River	MA72-10	4a	5	Escherichia Coli (E. Coli)	--	Added
Stop River	MA72-10	4a	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
Stop River	MA72-10	4a	5	Phosphorus, Total	40317	Unchanged
Todd Pond	MA72117	3	3	None	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Trout Brook	MA72-19	5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
Trout Brook	MA72-19	5	5	Temperature	--	Unchanged
Uncas Pond	MA72122	4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
Uncas Pond	MA72122	4a	4a	Dissolved Oxygen	40319	Unchanged
Unnamed Tributary	MA72-27	4c	4c	(Dewatering*)	--	Unchanged
Unnamed Tributary	MA72-27	4c	4c	(Flow Regime Modification*)	--	Unchanged
Unnamed Tributary	MA72-30	5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
Unnamed Tributary	MA72-30	5	5	Enterococcus	32381	Unchanged
Unnamed Tributary	MA72-30	5	5	Escherichia Coli (E. Coli)	32381	Unchanged
Unnamed Tributary	MA72-30	5	5	Odor	--	Unchanged
Unnamed Tributary	MA72-30	5	5	Phosphorus, Total	--	Unchanged
Unnamed Tributary	MA72-30	5	5	Total Suspended Solids (TSS)	--	Unchanged
Unnamed Tributary	MA72-30	5	5	Turbidity	--	Unchanged
Unnamed Tributary	MA72-31	5	5	(Bottom Deposits*)	--	Unchanged

Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Unnamed Tributary	MA72-31	5	5	(Debris*)	--	Unchanged
Unnamed Tributary	MA72-31	5	5	(Habitat Assessment*)	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Flocculant Masses	--	Removed
Unnamed Tributary	MA72-31	5	5	Odor	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Oil and Grease	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Petroleum Hydrocarbons	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Polychlorinated Biphenyls (PCBs)	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Scum/Foam	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Sedimentation/Siltation	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Trash	--	Unchanged
Unnamed Tributary	MA72-31	5	5	Turbidity	--	Unchanged

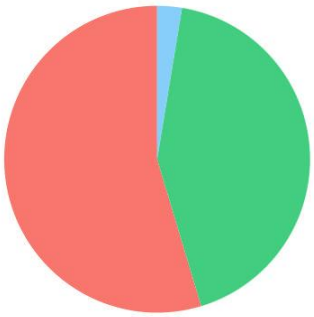
Waterbody	AU_ID	AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
Unnamed Tributary	MA72-31	5	5	Unspecified Metals in Sediment	--	Unchanged
Unnamed Tributary	MA72-32	4a	4a	Escherichia Coli (E. Coli)	32382	Unchanged
Unnamed Tributary	MA72-41	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Unnamed Tributary	MA72-42	5	5	Benthic Macroinvertebrates	--	Unchanged
Unnamed Tributary	MA72-43	5	4a	Escherichia Coli (E. Coli)	R1_MA_2024_04	Changed
Unnamed Tributary	MA72-47	5	5	Chloride	--	Unchanged
Unnamed Tributary	MA72-48	5	5	Chloride	--	Unchanged
Waban Brook	MA72-17	5	5	Temperature	--	Unchanged
Walker Pond	MA72126	3	3	None	--	Unchanged
Waseeka Sanctuary Pond	MA72155	3	3	None	--	Unchanged
Weld Pond	MA72131	3	3	None	--	Unchanged
Weston Reservoir	MA72134	3	3	None	--	Unchanged
Weston Station Pond	MA72135	3	3	None	--	Unchanged

Alder Brook (MA72-22)

Location:	Headwaters, perennial portion northwest of the Route 135 and South Street intersection, Needham to mouth at confluence with the Charles River, Needham.
AU Type:	RIVER
AU Size:	0.3 MILES
Classification/Qualifier:	B

Alder Brook (MA72-22)

Watershed Area: 1.73 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.73	1.73	0.19	0.19
Agriculture	0%	0%	0%	0%
Developed	54.7%	54.7%	39.4%	39.4%
Natural	42.7%	42.7%	42.6%	42.6%
Wetland	2.6%	2.6%	18%	18%
Impervious	32.1%	32.1%	13.1%	13.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	4a	Benthic Macroinvertebrates	40317	Changed
5	4a	Nutrient/Eutrophication Biological Indicators	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	Urban Runoff/Storm Sewers (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Urban Runoff/Storm Sewers (Y)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Benthic Macroinvertebrates	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts (Report CN 272.0, approved 6/10/2011, ATTAINS Action ID: 40317)

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 in Alder Brook (MA72-22), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary

No aesthetics observation data are available, so the Aesthetics Use for Alder Brook (MA72-22) 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 Alder Brook (MA72-22) 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 Alder Brook (MA72-22) 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 middle of the short Alder Brook AU (MA72-22) at W0405 [~5 meters downstream/SE of S St, Needham] from 1997-1998 (n=2-5/yr). Analysis of the historic single year limited frequency *E. coli* dataset from W0405 (only data from 1997 were of sufficient frequency to evaluate according to the 2024 CALM) indicated none of the intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 98 CFU/100mL). Historic *E. coli* data from W0405 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 Alder Brook.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0405	MassDEP	Water Quality	Alder Brook	[approximately 5 meters downstream/southeast of South Street, Needham.]	42.268643	-71.220246

Bacteria Data

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

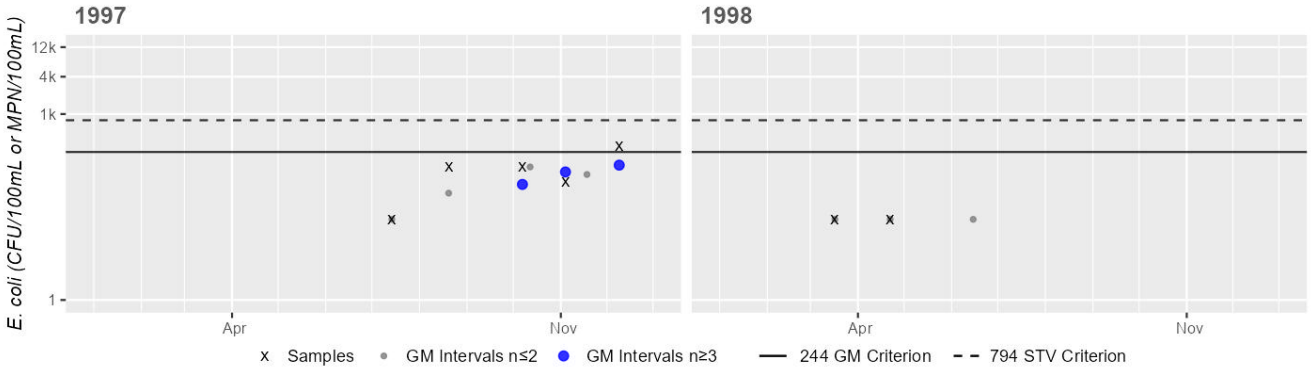
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0405	MassDEP	E. coli	07/14/97	12/09/97	5	20	300	98
W0405	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19

Station MASSDEP_W0405 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	98
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 (MA72-12)

Location:	Headwaters, outlet Beaver Pond, Bellingham to mouth at confluence with the Charles River, Bellingham.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	B

Beaver Brook (MA72-12)

Watershed Area: 2.85 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.85	2.78	1.17	1.17
Agriculture	0%	0%	0%	0%
Developed	24.9%	24.4%	15.7%	15.7%
Natural	60.3%	60.6%	58.1%	58.1%
Wetland	14.8%	15%	26.2%	26.2%
Impervious	10.1%	9.8%	5.8%	5.8%

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)	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (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 in this Beaver Brook AU (MA72-12), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Beaver Brook AU (MA72-12) 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 this Beaver Brook AU (MA72-12) 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 Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for this Beaver Brook AU (MA72-12) 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 W1142. MassDEP staff collected historical *E. coli* bacteria samples near the downstream end of this Beaver Brook AU (MA72-12) at W1142 [~725 ft upstream of confluence with the Charles River, Bellingham (upstream of footpath off Taunton St)] in 2002 and 2007 (n=5/yr). Analysis of this historic multi-year limited frequency *E. coli* dataset indicated that in 2 of 2 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2002 and 2007, 66% & 100%), no years had ≥2 samples exceed the 794 CFU/100mL STV, and cumulatively across years 83% of intervals had GMs >244 CFU/100mL. Historic *E. coli* data from W1142 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1142	MassDEP	Water Quality	Beaver Brook	[approximately 725 feet upstream of confluence with Charles River, Bellingham (upstream of footpath off Taunton Street)]	42.096207	-71.479588

Bacteria Data

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

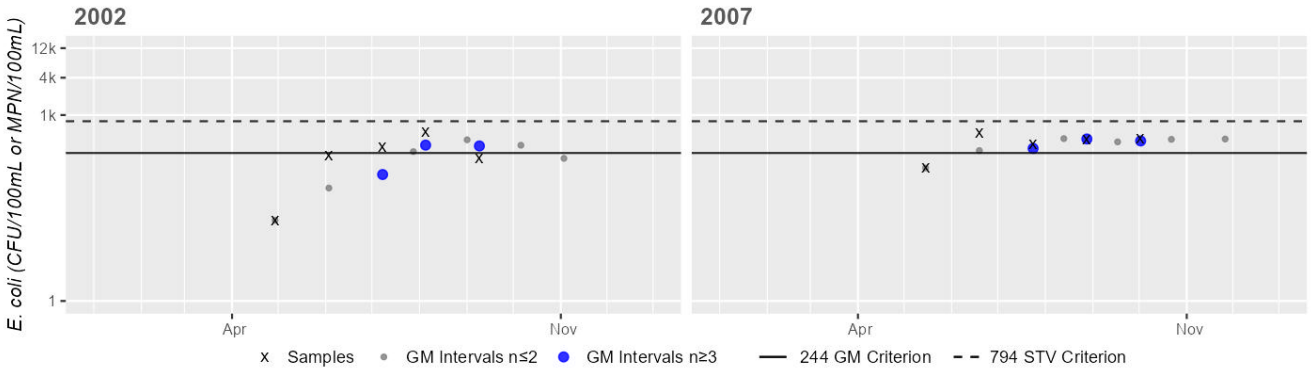
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1142	MassDEP	E. coli	04/29/02	09/09/02	5	20	530	169
W1142	MassDEP	E. coli	05/15/07	10/02/07	5	140	510	331

Station MASSDEP_W1142 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	169
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	331
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
83%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 (MA72-28)

Location:	Headwaters, perennial portion north of Route 2, Lexington to mouth at confluence with the Charles River, Waltham (one culverted portion approximately 2900 feet (0.55mile)).
AU Type:	RIVER
AU Size:	5.5 MILES
Classification/Qualifier:	B

Beaver Brook (MA72-28)

Watershed Area: 11.26 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	11.26	8.46	3.43	2.50
Agriculture	1.1%	1%	1.1%	0.3%
Developed	47.6%	49.7%	33.1%	35.6%
Natural	41.9%	41.6%	40.7%	43.6%
Wetland	9.4%	7.7%	25.2%	20.4%
Impervious	29.7%	31.4%	20.9%	23.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	(Other Anthropogenic substrate Alterations*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Algae	40317	Unchanged
5	5	Chloride	--	Unchanged
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	32379	Unchanged
5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Sedimentation/Siltation	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Flow Regime Modification*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Flow Regime Modification*)	Source Unknown (N)	X	--	--	--	--
(Other Anthropogenic substrate Alterations*)	Channelization (Y)	X	--	--	--	--
(Other Anthropogenic substrate Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Illicit Connections/Hook-ups to Storm Sewers (N)	X	--	X	X	X
Algae	Source Unknown (N)	X	--	X	X	X
Algae	Unspecified Urban Stormwater (Y)	X	--	X	X	X
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Waterfowl (Y)	--	--	--	X	X
Organic Enrichment (Sewage) Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Sedimentation/Siltation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	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 in this Beaver Brook AU (MA72-28), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Beaver Brook AU (MA72-28) continues to be assessed as Not Supporting with the prior Algae impairment being carried forward. MassDEP staff recorded aesthetics observations at one station about halfway down this Beaver Brook AU ~160 feet downstream/south of Trapelo Road, Waltham/Belmont (W2518), during the summer of 2015 as part of the MAP2 wadeable streams monitoring project (n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded. Since the observations of moderate algae in 2007 were made at other locations on the AU i.e. at inlet to Mill Pond, Waltham/Belmont (W1143) and Beaver Street, Waltham (downstream of Clematis Brook confluence) (W1144) (MassDEP Undated 6), there is insufficient information to delist the historic "excess algae" impairment which is retained.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2518	MassDEP	Water Quality	Beaver Brook	[approximately 160 feet downstream/south of Trapelo Road, Waltham/Belmont]	42.390098	-71.196718

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
W2518	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2518 on Beaver Brook (MA72-28) during 5 site visits between May 2015 and Aug 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
W2518	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
W2518	Beaver Brook	2015	Aesthetics Impaired?	No	5	5
W2518	Beaver Brook	2015	Aquatic Plant Density, Overall	None	4	5
W2518	Beaver Brook	2015	Aquatic Plant Density, Overall	NR	1	5
W2518	Beaver Brook	2015	Color	Light Yellow/Tan	4	5
W2518	Beaver Brook	2015	Color	None	1	5
W2518	Beaver Brook	2015	Objectionable Deposits	No	4	5
W2518	Beaver Brook	2015	Objectionable Deposits	Yes	1	5
W2518	Beaver Brook	2015	Odor	None	5	5
W2518	Beaver Brook	2015	Periphyton Density, Filamentous	None	5	5
W2518	Beaver Brook	2015	Periphyton Density, Film	Moderate	1	5
W2518	Beaver Brook	2015	Periphyton Density, Film	None	3	5
W2518	Beaver Brook	2015	Periphyton Density, Film	Sparse	1	5
W2518	Beaver Brook	2015	Scum	No	5	5
W2518	Beaver Brook	2015	Turbidity	Moderately Turbid	1	5
W2518	Beaver Brook	2015	Turbidity	None	4	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 (MA72-28) 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 W2518. The prior Algae impairment (from the Aesthetics Use) is also being carried forward.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in Beaver Brook (MA72-28) from 2015-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W2518 [~160 ft downstream/S of Trapelo Rd, Waltham/Belmont] from May-Aug 2015 (n=5) and in the downstream quarter of the AU at CRWA_BB [Beaver Brook] in Sep 2022 (n=1). Analysis of the single year limited frequency *E. coli* dataset from W2518 indicated 100% of intervals had GMs >126 CFU/100mL and 2 samples exceeded the 410 CFU/100mL STV (the seasonal GM was 349 CFU/100mL). *E. coli* data from W2518 are reflective of the existing Escherichia Coli (E. Coli) impairment. The available *E. coli* data from CRWA_BB are too limited to assess according to the 2024 CALM. Note that the sample significantly exceeded the 410 CFU/100mL STV in 2022 (n=1).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_BB	Charles River Watershed Association	Water Quality	Beaver Brook	Beaver Brook	42.380980	-71.217490
W2518	MassDEP	Water Quality	Beaver Brook	[approximately 160 feet downstream/south of Trapelo Road, Waltham/Belmont]	42.390098	-71.196718

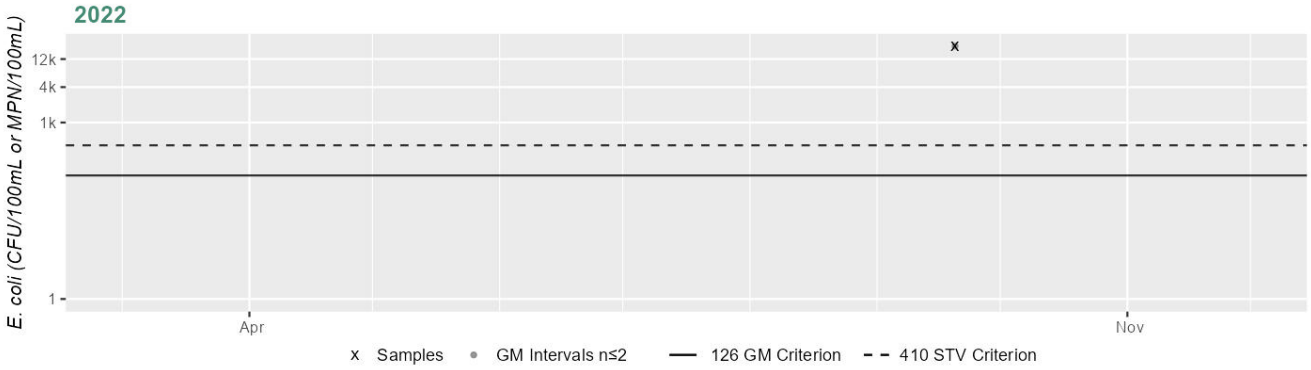
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2) (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
CRWA_BB	Charles River Watershed Association	E. coli	09/20/22	09/20/22	1	19900	19900	19900
W2518	MassDEP	E. coli	05/05/15	08/27/15	5	31	8700	349

Station CRWA_BB - Escherichia coli

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



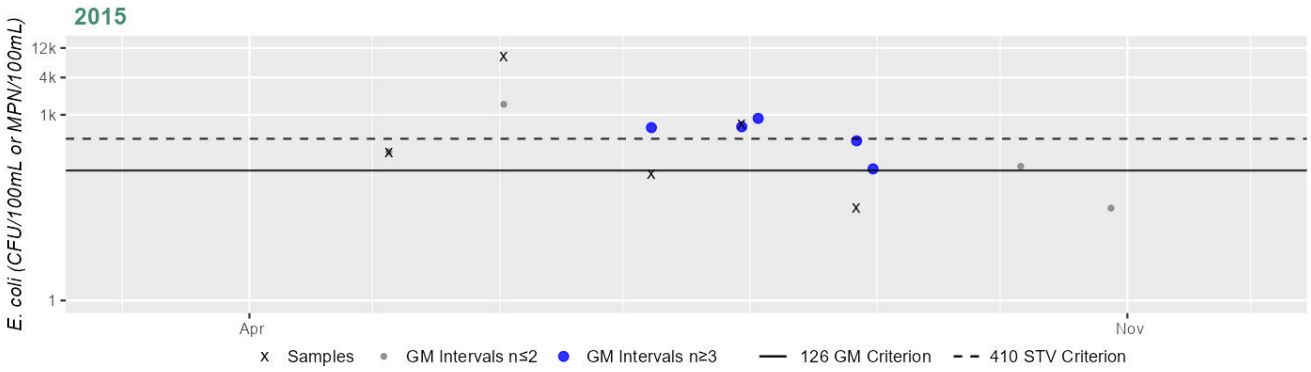
Variable*	Result
Samples	1
SeasGM	19900
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2518 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	349
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	40%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 this Beaver Brook AU (MA72-28) continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward. An Escherichia Coli (E. Coli) impairment is being added based on a re-evaluation of bacteria data not meeting the threshold at W2518. CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in Beaver Brook (MA72-28) from 2015-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W2518 [~160 ft downstream/S of Trapelo Rd, Waltham/Belmont] from May-Aug 2015 (n=5) and in the downstream quarter of the AU at CRWA_BB [Beaver Brook] in Sep 2022 (n=1). Analysis of the single year limited frequency *E. coli* dataset from W2518 indicated 80% of intervals had GMs >244 CFU/100mL, 1 sample exceeded the 794 CFU/100mL STV, and the overall GM was 349 CFU/100mL. *E. coli* data from W2518 are indicative of an Escherichia Coli (E. Coli) impairment. The available *E. coli* data from CRWA_BB are too limited to assess according to the 2024 CALM. Note that the sample significantly exceeded the 794 CFU/100mL STV in 2022 (n=1). MassDEP staff collected *E. coli* bacteria samples in the historic IR window (1997-2010) in Beaver Brook (MA72-28) from 1997-2007 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W1143 [at inlet to Mill Pond, Waltham/Belmont] in 2002 and 2007 (n=5/yr), and in the downstream quarter of the AU at W1144 [Beaver St, Waltham (downstream of Clematis Brook confluence)] in 2002 and 2007 (n=5/yr), W0393 [upstream/N side at Rt. 60 (downstream/S of Lyman Pond), Waltham] from Jul-Aug 1997 (n=3), and W0392 [~100 ft downstream/S of River St from culvert in parking lot (convenience/appliance store), Waltham] from 1997-1998 (n=2-3/yr). The *E. coli* data from these stations were similarly indicative of poor water quality conditions based on this re-evaluation.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_BB	Charles River Watershed Association	Water Quality	Beaver Brook	Beaver Brook	42.380980	-71.217490
W0392	MassDEP	Water Quality	Beaver Brook	[approximately 100 feet downstream/south of River Street from culvert in parking lot (convenience/appliance store), Waltham.]	42.372956	-71.228403

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0393	MassDEP	Water Quality	Beaver Brook	[upstream/north side at Route 60 (downstream/south of Lyman Pond), Waltham.]	42.379329	-71.222473
W1143	MassDEP	Water Quality	Beaver Brook	[at inlet to Mill Pond, Waltham/Belmont]	42.395545	-71.197102
W1144	MassDEP	Water Quality	Beaver Brook	[Beaver Street, Waltham (downstream of Clematis Brook confluence)]	42.383004	-71.207849
W2518	MassDEP	Water Quality	Beaver Brook	[approximately 160 feet downstream/south of Trapelo Road, Waltham/Belmont]	42.390098	-71.196718

Bacteria Data

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

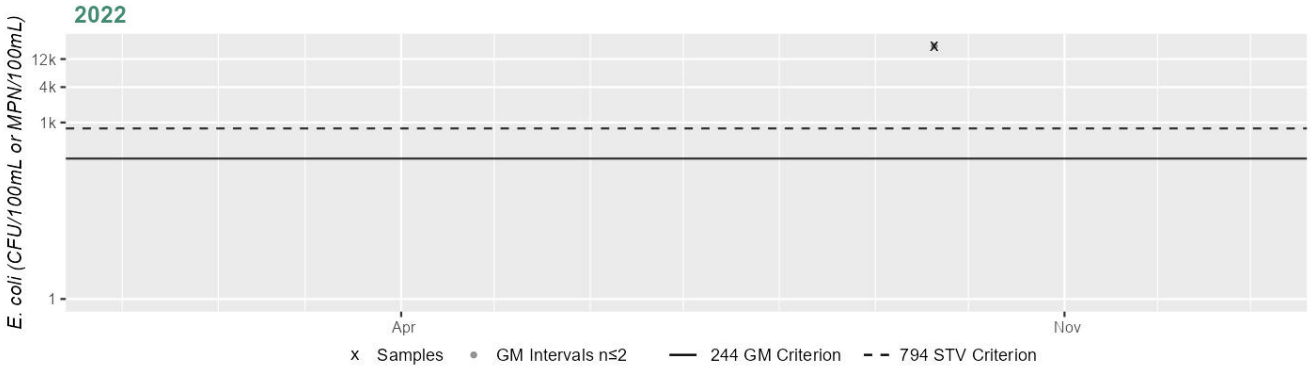
(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

[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
CRWA_BB	Charles River Watershed Association	E. coli	09/20/22	09/20/22	1	19900	19900	19900
W0392	MassDEP	E. coli	10/07/97	12/09/97	3	200	900	448
W0392	MassDEP	E. coli	03/17/98	04/22/98	2	20	100	44
W0393	MassDEP	E. coli	07/01/97	08/20/97	3	800	1600	1048
W1143	MassDEP	E. coli	04/29/02	09/09/02	5	130	1200	441
W1143	MassDEP	E. coli	05/15/07	10/02/07	5	230	610	383
W1144	MassDEP	E. coli	04/29/02	09/09/02	5	78	1900	439
W1144	MassDEP	E. coli	05/15/07	10/02/07	5	200	1400	561
W2518	MassDEP	E. coli	05/05/15	08/27/15	5	31	8700	349

Station CRWA_BB - Escherichia coli

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



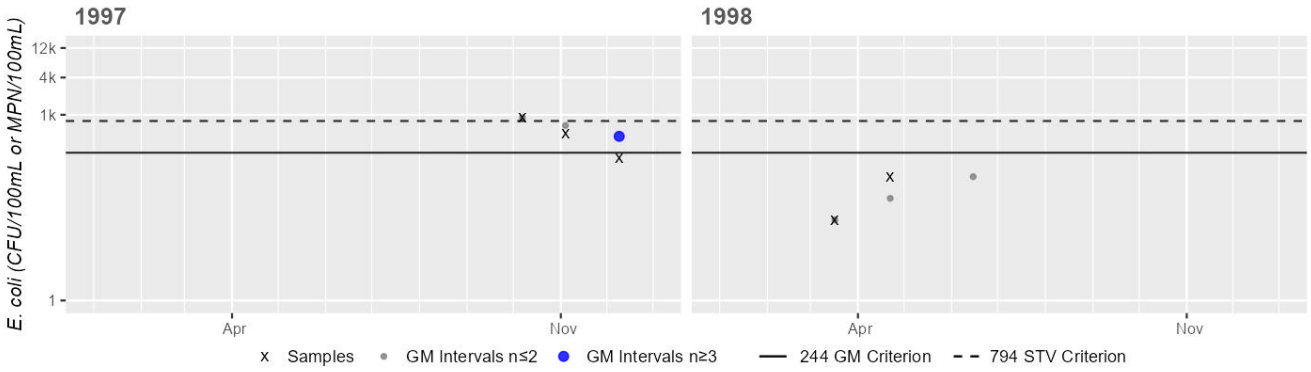
Variable*	Result
Samples	1
SeasGM	19900
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0392 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	448
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	33%

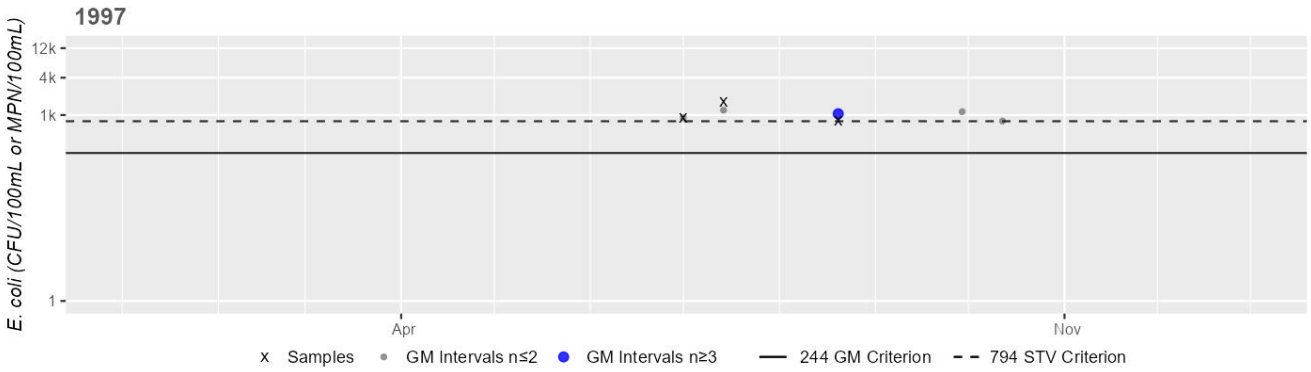
Variable*	Result
Samples	2
SeasGM	44
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0393 - Escherichia coli

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



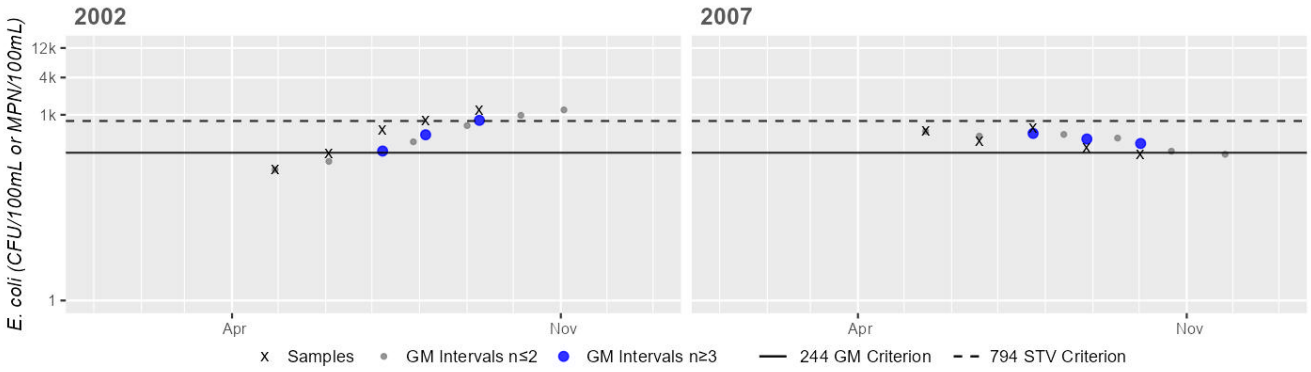
Variable*	Result
Samples	3
SeasGM	1048
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	3
%n>STV	100%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1143 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	441
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	40%

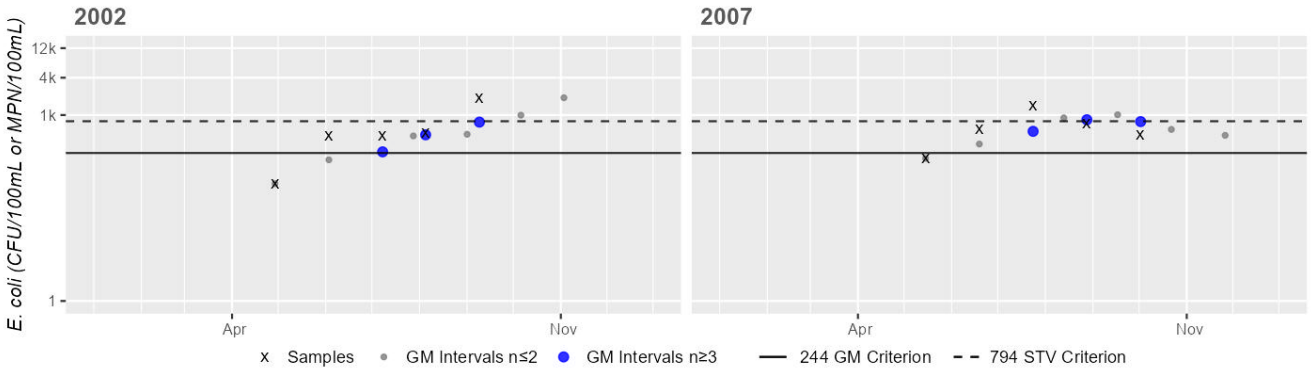
Variable*	Result
Samples	5
SeasGM	383
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1144 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	439
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	20%

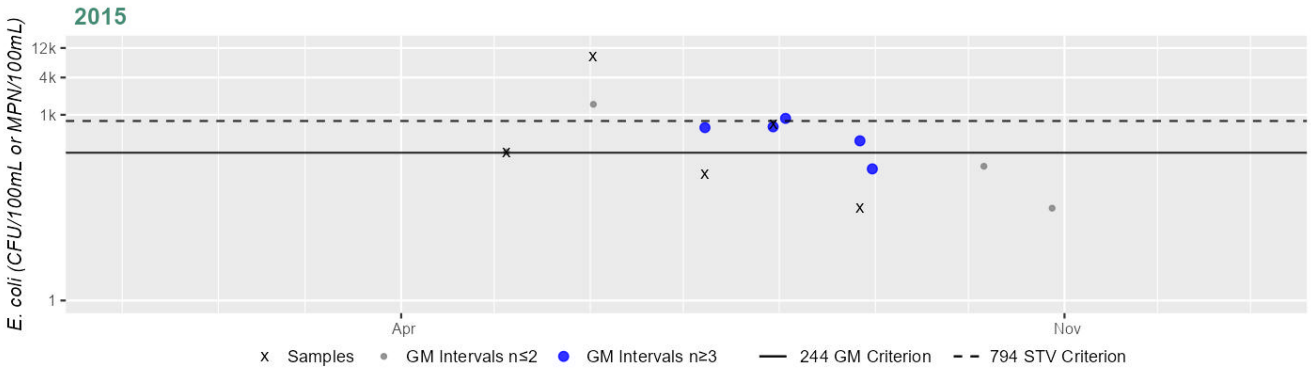
Variable*	Result
Samples	5
SeasGM	561
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	20%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2518 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	349
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance
Current (2011-2022)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Pond (MA72004)

Location:	Bellingham/Milford.
AU Type:	FRESHWATER LAKE
AU Size:	87 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Mercury in Fish Tissue	42394	Unchanged

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	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary

The Fish Consumption Use for this Beaver Pond AU (MA72004) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MA DPH included a site-specific advisory for Beaver 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 aesthetics observation data are available, so the Aesthetics Use for this Beaver Pond AU (MA72004) 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 Beaver Pond AU (MA72004) 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 this Beaver Pond AU (MA72004) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Beaver Pond (MA72006)

Location:	Franklin.
AU Type:	FRESHWATER LAKE
AU Size:	32 ACRES
Classification/Qualifier:	B

No usable data were available for Beaver Pond (MA72006) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Fanwort*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

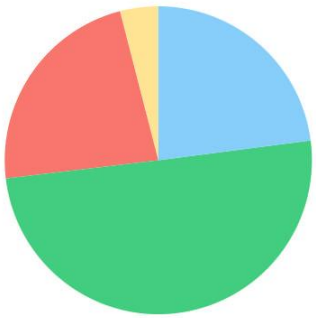
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Bogastow Brook (MA72-16)

Location:	Headwaters, outlet Factory Pond, Holliston to mouth at inlet South End Pond, Millis.
AU Type:	RIVER
AU Size:	9.4 MILES
Classification/Qualifier:	B

Bogastow Brook (MA72-16)

Watershed Area: 25.08 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	25.08	12.65	9.45	4.82
Agriculture	4%	5.4%	3.7%	5%
Developed	22.9%	18.9%	14.7%	10.4%
Natural	50.2%	46.8%	41.7%	35%
Wetland	22.9%	28.9%	39.8%	49.6%
Impervious	9.8%	7.5%	6.5%	4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Dewatering*)	--	Unchanged
4a	4a	Escherichia Coli (E. Coli)	32373	Unchanged
4a	4a	Fecal Coliform	32373	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
(Dewatering*)	Dam or Impoundment (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Fecal Coliform	Source Unknown (N)	--	--	--	X	--

Recommendations

2024/26 Recommendations
2024/2026 IR [Fecal Coliform & E. coli, high priority] While *E. coli* data indicative of good conditions were collected in 2015 at W2537 on Bogastow Brook (MA72-16), the prior Fecal Coliform and *E. coli* impairments were not delisted from the Primary Contact Recreation Use in the 2024/2026 IR cycle since recent data were not collected in the vicinity of the original data that triggered the bacteria impairments (of six stations located throughout the brook and sampled by MassDEP in 1997, elevated fecal coliform data were measured at two stations, BB04/W0418 and BB05/W0420 (Fiorentino, Kennedy and Weinstein 2000) which are significantly upstream of W2537- see delisting documentation for more information). Follow-up bacteria monitoring should be collected at one or both of the historical stations (W0418, W0420) to potentially provide evidence for delisting of the two bacteria indicator impairments. {W0418, W0420}

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 in Bogastow Brook (MA72-16), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Bogastow Brook (MA72-16) is assessed as Fully Supporting based on the general lack of objectionable conditions observed by MassDEP staff during summer 2015. MassDEP staff recorded aesthetics observations at one station about three-quarters of the way down Bogastow Brook ~800 feet downstream/north of Orchard Street, Millis (W2537), during the summer of 2015 as part of the MAP2 wadeable streams monitoring project (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
W2537	MassDEP	Water Quality	Bogastow Brook	[approximately 800 feet downstream/north of Orchard Street, Millis]	42.187016	-71.375822

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
W2537	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2537 on Bogastow Brook (MA72-16) 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
W2537	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
W2537	Bogastow Brook	2015	Aesthetics Impaired?	No	5	5
W2537	Bogastow Brook	2015	Aquatic Plant Density, Overall	Moderate	1	5
W2537	Bogastow Brook	2015	Aquatic Plant Density, Overall	Sparse	4	5
W2537	Bogastow Brook	2015	Color	Light Yellow/Tan	5	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2537	Bogastow Brook	2015	Objectionable Deposits	No	5	5
W2537	Bogastow Brook	2015	Odor	None	5	5
W2537	Bogastow Brook	2015	Periphyton Density, Filamentous	None	4	5
W2537	Bogastow Brook	2015	Periphyton Density, Filamentous	Sparse	1	5
W2537	Bogastow Brook	2015	Periphyton Density, Film	None	4	5
W2537	Bogastow Brook	2015	Periphyton Density, Film	Sparse	1	5
W2537	Bogastow Brook	2015	Scum	No	3	5
W2537	Bogastow Brook	2015	Scum	Yes	2	5
W2537	Bogastow Brook	2015	Turbidity	None	2	5
W2537	Bogastow Brook	2015	Turbidity	Slightly Turbid	3	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Bogastow Brook (MA72-16) is assessed as Not Supporting with the prior Escherichia Coli (E. Coli) and Fecal Coliform impairments being carried forward. Follow-up sampling should be conducted to provide data for possible future delistings.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in Bogastow Brook (MA72-16) from 2015-2022 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: about three-quarters of the way down the AU at W2537 [~800 ft downstream/N of Orchard St, Millis] from May-Sep 2015 (n=5) and a short distance downstream at CRWA_BGSB [Bogastow Brook] from Jul 2022 (n=1). Analysis of the single year limited frequency *E. coli* dataset from W2537 indicated no intervals had GMs >126 CFU/100mL and no samples exceeded the 410 CFU/100mL STV (the seasonal GM was 64 CFU/100mL). The available *E. coli* data from CRWA_BGSB are too limited to assess according to the 2024 CALM. Note that samples exceeded the 410 CFU/100ml STV in 2022 (n=1 at 794 CFU/100mL). *E. coli* data from W2537 meet 2024 CALM guidance. However, since there was an STV exceedance at CRWA_BGSB and there were no recent data collected in the vicinity of the original data that triggered the bacteria impairments (of six stations located throughout the brook and sampled by MassDEP in 1997, elevated fecal coliform data were measured at two stations, BB04/W0418 and BB05/W0420 (Fiorentino, Kennedy and Weinstein 2000) which are significantly upstream of W2537), the Fecal Coliform and Escherichia Coli (E. Coli) impairments are not being removed at this time. A recommendation will be made for follow-up sampling.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_BGSB	Charles River Watershed Association	Water Quality	Bogastow Brook	Bogastow Brook	42.190260	-71.371610
W2537	MassDEP	Water Quality	Bogastow Brook	[approximately 800 feet downstream/north of Orchard Street, Millis]	42.187016	-71.375822

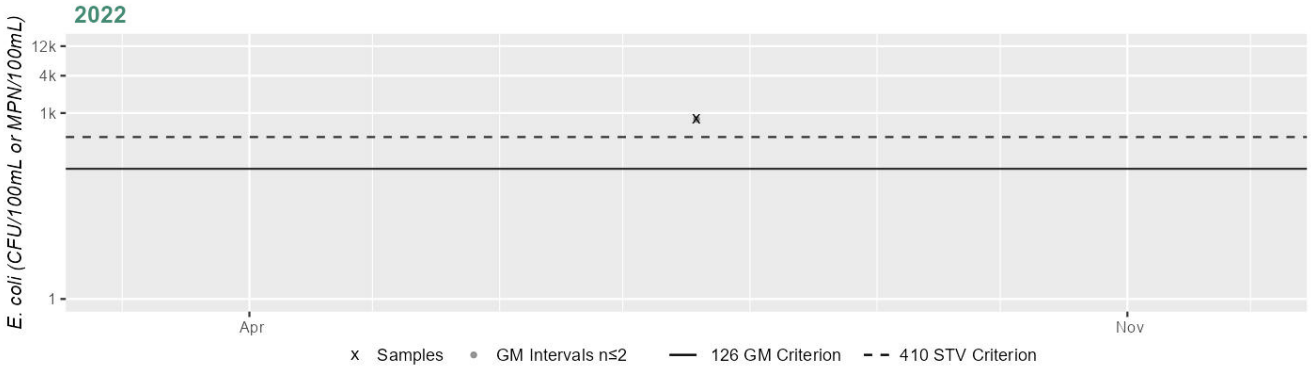
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2) (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
CRWA_BGSB	Charles River Watershed Association	E. coli	07/19/22	07/19/22	1	794	794	794
W2537	MassDEP	E. coli	05/13/15	09/03/15	5	10	160	64

Station CRWA_BGSB - Escherichia coli

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



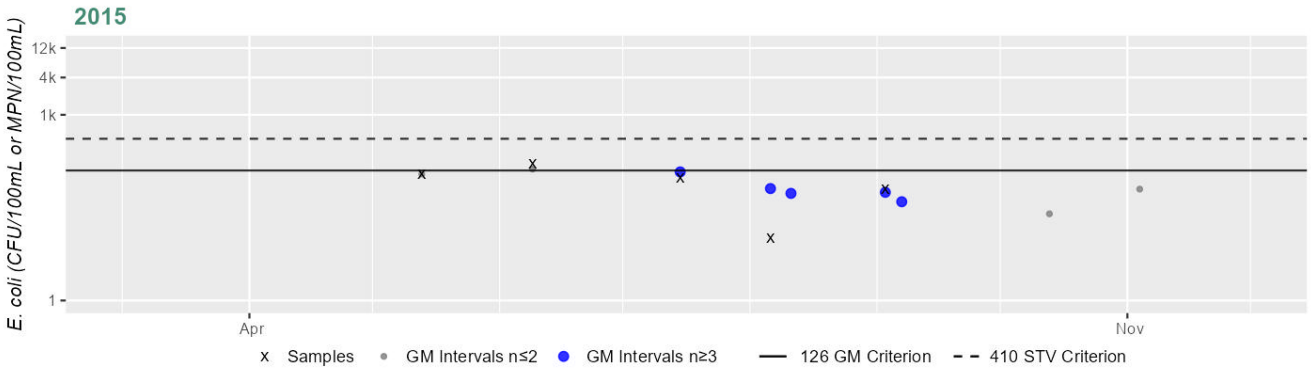
Variable*	Result
Samples	1
SeasGM	794
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2537 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	64
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 Bogastow Brook (MA72-16) continues to be assessed as Fully Supporting.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) at 2 stations in Bogastow Brook.
Samples were collected from the following stations/sample years from upstream to downstream: about three-quarters of the way down the AU at W2537 [~800 ft downstream/N of Orchard St, Millis] from May-Sep 2015 (n=5) and a short distance downstream at CRWA_BGSB [Bogastow Brook] in Jul 2022 (n=1). Analysis of the single year limited frequency *E. coli* dataset from W2537 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 64 CFU/100mL). *E. coli* data from W2537 are indicative of good water quality conditions but the available *E. coli* data from CRWA_BGSB are too limited to assess according to the 2024 CALM. MassDEP staff also collected *E. coli* bacteria samples in the historic IR window (1997-2010) in Bogastow Brook (MA72-16) from 1997-2010 at 7 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the upstream third of the AU at W0417 [upstream/S side at Lowland St, Holliston] in Aug 1997 (n=1) and at W0418 [upstream/N at Fiske St, Holliston] in Aug 1997 (n=1), in the middle of the AU at W0419 [upstream/N at Central St, Holliston] in Aug 1997 (n=1), W0420 [upstream/N at Orchard St, Millis] in Aug 1997 (n=1), and W2153 [~3875 ft downstream of Orchard St, Millis] from May-Jun 2010 (n=3), and in the downstream third of the AU at W0421 [upstream/S at Middlesex St, Millis] in Aug 1997 (n=1; note this is a short distance downstream of the current station W2537), and W0423 [at Orchard St below Bogastow Pond in the northern most outlet, Millis] in 1997 and 2007 (n=1-4/yr). The historical *E. coli* data from all these stations were either of insufficient frequency to be evaluated or similarly indicative of good water quality (W2153, W0423) as the current data. However, since the data were collected before the current IR window, they cannot be used to positively assess the Secondary Contact Recreation Use of Bogastow Brook (MA72-16).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_BGSB	Charles River Watershed Association	Water Quality	Bogastow Brook	Bogastow Brook	42.190260	-71.371610
W0417	MassDEP	Water Quality	Bogastow Brook	[upstream/south side at Lowland Street, Holliston.]	42.207081	-71.409234
W0418	MassDEP	Water Quality	Bogastow Brook	[upstream/north at Fiske Street, Holliston.]	42.203305	-71.399316

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0419	MassDEP	Water Quality	Bogastow Brook	[upstream/north at Central Street, Holliston.]	42.195536	-71.391536
W0420	MassDEP	Water Quality	Bogastow Brook	[upstream/north at Orchard Street, Millis.]	42.183871	-71.390400
W0421	MassDEP	Water Quality	Bogastow Brook	[upstream/south at Middlesex Street, Millis.]	42.189962	-71.374961
W0423	MassDEP	Water Quality	Bogastow Brook	[at Orchard Street below Bogastow Pond in the northern most outlet, Millis.]	42.188291	-71.362806
W2153	MassDEP	Water Quality	Bogastow Brook	[approximately 3875 feet downstream of Orchard Street, Millis]	42.178379	-71.383809
W2537	MassDEP	Water Quality	Bogastow Brook	[approximately 800 feet downstream/north of Orchard Street, Millis]	42.187016	-71.375822

Bacteria Data

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

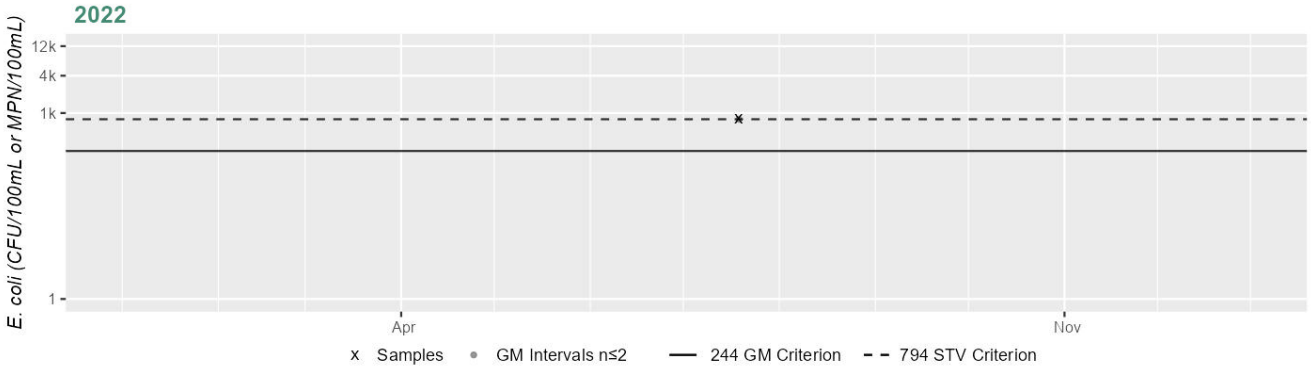
(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

[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
CRWA_BGSB	Charles River Watershed Association	E. coli	07/19/22	07/19/22	1	794	794	794
W0417	MassDEP	E. coli	08/19/97	08/19/97	1	20	20	19
W0418	MassDEP	E. coli	08/19/97	08/19/97	1	60	60	59
W0419	MassDEP	E. coli	08/19/97	08/19/97	1	40	40	40
W0420	MassDEP	E. coli	08/19/97	08/19/97	1	120	120	119
W0421	MassDEP	E. coli	08/19/97	08/19/97	1	60	60	59
W0423	MassDEP	E. coli	08/19/97	08/19/97	1	20	20	19
W0423	MassDEP	E. coli	05/15/07	10/02/07	4	10	200	84
W2153	MassDEP	E. coli	05/04/10	06/24/10	3	60	210	133
W2537	MassDEP	E. coli	05/13/15	09/03/15	5	10	160	64

Station CRWA_BGSB - Escherichia coli

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



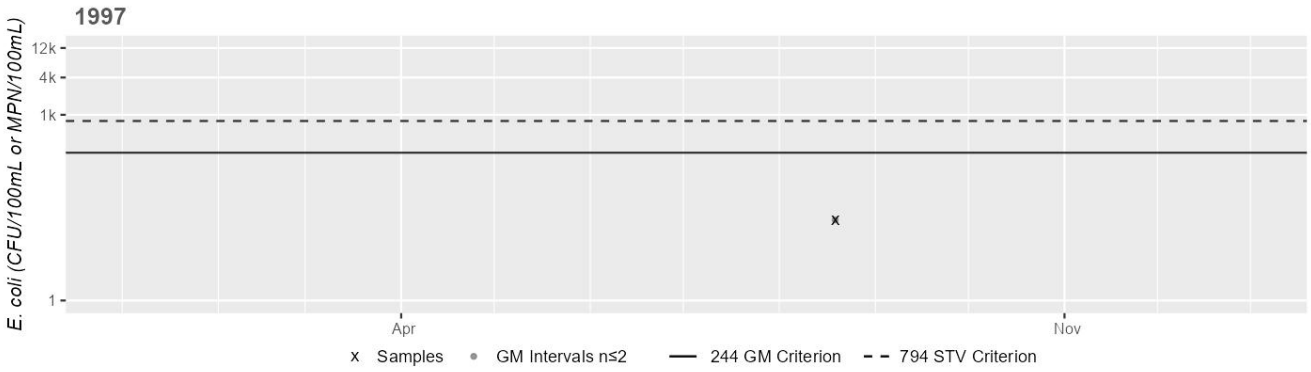
Variable*	Result
Samples	1
SeasGM	794
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0417 - Escherichia coli

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



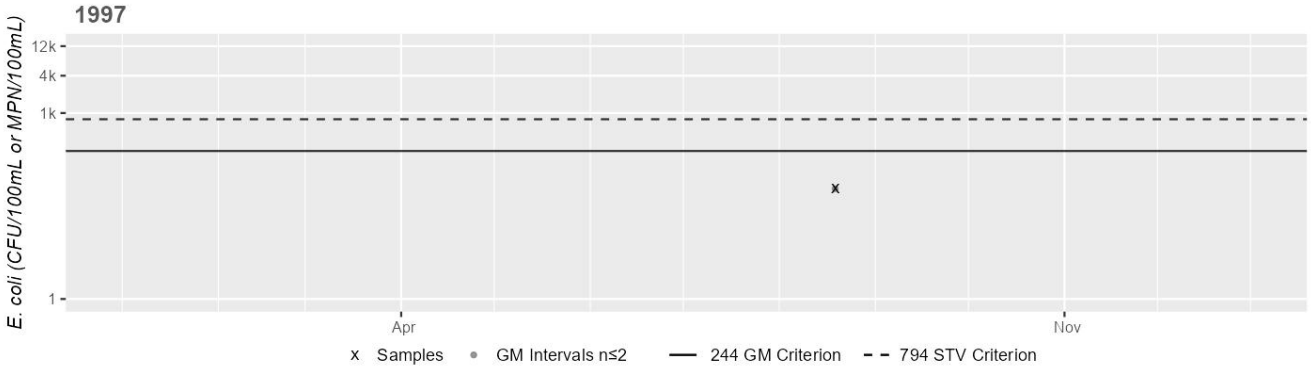
Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0418 - Escherichia coli

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



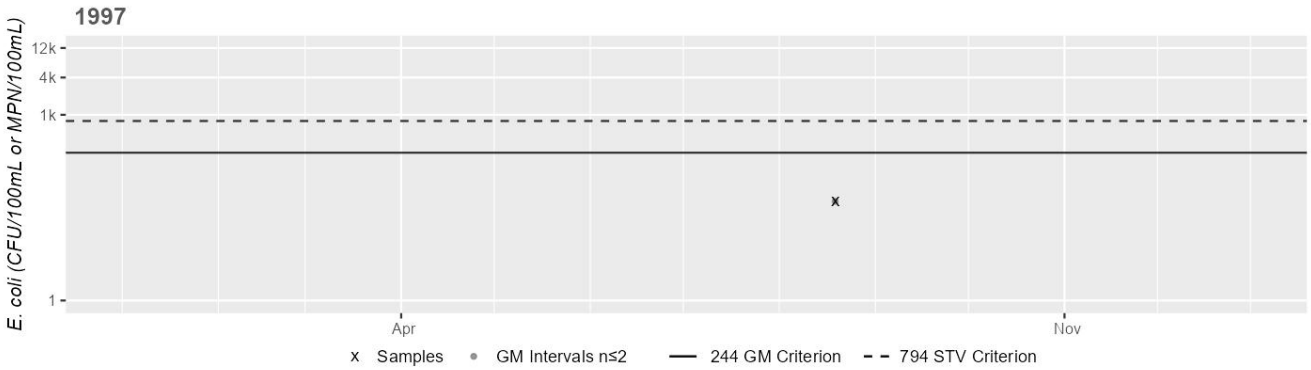
Variable*	Result
Samples	1
SeasGM	60
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0419 - Escherichia coli

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



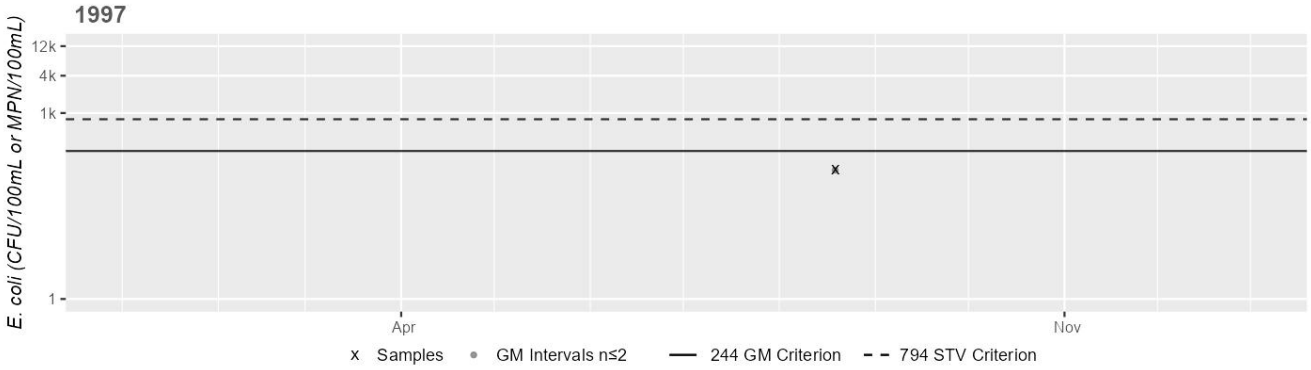
Variable*	Result
Samples	1
SeasGM	40
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0420 - Escherichia coli

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



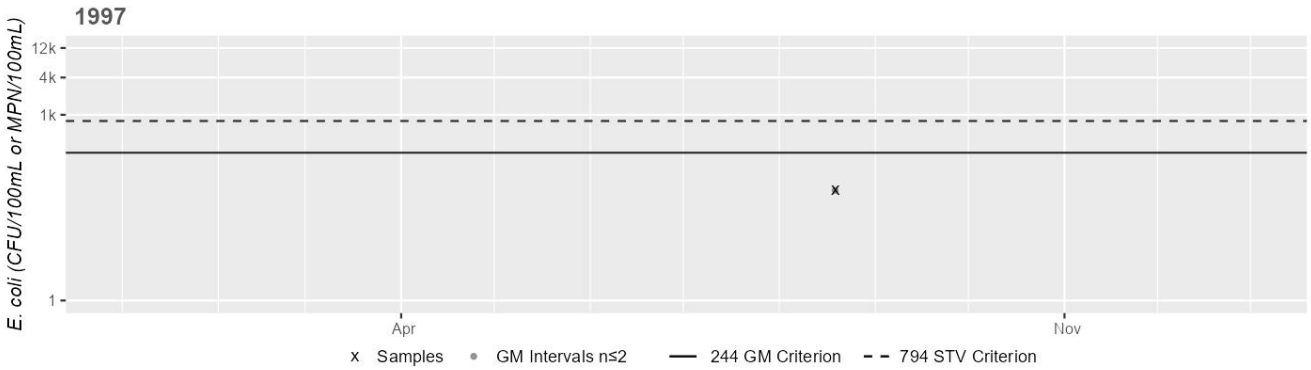
Variable*	Result
Samples	1
SeasGM	120
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0421 - Escherichia coli

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



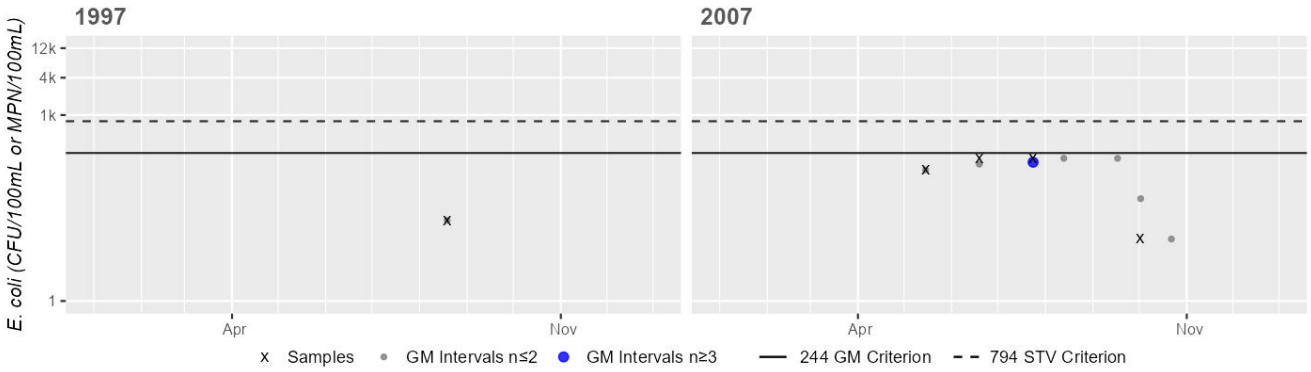
Variable*	Result
Samples	1
SeasGM	60
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0423 - Escherichia coli

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



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

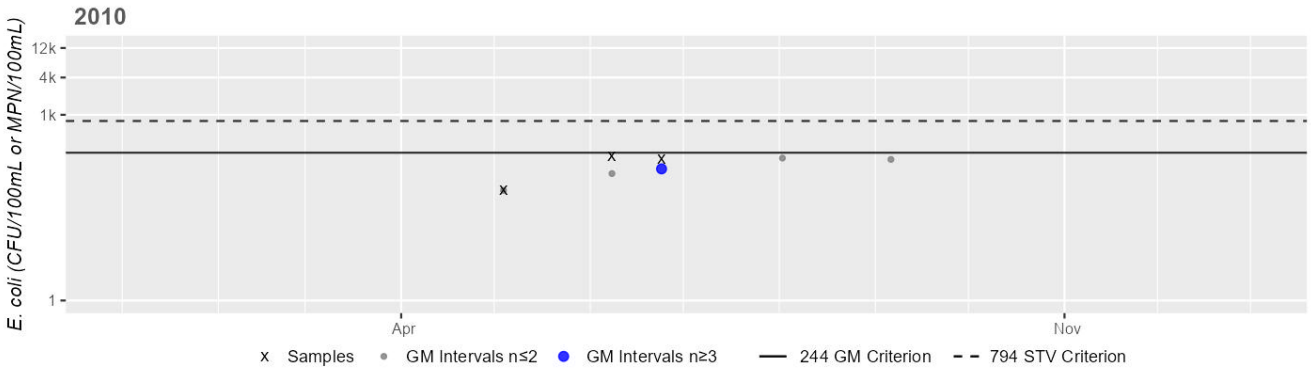
Variable*	Result
Samples	4
SeasGM	84
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2153 - Escherichia coli

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



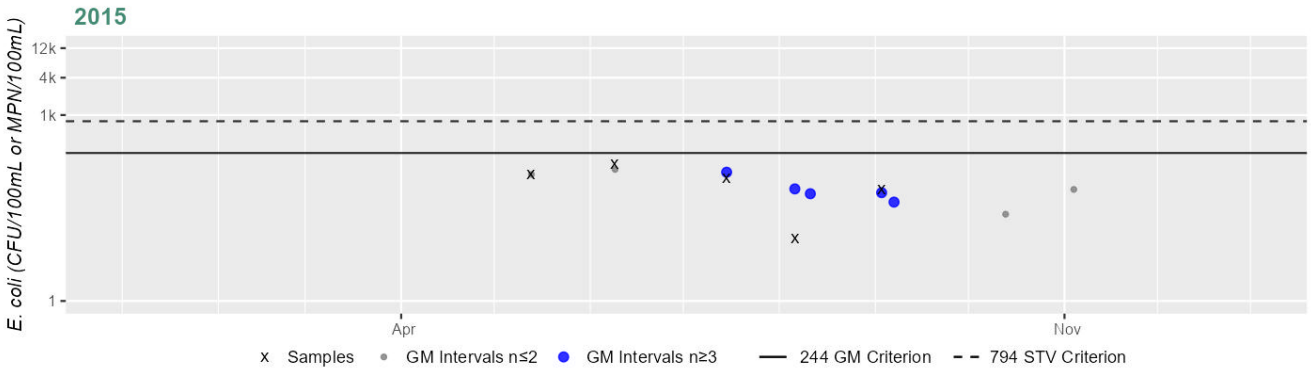
Variable*	Result
Samples	3
SeasGM	133
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2537 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	64
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Brookline Reservoir (MA72010)

Location:	Brookline.
AU Type:	FRESHWATER LAKE
AU Size:	21 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	5	Harmful Algal Blooms	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	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 in Brookline Reservoir (MA72010), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Brookline Reservoir (MA72010) is assessed as Not Supporting, with an impairment for Harmful Algal Blooms being added since extended C-HAB postings were reported to MDPH in a recent year. During the period 2015 through 2022, C-HAB postings for Brookline Reservoir were reported to MDPH for 21 days in 2015 (cell count) and 50 days in 2020 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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 Brookline Reservoir (MA72010) were reported to MDPH for 21 days in 2015 (cell count) and 50 days in 2020 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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
Brookline Reservoir	Brookline	21					50		

Primary Contact Recreation

2024 Impairment	Pollutant Y/N	2024 Source	Confirmed Y/N
Harmful Algal Blooms	YES	Source Unknown	NO

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Brookline Reservoir (MA72010) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since C-HAB postings extended >20 days in 2 recent years.
During the period 2015 through 2022, C-HAB postings for Brookline Reservoir (MA72010) were reported to MDPH for 21 days in 2015 (cell count) and 50 days in 2020 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment.

Secondary Contact Recreation

2024 Impairment	Pollutant Y/N	2024 Source	Confirmed Y/N
Harmful Algal Blooms	YES	Source Unknown	NO

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Brookline Reservoir (MA72010) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since C-HAB postings extended >20 days in 2 recent years. During the period 2015 through 2022, C-HAB postings for Brookline Reservoir (MA72010) were reported to MDPH for 21 days in 2015 (cell count) and 50 days in 2020 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment.

Bulloughs Pond (MA72011)

Location:	Newton.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

No usable data were available for Bulloughs Pond (MA72011) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Algae	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Algae	Source Unknown (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X

Bush Pond (MA72012)

Location:	Norfolk.
AU Type:	FRESHWATER LAKE
AU Size:	11 ACRES
Classification/Qualifier:	B

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

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 Bush Pond (MA72012). Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in Bush Pond (MA72012) at station F0351 in 2020 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. However, no site-specific fish consumption advisory was issued by MA DPH.

Fish Consumption Advisories

Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MassDEP Undated 5)

Summary Statement
Fish toxics sampling for PCB and organochlorine pesticides, and metals (mercury, arsenic, cadmium and selenium) was performed by MassDEP WPP biologists in Bush Pond (MA72012) at station F0351 in 2020 at the recommendation of the Interagency Committee on Freshwater Fish Toxics Monitoring and Assessment in response to a public request for monitoring. No site-specific fish consumption advisory was issued by MA DPH.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Bush Pond (MA72012) 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 Bush Pond (MA72012) 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 Bush Pond (MA72012) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Cambridge Reservoir (MA72014)

Location:	Waltham/Lincoln/Lexington.
AU Type:	FRESHWATER LAKE
AU Size:	531 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Contaminated Groundwater (Y)	X	--	--	--	--
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--
Chloride	Salt Storage Sites (Y)	X	--	--	--	--
Chloride	Upstream Source (Y)	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 in Cambridge Reservoir (MA72014), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Cambridge Reservoir (MA72014) is assessed as Fully Supporting based on observations made by MassDEP staff in 2017. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project in summer 2017 at two stations in Waltham on Cambridge Reservoir: at the western side of reservoir ~0.2 miles south of Lincoln/Waltham corporate boundary, Winter Street (W2671/MAP2L-128S, n=5) and at the index site, southern end of reservoir (W2670/MAP2L-128, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded (though minor amounts of trash were noted on four occasions at W2671 and green water color once at W2670) and no littoral zone duckweed was recorded in ten shoreline plots (n=1). Also, during the MAP2 macrophyte mapping survey in Sep 2017 (n=1), less than 25% (15.6%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2670	MassDEP	Water Quality	Cambridge Reservoir	[index site, southern end of reservoir, Waltham]	42.410283	-71.267453
W2671	MassDEP	Water Quality	Cambridge Reservoir	[western side of reservoir approximately 0.2 miles south of Lincoln/Waltham corporate boundary, Winter Street, Waltham]	42.408411	-71.272172

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
W2670	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W2670 (MAP2L-128) on Cambridge Reservoir (MA72014) 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). During the MAP2 macrophyte mapping survey (n=1) in Sep 2017, less than 25% (15.6%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%.
W2671	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2671 (MAP2L-128S) on Cambridge Reservoir (MA72014) 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 objectionable deposits (n=4). 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
W2670	Cambridge Reservoir	2017	Aesthetics Impaired?	No	3	3
W2670	Cambridge Reservoir	2017	Aquatic Plant Density, Overall	None	1	3
W2670	Cambridge Reservoir	2017	Aquatic Plant Density, Overall	NR	1	3
W2670	Cambridge Reservoir	2017	Aquatic Plant Density, Overall	Unobservable	1	3
W2670	Cambridge Reservoir	2017	Aquatic Plant Density, Whole Lake	NR	1	2
W2670	Cambridge Reservoir	2017	Aquatic Plant Density, Whole Lake	Unobservable	1	2
W2670	Cambridge Reservoir	2017	Color	Greenish	1	3
W2670	Cambridge Reservoir	2017	Color	Light Yellow/Tan	1	3
W2670	Cambridge Reservoir	2017	Color	None	1	3
W2670	Cambridge Reservoir	2017	Duckweed Density, Whole Lake	None	1	2
W2670	Cambridge Reservoir	2017	Duckweed Density, Whole Lake	Unobservable	1	2

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2670	Cambridge Reservoir	2017	Objectionable Deposits	No	3	3
W2670	Cambridge Reservoir	2017	Odor	None	3	3
W2670	Cambridge Reservoir	2017	Scum	No	3	3
W2670	Cambridge Reservoir	2017	Turbidity	None	1	3
W2670	Cambridge Reservoir	2017	Turbidity	Slightly Turbid	2	3
W2671	Cambridge Reservoir	2017	Aesthetics Impaired?	No	5	5
W2671	Cambridge Reservoir	2017	Color	Light Yellow/Tan	2	5
W2671	Cambridge Reservoir	2017	Color	None	2	5
W2671	Cambridge Reservoir	2017	Color	NR	1	5
W2671	Cambridge Reservoir	2017	Objectionable Deposits	No	1	5
W2671	Cambridge Reservoir	2017	Objectionable Deposits	Yes	4	5
W2671	Cambridge Reservoir	2017	Odor	Musty (Basement)	1	5
W2671	Cambridge Reservoir	2017	Odor	None	4	5
W2671	Cambridge Reservoir	2017	Scum	No	4	5
W2671	Cambridge Reservoir	2017	Scum	NR	1	5
W2671	Cambridge Reservoir	2017	Turbidity	None	3	5
W2671	Cambridge Reservoir	2017	Turbidity	Slightly Turbid	2	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Cambridge Reservoir (MA72014) is assessed as Fully Supporting. In Cambridge Reservoir (MA72014) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2670 [MAP2L-128, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2671 [MAP2L-128S, Shoreline]. At station W2670 (station depth=8.5 m) the Secchi depth measurements ranged from 2.74-4.2 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 W2671 (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 Cambridge Reservoir (MA72014) at W2671 [western side of reservoir ~0.2 miles S of Lincoln/Waltham corporate boundary, Winter St, Waltham] from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset indicated no intervals had GMs >126 CFU/100mL and no samples exceeded the 410 CFU/100mL STV (the seasonal GM was 15 CFU/100mL). *E. coli* data from W2671 are indicative of excellent water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2670	MassDEP	Water Quality	Cambridge Reservoir	[index site, southern end of reservoir, Waltham]	42.410283	-71.267453
W2671	MassDEP	Water Quality	Cambridge Reservoir	[western side of reservoir approximately 0.2 miles south of Lincoln/Waltham corporate boundary, Winter Street, Waltham]	42.408411	-71.272172

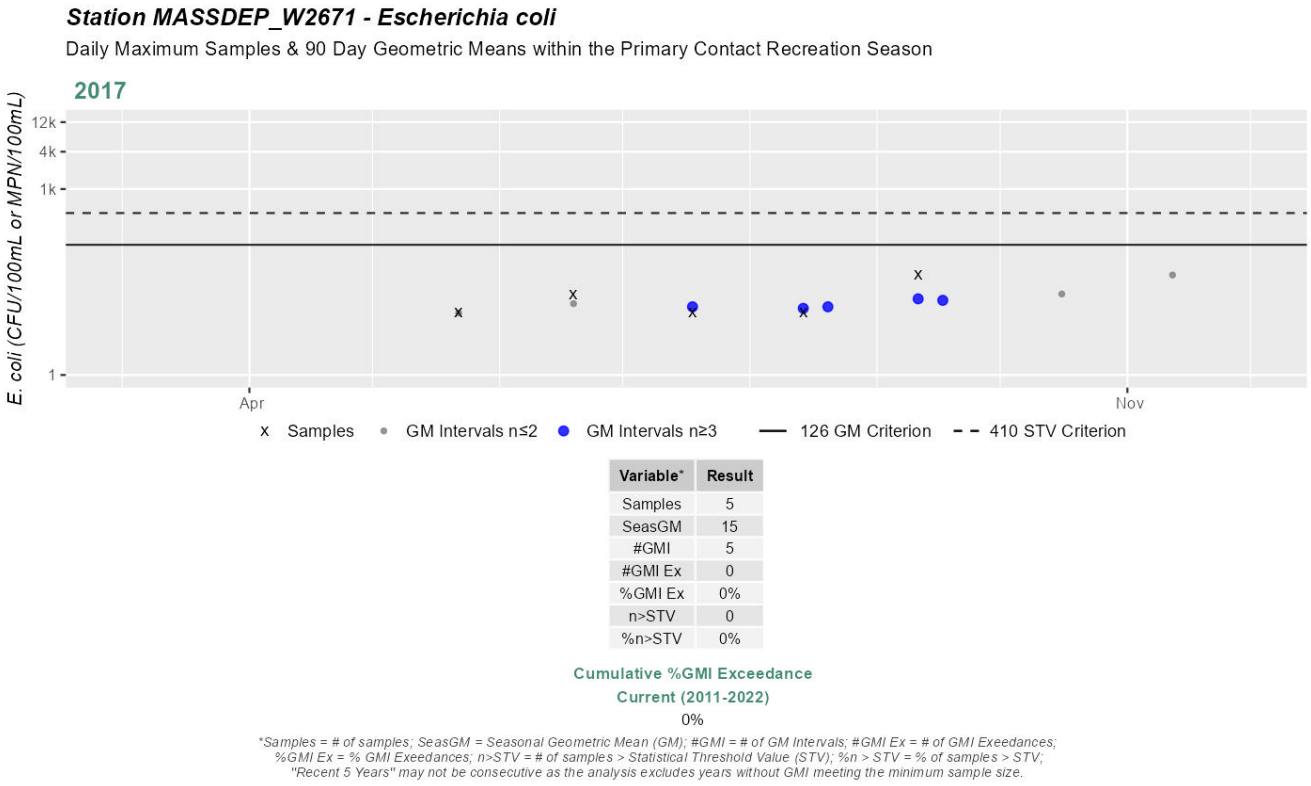
Bacteria Data

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
W2671	MassDEP	E. coli	05/22/17	09/11/17	5	10	41	15



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 Cambridge Reservoir (MA72014) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W2670 [MAP2L-128, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2671 [MAP2L-128S, Shoreline]. At station W2670 (station depth=8.5 m) the Secchi depth measurements ranged from 2.74-4.2 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 W2671 (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)
W2670	Cambridge Reservoir	Index	2017	3	0	NA
W2671	Cambridge Reservoir	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Cambridge Reservoir (MA72014) is assessed as Fully Supporting. In Cambridge Reservoir (MA72014) in 2017, MassDEP collected cyanobacteria cell count data at W2670 [MAP2L-128, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2671 [MAP2L-128S, Shoreline]. 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 W2671 (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 Cambridge Reservoir (MA72014) at W2671 [western side of reservoir ~0.2 miles S of Lincoln/Waltham corporate boundary, Winter St, Waltham] from May-Sep 2017 (n=5). Analysis of the single year limited frequency *E. coli* dataset indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 15 CFU/100mL). *E. coli* data from W2671 are indicative of excellent water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2671	MassDEP	Water Quality	Cambridge Reservoir	[western side of reservoir approximately 0.2 miles south of Lincoln/Waltham corporate boundary, Winter Street, Waltham]	42.408411	-71.272172

Bacteria Data

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

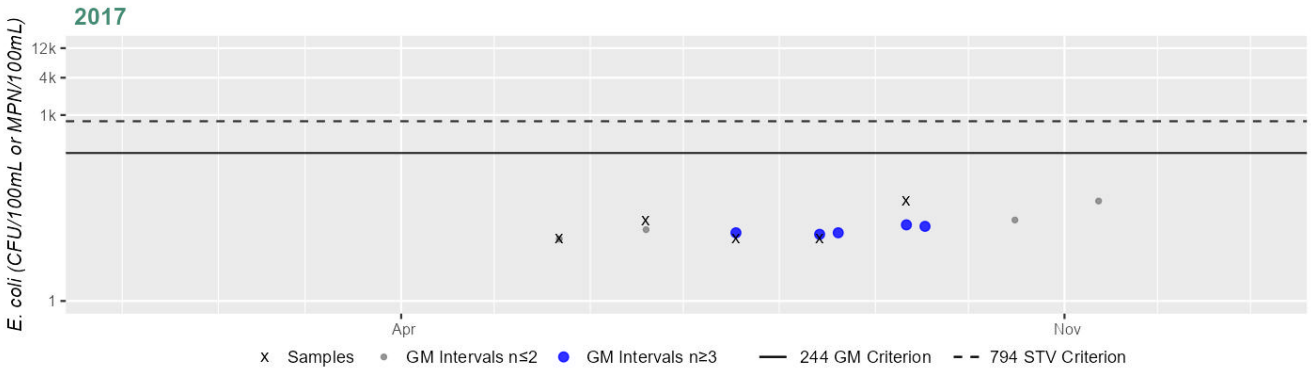
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2671	MassDEP	E. coli	05/22/17	09/11/17	5	10	41	15

Station MASSDEP_W2671 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	15
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Cambridge Reservoir, Upper Basin (MA72156)

Location:	Lincoln/Lexington.
AU Type:	FRESHWATER LAKE
AU Size:	44 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	Chloride	--	Unchanged
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Chloride	Contaminated Groundwater (Y)	X	--	--	--	--
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--
Chloride	Salt Storage Sites (Y)	X	--	--	--	--
Chloride	Upstream Source (Y)	X	--	--	--	--
Turbidity	Source Unknown (N)	--	--	X	X	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. The Cambridge Reservoir, Upper Basin (MA72156) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on an August 1997 synoptic survey conducted by MassDEP staff in which it was noted that 100% of the open water was covered with a 75-100% density of aquatic plants (although none were non-rooted species). A slight algal bloom was also observed (MassDEP 1997, MassDEP 2002). Google Earth images from September 2014, June 2019, and October 2020 show additional plant coverage (Google Earth Pro Undated). Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond may have been covered in aquatic macrophytes in recent years. Additional monitoring is being recommended during the summer index period to better evaluate the Aquatic Life Use for the Upper Basin of Cambridge Reservoir (MA72156) with regard to collecting evidence of any nutrient-related impacts (i.e., pH, temperature, DO to evaluate diel shifts and percent saturation, in addition to chlorophyll *a* and total phosphorus data), along with habitat quality conditions (observations of water level).

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):

LAKE, H

WBID: MA 72156 WATERSHED: Charles (Printed 08/01/96)
NAME: Cambridge Reservoir, ~~Lower~~ Upper TYPE: Lake/Pond
CODE: 72156 Basin SIZE: 44.0 acres

CLASS: A/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name:
Ecoregion Name:
Description: Cambridge Reservoir, Upper Basin, Lincoln/Lexington

Assessment Date: 9810 **Begin Sampling:** 9708 **Water Quality Limited?:** YES or NO
Cycle: ~~9699~~ **End Sampling:** 9708 **303(d) List?:** YES or NO

Lake Specific Information

	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				44.0		
ALUS					44.0	
FISH CONSUMPTION					44.0	
PRIMARY CONTACT				44.0		
SECONDARY CONTACT				44.0		
DRINKING WATER						
Nondegradation - ORW				44.0		
Aesthetics				44.0		
ALUS Bio						
ALUS Chem/Phys						
ALUS Toxicity						

Nonattainment Causes

Code	Size	Magnitude
2200	44.0	H
2500	44.0	S

Nonattainment Sources

Code	Size	Magnitude
9000	44.0	H

Assessment Type

1996 Assessment Category => (M) E NA

R 35

Media/Pollutants Assessed

1996 Toxics Monitoring => YES or (NO)

Comments:

1999: 5 August 1997 Synoptic survey indicated very dense submergent vegetation in remaining water area (low water level). Also, turbidity reduced transparency to below safety criterion (Secchi disk < 4ft).

1997 Synoptic Survey Field Sheet (note that Site 1 is on the upper basin, but Site 2 appears to be on the main basin) (MassDEP 1997):

613 Lower Res - 532 ac
Upper Res - 44 ac
A (both)

LAKE/POND: Cambridge Res. SIZE (acres): 549.0 PALIS NO. 72014

TOWN/CITY: Waltham/Lincoln/Lexington USGS TOPO. SHEET: Concord

DATE: 5 Aug 97 WATERSHED: Charles OBSERVERS: Brander/McVoy

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) Lincoln Rd., North end of Reservoir.

Site (2) West Shore upper basin; along Old County Rd.

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 [1]☐☐ Other ☐[2]☐

Other (describe): [1] 3 large iron pipes under road

[2] Through woods

☐

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public ☐[2]☐ Private ☐☐☐ Uncertain [1]☐☐

Names of Owners ☐ No. & Street Name ☐

[2] City of Cambridge 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) [1]

[2] Public Water Supply

☐

WATER/LAKE QUALITY OBSERVATIONS –

Turbidity: ☐☐☐ Slight ☐[2]☐ Moderate [1]☐☐ Excessive Brown

Transparency: [1]☐☐ < 1.2 m.(4 ft.) ☐[2]☐ > 1.2 m. (4 ft.)
[1][2]☐ Estimated visually
☐☐☐ Measured w/ Secchi Disk ☐ meters ☐ meters ☐ meters

Diss. Organics: [1]☐☐ Slight ☐[2]☐ Moderate ☐☐☐ Dark

Algal Bloom: [1]☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Bottom Type: ☐[2]☐ Undecomposed matter [1]☐☐ Muck/silt [1][2]☐ Sand [1][2]☐ Gravel ☐☐☐ Cobble [1]☐☐ Boulders

[1]☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: [1] water level down ~ 6'; 6 geese on north end.

[2] " " " ~ 6'; Slight foam on shore

☐

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

[1]☐☐ Float as debris, scum or other matter to form a nuisance

Describe: Oily scum

[1]☐☐ Produce objectionable odor, color, taste, or turbidity

Describe: Brown turbidity

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED --

NON-NATIVE WETLANDS SPECIES PRESENT: ☐1 ☒2 ☐ *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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☐1☐ Sparganium	☐☐☐	☐1☐ Najas flexilis
☐1☐ Pontederia cordata	☐☐☐	☐3☐ Ceratophyllum echinatum
☐2☐ Grafiola	☐☐☐	☐2☐ Potamogeton sp. (thin leaf)
☐☐☐	☐☐☐	☐2☐ Eleocharis sp (submerged)
☐☐☐	☐☐☐	☐4☐ Elodea
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY --

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ _____ % ☐2 0 % ☐ _____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐1 100 % of open water ☐2 0 % ☐ _____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants _____ % Forms _____

Describe locations of dense and/or very dense plant beds North section very dense submergent, + dry land (44 acres, based on GIS calculation)

Loss of open water habitat over entire lake (estimated): ☐ 90 - 100 % ☐ 60 - 85 % ☐ 30 - 55 % ☐ ≤ 25 % ?

ASSESSMENTS --

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

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

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

CAUSES: ☒ Noxious plants (2200) -- Size ✓ acres / Magnitude H ☐ Exotic plants (2600) -- Size _____ acres / Magnitude _____
☒ Turbidity (2500) -- Size ✓ acres / Magnitude S ☐ Flow alteration (1500) -- Size _____ acres / Magnitude _____
☐ Metals (0500) ☐ Hg (0501) -- Size _____ acres / Magnitude _____ ☐ Siltation (1100) -- Size _____ acres / Magnitude _____
☐ _____ ( ) -- Size _____ acres / Magnitude _____ ☐ _____ ( ) -- Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____

Google Earth image of Cambridge Reservoir, Upper Basin Surface, 4/9/2008 (Google Earth Pro Undated):



Google Earth image of Cambridge Reservoir, Upper Basin, 9/27/2014 (Google Earth Pro Undated):



Google Earth image of Cambridge Reservoir, Upper Basin, 6/22/2019 (Google Earth Pro Undated):



Google Earth image of Cambridge Reservoir, Upper Basin, 10/17/2020 (Google Earth Pro Undated):



Recommendations

2024/26 Recommendations
2024/2026 IR [Nutrient/Eutrophication Biological Indicators, medium priority] Additional monitoring is being recommended during the summer index period to better evaluate the Aquatic Life Use for the Upper Basin of Cambridge Reservoir (MA72156) with regard to collecting evidence of any nutrient-related impacts (i.e., pH, temperature, DO to evaluate diel shifts and percent saturation, in addition to chlorophyll *a* and total phosphorus data), along with habitat quality conditions (observations of water level). Note that Aquatic Plants (Macrophytes) was delisted as a pollutant in the 2024/2026 IR cycle and added back as a non-pollutant, so the purpose of monitoring would be to obtain recent data and determine whether a Nutrient/Eutrophication Biological Indicators impairment is needed. {Cambridge Reservoir, Upper Basin (MA72156)}

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 in Cambridge Reservoir, Upper Basin (MA72156), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Cambridge Reservoir, Upper Basin (MA72156) continues to be assessed as Not Supporting with the prior Turbidity impairment being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant impairment. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Cambridge Reservoir, Upper Basin (MA72156) was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on an August 1997 synoptic survey conducted by MassDEP staff in which it was noted that 100% of the open water was covered with a 75-100% density of aquatic plants (although none were non-rooted species). A slight algal bloom was also observed (MassDEP 1997, MassDEP 2002). Google Earth images from September 2014, June 2019, and October 2020 show high amounts of turbidity and sometimes plant coverage (Google Earth Pro Undated). Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the pond may have been covered in aquatic macrophytes in recent years. Additional monitoring is being recommended during the summer index period to better evaluate any nutrient-related impacts and determine whether there is any evidence for a Nutrient/Eutrophication Biological Indicators impairment. No new aesthetics observation data are available to evaluate the Aesthetics Use for Cambridge Reservoir, Upper Basin.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data are available for Cambridge Reservoir, Upper Basin (MA72156), so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant impairment (also 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 are available for Cambridge Reservoir, Upper Basin (MA72156) in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant impairment (also from the Aesthetics Use).

Cedar Swamp Pond (MA72016)

Location:	locally known as "Milford Pond", Milford.
AU Type:	FRESHWATER LAKE
AU Size:	99 ACRES
Classification/Qualifier:	B: AQL

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Dissolved Oxygen	40319	Unchanged
4a	4a	Mercury in Fish Tissue	42395	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	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	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (Y)	--	X	--	--	--

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

Recommendations

2024/26 Recommendations
2010 IR [Clarity / Transparency, medium priority] Follow-up Secchi depth data should be collected in Cedar Swamp Pond (MA72016) so this parameter can be properly assessed. The Prior alert from the 2010 IR cycle due to low Secchi disk readings (MassDEP 2008) was carried forward into the 2024/2026 IR cycle since there are no new Secchi depth data (according to the 2002-2006 Charles Water Quality Assessment Report (MassDEP 2008), 3 low readings were historically collected but all on the same date in June 2005). {Cedar Swamp Pond (MA72016)}

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Cedar Swamp Pond (MA72016) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MA DPH included a site-specific advisory for Cedar Swamp 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

There are no aesthetics observation data available to assess the status of the Aesthetics Use for Cedar Swamp Pond (MA72016), so it is Not Assessed. Since the prior Alert identified for low Secchi disk transparency was redundantly duplicated across multiple uses for this waterbody, this Alert is being removed from the Aesthetics Use but will continue to be maintained under the Primary Contact Recreation Use.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
No bacteria or other indicator data for Cedar Swamp Pond (MA72016) are available, so the Primary Contact Recreation Use is Not Assessed. The Prior alert from the 2010 IR cycle due to low Secchi disk readings (MassDEP 2008) is being maintained as there are no new Secchi depth data.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Cedar Swamp Pond (MA72016) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. Since the prior Alert identified for low Secchi disk transparency was redundantly duplicated across multiple uses for this waterbody, this Alert is being removed from the Secondary Contact Recreation Use but will continue to be maintained under the Primary Contact Recreation Use.

Chandler Pond (MA72017)

Location:	Boston.
AU Type:	FRESHWATER LAKE
AU Size:	11 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Algae	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
5	5	Phosphorus, Total	--	Unchanged
5	5	Transparency / Clarity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	X	--	X	X	X
Algae	Source Unknown (N)	X	--	X	X	X
Algae	Urban Runoff/Storm Sewers (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Urban Runoff/Storm Sewers (Y)	X	--	--	--	--
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Urban Runoff/Storm Sewers (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (N)	--	--	--	X	--
Transparency / Clarity	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 in Chandler Pond (MA72017), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Chandler Pond (MA72017) continues to be assessed as Not Supporting with the prior Algae impairment being carried forward. Since the Transparency/Clarity impairment was redundantly duplicated across multiple uses for this waterbody, the Transparency/Clarity impairment is being removed from the Aesthetics Use but will continue to be maintained under the Primary Contact Recreation Use. No new aesthetics observation data are available to evaluate the Aesthetics Use for Chandler Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert

Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Chandler Pond (MA72017) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Transparency / Clarity impairment is being carried forward and the prior Algae 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
No bacteria or other indicator data for Chandler Pond (MA72017) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward. Since the Transparency / Clarity impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use.

Charles River (MA72-01)

Location:	Headwaters, outlet Echo Lake, Hopkinton to Dilla Street (just upstream of Cedar Swamp Pond), Milford.
AU Type:	RIVER
AU Size:	2.5 MILES
Classification/Qualifier:	A: PWS, ORW

Charles River (MA72-01)

Watershed Area: 3.60 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.60	3.26	2.39	2.19
Agriculture	0.1%	0%	0.2%	0%
Developed	15.3%	12.9%	11.7%	9.7%
Natural	71.4%	73.8%	70%	72%
Wetland	13.2%	13.3%	18.2%	18.3%
Impervious	7.2%	6.1%	5.4%	4.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Dewatering*)	--	Unchanged
4a	4a	(Flow Regime Modification*)	--	Unchanged
4a	4a	Dissolved Oxygen	40318	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Dam or Impoundment (Y)	X	--	--	--	--
(Dewatering*)	Water Diversions (Y)	X	--	--	--	--
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
Dissolved Oxygen	Dam or Impoundment (Y)	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 in this upstream Charles River AU (MA72-01), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this upstream Charles River AU (MA72-01) 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 are available for this upstream Charles River AU (MA72-01), 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 are available for this upstream Charles River AU (MA72-01) 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 2 stations in the middle of this Charles River AU (MA72-01) from 2002-2007. Samples were collected from the following stations/sample years from upstream to downstream: W1592 [Cedar St (Rt. 85) crossing just upstream of Rt. 495, Milford] from May-Jun 2007 (n=2) and a short way downstream at W1134 [W of Rt. 85, ~100 ft from outlet of Wildcat Pond, Milford] from Apr-Sep 2002 (n=5). The historic *E. coli* data from W1592 are too limited to evaluate according to the 2024 CALM. Analysis of the historic single year limited frequency *E. coli* dataset from W1134 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 26 CFU/100mL). *E. coli* data from W1134 meet 2024 CALM guidance, however, since they were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of the Charles River (MA72-01).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1134	MassDEP	Water Quality	Charles River	[west of Route 85, approximately 100 feet from outlet of Wildcat Pond, Milford]	42.171747	-71.511243
W1592	MassDEP	Water Quality	Charles River	[Cedar Street (Route 85) crossing just upstream of Route 495, Milford]	42.173839	-71.508394

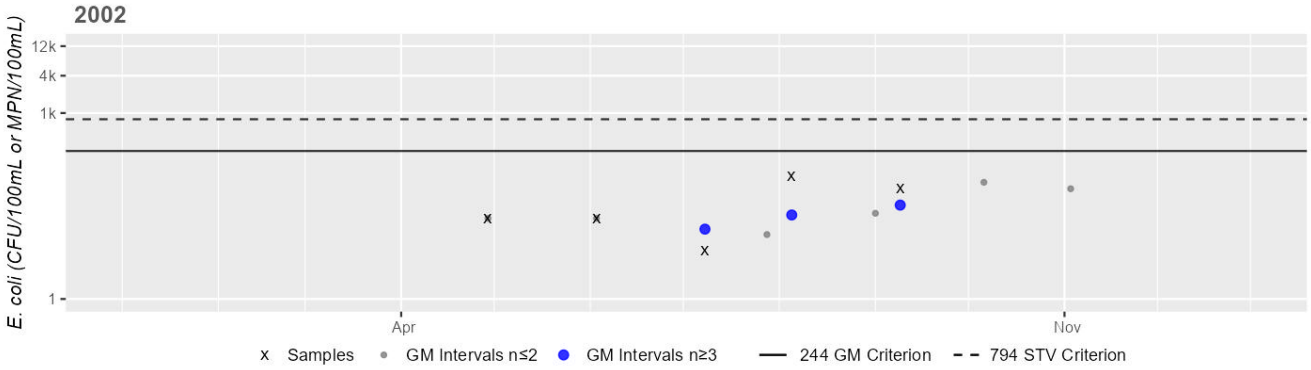
Bacteria Data

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
W1134	MassDEP	E. coli	04/29/02	09/09/02	5	6	97	26
W1592	MassDEP	E. coli	05/15/07	06/19/07	2	5	180	30

Station MASSDEP_W1134 - Escherichia coli

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



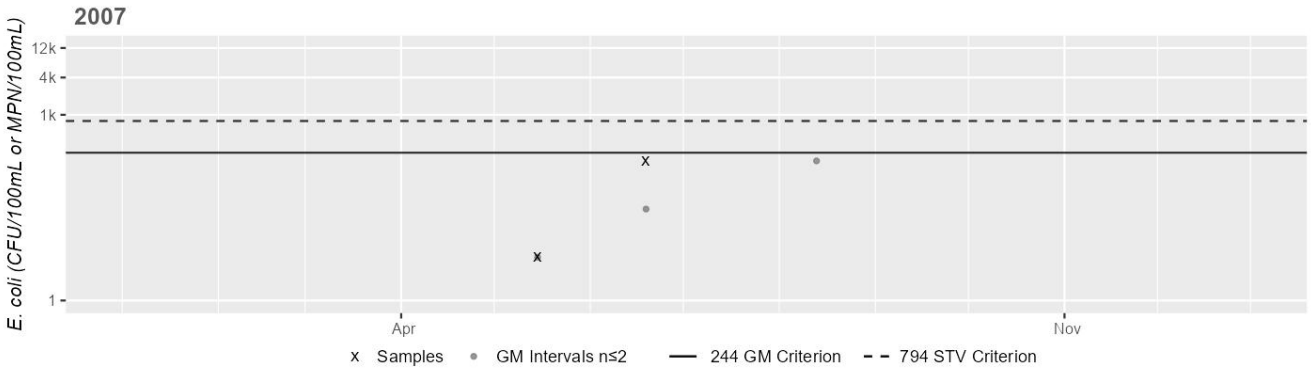
Variable*	Result
Samples	5
SeasGM	26
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1592 - Escherichia coli

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



Variable*	Result
Samples	2
SeasGM	30
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Charles River (MA72-03)

Location:	From Milford WWTF discharge (NPDES: MA0100579), Hopedale to outlet Box Pond, Bellingham (through former 2006 segment: Box Pond MA72008).
AU Type:	RIVER
AU Size:	3.4 MILES
Classification/Qualifier:	B: WWF

Charles River (MA72-03)

Watershed Area: 14.66 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	14.66	4.00	7.01	1.49
Agriculture	0.3%	0.9%	0.3%	1.3%
Developed	32.8%	26.2%	20.1%	15.2%
Natural	56.1%	59.9%	60.6%	58.2%
Wetland	10.8%	13%	19%	25.2%
Impervious	16.6%	12.7%	9.6%	7.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Algae	40317	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	32365	Unchanged
5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Municipal Point Source Discharges (Y)	X	--	X	X	X
Algae	Urban Runoff/Storm Sewers (N)	X	--	X	X	X
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Municipal Point Source Discharges (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Municipal Point Source Discharges (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Urban Runoff/Storm Sewers (N)	--	--	--	X	X
Organic Enrichment (Sewage) Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Organic Enrichment (Sewage) Biological Indicators	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	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 this Charles River AU (MA72-03) continues to be assessed as Not Supporting and the prior DDT in Fish Tissue impairment is being carried forward. MA DPH included a site-specific advisory for the Charles River (referred to by MA DPH as ''Box 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 this Charles River AU (MA72-03) continues to be assessed as Not Supporting with the prior Algae impairment being carried forward. No new data are available to evaluate the Aesthetics Use for this Charles 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 Charles River AU (MA72-03) 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 CRWA_59CS. The prior Algae impairment (from the Aesthetics Use) is also being carried forward.
CRWA staff/volunteers collected *E. coli* bacteria samples in the upstream portion of this Charles River AU (MA72-03) at CRWA_59CS [Mellen St Bridge, Milford] from 2011-2019 and 2021-2022 (n=6-7/yr). Analysis of the recent five years of this multi-year moderate/limited frequency *E. coli* dataset indicated that in 5 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017-2019 and 2021-2022, 25-100%), 3 years had ≥2 samples exceed the 410 CFU/100mL STV (2019 and 2021-2022, n=3-6), and cumulatively across years 73% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_59CS reflect the existing Escherichia Coli (E. Coli) impairment impairment. Surface water sampling was conducted by the USGS downstream of the Milford WWTF discharge on the Charles River (MA72-03) at station USGS_01103139 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

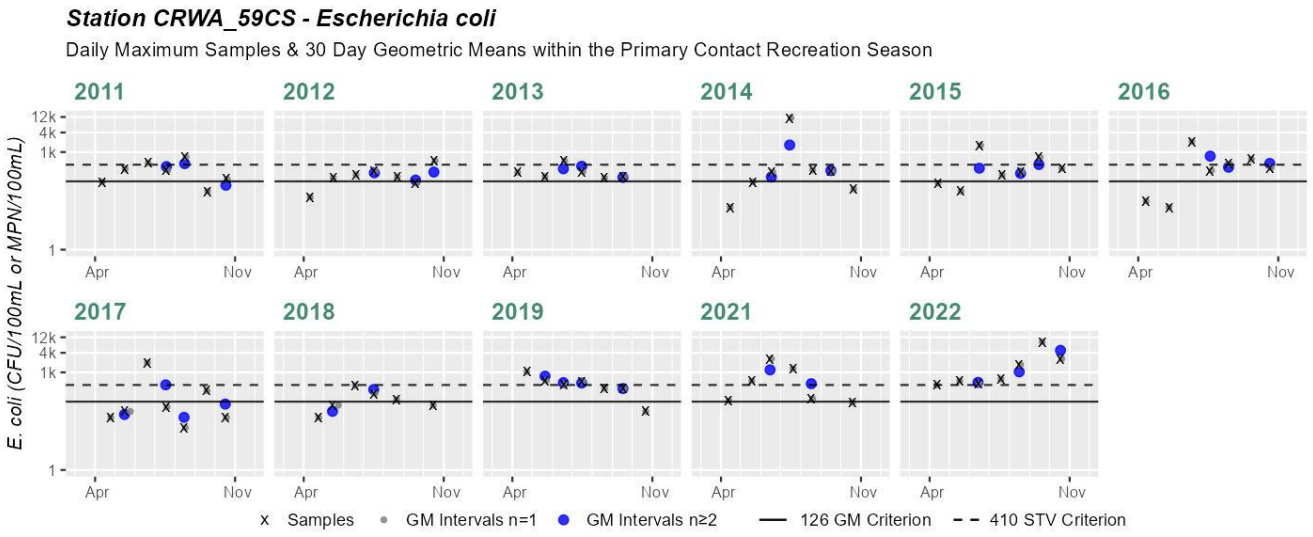
Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_59CS	Charles River Watershed Association	Water Quality	Charles River	Mellen St Bridge, Milford	42.116901	-71.501404
USGS-01103139	USGS Massachusetts Water Science Center	Water Quality	Charles River	CHARLES RIVER AT MELLEN STREET, MILFORD, MA; downstream of Milford WWTF	42.117000	-71.501000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(CRWA 2023) (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
CRWA_59CS	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	62	709	226
CRWA_59CS	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	41	537	166
CRWA_59CS	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	160	537	232

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_59CS	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	11200	230
CRWA_59CS	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	63	1620	275
CRWA_59CS	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	2100	226
CRWA_59CS	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	1990	99
CRWA_59CS	Charles River Watershed Association	E. coli	04/24/18	10/16/18	6	41	397	130
CRWA_59CS	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	63	1050	363
CRWA_59CS	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	120	2610	408
CRWA_59CS	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	410	8660	1134



Variable*	Result
Samples	7
SeasGM	226
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	166
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	232
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	230
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	275
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	226
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	99
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	130
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	363
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	6
SeasGM	408
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	1134
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	6
%n>STV	85%

Cumulative %GMI Exceedance Current (2011-2022)
84%

Cumulative %GMI Exceedance Current (Recent 5 Years)
73%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 downstream of the Milford WWTF discharge on the Charles River (MA72-03) at station USGS_01103139 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑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 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-01103139	8/21/2020	11	7.3	E1.45	2.02	9.34	6.66	27.2*
USGS-01103139	9/22/2020	11.5	7.04	E1.43	1.84	9.12	5.75	27.9*
USGS-01103139	10/21/2020	E11.1	E6.33	V1.26	1.95	7.39	5.62	25.7*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-03) continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_59CS.

CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in this Charles River AU (MA72-03) at CRWA_59CS [Mellen St Bridge, Milford] from 2011-2019 and 2021-2022 (current n=7-12/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset indicated that in 3 of 5 sufficient data years >20% of the GMs were >244 CFU/100mL (2019 and 2021-2022, 50-100%), 4 years had ≥2 samples exceed the 794 CFU/100mL STV (2017, 2019, and 2021-2022, n=2-3), and cumulatively across years 41% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_59CS are indicative of an Escherichia Coli (E. Coli) impairment. CRWA staff/volunteers also collected *E. coli* bacteria samples in the historic IR window (1997-2010) from 2009-2010 (historic n=12/yr) with similar results.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_59CS	Charles River Watershed Association	Water Quality	Charles River	Mellen St Bridge, Milford	42.116901	-71.501404

Bacteria Data

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

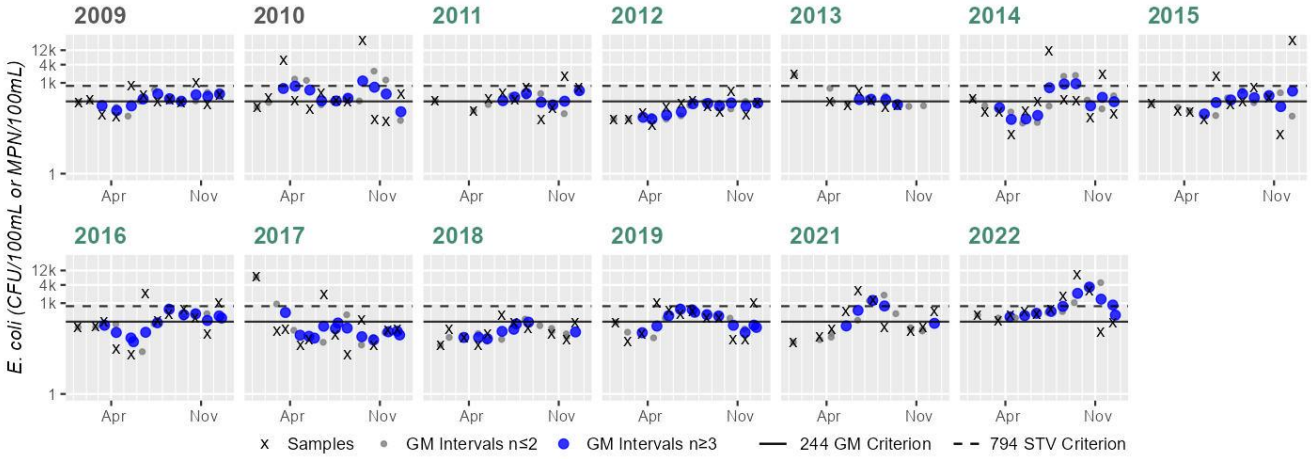
(CRWA 2023) (MassDEP Undated 1)

[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
CRWA_59CS	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	74	1020	273
CRWA_59CS	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	52	24200	382
CRWA_59CS	Charles River Watershed Association	E. coli	01/11/11	12/20/11	10	62	1660	312
CRWA_59CS	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	41	537	131
CRWA_59CS	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	160	1850	312
CRWA_59CS	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	20	11200	230
CRWA_59CS	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	20	24200	293
CRWA_59CS	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	2100	228
CRWA_59CS	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	7270	155
CRWA_59CS	Charles River Watershed Association	E. coli	01/23/18	12/11/18	11	41	397	110
CRWA_59CS	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	52	1050	250
CRWA_59CS	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	51	2610	261
CRWA_59CS	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	110	8660	631

Station CRWA_59CS - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	273
#GMI	10
#GMI Ex	7
%GMI Ex	70%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	12
SeasGM	382
#GMI	10
#GMI Ex	9
%GMI Ex	90%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	10
SeasGM	312
#GMI	7
#GMI Ex	5
%GMI Ex	71%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	12
SeasGM	131
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	312
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	12
SeasGM	230
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	293
#GMI	8
#GMI Ex	5
%GMI Ex	62%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	12
SeasGM	228
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	12
SeasGM	155
#GMI	13
#GMI Ex	1
%GMI Ex	7%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	110
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	250
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	10
SeasGM	261
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	20%

Variable*	Result
Samples	11
SeasGM	631
#GMI	10
#GMI Ex	10
%GMI Ex	100%
n>STV	3
%n>STV	27%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
80%	43%	41%

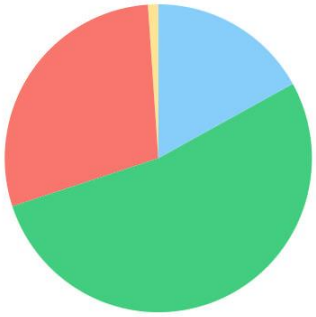
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Charles River (MA72-04)

Location:	From outlet Box Pond, Bellingham to inlet Populatic Pond, Norfolk/Medway (one culverted portion approximately 350 feet (0.07mile)).
AU Type:	RIVER
AU Size:	11.5 MILES
Classification/Qualifier:	B: WWF

Charles River (MA72-04)

Watershed Area: 66.04 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	66.04	10.39	22.87	2.97
Agriculture	1.1%	1.8%	1%	2.1%
Developed	29%	30.5%	18.6%	18.4%
Natural	53%	51.6%	50%	46.9%
Wetland	17%	16.1%	30.4%	32.6%
Impervious	13.9%	13.5%	8.6%	8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
5	5	Chlordane in Fish Tissue	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Escherichia Coli (E. Coli)	32366	Unchanged
5	5	Fish Bioassessments	--	Unchanged
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	--	Unchanged
5	5	Phosphorus, Total	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
Ambient Bioassays - Chronic Aquatic Toxicity	Source Unknown (N)	X	--	--	--	--
Chlordane in Fish Tissue	Source Unknown (N)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Escherichia Coli (E. Coli)	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems) (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Urban Runoff/Storm Sewers (N)	--	--	--	X	X
Fish Bioassessments	Dam or Impoundment (Y)	X	--	--	--	--
Mercury in Fish Tissue	Atmospheric Deposition (N)	--	X	--	--	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	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 this Charles River AU (MA72-04) continues to be assessed as Not Supporting and the prior Chlordane in Fish Tissue, Mercury in Fish Tissue, and DDT in Fish Tissue impairments are being carried forward. MA DPH included a site-specific advisory for the Charles River (referred to by MA DPH as ''Charles River (between the Medway Dam in Franklin and Medway, and the South Natick Dam in Natick)'') 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
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Charles River AU (MA72-04) is assessed as Fully Supporting based on the general lack of objectionable conditions observed by MassDEP staff during summer 2015. MassDEP staff recorded aesthetics observations at one station in the upstream half of this Charles River AU ~1000 feet upstream/south of Rt. 495, Bellingham (W2509), during the summer of 2015 as part of the MAP2 wadeable streams monitoring project (n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted dense aquatic plants on one occasion and very dense aquatic plants on another occasion.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2509	MassDEP	Water Quality	Charles River	[approximately 1000 feet upstream/south of Route 495, Bellingham]	42.104981	-71.458405

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
W2509	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2509 on Charles River (MA72-04) 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 dense/very dense aquatic plants (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
W2509	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
W2509	Charles River	2015	Aesthetics Impaired?	No	5	5
W2509	Charles River	2015	Aquatic Plant Density, Overall	Dense	1	5
W2509	Charles River	2015	Aquatic Plant Density, Overall	Sparse	3	5
W2509	Charles River	2015	Aquatic Plant Density, Overall	Very Dense	1	5
W2509	Charles River	2015	Color	Light Yellow/Tan	5	5
W2509	Charles River	2015	Objectionable Deposits	No	5	5
W2509	Charles River	2015	Odor	None	4	5
W2509	Charles River	2015	Odor	Other (Wetland/Marsh)	1	5
W2509	Charles River	2015	Periphyton Density, Filamentous	None	5	5
W2509	Charles River	2015	Periphyton Density, Film	None	5	5
W2509	Charles River	2015	Scum	No	3	5
W2509	Charles River	2015	Scum	Yes	2	5
W2509	Charles River	2015	Turbidity	None	4	5
W2509	Charles River	2015	Turbidity	Slightly Turbid	1	5

Primary Contact Recreation

2024/26 Use Attainment	Alert

Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Charles River AU (MA72-04) 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 CRWA_90CS, CRWA_130S, and CRWA_165S.

CRWA and MassDEP staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples in this Charles River AU (MA72-04) from 2011-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: near the upstream end of the AU at CRWA_90CS [Rt. 126, N. Main St., Bellingham] from 2011-2019 and 2021-2022 (EC n=3-7/yr; Ent n=1-2/yr), in the upstream half of the AU at W2509 [~1000 ft upstream/S of Rt. 495, Bellingham] from May-Sep 2015 (EC n=5) and at CRWA_130S [Charles River, Maple St., Bellingham] from 2011-2019 and 2021-2022 (EC n=5-7/yr & Ent n=1 in 2019), and in the downstream half of the AU at CRWA_165S [Shaw St./Elm St. Bridge, Franklin] from 2011-2019 and 2021-2022 (EC n=6-7/yr). Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_90CS indicated that in 4 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2018-2019 and 2021-2022, 33-100%), no years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 38% of intervals had GMs >126 CFU/100mL. Analysis of the single year limited frequency *E. coli* dataset from W2509 indicated 40% of intervals had GMs >126 CFU/100mL, no samples exceeded the 410 CFU/100mL STV, and the seasonal GM was 122 CFU/100mL. Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_130S indicated that in 4 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017-2019 and 2022, 33-83%), 1 year had ≥2 samples exceed the 410 CFU/100mL STV (2017, n=2), and cumulatively across years 50% of intervals had GMs >126 CFU/100mL. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_165S indicated that in all 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017-2019 and 2021-2022, 50-100%), 2 years had ≥2 samples exceed the 410 CFU/100mL STV (2021 and 2022, n=2 & 3), and cumulatively across years 75% of intervals had GMs >126 CFU/100mL. While *E. coli* data from W2509 meet 2024 CALM guidance, multi-year *E. coli* data collected upstream at CRWA_90CS and downstream at CRWA_130S as well as at CRWA_165S are reflective of the existing Escherichia Coli (E. Coli) impairment. The available *Enterococcus* data from CRWA_90CS are too limited to assess according to the 2024 CALM. Note that samples exceeded the 130 CFU/100mL STV in 2021 (n=1), and 2018 (n=2) with exceedances ranging from 169-419 CFU/100mL. The available Enterococcus data at CRWA_130S are also too limited to assess according to the 2024 CALM.

Surface water sampling was conducted by the USGS upstream of the Charles River Pollution Control District discharge on this Charles River AU (MA72-04) at station USGS_01103280 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
CRWA_130S	Charles River Watershed Association	Water Quality	Charles River	Charles River, Maple St., Bellingham	42.119499	-71.453400
CRWA_165S	Charles River Watershed Association	Water Quality	Charles River	Shaw St./Elm St. Bridge, Franklin	42.136501	-71.418503
CRWA_90CS	Charles River Watershed Association	Water Quality	Charles River	Rt. 126, N. Main St., Bellingham	42.094299	-71.475998
W2509	MassDEP	Water Quality	Charles River	[approximately 1000 feet upstream/south of Route 495, Bellingham]	42.104981	-71.458405
USGS-01103280	USGS Massachusetts Water Science Center	Water Quality	Charles River	CHARLES RIVER AT MEDWAY, MA; upstream of Charles River Pollution Control District WWTF	42.140000	-71.390000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2) (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
CRWA_130S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	809	89
CRWA_130S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	161	57
CRWA_130S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	134	36
CRWA_130S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	794	83
CRWA_130S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	441	107
CRWA_130S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	985	233
CRWA_130S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	30	609	188

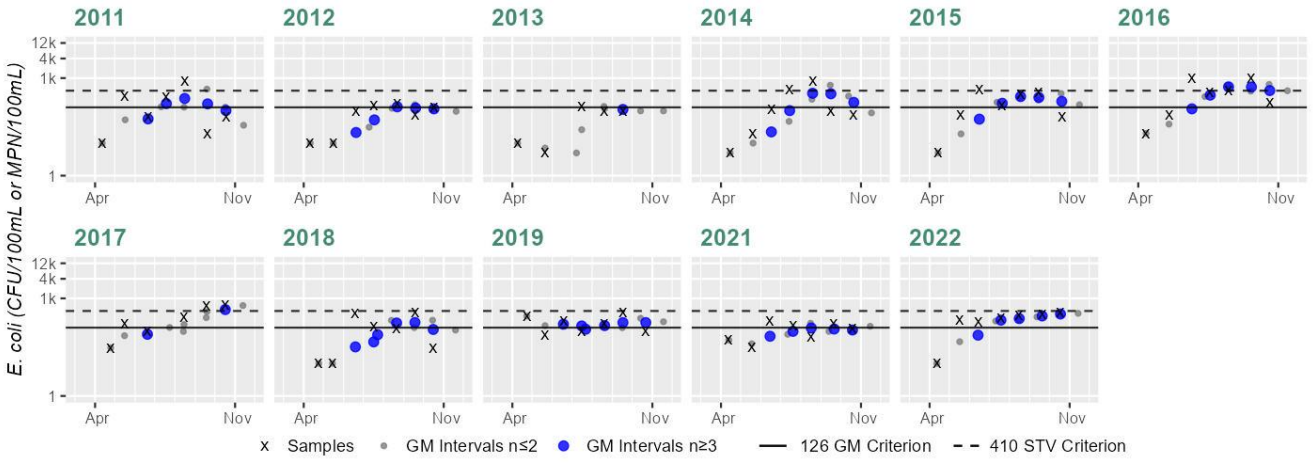
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_130S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	374	66
CRWA_130S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	74	373	157
CRWA_130S	Charles River Watershed Association	Enterococci	09/17/19	09/17/19	1	63	63	62
CRWA_130S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	31	199	92
CRWA_130S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	368	166
CRWA_165S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	3260	223
CRWA_165S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	156	58
CRWA_165S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	74	373	140
CRWA_165S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	41	1330	127
CRWA_165S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	663	98
CRWA_165S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	10	776	125
CRWA_165S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	249	103
CRWA_165S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	631	116
CRWA_165S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	20	3080	204
CRWA_165S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	62	1120	227
CRWA_165S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	960	265
CRWA_90CS	Charles River Watershed Association	E. coli	04/12/11	10/18/11	6	31	336	69

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_90CS	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	63	121	87
CRWA_90CS	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	379	38
CRWA_90CS	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	31	73	47
CRWA_90CS	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	98	21
CRWA_90CS	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	10	106	32
CRWA_90CS	Charles River Watershed Association	E. coli	08/19/14	10/21/14	3	20	97	43
CRWA_90CS	Charles River Watershed Association	Enterococci	09/16/14	09/16/14	1	20	20	19
CRWA_90CS	Charles River Watershed Association	E. coli	04/14/15	10/20/15	6	5	173	32
CRWA_90CS	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	10	63	25
CRWA_90CS	Charles River Watershed Association	E. coli	04/12/16	10/18/16	5	5	269	55
CRWA_90CS	Charles River Watershed Association	Enterococci	09/20/16	09/20/16	1	86	86	85
CRWA_90CS	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	122	70
CRWA_90CS	Charles River Watershed Association	Enterococci	09/19/17	09/19/17	1	122	122	122
CRWA_90CS	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	309	67
CRWA_90CS	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	169	368	249
CRWA_90CS	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	20	395	90
CRWA_90CS	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	52	63	57

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_90CS	Charles River Watershed Association	E. coli	05/18/21	10/19/21	5	74	295	186
CRWA_90CS	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	10	419	64
CRWA_90CS	Charles River Watershed Association	E. coli	04/12/22	10/18/22	6	52	199	119
CRWA_90CS	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	63	74	68
W2509	MassDEP	E. coli	05/13/15	09/03/15	5	75	290	122

Station CRWA_130S & MASSDEP_W1135 - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	89
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	57
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	36
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	83
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	107
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	233
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	6
SeasGM	188
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	66
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	157
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	92
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	166
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

54%

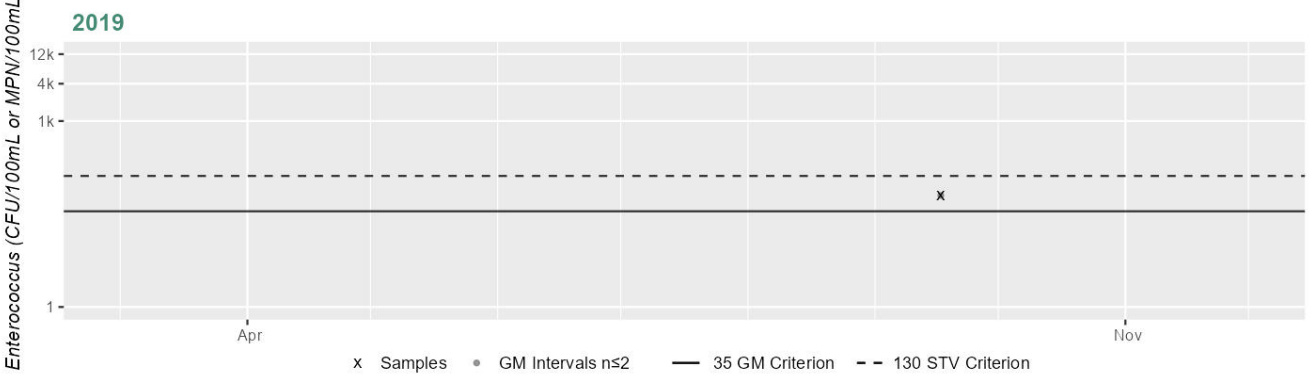
Cumulative %GMI Exceedance Current (Recent 5 Years)

50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_130S - Enterococcus

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



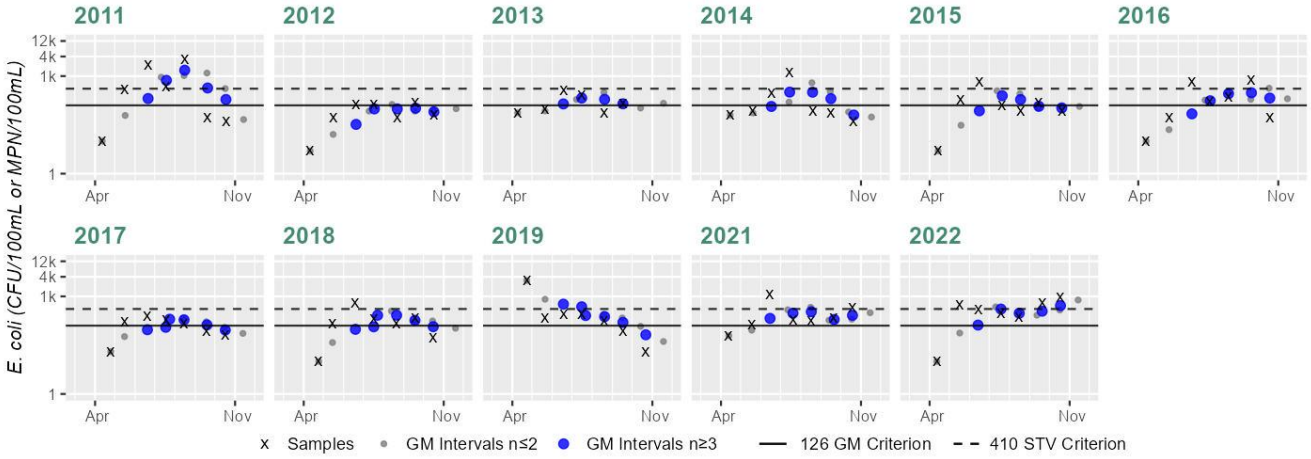
Variable*	Result
Samples	1
SeasGM	63
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_165S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	223
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	140
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	127
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	98
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	125
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	103
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	116
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	204
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	227
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	265
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Cumulative %GMI Exceedance Current (2011-2022)

68%

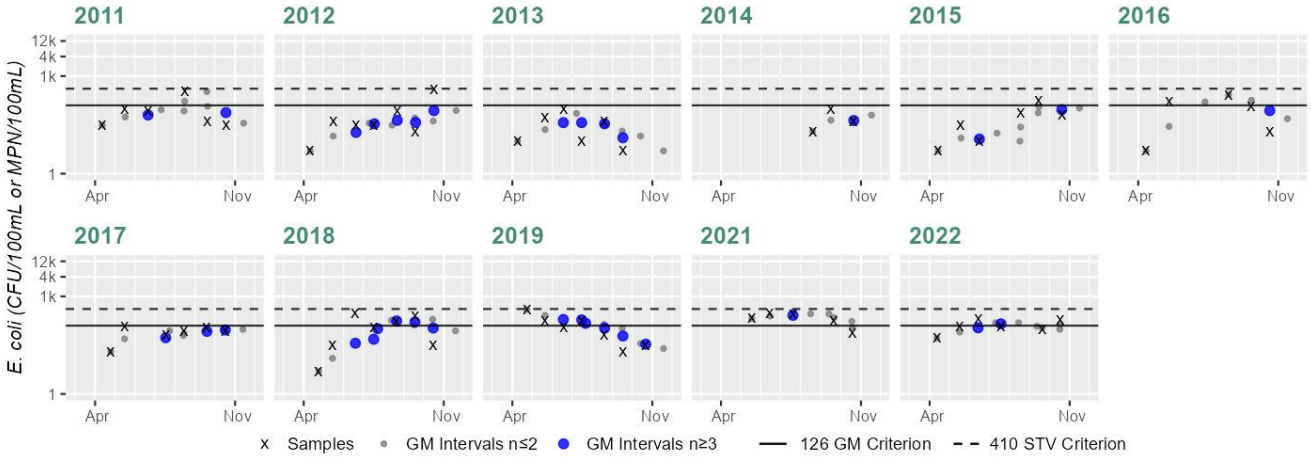
Cumulative %GMI Exceedance Current (Recent 5 Years)

75%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_90CS - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	69
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	21
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	43
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	32
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	55
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	70
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	67
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	90
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	186
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	119
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

21%

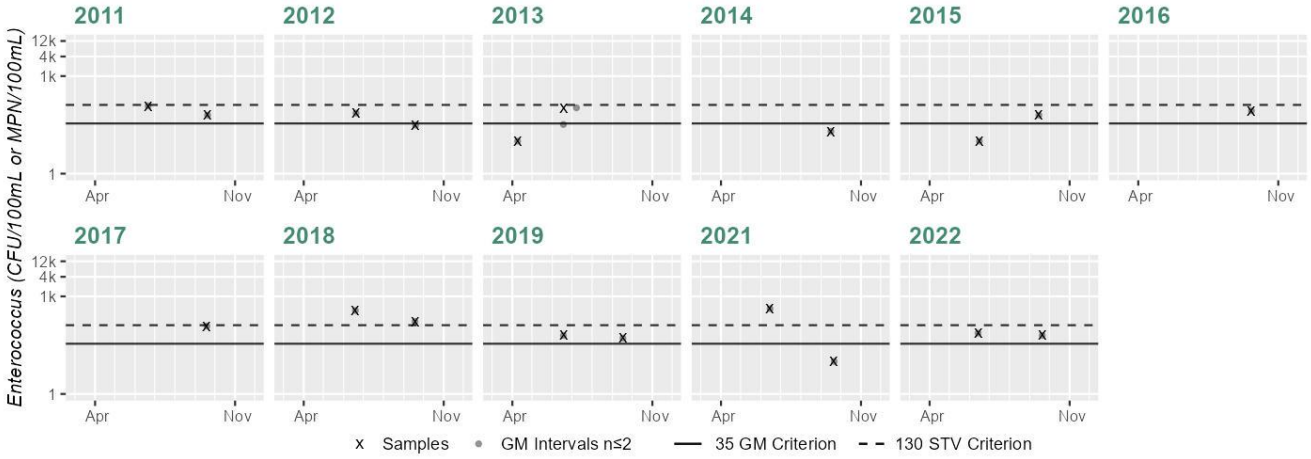
Cumulative %GMI Exceedance Current (Recent 5 Years)

38%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_90CS - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	87
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	47
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	32
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Variable*	Result
Samples	2
SeasGM	25
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	86
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	122
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	249
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	100%

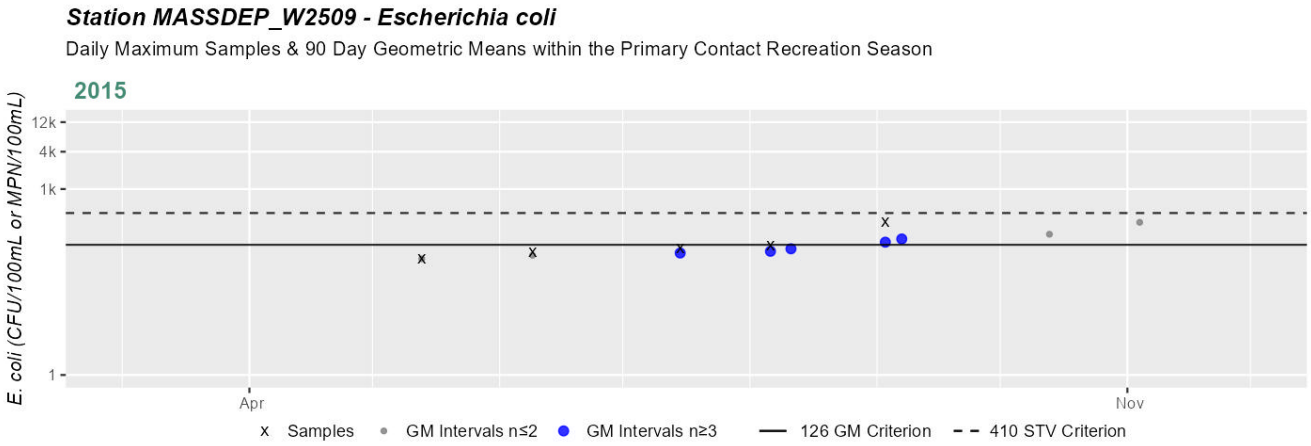
Variable*	Result
Samples	2
SeasGM	57
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	64
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	68
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*



Variable*	Result
Samples	5
SeasGM	122
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
40%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Charles River Pollution Control District discharge on the Charles River (MA72-04) at station USGS_01103280 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑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 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-01103280	8/21/2020	9.4	19	E1.26	6.21	7.32	5.79	40.4*
USGS-01103280	9/22/2020	9.62	E15.5	E1.17	5.35	6.13	5.81	36.3*
USGS-01103280	10/21/2020	E5.4	E6.19	V0.786	E2.83	3.92	4.49	20.3*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-04) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_165S.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in the Charles River (MA72-04) at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: near the upstream end of the AU at CRWA_90CS [Rt. 126, N. Main St., Bellingham] from 2011-2019 and 2021-2022 (current n=7-12/yr), in the upstream half of the AU at W2509 [~1000 ft upstream/S of Rt. 495, Bellingham] from May-Sep 2015 (n=5), and at CRWA_130S [Charles River, Maple St., Bellingham] from 2011-2019 and 2021-2022 (current n=6-12/yr), and in the downstream half of the AU at CRWA_165S [Shaw St./Elm St. Bridge, Franklin] from 2011-2019 and 2021-2022 (current n=7-12/yr). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_90CS indicated none of 5 sufficient data years had intervals where >20% of the GMs were >244 CFU/100mL, there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years 2% of intervals had GMs >244 CFU/100mL. Analysis of the single year limited frequency *E. coli* dataset from W2509 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 122 CFU/100mL). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_130S indicated that in 2 of 5 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2017 and 2022, 22 & 25%), there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years 8% of intervals had GMs >244 CFU/100mL. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_165S indicated that in 3 of 5 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2019 and 2021-2022, 25-58%), 1 year had ≥2 samples exceed the 794 CFU/100mL STV (2019, n=2), and cumulatively across years 24% of intervals had GMs >244 CFU/100mL. While *E. coli* data from CRWA_90CS, W2509, and CRWA_130S meet 2024 CALM guidance, *E. coli* data from the most downstream station CRWA_165S are indicative of an Escherichia Coli (E. Coli) impairment.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in the historic IR window (1997-2010) in the Charles River (MA72-04) from 1997-2010 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: CRWA_90CS [Rt. 126, N. Main St., Bellingham] from 2009-2010 (historic n=11/yr), the combined CRWA_130S & W1135 station [Maple St, Bellingham & Charles River, Maple St., Bellingham] in 2007 and from 2009-2010 (historic n=5-12/yr), W2157 [~760 ft downstream of Maple St, Bellingham] from May-Sep 2010 (n=6), CRWA_165S [Shaw St./Elm St. Bridge, Franklin] from 2009-2010 (historic n=12/yr), and W0414 [Walker St, Medway (near USGS flow gaging station #01103280) (upstream of Charles River Pollution Control District (MA0102598) discharge)] from 1997-1998, and in 2002 and 2007 (n=2-5/yr). *E. coli* data from these stations were all indicative of good conditions but are superseded by the data collected in the current IR window.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_130S	Charles River Watershed Association	Water Quality	Charles River	Charles River, Maple St., Bellingham	42.119499	-71.453400
CRWA_165S	Charles River Watershed Association	Water Quality	Charles River	Shaw St./Elm St. Bridge, Franklin	42.136501	-71.418503
CRWA_90CS	Charles River Watershed Association	Water Quality	Charles River	Rt. 126, N. Main St., Bellingham	42.094299	-71.475998
W0414	MassDEP	Water Quality	Charles River	[Walker Street, Medway (near USGS flow gaging station #01103280) (upstream of Charles River Pollution Control District (MA0102598) discharge)]	42.140071	-71.389673
W1135	MassDEP	Water Quality	Charles River	[Maple Street, Bellingham]	42.119434	-71.453444
W2157	MassDEP	Water Quality	Charles River	[approximately 760 feet downstream of Maple Street, Bellingham]	42.121400	-71.452513
W2509	MassDEP	Water Quality	Charles River	[approximately 1000 feet upstream/south of Route 495, Bellingham]	42.104981	-71.458405

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (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
CRWA_130S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	10	5	354	51
CRWA_130S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	10	2010	74
CRWA_130S	Charles River Watershed Association	E. coli	03/15/11	12/20/11	10	10	809	59
CRWA_130S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	161	31
CRWA_130S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	5	134	37
CRWA_130S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	1420	92

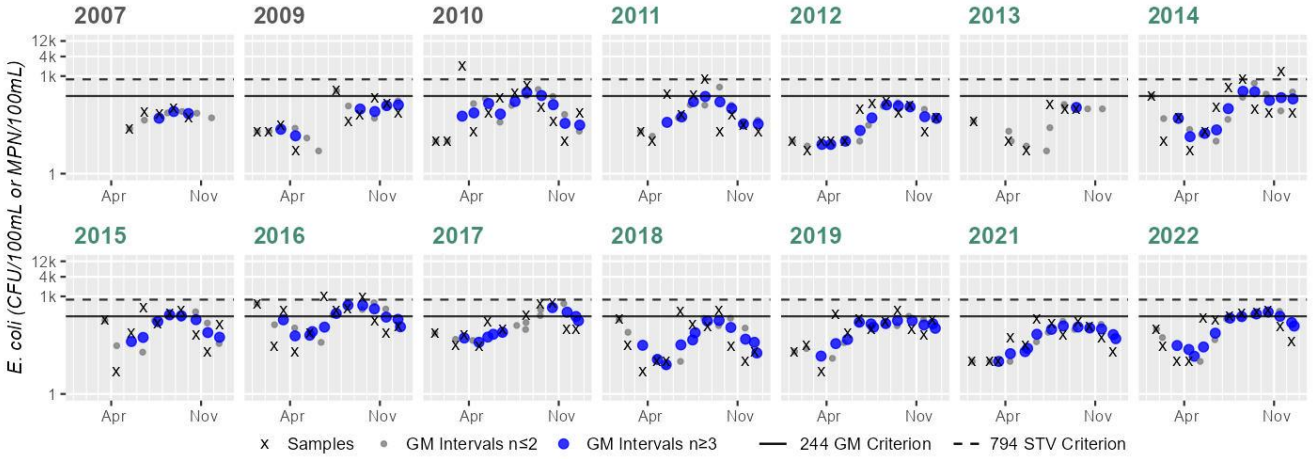
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_130S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	5	441	98
CRWA_130S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	985	190
CRWA_130S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	11	30	609	117
CRWA_130S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	374	42
CRWA_130S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	373	81
CRWA_130S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	199	44
CRWA_130S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	368	94
CRWA_165S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	275	54
CRWA_165S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	5	1090	62
CRWA_165S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	10	3260	120
CRWA_165S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	256	43
CRWA_165S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	20	373	106
CRWA_165S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	5480	112
CRWA_165S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	5	663	93
CRWA_165S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	776	86
CRWA_165S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	5	1350	94
CRWA_165S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	631	70

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_165S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	3080	121
CRWA_165S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	1120	119
CRWA_165S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	960	156
CRWA_90CS	Charles River Watershed Association	E. coli	01/13/09	12/15/09	11	31	24200	175
CRWA_90CS	Charles River Watershed Association	E. coli	01/12/10	11/16/10	11	5	4610	92
CRWA_90CS	Charles River Watershed Association	E. coli	01/11/11	12/20/11	10	31	336	76
CRWA_90CS	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	379	24
CRWA_90CS	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	98	26
CRWA_90CS	Charles River Watershed Association	E. coli	01/14/14	12/16/14	8	10	697	55
CRWA_90CS	Charles River Watershed Association	E. coli	01/13/15	12/15/15	10	5	173	30
CRWA_90CS	Charles River Watershed Association	E. coli	01/12/16	12/13/16	10	5	609	64
CRWA_90CS	Charles River Watershed Association	E. coli	01/10/17	12/12/17	11	10	122	47
CRWA_90CS	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	309	58
CRWA_90CS	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	20	395	73
CRWA_90CS	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	10	295	75
CRWA_90CS	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	199	66
W0414	MassDEP	E. coli	07/14/97	12/09/97	5	20	120	67
W0414	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0414	MassDEP	E. coli	04/29/02	09/09/02	5	20	78	38
W0414	MassDEP	E. coli	05/15/07	10/02/07	5	24	190	40
W1135	MassDEP	E. coli	05/15/07	10/02/07	5	24	100	58

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
W2157	MassDEP	E. coli	05/04/10	09/13/10	6	60	440	127
W2509	MassDEP	E. coli	05/13/15	09/03/15	5	75	290	122

Station CRWA_130S & MASSDEP_W1135 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	58
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	51
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	74
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	10
SeasGM	59
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	12
SeasGM	31
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	92
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	10
SeasGM	98
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	190
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	117
#GMI	9
#GMI Ex	2
%GMI Ex	22%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	42
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	81
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	44
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

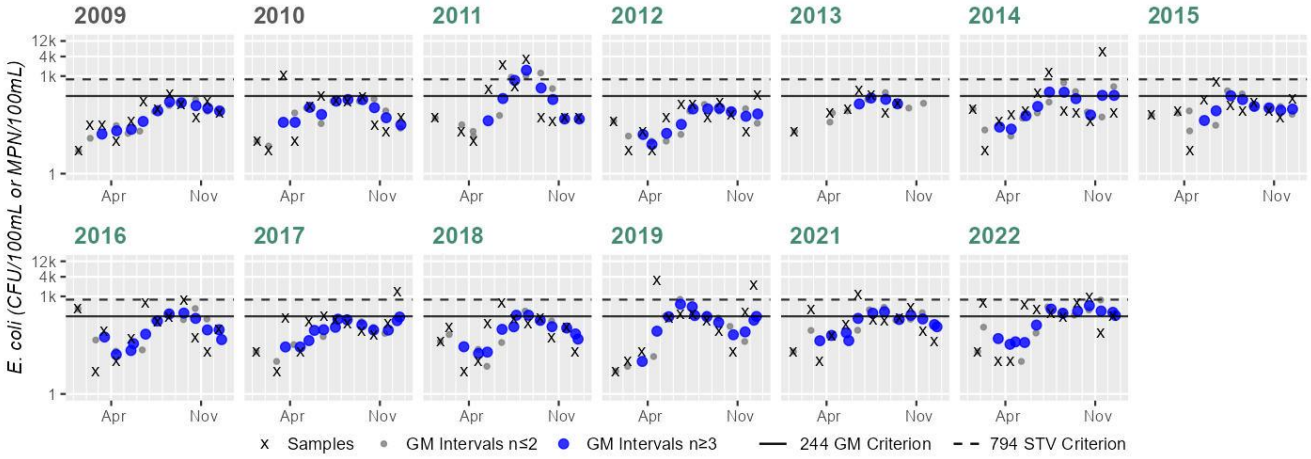
Variable*	Result
Samples	12
SeasGM	94
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
10%	12%	8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_165S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	54
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	62
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	120
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	12
SeasGM	43
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	106
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	112
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	93
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	86
#GMI	12
#GMI Ex	2
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	94
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	70
#GMI	12
#GMI Ex	2
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	121
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	12
SeasGM	119
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	156
#GMI	12
#GMI Ex	7
%GMI Ex	58%
n>STV	1
%n>STV	8%

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

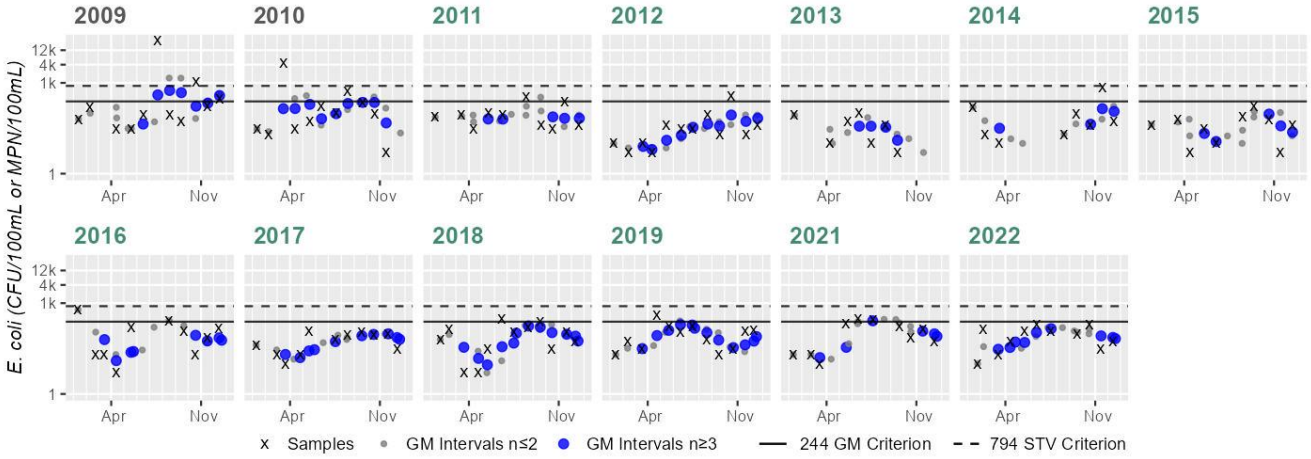
Cumulative %GMI Exceedance
Current (2011-2022)
22%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
24%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_90CS - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	175
#GMI	7
#GMI Ex	4
%GMI Ex	57%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	11
SeasGM	92
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	10
SeasGM	76
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	24
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	26
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	55
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	64
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	47
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	58
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	73
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	75
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

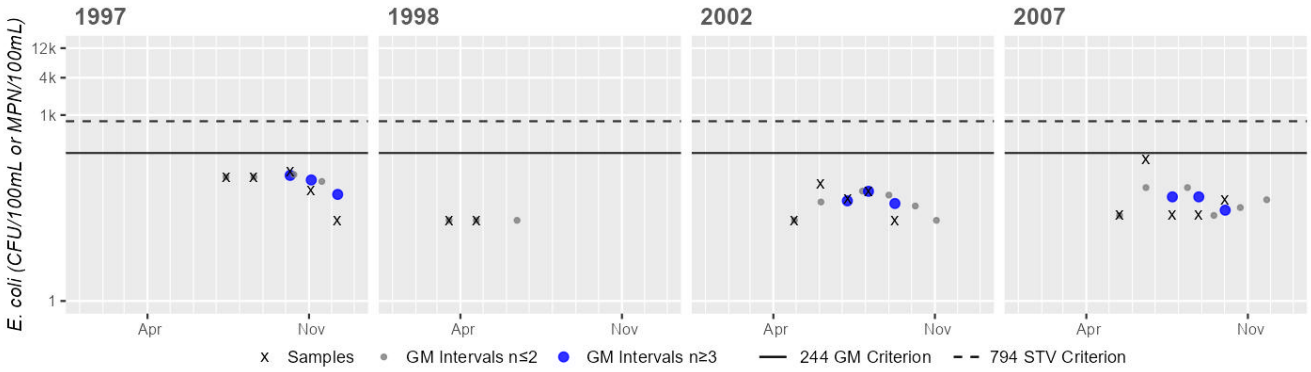
Variable*	Result
Samples	11
SeasGM	66
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
25%	1%	2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0414 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	67
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	38
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

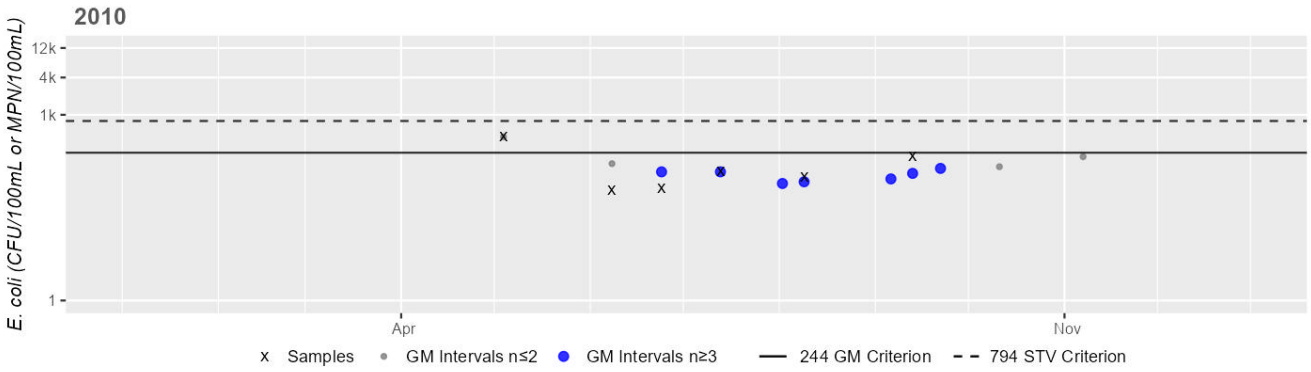
Variable*	Result
Samples	5
SeasGM	40
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2157 - Escherichia coli

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



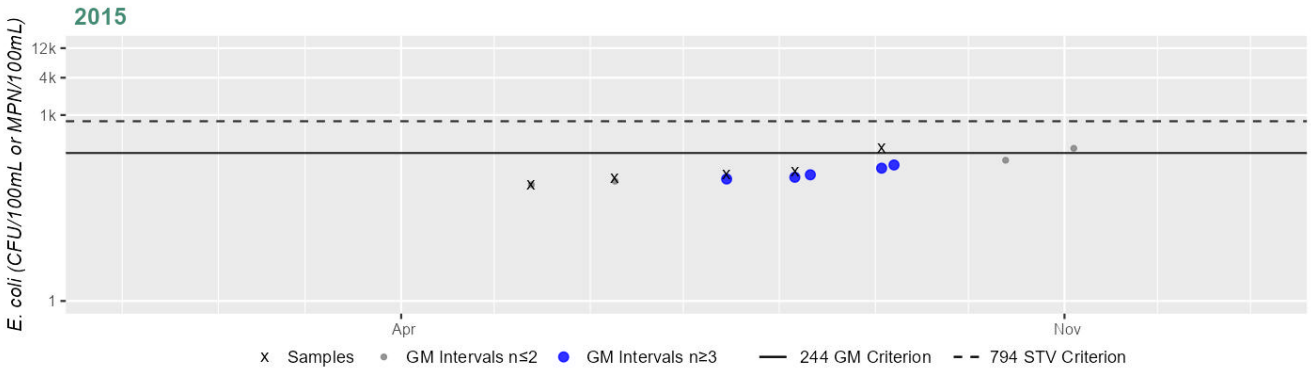
Variable*	Result
Samples	6
SeasGM	127
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2509 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	122
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

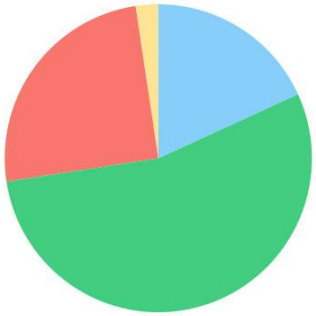
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Charles River (MA72-05)

Location:	From outlet Populatic Pond, Norfolk/Medway to South Natick Dam (NATID: MA00341), Natick.
AU Type:	RIVER
AU Size:	18.1 MILES
Classification/Qualifier:	B: WWF

Charles River (MA72-05)

Watershed Area: 155.46 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	155.46	9.94	54.32	3.29
Agriculture	2.4%	5.9%	2.1%	3.7%
Developed	25%	21.8%	15.5%	14.4%
Natural	54.4%	54.9%	49.9%	50.2%
Wetland	18.2%	17.4%	32.5%	31.7%
Impervious	11.3%	9.6%	6.9%	6.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fanwort*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Algae	40317	Unchanged
5	5	Benthic Macroinvertebrates	40317	Changed
5	5	Chlordane in Fish Tissue	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	--	Added
5	5	Mercury in Fish Tissue	--	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Phosphorus, Total	40317	Unchanged
5	5	Turbidity	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fanwort*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Internal Nutrient Recycling (N)	X	--	X	X	X
Algae	Municipal Point Source Discharges (Y)	X	--	X	X	X
Algae	Non-Point Source (Y)	X	--	X	X	X
Algae	Unspecified Urban Stormwater (N)	X	--	X	X	X
Algae	Wet Weather Discharges (Non-Point Source) (Y)	X	--	X	X	X
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Chlordane in Fish Tissue	Source Unknown (N)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Internal Nutrient Recycling (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Municipal Point Source Discharges (Y)	X	--	--	--	--
Dissolved Oxygen	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Internal Nutrient Recycling (N)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Municipal Point Source Discharges (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	--
Mercury in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Internal Nutrient Recycling (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Municipal Point Source Discharges (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Non-Point Source (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Wet Weather Discharges (Non-Point Source) (Y)	X	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Internal Nutrient Recycling (N)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Turbidity	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Benthic Macroinvertebrates	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts (Report CN 272.0, approved 6/10/2011, ATTAINS Action ID: 40317)

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary

The Fish Consumption Use for this Charles River AU (MA72-05) continues to be assessed as Not Supporting and the prior Chlordane in Fish Tissue, Mercury in Fish Tissue, and DDT in Fish Tissue impairments are being carried forward. MA DPH included a site-specific advisory for the Charles River (referred to by MA DPH as ''Charles River (between the Medway Dam in Franklin and Medway and the South Natick Dam in Natick)'') 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 this Charles River AU (MA72-05) continues to be assessed as Not Supporting with the prior Nutrient/Eutrophication Biological Indicators and Algae impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Charles 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 Charles River AU (MA72-05) continues to be assessed as Not Supporting. The prior Algae and Nutrient/Eutrophication Biological Indicators impairments (from the Aesthetics Use) are being carried forward. An Escherichia Coli (E. Coli) impairment is being added based on bacteria data from CRWA_267S and CRWA_290S.
CRWA staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples at 5 stations in this Charles River AU (MA72-05) from 2011-2022. Samples were collected from from upstream to downstream as follows: from the upstream 1/3 of the AU at CRWA_229S [Rt 115, Baltimore St, Millis] from 2011-2019 and 2021-2022 (EC n=4-7/yr, Ent n=1/yr), from the middle of the AU at CRWA_267S [Dwight St Bridge, Millis/Medfield] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=1), CRWA_290S [W St/Dover Rd, Medfield] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=2/yr), and CRWA_318S [Rt 27 Bridge, Medfield] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=1), from the downstream 1/3 of the AU at CRWA_343S [Farm Rd/Bridge St, Dover] from 2011-2019 and 2021-2022 (EC n=6-7/yr). Analysis of the recent five years of the multi-year moderate/limited frequency EC dataset from CRWA_229S indicated that in 3 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2018-2019 & 2022, 25-33%), no years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 20% of intervals had GMs >126 CFU/100mL. Analysis of the recent five years of the multi-year moderate/limited frequency EC dataset from CRWA_267S indicated that in 2 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2019 & 2022, 50% & 66%), 1 year had ≥2 samples exceed the 410 CFU/100mL STV (2022, n=2), and cumulatively across years 25% of intervals had GMs >126 CFU/100mL. These data do not meet 2024 CALM guidance. Analysis of the recent five years of the multi-year moderate frequency EC dataset from CRWA_290S indicated that in 4 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2018-2019 and 2021-2022, 25-66%), no years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 27% of intervals had GMs >126 CFU/100mL. These data do not meet 2024 CALM guidance. Analysis of the recent five years of the multi-year moderate/limited frequency EC dataset from CRWA_318S indicated that in 2 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2019 & 2021, 25% & 33%), no years had any exceedances of the 410 CFU/100mL STV, and cumulatively across years 12% of intervals had GMs >126 CFU/100mL. Analysis of the recent five years of the multi-year limited/moderate frequency EC dataset from CRWA_343S indicated that in 1 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017, 33%), there was only 1 exceedance of the 410 CFU/100mL STV in 2017, and cumulatively across years 6% of intervals had GMs >126 CFU/100mL. While upstr. EC data from CRWA_229S, and downstr. data from CRWA_318S and CRWA_343S meet 2024 CALM guidance, *E. coli* data from the middle of the AU at CRWA_267S and CRWA_290S are indicative of an *E. coli* impairment.
The available *Enterococcus* data from CRWA_229S, CRWA_267S, CRWA_290S, and CRWA_318S are too limited to assess according to the 2024 CALM. Note that individual samples exceeded the 130 CFU/100mL STV threshold in multiple years at CRWA_290S and CRWA_318S. Surface water sampling was conducted by the USGS downstream of the Charles River Pollution Control District WWTF discharge on this MA72-05 AU at station USGS_01103305 on 3 dates during Aug to Oct 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 6 of the 7 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
CRWA_229S	Charles River Watershed Association	Water Quality	Charles River	Rt. 115, Baltimore St., Millis	42.143299	-71.349297
CRWA_267S	Charles River Watershed Association	Water Quality	Charles River	Dwight St. Bridge, Millis/Medfield	42.173500	-71.323196
CRWA_290S	Charles River Watershed Association	Water Quality	Charles River	West St./Dover Rd., Medfield	42.188800	-71.333300
CRWA_318S	Charles River Watershed Association	Water Quality	Charles River	Rt. 27 Bridge, Medfield	42.209900	-71.351700
CRWA_343S	Charles River Watershed Association	Water Quality	Charles River	Farm Rd./Bridge St., Dover	42.232601	-71.330299
USGS-01103305	USGS Massachusetts Water Science Center	Water Quality	Charles River	CHARLES RIVER NEAR MILLIS, MA; downstream of Charles River Pollution Control District WWTF	42.133000	-71.362000

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(CRWA 2023) (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
CRWA_229S	Charles River Watershed Association	E. coli	06/21/11	10/18/11	4	41	318	106
CRWA_229S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	86	43
CRWA_229S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	379	42
CRWA_229S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	6	20	158	60
CRWA_229S	Charles River Watershed Association	E. coli	04/14/15	09/15/15	4	5	74	23

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_229S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	10	650	90
CRWA_229S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	323	98
CRWA_229S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	5	10	243	41
CRWA_229S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	10	1790	78
CRWA_229S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	41	249	82
CRWA_229S	Charles River Watershed Association	Enterococcus	09/21/21	09/21/21	1	110	110	110
CRWA_229S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	345	79
CRWA_229S	Charles River Watershed Association	Enterococcus	09/20/22	09/20/22	1	86	86	85
CRWA_267S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	857	100
CRWA_267S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	145	41
CRWA_267S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	98	34
CRWA_267S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	213	48
CRWA_267S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	74	37
CRWA_267S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	539	86
CRWA_267S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	309	68
CRWA_267S	Charles River Watershed Association	E. coli	04/24/18	09/18/18	6	10	160	42
CRWA_267S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	5	794	80

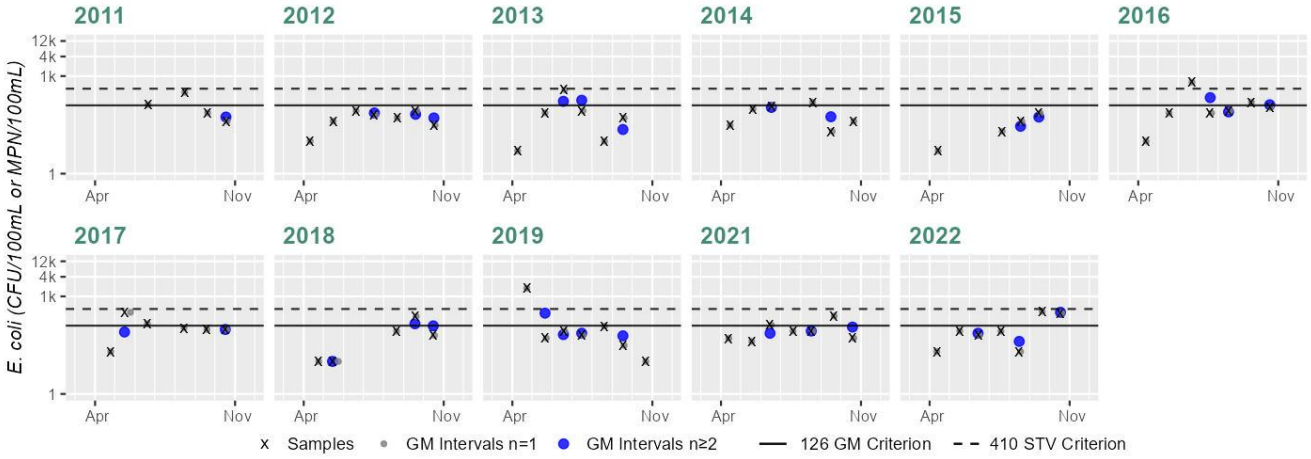
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_267S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	156	47
CRWA_267S	Charles River Watershed Association	Enterococcus	06/15/21	06/15/21	1	107	107	106
CRWA_267S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	520	116
CRWA_290S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	30	497	68
CRWA_290S	Charles River Watershed Association	Enterococcus	06/21/11	09/20/11	2	31	63	44
CRWA_290S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	30	175	80
CRWA_290S	Charles River Watershed Association	Enterococcus	06/19/12	09/18/12	2	5	41	14
CRWA_290S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	20	86	37
CRWA_290S	Charles River Watershed Association	Enterococcus	04/09/13	06/18/13	2	10	96	30
CRWA_290S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	158	45
CRWA_290S	Charles River Watershed Association	Enterococcus	06/17/14	09/16/14	2	10	122	34
CRWA_290S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	169	38
CRWA_290S	Charles River Watershed Association	Enterococcus	06/16/15	09/15/15	2	41	146	77
CRWA_290S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	10	620	75
CRWA_290S	Charles River Watershed Association	Enterococcus	06/21/16	09/20/16	2	41	413	130
CRWA_290S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	173	67
CRWA_290S	Charles River Watershed Association	Enterococcus	06/20/17	09/19/17	2	31	86	51

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_290S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	175	46
CRWA_290S	Charles River Watershed Association	Enterococcus	06/19/18	09/18/18	2	20	246	70
CRWA_290S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	20	246	61
CRWA_290S	Charles River Watershed Association	Enterococcus	06/18/19	09/17/19	2	63	213	115
CRWA_290S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	305	73
CRWA_290S	Charles River Watershed Association	Enterococcus	06/15/21	09/21/21	2	135	259	186
CRWA_290S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	31	472	127
CRWA_290S	Charles River Watershed Association	Enterococcus	06/14/22	09/20/22	2	98	148	120
CRWA_318S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	265	48
CRWA_318S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	20	85	42
CRWA_318S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	98	37
CRWA_318S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	6	5	135	28
CRWA_318S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	122	26
CRWA_318S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	122	65
CRWA_318S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	5	110	29
CRWA_318S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	52	13
CRWA_318S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	52	218	105

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_318S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	364	59
CRWA_318S	Charles River Watershed Association	Enterococcus	06/15/21	06/15/21	1	201	201	201
CRWA_318S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	31	132	69
CRWA_343S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	20	294	68
CRWA_343S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	63	27
CRWA_343S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	97	22
CRWA_343S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	120	40
CRWA_343S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	110	30
CRWA_343S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	10	52	22
CRWA_343S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	10	1140	62
CRWA_343S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	63	20
CRWA_343S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	20	145	49
CRWA_343S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	10	74	33
CRWA_343S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	6	10	201	63

Station CRWA_229S - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	106
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	43
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	42
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	60
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	23
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	90
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	98
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	41
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	78
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	82
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	79
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

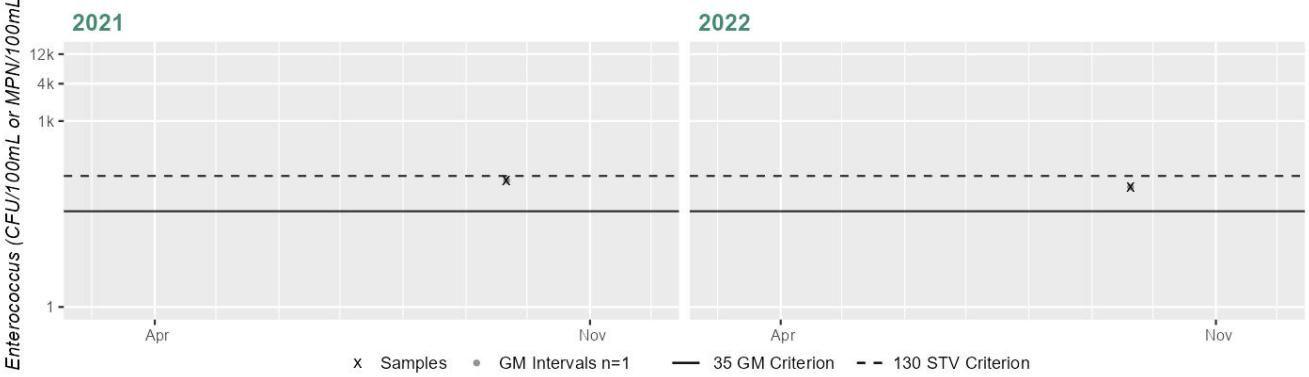
Cumulative %GMI Exceedance Current (2011-2022)
24%

Cumulative %GMI Exceedance Current (Recent 5 Years)
20%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_229S - Enterococcus

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



Variable*	Result
Samples	1
SeasGM	110
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

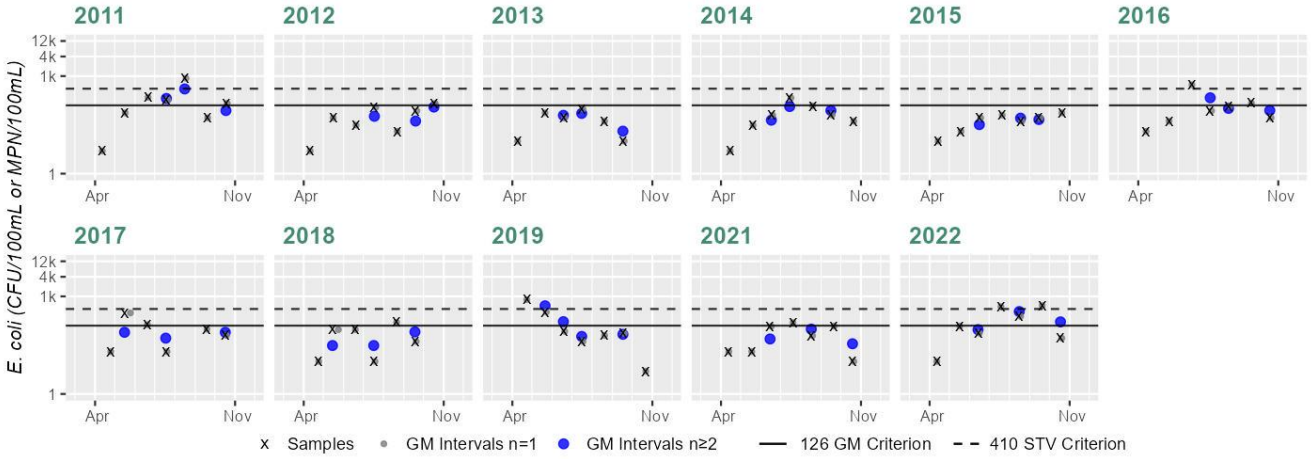
Variable*	Result
Samples	1
SeasGM	86
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_267S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	100
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	41
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	34
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	48
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	37
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	86
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	68
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	42
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	80
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	47
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	116
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Cumulative %GMI Exceedance Current (2011-2022)

20%

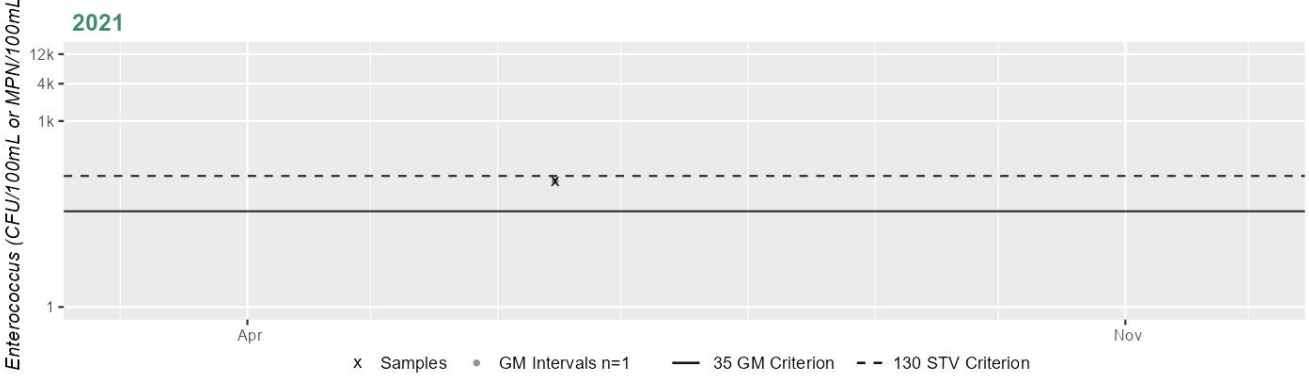
Cumulative %GMI Exceedance Current (Recent 5 Years)

25%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_267S - Enterococcus

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



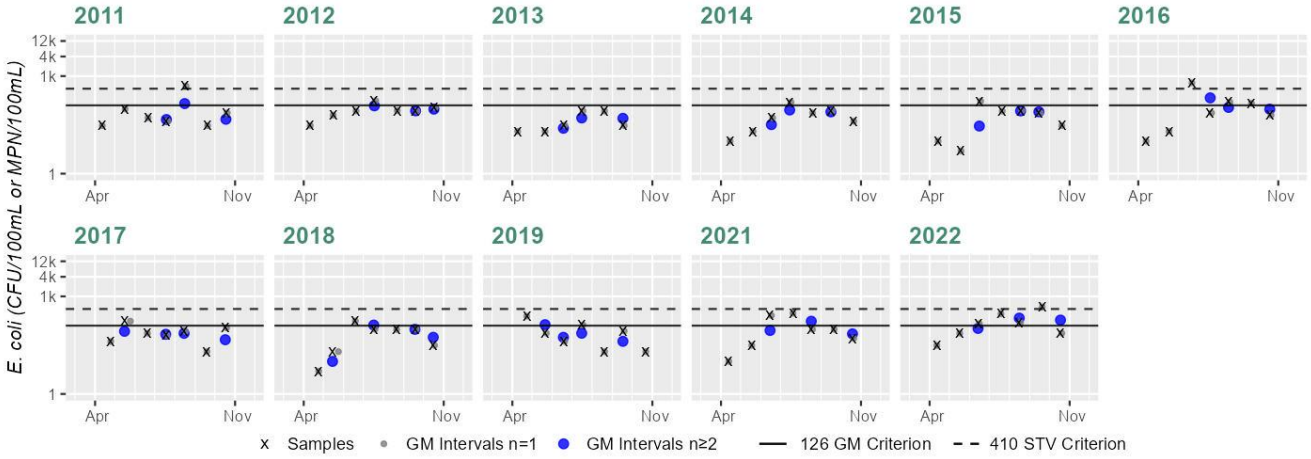
Variable*	Result
Samples	1
SeasGM	107
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_290S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	68
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	80
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	45
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	75
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	67
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	46
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	61
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	127
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	14%

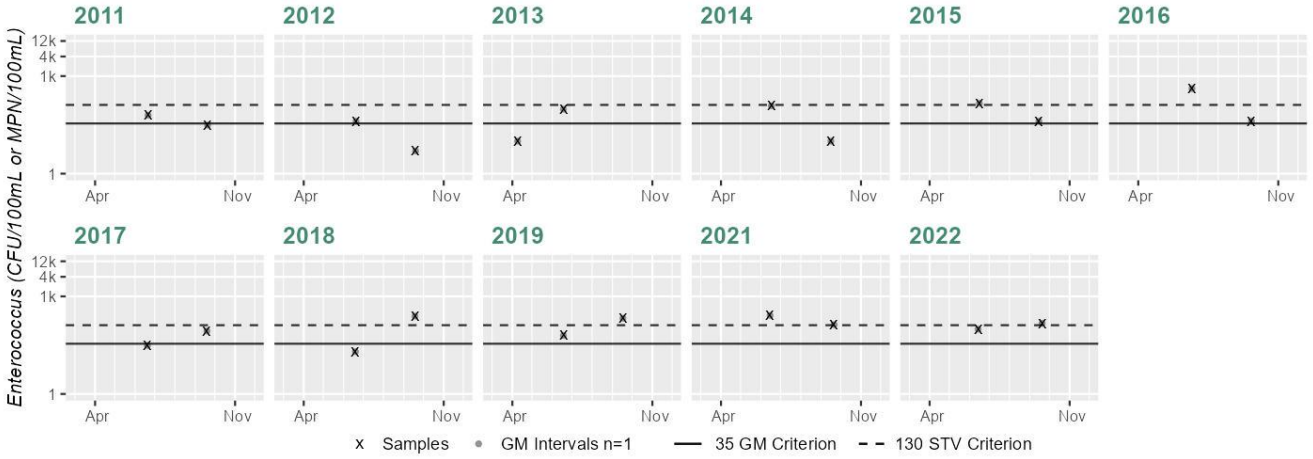
Cumulative %GMI Exceedance Current (2011-2022)
19%

Cumulative %GMI Exceedance Current (Recent 5 Years)
27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_290S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	44
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	30
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	34
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	77
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	130
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	51
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	70
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	115
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	186
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	100%

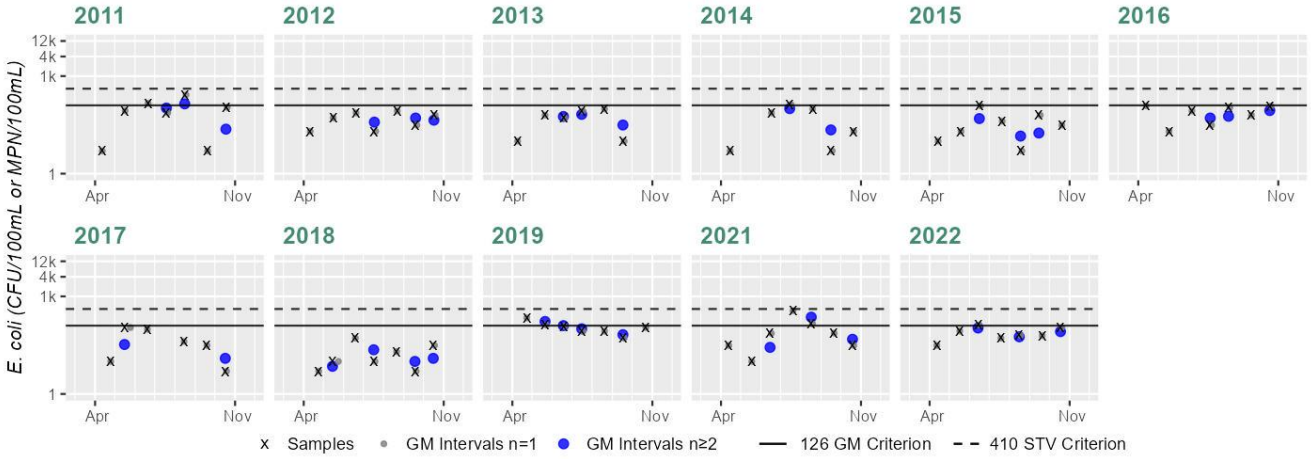
Variable*	Result
Samples	2
SeasGM	120
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_318S & MASSDEP_W1137 - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	48
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	42
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	37
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	28
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	26
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	29
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	13
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	105
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	59
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	69
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

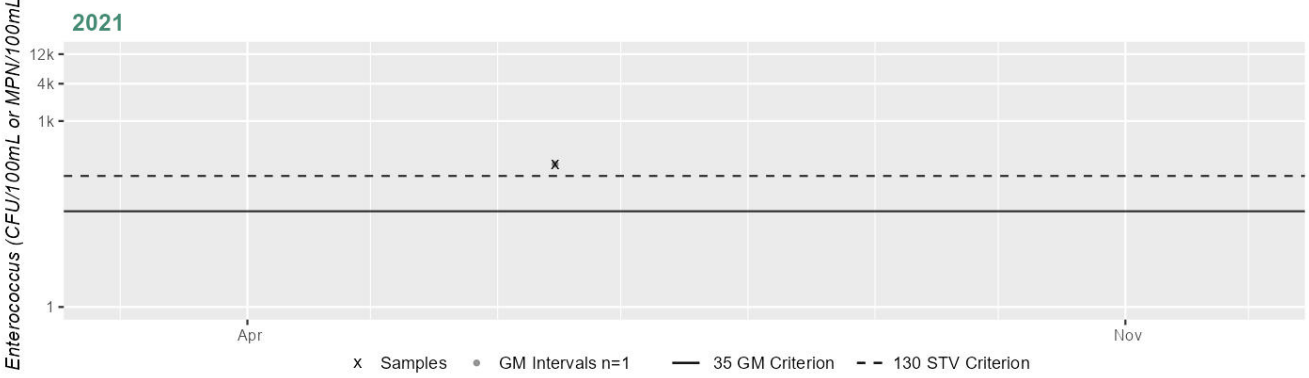
Cumulative %GMI Exceedance Current (2011-2022)
9%

Cumulative %GMI Exceedance Current (Recent 5 Years)
12%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_318S - Enterococcus

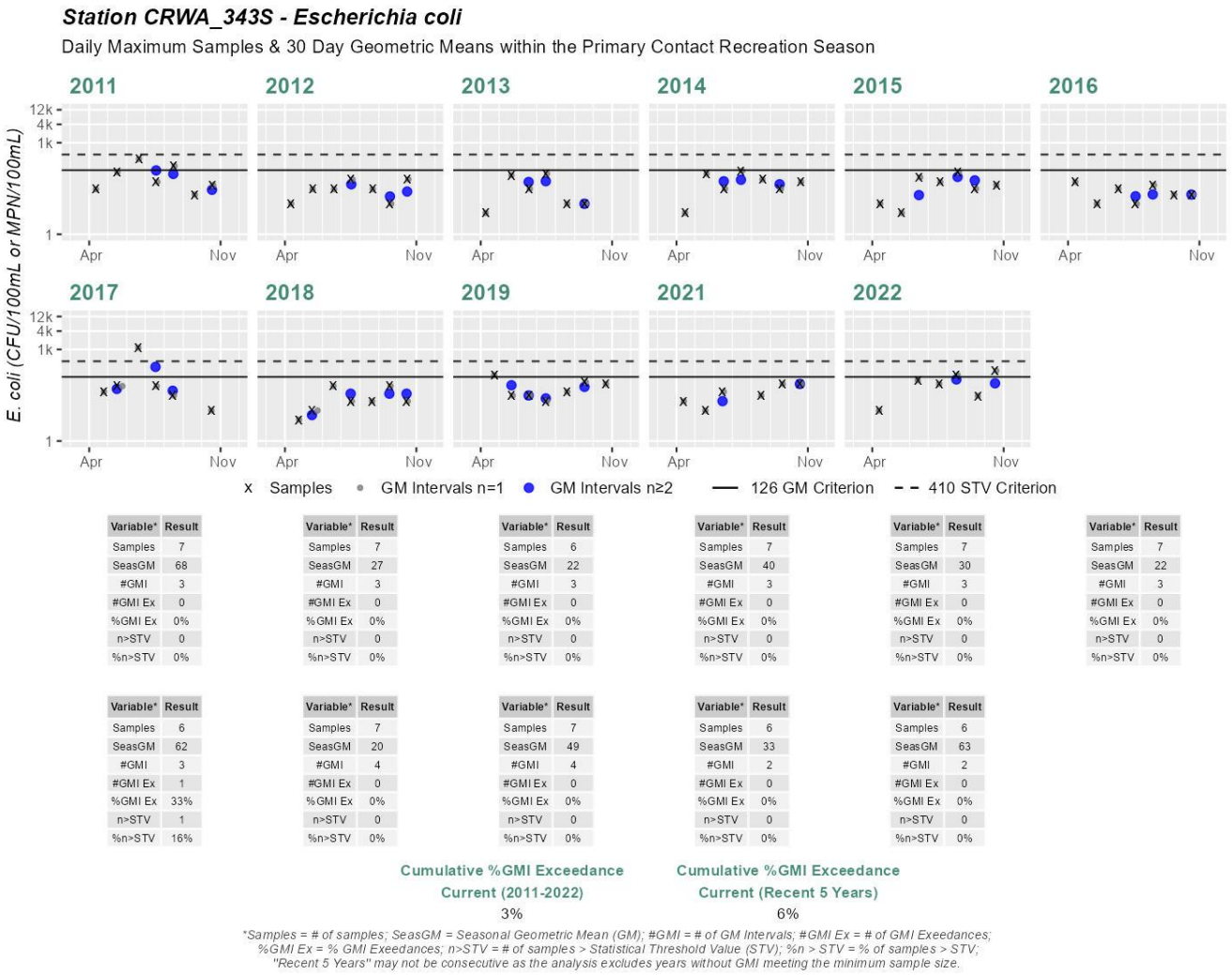
Daily Maximum Samples & 30 Day Geometric Means within the Primary Contact Recreation Season



Variable*	Result
Samples	1
SeasGM	201
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 downstream of the Charles River Pollution Control District WWTF discharge on the Charles River (MA72-05) at station USGS_01103305 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑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 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-01103305	8/21/2020	7	9.01	E1.28	4.29	7.02	3.79	25.9*
USGS-01103305	9/22/2020	8.33	E8.96	E0.983	3.49	6.56	4.2	25.8*
USGS-01103305	10/21/2020	5.07	5.62	E0.635	2.28	6.35	3.54	18.1*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-05) continues to be assessed as Not Supporting. Although *E. coli* bacteria data from multiple CRWA stations meet 2024 CALM guidance, the prior Algae and Nutrient/Eutrophication Biological Indicators impairments (from the Aesthetics Use) are being carried forward.
CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in the Charles River (MA72-05) from 2011-2022 at 5 stations. Samples were collected from the following stations/sample years from upstream to downstream: from the upstream 1/3 of the AU at CRWA_229S [Rt. 115, Baltimore St., Millis] from 2011-2019 and 2021-2022 (current n=6-12/yr), from the middle of the AU at CRWA_267S [Dwight St. Bridge, Millis/Medfield] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_290S [W St./Dover Rd., Medfield] from 2011-2019 and 2021-2022 (current n=7-12/yr), and CRWA_318S [Rt. 27 Bridge, Medfield] from 2011-2019 and 2021-2022 (current n=7-12/yr), and from the downstream 1/3 of the AU at CRWA_343S [Farm Rd./Bridge St., Dover] from 2011-2019 and 2021-2022 (current n=7-12/yr). Analysis of the recent five years of these multi-year moderate frequency *E. coli* datasets indicated that none of the stations had any year where >20% of intervals had GMs >244 CFU/100mL, only CRWA_229S had one year where ≥2 samples exceeded the 794 CFU/100mL STV (2019, n=2), and cumulatively across the five years only 0-4% of intervals had GMs >244 CFU/100mL among the stations. *E. coli* data from CRWA_229S, CRWA_267S, CRWA_290S, CRWA_318S, and CRWA_343S meet 2024 CALM guidance. EPA, CRWA, and MassDEP staff/volunteers also collected *E. coli* bacteria samples in the historic IR window (1997-2010) at the 5 stations noted above as well as 3 additional stations. Samples were collected from the following stations/sample years from upstream to downstream: W1136 [Dean St, Millis (downstream from the Charles River Pollution Control District (MA0102598) discharge)] from May-Oct 2007 (n=5), CRWA_229S [Rt. 115, Baltimore St., Millis] from 2009-2010 (historic n=10-12/yr), CRWA_267S [Dwight St. Bridge, Millis/Medfield] from 2009-2010 (historic n=12/yr), CRWA_290S [W St./Dover Rd., Medfield] from 2009-2010 (historic n=10-11/yr), the combined CRWA_318S & W1137 station [Rt. 27, Medfield/Sherborn & Rt. 27 Bridge, Medfield] in 2007 and from 2009-2010 (historic n=5-10/yr), CRWA_343S [Farm Rd./Bridge St., Dover] from 2009-2010 (historic n=12/yr), W1138 [~1000 ft upstream of Davis Brook confluence, Natick (informal boat launch off Rt. 16)] in 2002 and 2007 (n=4-5/yr), and 1111REG1-CRBL01 [S Natick Damdownstream] from 2001-2004 (n=3/yr). Data from these stations similarly meet 2024 CALM guidance but cannot be used to positively assess the Secondary Contact Recreation Use of this Charles River AU (MA72-05) since they were collected prior to the current IR window.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_229S	Charles River Watershed Association	Water Quality	Charles River	Rt. 115, Baltimore St., Millis	42.143299	-71.349297

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_267S	Charles River Watershed Association	Water Quality	Charles River	Dwight St. Bridge, Millis/Medfield	42.173500	-71.323196
CRWA_290S	Charles River Watershed Association	Water Quality	Charles River	West St./Dover Rd., Medfield	42.188800	-71.333300
CRWA_318S	Charles River Watershed Association	Water Quality	Charles River	Rt. 27 Bridge, Medfield	42.209900	-71.351700
CRWA_343S	Charles River Watershed Association	Water Quality	Charles River	Farm Rd./Bridge St., Dover	42.232601	-71.330299
W1136	MassDEP	Water Quality	Charles River	[Dean Street, Millis (downstream from the Charles River Pollution Control District (MA0102598) discharge)]	42.138281	-71.358673
W1137	MassDEP	Water Quality	Charles River	[Route 27, Medfield/Sherborn]	42.210062	-71.351725
W1138	MassDEP	Water Quality	Charles River	[approximately 1000 feet upstream of Davis Brook confluence, Natick (informal boat launch off Route 16)]	42.264400	-71.325382
1111REG1-CRBL01	US EPA Region 1	Water Quality	Charles River	South Natick Dam - downstream	42.271492	-71.315529

Bacteria Data

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

(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3) (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
CRWA_229S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	1720	135
CRWA_229S	Charles River Watershed Association	E. coli	01/12/10	10/19/10	10	10	2190	96
CRWA_229S	Charles River Watershed Association	E. coli	06/21/11	12/20/11	6	31	364	106
CRWA_229S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	10	712	52

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_229S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	613	62
CRWA_229S	Charles River Watershed Association	E. coli	01/14/14	11/18/14	10	5	384	64
CRWA_229S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	7	5	644	65
CRWA_229S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	10	1520	104
CRWA_229S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	10	20	785	100
CRWA_229S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	9	10	613	67
CRWA_229S	Charles River Watershed Association	E. coli	01/15/19	10/22/19	9	10	1790	81
CRWA_229S	Charles River Watershed Association	E. coli	02/23/21	12/14/21	11	10	2280	94
CRWA_229S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	520	84
CRWA_267S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	898	85
CRWA_267S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	20	538	86
CRWA_267S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	857	68
CRWA_267S	Charles River Watershed Association	E. coli	02/14/12	12/18/12	11	5	419	47
CRWA_267S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	10	457	49
CRWA_267S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	771	65
CRWA_267S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	10	384	45
CRWA_267S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	11	5	539	47

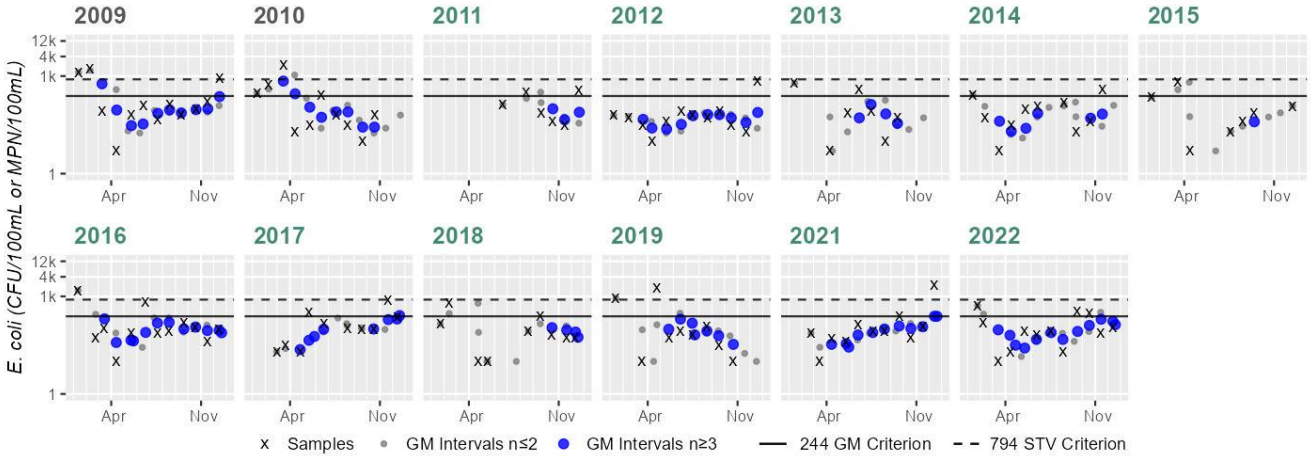
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_267S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	10	20	309	63
CRWA_267S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	11	5	292	47
CRWA_267S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	880	107
CRWA_267S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	1990	71
CRWA_267S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	520	118
CRWA_290S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	5	426	64
CRWA_290S	Charles River Watershed Association	E. coli	02/09/10	12/21/10	11	5	1080	58
CRWA_290S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	497	47
CRWA_290S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	295	67
CRWA_290S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	20	464	53
CRWA_290S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	10	1140	80
CRWA_290S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	5	169	40
CRWA_290S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	10	3650	67
CRWA_290S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	10	173	52
CRWA_290S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	328	45
CRWA_290S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	278	68
CRWA_290S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	10	1290	98

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_290S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	472	89
CRWA_318S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	5	292	59
CRWA_318S	Charles River Watershed Association	E. coli	02/09/10	11/16/10	10	10	738	60
CRWA_318S	Charles River Watershed Association	E. coli	03/15/11	12/20/11	10	5	265	41
CRWA_318S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	1220	47
CRWA_318S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	10	373	51
CRWA_318S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	9	5	504	61
CRWA_318S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	5	189	33
CRWA_318S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	1530	117
CRWA_318S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	10	5	404	62
CRWA_318S	Charles River Watershed Association	E. coli	02/13/18	12/11/18	11	5	556	21
CRWA_318S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	10	457	97
CRWA_318S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	733	106
CRWA_318S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	313	66
CRWA_343S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	459	79
CRWA_343S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	5	749	53
CRWA_343S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	294	52

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_343S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	10	1460	45
CRWA_343S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	243	31
CRWA_343S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	313	76
CRWA_343S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	5	231	38
CRWA_343S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	11	5	836	34
CRWA_343S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	11	10	1140	69
CRWA_343S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	11	5	373	34
CRWA_343S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	20	175	51
CRWA_343S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	10	697	59
CRWA_343S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	369	59
W1136	MassDEP	E. coli	05/15/07	10/02/07	5	24	310	105
W1137	MassDEP	E. coli	05/15/07	10/02/07	5	10	48	25
W1138	MassDEP	E. coli	04/29/02	08/05/02	4	20	59	37
W1138	MassDEP	E. coli	05/15/07	10/02/07	5	5	130	28
1111REG1-CRBL01	US EPA Region 1	E. coli	07/09/01	09/04/01	3	24	54	38
1111REG1-CRBL01	US EPA Region 1	E. coli	07/09/02	09/10/02	3	20	60	35
1111REG1-CRBL01	US EPA Region 1	E. coli	07/08/03	09/09/03	3	24	40	29
1111REG1-CRBL01	US EPA Region 1	E. coli	07/13/04	09/14/04	3	4	60	12

Station CRWA_229S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	135
#GMI	10
#GMI Ex	1
%GMI Ex	10%
n>STV	3
%n>STV	25%

Variable*	Result
Samples	10
SeasGM	96
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	6
SeasGM	106
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	52
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	64
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	104
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	10
SeasGM	100
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	67
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	81
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	22%

Variable*	Result
Samples	11
SeasGM	94
#GMI	11
#GMI Ex	1
%GMI Ex	9%
n>STV	1
%n>STV	9%

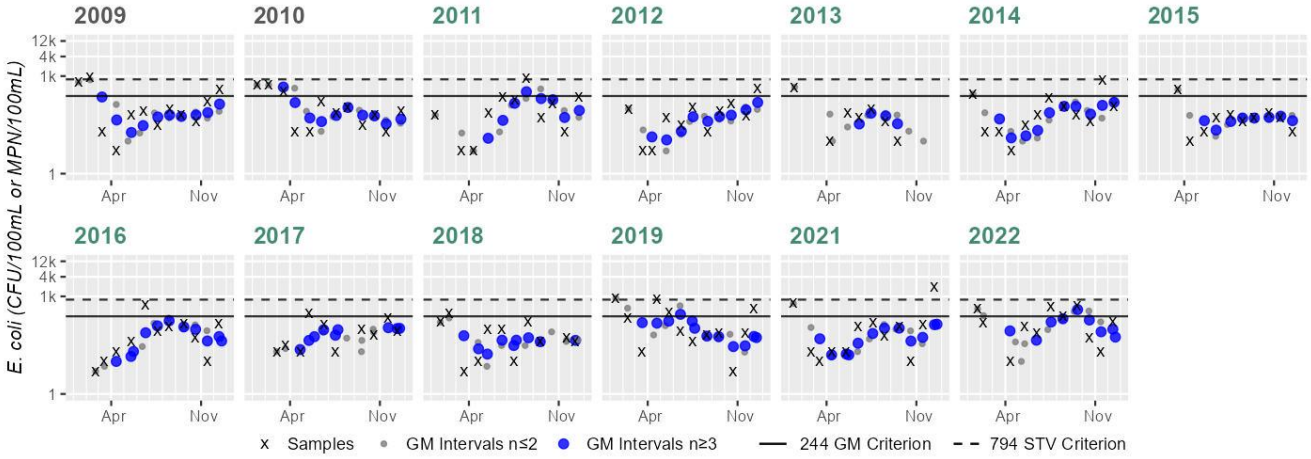
Variable*	Result
Samples	12
SeasGM	84
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
16%	2%	4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_267S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	85
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	86
#GMI	10
#GMI Ex	1
%GMI Ex	10%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	68
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	47
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	49
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	65
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	45
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	47
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	63
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	47
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	107
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	71
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	118
#GMI	9
#GMI Ex	1
%GMI Ex	11%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
5%

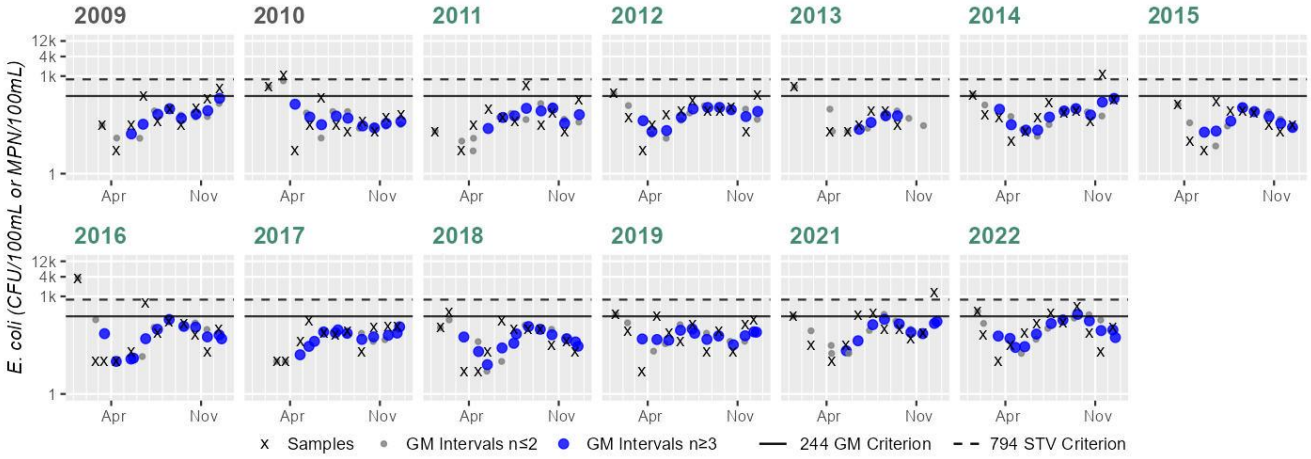
Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
3%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_290S - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	64
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	58
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	47
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	67
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	80
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	10
SeasGM	40
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	67
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	52
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	45
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	68
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	98
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	89
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	0
%n>STV	0%

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

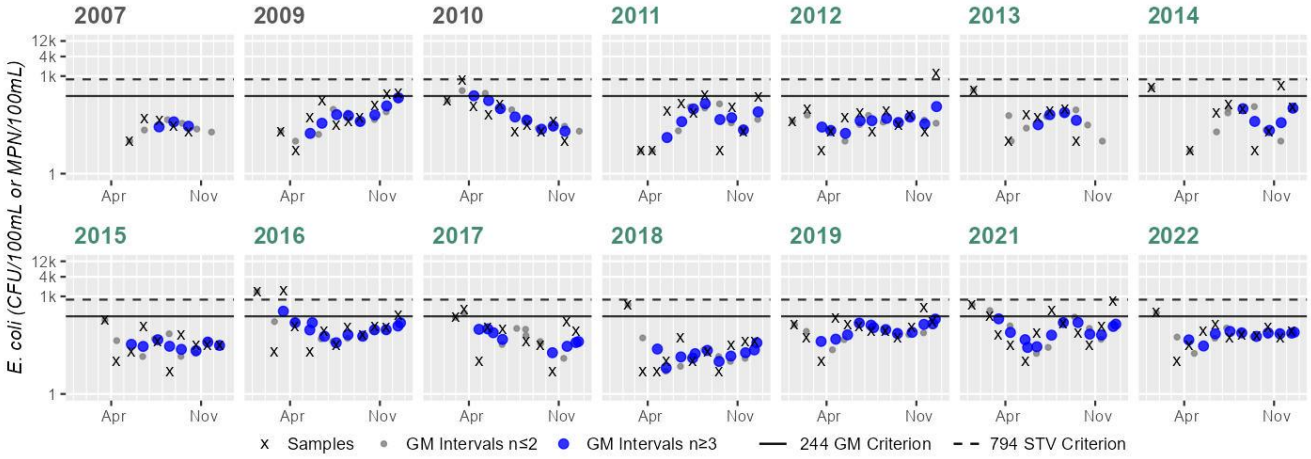
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
1%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_318S & MASSDEP_W1137 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	25
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	59
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	60
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	41
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	47
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	7
SeasGM	51
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	61
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	33
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	117
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	10
SeasGM	62
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	21
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	97
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	106
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

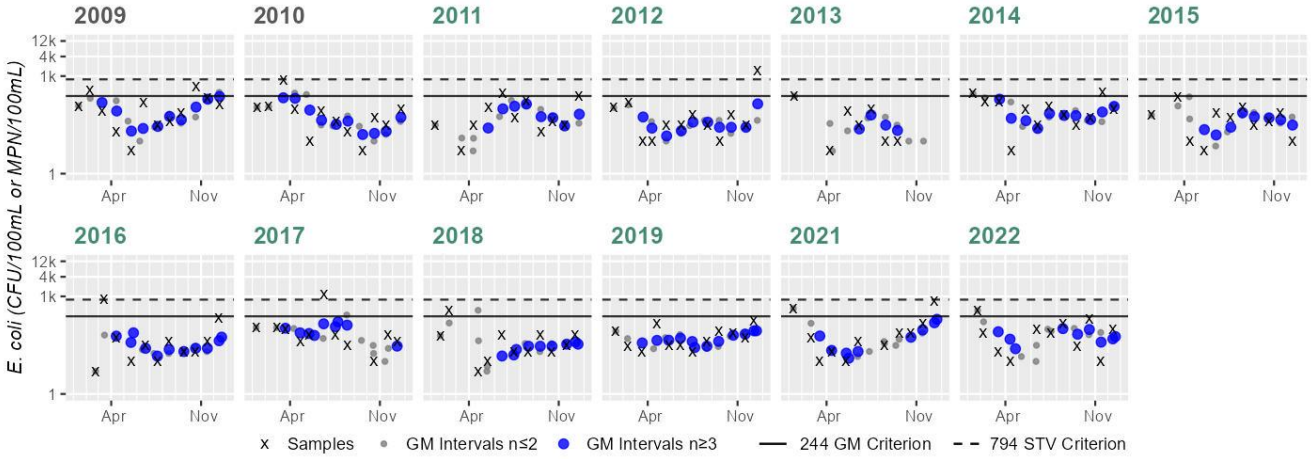
Variable*	Result
Samples	11
SeasGM	66
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
5%	1%	0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_343S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	79
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	53
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	52
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	45
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	7
SeasGM	31
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	76
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	38
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	34
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	69
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	34
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	51
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	59
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	59
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

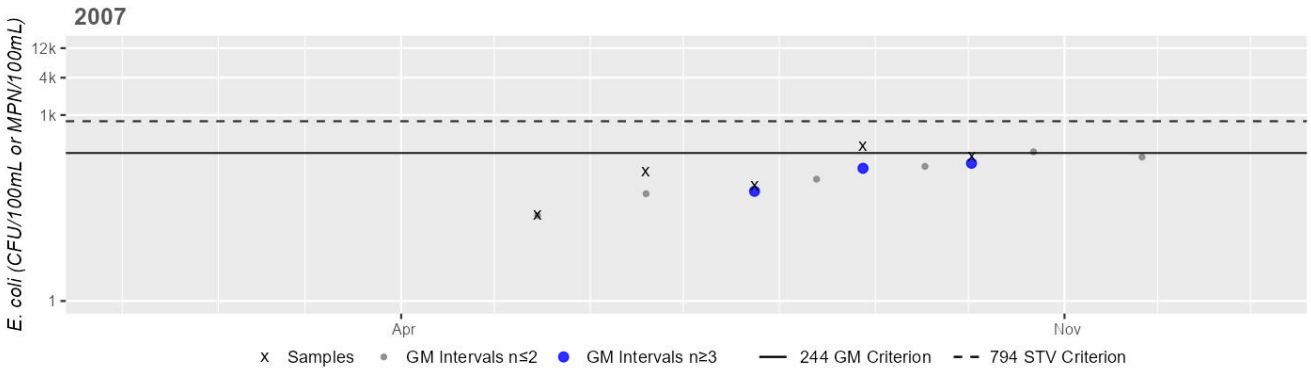
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1136 - Escherichia coli

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



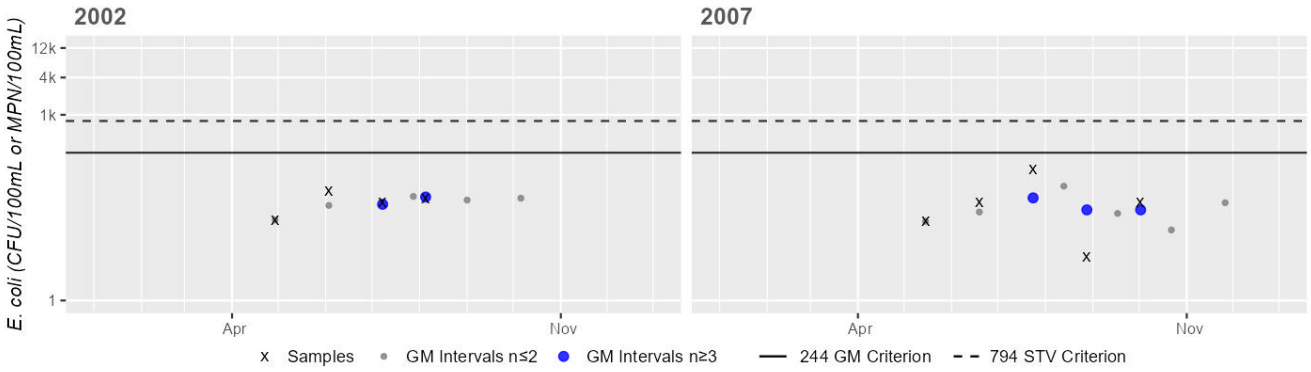
Variable*	Result
Samples	5
SeasGM	105
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1138 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	37
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

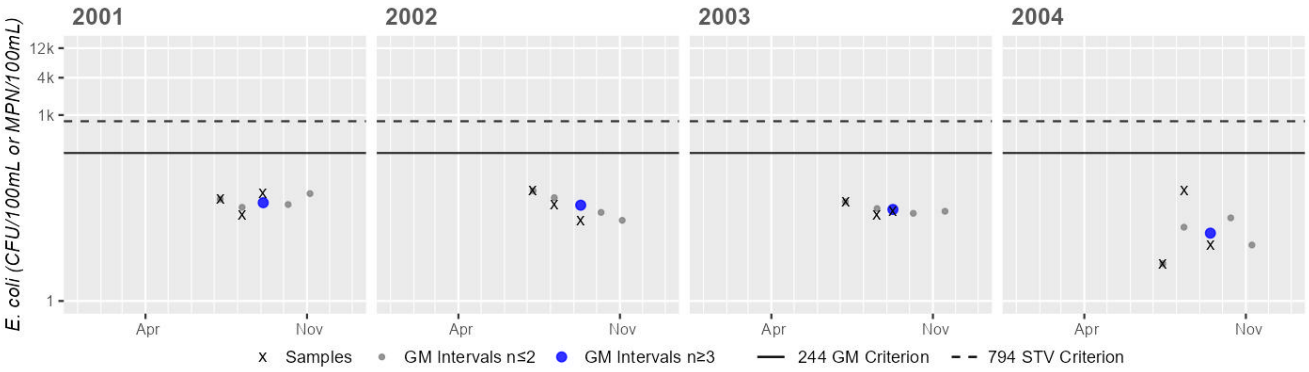
Variable*	Result
Samples	5
SeasGM	28
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL01 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	38
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	35
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	29
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	12
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

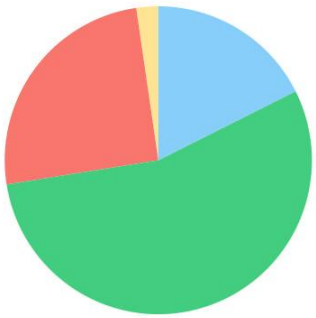
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Charles River (MA72-06)

Location:	From South Natick Dam (NATID: MA00341), Natick to Chestnut Street, Needham/Dover.
AU Type:	RIVER
AU Size:	8.2 MILES
Classification/Qualifier:	B: WWF

Charles River (MA72-06)

Watershed Area: 185.55 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	185.55	12.14	64.86	4.90
Agriculture	2.3%	2.7%	2.1%	2.8%
Developed	25.2%	17.3%	15.6%	9.6%
Natural	54.9%	59.1%	50.7%	54.1%
Wetland	17.6%	20.9%	31.6%	33.5%
Impervious	11.8%	8.6%	7.2%	4.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
5	5	(Fanwort*)	--	Unchanged
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Algae	40317	Unchanged
5	5	Cause Unknown [Fish Population Imbalance]	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Fish Bioassessments	--	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Dam or Impoundment (Y)	X	--	--	--	--
(Fanwort*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Dam or Impoundment (Y)	X	--	--	--	--
(Water Chestnut*)	Dam or Impoundment (Y)	X	--	--	--	--
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Internal Nutrient Recycling (N)	X	--	X	X	X
Algae	Municipal Point Source Discharges (Y)	X	--	X	X	X
Algae	Non-Point Source (N)	X	--	X	X	X
Algae	Unspecified Urban Stormwater (N)	X	--	X	X	X
Algae	Wet Weather Discharges (Non-Point Source) (N)	X	--	X	X	X
Cause Unknown [Fish Population Imbalance]	Source Unknown (N)	X	--	--	--	--
DDT in Fish Tissue	Contaminated Sediments (N)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Fish Bioassessments	Dam or Impoundment (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Internal Nutrient Recycling (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Municipal Point Source Discharges (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Non-Point Source (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Unspecified Urban Stormwater (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Wet Weather Discharges (Non-Point Source) (N)	X	--	X	X	X
PCBs in Fish Tissue	Contaminated Sediments (N)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Wet Weather Discharges (Non-Point Source) (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 this Charles River AU (MA72-06) continues to be assessed as Not Supporting. The prior PCBs in Fish Tissue and DDT in Fish Tissue impairments are being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in the next downstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in the Charles River (referred to by MA DPH as ''Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)'') in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing PCBs and Pesticides advisories in the January 2025 list (the Pesticides advisory is translated by DEP to DDT in Fish Tissue). 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 5)

Summary
Fish toxics sampling was conducted in the next downstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MA DPH retained the existing site-specific fish consumption advisories for PCBs and Pesticides associated with the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) 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, PCBs in Fish Tissue, and DDT in Fish Tissue for this Charles River AU (MA72-06).

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Charles River AU (MA72-06) continues to be assessed as Not Supporting with the prior Nutrient/ Eutrophication Biological Indicators and Algae impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Charles River AU (MA72-06).

Primary Contact Recreation

2024 Impairment	Pollutant Y/N	2024 Source	Confirmed Y/N
Algae	YES	Discharges from Municipal Separate Storm Sewer Systems (MS4)	YES
Algae	YES	Internal Nutrient Recycling	NO
Algae	YES	Municipal Point Source Discharges	YES
Algae	YES	Non-Point Source	NO
Algae	YES	Unspecified Urban Stormwater	NO
Algae	YES	Wet Weather Discharges (Non-Point Source)	NO
Nutrient/Eutrophication Biological Indicators	YES	Discharges from Municipal Separate Storm Sewer Systems (MS4)	YES
Nutrient/Eutrophication Biological Indicators	YES	Internal Nutrient Recycling	NO
Nutrient/Eutrophication Biological Indicators	YES	Municipal Point Source Discharges	YES
Nutrient/Eutrophication Biological Indicators	YES	Non-Point Source	NO
Nutrient/Eutrophication Biological Indicators	YES	Unspecified Urban Stormwater	NO
Nutrient/Eutrophication Biological Indicators	YES	Wet Weather Discharges (Non-Point Source)	NO

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Charles River AU (MA72-06) continues to be assessed as Not Supporting. The prior Algae and Nutrient/Eutrophication Biological Indicators impairments (from the Aesthetics Use) are being carried forward.
CRWA staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples in the Charles River (MA72-06) from 2011-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: toward the upstream end of the AU at CRWA_387S [Elm Bank/Cheney Dr. Bridge] from 2011-2019 and 2021-2022 (EC n=5-7/yr, Ent n=2/yr), in the middle of the AU at CRWA_400S [Charles River Rd. Bridge, Dover/Needham] from 2011-2019 and 2021-2022 (EC n=4-7/yr, Ent n=1-2/yr), and toward the downstream end of the AU at CRWA_447S [Dover Gage, Mill St., Needham] from 2011-2019 and 2021-2022 (EC n=5-7/yr & Ent n=1). Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_387S (2017-2019, 2021-2022) indicated that in 1 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2022, 25%), no years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 4% of intervals had GMs >126 CFU/100mL. Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_400S (2016-2019, 2021) indicated that in 2 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2016 & 2018, 40% & 25%), 0 years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 13% of intervals had GMs >126 CFU/100mL. Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_447S indicated that none of the 5 sufficient data years had >20% of intervals with GMs >126 CFU/100mL, 0 years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 7% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_387S, CRWA_400S, and CRWA_447S meet 2024 CALM guidance. The available *Enterococcus* data from CRWA_387S are too limited to assess according to the 2024 CALM. Note that samples exceeded the 130 CFU/100mL STV in 2022 (n=1), 2021 (n=1), and 2017 (n=1). The available *Enterococcus* data from CRWA_400S are too limited to assess according to the 2024 CALM. Note that samples exceeded the 130 CFU/100mL STV in 2021 (n=1) and 2018 (n=1). The available *Enterococcus* data from CRWA_447S are too limited to assess according to the 2024 CALM. *Enterococcus* data from CRWA_400S, CRWA_447S, and CRWA_387S are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use. In summary, *E. coli* data from CRWA_387S, CRWA_400S, and CRWA_447S meet 2024 CALM guidance, but *Enterococcus* data from the same stations are too limited to assess.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_387S	Charles River Watershed Association	Water Quality	Charles River	Elm Bank/Cheney Dr. Bridge	42.275700	-71.309500
CRWA_400S	Charles River Watershed Association	Water Quality	Charles River	Charles River Rd. Bridge, Dover/Needham	42.269300	-71.299800

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_447S	Charles River Watershed Association	Water Quality	Charles River	Dover Gage, Mill St., Needham	42.256302	-71.259598

Bacteria Data

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

(CRWA 2023) (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
CRWA_387S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	6	10	265	64
CRWA_387S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	5	74	19
CRWA_387S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	262	66
CRWA_387S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	10	52	22
CRWA_387S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	20	106	47
CRWA_387S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	5	96	21
CRWA_387S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	669	36
CRWA_387S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	41	52	46
CRWA_387S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	547	34
CRWA_387S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	20	63	35
CRWA_387S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	41	529	126
CRWA_387S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	41	120	70
CRWA_387S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	31	187	53

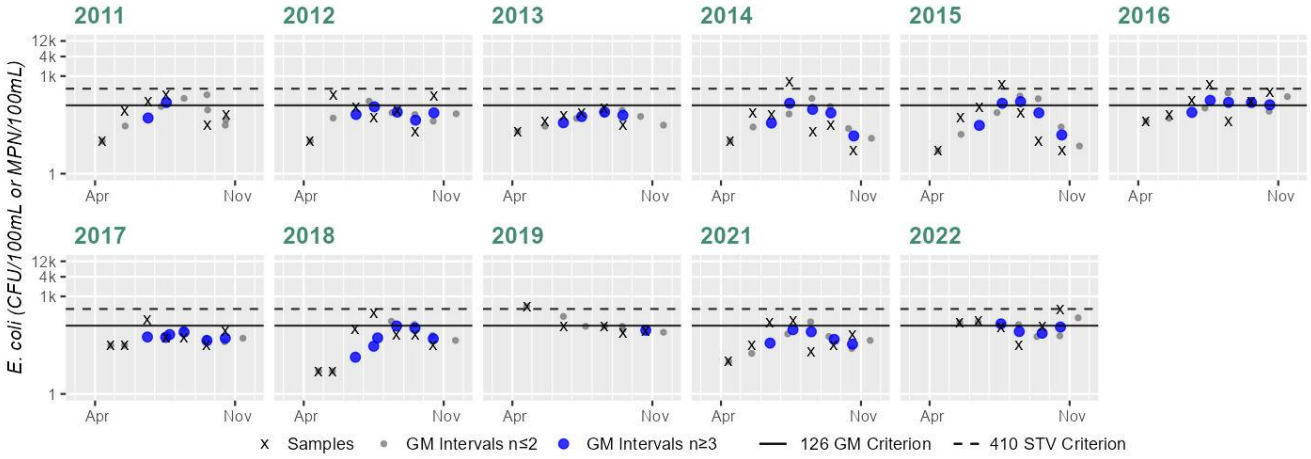
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_387S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	52	134	83
CRWA_387S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	301	36
CRWA_387S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	41	63	50
CRWA_387S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	5	74	487	134
CRWA_387S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	30	31	30
CRWA_387S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	173	44
CRWA_387S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	52	185	98
CRWA_387S	Charles River Watershed Association	E. coli	05/17/22	10/18/22	6	31	399	127
CRWA_387S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	41	146	77
CRWA_400S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	613	64
CRWA_400S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	20	85	41
CRWA_400S	Charles River Watershed Association	E. coli	04/10/12	09/18/12	6	10	512	33
CRWA_400S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	5	31	12
CRWA_400S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	10	109	53
CRWA_400S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	5	74	19
CRWA_400S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	8660	81
CRWA_400S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	5	52	16

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_400S	Charles River Watershed Association	E. coli	05/19/15	10/20/15	6	10	265	64
CRWA_400S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	10	203	45
CRWA_400S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	323	82
CRWA_400S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	30	61	42
CRWA_400S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	10	143	54
CRWA_400S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	41	41	41
CRWA_400S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	6	5	476	48
CRWA_400S	Charles River Watershed Association	Enterococci	06/19/18	06/19/18	1	285	285	285
CRWA_400S	Charles River Watershed Association	E. coli	05/21/19	10/22/19	5	31	148	69
CRWA_400S	Charles River Watershed Association	Enterococci	09/17/19	09/17/19	1	10	10	10
CRWA_400S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	173	40
CRWA_400S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	20	369	85
CRWA_400S	Charles River Watershed Association	E. coli	04/12/22	09/20/22	4	41	160	70
CRWA_400S	Charles River Watershed Association	Enterococci	09/20/22	09/20/22	1	74	74	74
CRWA_447S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	20	537	73
CRWA_447S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	556	54
CRWA_447S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	52	20

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_447S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	86	20
CRWA_447S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	122	38
CRWA_447S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	6	74	354	152
CRWA_447S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	10	305	64
CRWA_447S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	6	5	110	22
CRWA_447S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	40	450	95
CRWA_447S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	31	63	44
CRWA_447S	Charles River Watershed Association	Enterococci	09/21/21	09/21/21	1	31	31	31
CRWA_447S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	97	59

Station CRWA_387S & MASSDEP_W0413 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	64
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	66
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	47
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	36
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	34
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	126
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	53
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	36
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	134
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	7
SeasGM	44
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	127
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

18%

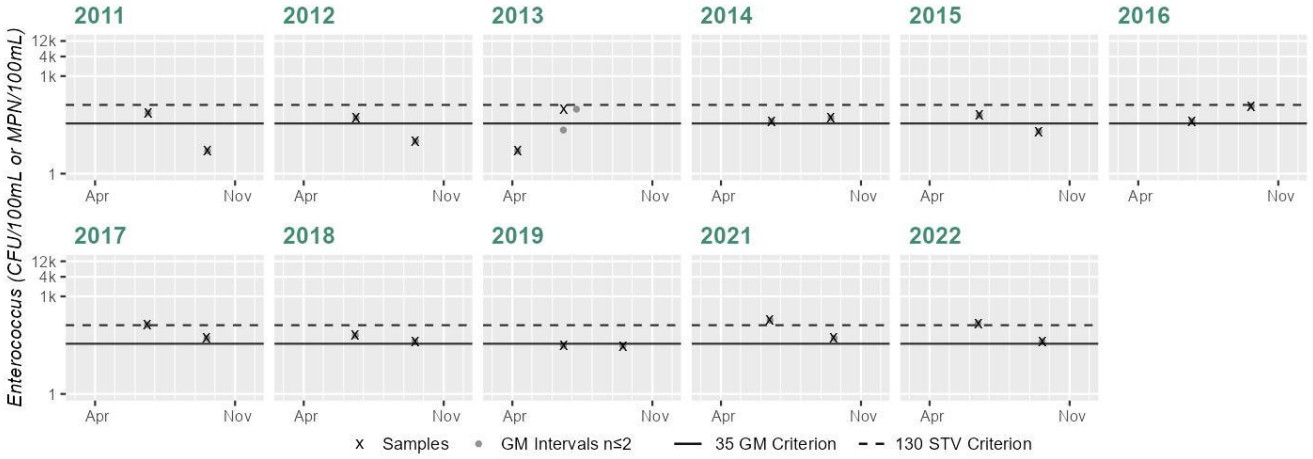
Cumulative %GMI Exceedance Current (Recent 5 Years)

4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_387S & MASSDEP_W0413 - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	19
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	22
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	21
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	46
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	35
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	70
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	83
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	50
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	30
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	98
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

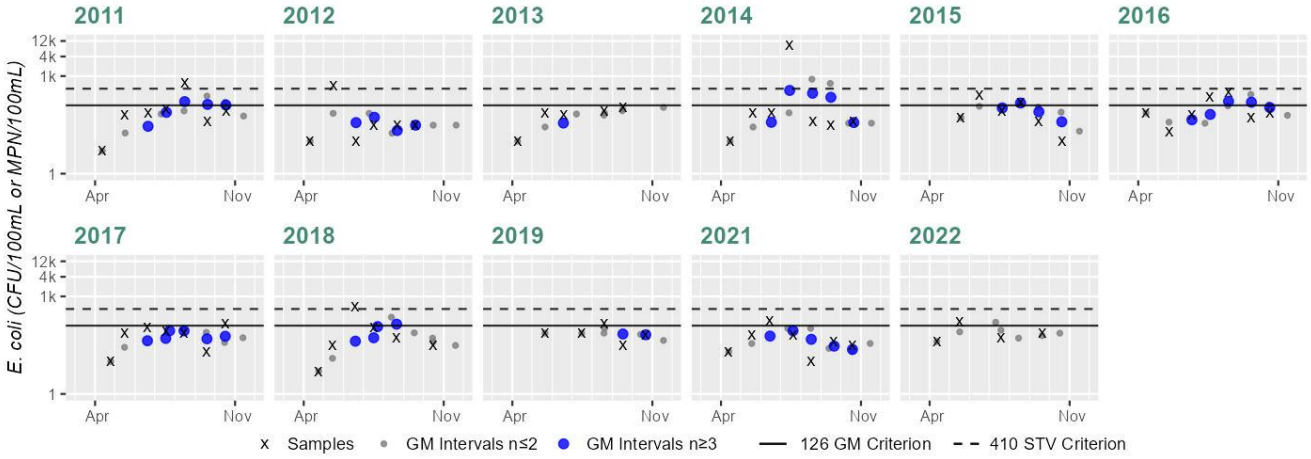
Variable*	Result
Samples	2
SeasGM	77
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_400S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	64
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	33
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	53
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	81
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	64
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	54
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	48
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	69
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	40
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	70
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

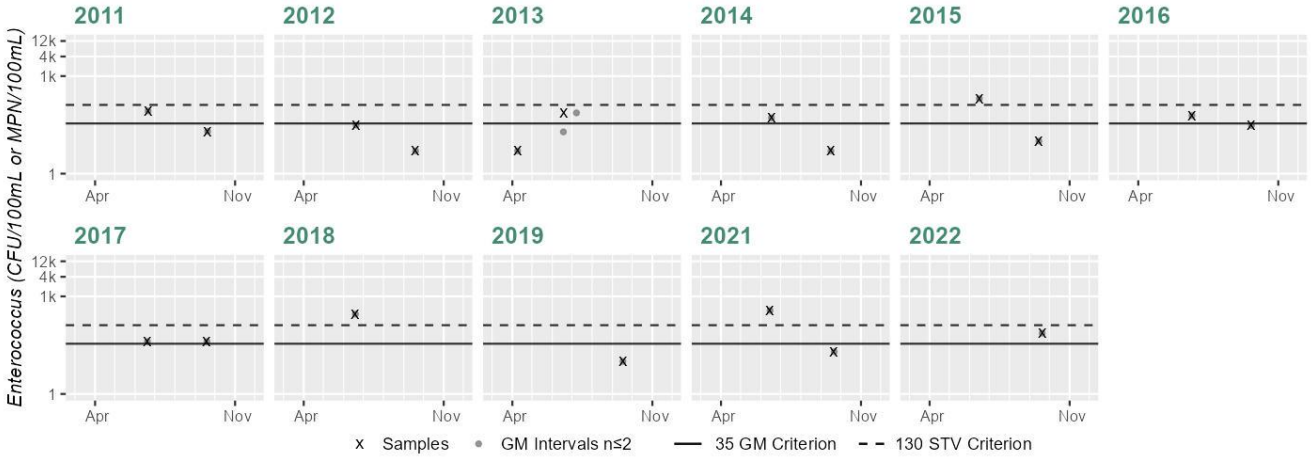
Cumulative %GMI Exceedance Current (2011-2022)
24%

Cumulative %GMI Exceedance Current (Recent 5 Years)
13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_400S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	41
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	12
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	19
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	16
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	45
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	42
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	41
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	285
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	85
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

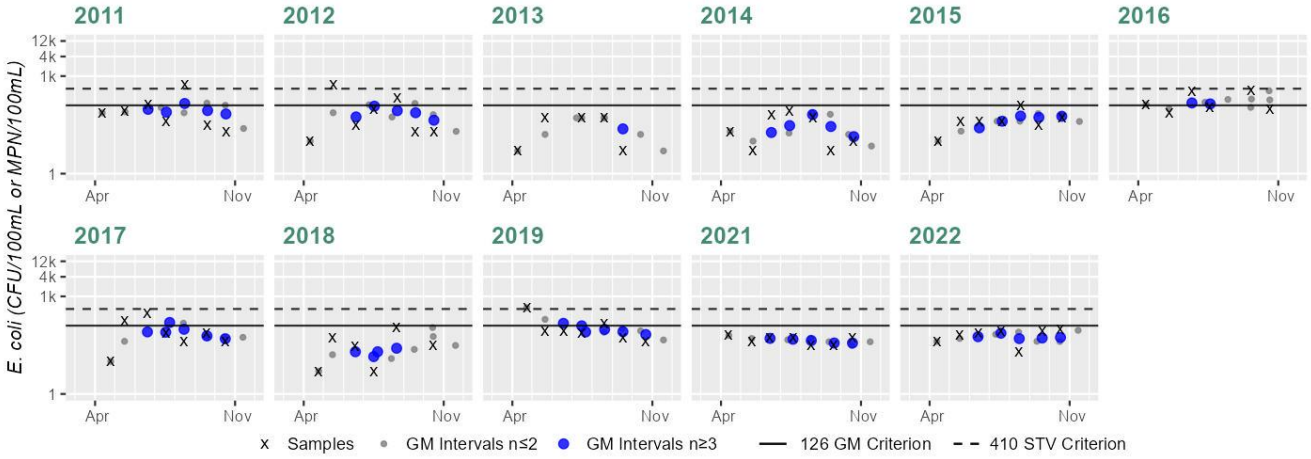
Variable*	Result
Samples	1
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_447S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	54
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

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

Variable*	Result
Samples	7
SeasGM	20
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	152
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	64
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	22
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	95
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	14%

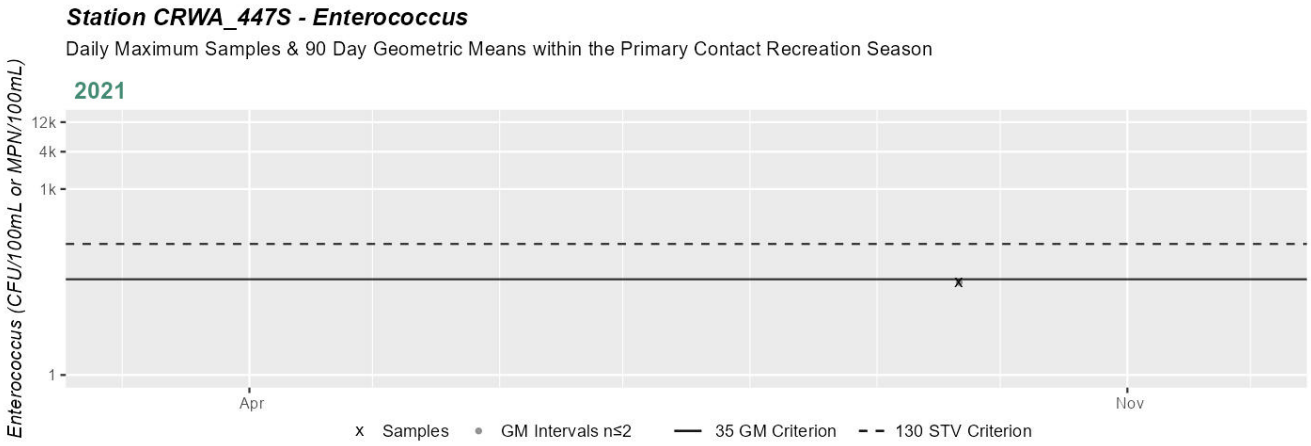
Variable*	Result
Samples	7
SeasGM	44
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	59
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)
10%

Cumulative %GMI Exceedance Current (Recent 5 Years)
7%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*



Variable*	Result
Samples	1
SeasGM	31
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 this Charles River AU (MA72-06) continues to be assessed as Not Supporting. The prior Algae and Nutrient/Eutrophication Biological Indicators impairments (from the Aesthetics Use) are being carried forward.
CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in the Charles River (MA72-06) from 2011-2022 at 3 stations. Samples were collected from the following stations/sample years from upstream to downstream: toward the upstream end of the AU at CRWA_387S [Elm Bank/Cheney Dr. Bridge] from 2011-2019 and 2021-2022 (current n=7-12/yr), in the middle of the AU at CRWA_400S [Charles River Rd. Bridge, Dover/Needham] from 2011-2019 and 2021-2022 (current n=6-12/yr), and toward the downstream end of the AU at CRWA_447S [Dover Gage, Mill St., Needham] from 2011-2019 and 2021-2022 (current n=5-12/yr). Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_387S indicated that none of the 5 sufficient data years had any intervals with GMs >244 CFU/100mL, there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100mL. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_400S indicated that none of the 5 sufficient data years had any intervals with GMs >244 CFU/100mL, there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100mL. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_447S indicated that none of the 5 sufficient data years had any intervals with GMs >244 CFU/100mL, there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_387S, CRWA_400S, and CRWA_447S meet 2024 CALM guidance. CRWA and MassDEP staff/volunteers also collected *E. coli* bacteria samples in the historic IR window (1997-2010) in the Charles River (MA72-06) from 1997-2010 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: the combined CRWA_387S & W0413 station [Cheney St , Wellesley/Dover. & Elm Bank/Cheney Dr. Bridge] from 1997-1998 and 2009-2010 (historic n=2-12/yr), CRWA_400S [Charles River Rd. Bridge, Dover/Needham] from 2009-2010 (historic n=10-11/yr), W1141 [~500 ft downstream of Willow St/S St, Dover/Needham (~1000 ft upstream of USGS Dover gage #01103500)] from May-Oct 2007 (n=5), and CRWA_447S [Dover Gage, Mill St., Needham] from 2009-2010 (historic n=7-8/yr). Historical *E. coli* data from these stations similarly meet 2024 CALM guidance, but since they were collected prior to the current IR window, they cannot be used to positively assess the Secondary Contact Recreation Use of this Charles River AU (MA72-06).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_387S	Charles River Watershed Association	Water Quality	Charles River	Elm Bank/Cheney Dr. Bridge	42.275700	-71.309500

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_400S	Charles River Watershed Association	Water Quality	Charles River	Charles River Rd. Bridge, Dover/Needham	42.269300	-71.299800
CRWA_447S	Charles River Watershed Association	Water Quality	Charles River	Dover Gage, Mill St., Needham	42.256302	-71.259598
W0413	MassDEP	Water Quality	Charles River	[Cheney Street , Wellesley/Dover.]	42.275746	-71.309516
W1141	MassDEP	Water Quality	Charles River	[approximately 500 feet downstream of Willow Street/South Street, Dover/Needham (approximately 1000 feet upstream of USGS Dover gage #01103500)]	42.257814	-71.262561

Bacteria Data

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

(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

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

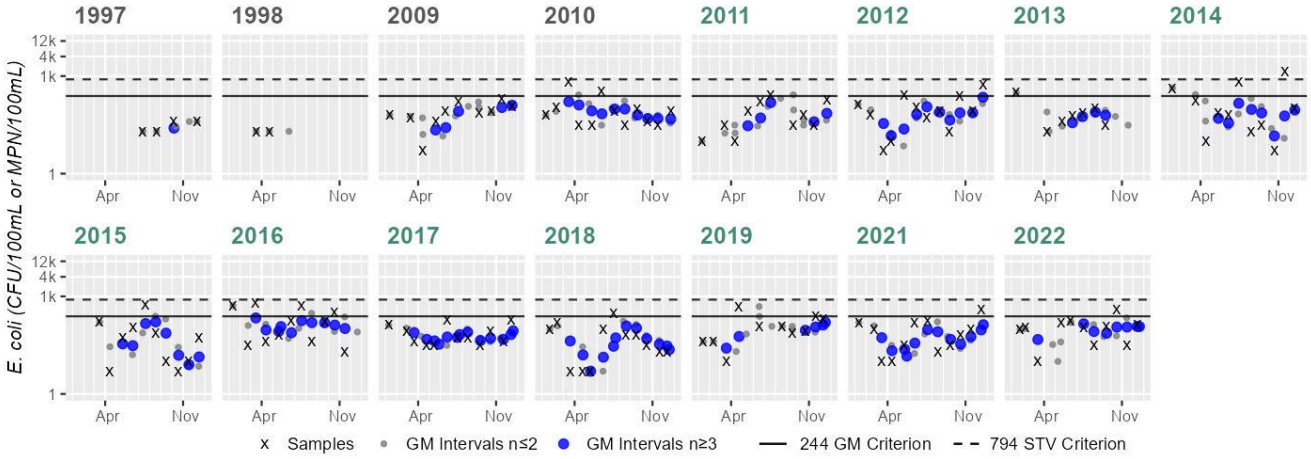
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_387S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	10	5	201	65
CRWA_387S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	31	650	76
CRWA_387S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	10	10	265	51
CRWA_387S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	537	69
CRWA_387S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	20	313	62
CRWA_387S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	5	1400	81
CRWA_387S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	5	547	36
CRWA_387S	Charles River Watershed Association	E. coli	01/12/16	11/15/16	11	20	631	124
CRWA_387S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	31	187	63

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_387S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	301	34
CRWA_387S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	10	10	487	90
CRWA_387S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	393	59
CRWA_387S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	399	85
CRWA_400S	Charles River Watershed Association	E. coli	02/10/09	12/15/09	11	5	309	57
CRWA_400S	Charles River Watershed Association	E. coli	02/09/10	11/16/10	10	30	1220	79
CRWA_400S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	613	43
CRWA_400S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	11	5	583	36
CRWA_400S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	10	295	71
CRWA_400S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	10	8660	121
CRWA_400S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	10	10	683	70
CRWA_400S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	404	104
CRWA_400S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	10	161	70
CRWA_400S	Charles River Watershed Association	E. coli	01/23/18	11/20/18	10	5	476	57
CRWA_400S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	9	10	275	60
CRWA_400S	Charles River Watershed Association	E. coli	01/12/21	11/16/21	11	10	183	45
CRWA_400S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	9	10	160	56

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_447S	Charles River Watershed Association	E. coli	04/14/09	11/17/09	8	20	7270	176
CRWA_447S	Charles River Watershed Association	E. coli	05/18/10	11/16/10	7	20	160	58
CRWA_447S	Charles River Watershed Association	E. coli	04/12/11	11/15/11	8	20	537	65
CRWA_447S	Charles River Watershed Association	E. coli	03/20/12	11/20/12	9	10	556	47
CRWA_447S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	52	20
CRWA_447S	Charles River Watershed Association	E. coli	04/15/14	11/18/14	8	5	638	31
CRWA_447S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	122	38
CRWA_447S	Charles River Watershed Association	E. coli	04/12/16	12/13/16	8	5	354	86
CRWA_447S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	10	305	58
CRWA_447S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	11	5	313	29
CRWA_447S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	10	450	64
CRWA_447S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	20	240	56
CRWA_447S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	20	121	64
W0413	MassDEP	E. coli	07/14/97	12/09/97	4	20	40	28
W0413	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W1141	MassDEP	E. coli	05/15/07	10/02/07	5	5	81	15

Station CRWA_387S & MASSDEP_W0413 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	28
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	65
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	76
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	51
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	69
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	81
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	10
SeasGM	36
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	124
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	63
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	34
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	90
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	59
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	85
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

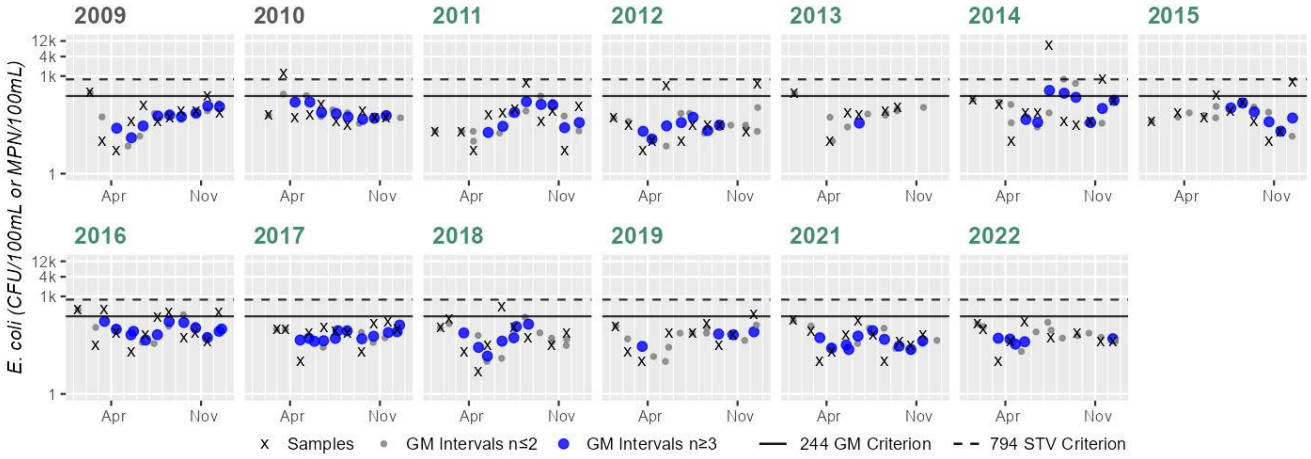
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_400S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	57
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	79
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	43
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	36
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	71
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	121
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	10
SeasGM	70
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	104
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	70
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	57
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	60
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	45
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	56
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

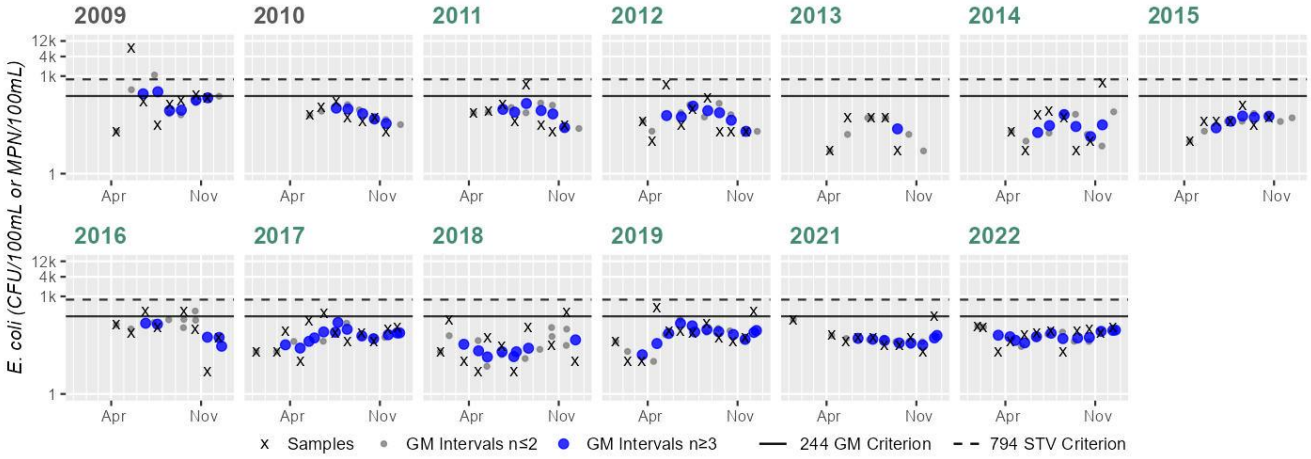
Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_447S - Escherichia coli

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



Variable*	Result
Samples	8
SeasGM	176
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	12%

Variable*	Result
Samples	7
SeasGM	58
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	65
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	47
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Variable*	Result
Samples	8
SeasGM	31
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	86
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	58
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	29
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	64
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	56
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

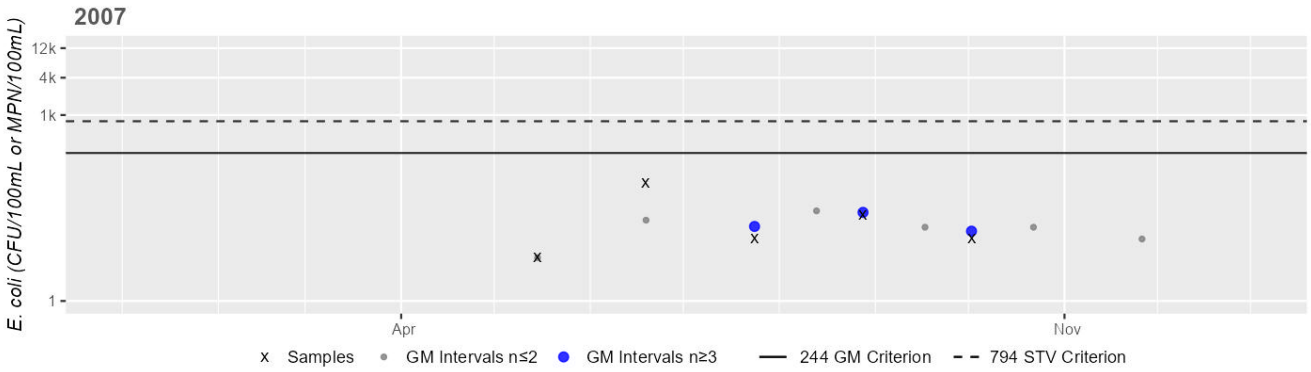
Variable*	Result
Samples	12
SeasGM	64
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
18%	0%	0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1141 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	15
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Charles River (MA72-07)

Location:	From Chestnut Street, Needham/Dover to Watertown Dam (NATID: MA00456), Watertown.
AU Type:	RIVER
AU Size:	24 MILES
Classification/Qualifier:	B: WWF

Charles River (MA72-07)

Watershed Area: 272.41 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	272.41	16.06	95.07	2.91
Agriculture	1.9%	0.8%	1.8%	0.5%
Developed	30.4%	59.8%	18.6%	43.2%
Natural	52.4%	35.2%	51%	42.2%
Wetland	15.3%	4.2%	28.7%	14.1%
Impervious	16.3%	42.2%	9.4%	29.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Added
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Benthic Macroinvertebrates	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Escherichia Coli (E. Coli)	32370	Unchanged
5	5	Fish Bioassessments	--	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Harmful Algal Blooms	40317	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	40317	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(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	--	--	--	--
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
DDT in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (N)	--	--	--	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Fish Bioassessments	Dam or Impoundment (Y)	X	--	--	--	--
Harmful Algal Blooms	Internal Nutrient Recycling (N)	--	--	X	X	X
Harmful Algal Blooms	Municipal Point Source Discharges (Y)	--	--	X	X	X
Harmful Algal Blooms	Non-Point Source (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Municipal Point Source Discharges (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Wet Weather Discharges (Non-Point Source) (N)	X	--	--	--	--
PCBs in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Wet Weather Discharges (Non-Point Source) (N)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	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 this Charles River AU (MA72-07) continues to be assessed as Not Supporting. The prior PCBs in Fish Tissue and DDT in Fish Tissue impairments are being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in this Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in the Charles River (referred to by MA DPH as ''Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)'') in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing PCBs and Pesticides advisories in the January 2025 list (the Pesticides advisory is translated by DEP to DDT in Fish Tissue). 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
F0485	MassDEP	Fish Toxics	Charles River/Charles River Lakes District	[west of Woerd Avenue boat launch, Waltham]	42.362910	-71.245470

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in this Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MA DPH retained the existing site-specific fish consumption advisories for PCBs and Pesticides associated with the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) 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, PCBs in Fish Tissue, and DDT in Fish Tissue for this Charles River AU (MA72-07).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (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 MA DPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: B = bluegill, BC = black crappie, 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
F0485	42	10/10/2022	B	ND	ND	ND	10.90	PFOS
F0485	42	10/10/2022	BC	0.17	0.39	ND	37.00	PFHxS, PFNA, PFOS
F0485	42	10/10/2022	LMB	ND	ND	ND	40.00	PFOS

Aesthetic

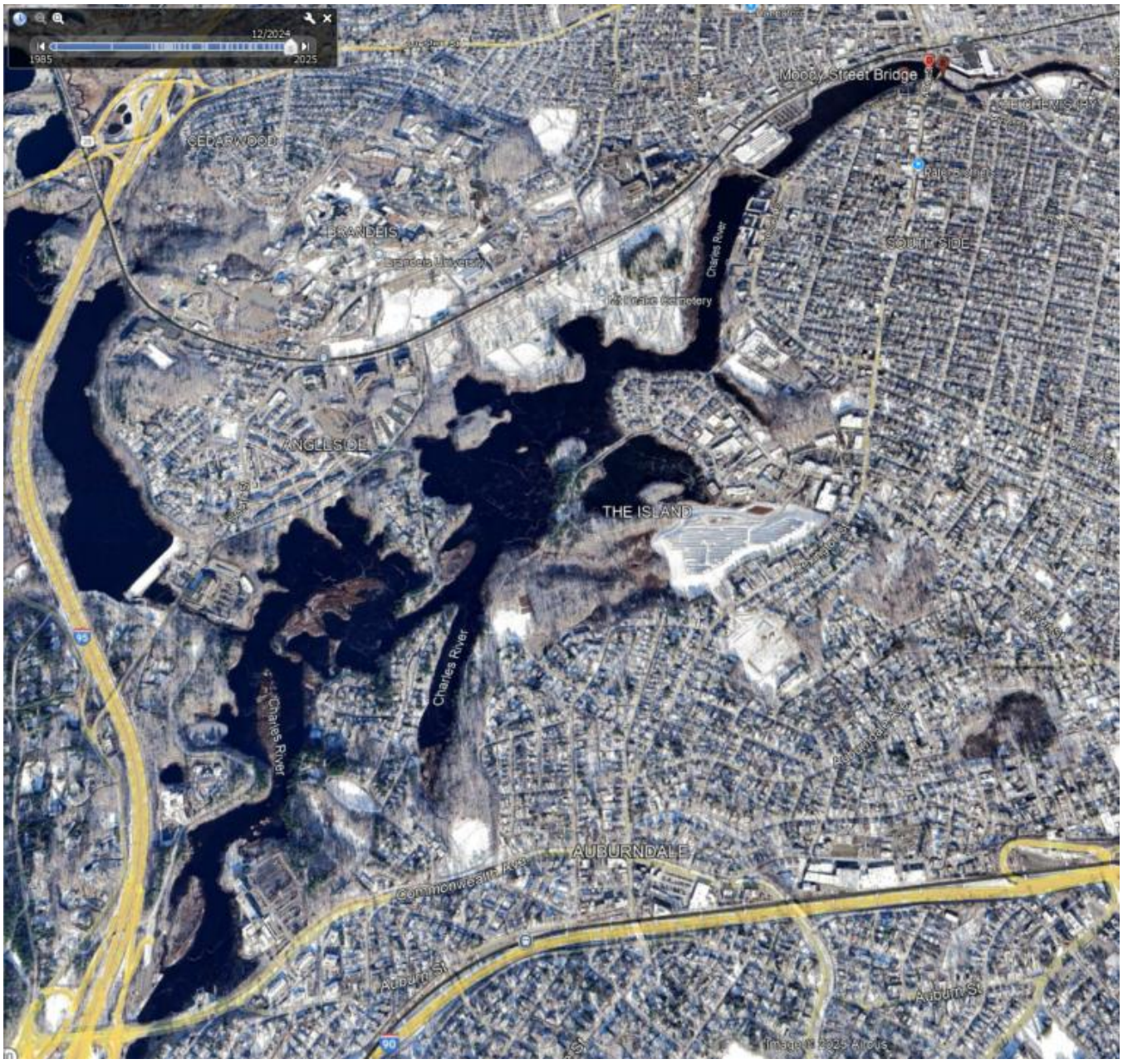
2024/26 Use Attainment	Alert
Not Supporting	NO

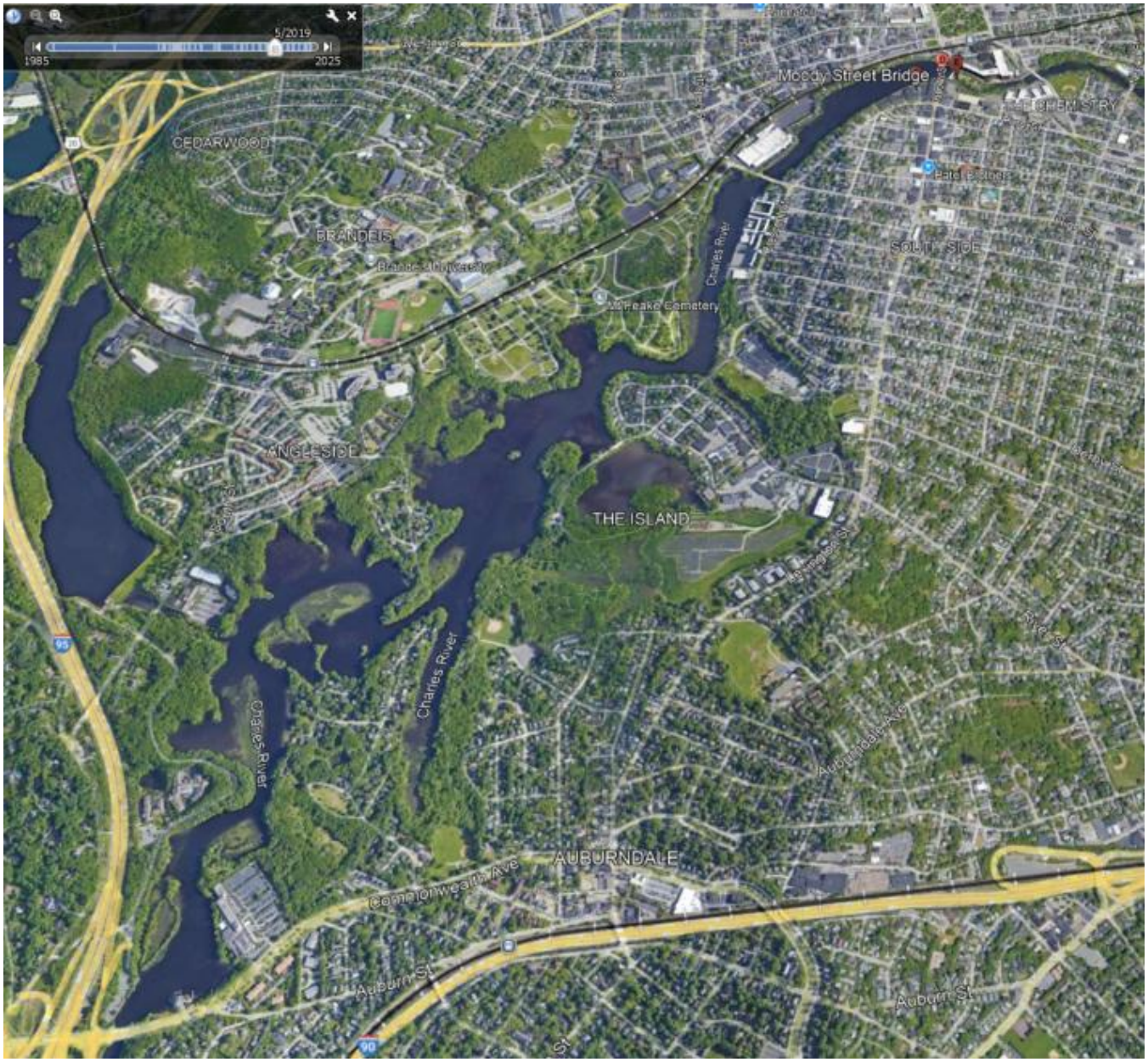
2024/26 Use Attainment Summary

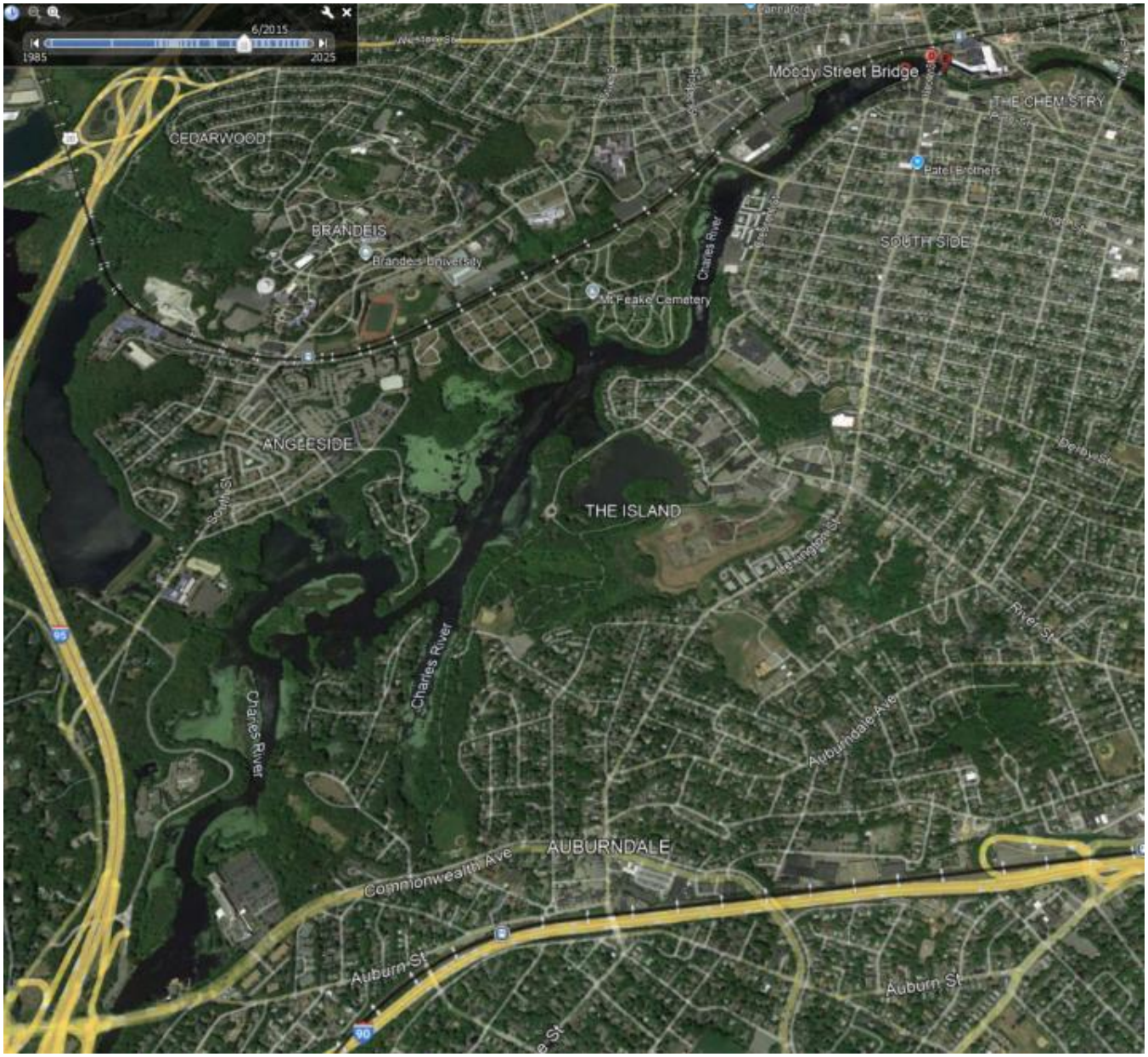
The Aesthetics Use for this Charles River AU (MA72-07) continues to be assessed as Not Supporting with the Harmful Algal Blooms impairment being carried forward. Since the Curly-leaf Pondweed (*Potamogeton crispus*), Water Chestnut (*Trapa natans*) and Eurasian Water Milfoil (*Myriophyllum Spicatum*) impairments were redundantly duplicated across multiple uses for this waterbody, these impairments are being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use.
Since MassDEP staff previously noted that the "Lakes District region" (the 3.1-mile reach between Commonwealth Avenue in Newton and Moody Street Dam in Waltham) experiences "explosive aquatic plant growth" each summer including the non-native macrophyte *Trapa natans*, recognizing an Aesthetics impairment for that 3.1 mile stretch as a result of "a dense non-native macrophyte infestation" (MassDEP 2008) (which equates to dense coverage of plants for more than 10% of the total AU river length) and Google Earth images from July 2014, June 2015 and May 2019 (Google Earth Pro Undated) also show the Lakes District Region with a dense coverage of submergent and emergent vegetation, an Aquatic Plants (Macrophytes) impairment is being added in place of the Curly-leaf Pondweed (Potamogeton crispus), Water Chestnut (Trapa natans) and Eurasian Water Milfoil (Myriophyllum Spicatum) impairments at this time. During the period 2015 through 2022, C-HAB postings for the Charles River were reported to MDPH based on visual observations for 41 days in 2020, 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 the Charles River.

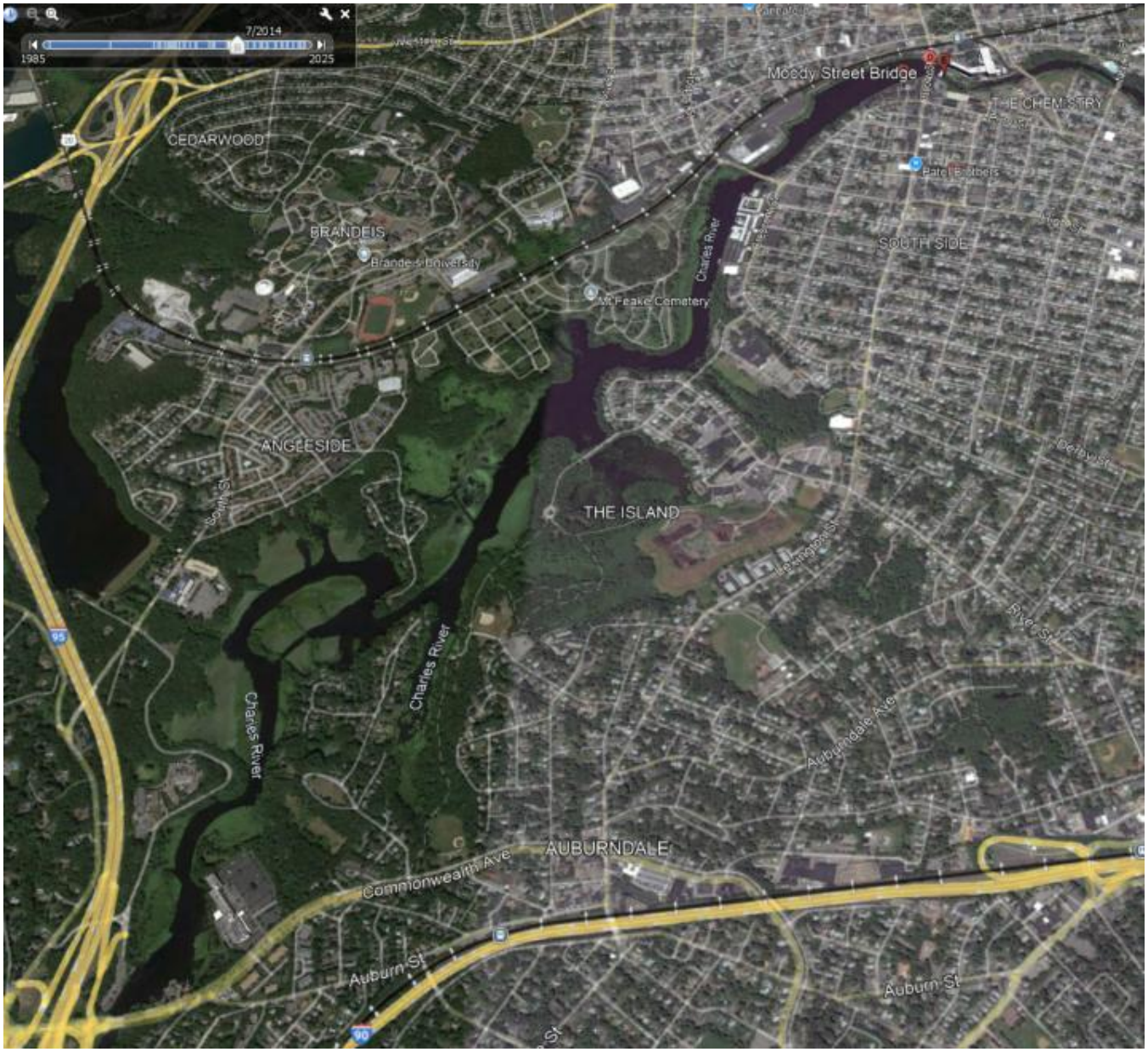
Aesthetic Observations

Charles River (MA72-07) Google Earth Imagery: Lakes District (between Commonwealth Avenue in Newton and Moody Street Dam in Waltham) Outline (2024) Followed by Imagery from May 2019, June 2015, and July 2014 Showing Dense/Very Dense Vegetation Covering >25% of the Surface (Google Earth Pro Undated)


12/2024
1985
2025
Moody Street Bridge
CEDARWOOD
BRANDEIS
SOUTH SIDE
Charles River
ANGELSIDE
THE ISLAND
Charles River
Charles River
AUBURNDALE
Commonwealth Ave
Auburn St
Auburn St
90
95


5/2019
1985
2025
Moody Street Bridge
CEDARWOOD
BRANDEIS
Brandeis University
Mt Feake Cemetery
Charles River
SOUTH SIDE
ANGLESIDE
THE ISLAND
Charles River
Charles River
AUBURNDALE
Commonwealth Ave
Auburn St
Auburn St
95
90


6/2015
1985
2025
Moody Street Bridge
THE CHEMISTRY
CEDARWOOD
Patel Brothers
BRANDEIS
Brandeis University
Mt Feake Cemetery
Charles River
SOUTH SIDE
ANGLESIDE
THE ISLAND
Derby St
River St
Auburndale Ave
AUBURNDALE
Commonwealth Ave
Auburn St
95
90



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 Charles River (MA72-07) were reported to MDPH based on visual observations for 41 days in 2020. 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
Charles River	Newton/Waltham/Weston						41		

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Charles River AU (MA72-07) 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 year, and the Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data from CRWA_484S, CRWA_534S, CRWA_591S, CRWA_609S, CRWA_621S, CRWA_635S, CRWA_675S, and the combined CRWA_012S & MWRA_012 station. An Enterococcus impairment is being added based on bacteria data not meeting the threshold at the combined CRWA_012S & MWRA_012 station, and an Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). The Curly-Leaf Pondweed, Eurasian Water Milfoil (Myriophyllum spicatum), and Water Chestnut impairments are being removed since they were removed from the Aesthetics Use this cycle.
During the period 2015 through 2022, C-HAB postings for Charles River (MA72-07) were reported to MDPH based on visual observations for 41 days in 2020. 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. CRWA and MWRA staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples throughout this MA72-07 AU from 2011-2022 at 12 stations. Samples were collected from upstream to downstream as follows: CRWA_484S [Greendale Av./Lyons S. (Dedham Medical Center)] from 2011-2019 and 2021-2022 (EC n=3-7/yr & Ent n=1), CRWA_521S [Ames St Bridge, Dedham] from 2012-2019 and 2021-2022 (EC n=5-7/yr), CRWA_534S [Rt 109 Bridge, Boston] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=2/yr), CRWA_567S [Nahanton Park, Newton] from 2011-2019 and 2021-2022 (EC n=6-7/yr), CRWA_591S [Rt 9 Gaging Station, Wellesley] from 2011-2019 and 2021-2022 (EC n=1-7/yr), CRWA_609S [Washington St Bridge, Newton] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=2/yr), CRWA_621S [Leo J. Martin Golf Course/Park Rd, Weston] from 2011-2019 and 2021-2022 (EC n=5-7/yr), CRWA_635S [2391 Commonwealth Ave, Newton] from 2011-2019 and 2021-2022 (EC n=4-9/yr & Ent n=1), CRWA_648S [Auburndale Park, Lakes Region, Waltham] from 2011-2019 and 2021-2022 (EC n=5-7/yr), CRWA_662S [Moody St Bridge, Waltham] from 2011-2019 and 2021-2022 (EC n=6-7/yr, Ent n=2/yr), CRWA_675S [North St Bridge, Waltham] from 2011-2019 and 2021-2022 (EC n=6-7/yr & Ent n=1), and the combined CRWA_012S & MWRA_012 station [Watertown Dam Footbridge, Watertown & Charles River, upstream of Watertown Dam and all active CSOs] from 2011-2022 (EC n=18-72/yr, Ent n=15-70). While EC data from CRWA_521S, CRWA_567S, CRWA_648S, and CRWA_662S meet 2024 CALM guidance, EC data from CRWA_484S, CRWA_534S, CRWA_591S, CRWA_609S, CRWA_621S, CRWA_635S, CRWA_675S, and the combined CRWA_012S & MWRA_012 station are reflective of the existing Escherichia Coli (E. Coli) impairment. The stations with data indicating impairment were located throughout the AU. Ent data from the 6 upstream stations were too limited to assess according to the 2024 CALM. Analysis of the recent 5 years (2018-2022) of the multi-year high frequency Ent dataset from the combined CRWA_012S & MWRA_012 station indicated that in all 5 sufficient data years >10% of intervals had GMs >35 CFU/100mL (62-99%), all 5 years had >10% of samples exceed the 130 CFU/100mL STV (20-45%), and cumulatively across the 5 years 88% of intervals had GMs >35 CFU/100mL. These data are indicative of an Enterococcus impairment. Surface water sampling was conducted in this AU (MA72-07) at station W3307 (PFAS Study ID 42) on 10/10/2022 as part of a 2022 MassDEP funded project with ERG evaluating 40 PFAS analytes in selected fresh waters. The concentrations of the 7 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
CRWA_012S	Charles River Watershed Association	Water Quality	Charles River	Charles River 012S (Watertown Dam Footbridge, Watertown)	42.365101	-71.190300
CRWA_484S	Charles River Watershed Association	Water Quality	Charles River	Greendale Ave./Lyons St. (Dedham Medical Center)	42.266998	-71.205002
CRWA_521S	Charles River Watershed Association	Water Quality	Charles River	Ames St. Bridge, Dedham	42.252399	-71.176300
CRWA_534S	Charles River Watershed Association	Water Quality	Charles River	Rt. 109 Bridge, Boston	42.270802	-71.173203
CRWA_567S	Charles River Watershed Association	Water Quality	Charles River	Nahanton Park, Newton	42.297100	-71.207802
CRWA_591S	Charles River Watershed Association	Water Quality	Charles River	Rt. 9 Gaging Station, Wellesley	42.316502	-71.228104
CRWA_609S	Charles River Watershed Association	Water Quality	Charles River	Washington St. Bridge, Newton	42.325199	-71.258499
CRWA_621S	Charles River Watershed Association	Water Quality	Charles River	Leo J. Martin Golf Course/Park Rd., Weston	42.330601	-71.267998
CRWA_635S	Charles River Watershed Association	Water Quality	Charles River	2391 Commonwealth Ave., Newton	42.344799	-71.259903
CRWA_648S	Charles River Watershed Association	Water Quality	Charles River	Auburndale Park, Lakes Region, Waltham	42.361500	-71.250099
CRWA_662S	Charles River Watershed Association	Water Quality	Charles River	Moody St. Bridge, Waltham	42.373200	-71.236702
CRWA_675S	Charles River Watershed Association	Water Quality	Charles River	North St. Bridge, Waltham	42.367199	-71.218201
MWRA_012	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, upstream of Watertown Dam and all active CSOs	42.365073	-71.190224
W3307	MassDEP	Water Quality	Charles River/Charles River Lakes District	[the default location representing co-located water/fish PFAS sampling, in Charles River Lakes District (a Charles River impoundment) west of Woerd Avenue boat launch, Waltham]	42.362910	-71.245470

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2) (MWRA 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
CRWA_012S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	5	20	743	86
CRWA_012S	Charles River Watershed Association	Enterococci	09/20/11	09/20/11	1	10	10	10
CRWA_012S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	6	5	1310	129
CRWA_012S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	30	31	30
CRWA_012S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	41	213	120
CRWA_012S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	41	146	77
CRWA_012S	Charles River Watershed Association	E. coli	04/15/14	11/18/14	7	74	833	324
CRWA_012S	Charles River Watershed Association	Enterococci	06/17/14	06/17/14	1	785	785	784
CRWA_012S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	74	520	167
CRWA_012S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	63	199	111
CRWA_012S	Charles River Watershed Association	E. coli	04/12/16	12/13/16	7	146	3080	433
CRWA_012S	Charles River Watershed Association	Enterococci	06/21/16	12/13/16	2	121	288	186
CRWA_012S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	41	565	156
CRWA_012S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	41	355	120
CRWA_012S	Charles River Watershed Association	E. coli	06/19/18	10/16/18	5	74	1990	414

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_012S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	305	495	388
CRWA_012S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	6	97	545	227
CRWA_012S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	97	160	124
CRWA_012S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	41	233	111
CRWA_012S	Charles River Watershed Association	Enterococci	09/21/21	09/21/21	1	52	52	52
CRWA_012S	Charles River Watershed Association	E. coli	04/12/22	09/20/22	6	41	3870	328
CRWA_012S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	85	2600	470
CRWA_484S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	31	743	88
CRWA_484S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	5	5	74	34
CRWA_484S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	1780	64
CRWA_484S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	650	92
CRWA_484S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	20	413	66
CRWA_484S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	41	8660	636
CRWA_484S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	265	85
CRWA_484S	Charles River Watershed Association	Enterococci	06/20/17	06/20/17	1	74	74	74
CRWA_484S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	228	38
CRWA_484S	Charles River Watershed Association	E. coli	04/23/19	09/17/19	3	52	601	132

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_484S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	10	74	35
CRWA_484S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	1620	177
CRWA_521S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	85	30
CRWA_521S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	199	51
CRWA_521S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	488	48
CRWA_521S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	5	10	173	20
CRWA_521S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	231	72
CRWA_521S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	135	71
CRWA_521S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	74	35
CRWA_521S	Charles River Watershed Association	E. coli	04/23/19	08/20/19	5	10	583	92
CRWA_521S	Charles River Watershed Association	E. coli	05/18/21	10/19/21	6	20	226	64
CRWA_521S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	52	173	86
CRWA_534S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	20	809	111
CRWA_534S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	20	41	28
CRWA_534S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	156	46
CRWA_534S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	5	41	14
CRWA_534S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	31	185	55

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_534S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	5	108	23
CRWA_534S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	19900	140
CRWA_534S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	41	119	69
CRWA_534S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	20	520	114
CRWA_534S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	20	187	61
CRWA_534S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	63	9210	534
CRWA_534S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	74	691	226
CRWA_534S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	299	94
CRWA_534S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	10	31	17
CRWA_534S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	571	62
CRWA_534S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	30	547	128
CRWA_534S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	52	733	126
CRWA_534S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	20	41	28
CRWA_534S	Charles River Watershed Association	E. coli	05/18/21	10/19/21	6	41	318	85
CRWA_534S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	63	528	182
CRWA_534S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	63	5790	390
CRWA_534S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	789	1520	1095

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_567S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	1080	72
CRWA_567S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	63	22
CRWA_567S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	135	30
CRWA_567S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	201	32
CRWA_567S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	6	20	41	28
CRWA_567S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	109	25
CRWA_567S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	173	59
CRWA_567S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	278	79
CRWA_567S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	6	30	1470	89
CRWA_567S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	20	246	75
CRWA_567S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	836	57
CRWA_591S	Charles River Watershed Association	E. coli	05/17/11	10/18/11	6	63	723	158
CRWA_591S	Charles River Watershed Association	E. coli	04/10/12	04/10/12	1	5	5	4
CRWA_591S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	160	45
CRWA_591S	Charles River Watershed Association	E. coli	04/15/14	09/16/14	5	20	24200	147
CRWA_591S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	435	54
CRWA_591S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	504	127

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_591S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	5	213	59
CRWA_591S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	31	24200	208
CRWA_591S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	6	20	563	90
CRWA_591S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	20	601	59
CRWA_591S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	1940	124
CRWA_609S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	813	100
CRWA_609S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	31	63	44
CRWA_609S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	6	20	195	77
CRWA_609S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	10	10	10
CRWA_609S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	275	78
CRWA_609S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	10	108	32
CRWA_609S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	373	65
CRWA_609S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	10	213	46
CRWA_609S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	228	62
CRWA_609S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	5	98	22
CRWA_609S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	6	20	399	98
CRWA_609S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	52	97	71

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_609S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	10	613	73
CRWA_609S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	31	246	87
CRWA_609S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	958	97
CRWA_609S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	110	637	264
CRWA_609S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	5	627	63
CRWA_609S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	20	41	28
CRWA_609S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	546	73
CRWA_609S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	10	880	93
CRWA_609S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	933	122
CRWA_609S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	31	305	97
CRWA_621S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	20	4610	164
CRWA_621S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	187	82
CRWA_621S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	121	40
CRWA_621S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	798	133
CRWA_621S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	223	42
CRWA_621S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	63	1150	158
CRWA_621S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	512	72

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_621S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	6870	138
CRWA_621S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	31	586	99
CRWA_621S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	5	10	109	47
CRWA_621S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	1200	177
CRWA_635S	Charles River Watershed Association	E. coli	04/12/11	09/20/11	9	41	1720	210
CRWA_635S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	41	404	114
CRWA_635S	Charles River Watershed Association	E. coli	04/09/13	08/20/13	5	20	173	82
CRWA_635S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	145	78
CRWA_635S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	727	94
CRWA_635S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	4	74	3080	487
CRWA_635S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	5	733	188
CRWA_635S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	3260	119
CRWA_635S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	51	457	174
CRWA_635S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	223	87
CRWA_635S	Charles River Watershed Association	Enterococci	09/21/21	09/21/21	1	10	10	10
CRWA_635S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	669	139
CRWA_648S	Charles River Watershed Association	E. coli	05/17/11	10/18/11	6	51	1110	110

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_648S	Charles River Watershed Association	E. coli	06/19/12	10/16/12	5	41	110	77
CRWA_648S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	148	60
CRWA_648S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	145	48
CRWA_648S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	98	36
CRWA_648S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	195	37
CRWA_648S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	195	96
CRWA_648S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	146	73
CRWA_648S	Charles River Watershed Association	E. coli	05/21/19	10/22/19	5	52	146	82
CRWA_648S	Charles River Watershed Association	E. coli	04/13/21	09/21/21	5	10	135	47
CRWA_648S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	369	70
CRWA_662S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	839	79
CRWA_662S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	5	10	7
CRWA_662S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	20	419	91
CRWA_662S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	5	10	7
CRWA_662S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	135	73
CRWA_662S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	5	86	20
CRWA_662S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	402	68

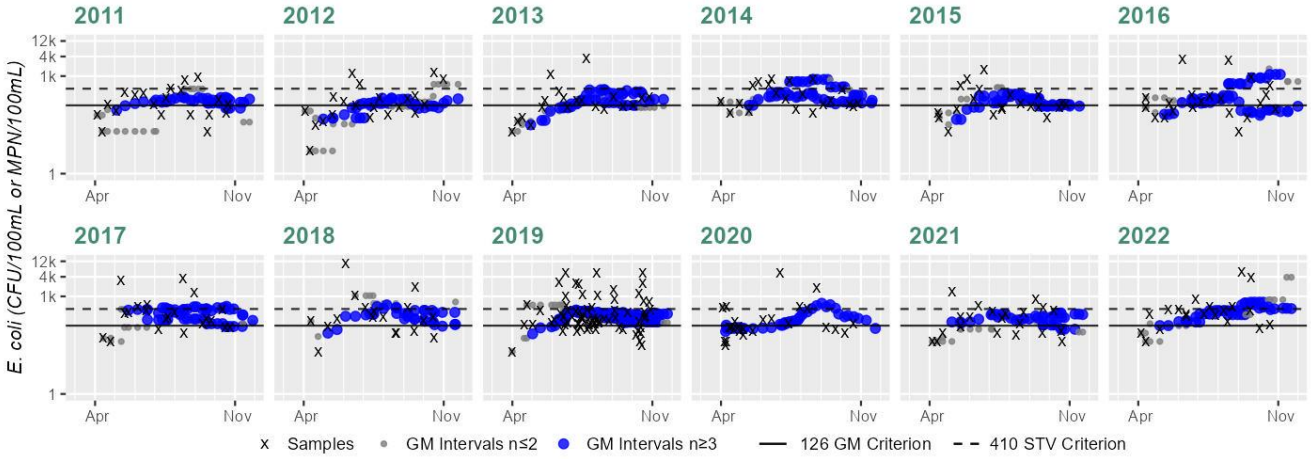
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_662S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	31	96	54
CRWA_662S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	213	35
CRWA_662S	Charles River Watershed Association	Enterococci	06/16/15	09/15/15	2	31	73	47
CRWA_662S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	73	759	186
CRWA_662S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	31	299	96
CRWA_662S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	41	231	111
CRWA_662S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	31	52	40
CRWA_662S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	20	213	69
CRWA_662S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	5	97	22
CRWA_662S	Charles River Watershed Association	E. coli	05/21/19	10/22/19	6	30	110	42
CRWA_662S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	30	31	30
CRWA_662S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	171	69
CRWA_662S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	30	218	80
CRWA_662S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	780	84
CRWA_662S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	20	156	55
CRWA_675S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	52	985	162
CRWA_675S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	31	613	233

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_675S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	131	309	183
CRWA_675S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	52	1370	242
CRWA_675S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	554	166
CRWA_675S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	63	1420	256
CRWA_675S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	74	426	183
CRWA_675S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	20	573	146
CRWA_675S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	86	631	248
CRWA_675S	Charles River Watershed Association	Enterococci	06/18/19	06/18/19	1	84	84	83
CRWA_675S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	52	586	108
CRWA_675S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	3260	371
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/04/11	10/21/11	15	63	933	166
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/04/11	10/21/11	15	10	426	48
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/02/12	10/31/12	15	31	1240	135
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/02/12	10/31/12	16	10	1040	44
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/01/13	10/28/13	14	20	3450	168
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/01/13	10/28/13	16	10	959	40
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/01/14	10/27/14	14	74	663	191

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/01/14	10/27/14	16	10	448	25
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/16/15	10/27/15	14	20	1620	138
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/16/15	10/27/15	15	10	96	19
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/11/16	10/27/16	14	20	3260	116
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/11/16	10/27/16	15	10	591	22
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/14/17	10/24/17	14	52	3450	344
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/14/17	10/24/17	15	10	359	56
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/12/18	10/18/18	13	20	10500	193
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/12/18	10/18/18	13	10	1620	46
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/01/19	12/16/19	66	20	5170	277
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/01/19	12/16/19	68	10	9800	128
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/03/20	10/20/20	25	31	5170	160
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/03/20	10/20/20	25	10	11200	54
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/05/21	12/21/21	15	41	1420	206
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/05/21	12/21/21	15	10	1720	99
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/05/22	11/14/22	14	74	5790	305
MWRA_012	Massachusetts Water Resources Authority	Enterococci	04/05/22	10/20/22	15	10	17300	61

Station CRWA_012S & MASSDEP_W0384 & MWRA_012 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	141
#GMI	41
#GMI Ex	33
%GMI Ex	80%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	21
SeasGM	133
#GMI	40
#GMI Ex	24
%GMI Ex	60%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	20
SeasGM	152
#GMI	50
#GMI Ex	40
%GMI Ex	80%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	21
SeasGM	228
#GMI	57
#GMI Ex	57
%GMI Ex	100%
n>STV	6
%n>STV	28%

Variable*	Result
Samples	21
SeasGM	147
#GMI	54
#GMI Ex	37
%GMI Ex	68%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	21
SeasGM	180
#GMI	57
#GMI Ex	39
%GMI Ex	68%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	21
SeasGM	264
#GMI	56
#GMI Ex	51
%GMI Ex	91%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	18
SeasGM	238
#GMI	38
#GMI Ex	34
%GMI Ex	89%
n>STV	5
%n>STV	27%

Variable*	Result
Samples	72
SeasGM	273
#GMI	174
#GMI Ex	171
%GMI Ex	98%
n>STV	18
%n>STV	25%

Variable*	Result
Samples	25
SeasGM	160
#GMI	45
#GMI Ex	30
%GMI Ex	66%
n>STV	5
%n>STV	20%

Variable*	Result
Samples	21
SeasGM	172
#GMI	42
#GMI Ex	38
%GMI Ex	90%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	20
SeasGM	312
#GMI	48
#GMI Ex	48
%GMI Ex	100%
n>STV	5
%n>STV	25%

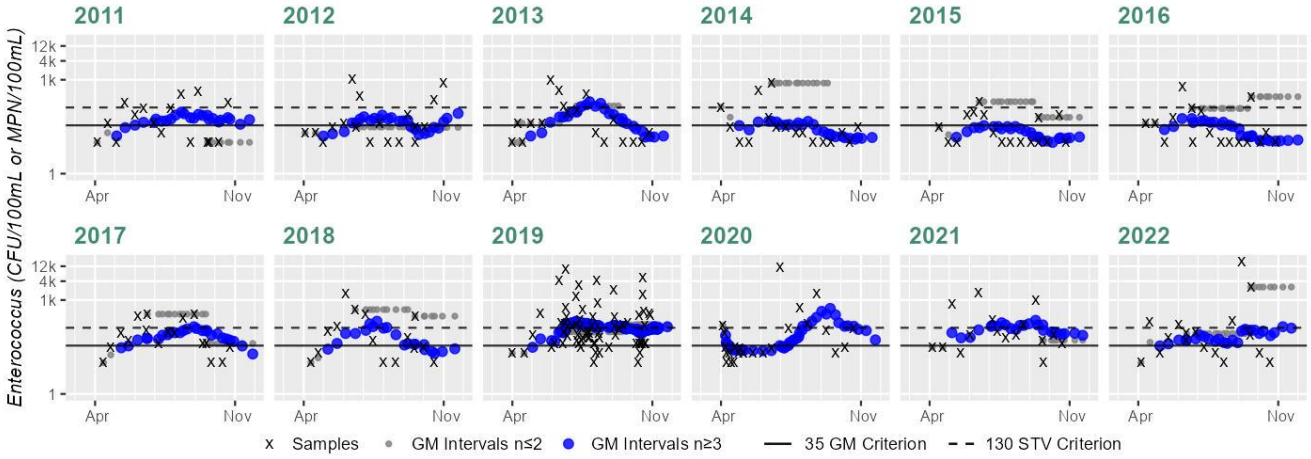
Cumulative %GMI Exceedance Current (2011-2022)
85%

Cumulative %GMI Exceedance Current (Recent 5 Years)
92%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_012S & MASSDEP_W0384 & MWRA_012 - Enterococcus

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



Variable*	Result
Samples	16
SeasGM	43
#GMI	27
#GMI Ex	23
%GMI Ex	85%
n>STV	4
%n>STV	25%

Variable*	Result
Samples	18
SeasGM	43
#GMI	30
#GMI Ex	19
%GMI Ex	63%
n>STV	4
%n>STV	22%

Variable*	Result
Samples	18
SeasGM	43
#GMI	30
#GMI Ex	19
%GMI Ex	63%
n>STV	4
%n>STV	22%

Variable*	Result
Samples	17
SeasGM	30
#GMI	29
#GMI Ex	11
%GMI Ex	37%
n>STV	3
%n>STV	17%

Variable*	Result
Samples	17
SeasGM	24
#GMI	28
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	17
SeasGM	29
#GMI	29
#GMI Ex	10
%GMI Ex	34%
n>STV	2
%n>STV	11%

Variable*	Result
Samples	17
SeasGM	61
#GMI	29
#GMI Ex	23
%GMI Ex	79%
n>STV	4
%n>STV	23%

Variable*	Result
Samples	15
SeasGM	61
#GMI	22
#GMI Ex	15
%GMI Ex	68%
n>STV	5
%n>STV	33%

Variable*	Result
Samples	70
SeasGM	128
#GMI	122
#GMI Ex	121
%GMI Ex	99%
n>STV	32
%n>STV	45%

Variable*	Result
Samples	25
SeasGM	54
#GMI	45
#GMI Ex	28
%GMI Ex	62%
n>STV	5
%n>STV	20%

Variable*	Result
Samples	16
SeasGM	95
#GMI	27
#GMI Ex	25
%GMI Ex	92%
n>STV	5
%n>STV	31%

Variable*	Result
Samples	17
SeasGM	78
#GMI	28
#GMI Ex	26
%GMI Ex	92%
n>STV	5
%n>STV	29%

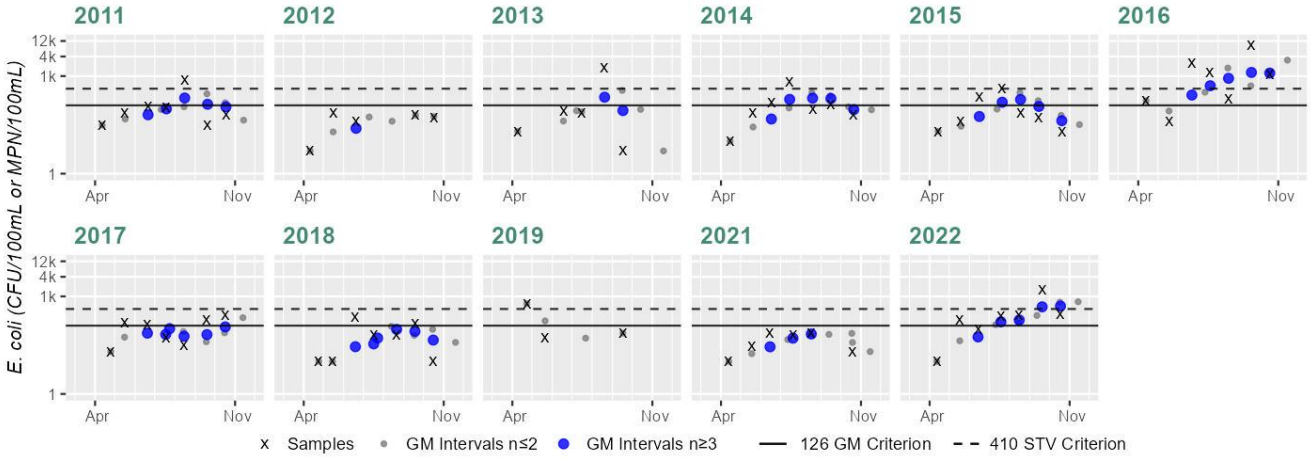
Cumulative %GMI Exceedance Current (2011-2022)
71%

Cumulative %GMI Exceedance Current (Recent 5 Years)
88%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_484S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	88
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	34
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	64
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	7
SeasGM	92
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	66
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	636
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	85
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	38
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	132
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	33%

Variable*	Result
Samples	6
SeasGM	35
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	177
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance Current (2011-2022)

39%

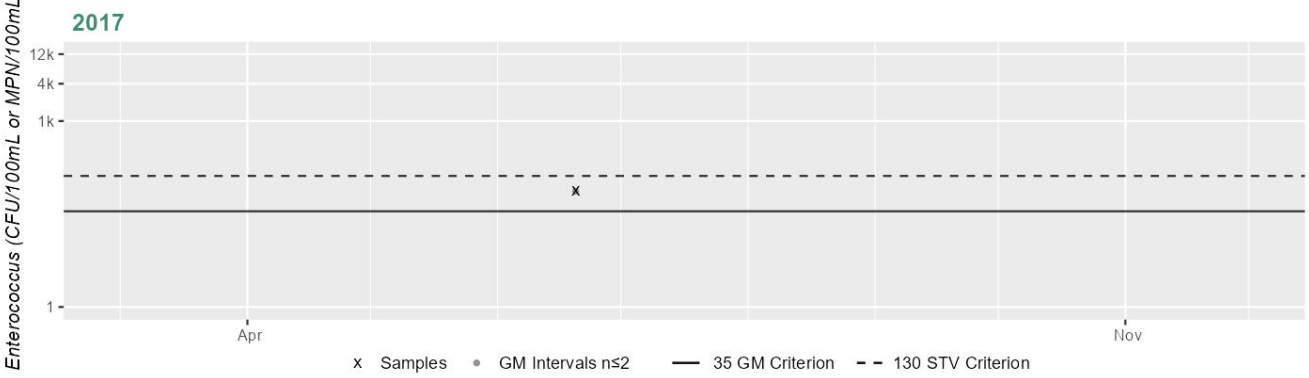
Cumulative %GMI Exceedance Current (Recent 5 Years)

36%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_484S - Enterococcus

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



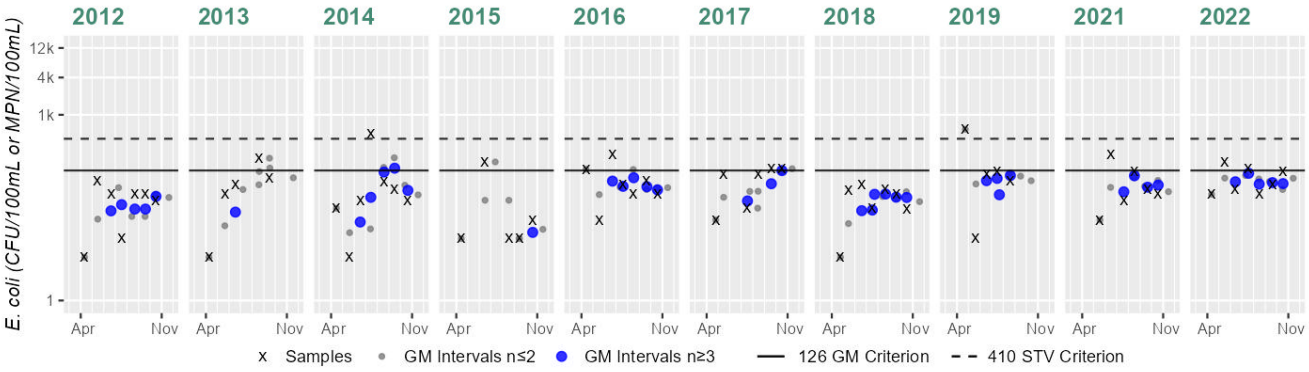
Variable*	Result
Samples	1
SeasGM	74
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_521S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	30
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	51
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	48
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

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

Variable*	Result
Samples	7
SeasGM	72
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	71
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	35
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	92
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	6
SeasGM	64
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	86
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

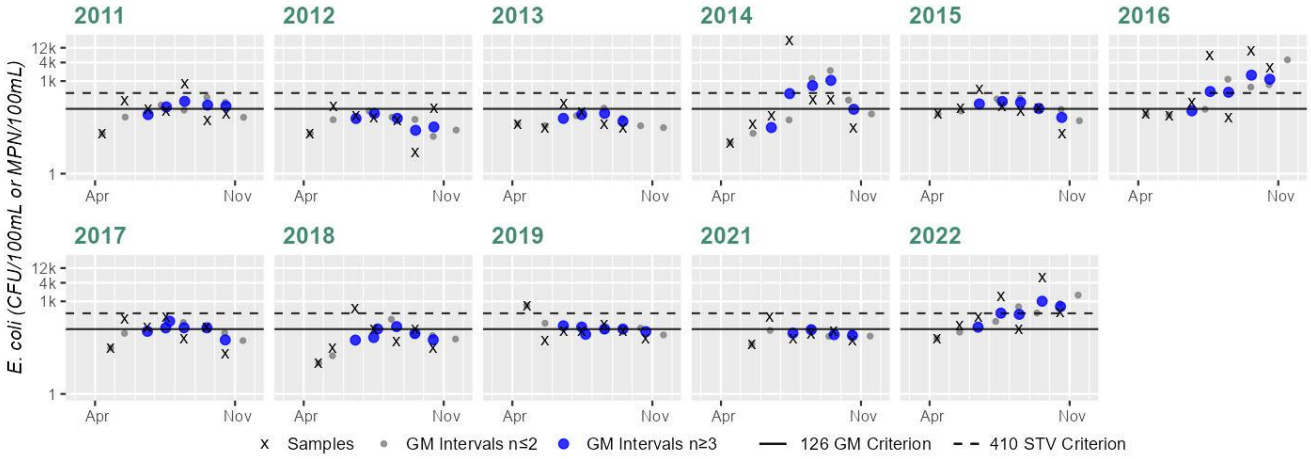
Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_534S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	111
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	46
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	55
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	140
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	114
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	534
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	94
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	126
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	85
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	390
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	42%

Cumulative %GMI Exceedance Current (2011-2022)

53%

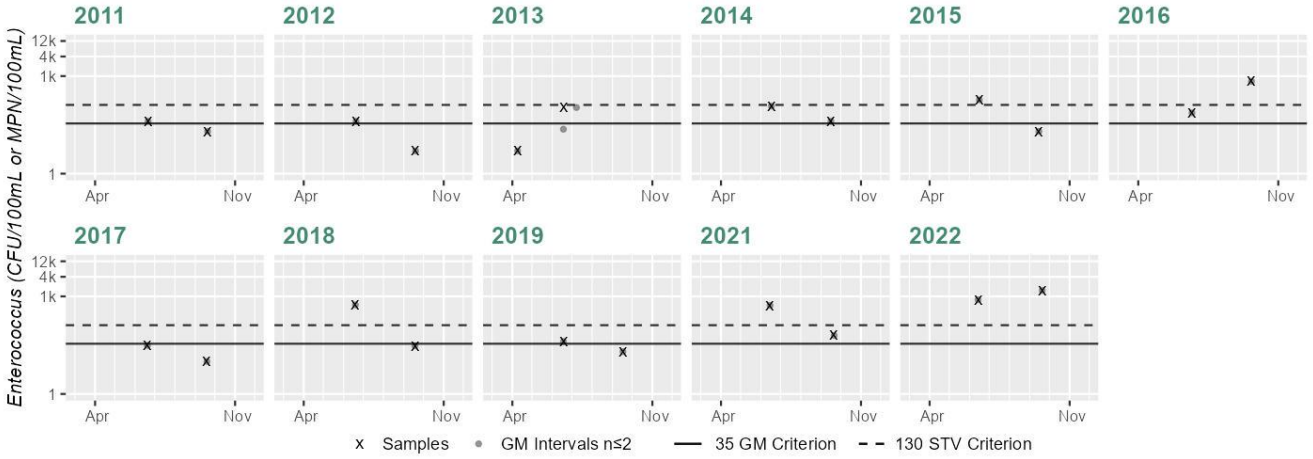
Cumulative %GMI Exceedance Current (Recent 5 Years)

55%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_534S - Enterococcus

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



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

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	23
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	69
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	61
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	226
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	17
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	128
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

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

Variable*	Result
Samples	2
SeasGM	182
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

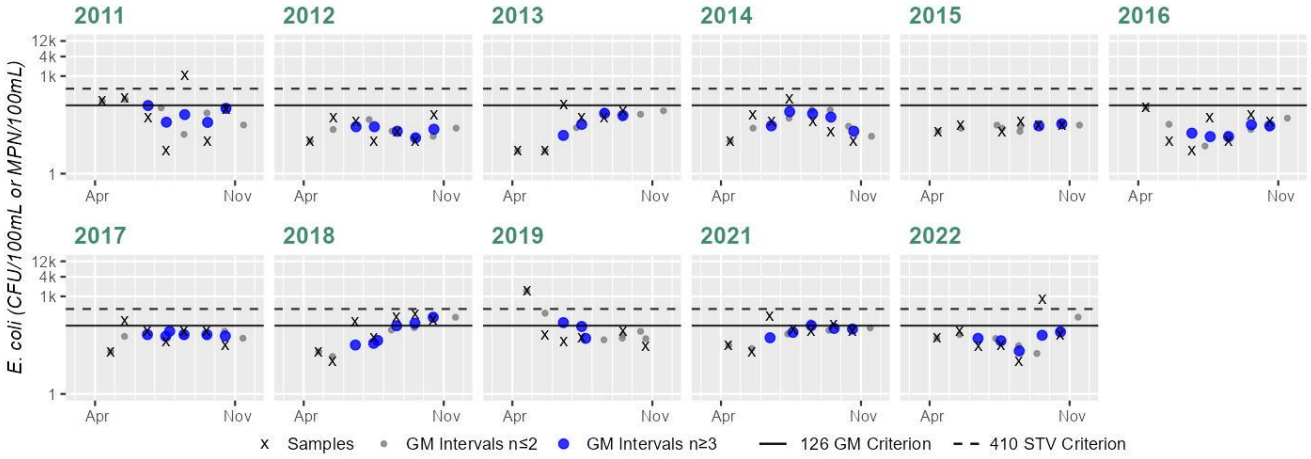
Variable*	Result
Samples	2
SeasGM	1095
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_567S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	72
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	22
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	30
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	32
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	28
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	25
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	59
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	79
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	89
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	75
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	57
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance Current (2011-2022)

7%

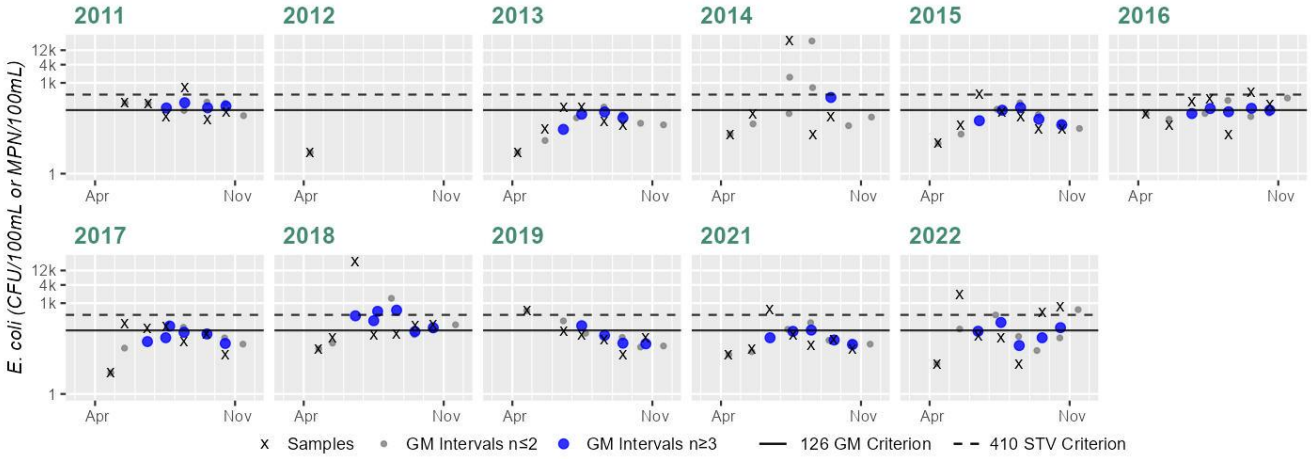
Cumulative %GMI Exceedance Current (Recent 5 Years)

16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_591S - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	158
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

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

Variable*	Result
Samples	6
SeasGM	45
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	147
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	7
SeasGM	54
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	127
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	59
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	208
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	90
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	59
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	124
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	3
%n>STV	42%

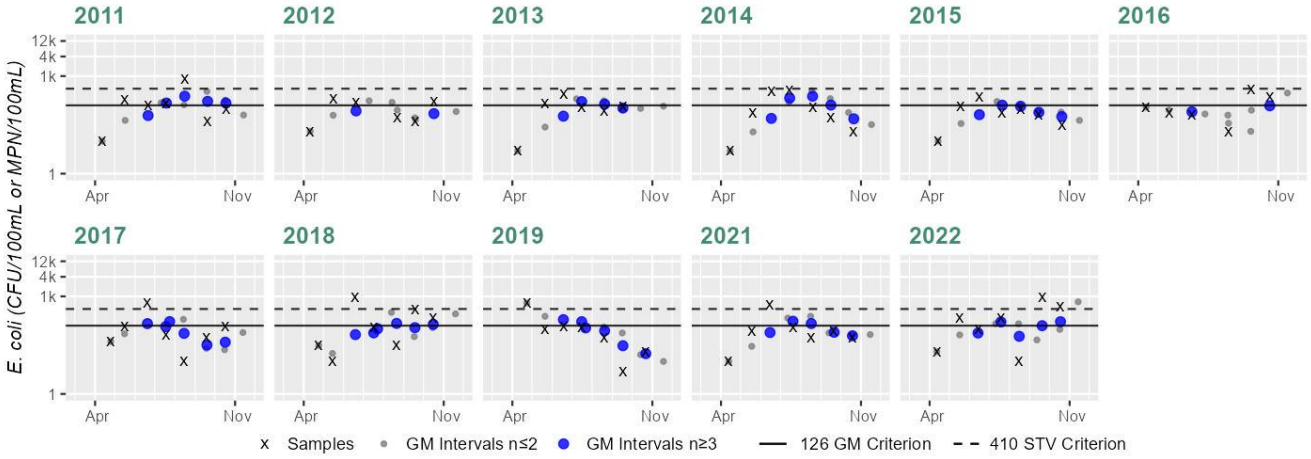
Cumulative %GMI Exceedance Current (2011-2022)
40%

Cumulative %GMI Exceedance Current (Recent 5 Years)
38%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_609S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	100
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	77
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	78
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	65
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	98
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	97
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	63
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	73
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	122
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

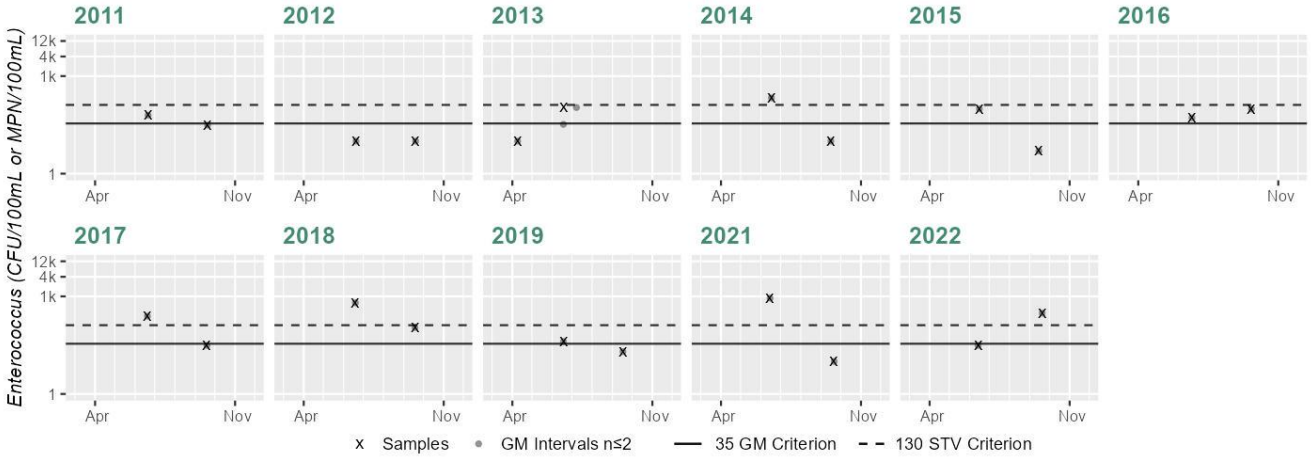
Cumulative %GMI Exceedance Current (2011-2022)
39%

Cumulative %GMI Exceedance Current (Recent 5 Years)
35%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_609S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	44
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	32
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	46
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	22
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	71
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	87
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	264
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

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

Variable*	Result
Samples	2
SeasGM	93
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

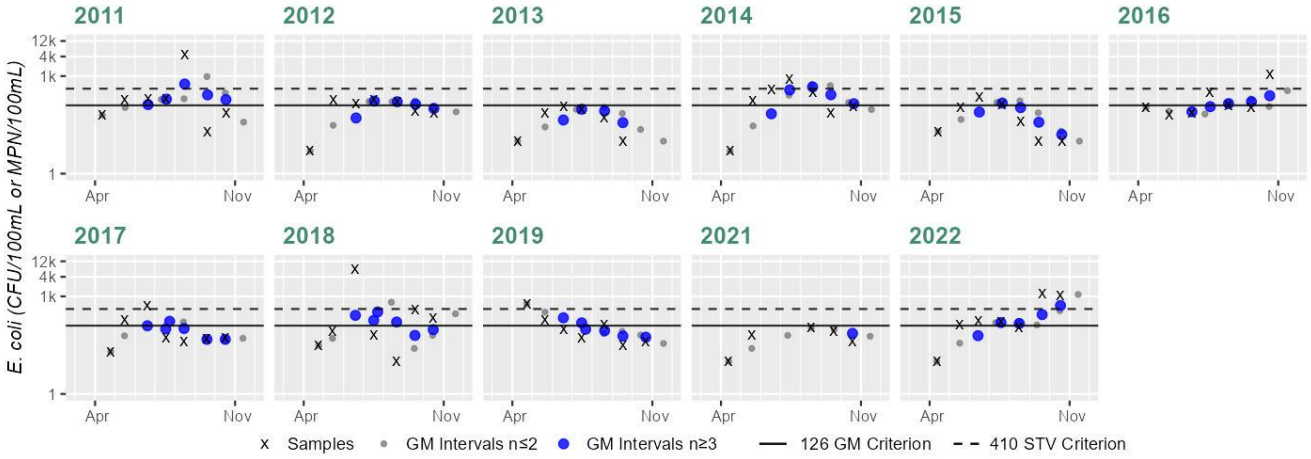
Variable*	Result
Samples	2
SeasGM	97
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_621S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	164
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	82
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	40
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	133
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	42
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	158
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	72
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	138
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	99
#GMI	6
#GMI Ex	2
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	47
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	177
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

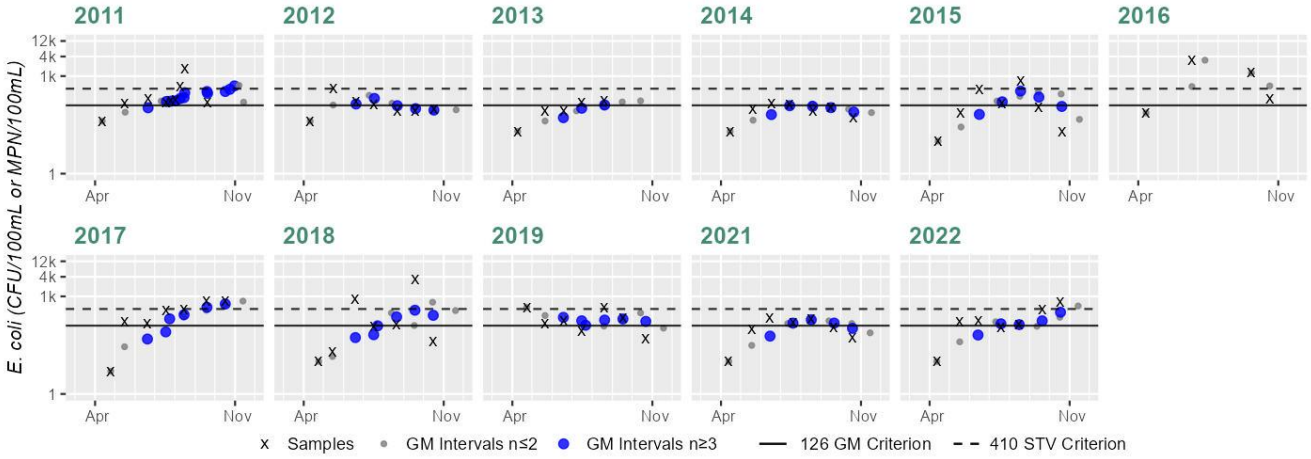
Cumulative %GMI Exceedance Current (2011-2022)
50%

Cumulative %GMI Exceedance Current (Recent 5 Years)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_635S - Escherichia coli

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



Variable*	Result
Samples	9
SeasGM	210
#GMI	12
#GMI Ex	11
%GMI Ex	91%
n>STV	2
%n>STV	22%

Variable*	Result
Samples	7
SeasGM	114
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	82
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	78
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	4
SeasGM	487
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	50%

Variable*	Result
Samples	7
SeasGM	188
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	119
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	174
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	87
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	139
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance Current (2011-2022)

63%

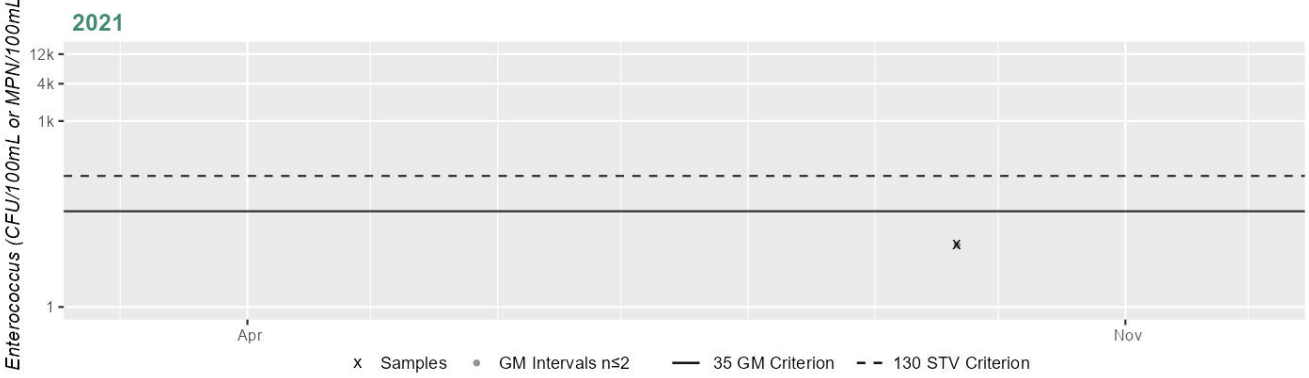
Cumulative %GMI Exceedance Current (Recent 5 Years)

71%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_635S - Enterococcus

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



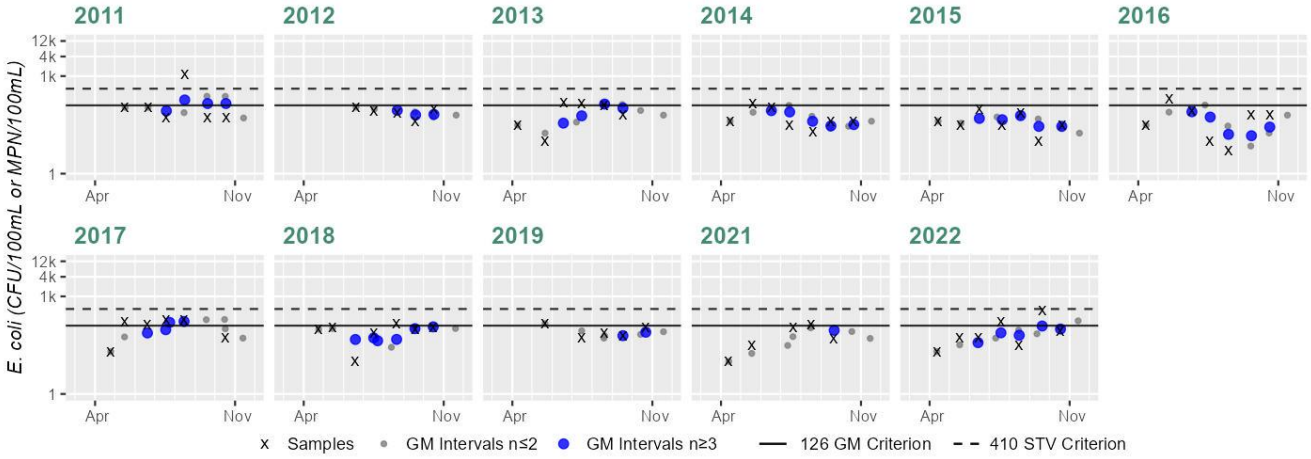
Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_648S - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	110
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	77
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	60
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	48
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	36
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	37
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	96
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	82
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	47
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	70
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

13%

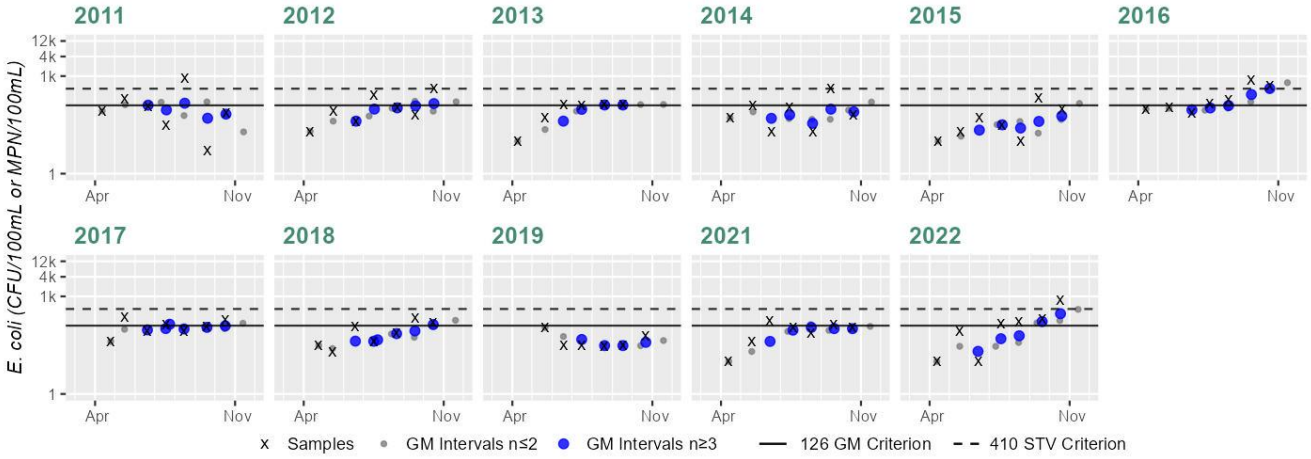
Cumulative %GMI Exceedance Current (Recent 5 Years)

11%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_662S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	79
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	91
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	73
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	68
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	35
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	186
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	111
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	69
#GMI	6
#GMI Ex	1
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	42
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	69
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	84
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	1
%n>STV	14%

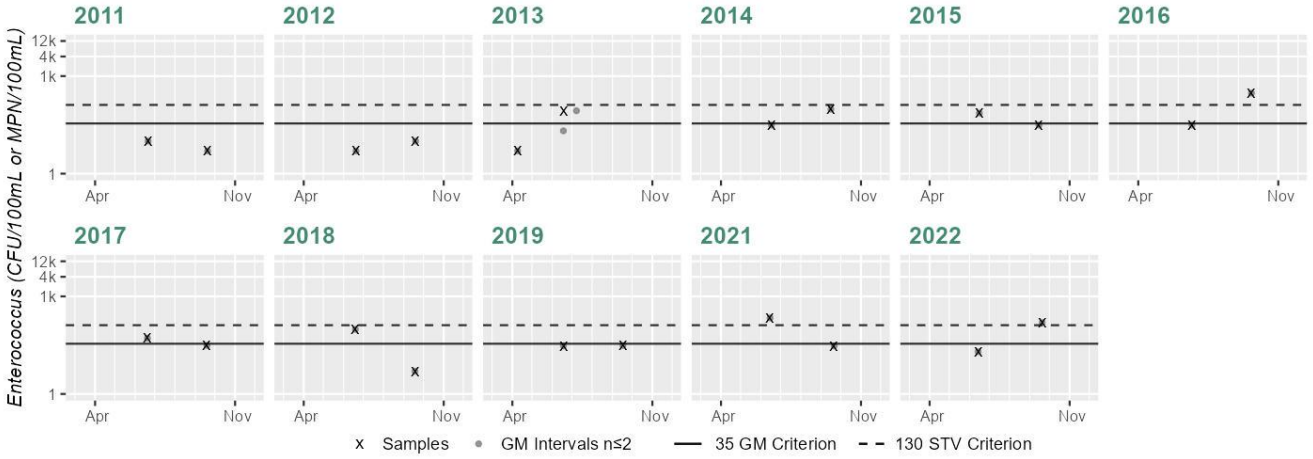
Cumulative %GMI Exceedance Current (2011-2022)
20%

Cumulative %GMI Exceedance Current (Recent 5 Years)
15%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_662S - Enterococcus

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



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

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

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	54
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	47
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	96
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	40
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	22
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	30
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	80
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	55
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Cumulative %GMI Exceedance

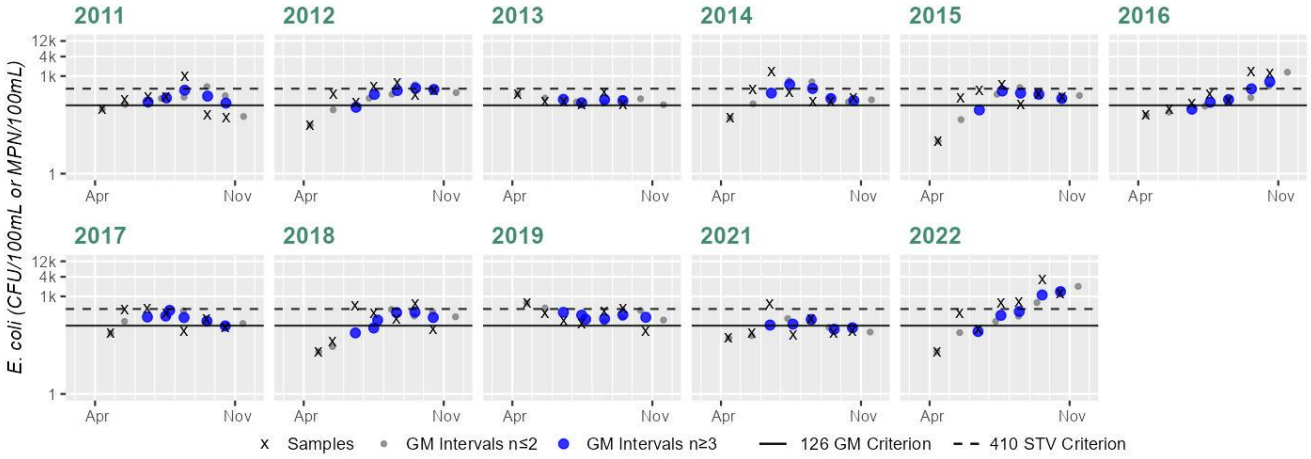
Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_675S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	162
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	233
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	183
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	242
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	166
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	256
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	183
#GMI	6
#GMI Ex	5
%GMI Ex	83%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	146
#GMI	6
#GMI Ex	4
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	248
#GMI	6
#GMI Ex	6
%GMI Ex	100%
n>STV	1
%n>STV	14%

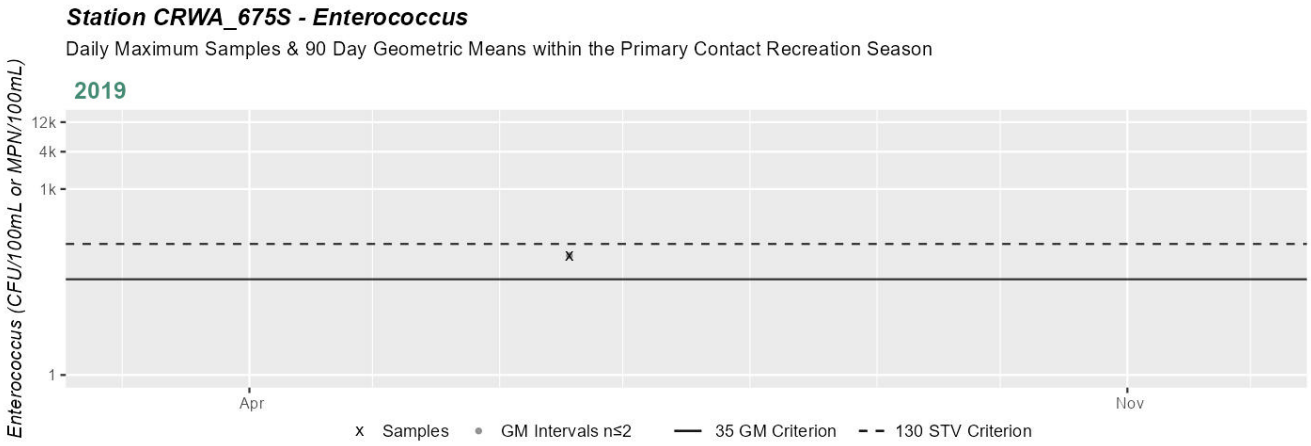
Variable*	Result
Samples	7
SeasGM	108
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	371
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	4
%n>STV	57%

Cumulative %GMI Exceedance Current (2011-2022)
84%

Cumulative %GMI Exceedance Current (Recent 5 Years)
78%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*



Variable*	Result
Samples	1
SeasGM	84
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 MassDEP 2022 PFAS in Water Column Data (MassDEP 2023) (MassDEP Undated 4)

Summary
Surface water sampling was conducted in the Charles River (MA72-07) at station W3307 (PFAS Study ID 42) on 10/10/2022 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑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	∑PFAS6 ng/L
W3307	42	10/10/2022	8.3	6.4	0.89j	2.2	5.6j	4.4	<2	21.3*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-07) continues to be assessed as Not Supporting. The prior Harmful Algal Blooms impairment is being carried forward since C-HAB postings extended >20 days in a year. An Escherichia Coli (E. Coli) impairment is being added based on data from CRWA_675S and the combined CRWA_012S & MWRA_012 station, and an Aquatic Plants (Macrophytes) impairment is being added (from the Aesthetics Use). The Curly-Leaf Pondweed, Eurasian Water Milfoil (Myriophyllum spicatum), and Water Chestnut impairments are being removed since they were removed from the Aesthetics Use this cycle.

During the period 2015 through 2022, C-HAB postings for Charles River (MA72-07) were reported to MDPH based on visual observations for 41 days in 2020. 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.

CRWA and MWRA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in this MA72-07 AU from 2011-2022 at 12 stations. Samples were collected upstream to downstream as follows: CRWA_484S [Greendale Ave/Lyons St (Dedham Medical Center)] from 2011-2019 and 2021-2022 (current n=6-12/yr), CRWA_521S [Ames St Bridge, Dedham] from 2011-2019 and 2021-2022 (current n=1-12/yr), CRWA_534S [Rt 109 Bridge, Boston] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_567S [Nahanton Park, Newton] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_591S [Rt 9 Gaging Station, Wellesley] from 2011-2019 and 2021-2022 (current n=5-12/yr), CRWA_609S [Washington St Bridge, Newton] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_621S [Leo J. Martin Golf Course/Park Rd, Weston] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_635S [2391 Commonwealth Ave, Newton] from 2011-2019 and 2021-2022 (current n=6-12/yr), CRWA_648S [Auburndale Park, Lakes Region, Waltham] from 2011-2019 and 2021-2022 (current n=5-8/yr), CRWA_662S [Moody St Bridge, Waltham] from 2011-2019 and 2021-2022 (current n=7-12/yr), CRWA_675S [North St Bridge, Waltham] from 2011-2019 and 2021-2022 (current n=7-12/yr), and the combined CRWA_012S & MWRA_012 station [Charles River 012S (Watertown Dam Footbridge, Watertown) & Charles River, upstream of Watertown Dam and all active CSOs] from 2011-2022 (current n=30-91/yr). Analysis of the recent five years of *E. coli* data from these multi-year, mostly moderate frequency datasets from the 10 upstream stations indicated that the data meet 2024 CALM guidance. These data will not be dicussed further due to space constraints. *E. coli* data from the two most downstream stations do not meet 2024 CALM guidance, however, and are discussed as follows. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_675S indicated that in 2 of 5 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2019 & 2022, 41% & 50%), 1 year had ≥2 samples exceed the 794 CFU/100mL STV (2022, n=2), and cumulatively across years 24% of intervals had GMs >244 CFU/100mL. Analysis of the recent five years of the multi-year high frequency *E. coli* dataset from CRWA_012S & MWRA_012 indicated that in all 5 sufficient data years >10% of intervals had GMs >244 CFU/100mL (2018-2022, 14-56%), 2 years had >10% of samples exceed the 794 CFU/100mL STV (2018 & 2019, 10% & 14%), and cumulatively across years 40% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_675S and the combined CRWA_012S & MWRA_012 station are indicative of an Escherichia Coli (E. Coli) impairment. Samples were also collected in the historic IR window (1997-2010) at all the CRWA/MWRA stations, as well as at a few MassDEP stations in the middle

of the AU (W1139, W2156) and one EPA station (1111REG1-CRBL02) at the downstream end of the AU. Historical data from the combined CRWA_012S & MASSDEP_W0384 & MWRA_012 station and the EPA station (1111REG1-CRBL02) did not meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_012S	Charles River Watershed Association	Water Quality	Charles River	Charles River 012S (Watertown Dam Footbridge, Watertown)	42.365101	-71.190300
CRWA_484S	Charles River Watershed Association	Water Quality	Charles River	Greendale Ave./Lyons St. (Dedham Medical Center)	42.266998	-71.205002
CRWA_521S	Charles River Watershed Association	Water Quality	Charles River	Ames St. Bridge, Dedham	42.252399	-71.176300
CRWA_534S	Charles River Watershed Association	Water Quality	Charles River	Rt. 109 Bridge, Boston	42.270802	-71.173203
CRWA_567S	Charles River Watershed Association	Water Quality	Charles River	Nahanton Park, Newton	42.297100	-71.207802
CRWA_591S	Charles River Watershed Association	Water Quality	Charles River	Rt. 9 Gaging Station, Wellesley	42.316502	-71.228104
CRWA_609S	Charles River Watershed Association	Water Quality	Charles River	Washington St. Bridge, Newton	42.325199	-71.258499
CRWA_621S	Charles River Watershed Association	Water Quality	Charles River	Leo J. Martin Golf Course/Park Rd., Weston	42.330601	-71.267998
CRWA_635S	Charles River Watershed Association	Water Quality	Charles River	2391 Commonwealth Ave., Newton	42.344799	-71.259903
CRWA_648S	Charles River Watershed Association	Water Quality	Charles River	Auburndale Park, Lakes Region, Waltham	42.361500	-71.250099
CRWA_662S	Charles River Watershed Association	Water Quality	Charles River	Moody St. Bridge, Waltham	42.373200	-71.236702
CRWA_675S	Charles River Watershed Association	Water Quality	Charles River	North St. Bridge, Waltham	42.367199	-71.218201
MWRA_012	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, upstream of Watertown Dam and all active CSOs	42.365073	-71.190224

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0384	MassDEP	Water Quality	Charles River	[footbridge above Watertown Dam, Watertown.]	42.365145	-71.190333
W1139	MassDEP	Water Quality	Charles River	[south of Route 16 at the Mary Hunnewell Bridge crossing (footbridge west of Wales Street/Walnut Street), Newton/Wellesley]	42.325843	-71.254393
W2156	MassDEP	Water Quality	Charles River	[approximately 1800 feet downstream of Washington Street (Route 16), Newton/Wellesley]	42.326259	-71.264030
1111REG1-CRBL02	US EPA Region 1	Water Quality	Charles River	Watertown Dam - upstream	42.365157	-71.189581

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (MWRA 2024) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3) (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
CRWA_012S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	63	1310	172
CRWA_012S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	52	2360	207
CRWA_012S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	9	20	743	72
CRWA_012S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	10	5	1310	160
CRWA_012S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	41	213	112
CRWA_012S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	74	833	268
CRWA_012S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	74	2360	199
CRWA_012S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	41	3080	304
CRWA_012S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	41	565	123
CRWA_012S	Charles River Watershed Association	E. coli	06/19/18	12/11/18	7	41	1990	258

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_012S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	11	52	545	170
CRWA_012S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	41	272	111
CRWA_012S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	41	3870	181
CRWA_484S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	10	275	78
CRWA_484S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	20	1790	83
CRWA_484S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	743	45
CRWA_484S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	10	5	199	29
CRWA_484S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	5	1780	73
CRWA_484S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	10	650	102
CRWA_484S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	5	413	47
CRWA_484S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	8660	180
CRWA_484S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	265	84
CRWA_484S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	228	46
CRWA_484S	Charles River Watershed Association	E. coli	02/12/19	12/10/19	7	5	601	59
CRWA_484S	Charles River Watershed Association	E. coli	02/23/21	12/14/21	10	10	213	41
CRWA_484S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	1620	105
CRWA_521S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	11	10	201	45

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_521S	Charles River Watershed Association	E. coli	01/12/10	11/16/10	11	10	1540	57
CRWA_521S	Charles River Watershed Association	E. coli	12/20/11	12/20/11	1	73	73	72
CRWA_521S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	161	22
CRWA_521S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	5	199	54
CRWA_521S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	5	857	77
CRWA_521S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	8	10	173	19
CRWA_521S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	11	10	231	50
CRWA_521S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	10	20	135	62
CRWA_521S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	10	5	74	30
CRWA_521S	Charles River Watershed Association	E. coli	01/15/19	11/19/19	8	10	583	54
CRWA_521S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	10	226	55
CRWA_521S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	31	173	75
CRWA_534S	Charles River Watershed Association	E. coli	01/13/09	11/17/09	11	20	233	89
CRWA_534S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	10	1010	76
CRWA_534S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	10	809	70
CRWA_534S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	373	50
CRWA_534S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	31	185	58

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_534S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	10	19900	114
CRWA_534S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	20	907	116
CRWA_534S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	30	9210	282
CRWA_534S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	299	78
CRWA_534S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	571	65
CRWA_534S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	10	733	75
CRWA_534S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	10	318	67
CRWA_534S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	41	5790	210
CRWA_567S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	31	275	78
CRWA_567S	Charles River Watershed Association	E. coli	02/09/10	12/21/10	11	5	1520	36
CRWA_567S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	1080	47
CRWA_567S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	882	24
CRWA_567S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	135	35
CRWA_567S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	10	677	60
CRWA_567S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	10	20	723	48
CRWA_567S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	364	35
CRWA_567S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	173	63

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_567S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	278	76
CRWA_567S	Charles River Watershed Association	E. coli	01/15/19	11/19/19	10	10	1470	58
CRWA_567S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	20	246	74
CRWA_567S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	11	10	836	59
CRWA_591S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	10	20	389	87
CRWA_591S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	10	2490	90
CRWA_591S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	10	5	723	88
CRWA_591S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	5	5	862	37
CRWA_591S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	160	48
CRWA_591S	Charles River Watershed Association	E. coli	02/11/14	11/18/14	7	20	24200	151
CRWA_591S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	10	10	4880	82
CRWA_591S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	11	10	504	101
CRWA_591S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	5	213	57
CRWA_591S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	24200	148
CRWA_591S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	11	20	563	78
CRWA_591S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	20	601	67
CRWA_591S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	1940	110

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_609S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	10	557	114
CRWA_609S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	11	20	1920	112
CRWA_609S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	10	5	813	61
CRWA_609S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	11	5	691	47
CRWA_609S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	275	75
CRWA_609S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	464	92
CRWA_609S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	10	1790	84
CRWA_609S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	11	20	399	124
CRWA_609S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	10	613	65
CRWA_609S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	958	89
CRWA_609S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	884	53
CRWA_609S	Charles River Watershed Association	E. coli	02/23/21	12/14/21	11	10	546	78
CRWA_609S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	933	82
CRWA_621S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	11	31	1480	135
CRWA_621S	Charles River Watershed Association	E. coli	02/09/10	12/21/10	10	5	2610	127
CRWA_621S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	10	4610	71
CRWA_621S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	601	56

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_621S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	10	121	40
CRWA_621S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	1020	142
CRWA_621S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	10	223	44
CRWA_621S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	1150	124
CRWA_621S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	512	68
CRWA_621S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	10	6870	106
CRWA_621S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	11	20	586	86
CRWA_621S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	10	504	48
CRWA_621S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	1200	108
CRWA_635S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	20	336	137
CRWA_635S	Charles River Watershed Association	E. coli	03/16/10	12/21/10	10	10	2280	149
CRWA_635S	Charles River Watershed Association	E. coli	03/15/11	12/20/11	12	20	1720	134
CRWA_635S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	10	413	63
CRWA_635S	Charles River Watershed Association	E. coli	01/15/13	08/20/13	6	20	173	73
CRWA_635S	Charles River Watershed Association	E. coli	03/18/14	12/16/14	9	10	145	65
CRWA_635S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	10	816	131
CRWA_635S	Charles River Watershed Association	E. coli	01/12/16	11/15/16	8	20	3080	213

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_635S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	5	733	138
CRWA_635S	Charles River Watershed Association	E. coli	02/13/18	11/20/18	10	10	3260	119
CRWA_635S	Charles River Watershed Association	E. coli	02/12/19	12/10/19	10	20	457	126
CRWA_635S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	10	223	72
CRWA_635S	Charles River Watershed Association	E. coli	03/15/22	12/13/22	10	10	669	118
CRWA_648S	Charles River Watershed Association	E. coli	04/14/09	09/15/09	6	5	121	46
CRWA_648S	Charles River Watershed Association	E. coli	04/13/10	08/17/10	5	31	148	60
CRWA_648S	Charles River Watershed Association	E. coli	05/17/11	10/18/11	6	51	1110	110
CRWA_648S	Charles River Watershed Association	E. coli	06/19/12	10/16/12	5	41	110	77
CRWA_648S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	148	60
CRWA_648S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	145	48
CRWA_648S	Charles River Watershed Association	E. coli	03/17/15	10/20/15	8	10	275	47
CRWA_648S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	195	37
CRWA_648S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	6	20	195	96
CRWA_648S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	146	73
CRWA_648S	Charles River Watershed Association	E. coli	03/19/19	10/22/19	6	5	146	51
CRWA_648S	Charles River Watershed Association	E. coli	04/13/21	09/21/21	5	10	135	47

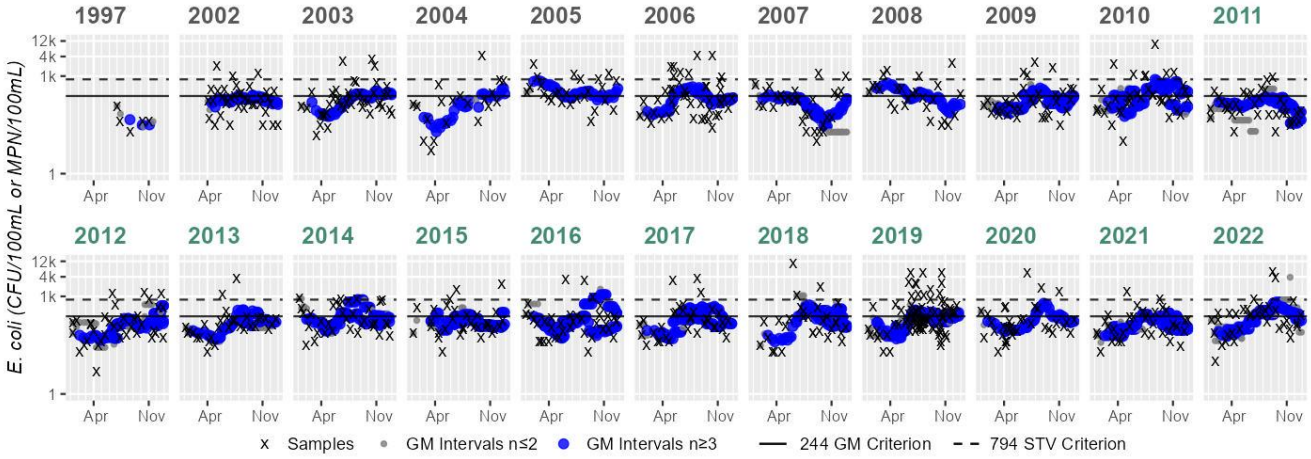
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_648S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	369	70
CRWA_662S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	11	0	355	55
CRWA_662S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	11	10	292	85
CRWA_662S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	839	67
CRWA_662S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	480	56
CRWA_662S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	10	135	71
CRWA_662S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	20	402	80
CRWA_662S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	10	10	727	63
CRWA_662S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	11	41	759	120
CRWA_662S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	231	91
CRWA_662S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	20	213	68
CRWA_662S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	11	20	288	54
CRWA_662S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	171	51
CRWA_662S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	780	76
CRWA_675S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	31	272	104
CRWA_675S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	12	63	3080	215
CRWA_675S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	41	985	115

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_675S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	20	644	160
CRWA_675S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	52	309	153
CRWA_675S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	52	1370	223
CRWA_675S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	10	987	197
CRWA_675S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	1420	175
CRWA_675S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	20	426	133
CRWA_675S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	20	573	126
CRWA_675S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	10	631	146
CRWA_675S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	586	80
CRWA_675S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	3260	172
MWRA_012	Massachusetts Water Resources Authority	E. coli	04/03/02	12/31/02	37	30	2080	173
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/16/03	12/30/03	44	15	3200	181
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/06/04	12/22/04	20	5	4280	122
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/05/05	12/19/05	26	40	2320	324
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/04/06	12/27/06	45	25	4200	213
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/09/07	12/27/07	27	10	1170	142
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/09/08	12/29/08	26	31	2480	234

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/27/09	12/28/09	23	31	2720	168
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/11/10	12/29/10	24	10	9800	242
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/10/11	12/27/11	26	41	933	132
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/11/12	12/28/12	26	20	1240	111
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/08/13	12/23/13	24	20	3450	137
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/06/14	12/22/14	23	31	855	174
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/07/15	12/21/15	22	20	1620	152
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/04/16	12/20/16	25	20	3260	110
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/03/17	12/04/17	22	31	3450	212
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/29/18	12/26/18	23	20	10500	129
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/07/19	12/16/19	80	20	5170	252
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/02/20	12/28/20	38	20	5170	150
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/11/21	12/29/21	26	20	1420	138
MWRA_012	Massachusetts Water Resources Authority	E. coli	01/12/22	12/28/22	25	10	5790	204
W0384	MassDEP	E. coli	07/01/97	11/04/97	5	20	120	43
W0384	MassDEP	E. coli	06/19/07	10/02/07	4	19	180	45
W1139	MassDEP	E. coli	05/15/07	10/02/07	5	43	430	171
W2156	MassDEP	E. coli	05/04/10	09/13/10	6	67	350	139
1111REG1-CRBL02	US EPA Region 1	E. coli	07/09/01	09/04/01	3	140	280	214
1111REG1-CRBL02	US EPA Region 1	E. coli	06/13/02	10/18/02	12	104	4100	322
1111REG1-CRBL02	US EPA Region 1	E. coli	07/08/03	09/18/03	6	136	2000	346
1111REG1-CRBL02	US EPA Region 1	E. coli	07/13/04	10/07/04	9	4	180	33
1111REG1-CRBL02	US EPA Region 1	E. coli	06/08/05	10/05/05	5	30	240	103

Station CRWA_012S & MASSDEP_W0384 & MWRA_012 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	43
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	37
SeasGM	173
#GMI	68
#GMI Ex	3
%GMI Ex	4%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	44
SeasGM	181
#GMI	79
#GMI Ex	34
%GMI Ex	43%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	20
SeasGM	122
#GMI	34
#GMI Ex	12
%GMI Ex	35%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	26
SeasGM	324
#GMI	47
#GMI Ex	34
%GMI Ex	72%
n>STV	6
%n>STV	23%

Variable*	Result
Samples	45
SeasGM	213
#GMI	78
#GMI Ex	31
%GMI Ex	39%
n>STV	8
%n>STV	17%

Variable*	Result
Samples	31
SeasGM	123
#GMI	64
#GMI Ex	4
%GMI Ex	6%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	26
SeasGM	234
#GMI	47
#GMI Ex	22
%GMI Ex	46%
n>STV	4
%n>STV	15%

Variable*	Result
Samples	35
SeasGM	169
#GMI	103
#GMI Ex	33
%GMI Ex	32%
n>STV	4
%n>STV	11%

Variable*	Result
Samples	36
SeasGM	230
#GMI	106
#GMI Ex	56
%GMI Ex	52%
n>STV	7
%n>STV	19%

Variable*	Result
Samples	35
SeasGM	113
#GMI	82
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	36
SeasGM	130
#GMI	86
#GMI Ex	10
%GMI Ex	11%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	31
SeasGM	123
#GMI	71
#GMI Ex	16
%GMI Ex	22%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	35
SeasGM	202
#GMI	105
#GMI Ex	35
%GMI Ex	33%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	32
SeasGM	165
#GMI	92
#GMI Ex	17
%GMI Ex	18%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	37
SeasGM	153
#GMI	110
#GMI Ex	27
%GMI Ex	24%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	34
SeasGM	175
#GMI	102
#GMI Ex	34
%GMI Ex	33%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	30
SeasGM	152
#GMI	74
#GMI Ex	27
%GMI Ex	36%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	91
SeasGM	240
#GMI	240
#GMI Ex	135
%GMI Ex	56%
n>STV	13
%n>STV	14%

Variable*	Result
Samples	38
SeasGM	150
#GMI	70
#GMI Ex	13
%GMI Ex	18%
n>STV	3
%n>STV	7%

Variable*	Result
Samples	37
SeasGM	129
#GMI	99
#GMI Ex	14
%GMI Ex	14%
n>STV	2
%n>STV	5%

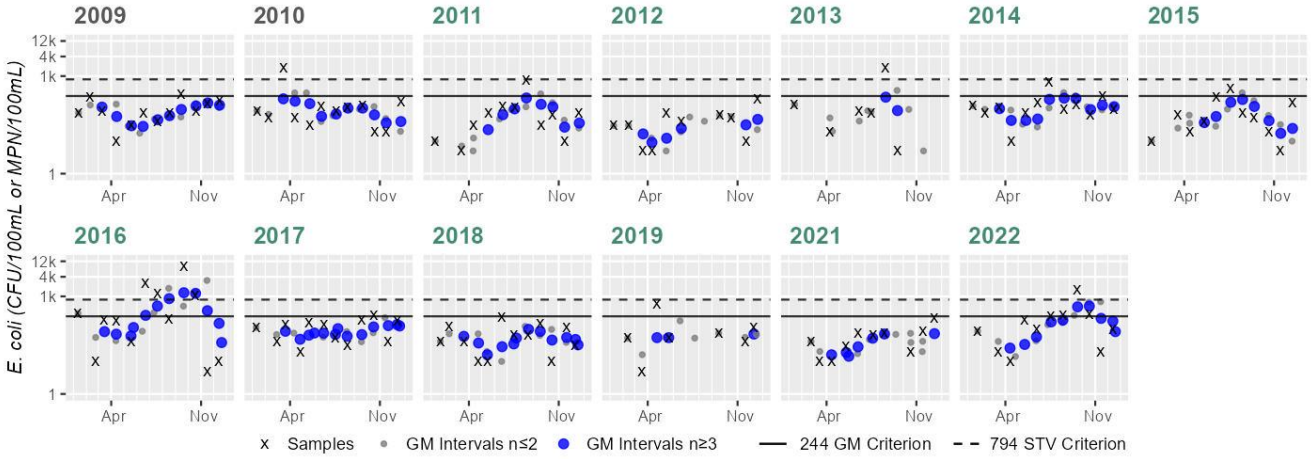
Variable*	Result
Samples	36
SeasGM	197
#GMI	91
#GMI Ex	45
%GMI Ex	49%
n>STV	3
%n>STV	8%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
36%	36%	30%	40%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_484S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	78
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	83
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	45
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	29
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	73
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	12
SeasGM	102
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	47
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	180
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	4
%n>STV	33%

Variable*	Result
Samples	12
SeasGM	84
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	46
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	59
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	41
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

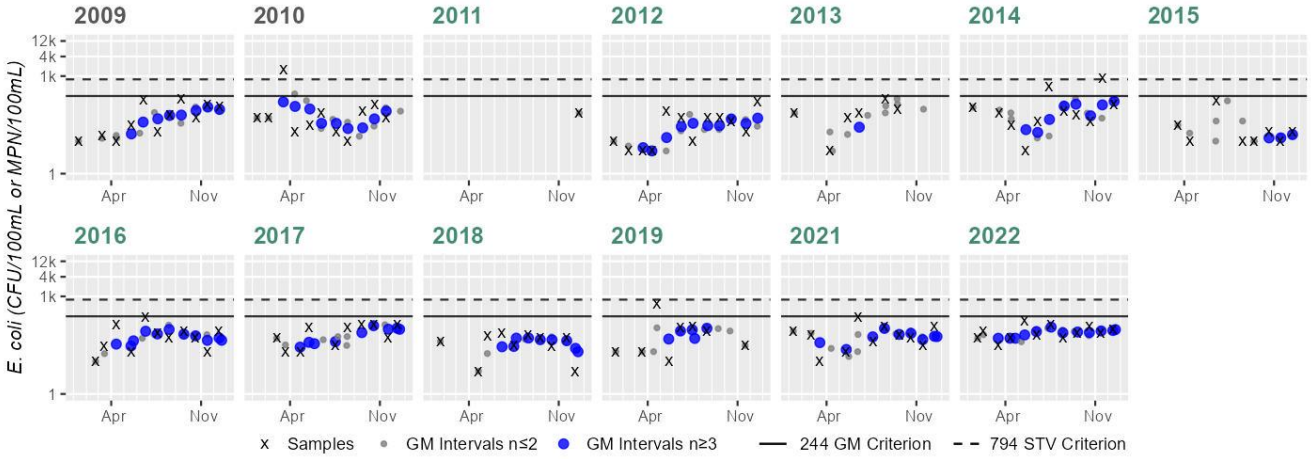
Variable*	Result
Samples	11
SeasGM	105
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	1
%n>STV	9%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
0%	8%	4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_521S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	45
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	57
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	1
SeasGM	73
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	22
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	77
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	8
SeasGM	19
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	50
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	62
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	30
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	54
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	55
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	75
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

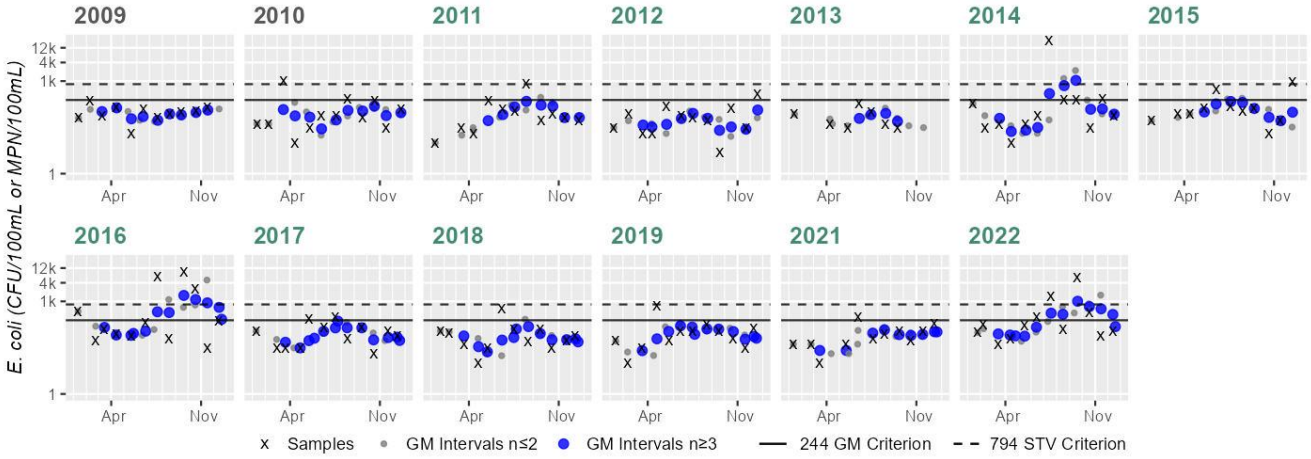
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_534S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	89
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	76
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	70
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	50
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	58
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	114
#GMI	10
#GMI Ex	3
%GMI Ex	30%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	116
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	282
#GMI	12
#GMI Ex	7
%GMI Ex	58%
n>STV	3
%n>STV	25%

Variable*	Result
Samples	12
SeasGM	78
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	65
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	75
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	67
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	210
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	2
%n>STV	16%

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

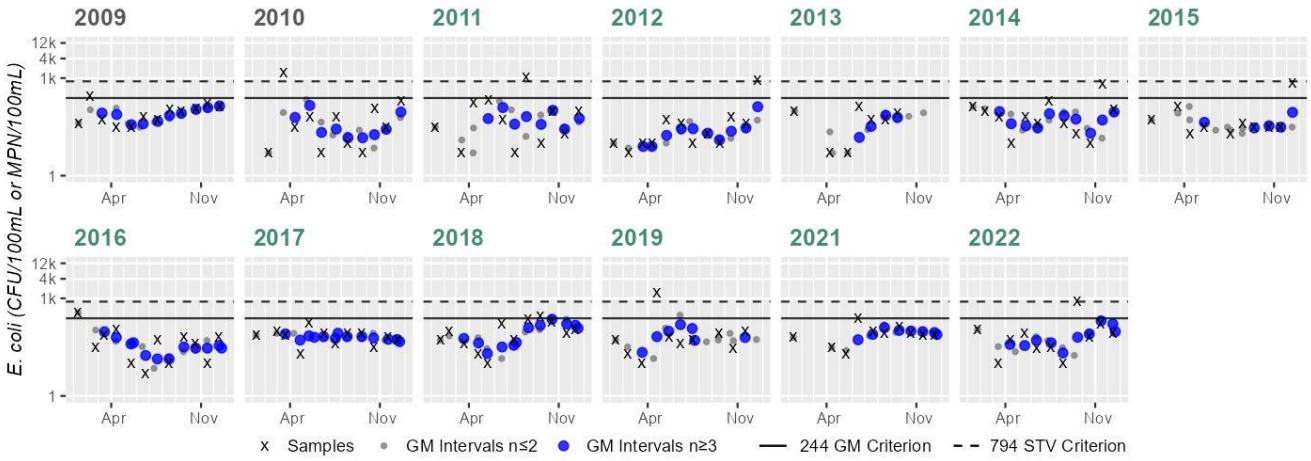
Cumulative %GMI Exceedance
Current (2011-2022)
14%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_567S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	78
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	36
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	47
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	24
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	7
SeasGM	35
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	60
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	48
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	35
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	63
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	76
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	58
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	10
SeasGM	74
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	59
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

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

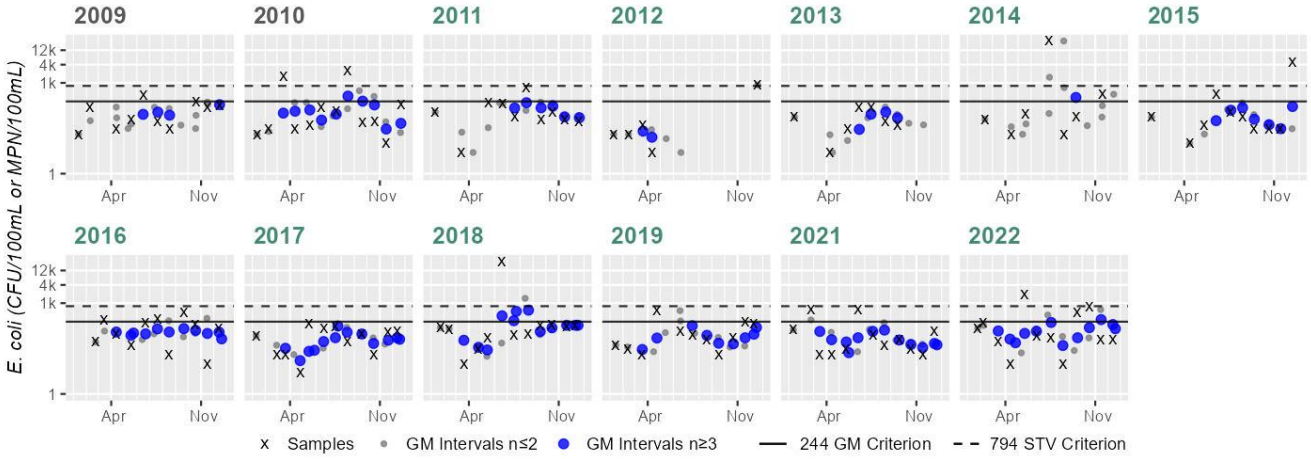
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_591S - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	87
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	90
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	10
SeasGM	88
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	37
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	7
SeasGM	48
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	151
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	10
SeasGM	82
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	101
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	57
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	148
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	78
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	67
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

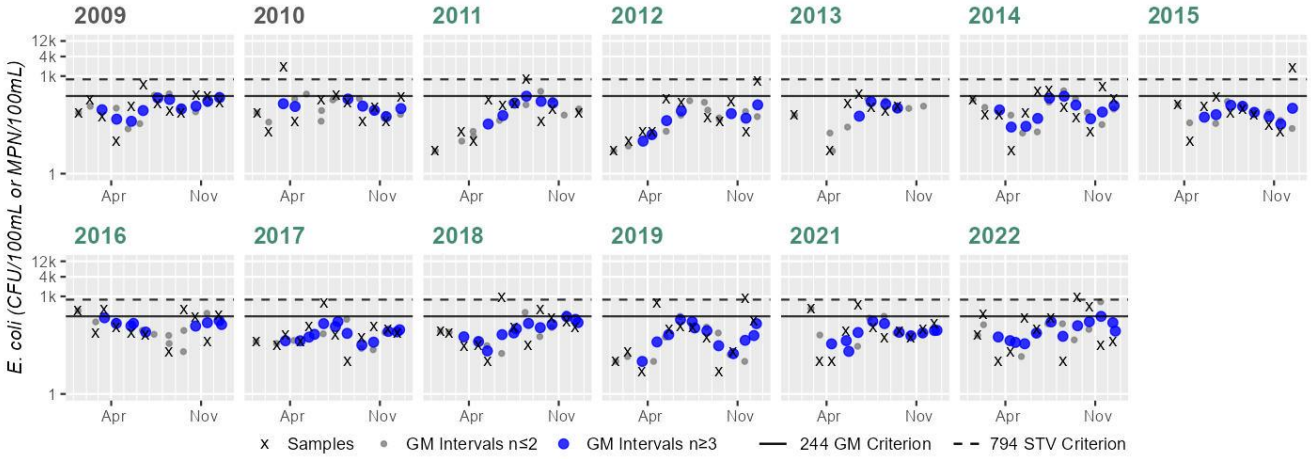
Variable*	Result
Samples	12
SeasGM	110
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	1
%n>STV	8%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
14%	6%	8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_609S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	114
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	112
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	10
SeasGM	61
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	47
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	75
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	92
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	84
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	124
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	65
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	89
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	53
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	78
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	82
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

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

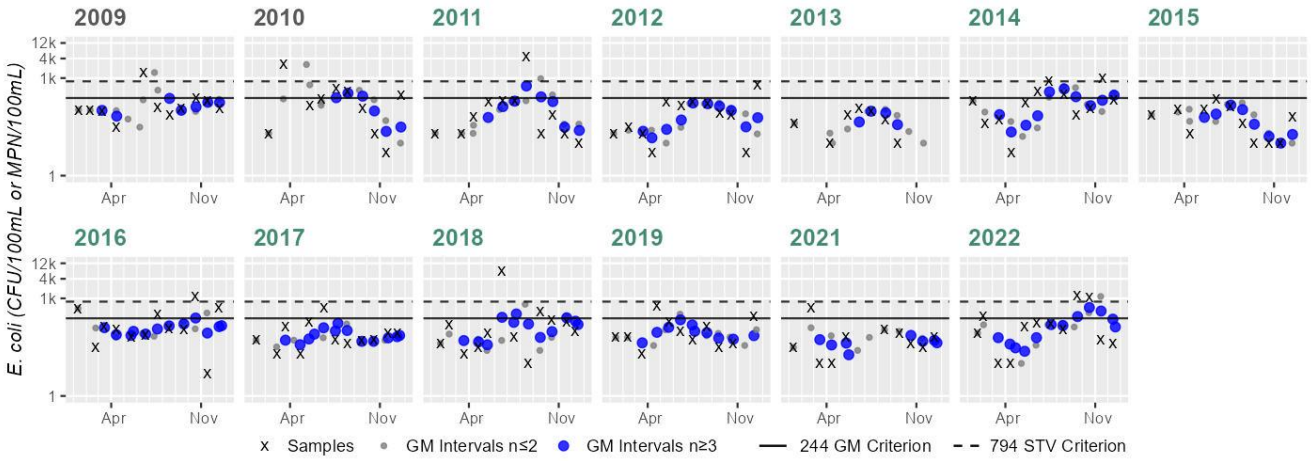
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_621S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	135
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	10
SeasGM	127
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	71
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	56
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	40
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	142
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	44
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	124
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	68
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	106
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	86
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	48
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	108
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	2
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
23%

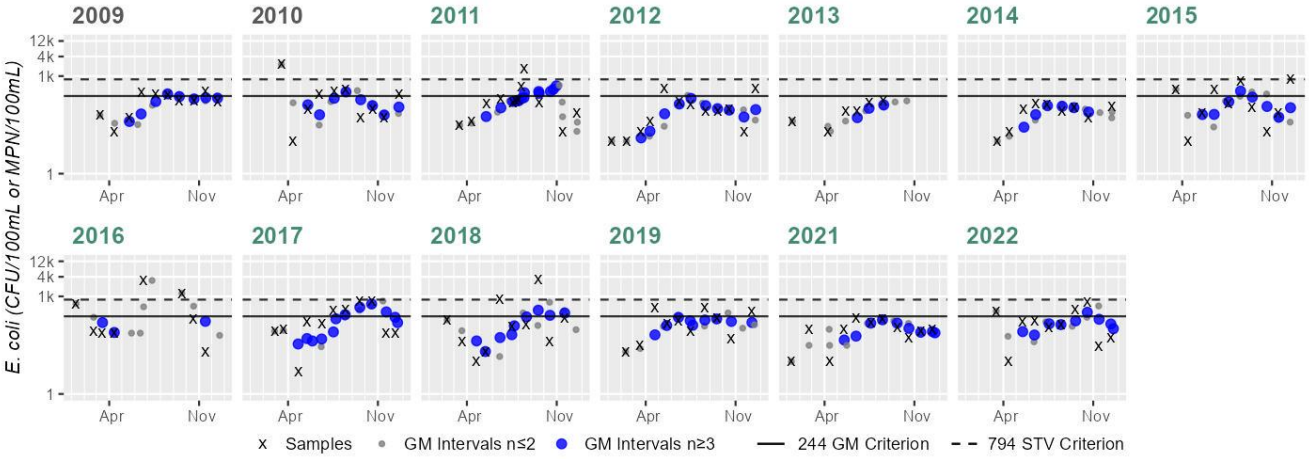
Cumulative %GMI Exceedance
Current (2011-2022)
12%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_635S - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	137
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	149
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	12
SeasGM	134
#GMI	13
#GMI Ex	6
%GMI Ex	46%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	63
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	73
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	65
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	131
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	8
SeasGM	213
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	25%

Variable*	Result
Samples	11
SeasGM	138
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	119
#GMI	9
#GMI Ex	3
%GMI Ex	33%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	10
SeasGM	126
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	72
#GMI	9
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

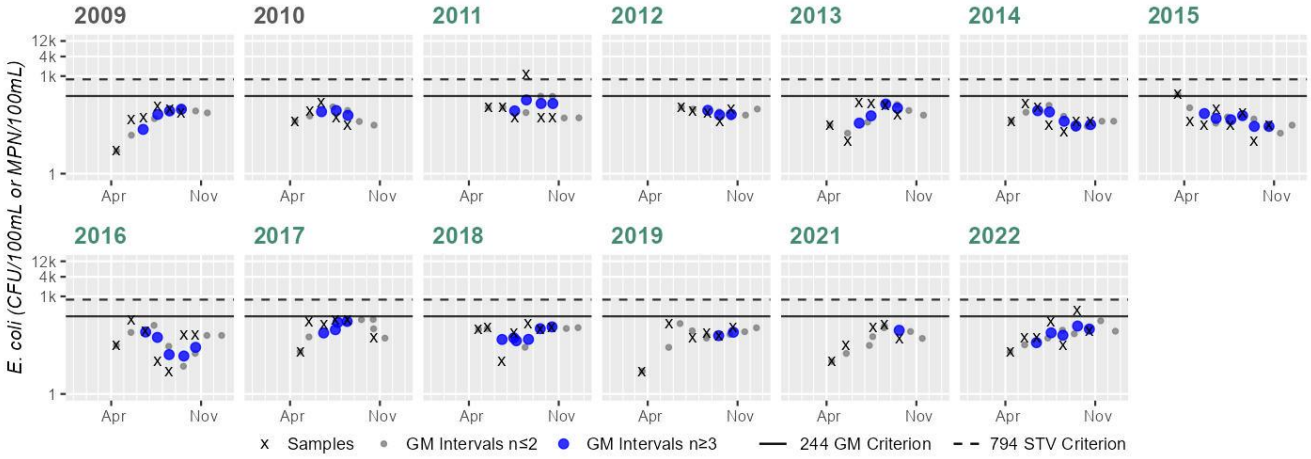
Variable*	Result
Samples	10
SeasGM	118
#GMI	9
#GMI Ex	1
%GMI Ex	11%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
12%	16%	16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_648S - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	46
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	60
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	110
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	5
SeasGM	77
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	60
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	48
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	47
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	37
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	96
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	73
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	51
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	47
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	70
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

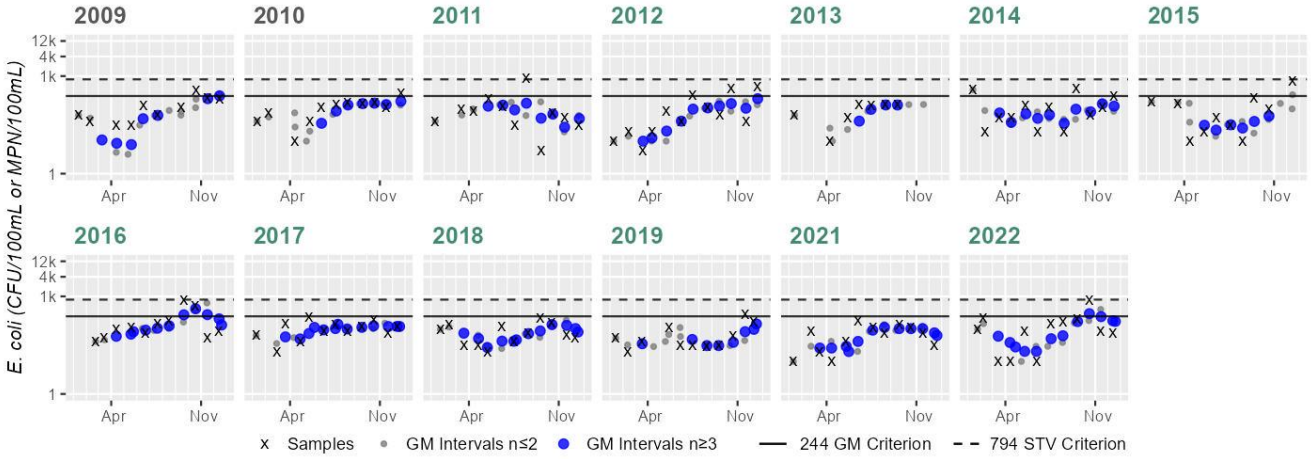
Cumulative %GMI Exceedance
Current (2011-2022)
0%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_662S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	55
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	85
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	67
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	56
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	71
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	80
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	63
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	120
#GMI	11
#GMI Ex	3
%GMI Ex	27%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	91
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	68
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	54
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	51
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	76
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
7%

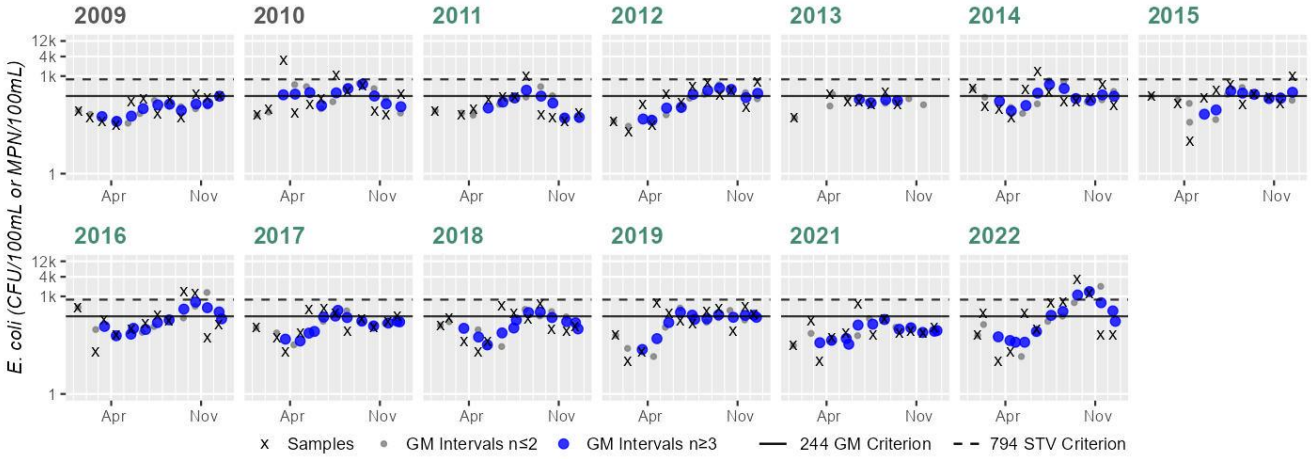
Cumulative %GMI Exceedance
Current (2011-2022)
3%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
1%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_675S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	104
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	215
#GMI	10
#GMI Ex	6
%GMI Ex	60%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	115
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	160
#GMI	10
#GMI Ex	5
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	153
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	223
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	197
#GMI	8
#GMI Ex	4
%GMI Ex	50%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	175
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	12
SeasGM	133
#GMI	13
#GMI Ex	2
%GMI Ex	15%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	126
#GMI	12
#GMI Ex	2
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	146
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	80
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	172
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	2
%n>STV	16%

Cumulative %GMI Exceedance Historic (1997-2010)
30%

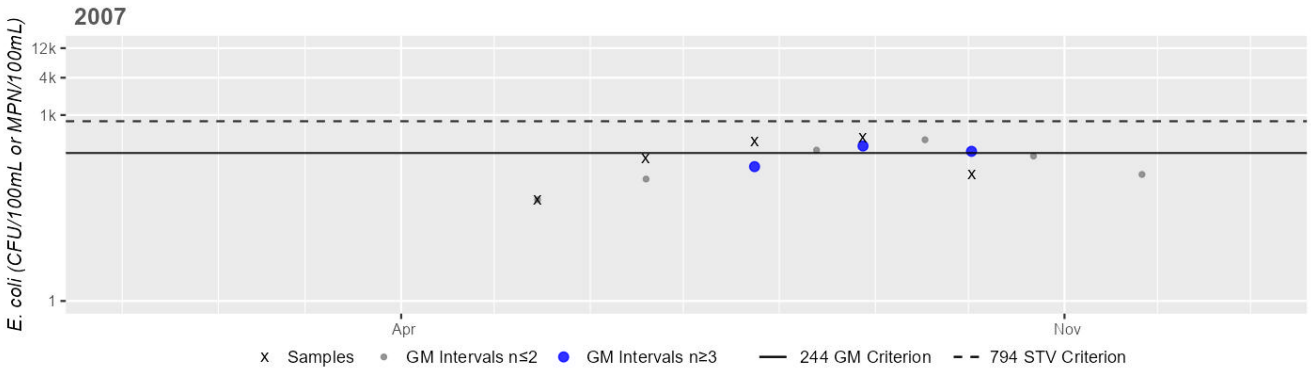
Cumulative %GMI Exceedance Current (2011-2022)
29%

Cumulative %GMI Exceedance Current (Recent 5 Years)
24%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1139 - Escherichia coli

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



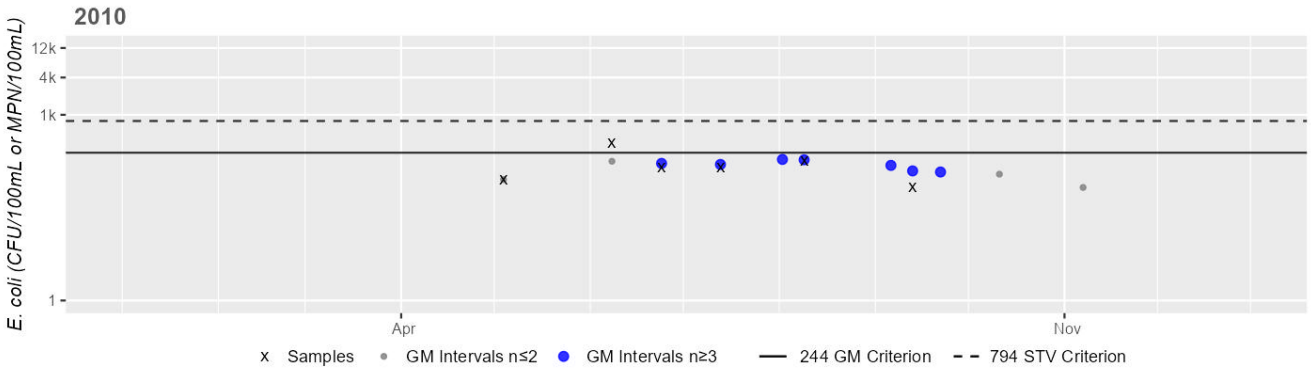
Variable*	Result
Samples	5
SeasGM	171
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
66%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2156 - Escherichia coli

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



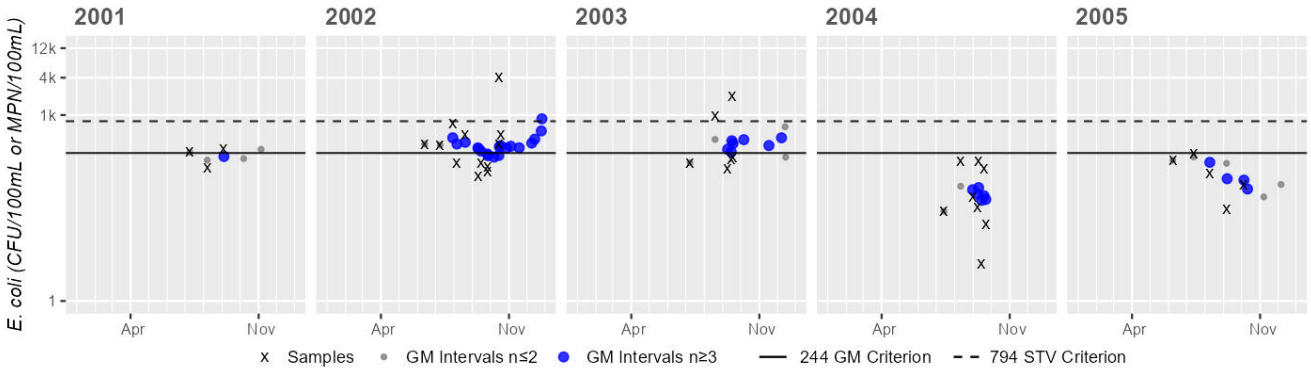
Variable*	Result
Samples	6
SeasGM	139
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL02 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	214
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	322
#GMI	19
#GMI Ex	15
%GMI Ex	78%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	6
SeasGM	346
#GMI	7
#GMI Ex	7
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	9
SeasGM	0
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	103
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
50%

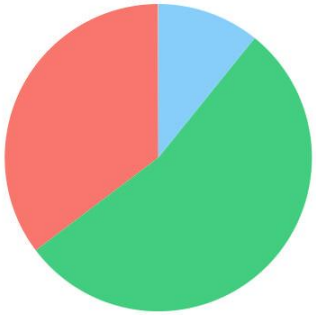
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Charles River (MA72-33)

Location:	From outlet Cedar Swamp Pond, Milford to the Milford WWTF discharge (NPDES: MA0100579), Hopedale (formerly part of 2006 segment: Charles River MA72-02) (two culverted portions totaling approximately 1100 feet (0.21mile) (as of 2008 excluding the approximately 0.8 mile through segment: Cedar Swamp Pond MA72016).
AU Type:	RIVER
AU Size:	2 MILES
Classification/Qualifier:	B: AQL

Charles River (MA72-33)

Watershed Area: 11.69 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	11.69	4.98	5.87	1.51
Agriculture	0%	0%	0.1%	0.1%
Developed	35.3%	53.8%	21.5%	37.8%
Natural	53.9%	38.7%	59.6%	44%
Wetland	10.8%	7.5%	18.8%	18.2%
Impervious	18%	28.5%	10.1%	18.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Physical Substrate Habitat Alterations*)	--	Unchanged
4a	4a	Escherichia Coli (E. Coli)	32364	Unchanged
4a	4a	Nutrient/Eutrophication Biological Indicators	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Physical Substrate Habitat Alterations*)	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Sanitary Sewer Overflows (Collection System Failures) (Y)	--	--	--	X	X
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	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 in this Charles River AU (MA72-33), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Charles River AU (MA72-33) 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 Charles River AU (MA72-33) 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 CRWA_35CS. CRWA staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples in the Charles River (MA72-33) at CRWA_35CS [Central St, Milford] from 2011-2019 and 2021-2022 (EC =5-7/yr; Ent =1-2/yr). Analysis of the recent five years of this multi-year limited/moderate frequency *E. coli* dataset indicated that in all 5 years (2017-2019 and 2021-2022) 100% of intervals had GMs >126 CFU/100mL, 4 years had ≥2 samples exceed the 410 CFU/100mL STV (2017-2018 and 2021-2022, n=3-5), and cumulatively across years 100% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_35CS are indicative of an Escherichia Coli (E. Coli) impairment. The available *Enterococcus* data from CRWA_35CS are too limited to assess according to the 2024 CALM. Note that samples exceeded the 130 CFU/100mL STV in the most recent 5 years in 2022 (n=2), 2021 (n=1), 2019 (n=1), 2018 (n=1), and 2017 (n=2), with elevated samples ranging from 201-4,350 CFU/100mL. Surface water sampling was conducted by the USGS upstream of the Milford WWTF discharge on this Charles River AU (MA72-33) at station USGS_01103138 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
CRWA_35CS	Charles River Watershed Association	Water Quality	Charles River	Central Street, Milford	42.139430	-71.512220
USGS-01103138	USGS Massachusetts Water Science Center	Water Quality	Charles River	CHARLES RIVER AT MILFORD SEWER PLANT, MILFORD, MA; upstream of Milford WWTF	42.120000	-71.507000

Bacteria Data

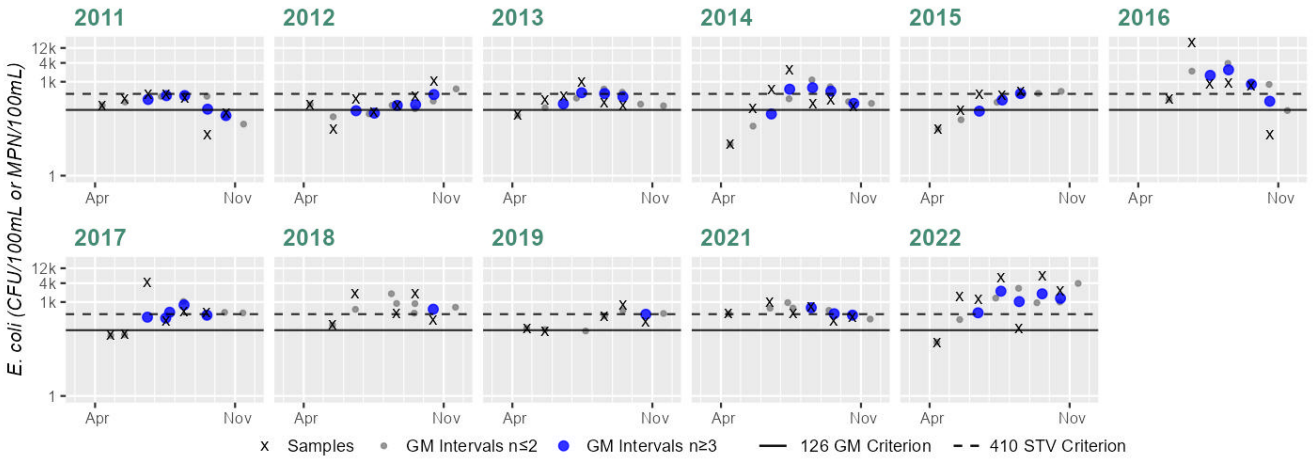
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_35CS	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	20	404	173
CRWA_35CS	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	31	259	89
CRWA_35CS	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	31	1020	195
CRWA_35CS	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	86	134	107
CRWA_35CS	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	85	993	255
CRWA_35CS	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	10	259	50
CRWA_35CS	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	2360	206
CRWA_35CS	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	20	450	94
CRWA_35CS	Charles River Watershed Association	E. coli	04/14/15	08/18/15	5	31	495	194
CRWA_35CS	Charles River Watershed Association	Enterococci	06/16/15	06/16/15	1	404	404	404
CRWA_35CS	Charles River Watershed Association	E. coli	05/17/16	10/18/16	6	20	17300	616
CRWA_35CS	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	637	13000	2877
CRWA_35CS	Charles River Watershed Association	E. coli	04/25/17	09/19/17	6	85	4350	353
CRWA_35CS	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	269	4350	1081
CRWA_35CS	Charles River Watershed Association	E. coli	05/15/18	10/16/18	5	185	1840	586
CRWA_35CS	Charles River Watershed Association	Enterococci	06/19/18	06/19/18	1	1270	1270	1270
CRWA_35CS	Charles River Watershed Association	E. coli	04/23/19	10/22/19	5	119	816	258

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_35CS	Charles River Watershed Association	Enterococci	09/17/19	09/17/19	1	201	201	201
CRWA_35CS	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	256	959	461
CRWA_35CS	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	86	1780	391
CRWA_35CS	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	52	6870	1036
CRWA_35CS	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	480	3260	1250

Station CRWA_35CS - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	173
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	195
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	255
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	206
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	5
SeasGM	194
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	6
SeasGM	616
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	6
SeasGM	353
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	3
%n>STV	50%

Variable*	Result
Samples	5
SeasGM	586
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	3
%n>STV	60%

Variable*	Result
Samples	5
SeasGM	258
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	20%

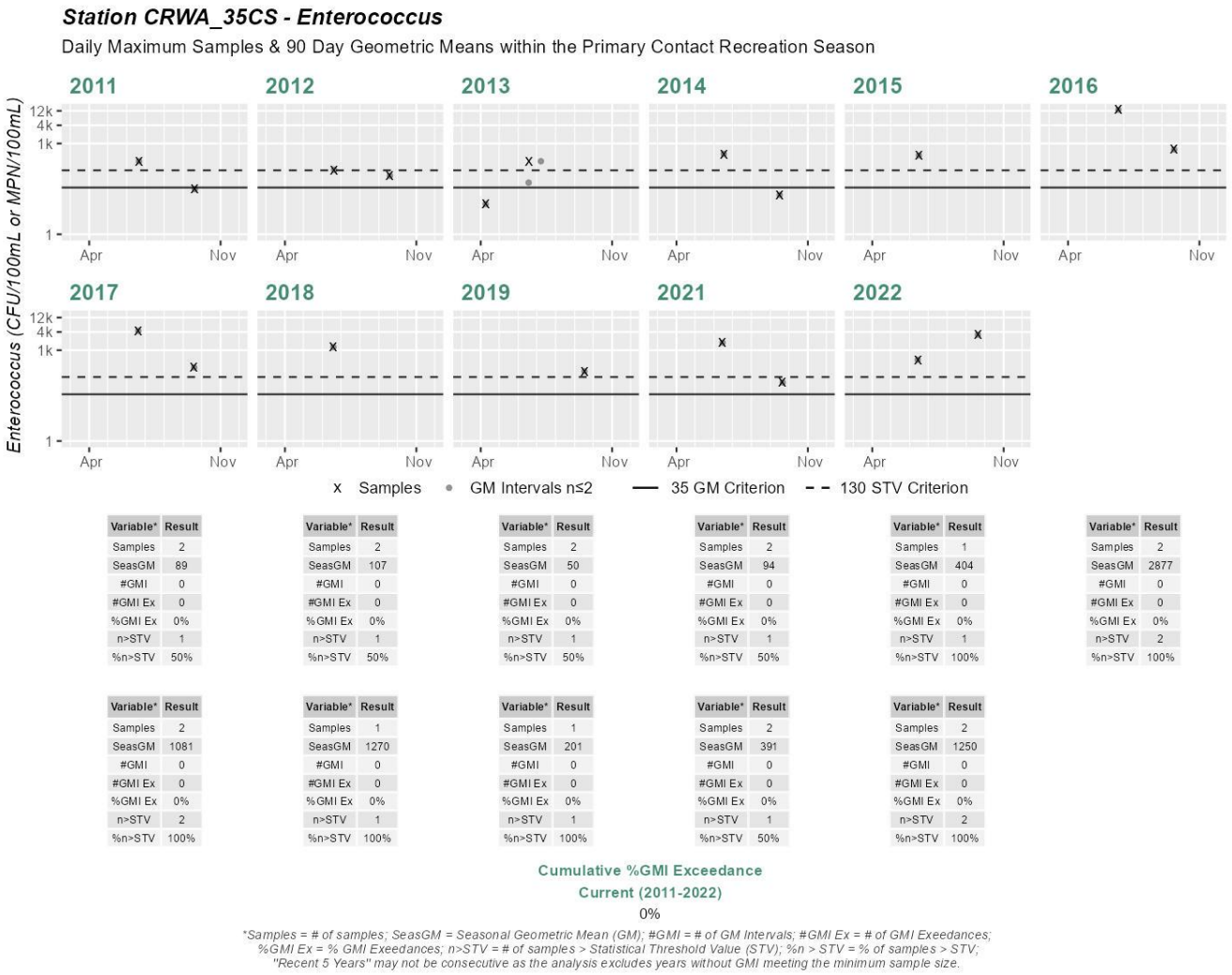
Variable*	Result
Samples	6
SeasGM	461
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	4
%n>STV	66%

Variable*	Result
Samples	7
SeasGM	1036
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	5
%n>STV	71%

Cumulative %GMI Exceedance Current (2011-2022)
87%

Cumulative %GMI Exceedance Current (Recent 5 Years)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Milford WWTF discharge on the Charles River (MA72-33) at station USGS_01103138 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here). * indicates the ∑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 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-01103138	8/21/2020	19.9	16.2	E1.76	4.78	6.89	5.68	49.5*
USGS-01103138	9/22/2020	11.5	10.4	E1.11	2.62	5.19	6.74	30.2*
USGS-01103138	10/21/2020	E11	E9.25	V1.16	2.68	4.96	5.25	28.5*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-33) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_35CS.
CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in the Charles River (MA72-33) at CRWA_35CS [Central St, Milford] from 2011-2019 and 2021-2022 (current n=7-12/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset indicated that in 5 of 5 sufficient data years >20% of the GMs were >244 CFU/100mL (2017-2019 and 2021-2022, 25-60%), 2 years had ≥2 samples exceed the 794 CFU/100mL STV (2018 and 2022, n=2 & 5), and cumulatively across years 45% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_35CS are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_35CS	Charles River Watershed Association	Water Quality	Charles River	Central Street, Milford	42.139430	-71.512220

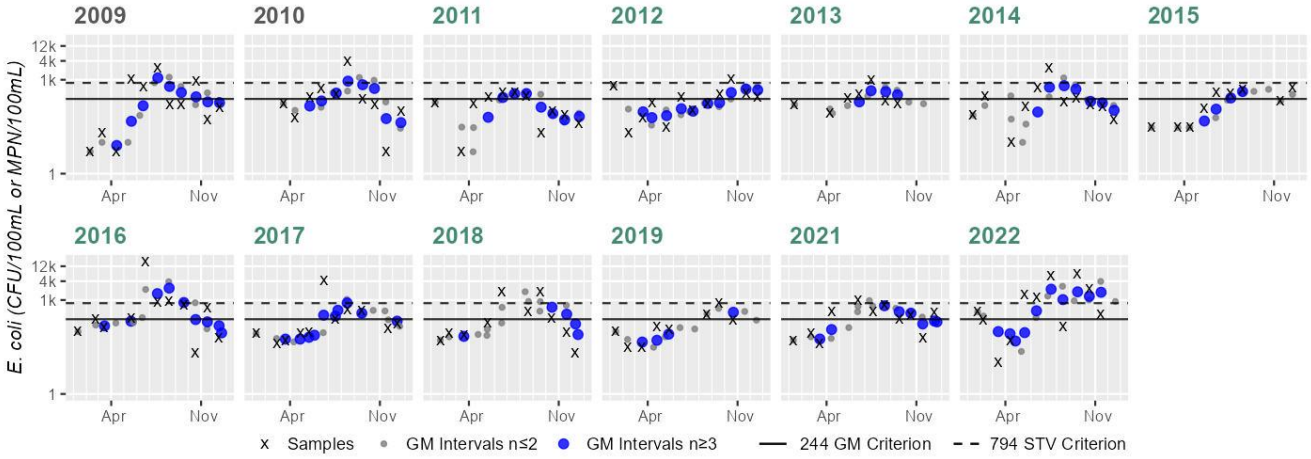
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_35CS	Charles River Watershed Association	E. coli	02/10/09	12/15/09	11	5	2360	125
CRWA_35CS	Charles River Watershed Association	E. coli	03/16/10	12/21/10	10	5	3870	182
CRWA_35CS	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	404	102
CRWA_35CS	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	20	1020	176
CRWA_35CS	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	85	993	239
CRWA_35CS	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	10	2360	166
CRWA_35CS	Charles River Watershed Association	E. coli	01/13/15	12/15/15	9	30	546	145
CRWA_35CS	Charles River Watershed Association	E. coli	01/12/16	12/13/16	11	20	17300	337
CRWA_35CS	Charles River Watershed Association	E. coli	01/10/17	12/12/17	11	41	4350	182
CRWA_35CS	Charles River Watershed Association	E. coli	01/23/18	12/11/18	10	20	1840	183
CRWA_35CS	Charles River Watershed Association	E. coli	01/15/19	10/22/19	8	31	816	134
CRWA_35CS	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	41	959	214
CRWA_35CS	Charles River Watershed Association	E. coli	01/25/22	11/15/22	11	10	6870	494

Station CRWA_35CS - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	125
#GMI	9
#GMI Ex	4
%GMI Ex	44%
n>STV	3
%n>STV	27%

Variable*	Result
Samples	10
SeasGM	182
#GMI	8
#GMI Ex	4
%GMI Ex	50%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	102
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	176
#GMI	10
#GMI Ex	3
%GMI Ex	30%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	7
SeasGM	239
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	11
SeasGM	166
#GMI	7
#GMI Ex	3
%GMI Ex	42%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	9
SeasGM	145
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	337
#GMI	9
#GMI Ex	3
%GMI Ex	33%
n>STV	3
%n>STV	27%

Variable*	Result
Samples	11
SeasGM	182
#GMI	10
#GMI Ex	5
%GMI Ex	50%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	10
SeasGM	183
#GMI	5
#GMI Ex	2
%GMI Ex	40%
n>STV	2
%n>STV	20%

Variable*	Result
Samples	8
SeasGM	134
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	12%

Variable*	Result
Samples	11
SeasGM	214
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	494
#GMI	10
#GMI Ex	6
%GMI Ex	60%
n>STV	5
%n>STV	45%

Cumulative %GMI Exceedance Historic (1997-2010)
47%

Cumulative %GMI Exceedance Current (2011-2022)
43%

Cumulative %GMI Exceedance Current (Recent 5 Years)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Charles River (MA72-36)

Location:	From Watertown Dam (NATID: MA00456), Watertown to the Boston University Bridge, Boston/Cambridge (formerly part of 2006 segment: Charles River MA72-08).
AU Type:	RIVER
AU Size:	6.1 MILES
Classification/Qualifier:	B: WWF, CSO

Charles River (MA72-36)

Watershed Area: 282.22 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	282.22	6.99	96.45	1.13
Agriculture	1.8%	0.1%	1.8%	0.5%
Developed	31.9%	73.1%	19%	45.8%
Natural	51.5%	26.4%	50.9%	51.5%
Wetland	14.8%	0.4%	28.3%	2.3%
Impervious	17.7%	59%	9.7%	32.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	(Non-Native Fish/Shellfish/Zooplankton*)	--	Unchanged
5	5	(Water Chestnut*)	--	Unchanged
5	5	Chlorophyll-a	33826	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Enterococcus	--	Added
5	5	Escherichia Coli (E. Coli)	32371	Unchanged
5	5	Fish Bioassessments	--	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Harmful Algal Blooms	33826	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	33826	Unchanged
5	5	Oil and Grease	--	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	pH, High	--	Unchanged
5	5	Phosphorus, Total	33826	Unchanged
5	5	Sediment Bioassay [Acute Toxicity Freshwater]	--	Unchanged
5	5	Transparency / Clarity	33826	Unchanged
5	5	Unspecified Metals in Sediment	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
(Non-Native Fish/Shellfish/Zooplankton*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Chlorophyll-a	Upstream Source (Y)	X	--	--	--	--
DDT in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Dissolved Oxygen	Dam or Impoundment (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Municipal Point Source Discharges (Y)	X	--	--	--	--
Dissolved Oxygen	Non-Point Source (N)	X	--	--	--	--
Enterococcus	Combined Sewer Overflows (Y)	--	--	--	X	--
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	--
Enterococcus	Illicit Connections/Hook-ups to Storm Sewers (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (N)	--	--	--	X	X
Fish Bioassessments	Contaminated Sediments (Y)	X	--	--	--	--
Fish Bioassessments	Dam or Impoundment (Y)	X	--	--	--	--
Fish Bioassessments	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Fish Bioassessments	Municipal Point Source Discharges (Y)	X	--	--	--	--
Fish Bioassessments	Non-Point Source (N)	X	--	--	--	--
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Harmful Algal Blooms	Illicit Connections/Hook-ups to Storm Sewers (N)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Unspecified Urban Stormwater (N)	--	--	X	X	X
Harmful Algal Blooms	Upstream Source (Y)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Contaminated Sediments (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Municipal Point Source Discharges (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Non-Point Source (N)	X	--	--	--	--
Oil and Grease	Source Unknown (N)	--	--	X	X	X
PCBs in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
pH, High	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
pH, High	Municipal Point Source Discharges (Y)	X	--	--	--	--
pH, High	Non-Point Source (N)	X	--	--	--	--
Phosphorus, Total	Contaminated Sediments (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Non-Point Source (N)	X	--	--	--	--
Sediment Bioassay [Acute Toxicity Freshwater]	Contaminated Sediments (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	X	--
Transparency / Clarity	Illicit Connections/Hook-ups to Storm Sewers (N)	X	--	--	X	--
Transparency / Clarity	Municipal Point Source Discharges (Y)	X	--	--	X	--
Transparency / Clarity	Non-Point Source (N)	X	--	--	X	--
Transparency / Clarity	Unspecified Urban Stormwater (N)	X	--	--	X	--
Transparency / Clarity	Upstream Source (Y)	X	--	--	X	--
Unspecified Metals in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Unspecified Metals in Sediment	Municipal Point Source Discharges (Y)	X	--	--	--	--
Unspecified Metals in Sediment	Non-Point Source (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 this Charles River AU (MA72-36) continues to be assessed as Not Supporting. The prior PCBs in Fish Tissue and DDT in Fish Tissue impairments are being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in the next upstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in the Charles River (referred to by MA DPH as ''Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)'') in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing PCBs and Pesticides advisories in the January 2025 list (the Pesticides advisory is translated by DEP to DDT in Fish Tissue). 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 5)

Summary
Fish toxics sampling was conducted in the next upstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MA DPH retained the existing site-specific fish consumption advisories for PCBs and Pesticides associated with the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) 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, PCBs in Fish Tissue, and DDT in Fish Tissue for this Charles River AU (MA72-36).

Aesthetic

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

2024/26 Use Attainment Summary

The Aesthetics Use for this Charles River AU (MA72-36) continues to be assessed as Not Supporting with the prior Oil and Grease and Harmful Algal Blooms impairments being carried forward. Since the Transparency/Clarity impairment was redundantly duplicated across multiple uses for this waterbody, the Transparency/Clarity impairment is being removed from the Aesthetics Use but will continue to be maintained under the Primary Contact Recreation Use. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Charles River AU.
During the period 2009 through 2014, C-HAB postings for Charles River were reported to MDPH based on visual observations for 42 days in 2009, 77 days in 2010, 88 days in 2012 (58 of those with cell count data), 14 days in 2013, and 38 days in 2014. During the period 2015 through 2022, C-HAB postings for the Charles River were reported to MDPH based on visual observations for 86 days in 2015, 76 days in 2016, 14 days in 2017, 21 days in 2018, 15 days in 2019, 168 days in 2020 (134 of those with cell count data), and 23 days in 2022. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, this is reflective of the existing Harmful Algal Blooms impairment for this Charles River AU (MA72-36).

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 2009 through 2014, C-HAB postings for Charles River (MA72-36) were reported to MDPH based on visual observations for 42 days in 2009, 77 days in 2010, 88 days in 2012 (58 of those with cell count data), 14 days in 2013, and 38 days in 2014. During the period 2015 through 2022, C-HAB postings for Charles River (MA72-36) were reported to MDPH based on visual observations for 86 days in 2015, 76 days in 2016, 14 days in 2017, 21 days in 2018, 15 days in 2019, 168 days in 2020 (134 of those with cell count data), and 23 days in 2022. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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
Charles River	Boston/Cambridge	86	76	14	21	15	168		23

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this Charles River AU (MA72-36) continues to be assessed as Not Supporting. Transparency / Clarity impairment: carried forward based on Secchi data from MWRA_001, MWRA_144, MWRA_002, MWRA_003, MWRA_004, and MWRA_005. Harmful Algal Blooms impairment: carried forward. Escherichia Coli (E. Coli) impairment: carried forward based on bacteria data from MWRA_001*, the combined CRWA_1NBS & CRWA_700S station, MWRA_144*, CRWA_715S, MWRA_002*, CRWA_729S, MWRA_003*, CRWA_2LARZ, CRWA_743S, MWRA_004*, MWRA_005*, and the combined CRWA_3BU & MWRA_206 station. Note that data from stations with an * triggered a new Enterococcus impairment. Oil and Grease impairment (from the Aesthetics Use): carried forward. Note that space constraints severely limit the following discussion of analyses.
C-HAB postings were reported to MDPH for >20 days in multiple years in the 2009-2014 and 2015-2022 periods. These blooms are reflective of the existing Harmful Algal Blooms impairment. More details can be found under the Aesthetics Use.
MWRA collected Secchi data at MWRA_001 (2011 and 2014-2022), MWRA_144 (2011-2022), MWRA_002 (2011-2022), MWRA_003 (2011-2022), MWRA_004 (2011-2022), and MWRA_005 (2011-2022). The most recent 5 yrs of data with >2 Secchi measurements were used for assessment (and all station depths were 1.2 m or deeper). The number of Secchi measurements/station/year usually ranged from >10 - 36 and typically the majority of measurements were less than the 1.2 m (4 ft) threshold. Secchi depth measurements from all 6 stations reflect the existing Transparency / Clarity impairment.
CRWA and MWRA staff/volunteers collected *E. coli* (EC) samples from 2011-2022 at 12 stations/combined stations and *Enterococcus* (Ent) samples at 9 stations. Samples were collected from upstream to downstream as follows: MWRA_001 [At Newton Yacht Club, upstr. of active CSOs] from 2011-2022 (EC & Ent n=18-61/yr), CRWA_1NBS & CRWA_700S [N Beacon St Bridge, Watertown/Boston] from 2011-2022 (EC n=18-39/yr), MWRA_144 [S of Arsenal Complex, near CSO BOS032 (closed), upstr. of active CSOs] from 2011-2022 (EC & Ent n=18-36/yr), CRWA_715S [Arsenal St Bridge, Watertown] from 2011-2019 and 2021-2022 (EC n=6-7/yr), MWRA_002 [10m downstr. of BOS033 (closed), upstr. of active CSOs] from 2011-2022 (EC & Ent n=18-61/yr), CRWA_729S [Eliot St Bridge, Cambridge] from 2011-2019 and 2021-2022 (EC n=6-7/yr & Ent n=1), MWRA_003 [Between CAM005 & CAM007] from 2011-2022 (EC & Ent n=18-61/yr), CRWA_2LARZ [Larz Anderson Bridge-Center, Cambridge/Boston] from 2011-2013 and 2016-2022 (EC n=18-31/yr), CRWA_743S [Western Ave Bridge, Cambridge] from 2011-2019 and 2021-2022 (EC n=5-7/yr, Ent n=1-2/yr), MWRA_004 [Downstr. of River St bridge] from 2011-2022 (EC & Ent n=18-36/yr), MWRA_005 [Upstr. of Cottage Farm and CAM011 (closed)] from 2011-2022 (EC n=31-75/yr, Ent n=32-75), CRWA_3BU & MWRA_206 [Upstr. side of Boston Univ Bridge, Cambridge/Boston] from 2011-2022 (EC n=22-43/yr), MWRA_206 [Mid-channel, upstr. side of BU Bridge] from 2019-2021 (Ent n=1-18/yr).
E. coli data from all 12 stations/combined stations do not meet 2024 CALM guidance and are reflective of the existing Escherichia Coli (E. Coli) impairment.
Enterococcus data from CRWA_729S and CRWA_743S were too limited to assess according to the 2024 CALM, and data from the most downstr. station, MWRA_206, meet 2024 CALM guidance. However, Ent data from the other 6 stations located throughout the AU do not meet CALM guidance. Analysis of the multi-year high frequency Ent datasets for all 6 stations indicated that in 4-5 of the most recent 5 yrs >10% of intervals had GMs >35 CFU/100mL, 3-5 yrs

had >10% of samples exceed the 130 CFU/100mL STV, and cumulatively across the 5 yrs >10% of intervals had GMs >35 CFU/100mL for all 6 stations. Ent data from MWRA_001, MWRA_144, MWRA_002, MWRA_003, MWRA_004, and MWRA_005 are indicative of an Enterococcus impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_1NBS	Charles River Watershed Association	Water Quality	Charles River	North Beacon Street Bridge, Watertown/Boston	42.358900	-71.161900
CRWA_2LARZ	Charles River Watershed Association	Water Quality	Charles River	Larz Anderson Bridge-Center, N. Harvard St., Cambridge/Boston	42.368897	-71.123321
CRWA_3BU	Charles River Watershed Association	Water Quality	Charles River	Boston University Bridge, Cambridge/Boston	42.352502	-71.110618
CRWA_700S	Charles River Watershed Association	Water Quality	Charles River	N. Beacon St. Bridge, Watertown	42.358898	-71.161598
CRWA_715S	Charles River Watershed Association	Water Quality	Charles River	Arsenal St. Bridge, Watertown	42.361599	-71.147301
CRWA_729S	Charles River Watershed Association	Water Quality	Charles River	Eliot St. Bridge, Cambridge	42.371601	-71.132797
CRWA_743S	Charles River Watershed Association	Water Quality	Charles River	Western Ave. Bridge, Cambridge	42.364201	-71.116798
MWRA_001	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, at Newton Yacht Club, upstream of active CSOs	42.359186	-71.170092
MWRA_002	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, 10m downstream of BOS033 (closed), upstream of active CSOs	42.363051	-71.145688
MWRA_003	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, between CAM005 and CAM007	42.373688	-71.131795
MWRA_004	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, downstream of River St. bridge	42.362948	-71.116901
MWRA_005	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, upstream of Cottage Farm and CAM011 (closed)	42.355082	-71.115513
MWRA_144	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, south of Arsenal Complex, near CSO BOS032 (closed), upstream of active CSOs	42.359692	-71.155560
MWRA_206	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Mid-channel, sampled on the upstream side of the BU Bridge	42.352678	-71.110694

Bacteria Data

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

(CRWA 2023) (MassDEP Undated 2) (MWRA 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
CRWA_1NBS	Charles River Watershed Association	E. coli	07/05/11	10/19/11	24	60	1600	251
CRWA_1NBS	Charles River Watershed Association	E. coli	07/02/12	10/10/12	25	30	7100	128
CRWA_1NBS	Charles River Watershed Association	E. coli	06/25/13	10/16/13	26	30	1600	156
CRWA_1NBS	Charles River Watershed Association	E. coli	06/24/14	10/15/14	29	20	1600	122
CRWA_1NBS	Charles River Watershed Association	E. coli	06/02/15	10/15/15	33	20	6100	172
CRWA_1NBS	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	10	1400	97
CRWA_1NBS	Charles River Watershed Association	E. coli	06/27/17	10/19/17	28	40	2300	289
CRWA_1NBS	Charles River Watershed Association	E. coli	06/26/18	10/18/18	30	80	3600	303
CRWA_1NBS	Charles River Watershed Association	E. coli	06/25/19	10/15/19	29	60	10000	296
CRWA_1NBS	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	30	1600	180
CRWA_1NBS	Charles River Watershed Association	E. coli	05/13/21	10/21/21	23	110	44000	505
CRWA_1NBS	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	60	800	168
CRWA_2LARZ	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	20	3500	165
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/05/12	10/17/12	30	5	1400	67
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/25/13	10/16/13	28	10	1600	98
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	15	920	78

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	40	1600	127
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/26/18	10/18/18	31	20	1530	207
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/25/19	10/15/19	31	40	18000	188
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	5	1500	84
CRWA_2LARZ	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	30	8000	328
CRWA_2LARZ	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	200	56
CRWA_3BU	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	10	2100	181
CRWA_3BU	Charles River Watershed Association	E. coli	06/05/12	10/17/12	30	10	1400	144
CRWA_3BU	Charles River Watershed Association	E. coli	06/25/13	10/16/13	27	10	1220	105
CRWA_3BU	Charles River Watershed Association	E. coli	06/24/14	10/15/14	30	20	1600	150
CRWA_3BU	Charles River Watershed Association	E. coli	06/02/15	10/15/15	36	8	9000	100
CRWA_3BU	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	20	1600	125
CRWA_3BU	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	30	1600	149
CRWA_3BU	Charles River Watershed Association	E. coli	06/26/18	10/18/18	31	20	5000	210
CRWA_3BU	Charles River Watershed Association	E. coli	06/27/19	10/15/19	30	5	9000	156
CRWA_3BU	Charles River Watershed Association	E. coli	06/18/20	10/15/20	17	5	820	99
CRWA_3BU	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	50	10000	277

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_3BU	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	370	88
CRWA_700S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	74	1330	199
CRWA_700S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	6	52	228	135
CRWA_700S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	109	1790	266
CRWA_700S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	6	20	292	119
CRWA_700S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	6	5	1110	128
CRWA_700S	Charles River Watershed Association	E. coli	04/12/16	09/20/16	5	31	663	131
CRWA_700S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	5	84	350	218
CRWA_700S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	4	52	512	184
CRWA_700S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	5	134	733	350
CRWA_700S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	73	842	199
CRWA_700S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	145	3260	392
CRWA_715S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	52	1990	209
CRWA_715S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	41	677	128
CRWA_715S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	74	886	290
CRWA_715S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	2480	119
CRWA_715S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	31	426	117

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_715S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	10	2600	123
CRWA_715S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	608	157
CRWA_715S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	41	1620	182
CRWA_715S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	135	888	349
CRWA_715S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	20	2600	259
CRWA_715S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	63	4110	458
CRWA_729S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	86	3870	292
CRWA_729S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	20	2610	129
CRWA_729S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	41	313	96
CRWA_729S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	20	185	74
CRWA_729S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	31	203	75
CRWA_729S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	345	94
CRWA_729S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	31	743	155
CRWA_729S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	31	670	137
CRWA_729S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	6	86	1160	287
CRWA_729S	Charles River Watershed Association	Enterococcus	09/17/19	09/17/19	1	10	10	10
CRWA_729S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	63	631	210

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_729S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	1220	118
CRWA_743S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	2480	152
CRWA_743S	Charles River Watershed Association	Enterococcus	06/21/11	09/20/11	2	5	121	24
CRWA_743S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	318	44
CRWA_743S	Charles River Watershed Association	Enterococcus	06/19/12	09/18/12	2	5	10	7
CRWA_743S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	41	487	96
CRWA_743S	Charles River Watershed Association	Enterococcus	04/09/13	06/18/13	2	5	199	31
CRWA_743S	Charles River Watershed Association	E. coli	04/15/14	09/16/14	6	5	323	43
CRWA_743S	Charles River Watershed Association	Enterococcus	06/17/14	09/16/14	2	10	20	14
CRWA_743S	Charles River Watershed Association	E. coli	04/14/15	09/15/15	6	5	134	27
CRWA_743S	Charles River Watershed Association	Enterococcus	06/16/15	09/15/15	2	5	84	20
CRWA_743S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	5	5	399	60
CRWA_743S	Charles River Watershed Association	Enterococcus	06/21/16	09/20/16	2	5	41	14
CRWA_743S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	20	226	93
CRWA_743S	Charles River Watershed Association	Enterococcus	06/20/17	09/19/17	2	5	10	7
CRWA_743S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	30	613	141
CRWA_743S	Charles River Watershed Association	Enterococcus	06/19/18	09/18/18	2	10	20	14

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_743S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	41	1070	184
CRWA_743S	Charles River Watershed Association	Enterococcus	06/18/19	09/17/19	2	5	41	14
CRWA_743S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	6	31	759	131
CRWA_743S	Charles River Watershed Association	Enterococcus	06/15/21	09/21/21	2	52	74	62
CRWA_743S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	6	10	135	65
CRWA_743S	Charles River Watershed Association	Enterococcus	06/14/22	06/14/22	1	41	41	41
MWRA_001	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	134	9210	473
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	2910	85
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	31	1140	207
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	122	25
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	18	85	24200	351
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	18	10	2190	44
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	30	38400	219
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	19900	30
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	51	826	196
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	650	24
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	1140	156

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	173	17
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	41	24200	411
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	24200	150
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	52	14100	321
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	24200	96
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	52	17300	473
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	24200	183
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	24200	232
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	1290	33
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	20	6130	356
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	14100	95
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	1660	245
MWRA_001	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	1090	47
MWRA_002	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	20	24200	307
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	5480	60
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	933	101
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	86	14

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	18	41	6130	390
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	18	10	5790	42
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	14100	135
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	6130	23
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	727	121
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	259	22
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	17300	125
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	1190	16
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	52	12000	354
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	19900	85
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	31	17300	287
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	5790	70
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	10	12000	343
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	14100	136
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	20	1080	134
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	364	26
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	31	19900	336

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	17300	114
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	20	2850	279
MWRA_002	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	1620	29
MWRA_003	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	74	6870	301
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	1150	59
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	20	12000	106
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	97	15
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	31	2100	184
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	1350	29
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	34100	127
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	13000	29
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1840	71
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	443	18
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	1380	102
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	143	17
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	41	10500	316
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	13000	73

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	62	10500	408
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	13000	66
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	63	24200	311
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	18900	87
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	959	105
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	175	25
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	31	11200	301
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	17300	87
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	727	87
MWRA_003	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	85	15
MWRA_004	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	1450	151
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	464	36
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	1110	54
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	336	13
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	20	1470	98
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	691	25
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	8660	86

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	4610	18
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1050	33
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	240	15
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	563	40
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	27	10	41	13
MWRA_004	Massachusetts Water Resources Authority	E. coli	05/01/17	10/31/17	26	20	8160	328
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	05/01/17	10/31/17	26	10	1620	30
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	14100	239
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/09/18	10/31/18	36	10	5750	40
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	28	10	9800	178
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	28	10	11200	55
MWRA_004	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	309	52
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	07/07/20	10/01/20	19	10	146	22
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	20	10	3260	139
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	20	10	2380	53
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	161	34
MWRA_004	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	41	11

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/04/11	11/16/11	35	10	1960	171
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/04/11	11/16/11	35	10	413	37
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/02/12	10/31/12	38	10	5480	108
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/02/12	10/31/12	38	10	1940	21
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/01/13	11/07/13	35	10	1190	99
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/01/13	11/07/13	35	10	1210	19
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/01/14	10/27/14	36	10	1780	61
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/01/14	10/27/14	36	10	813	18
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/16/15	10/27/15	35	10	789	48
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/16/15	10/27/15	35	10	226	15
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/11/16	10/27/16	43	10	1400	98
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/11/16	10/27/16	43	10	269	15
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/14/17	10/31/17	64	10	4880	214
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/14/17	10/31/17	64	10	5170	52
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/04/18	11/27/18	75	10	10500	268
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/27/18	75	10	5170	67
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/01/19	09/27/19	44	10	8660	186

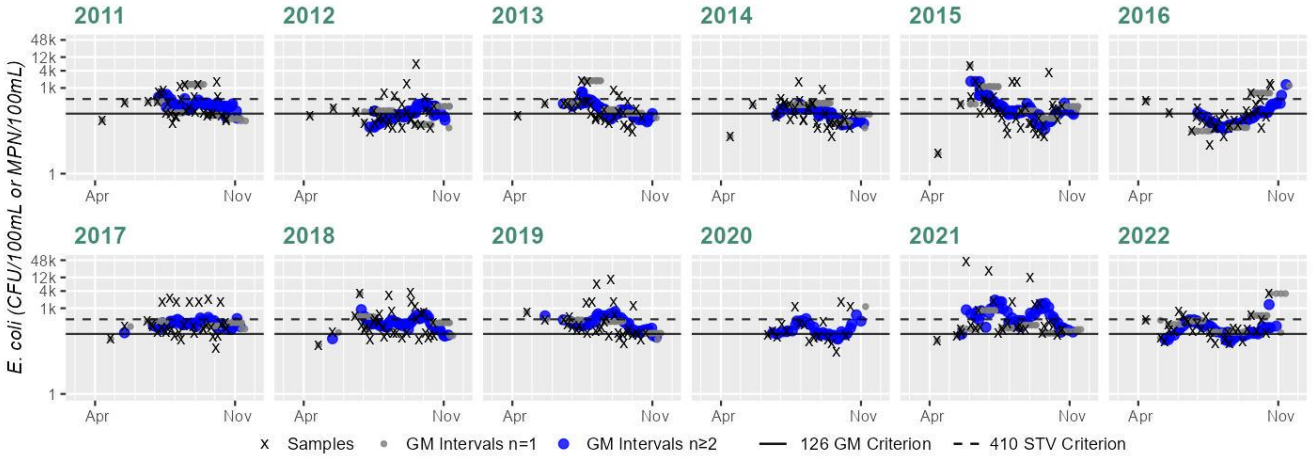
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/01/19	09/27/19	44	10	6870	67
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/03/20	10/20/20	53	10	5790	192
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/20/20	52	10	1790	62
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/05/21	10/20/21	36	10	24200	248
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/05/21	10/20/21	36	10	24200	105
MWRA_005	Massachusetts Water Resources Authority	Enterococcus	04/05/22	11/02/22	32	10	650	24
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/06/22	11/02/22	31	10	1660	102
MWRA_144	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	86	24200	413
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	1940	48
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	1580	161
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	199	19
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	18	63	24200	449
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	18	10	5480	47
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	31	8160	175
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	3450	34
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	41	813	175
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	576	19

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	20	3080	158
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	27	10	487	20
MWRA_144	Massachusetts Water Resources Authority	E. coli	05/01/17	10/31/17	25	30	9800	330
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	05/01/17	10/31/17	25	10	6490	78
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	20	24200	260
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/09/18	10/31/18	36	10	12000	52
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	28	52	24200	403
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	28	10	19900	115
MWRA_144	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	31	4360	208
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	07/07/20	10/01/20	19	10	262	37
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	20	31	7700	288
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	20	10	1940	68
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	20	1960	330
MWRA_144	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	703	36
MWRA_206	Massachusetts Water Resources Authority	E. coli	04/15/19	11/02/19	13	63	1500	234
MWRA_206	Massachusetts Water Resources Authority	Enterococcus	04/15/19	08/11/19	13	10	1240	64
MWRA_206	Massachusetts Water Resources Authority	E. coli	04/03/20	06/17/20	18	31	328	106

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_206	Massachusetts Water Resources Authority	Enterococcus	04/03/20	06/17/20	18	10	262	13
MWRA_206	Massachusetts Water Resources Authority	E. coli	07/02/21	07/02/21	1	2720	2720	2719
MWRA_206	Massachusetts Water Resources Authority	Enterococcus	07/02/21	07/02/21	1	2910	2910	2909

Station CRWA_1NBS & CRWA_700S - Escherichia coli

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



Variable*	Result
Samples	31
SeasGM	238
#GMI	52
#GMI Ex	49
%GMI Ex	94%
n>STV	9
%n>STV	29%

Variable*	Result
Samples	31
SeasGM	129
#GMI	54
#GMI Ex	27
%GMI Ex	50%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	32
SeasGM	172
#GMI	61
#GMI Ex	40
%GMI Ex	65%
n>STV	5
%n>STV	15%

Variable*	Result
Samples	35
SeasGM	121
#GMI	61
#GMI Ex	35
%GMI Ex	57%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	39
SeasGM	164
#GMI	68
#GMI Ex	48
%GMI Ex	70%
n>STV	8
%n>STV	20%

Variable*	Result
Samples	30
SeasGM	102
#GMI	43
#GMI Ex	15
%GMI Ex	34%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	33
SeasGM	277
#GMI	49
#GMI Ex	49
%GMI Ex	100%
n>STV	7
%n>STV	21%

Variable*	Result
Samples	34
SeasGM	285
#GMI	49
#GMI Ex	45
%GMI Ex	91%
n>STV	11
%n>STV	32%

Variable*	Result
Samples	34
SeasGM	304
#GMI	50
#GMI Ex	48
%GMI Ex	96%
n>STV	10
%n>STV	29%

Variable*	Result
Samples	18
SeasGM	180
#GMI	33
#GMI Ex	22
%GMI Ex	66%
n>STV	3
%n>STV	16%

Variable*	Result
Samples	30
SeasGM	406
#GMI	51
#GMI Ex	50
%GMI Ex	98%
n>STV	8
%n>STV	26%

Variable*	Result
Samples	29
SeasGM	207
#GMI	51
#GMI Ex	36
%GMI Ex	70%
n>STV	5
%n>STV	17%

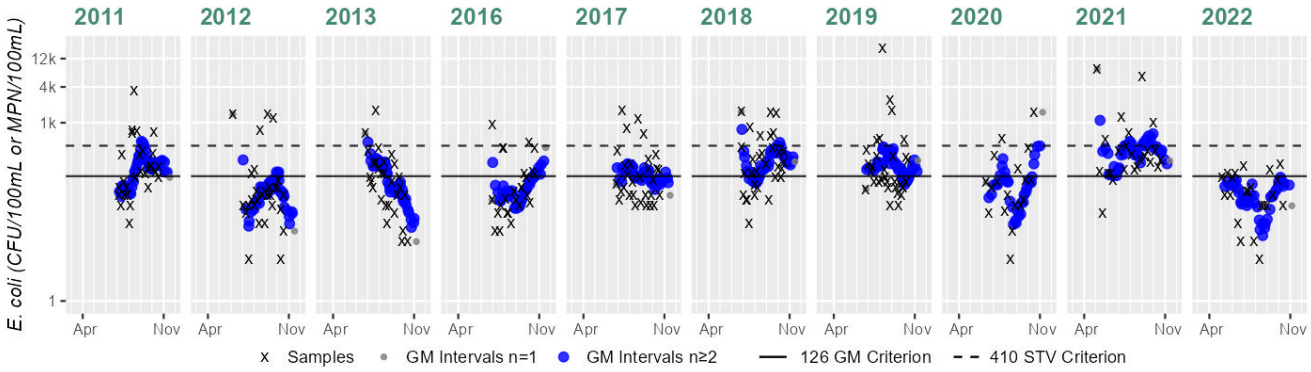
Cumulative %GMI Exceedance Current (2011-2022)
74%

Cumulative %GMI Exceedance Current (Recent 5 Years)
85%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_2LARZ - Escherichia coli

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



Variable*	Result
Samples	28
SeasGM	165
#GMI	49
#GMI Ex	36
%GMI Ex	73%
n>STV	5
%n>STV	17%

Variable*	Result
Samples	30
SeasGM	67
#GMI	54
#GMI Ex	5
%GMI Ex	9%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	28
SeasGM	98
#GMI	53
#GMI Ex	22
%GMI Ex	41%
n>STV	2
%n>STV	7%

Variable*	Result
Samples	25
SeasGM	78
#GMI	41
#GMI Ex	8
%GMI Ex	19%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	30
SeasGM	127
#GMI	48
#GMI Ex	20
%GMI Ex	41%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	31
SeasGM	207
#GMI	49
#GMI Ex	40
%GMI Ex	81%
n>STV	7
%n>STV	22%

Variable*	Result
Samples	31
SeasGM	188
#GMI	47
#GMI Ex	38
%GMI Ex	80%
n>STV	6
%n>STV	19%

Variable*	Result
Samples	18
SeasGM	84
#GMI	33
#GMI Ex	8
%GMI Ex	24%
n>STV	2
%n>STV	11%

Variable*	Result
Samples	24
SeasGM	328
#GMI	45
#GMI Ex	45
%GMI Ex	100%
n>STV	6
%n>STV	25%

Variable*	Result
Samples	22
SeasGM	56
#GMI	41
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

48%

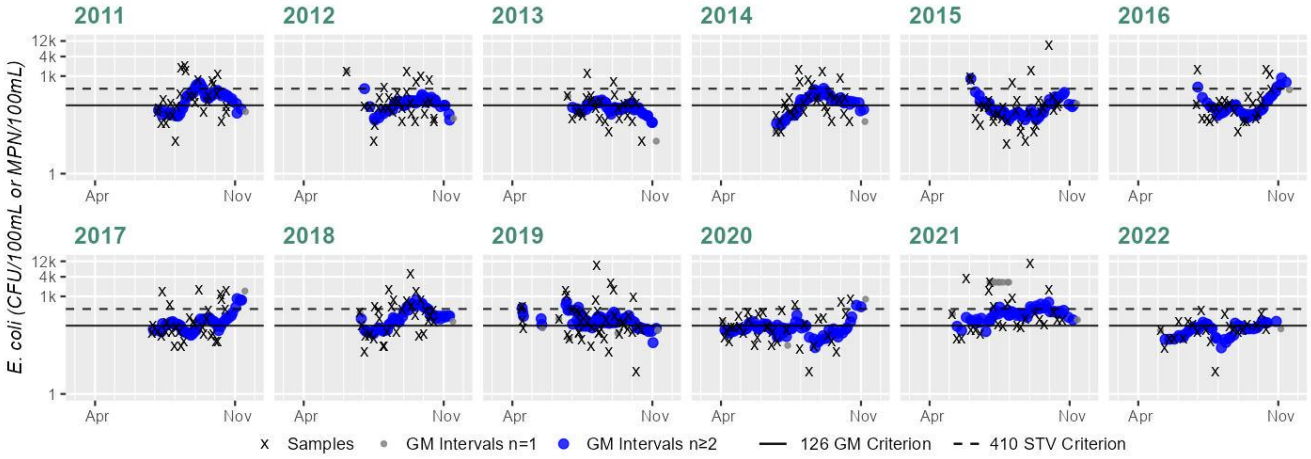
Cumulative %GMI Exceedance Current (Recent 5 Years)

60%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_3BU & MWRA_206 - Escherichia coli

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



Variable*	Result
Samples	28
SeasGM	181
#GMI	49
#GMI Ex	34
%GMI Ex	69%
n>STV	7
%n>STV	25%

Variable*	Result
Samples	30
SeasGM	144
#GMI	54
#GMI Ex	37
%GMI Ex	68%
n>STV	6
%n>STV	20%

Variable*	Result
Samples	27
SeasGM	105
#GMI	51
#GMI Ex	16
%GMI Ex	31%
n>STV	2
%n>STV	7%

Variable*	Result
Samples	30
SeasGM	150
#GMI	54
#GMI Ex	40
%GMI Ex	74%
n>STV	6
%n>STV	20%

Variable*	Result
Samples	36
SeasGM	100
#GMI	63
#GMI Ex	20
%GMI Ex	31%
n>STV	5
%n>STV	13%

Variable*	Result
Samples	25
SeasGM	125
#GMI	41
#GMI Ex	14
%GMI Ex	34%
n>STV	3
%n>STV	12%

Variable*	Result
Samples	30
SeasGM	149
#GMI	48
#GMI Ex	32
%GMI Ex	66%
n>STV	6
%n>STV	20%

Variable*	Result
Samples	31
SeasGM	210
#GMI	49
#GMI Ex	36
%GMI Ex	73%
n>STV	9
%n>STV	29%

Variable*	Result
Samples	43
SeasGM	177
#GMI	91
#GMI Ex	76
%GMI Ex	83%
n>STV	8
%n>STV	18%

Variable*	Result
Samples	35
SeasGM	102
#GMI	69
#GMI Ex	13
%GMI Ex	18%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	25
SeasGM	303
#GMI	47
#GMI Ex	44
%GMI Ex	93%
n>STV	8
%n>STV	32%

Variable*	Result
Samples	22
SeasGM	88
#GMI	41
#GMI Ex	11
%GMI Ex	26%
n>STV	0
%n>STV	0%

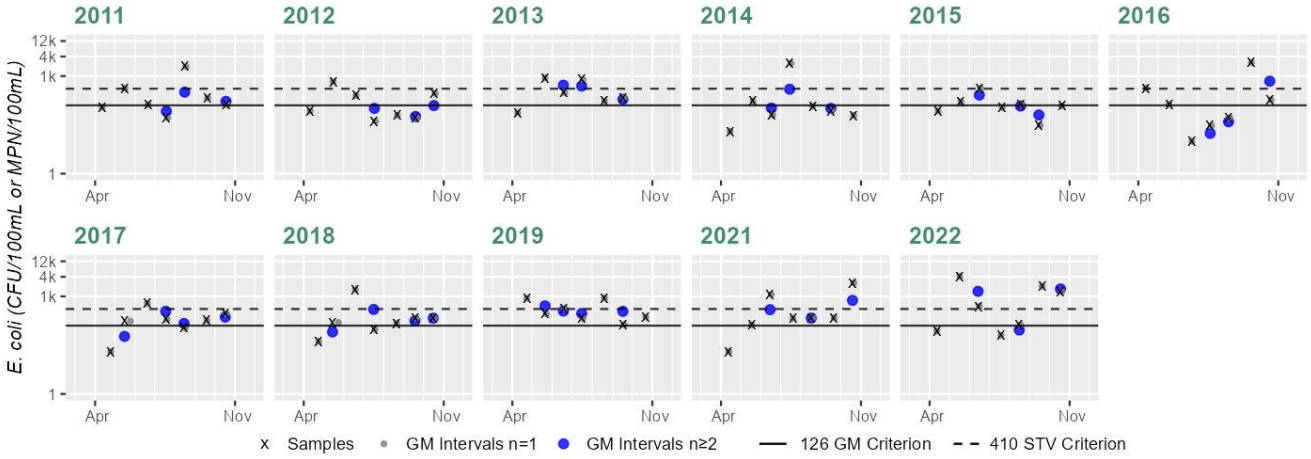
Cumulative %GMI Exceedance Current (2011-2022)
56%

Cumulative %GMI Exceedance Current (Recent 5 Years)
60%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_715S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	209
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	128
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	290
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	119
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	117
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	123
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	157
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	182
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	349
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	259
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	458
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	4
%n>STV	57%

Cumulative %GMI Exceedance Current (2011-2022)

63%

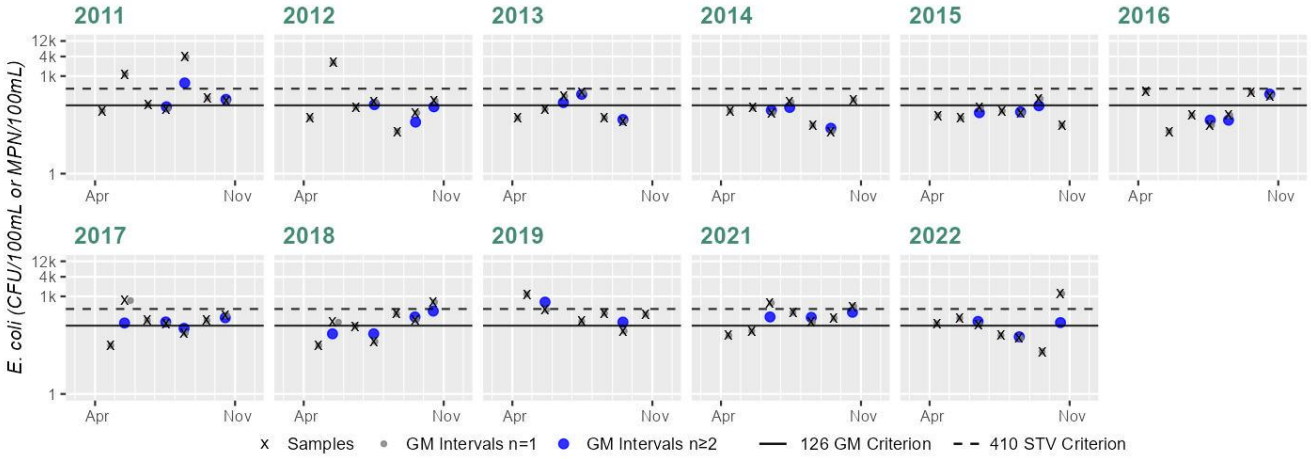
Cumulative %GMI Exceedance Current (Recent 5 Years)

83%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_729S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	292
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	129
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	96
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	74
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	75
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	155
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	137
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	6
SeasGM	287
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	210
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	118
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	14%

Cumulative %GMI Exceedance Current (2011-2022)

52%

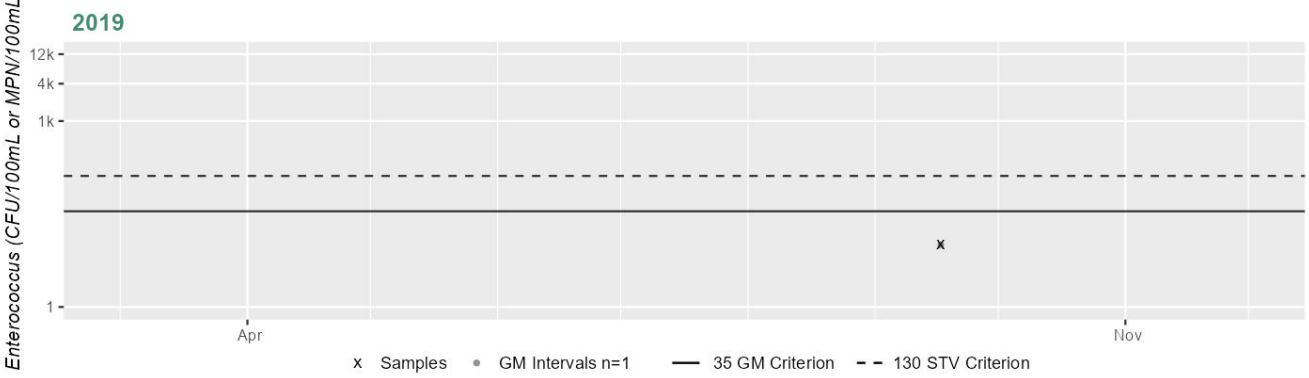
Cumulative %GMI Exceedance Current (Recent 5 Years)

75%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_729S - Enterococcus

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



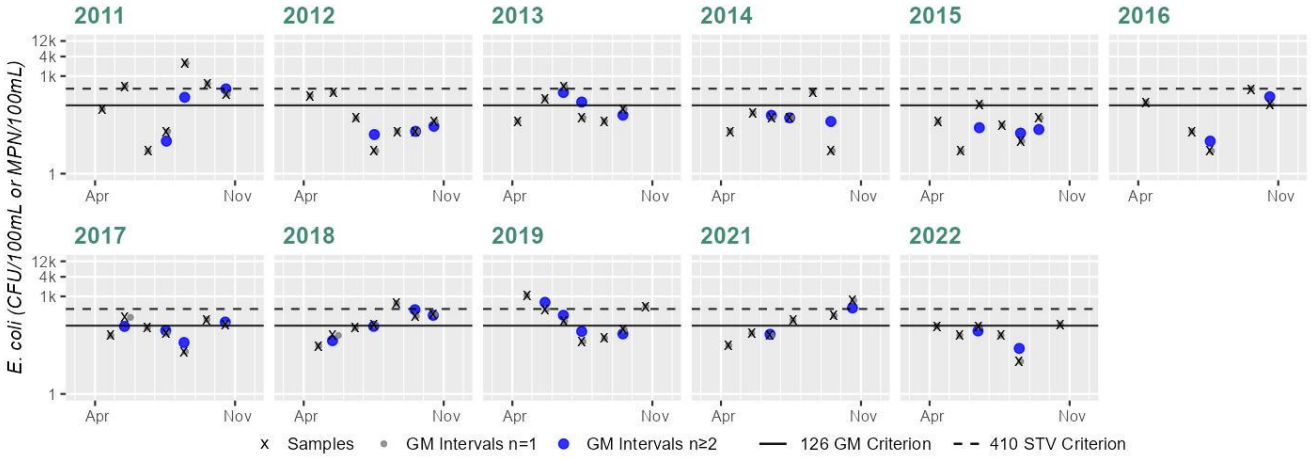
Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_743S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	152
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	44
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	96
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	43
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	27
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	60
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	93
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	141
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	184
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	131
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	6
SeasGM	65
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

33%

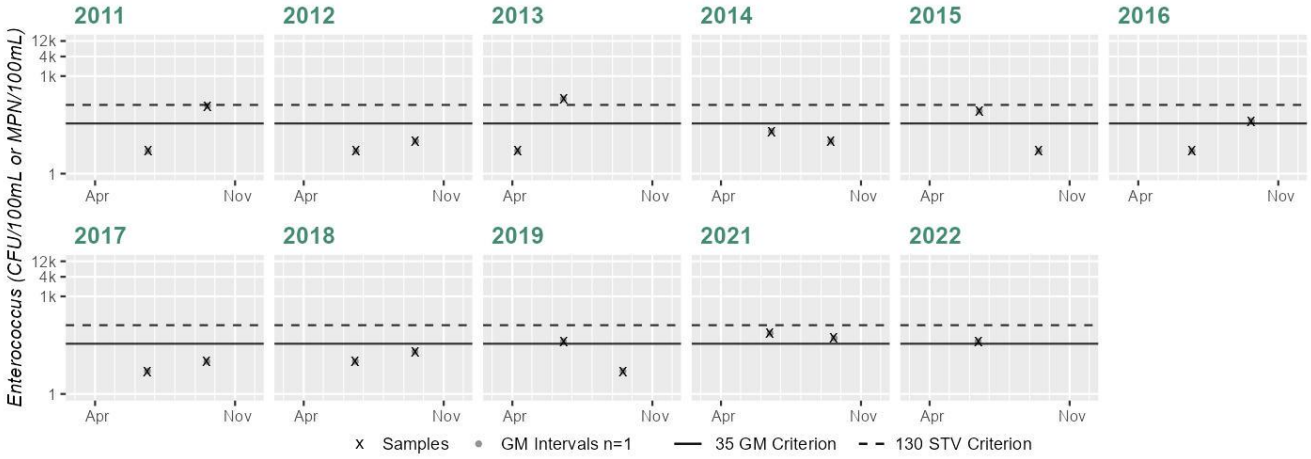
Cumulative %GMI Exceedance Current (Recent 5 Years)

37%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_743S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	24
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Variable*	Result
Samples	2
SeasGM	31
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	62
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

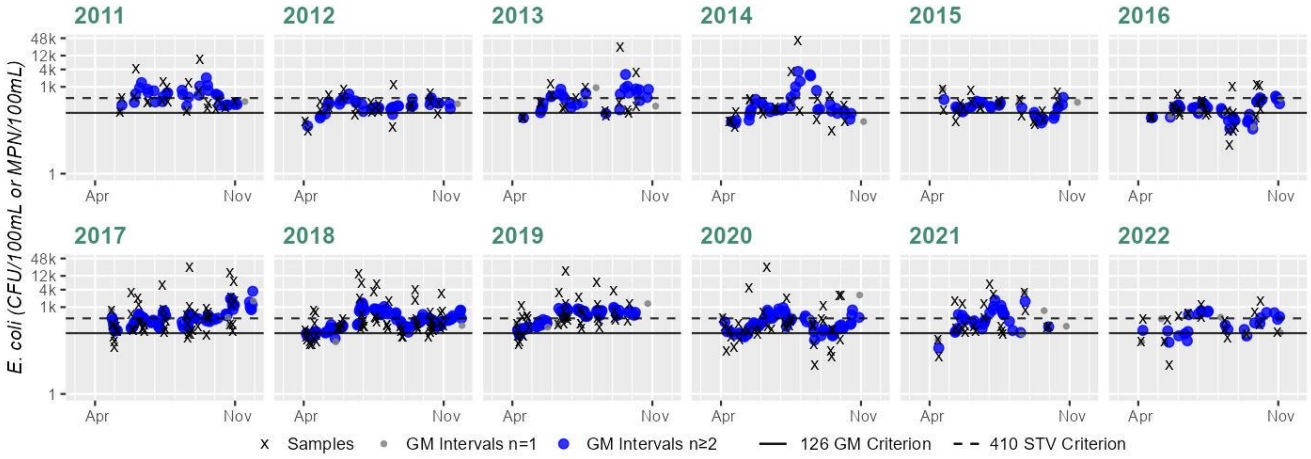
Variable*	Result
Samples	1
SeasGM	41
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_001 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	473
#GMI	32
#GMI Ex	32
%GMI Ex	100%
n>STV	7
%n>STV	35%

Variable*	Result
Samples	22
SeasGM	207
#GMI	40
#GMI Ex	35
%GMI Ex	87%
n>STV	4
%n>STV	18%

Variable*	Result
Samples	18
SeasGM	351
#GMI	29
#GMI Ex	27
%GMI Ex	93%
n>STV	5
%n>STV	27%

Variable*	Result
Samples	20
SeasGM	219
#GMI	36
#GMI Ex	27
%GMI Ex	75%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	196
#GMI	32
#GMI Ex	25
%GMI Ex	78%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	29
SeasGM	156
#GMI	43
#GMI Ex	27
%GMI Ex	62%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	50
SeasGM	411
#GMI	77
#GMI Ex	77
%GMI Ex	100%
n>STV	21
%n>STV	42%

Variable*	Result
Samples	61
SeasGM	321
#GMI	113
#GMI Ex	104
%GMI Ex	92%
n>STV	17
%n>STV	27%

Variable*	Result
Samples	41
SeasGM	473
#GMI	73
#GMI Ex	71
%GMI Ex	97%
n>STV	22
%n>STV	53%

Variable*	Result
Samples	38
SeasGM	232
#GMI	66
#GMI Ex	54
%GMI Ex	81%
n>STV	8
%n>STV	21%

Variable*	Result
Samples	21
SeasGM	356
#GMI	31
#GMI Ex	30
%GMI Ex	96%
n>STV	8
%n>STV	38%

Variable*	Result
Samples	18
SeasGM	245
#GMI	24
#GMI Ex	19
%GMI Ex	79%
n>STV	7
%n>STV	38%

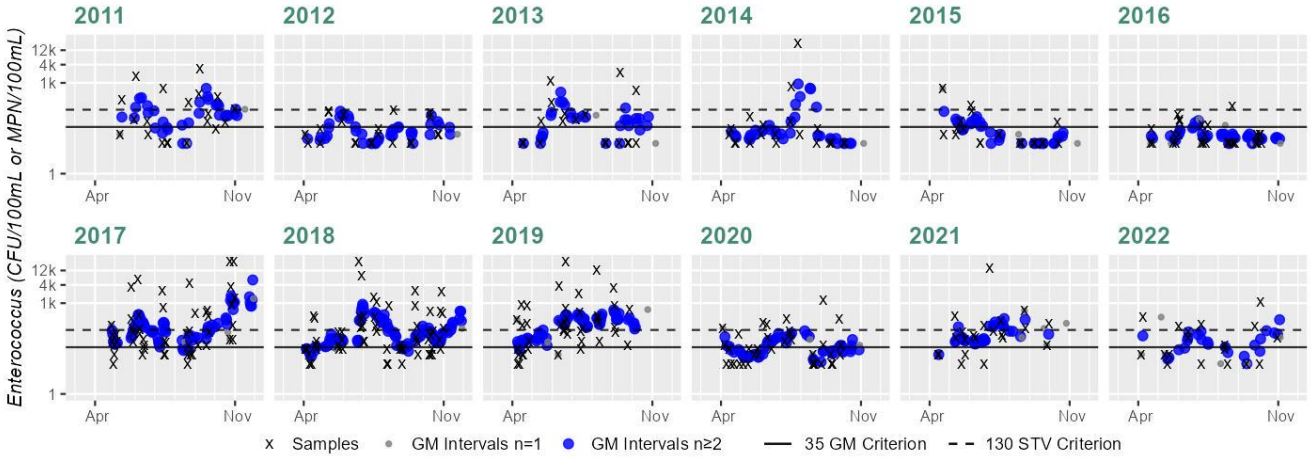
Cumulative %GMI Exceedance Current (2011-2022)
88%

Cumulative %GMI Exceedance Current (Recent 5 Years)
90%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_001 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	85
#GMI	32
#GMI Ex	26
%GMI Ex	81%
n>STV	8
%n>STV	40%

Variable*	Result
Samples	22
SeasGM	25
#GMI	40
#GMI Ex	12
%GMI Ex	30%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	18
SeasGM	44
#GMI	29
#GMI Ex	21
%GMI Ex	72%
n>STV	4
%n>STV	22%

Variable*	Result
Samples	20
SeasGM	30
#GMI	36
#GMI Ex	9
%GMI Ex	25%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	24
#GMI	32
#GMI Ex	11
%GMI Ex	34%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	29
SeasGM	17
#GMI	43
#GMI Ex	4
%GMI Ex	9%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	150
#GMI	77
#GMI Ex	71
%GMI Ex	92%
n>STV	20
%n>STV	40%

Variable*	Result
Samples	61
SeasGM	96
#GMI	113
#GMI Ex	102
%GMI Ex	90%
n>STV	22
%n>STV	36%

Variable*	Result
Samples	41
SeasGM	183
#GMI	73
#GMI Ex	72
%GMI Ex	98%
n>STV	24
%n>STV	58%

Variable*	Result
Samples	37
SeasGM	33
#GMI	64
#GMI Ex	27
%GMI Ex	42%
n>STV	6
%n>STV	16%

Variable*	Result
Samples	21
SeasGM	95
#GMI	31
#GMI Ex	30
%GMI Ex	96%
n>STV	7
%n>STV	33%

Variable*	Result
Samples	18
SeasGM	47
#GMI	24
#GMI Ex	16
%GMI Ex	66%
n>STV	5
%n>STV	27%

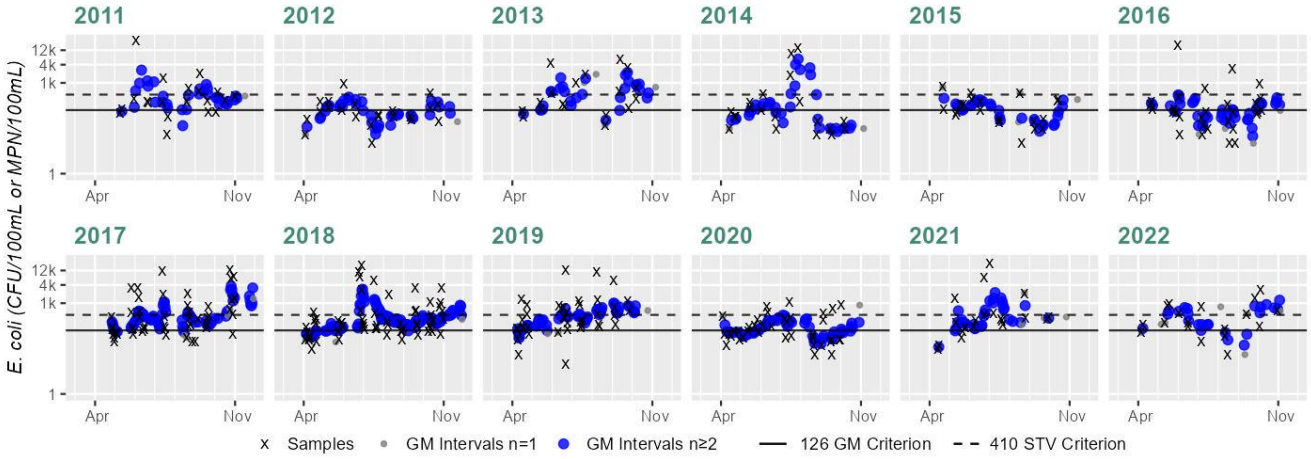
Cumulative %GMI Exceedance Current (2011-2022)
67%

Cumulative %GMI Exceedance Current (Recent 5 Years)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_002 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	307
#GMI	32
#GMI Ex	30
%GMI Ex	93%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	22
SeasGM	101
#GMI	40
#GMI Ex	17
%GMI Ex	42%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	18
SeasGM	390
#GMI	29
#GMI Ex	26
%GMI Ex	89%
n>STV	8
%n>STV	44%

Variable*	Result
Samples	20
SeasGM	135
#GMI	36
#GMI Ex	16
%GMI Ex	44%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	20
SeasGM	121
#GMI	32
#GMI Ex	17
%GMI Ex	53%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	29
SeasGM	125
#GMI	43
#GMI Ex	21
%GMI Ex	48%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	50
SeasGM	354
#GMI	77
#GMI Ex	73
%GMI Ex	94%
n>STV	18
%n>STV	36%

Variable*	Result
Samples	61
SeasGM	287
#GMI	113
#GMI Ex	96
%GMI Ex	84%
n>STV	17
%n>STV	27%

Variable*	Result
Samples	41
SeasGM	343
#GMI	73
#GMI Ex	68
%GMI Ex	93%
n>STV	17
%n>STV	41%

Variable*	Result
Samples	38
SeasGM	134
#GMI	66
#GMI Ex	33
%GMI Ex	50%
n>STV	6
%n>STV	15%

Variable*	Result
Samples	21
SeasGM	336
#GMI	31
#GMI Ex	29
%GMI Ex	93%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	18
SeasGM	279
#GMI	24
#GMI Ex	19
%GMI Ex	79%
n>STV	8
%n>STV	44%

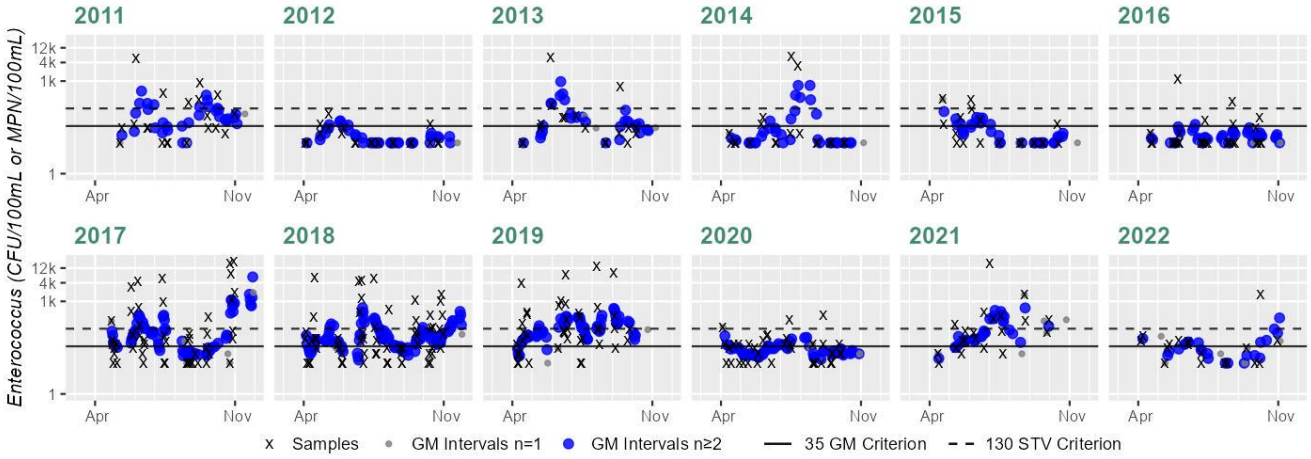
Cumulative %GMI Exceedance Current (2011-2022)
74%

Cumulative %GMI Exceedance Current (Recent 5 Years)
79%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_002 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	60
#GMI	32
#GMI Ex	23
%GMI Ex	71%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	22
SeasGM	14
#GMI	40
#GMI Ex	6
%GMI Ex	15%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	18
SeasGM	42
#GMI	29
#GMI Ex	19
%GMI Ex	65%
n>STV	3
%n>STV	16%

Variable*	Result
Samples	20
SeasGM	23
#GMI	36
#GMI Ex	9
%GMI Ex	25%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	22
#GMI	32
#GMI Ex	11
%GMI Ex	34%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	29
SeasGM	16
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	50
SeasGM	85
#GMI	77
#GMI Ex	53
%GMI Ex	68%
n>STV	14
%n>STV	28%

Variable*	Result
Samples	61
SeasGM	70
#GMI	113
#GMI Ex	90
%GMI Ex	79%
n>STV	17
%n>STV	27%

Variable*	Result
Samples	41
SeasGM	136
#GMI	73
#GMI Ex	68
%GMI Ex	93%
n>STV	16
%n>STV	39%

Variable*	Result
Samples	37
SeasGM	26
#GMI	64
#GMI Ex	16
%GMI Ex	25%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	21
SeasGM	114
#GMI	31
#GMI Ex	28
%GMI Ex	90%
n>STV	8
%n>STV	38%

Variable*	Result
Samples	18
SeasGM	29
#GMI	24
#GMI Ex	11
%GMI Ex	45%
n>STV	1
%n>STV	5%

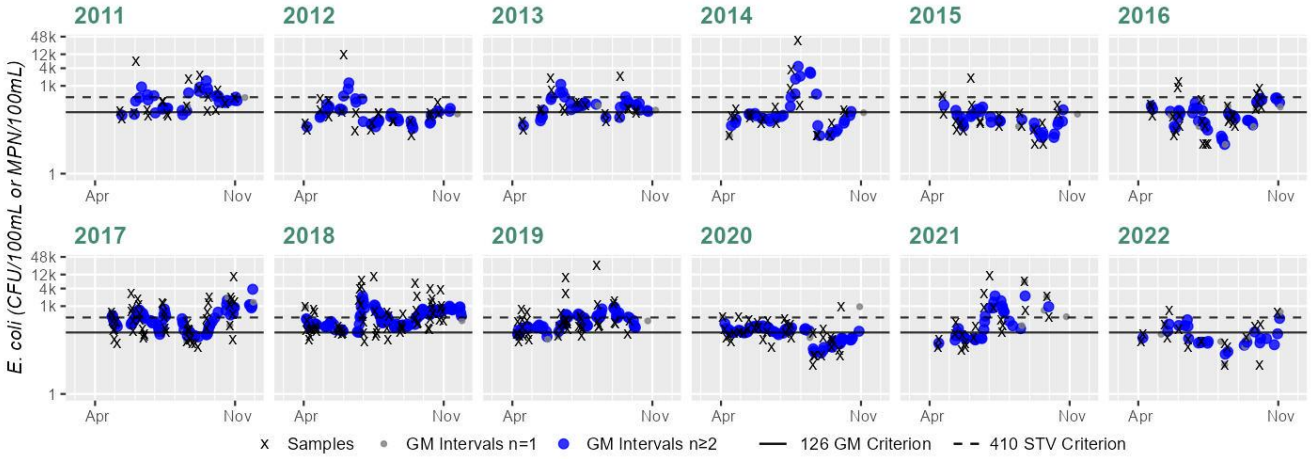
Cumulative %GMI Exceedance Current (2011-2022)
56%

Cumulative %GMI Exceedance Current (Recent 5 Years)
69%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_003 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	301
#GMI	32
#GMI Ex	28
%GMI Ex	87%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	22
SeasGM	106
#GMI	40
#GMI Ex	16
%GMI Ex	40%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	184
#GMI	32
#GMI Ex	26
%GMI Ex	81%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	127
#GMI	36
#GMI Ex	10
%GMI Ex	27%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	71
#GMI	32
#GMI Ex	7
%GMI Ex	21%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	29
SeasGM	102
#GMI	43
#GMI Ex	18
%GMI Ex	41%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	50
SeasGM	316
#GMI	77
#GMI Ex	67
%GMI Ex	87%
n>STV	21
%n>STV	42%

Variable*	Result
Samples	61
SeasGM	408
#GMI	113
#GMI Ex	113
%GMI Ex	100%
n>STV	26
%n>STV	42%

Variable*	Result
Samples	41
SeasGM	311
#GMI	73
#GMI Ex	69
%GMI Ex	94%
n>STV	10
%n>STV	24%

Variable*	Result
Samples	38
SeasGM	105
#GMI	66
#GMI Ex	40
%GMI Ex	60%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	21
SeasGM	301
#GMI	31
#GMI Ex	19
%GMI Ex	61%
n>STV	8
%n>STV	38%

Variable*	Result
Samples	18
SeasGM	87
#GMI	24
#GMI Ex	8
%GMI Ex	33%
n>STV	2
%n>STV	11%

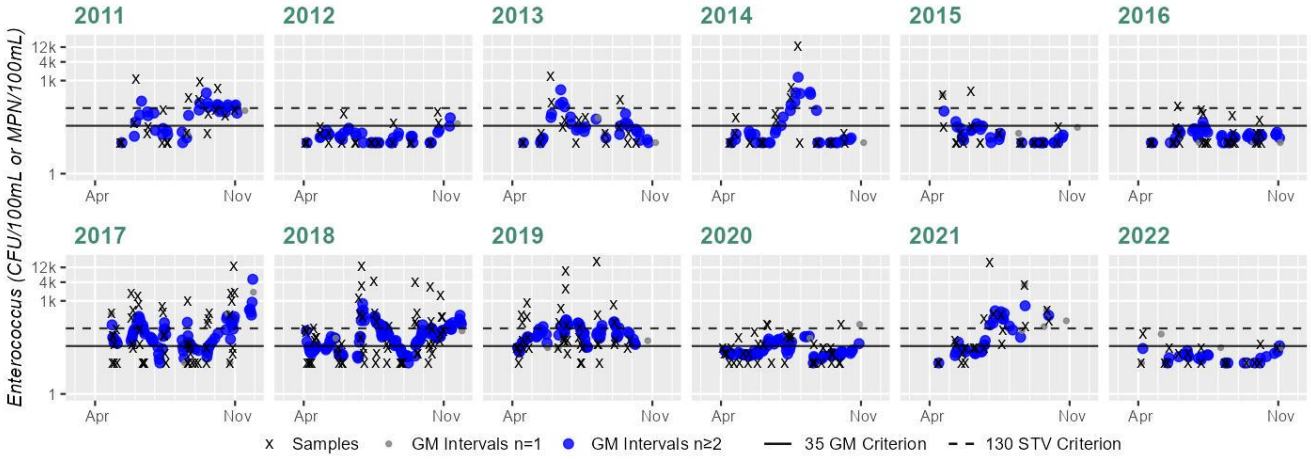
Cumulative %GMI Exceedance Current (2011-2022)
70%

Cumulative %GMI Exceedance Current (Recent 5 Years)
81%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_003 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	59
#GMI	32
#GMI Ex	22
%GMI Ex	68%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	22
SeasGM	15
#GMI	40
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	29
#GMI	32
#GMI Ex	12
%GMI Ex	37%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	29
#GMI	36
#GMI Ex	11
%GMI Ex	30%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	18
#GMI	32
#GMI Ex	3
%GMI Ex	9%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	29
SeasGM	17
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	73
#GMI	77
#GMI Ex	62
%GMI Ex	80%
n>STV	17
%n>STV	34%

Variable*	Result
Samples	61
SeasGM	66
#GMI	113
#GMI Ex	82
%GMI Ex	72%
n>STV	19
%n>STV	31%

Variable*	Result
Samples	41
SeasGM	87
#GMI	73
#GMI Ex	66
%GMI Ex	90%
n>STV	14
%n>STV	34%

Variable*	Result
Samples	37
SeasGM	25
#GMI	64
#GMI Ex	14
%GMI Ex	21%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	21
SeasGM	87
#GMI	31
#GMI Ex	18
%GMI Ex	58%
n>STV	8
%n>STV	38%

Variable*	Result
Samples	18
SeasGM	15
#GMI	24
#GMI Ex	1
%GMI Ex	4%
n>STV	0
%n>STV	0%

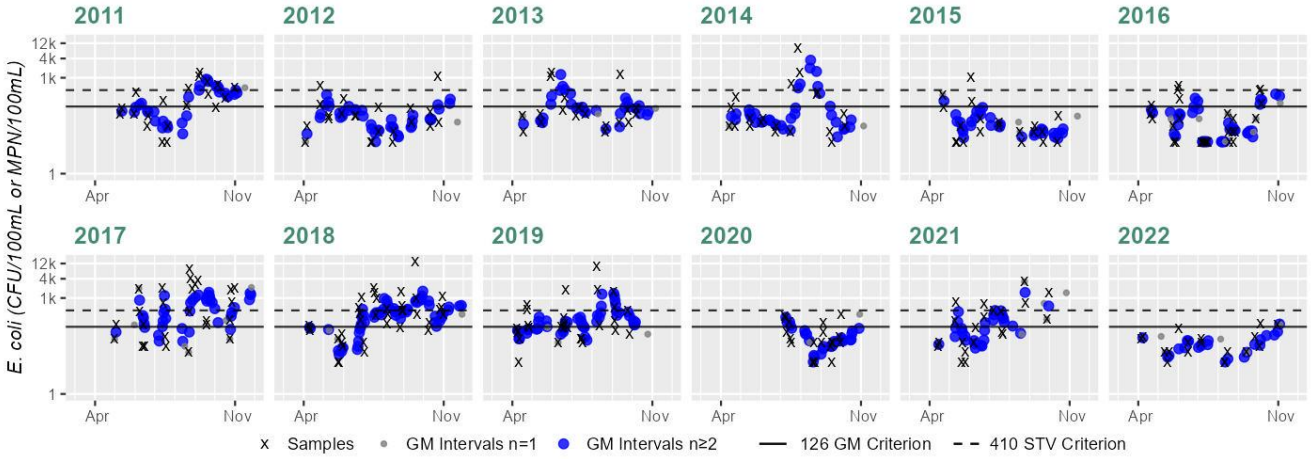
Cumulative %GMI Exceedance Current (2011-2022)
49%

Cumulative %GMI Exceedance Current (Recent 5 Years)
59%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_004 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	151
#GMI	32
#GMI Ex	18
%GMI Ex	56%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	22
SeasGM	54
#GMI	40
#GMI Ex	8
%GMI Ex	20%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	19
SeasGM	98
#GMI	32
#GMI Ex	11
%GMI Ex	34%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	86
#GMI	36
#GMI Ex	8
%GMI Ex	22%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	40
#GMI	39
#GMI Ex	7
%GMI Ex	17%
n>STV	4
%n>STV	14%

Variable*	Result
Samples	26
SeasGM	328
#GMI	38
#GMI Ex	30
%GMI Ex	78%
n>STV	11
%n>STV	42%

Variable*	Result
Samples	36
SeasGM	239
#GMI	65
#GMI Ex	51
%GMI Ex	78%
n>STV	14
%n>STV	38%

Variable*	Result
Samples	28
SeasGM	178
#GMI	50
#GMI Ex	31
%GMI Ex	62%
n>STV	8
%n>STV	28%

Variable*	Result
Samples	20
SeasGM	52
#GMI	32
#GMI Ex	4
%GMI Ex	12%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	139
#GMI	29
#GMI Ex	14
%GMI Ex	48%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	18
SeasGM	34
#GMI	24
#GMI Ex	1
%GMI Ex	4%
n>STV	0
%n>STV	0%

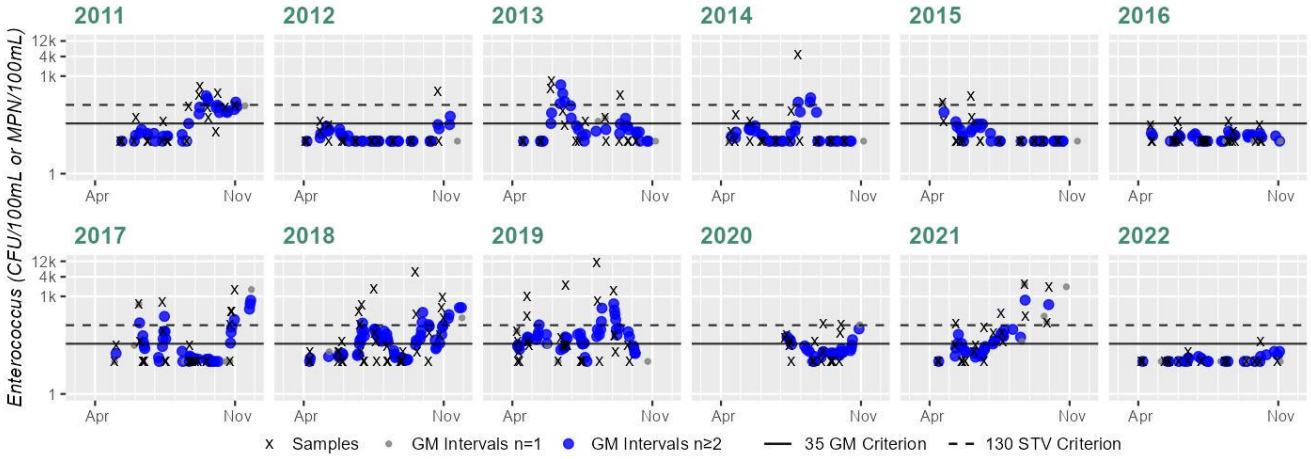
Cumulative %GMI Exceedance Current (2011-2022)
40%

Cumulative %GMI Exceedance Current (Recent 5 Years)
50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_004 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	36
#GMI	32
#GMI Ex	15
%GMI Ex	46%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	22
SeasGM	13
#GMI	40
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	25
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	18
#GMI	36
#GMI Ex	5
%GMI Ex	13%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	15
#GMI	32
#GMI Ex	2
%GMI Ex	6%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	27
SeasGM	13
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	30
#GMI	38
#GMI Ex	15
%GMI Ex	39%
n>STV	6
%n>STV	23%

Variable*	Result
Samples	36
SeasGM	40
#GMI	65
#GMI Ex	38
%GMI Ex	58%
n>STV	9
%n>STV	25%

Variable*	Result
Samples	28
SeasGM	55
#GMI	50
#GMI Ex	34
%GMI Ex	68%
n>STV	6
%n>STV	21%

Variable*	Result
Samples	19
SeasGM	22
#GMI	30
#GMI Ex	5
%GMI Ex	16%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	53
#GMI	29
#GMI Ex	14
%GMI Ex	48%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	18
SeasGM	11
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

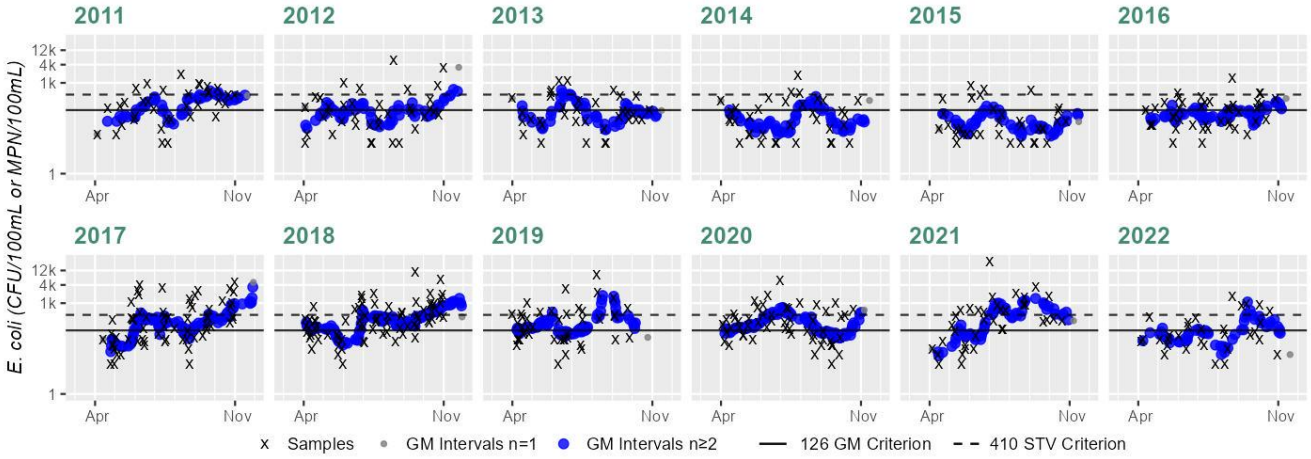
Cumulative %GMI Exceedance Current (2011-2022)
30%

Cumulative %GMI Exceedance Current (Recent 5 Years)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_005 - Escherichia coli

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



Variable*	Result
Samples	35
SeasGM	171
#GMI	56
#GMI Ex	38
%GMI Ex	67%
n>STV	11
%n>STV	31%

Variable*	Result
Samples	38
SeasGM	108
#GMI	67
#GMI Ex	28
%GMI Ex	41%
n>STV	6
%n>STV	15%

Variable*	Result
Samples	35
SeasGM	99
#GMI	62
#GMI Ex	23
%GMI Ex	37%
n>STV	5
%n>STV	14%

Variable*	Result
Samples	36
SeasGM	61
#GMI	63
#GMI Ex	13
%GMI Ex	20%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	35
SeasGM	48
#GMI	63
#GMI Ex	3
%GMI Ex	4%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	43
SeasGM	98
#GMI	77
#GMI Ex	16
%GMI Ex	20%
n>STV	4
%n>STV	9%

Variable*	Result
Samples	64
SeasGM	214
#GMI	107
#GMI Ex	78
%GMI Ex	72%
n>STV	19
%n>STV	29%

Variable*	Result
Samples	75
SeasGM	268
#GMI	136
#GMI Ex	116
%GMI Ex	85%
n>STV	24
%n>STV	32%

Variable*	Result
Samples	44
SeasGM	186
#GMI	84
#GMI Ex	62
%GMI Ex	73%
n>STV	13
%n>STV	29%

Variable*	Result
Samples	53
SeasGM	192
#GMI	96
#GMI Ex	68
%GMI Ex	70%
n>STV	14
%n>STV	26%

Variable*	Result
Samples	36
SeasGM	248
#GMI	61
#GMI Ex	41
%GMI Ex	67%
n>STV	15
%n>STV	41%

Variable*	Result
Samples	31
SeasGM	102
#GMI	55
#GMI Ex	22
%GMI Ex	40%
n>STV	5
%n>STV	16%

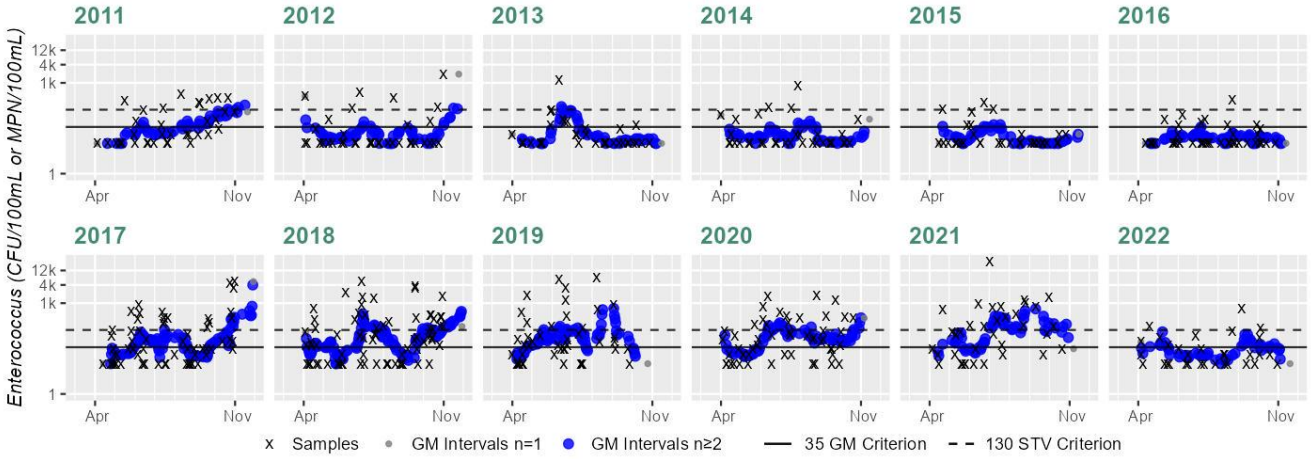
Cumulative %GMI Exceedance Current (2011-2022)
54%

Cumulative %GMI Exceedance Current (Recent 5 Years)
71%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_005 - Enterococcus

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



Variable*	Result
Samples	35
SeasGM	37
#GMI	56
#GMI Ex	30
%GMI Ex	53%
n>STV	8
%n>STV	22%

Variable*	Result
Samples	38
SeasGM	21
#GMI	67
#GMI Ex	10
%GMI Ex	14%
n>STV	6
%n>STV	15%

Variable*	Result
Samples	35
SeasGM	19
#GMI	62
#GMI Ex	13
%GMI Ex	20%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	36
SeasGM	18
#GMI	63
#GMI Ex	7
%GMI Ex	11%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	35
SeasGM	15
#GMI	63
#GMI Ex	5
%GMI Ex	7%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	43
SeasGM	15
#GMI	77
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	64
SeasGM	52
#GMI	107
#GMI Ex	66
%GMI Ex	61%
n>STV	18
%n>STV	28%

Variable*	Result
Samples	75
SeasGM	67
#GMI	136
#GMI Ex	100
%GMI Ex	73%
n>STV	27
%n>STV	36%

Variable*	Result
Samples	44
SeasGM	67
#GMI	84
#GMI Ex	66
%GMI Ex	78%
n>STV	12
%n>STV	27%

Variable*	Result
Samples	52
SeasGM	62
#GMI	94
#GMI Ex	70
%GMI Ex	74%
n>STV	14
%n>STV	26%

Variable*	Result
Samples	36
SeasGM	105
#GMI	61
#GMI Ex	49
%GMI Ex	80%
n>STV	16
%n>STV	44%

Variable*	Result
Samples	32
SeasGM	24
#GMI	57
#GMI Ex	19
%GMI Ex	33%
n>STV	3
%n>STV	9%

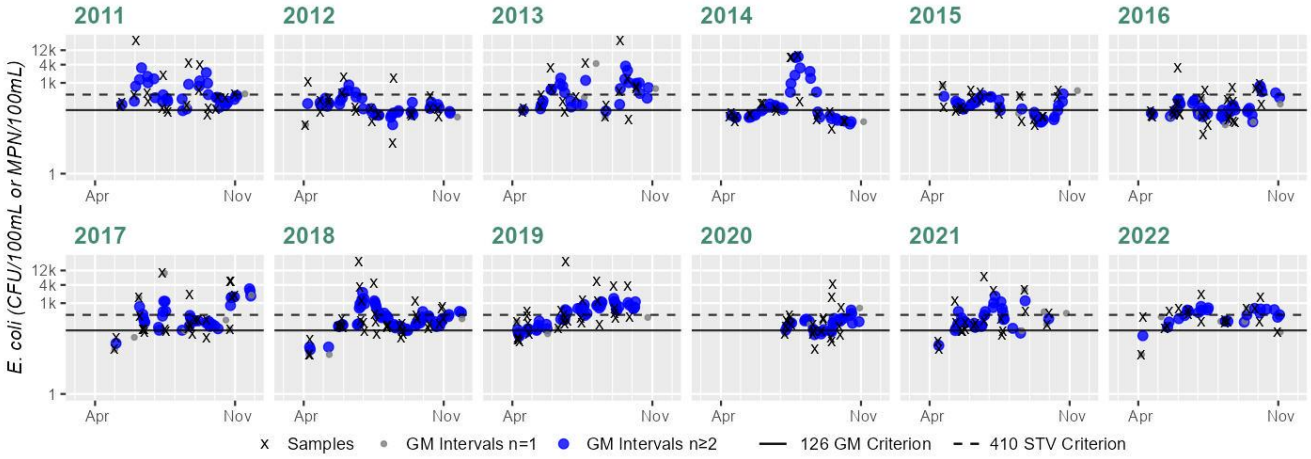
Cumulative %GMI Exceedance Current (2011-2022)
47%

Cumulative %GMI Exceedance Current (Recent 5 Years)
70%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_144 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	413
#GMI	32
#GMI Ex	31
%GMI Ex	96%
n>STV	7
%n>STV	35%

Variable*	Result
Samples	22
SeasGM	161
#GMI	40
#GMI Ex	24
%GMI Ex	60%
n>STV	4
%n>STV	18%

Variable*	Result
Samples	18
SeasGM	449
#GMI	29
#GMI Ex	28
%GMI Ex	96%
n>STV	8
%n>STV	44%

Variable*	Result
Samples	20
SeasGM	175
#GMI	36
#GMI Ex	16
%GMI Ex	44%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	175
#GMI	32
#GMI Ex	22
%GMI Ex	68%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	27
SeasGM	158
#GMI	39
#GMI Ex	21
%GMI Ex	53%
n>STV	6
%n>STV	22%

Variable*	Result
Samples	25
SeasGM	330
#GMI	36
#GMI Ex	35
%GMI Ex	97%
n>STV	7
%n>STV	28%

Variable*	Result
Samples	36
SeasGM	260
#GMI	65
#GMI Ex	61
%GMI Ex	93%
n>STV	9
%n>STV	25%

Variable*	Result
Samples	28
SeasGM	403
#GMI	50
#GMI Ex	46
%GMI Ex	92%
n>STV	10
%n>STV	35%

Variable*	Result
Samples	20
SeasGM	208
#GMI	32
#GMI Ex	27
%GMI Ex	84%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	288
#GMI	29
#GMI Ex	26
%GMI Ex	89%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	18
SeasGM	330
#GMI	24
#GMI Ex	23
%GMI Ex	95%
n>STV	8
%n>STV	44%

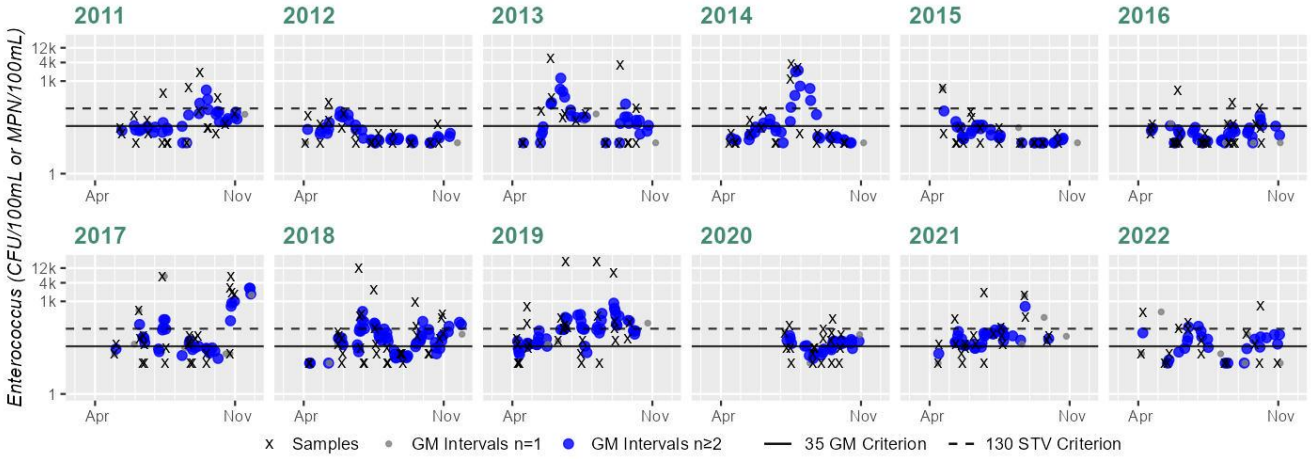
Cumulative %GMI Exceedance Current (2011-2022)
81%

Cumulative %GMI Exceedance Current (Recent 5 Years)
91%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_144 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	48
#GMI	32
#GMI Ex	18
%GMI Ex	56%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	22
SeasGM	19
#GMI	40
#GMI Ex	8
%GMI Ex	20%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	18
SeasGM	47
#GMI	29
#GMI Ex	20
%GMI Ex	68%
n>STV	4
%n>STV	22%

Variable*	Result
Samples	20
SeasGM	34
#GMI	36
#GMI Ex	12
%GMI Ex	33%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	19
#GMI	32
#GMI Ex	5
%GMI Ex	15%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	20
#GMI	39
#GMI Ex	4
%GMI Ex	10%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	25
SeasGM	78
#GMI	36
#GMI Ex	21
%GMI Ex	58%
n>STV	6
%n>STV	24%

Variable*	Result
Samples	36
SeasGM	52
#GMI	65
#GMI Ex	44
%GMI Ex	67%
n>STV	9
%n>STV	25%

Variable*	Result
Samples	28
SeasGM	115
#GMI	50
#GMI Ex	45
%GMI Ex	90%
n>STV	13
%n>STV	46%

Variable*	Result
Samples	19
SeasGM	37
#GMI	30
#GMI Ex	19
%GMI Ex	63%
n>STV	2
%n>STV	10%

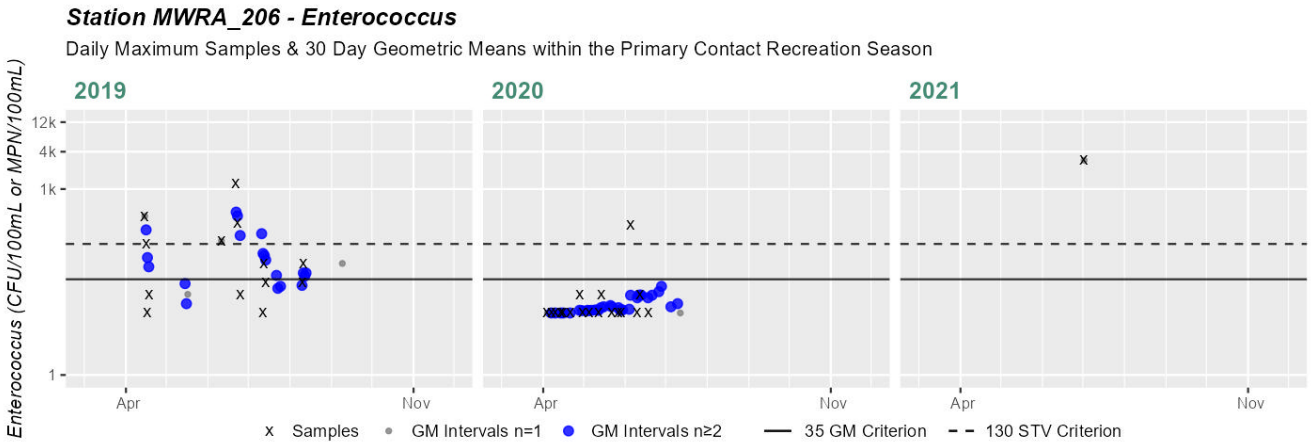
Variable*	Result
Samples	20
SeasGM	68
#GMI	29
#GMI Ex	25
%GMI Ex	86%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	18
SeasGM	36
#GMI	24
#GMI Ex	14
%GMI Ex	58%
n>STV	4
%n>STV	22%

Cumulative %GMI Exceedance Current (2011-2022)
53%

Cumulative %GMI Exceedance Current (Recent 5 Years)
74%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*



Variable*	Result
Samples	13
SeasGM	64
#GMI	19
#GMI Ex	14
%GMI Ex	73%
n>STV	5
%n>STV	38%

Variable*	Result
Samples	18
SeasGM	13
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	1
SeasGM	2910
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 (MWRA 2025) (MassDEP Undated 2)

Data Year(s)	Summary

2011-2022	In this Charles River AU (MA72-36), the Massachusetts Water Resources Authority (MWRA) collected Secchi data at MWRA_001 (2011 and 2014-2022), MWRA_144 (2011-2022), MWRA_002 (2011-2022), MWRA_003 (2011-2022), MWRA_004 (2011-2022), and MWRA_005 (2011-2022). The most recent five years of data with >2 Secchi measurements were used for assessment purposes. In 2018 at station MWRA_001 (station depth=1.5 m) the Secchi depth measurements ranged from 0.3-1.1 m (n=6) with 6 measurements in May, Jun, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_001 (station depth=1.2 m) the Secchi depth measurements ranged from 0.6-0.6 m (n=3) with 3 measurements in Apr that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_001 (station depth=1.6 m) the Secchi depth (n=1) was measured to be 1 m on Sep 28, 2020 with 1 measurement taken on Sep 28, 2020 that was less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_001 (station depth=1.8 m) the Secchi depth measurements ranged from 0.5-1.3 m (n=8) with 6 measurements in Apr, May, Jun, and Jul that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_001 (station depth=1.3 m) the Secchi depth measurements ranged from 0.2-1 m (n=7) with 7 measurements in Apr, May, Jun, Jul, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_144 (station depth=2.6 m) the Secchi depth measurements ranged from 0.5-1.7 m (n=31) with 19 measurements in May, Jun, Jul, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_144 (station depth=3 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=27) with 18 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_144 (station depth=3 m) the Secchi depth measurements ranged from 0.7-1.6 m (n=19) with 9 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_144 (station depth=2.9 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=20) with 18 measurements in Apr, May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_144 (station depth=2.7 m) the Secchi depth measurements ranged from 0.5-2 m (n=16) with 12 measurements in Apr, May, Jun, Jul, Aug, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_002 (station depth=3.6 m) the Secchi depth measurements ranged from 0.5-1.7 m (n=35) with 21 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_002 (station depth=3.8 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=28) with 22 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_002 (station depth=3.5 m) the Secchi depth measurements ranged from 0.5-1.8 m (n=20) with 12 measurements in Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_002 (station depth=3.7 m) the Secchi depth measurements ranged from 0.6-1.4 m (n=20) with 16 measurements in Apr, May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_002 (station depth=3.5 m) the Secchi depth measurements ranged from 0.5-1.7 m (n=18) with 16 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_003 (station depth=3.3 m) the Secchi depth measurements ranged from 0.5-1.6 m (n=36) with 25 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_003 (station depth=3.1 m) the Secchi depth measurements ranged from 0.6-1.6 m (n=28) with 20 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_003 (station depth=3.1 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=20) with 15 measurements in Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_003 (station depth=3.6 m) the Secchi depth measurements ranged from 0.5-1.2 m (n=20) with 18 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_003 (station depth=4.2 m) the Secchi depth measurements ranged from 0.6-1.3 m (n=18) with 14 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_004 (station depth=3.4 m) the Secchi depth measurements ranged from 0.4-1.4 m (n=36) with 30 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_004 (station depth=3.6 m) the Secchi depth

Data Year(s)	Summary
	measurements ranged from 0.6-1.4 m (n=28) with 21 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_004 (station depth=4.4 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=20) with 14 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_004 (station depth=3.6 m) the Secchi depth measurements ranged from 0.4-1.2 m (n=20) with 18 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_004 (station depth=3.5 m) the Secchi depth measurements ranged from 0.5-1.3 m (n=18) with 16 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_005 (station depth=1.9 m) the Secchi depth measurements ranged from 0.4-1.4 m (n=33) with 31 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_005 (station depth=1.8 m) the Secchi depth measurements ranged from 0.3-1.3 m (n=23) with 21 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_005 (station depth=1.9 m) the Secchi depth measurements ranged from 0.5-1.3 m (n=18) with 16 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_005 (station depth=1.8 m) the Secchi depth measurements ranged from 0.3-1.3 m (n=20) with 19 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_005 (station depth=1.9 m) the Secchi depth measurements ranged from 0.5-1.2 m (n=18) with 17 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. The Secchi depth measurements are indicative of a Transparency / Clarity impairment due to conditions at MWRA_001, MWRA_144, MWRA_002, MWRA_003, MWRA_004, and MWRA_005.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this Charles River AU (MA72-36) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data from MWRA_001, the combined CRWA_1NBS & CRWA_700S station, MWRA_144, CRWA_715S, MWRA_002, CRWA_729S, MWRA_003, CRWA_2LARZ, CRWA_743S, MWRA_004, MWRA_005, and the combined CRWA_3BU & MWRA_206 station. The prior Harmful Algal Blooms impairment and the Oil and Grease impairment (the latter from the Aesthetics Use) are also being carried forward. The Transparency / Clarity impairment is being removed since it was removed from the Aesthetics Use this cycle.

C-HAB postings for this MA72-36 AU were reported to MDPH for >20 days in multiple years in the 2009-2014 and 2015-2022 periods. These blooms are reflective of the existing Harmful Algal Blooms impairment. More details can be found under the Aesthetics Use.

CRWA and MWRA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in this MA72-36 AU from 2011-2022 at 12 stations. Samples were collected from the following stations/sample years from upstream to downstream: MWRA_001 [Charles River, at Newton Yacht Club, upstream of active CSOs] from 2011-2022 (current n=20-72/yr), the combined CRWA_1NBS & CRWA_700S station [N Beacon St Bridge, Watertown/Boston & N. Beacon St. Bridge, Watertown] from 2011-2022 (current n=18-42/yr), MWRA_144 [Charles River, S of Arsenal Complex, near CSO BOS032 (closed), upstream of active CSOs] from 2011-2022 (current n=20-36/yr), CRWA_715S [Arsenal St. Bridge, Watertown] from 2011-2019 and 2021-2022 (current n=7-12/yr), MWRA_002 [Charles River, 10m downstream of BOS033 (closed), upstream of active CSOs] from 2011-2022 (current n=20-72/yr), CRWA_729S [Eliot St. Bridge, Cambridge] from 2011-2019 and 2021-2022 (current n=7-12/yr), MWRA_003 [Charles River, between CAM005 and CAM007] from 2011-2022 (current n=20-72/yr), CRWA_2LARZ [Larz Anderson Bridge-Center, N. Harvard St., Cambridge/Boston] from 2011-2013 and 2016-2022 (current n=18-31/yr), CRWA_743S [Western Ave. Bridge, Cambridge] from 2011-2019 and 2021-2022 (current n=7-12/yr), MWRA_004 [Charles River, downstream of River St. bridge] from 2011-2022 (current n=20-36/yr), MWRA_005 [Charles River, upstream of Cottage Farm and CAM011 (closed)] from 2011-2022 (current n=40-94/yr), and the combined CRWA_3BU & MWRA_206 station [Boston University Bridge, Cambridge/Boston & Mid-channel, sampled on the upstream side of the BU Bridge] from 2011-2022 (current n=22-48/yr).

The mainly high frequency *E. coli* data from all 12 stations (CRWA_715S, CRWA_729S, and CRWA_743S were the only moderate frequency stations) are indicative of an Escherichia Coli (E. Coli) impairment. Analysis of the multi-year high or moderate frequency *E. coli* datasets for all 12 stations indicated that generally in 3-5 of the most recent 5 yrs >10%/20% of intervals had GMs >244 CFU/100mL (the one exception was CRWA_2LARZ with 2 years of exceedances), 3-5 yrs had >10% (or ≥2 samples/year for moderate frequency datasets) of samples exceed the 794 CFU/100mL STV (exceptions included CRWA_729S, CRWA_2LARZ, CRWA_743S, MWRA_004, and the combined CRWA_3BU & MWRA_206 station with 0-2 years of STV exceedances), and cumulatively across the 5 yrs >10% of intervals had GMs >244 CFU/100mL for all 12 stations. The mainly high frequency *E. coli* data from all 12 stations are reflective of the existing Escherichia Coli (E. Coli) impairment.

EPA (1111REG1), CRWA, MassDEP, and MWRA staff/volunteers collected *E. coli* bacteria samples at the same stations as well as some additional stations in the historic IR window (1997-2010). Much of this data was also indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_1NBS	Charles River Watershed Association	Water Quality	Charles River	North Beacon Street Bridge, Watertown/Boston	42.358900	-71.161900
CRWA_2LARZ	Charles River Watershed Association	Water Quality	Charles River	Larz Anderson Bridge-Center, N. Harvard St., Cambridge/Boston	42.368897	-71.123321
CRWA_3BU	Charles River Watershed Association	Water Quality	Charles River	Boston University Bridge, Cambridge/Boston	42.352502	-71.110618
CRWA_700S	Charles River Watershed Association	Water Quality	Charles River	N. Beacon St. Bridge, Watertown	42.358898	-71.161598
CRWA_715S	Charles River Watershed Association	Water Quality	Charles River	Arsenal St. Bridge, Watertown	42.361599	-71.147301
CRWA_729S	Charles River Watershed Association	Water Quality	Charles River	Eliot St. Bridge, Cambridge	42.371601	-71.132797
CRWA_743S	Charles River Watershed Association	Water Quality	Charles River	Western Ave. Bridge, Cambridge	42.364201	-71.116798
MWRA_001	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, at Newton Yacht Club, upstream of active CSOs	42.359186	-71.170092
MWRA_002	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, 10m downstream of BOS033 (closed), upstream of active CSOs	42.363051	-71.145688
MWRA_003	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, between CAM005 and CAM007	42.373688	-71.131795
MWRA_004	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, downstream of River St. bridge	42.362948	-71.116901
MWRA_005	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, upstream of Cottage Farm and CAM011 (closed)	42.355082	-71.115513

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_144	Massachusetts Water Resources Authority	Water Quality	Upper Basin	Charles River, south of Arsenal Complex, near CSO BOS032 (closed), upstream of active CSOs	42.359692	-71.155560
MWRA_206	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Mid-channel, sampled on the upstream side of the BU Bridge	42.352678	-71.110694
W0383	MassDEP	Water Quality	Charles River	[approximately 100 feet downstream/east of Watertown Dam, Watertown.]	42.365156	-71.187996
1111REG1-CRBL03	US EPA Region 1	Water Quality	Charles River	Daly Field - south bank	42.359711	-71.166906
1111REG1-CRBL04	US EPA Region 1	Water Quality	Charles River	Herter East Park - south bank	42.368139	-71.132775
1111REG1-CRBL05	US EPA Region 1	Water Quality	Charles River	Magazine Beach - north bank	42.353729	-71.113206

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (MWRA 2024) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3) (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
CRWA_1NBS	Charles River Watershed Association	E. coli	06/29/09	10/15/09	26	60	1160	157
CRWA_1NBS	Charles River Watershed Association	E. coli	07/07/10	10/21/10	14	15	1340	157
CRWA_1NBS	Charles River Watershed Association	E. coli	07/05/11	10/19/11	24	60	1600	251
CRWA_1NBS	Charles River Watershed Association	E. coli	07/02/12	10/10/12	25	30	7100	128
CRWA_1NBS	Charles River Watershed Association	E. coli	06/25/13	10/16/13	26	30	1600	156
CRWA_1NBS	Charles River Watershed Association	E. coli	06/24/14	10/15/14	29	20	1600	122
CRWA_1NBS	Charles River Watershed Association	E. coli	06/02/15	10/15/15	33	20	6100	172
CRWA_1NBS	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	10	1400	97

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_1NBS	Charles River Watershed Association	E. coli	06/27/17	10/19/17	28	40	2300	289
CRWA_1NBS	Charles River Watershed Association	E. coli	06/26/18	10/18/18	30	80	3600	303
CRWA_1NBS	Charles River Watershed Association	E. coli	06/25/19	10/15/19	29	60	10000	296
CRWA_1NBS	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	30	1600	180
CRWA_1NBS	Charles River Watershed Association	E. coli	05/13/21	10/21/21	23	110	44000	505
CRWA_1NBS	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	60	800	168
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/29/09	10/15/09	25	15	560	117
CRWA_2LARZ	Charles River Watershed Association	E. coli	07/07/10	10/21/10	14	10	1600	104
CRWA_2LARZ	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	20	3500	165
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/05/12	10/17/12	30	5	1400	67
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/25/13	10/16/13	28	10	1600	98
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	15	920	78
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	40	1600	127
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/26/18	10/18/18	31	20	1530	207
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/25/19	10/15/19	31	40	18000	188
CRWA_2LARZ	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	5	1500	84
CRWA_2LARZ	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	30	8000	328

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_2LARZ	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	200	56
CRWA_3BU	Charles River Watershed Association	E. coli	06/29/09	10/15/09	26	10	510	89
CRWA_3BU	Charles River Watershed Association	E. coli	07/07/10	10/21/10	14	20	1500	109
CRWA_3BU	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	10	2100	181
CRWA_3BU	Charles River Watershed Association	E. coli	06/05/12	10/17/12	30	10	1400	144
CRWA_3BU	Charles River Watershed Association	E. coli	06/25/13	10/16/13	27	10	1220	105
CRWA_3BU	Charles River Watershed Association	E. coli	06/24/14	10/15/14	30	20	1600	150
CRWA_3BU	Charles River Watershed Association	E. coli	06/02/15	10/15/15	36	8	9000	100
CRWA_3BU	Charles River Watershed Association	E. coli	06/28/16	10/20/16	25	20	1600	125
CRWA_3BU	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	30	1600	149
CRWA_3BU	Charles River Watershed Association	E. coli	06/26/18	10/18/18	31	20	5000	210
CRWA_3BU	Charles River Watershed Association	E. coli	06/27/19	10/15/19	30	5	9000	156
CRWA_3BU	Charles River Watershed Association	E. coli	06/18/20	10/15/20	17	5	820	99
CRWA_3BU	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	50	10000	277
CRWA_3BU	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	370	88
CRWA_700S	Charles River Watershed Association	E. coli	02/10/09	12/15/09	11	85	259	165
CRWA_700S	Charles River Watershed Association	E. coli	02/09/10	11/16/10	10	52	4610	175

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_700S	Charles River Watershed Association	E. coli	04/12/11	12/20/11	9	52	1330	151
CRWA_700S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	11	10	644	120
CRWA_700S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	109	1790	234
CRWA_700S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	10	20	1860	190
CRWA_700S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	9	5	1110	152
CRWA_700S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	10	31	1290	284
CRWA_700S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	9	84	455	227
CRWA_700S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	9	31	512	149
CRWA_700S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	10	20	1840	227
CRWA_700S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	73	842	163
CRWA_700S	Charles River Watershed Association	E. coli	03/15/22	12/13/22	10	63	3260	247
CRWA_715S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	11	74	388	206
CRWA_715S	Charles River Watershed Association	E. coli	01/12/10	12/21/10	10	62	3260	166
CRWA_715S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	52	1990	150
CRWA_715S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	41	683	173
CRWA_715S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	74	886	263
CRWA_715S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	20	2480	180

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_715S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	31	1610	179
CRWA_715S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	10	2600	198
CRWA_715S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	20	609	206
CRWA_715S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	10	41	1620	166
CRWA_715S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	11	52	888	317
CRWA_715S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	20	2600	250
CRWA_715S	Charles River Watershed Association	E. coli	01/25/22	12/13/22	10	63	4110	466
CRWA_729S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	9	122	876	249
CRWA_729S	Charles River Watershed Association	E. coli	02/09/10	12/21/10	11	41	3870	154
CRWA_729S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	74	3870	196
CRWA_729S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	20	2610	164
CRWA_729S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	41	313	101
CRWA_729S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	20	2280	141
CRWA_729S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	31	435	123
CRWA_729S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	598	156
CRWA_729S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	31	1380	218
CRWA_729S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	31	670	152

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_729S	Charles River Watershed Association	E. coli	01/15/19	12/10/19	10	31	1160	214
CRWA_729S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	63	631	186
CRWA_729S	Charles River Watershed Association	E. coli	02/08/22	12/13/22	11	20	1220	154
CRWA_743S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	41	1110	170
CRWA_743S	Charles River Watershed Association	E. coli	03/16/10	11/16/10	9	10	3130	64
CRWA_743S	Charles River Watershed Association	E. coli	03/15/11	12/20/11	10	5	2480	159
CRWA_743S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	637	85
CRWA_743S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	41	487	98
CRWA_743S	Charles River Watershed Association	E. coli	03/18/14	12/16/14	9	5	933	82
CRWA_743S	Charles River Watershed Association	E. coli	04/14/15	11/17/15	7	5	134	27
CRWA_743S	Charles River Watershed Association	E. coli	02/23/16	12/13/16	9	5	399	93
CRWA_743S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	20	907	146
CRWA_743S	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	30	613	160
CRWA_743S	Charles River Watershed Association	E. coli	02/12/19	10/22/19	9	41	1070	166
CRWA_743S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	11	31	759	133
CRWA_743S	Charles River Watershed Association	E. coli	03/15/22	12/13/22	9	10	216	75
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/18/02	11/13/02	4	230	6860	1409

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/23/03	10/27/03	4	80	9100	1598
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/27/04	12/31/04	13	130	5300	476
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/29/05	12/27/05	13	40	1500	281
MWRA_001	Massachusetts Water Resources Authority	E. coli	01/19/06	12/29/06	42	50	5500	408
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	22	10	7270	141
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	20	30	1670	265
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	74	4880	243
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	63	794	199
MWRA_001	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	134	9210	460
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	31	1140	205
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	20	63	24200	308
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	30	38400	219
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	51	826	196
MWRA_001	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	1140	156
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	10	24200	351
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	52	14100	320
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	48	52	17300	418

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	24200	224
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	20	6130	308
MWRA_001	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	1860	229
MWRA_002	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	45	3900	271
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	345	130
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	63	13000	340
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	63	1560	247
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	20	571	145
MWRA_002	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	20	24200	303
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	933	104
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	20	41	6130	341
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	14100	135
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	727	121
MWRA_002	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	17300	125
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	52	12000	310
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	31	17300	291
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	48	10	12000	308

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	20	1080	135
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	31	19900	301
MWRA_002	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	20	2850	258
MWRA_003	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	60	3100	225
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	471	81
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	31	12000	299
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	85	1050	230
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	41	727	118
MWRA_003	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	74	6870	296
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	20	12000	104
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	20	2100	154
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	34100	127
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1840	71
MWRA_003	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	1380	102
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	41	10500	300
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	62	10500	401
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	48	20	24200	309

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	959	107
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	20	11200	251
MWRA_003	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	738	95
MWRA_004	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	10	880	128
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	512	50
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	30	4350	239
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	22	10	888	87
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	1400	40
MWRA_004	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	1450	157
MWRA_004	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	1110	56
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	20	1470	91
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	8660	86
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1050	33
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	563	40
MWRA_004	Massachusetts Water Resources Authority	E. coli	03/23/17	11/03/17	35	20	8160	273
MWRA_004	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	14100	239
MWRA_004	Massachusetts Water Resources Authority	E. coli	03/28/19	09/27/19	30	10	9800	185

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_004	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	309	52
MWRA_004	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	22	10	3260	146
MWRA_004	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	754	40
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	25	12300	316
MWRA_005	Massachusetts Water Resources Authority	E. coli	04/02/03	12/31/03	50	10	8000	309
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/06/04	11/17/04	39	10	5900	265
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/30/05	12/06/05	34	10	9700	116
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/29/06	12/29/06	47	10	1300	111
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/09/07	11/20/07	33	10	480	62
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/20/08	12/01/08	28	31	4350	184
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/12/09	12/14/09	39	10	3870	106
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/27/10	12/13/10	42	10	1720	74
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/09/11	12/27/11	43	10	1960	174
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/11/12	12/26/12	49	10	5480	109
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/08/13	12/09/13	45	10	1190	107
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/18/14	12/22/14	41	10	1780	66
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/30/15	12/21/15	40	10	12000	64

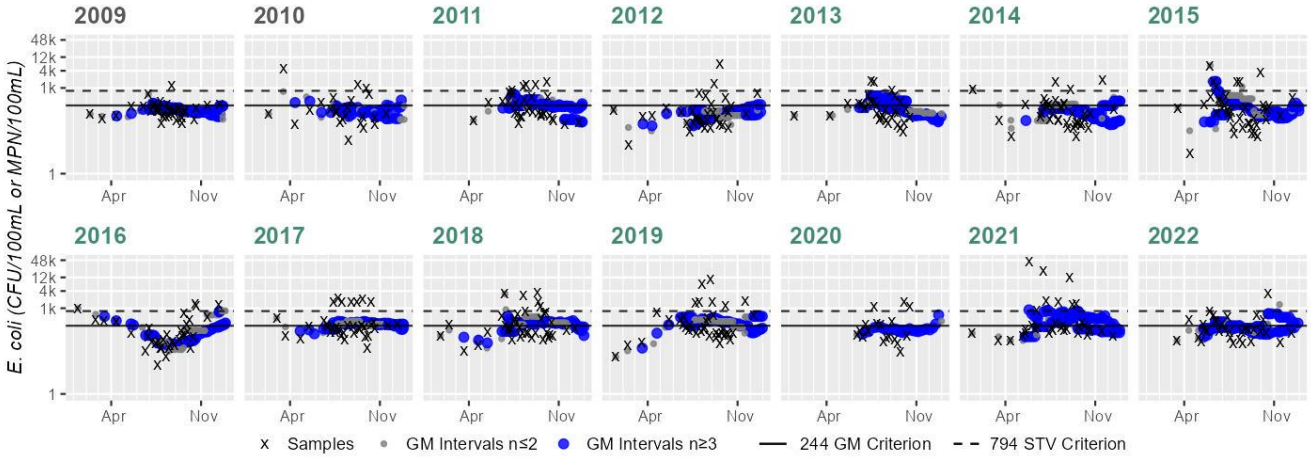
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/04/16	12/06/16	52	10	1400	108
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/03/17	12/04/17	81	10	4880	204
MWRA_005	Massachusetts Water Resources Authority	E. coli	01/29/18	11/27/18	94	10	10500	275
MWRA_005	Massachusetts Water Resources Authority	E. coli	02/07/19	09/27/19	48	10	8660	187
MWRA_005	Massachusetts Water Resources Authority	E. coli	02/10/20	12/28/20	63	10	5790	206
MWRA_005	Massachusetts Water Resources Authority	E. coli	03/10/21	12/29/21	45	10	24200	228
MWRA_005	Massachusetts Water Resources Authority	E. coli	02/09/22	12/12/22	42	10	1660	96
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/18/02	11/13/02	2	290	2000	761
MWRA_144	Massachusetts Water Resources Authority	E. coli	02/24/03	10/27/03	4	1300	10800	2759
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/27/04	12/31/04	13	5	8000	187
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/29/05	12/27/05	13	40	8600	402
MWRA_144	Massachusetts Water Resources Authority	E. coli	01/19/06	01/19/06	1	1330	1330	1330
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/19/07	09/06/07	6	41	1780	339
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/16/08	12/01/08	15	121	12000	941
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	134	2610	373
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	959	152
MWRA_144	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	86	24200	399

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/20/12	12/28/12	25	10	1580	169
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	20	63	24200	395
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	31	8160	175
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	41	813	175
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	20	3080	158
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/27/17	11/03/17	33	20	9800	275
MWRA_144	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	20	24200	260
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/28/19	09/27/19	30	31	24200	343
MWRA_144	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	31	4360	208
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	22	31	7700	255
MWRA_144	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	20	6130	320
MWRA_206	Massachusetts Water Resources Authority	E. coli	04/15/19	11/27/19	18	63	1610	278
MWRA_206	Massachusetts Water Resources Authority	E. coli	03/30/20	06/17/20	19	31	496	115
MWRA_206	Massachusetts Water Resources Authority	E. coli	07/02/21	07/02/21	1	2720	2720	2719
W0383	MassDEP	E. coli	12/09/97	12/09/97	1	80	80	79
W0383	MassDEP	E. coli	01/28/98	04/22/98	3	20	1400	118
1111REG1-CRBL03	US EPA Region 1	E. coli	07/09/01	09/04/01	3	270	310	286
1111REG1-CRBL03	US EPA Region 1	E. coli	06/13/02	09/10/02	6	28	420	134
1111REG1-CRBL03	US EPA Region 1	E. coli	07/08/03	09/09/03	3	80	468	204
1111REG1-CRBL03	US EPA Region 1	E. coli	07/13/04	09/14/04	3	4	48	9
1111REG1-CRBL04	US EPA Region 1	E. coli	07/09/01	09/04/01	3	31	184	94
1111REG1-CRBL04	US EPA Region 1	E. coli	06/13/02	09/10/02	5	16	370	72
1111REG1-CRBL04	US EPA Region 1	E. coli	07/08/03	08/19/03	2	84	1100	303
1111REG1-CRBL04	US EPA Region 1	E. coli	07/13/04	09/14/04	3	4	4	4
1111REG1-CRBL05	US EPA Region 1	E. coli	07/09/01	09/04/01	3	112	230	170

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
1111REG1-CRBL05	US EPA Region 1	E. coli	06/13/02	10/18/02	11	32	4100	339
1111REG1-CRBL05	US EPA Region 1	E. coli	07/08/03	09/18/03	6	88	800	326
1111REG1-CRBL05	US EPA Region 1	E. coli	07/13/04	10/07/04	9	4	250	26
1111REG1-CRBL05	US EPA Region 1	E. coli	06/08/05	10/05/05	5	22	64	37

Station CRWA_1NBS & CRWA_700S - Escherichia coli

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



Variable*	Result
Samples	37
SeasGM	159
#GMI	112
#GMI Ex	3
%GMI Ex	2%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	24
SeasGM	164
#GMI	60
#GMI Ex	4
%GMI Ex	6%
n>STV	3
%n>STV	12%

Variable*	Result
Samples	33
SeasGM	218
#GMI	100
#GMI Ex	44
%GMI Ex	44%
n>STV	5
%n>STV	15%

Variable*	Result
Samples	36
SeasGM	125
#GMI	76
#GMI Ex	6
%GMI Ex	7%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	33
SeasGM	170
#GMI	84
#GMI Ex	37
%GMI Ex	44%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	39
SeasGM	136
#GMI	91
#GMI Ex	7
%GMI Ex	7%
n>STV	4
%n>STV	10%

Variable*	Result
Samples	42
SeasGM	167
#GMI	98
#GMI Ex	25
%GMI Ex	25%
n>STV	6
%n>STV	14%

Variable*	Result
Samples	35
SeasGM	132
#GMI	64
#GMI Ex	13
%GMI Ex	20%
n>STV	4
%n>STV	11%

Variable*	Result
Samples	37
SeasGM	273
#GMI	86
#GMI Ex	67
%GMI Ex	77%
n>STV	7
%n>STV	18%

Variable*	Result
Samples	39
SeasGM	257
#GMI	83
#GMI Ex	54
%GMI Ex	65%
n>STV	6
%n>STV	15%

Variable*	Result
Samples	39
SeasGM	277
#GMI	82
#GMI Ex	65
%GMI Ex	79%
n>STV	7
%n>STV	17%

Variable*	Result
Samples	18
SeasGM	180
#GMI	31
#GMI Ex	2
%GMI Ex	6%
n>STV	3
%n>STV	16%

Variable*	Result
Samples	34
SeasGM	350
#GMI	105
#GMI Ex	66
%GMI Ex	62%
n>STV	8
%n>STV	23%

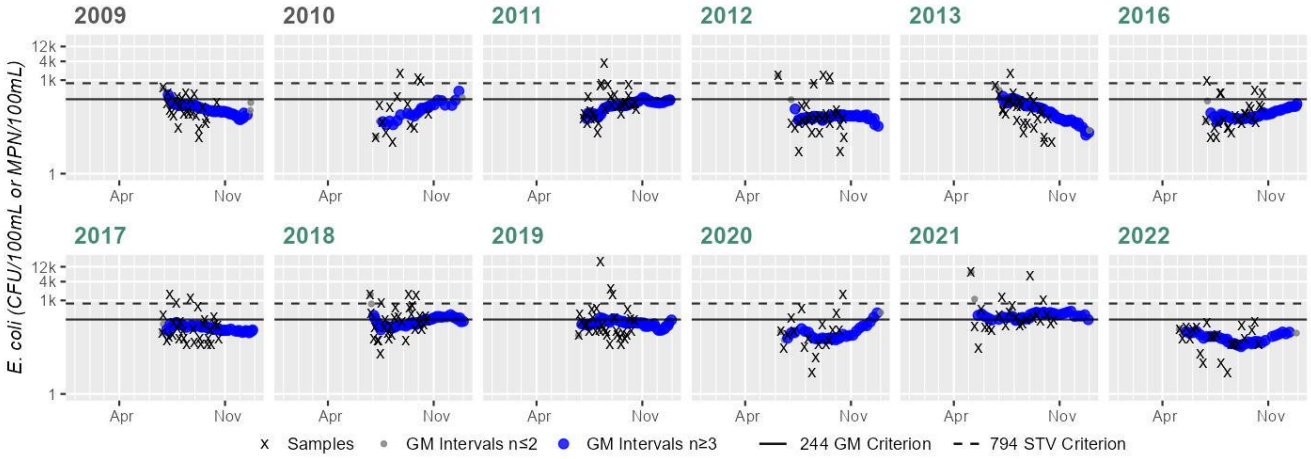
Variable*	Result
Samples	32
SeasGM	190
#GMI	101
#GMI Ex	20
%GMI Ex	19%
n>STV	2
%n>STV	6%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
4%	40%	51%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_2LARZ - Escherichia coli

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



Variable*	Result
Samples	25
SeasGM	117
#GMI	45
#GMI Ex	2
%GMI Ex	4%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	104
#GMI	23
#GMI Ex	1
%GMI Ex	4%
n>STV	3
%n>STV	21%

Variable*	Result
Samples	28
SeasGM	165
#GMI	49
#GMI Ex	4
%GMI Ex	8%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	30
SeasGM	67
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	28
SeasGM	98
#GMI	50
#GMI Ex	4
%GMI Ex	8%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	25
SeasGM	78
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	30
SeasGM	127
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	31
SeasGM	207
#GMI	57
#GMI Ex	18
%GMI Ex	31%
n>STV	4
%n>STV	12%

Variable*	Result
Samples	31
SeasGM	188
#GMI	57
#GMI Ex	5
%GMI Ex	8%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	18
SeasGM	84
#GMI	31
#GMI Ex	2
%GMI Ex	6%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	328
#GMI	43
#GMI Ex	38
%GMI Ex	88%
n>STV	4
%n>STV	16%

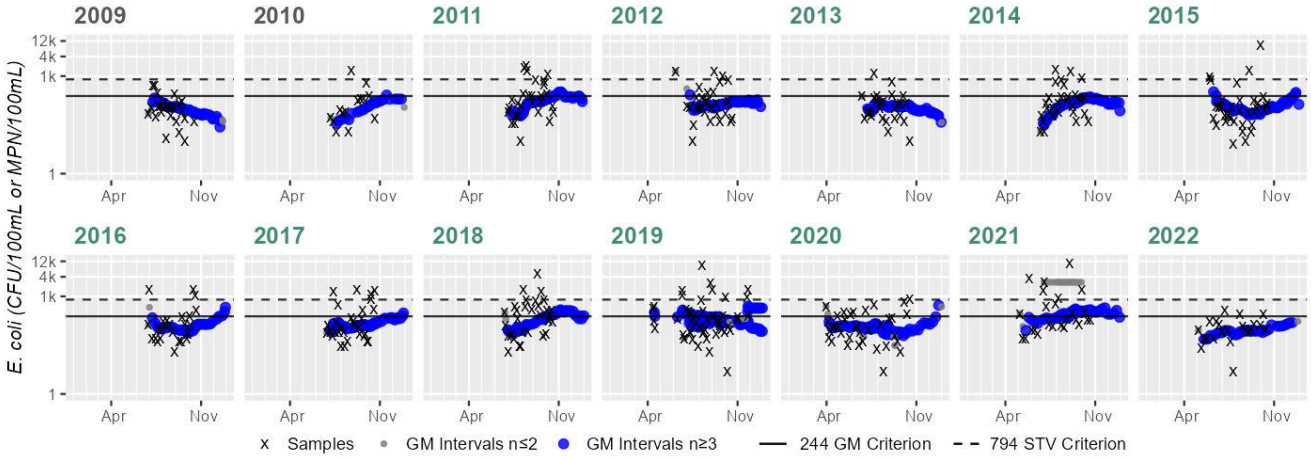
Variable*	Result
Samples	22
SeasGM	56
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
4%	14%	27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_3BU & MWRA_206 - Escherichia coli

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



Variable*	Result
Samples	26
SeasGM	89
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	109
#GMI	23
#GMI Ex	1
%GMI Ex	4%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	28
SeasGM	181
#GMI	49
#GMI Ex	6
%GMI Ex	12%
n>STV	4
%n>STV	14%

Variable*	Result
Samples	30
SeasGM	144
#GMI	54
#GMI Ex	1
%GMI Ex	1%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	27
SeasGM	105
#GMI	48
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	30
SeasGM	150
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	36
SeasGM	100
#GMI	61
#GMI Ex	4
%GMI Ex	6%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	25
SeasGM	125
#GMI	45
#GMI Ex	5
%GMI Ex	11%
n>STV	3
%n>STV	12%

Variable*	Result
Samples	30
SeasGM	149
#GMI	55
#GMI Ex	5
%GMI Ex	9%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	31
SeasGM	210
#GMI	57
#GMI Ex	25
%GMI Ex	43%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	48
SeasGM	194
#GMI	147
#GMI Ex	36
%GMI Ex	24%
n>STV	8
%n>STV	16%

Variable*	Result
Samples	36
SeasGM	107
#GMI	89
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	25
SeasGM	303
#GMI	44
#GMI Ex	27
%GMI Ex	61%
n>STV	6
%n>STV	24%

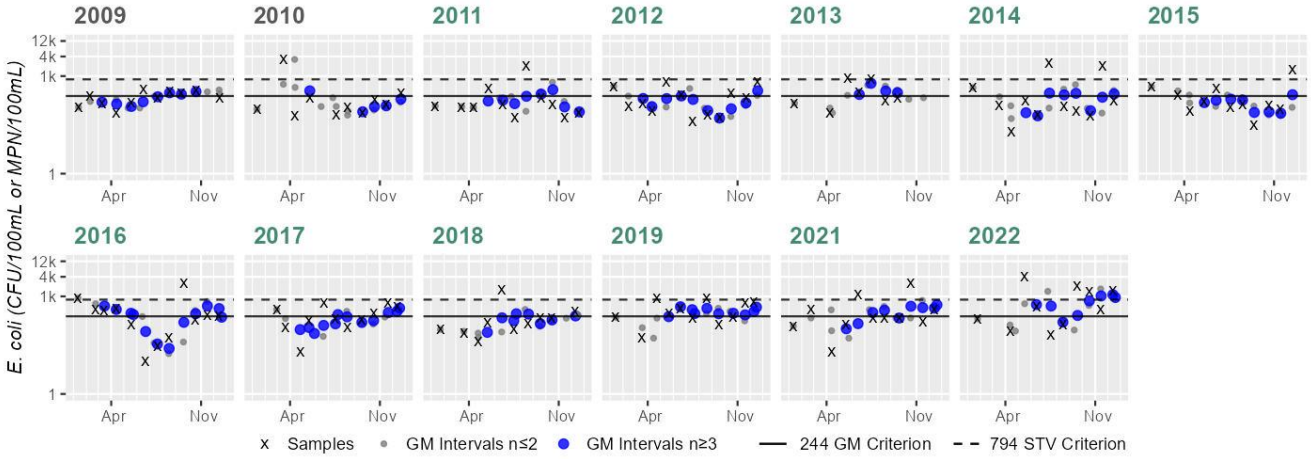
Variable*	Result
Samples	22
SeasGM	88
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
1%	14%	23%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_715S - Escherichia coli

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



Variable*	Result
Samples	11
SeasGM	206
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	166
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	150
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	173
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	263
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	11
SeasGM	180
#GMI	8
#GMI Ex	4
%GMI Ex	50%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	11
SeasGM	179
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	198
#GMI	12
#GMI Ex	7
%GMI Ex	58%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	11
SeasGM	206
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	166
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	317
#GMI	10
#GMI Ex	9
%GMI Ex	90%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	11
SeasGM	250
#GMI	9
#GMI Ex	6
%GMI Ex	66%
n>STV	2
%n>STV	18%

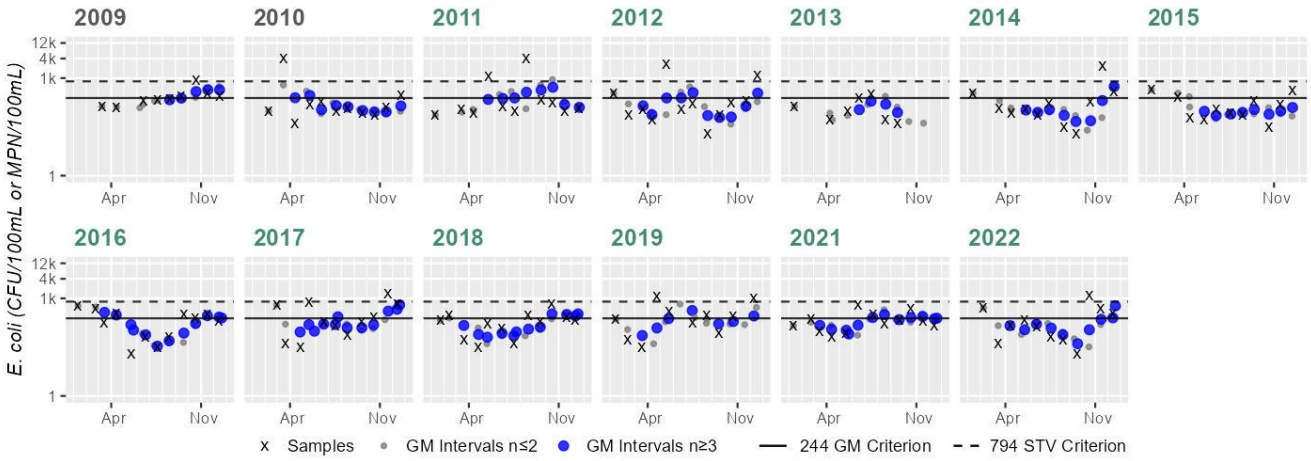
Variable*	Result
Samples	10
SeasGM	466
#GMI	8
#GMI Ex	7
%GMI Ex	87%
n>STV	4
%n>STV	40%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
30%	50%	61%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_729S - Escherichia coli

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



Variable*	Result
Samples	9
SeasGM	249
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	11
SeasGM	154
#GMI	9
#GMI Ex	2
%GMI Ex	22%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	196
#GMI	8
#GMI Ex	4
%GMI Ex	50%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	12
SeasGM	164
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	2
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	101
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	141
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	123
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	156
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	218
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	152
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	214
#GMI	7
#GMI Ex	2
%GMI Ex	28%
n>STV	2
%n>STV	20%

Variable*	Result
Samples	12
SeasGM	186
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	154
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	1
%n>STV	9%

Cumulative %GMI Exceedance
Historic (1997-2010)
35%

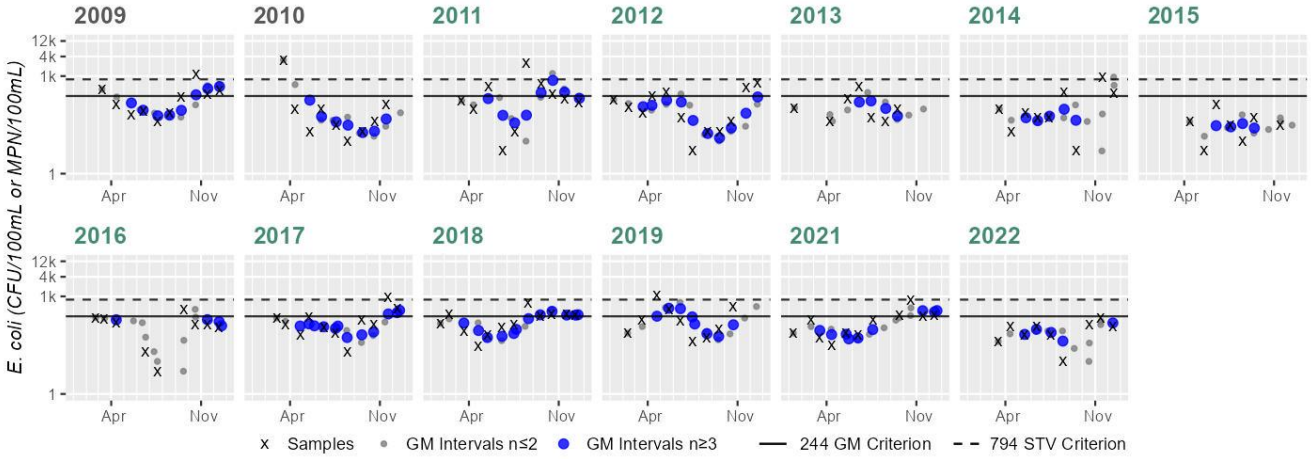
Cumulative %GMI Exceedance
Current (2011-2022)
30%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
32%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_743S - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	170
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	9
SeasGM	64
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	10
SeasGM	159
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	12
SeasGM	85
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	98
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	82
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	7
SeasGM	27
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	93
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	146
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	12
SeasGM	160
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	166
#GMI	8
#GMI Ex	3
%GMI Ex	37%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	11
SeasGM	133
#GMI	9
#GMI Ex	3
%GMI Ex	33%
n>STV	0
%n>STV	0%

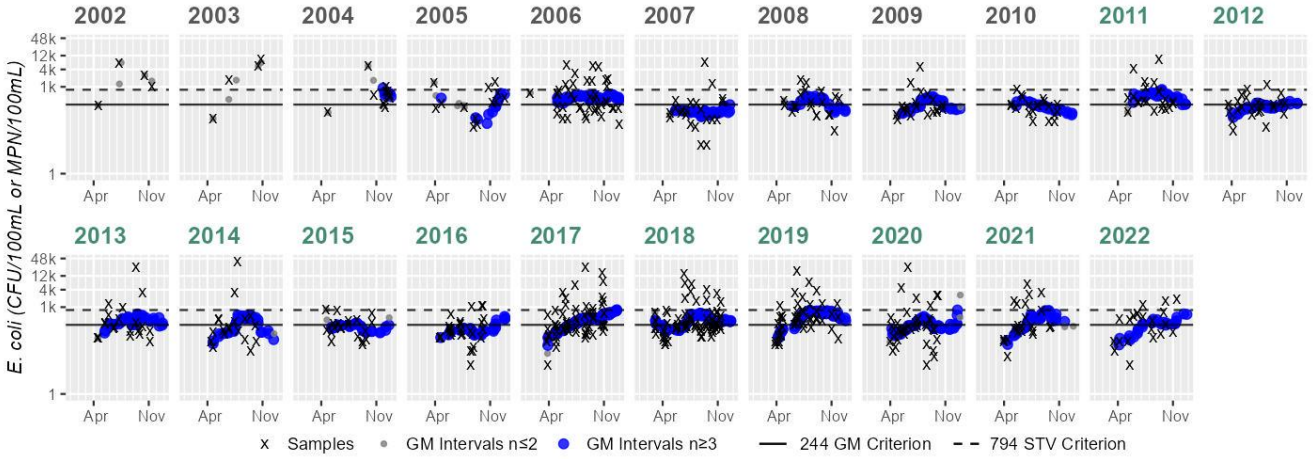
Variable*	Result
Samples	9
SeasGM	75
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
20%	20%	30%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_001 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	1409
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	75%

Variable*	Result
Samples	4
SeasGM	1598
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	75%

Variable*	Result
Samples	13
SeasGM	476
#GMI	19
#GMI Ex	19
%GMI Ex	100%
n>STV	2
%n>STV	15%

Variable*	Result
Samples	13
SeasGM	281
#GMI	16
#GMI Ex	9
%GMI Ex	56%
n>STV	3
%n>STV	23%

Variable*	Result
Samples	42
SeasGM	408
#GMI	70
#GMI Ex	67
%GMI Ex	95%
n>STV	11
%n>STV	26%

Variable*	Result
Samples	22
SeasGM	141
#GMI	38
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	265
#GMI	32
#GMI Ex	18
%GMI Ex	56%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	243
#GMI	35
#GMI Ex	18
%GMI Ex	51%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	199
#GMI	35
#GMI Ex	6
%GMI Ex	17%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	460
#GMI	37
#GMI Ex	36
%GMI Ex	97%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	24
SeasGM	205
#GMI	37
#GMI Ex	11
%GMI Ex	29%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	219
#GMI	35
#GMI Ex	28
%GMI Ex	80%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	20
SeasGM	308
#GMI	34
#GMI Ex	18
%GMI Ex	52%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	196
#GMI	32
#GMI Ex	5
%GMI Ex	15%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	156
#GMI	50
#GMI Ex	5
%GMI Ex	10%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	60
SeasGM	351
#GMI	111
#GMI Ex	84
%GMI Ex	75%
n>STV	13
%n>STV	21%

Variable*	Result
Samples	72
SeasGM	320
#GMI	129
#GMI Ex	103
%GMI Ex	79%
n>STV	10
%n>STV	13%

Variable*	Result
Samples	48
SeasGM	418
#GMI	87
#GMI Ex	69
%GMI Ex	79%
n>STV	10
%n>STV	20%

Variable*	Result
Samples	39
SeasGM	224
#GMI	69
#GMI Ex	27
%GMI Ex	39%
n>STV	6
%n>STV	15%

Variable*	Result
Samples	23
SeasGM	308
#GMI	39
#GMI Ex	26
%GMI Ex	66%
n>STV	6
%n>STV	26%

Variable*	Result
Samples	21
SeasGM	229
#GMI	31
#GMI Ex	20
%GMI Ex	64%
n>STV	3
%n>STV	14%

Cumulative %GMI Exceedance Historic (1997-2010)
55%

Cumulative %GMI Exceedance Historic (Recent 5 Years)
51%

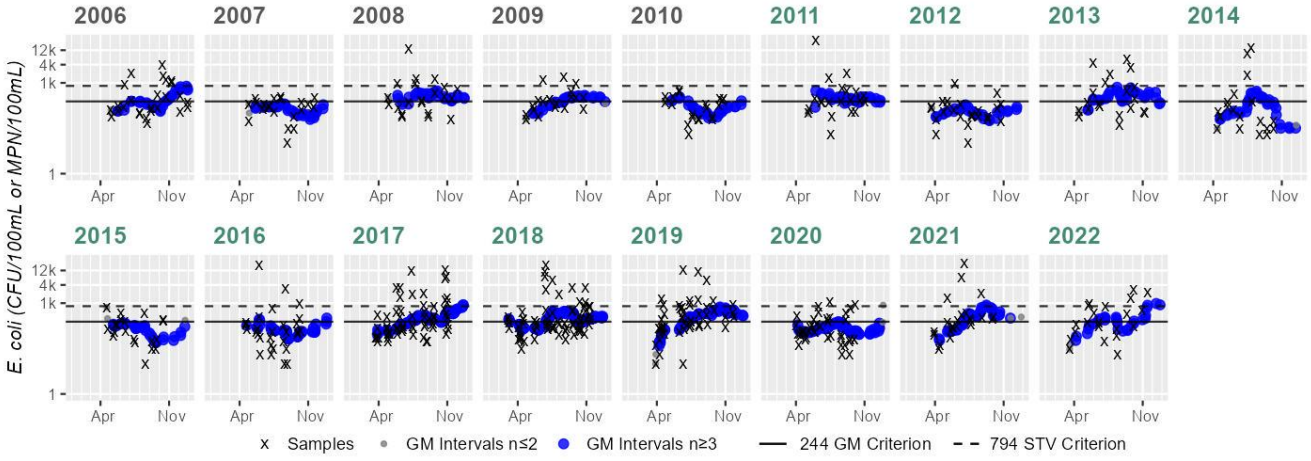
Cumulative %GMI Exceedance Current (2011-2022)
62%

Cumulative %GMI Exceedance Current (Recent 5 Years)
69%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_002 - Escherichia coli

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



Variable*	Result
Samples	26
SeasGM	271
#GMI	43
#GMI Ex	23
%GMI Ex	53%
n>STV	7
%n>STV	26%

Variable*	Result
Samples	21
SeasGM	130
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	340
#GMI	34
#GMI Ex	30
%GMI Ex	88%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	20
SeasGM	247
#GMI	35
#GMI Ex	21
%GMI Ex	60%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	145
#GMI	35
#GMI Ex	7
%GMI Ex	20%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	303
#GMI	37
#GMI Ex	30
%GMI Ex	81%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	24
SeasGM	104
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	341
#GMI	35
#GMI Ex	30
%GMI Ex	85%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	20
SeasGM	135
#GMI	34
#GMI Ex	12
%GMI Ex	35%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	121
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	29
SeasGM	125
#GMI	50
#GMI Ex	5
%GMI Ex	10%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	60
SeasGM	310
#GMI	111
#GMI Ex	76
%GMI Ex	68%
n>STV	13
%n>STV	21%

Variable*	Result
Samples	72
SeasGM	291
#GMI	129
#GMI Ex	97
%GMI Ex	75%
n>STV	10
%n>STV	13%

Variable*	Result
Samples	48
SeasGM	308
#GMI	87
#GMI Ex	60
%GMI Ex	68%
n>STV	11
%n>STV	22%

Variable*	Result
Samples	39
SeasGM	135
#GMI	69
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	23
SeasGM	301
#GMI	39
#GMI Ex	25
%GMI Ex	64%
n>STV	4
%n>STV	17%

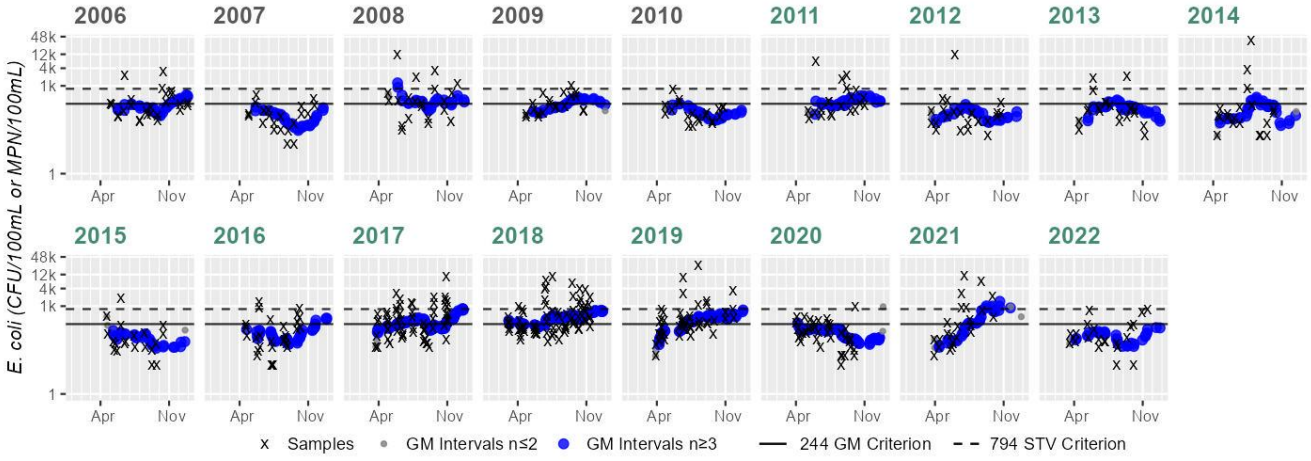
Variable*	Result
Samples	21
SeasGM	258
#GMI	31
#GMI Ex	18
%GMI Ex	58%
n>STV	5
%n>STV	23%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
44%	51%	56%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_003 - Escherichia coli

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



Variable*	Result
Samples	26
SeasGM	225
#GMI	43
#GMI Ex	16
%GMI Ex	37%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	21
SeasGM	81
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	299
#GMI	34
#GMI Ex	27
%GMI Ex	79%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	20
SeasGM	230
#GMI	35
#GMI Ex	17
%GMI Ex	48%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	118
#GMI	35
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	296
#GMI	37
#GMI Ex	27
%GMI Ex	72%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	24
SeasGM	104
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	21
SeasGM	154
#GMI	37
#GMI Ex	5
%GMI Ex	13%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	127
#GMI	34
#GMI Ex	7
%GMI Ex	20%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	71
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	102
#GMI	50
#GMI Ex	5
%GMI Ex	10%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	60
SeasGM	300
#GMI	111
#GMI Ex	67
%GMI Ex	60%
n>STV	14
%n>STV	23%

Variable*	Result
Samples	72
SeasGM	401
#GMI	129
#GMI Ex	109
%GMI Ex	84%
n>STV	18
%n>STV	25%

Variable*	Result
Samples	48
SeasGM	309
#GMI	87
#GMI Ex	63
%GMI Ex	72%
n>STV	7
%n>STV	14%

Variable*	Result
Samples	39
SeasGM	107
#GMI	69
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	23
SeasGM	251
#GMI	39
#GMI Ex	22
%GMI Ex	56%
n>STV	6
%n>STV	26%

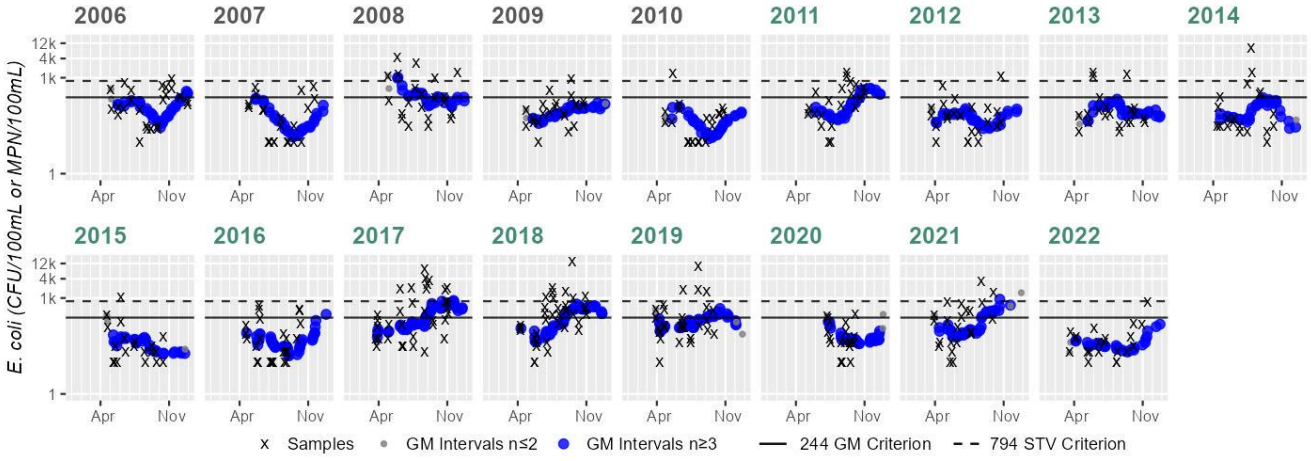
Variable*	Result
Samples	21
SeasGM	95
#GMI	31
#GMI Ex	1
%GMI Ex	3%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
33%	44%	55%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_004 - Escherichia coli

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



Variable*	Result
Samples	26
SeasGM	128
#GMI	43
#GMI Ex	9
%GMI Ex	20%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	21
SeasGM	50
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	239
#GMI	34
#GMI Ex	15
%GMI Ex	44%
n>STV	6
%n>STV	28%

Variable*	Result
Samples	22
SeasGM	87
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	40
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	157
#GMI	37
#GMI Ex	12
%GMI Ex	32%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	24
SeasGM	56
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	21
SeasGM	91
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	20
SeasGM	86
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	40
#GMI	46
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	35
SeasGM	273
#GMI	64
#GMI Ex	36
%GMI Ex	56%
n>STV	9
%n>STV	25%

Variable*	Result
Samples	36
SeasGM	239
#GMI	64
#GMI Ex	38
%GMI Ex	59%
n>STV	8
%n>STV	22%

Variable*	Result
Samples	30
SeasGM	185
#GMI	55
#GMI Ex	17
%GMI Ex	30%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	20
SeasGM	52
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	22
SeasGM	146
#GMI	38
#GMI Ex	12
%GMI Ex	31%
n>STV	2
%n>STV	9%

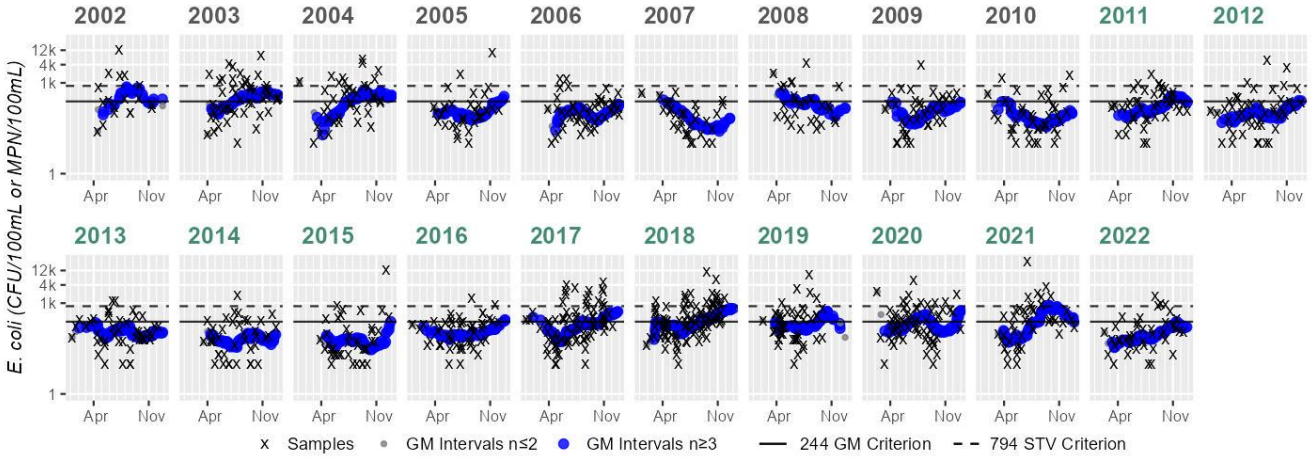
Variable*	Result
Samples	21
SeasGM	40
#GMI	31
#GMI Ex	1
%GMI Ex	3%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
12%	22%	30%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_005 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	316
#GMI	31
#GMI Ex	20
%GMI Ex	64%
n>STV	5
%n>STV	27%

Variable*	Result
Samples	50
SeasGM	309
#GMI	86
#GMI Ex	65
%GMI Ex	75%
n>STV	13
%n>STV	26%

Variable*	Result
Samples	39
SeasGM	265
#GMI	68
#GMI Ex	46
%GMI Ex	67%
n>STV	10
%n>STV	25%

Variable*	Result
Samples	34
SeasGM	116
#GMI	59
#GMI Ex	7
%GMI Ex	11%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	47
SeasGM	111
#GMI	83
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	33
SeasGM	62
#GMI	56
#GMI Ex	1
%GMI Ex	1%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	28
SeasGM	184
#GMI	47
#GMI Ex	15
%GMI Ex	31%
n>STV	5
%n>STV	17%

Variable*	Result
Samples	39
SeasGM	106
#GMI	70
#GMI Ex	2
%GMI Ex	2%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	42
SeasGM	74
#GMI	78
#GMI Ex	2
%GMI Ex	2%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	43
SeasGM	174
#GMI	80
#GMI Ex	22
%GMI Ex	27%
n>STV	4
%n>STV	9%

Variable*	Result
Samples	49
SeasGM	109
#GMI	81
#GMI Ex	10
%GMI Ex	12%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	45
SeasGM	107
#GMI	84
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	41
SeasGM	66
#GMI	73
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	40
SeasGM	64
#GMI	68
#GMI Ex	6
%GMI Ex	8%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	52
SeasGM	108
#GMI	90
#GMI Ex	7
%GMI Ex	7%
n>STV	2
%n>STV	3%

Variable*	Result
Samples	81
SeasGM	204
#GMI	144
#GMI Ex	47
%GMI Ex	32%
n>STV	14
%n>STV	17%

Variable*	Result
Samples	94
SeasGM	275
#GMI	162
#GMI Ex	88
%GMI Ex	54%
n>STV	20
%n>STV	21%

Variable*	Result
Samples	48
SeasGM	187
#GMI	85
#GMI Ex	18
%GMI Ex	21%
n>STV	5
%n>STV	10%

Variable*	Result
Samples	63
SeasGM	206
#GMI	111
#GMI Ex	43
%GMI Ex	38%
n>STV	10
%n>STV	15%

Variable*	Result
Samples	45
SeasGM	228
#GMI	75
#GMI Ex	36
%GMI Ex	48%
n>STV	9
%n>STV	20%

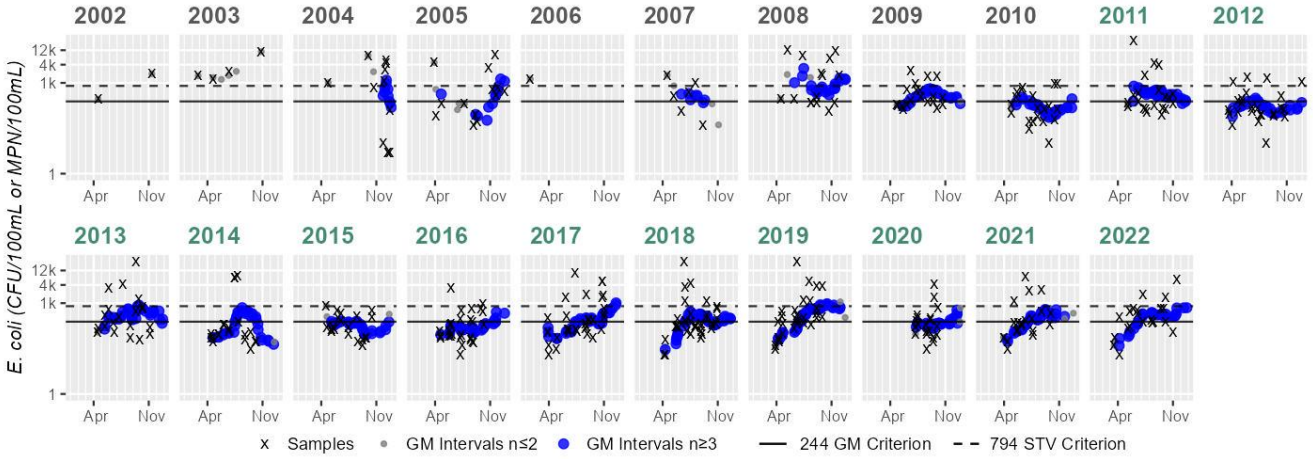
Variable*	Result
Samples	42
SeasGM	96
#GMI	70
#GMI Ex	1
%GMI Ex	1%
n>STV	4
%n>STV	9%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
27%	5%	24%	36%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_144 - Escherichia coli

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



Variable*	Result
Samples	2
SeasGM	761
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	4
SeasGM	2759
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	4
%n>STV	100%

Variable*	Result
Samples	13
SeasGM	187
#GMI	19
#GMI Ex	7
%GMI Ex	36%
n>STV	6
%n>STV	46%

Variable*	Result
Samples	13
SeasGM	402
#GMI	16
#GMI Ex	11
%GMI Ex	68%
n>STV	3
%n>STV	23%

Variable*	Result
Samples	1
SeasGM	1330
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Variable*	Result
Samples	6
SeasGM	339
#GMI	7
#GMI Ex	6
%GMI Ex	85%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	15
SeasGM	941
#GMI	23
#GMI Ex	23
%GMI Ex	100%
n>STV	7
%n>STV	46%

Variable*	Result
Samples	20
SeasGM	373
#GMI	35
#GMI Ex	29
%GMI Ex	82%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	20
SeasGM	152
#GMI	35
#GMI Ex	4
%GMI Ex	11%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	21
SeasGM	399
#GMI	37
#GMI Ex	35
%GMI Ex	94%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	25
SeasGM	169
#GMI	39
#GMI Ex	5
%GMI Ex	12%
n>STV	4
%n>STV	16%

Variable*	Result
Samples	20
SeasGM	395
#GMI	35
#GMI Ex	31
%GMI Ex	88%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	20
SeasGM	175
#GMI	34
#GMI Ex	17
%GMI Ex	50%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	175
#GMI	32
#GMI Ex	4
%GMI Ex	12%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	158
#GMI	46
#GMI Ex	4
%GMI Ex	8%
n>STV	2
%n>STV	7%

Variable*	Result
Samples	33
SeasGM	275
#GMI	60
#GMI Ex	38
%GMI Ex	63%
n>STV	7
%n>STV	21%

Variable*	Result
Samples	36
SeasGM	260
#GMI	64
#GMI Ex	42
%GMI Ex	65%
n>STV	5
%n>STV	13%

Variable*	Result
Samples	30
SeasGM	343
#GMI	55
#GMI Ex	38
%GMI Ex	69%
n>STV	6
%n>STV	20%

Variable*	Result
Samples	20
SeasGM	208
#GMI	35
#GMI Ex	7
%GMI Ex	20%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	22
SeasGM	255
#GMI	38
#GMI Ex	24
%GMI Ex	63%
n>STV	4
%n>STV	18%

Variable*	Result
Samples	21
SeasGM	320
#GMI	31
#GMI Ex	23
%GMI Ex	74%
n>STV	3
%n>STV	14%

Cumulative %GMI Exceedance Historic (1997-2010)
59%

Cumulative %GMI Exceedance Historic (Recent 5 Years)
62%

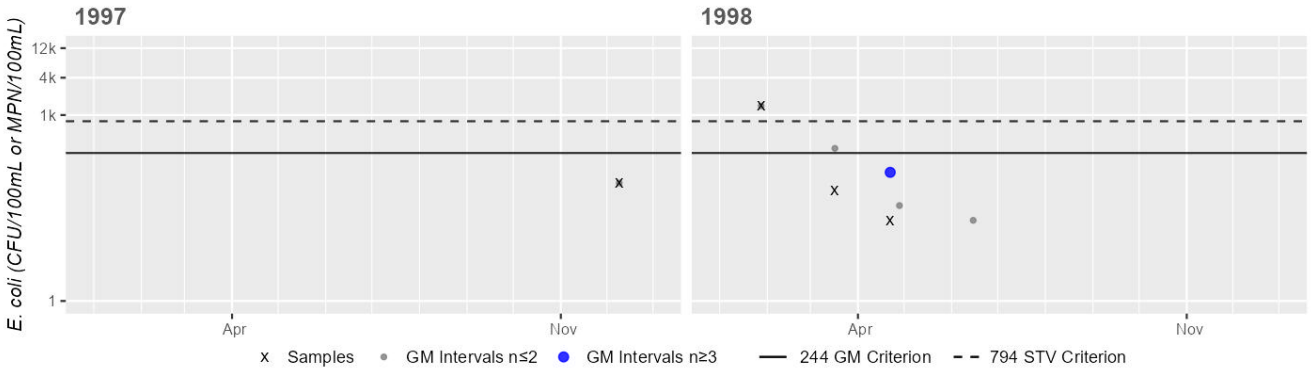
Cumulative %GMI Exceedance Current (2011-2022)
52%

Cumulative %GMI Exceedance Current (Recent 5 Years)
60%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0383 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	80
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

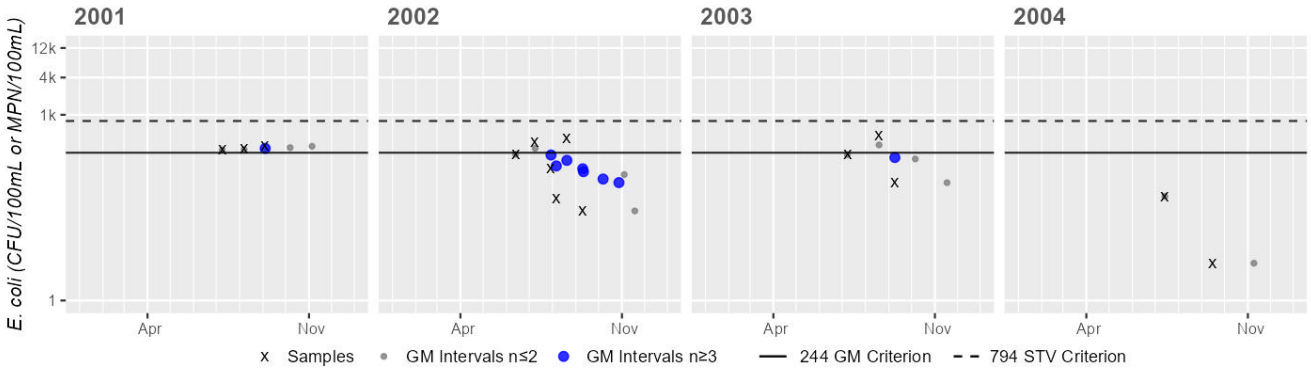
Variable*	Result
Samples	3
SeasGM	118
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	33%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL03 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	286
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	134
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	204
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

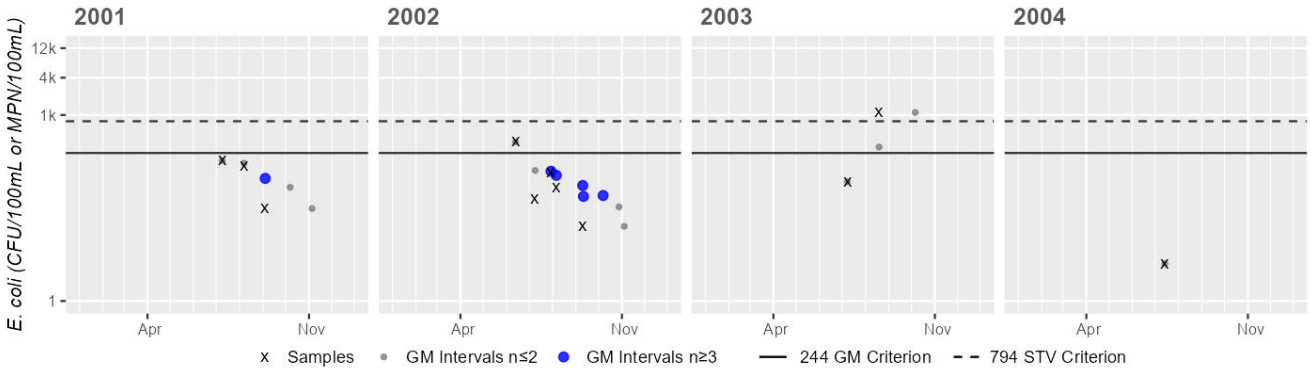
Variable*	Result
Samples	3
SeasGM	0
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL04 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	94
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	72
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	303
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

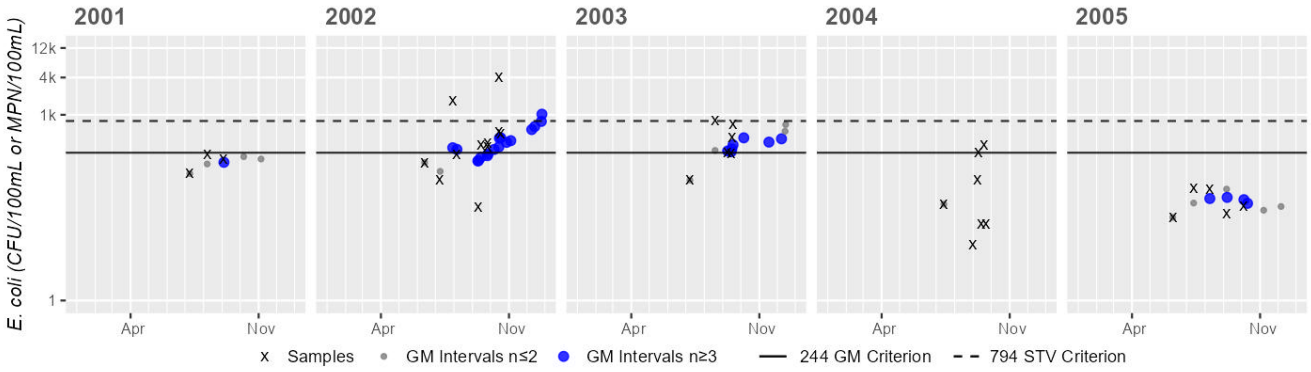
Variable*	Result
Samples	3
SeasGM	0
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL05 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	170
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	339
#GMI	17
#GMI Ex	12
%GMI Ex	70%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	6
SeasGM	326
#GMI	7
#GMI Ex	7
%GMI Ex	100%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	9
SeasGM	0
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	37
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Charles River (MA72-38)

Location:	From Boston University Bridge, Boston/Cambridge to mouth at the New Charles River Dam (NATID: MA01092), Boston (formerly part of 2006 segment: Charles River MA72-08).
AU Type:	RIVER
AU Size:	3.1 MILES
Classification/Qualifier:	B: WWF, CSO

Charles River (MA72-38)

Watershed Area: 310.18 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	310.18	9.30	99.86	1.67
Agriculture	1.7%	0%	1.7%	0%
Developed	34.8%	80.4%	19.6%	47.5%
Natural	50%	19.5%	51.2%	52.1%
Wetland	13.6%	0.1%	27.5%	0.4%
Impervious	20.7%	70.9%	10.3%	36.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Fish Passage Barrier*)	--	Unchanged
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	Cause Unknown [Sediment Screening Value (Exceedance)]	--	Unchanged
5	5	Chlorophyll-a	33826	Unchanged
5	5	Combined Biota/Habitat Bioassessments	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Dissolved Oxygen Supersaturation	33826	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Enterococcus	--	Added
5	5	Escherichia Coli (E. Coli)	32371	Unchanged
5	5	Harmful Algal Blooms	33826	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	33826	Unchanged
5	5	Odor	33826	Unchanged
5	5	Oil and Grease	--	Unchanged
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	33826	Unchanged
5	5	Salinity	--	Unchanged
5	5	Temperature	--	Unchanged
5	5	Transparency / Clarity	33826	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Fish Passage Barrier*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Cooling Water Intake Structures (Impingement or Entrainment) (Y)	X	--	--	--	--
(Flow Regime Modification*)	Dam or Impoundment (Y)	X	--	--	--	--
(Flow Regime Modification*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
(Flow Regime Modification*)	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Cause Unknown [Sediment Screening Value (Exceedance)]	Contaminated Sediments (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Cause Unknown [Sediment Screening Value (Exceedance)]	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Cause Unknown [Sediment Screening Value (Exceedance)]	Upstream Source (Y)	X	--	--	--	--
Chlorophyll-a	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Chlorophyll-a	Upstream Source (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Contaminated Sediments (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Cooling Water Intake Structures (Impingement or Entrainment) (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Dam or Impoundment (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Industrial Thermal Discharges (Y)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	Upstream Source (Y)	X	--	--	--	--
DDT in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia (Y)	X	--	--	--	--
Dissolved Oxygen	Dam or Impoundment (Y)	X	--	--	--	--
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Industrial Thermal Discharges (Y)	X	--	--	--	--
Dissolved Oxygen	Upstream Source (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Cooling Water Intake Structures (Impingement or Entrainment) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Industrial Thermal Discharges (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Upstream Source (Y)	X	--	--	--	--
Enterococcus	Combined Sewer Overflows (N)	--	--	--	X	--
Enterococcus	Source Unknown (N)	--	--	--	X	--
Escherichia Coli (E. Coli)	Combined Sewer Overflows (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Harmful Algal Blooms	Cooling Water Intake Structures (Impingement or Entrainment) (Y)	X	--	X	X	X
Harmful Algal Blooms	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Industrial Thermal Discharges (Y)	X	--	X	X	X
Harmful Algal Blooms	Unspecified Urban Stormwater (Y)	X	--	X	X	X
Harmful Algal Blooms	Upstream Source (Y)	X	--	X	X	X
Harmful Algal Blooms	Urban Runoff/Storm Sewers (Y)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Contaminated Sediments (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Industrial Thermal Discharges (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Upstream Source (Y)	X	--	--	--	--
Odor	Source Unknown (N)	--	--	X	X	X
Oil and Grease	Source Unknown (N)	--	--	X	X	X
PCBs in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
PCBs in Fish Tissue	Source Unknown (N)	--	X	--	--	--
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Contaminated Sediments (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Upstream Source (Y)	X	--	--	--	--
Salinity	Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Salinity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Temperature	Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia (Y)	X	--	--	--	--
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
Temperature	Industrial Thermal Discharges (Y)	X	--	--	--	--
Transparency / Clarity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	X	--
Transparency / Clarity	Unspecified Urban Stormwater (Y)	X	--	--	X	--
Transparency / Clarity	Upstream Source (Y)	X	--	--	X	--
Transparency / Clarity	Urban Runoff/Storm Sewers (Y)	X	--	--	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 the downstream Charles River AU (MA72-38) continues to be assessed as Not Supporting. The prior DDT in Fish Tissue and PCBs in Fish Tissue impairments are being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in an upstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in the Charles River (referred to by MA DPH as ''Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)'') in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing PCBs and Pesticides advisories in the January 2025 list (the Pesticides advisory is translated by DEP to DDT in Fish Tissue). 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 5)

Summary
Fish toxics sampling was conducted in an upstream Charles River AU (MA72-07) at station F0485 (PFAS Study ID 42) [west of Woerd Avenue boat launch, Waltham] on 10/10/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MA DPH retained the existing site-specific fish consumption advisories for PCBs and Pesticides associated with the Charles River (referred to by MA DPH as Charles River (between the South Natick Dam in Natick and the Museum of Science Dam in Boston/Cambridge)) 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, PCBs in Fish Tissue, and DDT in Fish Tissue for this Charles River AU (MA72-38).

Aesthetic

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

2024/26 Use Attainment Summary

The Aesthetics Use for the downstream Charles River AU (MA72-38) continues to be assessed as Not Supporting with the prior Harmful Algal Blooms, Odor, and Oil and Grease impairments being carried forward. Since the Transparency/Clarity impairment was redundantly duplicated across multiple uses for this waterbody, the Transparency/Clarity impairment is being removed from the Aesthetics Use but will continue to be maintained under the Primary Contact Recreation Use.
During the period 2009 through 2014, C-HAB postings for the Charles River were reported to MDPH based on visual observations for 42 days in 2009, 77 days in 2010, 88 days in 2012 (58 of those with cell count data), 14 days in 2013, and 38 days in 2014. During the period 2015 through 2022, C-HAB postings for Charles River were reported to MDPH based on visual observations for 86 days in 2015, 76 days in 2016, 14 days in 2017, 21 days in 2018, 15 days in 2019, 168 days in 2020 (134 of those with cell count data), and 23 days in 2022. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, this is reflective of the existing Harmful Algal Blooms impairment for this Charles River AU (MA72-38).

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 2009 through 2014, C-HAB postings for Charles River (MA72-38) were reported to MDPH based on visual observations for 42 days in 2009, 77 days in 2010, 88 days in 2012 (58 of those with cell count data), 14 days in 2013, and 38 days in 2014. During the period 2015 through 2022, C-HAB postings for Charles River (MA72-38) were reported to MDPH based on visual observations for 86 days in 2015, 76 days in 2016, 14 days in 2017, 21 days in 2018, 15 days in 2019, 168 days in 2020 (134 of those with cell count data), and 23 days in 2022. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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
Charles River	Boston/Cambridge	86	76	14	21	15	168		23

Primary Contact Recreation

2024/26 Use Attainment	Alert

Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for this downstream Charles River AU (MA72-38) continues to be assessed as Not Supporting. The prior Transparency / Clarity impairment is being carried forward based on Secchi depth data not meeting the threshold at MWRA_006, MWRA_007, MWRA_145, MWRA_008, MWRA_009, MWRA_010, MWRA_210, MWRA_166, and MWRA_011. The Harmful Algal Blooms impairment is being carried forward since C-HAB postings extended >20 days in multiple of the last 5 years. The Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data from MWRA_006*, MWRA_007*, MWRA_145*, MWRA_008*, MWRA_009*, CRWA_4LONG, CRWA_773S, MWRA_010*, MWRA_210*, MWRA_011*, and CRWA_763S. Note that data from stations with an * triggered a new Enterococcus impairment. The prior Odor, and Oil and Grease impairments (from the Aesthetics Use) are being carried forward.

C-HAB postings for this MA72-38 AU were reported to MDPH for >20 days in multiple years in the 2009-2014 and 2015-2022 periods. These blooms are reflective of the existing Harmful Algal Blooms impairment. More details can be found under the Aesthetics Use.

In this MA72-38 AU, MWRA collected Secchi depth data at MWRA_006 (2011-2022), MWRA_007 (2011-2022), MWRA_145 (2011-2022), MWRA_008 (2011-2022), MWRA_009 (2011-2022), MWRA_010 (2011-2022), MWRA_210 (2018-2022), MWRA_166 (2011-2019), and MWRA_011 (2011-2022). The most recent five years of data with >2 Secchi measurements were used for assessment (and all station depths except 1 were 1.2 m or deeper). The number of Secchi measurements/station/year usually ranged from 18 - 36 and at most stations, roughly half or more of the measurements were less than the 1.2 m (4 ft) threshold in multiple years (at all stations ≥5 measurements were less than the threshold in every year). Secchi depth measurements from all 9 stations reflect the existing Transparency / Clarity impairment.

MWRA and CRWA staff/volunteers collected *E. coli* (EC) bacteria samples in this MA72-38 AU from 2011-2022 at 13 stations and *Enterococcus* (Ent) samples at 12 of the stations. Samples were collected from the following stations/sample years from upstream to downstream: MWRA_006 [Charles River, downstream of Cottage Farm, MWR201] from 2011-2022 (EC & Ent n=18-36/yr), MWRA_007 [Charles River, at MIT Crew Boathouse] from 2011-2022 (EC & Ent n=18-61/yr), MWRA_145 [Charles River, Stony Brook outfall, MWR023] from 2011-2022 (EC & Ent n=18-61/yr), CRWA_763S [Mass. Ave. (Harvard) Bridge, Cambridge] from 2011-2019 and 2021-2022 (EC n=4-7/yr, Ent n=1-2/yr), MWRA_008 [Charles River, downstream of Harvard Bridge] from 2011-2022 (EC & Ent n=18-36/yr), MWRA_009 [Charles River, between Harvard and Longfellow Bridges, MWR020] from 2011-2022 (EC & Ent n=18-60/yr), CRWA_4LONG [Longfellow Bridge-Center, Boston/Cambridge] from 2011-2022 (EC n=18-36/yr), CRWA_773S [Longfellow Bridge, Boston] from 2011-2019 and 2021-2022 (EC n=6-7/yr & Ent n=1), MWRA_010 [Charles River, downstream of Longfellow Bridge] from 2011-2022 (EC & Ent n=18-36/yr), MWRA_210 [Lower Charles River downstream of CAM017] from 2018-2022 (EC & Ent n=18-61/yr), MWRA_166 [Charles River, landing in back of Science Museum] from 2011-2022 (EC & Ent n=14-23/yr), MWRA_011 [Charles River, between Science Museum and Zakim Bridge] from 2011-2022 (EC & Ent n=18-60/yr), CRWA_784S [New Charles River Dam, Boston] from 2011-2019 and 2021-2022 (EC n=5-7/yr, Ent n=2/yr).

Space constraints do not allow detailed discussion of analyses. While *E. coli* data from MWRA_166 and CRWA_784S meet 2024 CALM guidance, *E. coli* data from the other 11 mostly high frequency stations are reflective of the existing Escherichia Coli (E. Coli) impairment.

Additionally, *Enterococcus* data from MWRA_166 meet 2024 CALM guidance, and Ent data from CRWA_763S, CRWA_773S, and CRWA_784S are too limited to assess according to the 2024 CALM. However, Ent data from the remaining 8 high frequency stations are indicative of an Enterococcus impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_4LONG	Charles River Watershed Association	Water Quality	Charles River	Longfellow Bridge-Center, Boston/Cambridge	42.361100	-71.075800
CRWA_763S	Charles River Watershed Association	Water Quality	Charles River	Mass. Ave. (Harvard) Bridge, Cambridge	42.354401	-71.091400
CRWA_773S	Charles River Watershed Association	Water Quality	Charles River	Longfellow Bridge, Boston	42.361401	-71.075401
CRWA_784S	Charles River Watershed Association	Water Quality	Charles River	New Charles River Dam, Boston	42.369000	-71.061699
MWRA_006	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Cottage Farm, MWR201	42.352500	-71.108500
MWRA_007	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, at MIT Crew Boathouse	42.354999	-71.096893
MWRA_008	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Harvard Bridge	42.354500	-71.089500
MWRA_009	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, between Harvard and Longfellow Bridges, MWR020	42.357500	-71.076444
MWRA_010	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Longfellow Bridge	42.363851	-71.074809
MWRA_011	Massachusetts Water Resources Authority	Water Quality	Lower Basin	Charles River, between Science Museum and Zakim Bridge	42.368284	-71.067075
MWRA_145	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, Stony Brook outfall, MWR023	42.351930	-71.092007
MWRA_166	Massachusetts Water Resources Authority	Water Quality	Lower Basin	Charles River, landing in back of Science Museum	42.366177	-71.070201
MWRA_210	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Lower Charles River downstream of CAM017	42.364722	-71.075833

Bacteria Data

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

(CRWA 2023) (MassDEP Undated 2) (MWRA 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
CRWA_4LONG	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	2	770	49
CRWA_4LONG	Charles River Watershed Association	E. coli	07/02/12	10/17/12	27	2	110	19
CRWA_4LONG	Charles River Watershed Association	E. coli	06/25/13	10/16/13	28	5	230	33
CRWA_4LONG	Charles River Watershed Association	E. coli	06/24/14	10/15/14	30	5	272	11
CRWA_4LONG	Charles River Watershed Association	E. coli	06/02/15	10/15/15	36	0	5000	20
CRWA_4LONG	Charles River Watershed Association	E. coli	06/30/16	10/20/16	24	5	140	27
CRWA_4LONG	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	10	210	37
CRWA_4LONG	Charles River Watershed Association	E. coli	06/26/18	10/18/18	30	5	780	51
CRWA_4LONG	Charles River Watershed Association	E. coli	06/25/19	10/15/19	30	2	280	26
CRWA_4LONG	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	2	500	17
CRWA_4LONG	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	10	1700	101
CRWA_4LONG	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	1140	35
CRWA_763S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	618	103
CRWA_763S	Charles River Watershed Association	Enterococcus	06/21/11	09/20/11	2	5	31	12
CRWA_763S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	146	30
CRWA_763S	Charles River Watershed Association	Enterococcus	06/19/12	09/18/12	2	5	20	9
CRWA_763S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	5	313	40

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_763S	Charles River Watershed Association	Enterococcus	04/09/13	06/18/13	2	5	110	23
CRWA_763S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	10	2910	92
CRWA_763S	Charles River Watershed Association	Enterococcus	06/17/14	09/16/14	2	5	5	4
CRWA_763S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	2910	45
CRWA_763S	Charles River Watershed Association	Enterococcus	06/16/15	09/15/15	2	5	30	12
CRWA_763S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	2910	118
CRWA_763S	Charles River Watershed Association	Enterococcus	06/21/16	09/20/16	2	61	576	187
CRWA_763S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	5	613	64
CRWA_763S	Charles River Watershed Association	Enterococcus	06/20/17	09/19/17	2	5	20	9
CRWA_763S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	10	443	150
CRWA_763S	Charles River Watershed Association	Enterococcus	06/19/18	09/18/18	2	63	74	68
CRWA_763S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	5	1210	94
CRWA_763S	Charles River Watershed Association	Enterococcus	06/18/19	09/17/19	2	5	20	9
CRWA_763S	Charles River Watershed Association	E. coli	05/18/21	09/21/21	4	10	331	97
CRWA_763S	Charles River Watershed Association	Enterococcus	09/21/21	09/21/21	1	10	10	10
CRWA_763S	Charles River Watershed Association	E. coli	05/17/22	10/18/22	4	20	185	63
CRWA_763S	Charles River Watershed Association	Enterococcus	06/14/22	06/14/22	1	10	10	10

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_773S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	197	57
CRWA_773S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	6	5	243	53
CRWA_773S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	52	15
CRWA_773S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	97	13
CRWA_773S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	10	250	31
CRWA_773S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	148	33
CRWA_773S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	30	776	176
CRWA_773S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	393	51
CRWA_773S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	10	1620	94
CRWA_773S	Charles River Watershed Association	Enterococcus	09/17/19	09/17/19	1	5	5	4
CRWA_773S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	20	789	109
CRWA_773S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	31	1210	132
CRWA_784S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	5	86	26
CRWA_784S	Charles River Watershed Association	Enterococcus	06/21/11	09/20/11	2	5	5	4
CRWA_784S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	74	16
CRWA_784S	Charles River Watershed Association	Enterococcus	06/19/12	09/18/12	2	10	10	10
CRWA_784S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	10	86	21

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_784S	Charles River Watershed Association	Enterococcus	04/09/13	06/18/13	2	5	10	7
CRWA_784S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	31	11
CRWA_784S	Charles River Watershed Association	Enterococcus	06/17/14	09/16/14	2	5	5	4
CRWA_784S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	74	8
CRWA_784S	Charles River Watershed Association	Enterococcus	06/16/15	09/15/15	2	5	20	9
CRWA_784S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	20	203	45
CRWA_784S	Charles River Watershed Association	Enterococcus	06/21/16	09/20/16	2	5	63	17
CRWA_784S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	5	52	22
CRWA_784S	Charles River Watershed Association	Enterococcus	06/20/17	09/19/17	2	5	20	9
CRWA_784S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	341	56
CRWA_784S	Charles River Watershed Association	Enterococcus	06/19/18	09/18/18	2	20	41	28
CRWA_784S	Charles River Watershed Association	E. coli	05/21/19	09/17/19	5	10	52	24
CRWA_784S	Charles River Watershed Association	Enterococcus	06/18/19	09/17/19	2	5	10	7
CRWA_784S	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	278	50
CRWA_784S	Charles River Watershed Association	Enterococcus	06/15/21	09/21/21	2	10	30	17
CRWA_784S	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	10	132	53
CRWA_784S	Charles River Watershed Association	Enterococcus	06/14/22	09/20/22	2	10	20	14

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_006	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	20	2010	312
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	644	56
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	20	1110	150
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	108	15
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	20	1250	145
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	166	27
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	15500	148
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	5480	22
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	20	1270	102
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	189	21
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	3450	140
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	27	10	373	33
MWRA_006	Massachusetts Water Resources Authority	E. coli	05/01/17	10/31/17	26	10	6130	250
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	05/01/17	10/31/17	26	10	5480	52
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	5170	165
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/09/18	10/31/18	36	10	2280	51
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	28	10	8660	188

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	28	10	7270	57
MWRA_006	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	459	89
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	07/07/20	10/01/20	19	10	187	33
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	20	31	6870	213
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	20	10	1790	93
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	794	65
MWRA_006	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	906	24
MWRA_007	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	2360	151
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	1340	28
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	712	66
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	189	14
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	1140	107
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	529	24
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	1130	44
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	148	14
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	529	31
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	228	14

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	3450	46
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	545	17
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	10	4880	157
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	4350	44
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	10	5170	226
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	1660	49
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	10	9800	159
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	3450	44
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	1010	62
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	262	14
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	52	4350	282
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	2610	75
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	1620	43
MWRA_007	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	240	26
MWRA_008	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	4570	156
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	504	32
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	583	53

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	52	14
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	882	75
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	364	22
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	581	39
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	201	13
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	448	33
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	122	13
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	2760	52
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	27	10	2190	19
MWRA_008	Massachusetts Water Resources Authority	E. coli	05/01/17	10/31/17	26	10	11200	105
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	05/01/17	10/31/17	26	10	17300	36
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	5790	171
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/09/18	10/31/18	36	10	1920	40
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	28	10	1920	116
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	28	10	5170	42
MWRA_008	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	2720	39
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	07/07/20	10/01/20	19	10	1050	13

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	20	63	4880	300
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	20	10	1010	52
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	2280	40
MWRA_008	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	958	18
MWRA_009	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	933	92
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	335	20
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	269	30
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	41	11
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	318	63
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	238	16
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	388	21
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	22	10	109	13
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1470	33
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	22	10	72	13
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	959	33
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	31	10	63	12
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	10	4610	79

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	51	10	7270	22
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	60	10	3870	162
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	60	10	591	36
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	42	10	1990	95
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	42	10	1050	29
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	631	49
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	173	13
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	52	1720	197
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	1600	27
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	457	24
MWRA_009	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	31	11
MWRA_010	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	591	73
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	431	19
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	223	29
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	41	11
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	246	36
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	256	22

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	221	20
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	52	11
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	520	28
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	41	12
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	388	26
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	27	10	96	14
MWRA_010	Massachusetts Water Resources Authority	E. coli	05/01/17	10/31/17	26	10	4350	58
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	05/01/17	10/31/17	26	10	1790	20
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	1940	67
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/09/18	10/31/18	36	10	496	20
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	28	10	1410	70
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	28	10	723	21
MWRA_010	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	282	16
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	07/07/20	10/01/20	19	10	31	11
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	20	41	1610	146
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	20	10	275	24
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	109	19

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_010	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	143	13
MWRA_011	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	749	48
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	285	20
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	201	30
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	10	10
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	571	43
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	213	17
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	110	15
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	31	11
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	309	18
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	52	11
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	161	27
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	96	13
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	10	2360	59
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	1350	24
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	60	10	11200	156
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	60	10	2760	34

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	10	4110	114
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	932	35
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	1020	80
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	216	20
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	10	738	97
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	552	21
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	24200	54
MWRA_011	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	399	14
MWRA_145	Massachusetts Water Resources Authority	E. coli	05/09/11	10/31/11	20	10	9800	274
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	05/09/11	10/31/11	20	10	1780	52
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/03/12	10/24/12	22	10	7700	108
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/03/12	10/24/12	22	10	860	18
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	19	10	907	91
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/17/13	11/07/13	19	10	199	24
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	53800	149
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/14/14	10/07/14	20	10	3450	26
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	15500	81

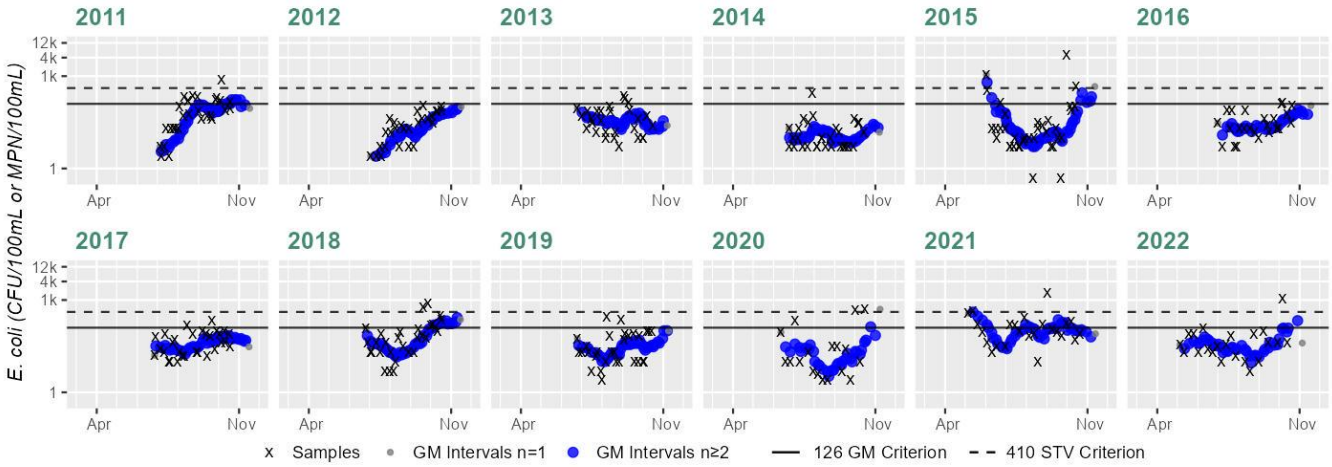
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/21/15	10/15/15	20	10	496	14
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	3080	93
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/19/16	10/06/16	29	10	465	24
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/26/17	10/31/17	50	10	19900	217
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/26/17	10/31/17	50	10	11200	56
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	20	6490	359
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	2600	68
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	10	6490	239
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	2760	67
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	9210	203
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	663	32
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	31	8660	338
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	2190	81
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	1540	82
MWRA_145	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	759	22
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/04/11	10/21/11	15	10	708	66
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/04/11	10/21/11	15	10	189	20

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/02/12	10/31/12	16	10	1520	33
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/02/12	10/31/12	16	10	860	13
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/01/13	10/28/13	16	10	265	32
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/01/13	10/28/13	16	10	160	11
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/01/14	10/27/14	16	10	373	26
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/01/14	10/27/14	16	10	121	12
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/10/15	10/27/15	23	10	6490	60
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/10/15	10/27/15	23	10	1270	21
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/11/16	10/27/16	15	10	135	29
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/11/16	10/27/16	15	10	31	11
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/14/17	10/24/17	15	10	185	33
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/14/17	10/24/17	15	10	20	10
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/12/18	10/18/18	14	10	158	49
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/12/18	10/18/18	14	10	20	13
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/01/19	10/22/19	16	10	171	38
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/01/19	10/22/19	16	10	63	17
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/08/20	10/20/20	15	10	189	41

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/08/20	10/20/20	15	10	134	15
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/05/21	10/20/21	15	20	450	74
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/05/21	10/20/21	15	10	292	17
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/05/22	11/02/22	14	10	121	27
MWRA_166	Massachusetts Water Resources Authority	Enterococcus	04/05/22	11/02/22	14	10	31	12
MWRA_210	Massachusetts Water Resources Authority	E. coli	04/04/18	11/14/18	61	10	2010	114
MWRA_210	Massachusetts Water Resources Authority	Enterococcus	04/04/18	11/14/18	61	10	620	25
MWRA_210	Massachusetts Water Resources Authority	E. coli	04/08/19	09/27/19	41	10	1660	87
MWRA_210	Massachusetts Water Resources Authority	Enterococcus	04/08/19	09/27/19	41	10	905	27
MWRA_210	Massachusetts Water Resources Authority	E. coli	04/03/20	10/01/20	38	10	275	45
MWRA_210	Massachusetts Water Resources Authority	Enterococcus	04/03/20	10/01/20	37	10	189	13
MWRA_210	Massachusetts Water Resources Authority	E. coli	04/14/21	09/30/21	21	31	556	107
MWRA_210	Massachusetts Water Resources Authority	Enterococcus	04/14/21	09/30/21	21	10	189	24
MWRA_210	Massachusetts Water Resources Authority	E. coli	04/06/22	10/31/22	18	10	364	23
MWRA_210	Massachusetts Water Resources Authority	Enterococcus	04/06/22	10/31/22	18	10	74	13

Station CRWA_4LONG - Escherichia coli

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



Variable*	Result
Samples	28
SeasGM	49
#GMI	49
#GMI Ex	8
%GMI Ex	16%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	27
SeasGM	19
#GMI	49
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	28
SeasGM	33
#GMI	53
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	11
#GMI	54
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	36
SeasGM	20
#GMI	63
#GMI Ex	7
%GMI Ex	11%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	24
SeasGM	27
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	37
#GMI	48
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	51
#GMI	48
#GMI Ex	13
%GMI Ex	27%
n>STV	2
%n>STV	6%

Variable*	Result
Samples	30
SeasGM	26
#GMI	46
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	18
SeasGM	17
#GMI	33
#GMI Ex	1
%GMI Ex	3%
n>STV	2
%n>STV	11%

Variable*	Result
Samples	24
SeasGM	101
#GMI	45
#GMI Ex	13
%GMI Ex	28%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	22
SeasGM	35
#GMI	41
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance Current (2011-2022)

7%

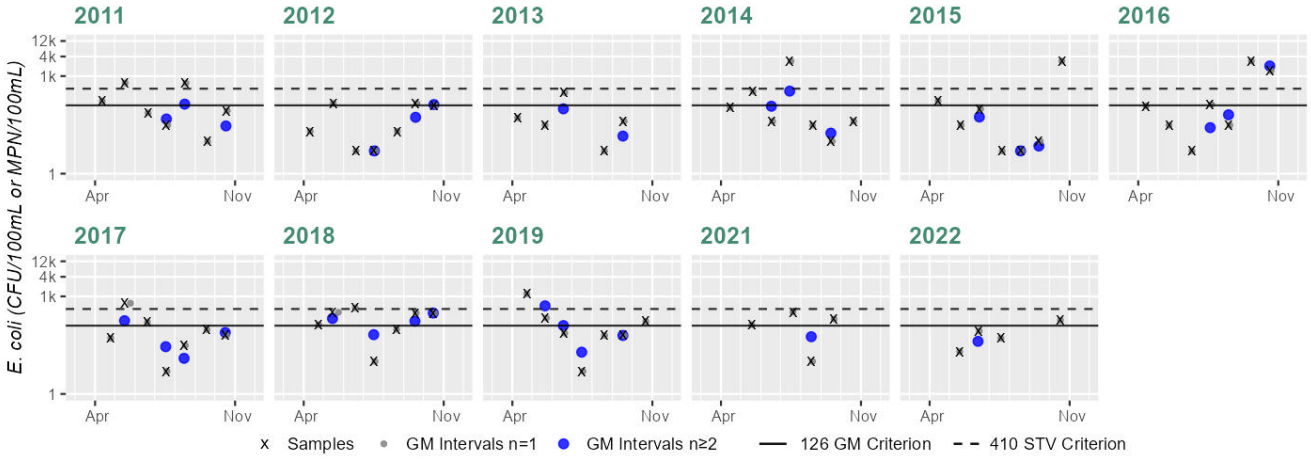
Cumulative %GMI Exceedance Current (Recent 5 Years)

13%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-10 & CRWA_763S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	103
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	30
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	40
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	92
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	45
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	118
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	64
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	150
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	94
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	4
SeasGM	97
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	63
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

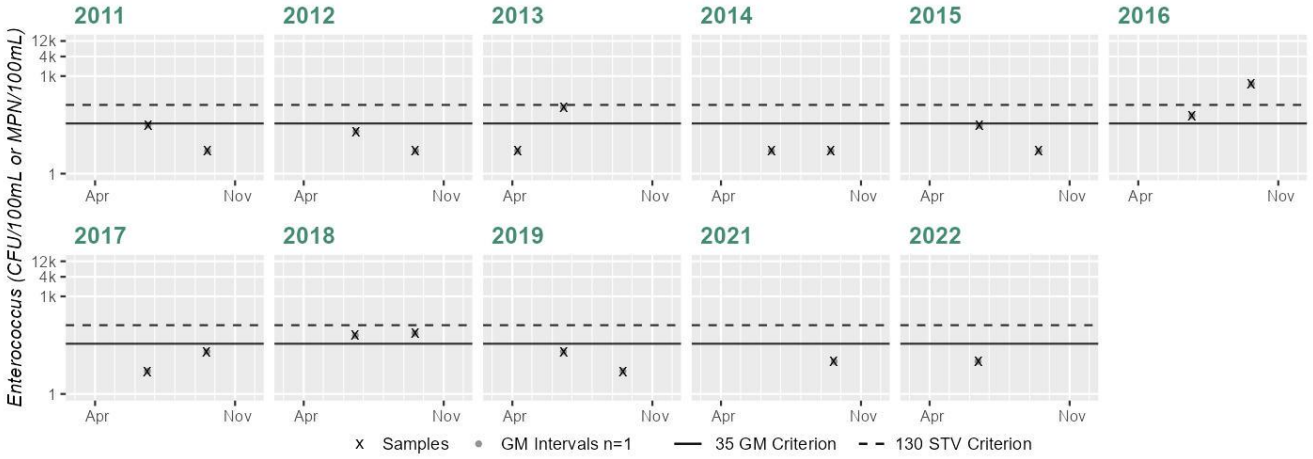
Cumulative %GMI Exceedance Current (2011-2022)
32%

Cumulative %GMI Exceedance Current (Recent 5 Years)
42%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-10 & CRWA_763S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	12
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	23
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	5
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	12
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	187
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	68
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance

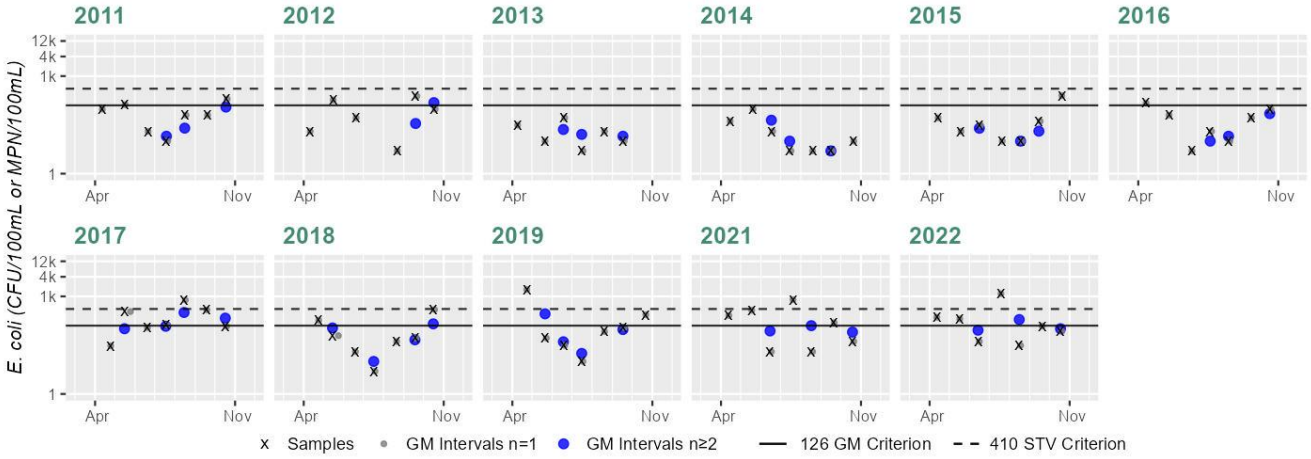
Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_773S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	57
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	53
#GMI	2
#GMI Ex	1
%GMI Ex	50%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	15
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	13
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	31
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	33
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	176
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	51
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	94
#GMI	4
#GMI Ex	1
%GMI Ex	25%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	109
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	132
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

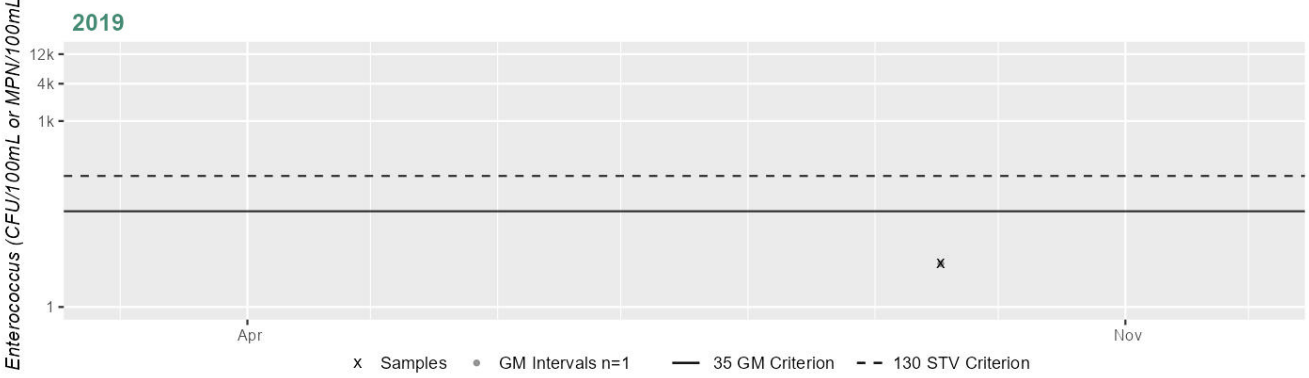
Cumulative %GMI Exceedance Current (2011-2022)
17%

Cumulative %GMI Exceedance Current (Recent 5 Years)
27%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_773S - Enterococcus

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



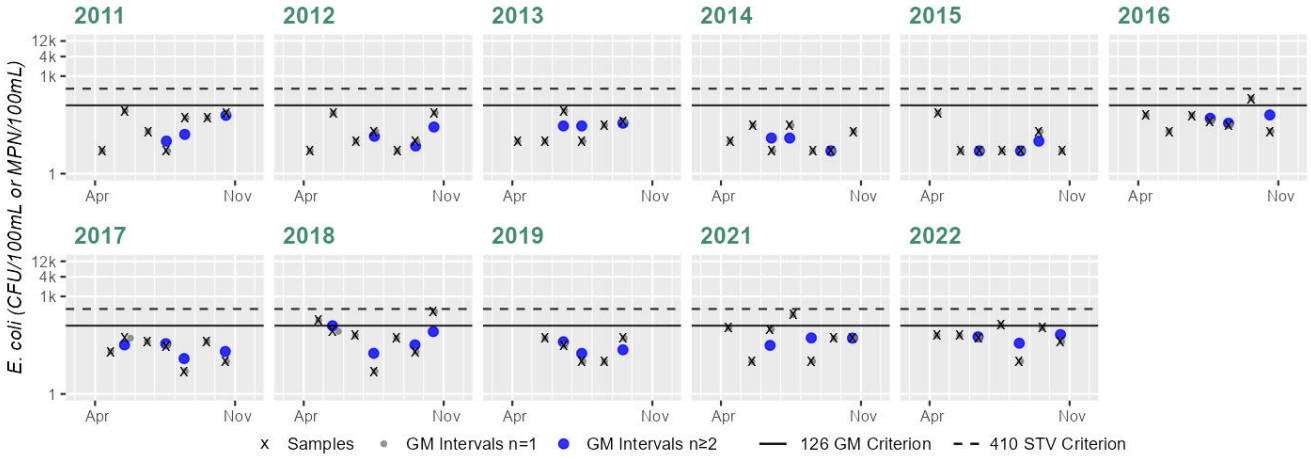
Variable*	Result
Samples	1
SeasGM	5
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_784S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	26
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	16
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	21
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	11
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	8
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	45
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	22
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	56
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	24
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	50
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	53
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)

0%

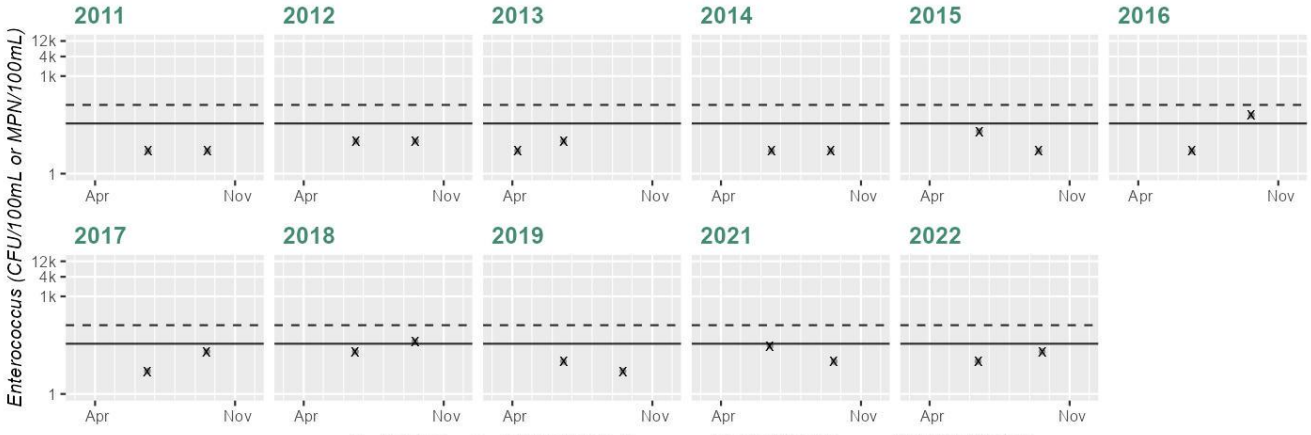
Cumulative %GMI Exceedance Current (Recent 5 Years)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_784S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	5
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Variable*	Result
Samples	2
SeasGM	5
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	17
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	10
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

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

Variable*	Result
Samples	2
SeasGM	17
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

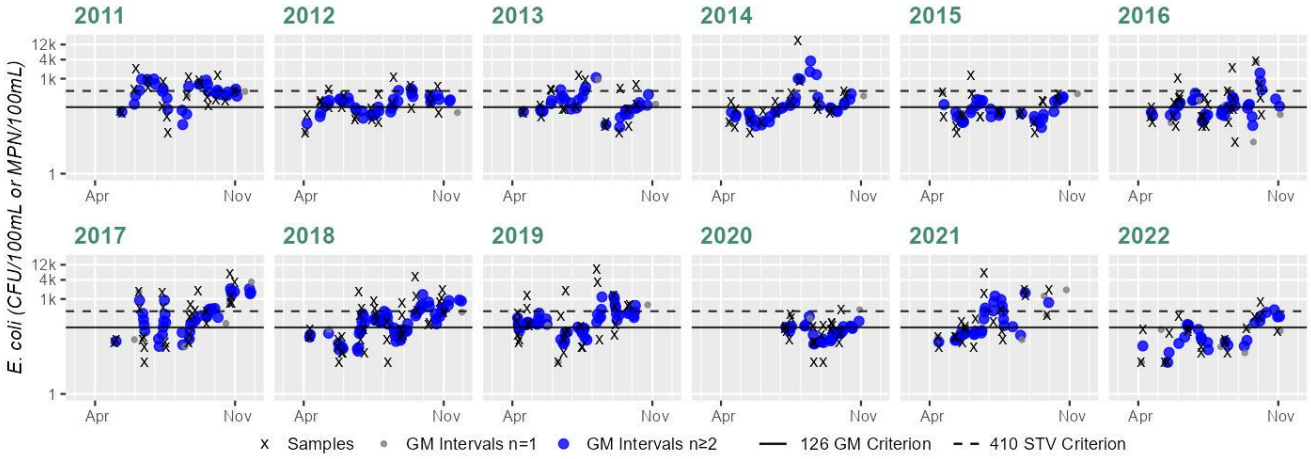
Variable*	Result
Samples	2
SeasGM	14
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_006 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	312
#GMI	32
#GMI Ex	27
%GMI Ex	84%
n>STV	9
%n>STV	45%

Variable*	Result
Samples	22
SeasGM	150
#GMI	40
#GMI Ex	26
%GMI Ex	65%
n>STV	4
%n>STV	18%

Variable*	Result
Samples	19
SeasGM	145
#GMI	32
#GMI Ex	16
%GMI Ex	50%
n>STV	6
%n>STV	31%

Variable*	Result
Samples	20
SeasGM	148
#GMI	36
#GMI Ex	15
%GMI Ex	41%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	102
#GMI	32
#GMI Ex	11
%GMI Ex	34%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	140
#GMI	39
#GMI Ex	21
%GMI Ex	53%
n>STV	5
%n>STV	18%

Variable*	Result
Samples	26
SeasGM	250
#GMI	38
#GMI Ex	29
%GMI Ex	76%
n>STV	12
%n>STV	46%

Variable*	Result
Samples	36
SeasGM	165
#GMI	65
#GMI Ex	39
%GMI Ex	60%
n>STV	11
%n>STV	30%

Variable*	Result
Samples	28
SeasGM	188
#GMI	50
#GMI Ex	33
%GMI Ex	66%
n>STV	9
%n>STV	32%

Variable*	Result
Samples	20
SeasGM	89
#GMI	32
#GMI Ex	10
%GMI Ex	31%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	213
#GMI	29
#GMI Ex	14
%GMI Ex	48%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	18
SeasGM	65
#GMI	24
#GMI Ex	10
%GMI Ex	41%
n>STV	1
%n>STV	5%

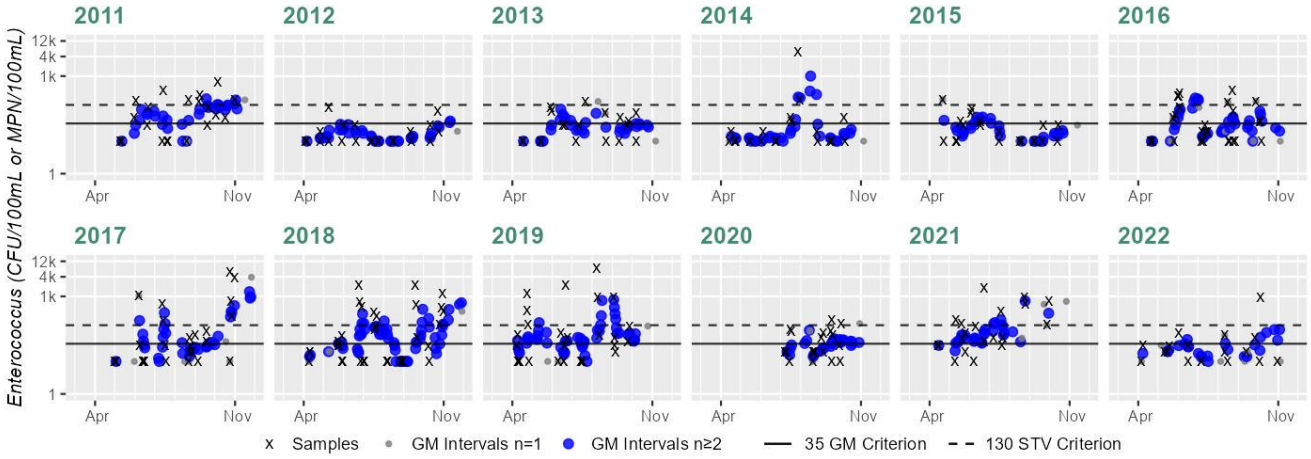
Cumulative %GMI Exceedance Current (2011-2022)
55%

Cumulative %GMI Exceedance Current (Recent 5 Years)
53%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_006 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	56
#GMI	32
#GMI Ex	24
%GMI Ex	75%
n>STV	7
%n>STV	35%

Variable*	Result
Samples	22
SeasGM	15
#GMI	40
#GMI Ex	2
%GMI Ex	5%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	27
#GMI	32
#GMI Ex	7
%GMI Ex	21%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	22
#GMI	36
#GMI Ex	6
%GMI Ex	16%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	21
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	33
#GMI	39
#GMI Ex	17
%GMI Ex	43%
n>STV	6
%n>STV	22%

Variable*	Result
Samples	26
SeasGM	52
#GMI	38
#GMI Ex	19
%GMI Ex	50%
n>STV	7
%n>STV	26%

Variable*	Result
Samples	36
SeasGM	51
#GMI	65
#GMI Ex	41
%GMI Ex	63%
n>STV	11
%n>STV	30%

Variable*	Result
Samples	28
SeasGM	57
#GMI	50
#GMI Ex	38
%GMI Ex	76%
n>STV	7
%n>STV	25%

Variable*	Result
Samples	19
SeasGM	33
#GMI	30
#GMI Ex	18
%GMI Ex	60%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	93
#GMI	29
#GMI Ex	27
%GMI Ex	93%
n>STV	8
%n>STV	40%

Variable*	Result
Samples	18
SeasGM	24
#GMI	24
#GMI Ex	8
%GMI Ex	33%
n>STV	1
%n>STV	5%

Cumulative %GMI Exceedance Current (2011-2022)

48%

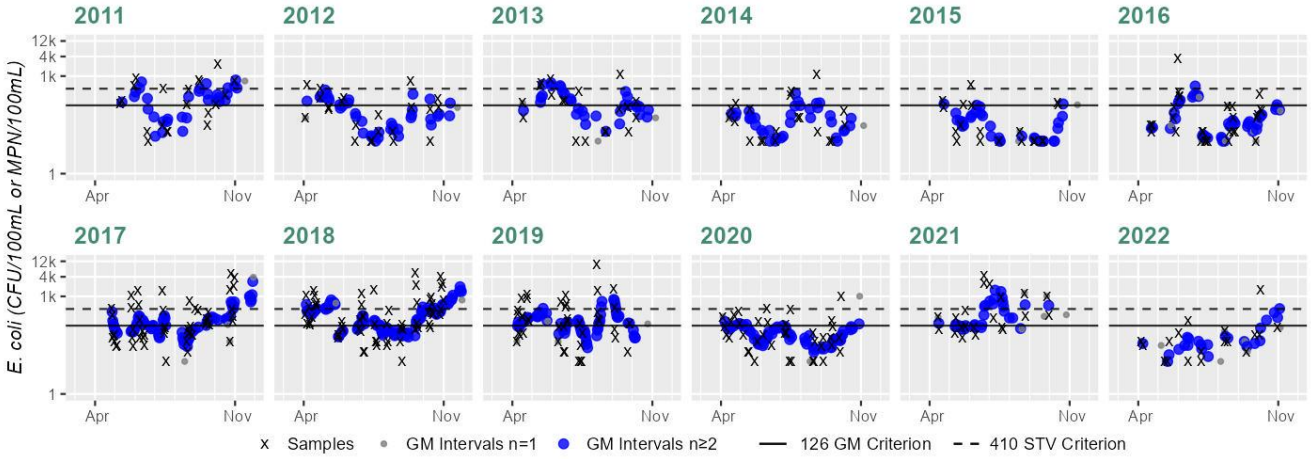
Cumulative %GMI Exceedance Current (Recent 5 Years)

66%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_007 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	151
#GMI	32
#GMI Ex	22
%GMI Ex	68%
n>STV	7
%n>STV	35%

Variable*	Result
Samples	22
SeasGM	66
#GMI	40
#GMI Ex	14
%GMI Ex	35%
n>STV	3
%n>STV	13%

Variable*	Result
Samples	19
SeasGM	107
#GMI	32
#GMI Ex	16
%GMI Ex	50%
n>STV	4
%n>STV	21%

Variable*	Result
Samples	20
SeasGM	44
#GMI	36
#GMI Ex	4
%GMI Ex	11%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	31
#GMI	32
#GMI Ex	3
%GMI Ex	9%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	46
#GMI	43
#GMI Ex	10
%GMI Ex	23%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	157
#GMI	77
#GMI Ex	44
%GMI Ex	57%
n>STV	11
%n>STV	22%

Variable*	Result
Samples	61
SeasGM	226
#GMI	113
#GMI Ex	77
%GMI Ex	68%
n>STV	20
%n>STV	32%

Variable*	Result
Samples	41
SeasGM	159
#GMI	73
#GMI Ex	47
%GMI Ex	64%
n>STV	11
%n>STV	26%

Variable*	Result
Samples	38
SeasGM	62
#GMI	66
#GMI Ex	6
%GMI Ex	9%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	282
#GMI	31
#GMI Ex	22
%GMI Ex	70%
n>STV	6
%n>STV	28%

Variable*	Result
Samples	18
SeasGM	43
#GMI	24
#GMI Ex	4
%GMI Ex	16%
n>STV	1
%n>STV	5%

Cumulative %GMI Exceedance Current (2011-2022)

44%

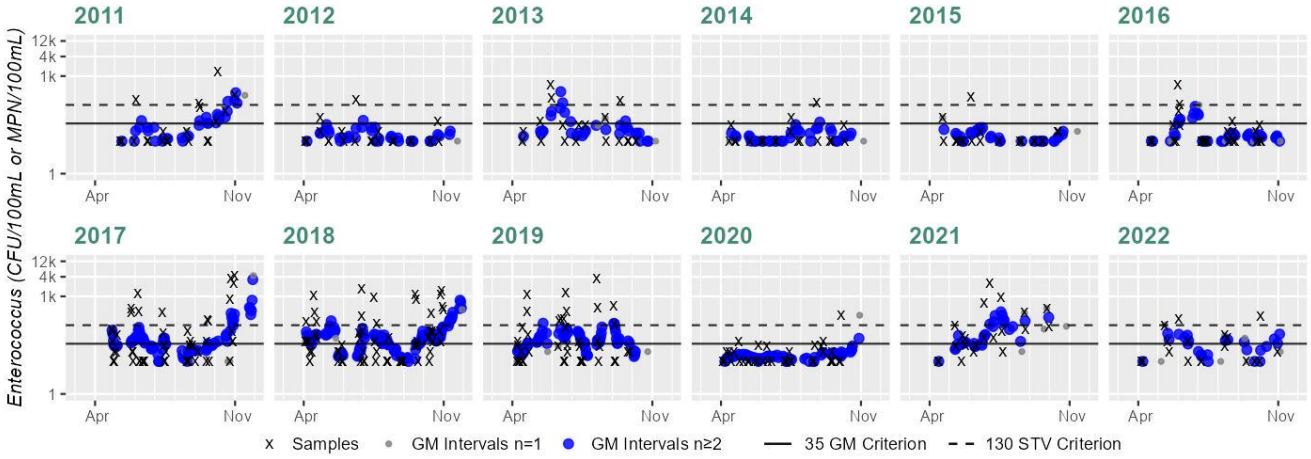
Cumulative %GMI Exceedance Current (Recent 5 Years)

50%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_007 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	28
#GMI	32
#GMI Ex	15
%GMI Ex	46%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	22
SeasGM	14
#GMI	40
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	24
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	14
#GMI	36
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	14
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	17
#GMI	43
#GMI Ex	9
%GMI Ex	20%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	44
#GMI	77
#GMI Ex	42
%GMI Ex	54%
n>STV	11
%n>STV	22%

Variable*	Result
Samples	61
SeasGM	49
#GMI	113
#GMI Ex	81
%GMI Ex	71%
n>STV	15
%n>STV	24%

Variable*	Result
Samples	41
SeasGM	44
#GMI	73
#GMI Ex	55
%GMI Ex	75%
n>STV	11
%n>STV	26%

Variable*	Result
Samples	37
SeasGM	14
#GMI	64
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	21
SeasGM	75
#GMI	31
#GMI Ex	23
%GMI Ex	74%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	18
SeasGM	26
#GMI	24
#GMI Ex	12
%GMI Ex	50%
n>STV	2
%n>STV	11%

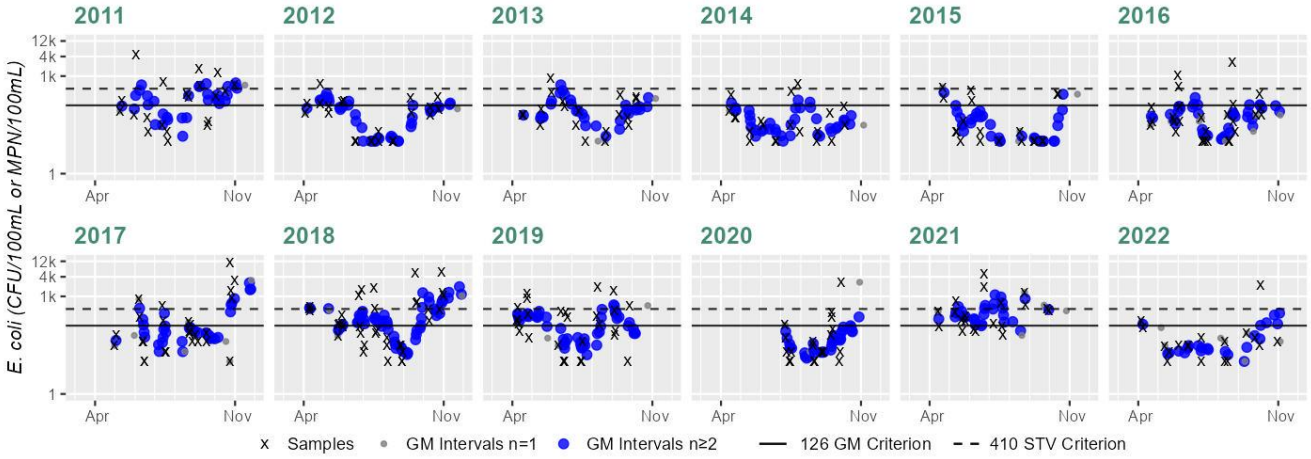
Cumulative %GMI Exceedance Current (2011-2022)
41%

Cumulative %GMI Exceedance Current (Recent 5 Years)
56%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_008 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	156
#GMI	32
#GMI Ex	22
%GMI Ex	68%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	22
SeasGM	53
#GMI	40
#GMI Ex	11
%GMI Ex	27%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	75
#GMI	32
#GMI Ex	10
%GMI Ex	31%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	39
#GMI	36
#GMI Ex	3
%GMI Ex	8%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	2
%GMI Ex	6%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	52
#GMI	39
#GMI Ex	5
%GMI Ex	12%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	26
SeasGM	105
#GMI	38
#GMI Ex	11
%GMI Ex	28%
n>STV	6
%n>STV	23%

Variable*	Result
Samples	36
SeasGM	171
#GMI	65
#GMI Ex	44
%GMI Ex	67%
n>STV	12
%n>STV	33%

Variable*	Result
Samples	28
SeasGM	116
#GMI	50
#GMI Ex	24
%GMI Ex	48%
n>STV	6
%n>STV	21%

Variable*	Result
Samples	20
SeasGM	39
#GMI	32
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	300
#GMI	29
#GMI Ex	27
%GMI Ex	93%
n>STV	7
%n>STV	35%

Variable*	Result
Samples	18
SeasGM	40
#GMI	24
#GMI Ex	6
%GMI Ex	25%
n>STV	1
%n>STV	5%

Cumulative %GMI Exceedance Current (2011-2022)

36%

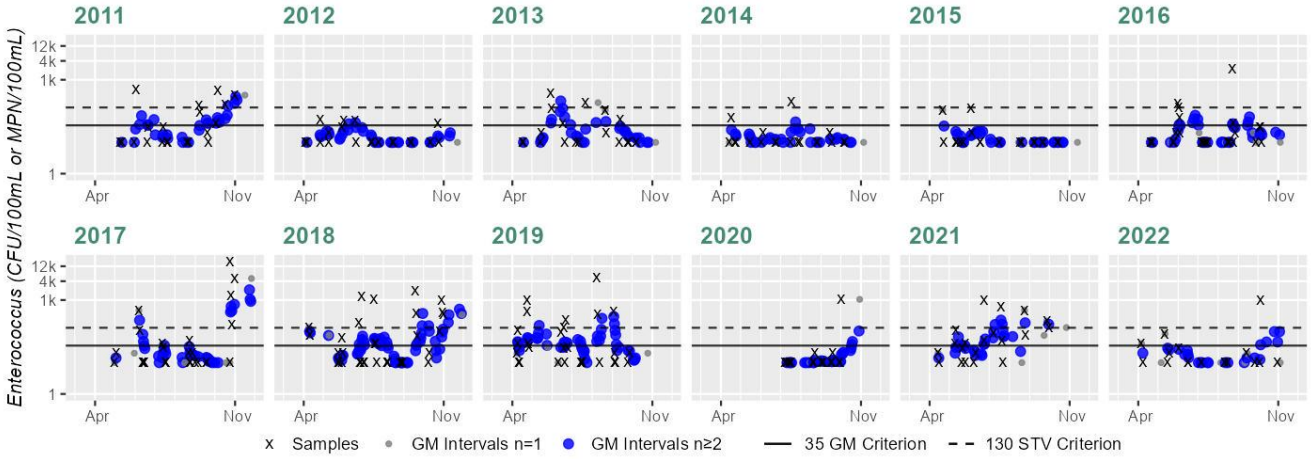
Cumulative %GMI Exceedance Current (Recent 5 Years)

51%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_008 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	32
#GMI	32
#GMI Ex	18
%GMI Ex	56%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	22
SeasGM	14
#GMI	40
#GMI Ex	2
%GMI Ex	5%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	22
#GMI	32
#GMI Ex	9
%GMI Ex	28%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	13
#GMI	36
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	13
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	19
#GMI	39
#GMI Ex	10
%GMI Ex	25%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	26
SeasGM	36
#GMI	38
#GMI Ex	11
%GMI Ex	28%
n>STV	5
%n>STV	19%

Variable*	Result
Samples	36
SeasGM	40
#GMI	65
#GMI Ex	35
%GMI Ex	53%
n>STV	9
%n>STV	25%

Variable*	Result
Samples	28
SeasGM	42
#GMI	50
#GMI Ex	30
%GMI Ex	60%
n>STV	6
%n>STV	21%

Variable*	Result
Samples	19
SeasGM	13
#GMI	30
#GMI Ex	3
%GMI Ex	10%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	52
#GMI	29
#GMI Ex	18
%GMI Ex	62%
n>STV	5
%n>STV	25%

Variable*	Result
Samples	18
SeasGM	18
#GMI	24
#GMI Ex	5
%GMI Ex	20%
n>STV	1
%n>STV	5%

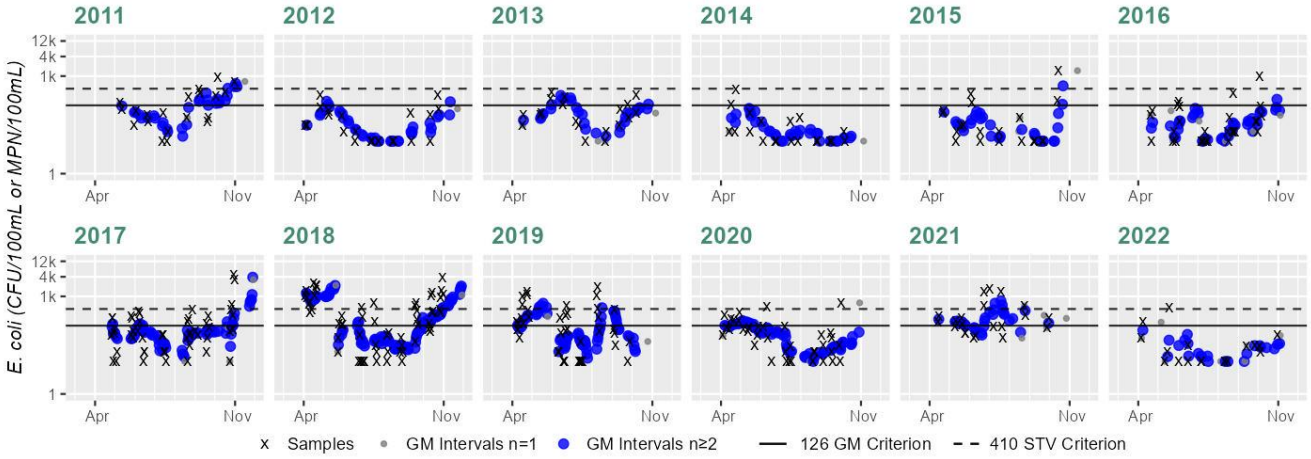
Cumulative %GMI Exceedance Current (2011-2022)
31%

Cumulative %GMI Exceedance Current (Recent 5 Years)
45%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_009 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	92
#GMI	32
#GMI Ex	15
%GMI Ex	46%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	22
SeasGM	30
#GMI	40
#GMI Ex	3
%GMI Ex	7%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	63
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	21
#GMI	36
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	2
%GMI Ex	6%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	33
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	50
SeasGM	79
#GMI	77
#GMI Ex	15
%GMI Ex	19%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	60
SeasGM	162
#GMI	111
#GMI Ex	58
%GMI Ex	52%
n>STV	20
%n>STV	33%

Variable*	Result
Samples	42
SeasGM	95
#GMI	74
#GMI Ex	28
%GMI Ex	37%
n>STV	8
%n>STV	19%

Variable*	Result
Samples	38
SeasGM	49
#GMI	66
#GMI Ex	13
%GMI Ex	19%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	197
#GMI	31
#GMI Ex	23
%GMI Ex	74%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	18
SeasGM	24
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

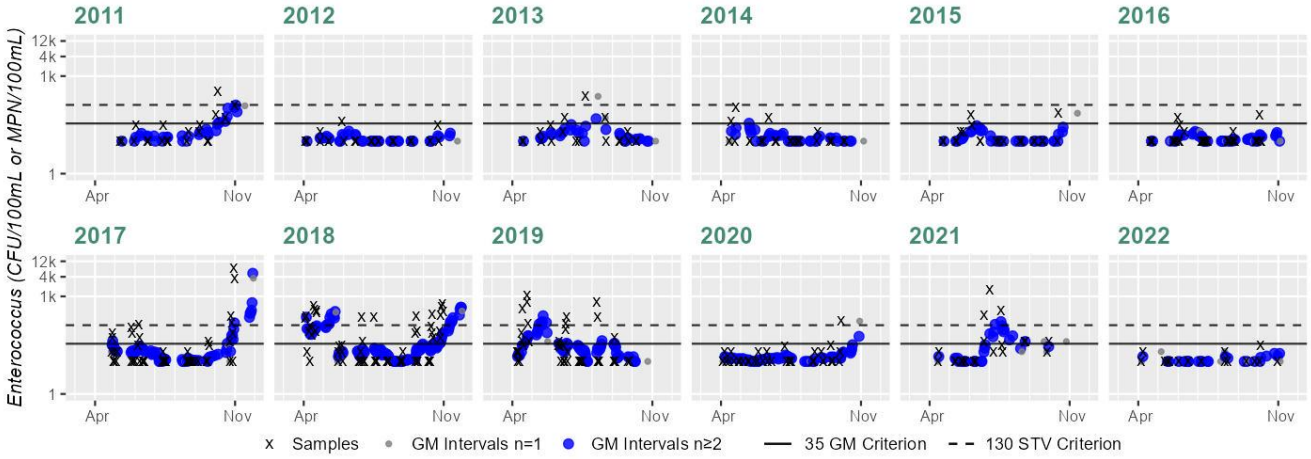
Cumulative %GMI Exceedance Current (2011-2022)
27%

Cumulative %GMI Exceedance Current (Recent 5 Years)
39%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_009 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	20
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	22
SeasGM	11
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	16
#GMI	32
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	22
SeasGM	13
#GMI	39
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	22
SeasGM	13
#GMI	38
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	12
#GMI	49
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	51
SeasGM	22
#GMI	79
#GMI Ex	14
%GMI Ex	17%
n>STV	5
%n>STV	9%

Variable*	Result
Samples	60
SeasGM	36
#GMI	111
#GMI Ex	40
%GMI Ex	36%
n>STV	14
%n>STV	23%

Variable*	Result
Samples	42
SeasGM	29
#GMI	74
#GMI Ex	19
%GMI Ex	25%
n>STV	8
%n>STV	19%

Variable*	Result
Samples	37
SeasGM	13
#GMI	64
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	21
SeasGM	27
#GMI	31
#GMI Ex	12
%GMI Ex	38%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	18
SeasGM	11
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

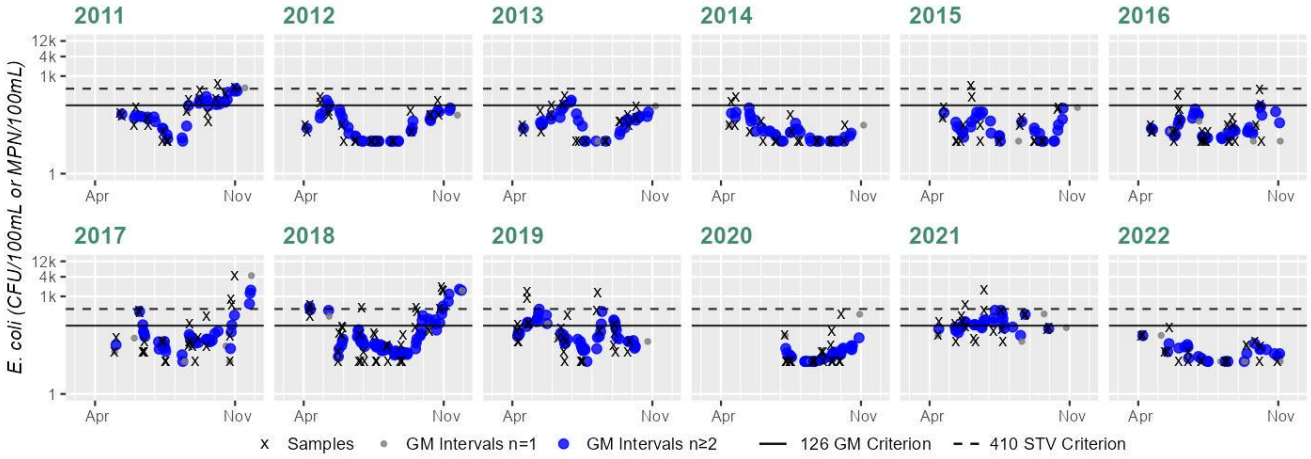
Cumulative %GMI Exceedance Current (2011-2022)
15%

Cumulative %GMI Exceedance Current (Recent 5 Years)
23%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_010 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	73
#GMI	32
#GMI Ex	14
%GMI Ex	43%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	22
SeasGM	29
#GMI	40
#GMI Ex	2
%GMI Ex	5%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	36
#GMI	32
#GMI Ex	3
%GMI Ex	9%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	20
#GMI	36
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	28
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	26
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	58
#GMI	38
#GMI Ex	7
%GMI Ex	18%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	36
SeasGM	67
#GMI	65
#GMI Ex	17
%GMI Ex	26%
n>STV	8
%n>STV	22%

Variable*	Result
Samples	28
SeasGM	70
#GMI	50
#GMI Ex	15
%GMI Ex	30%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	16
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	146
#GMI	29
#GMI Ex	16
%GMI Ex	55%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	18
SeasGM	19
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

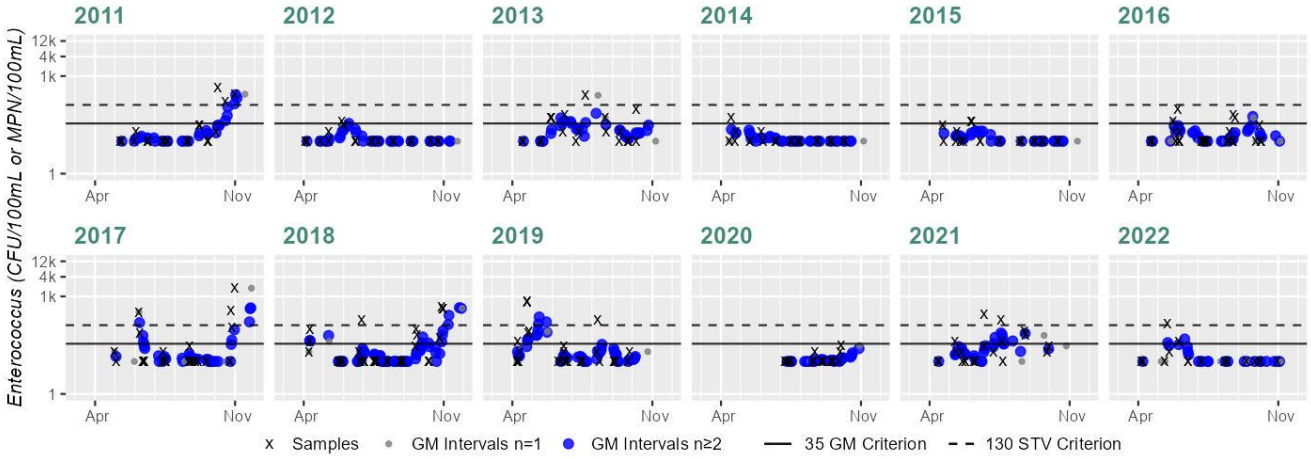
Cumulative %GMI Exceedance Current (2011-2022)
16%

Cumulative %GMI Exceedance Current (Recent 5 Years)
24%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_010 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	19
#GMI	32
#GMI Ex	6
%GMI Ex	18%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	22
SeasGM	11
#GMI	40
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	22
#GMI	32
#GMI Ex	7
%GMI Ex	21%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	11
#GMI	36
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	12
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	14
#GMI	39
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	20
#GMI	38
#GMI Ex	8
%GMI Ex	21%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	36
SeasGM	20
#GMI	65
#GMI Ex	13
%GMI Ex	20%
n>STV	4
%n>STV	11%

Variable*	Result
Samples	28
SeasGM	21
#GMI	50
#GMI Ex	10
%GMI Ex	20%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	19
SeasGM	11
#GMI	30
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	24
#GMI	29
#GMI Ex	8
%GMI Ex	27%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	18
SeasGM	13
#GMI	24
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	5%

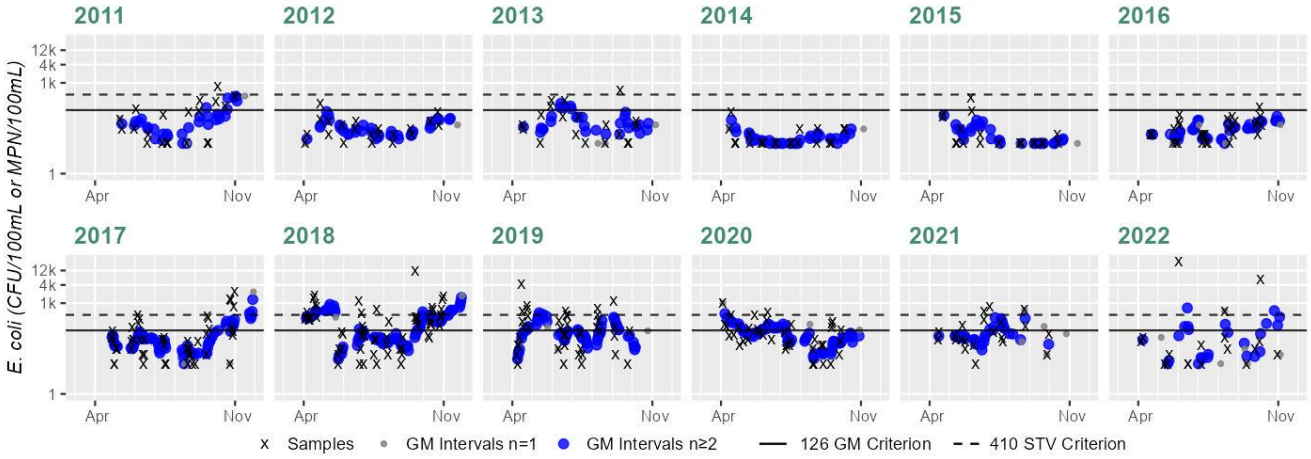
Cumulative %GMI Exceedance Current (2011-2022)
12%

Cumulative %GMI Exceedance Current (Recent 5 Years)
16%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_011 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	48
#GMI	32
#GMI Ex	6
%GMI Ex	18%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	22
SeasGM	30
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	43
#GMI	32
#GMI Ex	6
%GMI Ex	18%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	15
#GMI	36
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	18
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	29
SeasGM	27
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	59
#GMI	77
#GMI Ex	15
%GMI Ex	19%
n>STV	4
%n>STV	8%

Variable*	Result
Samples	60
SeasGM	156
#GMI	111
#GMI Ex	59
%GMI Ex	53%
n>STV	15
%n>STV	25%

Variable*	Result
Samples	41
SeasGM	114
#GMI	73
#GMI Ex	27
%GMI Ex	36%
n>STV	7
%n>STV	17%

Variable*	Result
Samples	38
SeasGM	80
#GMI	66
#GMI Ex	20
%GMI Ex	30%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	97
#GMI	31
#GMI Ex	10
%GMI Ex	32%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	18
SeasGM	54
#GMI	24
#GMI Ex	9
%GMI Ex	37%
n>STV	3
%n>STV	16%

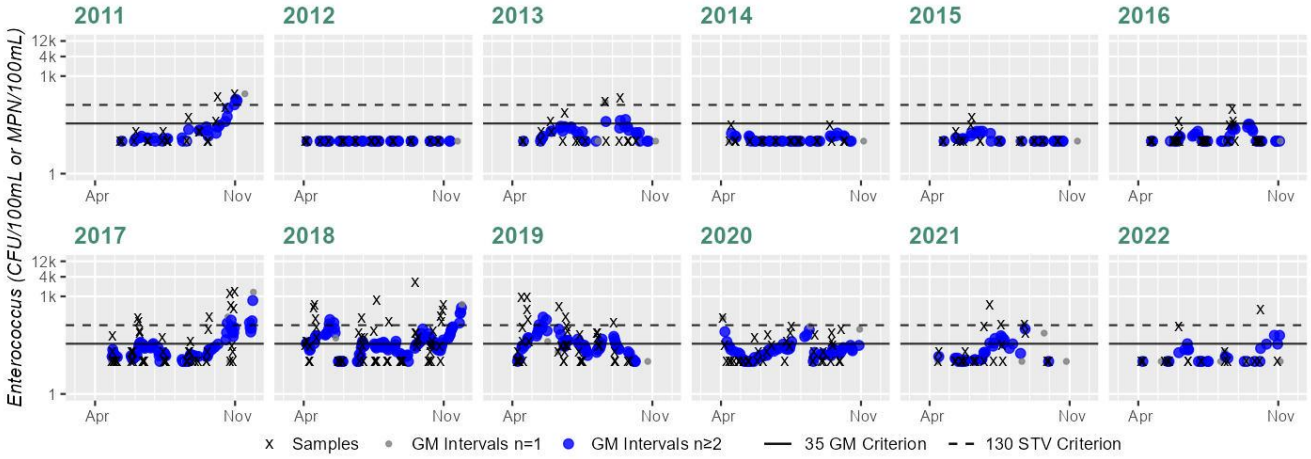
Cumulative %GMI Exceedance Current (2011-2022)
25%

Cumulative %GMI Exceedance Current (Recent 5 Years)
40%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_011 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	20
#GMI	32
#GMI Ex	6
%GMI Ex	18%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	22
SeasGM	10
#GMI	40
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	19
SeasGM	17
#GMI	32
#GMI Ex	3
%GMI Ex	9%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	11
#GMI	36
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	11
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	29
SeasGM	13
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	50
SeasGM	24
#GMI	77
#GMI Ex	19
%GMI Ex	24%
n>STV	7
%n>STV	14%

Variable*	Result
Samples	60
SeasGM	34
#GMI	111
#GMI Ex	48
%GMI Ex	43%
n>STV	11
%n>STV	18%

Variable*	Result
Samples	41
SeasGM	35
#GMI	73
#GMI Ex	33
%GMI Ex	45%
n>STV	7
%n>STV	17%

Variable*	Result
Samples	37
SeasGM	20
#GMI	64
#GMI Ex	6
%GMI Ex	9%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	21
SeasGM	21
#GMI	31
#GMI Ex	9
%GMI Ex	29%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	18
SeasGM	14
#GMI	24
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	5%

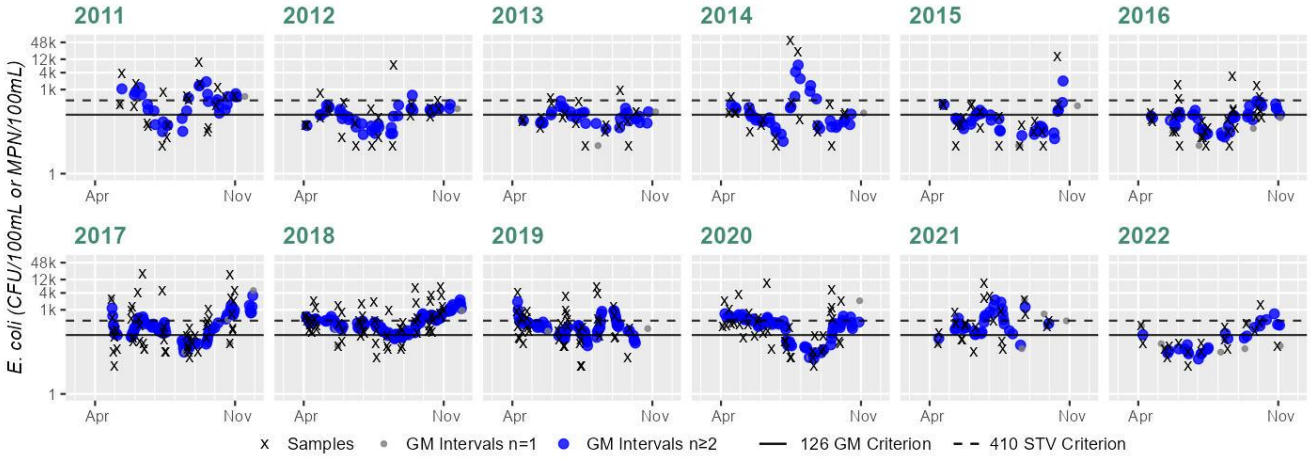
Cumulative %GMI Exceedance Current (2011-2022)
21%

Cumulative %GMI Exceedance Current (Recent 5 Years)
32%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_145 - Escherichia coli

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



Variable*	Result
Samples	20
SeasGM	274
#GMI	32
#GMI Ex	25
%GMI Ex	78%
n>STV	10
%n>STV	50%

Variable*	Result
Samples	22
SeasGM	108
#GMI	40
#GMI Ex	20
%GMI Ex	50%
n>STV	3
%n>STV	13%

Variable*	Result
Samples	19
SeasGM	91
#GMI	32
#GMI Ex	13
%GMI Ex	40%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	149
#GMI	36
#GMI Ex	16
%GMI Ex	44%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	81
#GMI	32
#GMI Ex	9
%GMI Ex	28%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	93
#GMI	43
#GMI Ex	16
%GMI Ex	37%
n>STV	5
%n>STV	17%

Variable*	Result
Samples	50
SeasGM	217
#GMI	77
#GMI Ex	57
%GMI Ex	74%
n>STV	16
%n>STV	32%

Variable*	Result
Samples	61
SeasGM	359
#GMI	113
#GMI Ex	105
%GMI Ex	92%
n>STV	27
%n>STV	44%

Variable*	Result
Samples	41
SeasGM	239
#GMI	73
#GMI Ex	60
%GMI Ex	82%
n>STV	15
%n>STV	36%

Variable*	Result
Samples	38
SeasGM	203
#GMI	66
#GMI Ex	48
%GMI Ex	72%
n>STV	11
%n>STV	28%

Variable*	Result
Samples	21
SeasGM	338
#GMI	31
#GMI Ex	29
%GMI Ex	93%
n>STV	7
%n>STV	33%

Variable*	Result
Samples	18
SeasGM	82
#GMI	24
#GMI Ex	9
%GMI Ex	37%
n>STV	1
%n>STV	5%

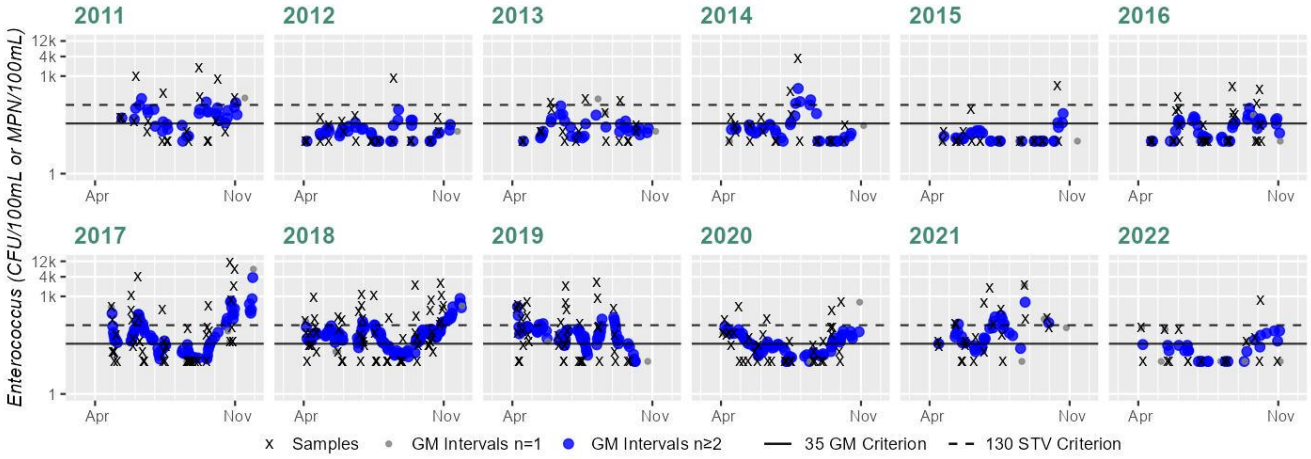
Cumulative %GMI Exceedance Current (2011-2022)
67%

Cumulative %GMI Exceedance Current (Recent 5 Years)
81%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_145 - Enterococcus

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



Variable*	Result
Samples	20
SeasGM	52
#GMI	32
#GMI Ex	24
%GMI Ex	75%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	22
SeasGM	18
#GMI	40
#GMI Ex	5
%GMI Ex	12%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	24
#GMI	32
#GMI Ex	8
%GMI Ex	25%
n>STV	3
%n>STV	15%

Variable*	Result
Samples	20
SeasGM	26
#GMI	36
#GMI Ex	8
%GMI Ex	22%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	14
#GMI	32
#GMI Ex	3
%GMI Ex	9%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	24
#GMI	43
#GMI Ex	17
%GMI Ex	39%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	50
SeasGM	56
#GMI	77
#GMI Ex	49
%GMI Ex	63%
n>STV	13
%n>STV	26%

Variable*	Result
Samples	61
SeasGM	68
#GMI	113
#GMI Ex	93
%GMI Ex	82%
n>STV	21
%n>STV	34%

Variable*	Result
Samples	41
SeasGM	67
#GMI	73
#GMI Ex	59
%GMI Ex	80%
n>STV	14
%n>STV	34%

Variable*	Result
Samples	37
SeasGM	32
#GMI	64
#GMI Ex	28
%GMI Ex	43%
n>STV	5
%n>STV	13%

Variable*	Result
Samples	21
SeasGM	81
#GMI	31
#GMI Ex	25
%GMI Ex	80%
n>STV	9
%n>STV	42%

Variable*	Result
Samples	18
SeasGM	22
#GMI	24
#GMI Ex	6
%GMI Ex	25%
n>STV	1
%n>STV	5%

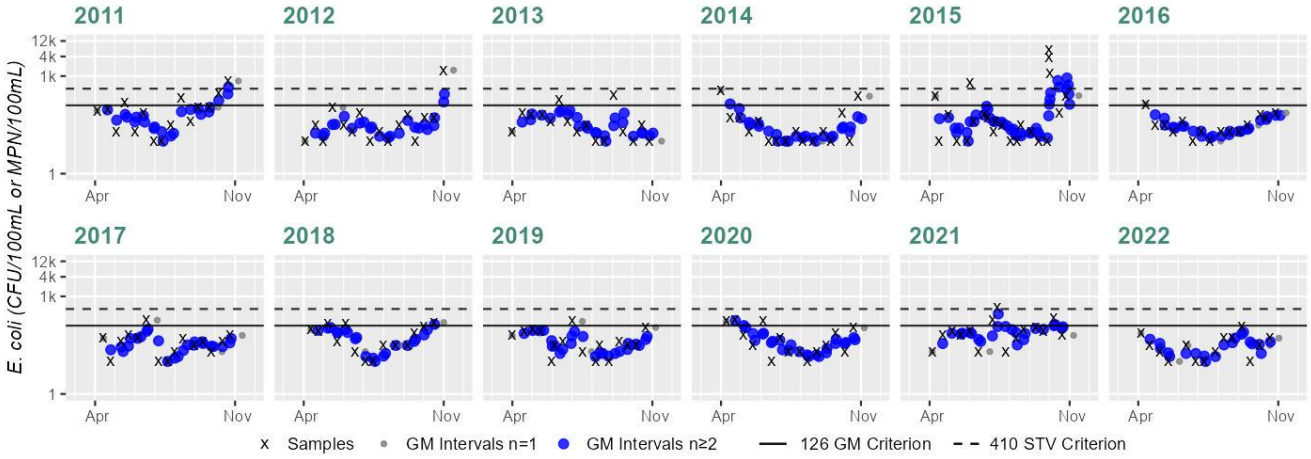
Cumulative %GMI Exceedance Current (2011-2022)
54%

Cumulative %GMI Exceedance Current (Recent 5 Years)
69%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_166 - Escherichia coli

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



Variable*	Result
Samples	15
SeasGM	66
#GMI	23
#GMI Ex	3
%GMI Ex	13%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	16
SeasGM	33
#GMI	24
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	16
SeasGM	32
#GMI	26
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	26
#GMI	26
#GMI Ex	1
%GMI Ex	3%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	23
SeasGM	60
#GMI	42
#GMI Ex	10
%GMI Ex	23%
n>STV	4
%n>STV	17%

Variable*	Result
Samples	15
SeasGM	29
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	33
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	49
#GMI	21
#GMI Ex	1
%GMI Ex	4%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	38
#GMI	25
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	41
#GMI	26
#GMI Ex	2
%GMI Ex	7%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	74
#GMI	23
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	14
SeasGM	27
#GMI	20
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

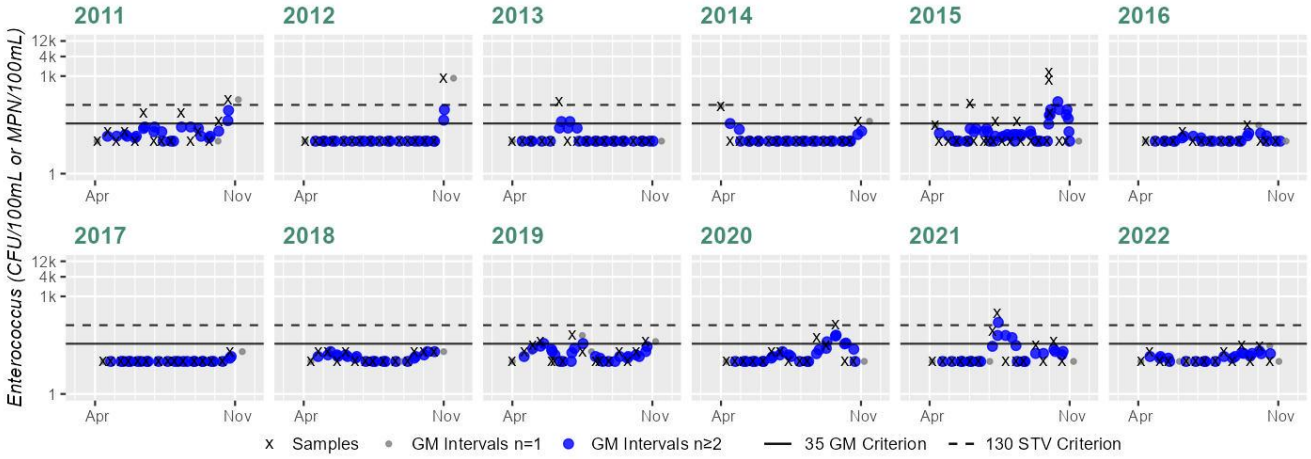
Cumulative %GMI Exceedance Current (2011-2022)
6%

Cumulative %GMI Exceedance Current (Recent 5 Years)
4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_166 - Enterococcus

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



Variable*	Result
Samples	15
SeasGM	20
#GMI	23
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	16
SeasGM	13
#GMI	24
#GMI Ex	2
%GMI Ex	8%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	16
SeasGM	11
#GMI	26
#GMI Ex	2
%GMI Ex	7%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	16
SeasGM	12
#GMI	26
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	23
SeasGM	21
#GMI	42
#GMI Ex	8
%GMI Ex	19%
n>STV	3
%n>STV	13%

Variable*	Result
Samples	15
SeasGM	11
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	10
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	13
#GMI	21
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	17
#GMI	25
#GMI Ex	2
%GMI Ex	8%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	15
SeasGM	15
#GMI	26
#GMI Ex	4
%GMI Ex	15%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	15
SeasGM	17
#GMI	23
#GMI Ex	4
%GMI Ex	17%
n>STV	1
%n>STV	6%

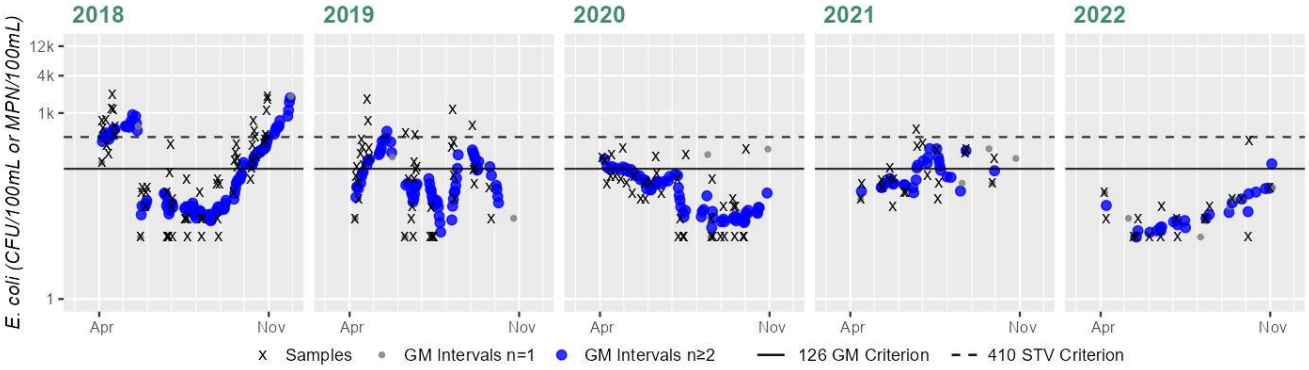
Variable*	Result
Samples	14
SeasGM	12
#GMI	20
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
7%	8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_210 - Escherichia coli

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



Variable*	Result
Samples	61
SeasGM	114
#GMI	113
#GMI Ex	55
%GMI Ex	48%
n>STV	14
%n>STV	22%

Variable*	Result
Samples	41
SeasGM	87
#GMI	73
#GMI Ex	25
%GMI Ex	34%
n>STV	6
%n>STV	14%

Variable*	Result
Samples	38
SeasGM	45
#GMI	66
#GMI Ex	6
%GMI Ex	9%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	107
#GMI	31
#GMI Ex	11
%GMI Ex	35%
n>STV	1
%n>STV	4%

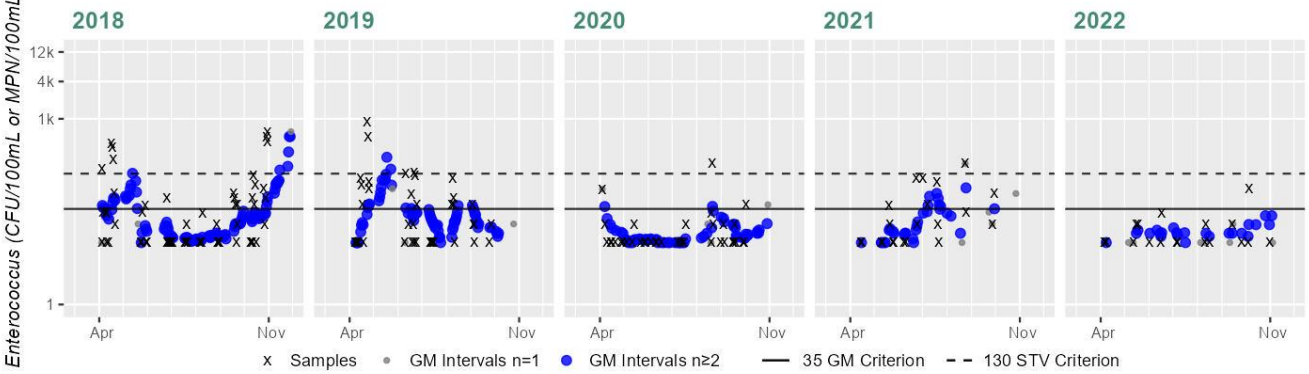
Variable*	Result
Samples	18
SeasGM	23
#GMI	24
#GMI Ex	1
%GMI Ex	4%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
31%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_210 - Enterococcus

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



Variable*	Result
Samples	61
SeasGM	25
#GMI	113
#GMI Ex	32
%GMI Ex	28%
n>STV	7
%n>STV	11%

Variable*	Result
Samples	41
SeasGM	27
#GMI	73
#GMI Ex	19
%GMI Ex	26%
n>STV	4
%n>STV	9%

Variable*	Result
Samples	37
SeasGM	13
#GMI	64
#GMI Ex	2
%GMI Ex	3%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	21
SeasGM	24
#GMI	31
#GMI Ex	8
%GMI Ex	25%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	18
SeasGM	13
#GMI	24
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
20%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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
(MWRA 2025) (MassDEP Undated 2)

Data Year(s)	Summary

2011-2022	In this Charles River AU (MA72-38), the Massachusetts Water Resources Authority (MWRA) collected Secchi data at MWRA_006 (2011-2022), MWRA_007 (2011-2022), MWRA_008 (2011-2022), MWRA_009 (2011-2022), MWRA_010 (2011-2022), MWRA_011 (2011-2022), MWRA_145 (2011-2022), MWRA_166 (2011-2019), and MWRA_210 (2018-2022). The most recent five years of data with >2 Secchi measurements were used for assessment purposes. In 2018 at station MWRA_006 (station depth=4 m) the Secchi depth measurements ranged from 0.5-1.4 m (n=36) with 30 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_006 (station depth=3.5 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=28) with 25 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_006 (station depth=3.4 m) the Secchi depth measurements ranged from 0.5-2 m (n=20) with 17 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_006 (station depth=3.6 m) the Secchi depth measurements ranged from 0.5-1.2 m (n=20) with 19 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_006 (station depth=3.5 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=18) with 15 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_007 (station depth=5 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=36) with 23 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_007 (station depth=5.3 m) the Secchi depth measurements ranged from 0.6-1.6 m (n=28) with 16 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_007 (station depth=5 m) the Secchi depth measurements ranged from 0.6-1.7 m (n=20) with 12 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_007 (station depth=5.2 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=20) with 12 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_007 (station depth=5.4 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=18) with 12 measurements in Apr, May, Jun, Jul, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_008 (station depth=5 m) the Secchi depth measurements ranged from 0.6-1.4 m (n=36) with 27 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_008 (station depth=7.3 m) the Secchi depth measurements ranged from 0.7-1.7 m (n=28) with 13 measurements in Apr, Jun, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_008 (station depth=6 m) the Secchi depth measurements ranged from 0.6-1.7 m (n=20) with 14 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_008 (station depth=4.7 m) the Secchi depth measurements ranged from 0.7-1.6 m (n=20) with 12 measurements in Apr, May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_008 (station depth=6.5 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=18) with 9 measurements in Apr, May, Jun, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_009 (station depth=9.1 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=36) with 22 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_009 (station depth=9.4 m) the Secchi depth measurements ranged from 0.7-1.6 m (n=28) with 9 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_009 (station depth=9.5 m) the Secchi depth measurements ranged from 0.5-2 m (n=20) with 14 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_009 (station depth=9.5 m) the Secchi depth measurements ranged from 0.7-1.7 m (n=20) with 13 measurements in Apr, May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_009 (station depth=9.6 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=18) with 11 measurements in Apr, May, Jun, Jul, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_010 (station depth=9.2 m) the Secchi depth measurements ranged from 0.8-1.7 m (n=36) with 19

	measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_010 (station depth=9.3 m) the Secchi depth measurements ranged from 0.8-1.6 m (n=28) with 10 measurements in Apr, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_010 (station depth=9.7 m) the Secchi depth measurements ranged from 0.6-1.7 m (n=20) with 11 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_010 (station depth=10 m) the Secchi depth measurements ranged from 0.7-1.9 m (n=20) with 9 measurements in May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_010 (station depth=9.7 m) the Secchi depth measurements ranged from 0.6-2 m (n=18) with 9 measurements in Apr, May, Jun, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_011 (station depth=6.6 m) the Secchi depth measurements ranged from 0.8-1.7 m (n=36) with 9 measurements in Jul, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_011 (station depth=7.2 m) the Secchi depth measurements ranged from 0.7-1.7 m (n=28) with 5 measurements in Apr, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_011 (station depth=7.2 m) the Secchi depth measurements ranged from 0.6-1.9 m (n=20) with 8 measurements in Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_011 (station depth=7.4 m) the Secchi depth measurements ranged from 0.6-2 m (n=20) with 7 measurements in May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_011 (station depth=7 m) the Secchi depth measurements ranged from 0.6-2.5 m (n=18) with 6 measurements in May, Jun, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_145 (station depth=2.7 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=36) with 24 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_145 (station depth=4.5 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=28) with 21 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_145 (station depth=2.8 m) the Secchi depth measurements ranged from 0.6-1.5 m (n=20) with 15 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_145 (station depth=3 m) the Secchi depth measurements ranged from 0.5-1.1 m (n=20) with 20 measurements in Apr, May, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_145 (station depth=2.9 m) the Secchi depth measurements ranged from 0.5-1.5 m (n=18) with 13 measurements in Apr, May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_166 (station depth=7.4 m) the Secchi depth measurements ranged from 0.7-2.6 m (n=36) with 14 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_166 (station depth=7.2 m) the Secchi depth measurements ranged from 0.6-1.8 m (n=28) with 12 measurements in Apr, Jun, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2018 at station MWRA_210 (station depth=4 m) the Secchi depth measurements ranged from 0.7-2 m (n=36) with 19 measurements in May, Jun, Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2019 at station MWRA_210 (station depth=4.4 m) the Secchi depth measurements ranged from 0.7-1.5 m (n=28) with 8 measurements in Apr, Jul, Aug, and Sep that were less than the 1.2 m (4 ft) threshold. In 2020 at station MWRA_210 (station depth=7.8 m) the Secchi depth measurements ranged from 0.6-1.8 m (n=20) with 10 measurements in Jul, Aug, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. In 2021 at station MWRA_210 (station depth=4.4 m) the Secchi depth measurements ranged from 0.7-2 m (n=20) with 10 measurements in Apr, May, Jun, Jul, and Aug that were less than the 1.2 m (4 ft) threshold. In 2022 at station MWRA_210 (station depth=4.1 m) the Secchi depth measurements ranged from 0.6-2 m (n=18) with 7 measurements in Apr, May, Jun, Sep, and Oct that were less than the 1.2 m (4 ft) threshold. The Secchi depth measurements are indicative of a Transparency / Clarity impairment due to conditions at MWRA_006, MWRA_007, MWRA_008, MWRA_009, MWRA_010, MWRA_011, MWRA_145, MWRA_166, and MWRA_210.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for this downstream Charles River AU (MA72-38) continues to be assessed as Not Supporting. The prior Escherichia Coli (E. Coli) impairment is being carried forward based on bacteria data from MWRA_006, MWRA_007, MWRA_145, MWRA_008, MWRA_009, and MWRA_166, and the Harmful Algal Blooms impairment is being carried forward since C-HAB postings extended >20 days in multiple of the last 5 years. The prior Odor, and Oil and Grease impairments (from the Aesthetics Use) are being carried forward. The prior Transparency / Clarity impairment is being removed since it was removed from the Aesthetics Use this cycle.

C-HAB postings for this MA72-38 AU were reported to MDPH for >20 days in multiple years in the 2009-2014 and 2015-2022 periods. These blooms are reflective of the existing Harmful Algal Blooms impairment. More details can be found under the Aesthetics Use.

MWRA and CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in this Charles River AU (MA72-38) from 2001-2022 at 13 stations. Samples were collected from the following stations/sample years from upstream to downstream: MWRA_006 [Charles River, downstream of Cottage Farm, MWR201] from 2011-2022 (current n=20-36/yr), MWRA_007 [Charles River, at MIT Crew Boathouse] from 2011-2022 (current n=20-72/yr), MWRA_145 [Charles River, Stony Brook outfall, MWR023] from 2011-2022 (current n=20-72/yr), CRWA_763S [Mass. Ave. (Harvard) Bridge, Cambridge] from 2011-2019 and 2021-2022 (current n=6-12/yr), MWRA_008 [Charles River, downstream of Harvard Bridge] from 2011-2022 (current n=20-36/yr), MWRA_009 [Charles River, between Harvard and Longfellow Bridges, MWR020] from 2011-2022 (current n=20-71/yr), CRWA_4LONG [Longfellow Bridge-Center, Boston/Cambridge] from 2011-2022 (current n=18-36/yr), CRWA_773S [Longfellow Bridge, Boston] from 2011-2019 and 2021-2022 (current n=7-12/yr), MWRA_010 [Charles River, downstream of Longfellow Bridge] from 2011-2022 (current n=20-36/yr), MWRA_210 [Lower Charles River downstream of CAM017] from 2018-2022 (n=21-72/yr), MWRA_166 [Charles River, landing in back of Science Museum] from 2011-2022 (current n=22-31/yr), MWRA_011 [Charles River, between Science Museum and Zakim Bridge] from 2011-2022 (current n=20-71/yr), CRWA_784S [New Charles River Dam, Boston] from 2011-2019 and 2021-2022 (current n=7-12/yr).

E. coli data from four of five stations in the upstream half of the MA72-38 AU did not meet 2024 CALM guidance. These included the high frequency stations MWRA_006, MWRA_007, MWRA_145, and MWRA_008 (note that CRWA_763S is slightly upstream of MWR_008 and data met CALM guidance, but this was a moderate frequency station). Additionally, in the downstream half of the AU, *E. coli* data from the high frequency stations, MWRA_009 and MWRA_166, also did not meet CALM guidance. Analysis of the recent five years of *E. coli* data from these six stations indicated that in 2-5 of the five data years >10% of intervals had GMs >244 CFU/100mL, generally 3-4 years had >10% of samples exceed the 794 CFU/100mL STV (with the exception of MWRA_166 which had 1 year of STV exceedances above the threshold), and cumulatively across the five years >10% of intervals had GMs >244 CFU/100mL at all six stations. The *E. coli* data from from MWRA_006, MWRA_007, MWRA_145, MWRA_008, MWRA_009, and MWRA_166 are reflective of the existing Escherichia Coli (E. Coli) impairment.

Samples were also collected in the historical IR window (1997-2010) at the same MWRA/CRWA stations as well as many additional stations, including a number of stations sampled by EPA. Three of the same six MWRA stations (MWRA_145, MWRA_008, MWRA_166) sampled in the

current IR window had *E. coli* data in the last five years of the historical window which did not meet 2024 CALM guidance.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_4LONG	Charles River Watershed Association	Water Quality	Charles River	Longfellow Bridge-Center, Boston/Cambridge	42.361100	-71.075800
CRWA_763S	Charles River Watershed Association	Water Quality	Charles River	Mass. Ave. (Harvard) Bridge, Cambridge	42.354401	-71.091400
CRWA_773S	Charles River Watershed Association	Water Quality	Charles River	Longfellow Bridge, Boston	42.361401	-71.075401
CRWA_784S	Charles River Watershed Association	Water Quality	Charles River	New Charles River Dam, Boston	42.369000	-71.061699
MWRA_006	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Cottage Farm, MWR201	42.352500	-71.108500
MWRA_007	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, at MIT Crew Boathouse	42.354999	-71.096893
MWRA_008	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Harvard Bridge	42.354500	-71.089500
MWRA_009	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, between Harvard and Longfellow Bridges, MWR020	42.357500	-71.076444
MWRA_010	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, downstream of Longfellow Bridge	42.363851	-71.074809
MWRA_011	Massachusetts Water Resources Authority	Water Quality	Lower Basin	Charles River, between Science Museum and Zakim Bridge	42.368284	-71.067075
MWRA_145	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Charles River, Stony Brook outfall, MWR023	42.351930	-71.092007

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
MWRA_166	Massachusetts Water Resources Authority	Water Quality	Lower Basin	Charles River, landing in back of Science Museum	42.366177	-71.070201
MWRA_210	Massachusetts Water Resources Authority	Water Quality	Mid-Basin	Lower Charles River downstream of CAM017	42.364722	-71.075833
1111REG1-CHR4-01	US EPA Region 1	Water Quality	Charles River	CHR4-01	42.362500	-71.073500
1111REG1-CHR4-03	US EPA Region 1	Water Quality	Charles River	CHR4-03	42.359167	-71.075500
1111REG1-CHR4-05	US EPA Region 1	Water Quality	Charles River	CHR4-05	42.356167	-71.078667
1111REG1-CHR4-06	US EPA Region 1	Water Quality	Charles River	CHR4-06	42.356167	-71.081167
1111REG1-CHR4-10	US EPA Region 1	Water Quality	Charles River	CHR4-10	42.354500	-71.091500
1111REG1-CRBL06	US EPA Region 1	Water Quality	Charles River	BU Bridge - main stem	42.352505	-71.106310
1111REG1-CRBL07	US EPA Region 1	Water Quality	Charles River	MA Ave. Bridge - south shore	42.352791	-71.087726
1111REG1-CRBL08	US EPA Region 1	Water Quality	Charles River	Pond at Esplanade	42.353605	-71.083781
1111REG1-CRBL09	US EPA Region 1	Water Quality	Charles River	Longfellow Bridge - upstream	42.360366	-71.080435
1111REG1-CRBL10	US EPA Region 1	Water Quality	Charles River	Community Boating Area	42.360485	-71.073506
1111REG1-CRBL11	US EPA Region 1	Water Quality	Charles River	Old Charles River Dam	42.365214	-71.072982
1111REG1-CRBL12	US EPA Region 1	Water Quality	Charles River	New Charles River Dam	42.368533	-71.066425
1111REG1-CRBLA8	US EPA Region 1	Water Quality	Charles River	Charles River off the Esplanade	42.354783	-71.083220
1111REG1-TMDL21	US EPA Region 1	Water Quality	Charles River	between Harvard Bridge and CRBL06	42.353153	-71.098578
1111REG1-TMDL22	US EPA Region 1	Water Quality	Charles River	Deep hole at beginning of the Upstream Lagoon	42.354889	-71.085800
1111REG1-TMDL23	US EPA Region 1	Water Quality	Charles River	Center transect station between TMDL22 and TMDL24	42.356194	-71.086731
1111REG1-TMDL24	US EPA Region 1	Water Quality	Charles River	Northern transect near MIT sailing pavilion	42.357678	-71.087569
1111REG1-TMDL25	US EPA Region 1	Water Quality	Charles River	Southern transect station deep hole near the Hatch Shell	42.357594	-71.076878
1111REG1-TMDL26	US EPA Region 1	Water Quality	Charles River	Center transect station between TMDL25 and CRBL09	42.358767	-71.078189
1111REG1-TMDL28	US EPA Region 1	Water Quality	Charles River	off the old dam, center channel	42.366533	-71.071808

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (MWRA 2024) (MassDEP Undated 1) (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
CRWA_4LONG	Charles River Watershed Association	E. coli	06/29/09	10/15/09	26	3	280	46
CRWA_4LONG	Charles River Watershed Association	E. coli	07/07/10	10/21/10	14	2	1360	39
CRWA_4LONG	Charles River Watershed Association	E. coli	07/05/11	10/19/11	28	2	770	49
CRWA_4LONG	Charles River Watershed Association	E. coli	07/02/12	10/17/12	27	2	110	19
CRWA_4LONG	Charles River Watershed Association	E. coli	06/25/13	10/16/13	28	5	230	33
CRWA_4LONG	Charles River Watershed Association	E. coli	06/24/14	10/15/14	30	5	272	11
CRWA_4LONG	Charles River Watershed Association	E. coli	06/02/15	10/15/15	36	0	5000	20
CRWA_4LONG	Charles River Watershed Association	E. coli	06/30/16	10/20/16	24	5	140	27
CRWA_4LONG	Charles River Watershed Association	E. coli	06/27/17	10/19/17	30	10	210	37
CRWA_4LONG	Charles River Watershed Association	E. coli	06/26/18	10/18/18	30	5	780	51
CRWA_4LONG	Charles River Watershed Association	E. coli	06/25/19	10/15/19	30	2	280	26
CRWA_4LONG	Charles River Watershed Association	E. coli	06/11/20	10/15/20	18	2	500	17
CRWA_4LONG	Charles River Watershed Association	E. coli	05/06/21	10/21/21	24	10	1700	101
CRWA_4LONG	Charles River Watershed Association	E. coli	05/05/22	10/13/22	22	5	1140	35
CRWA_763S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	7	1020	184

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_763S	Charles River Watershed Association	E. coli	03/16/10	12/21/10	10	20	24200	196
CRWA_763S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	10	644	129
CRWA_763S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	839	58
CRWA_763S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	5	504	61
CRWA_763S	Charles River Watershed Association	E. coli	04/15/14	12/16/14	9	10	2910	124
CRWA_763S	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	5	7700	109
CRWA_763S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	2910	198
CRWA_763S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	5	613	90
CRWA_763S	Charles River Watershed Association	E. coli	02/13/18	12/11/18	11	10	683	232
CRWA_763S	Charles River Watershed Association	E. coli	02/12/19	11/19/19	10	5	1210	99
CRWA_763S	Charles River Watershed Association	E. coli	01/12/21	11/16/21	7	10	1380	144
CRWA_763S	Charles River Watershed Association	E. coli	03/15/22	12/13/22	7	20	216	96
CRWA_773S	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	5	3080	190
CRWA_773S	Charles River Watershed Association	E. coli	03/16/10	11/16/10	9	5	8660	97
CRWA_773S	Charles River Watershed Association	E. coli	03/15/11	12/20/11	10	10	197	70
CRWA_773S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	11	5	243	61
CRWA_773S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	5	218	23

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_773S	Charles River Watershed Association	E. coli	03/18/14	12/16/14	10	5	472	28
CRWA_773S	Charles River Watershed Association	E. coli	04/14/15	12/15/15	9	10	521	49
CRWA_773S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	5	1020	51
CRWA_773S	Charles River Watershed Association	E. coli	01/10/17	12/12/17	12	10	776	127
CRWA_773S	Charles River Watershed Association	E. coli	02/13/18	11/20/18	10	5	1200	128
CRWA_773S	Charles River Watershed Association	E. coli	02/12/19	10/22/19	9	10	1620	102
CRWA_773S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	10	20	1150	166
CRWA_773S	Charles River Watershed Association	E. coli	04/12/22	12/13/22	9	31	1210	135
CRWA_784S	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	1215	112
CRWA_784S	Charles River Watershed Association	E. coli	02/09/10	12/21/10	11	5	11200	55
CRWA_784S	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	160	46
CRWA_784S	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	122	20
CRWA_784S	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	10	262	31
CRWA_784S	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	565	32
CRWA_784S	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	5	216	23
CRWA_784S	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	20	573	63
CRWA_784S	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	5	171	31

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_784S	Charles River Watershed Association	E. coli	02/13/18	12/11/18	11	5	1310	146
CRWA_784S	Charles River Watershed Association	E. coli	02/12/19	12/10/19	8	10	717	61
CRWA_784S	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	1170	100
CRWA_784S	Charles River Watershed Association	E. coli	02/08/22	12/13/22	11	10	488	71
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	20	16000	351
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	150	1520	489
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	40	20700	364
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/04/05	12/12/05	21	25	1900	152
MWRA_006	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	30	1100	141
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	496	93
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	97	3870	645
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	31	520	118
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	480	71
MWRA_006	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	20	2010	313
MWRA_006	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	20	1110	142
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	20	1250	145
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	20	15500	148

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	20	1270	102
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	3450	140
MWRA_006	Massachusetts Water Resources Authority	E. coli	03/23/17	11/03/17	35	10	6130	210
MWRA_006	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	5170	165
MWRA_006	Massachusetts Water Resources Authority	E. coli	03/28/19	09/27/19	30	10	8660	190
MWRA_006	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	459	89
MWRA_006	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	22	31	6870	200
MWRA_006	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	794	66
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	5	7300	105
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	30	1340	146
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	5	19700	160
MWRA_007	Massachusetts Water Resources Authority	E. coli	05/09/05	12/12/05	19	5	630	68
MWRA_007	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	25	2060	151
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	373	51
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	10	4110	309
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	697	91
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	1990	99

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_007	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	2360	160
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	712	67
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	1140	105
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	1130	44
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	529	31
MWRA_007	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	3450	46
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	10	4880	167
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	10	5170	250
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	47	10	9800	184
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	1010	65
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	52	4350	280
MWRA_007	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	1620	47
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	10	405	61
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	5	1540	94
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	5	1000	64
MWRA_008	Massachusetts Water Resources Authority	E. coli	05/09/05	12/12/05	19	5	435	61
MWRA_008	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	10	1420	157

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	388	53
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	31	4610	394
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	359	73
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	670	108
MWRA_008	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	4570	167
MWRA_008	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	583	56
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	882	69
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	581	39
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	448	33
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	2760	52
MWRA_008	Massachusetts Water Resources Authority	E. coli	03/23/17	11/03/17	35	10	11200	134
MWRA_008	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	5790	171
MWRA_008	Massachusetts Water Resources Authority	E. coli	03/28/19	09/27/19	30	10	1920	119
MWRA_008	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	2720	39
MWRA_008	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	22	63	4880	294
MWRA_008	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	2280	48
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	5	185	31

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	5	1090	55
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	5	1400	52
MWRA_009	Massachusetts Water Resources Authority	E. coli	05/09/05	12/13/05	20	5	380	45
MWRA_009	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	10	760	102
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	354	43
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	10	1990	219
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	428	70
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	393	39
MWRA_009	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	933	99
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	269	30
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	318	60
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	388	21
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	1470	33
MWRA_009	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	959	33
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	10	4610	91
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	71	10	3870	211
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	49	10	1990	106

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	631	51
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	52	1720	203
MWRA_009	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	457	29
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/17/02	12/10/02	19	5	320	33
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	5	310	42
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	5	1140	38
MWRA_010	Massachusetts Water Resources Authority	E. coli	05/09/05	12/13/05	20	5	490	50
MWRA_010	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	5	850	76
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	218	38
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	10	1920	122
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	428	60
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	404	36
MWRA_010	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	591	79
MWRA_010	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	223	30
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	246	36
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	221	20
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	520	28

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	27	10	388	26
MWRA_010	Massachusetts Water Resources Authority	E. coli	03/23/17	11/03/17	35	10	4350	69
MWRA_010	Massachusetts Water Resources Authority	E. coli	04/09/18	10/31/18	36	10	1940	67
MWRA_010	Massachusetts Water Resources Authority	E. coli	03/28/19	09/27/19	30	10	1410	71
MWRA_010	Massachusetts Water Resources Authority	E. coli	07/07/20	10/01/20	20	10	282	16
MWRA_010	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	22	41	1610	157
MWRA_010	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	134	22
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/17/02	12/10/02	19	5	85	27
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	21	5	255	34
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	5	930	36
MWRA_011	Massachusetts Water Resources Authority	E. coli	05/09/05	12/13/05	20	5	375	50
MWRA_011	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	5	620	58
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	146	27
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	10	1670	96
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	368	50
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	10	201	38
MWRA_011	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	749	54

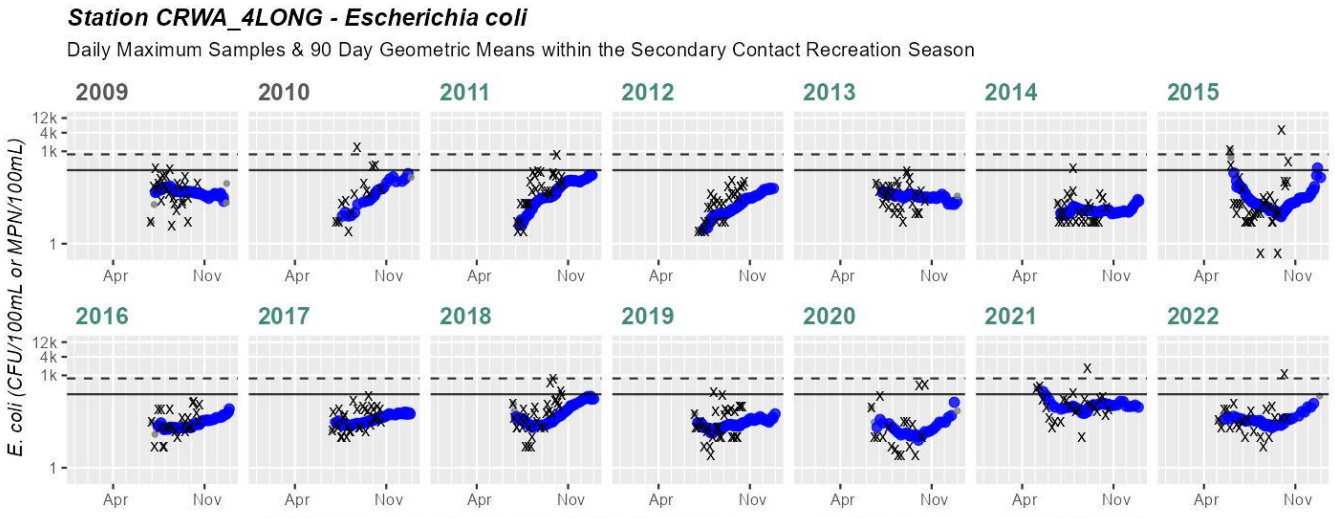
Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/20/12	10/24/12	24	10	201	30
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	571	41
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	110	15
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	309	18
MWRA_011	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	161	27
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	10	2360	64
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	71	10	11200	200
MWRA_011	Massachusetts Water Resources Authority	E. coli	01/24/19	11/27/19	49	10	4110	131
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	1020	83
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	10	738	105
MWRA_011	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	24200	62
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/17/02	11/13/02	18	10	3900	162
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/22/03	12/31/03	20	25	2200	244
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/12/04	11/17/04	21	10	24700	282
MWRA_145	Massachusetts Water Resources Authority	E. coli	05/09/05	12/12/05	19	15	5670	211
MWRA_145	Massachusetts Water Resources Authority	E. coli	05/04/06	12/29/06	26	15	5500	281
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/30/07	11/20/07	21	10	15500	124

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/30/08	12/01/08	21	146	17300	925
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/27/09	10/23/09	20	10	3870	118
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/28/10	10/26/10	20	41	1330	202
MWRA_145	Massachusetts Water Resources Authority	E. coli	05/09/11	11/01/11	21	10	9800	282
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/20/12	12/28/12	25	10	7700	121
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/17/13	11/07/13	21	10	907	95
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/14/14	10/07/14	20	10	53800	149
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/21/15	10/15/15	20	10	15500	81
MWRA_145	Massachusetts Water Resources Authority	E. coli	04/19/16	10/06/16	29	10	3080	93
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/23/17	11/04/17	60	10	19900	212
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	20	15500	476
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	48	10	6490	240
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	9210	216
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	31	8660	326
MWRA_145	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	1540	83
MWRA_166	Massachusetts Water Resources Authority	E. coli	04/03/02	12/31/02	38	5	980	33
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/16/03	12/30/03	43	5	925	52

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/06/04	12/08/04	23	5	210	22
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/05/05	12/08/05	27	5	1600	128
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/04/06	12/27/06	35	10	7900	128
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/09/07	12/31/07	34	10	1210	90
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/09/08	12/29/08	31	10	2140	259
MWRA_166	Massachusetts Water Resources Authority	E. coli	02/10/09	12/14/09	27	10	1480	88
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/27/10	12/29/10	24	10	2190	83
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/10/11	12/27/11	24	10	712	113
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/11/12	12/26/12	26	10	1520	46
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/08/13	12/23/13	26	10	368	46
MWRA_166	Massachusetts Water Resources Authority	E. coli	02/03/14	12/22/14	23	10	373	35
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/20/15	12/21/15	31	10	6490	86
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/04/16	12/06/16	26	10	583	55
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/03/17	12/20/17	25	10	712	63
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/29/18	12/26/18	24	10	1250	137
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/07/19	12/16/19	26	10	1200	75
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/02/20	12/28/20	27	10	1080	94

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
MWRA_166	Massachusetts Water Resources Authority	E. coli	01/11/21	12/29/21	24	20	573	113
MWRA_166	Massachusetts Water Resources Authority	E. coli	02/09/22	12/12/22	22	10	318	41
MWRA_210	Massachusetts Water Resources Authority	E. coli	03/02/18	11/14/18	72	10	2360	150
MWRA_210	Massachusetts Water Resources Authority	E. coli	03/28/19	11/27/19	48	10	1660	101
MWRA_210	Massachusetts Water Resources Authority	E. coli	03/30/20	10/01/20	39	10	275	47
MWRA_210	Massachusetts Water Resources Authority	E. coli	03/30/21	09/30/21	23	31	556	114
MWRA_210	Massachusetts Water Resources Authority	E. coli	03/18/22	11/16/22	21	10	364	27
1111REG1-CHR4-01	US EPA Region 1	E. coli	06/27/02	07/05/02	6	16	68	28
1111REG1-CHR4-03	US EPA Region 1	E. coli	06/27/02	07/05/02	6	12	116	24
1111REG1-CHR4-05	US EPA Region 1	E. coli	06/27/02	07/05/02	6	12	76	25
1111REG1-CHR4-06	US EPA Region 1	E. coli	06/27/02	07/05/02	6	8	76	18
1111REG1-CHR4-10	US EPA Region 1	E. coli	06/27/02	07/05/02	6	8	96	28
1111REG1-CRBL06	US EPA Region 1	E. coli	07/09/01	09/04/01	3	220	927	410
1111REG1-CRBL06	US EPA Region 1	E. coli	06/13/02	10/18/02	11	20	2400	192
1111REG1-CRBL06	US EPA Region 1	E. coli	07/08/03	09/18/03	6	68	380	211
1111REG1-CRBL06	US EPA Region 1	E. coli	07/13/04	09/21/04	8	4	270	46
1111REG1-CRBL06	US EPA Region 1	E. coli	06/08/05	10/05/05	5	34	128	64
1111REG1-CRBL07	US EPA Region 1	E. coli	07/09/01	09/04/01	3	8	100	26
1111REG1-CRBL07	US EPA Region 1	E. coli	06/13/02	10/18/02	16	4	1900	46
1111REG1-CRBL07	US EPA Region 1	E. coli	07/08/03	09/18/03	6	16	170	48
1111REG1-CRBL07	US EPA Region 1	E. coli	07/13/04	09/21/04	8	4	160	18
1111REG1-CRBL07	US EPA Region 1	E. coli	06/08/05	10/05/05	5	8	84	36
1111REG1-CRBL08	US EPA Region 1	E. coli	07/09/01	09/04/01	3	9	120	43
1111REG1-CRBL09	US EPA Region 1	E. coli	07/09/01	09/04/01	3	9	48	24
1111REG1-CRBL09	US EPA Region 1	E. coli	06/13/02	10/18/02	18	4	420	28
1111REG1-CRBL09	US EPA Region 1	E. coli	07/08/03	09/18/03	6	4	76	17
1111REG1-CRBL09	US EPA Region 1	E. coli	07/13/04	09/21/04	8	4	132	17
1111REG1-CRBL10	US EPA Region 1	E. coli	07/09/01	09/04/01	3	4	16	6
1111REG1-CRBL10	US EPA Region 1	E. coli	06/13/02	09/10/02	11	4	64	11
1111REG1-CRBL10	US EPA Region 1	E. coli	07/08/03	09/09/03	3	8	24	15
1111REG1-CRBL10	US EPA Region 1	E. coli	07/13/04	09/14/04	3	4	4	4
1111REG1-CRBL11	US EPA Region 1	E. coli	07/09/01	09/04/01	3	10	44	24
1111REG1-CRBL11	US EPA Region 1	E. coli	06/13/02	10/18/02	9	4	224	19
1111REG1-CRBL11	US EPA Region 1	E. coli	07/08/03	09/18/03	6	4	112	12
1111REG1-CRBL11	US EPA Region 1	E. coli	07/13/04	10/07/04	9	4	156	9
1111REG1-CRBL11	US EPA Region 1	E. coli	06/08/05	10/05/05	5	4	64	9
1111REG1-CRBL12	US EPA Region 1	E. coli	07/09/01	09/04/01	3	4	44	16
1111REG1-CRBL12	US EPA Region 1	E. coli	06/13/02	09/10/02	6	4	360	23
1111REG1-CRBL12	US EPA Region 1	E. coli	07/08/03	09/09/03	3	8	60	23

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
1111REG1-CRBL12	US EPA Region 1	E. coli	07/13/04	09/14/04	3	4	8	5
1111REG1-CRBL12	US EPA Region 1	E. coli	06/08/05	10/05/05	5	4	53	12
1111REG1-CRBLA8	US EPA Region 1	E. coli	06/13/02	10/18/02	17	4	973	29
1111REG1-CRBLA8	US EPA Region 1	E. coli	07/08/03	09/18/03	6	4	99	19
1111REG1-CRBLA8	US EPA Region 1	E. coli	07/13/04	10/07/04	8	4	36	7
1111REG1-CRBLA8	US EPA Region 1	E. coli	06/08/05	10/05/05	5	4	72	14
1111REG1-TMDL21	US EPA Region 1	E. coli	06/13/02	08/20/02	5	8	649	41
1111REG1-TMDL22	US EPA Region 1	E. coli	06/13/02	09/10/02	12	4	84	18
1111REG1-TMDL23	US EPA Region 1	E. coli	06/13/02	08/06/02	4	10	72	17
1111REG1-TMDL24	US EPA Region 1	E. coli	06/13/02	08/20/02	11	4	100	19
1111REG1-TMDL25	US EPA Region 1	E. coli	06/13/02	08/20/02	11	4	100	17
1111REG1-TMDL26	US EPA Region 1	E. coli	06/13/02	09/10/02	5	4	104	15
1111REG1-TMDL28	US EPA Region 1	E. coli	06/13/02	08/06/02	4	4	24	9



Variable*	Result
Samples	26
SeasGM	46
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	14
SeasGM	39
#GMI	23
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	7%

Variable*	Result
Samples	28
SeasGM	49
#GMI	49
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	19
#GMI	48
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	28
SeasGM	33
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	11
#GMI	52
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	36
SeasGM	20
#GMI	61
#GMI Ex	1
%GMI Ex	1%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	24
SeasGM	27
#GMI	43
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	37
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	51
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	30
SeasGM	26
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	18
SeasGM	17
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	101
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	22
SeasGM	35
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

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

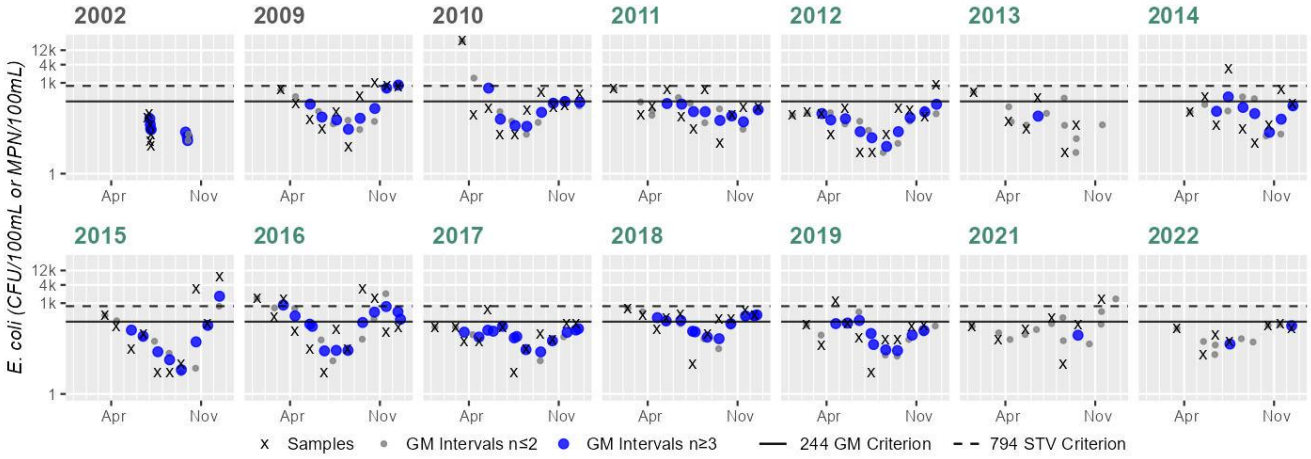
Cumulative %GMI Exceedance Current (2011-2022)
0%

Cumulative %GMI Exceedance Current (Recent 5 Years)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-10 & CRWA_763S - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	28
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	184
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	10
SeasGM	196
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	11
SeasGM	129
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	58
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	6
SeasGM	61
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	124
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	10
SeasGM	109
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	2
%n>STV	20%

Variable*	Result
Samples	12
SeasGM	198
#GMI	12
#GMI Ex	6
%GMI Ex	50%
n>STV	4
%n>STV	33%

Variable*	Result
Samples	12
SeasGM	90
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	232
#GMI	11
#GMI Ex	6
%GMI Ex	54%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	99
#GMI	9
#GMI Ex	1
%GMI Ex	11%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	7
SeasGM	144
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	96
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
13%

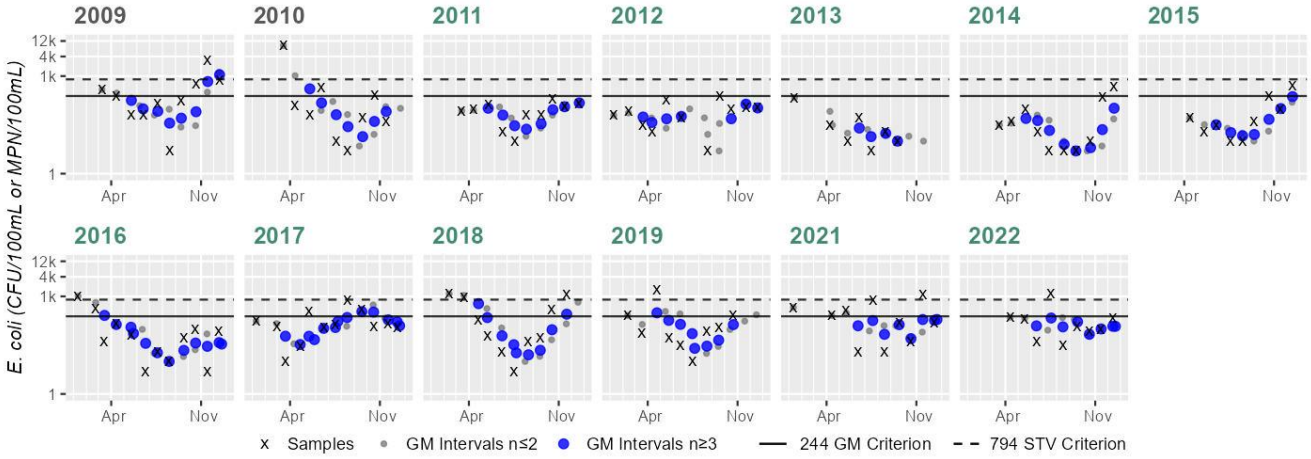
Cumulative %GMI Exceedance Current (2011-2022)
18%

Cumulative %GMI Exceedance Current (Recent 5 Years)
19%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_773S - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	190
#GMI	8
#GMI Ex	2
%GMI Ex	25%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	9
SeasGM	97
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	10
SeasGM	70
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	61
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	23
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	28
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	49
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	51
#GMI	12
#GMI Ex	1
%GMI Ex	8%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	12
SeasGM	127
#GMI	13
#GMI Ex	2
%GMI Ex	15%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	10
SeasGM	128
#GMI	9
#GMI Ex	2
%GMI Ex	22%
n>STV	3
%n>STV	30%

Variable*	Result
Samples	9
SeasGM	102
#GMI	8
#GMI Ex	1
%GMI Ex	12%
n>STV	1
%n>STV	11%

Variable*	Result
Samples	10
SeasGM	166
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	10%

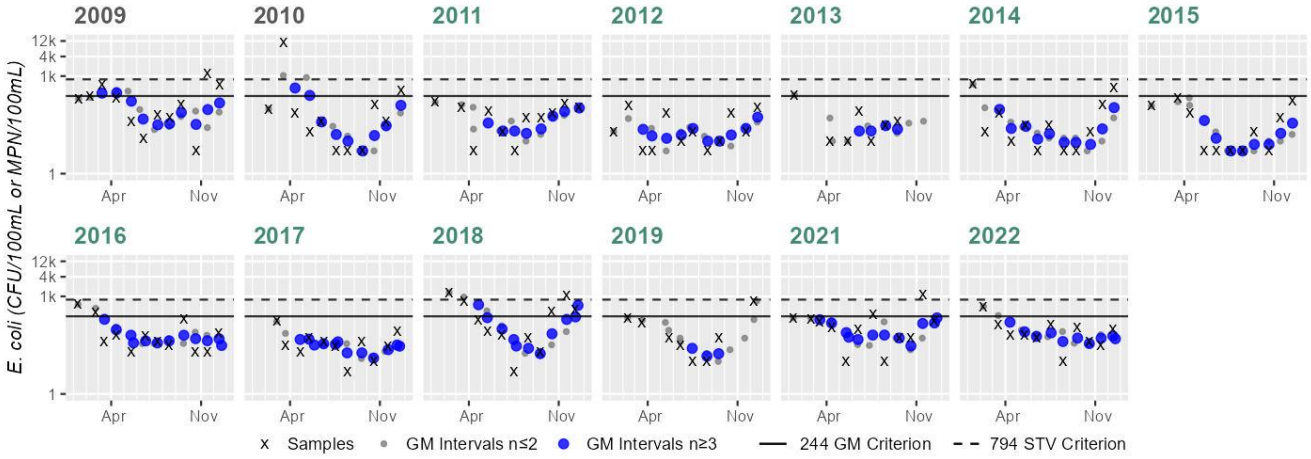
Variable*	Result
Samples	9
SeasGM	135
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	11%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
20%	6%	10%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_784S - Escherichia coli

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



Variable*	Result
Samples	12
SeasGM	112
#GMI	10
#GMI Ex	2
%GMI Ex	20%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	55
#GMI	9
#GMI Ex	2
%GMI Ex	22%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	46
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	20
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	31
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	32
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	23
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	63
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	31
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	146
#GMI	11
#GMI Ex	2
%GMI Ex	18%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	8
SeasGM	61
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	100
#GMI	12
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	71
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
21%

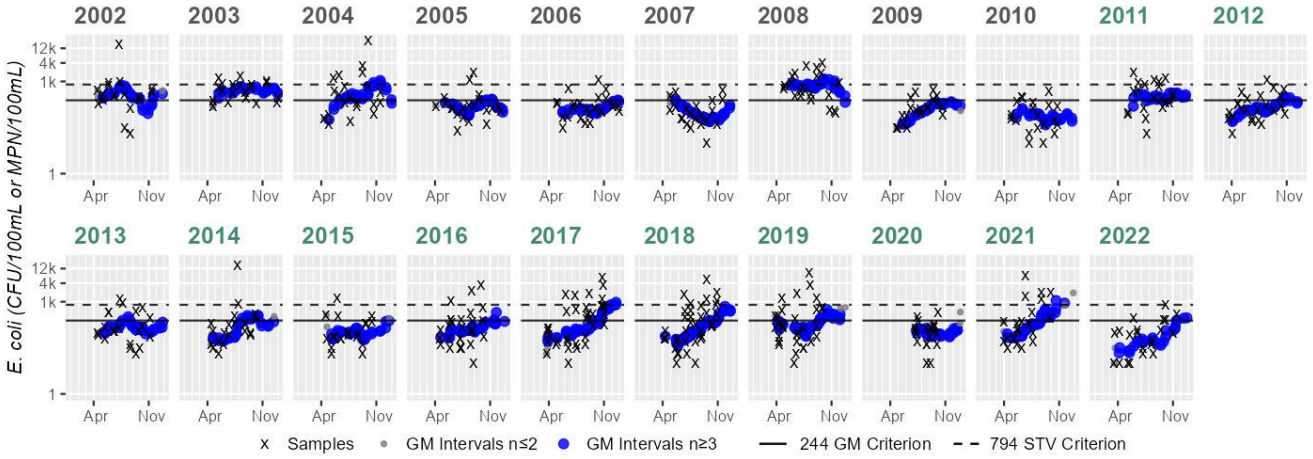
Cumulative %GMI Exceedance
Current (2011-2022)
2%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_006 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	351
#GMI	31
#GMI Ex	25
%GMI Ex	80%
n>STV	3
%n>STV	16%

Variable*	Result
Samples	20
SeasGM	489
#GMI	32
#GMI Ex	32
%GMI Ex	100%
n>STV	6
%n>STV	30%

Variable*	Result
Samples	21
SeasGM	364
#GMI	34
#GMI Ex	28
%GMI Ex	82%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	21
SeasGM	152
#GMI	35
#GMI Ex	3
%GMI Ex	8%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	26
SeasGM	141
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	21
SeasGM	93
#GMI	37
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	645
#GMI	34
#GMI Ex	31
%GMI Ex	91%
n>STV	9
%n>STV	42%

Variable*	Result
Samples	20
SeasGM	118
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	71
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	313
#GMI	37
#GMI Ex	35
%GMI Ex	94%
n>STV	6
%n>STV	28%

Variable*	Result
Samples	24
SeasGM	142
#GMI	37
#GMI Ex	3
%GMI Ex	8%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	21
SeasGM	145
#GMI	37
#GMI Ex	3
%GMI Ex	8%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	148
#GMI	34
#GMI Ex	13
%GMI Ex	38%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	102
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	27
SeasGM	140
#GMI	46
#GMI Ex	2
%GMI Ex	4%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	35
SeasGM	210
#GMI	64
#GMI Ex	24
%GMI Ex	37%
n>STV	6
%n>STV	17%

Variable*	Result
Samples	36
SeasGM	165
#GMI	64
#GMI Ex	18
%GMI Ex	28%
n>STV	7
%n>STV	19%

Variable*	Result
Samples	30
SeasGM	190
#GMI	55
#GMI Ex	14
%GMI Ex	25%
n>STV	5
%n>STV	16%

Variable*	Result
Samples	20
SeasGM	89
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	22
SeasGM	200
#GMI	38
#GMI Ex	14
%GMI Ex	36%
n>STV	5
%n>STV	22%

Variable*	Result
Samples	21
SeasGM	66
#GMI	31
#GMI Ex	4
%GMI Ex	12%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)
38%

Cumulative %GMI Exceedance Historic (Recent 5 Years)
17%

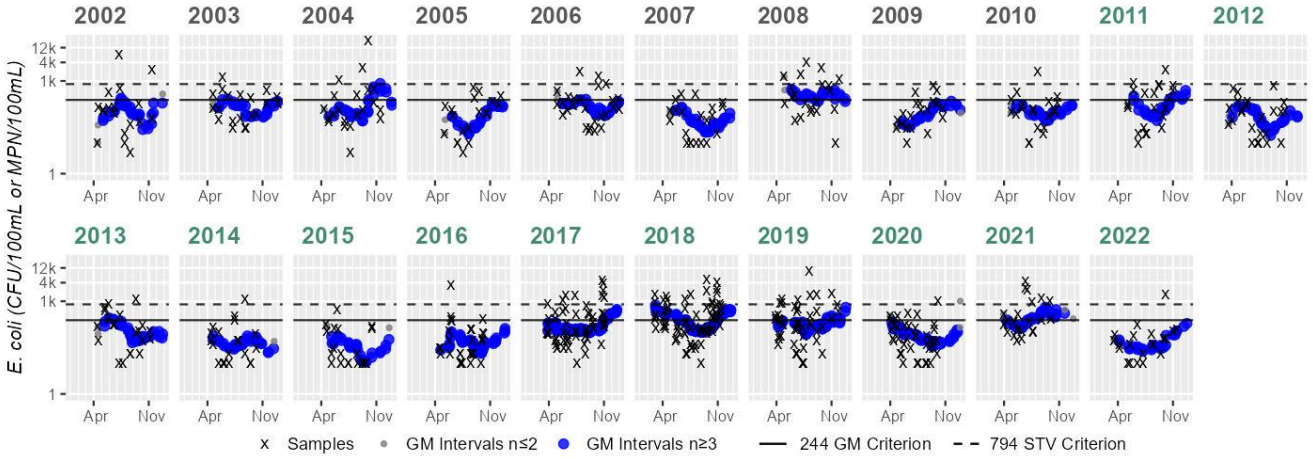
Cumulative %GMI Exceedance Current (2011-2022)
25%

Cumulative %GMI Exceedance Current (Recent 5 Years)
22%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_007 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	105
#GMI	31
#GMI Ex	2
%GMI Ex	6%
n>STV	2
%n>STV	11%

Variable*	Result
Samples	20
SeasGM	146
#GMI	32
#GMI Ex	4
%GMI Ex	12%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	160
#GMI	34
#GMI Ex	10
%GMI Ex	29%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	19
SeasGM	68
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	151
#GMI	43
#GMI Ex	2
%GMI Ex	4%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	21
SeasGM	51
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	309
#GMI	34
#GMI Ex	29
%GMI Ex	85%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	20
SeasGM	91
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	99
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	21
SeasGM	160
#GMI	37
#GMI Ex	12
%GMI Ex	32%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	24
SeasGM	67
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	105
#GMI	37
#GMI Ex	4
%GMI Ex	10%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	44
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	20
SeasGM	31
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	29
SeasGM	46
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	60
SeasGM	167
#GMI	111
#GMI Ex	27
%GMI Ex	24%
n>STV	9
%n>STV	15%

Variable*	Result
Samples	72
SeasGM	250
#GMI	129
#GMI Ex	68
%GMI Ex	52%
n>STV	14
%n>STV	19%

Variable*	Result
Samples	47
SeasGM	184
#GMI	85
#GMI Ex	11
%GMI Ex	12%
n>STV	8
%n>STV	17%

Variable*	Result
Samples	39
SeasGM	65
#GMI	69
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	23
SeasGM	280
#GMI	39
#GMI Ex	26
%GMI Ex	66%
n>STV	6
%n>STV	26%

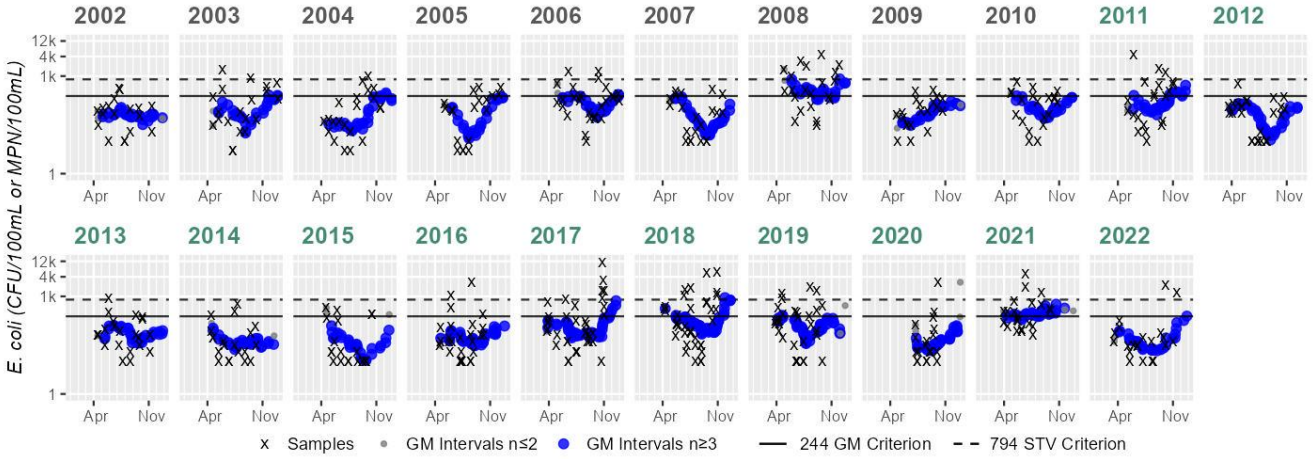
Variable*	Result
Samples	21
SeasGM	47
#GMI	31
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
15%	16%	21%	30%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_008 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	61
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	94
#GMI	32
#GMI Ex	4
%GMI Ex	12%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	21
SeasGM	64
#GMI	34
#GMI Ex	3
%GMI Ex	8%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	19
SeasGM	61
#GMI	31
#GMI Ex	1
%GMI Ex	3%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	157
#GMI	43
#GMI Ex	6
%GMI Ex	13%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	21
SeasGM	53
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	394
#GMI	34
#GMI Ex	27
%GMI Ex	79%
n>STV	7
%n>STV	33%

Variable*	Result
Samples	20
SeasGM	73
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	108
#GMI	35
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	167
#GMI	37
#GMI Ex	11
%GMI Ex	29%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	24
SeasGM	56
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	69
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	39
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	52
#GMI	46
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	7%

Variable*	Result
Samples	35
SeasGM	134
#GMI	64
#GMI Ex	12
%GMI Ex	18%
n>STV	6
%n>STV	17%

Variable*	Result
Samples	36
SeasGM	171
#GMI	64
#GMI Ex	13
%GMI Ex	20%
n>STV	7
%n>STV	19%

Variable*	Result
Samples	30
SeasGM	119
#GMI	55
#GMI Ex	2
%GMI Ex	3%
n>STV	4
%n>STV	13%

Variable*	Result
Samples	20
SeasGM	39
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	22
SeasGM	294
#GMI	38
#GMI Ex	30
%GMI Ex	78%
n>STV	3
%n>STV	13%

Variable*	Result
Samples	21
SeasGM	48
#GMI	31
#GMI Ex	2
%GMI Ex	6%
n>STV	2
%n>STV	9%

Cumulative %GMI Exceedance Historic (1997-2010)
13%

Cumulative %GMI Exceedance Historic (Recent 5 Years)
18%

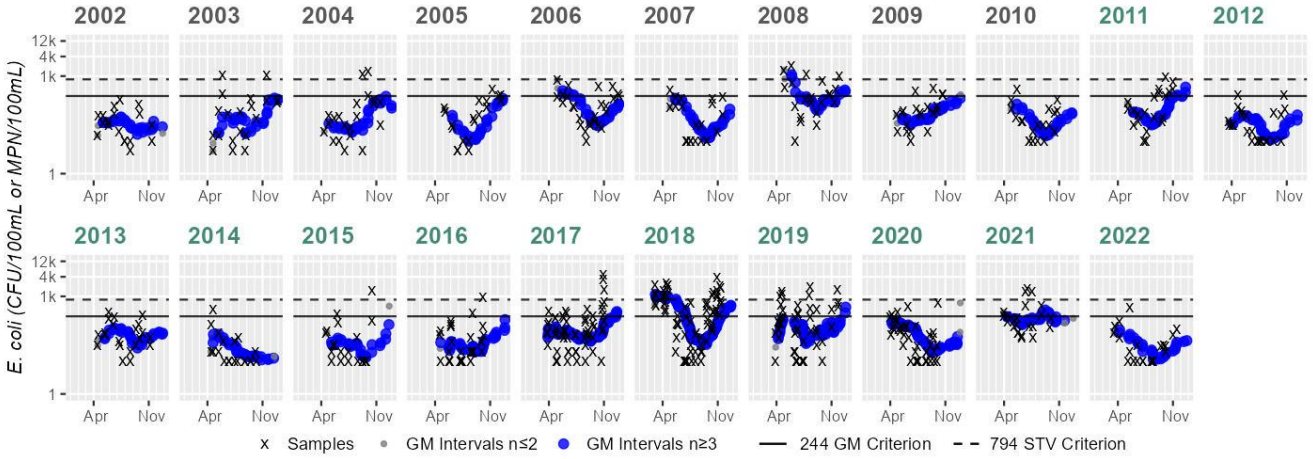
Cumulative %GMI Exceedance Current (2011-2022)
13%

Cumulative %GMI Exceedance Current (Recent 5 Years)
21%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_009 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	31
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	55
#GMI	32
#GMI Ex	1
%GMI Ex	3%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	21
SeasGM	52
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	45
#GMI	33
#GMI Ex	1
%GMI Ex	3%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	102
#GMI	43
#GMI Ex	6
%GMI Ex	13%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	43
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	219
#GMI	34
#GMI Ex	10
%GMI Ex	29%
n>STV	4
%n>STV	19%

Variable*	Result
Samples	20
SeasGM	70
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	39
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	99
#GMI	37
#GMI Ex	7
%GMI Ex	18%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	30
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	60
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	21
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	33
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	33
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	60
SeasGM	91
#GMI	111
#GMI Ex	13
%GMI Ex	11%
n>STV	3
%n>STV	5%

Variable*	Result
Samples	71
SeasGM	211
#GMI	127
#GMI Ex	62
%GMI Ex	48%
n>STV	20
%n>STV	28%

Variable*	Result
Samples	49
SeasGM	106
#GMI	89
#GMI Ex	4
%GMI Ex	4%
n>STV	6
%n>STV	12%

Variable*	Result
Samples	39
SeasGM	51
#GMI	69
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	23
SeasGM	203
#GMI	39
#GMI Ex	7
%GMI Ex	17%
n>STV	3
%n>STV	13%

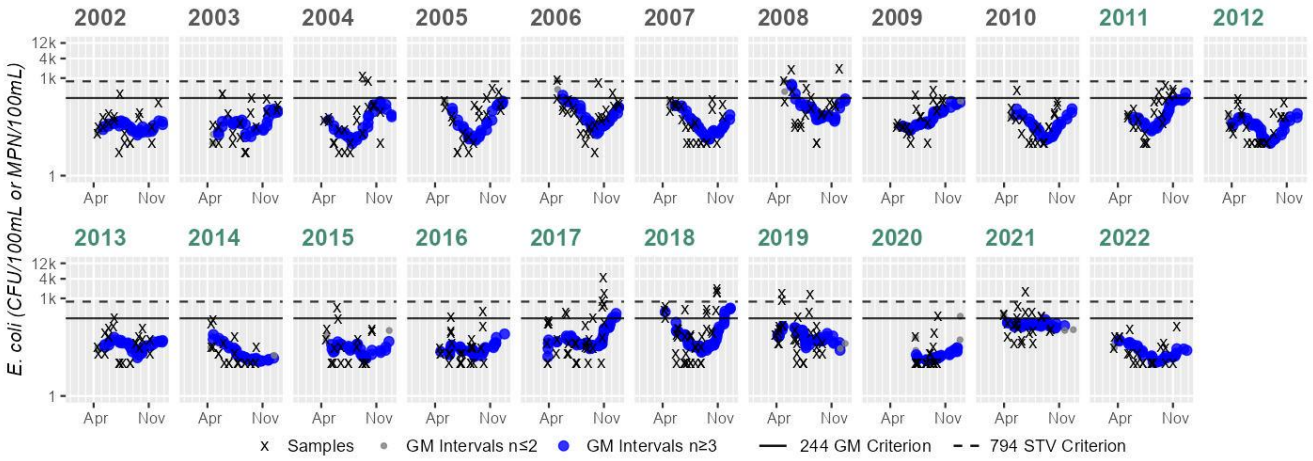
Variable*	Result
Samples	21
SeasGM	29
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
5%	8%	13%	20%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_010 - Escherichia coli

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



Variable*	Result
Samples	19
SeasGM	33
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	42
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	38
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	50
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	76
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	21
SeasGM	38
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	122
#GMI	34
#GMI Ex	5
%GMI Ex	14%
n>STV	2
%n>STV	9%

Variable*	Result
Samples	20
SeasGM	60
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	36
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	79
#GMI	37
#GMI Ex	4
%GMI Ex	10%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	30
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	36
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	20
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	28
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	26
#GMI	46
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	35
SeasGM	69
#GMI	64
#GMI Ex	8
%GMI Ex	12%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	36
SeasGM	67
#GMI	64
#GMI Ex	9
%GMI Ex	14%
n>STV	3
%n>STV	8%

Variable*	Result
Samples	30
SeasGM	71
#GMI	55
#GMI Ex	0
%GMI Ex	0%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	16
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	22
SeasGM	157
#GMI	38
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

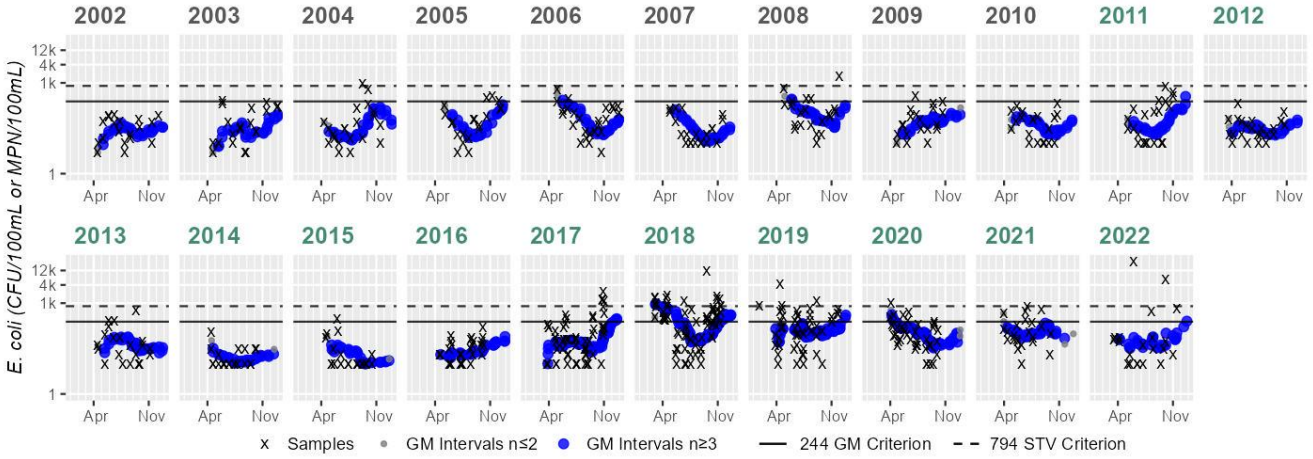
Variable*	Result
Samples	21
SeasGM	22
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
1%	3%	4%	4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_011 - Escherichia coli

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



Variable*	Result
Samples	19
SeasGM	27
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	34
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	36
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	50
#GMI	33
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	58
#GMI	43
#GMI Ex	1
%GMI Ex	2%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	27
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	96
#GMI	34
#GMI Ex	3
%GMI Ex	8%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	50
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	38
#GMI	35
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	54
#GMI	37
#GMI Ex	3
%GMI Ex	8%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	30
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	21
SeasGM	41
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	15
#GMI	34
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	20
SeasGM	18
#GMI	32
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	29
SeasGM	27
#GMI	50
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	60
SeasGM	64
#GMI	111
#GMI Ex	13
%GMI Ex	11%
n>STV	4
%n>STV	6%

Variable*	Result
Samples	71
SeasGM	200
#GMI	127
#GMI Ex	54
%GMI Ex	42%
n>STV	12
%n>STV	16%

Variable*	Result
Samples	49
SeasGM	131
#GMI	88
#GMI Ex	4
%GMI Ex	4%
n>STV	3
%n>STV	6%

Variable*	Result
Samples	39
SeasGM	83
#GMI	69
#GMI Ex	4
%GMI Ex	5%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	23
SeasGM	105
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

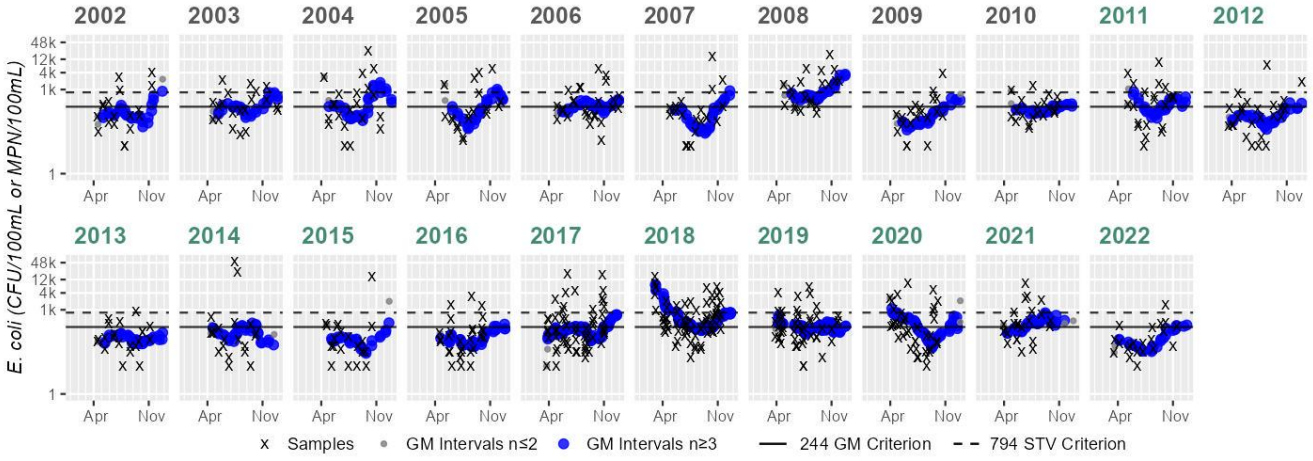
Variable*	Result
Samples	21
SeasGM	62
#GMI	31
#GMI Ex	2
%GMI Ex	6%
n>STV	2
%n>STV	9%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
1%	2%	11%	18%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_145 - Escherichia coli

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



Variable*	Result
Samples	18
SeasGM	162
#GMI	31
#GMI Ex	5
%GMI Ex	16%
n>STV	4
%n>STV	22%

Variable*	Result
Samples	20
SeasGM	244
#GMI	32
#GMI Ex	16
%GMI Ex	50%
n>STV	4
%n>STV	20%

Variable*	Result
Samples	21
SeasGM	282
#GMI	34
#GMI Ex	17
%GMI Ex	50%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	19
SeasGM	211
#GMI	31
#GMI Ex	14
%GMI Ex	45%
n>STV	4
%n>STV	21%

Variable*	Result
Samples	26
SeasGM	281
#GMI	43
#GMI Ex	28
%GMI Ex	65%
n>STV	6
%n>STV	23%

Variable*	Result
Samples	21
SeasGM	124
#GMI	37
#GMI Ex	9
%GMI Ex	24%
n>STV	3
%n>STV	14%

Variable*	Result
Samples	21
SeasGM	925
#GMI	34
#GMI Ex	34
%GMI Ex	100%
n>STV	11
%n>STV	52%

Variable*	Result
Samples	20
SeasGM	118
#GMI	35
#GMI Ex	6
%GMI Ex	17%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	202
#GMI	35
#GMI Ex	10
%GMI Ex	28%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	21
SeasGM	282
#GMI	37
#GMI Ex	20
%GMI Ex	54%
n>STV	5
%n>STV	23%

Variable*	Result
Samples	25
SeasGM	121
#GMI	39
#GMI Ex	4
%GMI Ex	10%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	21
SeasGM	95
#GMI	37
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	20
SeasGM	149
#GMI	34
#GMI Ex	6
%GMI Ex	17%
n>STV	2
%n>STV	10%

Variable*	Result
Samples	20
SeasGM	81
#GMI	32
#GMI Ex	1
%GMI Ex	3%
n>STV	1
%n>STV	5%

Variable*	Result
Samples	29
SeasGM	93
#GMI	50
#GMI Ex	3
%GMI Ex	6%
n>STV	3
%n>STV	10%

Variable*	Result
Samples	60
SeasGM	212
#GMI	111
#GMI Ex	31
%GMI Ex	27%
n>STV	12
%n>STV	20%

Variable*	Result
Samples	72
SeasGM	476
#GMI	129
#GMI Ex	105
%GMI Ex	81%
n>STV	23
%n>STV	31%

Variable*	Result
Samples	48
SeasGM	240
#GMI	87
#GMI Ex	40
%GMI Ex	45%
n>STV	8
%n>STV	16%

Variable*	Result
Samples	39
SeasGM	216
#GMI	69
#GMI Ex	33
%GMI Ex	47%
n>STV	9
%n>STV	23%

Variable*	Result
Samples	23
SeasGM	326
#GMI	39
#GMI Ex	28
%GMI Ex	71%
n>STV	6
%n>STV	26%

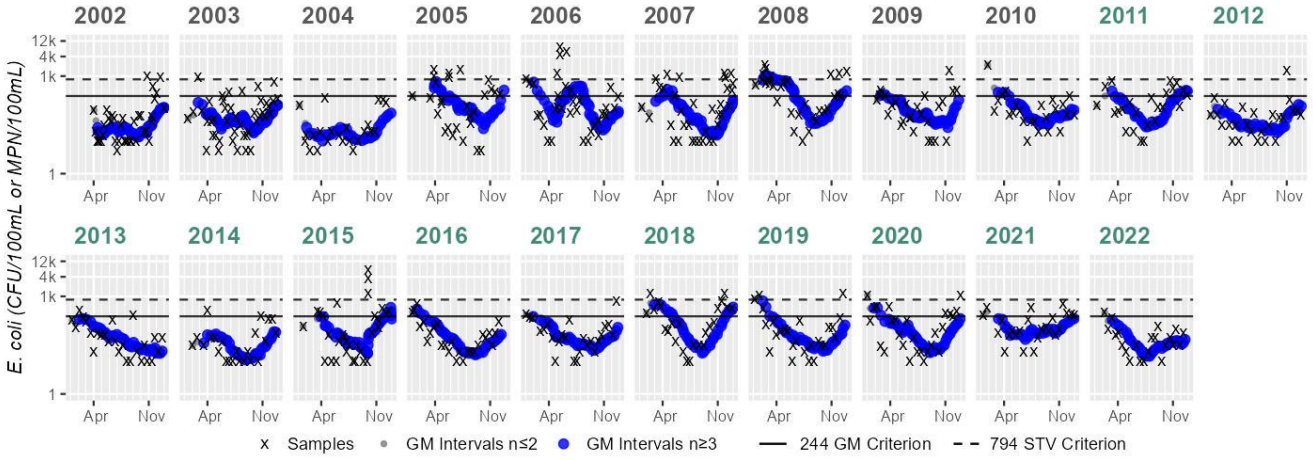
Variable*	Result
Samples	21
SeasGM	83
#GMI	31
#GMI Ex	5
%GMI Ex	16%
n>STV	1
%n>STV	4%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
44%	47%	39%	59%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_166 - Escherichia coli

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



Variable*	Result
Samples	38
SeasGM	33
#GMI	68
#GMI Ex	3
%GMI Ex	4%
n>STV	2
%n>STV	5%

Variable*	Result
Samples	43
SeasGM	52
#GMI	77
#GMI Ex	1
%GMI Ex	1%
n>STV	1
%n>STV	2%

Variable*	Result
Samples	23
SeasGM	22
#GMI	41
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	27
SeasGM	128
#GMI	49
#GMI Ex	11
%GMI Ex	22%
n>STV	5
%n>STV	18%

Variable*	Result
Samples	35
SeasGM	128
#GMI	62
#GMI Ex	17
%GMI Ex	27%
n>STV	5
%n>STV	14%

Variable*	Result
Samples	34
SeasGM	90
#GMI	63
#GMI Ex	14
%GMI Ex	22%
n>STV	6
%n>STV	17%

Variable*	Result
Samples	31
SeasGM	259
#GMI	57
#GMI Ex	31
%GMI Ex	54%
n>STV	7
%n>STV	22%

Variable*	Result
Samples	27
SeasGM	88
#GMI	48
#GMI Ex	4
%GMI Ex	8%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	24
SeasGM	83
#GMI	43
#GMI Ex	3
%GMI Ex	6%
n>STV	1
%n>STV	4%

Variable*	Result
Samples	24
SeasGM	113
#GMI	43
#GMI Ex	10
%GMI Ex	23%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	26
SeasGM	46
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	3%

Variable*	Result
Samples	26
SeasGM	46
#GMI	47
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	23
SeasGM	35
#GMI	41
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	31
SeasGM	86
#GMI	56
#GMI Ex	7
%GMI Ex	12%
n>STV	3
%n>STV	9%

Variable*	Result
Samples	26
SeasGM	55
#GMI	47
#GMI Ex	3
%GMI Ex	6%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	25
SeasGM	63
#GMI	45
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	24
SeasGM	137
#GMI	41
#GMI Ex	15
%GMI Ex	36%
n>STV	2
%n>STV	8%

Variable*	Result
Samples	26
SeasGM	75
#GMI	45
#GMI Ex	3
%GMI Ex	6%
n>STV	3
%n>STV	11%

Variable*	Result
Samples	27
SeasGM	94
#GMI	49
#GMI Ex	7
%GMI Ex	14%
n>STV	2
%n>STV	7%

Variable*	Result
Samples	24
SeasGM	113
#GMI	42
#GMI Ex	3
%GMI Ex	7%
n>STV	0
%n>STV	0%

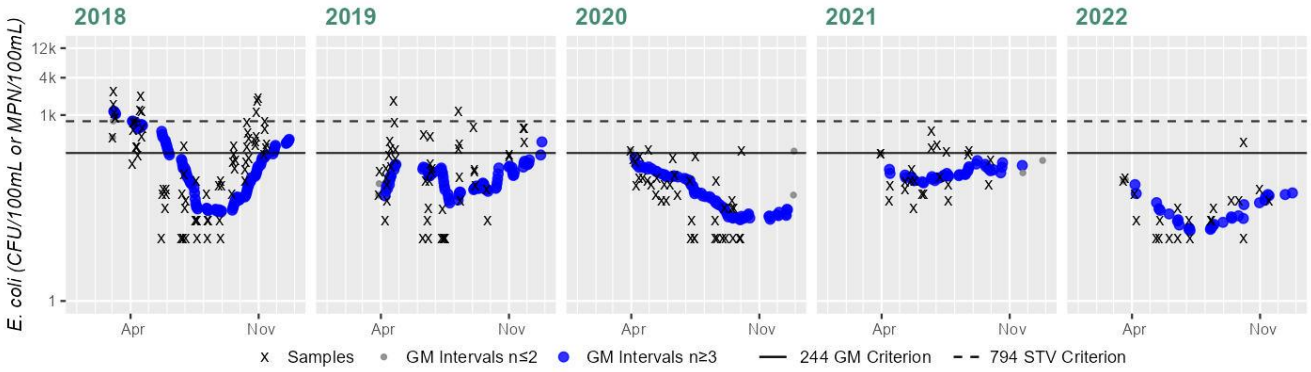
Variable*	Result
Samples	22
SeasGM	41
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Historic (Recent 5 Years)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
16%	25%	8%	12%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 MWRA_210 - Escherichia coli

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



Variable*	Result
Samples	72
SeasGM	150
#GMI	129
#GMI Ex	51
%GMI Ex	39%
n>STV	11
%n>STV	15%

Variable*	Result
Samples	48
SeasGM	101
#GMI	87
#GMI Ex	3
%GMI Ex	3%
n>STV	2
%n>STV	4%

Variable*	Result
Samples	39
SeasGM	47
#GMI	69
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	23
SeasGM	114
#GMI	39
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

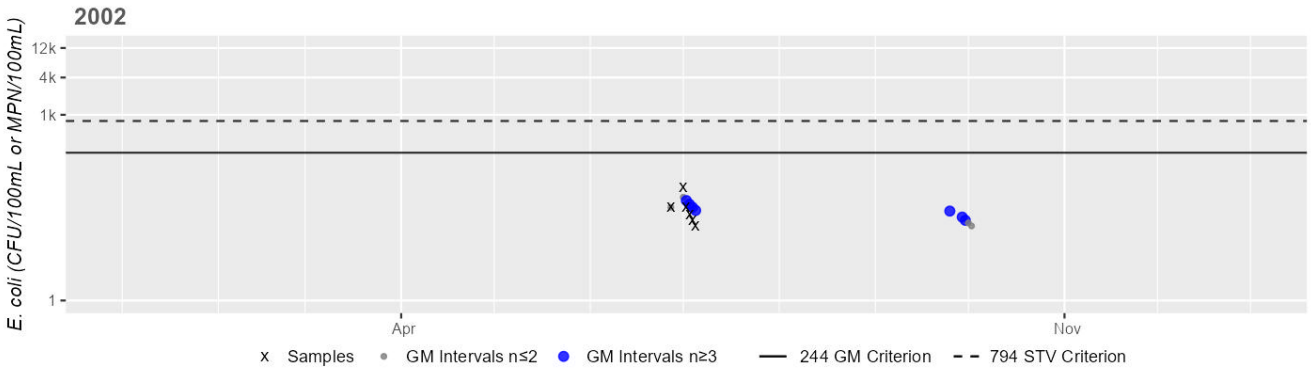
Variable*	Result
Samples	21
SeasGM	27
#GMI	31
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
15%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-01 - Escherichia coli

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



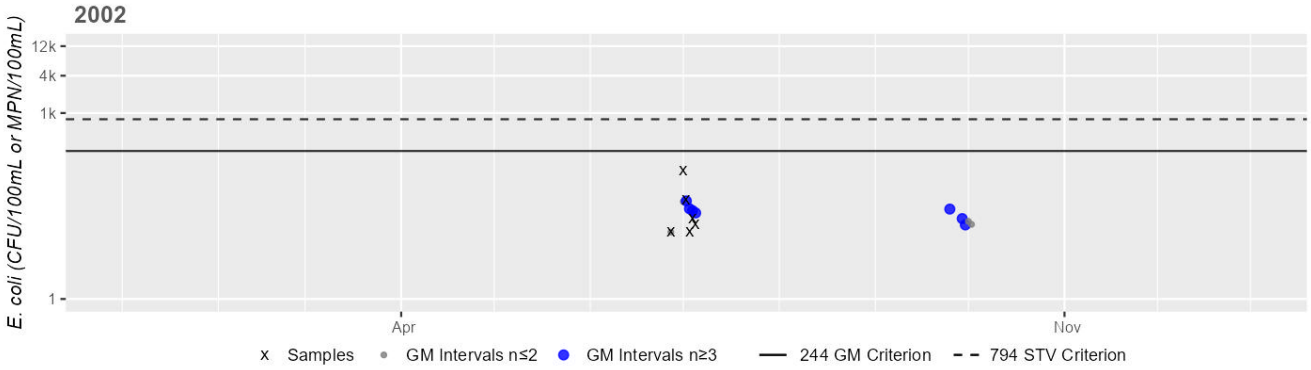
Variable*	Result
Samples	6
SeasGM	28
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-03 - Escherichia coli

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



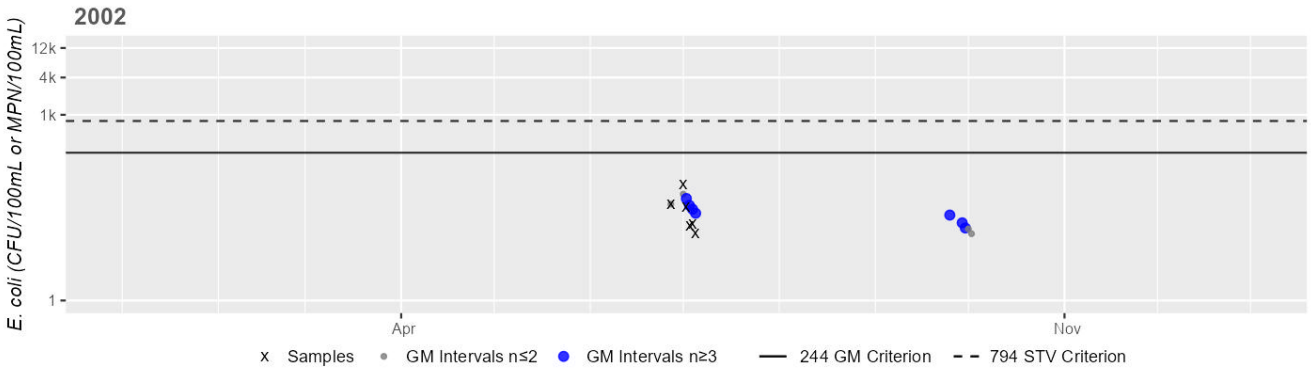
Variable*	Result
Samples	6
SeasGM	24
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-05 - Escherichia coli

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



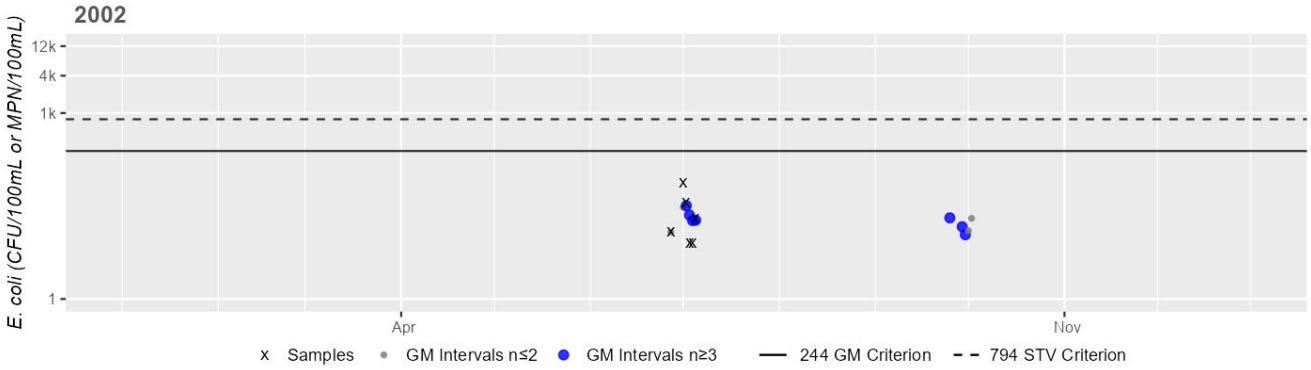
Variable*	Result
Samples	6
SeasGM	25
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CHR4-06 - Escherichia coli

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



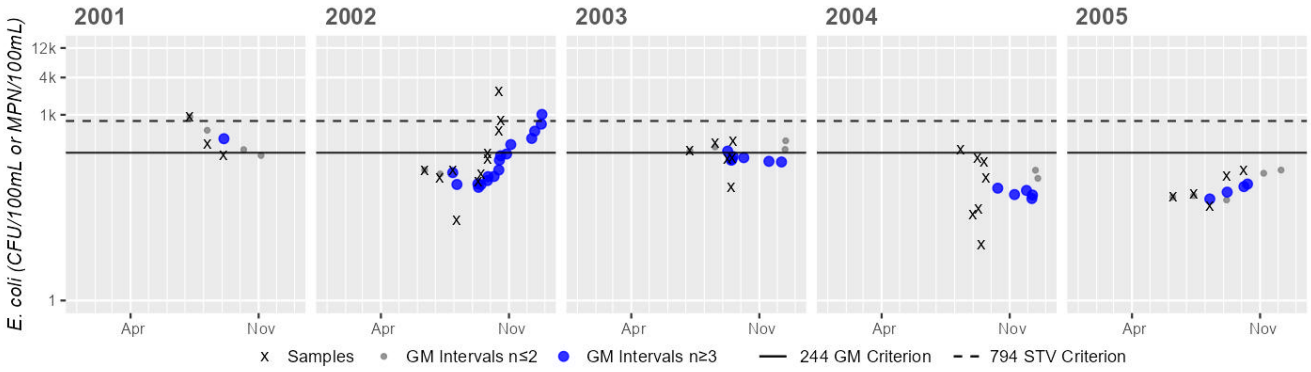
Variable*	Result
Samples	6
SeasGM	18
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL06 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	410
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	33%

Variable*	Result
Samples	11
SeasGM	192
#GMI	17
#GMI Ex	5
%GMI Ex	29%
n>STV	2
%n>STV	18%

Variable*	Result
Samples	6
SeasGM	211
#GMI	7
#GMI Ex	1
%GMI Ex	14%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	0
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

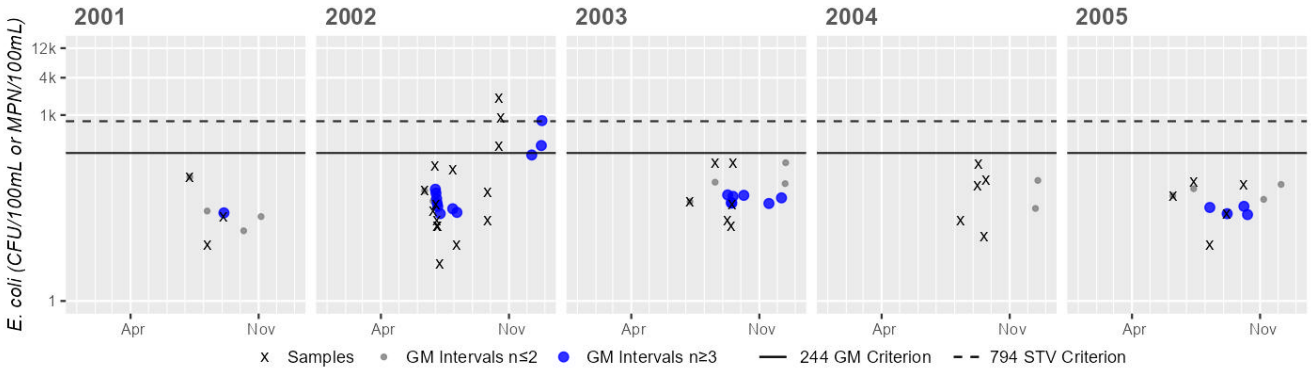
Variable*	Result
Samples	5
SeasGM	64
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
17%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL07 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	26
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	16
SeasGM	0
#GMI	27
#GMI Ex	2
%GMI Ex	7%
n>STV	2
%n>STV	12%

Variable*	Result
Samples	6
SeasGM	48
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	0
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

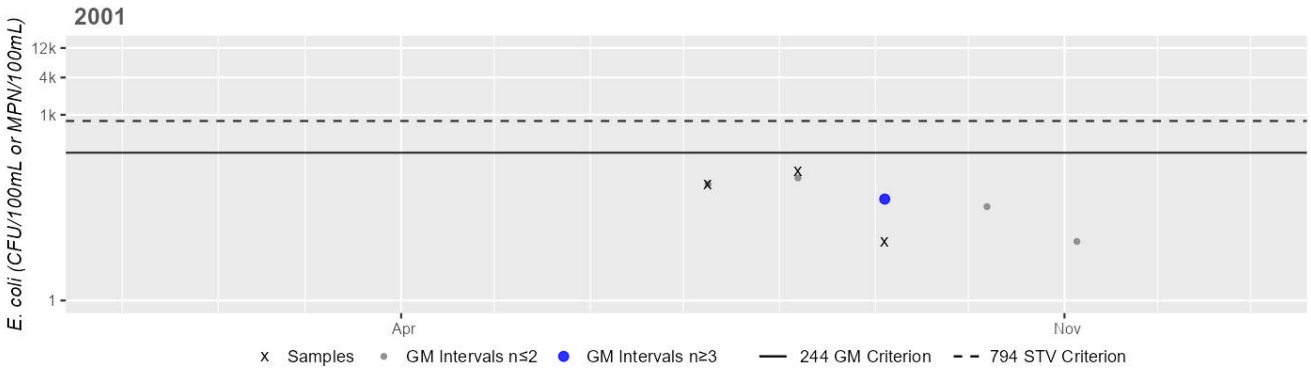
Variable*	Result
Samples	5
SeasGM	36
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
4%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL08 - Escherichia coli

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



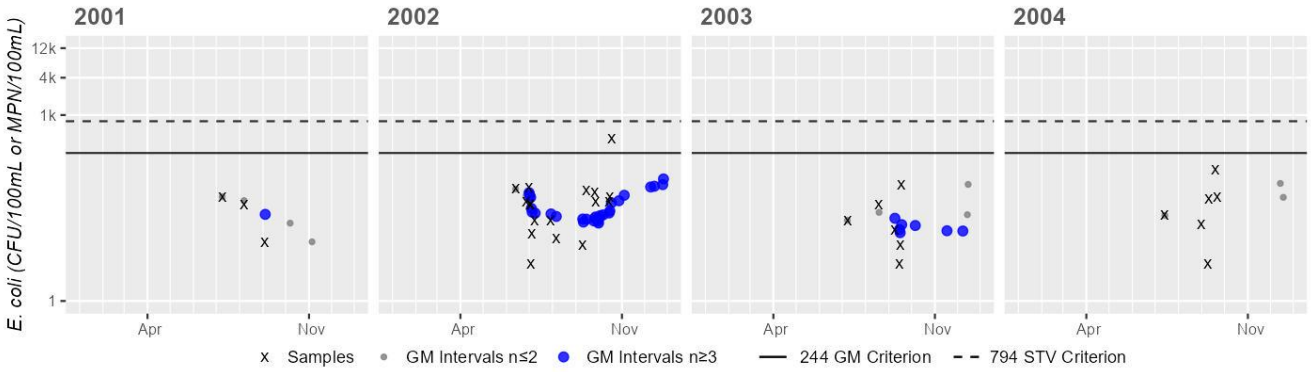
Variable*	Result
Samples	3
SeasGM	43
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL09 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	24
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	17
SeasGM	31
#GMI	29
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	17
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

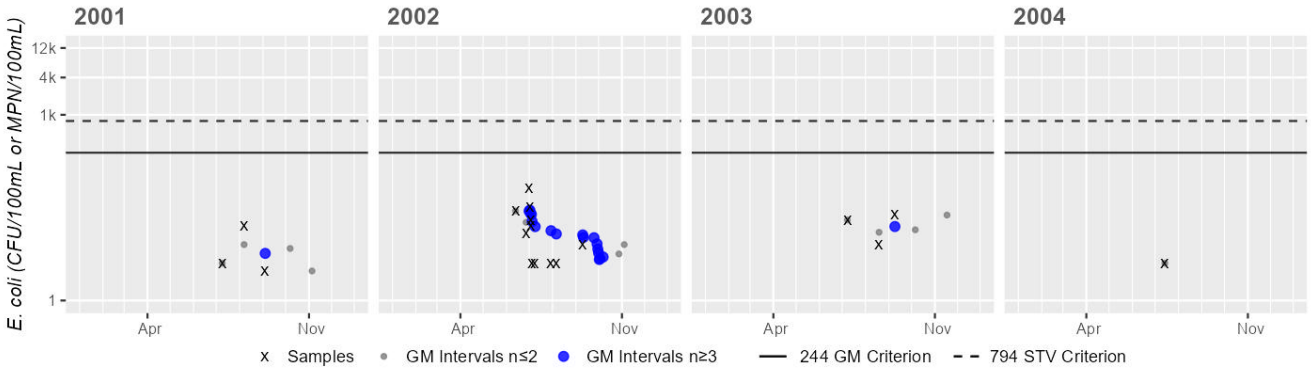
Variable*	Result
Samples	8
SeasGM	0
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL10 - Escherichia coli

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



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

Variable*	Result
Samples	11
SeasGM	11
#GMI	17
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	15
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

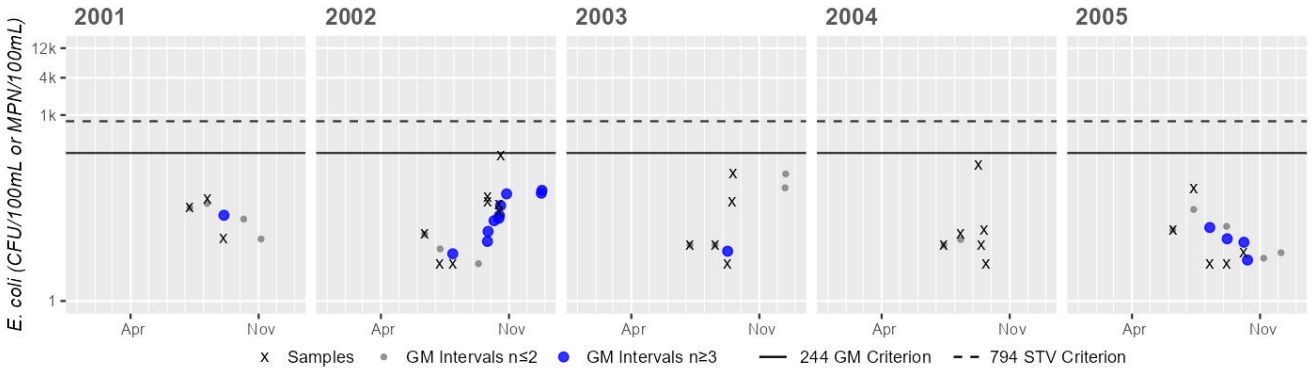
Variable*	Result
Samples	3
SeasGM	0
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL11 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	24
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	23
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	0
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	9
SeasGM	0
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

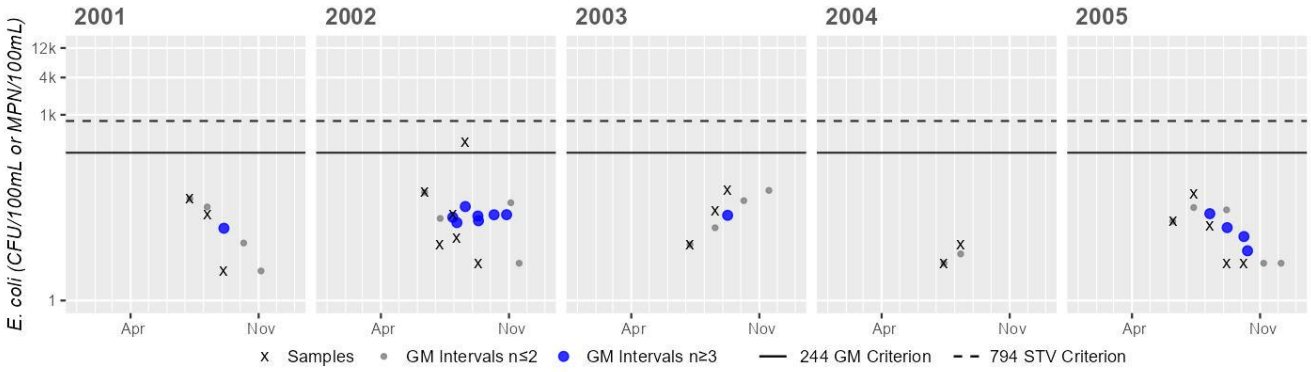
Variable*	Result
Samples	5
SeasGM	9
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBL12 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	14
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	23
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	23
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

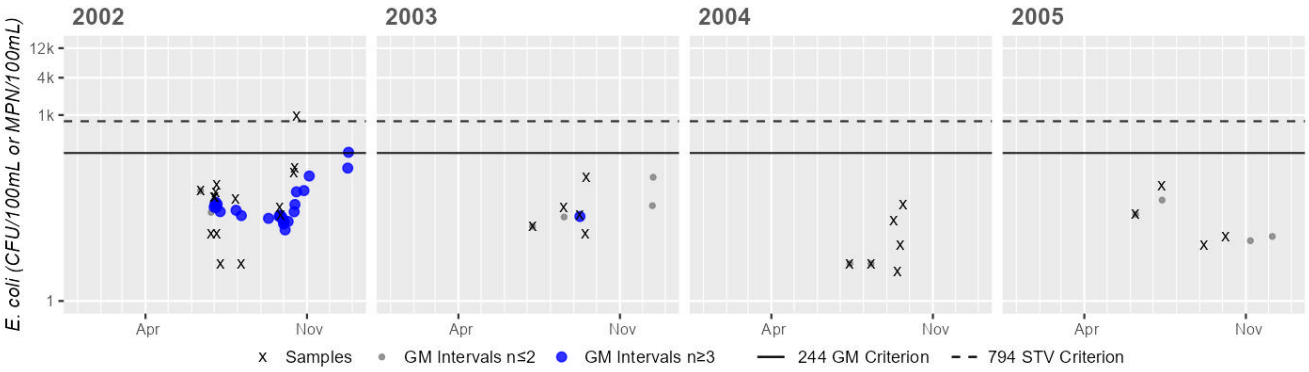
Variable*	Result
Samples	5
SeasGM	12
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-CRBLA8 - Escherichia coli

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



Variable*	Result
Samples	15
SeasGM	38
#GMI	25
#GMI Ex	1
%GMI Ex	4%
n>STV	1
%n>STV	6%

Variable*	Result
Samples	6
SeasGM	0
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	0
#GMI	11
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

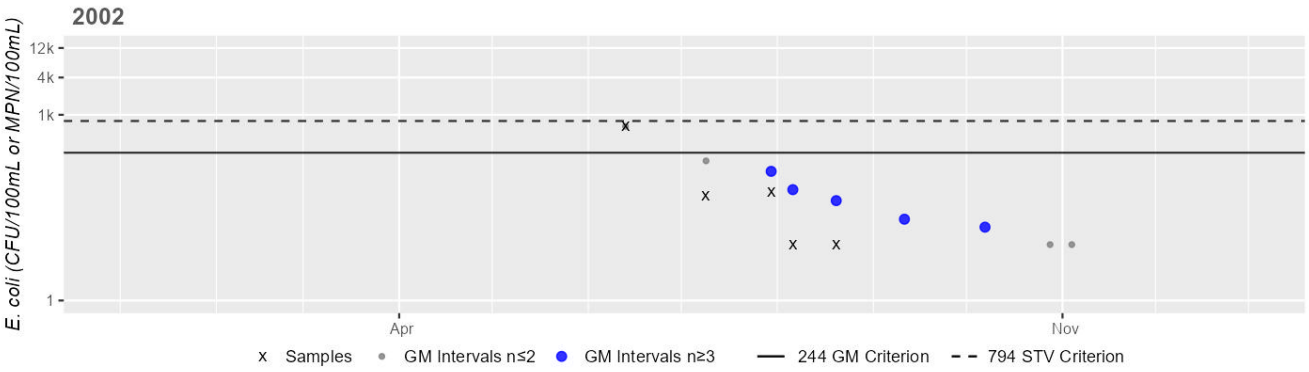
Variable*	Result
Samples	5
SeasGM	0
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
2%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL21 - Escherichia coli

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



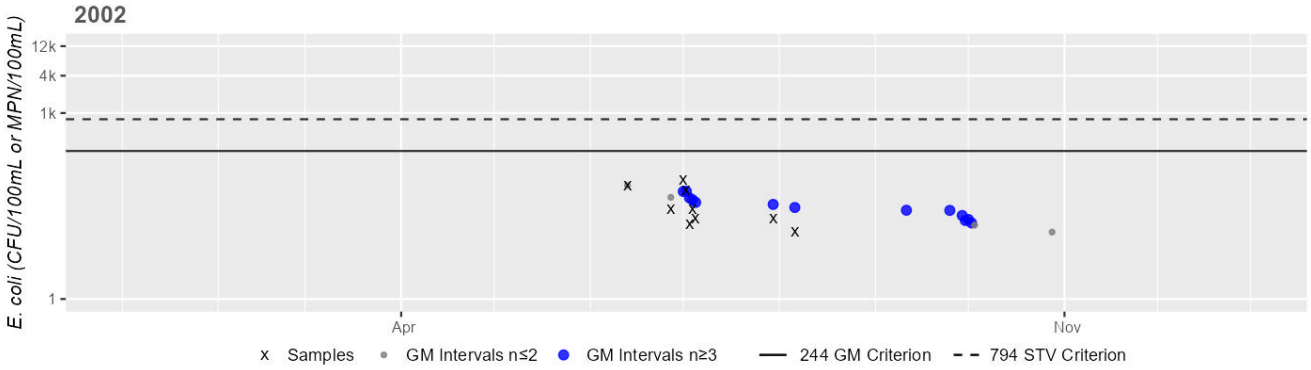
Variable*	Result
Samples	5
SeasGM	41
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL22 - Escherichia coli

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



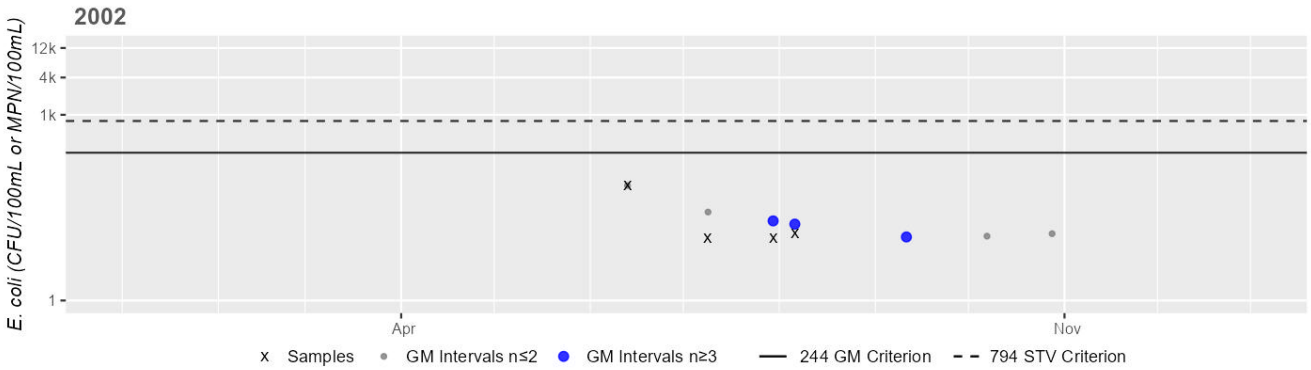
Variable*	Result
Samples	9
SeasGM	29
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL23 - Escherichia coli

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



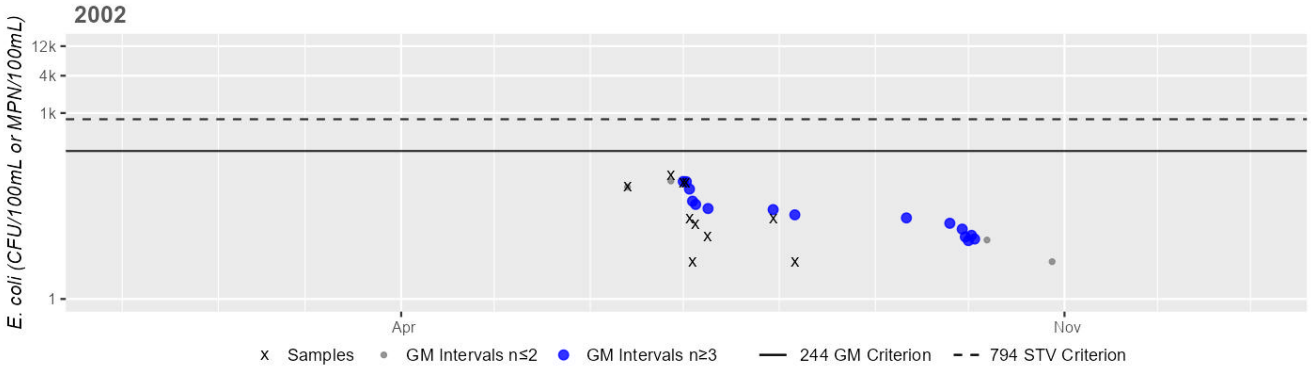
Variable*	Result
Samples	4
SeasGM	17
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL24 - Escherichia coli

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



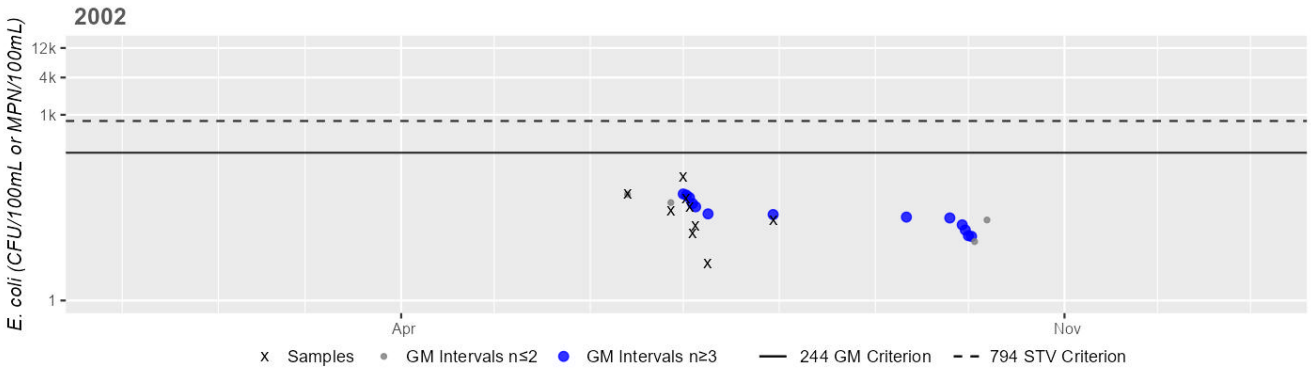
Variable*	Result
Samples	10
SeasGM	22
#GMI	15
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL25 - Escherichia coli

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



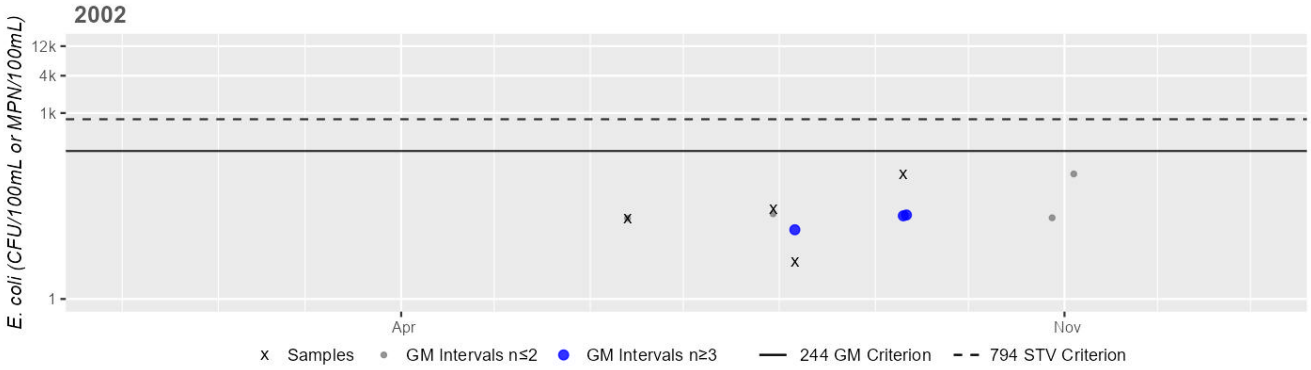
Variable*	Result
Samples	9
SeasGM	24
#GMI	13
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL26 - Escherichia coli

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



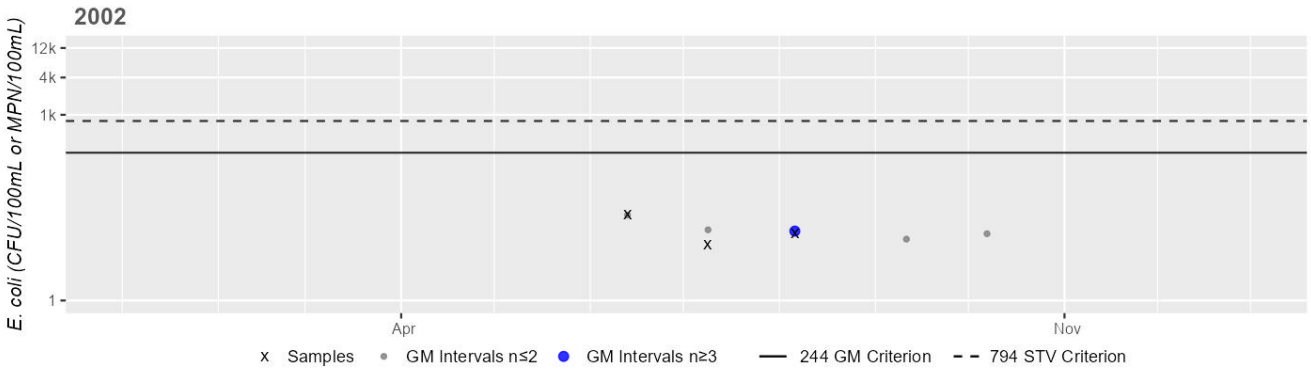
Variable*	Result
Samples	4
SeasGM	21
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 1111REG1-TMDL28 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	13
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

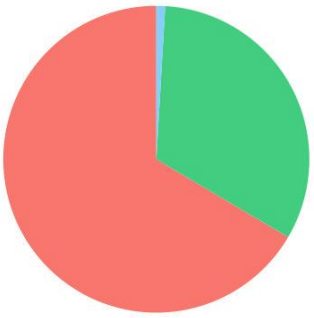
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Cheese Cake Brook (MA72-29)

Location:	Emerges south of Route 16, Newton to mouth at confluence with the Charles River, Newton.
AU Type:	RIVER
AU Size:	1.4 MILES
Classification/Qualifier:	B

Cheese Cake Brook (MA72-29)

Watershed Area: 2.96 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.96	2.96	0.33	0.33
Agriculture	0%	0%	0%	0%
Developed	66.5%	66.5%	68.7%	68.7%
Natural	32.6%	32.6%	29.2%	29.2%
Wetland	0.9%	0.9%	2.1%	2.1%
Impervious	41%	41%	31.8%	31.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Alteration in Stream-side or Littoral Vegetative Covers*)	--	Unchanged
5	5	(Other Anthropogenic substrate Alterations*)	--	Unchanged
5	5	Algae	40317	Unchanged
5	5	Dissolved Oxygen Supersaturation	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	32380	Unchanged
5	5	Fish Bioassessments	--	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Alteration in Stream-side or Littoral Vegetative Covers*)	Channelization (Y)	X	--	--	--	--
(Alteration in Stream-side or Littoral Vegetative Covers*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Other Anthropogenic substrate Alterations*)	Channelization (Y)	X	--	--	--	--
(Other Anthropogenic substrate Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
Algae	Source Unknown (N)	--	--	X	X	X
Algae	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Algae	Waterfowl (Y)	--	--	X	X	X
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Waterfowl (Y)	--	--	--	X	X
Fish Bioassessments	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	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 in Cheese Cake Brook (MA72-29), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Cheese Cake Brook (MA72-29) continues to be assessed as Not Supporting with the prior Algae impairment being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for Cheese Cake Brook.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Cheese Cake Brook (MA72-29) continues to be assessed as Not Supporting. The prior Escherichia coli (E. coli) impairment is being carried forward. Elevated data from Station CRWA_CHBR are reflective of the existing Escherichia coli (E. coli) impairment. The prior Algae impairment (from the Aesthetics Use) is also being carried forward. CRWA staff/volunteers collected *E. coli* bacteria samples in the middle of the Cheese Cake Brook AU (MA72-29) at CRWA_CHBR [Cheesecake Brook] in Oct 2022 (n=1). The available *E. coli* data from CRWA_CHBR are too limited to assess according to the 2024 CALM. However, note that the sample significantly exceeded the 410 CFU/100mL STV in 2022 (max = 6130 CFU/100mL) and the data are reflective of the prior impairment. The prior Escherichia Coli (E. Coli) impairment is being carried forward.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_CHBR	Charles River Watershed Association	Water Quality	Cheesecake Brook	Cheesecake Brook	42.356674	-71.215607

Bacteria Data

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

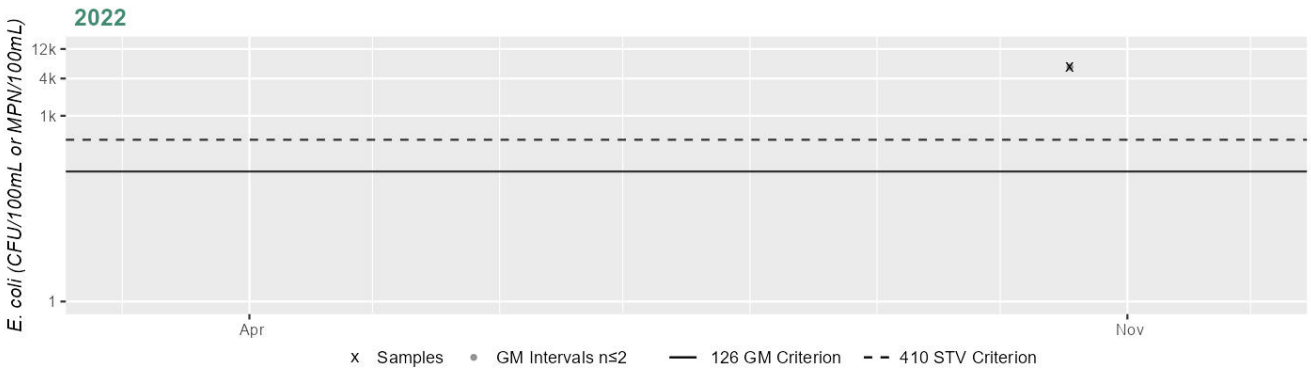
(CRWA 2023) (MassDEP Undated 2)

[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
CRWA_CHBR	Charles River Watershed Association	E. coli	10/18/22	10/18/22	1	6130	6130	6130

Station CRWA_CHBR - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	6130
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance

Current (2011-2022)

0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Cheese Cake Brook (MA72-29) continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward. An Escherichia Coli (E. Coli) impairment is being added based on a re-evaluation of historical bacteria data not meeting the threshold at W1160 and W0386.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in Cheese Cake Brook (MA72-29) from 1997-2022 at 6 stations. Samples were collected from the following stations/sample years from upstream to downstream: toward the upstream end of the AU at W0391 [upstream/W side at Eddy St, Newton] in Jan 1998 (n=1), W1160 [~160 ft upstream Rt. 16, Newton] from Jun-Sep 2002 (n=4), and W1162 [Rt. 16, Newton (downstream of storm drain pipe)] in Apr 2002 (n=1), in the middle of the AU at CRWA_CHBR [Cheesecake Brook] in Oct 2022 (n=1) and W0387 [upstream/S side at Crafts St, Newton] in Jan 1998 (n=1), and at the downstream end of the AU at W0386 [E of Albemarle Rd, below channelized walls, upstream of confluence with Charles River, Newton] from 1997-1998 and 2002 (n=2-6/yr). Note that only the data from W1160 and W0386 were of sufficient frequency to assess, according to the 2024 CALM
Analysis of the historic single year limited frequency *E. coli* dataset from W1160 indicated 100% of intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 399 CFU/100mL). Analysis of the historic multi-year limited frequency *E. coli* dataset from W0386 (note that only data from 1997 & 2002 were of sufficient frequency to assess) indicated that in both sufficient data years >20% of intervals had GMs >244 CFU/100mL (1997 & 2002, 50% & 66%), 1 year had ≥2 samples exceed the 794 CFU/100mL STV (1997, n=2), and cumulatively across years 57% of intervals had GMs >244 CFU/100mL. Historic *E. coli* data from W1160 and W0386 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_CHBR	Charles River Watershed Association	Water Quality	Cheesecake Brook	Cheesecake Brook	42.356674	-71.215607
W0386	MassDEP	Water Quality	Cheese Cake Brook	[east of Albemarle Road, below channelized walls, upstream of confluence with Charles River, Newton]	42.364288	-71.213818
W0387	MassDEP	Water Quality	Cheese Cake Brook	[upstream/south side at Crafts Street, Newton.]	42.359707	-71.216962
W0391	MassDEP	Water Quality	Cheese Cake Brook	[upstream/west side at Eddy Street, Newton.]	42.351836	-71.217053
W1160	MassDEP	Water Quality	Cheese Cake Brook	[approximately 160 feet upstream Route 16, Newton]	42.353613	-71.213842
W1162	MassDEP	Water Quality	Cheese Cake Brook	[Route 16, Newton (downstream of stormdrain pipe)]	42.354166	-71.213855

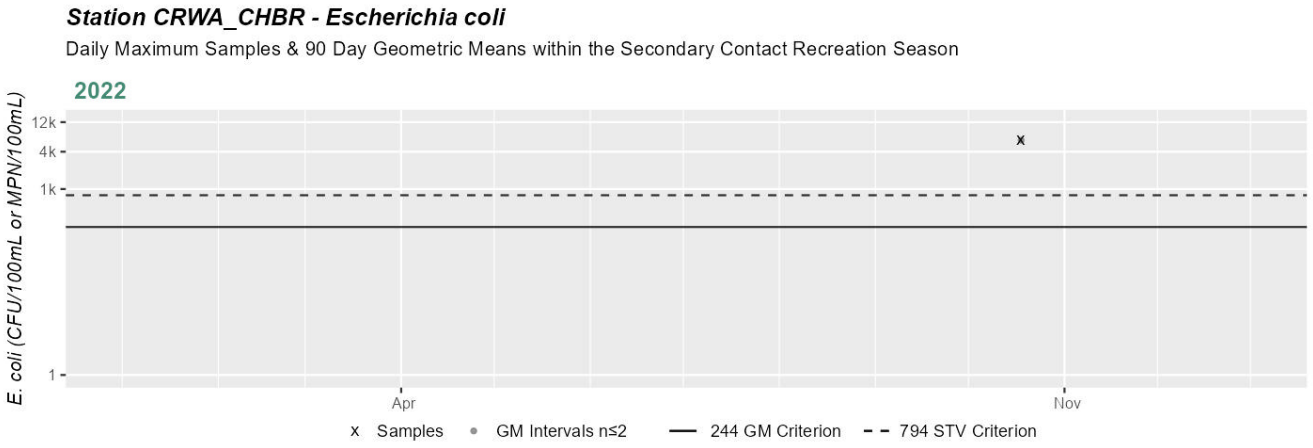
Bacteria Data

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

(CRWA 2023) (MassDEP Undated 1) (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
CRWA_CHBR	Charles River Watershed Association	E. coli	10/18/22	10/18/22	1	6130	6130	6130
W0386	MassDEP	E. coli	07/01/97	12/09/97	6	40	1760	301
W0386	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0386	MassDEP	E. coli	04/29/02	09/09/02	5	160	520	265
W0387	MassDEP	E. coli	01/28/98	01/28/98	1	200	200	199
W0391	MassDEP	E. coli	01/28/98	01/28/98	1	320	320	319
W1160	MassDEP	E. coli	06/03/02	09/09/02	4	160	720	399
W1162	MassDEP	E. coli	04/29/02	04/29/02	1	20	20	19



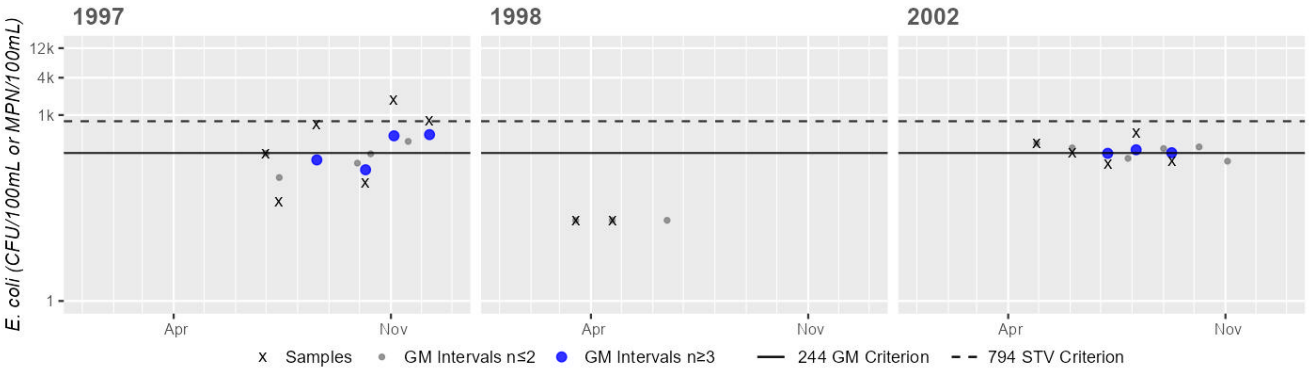
Variable*	Result
Samples	1
SeasGM	6130
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0386 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	301
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

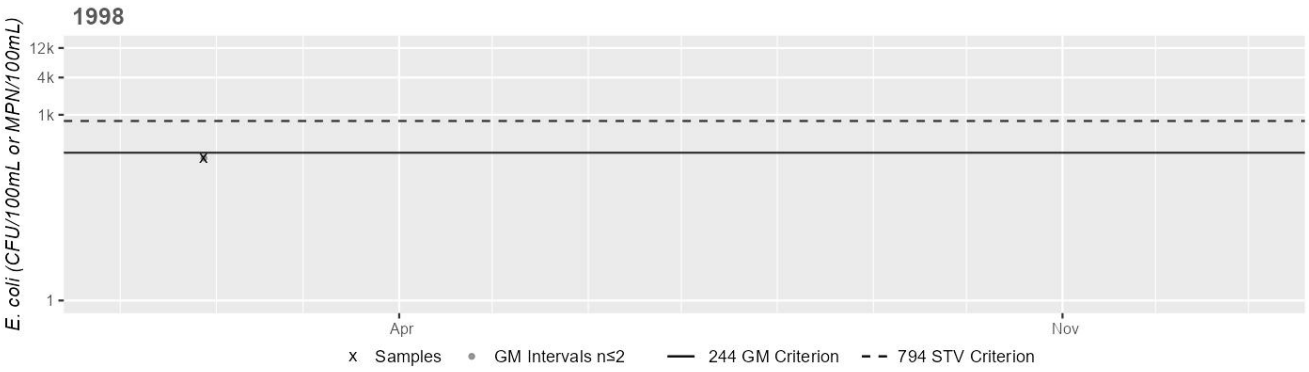
Variable*	Result
Samples	5
SeasGM	265
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
57%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0387 - Escherichia coli

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



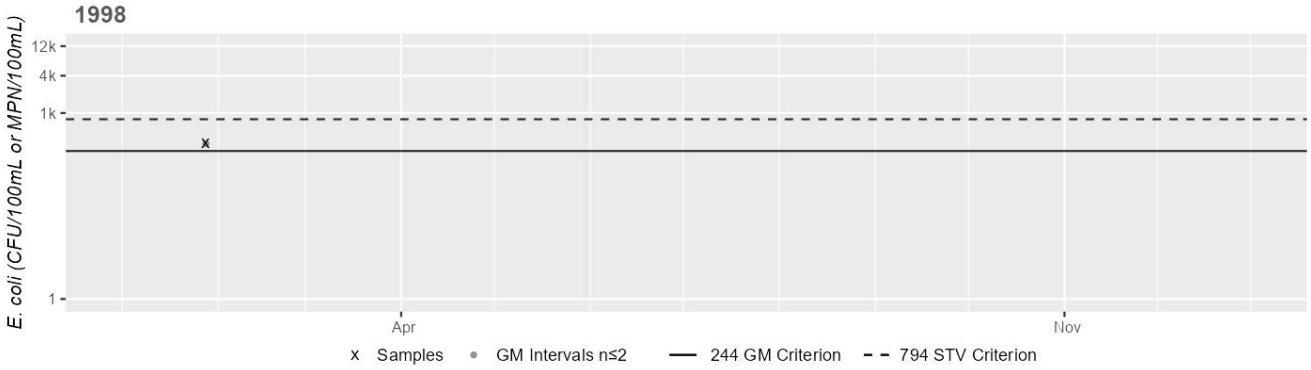
Variable*	Result
Samples	1
SeasGM	200
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0391 - Escherichia coli

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



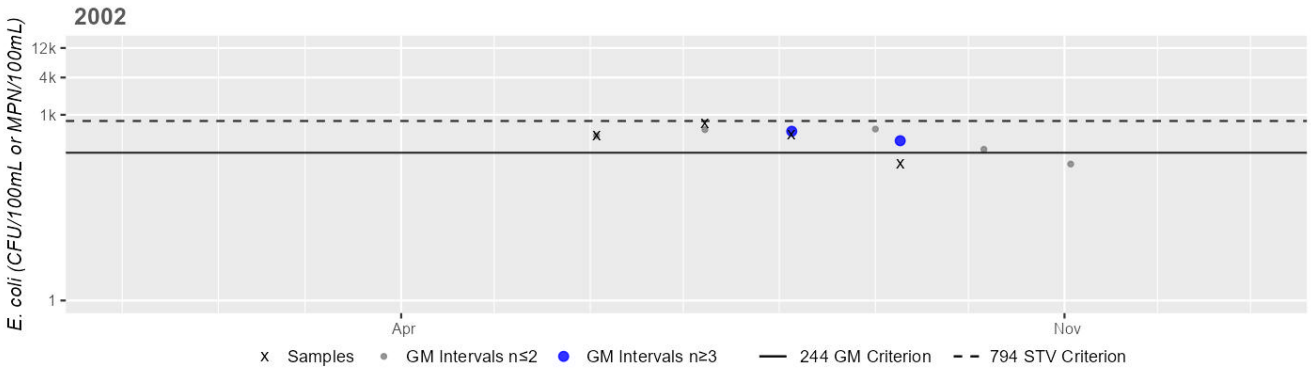
Variable*	Result
Samples	1
SeasGM	320
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1160 - Escherichia coli

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



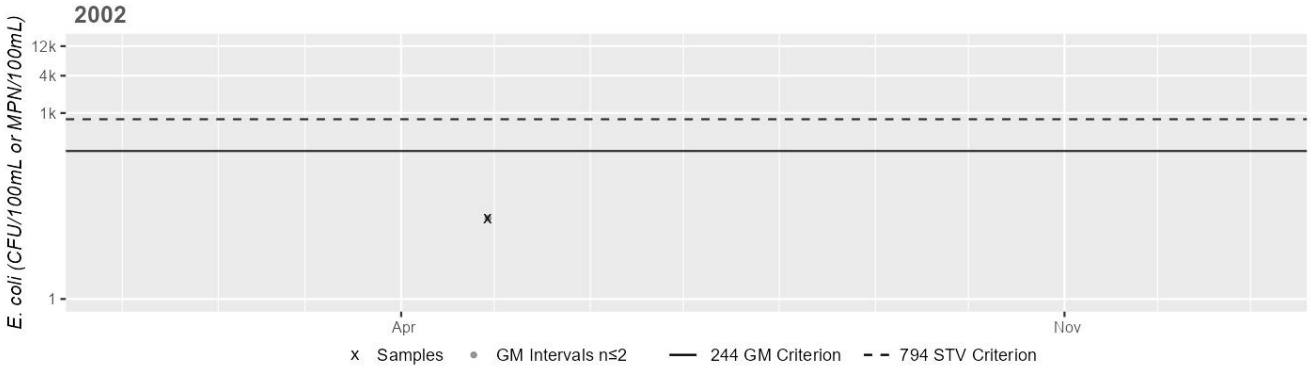
Variable*	Result
Samples	4
SeasGM	399
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1162 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	20
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Cherry Brook (MA72-53)

Location:	Headwaters south of Warren Avenue, Weston to mouth at confluence with Stony Brook, Weston.
AU Type:	RIVER
AU Size:	3.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Cherry Brook (MA72-53) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Chestnut Hill Reservoir (MA72023)

Location:	Boston.
AU Type:	FRESHWATER LAKE
AU Size:	82 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	5	Harmful Algal Blooms	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	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 in Chestnut Hill Reservoir (MA72023), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Chestnut Hill Reservoir (MA72023) is assessed as Not Supporting, with an impairment for Harmful Algal Blooms being added, since extended C-HAB postings were reported to MDPH in a recent year. During the period 2015 through 2022, C-HAB postings for Chestnut Hill Reservoir were reported to MDPH based on cell count data for 11 days in 2017 and 32 days in 2018. No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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 Chestnut Hill Reservoir (MA72023) were reported to MDPH based on cell count data for 11 days in 2017 and 32 days in 2018. No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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
Chestnut Hill Reservoir	Boston			11	32				

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Chestnut Hill Reservoir (MA72023) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since extended duration C-HAB postings (>20 days) were reported to MDPH in a recent year. During the period 2015 through 2022, C-HAB postings for Chestnut Hill Reservoir (MA72023) were reported to MDPH based on cell count data for 11 days in 2017 and 32 days in 2018. No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

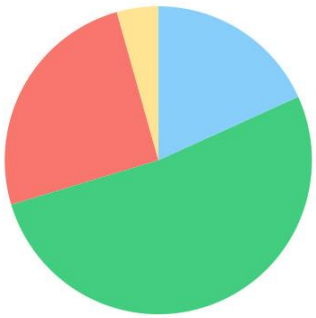
2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Chestnut Hill Reservoir (MA72023) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since extended duration C-HAB postings (>20 days) were reported to MDPH in a recent year. During the period 2015 through 2022, C-HAB postings for Chestnut Hill Reservoir (MA72023) were reported to MDPH based on cell count data for 11 days in 2017 and 32 days in 2018. No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment

Chicken Brook (MA72-34)

Location:	Source, outlet Waseeka Sanctuary Pond, Holliston to mouth at confluence with the Charles River, Medway.
AU Type:	RIVER
AU Size:	7.4 MILES
Classification/Qualifier:	B

Chicken Brook (MA72-34)

Watershed Area: 7.19 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.19	4.07	2.51	1.37
Agriculture	4.4%	4.4%	4.2%	5%
Developed	25.3%	27.4%	19.2%	19.9%
Natural	52.1%	48.2%	43.4%	40.4%
Wetland	18.2%	20%	33.2%	34.7%
Impervious	10.6%	12%	7%	7.9%

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)	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 in Chicken Brook (MA72-34), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
There are no aesthetics observations available to assess the status of the Aesthetics Use for Chicken Brook (MA72-34), so it is Not Assessed. The prior Alert identified for High Total Phosphorus concentrations based on data collected ~400 feet downstream of Winthrop Street in Medway (W1583) in 2007 is being removed from the Aesthetics Use (due to redundant duplication across multiple Uses); a discussion pertaining to the high phosphorus concentrations for this AU in 2007 is included in the Aquatic Life Use summary in the 2018/20 IR (MassDEP 2021).

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Chicken Brook (MA72-34) 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 CRWA_CB-U and CRWA_CB-D.
CRWA staff/volunteers collected *E. coli* bacteria samples in Chicken Brook (MA72-34) from 2019 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the upstream quarter of the AU at CRWA_CB-U [Prentice St, Holliston] from Apr-Oct 2019 (n=10) and in the downstream quarter of the AU at CRWA_CB-D [Main St, Medway] from Apr-Oct 2019 (n=9). Analysis of the single year moderate frequency *E. coli* dataset from CRWA_CB-U indicated 100% of intervals had GMs >126 CFU/100mL and 4 samples exceeded the 410 CFU/100mL STV. Analysis of the single year moderate frequency *E. coli* dataset from CRWA_CB-D indicated 90% of intervals had GMs >126 CFU/100mL and 3 samples exceeded the 410 CFU/100mL STV. *E. coli* data from CRWA_CB-U and CRWA_CB-D are reflective of the existing Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_CB-D	Charles River Watershed Association	Water Quality	Chicken Brook	Main Street, Medway	42.146826	-71.427631
CRWA_CB-U	Charles River Watershed Association	Water Quality	Chicken Brook	Prentice Street, Holliston	42.204753	-71.448594

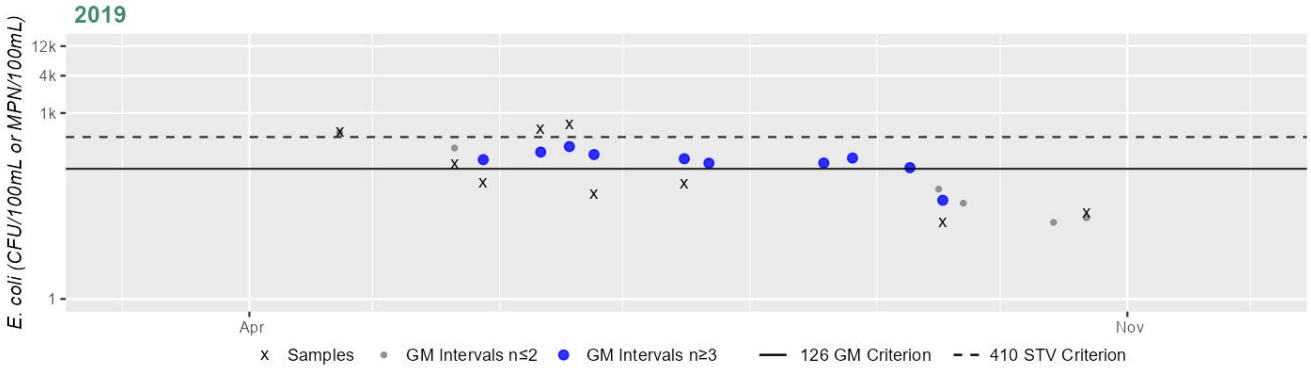
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_CB-D	Charles River Watershed Association	E. coli	04/23/19	10/22/19	9	17	648	112
CRWA_CB-U	Charles River Watershed Association	E. coli	04/23/19	10/22/19	10	95	5834	525

Station CRWA_CB-D - Escherichia coli

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



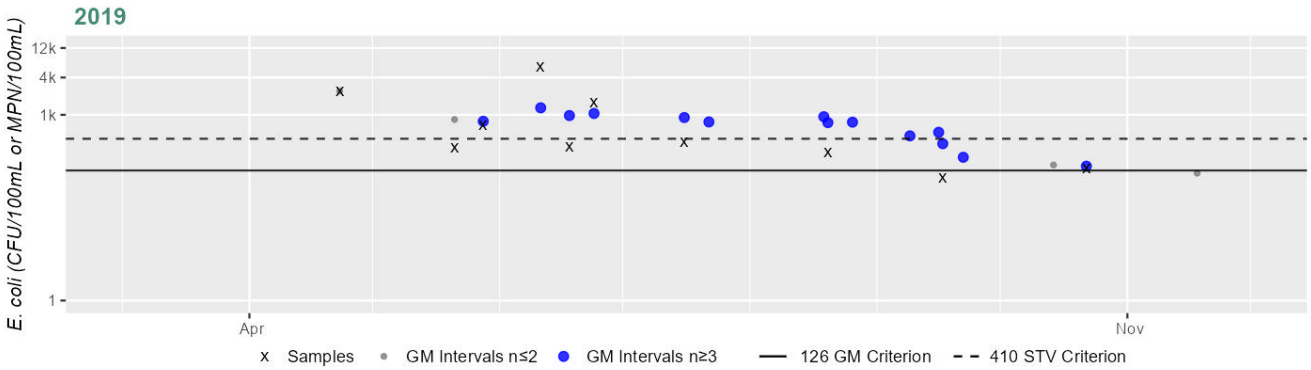
Variable*	Result
Samples	9
SeasGM	112
#GMI	10
#GMI Ex	9
%GMI Ex	90%
n>STV	3
%n>STV	33%

Cumulative %GMI Exceedance
Current (2011-2022)
90%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_CB-U & MASSDEP_W1158 - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	525
#GMI	14
#GMI Ex	14
%GMI Ex	100%
n>STV	4
%n>STV	40%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Chicken Brook (MA72-34) 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 CRWA_CB-U in 2019. Since the prior Alert for high total phosphorus was removed from the Aesthetics Use, it is also being removed from the Secondary Contact Recreation Use.

CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in Chicken Brook (MA72-34) at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the upstream quarter of the AU at CRWA_CB-U [Prentice St, Holliston] from Apr-Nov 2019 (current n=11) and in the downstream quarter of the AU at CRWA_CB-D [Main St, Medway] from Apr-Nov 2019 (n=10). Analysis of the single year moderate frequency *E. coli* dataset from CRWA_CB-U indicated 80% of intervals had GMs >244 CFU/100mL and 3 samples exceeded the 794 CFU/100mL STV. Analysis of the single year moderate frequency *E. coli* dataset from CRWA_CB-D indicated 9% of intervals had GMs >244 CFU/100mL and 1 sample exceeded the 794 CFU/100mL STV. While *E. coli* data from the downstream station CRWA_CB-D meet 2024 CALM guidance, *E. coli* data from the upstream station CRWA_CB-U are indicative of an Escherichia Coli (E. Coli) impairment.

MassDEP staff also collected *E. coli* bacteria samples in the historic IR window (1997-2010) in Chicken Brook (MA72-34) from 2002-2010 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: near the upstream CRWA station at W1158 [Prentice St, Holliston] in Apr 2002 (historic n=1), in the middle of the AU at W1159 [Washington St, Holliston] from Jun-Sep 2002 (n=4), and a bit upstream of the downstream CRWA station at W1583 [~400 ft downstream of Winthrop St, Medway] from May-Oct 2007 (n=5) and W2152 [~970 ft downstream of Winthrop St, Medway] from May-Sep 2010 (n=6). The data from all these historical stations either were of insufficient frequency to evaluate (W1158) or met 2024 CALM guidance (W1159, W1583, W2152).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_CB-D	Charles River Watershed Association	Water Quality	Chicken Brook	Main Street, Medway	42.146826	-71.427631
CRWA_CB-U	Charles River Watershed Association	Water Quality	Chicken Brook	Prentice Street, Holliston	42.204753	-71.448594

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1158	MassDEP	Water Quality	Chicken Brook	[Prentice Street, Holliston]	42.204831	-71.448646
W1159	MassDEP	Water Quality	Chicken Brook	[Washington Street, Holliston]	42.189246	-71.439559
W1583	MassDEP	Water Quality	Chicken Brook	[approximately 400 feet downstream of Winthrop Street, Medway]	42.151404	-71.427140
W2152	MassDEP	Water Quality	Chicken Brook	[approximately 970 feet downstream of Winthrop Street, Medway]	42.150629	-71.428909

Bacteria Data

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

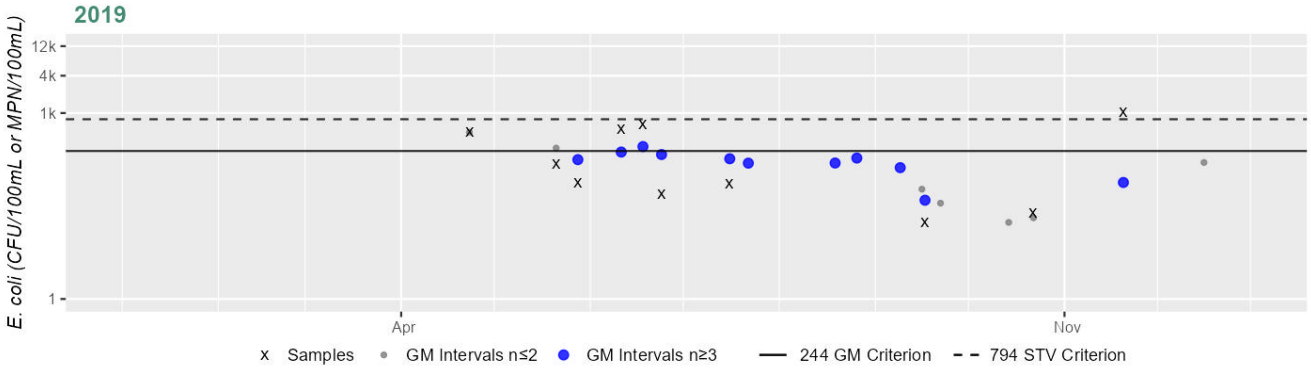
(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

[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
CRWA_CB-D	Charles River Watershed Association	E. coli	04/23/19	11/20/19	10	17	1046	140
CRWA_CB-U	Charles River Watershed Association	E. coli	04/23/19	11/20/19	11	95	5834	481
W1158	MassDEP	E. coli	04/29/02	04/29/02	1	20	20	19
W1159	MassDEP	E. coli	06/03/02	09/09/02	4	60	290	123
W1583	MassDEP	E. coli	05/15/07	10/02/07	5	33	360	105
W2152	MassDEP	E. coli	05/04/10	09/13/10	6	30	730	199

Station CRWA_CB-D - Escherichia coli

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



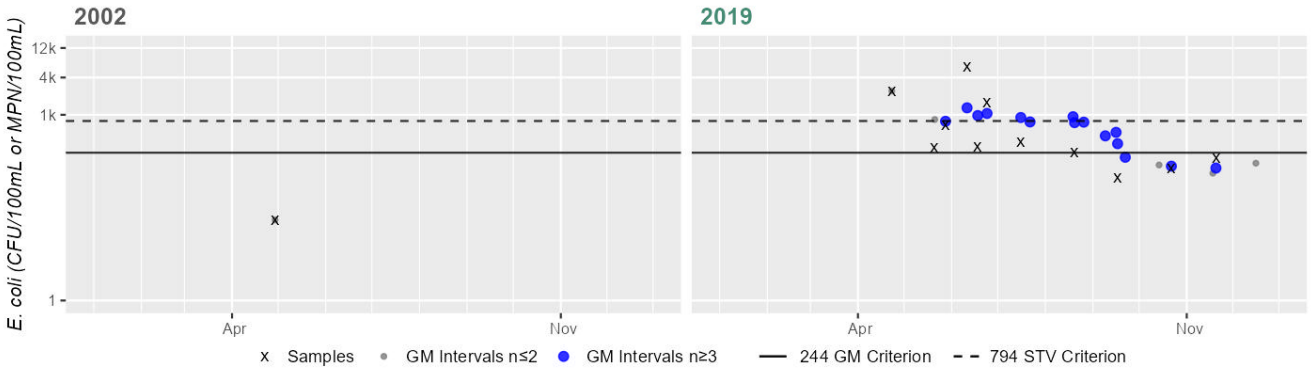
Variable*	Result
Samples	10
SeasGM	140
#GMI	11
#GMI Ex	1
%GMI Ex	9%
n>STV	1
%n>STV	10%

Cumulative %GMI Exceedance
Current (2011-2022)
9%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_CB-U & MASSDEP_W1158 - Escherichia coli

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



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

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

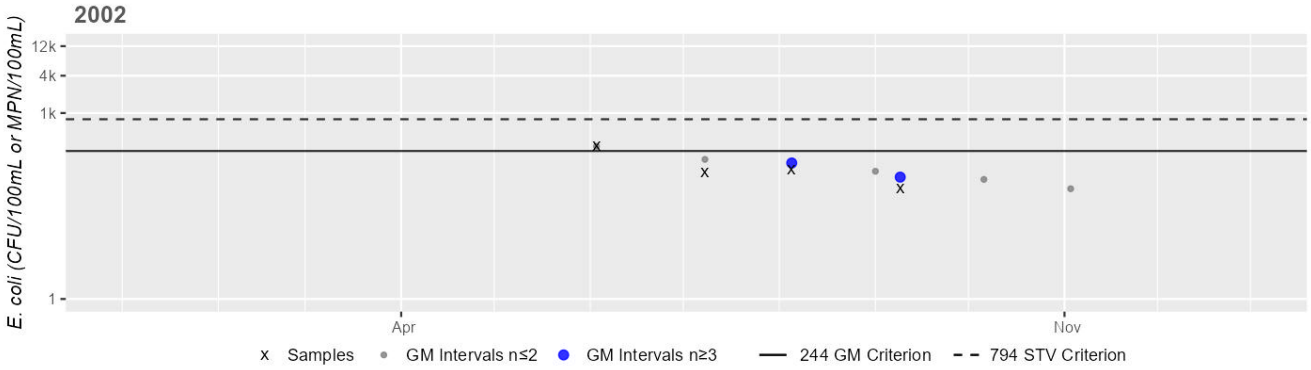
Variable*	Result
Samples	11
SeasGM	481
#GMI	15
#GMI Ex	12
%GMI Ex	80%
n>STV	3
%n>STV	27%

Cumulative %GMI Exceedance
Current (2011-2022)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1159 - Escherichia coli

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



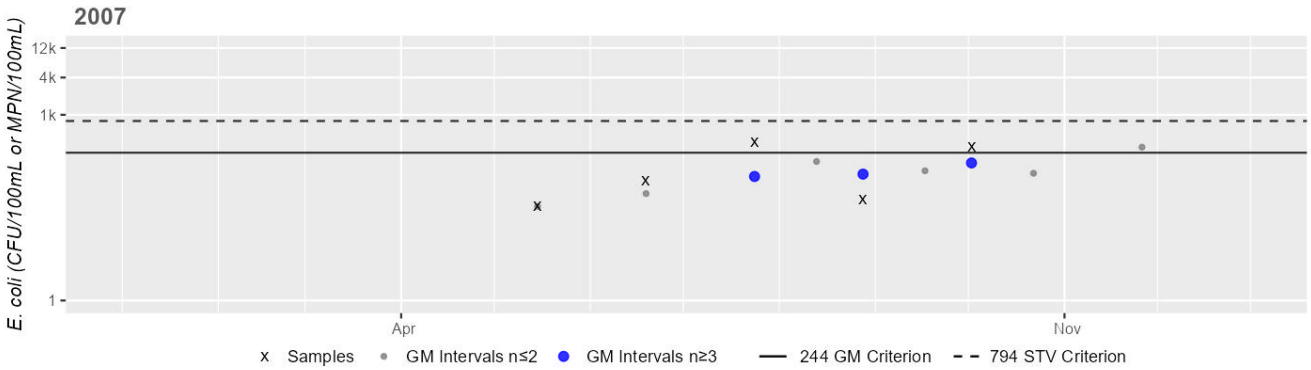
Variable*	Result
Samples	4
SeasGM	123
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1583 - Escherichia coli

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



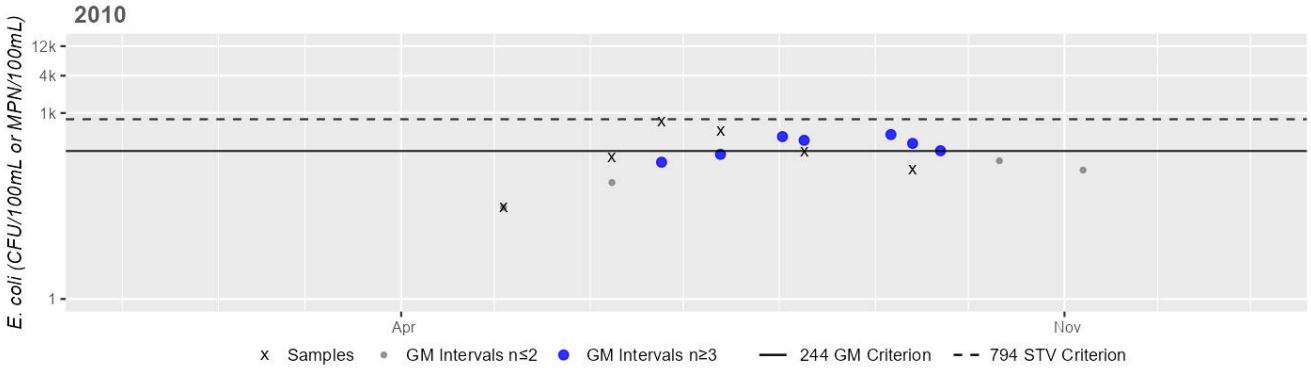
Variable*	Result
Samples	5
SeasGM	105
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W2152 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	199
#GMI	7
#GMI Ex	5
%GMI Ex	71%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Historic (1997-2010)
71%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Crystal Lake (MA72030)

Location:	Newton.
AU Type:	FRESHWATER LAKE
AU Size:	27 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Harmful Algal Blooms	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Harmful Algal Blooms	Source Unknown (N)	X	--	X	X	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 in Crystal Lake (MA72030), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Crystal Lake (MA72030) continues to be assessed as Not Supporting with the prior Harmful Algal Blooms impairment being carried forward. During the period 2015 through 2022, C-HAB postings for Crystal Lake were reported to MDPH based on visual observations for 16 days in 2019. 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 Crystal Lake.

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 Crystal Lake (MA72030) were reported to MDPH based on visual observations for 16 days in 2019. 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
Crystal Lake	Newton					16			

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Crystal Lake (MA72030) continues to be assessed as Not Supporting with the prior Harmful Algal Blooms impairment being carried forward. During the period 2015 through 2022, C-HAB postings for Crystal Lake (MA72030) were reported to MDPH based on visual observations for 16 days in 2019. 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 Crystal Lake.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Crystal Lake (MA72030) continues to be assessed as Not Supporting with the prior Harmful Algal Blooms impairment being carried forward. During the period 2015 through 2022, C-HAB postings for Crystal Lake (MA72030) were reported to MDPH based on visual observations for 16 days in 2019. 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 Crystal Lake

Dix Brook (MA72-56)

Location:	Headwaters outlet unnamed pond southeast of Woodward Swamp, Franklin to mouth at confluence with Mine Brook, Franklin.
AU Type:	RIVER
AU Size:	2.1 MILES
Classification/Qualifier:	B

No usable data were available for Dix Brook (MA72-56) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

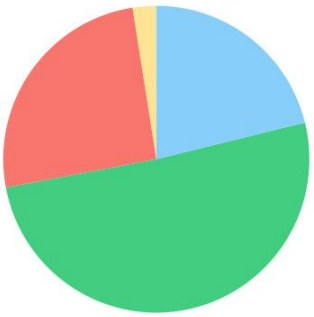
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	3	None	--	Unchanged

Dopping Brook (MA72-40)

Location:	Headwater outlet small unnamed pond on Holliston/Sherborn border to mouth at confluence with Bogastow Brook, Holliston/Sherborn.
AU Type:	RIVER
AU Size:	2.6 MILES
Classification/Qualifier:	B

Dopping Brook (MA72-40)

Watershed Area: 2.06 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.06	2.06	0.65	0.65
Agriculture	2.5%	2.5%	1.3%	1.3%
Developed	25.5%	25.5%	15.6%	15.6%
Natural	50.9%	50.9%	43.7%	43.7%
Wetland	21.2%	21.2%	39.4%	39.4%
Impervious	9.4%	9.4%	7.5%	7.5%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	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 in Dopping Brook (MA72-40), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
There are no data available to assess the status of the Aesthetics Use for Dopping Brook (MA72-40), so it is Not Assessed. Since the prior Total Phosphorus Alert was redundantly duplicated across multiple uses for this waterbody, the Total Phosphorus Alert is being removed from the Aesthetics Use but will continue to be maintained under the Aquatic Life Use.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Dopping Brook (MA72-40) are available, so the Primary Contact Recreation Use is Not Assessed. Since the prior Total Phosphorus Alert was removed from the Aesthetics Use, it is being removed from the recreational uses as well.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Dopping Brook (MA72-40) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. Since the prior Total Phosphorus Alert was removed from the Aesthetics Use, it is being removed from the recreational uses as well. MassDEP staff collected historical *E. coli* bacteria samples at 2 stations in Dopping Brook (MA72-40) in 2007. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W1589 [Brook St, Holliston/Sherborn] from May-Aug 2007 (n=4) and downstream at W0416 [Whitney St, Holliston] from May-Aug 2007 (n=4). Analysis of the historic single year limited frequency *E. coli* dataset from W1589 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 30 CFU/100mL). Analysis of the historic single year limited frequency *E. coli* dataset from W0416 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 110 CFU/100mL). Historic *E. coli* data from W1589 and W0416 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 Dopping Brook (MA72-40).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0416	MassDEP	Water Quality	Dopping Brook	[Whitney Street, Holliston]	42.215540	-71.407659
W1589	MassDEP	Water Quality	Dopping Brook	[Brook Street, Holliston/Sherborn]	42.222372	-71.409274

Bacteria Data

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

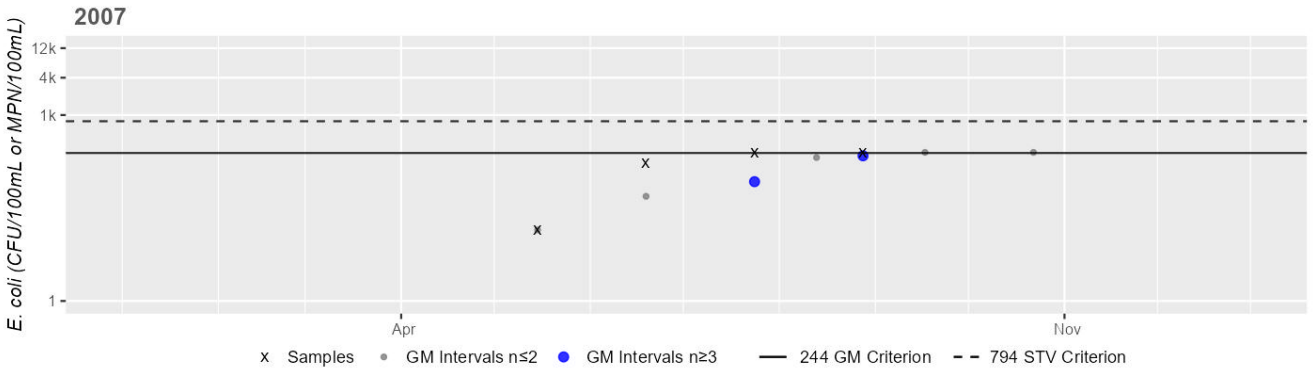
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0416	MassDEP	E. coli	05/15/07	08/28/07	4	14	250	110
W1589	MassDEP	E. coli	05/15/07	08/28/07	4	5	220	30

Station MASSDEP_W0416 - Escherichia coli

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



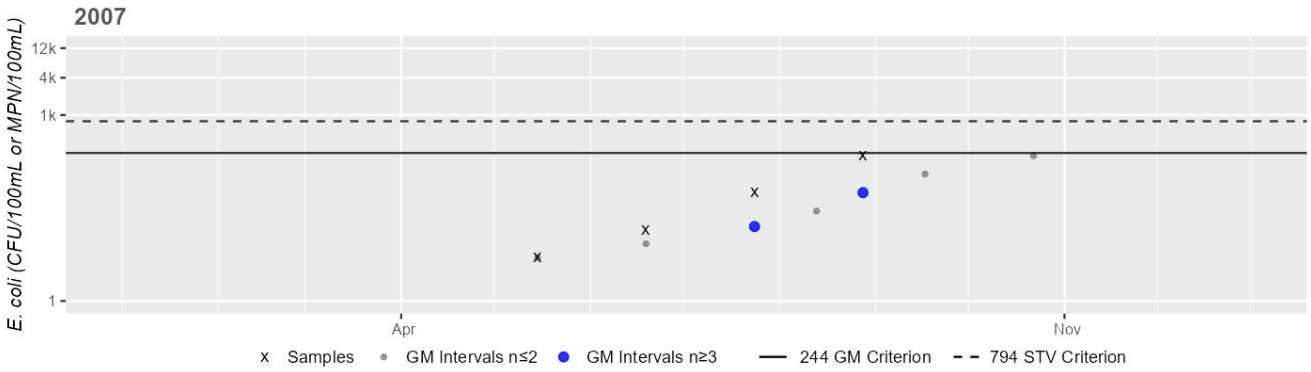
Variable*	Result
Samples	4
SeasGM	110
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1589 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	30
#GMI	2
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Dug Pond (MA72034)

Location:	Natick.
AU Type:	FRESHWATER LAKE
AU Size:	50 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

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 Dug Pond (MA72034). Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Dug Pond (MA72034) at station F0496 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). However, no site-specific fish consumption advisory was issued by MA DPH.

Fish Consumption Advisories

Summary of Fish Toxics Sampling and Resulting Fish Consumption Advisories (MassDEP Undated 5)

Summary Statement
Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Dug Pond (MA72034) at station F0496 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). No site-specific fish consumption advisory was issued by MA DPH.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Dug Pond (MA72034) 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 Dug Pond (MA72034) 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 Dug Pond (MA72034) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Echo Lake (MA72035)

Location:	Milford/Hopkinton.
AU Type:	FRESHWATER LAKE
AU Size:	72 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

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

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	--	--	--

Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary

The Fish Consumption Use for Echo Lake (MA72035) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue impairment is being carried forward. MA DPH included a site-specific advisory for Echo 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 aesthetics observation data are available, so the Aesthetics Use for Echo Lake (MA72035) 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 Echo Lake (MA72035) 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 Echo Lake (MA72035) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Factory Pond (MA72037)

Location:	Holliston.
AU Type:	FRESHWATER LAKE
AU Size:	10 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	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, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Factory Pond (MA72037) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Factory Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that the entire pond was 100% covered with submerged and small floating aquatic plant species, including the non-rooted species, *Lemna minor*, *Wolffia* sp., *Ceratophyllum demersum*, and *Utricularia vulgaris* (MassDEP 1997, MassDEP 2002). In Google Earth images from September 2014, June 2015, and June 2019 more than half the pond's surface has dense plant coverage (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. 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.

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):

WBID: 6W [illegible] MA 72037
NAME: Factory Pond ✓ WATERSHED: Charles
CODE: 72037 TYPE: Lake/Pond
SIZE: 10.0 acres

✓ RSM (Printed 08/01/96)

CLASS: B/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name:
Ecoregion Name:
Description: Factory Pond, Holliston

Assessment Date: 9810
Cycle: 9699
Begin Sampling: 9707
End Sampling: 9707
Water Quality Limited?: YES or NO
303(d) List?: YES or NO

Lake Specific Information

Significantly Publicly Owned:
Trophic Status:
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						
ALUS				10.0		
FISH CONSUMP?			10.0			
PRIMARY CONT					10.0	
SECONDARY CO				10.0		
Aesthetics				10.0		
ALUS Bio				10.0		
ALUS Chem/Phy						
ALUS Toxicity						

ADDED Source Code

Nonattainment Causes

Code	Size	Magnitude
1996?		
2200	10.0	M
2600	10.0	M

Nonattainment Sources

Code	Size	Magnitude
1996?		
9000	10.0	H

7/10/20 RSM

Assessment Type

1996? Assessment Category = > (M) E NA

B25, R35

Media/Pollutants Assessed

1996? Toxics Monitoring = > YES or (NO)

Comments:

1999: 11 July 1997 synoptic survey indicated very dense submergent and floating vegetation, including the non-native species Myriophyllum heterophyllum, cover the entire pond.

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: FACTORY POND SIZE (acres): 10 PALIS NO. 72037*

TOWN/CITY: HOLLISTON USGS TOPO. SHEET: MEDFIELD 7.5X15'

DATE: 7-1-97 WATERSHED: CHARLES OBSERVERS: R. HAYNES

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) AT OUTLET, WHICH ABUTS WOODLAND STREET

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 ☑☐☐ Abuts Public Road

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) ☐ LAKE OBSERVED

☐ _____

☐ _____

WATER/LAKE QUALITY OBSERVATIONS --

Turbidity: ☐☐☐ Slight ☐☐☐ Moderate ☑☐☐ Excessive

Diss. Organics: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☑☐☐ < 1.2 m. (4 ft.) ☐☐☐ > 1.2 m. (4 ft.)

☑☐☐ Estimated visually

☐☐☐ Measured w/ Secchi Disk ☐ _____ meters

☐ _____ meters

☐ _____ meters

Bottom Type: ☐☐☐ Undecomposed matter ☐☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

☐☐☐ Vegetation Other ☐ _____ ☐ _____ ☐ _____

Other Observations: ☐ Cannot estimate or observe bottom types

☐ _____

☐ _____

AESTHETICALLY OBJECTIONABLE -- Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe: _____

☐☐☐ Produce objectionable odor, color, taste, or turbidity

Describe: _____

☑☐☐ Float as debris, scum or other matter to form a nuisance

Describe: floating algal mats of water meal + duckweed

☑☐☐ Produce undesirable nuisance species of aquatic life

Describe: Milfoil, some near outlet

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

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) Very likely M. heterophy.

☐☐☐ *Najas minor* ☐☐☐ *Nelumbo lutea* ☐☐☐ *Nymphoides peltata* ☐☐☐ *Potamogeton crispus* ☐☐☐ *Trapa natans*

NATIVE SPECIES POPULATIONS:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☑☐☐ Typha latifolia	☑☐☐ Lemna minor	☑☐☐ Potamogeton (?) heter.
☑☐☐ Iris	☑☐☐ Wolffia	☑☐☐ P. robbinsii
☑☐☐ Sparganium	☑☐☐ Nymphaea	☐☐☐
☑☐☐ Pontederia cordata	☐☐☐	☑☐☐ Elodea canadensis
☐☐☐ Peltandra virginica	☐☐☐	☑☐☐ Ceratophyllum demersum
☐☐☐	☐☐☐	☑☐☐ Utricularia vulgaris
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY –

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ ____ ☐ ____ ☐ ____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ ____ ☐ ____ ☐ ____

Percent of entire lake surface covered with dense or very dense aquatic plants 100 % Forms Submerged + Small floating

Describe locations of dense and/or very dense plant beds Entire Pond,

Loss of open water habitat over entire lake (estimated): ☐ 90 - 100 % ☐ 60 - 85 % ☐ 30 - 55 % ☑ ≤ 25 % ? ppm

ASSESSMENTS –

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

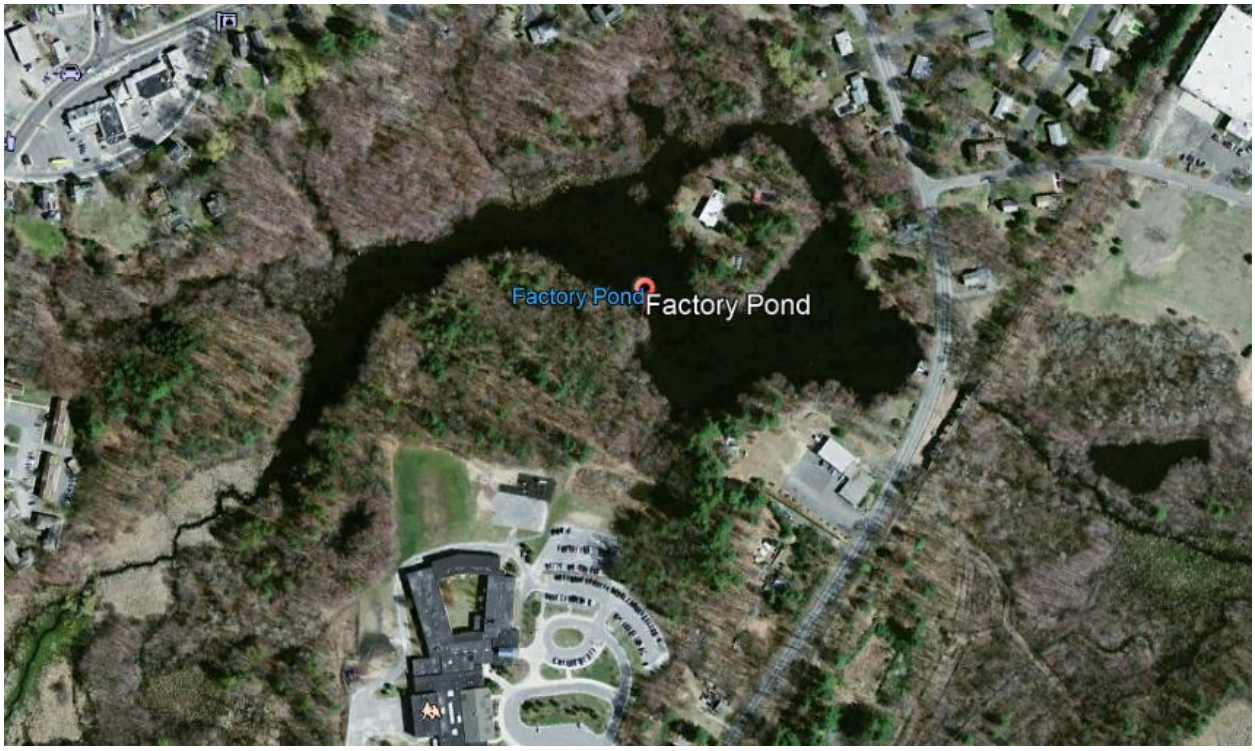
305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed
Aquatic Life			10.0		
Fish Consumption					10.0
Primary Contact				10.0	
Secondary Contact				10.0	
Aesthetics				10.0	

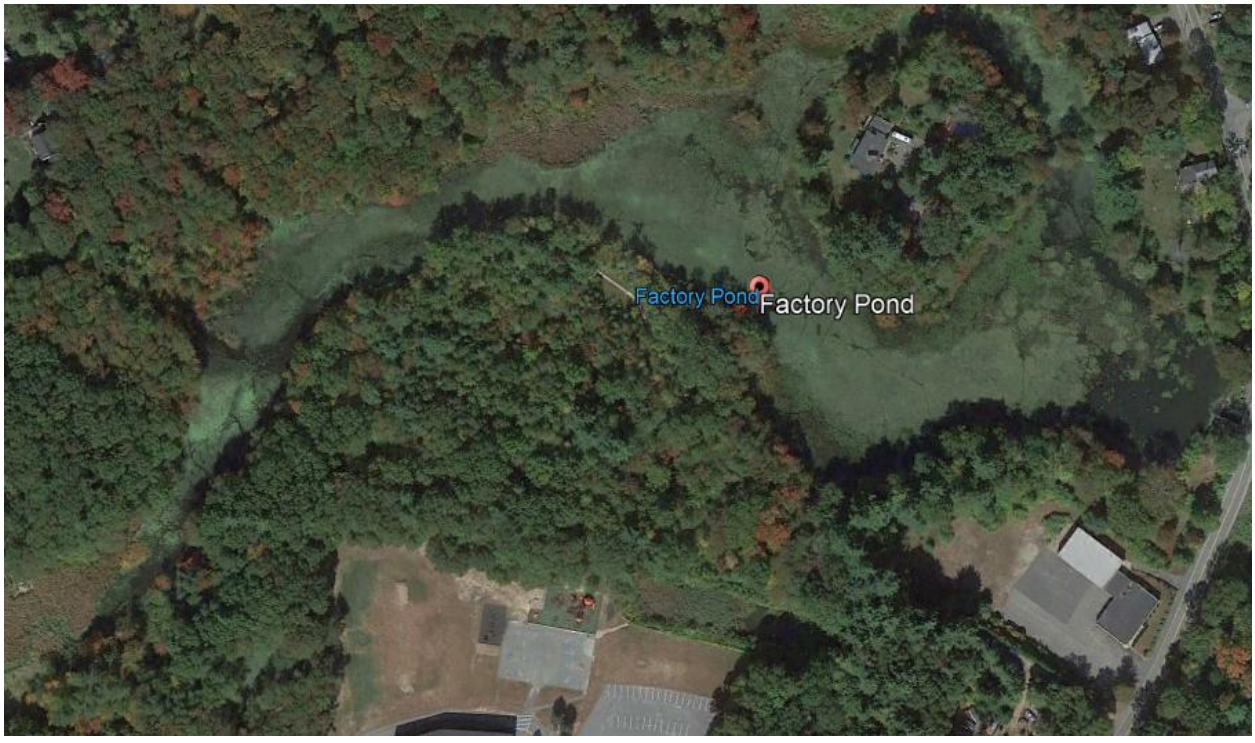
CAUSES: ☒ Noxious plants (2200) – Size 10 acres / Magnitude M ☒ Exotic plants (2600) – Size 10 acres / Magnitude M
☐ Turbidity (2500) – Size ____ acres / Magnitude ____ ☐ Flow alteration (1500) – Size ____ acres / Magnitude ____
☐ Metals (0500) ☐ Hg (0501) – Size ____ acres / Magnitude ____ ☐ Siltation (1100) – Size ____ acres / Magnitude ____
☐ ____ ( ) – Size ____ acres / Magnitude ____ ☐ ____ ( ) – Size ____ acres / Magnitude ____

SOURCES: Describe any obvious sources of impairment ____

Google Earth image of Factory Pond surface, 4/9/2008 (Google Earth Pro Undated):



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



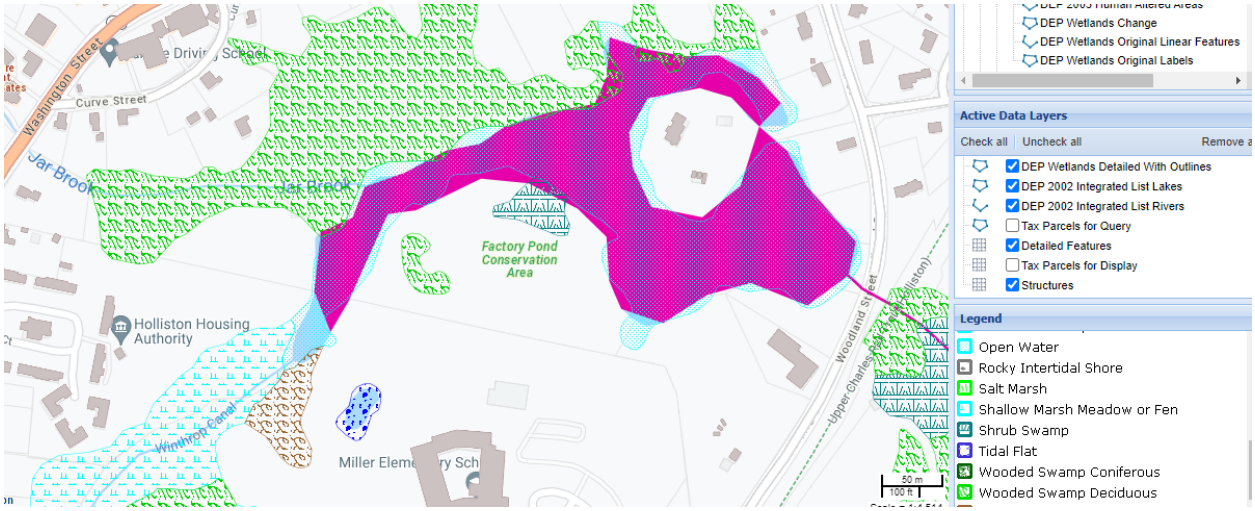
Google Earth image of Factory Pond, 6/6/2015 (Google Earth Pro Undated):



Google Earth image of Factory Pond, 6/22/2019 (Google Earth Pro Undated):



Detailed Wetlands data layer depicting most of Factory Pond as open water habitat (MassGIS 2019):



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 in Factory Pond (MA72037), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Factory Pond (MA72037) continues to be assessed as Not Supporting. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added. As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Factory Pond (MA72037) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Factory Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that the entire pond was 100% covered with submerged and small floating aquatic plant species, including the non-rooted species, *Lemna minor*, *Wolffia* sp., *Ceratophyllum demersum*, and *Utricularia vulgaris* (MassDEP 1997, MassDEP 2002). In Google Earth images from September 2014, June 2015, and June 2019 more than half the pond's surface has dense plant coverage (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. 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. No new aesthetics observation data are available to evaluate the Aesthetics Use for Factory Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Factory Pond (MA72037) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both 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 Factory Pond (MA72037) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both from the Aesthetics Use).

Farm Pond (MA72039)

Location:	Sherborn.
AU Type:	FRESHWATER LAKE
AU Size:	125 ACRES
Classification/Qualifier:	B

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

Recommendations

2024/26 Recommendations
2024/2026 IR [Harmful Algal Blooms, high priority] Follow-up monitoring should be conducted in Farm Pond (MA72039) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses (note that C-HAB postings for Farm Pond were reported to MDPH based on visual observations for 46 days in 2022). Monitoring should include collection of cyanobacteria cell count data and observational data as well as continued reporting of algal blooms to MDPH. {Farm Pond (MA72039)}

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 in Farm Pond (MA72039), so the Fish Consumption Use is Not Assessed.

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 Farm Pond (MA72039), 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 2022. During the period 2015 through 2022, C-HAB postings for Farm Pond were reported to MDPH based on visual observations for 46 days in 2022 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 Farm Pond (MA72039) were reported to MDPH based on visual observations for 46 days in 2022. 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
Farm Pond	Sherborn								46

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 Farm Pond (MA72039) 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 Farm Pond (MA72039) were reported to MDPH based on visual observations for 46 days in 2022. 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.

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 Farm Pond (MA72039) 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 Farm Pond (MA72039) were reported to MDPH based on visual observations for 46 days in 2022. 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.

Franklin Reservoir Northeast (MA72095)

Location:	Franklin.
AU Type:	FRESHWATER LAKE
AU Size:	21 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
4a	4a	(Water Chestnut*)	--	Unchanged
4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	X

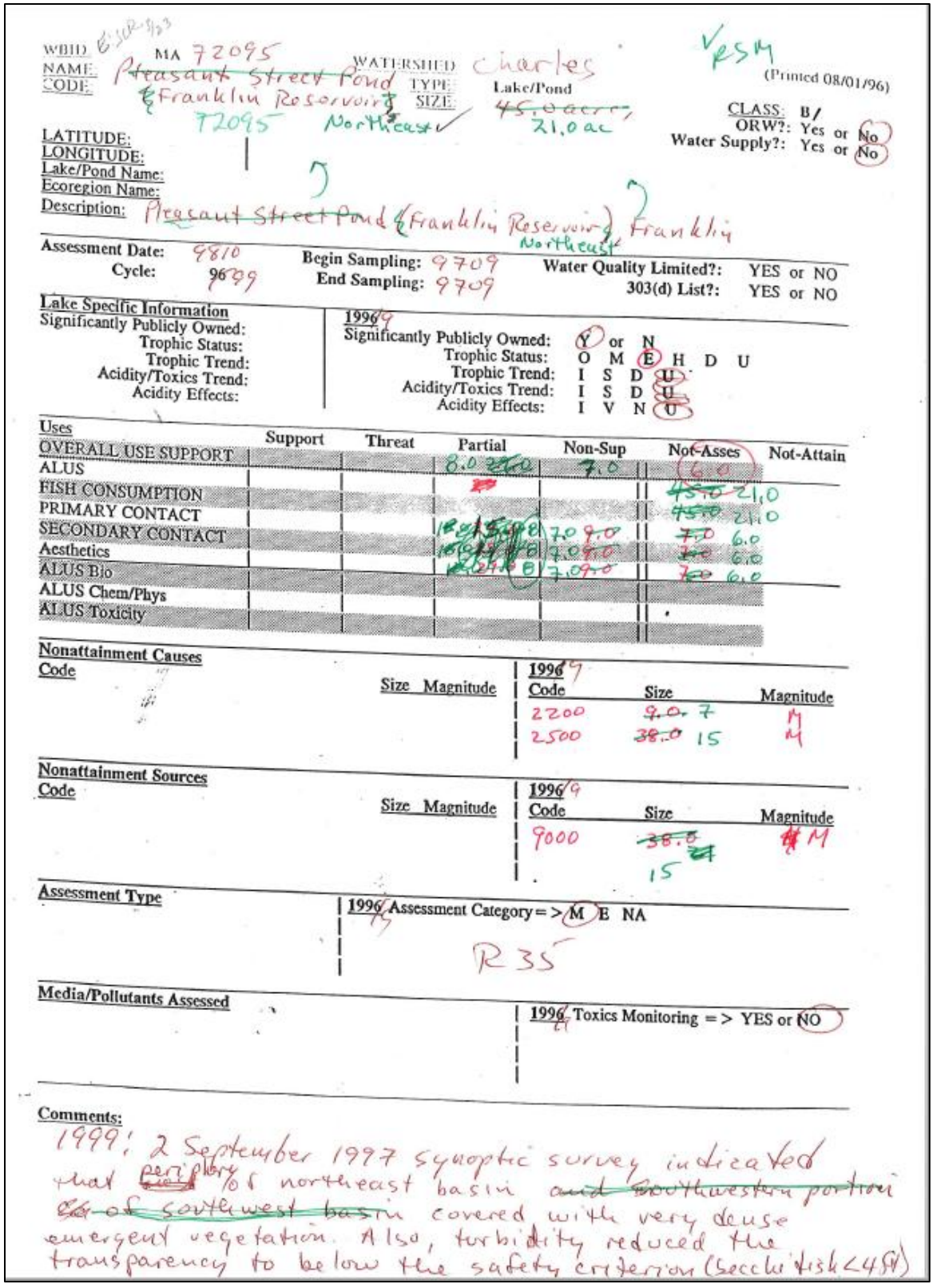
Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Aquatic Plants (Macrophytes)	Not caused by a pollutant (4c)	As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Franklin Reservoir Northeast (MA72095) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Franklin Reservoir Northeast was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a September 1997 synoptic survey conducted by MassDEP staff in which it was noted that "*L. salicaria* [is] the most abundant plant; it "rings" most of this basin." Note that *L. salicaria*, or purple loosestrife, is a wetland plant. No non-rooted, floating species were listed on the field sheet. (MassDEP 1997, MassDEP 2002). Subsequently, ESS conducted an aquatic macrophyte survey of the main basin of the reservoir for the Town of Franklin on October 9, 2015; staff noted the presence of the non-rooted species, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata*, and that the majority of the basin suffered >75% plant coverage (ESS 2016). In Google Earth images from August 2013, September 2014, and June 2019, the northeastern basin of the reservoir is mostly filled in with dense vegetation, and the main/southwestern basin is roughly 20-50% filled in with dense plant coverage (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of non-rooted, floating, aquatic macrophyte species in 2015. Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the reservoir was covered in aquatic macrophytes in recent years. Note: Franklin

2022 Removed Impairment	Removal Reason	Removal Comment
		Reservoir Northeast will remain an impaired lake segment for the 2024/26 cycle. However, according to the ecological and management study conducted for the Town of Franklin, it is very shallow (roughly 4 ft maximum depth, or 1.2 m) (ESS 2016) and 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. 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 the northeastern basin maps partially as a shallow marsh meadow or fen (MassGIS 2019).

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):



WBID: MA 72095 WATERSHED: Charles
NAME: ~~Pleasant Street Pond~~ & Franklin Reservoirs TYPE: Lake/Pond
CODE: 72095 SIZE: ~~45.0 acres~~ 21.0 ac
Northeast

RSM
(Printed 08/01/96)

CLASS: B/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name:
Ecoregion Name:
Description: ~~Pleasant Street Pond~~ (Franklin Reservoirs) Franklin Northeast

Assessment Date: 9810
Cycle: 9699
Begin Sampling: 9709
End Sampling: 9709
Water Quality Limited?: YES or NO
303(d) List?: YES or NO

Lake Specific Information

	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			~~8.0~~ ~~25.0~~	~~7.0~~	~~6.0~~	
ALUS			~~25~~		~~45.0~~ 21.0	
FISH CONSUMPTION					~~45.0~~ 21.0	
PRIMARY CONTACT					~~7.0~~ 6.0	
SECONDARY CONTACT			~~18.0~~ ~~25.0~~ B	7.0 ~~9.0~~	~~7.0~~ 6.0	
Aesthetics			~~18.0~~ ~~25.0~~ B	7.0 ~~9.0~~	~~7.0~~ 6.0	
ALUS Bio			~~18.0~~ ~~25.0~~ B	7.0 ~~9.0~~	~~7.0~~ 6.0	
ALUS Chem/Phys						
ALUS Toxicity						

Nonattainment Causes

Code	Size	Magnitude

1996

Code	Size	Magnitude
2200	~~9.0~~ 7	M
2500	~~38.0~~ 15	M

Nonattainment Sources

Code	Size	Magnitude

1996

Code	Size	Magnitude
9000	~~38.0~~ ~~27~~ 15	~~M~~ M

Assessment Type

1996 Assessment Category = > M E NA

R 35

Media/Pollutants Assessed

1996 Toxics Monitoring = > YES or NO

Comments:

1999: 2 September 1997 synoptic survey indicated that ~~periphery~~ & northeast basin ~~and southwestern portion of southwest basin~~ covered with very dense emergent vegetation. Also, turbidity reduced the transparency to below the safety criterion (Secchi disk < 4ft)

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: Franklin Res, Northeast SIZE (acres): 21 PALIS NO. 72095

TOWN/CITY: Franklin USGS TOPO. SHEET: Franklin (7.5 min)

DATE: 9/2/97 WATERSHED: Charles OBSERVERS: Haynes

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) *See note below

Site (2) Across From No. 397 Pleasant Street (small space for 1 vehicle)

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 ☐2☐ well worn path through woods

Other (describe): ☐ *originally surveyed as 1 waterbody, site #1 is with Franklin Res, SE.

☒ Pond basin NE of isthmus (flow from SE basin to NE)

☐

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

Diss. Organics: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☐☐☐ <1.2 m. (4 ft.) ☐☐☐ >1.2 m. (4 ft.)

☐☐☐ Estimated visually

☐☐☐ Measured w/ Secchi Disk ☐ _____ meters

☐2☐ cannot get close enough ☐ _____ meters to make judgement, but likely no different than upstream basin which was est. <1.2 m ☐ _____ 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

Describe:

☐☐☐ Produce objectionable odor, color, taste, or turbidity

Describe:

☐☐☐ Float as debris, scum or other matter to form a nuisance

Describe: floating mats of dead filamentous algae + woody

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED --

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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☐☑☐ Lythrum Salicaria	☐☑☐ Nymphaea odorata	☐☐☐
☐☐☐	☐☑☐ Potamogeton epihydrus	☐☐☐
☐☐☐	☐☑☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
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☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY --

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants ____ % Forms _____

Describe locations of dense and/or very dense plant beds *L. Salicaria most abundant plant; it "rings" most of this basin; SW. cove, periphery, and main water-body esp. SW half*

Loss of open water habitat over entire lake (estimated): ☐ >90 - 100 % ☐ >60 - ~~90~~ 85 % ☑ ~~>20 - 60 %~~ 30 - 55 ☐ ≤ 25 %

≥ 85% open

ASSESSMENTS --

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

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life					21	
Fish Consumption					21	
Primary Contact			8	7	6	
Secondary Contact			8	7	6	
Aesthetics			8	7	6	

CAUSES: ☒ Noxious plants (2200) -- Size 7 acres / Magnitude M ☐ Exotic plants (2600) -- Size _____ acres / Magnitude _____

☒ Turbidity (2500) -- Size 15 acres / Magnitude M ☐ Flow alteration (1500) -- Size _____ acres / Magnitude _____

☐ Metals (0500) ☐ Hg (0501) -- Size _____ acres / Magnitude _____ ☐ Siltation (1100) -- Size _____ acres / Magnitude _____

☐ _____ ( ) -- Size _____ acres / Magnitude _____ ☐ _____ ( ) -- Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____

Google Earth image of Franklin Reservoir Northeast (MA72095) while clear, 3/31/2009 (Google Earth Pro Undated):



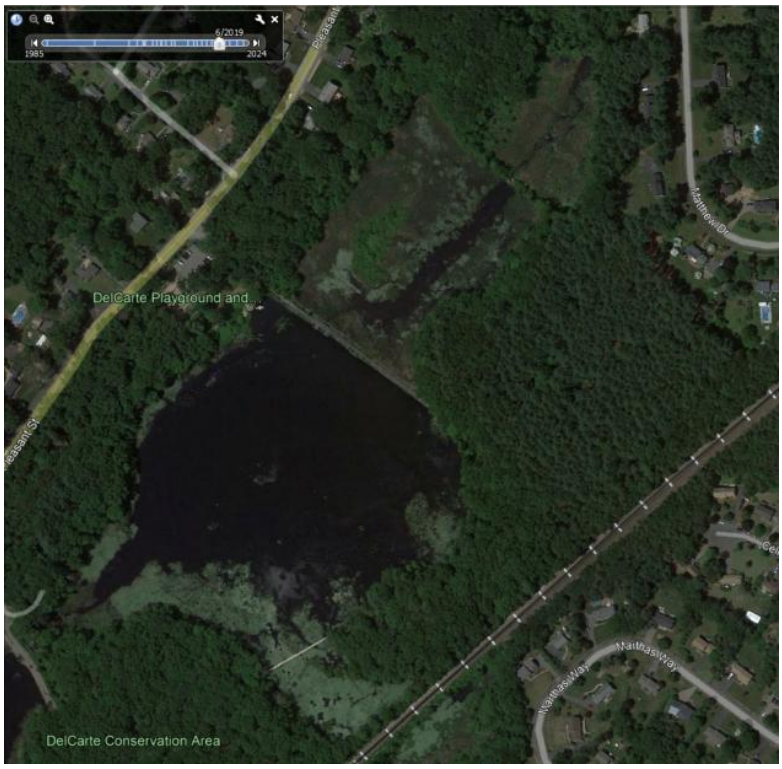
Google Earth image of Franklin Reservoir Northeast (MA72095), 8/24/2013 (Google Earth Pro Undated):



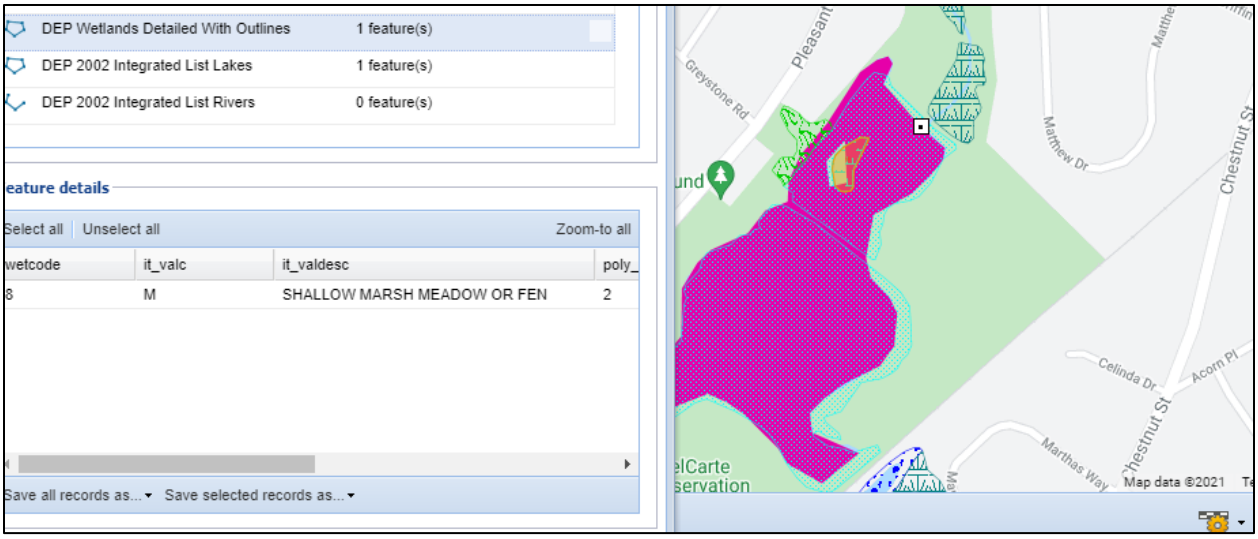
Google Earth image of Franklin Reservoir Northeast (MA72095), 9/27/2014 (Google Earth Pro Undated):



Google Earth image of Franklin Reservoir Northeast (MA72095), 6/22/2019 (Google Earth Pro Undated):



The portion of the northeastern basin of Franklin Reservoir Northeast in gold/red maps as shallow marsh meadow or fen, while the rest is considered open water (MassGIS 2019):



ESS Group, Inc. conducted a survey of aquatic plant species composition, cover, and biovolume in the main basins of Franklin Reservoir Southwest and Franklin Reservoir Northeast (which they call DelCarte Ponds) on October 9, 2015 (see table below). Sampling along transects, they mapped aquatic macrophytes at 104 locations combined among the two ponds. The non-rooted floating macrophytes, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata* were observed in Franklin Reservoir Northeast (the non-native species, *Trapa natans* and *Myriophyllum heterophyllum*, were also observed). ESS characterized 18 acres of the total 30 from the main basins of both ponds as having greater than 75% plant cover, while the majority of the remaining area (8.45 acres) had 50-74% plant cover. Data Source: (ESS 2016)

Table D. Wetland Plant Species Observed in the DelCarte Ponds

Common Name	Scientific Name	Pond	Status
Submersed and Floating Species			
Bigleaf Pondweed	*Potamogeton amplifolius*	S	Native
Canadian Waterweed	*Elodea canadensis*	S	Native
Common Bladderwort	*Utricularia macrorhiza*	N, S	Native
Coontail	*Ceratophyllum demersum*	N, S	Native
Duckweed	*Lemna minor*	S	Native
Filamentous Green Algae	*Chlorophyceae*	N, S	Native
Floating Pondweed	*Potamogeton natans*	N, S	Native
Little Floating Bladderwort	*Utricularia radiata*	N, S	Native
Snailseed Pondweed	*Potamogeton bicupulatus*	N	Native
Stonewort	*Nitella spp.*	S	Native
Thinleaf Pondweed	*Potamogeton pusillus*	N, S	Native
Variable-leaf Milfoil	*Myriophyllum heterophyllum*	N	Exotic Invasive
Water Chestnut	*Trapa natans*	N, S	Exotic Invasive
Watershield	*Brasenia schreberi*	N, S	Native
Western Waterweed	*Elodea nuttalii*	S	Native
White Water Lily	*Nymphaea odorata*	N, S	Native
Yellow Water Lily	*Nuphar lutea variegata*	N, S	Native
Emergent Species			
Awlfruit Sedge	*Carex stipata*	N, S	Native
Bayonet Rush	*Juncus militaris*	N, S	Native
Cattail	*Typha latifolia*	N, S	Native
Common Reed	*Phragmites australis*	N, S	Exotic Invasive
Fringed Sedge	*Carex crinita*	N, S	Native
Purple Loosestrife	*Lythrum salicaria*	N, S	Exotic Invasive
Soft Rush	*Juncus effusus*	N, S	Native

N and S indicate the northern and southern pond, respectively.

Aquatic plant cover was very dense (average approx. 80%) throughout both ponds (Figure 7). Approximately 18 acres of the total 30 were characterized by very dense plant cover (greater than 75%). The majority of the remaining acreage (8.45 acres) had plant cover ranging from 50-74%. No areas within the ponds were recorded as having no plant cover.

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 in Franklin Reservoir Northeast (MA72095), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Franklin Reservoir Northeast (MA72095) continues to be assessed as Not Supporting with the prior Turbidity impairment being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added.
As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Franklin Reservoir Northeast (MA72095) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Franklin Reservoir Northeast was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a September 1997 synoptic survey conducted by MassDEP staff in which it was noted that "*L. salicaria* [is] the most abundant plant; it "rings" most of this basin." Note that *L. salicaria*, or purple loosestrife, is a wetland plant. No non-rooted, floating species were listed on the field sheet. (MassDEP 1997, MassDEP 2002). Subsequently, ESS conducted an aquatic macrophyte survey of the main basin of the reservoir for the Town of Franklin on October 9, 2015; staff noted the presence of the non-rooted species, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata*, and that the majority of the basin suffered >75% plant coverage (ESS 2016). In Google Earth images from August 2013, September 2014, and June 2019, the northeastern basin of the reservoir is mostly filled in with dense vegetation, and the main/southwestern basin is roughly 20-50% filled in with dense plant coverage (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of non-rooted, floating, aquatic macrophyte species in 2015. Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the reservoir was covered in aquatic macrophytes in recent years. Note: Franklin Reservoir Northeast will remain an impaired lake segment for the 2024/26 cycle. However, according to the ecological and management study conducted for the Town of Franklin, it is very shallow (roughly 4 ft maximum depth, or 1.2 m) (ESS 2016) and 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. 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 the northeastern basin maps partially as a shallow marsh meadow or fen (MassGIS 2019). No new aesthetics observation data are available to evaluate the Aesthetics Use for Franklin Reservoir Northeast.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Franklin Reservoir Northeast (MA72095) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both 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 Franklin Reservoir Northeast (MA72095) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both from the Aesthetics Use).

Franklin Reservoir Southwest (MA72032)

Location:	Franklin.
AU Type:	FRESHWATER LAKE
AU Size:	13 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	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, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Franklin Reservoir Southwest (MA72032) lies within

2022 Removed Impairment	Removal Reason	Removal Comment
		the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Franklin Reservoir Southwest was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a September 1997 synoptic survey conducted by MassDEP staff in which it was noted that 40-50% of the smaller, southwestern basin of the pond was covered with excessive aquatic plants, including the non-rooted, floating species, *Wolffia* sp. (MassDEP 1997, MassDEP 2002). Subsequently, ESS conducted an aquatic macrophyte survey of the main basin of the reservoir for the Town of Franklin on October 9, 2015; staff noted the presence of the non-rooted species, *Lemna minor*, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata*, and that the majority of the basin suffered >75% plant coverage (ESS 2016). Google Earth images from August 2013, September 2014, and October 2020 show high amounts of plant coverage over 2/3 or more of the southwestern basin and roughly 33 to 40% of the main basin (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of non-rooted, floating, aquatic macrophyte species in 1997 and 2015. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the reservoir was covered in aquatic macrophytes in recent years. Note: Franklin Reservoir Southwest will remain an impaired lake segment for the 2024/26 cycle. However, according to the ecological and management study conducted for the Town of Franklin, it is very shallow (roughly 5 ft maximum depth, or 1.5 m) (ESS 2016) and likely should not be represented as a lake segment (From 314 CMR 4.0 Definition for Lakes and Ponds – lakes are

2022 Removed Impairment	Removal Reason	Removal Comment
		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. 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 the southwestern basin maps as deep marsh habitat (MassGIS 2019).

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):

E. Sch 3/29

✓RSM

WBID: MA 72032 WATERSHED
NAME: Franklin Reservoir x TYPE: Lake/Pond
CODE: 72037 Southwest ✓ SIZE: 13.0 acres

(Printed 08/01/96)

CLASS: B/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name: Franklin Reservoir, Southwest, Franklin
Ecoregion Name:
Description:

Assessment Date: 9810 Begin Sampling: 9709 Water Quality Limited?: YES or NO
Cycle: ~~96~~ 99 End Sampling: 9709 303(d) List?: YES or NO

Lake Specific Information

Significantly Publicly Owned:
Trophic Status:
Trophic Trend:
Acidity/Toxics Trend:
Acidity Effects:

1996 ~~99~~
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			3	7	3	
ALUS					13	
FISH CONSUMPTION					13	
PRIMARY CONTACT			3	7	3	
SECONDARY CONTACT			3	7	3	
Aesthetics			3	7	3	
ALUS Bio						
ALUS Chem/Phys						
ALUS Toxicity						

Nonattainment Causes

Code	Size	Magnitude

1996

Code	Size	Magnitude
2200	7	M
2500	10	M

Nonattainment Sources

Code	Size	Magnitude

1996

Code	Size	Magnitude
9000	17	H

Assessment Type

1996 Assessment Category = > (M) E NA

R35

Media/Pollutants Assessed

1996 Toxics Monitoring = > YES or (NO)

Comments:

1999 : 2 September 1997 synoptic survey indicated that southwestern portion is covered with very dense emergent vegetation. Also, turbidity reduced the transparency to below the safety criterion (4ft.).

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: Franklin Res., Southwest SIZE (acres): 13 PALIS NO. 72032

TOWN/CITY: Franklin USGS TOPO. SHEET: Franklin (7.5 min)

DATE: 9/2/97 WATERSHED: Charles OBSERVERS: Haynes

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) Across from No. 392 Pleasant Street (small parking space for one vehicle)

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): ☑ Pond basin sw of isthmus (flow is from SW to NE)

☐ _____

☐ _____

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

☐☐☐ Measured w/ Secchi Disk ☐ _____ meters ☐ _____ meters ☐ _____ meters

Diss. Organics: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Bottom Type: ☐☐☐ Undecomposed matter ☐☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

☐☐☐ Vegetation Other ☐ _____ ☐ _____ ☐ _____

Other Observations: ☑ Rocks @ outlet covered with dense mats of filamentous algae

☑ Shallow, too.

☐ _____

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe: _____

☑☐☐ Float as debris, scum or other matter to form a nuisance

Describe: Floating mats of dead filamentous algae + Utricularia

☑☐☐ Produce objectionable odor, color, taste, or turbidity

Describe: Grey-brown turbid water

☐☐☐ Produce undesirable nuisance species of aquatic life

Describe: _____

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☑☐☐ Phragmites	☑☐☐ Nymphaea odorata	☐☐☐
☑☐☐ L. Salicaria	☑☐☐ Potamogeton epihydrus	☐☐☐
☑☐☐ Typha latifolia	☑☐☐ Wolffia (Wolffiella?)	☐☐☐
☐☐☐	☑☐☐ Brasenia schreberi	☐☐☐
☐☐☐	☑☐☐ Sparganium sp.	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY – ☑1 40-50% (may be greater, but cannot observe submerged plant community.

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☑1 E, F(?S) ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants ____ % Forms _____

Describe locations of dense and/or very dense plant beds _____

Loss of open water habitat over entire lake (estimated): ☐ >90 - 100 % ☐ ~~>80 - 90 %~~ 60-85 ☑ ~~>25 - 60 %~~ 30-50 ☐ ≤ 25 %

ASSESSMENTS –

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

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed	Not Attainable
Aquatic Life					13	
Fish Consumption					13	
Primary Contact			3	7	3	
Secondary Contact			3	7	3	
Aesthetics			3	7	3	

CAUSES: ☑ Noxious plants (2200) – Size 7 acres / Magnitude M ☐ Exotic plants (2600) – Size _____ acres / Magnitude _____

☑ Turbidity (2500) – Size 10 acres / Magnitude M ☐ Flow alteration (1500) – Size _____ acres / Magnitude _____

☐ Metals (0500) ☐ Hg (0501) – Size _____ acres / Magnitude _____ ☐ Siltation (1100) – Size _____ acres / Magnitude _____

☐ _____ ( ) – Size _____ acres / Magnitude _____ ☐ _____ ( ) – Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____

Google Earth image of Franklin Reservoir Southwest (MA72032), 3/31/2005, clear of vegetation (Google Earth Pro Undated):



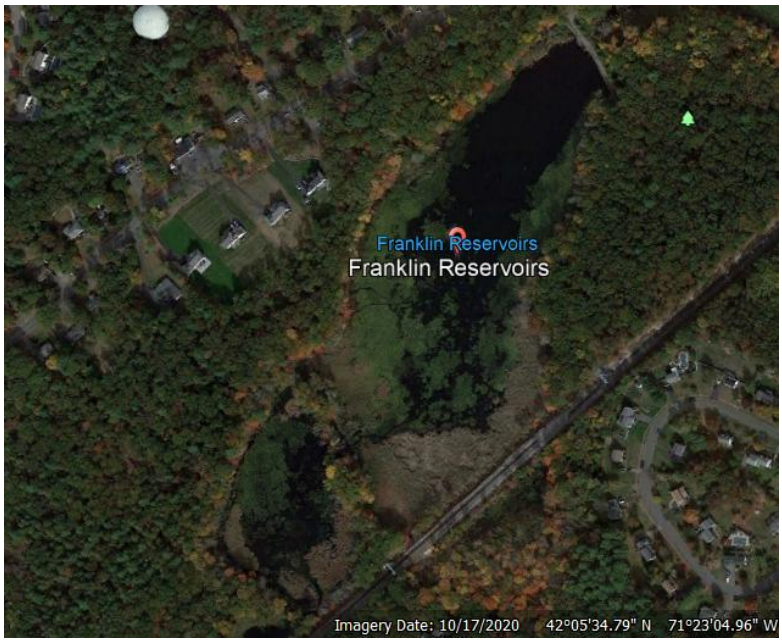
Google Earth image of Franklin Reservoir Southwest (MA72032), 8/24/2013 (Google Earth Pro Undated):



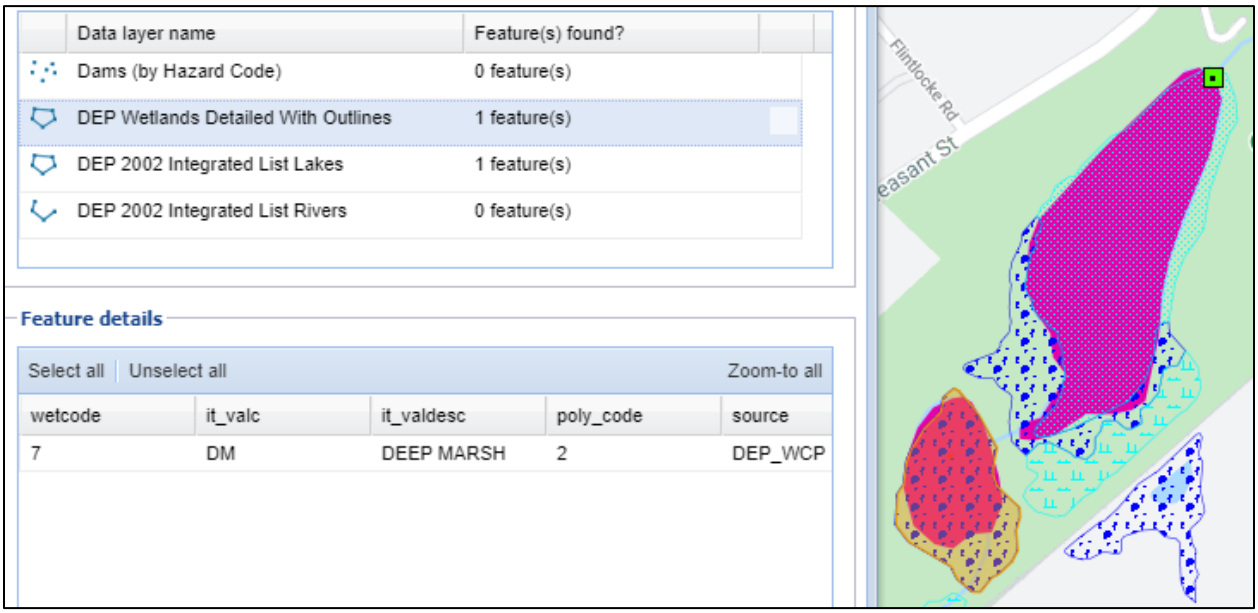
Google Earth image of Franklin Reservoir Southwest (MA72032), 9/27/2014 (Google Earth Pro Undated):



Google Earth image of Franklin Reservoir Southwest (MA72032), 10/17/2020 (Google Earth Pro Undated):



The portion of the southwestern basin of Franklin Reservoir Southwest in red and any areas with big blue speckles are mapped as deep marsh habitat while most of the main basin is considered open water (MassGIS 2019):



ESS Group, Inc. conducted a survey of aquatic plant species composition, cover, and biovolume in the main basins of Franklin Reservoir Southwest and Franklin Reservoir Northeast (which they call DelCarte Ponds) on October 9, 2015 (see table below). Sampling along transects, they mapped aquatic macrophytes at 104 locations combined among the two ponds. The non-rooted floating macrophytes, *Lemna minor*, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata* were observed in Franklin Reservoir Southwest (the non-native species, *Trapa natans*, was also observed). ESS characterized 18 acres of the total 30 from the main basins of both ponds as having greater than 75% plant cover, while the majority of the remaining area (8.45 acres) had 50-74% plant cover. Data Source: (ESS 2016)

Table D. Wetland Plant Species Observed in the DelCarte Ponds

Common Name	Scientific Name	Pond	Status
Submersed and Floating Species			
Bigleaf Pondweed	*Potamogeton amplifolius*	S	Native
Canadian Waterweed	*Elodea canadensis*	S	Native
Common Bladderwort	*Utricularia macrorhiza*	N, S	Native
Coontail	*Ceratophyllum demersum*	N, S	Native
Duckweed	*Lemna minor*	S	Native
Filamentous Green Algae	*Chlorophyceae*	N, S	Native
Floating Pondweed	*Potamogeton natans*	N, S	Native
Little Floating Bladderwort	*Utricularia radiata*	N, S	Native
Snailseed Pondweed	*Potamogeton bicupulatus*	N	Native
Stonewort	*Nitella spp.*	S	Native
Thinleaf Pondweed	*Potamogeton pusillus*	N, S	Native
Variable-leaf Milfoil	*Myriophyllum heterophyllum*	N	Exotic Invasive
Water Chestnut	*Trapa natans*	N, S	Exotic Invasive
Watershield	*Brasenia schreberi*	N, S	Native
Western Waterweed	*Elodea nuttalii*	S	Native
White Water Lily	*Nymphaea odorata*	N, S	Native
Yellow Water Lily	*Nuphar lutea variegata*	N, S	Native
Emergent Species			
Awlfruit Sedge	*Carex stipata*	N, S	Native
Bayonet Rush	*Juncus militaris*	N, S	Native
Cattail	*Typha latifolia*	N, S	Native
Common Reed	*Phragmites australis*	N, S	Exotic Invasive
Fringed Sedge	*Carex crinita*	N, S	Native
Purple Loosestrife	*Lythrum salicaria*	N, S	Exotic Invasive
Soft Rush	*Juncus effusus*	N, S	Native

N and S indicate the northern and southern pond, respectively.

Aquatic plant cover was very dense (average approx. 80%) throughout both ponds (Figure 7). Approximately 18 acres of the total 30 were characterized by very dense plant cover (greater than 75%). The majority of the remaining acreage (8.45 acres) had plant cover ranging from 50-74%. No areas within the ponds were recorded as having no plant cover.

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 in Franklin Reservoir Southwest (MA72032), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Aesthetics Use for Franklin Reservoir Southwest (MA72032) continues to be assessed as Not Supporting with the prior Turbidity impairment being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added. As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Franklin Reservoir Southwest (MA72032) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Franklin Reservoir Southwest was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a September 1997 synoptic survey conducted by MassDEP staff in which it was noted that 40-50% of the smaller, southwestern basin of the pond was covered with excessive aquatic plants, including the non-rooted, floating species, *Wolffia* sp. (MassDEP 1997, MassDEP 2002). Subsequently, ESS conducted an aquatic macrophyte survey of the main basin of the reservoir for the Town of Franklin on October 9, 2015; staff noted the presence of the non-rooted species, *Lemna minor*, *Ceratophyllum demersum*, *Utricularia macrorhiza*, and *Utricularia radiata*, and that the majority of the basin suffered >75% plant coverage (ESS 2016). Google Earth images from August 2013, September 2014, and October 2020 show high amounts of plant coverage over 2/3 or more of the southwestern basin and roughly 33 to 40% of the main basin (Google Earth Pro Undated). Nutrient/Eutrophication Biological Indicators is being added as an impairment based on the presence of non-rooted, floating, aquatic macrophyte species in 1997 and 2015. Additionally, Aquatic Plants (Macrophytes) is being delisted as a pollutant and added again as a non-pollutant since more than 25% of the reservoir was covered in aquatic macrophytes in recent years. Note: Franklin Reservoir Southwest will remain an impaired lake segment for the 2024/26 cycle. However, according to the ecological and management study conducted for the Town of Franklin, it is very shallow (roughly 5 ft maximum depth, or 1.5 m) (ESS 2016) and 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. 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 the southwestern basin maps as deep marsh habitat (MassGIS 2019). No new aesthetics observation data are available to evaluate the Aesthetics Use for Franklin Reservoir Southwest.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Franklin Reservoir Southwest (MA72032) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both 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 Franklin Reservoir Southwest (MA72032) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both from the Aesthetics Use)

Fuller Brook (MA72-18)

Location:	Headwater south of Route 135, Needham to mouth at confluence with Waban Brook, Wellesley (one culverted portion approximately 360 feet (0.07mile)).
AU Type:	RIVER
AU Size:	4.3 MILES
Classification/Qualifier:	B

Fuller Brook (MA72-18)

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	1.35	1.35
Agriculture	0.6%	0.6%	1.9%	1.9%
Developed	38.8%	38.8%	25%	25%
Natural	46.3%	46.3%	40%	40%
Wetland	14.3%	14.3%	33%	33%
Impervious	23.4%	23.4%	12.8%	12.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	Escherichia Coli (E. Coli)	32374	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
5	5	Sedimentation/Siltation	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Physical Substrate Habitat Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Post-development Erosion and Sedimentation (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Waterfowl (Y)	--	--	--	X	X
Nutrient/Eutrophication Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Sedimentation/Siltation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Sedimentation/Siltation	Post-development Erosion and Sedimentation (Y)	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 in Fuller Brook (MA72-18), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Fuller Brook (MA72-18) 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 are available for Fuller Brook (MA72-18), 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 Supporting	NO

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Fuller Brook (MA72-18) 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 W0409.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples at three stations on Fuller Brook (MA72-18) in the historic IR window (1997-2010) & only one sample at one station in the current IR window (2011-2022). Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W0411 [~102 meters upstream/N of Cameron St (above duckpond tributary), Wellesley] in Jan 1998 (n=1) and W0410 [~100 meters upstream/N of Cameron St (below duckpond tributary), Wellesley] in Jan 1998 (n=1), and toward the downstream end of the AU at W0409 [Dover Rd, Wellesley] from 1997-1998, and in 2002, and 2007 (n=2-5/yr), and CRWA_Fuller [Fuller Brook] from Mar 2022 (n=1). The current *E. coli* data from CRWA_Fuller are too limited to assess according to the 2024 CALM. Among the historical samples, those from W0411 and W0410 are also too limited to evaluate. Analysis of the historic multi-year limited frequency *E. coli* dataset from W0409 (1997, 2002, 2007) indicated that in 3 of 3 sufficient data years >20% of the GMs were >244 CFU/100mL (100% in all 3 years), 2 years had ≥2 samples exceed the 794 CFU/100mL STV (2002 & 2007, n=3 & 3), and cumulatively across years 100% of intervals had GMs >244 CFU/100mL. Historic *E. coli* data from W0409 are reflective of the existing Escherichia Coli (E. Coli) impairment.

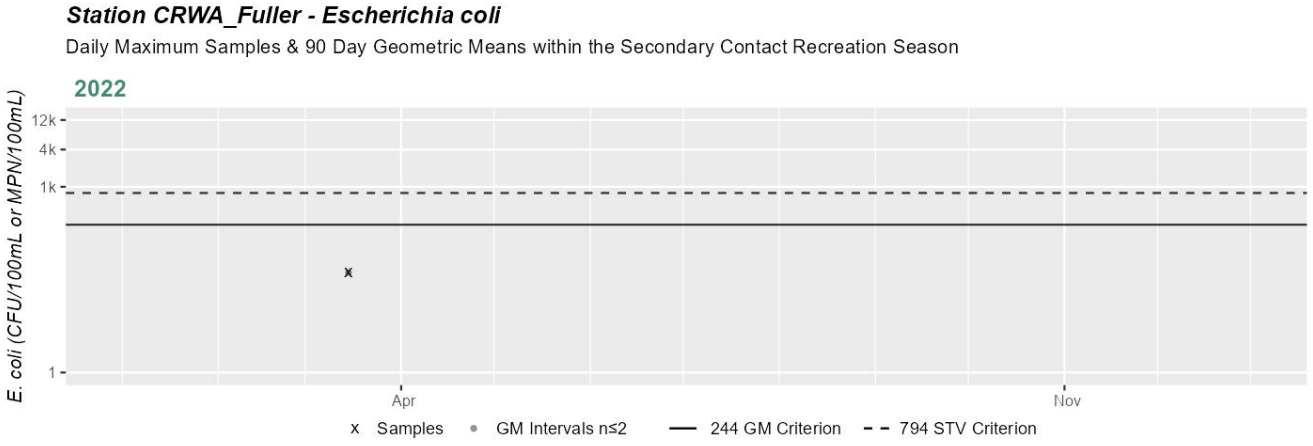
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_Fuller	Charles River Watershed Association	Water Quality	Fuller Brook	Fuller Brook	42.285960	-71.293930
W0409	MassDEP	Water Quality	Fuller Brook	[Dover Road, Wellesley]	42.286523	-71.293843
W0410	MassDEP	Water Quality	Fuller Brook	[approximately 100 meters upstream/north of Cameron Street (below duckpond tributary), Wellesley.]	42.295380	-71.288884
W0411	MassDEP	Water Quality	Fuller Brook	[approximately 102 meters upstream/north of Cameron Street (above duckpond tributary), Wellesley.]	42.295499	-71.288804

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (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
CRWA_Fuller	Charles River Watershed Association	E. coli	03/15/22	03/15/22	1	41	41	41
W0409	MassDEP	E. coli	07/14/97	12/09/97	4	100	920	387
W0409	MassDEP	E. coli	03/17/98	04/22/98	2	20	40	28
W0409	MassDEP	E. coli	04/29/02	08/05/02	4	59	1800	633
W0409	MassDEP	E. coli	05/15/07	10/02/07	5	400	6000	1588
W0410	MassDEP	E. coli	01/28/98	01/28/98	1	800	800	799
W0411	MassDEP	E. coli	01/28/98	01/28/98	1	120	120	119



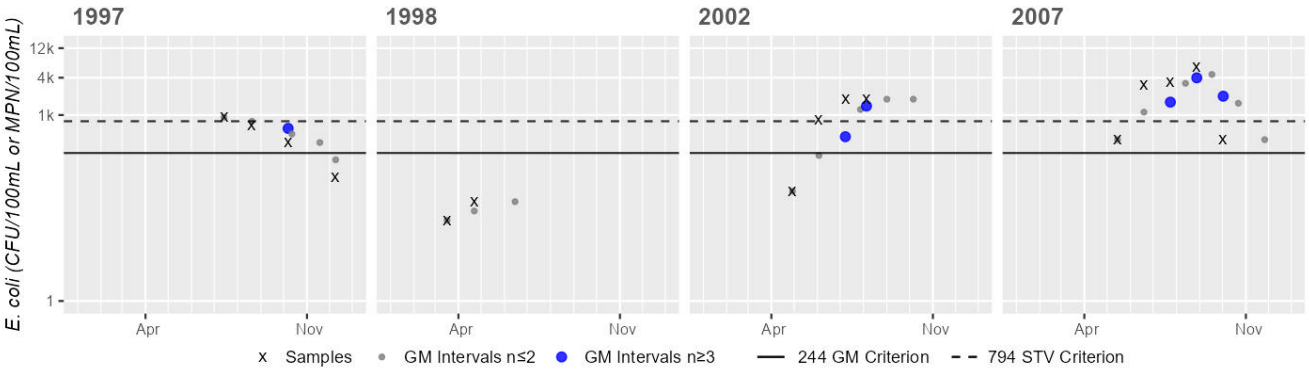
Variable*	Result
Samples	1
SeasGM	41
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0409 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	387
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	25%

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

Variable*	Result
Samples	4
SeasGM	633
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	3
%n>STV	75%

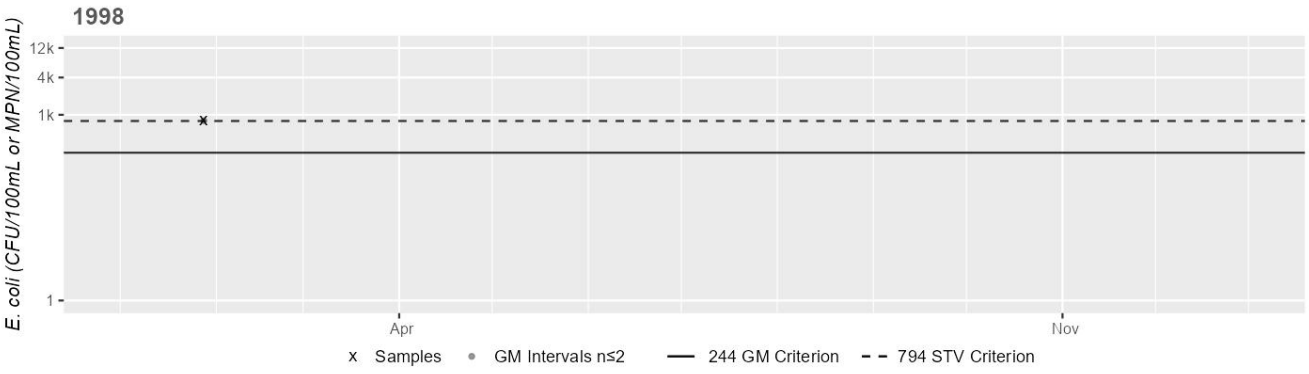
Variable*	Result
Samples	5
SeasGM	1588
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	60%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0410 - Escherichia coli

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



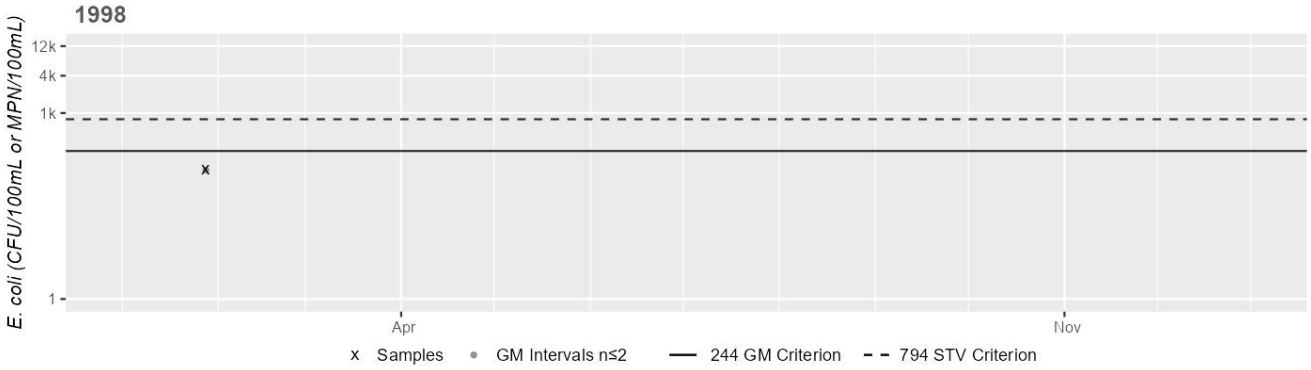
Variable*	Result
Samples	1
SeasGM	800
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	100%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0411 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	120
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

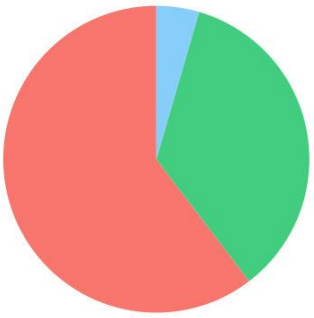
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Godfrey Brook (MA72-51)

Location:	Perennial portion, South Main Street, Milford to mouth at confluence with the Charles River, Milford.
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	B

Godfrey Brook (MA72-51)

Watershed Area: 2.06 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.06	2.06	0.39	0.39
Agriculture	0%	0%	0%	0%
Developed	60.4%	60.4%	61.3%	61.3%
Natural	35.1%	35.1%	27.3%	27.3%
Wetland	4.5%	4.5%	11.5%	11.5%
Impervious	32.7%	32.7%	31.8%	31.8%

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 in Godfrey Brook (MA72-51), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Godfrey Brook (MA72-51) 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 Godfrey Brook (MA72-51) 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 Godfrey Brook (MA72-51) 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 W1585.
MassDEP staff collected historical *E. coli* bacteria samples in the middle of Godfrey Brook (MA72-51) at W1585 [Vernon St, Milford] from May-Oct 2007 (n=5). Analysis of this limited frequency *E. coli* dataset indicated 100% of intervals had GMs >244 CFU/100mL and 3 samples exceeded the 794 CFU/100mL STV (the overall GM was 489 CFU/100mL). Historic *E. coli* data from W1585 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1585	MassDEP	Water Quality	Godfrey Brook	[Vernon Street, Milford]	42.131030	-71.515524

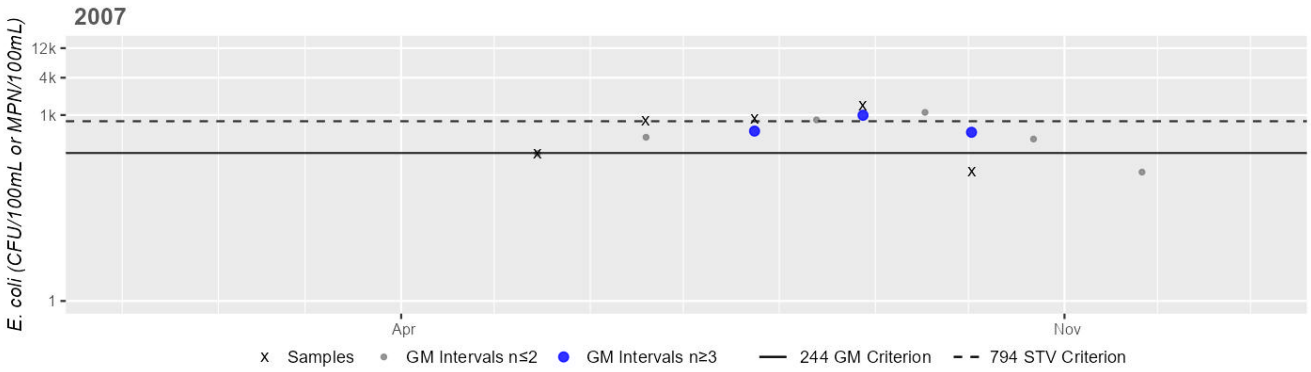
Bacteria Data

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
W1585	MassDEP	E. coli	05/15/07	10/02/07	5	120	1400	489

Station MASSDEP_W1585 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	489
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	60%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Halls Pond (MA72043)

Location:	Brookline.
AU Type:	FRESHWATER LAKE
AU Size:	0.6 ACRES
Classification/Qualifier:	B

No usable data were available for Halls Pond (MA72043) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Hammond Pond (MA72044)

Location:	Newton.
AU Type:	FRESHWATER LAKE
AU Size:	22 ACRES
Classification/Qualifier:	B

No usable data were available for Hammond Pond (MA72044) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Hardys Pond (MA72045)

Location:	Waltham.
AU Type:	FRESHWATER LAKE
AU Size:	43 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Water Chestnut*)	--	Unchanged
4a	4a	Algae	40319	Unchanged
4a	4a	Phosphorus, Total	40319	Unchanged
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Water Chestnut*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Algae	Source Unknown (N)	X	--	X	X	X
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--
Turbidity	Source Unknown (N)	--	--	X	X	X

Recommendations

2024/26 Recommendations
2024/2026 IR [Harmful Algal Blooms, high priority] Follow-up monitoring should be conducted in Hardys Pond (MA72045) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses (note that an Alert was identified in the 2024/2026 IR cycle since C-HAB postings were reported to MDPH based on visual observations for 104 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. {Hardys Pond (MA72045)}

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 in Hardys Pond (MA72045), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Aesthetics Use for Hardys Pond (MA72045) continues to be assessed as Not Supporting with the Algae and Turbidity impairments being carried forward. 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. Since the Water Chestnut impairment was redundantly duplicated across multiple uses for this waterbody, the Water Chestnut impairment is being removed from the Aesthetics Use, but will continue to be maintained under the Aquatic Life Use.

While MassDEP staff noted Water Chestnut (Trapa natans) to be "very dense" during an August 1997 synoptic survey (covering approximately one third of the pond overall) (MassDEP 1997), and Google Earth images in 2003 and 2004 also show a very dense coverage of plants in the shallows of the northern end of the pond (east and west shores), more recent Google Earth images indicate the coverage of dense Aquatic Plants (Macrophytes) to be <25% during the summer months (Google Earth Pro Undated). The City of Waltham actively manages aquatic vegetation in the pond with contracts awarded (in 2014 and 2023) for chemical and physical removal of aquatic plants (City of Waltham 2014, City of Waltham 2023). Consequently, an impairment for Aquatic Plants (Macrophytes) will not be added at this time.

During the period 2015 through 2022, C-HAB postings for Hardys Pond were reported to MDPH based on visual observations for 104 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 Hardys Pond (MA72045) were reported to MDPH based on visual observations for 104 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
Hardys Pond	Waltham						104		

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Hardys Pond (MA72045) continues to be assessed as Not Supporting. The prior Algae and Turbidity impairments (from the Aesthetics Use) are being carried forward. Since the Water Chestnut impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Primary Contact Recreation Use. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU 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 Hardys Pond (MA72045) were reported to MDPH based on visual observations for 104 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.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Hardys Pond (MA72045) continues to be assessed as Not Supporting. The prior Algae and Turbidity impairments (from the Aesthetics Use) are being carried forward. Since the Water Chestnut impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU 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 Hardys Pond (MA72045) were reported to MDPH based on visual observations for 104 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.

Hobbs Brook (MA72-45)

Location:	Headwaters west of Bedford Road, Lincoln to inlet Cambridge Reservoir, Upper Basin, Lincoln.
AU Type:	RIVER
AU Size:	2.4 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Hobbs Brook (MA72-45) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--

Hobbs Brook (MA72-46)

Location:	From outlet Cambridge Reservoir, Waltham to mouth at confluence with Stony Brook, Weston.
AU Type:	RIVER
AU Size:	1.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Hobbs Brook (MA72-46) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

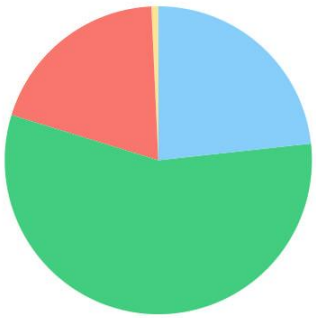
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Contaminated Groundwater (N)	X	--	--	--	--
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--
Chloride	Upstream Source (Y)	X	--	--	--	--

Hopping Brook (MA72-35)

Location:	Source in Cedar Swamp, Holliston to mouth at confluence with the Charles River, Bellingham/Medway.
AU Type:	RIVER
AU Size:	4.9 MILES
Classification/Qualifier:	B

Hopping Brook (MA72-35)

Watershed Area: 10.98 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	10.98	4.68	3.50	1.36
Agriculture	0.7%	0.4%	1.1%	0.2%
Developed	19.5%	22.7%	14.2%	16.8%
Natural	56.5%	56.5%	46.3%	44.2%
Wetland	23.3%	20.4%	38.4%	38.8%
Impervious	7.9%	10%	5.6%	7.3%

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 in Hopping Brook (MA72-35), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Hopping Brook (MA72-35) 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 Hopping Brook (MA72-35) 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 CRWA_HB-D.
CRWA staff/volunteers collected *E. coli* bacteria samples near the downstream end of Hopping Brook (MA72-35) at CRWA_HB-D [Hartford Avenue, Bellingham] from Apr-Oct 2019 (n=8). Analysis of this moderate frequency *E. coli* dataset indicated 100% of intervals had GMs >126 CFU/100mL and 2 samples exceeded the 410 CFU/100mL STV. *E. coli* data from CRWA_HB-D are indicative of an Escherichia Coli (E. Coli) impairment.

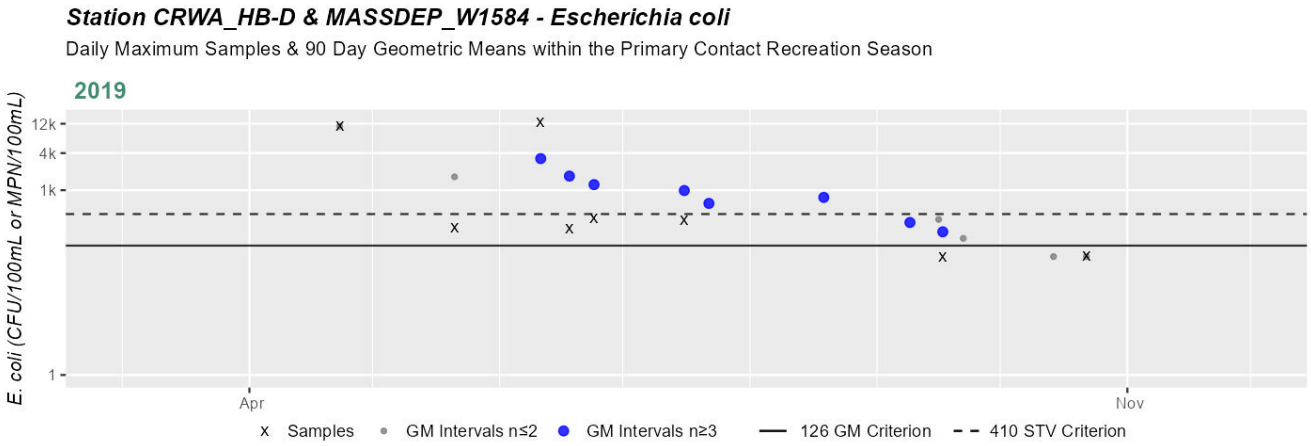
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_HB-D	Charles River Watershed Association	Water Quality	Hopping Brook	Hartford Avenue, Bellingham	42.134502	-71.445703

Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_HB-D	Charles River Watershed Association	E. coli	04/23/19	10/22/19	8	83	12734	532



Variable*	Result
Samples	8
SeasGM	532
#GMI	8
#GMI Ex	8
%GMI Ex	100%
n>STV	2
%n>STV	25%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Hopping Brook (MA72-35) 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 CRWA_HB-D. CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in Hopping Brook (MA72-35) at CRWA_HB-D [Hartford Avenue, Bellingham] from Apr-Nov 2019 (current n=9). Analysis of this single year moderate frequency *E. coli* dataset indicated 77% of intervals had GMs >244 CFU/100mL and 2 samples exceeded the 794 CFU/100mL STV. *E. coli* data from CRWA_HB-D are indicative of an Escherichia Coli (E. Coli) impairment. Historic data collected by MassDEP at a nearby station W1584 [Hartford Avenue (Route 126), Bellingham] from May-Oct 2007 (historic n=5) were not indicative of an impairment, however they are superseded by the more recent data.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_HB-D	Charles River Watershed Association	Water Quality	Hopping Brook	Hartford Avenue, Bellingham	42.134502	-71.445703
W1584	MassDEP	Water Quality	Hopping Brook	[Hartford Avenue (Route 126), Bellingham]	42.134458	-71.446020

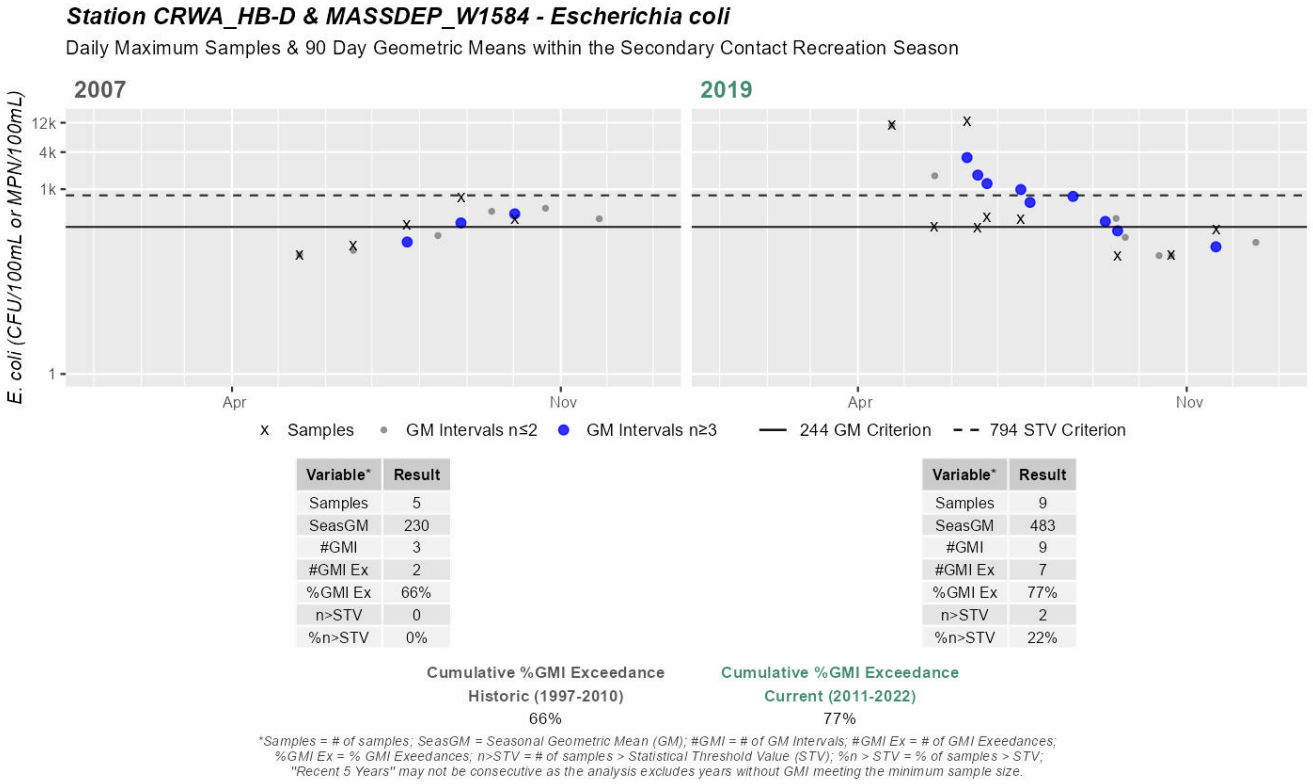
Bacteria Data

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

(CRWA 2023) (MassDEP Undated 1) (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
CRWA_HB-D	Charles River Watershed Association	E. coli	04/23/19	11/20/19	9	83	12734	483
W1584	MassDEP	E. coli	05/15/07	10/02/07	5	86	730	230



Houghton Pond (MA72050)

Location:	Holliston.
AU Type:	FRESHWATER LAKE
AU Size:	17 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Added
4a	4a	Algae	40319	Unchanged
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Source Unknown (N)	X	--	X	X	X
Algae	Wet Weather Discharges (Non-Point Source) (Y)	X	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	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 in Houghton Pond (MA72050), so the Fish Consumption Use is Not Assessed.

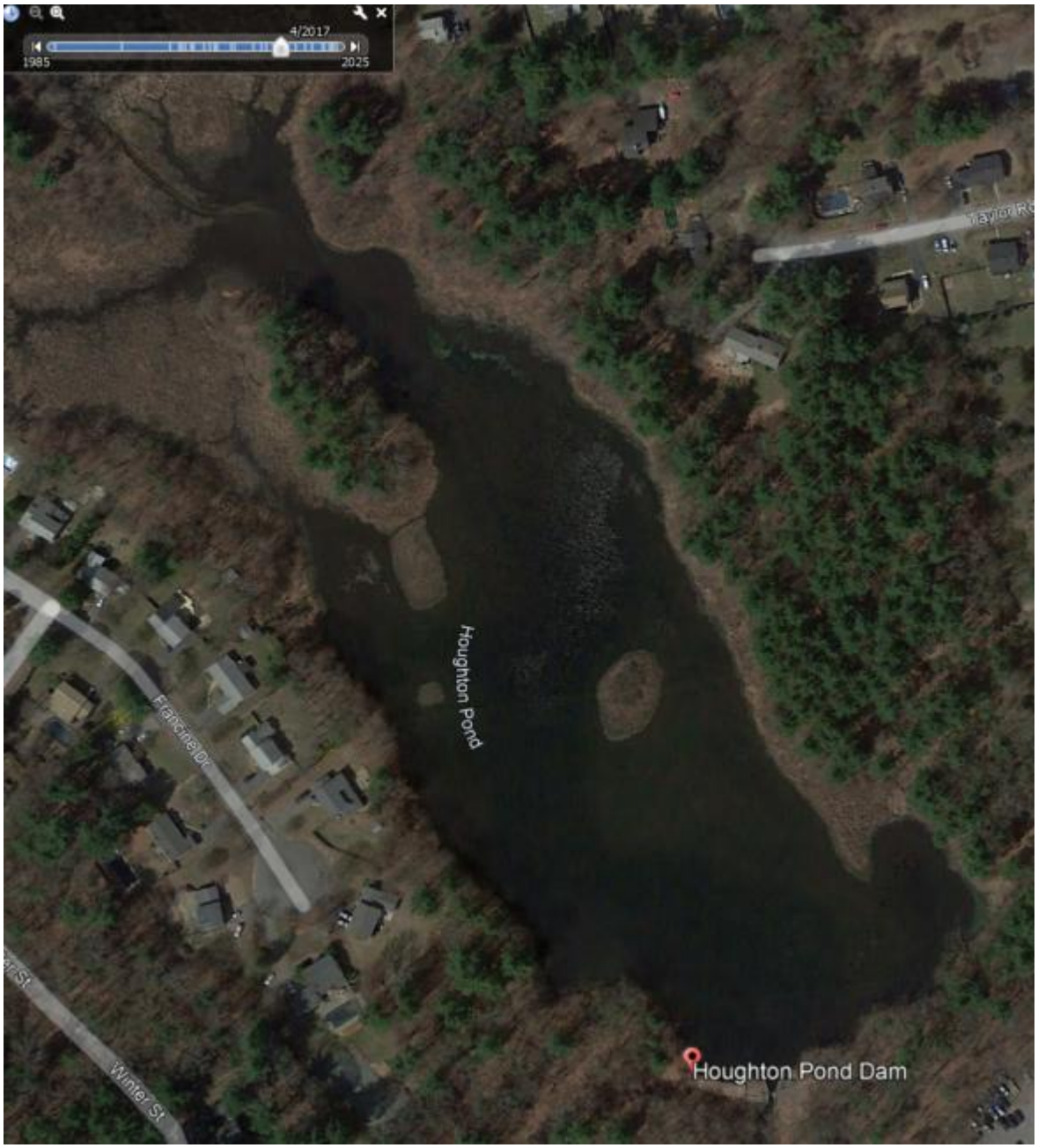
Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Houghton Pond (MA72050) continues to be assessed as Not Supporting with the Algae and Turbidity impairments being carried forward and an impairment for Aquatic Plants (Macrophytes) non-pollutant being added. Since the Alert identified for Myriophyllum sp. (suspected non-native) was redundantly duplicated across multiple uses for this waterbody, the Alert for Myriophyllum sp. is being removed from the Aesthetics Use, but will continue to be maintained under the Aquatic Life Use. Since MassDEP staff noted aquatic macrophytes (including Myriophyllum sp.) to be “very dense” over the entire pond surface area during a July 1997 synoptic survey (MassDEP 1997) and Google Earth images from June 2010-October 2021 (Google Earth Pro Undated) show this pond is very filled in with submergent and emergent vegetation (>25% coverage), an Impairment for Aquatic Plants (Macrophytes) non-pollutant is being added in the place of the Alert for Myriophyllum sp. at this time. No new aesthetics observation data are available to evaluate the Aesthetics Use for Houghton Pond.

Aesthetic Observations

Houghton Pond (MA72050) Google Earth Imagery: Pond Outline (April 2017) Followed by Imagery from June 2019 and June 2015 Showing Dense/Very Dense Vegetation Covering >25% of the Pond’s Surface (Google Earth Pro Undated)


4/2017
1985
2025
Houghton Pond
Houghton Pond Dam
Winter St


6/2019
1985
2025
Little Rd
Francine Dr
Houghton Pond
Winter St
Winter St
Houghton Pond Dam



Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Houghton Pond (MA72050) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Algae and Turbidity impairments (from the Aesthetics Use) are being carried forward. An Aquatic Plants (Macrophytes) non-pollutant impairment is being added (from the Aesthetics Use). Since the prior Alert for Myriophyllum sp. (suspected non-native) was removed from the Aesthetics Use, it is also being removed from the recreational uses.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

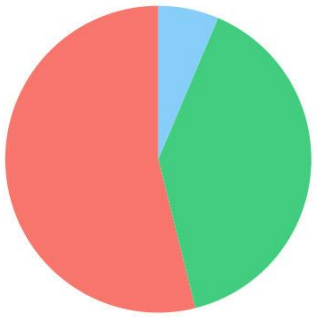
2024/26 Use Attainment Summary
No bacteria or other indicator data for Houghton Pond (MA72050) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Algae and Turbidity impairments (from the Aesthetics Use) are being carried forward. An Aquatic Plants (Macrophytes) non-pollutant impairment is being added (from the Aesthetics Use). Since the prior Alert for Myriophyllum sp. (suspected non-native) was removed from the Aesthetics Use, it is also being removed from the recreational uses.

Hurd Brook (MA72-52)

Location:	Headwaters east of Pine Grove Street and Central Avenue intersection, Needham to mouth at confluence with Charles River, Wellesley (three culverted portions totalling approximately 2560 feet (0.48 mile)).
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B

Hurd Brook (MA72-52)

Watershed Area: 0.85 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.85	0.85	0.26	0.26
Agriculture	0%	0%	0%	0%
Developed	53.9%	53.9%	45.2%	45.2%
Natural	39.7%	39.7%	36.4%	36.4%
Wetland	6.4%	6.4%	18.4%	18.4%
Impervious	32%	32%	26.6%	26.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	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	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	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 in Hurd Brook (MA72-52), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Hurd Brook (MA72-52) is assessed as Fully Supporting based on the general lack of objectionable conditions observed by MassDEP staff during summer 2015. Aesthetic observations were made by MassDEP field sampling crews in the upstream quarter of the AU ~800 feet downstream/east of Webster Street, Needham (W2514), during the summer of 2015 as part of the MAP2 wadeable streams monitoring project (n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted minor trash on two occasions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2514	MassDEP	Water Quality	Hurd Brook	[approximately 800 feet downstream/east of Webster Street, Needham]	42.304938	-71.233834

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
W2514	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2514 on Hurd Brook (MA72-52) during 5 site visits between May 2015 and Aug 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
W2514	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
W2514	Hurd Brook	2015	Aesthetics Impaired?	No	5	5
W2514	Hurd Brook	2015	Aquatic Plant Density, Overall	None	3	5
W2514	Hurd Brook	2015	Aquatic Plant Density, Overall	Sparse	2	5
W2514	Hurd Brook	2015	Color	Light Yellow/Tan	2	5
W2514	Hurd Brook	2015	Color	None	3	5
W2514	Hurd Brook	2015	Objectionable Deposits	No	3	5
W2514	Hurd Brook	2015	Objectionable Deposits	Yes	2	5
W2514	Hurd Brook	2015	Odor	None	5	5
W2514	Hurd Brook	2015	Periphyton Density, Filamentous	None	4	5
W2514	Hurd Brook	2015	Periphyton Density, Filamentous	Very Dense	1	5
W2514	Hurd Brook	2015	Periphyton Density, Film	None	4	5
W2514	Hurd Brook	2015	Periphyton Density, Film	Sparse	1	5
W2514	Hurd Brook	2015	Scum	No	5	5
W2514	Hurd Brook	2015	Turbidity	None	5	5

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Hurd Brook (MA72-52) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at W2514. MassDEP staff collected *E. coli* bacteria samples in the upstream quarter of the Hurd Brook AU (MA72-52) at W2514 [~800 ft downstream/E of Webster St, Needham] from May-Aug 2015 (n=5). Analysis of this single year limited frequency *E. coli* dataset indicated 100% of intervals had GMs >126 CFU/100mL and 2 samples exceeded the 410 CFU/100mL STV (the seasonal GM was 334 CFU/100mL). *E. coli* data from W2514 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2514	MassDEP	Water Quality	Hurd Brook	[approximately 800 feet downstream/east of Webster Street, Needham]	42.304938	-71.233834

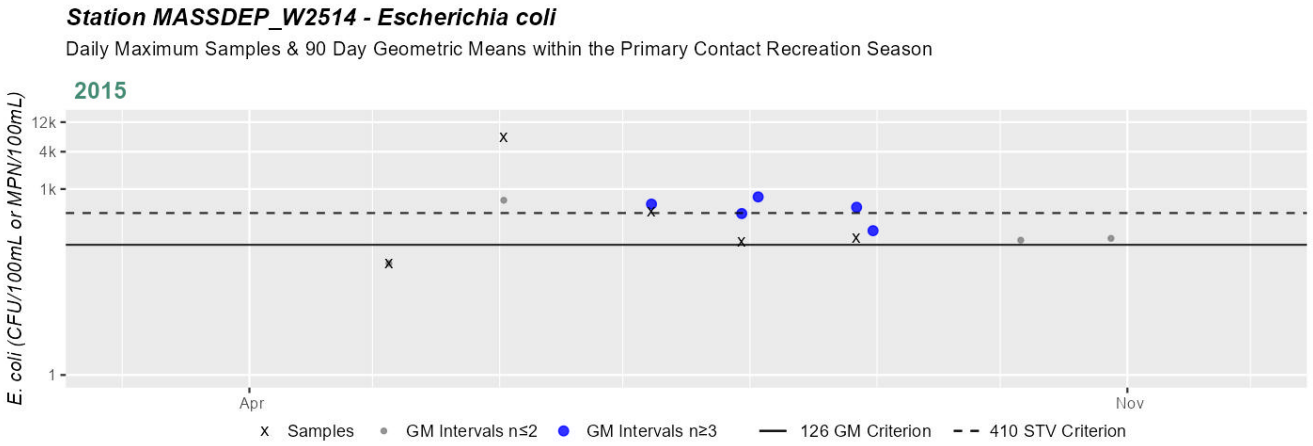
Bacteria Data

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
W2514	MassDEP	E. coli	05/05/15	08/27/15	5	63	6900	334



Variable*	Result
Samples	5
SeasGM	334
#GMI	5
#GMI Ex	5
%GMI Ex	100%
n>STV	2
%n>STV	40%

Cumulative %GMI Exceedance
Current (2011-2022)
100%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Hurd Brook (MA72-52) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at W2514. MassDEP staff collected *E. coli* bacteria samples in the upstream quarter of the Hurd Brook AU (MA72-52) at W2514 [~800 ft downstream/E of Webster St, Needham] from May-Aug 2015 (n=5). Analysis of this single year limited frequency *E. coli* dataset indicated 80% of intervals had GMs >244 CFU/100mL and 1 sample exceeded the 794 CFU/100mL STV (the overall GM was 334 CFU/100mL). *E. coli* data from W2514 are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2514	MassDEP	Water Quality	Hurd Brook	[approximately 800 feet downstream/east of Webster Street, Needham]	42.304938	-71.233834

Bacteria Data

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

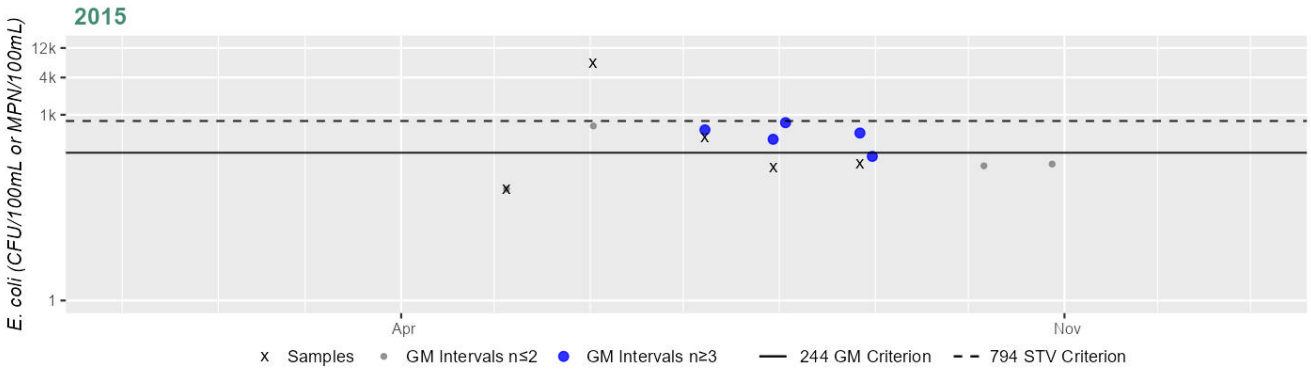
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2514	MassDEP	E. coli	05/05/15	08/27/15	5	63	6900	334

Station MASSDEP_W2514 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	334
#GMI	5
#GMI Ex	4
%GMI Ex	80%
n>STV	1
%n>STV	20%

Cumulative %GMI Exceedance

Current (2011-2022)

80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Jamaica Pond (MA72052)

Location:	Boston.
AU Type:	FRESHWATER LAKE
AU Size:	67 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Harmful Algal Blooms	--	Added
5	5	PFAS in Fish Tissue	--	Added
5	5	Phosphorus, Total	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Dissolved Oxygen	Internal Nutrient Recycling (Y)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Harmful Algal Blooms	Source Unknown (N)	--	--	X	X	X
PFAS in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Phosphorus, Total	Internal Nutrient Recycling (Y)	X	--	--	--	--
Phosphorus, Total	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 Jamaica Pond (MA72052) is assessed as Not Supporting with a new impairment being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Jamaica Pond (MA72052) at station F0199 (PFAS Study ID 15) on 10/05/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in Jamaica Pond 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
F0199	MassDEP	Fish Toxics	Jamaica Pond	[Boston]	42.317601	-71.120540

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in Jamaica Pond (MA72052) at station F0199 (PFAS Study ID 15) on 10/05/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for Jamaica Pond 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 Jamaica Pond (MA72052).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (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 MA DPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: RT = rainbow trout, 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
F0199	15	10/05/2022	RT	ND	ND	ND	1.10	
F0199	15	10/05/2022	YP	ND	0.34	ND	9.60	PFNA

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Jamaica Pond (MA72052) is assessed as Not Supporting, with an impairment for Harmful Algal Blooms being added, since extended C-HAB postings were reported to MDPH in 2015, 2021 and 2022. During the period 2015 through 2022, C-HAB postings for Jamaica Pond (MA72052) were reported to MDPH for 23 days in 2015 (cell count), 34 days in 2021 (visual observations), and 23 days in 2022 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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 Jamaica Pond (MA72052) were reported to MDPH for 23 days in 2015 (cell count), 34 days in 2021 (visual observations), and 23 days in 2022 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, 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
Jamaica Pond	Boston	23						34	23

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Jamaica Pond (MA72052) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since C-HAB postings extended >20 days in 3 recent years. During the period 2015 through 2022, C-HAB postings for Jamaica Pond (MA72052) were reported to MDPH for 23 days in 2015 (cell count), 34 days in 2021 (visual observations), and 23 days in 2022 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment. Surface water sampling was conducted in Jamaica Pond (MA72052) at station W3276 (PFAS Study ID 15) on 10/05/2022 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
W3276	MassDEP	Water Quality	Jamaica Pond	[the default location representing co-located water/fish PFAS sampling, Boston]	42.317601	-71.120540

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 Jamaica Pond (MA72052) at station W3276 (PFAS Study ID 15) on 10/05/2022 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑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	∑PFAS6 ng/L
W3276	15	10/05/2022	14	<0.49	1.8j	0.95j	4.2j	1.9	<1.9	23.4*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Jamaica Pond (MA72052) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added since C-HAB postings extended >20 days in 3 recent years. During the period 2015 through 2022, C-HAB postings for Jamaica Pond (MA72052) were reported to MDPH for 23 days in 2015 (cell count), 34 days in 2021 (visual observations), and 23 days in 2022 (visual observations). No blooms were reported in other years. Since extended blooms (>20 days in duration) based on cell count data were reported in recent years, the C-HAB data are indicative of a Harmful Algal Blooms impairment.

Jennings Pond (MA72053)

Location:	Natick.
AU Type:	FRESHWATER LAKE
AU Size:	7 ACRES
Classification/Qualifier:	B

No usable data were available for Jennings Pond (MA72053) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Kendrick Street Pond (MA72055)

Location:	Needham.
AU Type:	FRESHWATER LAKE
AU Size:	39 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Turbidity	Source Unknown (N)	--	--	X	X	X

Recommendations

2024/26 Recommendations
2024/2026 IR [Harmful Algal Blooms, high priority] Follow-up monitoring should be conducted in Kendrick Street Pond (MA72055) to determine if Harmful Algal Blooms may be impairing the Recreational and Aesthetic uses (note that an Alert was identified in the 2024/2026 IR since Harmful Algal Bloom postings were reported to MDPH based on visual observations for 77 days in 2021). Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH. {Kendrick Street Pond (MA72055)}

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 in Kendrick Street Pond (MA72055), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Aesthetics Use for Kendrick Street Pond (MA72055, MDPH name Cutler Park) is assessed as Not Supporting, with the prior Turbidity impairment being carried forward. 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 2021. During the period 2015 through 2022, C-HAB postings for Kendrick Street Pond (MDPH name Cutler Park) were reported to MDPH based on visual observations for 77 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. However, an Alert is being identified for Harmful Algal Blooms in this waterbody 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 Kendrick Street Pond (MDPH name Cutler Park) (MA72055) were reported to MDPH based on visual observations for 77 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. 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
Kendrick Street Pond (MDPH name Cutler Park)	Needham							77	

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Kendrick Street Pond (MA72055) continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. 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 Kendrick Street Pond (MDPH name Cutler Park) (MA72055) were reported to MDPH based on visual observations for 77 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. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Secondary Contact Recreation Use for Kendrick Street Pond (MA72055) continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. 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 Kendrick Street Pond (MDPH name Cutler Park) (MA72055) were reported to MDPH based on visual observations for 77 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. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

Kingsbury Pond (MA72056)

Location:	Norfolk.
AU Type:	FRESHWATER LAKE
AU Size:	15 ACRES
Classification/Qualifier:	B

No usable data were available for Kingsbury Pond (MA72056) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Dewatering*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Source Unknown (N)	X	--	--	--	--

Lake Archer (MA72002)

Location:	Wrentham.
AU Type:	FRESHWATER LAKE
AU Size:	77 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
4c	5	Harmful Algal Blooms	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Harmful Algal Blooms	Source Unknown (N)	--	--	--	X	X

Recommendations

2024/26 Recommendations
2010 IR [*E. coli*, medium priority] Follow-up bacteria monitoring should be conducted in Lake Archer (MA72002), and if resources allow, in storm drains that discharge to the lake, to determine whether the Alert previously identified in the 2010 IR cycle for high fecal coliform bacteria in storm drain discharges to the lake (part of an ESS 2001 report) (MassDEP 2008), should remain in effect (note that there were no recent bacteria data to report in the 2024/2026 IR). {Lake Archer (MA72002)}

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 in Lake Archer (MA72002), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited data are available to assess the Aesthetics Use for Lake Archer (MA72002), so it is assessed as having Insufficient Information. The prior Alert identified for low Secchi disk transparency is being removed since it is being removed from the Primary Contact Recreation Use. During the period 2015 through 2022, C-HAB postings for Lake Archer were reported to MDPH based on visual observations for 7 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.

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 Archer (MA72002) were reported to MDPH based on visual observations for 7 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
Lake Archer	Wrentham							7	

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Lake Archer (MA72002) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added due to cyanotoxin data not meeting the threshold at LAA-LA-S1S. The Alert previously identified in the 2010 IR cycle for a low Secchi depth transparency measurement (MassDEP 2008) is being removed based on data collected by the Lake Archer Association at two stations in 2021, however, the prior Alert, identified at the same time for high fecal coliform bacteria in storm drain discharges to the lake (MassDEP 2008), remains in effect since there are no recent bacteria data to report.

During the period 2015 through 2022, C-HAB postings for Lake Archer (MA72002) were reported to MDPH based on visual observations for 7 days in 2021.

In Lake Archer (MA72002), the Lake Archer Association (LAA) collected Secchi data in 2021 at LAA_LA-N1 [42.072485, -71.336941, Lake Archer North Basin] and LAA_LA-S1 [42.067234, -71.339701, Lake Archer South Basin]. LAA also collected cyanotoxin data at LAA_LA-N1S [42.074405, -71.337165, Lake Archer North Basin Surface] in 2021 and at LAA_LA-S1S [42.06647, -71.3375, Lake Archer South Basin Surface] from 2021-2022. In 2021 at station LAA_LA-N1 (station depth=9.14 m) the Secchi depth measurements ranged from 3.51-7.62 m (n=6) while at station LAA_LA-S1 (station depth=9.14) the Secchi depth measurements ranged from 3.57-8.08 m (n=6) indicating water clarity meeting the 1.2 m (4 ft) threshold at both stations.

Analysis of microcystins samples from LAA_LA-N1S in 2021 (n=1), LAA_LA-S1S in 2021 (n=4), and LAA_LA-S1S in 2022 (n=7) indicated that the concentrations exceeded the threshold of 8 µg/L within two 10-day periods in 2021 and more than three 10-day periods in 2022 with exceedances on 2021-08-16, 2021-08-27, 2021-08-29, 2021-09-03 and 2022-07-03, 2022-07-10, 2022-09-20, 2022-09-29, 2022-09-30, 2022-10-01, 2022-10-18 at LAA_LA-S1S. These exceedances are indicative of a Harmful Algal Blooms impairment.

Other Indicators

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

Data Year(s)	Summary
2021-2022	In Lake Archer (MA72002), the Lake Archer Association (LAA) collected Secchi data in 2021 at LAA_LA-N1 [42.072485, -71.336941, Lake Archer North Basin] and LAA_LA-S1 [42.067234, -71.339701, Lake Archer South Basin]. LAA collected cyanotoxin data at LAA_LA-N1S [42.074405, -71.337165, Lake Archer North Basin Surface] in 2021 and at LAA_LA-S1S [42.06647, -71.3375, Lake Archer South Basin Surface] from 2021-2022. In 2021 at station LAA_LA-N1 (station depth=9.14 m) the Secchi depth measurements ranged from 3.51-7.62 m (n=6) while at station LAA_LA-S1 (station depth=9.14) the Secchi depth measurements ranged from 3.57-8.08 m (n=6) indicating water clarity meeting the 1.2 m (4 ft) threshold at both stations. Analysis of microcystins samples from LAA_LA-N1S in 2021 (n=1), LAA_LA-S1S in 2021 (n=4), and LAA_LA-S1S in 2022 (n=7) indicated that the concentrations exceeded the threshold of 8 µg/L within two 10-day periods in 2021 and more than three 10-day periods in 2022 with exceedances on 2021-08-16, 2021-08-27, 2021-08-29, 2021-09-03 and 2022-07-03, 2022-07-10, 2022-09-20, 2022-09-29, 2022-09-30, 2022-10-01, 2022-10-18 at LAA_LA-S1S. These exceedances are indicative of a Harmful Algal Blooms impairment.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	YES

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Lake Archer (MA72002) is assessed as Not Supporting. A Harmful Algal Blooms impairment is being added due to cyanotoxin data not meeting the threshold at LAA-LA-S1S. The Alert previously identified in the 2010 IR cycle for a low Secchi depth transparency measurement (MassDEP 2008) is being removed based on data collected by the Lake Archer Association at two stations in 2021, however, the prior Alert, identified at the same time for high fecal coliform bacteria in storm drain discharges to the lake (MassDEP 2008), remains in effect since there are no recent bacteria data to report. During the period 2015 through 2022, C-HAB postings for Lake Archer (MA72002) were reported to MDPH based on visual observations for 7 days in 2021. In Lake Archer (MA72002), the Lake Archer Association (LAA) collected cyanotoxin data at LAA_LA-N1S [42.074405, -71.337165, Lake Archer North Basin Surface] in 2021 and at LAA_LA-S1S [42.06647, -71.3375, Lake Archer South Basin Surface] from 2021-2022. Analysis of microcystins samples from LAA_LA-N1S in 2021 (n=1), LAA_LA-S1S in 2021 (n=4), and LAA_LA-S1S in 2022 (n=7) indicated that the concentrations exceeded the threshold of 8 µg/L within two 10-day periods in 2021 and more than three 10-day periods in 2022 with exceedances on 2021-08-16, 2021-08-27, 2021-08-29, 2021-09-03 and 2022-07-03, 2022-07-10, 2022-09-20, 2022-09-29, 2022-09-30, 2022-10-01, 2022-10-18 at LAA_LA-S1S. These exceedances are indicative of a Harmful Algal Blooms impairment.

Lake Pearl (MA72092)

Location:	Wrentham.
AU Type:	FRESHWATER LAKE
AU Size:	237 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Dissolved Oxygen	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Eurasian Water Milfoil, Myriophyllum Spicatum*)	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	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/2026 IR [Harmful Algal Blooms, high priority] Follow-up monitoring should be conducted in Lake Pearl (MA72092) 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 extended duration blooms (>20 days) were reported to MDPH based on visual evidence for 2 years reported on during the 2024/2026 IR cycle, and cell count data are needed to make a determination that the recreational uses are impaired. {Lake Pearl (MA72092)}; 2024/2026 IR [Nutrient/Eutrophication Biological Indicators, high priority] Physicochemical data should be collected/evaluated for Lake Pearl (MA72092) which can potentially provide evidence of a Nutrient/Eutrophication Biological Indicators impairment. Note that during the 2024/2026 IR cycle an Aquatic Plants (Macrophytes) impairment was added due to dense/very dense plant coverage over >25% of the lake, including non-rooted macrophytes (duckweed), and the lake has been subject to recurring Harmful Algal Blooms (according to visual evidence). {Lake Pearl (MA72092)} 2024/2026 IR [Aquatic Plants, low]] Follow-up monitoring should be conducted in Lake Pearl (MA72092) to determine if excess aquatic plant growth may be impairing the Recreational and Aesthetic uses. During the MAP2 macrophyte mapping survey (n=1) in Jul 2017, greater than 25% (27.4%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. Aquatic vegetation appeared to be limited to shallow areas located adjacent to wetland regions that are naturally conducive to both rooted and non-rooted aquatic plant growth.

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 in Lake Pearl (MA72092) recently, so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Aesthetics Use for Lake Pearl (MA72092) is assessed as Fully Supporting. An Alert is also being identified for Harmful Algal Blooms and Aquatic Plants (Macrophytes) in this waterbody. MassDEP staff recorded aesthetics observations as part of the MAP2 lake monitoring project during summer 2017 at two stations on Lake Pearl (MA72092) in Wrentham: at northwestern edge of lake, at Sweatt Beach, east off Woolford Road, Wrentham (W2698/MAP2L-154S, n=5) and at the deep hole index site (W0970/MAP2L-154, n=3). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, but littoral zone duckweed was recorded in two of ten shoreline plots (n=1). During the MAP2 macrophyte mapping survey (n=1) in Jul 2017, greater than 25% (27.4%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Alert for Aquatic Plants because the vegetation appeared to be limited to shallow areas that are naturally conducive to both rooted and non-rooted aquatic plant growth. During the period 2015 through 2022, C-HAB postings for Lake Pearl were reported to MDPH based on visual observations for 71 days in 2020 and 29 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. However, an Alert is being identified for Harmful Algal Blooms and a recommendation for follow-up sampling will be made.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0970	MassDEP	Water Quality	Lake Pearl	[deep hole, Wrentham]	42.066050	-71.352043
W2698	MassDEP	Water Quality	Lake Pearl	[northwestern edge of lake, at Sweatt Beach, east off Woolford Road, Wrentham]	42.068379	-71.355757

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
W0970	2017	3	Aesthetic observations were made by MassDEP field sampling crews at Station W0970 (MAP2L-154) on Lake Pearl (MA72092) 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, greater than 25% (27.4%) of the waterbody was determined to have an aquatic macrophyte biovolume >50%. The observations from the MAP2 survey are indicative of an Alert.

Station Code	Data Year	Field Sheet Count	Aesthetics Summary Statement
W2698	2017	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2698 (MAP2L-154S) on Lake Pearl (MA72092) 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 noted at 2 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
W0970	Lake Pearl	2017	Aesthetics Impaired?	No	3	3
W0970	Lake Pearl	2017	Aquatic Plant Density, Overall	None	3	3
W0970	Lake Pearl	2017	Aquatic Plant Density, Whole Lake	Unobservable	3	3
W0970	Lake Pearl	2017	Color	Light Yellow/Tan	2	3
W0970	Lake Pearl	2017	Color	None	1	3
W0970	Lake Pearl	2017	Duckweed Density, Whole Lake	None	1	3
W0970	Lake Pearl	2017	Duckweed Density, Whole Lake	Unobservable	2	3
W0970	Lake Pearl	2017	Objectionable Deposits	No	3	3
W0970	Lake Pearl	2017	Odor	None	2	3
W0970	Lake Pearl	2017	Odor	Sulfide (rotten egg)	1	3
W0970	Lake Pearl	2017	Scum	No	2	3
W0970	Lake Pearl	2017	Scum	Yes	1	3
W0970	Lake Pearl	2017	Turbidity	None	2	3
W0970	Lake Pearl	2017	Turbidity	Slightly Turbid	1	3
W2698	Lake Pearl	2017	Aesthetics Impaired?	No	5	5
W2698	Lake Pearl	2017	Color	Light Yellow/Tan	1	5
W2698	Lake Pearl	2017	Color	None	3	5
W2698	Lake Pearl	2017	Color	NR	1	5
W2698	Lake Pearl	2017	Objectionable Deposits	No	5	5
W2698	Lake Pearl	2017	Odor	None	4	5
W2698	Lake Pearl	2017	Odor	NR	1	5
W2698	Lake Pearl	2017	Scum	No	3	5
W2698	Lake Pearl	2017	Scum	Yes	2	5
W2698	Lake Pearl	2017	Turbidity	None	4	5
W2698	Lake Pearl	2017	Turbidity	Slightly Turbid	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 Lake Pearl (MA72092) were reported to MDPH based on visual observations for 71 days in 2020 and 29 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. 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 Pearl	Wrentham						71	29	

Primary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for Lake Pearl (MA72092) is assessed as Fully Supporting. An Alert is being identified for Harmful Algal Blooms - additional sampling is recommended for this AU.

During the period 2015 through 2022, C-HAB postings for Lake Pearl (MA72092) were reported to MDPH based on visual observations for 71 days in 2020 and 29 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. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made.

In Lake Pearl (MA72092) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W0970 [MAP2L-154, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2698 [MAP2L-154S, Shoreline]. At station W0970 (station depth=10 m) the Secchi depth measurements ranged from 3.1-4.05 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 W2698 (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 Lake Pearl (MA72092) at W2698 [northwestern edge of lake, at Sweatt Beach, E off Woolford Rd, Wrentham] from May-Sep 2017 (n=5). Analysis of this limited frequency *E. coli* dataset indicated no intervals had GMs >126 CFU/100mL and no samples exceeded the 410 CFU/100mL STV (the seasonal GM was 13 CFU/100mL). *E. coli* data from W2698 are indicative of good water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0970	MassDEP	Water Quality	Lake Pearl	[deep hole, Wrentham]	42.066050	-71.352043
W2698	MassDEP	Water Quality	Lake Pearl	[northwestern edge of lake, at Sweatt Beach, east off Woolford Road, Wrentham]	42.068379	-71.355757

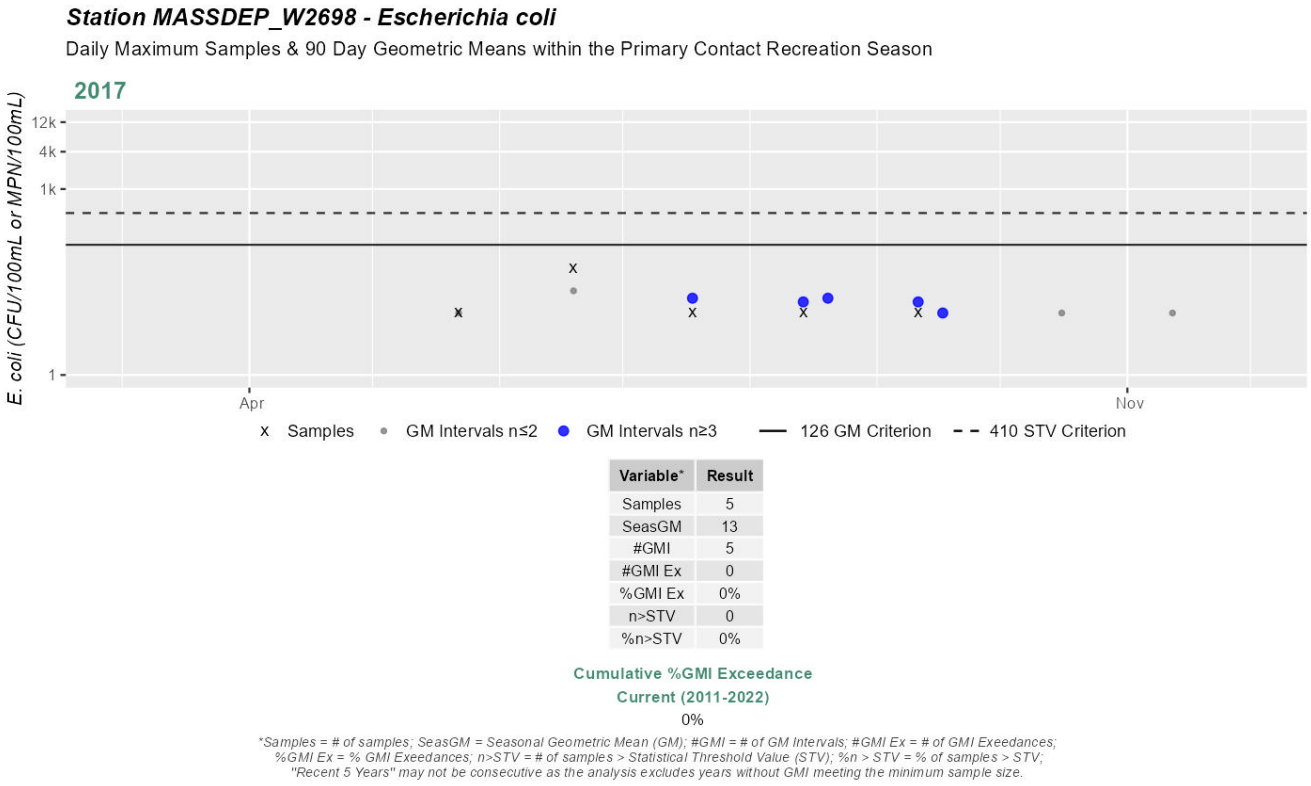
Bacteria Data

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
W2698	MassDEP	E. coli	05/22/17	09/11/17	5	10	52	13



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 Lake Pearl (MA72092) in 2017, MassDEP collected Secchi and cyanobacteria cell count data at W0970 [MAP2L-154, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2698 [MAP2L-154S, Shoreline]. At station W0970 (station depth=10 m) the Secchi depth measurements ranged from 3.1-4.05 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 W2698 (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)
W0970	Lake Pearl	Index	2017	3	0	NA
W2698	Lake Pearl	Shoreline	2017	3	0	NA

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Fully Supporting	YES

2024/26 Use Attainment Summary
The Secondary Contact Recreation Use for Lake Pearl (MA72092) is assessed as Fully Supporting. An Alert is being identified for Harmful Algal Blooms- additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Lake Pearl (MA72092) were reported to MDPH based on visual observations for 71 days in 2020 and 29 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. However, a Harmful Algal Blooms Alert is being identified for this waterbody and a recommendation for follow-up sampling will be made. In Lake Pearl (MA72092) in 2017, MassDEP collected cyanobacteria cell count data at W0970 [MAP2L-154, Index-deep hole], and cyanobacteria cell count and cyanotoxin data at W2698 [MAP2L-154S, Shoreline]. 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 W2698 (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 Lake Pearl (MA72092) at W2698 [northwestern edge of lake, at Sweatt Beach, E off Woolford Rd, Wrentham] from May-Sep 2017 (n=5). Analysis of this limited frequency *E. coli* dataset from W2698 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 13 CFU/100mL). *E. coli* data from W2698 are indicative of good water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2698	MassDEP	Water Quality	Lake Pearl	[northwestern edge of lake, at Sweatt Beach, east off Woolford Road, Wrentham]	42.068379	-71.355757

Bacteria Data

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

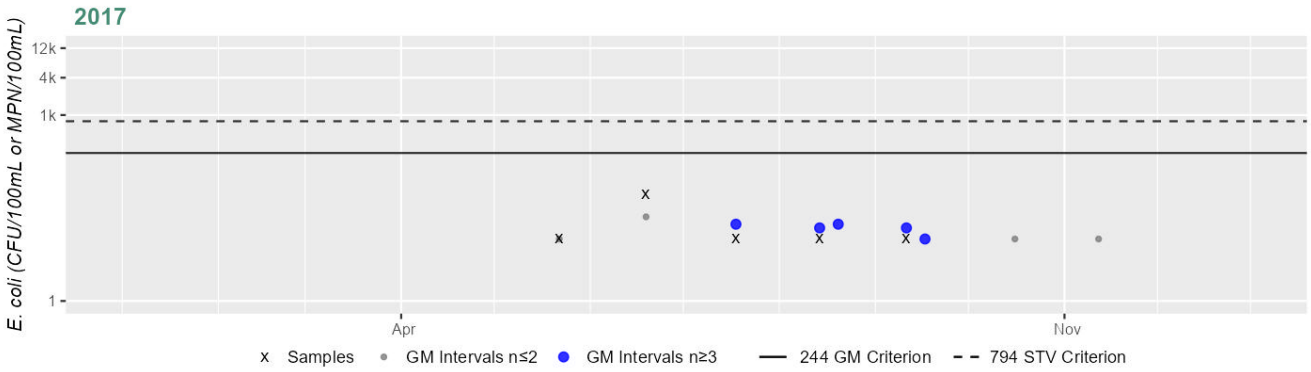
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2698	MassDEP	E. coli	05/22/17	09/11/17	5	10	52	13

Station MASSDEP_W2698 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	13
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Lake Waban (MA72125)

Location:	Wellesley.
AU Type:	FRESHWATER LAKE
AU Size:	109 ACRES
Classification/Qualifier:	B

No usable data were available for Lake Waban (MA72125) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4c	4c	(Fanwort*)	--	Unchanged
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(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	--	--	--	--

Lake Winthrop (MA72140)

Location:	Holliston.
AU Type:	FRESHWATER LAKE
AU Size:	131 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Aquatic Plants (Macrophytes)*)	--	Changed
5	5	(Fanwort*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	2,3,7,8-Tetrachlorodibenzo-p-dioxin	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	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	--	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Pesticide Application (N)	--	X	--	--	--

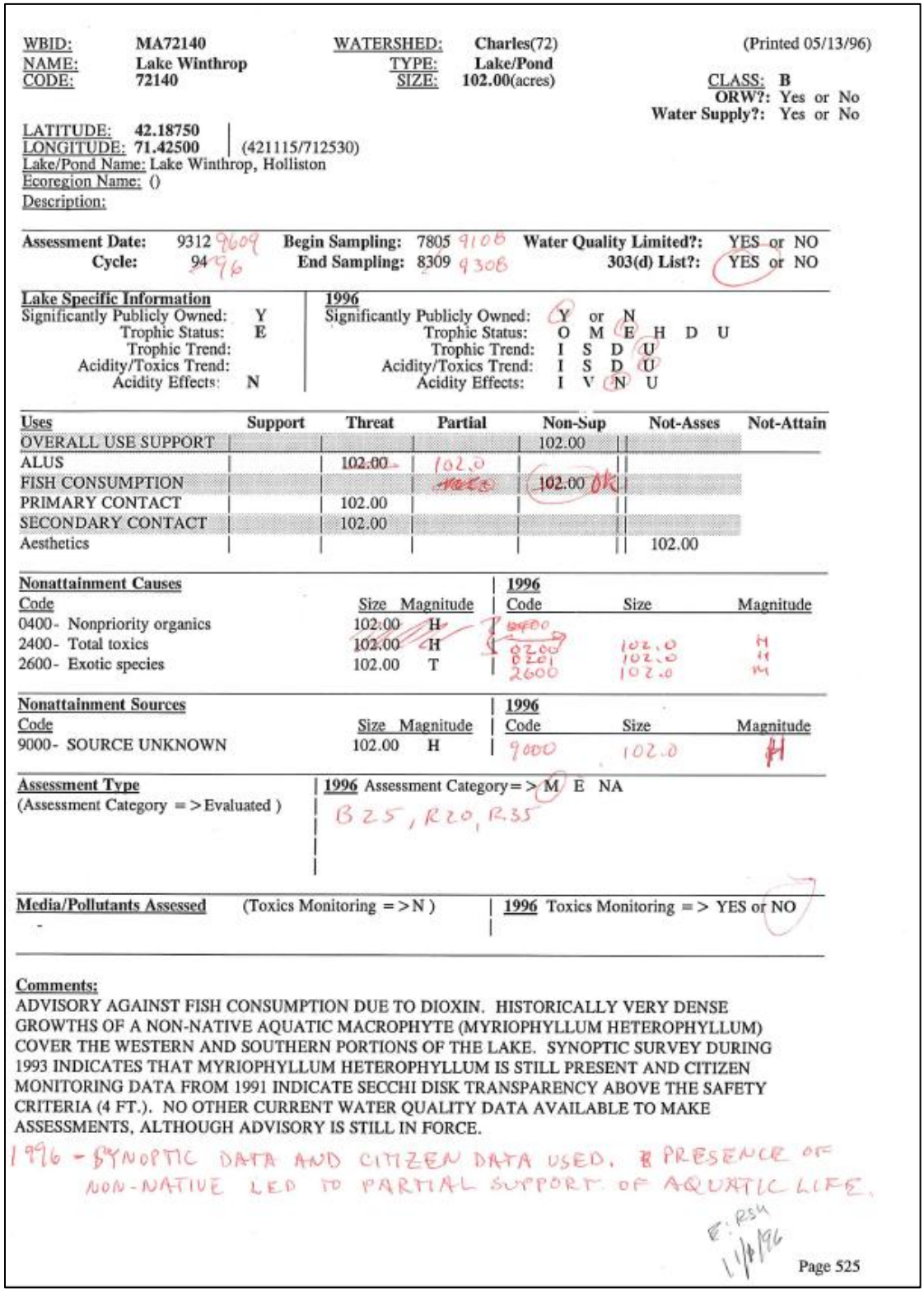
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Source Unknown (N)	--	X	--	--	--

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, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Lake Winthrop was first listed as impaired for Noxious Aquatic Plants in 1992, then sporadically listed until the cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). Although it is not clear what data were used to make the original 1992 impairment, a synoptic survey of the lake was conducted in July 1997 by MassDEP staff in which it was noted that roughly 15% of the lake's surface was covered with dense/very dense aquatic plants, but that submerged vegetation was likely dense through much of the lake. The species list included the non-rooted, floating species, *Ceratophyllum demersum* and *C. echinatum* (MassDEP 1997, MassDEP 2002). Google Earth images from September 2014 and October 2020 show less than 25% of the lake covered in aquatic plants (with likely less in other years) (Google Earth Pro Undated). Aquatic vegetation appeared to be limited to shallow areas located adjacent to wetland regions that are naturally conducive to both rooted and non-rooted aquatic plant growth. Aquatic Plants (Macrophytes) is being delisted as a pollutant and relisted as a non-pollutant as less than 25% of the open water was covered in aquatic macrophytes in both recent years and the 1998 synoptic survey.

Aquatic Plants (Macrophytes)

1994/1996 WBS Coding Sheet (MassDEP 2002):



WBID: MA72140 WATERSHED: Charles(72) (Printed 05/13/96)
NAME: Lake Winthrop TYPE: Lake/Pond
CODE: 72140 SIZE: 102.00(acres)
CLASS: B
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE: 42.18750
LONGITUDE: 71.42500 (421115/712530)
Lake/Pond Name: Lake Winthrop, Holliston
Ecoregion Name: ()
Description:

Assessment Date: 9312 9609 Begin Sampling: 7805 9108 Water Quality Limited?: YES or NO
Cycle: 94 96 End Sampling: 8309 9308 303(d) List?: YES or NO

Lake Specific Information		1996	
Significantly Publicly Owned:	Y	Significantly Publicly Owned:	Y or N
Trophic Status:	E	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:	N	Acidity Effects:	I V N U

Uses	Support	Threat	Partial	Non-Sup	Not-Asses	Not-Attain
OVERALL USE SUPPORT				102.00		
ALUS		102.00	102.0			
FISH CONSUMPTION				102.00		
PRIMARY CONTACT		102.00				
SECONDARY CONTACT		102.00				
Aesthetics					102.00	

Nonattainment Causes			1996		
Code	Size	Magnitude	Code	Size	Magnitude
0400- Nonpriority organics	102.00	H	0400		
2400- Total toxics	102.00	H	0200	102.0	H
2600- Exotic species	102.00	T	0201	102.0	H
			2600	102.0	M

Nonattainment Sources			1996		
Code	Size	Magnitude	Code	Size	Magnitude
9000- SOURCE UNKNOWN	102.00	H	9000	102.0	H

Assessment Type (Assessment Category = > Evaluated)
1996 Assessment Category = > M E NA
B25, R20, R35

Media/Pollutants Assessed (Toxics Monitoring = > N)
1996 Toxics Monitoring = > YES or NO

Comments:
ADVISORY AGAINST FISH CONSUMPTION DUE TO DIOXIN. HISTORICALLY VERY DENSE GROWTHS OF A NON-NATIVE AQUATIC MACROPHYTE (MYRIOPHYLLUM HETEROPHYLLUM) COVER THE WESTERN AND SOUTHERN PORTIONS OF THE LAKE. SYNOPTIC SURVEY DURING 1993 INDICATES THAT MYRIOPHYLLUM HETEROPHYLLUM IS STILL PRESENT AND CITIZEN MONITORING DATA FROM 1991 INDICATE SECCHI DISK TRANSPARENCY ABOVE THE SAFETY CRITERIA (4 FT.). NO OTHER CURRENT WATER QUALITY DATA AVAILABLE TO MAKE ASSESSMENTS, ALTHOUGH ADVISORY IS STILL IN FORCE.

1996 - SYNOPTIC DATA AND CITIZEN DATA USED. ∄ PRESENCE OF NON-NATIVE LED TO PARTIAL SUPPORT OF AQUATIC LIFE.

E. RSH 1/8/96

Page 525

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: LAKE WINTHROP SIZE (acres): 102 PALIS NO. 72140*

TOWN/CITY: HOLLISTON USGS TOPO. SHEET: MEDFIELD 7.5X15'

DATE: 7-23-97 WATERSHED: CHARLES OBSERVERS: HAYNES

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) Pleasure Point Boat Ramp – Follow winthrop St. to end; turn Right

Site (2) Norfolk Lane off Hill street @ South end of Lake

Site (3) Stoddard Park @ East margin of Lake, Stoddard Park Lane off Norfolk Street

ACCESS – Type (for multiple observation sites use numbers in boxes that apply)

Formal Boat Ramp [1] and/or Beach [1][2] Informal Boat Ramp [3] and/or Beach

Park Conservation Area Right-of-Way: Road Other [1][2] Private

Other (describe): [1] TOWN PARK DEPARTMENT

[2] Private home that abuts lake margin

[3] Boat launch area to left of Public beach, and outside of Park fence

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public [1] Private [2] Uncertain [3] open to public, but those out of town pay fee.

Names of Owners [1] Town of Holliston No. & Street Name

[2] Pignalosa Point No. & Street Name Norfolk Lane

(?) [3] town of Holliston ?? No. & Street Name

SIGN POSTINGS –

[1] Warning: Stop Aquatic Plant Spread [3] Fishing Advisory or Ban

Public Access without Restrictions Public Access with Restrictions

Describe any restrictions (or other notes) [1] NO POWER BOATS

[3] "DO NOT EAT THE FISH"

WATER/LAKE QUALITY OBSERVATIONS –

Turbidity: [1][2][3] Slight Moderate Excessive

Diss. Organics: [1][2][3] Slight Moderate Dark

Algal Bloom: Slight Moderate Dense

Transparency: < 1.2 m.(4 ft.) [1][2][3] > 1.2 m. (4 ft.)

[1][2][3] Estimated visually

Measured w/ Secchi Disk meters meters meters

Bottom Type: Undecomposed matter Muck/silt [3] Sand [1] Gravel [1] Cobble Boulders

[1] Vegetation Other

Other Observations: Vegetation is dense, both floating-leaf and submerged

[3] Vegetation is comparatively scant

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

Settle to form objectionable deposits Describe:

Float as debris, scum or other matter to form a nuisance Describe:

Produce objectionable odor, color, taste, or turbidity Describe:

Produce undesirable nuisance species of aquatic life Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED --

NON-NATIVE WETLANDS SPECIES PRESENT: [1][2] *Lythrum Salicaria* ✓ ☐☐☐ *Phragmites* sp.

NON-NATIVE AQUATIC SPECIES PRESENT: ☐☐☐ *Butomus umbellatus* [1][2][3] *Cabomba caroliniana* ✓ ☐☐☐ *Egeria densa*

☐☐☐ *Eichornia crassipes* ☐☐☐ *Hydrilla verticillata* ☐☐☐ *Hydrocharis morsus-ranae* ☐☐☐ *Marsilea quadrifolia*

☐☐☐ *Myriophyllum aquaticum* [1]☐☐ *Myriophyllum heterophyllum* ✓ ☐☐☐ *Myriophyllum spicatum*

☐☐[3] *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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
[1]☐☐ Decodon verticillatum	[1]☐☐ Brasenia schreberi	[1]☐☐ Gratiola
☐☐☐ Pontederia cordata	[1]☐☐ Nymphaea (dominant)	[1]☐☐ Potamogeton (Dom P.)
☐☐[3] scirpus	[1]☐☐ Nuphar	[1]☐☐ Potamogeton (small isolates below surface)
☐☐☐	☐☐☐	[1]☐☐ Ceratophyllum demersum
☐☐☐	☐☐☐	[1]☐☐ Ceratophyllum echinatum
☐☐☐	☐☐☐	☐☐[2] Najas guadalupensis (likely)*
☐☐☐	☐☐☐	☐☐[2] Potamogeton robbinsii
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY – * large mass washed up on shoreline

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ ____ ☐ ____ ☐ ____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover [1] 95* % [2] 75+ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ ____ ☐ ____ ☐ ____

Percent of entire lake surface covered with dense or very dense aquatic plants 15 (***) % Forms F S

Describe locations of dense and/or very dense plant beds (*) Except for boat passage area, and out to island (R) and point (L) // [3] Vegetation in shallow water is diminutive and covered @ sediment

Loss of open water habitat over entire lake (estimated): ☐ 90 - 100 % ☐ 60 - 85 % ☐ 30 - 55 % [2] ≤ 25 %

ASSESSMENTS – (***) Submerged Veg. is likely dense throughout much of lake, but can vary with storm;

TROPHIC STATUS ESTIMATE: ☐ Oligotrophic ☐ Mesotrophic [E] Eutrophic ☐ Hypereutrophic ☐ Dystrophic ☐ Undetermined

305(b) USE IMPAIRMENT ASSESSMENTS (Acres): Benthic Mats (old) evident @ [3]

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed
Aquatic Life			102.0		
Fish Consumption				~~102.0~~	
Primary Contact				20.0	~~102.0~~
Secondary Contact	82.0			20.0	
Aesthetics	82.0			20.0	

CAUSES: [X] Noxious plants (2200) – Size 20.0 acres / Magnitude M [X] Exotic plants (2600) – Size 102.0 acres / Magnitude M

☐ Turbidity (2500) – Size ____ acres / Magnitude ____ ☐ Flow alteration (1500) – Size ____ acres / Magnitude ____

☐ Metals (0500) ☐ Hg (0501) – Size ____ acres / Magnitude ____ ☐ Siltation (1100) – Size ____ acres / Magnitude ____

[X] Pesticides (0200) – Size 102.0 acres / Magnitude M ☐ ____ ( ) – Size ____ acres / Magnitude ____

Dioxin (0204)

SOURCES: Describe any obvious sources of impairment _____

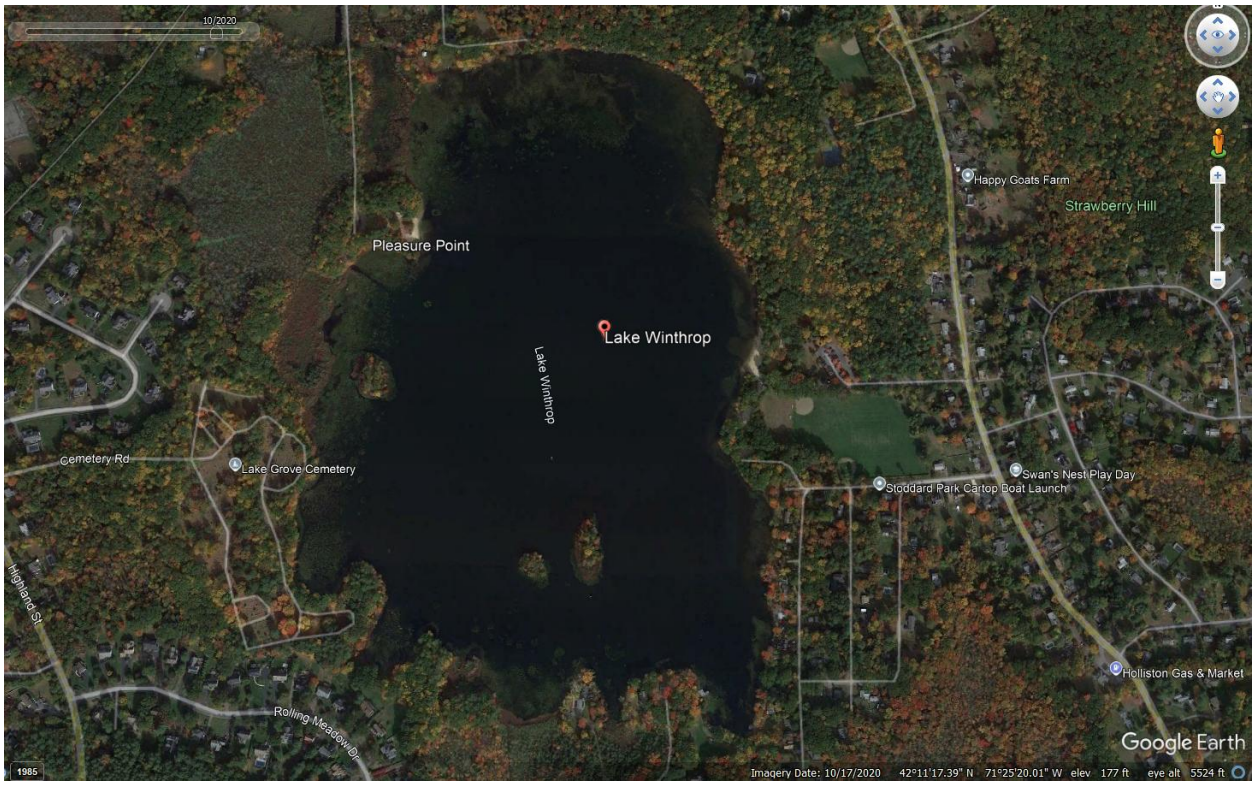
Google Earth image of Lake Winthrop while clear, 3/31/2005 (Google Earth Pro Undated):



Google Earth image of Lake Winthrop, 9/27/2014 (Google Earth Pro Undated):



Google Earth image of Lake Winthrop, 10/17/2020 (Google Earth Pro Undated):



Designated Use Attainment Decisions

Fish Consumption

2024/26 Use Attainment	Alert
Not Supporting	No

2024/26 Use Attainment Summary
The Fish Consumption Use for Lake Winthrop (MA72140) continues to be assessed as Not Supporting. The prior 2,3,7,8-Tetrachlorodibenzo-P-Dioxin impairment (otherwise known as dioxin) is being carried forward and a new impairment is being added for PFAS in Fish Tissue. Fish toxics sampling was conducted in Lake Winthrop (MA72140) at station F0033 (PFAS Study ID 22) on 09/26/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. MA DPH issued a site-specific advisory for PFAS in Lake Winthrop (referred to by MA DPH as "Winthrop, Lake") in their May 2024 Freshwater Fish Consumption Advisory List and retained both this advisory as well as the existing dioxin 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
F0033	MassDEP	Fish Toxics	Lake Winthrop	[Holliston (impounded by Lake Winthrop Dam, NAT ID: MA02949)]	42.188167	-71.424429

Fish Tissue Data

Summary of Fish Tissue Data and Resulting Fish Consumption Advisories (MA DPH 2025) (MassDEP 2023) (MassDEP Undated 5)

Summary
Fish toxics sampling was conducted in Lake Winthrop (MA72140) at station F0033 (PFAS Study ID 22) on 09/26/2022 as part of a MassDEP-funded project evaluating 40 PFAS analytes in selected fresh waters. Because of elevated PFAS measured in fish filets, MA DPH issued site-specific fish consumption advisories for Lake Winthrop (referred to by MA DPH as Winthrop, Lake) in their May 2024 Freshwater Fish Consumption Advisory List and retained them in the January 2025 list. Additionally, MA DPH retained the existing site-specific fish consumption advisories for Dioxin associated with Lake Winthrop (referred to by MA DPH as Winthrop, 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 2,3,7,8-Tetrachlorodibenzo-p-dioxin (known as dioxin) for Lake Winthrop (MA72140).

MassDEP 2022 PFAS in Fish Tissue Data for Massachusetts Surface Waters (MassDEP 2023) (MassDEP Undated 5) (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 MA DPH's 2023 Technical Support Document for the evaluation of PFAS in recreational waterbodies.]

[Species List: BC = black crappie, CP = chain pickerel, 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
F0033	22	09/26/2022	BC	ND	0.31	ND	11.15	PFNA
F0033	22	09/26/2022	CP	ND	ND	ND	7.00	
F0033	22	09/26/2022	YP	ND	0.14	ND	2.30	PFNA

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Lake Winthrop (MA72140) continues to be assessed as Not Supporting with the prior Aquatic Plants (Macrophytes) pollutant impairment being removed and then added again as a non-pollutant. 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. As described in detail in the 2024 CALM guidance document the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Lake Winthrop was first listed as impaired for Noxious Aquatic Plants in 1992, then sporadically listed until the cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). Although it is not clear what data were used to make the original 1992 impairment, a synoptic survey of the lake was conducted in July 1997 by MassDEP staff in which it was noted that roughly 15% of the lake's surface was covered with dense/very dense aquatic plants, but that submerged vegetation was likely dense through much of the lake. The species list included the non-rooted, floating species, *Ceratophyllum demersum* and *C. echinatum* (MassDEP 1997, MassDEP 2002). Google Earth images from September 2014 and October 2020 show less than 25% of the lake covered in aquatic plants (with likely less in other years) (Google Earth Pro Undated). Aquatic vegetation appeared to be limited to shallow areas located adjacent to wetland regions that are naturally conducive to both rooted and non-rooted aquatic plant growth. Aquatic Plants (Macrophytes) is being delisted as a pollutant and relisted as a non-pollutant as less than 25% of the open water was covered in aquatic macrophytes in both recent years and the 1998 synoptic survey. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Lake Winthrop AU.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lake Winthrop (MA72140) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Aquatic Plants (Macrophytes) pollutant impairment (from the Aesthetics Use) is being removed and then added again as a non-pollutant. 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. Surface water sampling was conducted in Lake Winthrop (MA72140) at station W3284 (PFAS Study ID 22) and at station W3285 (PFAS Study ID 22B), the beach on the eastern edge of the lake, on 09/26/2022 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
W3284	MassDEP	Water Quality	Lake Winthrop	[the default location representing co-located water/fish PFAS sampling, Holliston]	42.188167	-71.424429
W3285	MassDEP	Water Quality	Lake Winthrop	[beach on eastern edge of lake, Holliston]	42.188669	-71.420135

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 Winthrop (MA72140) at station W3284 (PFAS Study ID 22) on 09/26/2022 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.
Surface water sampling was conducted in Lake Winthrop (MA72140) at station W3285 (PFAS Study ID 22B), the beach on the eastern edge of the lake, on 09/26/2022 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 ∑PFAS6 equals the sum of PFOA, PFOS, PFNA, PFHxS, PFDA, PFHpA (not all shown individually here); * indicates the ∑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	∑PFAS6 ng/L
W3284	22	09/26/2022	5.4	2.2	0.76j	1.1j	3.9j	3.5	<2	12.0*
W3285	22B	09/26/2022	5.4	2.3	0.83j	1.1j	4j	3.3	<1.9	12.5*

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Lake Winthrop (MA72140) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Aquatic Plants (Macrophytes) pollutant impairment (from the Aesthetics Use) is being removed and then added again as a non-pollutantSince 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.

Linden Pond (MA72063)

Location:	Holliston.
AU Type:	FRESHWATER LAKE
AU Size:	1 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Added
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	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, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Linden Pond (MA72063) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Linden Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that the entire pond visible from the observation site was covered with very dense aquatic plants, including the non-rooted, floating species, *Lemna minor* (MassDEP 1997, MassDEP 2002). In Google Earth images from August 2013, September 2014, and September 2019 the pond is nearly entirely covered with dense vegetation, (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 (*Lemna minor*). 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.

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):

WBID: MA 72063 ✓ WATERSHED: Charles ✓ RSM (Printed 08/01/96)
NAME: Linden Pond TYPE: Lake/Pond
CODE: 72063 SIZE: 1.0 acres

CLASS: B/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name:
Ecoregion Name:
Description: Linden Pond, Holliston

Assessment Date: 9810 Begin Sampling: 9707 Water Quality Limited?: YES or NO
Cycle: 96 99 End Sampling: 9707 303(d) List?: YES or NO

Lake Specific Information

Significantly Publicly Owned:
Trophic Status:
Trophic Trend:
Acidity/Toxics Trend:
Acidity Effects:

1996 99
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						
ALUS				1.0		
FISH CONSUMPTION					1.0	
PRIMARY CONTACT					1.0	
SECONDARY CONTACT				1.0		
Aesthetics				1.0		
ALUS Bio				1.0		
ALUS Chem/Phys						
ALUS Toxicity						

Nonattainment Causes

Code	Size	Magnitude
2200	1.0	M
2500	1.0	M

Nonattainment Sources

Code	Size	Magnitude
9000	1.0	H

Assessment Type

1996 99 Assessment Category = > (M) E NA

R35

Media/Pollutants Assessed

1996 Toxics Monitoring = > YES or (NO)

Comments:

1999: 11 July 1997 synoptic survey indicated very dense vegetation over the entire surface. Also, turbidity reduced transparency to below safety criterion (Secchi disk < 4ft).

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: LINDEN POND SIZE (acres): 1 PALIS NO. 72063

TOWN/CITY: HOLLISTON USGS TOPO. SHEET: MEDFIELD 7.5X15'

DATE: 7-11-97 WATERSHED: CHARLES OBSERVERS: R. HAYNES

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) ATOP DAM ADJACENT TO LINDEN STREET - SHORT PATH FROM STREET

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 ☑☐☐ INFORMAL "PARK" WITH SINGLE BENCH, MAY / MAY NOT BE OWNED PUBLICLY. CRUDE

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

Diss. Organics: ☑☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☑☐☐ < 1.2 m.(4 ft.) ☐☐☐ > 1.2 m. (4 ft.)

☑☐☐ Estimated visually

☐☐☐ Measured w/ Secchi Disk ☐ meters ☐ meters ☐ meters

Surface is 100% covered with aquatic vegetation, and pond is where less than 4 feet deep throughout

Bottom Type: ☑☐☐ Undecomposed matter ☐☐☐ Muck/silt ☐☐☐ Sand ☐☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

☐☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: ☑ Current observed from bottom. Area is, without doubt, less than 4' deep.

☐

☐

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

☐☐☐ Produce objectionable odor, color, taste, or turbidity

Describe:

☑☐☐ Float as debris, scum or other matter to form a nuisance

Describe: TIPS of tall vegetation

☑☐☐ Produce undesirable nuisance species of aquatic life

Describe: Nuisance in this particular pond

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED –

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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☑☐☐ SPARGANIUM	☑☐☐ Potamogeton pulcher	☑☐☐ Callitriche
☐☐☐ Covers about 20-25%	☐☐☐ (robust specimens)	☑☐☐ Elodea canadensis
☐☐☐ of Pond	☐☐☐ Lemna minor	☐☐☐ These two plants
☑☐☐ Sagittaria	☐☐☐	☐☐☐ have grown to
☐☐☐	☐☐☐	☐☐☐ exceedingly dense
☑☐☐ Peltandra	☐☐☐	☐☐☐ concentrations;
☐☐☐	☐☐☐	☐☐☐ as can not see
☐☐☐	☐☐☐	☐☐☐ any water on
☐☐☐	☐☐☐	☐☐☐ most of the Pond
☐☐☐	☐☐☐	☐☐☐ (≥90%)
☐☐☐	☐☐☐	☑☐☐ Ludwigia
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY –

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☐ _____ ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants 100 % Forms _____

Describe locations of dense and/or very dense plant beds Entire Pond, which is visible from Dam. 100%. type plants creates an objectional environment

Loss of open water habitat over entire lake (estimated): ☑ 90 - 100 % ☐ 60 - 85 % ☐ 30 - 55 % ☐ ≤ 25 %

ASSESSMENTS –

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

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed
Aquatic Life					1.0
Fish Consumption					1.0
Primary Contact				1.0	
Secondary Contact				1.0	
Aesthetics				1.0	

CAUSES: ☒ Noxious plants (2200) – Size 1.0 acres / Magnitude M ☐ Exotic plants (2600) – Size _____ acres / Magnitude _____
☒ Turbidity (2500) – Size 1.0 acres / Magnitude M ☐ Flow alteration (1500) – Size _____ acres / Magnitude _____
☐ Metals (0500) ☐ Hg (0501) – Size _____ acres / Magnitude _____ ☐ Siltation (1100) – Size _____ acres / Magnitude _____
☐ _____ ( ) – Size _____ acres / Magnitude _____ ☐ _____ ( ) – Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment _____

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



Google Earth image of Linden Pond, 8/24/2013 (Google Earth Pro Undated):



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



Google Earth image of Linden Pond, 6/22/2019 (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 in Linden Pond (MA72063), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Linden Pond (MA72063) continues to be assessed as Not Supporting with the prior Turbidity impairment being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added. As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Linden Pond (MA72063) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Linden Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that the entire pond visible from the observation site was covered with very dense aquatic plants, including the non-rooted, floating species, *Lemna minor* (MassDEP 1997, MassDEP 2002). In Google Earth images from August 2013, September 2014, and September 2019 the pond is nearly entirely covered with dense vegetation, (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 (*Lemna minor*). 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. No new aesthetics observation data are available to evaluate the Aesthetics Use for Linden Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data for Linden Pond (MA72063) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both 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 Linden Pond (MA72063) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant and a Nutrient/Eutrophication Biological Indicators impairment is also being added (both from the Aesthetics Use)

Little Farm Pond (MA72064)

Location:	Sherborn.
AU Type:	FRESHWATER LAKE
AU Size:	24 ACRES
Classification/Qualifier:	B

No usable data were available for Little Farm Pond (MA72064) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Louisa Lake (MA72068)

Location:	Milford.
AU Type:	FRESHWATER LAKE
AU Size:	8 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Louisa Lake (MA72068) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Lymans Pond (MA72070)

Location:	Dover.
AU Type:	FRESHWATER LAKE
AU Size:	4 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Aquatic Plants (Macrophytes)*)	--	Changed
4a	4a	Turbidity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Aquatic Plants (Macrophytes)*)	Source Unknown (N)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	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, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Lymans Pond (MA72070) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Lymans Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that 60% of the pond was covered with *Nymphoides cordata* (little floating heart), a native, rooted, floating macrophyte (there were no non-rooted species on the taxa list). A large resident Canada geese population was also noted, likely contributing to the hypereutrophic conditions observed (MassDEP 1997, MassDEP 2002). In a Google Earth image from September 2014, it appears that some type of bloom or plant growth covers roughly 2/3 of the pond, while in October 2020, there appears to be some turbidity and a bit of a bloom in less than 25% of the pond (Google Earth Pro Undated). As a protective measure, Aquatic Plants (Macrophytes) is being delisted as a pollutant for Lymans Pond and added again as a non-pollutant since more than 25% of the pond was covered in vegetation in 2014; however, use attainment should be reevaluated after new water quality and aquatic macrophyte surveys are conducted.

Aquatic Plants (Macrophytes)

1999 WBS Coding Sheet (MassDEP 2002):

WBID: MA 72070 WATERSHED: Charles
NAME: Lymans Pond TYPE: Lake/Pond
CODE: 72070 SIZE: 3.0 acres

RSM (Printed 08/01/96)

CLASS: B/
ORW?: Yes or No
Water Supply?: Yes or No

LATITUDE:
LONGITUDE:
Lake/Pond Name:
Ecoregion Name:
Description: Lymans Pond, Dover

Assessment Date: 9820
Cycle: 96 99
Begin Sampling: 9707
End Sampling: 9707
Water Quality Limited?: YES or NO
303(d) List?: YES or NO

Lake Specific Information

	1996 99
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			1.0	2.0		
ALUS					3.0	
FISH CONSUMPTION					3.0	
PRIMARY CONTACT			1.0	2.0		
SECONDARY CONTACT			1.0	2.0		
Aesthetics			1.0	2.0		
ALUS Bio						
ALUS Chem/Phys						
ALUS Toxicity						

Nonattainment Causes

Code	Size	Magnitude
2200	2.0	M
2500	3.0	M

Nonattainment Sources

Code	Size	Magnitude
9000	3.0	H

Assessment Type

1996 99 Assessment Category = > M E NA

R 35

Media/Pollutants Assessed

1996 99 Toxics Monitoring = > YES or NO

Comments:

1999: 15 July 1997 synoptic survey indicated very dense floating vegetation over about 60% of the pond. Also, turbidity reduced transparency to below the safety criterion (Secchi disk 1.4 m).

1997 Synoptic Survey Field Sheet (MassDEP 1997):

LAKE/POND: LYMANS POND SIZE (acres): 3 PALIS NO. 72070

TOWN/CITY: ~~SHERBORN~~ DOVER USGS TOPO. SHEET: MEDFIELD 7.5X15'

DATE: 7-15-97 WATERSHED: CHARLES OBSERVERS: HAYNES

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) Private residence that abuts Pond on west shoreline.

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): ☑ Back of yard to west margin of Pond.

☑ " " North margin of Pond.

☐

ACCESS – Ownership (for multiple observation sites use numbers in boxes that apply)

Public ☐☐☐ Private ☑☑☐ Uncertain ☐☐☐

Names of Owners ☑ MR CHASE* No. & Street Name ☑ 74 FARM STREET (Housekeeper = Mary)

* Former head of Stanley Co. of the present time ☑ " " 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

Diss. Organics: ☑☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dark

Algal Bloom: ☐☐☐ Slight ☐☐☐ Moderate ☐☐☐ Dense

Transparency: ☑☑☐ <1.2 m.(4 ft.) ☐☐☐ >1.2 m. (4 ft.)

☑☑☐ Estimated visually

☐☐☐ Measured w/ Secchi Disk ☐ meters ☐ meters ☐ meters

Best judgement but difficult to judge with current stage

Bottom Type: ☑☑☐ Undecomposed matter ☐☑☐ Muck/silt ☑☐☐ Sand ☑☐☐ Gravel ☐☐☐ Cobble ☐☐☐ Boulders

☐☐☐ Vegetation Other ☐ ☐ ☐

Other Observations: ☑ Problem @ large resident population of Canada Geese. Count = 31, but

☑ Housekeeper said there is often twice that many. Fecal dropping

☐ are abundant. Source of bacteria to Charles R. ?? (Sample)

AESTHETICALLY OBJECTIONABLE – Substances attributable to wastewater or other discharges (point or nonpoint) that:

☐☐☐ Settle to form objectionable deposits

Describe:

☑☐☐ Float as debris, scum or other matter to form a nuisance

Describe: oil-like (natural) skin on surface

☑☐☐ Produce objectionable odor, color, taste, or turbidity

Describe:

☐☐☐ Produce undesirable nuisance species of aquatic life ?

Describe:

RECORD OF AQUATIC PLANT "SPECIES" OBSERVED – Extreme SW end of Pond at outlet (5 plants), urged owners to bag & remove these plants.

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:

Emergent Plants	Floating Leaf Plants	Submergent Plants
☑☑☐ Polygonum sp.	☑☐☐ Nymphoides cordatum*	☑☐☐ Gratiola lutea
☐☑☐ Typha latifolia	☑☐☐ Nuphar (Scant)	☐☐☐
☐☑☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐
☐☐☐	☐☐☐	☐☐☐

AQUATIC PLANT DENSITY – * White-flowered floating heart (RCH verified plant ID in Lab)

Percent of suface area (at observation site) with dense (50 - 75 %) aquatic plant cover ☐ ____ % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent] present ☐ _____ ☐ _____ ☐ _____

Percent of surface area (observation site) with very dense (75 - 100 %) plant cover ☑ 100 % ☐ ____ % ☐ ____ %

Forms [(E)mergent, (F)loating, or (S)ubmerent) present ☑ F ☐ _____ ☐ _____

Percent of entire lake surface covered with dense or very dense aquatic plants 60 % Forms F (Abund 100% floating heart)

Describe locations of dense and/or very dense plant beds North of Island, East of Island, and Southeast of Island. Plus, 5-10 ft. fringe along W. shoreline. All due to one plant: Nymphoides cordatum.

Loss of open water habitat over entire lake (estimated): ☐ 90 - 100 % ☐ 60 - 85 % ☐ 30 - 55 % ☐ ≤ 25 %

ASSESSMENTS –

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

305(b) USE IMPAIRMENT ASSESSMENTS (Acres):

USES	Full Support	Threatened	Partial Support	Non-support	Not Assessed
Aquatic Life					3.0
Fish Consumption					3.0
Primary Contact			1.0	2.0	
Secondary Contact			1.0	2.0	
Aesthetics			1.0	2.0	

CAUSES: ☒ Noxious plants (2200) – Size 2.0 acres / Magnitude M ☐ Exotic plants (2600) – Size _____ acres / Magnitude _____

☒ Turbidity (2500) – Size 3.0 acres / Magnitude M ☐ Flow alteration (1500) – Size _____ acres / Magnitude _____

☐ Metals (0500) ☐ Hg (0501) – Size _____ acres / Magnitude _____ ☐ Siltation (1100) – Size _____ acres / Magnitude _____

☐ _____ ( ) – Size _____ acres / Magnitude _____ ☐ _____ ( ) – Size _____ acres / Magnitude _____

SOURCES: Describe any obvious sources of impairment Large, resident population of geese on small (3 acre) pond.

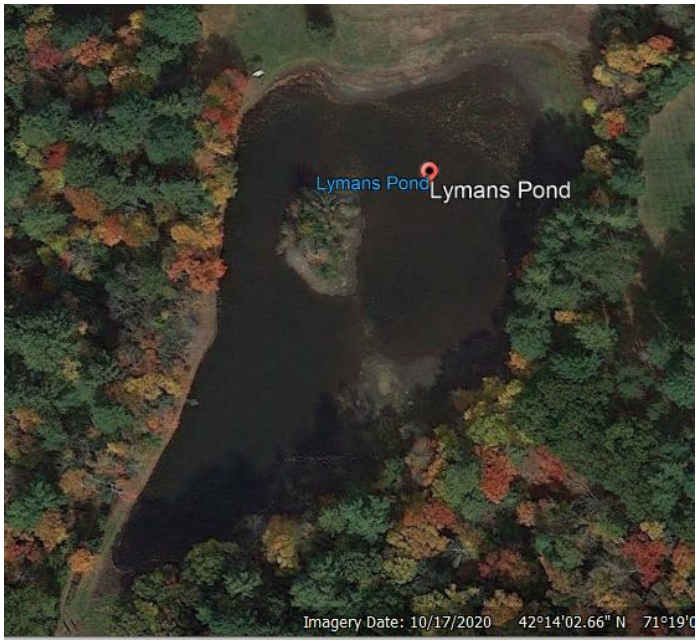
Google Earth image of Lymans Pond while clear, 4/9/2008 (Google Earth Pro Undated):



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



Google Earth image of Lymans Pond, 10/17/2020 (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 in Lymans Pond (MA72070), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Lymans Pond (MA72070) continues to be assessed as Not Supporting with the prior Turbidity impairment being carried forward. The prior Aquatic Plants (Macrophytes) pollutant impairment is being removed and then added again as a non-pollutant. As described in detail in the 2024 CALM, the mapping of Aquatic Plants (Macrophytes) impairments as a pollutant is being reevaluated. Lymans Pond (MA72070) lies within the area subject to the Upper and Middle Charles River Basin Nutrient TMDL which called for reductions in phosphorus mainly from WWTF discharges and stormwater (CRWA 2011). Lymans Pond was first listed as impaired for Noxious Aquatic Plants in 2002 and this cause was remapped to Aquatic Plants (Macrophytes) during the 2008 IR cycle (MassDEP 2015). The original impairment was based on a July 1997 synoptic survey conducted by MassDEP staff in which it was noted that 60% of the pond was covered with *Nymphoides cordata* (little floating heart), a native, rooted, floating macrophyte (there were no non-rooted species on the taxa list). A large resident Canada geese population was also noted, likely contributing to the hypereutrophic conditions observed (MassDEP 1997, MassDEP 2002). In a Google Earth image from September 2014, it appears that some type of bloom or plant growth covers roughly 2/3 of the pond, while in October 2020, there appears to be some turbidity and a bit of a bloom in less than 25% of the pond (Google Earth Pro Undated). As a protective measure, Aquatic Plants (Macrophytes) is being delisted as a pollutant for Lymans Pond and added again as a non-pollutant since more than 25% of the pond was covered in vegetation in 2014; however, use attainment should be reevaluated after new water quality and aquatic macrophyte surveys are conducted. No new data are available to evaluate the Aesthetics Use for Lymans Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lymans Pond (MA72070) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward, and the prior Aquatic Plants (Macrophytes) pollutant impairment (from the Aesthetics Use) is being removed then added again as a non-pollutant.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Lymans Pond (MA72070) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Turbidity impairment (from the Aesthetics Use) is being carried forward, and the prior Aquatic Plants (Macrophytes) pollutant impairment (from the Aesthetics Use) is being removed then added again as a non-pollutant.

Mill Brook (MA72-39)

Location:	Source wetlands, Pine Street, Medfield to mouth at confluence with the Charles River, Medfield.
AU Type:	RIVER
AU Size:	3.7 MILES
Classification/Qualifier:	B

Mill Brook (MA72-39)

Watershed Area: 4.18 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.18	3.93	1.52	1.42
Agriculture	3.1%	3.3%	2.4%	2.5%
Developed	23%	23.9%	17.3%	17.5%
Natural	64.6%	63.6%	61%	60.3%
Wetland	9.2%	9.2%	19.4%	19.6%
Impervious	11%	11.4%	7.9%	7.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
2	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 in this Mill Brook AU (MA72-39), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Mill Brook AU (MA72-39) 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 Mill Brook AU (MA72-39) 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 this Mill Brook AU (MA72-39) 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 quarter of Mill Brook (MA72-39) at W1586 [N Meadows Rd (Rt. 27), Medfield (identified as N Brook on USGS 1987 Medfield quadrangle)] from May-Oct 2007 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 81 CFU/100mL). Historic *E. coli* data from W1586 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 Mill Brook (MA72-39).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1586	MassDEP	Water Quality	Mill Brook	[North Meadows Road (Route 27), Medfield (identified as North Brook on USGS 1987 Medfield quadrangle)]	42.195981	-71.330221

Bacteria Data

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

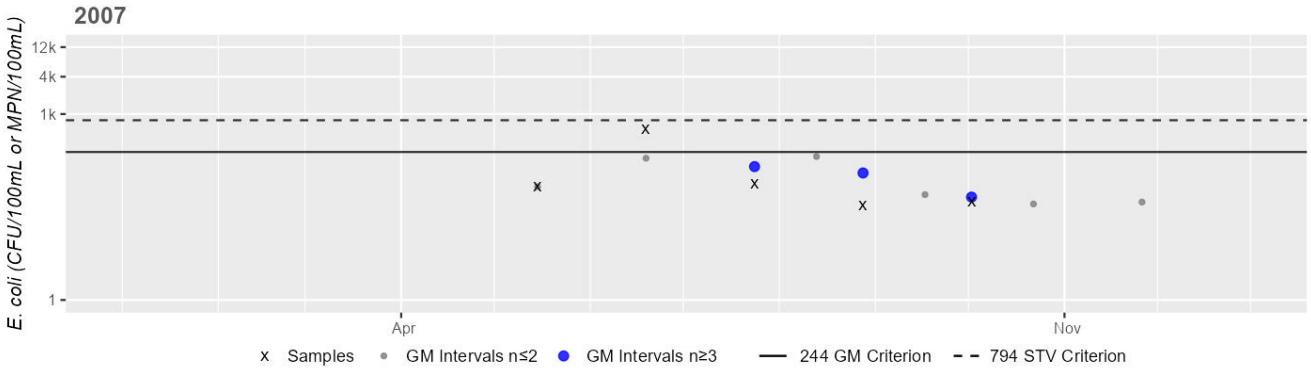
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1586	MassDEP	E. coli	05/15/07	10/02/07	5	33	560	81

Station MASSDEP_W1586 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	81
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

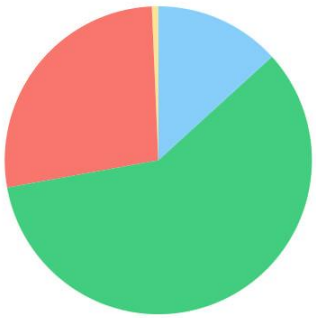
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Mill River (MA72-15)

Location:	Headwaters, outlet Bush Pond, Norfolk to mouth at confluence with the Charles River, Norfolk.
AU Type:	RIVER
AU Size:	3.5 MILES
Classification/Qualifier:	B

Mill River (MA72-15)

Watershed Area: 15.69 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	15.69	6.55	5.13	2.10
Agriculture	0.7%	1.3%	0.7%	1.5%
Developed	27.2%	26.3%	16.2%	15.4%
Natural	58.9%	57%	58.4%	50.6%
Wetland	13.3%	15.5%	24.6%	32.6%
Impervious	10.6%	9.3%	6%	5.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Curly-leaf Pondweed*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Temperature	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
Temperature	Dam or Impoundment (N)	X	--	--	--	--
Temperature	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 in this Mill River AU (MA72-15), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Fully Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Mill River AU (MA72-15) is assessed as Fully Supporting based on the general lack of objectionable conditions observed by MassDEP staff during summer 2015. MassDEP staff recorded aesthetics observations at one station in the downstream half of this Mill River AU at ~250 feet upstream/south of Miller Street, Norfolk (W2530), during the summer of 2015 as part of the MAP2 wadeable streams monitoring project (n=5). There were generally no persistent objectionable conditions (odors, deposits, growths, or turbidity) recorded, though field staff noted dense and/or very dense aquatic plants on three occasions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2530	MassDEP	Water Quality	Mill River	[approximately 250 feet upstream/south of Miller Street, Norfolk]	42.121769	-71.365440

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
W2530	2015	5	Aesthetic observations were made by MassDEP field sampling crews at Station W2530 on Mill River (MA72-15) 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 dense/very dense aquatic plants (n=3).

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
W2530	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
W2530	Mill River	2015	Aesthetics Impaired?	No	5	5
W2530	Mill River	2015	Aquatic Plant Density, Overall	Dense	1	5
W2530	Mill River	2015	Aquatic Plant Density, Overall	Moderate	2	5
W2530	Mill River	2015	Aquatic Plant Density, Overall	Very Dense	2	5
W2530	Mill River	2015	Color	Light Yellow/Tan	5	5
W2530	Mill River	2015	Objectionable Deposits	No	5	5
W2530	Mill River	2015	Odor	None	5	5
W2530	Mill River	2015	Periphyton Density, Filamentous	Dense	1	5
W2530	Mill River	2015	Periphyton Density, Filamentous	None	2	5
W2530	Mill River	2015	Periphyton Density, Filamentous	Sparse	2	5

Station Code	Waterbody	Data Year	Parameter	Result	Result Count	Total Field Sheet Count
W2530	Mill River	2015	Periphyton Density, Film	None	4	5
W2530	Mill River	2015	Periphyton Density, Film	Sparse	1	5
W2530	Mill River	2015	Scum	No	3	5
W2530	Mill River	2015	Scum	Yes	2	5
W2530	Mill River	2015	Turbidity	None	3	5
W2530	Mill River	2015	Turbidity	Slightly Turbid	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 Mill River AU (MA72-15) is assessed as Fully Supporting based on 2015 data from W2530.
MassDEP staff collected *E. coli* bacteria samples in the downstream half of this Mill River AU (MA72-15) at W2530 [~250 ft upstream/S of Miller St, Norfolk] from May-Sep 2015 (n=5). Analysis of this limited frequency *E. coli* dataset indicated no intervals had GMs >126 CFU/100mL and no samples exceeded the 410 CFU/100mL STV (the seasonal GM was 92 CFU/100mL). *E. coli* data from W2530 are indicative of good water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2530	MassDEP	Water Quality	Mill River	[approximately 250 feet upstream/south of Miller Street, Norfolk]	42.121769	-71.365440

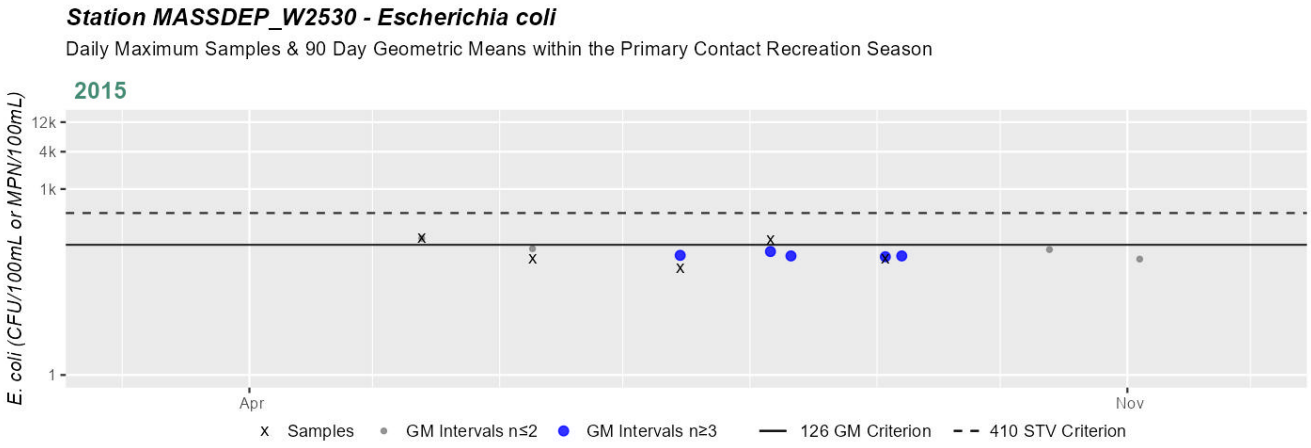
Bacteria Data

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
W2530	MassDEP	E. coli	05/13/15	09/03/15	5	52	160	92



Variable*	Result
Samples	5
SeasGM	92
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 Mill River AU (MA72-15) is assessed as Fully Supporting based on 2015 data from W2530. MassDEP staff collected *E. coli* bacteria samples in the downstream half of this Mill River AU (MA72-15) at W2530 [~250 ft upstream/S of Miller St, Norfolk] from May-Sep 2015 (n=5). Analysis of this limited frequency *E. coli* dataset indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100ml STV (the overall GM was 92 CFU/100mL). *E. coli* data from W2530 are indicative of good water quality conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2530	MassDEP	Water Quality	Mill River	[approximately 250 feet upstream/south of Miller Street, Norfolk]	42.121769	-71.365440

Bacteria Data

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

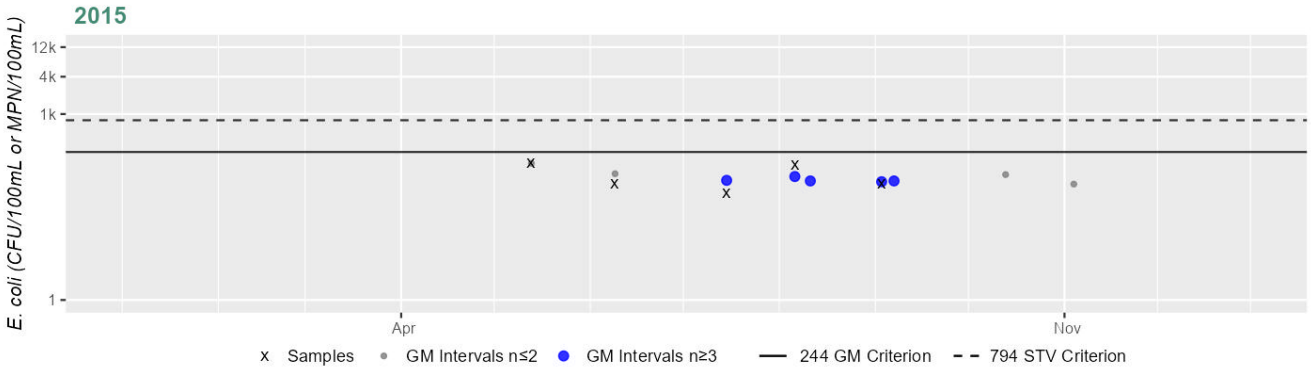
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2530	MassDEP	E. coli	05/13/15	09/03/15	5	52	160	92

Station MASSDEP_W2530 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	92
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Mine Brook (MA72-14)

Location:	Headwaters in Franklin State Forest, Franklin to mouth at confluence with the Charles River, Franklin (through former 2006 segment: Mine Brook Pond MA72077) (HQW applies upstream of former Franklin WWTP discharge, approximately 4 miles upstream of mouth (note: Franklin WWTP tied into Medway (CRWPCD) on 15 January 1980)).
AU Type:	RIVER
AU Size:	8.9 MILES
Classification/Qualifier:	B: WWF, HQW* (*HQW qualifier applies to portion upstream of former Franklin WWTP)

Mine Brook (MA72-14)

Watershed Area: 15.72 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	15.72	4.55	4.24	1.17
Agriculture	1.3%	0.4%	0.9%	0.4%
Developed	32.4%	29.7%	18.1%	15%
Natural	50.4%	47.4%	44.6%	35.6%
Wetland	16%	22.5%	36.4%	49.1%
Impervious	16.4%	11.7%	9.5%	6.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Habitat Assessment*)	--	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
(Habitat Assessment*)	Habitat Modification - other than Hydromodification (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
Temperature	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
Temperature	Loss of Riparian Habitat (N)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--
Temperature	Upstream/Downstream Source (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 [Aquatic Plants (Macrophytes), low priority] Follow-up monitoring should be conducted in Mine Brook (MA72-14), since an Alert was carried forward in the 2024/2026 IR cycle which was originally identified in the 2016 IR cycle for dense and very dense aquatic macrophytes (based on observations at Pond Street, Franklin (W1147) in 2007 and just upstream at the Rt. 495 crossing south of Rt. 140, Franklin (W1625) in 2006) (MassDEP Undated 6). {W1147 & W1625}

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 in Mine Brook (MA72-14), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
There are no aesthetics observation data available to assess the status of the Aesthetics Use for Mine Brook (MA72-14), so it is Not Assessed. The prior Alert identified for dense and very dense Aquatic Macrophytes (based on observations at Pond Street, Franklin (W1147) in 2007 and just upstream at the Rt. 495 crossing south of Rt. 140, Franklin (W1625) in 2006) (MassDEP Undated 6) is being carried forward. Sampling should be conducted in this Mine Brook AU and in particular at W1147 and W1625 to determine current conditions.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Mine Brook (MA72-14) 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 CRWA_MB-U and CRWA_MB-D. CRWA staff/volunteers collected *E. coli* bacteria samples in 2019 at 2 stations in Mine Brook (MA72-14). Samples were collected from the following stations/sample years from upstream to downstream: in the upstream 1/3 of the AU at CRWA_MB-U [Beaver St, Franklin] from Apr-Oct 2019 (n=10) and in the downstream 1/3 of the AU at CRWA_MB-D [Beech St, Franklin] from Apr-Oct 2019 (n=9). Analysis of the single year moderate frequency *E. coli* dataset from CRWA_MB-U indicated 78% of intervals had GMs >126 CFU/100mL and 4 samples exceeded the 410 CFU/100mL STV. Analysis of the single year moderate frequency *E. coli* dataset from CRWA_MB-D indicated 80% of intervals had GMs >126 CFU/100mL and 1 sample exceeded the 410 CFU/100mL STV. *E. coli* data from both CRWA_MB-U and CRWA_MB-D are reflective of the existing Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_MB-D	Charles River Watershed Association	Water Quality	Mine Brook	Beech Street, Franklin	42.122444	-71.433395
CRWA_MB-U	Charles River Watershed Association	Water Quality	Mine Brook	Beaver Street, Franklin	42.084282	-71.414123

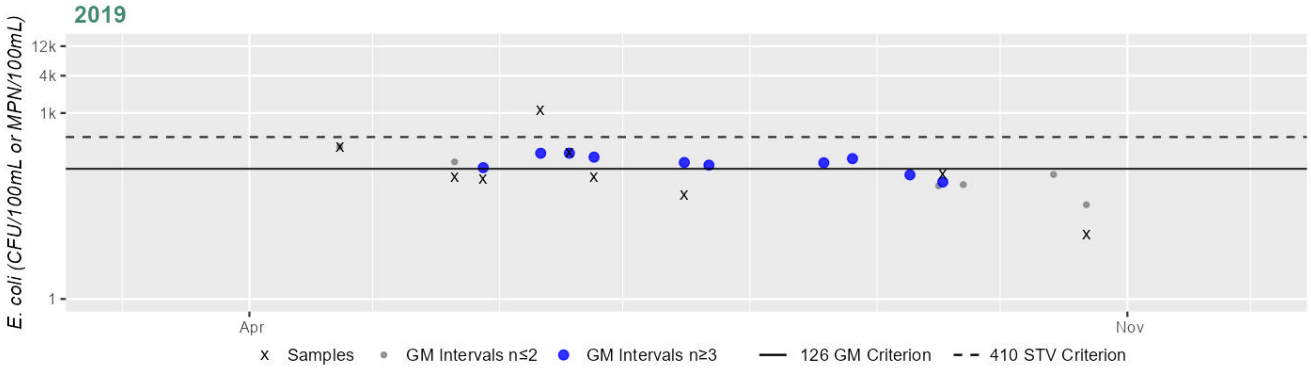
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_MB-D	Charles River Watershed Association	E. coli	04/23/19	10/22/19	9	10	1119	112
CRWA_MB-U	Charles River Watershed Association	E. coli	04/23/19	10/22/19	10	56	4510	237

Station CRWA_MB-D - Escherichia coli

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



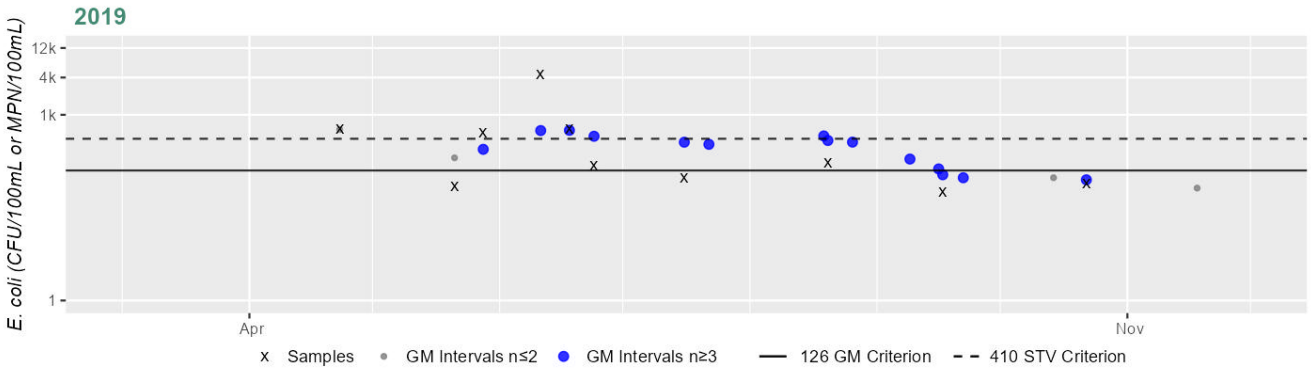
Variable*	Result
Samples	9
SeasGM	112
#GMI	10
#GMI Ex	8
%GMI Ex	80%
n>STV	1
%n>STV	11%

Cumulative %GMI Exceedance
Current (2011-2022)
80%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_MB-U - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	237
#GMI	14
#GMI Ex	11
%GMI Ex	78%
n>STV	4
%n>STV	40%

Cumulative %GMI Exceedance
Current (2011-2022)
78%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Mine Brook (MA72-14) 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 CRWA_MB-U. The prior Alert for macrophytes is being removed from the recreational uses but continues to be maintained under the Aesthetics Use.

CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in Mine Brook (MA72-14) from 2011-2019 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the upstream 1/3 of the AU at CRWA_MB-U [Beaver St, Franklin] from Apr-Nov 2019 (n=11) and in the downstream 1/3 of the AU at CRWA_MB-D [Beech St, Franklin] from Apr-Nov 2019 (n=10). Analysis of the single year moderate frequency *E. coli* dataset from CRWA_MB-U indicated 60% of intervals had GMs >244 CFU/100mL and 1 sample exceeded the 794 CFU/100mL STV. Analysis of the single year moderate frequency *E. coli* dataset from CRWA_MB-D indicated no intervals had GMs >244 CFU/100mL and 1 sample exceeded the 794 CFU/100mL STV. While *E. coli* data from the downstream station CRWA_MB-D meet 2024 CALM guidance, *E. coli* data from the upstream station CRWA_MB-U are indicative of an Escherichia Coli (E. Coli) impairment.

MassDEP staff also collected *E. coli* bacteria samples at 2 stations in Mine Brook (MA72-14) in the historic IR window (1997-2010) in 2007. Samples were collected from the following stations/sample years from upstream to downstream: W1588 [W Central St (Rt. 140), Franklin] from May-Oct 2007 (n=5) and W1147 [Pond St, Franklin] from May-Oct 2007 (n=5). These data were indicative of good water quality conditions but are superseded by the more recent results in the current IR window.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_MB-D	Charles River Watershed Association	Water Quality	Mine Brook	Beech Street, Franklin	42.122444	-71.433395
CRWA_MB-U	Charles River Watershed Association	Water Quality	Mine Brook	Beaver Street, Franklin	42.084282	-71.414123
W1147	MassDEP	Water Quality	Mine Brook	[Pond Street, Franklin]	42.124532	-71.430655

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1588	MassDEP	Water Quality	Mine Brook	[West Central Street (Route 140), Franklin]	42.090478	-71.432836

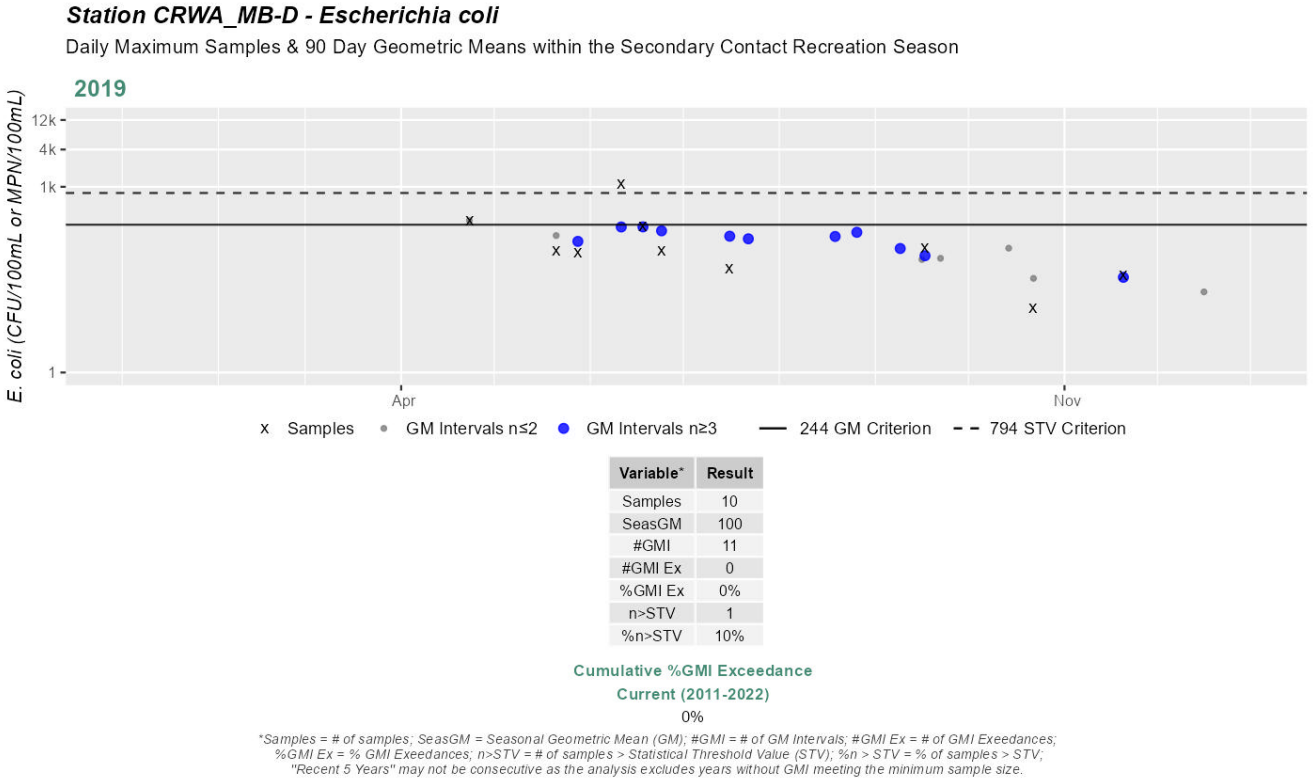
Bacteria Data

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

(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)

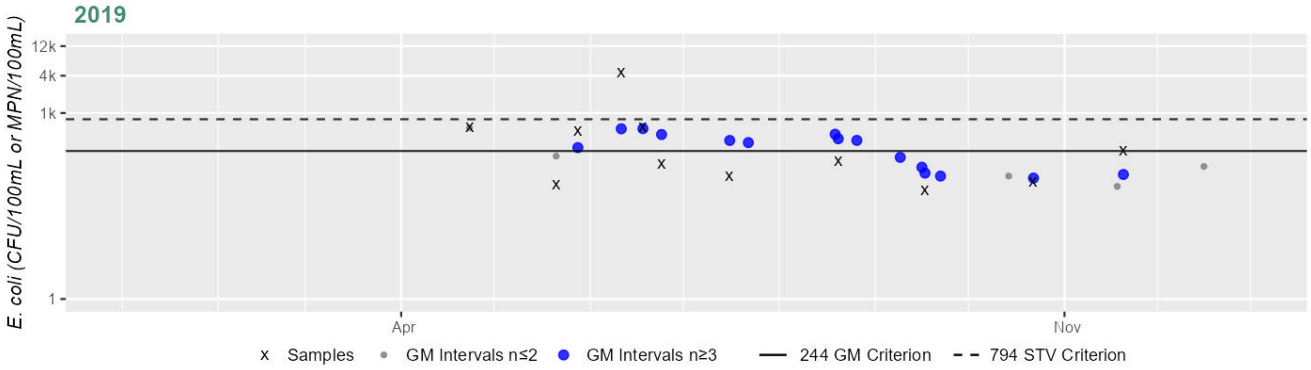
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_MB-D	Charles River Watershed Association	E. coli	04/23/19	11/20/19	10	10	1119	100
CRWA_MB-U	Charles River Watershed Association	E. coli	04/23/19	11/20/19	11	56	4510	238
W1147	MassDEP	E. coli	05/15/07	10/02/07	5	100	340	145
W1588	MassDEP	E. coli	05/15/07	10/02/07	5	33	190	60



Station CRWA_MB-U - Escherichia coli

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



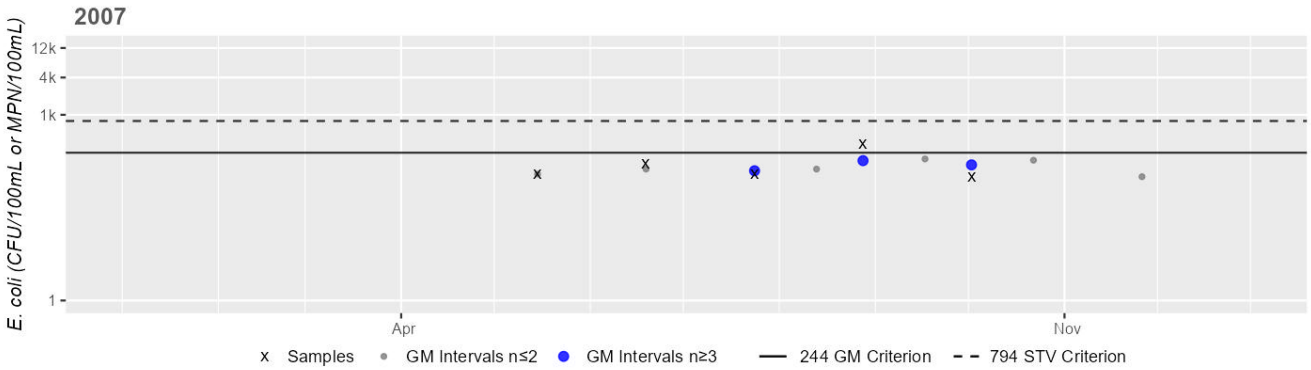
Variable*	Result
Samples	11
SeasGM	238
#GMI	15
#GMI Ex	9
%GMI Ex	60%
n>STV	1
%n>STV	9%

Cumulative %GMI Exceedance
Current (2011-2022)
60%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1147 - Escherichia coli

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



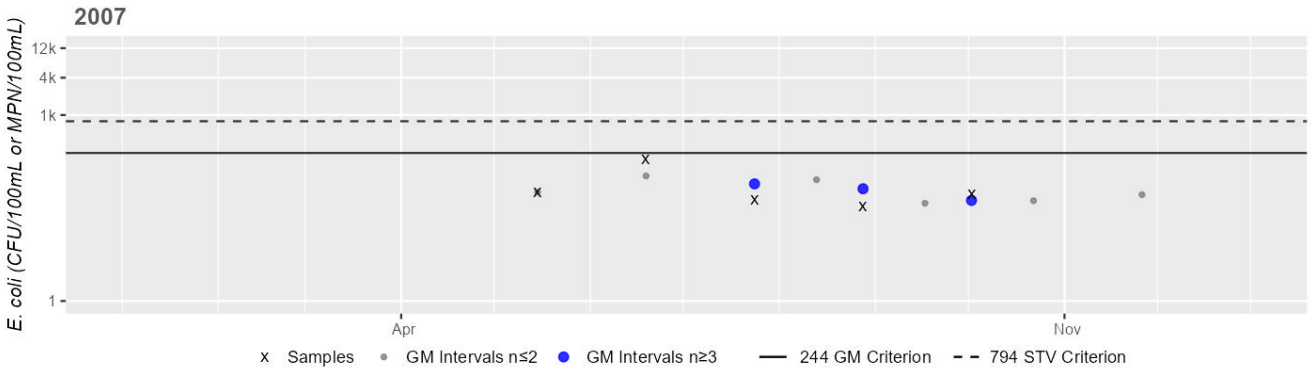
Variable*	Result
Samples	5
SeasGM	145
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1588 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	60
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Mirror Lake (MA72078)

Location:	Wrentham/Norfolk.
AU Type:	FRESHWATER LAKE
AU Size:	62 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Curly-leaf Pondweed*)	--	Unchanged
4a	4a	Nutrient/Eutrophication Biological Indicators	40319	Unchanged
4a	4a	Phosphorus, Total	40319	Unchanged
4a	4a	Transparency / Clarity	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Residential Districts (N)	X	--	--	--	--
Phosphorus, Total	Residential Districts (N)	X	--	--	--	--
Transparency / Clarity	Residential Districts (N)	--	--	--	X	--
Transparency / Clarity	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 in Mirror Lake (MA72078), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited data are available to evaluate the Aesthetics Use of Mirror Lake (MA72078), so it is assessed as having Insufficient Information. Since the Transparency/Clarity impairment was redundantly duplicated across multiple uses for this waterbody, the Transparency/Clarity impairment is being removed from the Aesthetics Use but will continue to be maintained under the Primary Contact Recreation Use.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Mirror Lake (MA72078) are available, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Transparency / Clarity impairment is being carried forward.

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 Mirror Lake (MA72078) so it is assessed as having Insufficient Information. Since the Transparency / Clarity impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use.

Morses Pond (MA72079)

Location:	Wellesley/Natick.
AU Type:	FRESHWATER LAKE
AU Size:	112 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	5	(Eurasian Water Milfoil, Myriophyllum Spicatum*)	--	Unchanged
4c	5	(Fanwort*)	--	Unchanged
4c	5	(Non-Native Aquatic Plants*)	--	Unchanged
4c	5	Mercury in Fish Tissue	--	Added

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(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 (N)	--	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 Morses Pond (MA72079) 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 Morses Pond (MA72079) at station F0495 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). MA DPH issued a site-specific advisory for Mercury in Morses 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 5)

Summary Statement
Fish toxics sampling for metals (mercury, arsenic, cadmium, and selenium) was performed by MassDEP WPP biologists in Morses Pond (MA72079) at station F0495 in 2022 as part of the MassDEP WPP targeted assessment monitoring (TAM). Because of elevated Mercury measured in fish filets, MA DPH issued site-specific fish consumption advisories for Morses 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 Morses Pond (MA72079).

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Morses Pond (MA72079) 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 Morses Pond (MA72079) are available, so the Primary Contact Recreation Use is Not Assessed.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

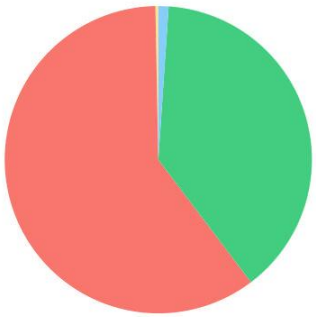
2024/26 Use Attainment Summary
No bacteria or other indicator data for Morses Pond (MA72079) are available in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed.

Muddy River (MA72-11)

Location:	Headwaters, outlet Ward Pond in Olmstead Park, Boston through Leverett Pond, Boston/Brookline to confluence with Charles River, Boston (four culverted portions totaling approximately 2200 feet (0.42mile)).
AU Type:	RIVER
AU Size:	3.6 MILES
Classification/Qualifier:	B(CSO): WWF

Muddy River (MA72-11)

Watershed Area: 21.51 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	21.51	8.22	2.36	1.01
Agriculture	0.3%	0%	0.3%	0.2%
Developed	60%	69.2%	35%	43.1%
Natural	38.6%	30.4%	59.4%	53.7%
Wetland	1.1%	0.4%	5.3%	3%
Impervious	44.4%	58.7%	22%	31.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Bottom Deposits*)	--	Unchanged
5	5	(Flow Regime Modification*)	--	Unchanged
5	5	(Non-Native Aquatic Plants*)	--	Unchanged
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen	--	Unchanged
5	5	Escherichia Coli (E. Coli)	32383	Unchanged
5	5	Odor	--	Unchanged
5	5	Oil and Grease	--	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	PCBs in Fish Tissue	--	Unchanged
5	5	Phosphorus, Total	--	Unchanged
5	5	Turbidity	--	Unchanged
5	5	Unspecified Metals in Sediment	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Bottom Deposits*)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X	--	--	--	--
(Flow Regime Modification*)	Channelization (Y)	X	--	--	--	--
(Flow Regime Modification*)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X	--	--	--	--
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Channelization (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Contaminated Sediments (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--
Dissolved Oxygen	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Urban Runoff/Storm Sewers (Y)	--	--	--	X	X
Odor	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	X	X	X
Oil and Grease	Wet Weather Discharges (Non-Point Source) (Y)	X	--	X	X	X
Oil and Grease	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X	--	X	X	X
PCBs in Fish Tissue	Contaminated Sediments (Y)	--	X	--	--	--
Phosphorus, Total	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	X	--	--	--	--
Turbidity	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	X	X	X
Turbidity	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO) (Y)	--	--	X	X	X
Unspecified Metals in Sediment	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 the Muddy River (MA72-11) continues to be assessed as Not Supporting and the prior PCBs in Fish Tissue and DDT in Fish Tissue impairments are being carried forward. MA DPH included a site-specific advisory for the Muddy River (referred to by MA DPH as ''Leverett Pond'' or ''Muddy River'') 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 the Muddy River (MA72-11) continues to be assessed as Not Supporting with the prior Turbidity, Odor, and Oil and Grease impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for Muddy River.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

The Primary Contact Recreation Use for the Muddy River (MA72-11) 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 CRWA_760T. The prior Odor, Oil and Grease, and Turbidity impairments (from the Aesthetics Use) are also being carried forward.
CRWA staff/volunteers collected *E. coli* bacteria samples toward the downstream end of the Muddy River (MA72-11) at CRWA_760T [Muddy River at Commonwealth Ave., Boston] from 2011-2019 and 2021-2022 (n=6-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset indicated that in all 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017-2019 and 2021-2022, 66-100%), all 5 years had ≥2 samples exceed the 410 CFU/100mL STV (2017-2019 and 2021-2022, n=2-5), and cumulatively across the 5 years 94% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_760T are reflective of the existing Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_760T	Charles River Watershed Association	Water Quality	Charles River; Muddy River	Muddy River at Commonwealth Ave.., Boston	42.348702	-71.091797

Bacteria Data

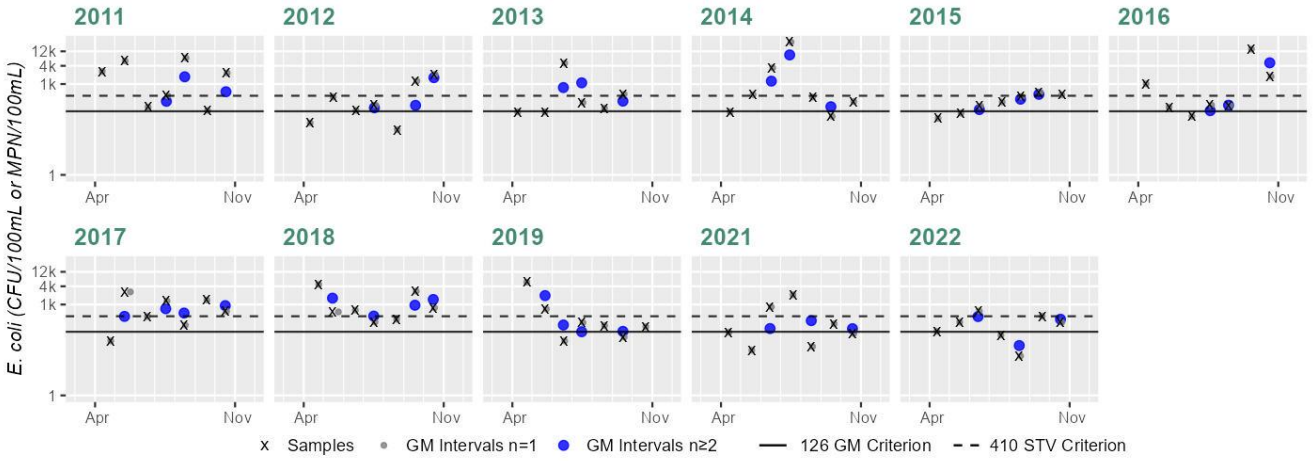
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_760T	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	134	7270	1136
CRWA_760T	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	31	2100	237
CRWA_760T	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	120	4880	329
CRWA_760T	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	86	24200	627
CRWA_760T	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	74	537	231
CRWA_760T	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	86	14100	549

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_760T	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	63	2610	550
CRWA_760T	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	265	4610	848
CRWA_760T	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	63	5480	294
CRWA_760T	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	31	2100	182
CRWA_760T	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	20	613	171

Station CRWA_760T - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	1136
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	7
SeasGM	237
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	6
SeasGM	329
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	7
SeasGM	627
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	231
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	549
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	3
%n>STV	42%

Variable*	Result
Samples	7
SeasGM	550
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	4
%n>STV	57%

Variable*	Result
Samples	7
SeasGM	848
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	5
%n>STV	71%

Variable*	Result
Samples	7
SeasGM	294
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	182
#GMI	3
#GMI Ex	3
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	171
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Cumulative %GMI Exceedance Current (2011-2022)
97%

Cumulative %GMI Exceedance Current (Recent 5 Years)
94%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 the Muddy River (MA72-11) continues to be assessed as Not Supporting. The prior Odor, Oil and Grease, and Turbidity impairments (from the Aesthetics Use) are being carried forward. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_760T. CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in the Muddy River (MA72-11) at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: at the upstream end of the AU at CRWA_MUD4 [Ward Pond outlet] in Dec 2022 (n=1) and toward the downstream end of the AU at CRWA_760T [Muddy River at Commonwealth Ave., Boston] from 2011-2019 and 2021-2022 (current n=7-12/yr). The available *E. coli* data from CRWA_MUD4 are too limited to assess according to the 2024 CALM. Analysis of the recent five years of the multi-year moderate frequency *E. coli* dataset from CRWA_760T indicated that in all 5 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2017-2019 and 2021-2022, 40-100%), 4 years had ≥2 samples exceed the 794 CFU/100mL STV (2017-2019 and 2021, n=3-5), and cumulatively across years 69% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_760T are indicative of an Escherichia Coli (E. Coli) impairment. CRWA staff/volunteers also collected historical *E. coli* bacteria samples in the historic IR window (1997-2010) in the Muddy River (MA72-11) from 2009-2010 at CRWA_760T (historic n=10/yr). These data were similarly indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_760T	Charles River Watershed Association	Water Quality	Charles River; Muddy River	Muddy River at Commonwealth Ave.., Boston	42.348702	-71.091797
CRWA_MUD4	Charles River Watershed Association	Water Quality	Muddy River	Ward Pond outlet	42.322500	-71.118300

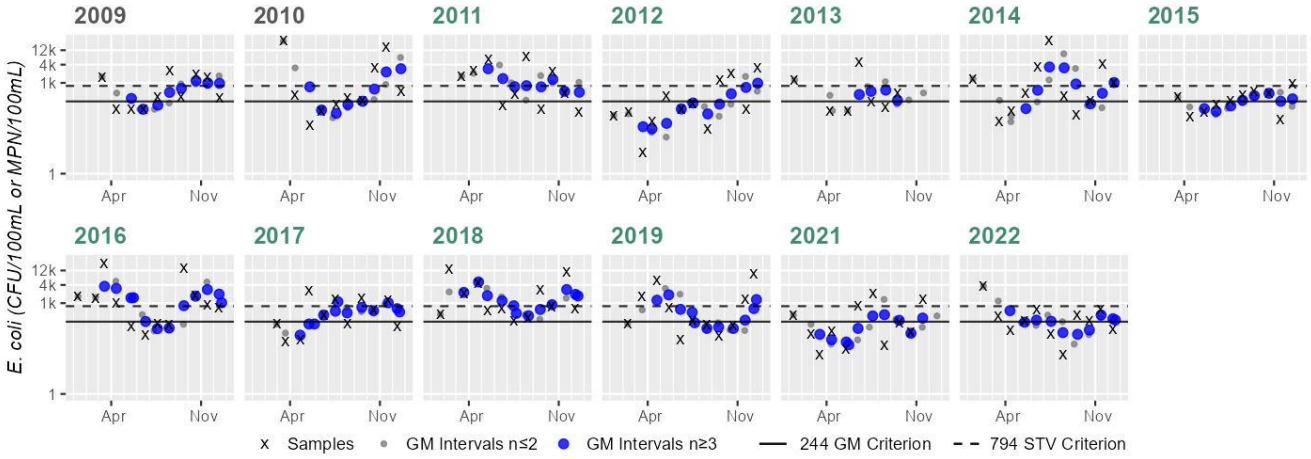
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_760T	Charles River Watershed Association	E. coli	03/10/09	12/15/09	10	134	2490	500
CRWA_760T	Charles River Watershed Association	E. coli	03/16/10	12/21/10	10	41	24200	671
CRWA_760T	Charles River Watershed Association	E. coli	03/15/11	12/20/11	10	109	7270	855
CRWA_760T	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	3260	175
CRWA_760T	Charles River Watershed Association	E. coli	01/15/13	09/17/13	7	120	4880	398
CRWA_760T	Charles River Watershed Association	E. coli	01/14/14	12/16/14	11	52	24200	662
CRWA_760T	Charles River Watershed Association	E. coli	03/17/15	12/15/15	10	63	933	243
CRWA_760T	Charles River Watershed Association	E. coli	01/12/16	12/13/16	12	86	19900	933
CRWA_760T	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	52	2610	394
CRWA_760T	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	265	13000	1306
CRWA_760T	Charles River Watershed Association	E. coli	02/12/19	12/10/19	11	63	9210	525
CRWA_760T	Charles River Watershed Association	E. coli	01/12/21	11/16/21	11	20	2100	181
CRWA_760T	Charles River Watershed Association	E. coli	02/08/22	12/13/22	11	20	3650	267
CRWA_MUD4	Charles River Watershed Association	E. coli	12/13/22	12/13/22	1	20	20	19

Station CRWA_760T - Escherichia coli

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



Variable*	Result
Samples	10
SeasGM	500
#GMI	8
#GMI Ex	6
%GMI Ex	75%
n>STV	4
%n>STV	40%

Variable*	Result
Samples	10
SeasGM	671
#GMI	8
#GMI Ex	5
%GMI Ex	62%
n>STV	3
%n>STV	30%

Variable*	Result
Samples	10
SeasGM	855
#GMI	8
#GMI Ex	8
%GMI Ex	100%
n>STV	5
%n>STV	50%

Variable*	Result
Samples	12
SeasGM	175
#GMI	10
#GMI Ex	3
%GMI Ex	30%
n>STV	3
%n>STV	25%

Variable*	Result
Samples	7
SeasGM	398
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	11
SeasGM	662
#GMI	8
#GMI Ex	6
%GMI Ex	75%
n>STV	5
%n>STV	45%

Variable*	Result
Samples	10
SeasGM	243
#GMI	8
#GMI Ex	5
%GMI Ex	62%
n>STV	1
%n>STV	10%

Variable*	Result
Samples	12
SeasGM	933
#GMI	12
#GMI Ex	10
%GMI Ex	83%
n>STV	7
%n>STV	58%

Variable*	Result
Samples	11
SeasGM	394
#GMI	12
#GMI Ex	9
%GMI Ex	75%
n>STV	4
%n>STV	36%

Variable*	Result
Samples	12
SeasGM	1306
#GMI	12
#GMI Ex	12
%GMI Ex	100%
n>STV	5
%n>STV	41%

Variable*	Result
Samples	11
SeasGM	525
#GMI	11
#GMI Ex	7
%GMI Ex	63%
n>STV	4
%n>STV	36%

Variable*	Result
Samples	11
SeasGM	181
#GMI	10
#GMI Ex	4
%GMI Ex	40%
n>STV	3
%n>STV	27%

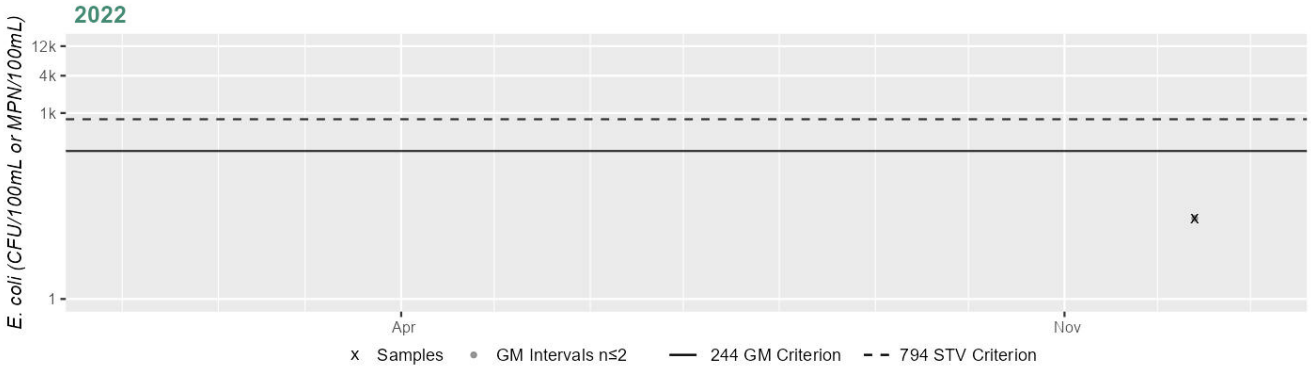
Variable*	Result
Samples	11
SeasGM	267
#GMI	10
#GMI Ex	6
%GMI Ex	60%
n>STV	1
%n>STV	9%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
68%	70%	69%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_MUD4 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	20
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Noanet Brook (MA72-54)

Location:	Headwaters in wetland east of Walpole Street, Dover to mouth at confluence with the Charles River, Dover.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	B

No usable data were available for Noanet Brook (MA72-54) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Noannet Pond (MA72084)

Location:	Westwood/Dover.
AU Type:	FRESHWATER LAKE
AU Size:	50 ACRES
Classification/Qualifier:	B

No usable data were available for Noannet Pond (MA72084) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Nonesuch Pond (MA72085)

Location:	Natick/Weston.
AU Type:	FRESHWATER LAKE
AU Size:	39 ACRES
Classification/Qualifier:	B

No usable data were available for Nonesuch Pond (MA72085) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Curly-leaf Pondweed*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Curly-leaf Pondweed*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Norumbega Reservoir (MA72086)

Location:	[North Basin] Weston.
AU Type:	FRESHWATER LAKE
AU Size:	14 ACRES
Classification/Qualifier:	B

No usable data were available for Norumbega Reservoir (MA72086) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Norumbega Reservoir (MA72087)

Location:	[South Basin] Weston.
AU Type:	FRESHWATER LAKE
AU Size:	38 ACRES
Classification/Qualifier:	B

No usable data were available for Norumbega Reservoir (MA72087) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Populatic Pond (MA72096)

Location:	Norfolk.
AU Type:	FRESHWATER LAKE
AU Size:	42 ACRES
Classification/Qualifier:	B: WWF

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Algae	40319	Unchanged
5	5	Chlordane in Fish Tissue	--	Unchanged
5	5	DDT in Fish Tissue	--	Unchanged
5	5	Dissolved Oxygen	40319	Unchanged
5	5	Dissolved Oxygen Supersaturation	40319	Unchanged
5	5	Mercury in Fish Tissue	33880	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	40319	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Algae	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	X	X	X
Algae	Internal Nutrient Recycling (Y)	X	--	X	X	X
Algae	Municipal Point Source Discharges (Y)	X	--	X	X	X
Chlordane in Fish Tissue	Source Unknown (N)	--	X	--	--	--
DDT in Fish Tissue	Source Unknown (N)	--	X	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Internal Nutrient Recycling (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen Supersaturation	Internal Nutrient Recycling (Y)	X	--	--	--	--
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) (Y)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Internal Nutrient Recycling (Y)	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 Populatic Pond (MA72096) continues to be assessed as Not Supporting and the prior Mercury in Fish Tissue, DDT in Fish Tissue, and Chlordane in Fish Tissue impairments are being carried forward. MA DPH included a site-specific advisory for Populatic 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 Populatic Pond (MA72096) continues to be assessed as Not Supporting with the prior Algae impairment being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for Populatic Pond.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for Populatic Pond (MA72096) continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward. CRWA staff/volunteers collected *E. coli* (EC) and *Enterococcus* (Ent) bacteria samples in Populatic Pond (MA72096) at CRWA_199S [Populatic Pond Boat Launch, Norfolk] from 2011-2019 and 2021-2022 (EC n=5-7/yr & Ent n=1-2/yr). Analysis of the recent five years of the multi-year moderate/limited frequency *E. coli* dataset from CRWA_199S indicated that in 1 of 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2019, 66%), no years had ≥2 samples exceed the 410 CFU/100mL STV, and cumulatively across years 8% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_199S meet 2024 CALM guidance. The available *Enterococcus* data from CRWA_199S are too limited to assess according to the 2024 CALM. However, note that samples exceeded the 130 CFU/100mL STV in the most recent five years of data in 2022 (n=1) and 2021 (n=2) with exceedances ranging from 226-1,420 CFU/100mL.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_199S	Charles River Watershed Association	Water Quality	Charles River	Populatic Pond Boat Launch, Norfolk	42.131100	-71.376801

Bacteria Data

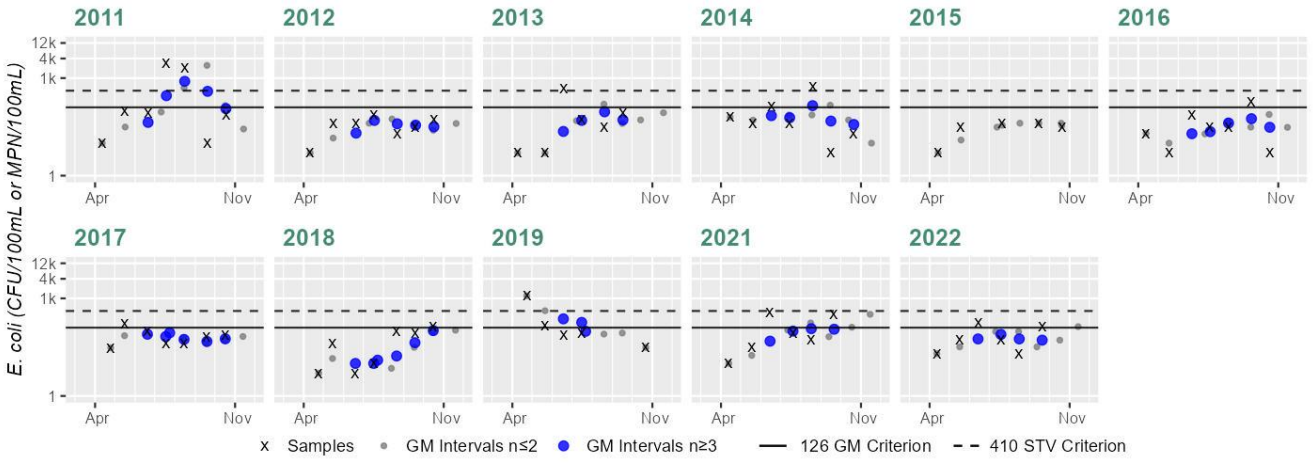
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_199S	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	10	2910	120
CRWA_199S	Charles River Watershed Association	Enterococci	06/21/11	09/20/11	2	5	97	22
CRWA_199S	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	5	74	29
CRWA_199S	Charles River Watershed Association	Enterococci	06/19/12	09/18/12	2	20	62	35
CRWA_199S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	479	34
CRWA_199S	Charles River Watershed Association	Enterococci	04/09/13	06/18/13	2	5	504	50
CRWA_199S	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	529	49
CRWA_199S	Charles River Watershed Association	Enterococci	06/17/14	09/16/14	2	5	109	23
CRWA_199S	Charles River Watershed Association	E. coli	04/14/15	10/20/15	5	5	41	23
CRWA_199S	Charles River Watershed Association	Enterococci	09/15/15	09/15/15	1	31	31	31
CRWA_199S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	187	25
CRWA_199S	Charles River Watershed Association	Enterococci	06/21/16	09/20/16	2	30	200	77
CRWA_199S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	30	169	62
CRWA_199S	Charles River Watershed Association	Enterococci	06/20/17	09/19/17	2	20	98	44
CRWA_199S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	131	27
CRWA_199S	Charles River Watershed Association	Enterococci	06/19/18	09/18/18	2	31	61	43
CRWA_199S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	5	31	1200	127

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_199S	Charles River Watershed Association	Enterococci	06/18/19	09/17/19	2	41	108	66
CRWA_199S	Charles River Watershed Association	E. coli	04/13/21	09/21/21	6	10	364	73
CRWA_199S	Charles River Watershed Association	Enterococci	06/15/21	09/21/21	2	556	1420	888
CRWA_199S	Charles River Watershed Association	E. coli	04/12/22	09/20/22	6	20	175	54
CRWA_199S	Charles River Watershed Association	Enterococci	06/14/22	09/20/22	2	31	226	83

Station CRWA_199S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	120
#GMI	5
#GMI Ex	3
%GMI Ex	60%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	29
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	34
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	16%

Variable*	Result
Samples	7
SeasGM	49
#GMI	5
#GMI Ex	1
%GMI Ex	20%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	5
SeasGM	23
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	25
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	127
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	6
SeasGM	73
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

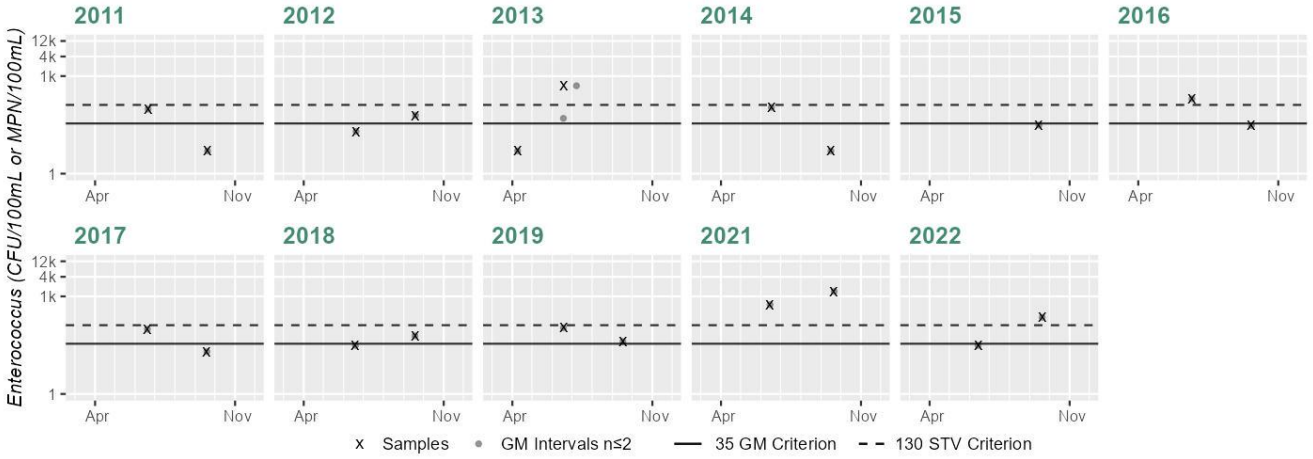
Cumulative %GMI Exceedance Current (2011-2022)
12%

Cumulative %GMI Exceedance Current (Recent 5 Years)
8%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 CRWA_199S - Enterococcus

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



Variable*	Result
Samples	2
SeasGM	22
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	35
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	50
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	23
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	31
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	77
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Variable*	Result
Samples	2
SeasGM	44
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	43
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	66
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	888
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	100%

Variable*	Result
Samples	2
SeasGM	83
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 Populatic Pond (MA72096) continues to be assessed as Not Supporting. The prior Algae impairment (from the Aesthetics Use) is being carried forward.
CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) in Populatic Pond (MA72096) at CRWA_199S [Populatic Pond Boat Launch, Norfolk] from 2011-2019 and 2021-2022 (current n=5-9/yr). Analysis of the recent five years of this multi-year moderate/limited frequency *E. coli* dataset indicated that none of the 5 sufficient data years had any intervals with GMs >244 CFU/100mL, only 1 year had 1 sample exceed the 794 CFU/100mL STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_199S are indicative of good water quality conditions.
CRWA staff/volunteers also collected *E. coli* bacteria samples at CRWA_199S in Populatic Pond (MA72096) in the historic IR window (1997-2010) from 2009-2010 (historic n=6-7/yr) and these data were similarly indicative of good conditions.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_199S	Charles River Watershed Association	Water Quality	Charles River	Populatic Pond Boat Launch, Norfolk	42.131100	-71.376801

Bacteria Data

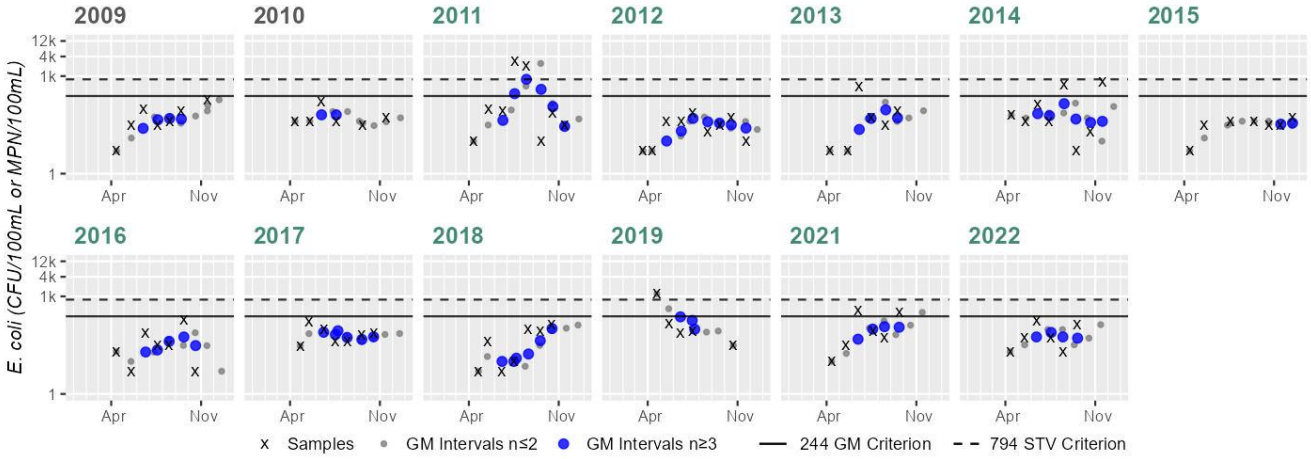
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_199S	Charles River Watershed Association	E. coli	04/14/09	11/17/09	7	5	187	43
CRWA_199S	Charles River Watershed Association	E. coli	04/13/10	11/16/10	6	30	160	50
CRWA_199S	Charles River Watershed Association	E. coli	04/12/11	11/15/11	8	10	2910	101
CRWA_199S	Charles River Watershed Association	E. coli	03/20/12	11/20/12	9	5	74	21
CRWA_199S	Charles River Watershed Association	E. coli	04/09/13	09/17/13	6	5	479	34

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_199S	Charles River Watershed Association	E. coli	04/15/14	11/18/14	8	5	670	68
CRWA_199S	Charles River Watershed Association	E. coli	04/14/15	12/15/15	7	5	52	27
CRWA_199S	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	187	25
CRWA_199S	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	30	169	62
CRWA_199S	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	131	27
CRWA_199S	Charles River Watershed Association	E. coli	04/23/19	10/22/19	5	31	1200	127
CRWA_199S	Charles River Watershed Association	E. coli	04/13/21	09/21/21	6	10	364	73
CRWA_199S	Charles River Watershed Association	E. coli	04/12/22	09/20/22	6	20	175	54

Station CRWA_199S - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	43
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	50
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	101
#GMI	6
#GMI Ex	3
%GMI Ex	50%
n>STV	2
%n>STV	25%

Variable*	Result
Samples	9
SeasGM	21
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	34
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	8
SeasGM	68
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	25
#GMI	5
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	62
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	27
#GMI	6
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	127
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

Variable*	Result
Samples	6
SeasGM	73
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	54
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

Cumulative %GMI Exceedance
Current (2011-2022)
5%

Cumulative %GMI Exceedance
Current (Recent 5 Years)
0%

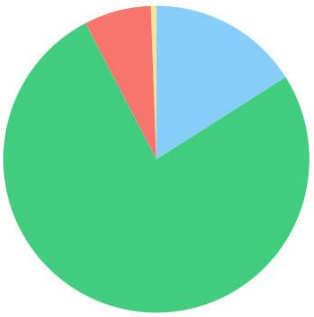
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Powissett Brook (MA72-20)

Location:	Headwaters, outlet Noannet Pond, Westwood to mouth at confluence with the Charles River, Dover.
AU Type:	RIVER
AU Size:	1.9 MILES
Classification/Qualifier:	B

Powissett Brook (MA72-20)

Watershed Area: 1.61 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	1.61	1.61	0.84	0.84
Agriculture	0.6%	0.6%	0%	0%
Developed	7.1%	7.1%	4.7%	4.7%
Natural	76.3%	76.3%	74.5%	74.5%
Wetland	16%	16%	20.8%	20.8%
Impervious	3.5%	3.5%	2.4%	2.4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Combined Biota/Habitat Bioassessments	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Combined Biota/Habitat Bioassessments	Dam or Impoundment (N)	X	--	--	--	--
Combined Biota/Habitat Bioassessments	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 in Powissett Brook (MA72-20), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Powissett Brook (MA72-20) 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 are available for Powissett Brook (MA72-20), 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 are available for Powissett Brook (MA72-20) 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 1/3 of Powissett Brook (MA72-20) at W0407 [Wilsondale St, Dover (below impoundment)] from 1997-1998, and in 2002 and 2007 (n=1-5/yr). Analysis of this historic multi-year limited frequency *E. coli* dataset (only data from 2002 and 2007 were of sufficient frequency according to the 2024 CALM to evaluate) indicated that none of the 2 sufficient data years had any intervals where GMs were >244 CFU/100mL, no years had ≥2 samples exceed the 794 CFU/100mL STV, and cumulatively across years no intervals had GMs >244 CFU/100mL. Although historic *E. coli* data from W0407 are indicative of good water quality conditions, since they were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Powissett Brook (MA72-20).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0407	MassDEP	Water Quality	Powissett Brook	[Wilsondale Street, Dover (below impoundment).]	42.251234	-71.239707

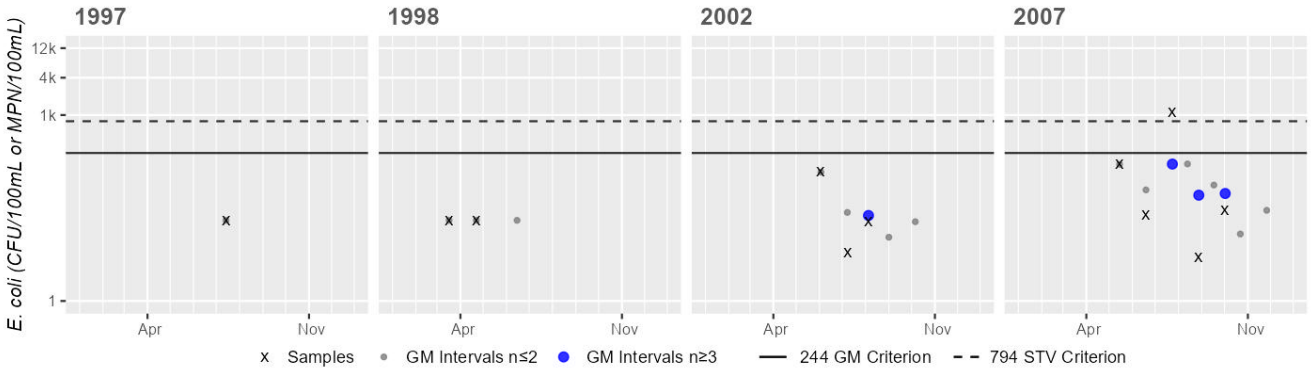
Bacteria Data

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
W0407	MassDEP	E. coli	07/14/97	07/14/97	1	20	20	19
W0407	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0407	MassDEP	E. coli	06/03/02	08/05/02	3	6	120	23
W0407	MassDEP	E. coli	05/15/07	10/02/07	5	5	1100	57

Station MASSDEP_W0407 - Escherichia coli

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



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

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	3
SeasGM	23
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	57
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	20%

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

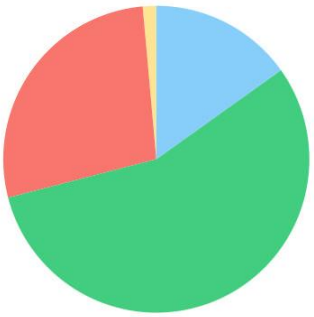
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Rock Meadow Brook (MA72-21)

Location:	Headwaters, Fisher Meadow, Westwood to mouth at confluence with the Charles River, Dedham.
AU Type:	RIVER
AU Size:	3.8 MILES
Classification/Qualifier:	B

Rock Meadow Brook (MA72-21)

Watershed Area: 2.67 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.67	2.56	1.00	0.98
Agriculture	1.4%	1.5%	1.1%	1.1%
Developed	27.6%	27.8%	20.7%	20.8%
Natural	55.8%	55.2%	48.2%	47.5%
Wetland	15.1%	15.5%	30%	30.5%
Impervious	12%	11.9%	6.7%	6.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Algae	40317	Unchanged
5	5	Benthic Macroinvertebrates	40317	Changed
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
5	5	Organic Enrichment (Sewage) Biological Indicators	--	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Algae	Golf Courses (N)	--	--	X	X	X
Algae	Source Unknown (N)	--	--	X	X	X
Benthic Macroinvertebrates	Golf Courses (N)	X	--	--	--	--
Benthic Macroinvertebrates	Source Unknown (N)	X	--	--	--	--
Dissolved Oxygen	Golf Courses (N)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Nutrient/Eutrophication Biological Indicators	Golf Courses (N)	X	--	X	X	X
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X	--	X	X	X
Organic Enrichment (Sewage) Biological Indicators	Golf Courses (N)	X	--	--	--	--
Phosphorus, Total	Golf Courses (N)	X	--	--	--	--
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Benthic Macroinvertebrates	TMDL approved or established by EPA (4a)	Impairment covered under TMDL: Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts (Report CN 272.0, approved 6/10/2011, ATTAINS Action ID: 40317)

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 in Rock Meadow Brook (MA72-21), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for Rock Meadow Brook (MA72-21) continues to be assessed as Not Supporting with the prior Algae and Nutrient/Eutrophication Biological Indicators impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for Rock Meadow Brook.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data are available for Rock Meadow Brook (MA72-21), so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Algae and Nutrient/Eutrophication Biological Indicators 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 Rock Meadow Brook (MA72-21) continues to be assessed as Not Supporting. The prior Algae and Nutrient/Eutrophication Biological Indicators impairments (from the Aesthetics Use) are being carried forward.
MassDEP staff collected historical *E. coli* bacteria samples in Rock Meadow Brook (MA72-21) from 1997-2007 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W0406 [Summer St, Westwood] from 1997-1998 and in 2007 (n=2-5/yr), and toward the downstream end of the AU at W1155 [~2300 ft downstream of Westfield St, Dedham (upstream of golf course impoundment)] from Apr-Sep 2002 (n=5). Analysis of the historic single year limited frequency *E. coli* dataset from W0406 (only data from 2007 were of sufficient frequency to evaluate according to the 2024 CALM) indicated none of the intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 43 CFU/100mL). Analysis of the historic single year limited frequency *E. coli* dataset from W1155 indicated none of the intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 46 CFU/100mL). Although historic *E. coli* data from W0406 and W1155 are indicative of good water quality conditions, since they were collected prior to the current IR window (2011-2022) they cannot be used to positively assess the Secondary Contact Recreation Use of Rock Meadow Brook (MA72-21).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0406	MassDEP	Water Quality	Rock Meadow Brook	[Summer Street, Westwood.]	42.249807	-71.222702
W1155	MassDEP	Water Quality	Rock Meadow Brook	[approximately 2300 feet downstream of Westfield Street, Dedham (upstream of golf course impoundment)]	42.260013	-71.223577

Bacteria Data

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

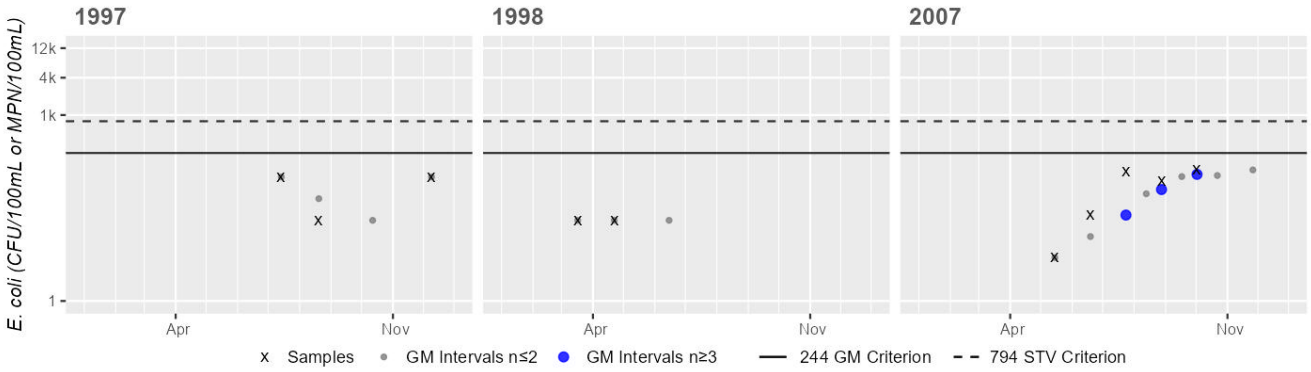
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0406	MassDEP	E. coli	07/14/97	12/09/97	3	20	100	58
W0406	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0406	MassDEP	E. coli	05/15/07	10/02/07	5	5	130	43
W1155	MassDEP	E. coli	04/29/02	09/09/02	5	19	140	46

Station MASSDEP_W0406 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	58
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

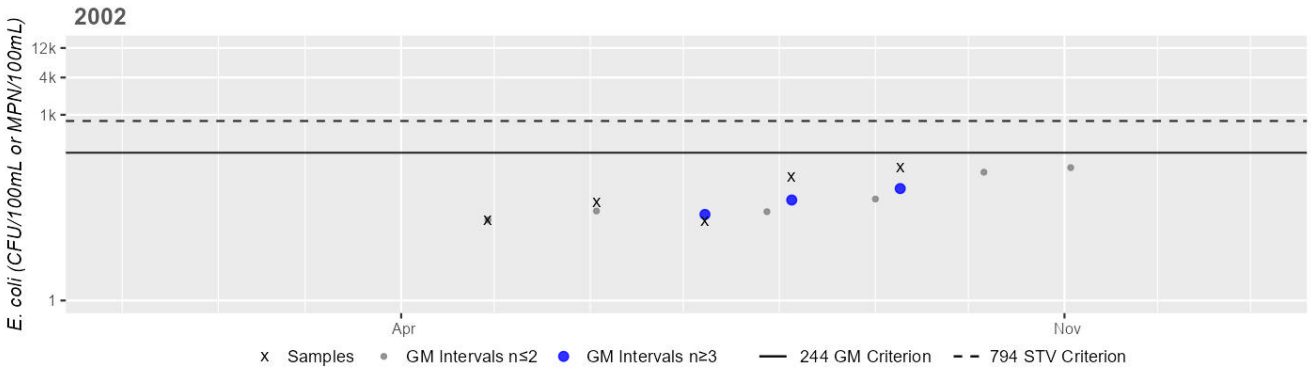
Variable*	Result
Samples	5
SeasGM	43
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1155 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	46
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

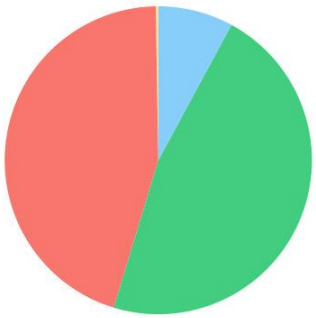
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Rosemary Brook (MA72-25)

Location:	Headwaters, outlet Rosemary Lake, Needham to mouth at confluence with the Charles River, Wellesley.
AU Type:	RIVER
AU Size:	3.3 MILES
Classification/Qualifier:	B

Rosemary Brook (MA72-25)

Watershed Area: 3.74 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.74	3.60	0.99	0.99
Agriculture	0.3%	0.3%	0.6%	0.6%
Developed	45%	44.9%	28.2%	28.2%
Natural	46.8%	46.9%	46.6%	46.6%
Wetland	7.9%	7.9%	24.6%	24.6%
Impervious	27.3%	27.2%	14.7%	14.7%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Dissolved Oxygen	40317	Unchanged
4a	4a	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--
Phosphorus, Total	Golf Courses (N)	X	--	--	--	--
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2010 IR [Trash & Debris, medium priority] Follow-up monitoring should be conducted in Rosemary Brook (MA72-25) to determine current conditions and to determine whether the prior Alert, identified in the 2010 IR, for trash and debris (based on observations towards the downstream end of the AU at Barton Road, Wellesley (W1156) in 2007 and 2002) should be removed or upgraded to an impairment. (MassDEP 2008) {W1156}

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 in Rosemary Brook (MA72-25), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
There are no aesthetics observation data available to assess the status of the Aesthetics Use for Rosemary Brook (MA72-25), so it is Not Assessed. The prior Alert identified for trash and debris (based on observations towards the downstream end of the AU at Barton Road, Wellesley (W1156) in 2007 and 2002) (MassDEP 2008) is being carried forward. Sampling should be conducted in this AU, and in particular at W1156 to determine current conditions.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Primary Contact Recreation Use for Rosemary Brook (MA72-25), so it is assessed as having Insufficient Information.
CRWA staff/volunteers collected *E. coli* bacteria samples in Rosemary Brook (MA72-25) at CRWA_RB01 [Rosemary Brook] in May 2022 (n=1). *E. coli* data from CRWA_RB01 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use of Rosemary Brook.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_RB01	Charles River Watershed Association	Water Quality	Rosemary Brook	Rosemary Brook	42.319230	-71.246400

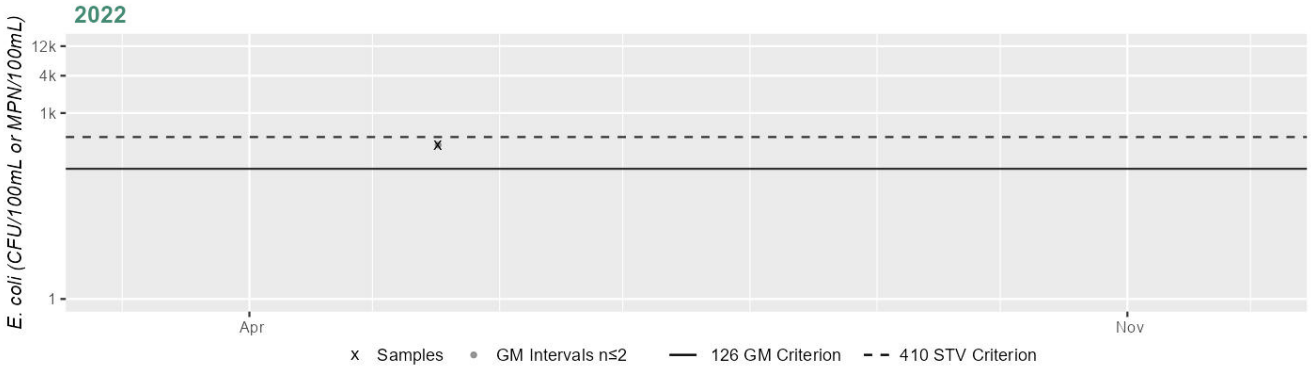
Bacteria Data

Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (90-day Interval Analysis)
(CRWA 2023) (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
CRWA_RB01	Charles River Watershed Association	E. coli	05/17/22	05/17/22	1	305	305	305

Station CRWA_RB01 & MASSDEP_W1156 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	305
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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
Insufficient Information	NO

2024/26 Use Attainment Summary

Too limited bacteria data are available to assess the Secondary Contact Recreation Use for Rosemary Brook (MA72-25), so it is assessed as having Insufficient Information.
CRWA staff/volunteers collected limited *E. coli* bacteria samples in the current IR window (2011-2022) in Rosemary Brook (MA72-25) at CRWA_RB01 [Rosemary Brook] in May 2022 (current n=1). The available *E. coli* data from CRWA_RB01 are too limited to assess according to the 2024 CALM.
MassDEP staff collected *E. coli* bacteria samples in the historic IR window (1997-2010) in Rosemary Brook (MA72-25) from 1997-2007 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: toward the downstream end of the brook at W1156 [Barton Rd, Wellesley], which is the same location as CRWA_RB01, in 2002 and 2007 (historic n=5/yr), and a short distance downstream at W0398 [~225 ft downstream of Barton Rd, Wellesley (~30 ft downstream of "stormdrain" pipe station RBE1)] from 1997-1998 (n=2-6/yr).
Analysis of the historic multi-year limited frequency *E. coli* dataset from W1156 indicated there were no intervals where >20% of the GMs were >244 CFU/100mL, there were no exceedances of the 794 CFU/100mL STV, and cumulatively across years no intervals had GMs >244 CFU/100mL. Analysis of the historic single year limited frequency *E. coli* dataset from W0398 (only 1997 had sufficient data to evaluate) indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 91 CFU/100mL). Historic *E. coli* data from W1156 and W0398 meet 2024 CALM guidance. While the historic bacteria samples are indicative of good water quality conditions, since they were collected prior to the current IR window they cannot be used to positively assess the Secondary Contact Recreation Use of Rosemary Brook (MA72-25), and the bacteria data from the current IR window (2011-2022) are too limited to determine use attainment.

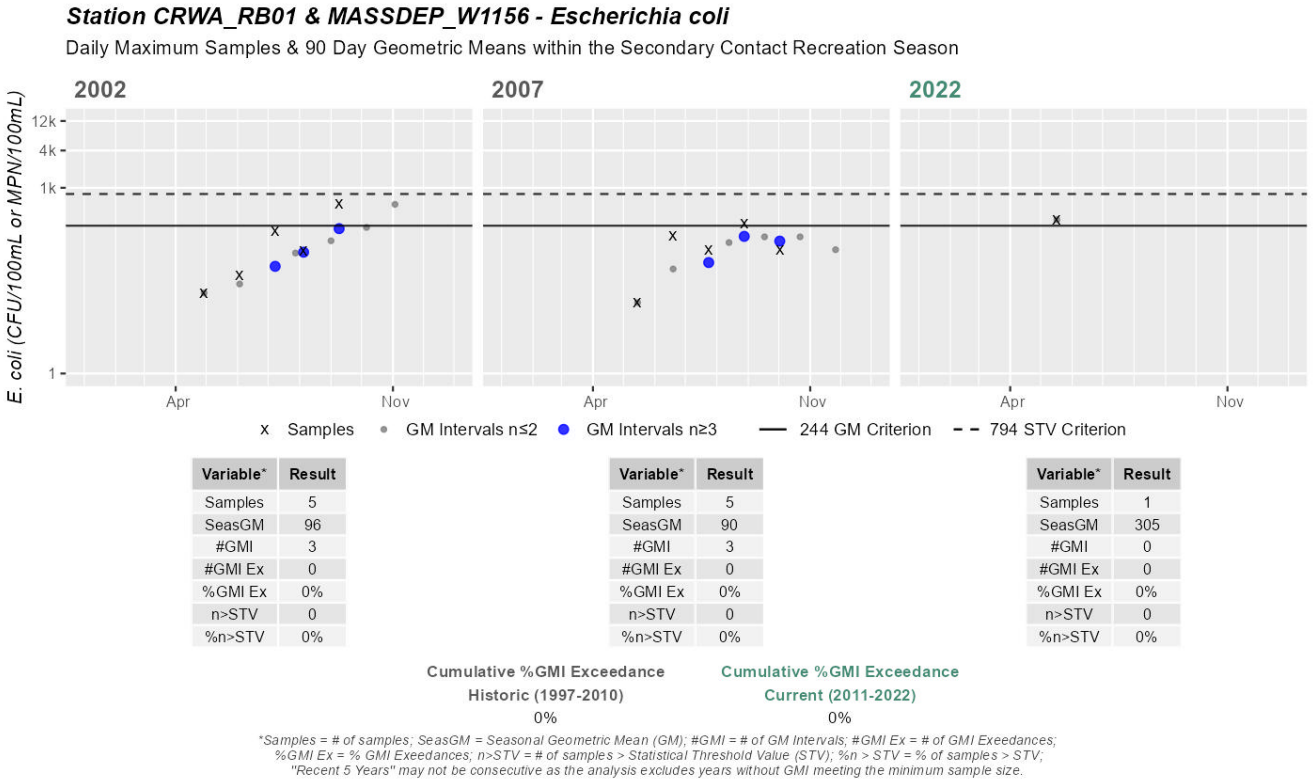
Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_RB01	Charles River Watershed Association	Water Quality	Rosemary Brook	Rosemary Brook	42.319230	-71.246400
W0398	MassDEP	Water Quality	Rosemary Brook	[approximately 225 feet downstream of Barton Road, Wellesley (approximately 30 feet downstream of "stormdrain" pipe station RBE1)]	42.319930	-71.246044
W1156	MassDEP	Water Quality	Rosemary Brook	[Barton Road, Wellesley]	42.319313	-71.246248

Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (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
CRWA_RB01	Charles River Watershed Association	E. coli	05/17/22	05/17/22	1	305	305	305
W0398	MassDEP	E. coli	07/01/97	12/09/97	6	60	200	91
W0398	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W1156	MassDEP	E. coli	04/29/02	09/09/02	5	20	540	96
W1156	MassDEP	E. coli	05/15/07	10/02/07	5	14	260	90



Variable*	Result
Samples	5
SeasGM	96
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	90
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	1
SeasGM	305
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

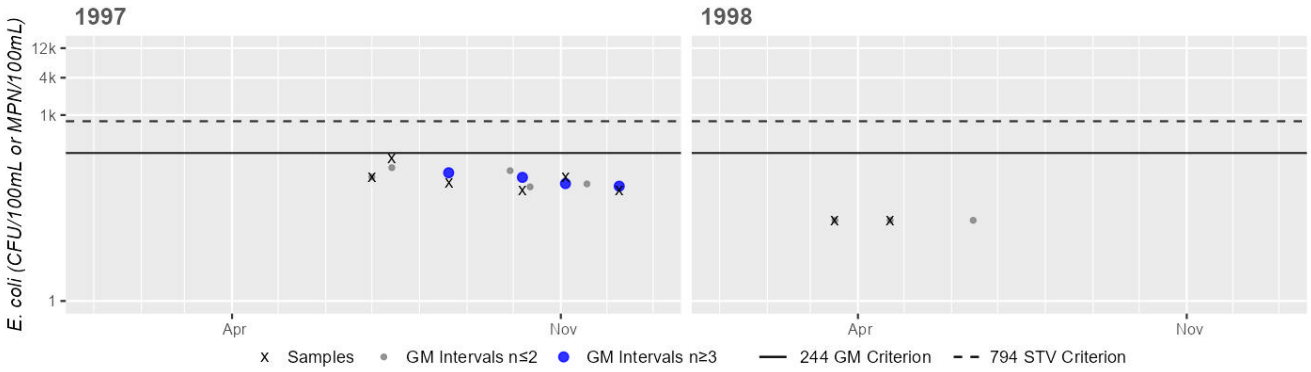
Cumulative %GMI Exceedance Historic (1997-2010)
0%

Cumulative %GMI Exceedance Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0398 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	91
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Sandy Pond (MA72105)

Location:	Lincoln.
AU Type:	FRESHWATER LAKE
AU Size:	157 ACRES
Classification/Qualifier:	A: PWS, ORW (PWS and Tributary to PWS)

No usable data were available for Sandy Pond (MA72105) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

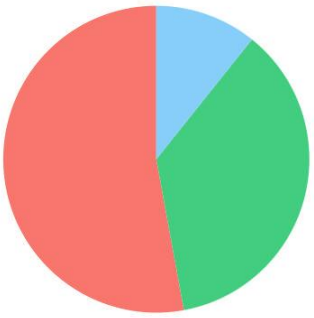
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Sawmill Brook (MA72-23)

Location:	Headwaters, Newton to mouth at confluence with the Charles River, Boston.
AU Type:	RIVER
AU Size:	2.4 MILES
Classification/Qualifier:	B

Sawmill Brook (MA72-23)

Watershed Area: 2.99 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.99	2.99	0.39	0.39
Agriculture	0%	0%	0%	0%
Developed	52.9%	52.9%	32.4%	32.4%
Natural	36.4%	36.4%	28.8%	28.8%
Wetland	10.7%	10.7%	38.9%	38.9%
Impervious	31.4%	31.4%	11.2%	11.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	32376	Unchanged
5	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Source Unknown (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Urban Runoff/Storm Sewers (N)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Organic Enrichment (Sewage) Biological Indicators	Source Unknown (N)	X	--	--	--	--
Organic Enrichment (Sewage) Biological Indicators	Urban Runoff/Storm Sewers (N)	X	--	--	--	--
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Urban Runoff/Storm Sewers (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 in Sawmill Brook (MA72-23), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert

Insufficient Information	NO

2024/26 Use Attainment Summary
Too limited data are available to evaluate the Aesthetics Use of Sawmill Brook (MA72-23), so it is assessed as having Insufficient Information. Since the Organic Enrichment (Sewage) Biological Indicators impairment was redundantly duplicated across multiple uses for this waterbody, the Organic Enrichment (Sewage) Biological Indicators impairment is being removed from the Aesthetics Use, but will continue to be maintained under the Aquatic Life Use.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Sawmill Brook (MA72-23) 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. Since the Organic Enrichment (Sewage) Biological Indicators impairment is being removed from the Aesthetics Use this cycle, this impairment is 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

The Secondary Contact Recreation Use for Sawmill Brook (MA72-23) 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 W0404 and W0402. Since the Organic Enrichment (Sewage) Biological Indicators impairment is being removed from the Aesthetics Use this cycle, this impairment is also being removed from the Secondary Contact Recreation Use.

MassDEP staff collected historical *E. coli* bacteria samples at 2 stations in the middle of the Sawmill Brook AU (MA72-23) from 1997-2002. Samples were collected from the following stations/sample years from upstream to downstream: W0404 [Saint Josephs Cemetery, W Roxbury, Boston (~860 ft upstream of Baker St, directly upstream of Boston Water and Sewer Commission outfall #12B124)] in 1998 and 2002 (n=1-4/yr) and at W0402 [Saint Josephs Cemetery, W Roxbury, Boston (~140 ft upstream of Baker St)] from 1997-1998 and in 2002 (n=2-4/yr). Analysis of the historic single year limited frequency *E. coli* dataset from W0404 (only data from 2002 were of sufficient frequency to evaluate according to the 2024 CALM) indicated 100% of intervals had GMs >244 CFU/100mL, 1 sample exceeded the 794 CFU/100mL STV, and the overall GM was 498 CFU/100mL. Analysis of the historic single year limited frequency *E. coli* dataset from W0402 (again, only data from 2002 were of sufficient frequency to evaluate) indicated 100% of intervals had GMs >244 CFU/100mL, 3 samples exceeded the 794 CFU/100mL STV, and the overall GM was 1002 CFU/100mL. Historic *E. coli* data from W0404 and W0402 are reflective of the existing Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0402	MassDEP	Water Quality	Sawmill Brook	[Saint Josephs Cemetery, West Roxbury, Boston (approximately 140 feet upstream of Baker Street)]	42.291357	-71.173516
W0404	MassDEP	Water Quality	Sawmill Brook	[Saint Josephs Cemetery, West Roxbury, Boston (approximately 860 feet upstream of Baker Street, directly upstream of Boston Water and Sewer Commission outfall #12B124)]	42.292780	-71.172336

Bacteria Data

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

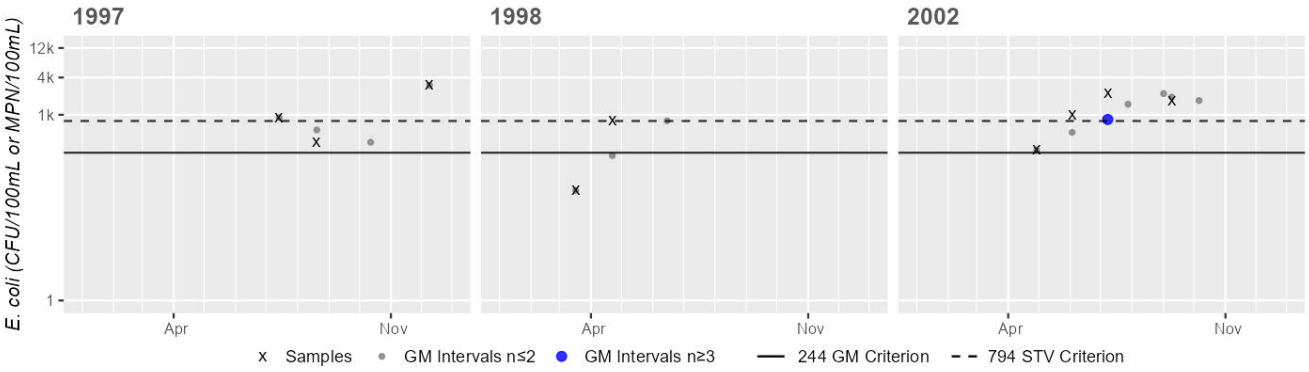
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0402	MassDEP	E. coli	07/14/97	12/09/97	3	360	3000	990
W0402	MassDEP	E. coli	03/17/98	04/22/98	2	60	800	219
W0402	MassDEP	E. coli	04/29/02	09/09/02	4	270	2200	1002
W0404	MassDEP	E. coli	01/28/98	01/28/98	1	120	120	119
W0404	MassDEP	E. coli	04/29/02	09/09/02	4	320	960	498

Station MASSDEP_W0402 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	990
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	66%

Variable*	Result
Samples	2
SeasGM	219
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

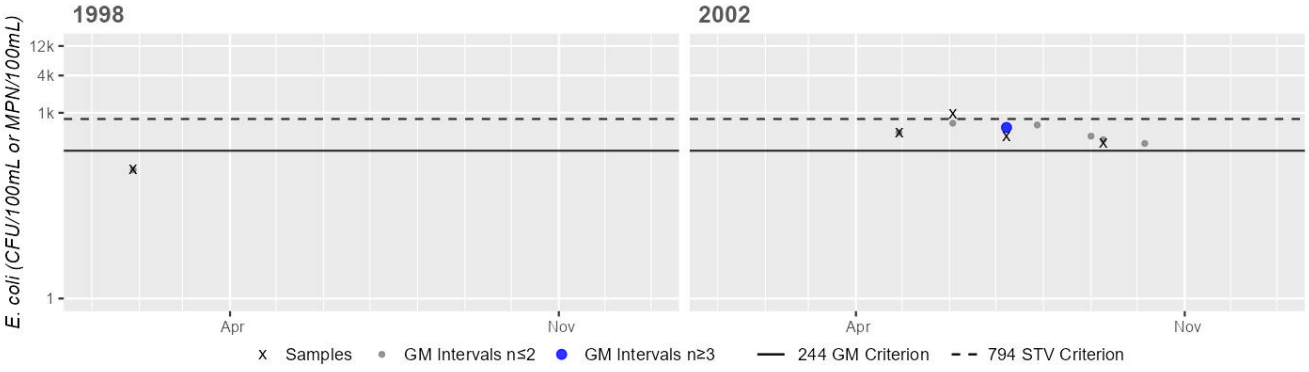
Variable*	Result
Samples	4
SeasGM	1002
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	3
%n>STV	75%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0404 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	120
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	4
SeasGM	498
#GMI	1
#GMI Ex	1
%GMI Ex	100%
n>STV	1
%n>STV	25%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Scarboro Golf Course Pond (MA72107)

Location:	Boston.
AU Type:	FRESHWATER LAKE
AU Size:	6 ACRES
Classification/Qualifier:	B

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Non-Native Aquatic Plants*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2024/2026 IR [Harmful Algal Blooms, low priority] Follow-up monitoring should be conducted in Scarboro Pond (MA72107) 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 for Scarboro Golf Course Pond were reported to MDPH based on visual observations for 32 days in 2015). Monitoring should include collection of cyanobacteria cell count data and observational data, as well as continued reporting of algal blooms to MDPH. {Scarboro Golf Course Pond (MA72107)}

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 in Scarboro Golf Course Pond (MA72107), so the Fish Consumption Use is Not Assessed.

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 Scarboro Pond (MA72107), 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 2015. During the period 2015 through 2022, C-HAB postings for Scarboro Golf Course Pond (MDPH name Scarboro Pond) were reported to MDPH based on visual observations for 32 days in 2015 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 Scarboro Golf Course Pond (MDPH name Scarboro Pond) (MA72107) were reported to MDPH based on visual observations for 32 days in 2015. 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
Scarboro Golf Course Pond (MDPH name Scarboro Pond)	Boston	32							

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 Scarboro Golf Course Pond (MA72107) 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 Scarboro Golf Course Pond (MDPH name Scarboro Pond) (MA72107) were reported to MDPH based on visual observations for 32 days in 2015. 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.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Insufficient Information	YES

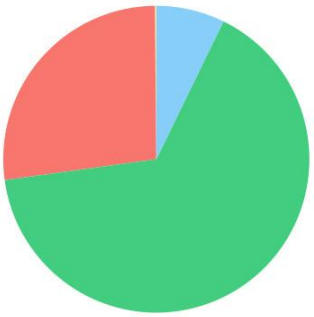
2024/26 Use Attainment Summary
No bacteria data are available to assess the Secondary Contact Recreation Use for Scarboro Golf Course Pond (MA72107) and available other indicators for this AU did not result in any impairment, so it is assessed as having Insufficient Information. An Alert is being identified for Harmful Algal Blooms and additional sampling is recommended for this AU. During the period 2015 through 2022, C-HAB postings for Scarboro Golf Course Pond (MDPH name Scarboro Pond) (MA72107) were reported to MDPH based on visual observations for 32 days in 2015. 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

Seaverns Brook (MA72-44)

Location:	Headwaters outlet Norumbega Reservoir, Weston to mouth at confluence with the Charles River, Weston.
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

Seaverns Brook (MA72-44)

Watershed Area: 2.49 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.49	2.49	1.32	1.32
Agriculture	0.2%	0.2%	0.1%	0.1%
Developed	27%	27%	22.5%	22.5%
Natural	65.6%	65.6%	67.4%	67.4%
Wetland	7.2%	7.2%	10%	10%
Impervious	11.5%	11.5%	9.5%	9.5%

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)	Highway/Road/Bridge Runoff (Non-construction Related) (N)	--	--	--	X	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Site Clearance (Land Development or Redevelopment) (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 in Seaverns Brook (MA72-44), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Seaverns Brook (MA72-44) 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 are available for Seaverns Brook (MA72-44), 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 Seaverns Brook (MA72-44) 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 Seaverns Brook (MA72-44) at W1590 [~1100 ft downstream from Park Rd, Weston] from May-Oct 2007 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset indicated 33% of intervals had GMs >244 CFU/100mL, 1 sample exceeded the 794 CFU/100mL STV, and the overall GM was 280 CFU/100mL. Historic *E. coli* data from W1590 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 Seaverns Brook (MA72-44).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1590	MassDEP	Water Quality	Seaverns Brook	[approximately 1100 feet downstream from Park Road, Weston]	42.341545	-71.266625

Bacteria Data

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

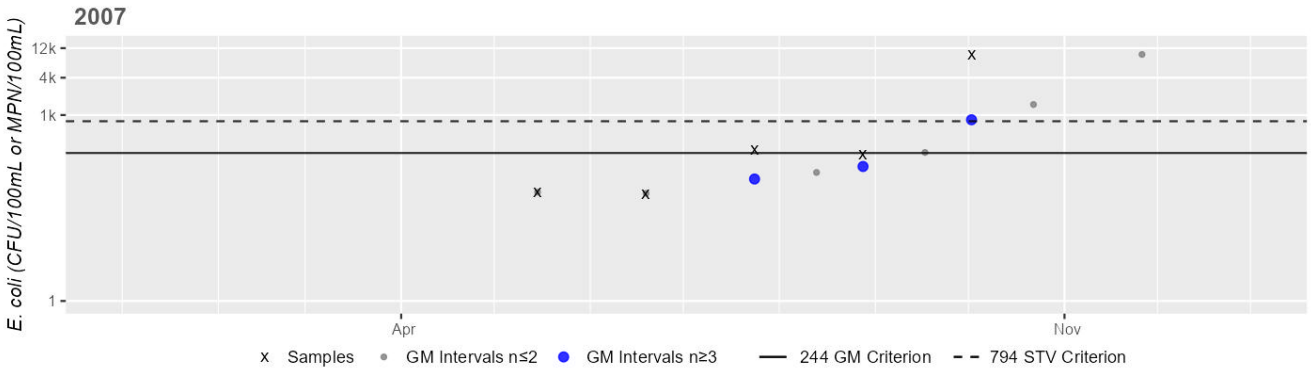
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1590	MassDEP	E. coli	05/15/07	10/02/07	5	52	9500	280

Station MASSDEP_W1590 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	280
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	20%

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

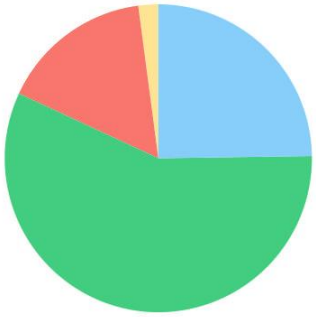
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Sewall Brook (MA72-49)

Location:	Headwaters outlet Washington Street Pond, south off Route 16 (Washington Street), Sherborn to mouth at confluence with Charles River, Sherborn.
AU Type:	RIVER
AU Size:	3 MILES
Classification/Qualifier:	B

Sewall Brook (MA72-49)

Watershed Area: 3.03 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.03	3.03	0.85	0.85
Agriculture	2.1%	2.1%	2%	2%
Developed	16%	16%	10.6%	10.6%
Natural	57.1%	57.1%	42.4%	42.4%
Wetland	24.8%	24.8%	45.1%	45.1%
Impervious	6.4%	6.4%	4.4%	4.4%

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 in Sewall Brook (MA72-49), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Sewall Brook (MA72-49) 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 Sewall Brook (MA72-49) 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 Sewall Brook (MA72-49) 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 half of Sewall Brook (MA72-49) at W2154 [~350 ft downstream of Forest St, Sherborn] in May 2010 (n=1). The historic *E. coli* data from W2154 are too limited to evaluate according to the 2024 CALM.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2154	MassDEP	Water Quality	Sewall Brook	[approximately 350 feet downstream of Forest Street, Sherborn]	42.222224	-71.354375

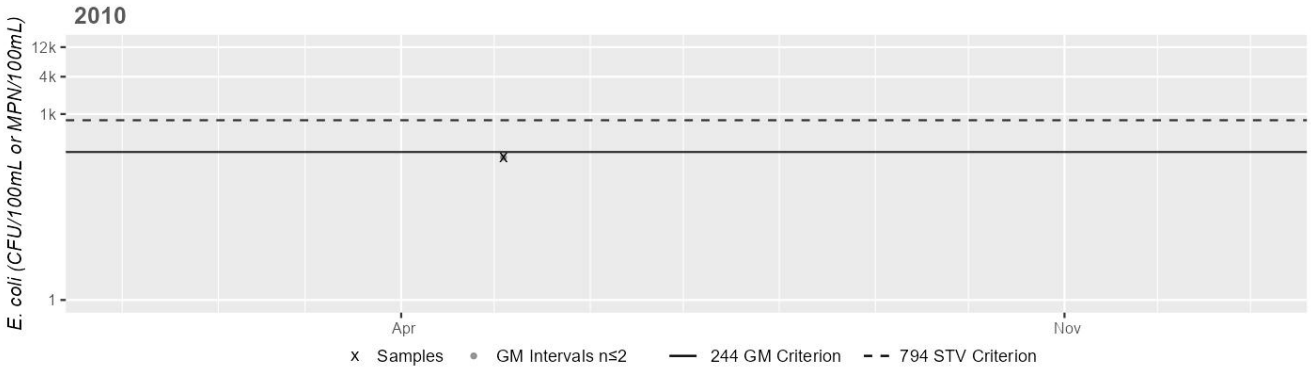
Bacteria Data

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
W2154	MassDEP	E. coli	05/04/10	05/04/10	1	200	200	199

Station MASSDEP_W2154 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	200
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Shepards Brook (MA72-50)

Location:	Perennial portion, north of Brook Street, Franklin to mouth at confluence with Charles River, Franklin.
AU Type:	RIVER
AU Size:	2.3 MILES
Classification/Qualifier:	B: CWF

No usable data were available for Shepards Brook (MA72-50) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

South End Pond (MA72109)

Location:	Millis.
AU Type:	FRESHWATER LAKE
AU Size:	30 ACRES
Classification/Qualifier:	B

No usable data were available for South End Pond (MA72109) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

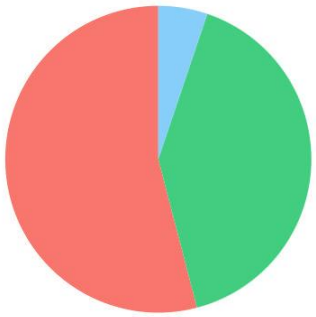
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

South Meadow Brook (MA72-24)

Location:	From emergence west of Parker Street, Newton to mouth at confluence with the Charles River, Newton (three culverted portions totaling approximately 1610 feet (0.30mile)).
AU Type:	RIVER
AU Size:	1.5 MILES
Classification/Qualifier:	B

South Meadow Brook (MA72-24)

Watershed Area: 2.95 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	2.95	2.95	0.31	0.31
Agriculture	0%	0%	0%	0%
Developed	54.1%	54.1%	47.9%	47.9%
Natural	40.7%	40.7%	44.2%	44.2%
Wetland	5.2%	5.2%	8%	8%
Impervious	39.7%	39.7%	36.2%	36.2%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Bottom Deposits*)	--	Unchanged
5	5	(Debris*)	--	Unchanged
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Escherichia Coli (E. Coli)	32377	Unchanged
5	5	Fish Bioassessments	--	Unchanged
5	5	Phosphorus, Total	40317	Unchanged
5	5	Trash	--	Unchanged
5	5	Turbidity	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Bottom Deposits*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
(Debris*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
(Debris*)	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	X	X	X
(Debris*)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
(Physical Substrate Habitat Alterations*)	Habitat Modification - other than Hydromodification (Y)	X	--	--	--	--
(Physical Substrate Habitat Alterations*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Fish Bioassessments	Channelization (Y)	X	--	--	--	--
Fish Bioassessments	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Trash	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Trash	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	X	X	X
Trash	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Turbidity	Illicit Connections/Hook-ups to Storm Sewers (Y)	--	--	X	X	X
Turbidity	Unspecified Urban Stormwater (Y)	--	--	X	X	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 in South Meadow Brook (MA72-24), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for South Meadow Brook (MA72-24) continues to be assessed as Not Supporting with the prior Turbidity, Trash and Debris impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for South Meadow Brook.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Primary Contact Recreation Use for South Meadow Brook (MA72-24) 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. CRWA staff/volunteers collected *E. coli* bacteria samples in the downstream 1/3 of the South Meadow Brook AU (MA72-24) at CRWA_SMB02 [S Meadow Brook] in Apr 2022 (n=1). *E. coli* data from CRWA_SMB02 are too limited according to the 2024 CALM to assess the Primary Contact Recreation Use of South Meadow Brook.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_SMB02	Charles River Watershed Association	Water Quality	South Meadow Brook	South Meadow Brook	42.311450	-71.212560

Bacteria Data

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

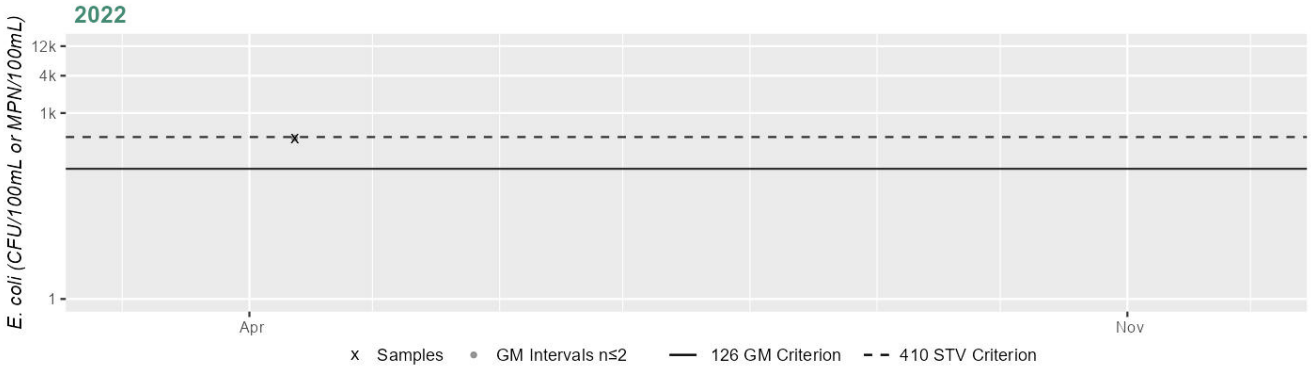
(CRWA 2023) (MassDEP Undated 2)

[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
CRWA_SMB02	Charles River Watershed Association	E. coli	04/12/22	04/12/22	1	393	393	393

Station CRWA_SMB02 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	393
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 South Meadow Brook (MA72-24) 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 W0399. The prior Debris, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward.
CRWA and MassDEP staff/volunteers collected *E. coli* bacteria samples in both the historic (1997-2010) & the current IR window (2011-2022) in South Meadow Brook (MA72-24) from 1997-2022 at 4 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W0401 [downstream/southW at Winchester St, Newton] in Jan 1998 (n=1), and further downstream at CRWA_SMB02 [S Meadow Brook] in Apr 2022 (n=1), W1397 [~475 ft downstream of Needham St, Newton (upstream of stormdrain on right bank)] in Apr 2002 (n=1), and W0399 [~575 ft downstream of Needham St, Newton (downstream of stormdrain on right bank)] from 1997-1998 and in 2002 (n=2-6/yr). The available *E. coli* data from the first 3 stations (including the current station, CRWA_SMB02) are too limited to assess according to the 2024 CALM. Analysis of the historic multi-year limited frequency *E. coli* dataset from W0399 (only 1997 & 2002 had sufficient data to evaluate) indicated that in both sufficient data years 100% of the GMs were >244 CFU/100mL, 1 year had ≥2 samples exceed the 794 CFU/100mL STV (2002, n=4), and cumulatively across years 100% of intervals had GMs >244 CFU/100mL. Historic *E. coli* data from W0399 are reflective of the existing Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_SMB02	Charles River Watershed Association	Water Quality	South Meadow Brook	South Meadow Brook	42.311450	-71.212560
W0399	MassDEP	Water Quality	South Meadow Brook	[approximately 575 feet downstream of Needham Street, Newton (downstream of stormdrain on right bank)]	42.311567	-71.215470
W0401	MassDEP	Water Quality	South Meadow Brook	[downstream/southwest at Winchester Street, Newton.]	42.312373	-71.209267
W1397	MassDEP	Water Quality	South Meadow Brook	[approximately 475 feet downstream of Needham Street, Newton (upstream of stormdrain on right bank)]	42.311605	-71.215187

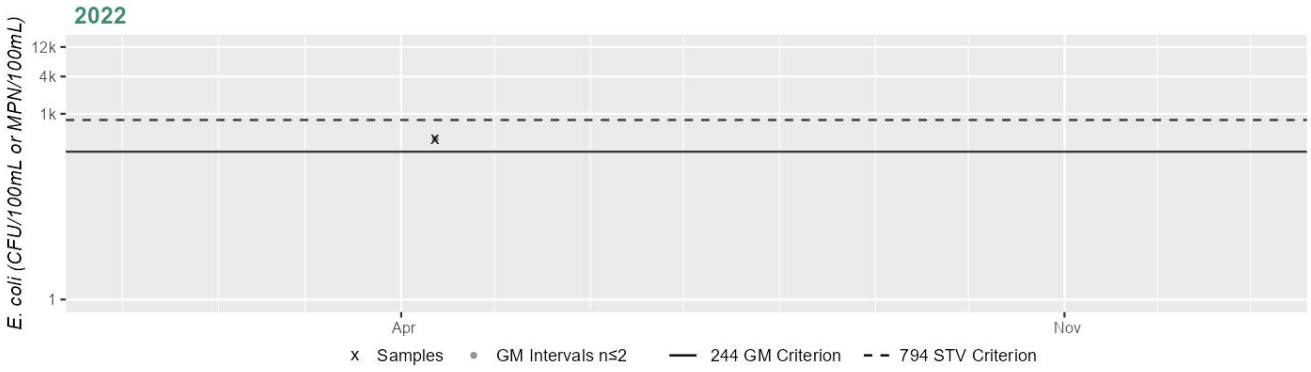
Bacteria Data

Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (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
CRWA_SMB02	Charles River Watershed Association	E. coli	04/12/22	04/12/22	1	393	393	393
W0399	MassDEP	E. coli	07/01/97	12/09/97	6	400	780	523
W0399	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0399	MassDEP	E. coli	06/03/02	09/09/02	4	830	5000	1908
W0401	MassDEP	E. coli	01/28/98	01/28/98	1	220	220	220
W1397	MassDEP	E. coli	04/29/02	04/29/02	1	120	120	119

Station CRWA_SMB02 - Escherichia coli

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



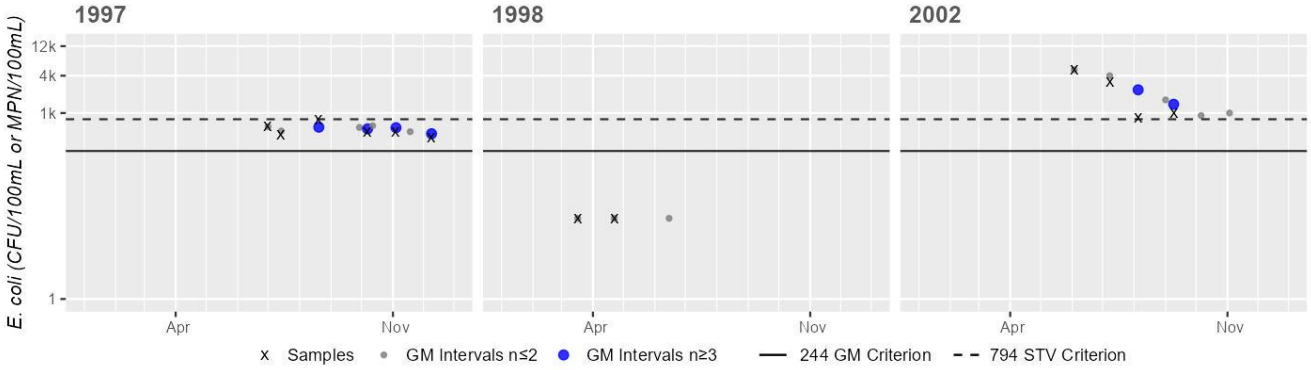
Variable*	Result
Samples	1
SeasGM	393
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Cumulative %GMI Exceedance
Current (2011-2022)
0%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0399 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	523
#GMI	4
#GMI Ex	4
%GMI Ex	100%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

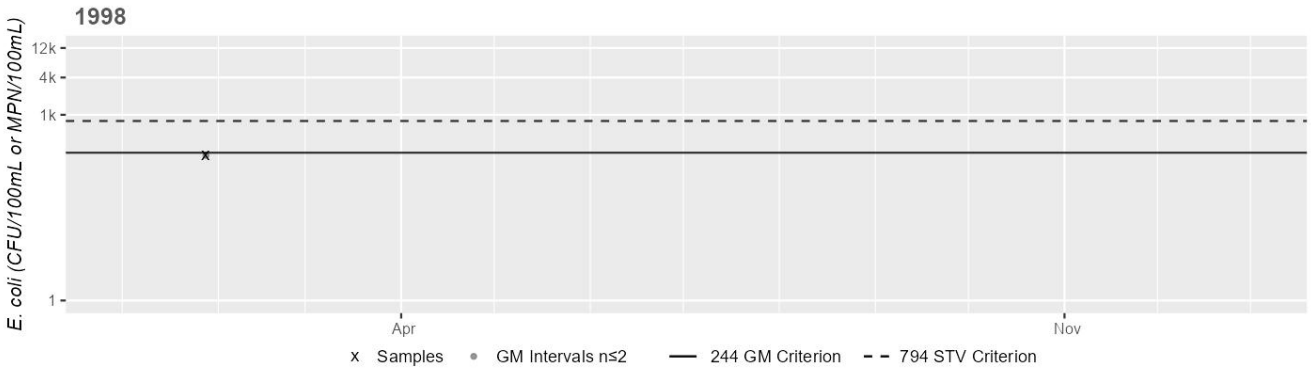
Variable*	Result
Samples	4
SeasGM	1908
#GMI	2
#GMI Ex	2
%GMI Ex	100%
n>STV	4
%n>STV	100%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W0401 - Escherichia coli

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



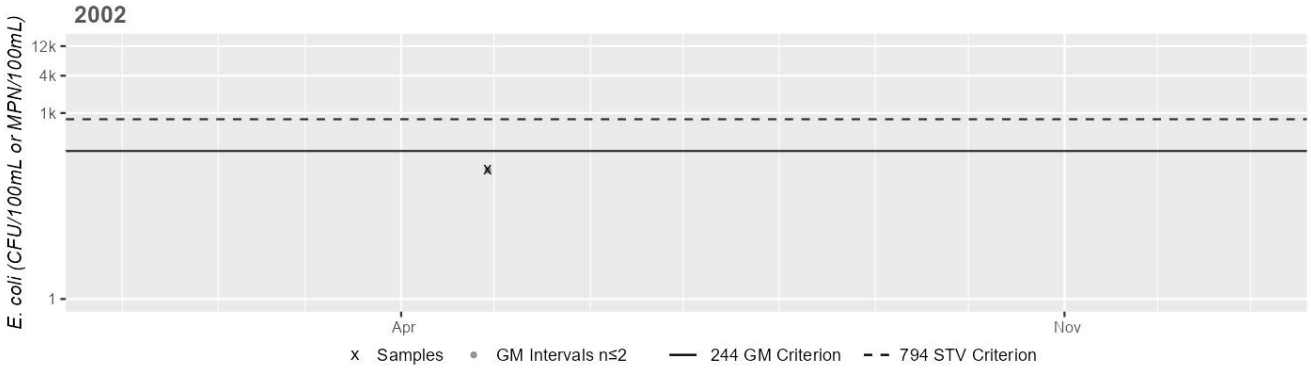
Variable*	Result
Samples	1
SeasGM	220
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1397 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	120
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Stall Brook (MA72-55)

Location:	Headwaters in wetland north of Alder Street, Medway to mouth at confluence with the Charles River, Bellingham.
AU Type:	RIVER
AU Size:	2.7 MILES
Classification/Qualifier:	B

No usable data were available for Stall Brook (MA72-55) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

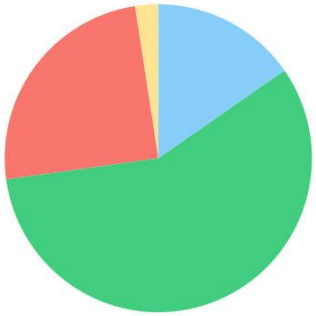
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
--	3	None	--	Unchanged

Stony Brook (MA72-26)

Location:	Headwaters, outlet Beaver Pond, Lincoln to mouth at inlet Stony Brook Reservoir, Waltham/Weston (mileage includes length of braid).
AU Type:	RIVER
AU Size:	5.1 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

Stony Brook (MA72-26)

Watershed Area: 22.50 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	22.50	11.06	12.68	5.77
Agriculture	2.4%	0.6%	2.2%	0.3%
Developed	24.8%	29.4%	18.5%	22.5%
Natural	57.5%	55.8%	55.7%	53.5%
Wetland	15.3%	14.2%	23.6%	23.7%
Impervious	14.1%	17.1%	10.5%	12.6%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	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 in this Stony Brook AU (MA72-26), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Stony Brook AU (MA72-26) 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 are available for this Stony Brook AU (MA72-26), 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 this Stony Brook AU (MA72-26) 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 this Stony Brook AU (MA72-26) from 1997-2007 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W0397 [upstream/NW at Church St, Weston] from Jul-Nov 1997 (n=5) and at the downstream end of the AU at W1157 [railroad tracks near Sibley Rd, Weston/Waltham] in 2002 and 2007 (n=5/yr). Analysis of the historic single year limited frequency *E. coli* dataset from W0397 indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 52 CFU/100mL). Analysis of the historic multi-year limited frequency *E. coli* dataset from W1157 indicated no intervals in either year had GMs >244 CFU/100mL, neither year had any samples exceed the 794 CFU/100mL STV, and cumulatively across years 0% of intervals had GMs >244 CFU/100mL. Although historic *E. coli* data from W0397 and W1157 are indicative of excellent water quality conditions, 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 this Stony Brook AU (MA72-26).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0397	MassDEP	Water Quality	Stony Brook	[upstream/northwest at Church Street, Weston.]	42.378781	-71.282936
W1157	MassDEP	Water Quality	Stony Brook	[railroad tracks near Sibley Road, Weston/Waltham]	42.367955	-71.270332

Bacteria Data

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

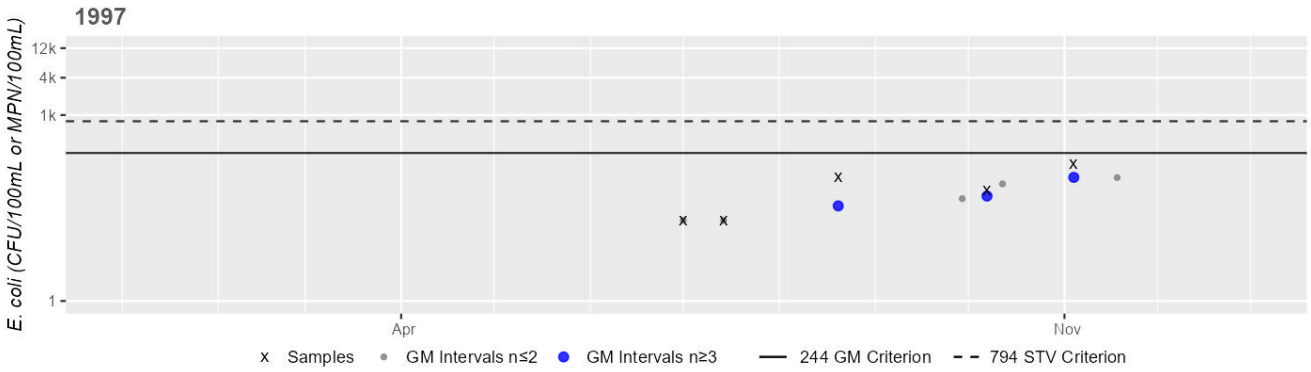
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0397	MassDEP	E. coli	07/01/97	11/04/97	5	20	160	52
W1157	MassDEP	E. coli	04/29/02	09/09/02	5	39	210	99
W1157	MassDEP	E. coli	05/15/07	10/02/07	5	38	270	81

Station MASSDEP_W0397 - Escherichia coli

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



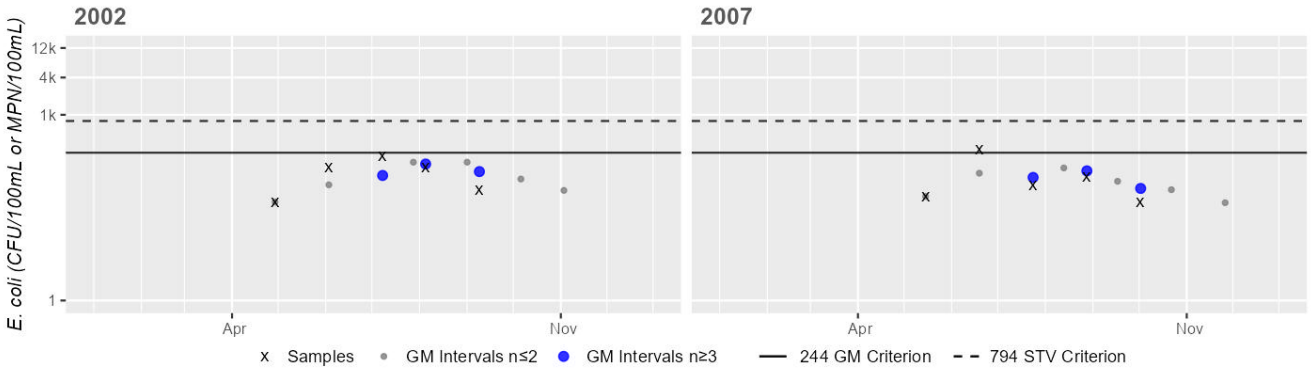
Variable*	Result
Samples	5
SeasGM	52
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1157 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	99
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	81
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 (MA72-37)

Location:	Headwaters, outlet Turtle Pond, Boston to culvert entrance, Boston (two culverted portions totaling approximately 740 feet (0.14mile)).
AU Type:	RIVER
AU Size:	1.6 MILES
Classification/Qualifier:	B

No usable data were available for Stony Brook (MA72-37) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Stony Brook Reservoir (MA72114)

Location:	Waltham/Weston.
AU Type:	FRESHWATER LAKE
AU Size:	64 ACRES
Classification/Qualifier:	A: PWS, ORW

No usable data were available for Stony Brook Reservoir (MA72114) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

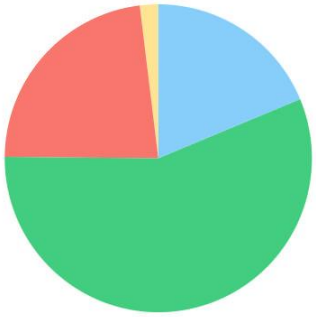
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Stop River (MA72-09)

Location:	Headwaters south of Route 1A, Wrentham to Norfolk-Walpole MCI discharge (NPDES: MA0102253), Norfolk (through former 2006 segment: Highland Lake MA72047).
AU Type:	RIVER
AU Size:	4.9 MILES
Classification/Qualifier:	B

Stop River (MA72-09)

Watershed Area: 10.62 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	10.62	7.60	3.66	2.62
Agriculture	1.9%	1.4%	2.1%	2.3%
Developed	22.9%	21.4%	12.6%	11.2%
Natural	56.4%	56.6%	54%	52.8%
Wetland	18.7%	20.6%	31.4%	33.7%
Impervious	10.3%	9.6%	5.8%	4.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Ambient Bioassays - Chronic Aquatic Toxicity	--	Unchanged
5	5	Dissolved Oxygen	40317	Unchanged
5	5	Phosphorus, Total	40317	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Ambient Bioassays - Chronic Aquatic Toxicity	Municipal Point Source Discharges (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Ambient Bioassays - Chronic Aquatic Toxicity	Source Unknown (N)	X	--	--	--	--
Dissolved Oxygen	Package Plant or Other Permitted Small Flows Discharges (N)	X	--	--	--	--
Dissolved Oxygen	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Package Plant or Other Permitted Small Flows Discharges (N)	X	--	--	--	--
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2016 IR [Algae, low priority] Follow-up aesthetics observations and potentially algal/cyanobacteria monitoring should be conducted in the upstream Stop River AU (MA72-09) in the vicinity of W1150 since an Alert was first identified in the 2016 IR for Algae (filamentous algae and an unconfirmed algal bloom; based on a single observation of each at Campbell Street, Norfolk (W1150) in 2007) (MassDEP Undated 6). {W1150}

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 in this upstream Stop River AU (MA72-09), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert

Not Assessed	YES

2024/26 Use Attainment Summary
There are no aesthetics observation data available to assess the status of the Aesthetics Use for this upstream Stop River AU (MA72-09), so it is Not Assessed. The prior Alert identified for Algae (Filamentous Algae and an unconfirmed Algal Bloom; based on a single observation of each at Campbell Street, Norfolk (W1150) in 2007) (MassDEP Undated 6) is being carried forward. No new data are available to evaluate the Aesthetics Use for this Stop River AU (MA72-09). Sampling should be conducted to determine current conditions.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data are available for this upstream Stop River AU (MA72-09), so the Primary Contact Recreation Use is Not Assessed. The prior Alert for Algae is being removed from the recreational uses but continues to be maintained under the Aesthetics Use.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data are available for this upstream Stop River AU (MA72-09) in the current IR window (2011-2022), so the Secondary Contact Recreation Use is Not Assessed. The prior Alert for Algae is being removed from the recreational uses but continues to be maintained under the Aesthetics Use. MassDEP staff collected historical *E. coli* bacteria samples in the downstream portion of this upstream Stop River AU (MA72-09) at W1150 [Campbell St, Norfolk (~1/2 mile upstream of MCI Norfolk Walpole WWTF (MA0102253) discharge)] in 2002 and 2007 (n=5/yr). Historic *E. coli* data from W1150 are indicative of good water quality conditions. Since these data were collected prior to the current IR window (2011-2022), however, they cannot be used to positively assess the Secondary Contact Recreation Use of this Stop River AU (MA72-09).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1150	MassDEP	Water Quality	Stop River	[Campbell Street, Norfolk (approximately 1/2 mile upstream of MCI Norfolk Walpole WWTF (MA0102253) discharge)]	42.129112	-71.305030

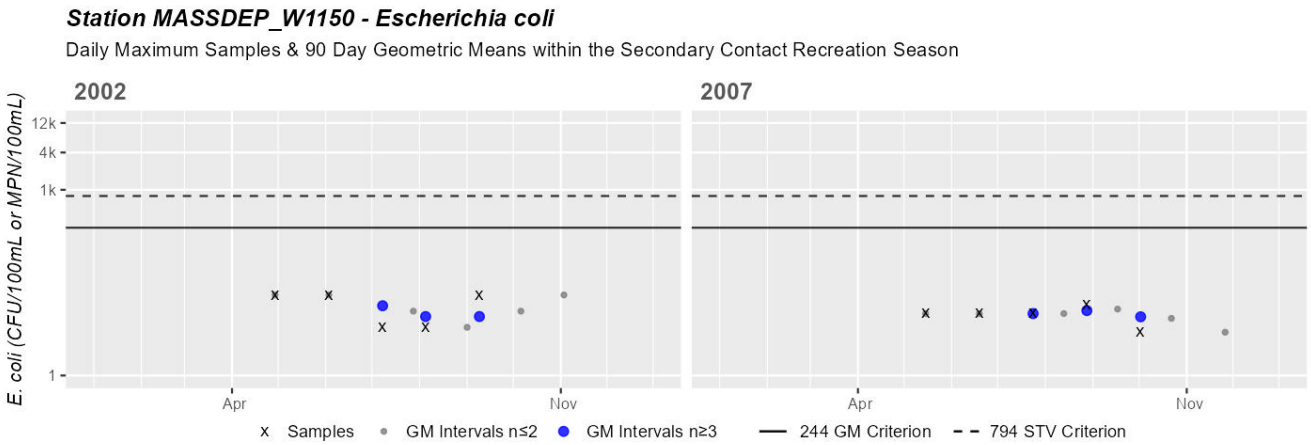
Bacteria Data

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
W1150	MassDEP	E. coli	04/29/02	09/09/02	5	6	20	12
W1150	MassDEP	E. coli	05/15/07	10/02/07	5	5	14	9



Variable*	Result
Samples	5
SeasGM	12
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	9
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

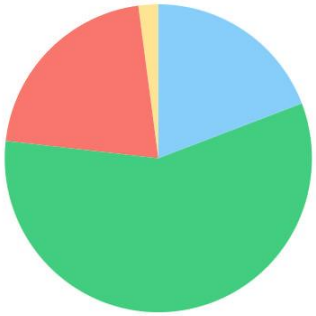
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Stop River (MA72-10)

Location:	From Norfolk-Walpole MCI discharge, Norfolk to confluence with Charles River, Medfield.
AU Type:	RIVER
AU Size:	4.2 MILES
Classification/Qualifier:	B

Stop River (MA72-10)

Watershed Area: 17.09 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	17.09	7.16	5.70	2.30
Agriculture	2.1%	2.4%	2.3%	3.2%
Developed	21.1%	18.1%	10.9%	8.4%
Natural	57.6%	59.6%	51.9%	48.2%
Wetland	19.2%	19.8%	34.9%	40.2%
Impervious	9.7%	8.7%	5.1%	4.1%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	5	Escherichia Coli (E. Coli)	--	Added
4a	5	Organic Enrichment (Sewage) Biological Indicators	40317	Unchanged
4a	5	Phosphorus, Total	40317	Unchanged

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

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Organic Enrichment (Sewage) Biological Indicators	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Organic Enrichment (Sewage) Biological Indicators	Municipal Point Source Discharges (Y)	X	--	--	--	--
Organic Enrichment (Sewage) Biological Indicators	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--
Phosphorus, Total	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Phosphorus, Total	Municipal Point Source Discharges (Y)	X	--	--	--	--
Phosphorus, Total	Wet Weather Discharges (Non-Point Source) (Y)	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 in this downstream Stop River AU (MA72-10), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this downstream Stop River AU (MA72-10) 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 downstream Stop River AU (MA72-10) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_269T. CRWA staff/volunteers collected *E. coli* bacteria samples at the downstream end of the Stop River (MA72-10) at CRWA_269T [Stop River, Causeway St, Medfield] from 2011-2019 and 2021-2022 (n=5-7/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset indicated that in all 5 sufficient data years >20% of intervals had GMs >126 CFU/100mL (2017-2019 and 2021-2022, 50-75%), 2 years had ≥2 samples exceed the 410 CFU/100mL STV (2018 and 2022, n=2 & 2), and cumulatively across the last 5 years 61% of intervals had GMs >126 CFU/100mL. *E. coli* data from CRWA_269T are indicative of an Escherichia Coli (E. Coli) impairment.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_269T	Charles River Watershed Association	Water Quality	Charles River; Stop River	Stop River, Causeway St, Medfield	42.172600	-71.317070

Bacteria Data

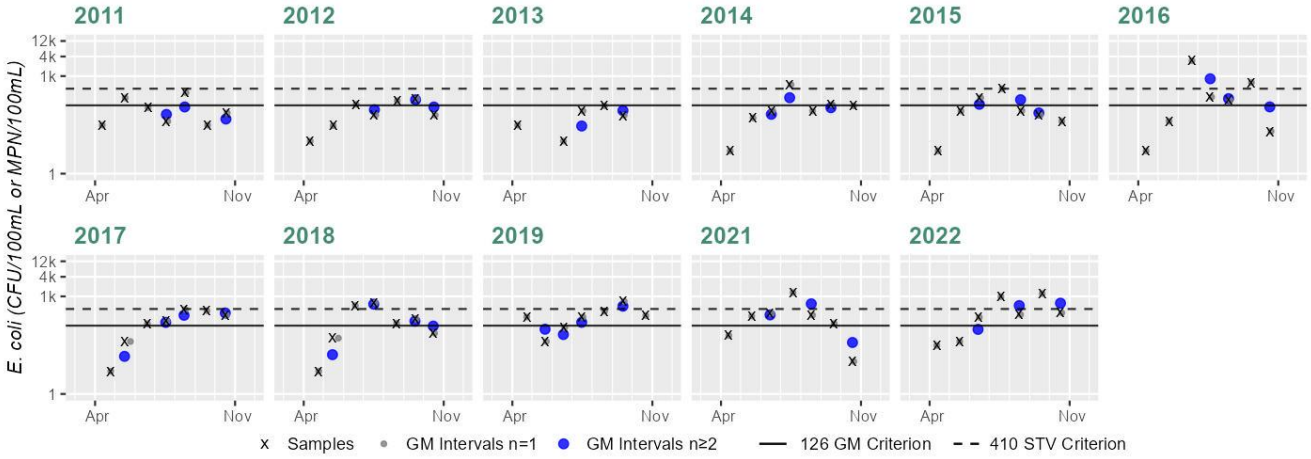
Bacteria Data Collected by MassDEP (2011-2020) and External Data Providers (2011-2022) (30-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 2)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_269T	Charles River Watershed Association	E. coli	04/12/11	10/18/11	7	31	309	79
CRWA_269T	Charles River Watershed Association	E. coli	04/10/12	10/16/12	7	10	199	66

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_269T	Charles River Watershed Association	E. coli	04/09/13	09/17/13	5	10	122	45
CRWA_269T	Charles River Watershed Association	E. coli	04/15/14	10/21/14	7	5	546	77
CRWA_269T	Charles River Watershed Association	E. coli	04/14/15	10/20/15	7	5	410	70
CRWA_269T	Charles River Watershed Association	E. coli	04/12/16	10/18/16	7	5	2990	118
CRWA_269T	Charles River Watershed Association	E. coli	04/25/17	10/17/17	7	5	399	110
CRWA_269T	Charles River Watershed Association	E. coli	04/24/18	10/16/18	7	5	637	109
CRWA_269T	Charles River Watershed Association	E. coli	04/23/19	10/22/19	7	41	712	205
CRWA_269T	Charles River Watershed Association	E. coli	04/13/21	10/19/21	7	10	1310	156
CRWA_269T	Charles River Watershed Association	E. coli	04/12/22	10/18/22	7	31	1220	225

Station CRWA_269T & MASSDEP_W1716 - Escherichia coli

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



Variable*	Result
Samples	7
SeasGM	79
#GMI	3
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	66
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	45
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	77
#GMI	3
#GMI Ex	1
%GMI Ex	33%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	70
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	118
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	110
#GMI	4
#GMI Ex	3
%GMI Ex	75%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	7
SeasGM	109
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	2
%n>STV	28%

Variable*	Result
Samples	7
SeasGM	205
#GMI	4
#GMI Ex	2
%GMI Ex	50%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	156
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	1
%n>STV	14%

Variable*	Result
Samples	7
SeasGM	225
#GMI	3
#GMI Ex	2
%GMI Ex	66%
n>STV	2
%n>STV	28%

Cumulative %GMI Exceedance Current (2011-2022)
48%

Cumulative %GMI Exceedance Current (Recent 5 Years)
61%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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 this downstream Stop River AU (MA72-10) is assessed as Not Supporting. An Escherichia Coli (E. Coli) impairment is being added due to bacteria data not meeting the threshold at CRWA_269T.
CRWA staff/volunteers collected *E. coli* bacteria samples in the current IR window (2011-2022) at the downstream end of the Stop River (MA72-10) at CRWA_269T [Stop River, Causeway St, Medfield] from 2011-2019 and 2021-2022 (current n=6-12/yr). Analysis of the recent five years of this multi-year moderate frequency *E. coli* dataset from CRWA_269T indicated that in 4 of 5 sufficient data years >20% of intervals had GMs >244 CFU/100mL (2018-2019 and 2021-2022, 25-41%), 1 year had ≥2 samples exceed the 794 CFU/100mL STV (2022, n=2), and cumulatively across the 5 years 28% of intervals had GMs >244 CFU/100mL. *E. coli* data from CRWA_269T are indicative of an Escherichia Coli (E. Coli) impairment.
CRWA and MassDEP staff/volunteers also collected *E. coli* bacteria samples in the historic IR window (1997-2010) in the Stop River (MA72-10) from 2002-2010 at 2 stations. Samples were collected from the following stations/sample years from upstream to downstream: in the middle of the AU at W1151 [Noon Hill Rd, Medfield] in 2002 and 2007 (n=3-5/yr) and at the downstream end of the AU at the combined CRWA_269T & W1716 station [Causeway St, Medfield & Stop River, Causeway St, Medfield] in 2007 and from 2009-2010 (historic n=1-12/yr). All these data meet 2024 CALM guidance but are superseded by the data collected at CRWA_269T in the current IR window.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
CRWA_269T	Charles River Watershed Association	Water Quality	Charles River; Stop River	Stop River, Causeway St, Medfield	42.172600	-71.317070
W1151	MassDEP	Water Quality	Stop River	[Noon Hill Road, Medfield]	42.158666	-71.302810
W1716	MassDEP	Water Quality	Stop River	[Causeway Street, Medfield]	42.172452	-71.317261

Bacteria Data

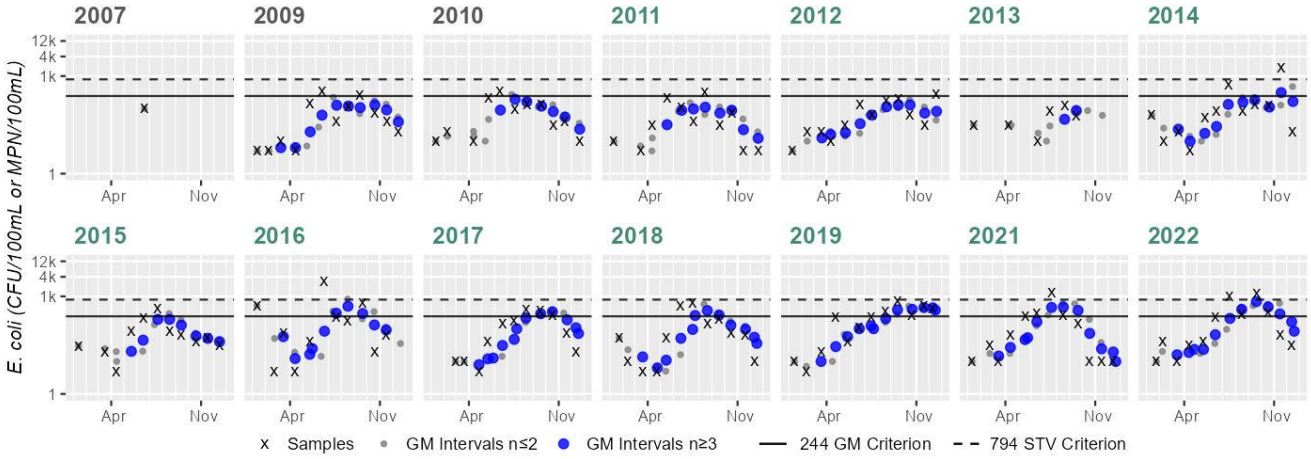
Bacteria Data Collected by MassDEP (1997-2020) and External Data Providers (1997-2022) (90-day Interval Analysis)
(CRWA 2023) (MassDEP Undated 1) (MassDEP Undated 7) (MassDEP Undated 3)
[Result units are CFU/100mL or MPN/100mL]

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_269T	Charles River Watershed Association	E. coli	01/13/09	12/15/09	12	5	345	35

Station Code	Organization	Indicator	Start Date	End Date	Sample Count	Minimum Sample Result	Maximum Sample Result	Seasonal Geometric Mean
CRWA_269T	Charles River Watershed Association	E. coli	01/12/10	12/21/10	11	10	336	48
CRWA_269T	Charles River Watershed Association	E. coli	01/11/11	12/20/11	11	5	309	31
CRWA_269T	Charles River Watershed Association	E. coli	01/10/12	12/18/12	12	5	285	46
CRWA_269T	Charles River Watershed Association	E. coli	01/15/13	09/17/13	6	10	122	42
CRWA_269T	Charles River Watershed Association	E. coli	01/14/14	12/16/14	12	5	1850	66
CRWA_269T	Charles River Watershed Association	E. coli	01/13/15	12/15/15	11	5	410	52
CRWA_269T	Charles River Watershed Association	E. coli	01/12/16	11/15/16	11	5	2990	91
CRWA_269T	Charles River Watershed Association	E. coli	02/28/17	12/12/17	11	5	399	58
CRWA_269T	Charles River Watershed Association	E. coli	01/23/18	12/11/18	12	5	637	51
CRWA_269T	Charles River Watershed Association	E. coli	01/15/19	12/10/19	12	5	712	110
CRWA_269T	Charles River Watershed Association	E. coli	01/12/21	12/14/21	12	10	1310	54
CRWA_269T	Charles River Watershed Association	E. coli	01/25/22	12/13/22	12	10	1220	88
W1151	MassDEP	E. coli	07/08/02	09/09/02	3	97	160	115
W1151	MassDEP	E. coli	05/15/07	10/02/07	5	43	250	88
W1716	MassDEP	E. coli	06/19/07	06/19/07	1	100	100	100

Station CRWA_269T & MASSDEP_W1716 - Escherichia coli

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



Variable*	Result
Samples	1
SeasGM	100
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	35
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	48
#GMI	7
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	31
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	46
#GMI	10
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	6
SeasGM	42
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	66
#GMI	10
#GMI Ex	1
%GMI Ex	10%
n>STV	1
%n>STV	8%

Variable*	Result
Samples	11
SeasGM	52
#GMI	8
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	11
SeasGM	91
#GMI	10
#GMI Ex	3
%GMI Ex	30%
n>STV	1
%n>STV	9%

Variable*	Result
Samples	11
SeasGM	58
#GMI	12
#GMI Ex	2
%GMI Ex	16%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	51
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	110
#GMI	12
#GMI Ex	5
%GMI Ex	41%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	12
SeasGM	54
#GMI	12
#GMI Ex	3
%GMI Ex	25%
n>STV	1
%n>STV	8%

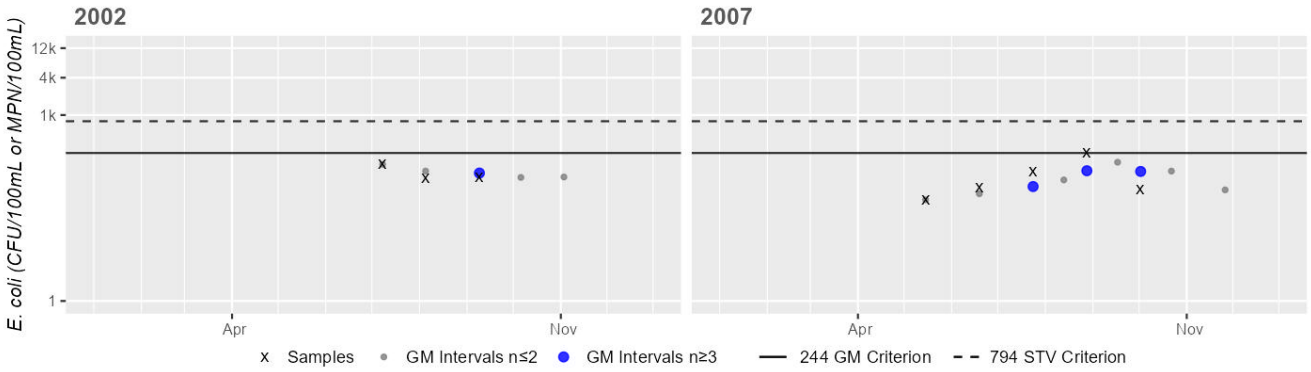
Variable*	Result
Samples	12
SeasGM	88
#GMI	12
#GMI Ex	4
%GMI Ex	33%
n>STV	2
%n>STV	16%

Cumulative %GMI Exceedance Historic (1997-2010)	Cumulative %GMI Exceedance Current (2011-2022)	Cumulative %GMI Exceedance Current (Recent 5 Years)
0%	19%	28%

**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; 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_W1151 - Escherichia coli

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



Variable*	Result
Samples	3
SeasGM	115
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	88
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Todd Pond (MA72117)

Location:	Lincoln.
AU Type:	FRESHWATER LAKE
AU Size:	9 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Todd Pond (MA72117) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

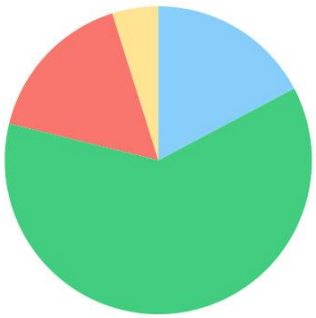
AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
3	3	None	--	Unchanged

Trout Brook (MA72-19)

Location:	Headwaters, outlet Channings Pond, Dover to mouth at confluence with the Charles River, Dover.
AU Type:	RIVER
AU Size:	2.8 MILES
Classification/Qualifier:	B

Trout Brook (MA72-19)

Watershed Area: 4.56 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	4.56	4.44	1.73	1.72
Agriculture	4.8%	4.9%	4.2%	4.1%
Developed	16.3%	16.2%	9.8%	9.6%
Natural	61.6%	61.4%	54.1%	54.1%
Wetland	17.3%	17.5%	32%	32.2%
Impervious	7.1%	7.1%	4%	4%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Nutrient/Eutrophication Biological Indicators	40317	Unchanged
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Nutrient/Eutrophication Biological Indicators	Source Unknown (N)	X	--	--	--	--
Temperature	Baseflow Depletion from Groundwater Withdrawals (N)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	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 in Trout Brook (MA72-19), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Trout Brook (MA72-19) 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 are available for Trout Brook (MA72-19), 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 are available for Trout Brook (MA72-19) 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 middle of Trout Brook (MA72-19) at W0408 [Haven St, Dover] from 1997-1998 and in 2007 (n=2-5/yr; note that only data from 1997 & 2007 were sufficient to evaluate). Analysis of this historic multi-year limited frequency *E. coli* dataset from W0408 indicated that none of the 2 sufficient data years had >20% of intervals with GMs >244 CFU/100mL, no years had ≥2 samples exceed the 794 CFU/100mL STV, and cumulatively across years no intervals had GMs >244 CFU/100mL. Although historic *E. coli* data from W0408 are indicative of good water quality conditions, 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 (MA72-19).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0408	MassDEP	Water Quality	Trout Brook	[Haven Street, Dover]	42.254173	-71.293374

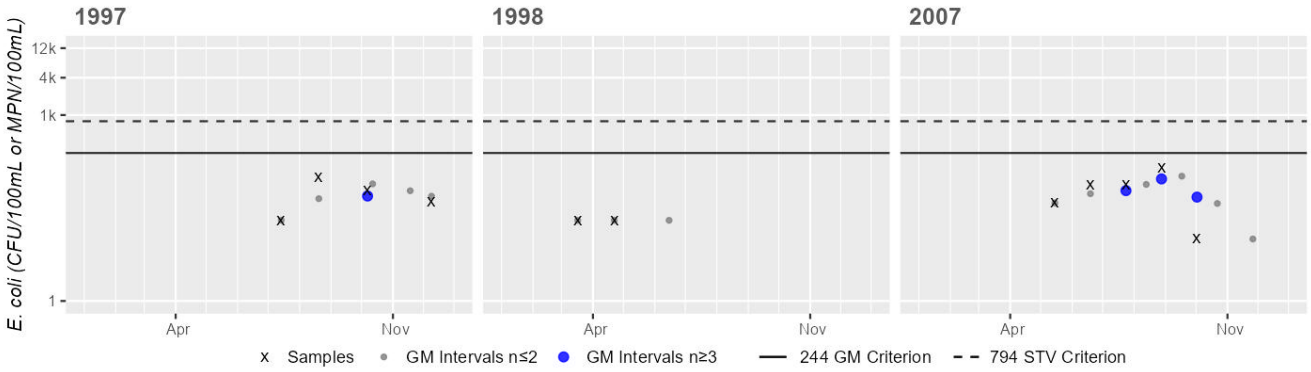
Bacteria Data

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
W0408	MassDEP	E. coli	07/14/97	12/09/97	4	20	100	46
W0408	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19
W0408	MassDEP	E. coli	05/15/07	10/02/07	5	10	140	49

Station MASSDEP_W0408 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	46
#GMI	1
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	5
SeasGM	49
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Uncas Pond (MA72122)

Location:	Franklin.
AU Type:	FRESHWATER LAKE
AU Size:	17 ACRES
Classification/Qualifier:	B

No usable data were available for Uncas Pond (MA72122) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	(Non-Native Aquatic Plants*)	--	Unchanged
4a	4a	Dissolved Oxygen	40319	Unchanged

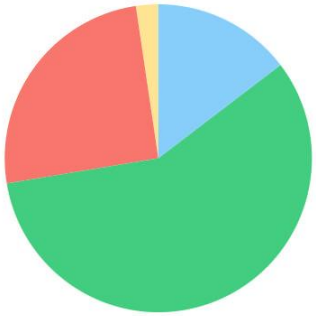
Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Non-Native Aquatic Plants*)	Introduction of Non-native Organisms (Accidental or Intentional) (Y)	X	--	--	--	--
Dissolved Oxygen	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Dissolved Oxygen	Wet Weather Discharges (Non-Point Source) (Y)	X	--	--	--	--

Unnamed Tributary (MA72-27)

Location:	Headwaters, outlet Stony Brook Reservoir, Waltham/Weston to mouth at confluence with the Charles River, Waltham/Weston.
AU Type:	RIVER
AU Size:	0.2 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-27)

Watershed Area: 24.08 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	24.08	7.77	13.59	3.97
Agriculture	2.3%	0.6%	2%	0%
Developed	25.3%	33.7%	19.1%	27.8%
Natural	57.7%	54.4%	56.3%	51.7%
Wetland	14.6%	11.3%	22.5%	20.5%
Impervious	14.2%	19.5%	10.7%	15.9%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4c	4c	(Dewatering*)	--	Unchanged
4c	4c	(Flow Regime Modification*)	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Dewatering*)	Impacts from Hydrostructure Flow Regulation/Modification (Y)	X	--	--	--	--
(Dewatering*)	Water Diversions (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Flow Regime Modification*)	Impacts from Hydrostructure Flow Regulation/Modification (Y)	X	--	--	--	--
(Flow Regime Modification*)	Water Diversions (Y)	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 in this Unnamed Tributary AU (MA72-27), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Unnamed Tributary AU (MA72-27) 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 are available for this Unnamed Tributary AU (MA72-27), 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 are available for this Unnamed Tributary AU (MA72-27) 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 middle of this short Unnamed Tributary AU (MA72-27) at W0396 [30 ft downstream/E of S St/River St below outlet Stony Brook Reservoir, Waltham/Weston] from 1997-1998 n=1-2/yr). The historic *E. coli* data from W0396 are too limited to assess according to the 2024 CALM.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0396	MassDEP	Water Quality	Unnamed Tributary	[30 feet downstream/east of South Street/River Street below outlet Stony Brook Reservoir, Waltham/Weston.]	42.354390	-71.262903

Bacteria Data

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

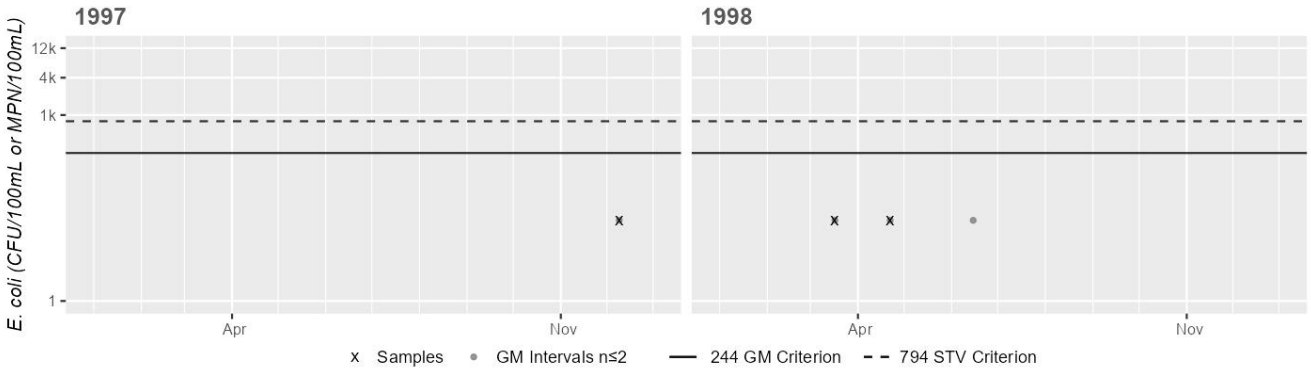
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0396	MassDEP	E. coli	12/09/97	12/09/97	1	20	20	19
W0396	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19

Station MASSDEP_W0396 - Escherichia coli

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



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

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

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

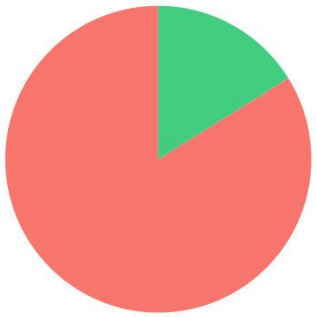
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Unnamed Tributary (MA72-30)

Location:	Locally known as "Laundry Brook" - emerges north of California Street, Watertown to mouth at confluence with the Charles River, Watertown (stream not depicted on 1987 Newton USGS map).
AU Type:	RIVER
AU Size:	0.02 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-30)

Watershed Area: 0.11 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.11	0.11	0.00	0.00
Agriculture	0%	0%	0%	0%
Developed	83.9%	83.9%	71.8%	71.8%
Natural	16.1%	16.1%	28.2%	28.2%
Wetland	0%	0%	0%	0%
Impervious	67.2%	67.2%	64.8%	64.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Physical Substrate Habitat Alterations*)	--	Unchanged
5	5	Enterococcus	32381	Unchanged
5	5	Escherichia Coli (E. Coli)	32381	Unchanged
5	5	Odor	--	Unchanged
5	5	Phosphorus, Total	--	Unchanged
5	5	Total Suspended Solids (TSS)	--	Unchanged
5	5	Turbidity	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Physical Substrate Habitat Alterations*)	Source Unknown (N)	X	--	--	--	--
Enterococcus	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Enterococcus	Source Unknown (N)	--	--	--	X	X
Enterococcus	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	--	X	X
Escherichia Coli (E. Coli)	Source Unknown (N)	--	--	--	X	X
Escherichia Coli (E. Coli)	Unspecified Urban Stormwater (Y)	--	--	--	X	X
Odor	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Odor	Source Unknown (N)	--	--	X	X	X
Odor	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Phosphorus, Total	Source Unknown (N)	X	--	--	--	--
Phosphorus, Total	Unspecified Urban Stormwater (Y)	X	--	--	--	--
Total Suspended Solids (TSS)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Total Suspended Solids (TSS)	Source Unknown (N)	--	--	X	X	X
Total Suspended Solids (TSS)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Turbidity	Source Unknown (N)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Turbidity	Unspecified Urban Stormwater (Y)	--	--	X	X	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 in this Unnamed Tributary AU (MA72-30), known locally as “Laundry Brook”, so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Unnamed Tributary AU (MA72-30), known locally as “Laundry Brook”, continues to be assessed as Not Supporting with the prior Total Suspended Solids (TSS), Turbidity and Odor impairments being carried forward. No new aesthetics observation data are available to evaluate the Aesthetics Use for this Unnamed Tributary AU (MA72-30).

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary

No bacteria or other indicator data are available for this Unnamed Tributary AU (MA72-30), known locally as “Laundry Brook”, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Enterococcus and Escherichia Coli (E. Coli) impairments are being carried forward and the prior Odor, Total Suspended Solids (TSS), and Turbidity impairments (from the Aesthetics Use) are also 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 Unnamed Tributary AU (MA72-30), known locally as “Laundry Brook”, continues to be assessed as Not Supporting. The prior Enterococcus and Escherichia Coli (E. Coli) impairments are being carried forward and the prior Odor, Total Suspended Solids (TSS), and Turbidity impairments (from the Aesthetics Use) are also being carried forward. MassDEP staff collected historical *E. coli* bacteria samples in this Unnamed Tributary AU (MA72-30) at W0385 [10 ft downstream/N of California St, Watertown. Unnamed tributary locally known as Laundry Brook] from 1997-1998 (n=2-6/yr). Analysis of this historic single year limited frequency *E. coli* dataset from W0385 (only the data from 1997 were of sufficient frequency to be assessed according to the 2024 CALM) indicated no intervals had GMs >244 CFU/100mL, 2 samples exceeded the 794 CFU/100mL STV, and the overall GM was 189 CFU/100mL. Historic *E. coli* data from W0385 are inconclusive according to the 2024 CALM because this single year, limited frequency dataset with GMs below the threshold had STV exceedances and an overall GM lower than the threshold. Therefore, the existing Enterococcus and Escherichia Coli (E. Coli) impairments are being retained.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0385	MassDEP	Water Quality	Unnamed Tributary	[10 feet downstream/north of California Street, Watertown. Unnamed tributary locally known as Laundry Brook.]	42.364793	-71.189073

Bacteria Data

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

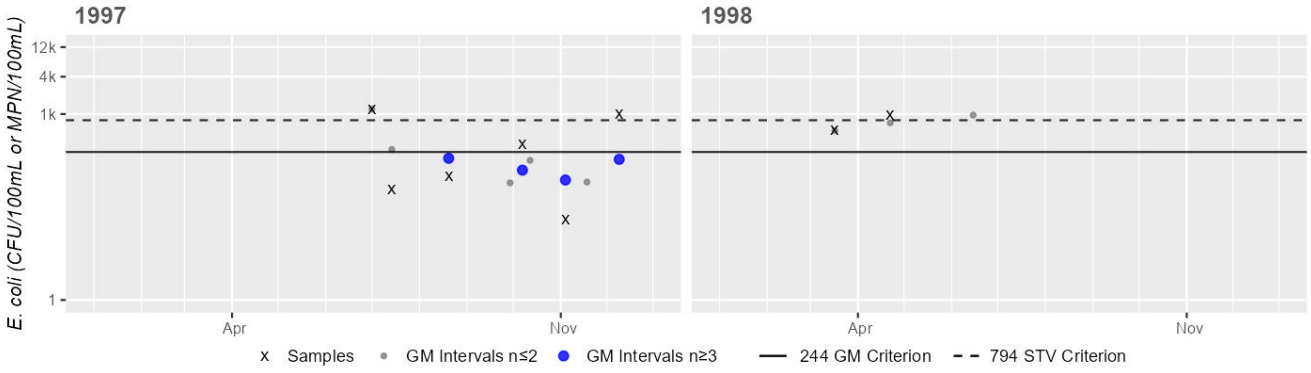
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0385	MassDEP	E. coli	07/01/97	12/09/97	6	20	1200	189
W0385	MassDEP	E. coli	03/17/98	04/22/98	2	540	960	720

Station MASSDEP_W0385 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	189
#GMI	4
#GMI Ex	0
%GMI Ex	0%
n>STV	2
%n>STV	33%

Variable*	Result
Samples	2
SeasGM	720
#GMI	0
#GMI Ex	0
%GMI Ex	0%
n>STV	1
%n>STV	50%

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

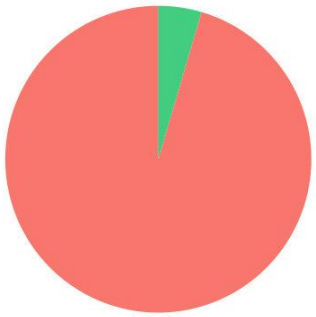
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Unnamed Tributary (MA72-31)

Location:	Locally known as "Millers River" - from emergence near Route 93, Cambridge/Boston to mouth at confluence with the Charles River, Cambridge.
AU Type:	RIVER
AU Size:	0.2 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-31)

Watershed Area: 0.90 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.90	0.90	0.03	0.03
Agriculture	0%	0%	0%	0%
Developed	95.4%	95.4%	98.2%	98.2%
Natural	4.6%	4.6%	1.8%	1.8%
Wetland	0%	0%	0%	0%
Impervious	77.5%	77.5%	84.8%	84.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	(Bottom Deposits*)	--	Unchanged
5	5	(Debris*)	--	Unchanged
5	5	(Habitat Assessment*)	--	Unchanged
5	5	Flocculant Masses	--	Removed
5	5	Odor	--	Unchanged
5	5	Oil and Grease	--	Unchanged
5	5	Petroleum Hydrocarbons	--	Unchanged
5	5	Polychlorinated Biphenyls (PCBs)	--	Unchanged
5	5	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	--	Unchanged
5	5	Scum/Foam	--	Unchanged

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Sedimentation/Siltation	--	Unchanged
5	5	Trash	--	Unchanged
5	5	Turbidity	--	Unchanged
5	5	Unspecified Metals in Sediment	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
(Bottom Deposits*)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
(Bottom Deposits*)	Industrial Point Source Discharge (Y)	--	--	X	X	X
(Bottom Deposits*)	Unspecified Urban Stormwater (Y)	--	--	X	X	X
(Debris*)	Illegal Dumps or Other Inappropriate Waste Disposal (N)	--	--	X	X	X
(Habitat Assessment*)	Channelization (Y)	X	--	--	--	--
(Habitat Assessment*)	Loss of Riparian Habitat (Y)	X	--	--	--	--
Odor	Source Unknown (N)	--	--	X	X	X
Oil and Grease	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Oil and Grease	Industrial Point Source Discharge (Y)	--	--	X	X	X
Oil and Grease	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Petroleum Hydrocarbons	Contaminated Sediments (Y)	X	--	--	--	--

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Petroleum Hydrocarbons	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Polychlorinated Biphenyls (PCBs)	Contaminated Sediments (Y)	X	--	--	--	--
Polychlorinated Biphenyls (PCBs)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Contaminated Sediments (Y)	X	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Scum/Foam	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Scum/Foam	Industrial Point Source Discharge (Y)	--	--	X	X	X
Scum/Foam	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Sedimentation/Siltation	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--
Trash	Illegal Dumps or Other Inappropriate Waste Disposal (N)	--	--	X	X	X
Turbidity	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	--	--	X	X	X
Turbidity	Industrial Point Source Discharge (Y)	--	--	X	X	X

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Turbidity	Unspecified Urban Stormwater (Y)	--	--	X	X	X
Unspecified Metals in Sediment	Contaminated Sediments (Y)	X	--	--	--	--
Unspecified Metals in Sediment	Discharges from Municipal Separate Storm Sewer Systems (MS4) (Y)	X	--	--	--	--

Supporting Information for Removed Impairments

2022 Removed Impairment	Removal Reason	Removal Comment
Flocculant Masses	Data and/or information lacking to determine WQ status; original basis for listing was incorrect	The ADB impairment "Foam/Flocs/Scum/Oil Slicks" was previously applied to Unnamed Tributary (MA72-31), locally known as "Millers River", during the 2008 reporting cycle. The impairment was based on original field observations by consultants Geoenvironmental Inc. (GZA) (Fiorentino, Kennedy and Weinstein 2000) and later confirmed by MassDEP staff at the upstream end of the AU at station W1714 (approximately 50 feet from large gated culvert outlet beneath Route 93, Boston/Cambridge) during summer 2007, where scums/oily sheens were noted on two occasions (MassDEP Undated 6). The "Foam/Flocs/Scum/Oil Slicks" impairment code was subsequently divided into more specific codes and applied automatically to this AU for the final 2016 reporting cycle submittal to EPA's new ATTAINS database. Since there was no mention of "Flocculant Masses" in the field observations, this impairment is being removed (the impairments for "Scum/foam" and "Oil and Grease" are being carried forward).

Flocculant Masses

See Removal Comment for more information.

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 in this Unnamed Tributary AU (MA72-31), known locally as Millers River, so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
The Aesthetics Use for this Unnamed Tributary AU (MA72-31), locally known as “Millers River”, continues to be assessed as Not Supporting, with the Debris, Trash, Turbidity, Odor, Bottom Deposits, Scum/foam, and Oil/Grease impairments being carried forward. The Flocculant Masses impairment is being removed (see supporting information for removed impairments). No new aesthetics observation data are available to evaluate the Aesthetics Use for this Unnamed Tributary AU (MA72-31).

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data are available for this Unnamed Tributary AU (MA72-31), locally known as “Millers River”, so the Primary Contact Recreation Use continues to be assessed as Not Supporting. The prior Bottom Deposits, Debris, Odor, Oil and Grease, Scum/Foam, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward. Since the Flocculant Masses impairment was removed from the Aesthetics Use, it is being removed from the recreational uses as well.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data are available for this Unnamed Tributary AU (MA72-31), locally known as “Millers River” in the current IR window (2011-2022), so the Secondary Contact Recreation Use continues to be assessed as Not Supporting. The prior Bottom Deposits, Debris, Odor, Oil and Grease, Scum/Foam, Trash, and Turbidity impairments (from the Aesthetics Use) are being carried forward. Since the Flocculant Masses impairment was removed from the Aesthetics Use, it is being removed from the recreational uses as well.

Unnamed Tributary (MA72-32)

Location:	Locally known as "Sawins Brook" - emerges east of Elm Street, Watertown to mouth at confluence with the Charles River, Watertown (one culverted portion approximately 360 feet (0.07mile)).
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	B

No usable data were available for Unnamed Tributary (MA72-32) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
4a	4a	Escherichia Coli (E. Coli)	32382	Unchanged

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

Unnamed Tributary (MA72-41)

Location:	Unnamed tributary to the Charles River, outlet Lymans Pond, Dover to mouth at confluence with the Charles River, Dover.
AU Type:	RIVER
AU Size:	0.5 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-41)

Watershed Area: 0.67 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	0.67	0.67	0.20	0.20
Agriculture	7.2%	7.2%	2.4%	2.4%
Developed	10%	10%	7%	7%
Natural	67.9%	67.9%	65%	65%
Wetland	14.9%	14.9%	25.5%	25.5%
Impervious	2.9%	2.9%	1.9%	1.9%

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)	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 in this Unnamed Tributary AU (MA72-41), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Unnamed Tributary AU (MA72-41) is Not Assessed.

Primary Contact Recreation

2024 Impairment	Pollutant Y/N	2024 Source	Confirmed Y/N
Escherichia Coli (E. Coli)	YES	Source Unknown	NO

2024/26 Use Attainment	Alert
Not Supporting	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for this Unnamed Tributary AU (MA72-41) 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 this Unnamed Tributary AU (MA72-41) 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 middle of this Unnamed Tributary AU (MA72-41) at W2155 [unnamed tributary to the Charles River ~180 ft downstream of Farm St, Dover] from May-Sep 2010 (n=6). Analysis of this historic single year limited frequency *E. coli* dataset indicated 57% of intervals had GMs >244 CFU/100mL, 1 sample exceeded the 794 CFU/100mL STV, and the overall GM was 203 CFU/100mL. Historic *E. coli* data from W2155 are inconclusive according to the 2024 CALM because this single year, limited frequency dataset included GMs below the threshold, an STV exceedance, and the overall GM was below the threshold. Additionally, since these data were collected prior to the current IR window, they cannot be used to assess the Secondary Contact Recreation Use of this Unnamed Tributary (MA72-41).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W2155	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to the Charles River approximately 180 feet downstream of Farm Street, Dover]	42.233158	-71.324399

Bacteria Data

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

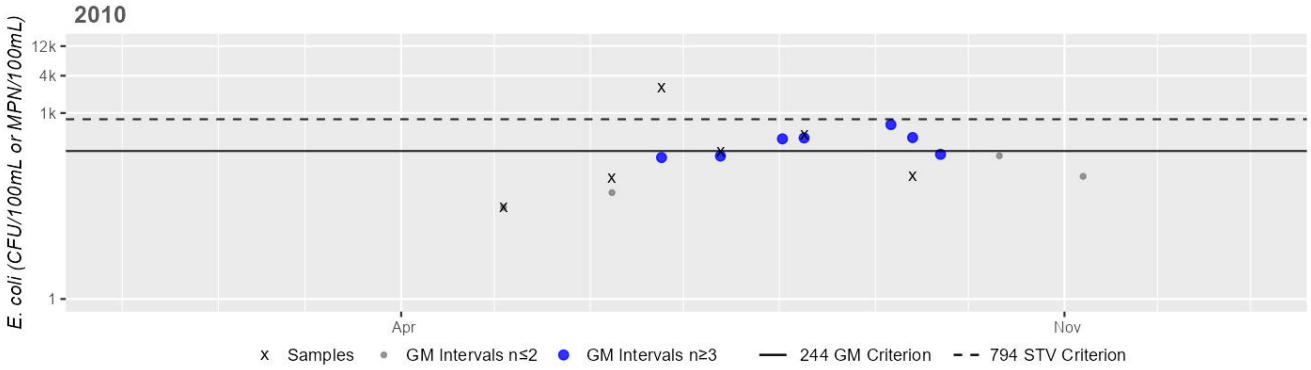
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W2155	MassDEP	E. coli	05/04/10	09/13/10	6	30	2600	203

Station MASSDEP_W2155 - Escherichia coli

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



Variable*	Result
Samples	6
SeasGM	203
#GMI	7
#GMI Ex	4
%GMI Ex	57%
n>STV	1
%n>STV	16%

Cumulative %GMI Exceedance
Historic (1997-2010)
57%

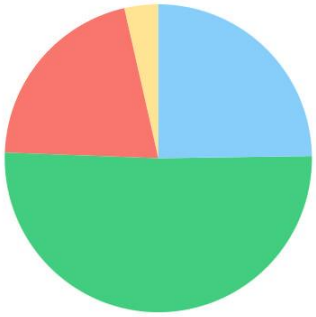
**Samples = # of samples; SeasGM = Seasonal Geometric Mean (GM); #GMI = # of GM Intervals; #GMI Ex = # of GMI Exeedances; %GMI Ex = % GMI Exeedances; n>STV = # of samples > Statistical Threshold Value (STV); %n > STV = % of samples > STV; "Recent 5 Years" may not be consecutive as the analysis excludes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

Unnamed Tributary (MA72-42)

Location:	Unnamed tributary to the Charles River, from outlet unnamed pond north of South Street, Natick to mouth at confluence with the Charles River, Natick.
AU Type:	RIVER
AU Size:	0.3 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-42)

Watershed Area: 3.75 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	3.75	3.75	1.28	1.28
Agriculture	3.6%	3.6%	1.3%	1.3%
Developed	20.8%	20.8%	15.2%	15.2%
Natural	50.8%	50.8%	43.1%	43.1%
Wetland	24.8%	24.8%	40.5%	40.5%
Impervious	7.9%	7.9%	5.8%	5.8%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Benthic Macroinvertebrates	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Benthic Macroinvertebrates	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 in this Unnamed Tributary AU (MA72-42), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Unnamed Tributary AU (MA72-42) 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 are available for this Unnamed Tributary AU (MA72-42), 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 are available for this Unnamed Tributary AU (MA72-42) 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 upstream end of this short Unnamed Tributary AU (MA72-42) at W1587 [unnamed tributary to Charles River, South St Natick] from May-Oct 2007 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 29 CFU/100mL). Historic *E. coli* data from W1587 are indicative of good water quality conditions, 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 this Unnamed Tributary AU (MA72-42).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1587	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary to Charles River, South Street Natick]	42.255055	-71.330092

Bacteria Data

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

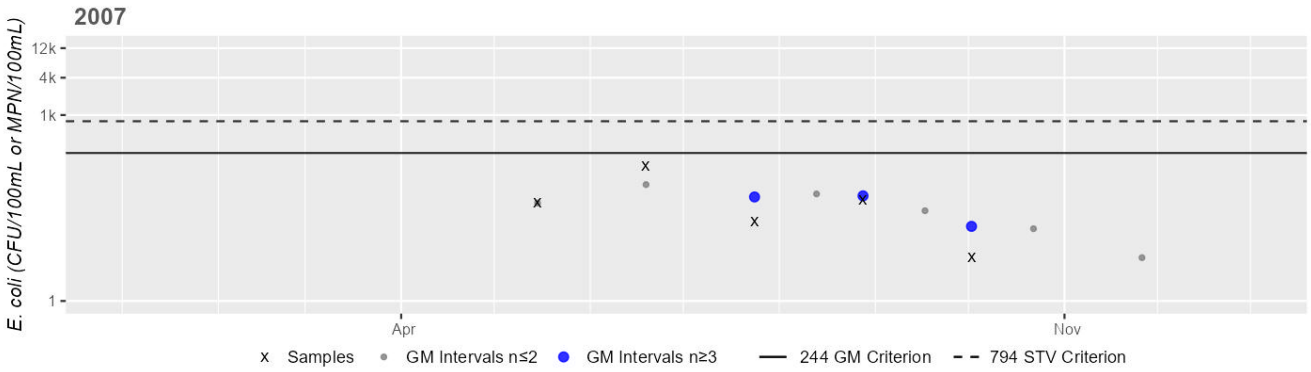
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1587	MassDEP	E. coli	05/15/07	10/02/07	5	5	150	29

Station MASSDEP_W1587 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	29
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 (MA72-43)

Location:	Unnamed tributary to Morses Pond, headwaters outlet Reeds Pond, Wellesley to mouth at confluence with Morses Pond, Wellesley.
AU Type:	RIVER
AU Size:	0.2 MILES
Classification/Qualifier:	B

Unnamed Tributary (MA72-43)

Watershed Area: 7.16 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	7.16	6.97	2.29	2.27
Agriculture	0.3%	0.3%	0.4%	0.4%
Developed	33.4%	34%	23.9%	24.2%
Natural	50.2%	49.5%	46.8%	46.4%
Wetland	16.1%	16.2%	28.9%	29%
Impervious	19.5%	19.9%	14.2%	14.4%

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	--

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 in this Unnamed Tributary AU (MA72-43), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for this Unnamed Tributary AU (MA72-43) 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 are available for this Unnamed Tributary AU (MA72-43), 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 are available for this Unnamed Tributary AU (MA72-43) 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 this Unnamed Tributary AU (MA72-43) at W1582 [unnamed tributary between Bogle Brook/Reeds Pond and Morses Pond, Wellesley (just upstream of culverting under parking lot)] from May-Oct 2007 (n=5). Analysis of this historic single year limited frequency *E. coli* dataset indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 127 CFU/100mL). Historic *E. coli* data from W1582 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 Unnamed Tributary MA72-43.

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W1582	MassDEP	Water Quality	Unnamed Tributary	[unnamed tributary between Bogle Brook/Reeds Pond and Morses Pond, Wellesley (just upstream of culverting under parking lot)]	42.305104	-71.325276

Bacteria Data

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

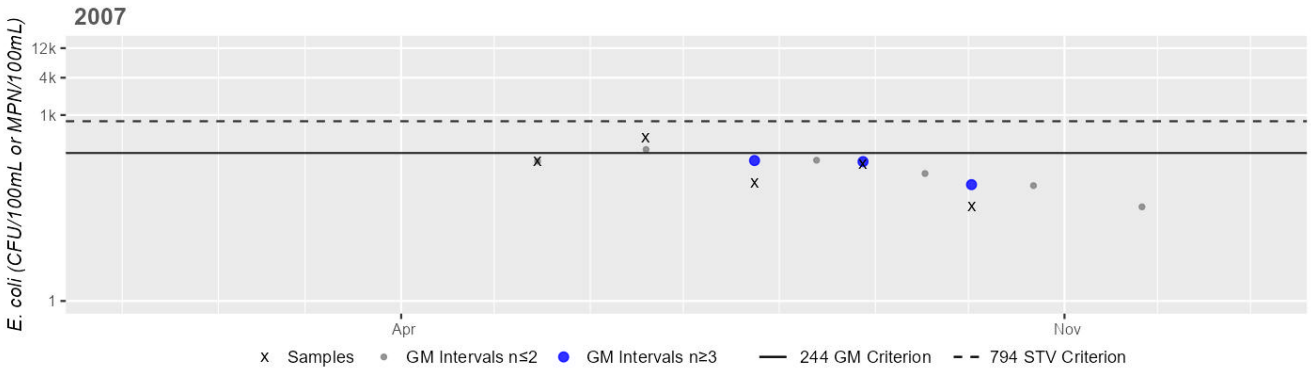
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W1582	MassDEP	E. coli	05/15/07	10/02/07	5	33	430	127

Station MASSDEP_W1582 - Escherichia coli

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



Variable*	Result
Samples	5
SeasGM	127
#GMI	3
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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 (MA72-47)

Location:	Headwaters west of Forbes Road, Lexington to mouth at confluence with Hobbs Brook, Lincoln.
AU Type:	RIVER
AU Size:	0.8 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unnamed Tributary (MA72-47) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

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

Unnamed Tributary (MA72-48)

Location:	Headwaters northeast of the Trapelo Road/Smith Street intersection, Waltham to mouth at inlet Cambridge Reservoir, Lexington.
AU Type:	RIVER
AU Size:	0.9 MILES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Unnamed Tributary (MA72-48) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Chloride	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Chloride	Highway/Road/Bridge Runoff (Non-construction Related) (Y)	X	--	--	--	--
Chloride	Impervious Surface/Parking Lot Runoff (Y)	X	--	--	--	--

Waban Brook (MA72-17)

Location:	Headwaters, outlet Lake Waban, Wellesley to mouth at confluence with the Charles River, Wellesley.
AU Type:	RIVER
AU Size:	0.7 MILES
Classification/Qualifier:	B

Waban Brook (MA72-17)

Watershed Area: 16.27 square miles



Land Cover Type	Entire Basin	Proximal Subbasin (5 km radius)	Stream Buffer (100 m)	Proximal Stream Buffer
Land Cover Area (square miles)	16.27	11.89	4.75	3.33
Agriculture	0.4%	0.4%	0.7%	0.8%
Developed	34.9%	36.1%	23.6%	23.5%
Natural	51.5%	51.2%	50.3%	51.7%
Wetland	13.2%	12.3%	25.4%	24.1%
Impervious	20.7%	21.8%	13.3%	13.3%

AU Category 2022	AU Category 2024/26	Impairment	ATTAINS Action ID	Impairment Change Summary
5	5	Temperature	--	Unchanged

Impairment	Source (Confirmed Y/N)	ALU	FC	AES	PCR	SCR
Temperature	Dam or Impoundment (Y)	X	--	--	--	--
Temperature	Source Unknown (N)	X	--	--	--	--

Recommendations

2024/26 Recommendations
2010 IR [E. coli, high priority] Follow-up bacteria sampling should be conducted in Waban Brook (MA72-17) to determine whether an impairment is needed or the Alert can be removed since occasional elevated *E. coli* concentrations were documented by CRWA 2002-2005 as part of the Upper Charles TMDL project at one station near the Nehoiden Golf Club dirt road to aqueduct in Wellesley (MassDEP 2008). {Waban Brook (MA72-17) near the Nehoiden Golf Club dirt road to aqueduct in Wellesley}

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 in Waban Brook (MA72-17), so the Fish Consumption Use is Not Assessed.

Aesthetic

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No aesthetics observation data are available, so the Aesthetics Use for Waban Brook (MA72-17) is Not Assessed.

Primary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	YES

2024/26 Use Attainment Summary
No bacteria or other indicator data for Waban Brook (MA72-17) are available, so the Primary Contact Recreation Use is Not Assessed. The prior Alert for occasional elevated *E. coli* concentrations (documented by CRWA as part of the Upper Charles TMDL project at one station near the Nehoiden Golf Club dirt road to aqueduct in Wellesley (MassDEP 2008)) is being retained.

Secondary Contact Recreation

2024/26 Use Attainment	Alert
Not Assessed	NO

2024/26 Use Attainment Summary
No bacteria or other indicator data for Waban Brook (MA72-17) 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 middle of the Waban Brook AU (MA72-17) at W0412 [dirt Rd off of Service Drive, Wellesley] from 1997-1998 (n=2-4/yr). Analysis of this historic single year limited frequency *E. coli* dataset (only 1997 had sufficient data to evaluate) indicated no intervals had GMs >244 CFU/100mL and no samples exceeded the 794 CFU/100mL STV (the overall GM was 33 CFU/100mL). Although historic *E. coli* data from W0412 are indicative of good water quality conditions, 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 Waban Brook (MA72-17).

Monitoring Stations

Station Code	Organization	Type	Water Body	Station Description	Latitude	Longitude
W0412	MassDEP	Water Quality	Waban Brook	[dirt road off of Service Drive, Wellesley.]	42.286972	-71.300718

Bacteria Data

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

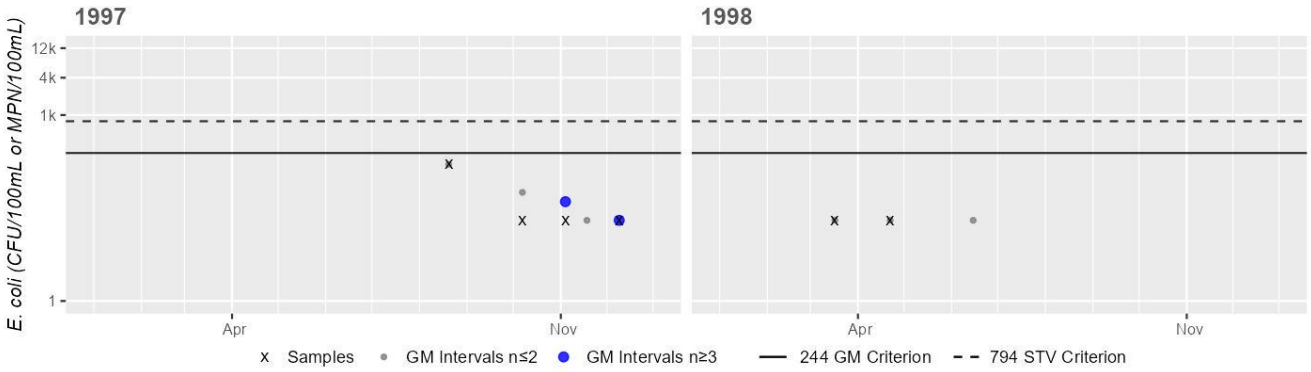
(MassDEP Undated 7) (MassDEP Undated 3)

[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
W0412	MassDEP	E. coli	08/20/97	12/09/97	4	20	160	33
W0412	MassDEP	E. coli	03/17/98	04/22/98	2	20	20	19

Station MASSDEP_W0412 - Escherichia coli

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



Variable*	Result
Samples	4
SeasGM	33
#GMI	2
#GMI Ex	0
%GMI Ex	0%
n>STV	0
%n>STV	0%

Variable*	Result
Samples	2
SeasGM	20
#GMI	0
#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 Exeedances; %GMI Ex = % GMI Exeedances; 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.*

Walker Pond (MA72126)

Location:	Millis.
AU Type:	FRESHWATER LAKE
AU Size:	9 ACRES
Classification/Qualifier:	B

No usable data were available for Walker Pond (MA72126) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Waseeka Sanctuary Pond (MA72155)

Location:	Holliston.
AU Type:	FRESHWATER LAKE
AU Size:	17 ACRES
Classification/Qualifier:	B

No usable data were available for Waseeka Sanctuary Pond (MA72155) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Weld Pond (MA72131)

Location:	Dedham.
AU Type:	FRESHWATER LAKE
AU Size:	27 ACRES
Classification/Qualifier:	B

No usable data were available for Weld Pond (MA72131) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Weston Reservoir (MA72134)

Location:	Weston.
AU Type:	FRESHWATER LAKE
AU Size:	59 ACRES
Classification/Qualifier:	B

No usable data were available for Weston Reservoir (MA72134) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Weston Station Pond (MA72135)

Location:	Weston.
AU Type:	FRESHWATER LAKE
AU Size:	38 ACRES
Classification/Qualifier:	A: PWS, ORW (Tributary)

No usable data were available for Weston Station Pond (MA72135) for the 2024/26 Integrated Reporting cycle, therefore its category, use attainments, impairments, associated actions, and sources remain unchanged from the previous cycle.

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

Data Sources

Bailey, Logan. "Email providing Harmful Algal Bloom advisory data (2015-2022) in the attached spreadsheet "CyanoHAB_Advisories.csv"." Email to Dan Davis and Laurie Kennedy (MassDEP Watershed Planning Program) with subject line "RE: DPH Beach Posting information update needed for 2024 IR", Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health, Boston, MA, April 26, 2023.

City of Waltham. "Aquatic Vegetation Management of Hardy Pond, 2023." City of Waltham Purchasing Department. 2023. https://www.city.waltham.ma.us/purchasing-department/pages/aquatic-vegetation-management-of-hardy-pond-2023 (accessed 2025).

—. "Aquatic Vegetation Management, Hardy Pond." City of Waltham Purchasing Department. 2014. https://www.city.waltham.ma.us/purchasing-department/pages/aquatic-vegetation-management-hardy-pond (accessed 2025).

CRWA. "2009-2022 bacteria data submitted to MassDEP WPP portal over multiple dates or downloaded from WQX (last submittal/download 1/18/2023)." Charles River Watershed Association, Boston, MA, 2023.

CRWA. "Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts." CN 272.0, Charles River Watershed Association (Weston, MA) and Numeric Environmental Services, Inc. (Beverly Farms, MA), 2011.

ESS. "Ecological and Management Study of the DelCarte Ponds Franklin, Massachusetts." Town of Franklin DelCarte Conservation Area website. Prepared for the Town of Franklin by ESS Group, Inc. (East Providence, Rhode Island). January 7, 2016. https://www.franklinma.gov/sites/g/files/vyhlif6896/f/pages/delcarte_ponds_ecological_and_management_study.pdf (accessed May 2021).

Fiorentino, John F, Laurie E Kennedy, and Mollie J Weinstein. "Charles River Watershed 1997/1998 Water Quality Assessment Report." CN 16.0, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2000.

Google Earth Pro. "Satellite Imagery of selected stream and lake/pond segments." Massachusetts, Undated.

MA DPH. "Evaluation of PFAS in Recreational Waterbodies in Massachusetts, Technical Support Document." Environmental Toxicology Program, Bureau of Environmental Health, Massachusetts Department of Public Health. March 2023.

https://www.mass.gov/doc/technical-basis-for-issuing-fish-advisories-0/download (accessed 2024).

—. "Freshwater Fish Consumption Advisory List." Bureau of Climate and Environmental Health, Massachusetts Department of Public Health. January 2025. https://www.mass.gov/doc/public-health-freshwater-fish-consumption-advisories-2025-0/download (accessed January 2025).

MassDEP. "2015 Scanned Project Files, Charles watershed lake survey data, 1997, D01-12.pdf." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, 1997.

MassDEP. "Charles River Watershed 2002-2006 Water Quality Assessment Report." CN 136.5, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2008.

MassDEP. "Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle (and associated basin-specific appendices)." CN 505.1, Available at https://www.mass.gov/lists/integrated-lists-of-waters-related-reports, Watershed Planning Program, Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2021.

MassDEP. "Integrated Listing History 1992-2014 INTLIST_HISTORY.xlsx." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2015.

MassDEP. "Open file analysis of external water quality data (potential date range 1997-2022) using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 1.

MassDEP. "Open file analysis of external water quality data (potential date range 2011-2022) using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 2.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 1997 and 2020 using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 3.

MassDEP. "Open file analysis of MassDEP WPP water quality data collected between 2011 and 2020 using 2024 CALM guidance." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 4.

MassDEP. "Open files of fish toxicity testing data, metadata, and GIS datalayers in development." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 5.

MassDEP. "Open files of repository documents for the 2016 Integrated Report cycle." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 6.

MassDEP. "Open files of unpublished, validated water quality monitoring data, field sheet data, and GIS datalayers in development." Watershed Planning Program, Massachusetts Department of Environmental Protection, Worcester, MA, Undated 7.

—. "PFAS Concentrations in Surface Water and Fish Tissue at Selected Rivers and Lakes in Massachusetts." Watershed Planning Program, Division of Watershed Management, Bureau of Water Resources, Massachusetts Department of Environmental Protection. Worcester, MA. In cooperation with Eastern Research Group, Inc. December 2023. https://www.mass.gov/doc/massdep-final-report-on-pfas-concentrations-in-surface-water-and-fish-tissue-at-selected-rivers-and-lakes-in-massachusetts/download (accessed January 2024).

MassDEP. "Scanned historical 305B reports and 303d coding sheets charles91_02_searchable.pdf." Division of Watershed Management, Massachusetts Department of Environmental Protection, Worcester, MA, 2002.

MassGIS. "MassDEP Wetlands (2005) 1:5,000 Shapefile, Data Provided By MassDEP Wetlands Conservancy Program." Bureau of Geographic Information, Boston, MA, 2019.

MWRA. "Bacteria data from Boston Harbor and tributary rivers 2011-2022." Massachusetts Water Resources Authority. 2024. https://www.mwra.com/our-environment/download-environmental-data (accessed Sept 11, 2024).

—. "Environmental Data from Boston Harbor and Tributary Rivers 2011-2022." Massachusetts Water Resources Authority. 2025. https://www.mwra.com/harbor/download-environmental-data (accessed January 2025).

Savoie, Jennifer G, and Denise M Argue. "Concentrations of Per- and Polyfluoroalkyl Substances (PFAS) in Selected Rivers and Streams in Massachusetts, 2020." U.S. Geological Survey data report 1160 version 2.0 and accompanying data prepared in cooperation with the Massachusetts Department of Environmental Protection. October 2023. https://doi.org/10.5066/P967NOOZ (accessed January 2024).