EPA REVIEW OF MASSACHUSETTS' 2016 SECTION 303(d) LIST

INTRODUCTION

EPA has conducted a review of Massachusetts' 2016 section 303(d) list, supporting documentation and other information. Based on this review, EPA has determined that Massachusetts' list of water quality limited segments (WQLSs) still requiring total maximum daily loads (TMDLs) meets the requirements of section 303(d) of the Clean Water Act ("CWA" or "the Act") and EPA implementing regulations. Therefore, by this action, EPA hereby approves Massachusetts' 2016 final section 303(d) list. The statutory and regulatory requirements for Massachusetts' 2016 section 303(d) list, and EPA's review of Massachusetts compliance with each requirement, are described in detail below.

II. STATUTORY AND REGULATORY BACKGROUND

Identification of Water Quality Limited Segments for Inclusion on the Section 303(d) List

Section 303(d)(1) of the Act directs States to identify those waters within its jurisdiction for which effluent limitations required by section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of section 303(d).

EPA regulations provide that States do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act, (2) more stringent effluent limitations required by State or local authority, and (3) other pollution control requirements required by State, local, or federal authority. See 40 CFR §130.7 (b) (1).

Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any section 319 nonpoint assessment submitted to EPA. See 40 CFR §130.7(b) (5). Massachusetts considered all existing and readily

available data that it was able to validate for this listing cycle pertinent to the specific uses and watersheds identified for assessment during this cycle per its rotating basin plan. In addition to the minimum categories, States are required to consider any other data and information that is existing and readily available. EPA's 2006 Integrated Report Guidance describes categories of water quality-related data and information that may be existing and readily available. See EPA's March 21st, 2011 memorandum on Information Concerning 2012 Clean Water Act Sections 303(d), 305 (b), and 314 Integrated Reporting and Listing Decisions which recommended that the 2012 integrated water quality reports follow the Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305 (b) and 314 of the Clean Water Act (2006 Integrated Report Guidance (IRG)) issued July 29, 2005 (available at http://www.epa.gov/owow/tmdl/2006 IRG/) as supplemented by the October 12, 2006 memo and attachments, the May 5, 2009 memo and attachments, the November 15, 2010 memo, the March 21, 2011 memo and attachments, the September 3, 2013 memo and attachments and the August 13, 2015 memo and attachments. All guidance, memoranda and attachments may be found at: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/guidance.cfm.

While States are required to evaluate all existing and readily available water quality-related data and information, States may decide to rely or not rely on particular data or information in determining whether to list particular waters. In addition to requiring States to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR §130.7(b)(6) require States to include as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by EPA.

Priority Ranking

EPA regulations also codify and interpret the requirement in section 303(d)(1)(A) of the Act that States establish a priority ranking for listed waters. The regulations at 40 CFR § 130.7(b)(4) require States to prioritize waters on their section 303(d) lists for TMDL development, and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See section 303(d)(1)(A). As long as these factors are taken into account, the Act provides that States establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and State or national policies and priorities. See 57 FR 33040, 33045 (July 24, 1992), and EPA's 2006 Integrated Report Guidance and the 2006, 2009, 2011, 2013 and 2015 memoranda and attachments.

III. ANALYSIS OF MASSACHUSETTS' SUBMISSION

On August 23, 2017 the Massachusetts Department of Environmental Protection (MassDEP) released for public comment and review a draft version of its 2016 section 303(d) list as part of the State's 2016 Integrated Report (IR). Public comments on the draft version of the 2016 Integrated Report were accepted until October 23, 2017. The final version of the 2016 Integrated Report including the Section 303(d) list was issued on December 5, 2019. The State's December 5, 2019 Integrated Report submittal included the following specific components:

1. The State of Massachusetts' 2016 Integrated Report content introduction;

2. The State of Massachusetts' 2016 section 303(d) list;

3. A list of waters / impairments being removed or delisted from Massachusetts' section 303(d) list;

4. Massachusetts' Response to Public Comments on the August 23, 2017 draft Integrated Report and 303(d) list.

Massachusetts' section 303(d) list contains water segments for which available data and/or other information indicates that a water segment is not meeting water quality standards because it is impaired or threatened by one or more pollutants for one or more designated uses, and for which a Total Maximum Daily Load (TMDL) is therefore required to be established. EPA's regulations at 40 CFR §130.7 require EPA to review and approve, or disapprove, a state's section 303(d) list.

Pursuant to EPA's Integrated Report Guidance related to assessment and listing of waters pursuant to sections 305(b) and 303(d) of the CWA, states list their waters in one or more of five categories, depending on the status of each water body's attainment of water quality standards. Category 5 corresponds to the section 303(d) list. Category 4 is comprised of waters that are not meeting water quality standards, but for which a TMDL need not be established due to one of three reasons. Category 4A contains waters for which a TMDL has already been established and approved by EPA. Category 4B includes waters, for which a "functionally equivalent" control action has been developed and is being implemented, i.e., an impairment caused by a pollutant is being addressed through other pollution control requirements. Category 4C contains waters that are not attaining water quality standards due to pollution that is not associated with a pollutant. Although waters in Category 4 are not on the section 303(d) list, EPA reviews a state's Category 4 list to ensure that the waters are categorized appropriately and do not, in fact, belong on the section 303(d) list. MassDEP included waters in Category 4 with its 2016 submission to EPA.

Public Participation

MassDEP conducted a public participation process, in which it provided the public an opportunity to review and comment on the State's draft 2016 Integrated Report and section 303(d) list. A public comment period opened on August 23, 2017 and closed on October 23, 2017. MassDEP posted its draft Integrated Report on the Department's website, as well as publishing notification in Vol. 88, Issue 8 of the Massachusetts Environmental Monitor. MassDEP also notified approximately 150 environmental organizations and other interested stakeholders by direct email notification. MassDEP received a total of 16 comment submissions on the August 23, 2017 version of the draft Integrated Report and 303(d) list. On December 5, 2019 MassDEP released the final version of the 2016 Integrated Report and section 303(d) list which included the responses to all comments received on the draft Integrated Report and section 303(d) list. MassDEP responded to comments in two parts: Part 1 consists of responses to comments that were common themes from multiple commenting parties; and Part 2 which consists of responses to individual comments.

Summary of Comments Received on the August 23, 2017 draft Integrated Report and section 303(d) list:

Part 1: Common Theme Comments

Common Theme #1: MassDEP should provide more documentation to support assessment and listing of waters. Specifically, the lack of watershed reports for public review makes it difficult for outside organizations to evaluate MassDEP decisions and this creates a lack of transparency about the decisions that are made.

MassDEP's Response: MassDEP discontinued the practice of making watershed reports available to the public as part of the Integrated Report to increase efficiency of putting the report together. MassDEP explained that the amount of time required to prepare the watershed reports was making it difficult to complete the Integrated Report in a timely manner. The public can request watershed reports from the MassDEP data repository in their current non-public facing format.

Common Theme #2: MassDEP should provide additional detail and rationale for utilizing data that is more than five years old for assessment and listing decisions.

MassDEP's Response: MassDEP's goal is to use the most current data available that is representative of current conditions. In instances when data is older than 5 years old, MassDEP analyzes land use changes and effluent discharges within the watershed to determine whether conditions have changed that would affect the representativeness of the data. If conditions have not significantly changed, then MassDEP will utilize data that is older than 5 years old.

Common Theme #3: MassDEP should utilize more external sources of data from watershed associations and other stakeholders in order to expand the amount of data

utilized in assessment and listing decisions. Additionally, MassDEP should provide updated and more detailed guidance on what the quality assurance data requirements are to use external data sources.

MassDEP's Response: In 2014 MassDEP updated the guidance for utilizing external data sources in assessment and listing decisions, as well as the creation of a data portal for external groups to submit data to MassDEP. The data portal also includes information on what the requirements are for submitting data and the quality assurance procedures that need to be in place before submitting data to MassDEP. Due to the workload associated with ensuring that submitted data met all of the requirements, data from external sources was limited for the 2016 cycle. MassDEP attempted to utilize as much external data that met the requirements, while at the same time producing the Integrated Report in a timely manner. MassDEP has increased staff capacity to be able to better accommodate external data and will be implementing procedures in the future to solicit data within a reasonable timeframe so that data can be included in future decisions.

Common Theme #4: MassDEP should complete the review (triennial review) of water quality standards every three years as mandated in the Clean Water Act. Commenters were concerned by the regular lack of review and updating of water quality standards in Massachusetts.

MassDEP's Response: MassDEP acknowledged that the triennial review process has not taken place on the mandated schedule. Currently, a triennial review is in progress and will be completed sometime in 2019 at which time it will be available for public review. The review is larger and more comprehensive than was originally intended which has led to some delays.

Common Theme #5: Several commenters requested that MassDEP provide better interaction and communication between the monitoring and assessment group and stakeholders. Specifically, the commenters are requesting to be better informed of the planning, schedule and location of sampling to be completed for MassDEP's probabilistic and deterministic sampling programs. The stakeholders would also like to be informed of the particular parameters that MassDEP intends to sample for in a particular waterbody. In addition, the commenters are requesting that MassDEP include a greater level of information regarding sampling and assessment of waterbodies in the Integrated Report.

MassDEP's Response: MassDEP explained that a large portion of the information that the commenters are seeking is located on MassDEP's website. MassDEP provided the weblinks so that the commenters can access the requested information. Additionally, MassDEP noted that many of the concerns raised by the commenters are addressed in the 10 Year Vision for the TMDL program document. As part of the 10-year Vision, MassDEP will be implementing a Technical Advisory Group that will be able to address these concerns in a collaborative manner.

Part 2: Individual Comments

Congamond Lakes Group/Lake Management Committee, Town of Southwick

Summary of Comment: The commenter requested that several nutrient related impairments be added to the 303(d) list for North, South and Middle ponds of Congamond Lake. A report was also submitted in support of these requested listings that provided documentation of the water quality impairments.

MassDEP's Response: MassDEP requested additional information in order for the data contained in the report to meet MassDEP's quality assurance requirements. MassDEP declined to list the North basin for the "Harmful Algal Bloom" cause due to a lack of magnitude, frequency and duration evidence to support listing at this time.

Jones River Watershed Association (JRWA)

Summary of Comment: The commenter is concerned with the description of a segment of the Jones River in Kingston that still has a reference in the segment description to a dam that was removed in 2011. JRWA is also concerned that previous comments that the group submitted regarding the draft Monponsett Ponds TMDL will be incorporated into the final version of the document. The commenter also expressed concern with allowing interbasin transfers of water and what the implications are for transferring pollutants from one waterbody to another waterbody. JWRA suggested that MassDEP consider adding the Department of Conservation and Recreation and the Office of Dam Safety to its list of external data source partners as these state departments also have valuable water quality data. JWRA also suggested adding a "source" column to the Integrated List in future list cycles as is already included in the MassGIS datalayers for water resources. This would provide additional information for stakeholders to review future lists as to the source of a pollutant causing a water quality impairment.

MassDEP's Response: MassDEP has been working with the Division of Ecological Restoration and Division of Marine Fisheries to incorporate data on fish passage and dam removals on a case by case basis as waterbodies are evaluated. The Jones River was not evaluated as part of the 2016 cycle but will be evaluated for the 2018 cycle which will also include new assessment procedures as part of the Consolidated Assessment and Listing Methodology (CALM) document. MassDEP explained that not all of the information regarding a waterbody is included in the tables of the Integrated Report due to space constraints. The development of the new EPA ATTAINS database will make it much easier for stakeholders to access all of the data available on a waterbody, including the source of a pollutant(s) that is causing an impairment. JRWA's specific comments pertaining to segments for the aquatic life use will be addressed in the 2018 listing cycle when this watershed will be evaluated. MassDEP will review the description of the segment of the Jones River that contained the dam reference and revise the description. MassDEP explained that as a result of the public comment period for the Monponsett Ponds TMDL, the document is undergoing further revisions and that a new version will

be made available for the public to comment on. Revisions to the TMDL document will not affect the 2016 version of the Integrated Report as any impaired segments will be moved to Category 4A after the TMDL is approved. MassDEP addressed JRWA's concerns regarding the interbasin transfer of water between Monponsett Pond and Silver Lake as outside of the scope of MassDEP's waterbody assessment procedures. However, MassDEP will continue to assess each waterbody independently and will make listing decisions based on water quality of each individual waterbody.

Ipswich River Watershed Association (IRWA)

Summary of Comment: The commenter is concerned with the removal of several impairments from the 303(d) list for several different segments and several different sampling parameters. Specifically, IRWA is concerned about the removal of the "fishes bioassessment" impairment for Howlett Brook and Martins Brook due to changes in the assessment methodology. The commenter also expressed concern for both waterbodies due to the fact that both streams regularly go dry in the summer and should be listed for flow alterations as well. The commenter was concerned about the removal of fecal coliform impairments in the Miles River and Wills Brook due to changes in water quality standards, as well as removal of impairments for total suspended solids (TSS) and turbidity in Norris Brook and removal of dissolved oxygen impairment in Wills Brook due to the fact that the basis for the original listings was incorrect. The commenter requested that MassDEP provide an explanation and data to support these de-listings.

MassDEP's Response: MassDEP responded by explaining that the de-listing of "fishes bioassessment" in Howlett Brook was due to refinements in the assessment methodology for aquatic life. In 2016 MassDEP made a distinction between high/medium-gradient streams and low-gradient streams in terms of what the appropriate fish community structure should be in terms of species presence and tolerance to environmental stress. Howlett Brook is a low-gradient stream and supports a mix of fluvial and generalist species, as well as species that are intolerant to moderately intolerant of environmental stress. The impairment listing was removed because the segment meets the guidance in the CALM document.

Martins Brook was originally listed as impaired for "fishes bioassessment" in 2010 during a database migration to the Assessment Database (ADB). The original listing was determined to be an error. MassDEP evaluated sampling data for Martins Brook and determined that the fishes bioassessment impairment was no longer applicable; however, MassDEP determined that the macroinvertebrate community was impaired and added that impairment to the 2016 303(d) list. MassDEP also evaluated the commenter's request to add a flow impairment to Martins Brook for aquatic life due to frequent events when the brook goes dry in the summer. MassDEP explained that in order for a segment to be listed for flow impairment, there needs to be data on flow magnitude, frequency and duration in addition to photographic evidence, which MassDEP did not possess. MassDEP also noted that 2016 was a drought year during the summer and it is very difficult to separate out anthropogenic influence from natural rainfall levels.

Miles River was originally listed for pathogens in 1998, and the listing was transferred over to fecal coliform in 2010 with the transition to the ADB. MassDEP now uses *E. coli* for assessing primary and secondary contact recreation designated uses. The segment was de-listed for fecal coliform due to analysis of *E. coli* data that had not been previously analyzed. The data showed that the segment meets standards for *E. coli* for primary and secondary contact recreation and therefore the fecal coliform impairment has been removed.

Norris Brook was listed in 1998 as impaired by suspended solids and turbidity. The data were re-examined for the 2016 cycle and found to be meeting standards, indicating that the original listing was in error. Additionally, the turbidity data had been flagged in the database as likely incorrect, further supporting the assertion that the original listing was incorrect.

Wills Brook was listed in 1998 based on one sample that did not meet the water quality standard for dissolved oxygen. The other sample taken during the same summer sampling season met the water quality standard for dissolved oxygen. MassDEP does not typically list a waterbody as impaired based on one sample. Because of the uncertainty of the conditions under which this sample was taken, i.e., a lack of supporting field notes combined with the fact that this listing decision was based on only one sample, MassDEP decided that an unacceptable level of uncertainty existed as to whether this waterbody was actually impaired. Therefore, this segment was de-listed for dissolved oxygen impairment.

Wills Brook was also listed for fecal coliform in 1998 based on one sample. MassDEP typically does not list an impairment based on a single sample. Since the standard has changed from fecal coliform to *E. coli* for assessing primary and secondary contact recreation, MassDEP evaluated the most recent data for *E. coli* and determined that those samples meet the water quality standard for *E. coli* concentration. Therefore, MassDEP is de-listing this segment for fecal coliform impairment of the primary and secondary contact recreation designated uses.

OARS- For the Assabet, Sudbury and Concord Rivers

Summary of Comment: The commenter expressed thanks for MassDEP utilizing data submitted by OARS. They also requested that MassDEP publish additional guidance for sampling methods and data quality objectives to make it easier for outside groups to provide external data to MassDEP in the future. The commenter also requested that the data and water quality standards used in future Integrated Reports be published so that external groups can review the data. OARS also expressed concerns that the Massachusetts water quality standards have not been updated since 2006. OARS encouraged MassDEP to incorporate EPA's nutrient criteria recommendations into a future water quality standards review.
OARS supports the de-listing of total phosphorus as an impairment from three segments in the Concord River (MA82A-07, MA82A-08 and MA82A-09) based on data from 2004-2016 which show phosphorus concentrations in the water column have decreased

and dissolved oxygen levels have improved. The commenter requested that MassDEP provide the data and standards that were used to make the de-listing decisions.
OARS requested that the excess algal growth impairment remain on the 303(d) list for Hop Brook (MA82A-06) in Sudbury based on observations from Landham Road that show excess macrophyte and algal growth in this segment. The commenter requested that MassDEP provide the data and standards that were used to make the de-listing decision.
OARS requested that MassDEP add the Coldwater Fishery Resource designation to thirty-three coldwater streams that have been identified by Massachusetts Division of Fisheries and Wildlife in the Concord River basin. Currently, only one stream (Jackstraw Brook) is classified as a coldwater fishery resource in the Concord River basin. OARS also offered to share continuous water temperature data for Hop Brook and Cranberry Brook.

MassDEP's Response: MassDEP responded to OARS' comments on external data, transparency and watear quality standards in the general comments section of the response to comments. For comments pertaining to the aquatic life use, MassDEP explained that the Concord River basin will be assessed for this use in the 2018 cycle pursuant to its rotating basin plan. MassDEP provided the data and narrative descriptions of the sampling for the three phosphorus de-listings on the Concord River. MassDEP explained that these listings were for the aesthetics designated use and not for the aquatic life designated use, which is why they are addressing these comments at this time.

Massachusetts Bays National Estuary Program:

Summary of Comment: The commenter made comments pertaining to the use of citizen collected data to supplement MassDEP's monitoring efforts. The commenter requested clarification on the acceptability of data collected by citizen monitoring groups.
MassBays was pleased with the transition of sampling for bacteria in freshwater using *E. coli* as the indicator organism as well as the use of algal bloom monitoring and fish passage obstructions in taking a more holistic approach to assessing waterbodies. The commenter suggested that there were other waterbodies that are affected by fish passage issues that should be included as impaired in future lists. Specific comments were made relating to Mine Brook and Third Herring Brook as to whether bacteria conditions have improved as a result of the change in water quality standards to *E. coli* as the indicator organism. The commenter requested that MassDEP clarify the reasons for delisting these waterbodies.

MassDEP's Response: The general comments on data transparency and the use of external data were addressed in Part 1: Common Theme Comments. For the specific comments regarding bacteria impairments in Iron Mine Brook and Third Herring Brook, MassDEP explained that these delistings were based on data which had not been evaluated in previous cycles and that the most recent sampling data showed that these two waterbodies are now meeting water quality standards for *E. coli*.

Massachusetts Rivers Alliance:

Summary of Comment: The commenter was appreciative of changes that MassDEP made to the Consolidated Assessment and Listing Methodology (CALM) document with regard to the new Appendices and the addition of CSO discharge presence in evaluating the primary contact recreation designated use. Additionally, the commenter is seeking clarification on how CSOs with variances will be evaluated when the next update to the CALM document occurs.

Massachusetts Rivers Alliance has multiple concerns regarding data that is used in making assessment and listing decisions such as: the age of data, use of data from external organizations, qualifications for using data from external organizations and how particular data is utilized by MassDEP to make listing and delisting decisions. The commenter is also concerned with the number of assessment units that are in Category 3 (Insufficient Information) and in Category 2 (Some uses assessed), and how impairments line up with the list of waters in Category 5 which require a TMDL. Additionally, the commenter is concerned about the pace at which triennial water quality standards reviews have been conducted in Massachusetts as there has not been a review in over 10 years.

MassDEP's Response: MassDEP's responses to the issues of external data, transparency, water quality standards and monitoring and assessment programs are addressed in the response to general comments section in Part 1.

In response to specific comments, MassDEP explained that the assessment procedures for evaluating waters with CSO discharges is the same as for all other waters and that the methodologies are contained in the CALM document. For the bacteria delistings due to a change in assessment methodology, MassDEP explained that there needed to be data that showed that water quality standards were being met for the new indicator organism in order for that waterbody to be delisted. For Massachusetts Rivers Alliance's request for the percentage of waterbodies that have been assessed and have not been assessed, MassDEP explained that these tables will be included with the final version of the 303(d)/305(b) report. MassDEP explained some of the limitations surrounding the estimations of this data, as well as that accounting of assessments will reflect what has been completed in the last five years for the basins and parameters that are described in the introduction to the 303(d) list. Massachusetts Rivers Alliance also requested that an explanation and accounting of how impairments are matched with a corresponding TMDL be given along with the 303(d) list. MassDEP explained that the process for developing a TMDL is site specific and that in many cases multiple pollutants will be covered by one TMDL which makes it impossible to uniformly assign a TMDL type to an impairment.

United States Environmental Protection Agency (EPA) and the City of Cambridge, MA:
Summary of Comment: EPA and the City of Cambridge submitted separate comments that pertained to the same issue of impairment in the Cambridge water supply reservoir system. EPA and Cambridge submitted data and reports showing that the four tributaries and the reservoir for the City of Cambridge water supply system are impaired for chloride

and therefore should be listed on the 303(d) list. The data show that both the chronic and acute water quality standards are consistently being violated in this watershed.

MassDEP's Response: MassDEP explained that the drinking water designated use is not assessed for 303(d) purposes in MA and that the Charles River Basin was not assessed for aquatic life use as part of this listing cycle. However, MassDEP is including the data submitted by EPA as a special case assessment and is agreeing with EPA and the City of Cambridge that the Cambridge reservoir and associated tributaries are impaired for Aquatic Life Use for chlorides and will list these waterbodies on the 2016 303(d) list.

Buzzards Bay National Estuary Program:

Summary of Comment: The Buzzards Bay NEP is concerned with discrepancies between bacteria listed segments and current water quality conditions and the designations for closed shellfishing areas. Specifically, there are listed segments on the south coast of Dartmouth, Nasketucket Bay, Mattapoisett Harbor and areas in Wareham, Pocasset, Bourne and Megansett Harbor where only a small portion may be impaired, but due to the impairment of entire embayments, the entire segment is listed as impaired. The commenter stated that these impairments are not indicative of the improvements in water quality that have occurred.

MassDEP's Response: MassDEP realizes the way in which assessment units and impairments may not always be representative of water quality in the entire assessment unit, but MassDEP is required to list all impairments and subsequently develop TMDLs for those impairments. There are cases where this can lead to confusion as well as an overestimation of the amount of impaired area in a waterbody, but MassDEP believes that this does meet its Clean Water Act obligations for reporting on water quality. MassDEP uses the practice of re-segmentation of assessment units sparingly due to the fact that it can lead to more uncertainty and confusion if the assessment units are changed frequently.

Neponset River Watershed Association:

Summary of Comment: The commenter is concerned with the lack of data transparency used in assessment and listing decisions by MassDEP. The Neponset River Watershed Association (NRWA) is encouraging MassDEP to utilize data from external organizations and to use more current data in evaluating water quality. NRWA is seeking greater transparency and explanation regarding delisting decisions and the data that were used to make those decisions. The commenter is also concerned that the use of geometric means for evaluation of bacteria samples without using a maximum value is a violation of water quality standards. Additionally, NRWA is concerned with the lack of a recent triennial review of water quality standards in the State, with the last update occurring in 2006. NRWA believes that there are several waterbodies which should be added to the 2016 303(d) list. NRWA stated that Traphole Brook (MA73-17) should be added for impairment of the temperature standard for a coldwater fishery. NRWA stated that the lower Neponset River (MA73-03) and Neponset estuary (MA73-04) should be added to

category 4C due to fish passage listings at the Baker dam. NRWA stated that Turner Pond (MA73-58) should be listed for dissolved oxygen, nutrients and eutrophication parameters.

The commenter also believes that several waterbodies were being delisted from Categories 4 and 5 that should remain on the list for the 2016 cycle. NRWA stated that Mother Brook (MA73-28) was listed for *E. coli* impairment and is continuing not to meet the calculated geomean and single sample maximum values. NRWA stated that Pecunit Brook (MA 73-25) should remain in category 4A due to exceedances of both the geomean and single sample maximum values for *E. coli*. NRWA stated that the Neponset River from Neponset Reservoir to East Branch (MA73-01) should remain in Category 5 for nutrients and sediment/siltation impairments. NRWA stated that Unquity Brook (MA73-26), Germany Brook (MA73-15) and Hawes Brook (MA73-16) should all remain in Category 5 as impaired for trash/debris. NRWA stated that Unnamed Tributary (Meadow Brook) (MA73-33) should remain in Category 5 for taste/odor and trash/debris impairments.

MassDEP's Response: MassDEP responded to the general comments pertaining to age of data, external sources of data, transparency of assessment decisions and the pace at which triennial reviews of water quality standards are completed in Part 1: Common Themes section of this document.

For the specific comments section, MassDEP explained that the aquatic life use was not assessed for this cycle in the Neponset River watershed and that the comments pertaining to MA73-03, MA73-04, MA73-17 and MA73-58 will be addressed as part of the next listing cycle. MassDEP explained that Mother Brook will remain in Category 5 due to the fact that other impairments exist in this assessment unit and the bacteria impairment is covered by an existing TMDL. NRWA's data support keeping this assessment unit in Category 4A for bacteria impairment. Pecunit Brook was returned to Category 4A based on data submitted by NRWA that showed impairment by *E. coli*. Unquity Brook, Germany Brook and Hawes Brook will remain delisted based on MassDEP surveys in 2009 that did not show that these streams were still impaired for trash/debris. Unnamed Tributary (Meadow Brook) has never been listed for trash/debris and so this impairment cannot be removed. As for the taste/odor impairment, a 2009 MassDEP survey did not find any evidence of taste/odor impairment, and additional data submitted by NRWA did not show significant impairment conditions, which led MassDEP to conclude that this assessment unit should be delisted for taste/odor.

Connecticut River Conservancy:

Summary of Comment: The commenter is concerned that MassDEP has not developed any TMDLs in the western part of the state in over 10 years and there are multiple bacteria impairments that have not been addressed with a TMDL. Connecticut River Conservancy (CRC) is also concerned that the amount of data presented in the 303(d) list is not adequate for an outside organization to evaluate whether a delisting is appropriate.

CRC makes basin specific comments about specific waterbodies in the Chicopee, Connecticut, Deerfield, Farmington, Millers and Westfield River basins. Chicopee: CRC is concerned that evaluation of waters in this basin is slipping further behind especially with respect to tributaries to the Quabbin reservoir. CRC is wondering if Department of Conservation and Recreation may be able to assist with data for this watershed. Connecticut: CRC is concerned with the delisting for total suspended solids in the Connecticut River (MA34-05) as there is no recent data for this delisting and the closest sampling station is in Suffield, CT. CRC believes that the Mill River (MA34-28) should not be delisted for *E. coli* impairment and asserts that CRC has data to support its position. CRC suggested contacting the Conte Anadromous Fish Lab to obtain data on West Brook as the lab is conducting a multi-year study on this stream. CRC requested that the descriptions of the assessment units of Barton Cove (MA34-22) and Log Pond Cove (MA34-24) reflect that they are upstream of Turners Falls and Holyoke Dams respectively. CRC is requesting that Sugarloaf Brook be added as an assessment unit for integrated list purposes. Deerfield: CRC requested more information be supplied regarding the addition of 100 new assessment units in the Deerfield basin including several new impairment listings as well as two delistings. CRC also wanted to notify MassDEP about the availability of data from the Deerfield River Watershed Association. Farmington: CRC is requesting more information regarding 23 new river listings in this watershed for fish and aquatic life. Millers: CRC is requesting clarification on *E. coli* delistings and listings due to the change in water quality standards. Also, CRC is requesting information on newly listed segments for PCBs in fish tissue. Westfield: CRC is requesting additional information for the twenty-five newly listed assessment units in the Westfield basin.

MassDEP's Response: MassDEP responded by saying that it has made corrections to segment descriptions that were pointed out by CRC. For the newly impaired bacteria listings, MassDEP is adding those segments to the list of segments for which a TMDL needs to be developed. MassDEP recognizes the need for greater transparency in making listing and delisting decisions and therefore provided to CRC the "data compendia" for the watersheds that were evaluated for this listing cycle. MassDEP addressed CRC's individual comments by providing separate documents for the watershed or by providing the data compendia for individual watersheds. MassDEP explained that all external sources of data will be utilized as long as the data meet quality assurance objectives and that all delistings are supported by appropriate data.

Nashua River Watershed Association:

Summary of Comment: Nashua River Watershed Association (NRWA) expressed its support for the general comments that Massachusetts Rivers Alliance submitted regarding the use of external data, data transparency, diminishing MassDEP resources and transparency of sampling design and planning. NRWA asserted that it has also spent considerable time and effort to submit data to MassDEP and the group is wondering how its data is being used. NRWA expressed support for the newly listed assessment units for *E. coli* on Baker (MA81-62), Falulah (MA81-63) and Wekepeke (MA81-72) Brooks. NRWA noted that Pearl Hill Brook (MA81-80) and Willard Brook (MA81-79) were

listed for *Enterococcus* and were the only freshwater listings for *Enterococcus* in the Nashua River watershed. NRWA questioned the removal of impairment status for Squannacook River segment MA81-18 for *E. coli* due lack of clarity on what data were used to support this delisting, along with the fact that two tributary streams to the Squannacook River are newly listed for *Enterococcus*.

MassDEP's Response: MassDEP responded to NRWA's general comments regarding data transparency and age of data in Part 1 of this document. MassDEP provided the summary data for Baker, Falulah and Wekepeke Brooks for *E. coli* impairment that NRWA had requested. Confirmation was provided that the reason for listing of Pearl Hill and Willard Brooks was due to the Massachusetts Department of Conservation and recreation (DCR) sampling of *Enterococcus* at beaches in the respective state parks. For the Squannacook River delisting, MassDEP provided all the data used in the delisting decision, as well as all of the geomean calculations which showed that the waterbody is meeting water quality standards for bacteria.

City of New Bedford:

Summary of Comment: The City of New Bedford expressed support for the delisting of Outer New Bedford Harbor which was on the prior 303(d) list as impaired for estuarine bioassessments, total nitrogen and dissolved oxygen. The City provided data and information regarding improvements that have been made to the wastewater treatment plant and CSO reduction efforts.

MassDEP Response: MassDEP explained that during the public comment period, the department received both comments for and against the proposed delisting of Outer New Bedford Harbor. The Buzzards Bay Coalition submitted more recent data that showed that there are still impairments to the aquatic life use pertaining to total nitrogen and dissolved oxygen. However, MassDEP explained that the decision to delist estuarine bioassessments will stand based on the recovery and extent of eelgrass coverage in the assessment unit.

Charles River Watershed Association:

Summary of Comment: The Charles River Watershed Association (CRWA) expressed concern for the age of data that MassDEP uses in making assessment and listing decisions and also requested to be notified of the sampling schedule for waterbodies within the Charles River Watershed. The commenter also requested that the data used in making listing and delisting decisions be made available to the public. CRWA was especially concerned with how decisions were made with regard to bacteria delistings and changes to water quality standards. Concerns were also raised for the waterbodies in Category 3 and it was requested that more information be made available for these waters. CRWA also was disappointed with the timeliness and pace at which the water quality standards triennial review has been conducted in Massachusetts.
CRWA also submitted comments pertaining to individual waterbody listing and delisting decisions. The commenter does not agree with the decision to delist the Stop River for *E.*

coli and submitted data supporting its position. CRWA believes that Bogastow Brook should not be in Category 2 for fish and wildlife uses as the brook went dry in 2016. CRWA commented that the brook should be listed as impaired due to flow alterations, and CRWA submitted macroinvertebrate data to support listing for the aquatic life use. Several other segments experienced very low flows in 2016 due to drought which was exacerbated by flow alterations.

CRWA commented that Alder, Trout and Fuller Brooks are listed as impaired for nutrient/eutrophication biological indicators, but no other impairments for other parameters such as macroinvertebrates, dissolved oxygen or excess algae are listed to better inform the planning process for restoration. Similarly, CRWA commented that Powisset Brook is listed as impaired for combined biota/habitat bioassessments, but no other parameters.

CRWA commented that the Charles River (MA72-04) from Box Pond to Populatic Pond is the only segment of the Charles River not listed for total phosphorus. CRWA commented that Populatic Pond exhibits eutrophication symptoms including routine algal blooms and a likely cyanobacteria bloom in 2017. CRWA stated that this segment is covered under the Charles River TMDL and should be categorized the same as the other segments based on data submitted by CRWA.

CRWA commented that Charles River segments MA72-05 and MA72-06 should be listed for *E. coli* impairment based on regular sampling conducted by CRWA and submitted to MassDEP. CRWA commented that Charles River segment MA72-38 is not listed as impaired for bottom deposits despite this segment not being open to swimming based on a USGS study that characterized the sediments in this segment as impaired for aquatic life. CRWA requested the data that show that Rock Meadow Brook is no longer impaired for macrophytes and that Beaver Brook is no longer impaired for taste and odor. CRWA stated that recent monitoring indicate that these impairments still exist.

CRWA commented that the Cambridge and Stony Brook water supply reservoirs are impacted by chloride, sodium and total phosphorus as detailed in a recent USGS publication. CRWA stated that samples collected in this study exceed water quality standards and, as such, these reservoirs should be listed as impaired. CRWA is requesting that data be published on the levels of road salt and de-icing products in other waterbodies in the Charles River Watershed as well.

MassDEP Response: MassDEP responded to CRWA's general comments on data transparency, availability and age, as well as external sources of data and water quality standards revisions as described in Part 1 of this document.

MassDEP explained that the aquatic life use was not evaluated in the Charles River Basin for this cycle and that data will be evaluated for the next cycle for this basin. For bacteria delistings, MassDEP explained that no delistings took place without data to support delisting that particular parameter.

MassDEP indicated that the final 303(d)/305(b) Integrated Report will include a summary of the assessed waterbodies as well as the waterbodies which have not been assessed and are in Category 3. An explanation was provided for how the State designs its sampling protocol to sample probabilistically to account for the waters that have yet to be sampled in the State.

MassDEP explained why there is sometimes confusion over matching up pollutants with a TMDL due to the fact that some TMDLs are effective at addressing multiple pollutants within a single TMDL. Typically, TMDLs are developed on a site-specific basis and it is very difficult to uniformly address all pollutant and TMDL combinations in a broad summary table.

Regarding the delisting of the Stop River for *E. coli* impairment, MassDEP reviewed CRWA's data and found it to be sufficient for making listing decisions. Aside from one very high sample which caused the geomean for 2016 to be exceeded, there were no other violations of the water quality standard. This sample was collected during the drought of 2016 and is not considered to be representative of typical conditions.
CRWA had challenged the delisting of Charles River assessment units MA72-05 and MA72-06 for *E. coli* impairment and submitted data for MassDEP to review. After reviewing the data, MassDEP has determined that the data show compliance with water quality standards and therefore these assessment units will be delisted.
CRWA commented that Charles River assessment unit MA72-38 should be listed for bottom deposit impairment due to a USGS report on sediment in the Charles River. MassDEP explained that the more appropriate impairment label of "Sediment Screening Value (Exceedance)" is used to evaluate this assessment unit and it is listed for this parameter.

MassDEP clarified the listing status for Rock Meadow Brook by explaining that the listing for macrophytes has been incorporated into the larger category of "Nutrient Eutrophication Biological Indicators" as this better represents the pollutant, which is phosphorus in this case. This waterbody is covered by a nutrient TMDL and will continue to be impaired until macrophyte and algal parameters indicate compliance with water quality standards.

CRWA questioned the delisting for taste/odor in Beaver Brook due to a combination of impairments that likely would cause taste and odor impairments. MassDEP cited a 2007 survey which did not document any taste or odor impairments and as a result MassDEP delisted this segment.

Regarding CRWA's comments on the Cambridge and Stony Brook reservoirs, MassDEP explained that for the 2016 cycle the aquatic life use was not assessed in the Charles River basin and phosphorus impairments would be addressed as part of the 2018 cycle. MassDEP does not evaluate drinking water use for Clean Water Act purposes. The sodium and chloride impairments are being addressed as a special case for the 2016 cycle as the Cambridge reservoir is being added to the 303(d) list for chloride impairment based on comments and data submitted to MassDEP by EPA.

Upper Blackstone Water Pollution Abatement District:

Summary of Comment: The commenter provided a brief summary of sampling and water quality monitoring that has been done in the Blackstone River since 2012. This monitoring effort has been focused on nutrient parameters and aquatic life. Upper Blackstone Water Pollution Abatement District (UBWPAD) submitted reports detailing its efforts to document the effects of reducing nutrients in the Blackstone River. The commenter had questions about what data was used in the assessment of the Blackstone River and whether the most recent data used in the assessment was from 2008. The commenter was concerned that if more recent data had not been used, then water quality would not reflect the improvements that have been made at the wastewater treatment plant to reduce nutrients. The commenter also noted that a reference was included to a USGS study from 2007-09 which would not reflect current conditions and improvements in water quality. UBWPAD has submitted data to MassDEP for 2014-16 and limited data from 2012-13 and the commenter would appreciate emphasizing its participation in the data submission effort. The commenter also submitted a comparison of sampling values compared to CALM guidance values for the following assessment units: MA51-03, MA51-04, MA51-05 and MA51-06. Most values are below the guidance values with the exception of dissolved oxygen. The commenter suggested reporting this data to show the most current data and improvements. A summary of nutrient reduction activities and monitoring is provided along with suggested text to be included in the final 303(d)/305(b) report.

MassDEP Response: MassDEP explained that the aquatic life use was not assessed for the Blackstone River basin for this listing cycle and that it will be evaluated for the 2018 cycle which will evaluate the data submitted from UBWPAD. MassDEP explained that the reference to the USGS study was included to highlight collaboration on nutrients and metals sampling between MassDEP and USGS. MassDEP indicated that it would incorporate the suggested language from UBWPAD into the final report to reflect the nutrient reduction efforts in the Blackstone River. The data submitted to MassDEP will be evaluated for the aquatic life use in the 2018 cycle.

Buzzards Bay Coalition:

Summary of Comment: The Buzzards Bay Coalition (BBC) submitted the following list of waterbodies that should remain on the 303(d) list as impaired: Outer New Bedford Harbor, Acushnet River, Westport River, Nasketucket River, Little River and Wild Harbor River. BBC also submitted a list of waterbodies that should be added to the list of impaired waterbodies: Fiddlers Cove, Rands Harbor and Wild Harbor. Along with the list of impaired waters, BBC submitted summary data with graphs as well as the raw data that was used to analyze compliance with water quality standards for dissolved oxygen, chlorophyll and nutrients. BBC also included a description of its Baywatchers program and included information on what parameters they monitor for and the details of their quality assurance program.

The remainder of BBC's comments provide the data to support keeping specific waters on the list and adding other waters to the list. BBC is recommending keeping Outer New Bedford Harbor in Category 5 for total nitrogen and dissolved oxygen. BBC submitted dissolved oxygen, chlorophyll and total nitrogen data that show exceedances of water quality standards/threshold values in long-term datasets that are current through 2017. BBC submitted data supporting the listing of the Acushnet River as impaired for dissolved oxygen based on a long-term dataset through 2017, as well as documentation of a fish kill in 2016. Dissolved oxygen, chlorophyll and total nitrogen data were submitted to support the continued inclusion of the Westport River as impaired for total nitrogen in Category 4A (TMDL completed). Total nitrogen data was submitted for the Wild Harbor assessment unit in support of it remaining in Category 5 as impaired for total nitrogen. Long-term data show that this assessment unit is not meeting its total nitrogen threshold as set by the Massachusetts Estuary Project (MEP). BBC believes that it is premature to delist Nasketucket River and Little River from Category 5 for total nitrogen impairment due to the fact that the data show these assessment units oscillating between exceeding and meeting their threshold values for total nitrogen as set by the MEP. BBC is requesting that Fiddlers Cove, Rands Harbor and Wild Harbor should all be listed in Category 5 for total nitrogen impairment due to exceedances of the total nitrogen, dissolved oxygen and chlorophyll thresholds that have been set either as water quality standards or by the MEP.

MassDEP Response: Based on data and analysis provided by BBC, MassDEP has decided to retain the Category 5 impairment listings for total nitrogen and dissolved oxygen for the Outer New Bedford Harbor assessment unit. MassDEP has decided to delist this assessment unit for estuarine bioassessments based on the increase in eelgrass areal coverage. MassDEP has reconsidered its decision to delist the Acushnet River for dissolved oxygen impairment based on data and analysis submitted by BBC, as well as documentation of fish kills in this assessment unit. After review of data and analysis submitted by BBC, MassDEP has decided to proceed with delisting of the Westport River for total nitrogen impairment based on healthy eelgrass and benthic fauna populations. After review of data and analysis submitted by BBC for Wild Harbor River, MassDEP is proceeding with delisting this assessment unit for nutrient/eutrophication biological indicators based on the sampling and analysis completed by the School for Marine Science and Technology (SMAST) that concluded that this assessment unit is not impaired and supports healthy benthic communities and water quality. Based on data and analysis submitted by BBC, MassDEP is retaining the total nitrogen impairment for the Nasketucket River. After consideration of data and analysis of total nitrogen, dissolved oxygen and chlorophyll for the Little River, MassDEP has decided to proceed with delisting this segment for total nitrogen based on the MEP report that concluded that the assessment unit was determined to support healthy water and habitat quality. Based on data and analysis submitted by BBC, MassDEP has concluded that Fiddlers, Rands and Wild Harbors are all impaired for total nitrogen and is adding these three assessment units to Category 5 for the 2016 303(d) list.

EPA concludes that MassDEP adequately responded to the comments.

Identification of Waters and Consideration of Existing and Readily Available Water Quality Related Data and Information

EPA has reviewed the State's submission and has concluded that the State developed its Integrated Report and section 303(d) list in compliance with section 303(d) of the Act and 40 CFR § 130.7. EPA's review is based on its analysis of whether the State reasonably considered existing and readily available water quality-related data and information and reasonably identified waters required to be listed. As noted earlier, Massachusetts considered all existing and readily available data that it was able to validate for this listing cycle pertinent to the specific uses and watersheds identified for assessment during this cycle per its rotating basin plan.

Massachusetts used the MassDEP assessment database to develop its 2016 section 303(d) list. The same database was used to assist in the preparation of the biennial section 305(b) report. MassDEP provides ongoing notice on its website to request data from outside sources. Information received from outside sources was assessed in accordance with the State's assessment methodology. In the development of the 2016 section 303(d) list, Massachusetts began with its existing EPA-approved 2014 section 303(d) list and relied on new water quality assessments to update the list accordingly. Massachusetts believes that information pertaining to impairment status must be well substantiated, preferably with actual monitoring data, for it to be used in section 303(d) listing.

Priority Ranking

As described in its methodology, Massachusetts established a priority ranking for listed waters by considering: 1) the presence of public health issues, 2) natural/outstanding resource waters, 3) threat to federally threatened or endangered species, 4) public interest, 5) available resources, 6) administrative or legal factors (i.e., NPDES program support or court order), and 7) the likelihood of implementation after the TMDL has been completed.

Individual priority rankings for listed waters are presented as the date shown on the section 303(d) list which indicates when the TMDL is expected to be completed. EPA finds that the water body prioritization and targeting method used by Massachusetts is reasonable and sufficient for purposes of section 303(d). The State properly took into account the severity of pollution and the uses to be made of listed waters, as well as relevant factors described above.

Waters which are not listed on Massachusetts 2016 section 303(d) List

The following section provides a summary of MassDEP’s rationale supporting decisions not to include certain newly identified waters and certain previously listed waters on the State’s 2016 303(d) list. As discussed below, the State has demonstrated, to EPA’s

satisfaction, good cause for not listing the following waters, as provided in 40 CFR §130.7(b)(6)(iv).

EPA approves the State's section 303(d) list without the following water body-pollutant combinations because the removal of these listings is consistent with EPA's regulations and EPA's Guidance for Assessment, Listing and Reporting Requirements.

Bacteria Section

Applicable Water Quality Criteria and Assessment Procedures

Class A other (non-public water supply intake) waters, Class B:

Where *E. coli* is the chosen indicator at public bathing beaches as defined by MA DPH:

The geometric mean of the five most recent *E. coli* samples taken during the same bathing season shall not exceed 126 colonies/ 100 ml and no single sample taken during the bathing season shall exceed 235 colonies/ 100 ml (these criteria may be applied on a seasonal basis at the Department's discretion).

Where *Enterococci* are the chosen indicators at public bathing beaches:

The geometric mean of the five most recent samples taken during the same bathing season shall not exceed 33 colonies /100 ml and no single *Enterococci* sample taken during the bathing season shall exceed 61 colonies /100 ml.

For other waters and, during the non bathing season, for waters at public bathing beaches:

The geometric mean of all *E. coli* samples taken within the most recent six months shall not exceed 126 colonies/ 100 ml typically based on a minimum of five samples and no single sample shall exceed 235colonies/ 100 ml. These criteria may be applied on a seasonal basis at the Department's discretion.

The geometric mean of all *Enterococci* samples taken within the most recent six months shall not exceed 33 colonies/ 100 ml typically based on a minimum of five samples and no single sample shall exceed 61 colonies/ 100 ml. These criteria may be applied on a seasonal basis at the Department's discretion.

Class SA:
Waters designated for shellfishing:

Fecal coliform bacteria shall not exceed a geometric mean (Most Probable Number (MPN) method) of 14 organisms/100 ml, nor shall more than 10% of the samples exceed an MPN of 28 organisms/100 ml, or other values of equivalent

protection based on sampling and analytical methods used by the Massachusetts Division of Marine Fisheries and approved by the National Shellfish Sanitation Program in the latest revision of the Guide for the Control of Molluscan Shellfish Areas (more stringent regulations may apply, see 314 CMR 4.06(1)(d)(5)).

Class SB:
Waters designated for shellfishing:

Fecal coliform median or geometric mean MPN shall not exceed 88 organisms/100 ml, nor shall more than 10% of the samples exceed an MPN of 260 organisms/100 ml or other values of equivalent protection based on sampling and analytical methods used by the Massachusetts Division of Marine Fisheries and approved by the National Shellfish Sanitation Program in the latest revision of the Guide for the Control of Molluscan Shellfish Areas (more stringent regulations may apply, see 314 CMR 4.06(1)(d)(5)).

Class SA and Class SB:

At public bathing beaches, as defined by MA DPH:

No single *Enterococci* sample taken during the bathing season shall exceed 104 colonies /100 ml and the geometric mean of the five most recent *Enterococci* samples taken within the same bathing season shall not exceed 35 colonies /100 ml.

At public bathing beaches during the non-bathing season and in non-bathing beach waters:

No single *Enterococci* sample shall exceed 104 colonies/ 100 ml and the geometric mean of all samples taken within the most recent six months, typically a minimum of five samples, shall not exceed 35 colonies/ 100 ml. These criteria may be applied on a seasonal basis at the discretion of the Department.

While the current bacteria criteria for Massachusetts surface waters include both a geometric mean and a single sample maximum, MassDEP makes 303(d) list assessment decisions based on whether or not the geometric mean of bacteria samples collected within the "bathing season" meet the criterion for primary contact recreation (i.e., *E. coli* and/or *Enterococci* bacterial indicators for Class A, B, SA, SB waters). The single sample maximum (SSM) criterion is used to determine the status of public bathing beaches. Bathing beaches are sampled often to determine the risk to bathers; where samples exceed the SSM, the beach will be closed until it is determined bacteria levels in the water are safe for swimming again. This approach is consistent with EPA's recommended bacteria criteria.

The Beaches Bill monitoring program is a major source of bacteria data and beach posting/closing information. Pursuant to this legislation, the Massachusetts Department of Public Health (DPH) requires communities to report monitoring data from their beaches (most beaches sampled weekly) and decisions to post/close their beaches over the course of the beach season. When considering beach closure information for making assessments, MassDEP contends that postings/advisories at public bathing beaches

should be neither frequent nor prolonged during the swimming season (i.e., the number of days posted or closed should not, or rarely exceed 10% during the locally operated swimming season). The pathogen indicator used for marine beach monitoring as well as the DCR fresh water beach monitoring (the rare exception being Massachusetts Department of Conservation and recreation (DCR) beaches sampled by local municipalities) is *Enterococci* bacteria. A bathing beach that is not closed for more than 10% of the bathing season is indicative of good water quality.

Although the bacteria indicator species are different (i.e., fecal coliform bacteria for shellfish and *Enterococci* for bathing beach areas) an "approved" shellfish growing area classification is indicative of excellent water quality.

The State's decision to delist bacteria impairments is supported by the following evidence per Massachusetts' 2016 Comprehensive Assessment and Listing Methodology:

For Rivers and Lakes: geomean of bacteria sample meets criterion or Beach Postings (closures) at DCR freshwater beaches are generally < 10% of the season.

For Estuaries: geomean of bacteria sample meets criterion, Beach Postings (closures) are generally less than <10% of the bathing season, or a Massachusetts Division of Marine Fisheries (DMF) "approved" shellfish growing area classification.

The 2016 Comprehensive Assessment and Listing Methodology manual specifies that "the DWM's most recent validated data are utilized for making the use assessment decisions. Ideally these data are 5 years old or less". As a practical matter, however, older data are typically utilized for assessments and this is entirely consistent with EPA guidance (see below). The routine procedures associated with laboratory analyses and data validation and reduction contribute to a prolonged time interval between sample collection and final data availability. This, combined with the rotating watershed assessment schedule, often leads to situations where the most recent data available are already older than five years when first considered for assessment.

The above-referenced guidance states the following: "The spatial and temporal representativeness of data and information should be considered by states as they attempt to characterize conditions in a given segment. Clearly, the degree of confidence in a WQS attainment status determination increases as the amount of data and information grows. Ideally, all decisions about the WQS attainment status of individual assessment units would be based on a complete census of water quality conditions, which could involve sampling every portion of a waterbody at frequent intervals. Unfortunately, gathering this vast amount of data is not currently feasible, due to the limitations of current monitoring technology as well as the amount of funding available for gathering and analysis of water quality information. Even for those segments where unusually large amounts of monitoring data is available, compared to most waterbodies, the percentage of all possible locations in time and space from which data has been collected is very, very small. Given this situation, states and EPA will continue to need to make WQS

attainment status determinations by extrapolating, in time and space, to a substantial degree, from individual points of data."

With particular regard to temporal representativeness, the guidance continues: "EPA believes that data should not automatically be treated as unrepresentative of relevant segment conditions solely on the basis of its age without supporting information indicating that the data are not a good indicator of current conditions".

MA DEP and EPA took measures to ensure that data collected more than 5 years beyond the data cutoff was evaluated as still relevant to current conditions. This includes the comparison of geospatial, infrastructure and other information available for the time the assessment and listing decisions are made to similar information available for the time that the older data were collected, in order to instill confidence in the likelihood that those older data continue to be representative of prevailing conditions.

ArcMap datalayers that provide past and present geospatial information include the following:

- Land Use coverages
- Historical and current USGS Topographic Maps
- 1:25K Hydrography, NHD Hydrography Network
- Various infrastructure datalayers (NPDES Surface Water Discharge Permits, Public Water Supply Sources including groundwater and surface water intakes, Dams, CSO outfall locations, MassDOT Roads, Urbanized Areas)
- Orthophotos (2008/2009 one foot color, 2014-17 Google Ortho Imagery, and other datalayers may reveal changes in land use (increased development, impervious cover, etc).
- Google Earth imagery

This information provides a historical context for assessing the suitability of older monitoring data and could lead to decisions not to use particular historical data if they were collected prior to significant changes in land use, infrastructure, etc. The above approach is most useful for predicting whether pollutant loadings from nonpoint sources and stormwater runoff may have increased since the time the receiving water was surveyed. Water segments marked with an asterisk (*), below, have been reviewed following this procedure. Segment review documents with satellite screen captures are available upon request.

Fecal Coliform Category 5 delistings

Fecal coliform is no longer an indicator for fresh waters. However, as of the 2014 303(d) list, there were 149 Assessment Units listed with fecal cause. EPA and MassDEP agreed to keep all fecal coliform listings where there was no new data to compare to current Water Quality Standards (WQS), to delist fecal coliform where new data <u>does</u> meet current *E. coli*/*Enterococcus* standard, and to add the *E. coli*/*Enterococcus* cause where recent data shows the assessment unit (AU) <u>does not</u> meet current WQS.

There are 67 segments being delisted for fecal coliform impairments. Of those, 18 delistings are due to TMDL development, and 49 delistings are due to applicable water quality standards attainment. Evidence in support of this attainment is shown in the following tables and narrative.

Marine fecal coliform impairment delistings. Bases for delistings are Beach Postings generally <10% of season or DMF Approved Shellfish Growing Area Classification.

Basin Name	Water Body	Segment ID	Evidence of Attainment	Explanation for delisting
Cape Cod	Hyannis Harbor	MA96-05	beach is rarely posted for more than 10% of the swimming season	Applicable WQS attained; according to new assessment method.
Cape Cod	Little Pleasant Bay	MA96-78	DMF Approved Shellfish Growing Area classification	Applicable WQS attained; according to new assessment method.
Cape Cod	Town Cove	MA96-68	beach is rarely posted for more than 10% of the swimming season	Applicable WQS attained; according to new assessment method.
Islands	Lagoon Pond	MA97-11	beach is rarely posted for more than 10% of the swimming season	Applicable WQS attained; according to new assessment method.
Buzzards Bay	Sippican Harbor	MA95-69	DMF Approved Shellfish Growing Area classification	Applicable WQS attained; reason for recovery unspecified.
Islands	Edgartown Great Pond	MA97-17	DMF Approved Shellfish Growing Area classification	Applicable WQS attained; reason for recovery unspecified.

Islands	Madaket Harbor	MA97-27	beach is rarely posted for more than 10% of the swimming season	Applicable WQS attained; reason for recovery unspecified.
Islands	Westend Pond	MA97-20	DMF Approved Shellfish Growing Area classification	Applicable WQS attained; reason for recovery unspecified.

Freshwater fecal coliform impairment delistings. Bases for the delistings are the most recent sampling effort geomean(s) must meet *E. coli* standards of not more than 126 cfu/100 ml or Beach Postings at DCR freshwater beaches generally <10% season

Basin Name	Water Body	Segment ID	*E. coli* sample geomean(s)	Explanation for delisting
Blackstone	Unnamed Tributary	MA51-20	66	Applicable WQS attained; due to change in WQS.
Boston Harbor: Neponset	Mine Brook	MA73-09	19	Applicable WQS attained; due to change in WQS.
Boston Harbor: Neponset	School Meadow Brook	MA73-06	93	Applicable WQS attained; due to change in WQS.
Boston Harbor: Neponset	Traphole Brook	MA73-17	84	Applicable WQS attained; due to change in WQS.
Concord (SuAsCo)	Assabet River	MA82B-01*	97	Applicable WQS attained; due to change in WQS.
Concord (SuAsCo)	Hop Brook	MA82A-06*	89	Applicable WQS attained; due to change in WQS.
Deerfield	Chickley River	MA33-11*	100, 12	Applicable WQS attained; due to change in WQS.
French	French River	MA42-05	38, 103	Applicable WQS attained; due to change in WQS.
French	French River	MA42-06	83	Applicable WQS attained; due to change in WQS.

Housatonic	East Branch Housatonic River	MA21-01	56	Applicable WQS attained; due to change in WQS.
Housatonic	Wahconah Falls Brook	MA21-11	69	Applicable WQS attained; due to change in WQS.
Hudson: Hoosic	Green River	MA11-06	25, 12, 33, 33	Applicable WQS attained; due to change in WQS.
Hudson: Hoosic	Hoosic River	MA11-04	93	Applicable WQS attained; due to change in WQS.
Hudson: Hoosic	Paull Brook	MA11-20	60, 46	Applicable WQS attained; due to change in WQS.
Ipswich	Miles River	MA92-03*	114	Applicable WQS attained; due to change in WQS.
Ipswich	Wills Brook	MA92-10*	21	Applicable WQS attained; due to change in WQS.
Millers	Beaver Brook	MA35-09	23, 49	Applicable WQS attained; due to change in WQS.
Millers	Millers River	MA35-01	74, 46	Applicable WQS attained; due to change in WQS.
Millers	Millers River	MA35-04	78, 56, 70, 46, 95, 91	Applicable WQS attained; due to change in WQS.
Millers	Otter River	MA35-08	65, 88	Applicable WQS attained; due to change in WQS.
North Coastal	Alewife Brook	MA93-45*	125	Applicable WQS attained; due to change in WQS.
North Coastal	Cat Brook	MA93-29*	126	Applicable WQS attained; due to change in WQS.
Quinebaug	Cady Brook	MA41-05	87	Applicable WQS attained; due to change in WQS.
Shawsheen	Spring Brook	MA83-14*	87	Applicable WQS attained; due to change in WQS.

Shawsheen	Vine Brook	MA83-06*	67	Applicable WQS attained; due to change in WQS.
South Coastal	Iron Mine Brook	MA94-24*	113	Applicable WQS attained; due to change in WQS.
South Coastal	Third Herring Brook	MA94-27*	126	Applicable WQS attained; due to change in WQS.
Taunton	Wading River	MA62-47*	85	Applicable WQS attained; due to change in WQS.
Parker	Pentucket Pond	MA91010	MA DPH recreational beach sampling supports delisting	Applicable WQS attained; reason for recovery unspecified.

Quinebaug watershed: Quinebaug River MA41-01

Four water quality sampling stations were tested several times over the course of the 2011 sampling season. The geomeans of *E. coli* at those sampling stations for 2011 are as follows: 47, 15, 36, and 134.

The decision to delist was based on excellent spatial representation throughout the assessment unit, where only one of the four stations slightly exceeded standards, but others met and were well below standards. The one site that slightly exceeded the geomean standard of 126 cfu/100 ml during the 2011 sampling effort was directly in the path of the June 1, 2011 tornado that devastated the area near the inlet to East Brimfield Reservoir. Best professional judgement is to delist this segment, since three of the four sites are well below the bacteria standard and the fourth suffered severe atypical conditions associated with the tornado during the sampling season.

*Taunton watershed: Three Mile River MA62-56**

Seven water quality sampling stations were tested several times over the course of the 2011 sampling season. The geomeans of *E. coli* at those sampling stations for 2011 are as follows: 146, 93, 92, 57

Bacteria source tracking efforts in 2011 were initiated in this sub-watershed as a result of the segment being listed for pathogens on the integrated list of waters. Historic data collected by the Taunton River Watershed Association and the Water Protection Program assessment program suggested very few dry weather bacteria problems. Samples were collected throughout the study area in June and August. Concentrations of *E.coli* did not exceed single sample water quality standards at any sample station on either date with the exception of a peak in concentrations (275.3 MPN) at Spring/South Street (TMR04B) in August. However, as a result of this data, additional tracking sampling was conducted at

the Spring Street/South Street bridge in October, with the inclusion of a couple of new stations (TMRSD03 and TMR07). Bacteria concentrations were so low at the bridge in October (ranging <10 to 47.1 MPN) that it was not deemed worthwhile to spend additional resources to conduct bacteria source tracking in this area. EPA agrees with MassDEP's decision that it is appropriate to delist this segment.

*Ten Mile watershed: Bungay River MA52-06**

Two water quality sampling stations were tested twice over the course of the 2011 sampling season. The geomeans of *E. coli* at those sampling stations are as follows: 415, 185.

Bacteria source tracking efforts were initiated in this sub-watershed in 2011 as a result of the Water Protection Program (WPP) assessment program reporting high bacteria concentrations during dry-weather conditions in this segment (specifically in the Blackington Pond area), the segment being listed for pathogens on the integrated list of waters and a specific request coming from the WPP to study the Blackington Pond area and rule out human sources. Stations both up and downstream of the pond were sampled; in 2011, the upstream station easily met single sample maximum standards for *E. coli*, but exceeded standards downstream of the pond; however concentrations were not high enough to warrant the use of human marker analysis, due to on-going roadworks on the bridge potentially diluting any sources. A second round of samples was collected from the same locations, meeting single sample standards for *E. coli* despite a large number of geese observed. In 2013, two additional rounds of samples were collected that were not significantly higher than the single sample maximum standard. In both the June and August sampling efforts, there was not a significant difference in the concentrations of *E. coli* upstream and downstream of the pond which suggests the pond itself is not a significant source of bacteria to the Bungay River.

MassDEP concluded that there is not enough evidence of a significant dry weather bacteria issues to warrant spending additional resources on bacterial source tracking in this stretch of the Bungay River. Based on the information above, EPA agrees with MassDEP's decision that it is appropriate to delist this segment.

Seven segments are being delisted for fecal coliform based on re-segmentation of the Assessment Units:

Westfield watershed: Moose Meadow Brook MA32-40

Since segment MA32-23 was split into two new segments, MA32-40 (upstream) and MA32-41 (downstream), for 2016 reporting cycle, no impairments are appropriate for this new upstream segment. The original assessment of Moose Meadow Brook was that the upper 6.9-mile reach of Moose Meadow Brook was originally assessed as support for the Recreational and Aesthetic uses while only the lower 1.3 miles was impaired.

Therefore the impairment for fecal coliform should be removed from the re-segmented upper AU MA32-40.

Taunton watershed: Rumford River (MA62-62 and MA62-63*) and Glue Factory Pond (MA62078)*

Assessment Unit MA62-39 was deleted and split into two river segments (MA62-62 and MA62-63) and one lake segment (MA62078). AU MA62-39 (historically MA62-15) was originally listed for fecal coliform based on surveys conducted in the Rumford River between June and August 1988, 4 stations sampled 4 times in the reach of the Rumford River all downstream from Glue Factory Pond in Foxborough. Because the recent *E. coli* data used for assessing the Rumford River upstream of Glue Factory Pond (AU MA62-62), meet the use criteria, and no fecal coliform impairments have ever been identified for Glue Factory Pond or the Rumford River upstream from Glue Factory Pond, the fecal coliform impairment should be delisted.

Most recent *E. coli* sample geomean for MA62-62: 76; sample meets applicable water quality standard of not more than 126 cfu/ 100 ml. Appropriate to delist.

Most recent *E. coli* sample geomean for MA62-63: 54; sample meets applicable water quality standard of not more than126 cfu/ 100 ml. Appropriate to delist.

Samples both up and downstream of MA62078 meet applicable water quality standards. Historic fecal impairment was based on surveys conducted downstream of Glue Factory Pond in 1988. Appropriate to delist.

Taunton watershed: Wading River (MA62-60 and MA62-61*)*

MA62-61 was originally listed for pathogens in the 1992 cycle when this AU was part of AU MA62-17. Most recent sampling of *E. coli* in this segment (geomean of samples = 17 cfu/100 ml) meet applicable water quality standards (not more than126 cfu/100 ml). Appropriate to delist.

MA62-60 was originally listed for pathogens in the 1992 cycle when this AU was part of AU MA62-17. Most recent sampling of *E. coli* in this segment (geomean of samples = 31 cfu/100 ml) meet applicable water quality standards (not more than 126 cfu/100 ml). Appropriate to delist.

*Shawsheen watershed: Elm Brook MA83-23**

For 2016, MA83-05 was deleted and split into MA83-23 and MA83-24; no Watershed Planning Program (WPP) stations on this portion of Elm Brook (formerly MA83-05); historic Fecal Coliform listing only applies to downstream segment MA83-24 (WPP station W0099, EB02; Merrimack River Watershed Council (MRWC) stations EB 3.3, 3.4, and 4.0) therefore it is appropriate to delist fecal coliform from MA83-23.

Segments delisted for fecal coliform impairments due to TMDL development:

Basin Name	Water Body	Segment ID	Explanation
Cape Cod	Great Pond	MA96-54	covered under existing TMDL [CN 252.0, 8/28/2009]
Cape Cod	Popponesset Creek	MA96-39	covered under existing TMDL [CN 252.0, 8/28/2009]
South Coastal	Bluefish River	MA94-30	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Cohasset Cove	MA94-32	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Cohasset Harbor	MA94-01	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Drinkwater River	MA94-21	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Duxbury Bay	MA94-15	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Ellisville Harbor	MA94-34	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	French Stream	MA94-03	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Green Harbor	MA94-11	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Herring River	MA94-07	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Jones River	MA94-14	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Musquashcut Pond	MA94-33	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	North River	MA94-05	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	North River	MA94-06	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Plymouth Harbor	MA94-16	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Scituate Harbor	MA94-02	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	Second Herring Brook	MA94-31	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	South River	MA94-09	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	The Gulf	MA94-19	covered under existing TMDL [CN 255.0, 9/25/2014]

EPA approves the state's 2016 Section 303(d) list without these waterbody segment-pollutant combinations because the delistings are consistent with EPA regulations and EPA guidance.

Escherichia coli (E. coli)

There are 56 segments being delisted for *E. coli* impairments; 51 of those segments are being delisted due to TMDL development, five are due to applicable water quality standards being attained. This is evidenced by the most recent water samples meeting water quality standards.

Escherichia coli impairment delistings: most recent *E. coli* data sample geomean(s) must meet standards (not to exceed 126 cfu/100 ml)

Basin Name	Water Body	Segment ID	*E. coli* sample geomean(s)	Explanation
Charles	Stop River	MA72-10**	88, 100	Applicable WQS attained; reason for recovery unspecified.
Chicopee	Forget-Me-Not Brook	MA36-28	57	Applicable WQS attained; reason for recovery unspecified.
Merrimack	Johnson Creek	MA84A-15	56	Applicable WQS attained; reason for recovery unspecified.
Nashua	Squannacook River	MA81-18	36, 57, 104, 6, 55, 87	Applicable WQS attained; reason for recovery unspecified.
Quinebaug	Hatchet Brook	MA41-14	85	Applicable WQS attained; reason for recovery unspecified.

**The Charles River Watershed Association submitted *E. coli* data from 2009-2016 that DEP determined is useable for assessment and listing purposes. 2009-2015 data meets standards, 2016 data shows an exceedance. The single uncharacteristically high *E. coli* sample collected on June 21, 2016 (2,990 MPN/100ml) that was responsible for the elevated geometric mean for 2016 (178 mpn/100), which was collected during the extreme drought and was also atypical of all other dry weather sampling results is not considered sufficient evidence of impairment.

Segments delisted for *Escherichia coli* due to TMDL development:

Basin Name	Water Body	Segment ID	Explanation
Narragansett Bay (Shore)	Fullers Brook	MA53-12	covered under existing TMDL [CN 182.0, 9/22/2004]

Narragansett Bay (Shore)	Oak Swamp Brook	MA53-15	covered under existing TMDL [CN 182.0, 9/22/2004]
Narragansett Bay (Shore)	Torrey Creek	MA53-14	covered under existing TMDL [CN 182.0, 9/22/2004]
Boston Harbor: Neponset	Beaver Meadow Brook	MA73-20	covered under existing TMDL [CN 121.0, 6/21/2002]
Shawsheen	Content Brook	MA83-09	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Long Meadow Brook	MA83-11	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Rogers Brook	MA83-04	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Sandy Brook	MA83-13	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Shawsheen River	MA83-01	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Shawsheen River	MA83-08	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Shawsheen River	MA83-17	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Shawsheen River	MA83-18	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Shawsheen River	MA83-19	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Strong Water Brook	MA83-07	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Unnamed Tributary	MA83-15	covered under existing TMDL [CN 122.0, 9/12/2002]
Shawsheen	Unnamed Tributary	MA83-21	covered under existing TMDL [CN 122.0, 9/12/2002]

North Coastal	Beaverdam Brook	MA93-30	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Bennetts Pond Brook	MA93-48	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Causeway Brook	MA93-47	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Crane Brook	MA93-02	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Frost Fish Brook	MA93-36	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Goldthwait Brook	MA93-05	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Hawkes Brook	MA93-32	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Hawkes Brook	MA93-33	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Mill River	MA93-31	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Proctor Brook	MA93-39	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Saugus River	MA93-34	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Saugus River	MA93-35	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Shute Brook	MA93-50	covered under existing TMDL [CN 155.0, 10/25/2012]
Charles	Bogastow Brook	MA72-16	covered under existing TMDL [CN 156.0, 5/22/2007]
Narragansett Bay (Shore)	Clear Run Brook	MA53-13	covered under existing TMDL [CN 182.0, 9/22/2004]

Narragansett Bay (Shore)	Rocky Run	MA53-16	covered under existing TMDL [CN 182.0, 9/22/2004]
Buzzards Bay	Acushnet River	MA95-31	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Acushnet River	MA95-32	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Buttonwood Brook	MA95-13	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Snell Creek	MA95-44	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Snell Creek	MA95-45	covered under existing TMDL [CN 251.1, 5/15/2009]
Taunton	Beaver Brook	MA62-09	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Matfield River	MA62-32	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Meadow Brook	MA62-38	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Salisbury Brook	MA62-08	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Salisbury Plain River	MA62-05	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Salisbury Plain River	MA62-06	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Trout Brook	MA62-07	covered under existing TMDL [CN 256.0, 6/16/2011]
Mount Hope Bay (Shore)	Kickamuit River	MA61-08	covered under existing TMDL [CN 285.0, 9/29/2006]
Narragansett Bay (Shore)	Runnins River	MA53-01	covered under existing TMDL [CN 351.0, 7/21/2010]

Narragansett Bay (Shore)	Palmer River	MA53-22	covered under existing TMDL [CN 182.0, 9/22/2004]
Shawsheen	Elm Brook	MA83-24	covered under existing TMDL [CN 122.0, 9/12/2002]
South Coastal	Drinkwater River	MA94-21	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	French Stream	MA94-03	covered under existing TMDL [CN 255.0, 9/25/2014]
Charles	Charles River	MA72-38	covered under existing TMDL [CN 156.0, 5/22/2007]

EPA approves the state's 2016 Section 303(d) list without these waterbody segment-pollutant combinations because the delistings are consistent with EPA regulations and EPA guidance.

Enterococcus

There are 29 segments being delisted for *Enterococcus*; 28 of those are due to TMDL development, one due to restoration activities.

Hoosic watershed: Mauserts Pond (MA11009) Delisted for *Enterococcus* due to restoration activities resulting in relevant water quality standards being attained. This is evidenced by the beach at this location rarely being posted for water quality advisories by MA DPH for more than 10% of the swimming season. The 2013 season (most recent data for this site submitted by MA DEP) was posted for water quality advisories 0% of the time.

Segments delisted for *Enterococcus* due to TMDL development:

Basin Name	Water Body	Segment ID	Explanation
North Coastal	Gloucester Harbor	MA93-18	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Lynn Harbor	MA93-52	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Manchester Harbor	MA93-19	covered under existing TMDL [CN 155.0, 10/25/2012]

North Coastal	Nahant Bay	MA93-24	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Porter River	MA93-04	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Salem Harbor	MA93-54	covered under existing TMDL [CN 155.0, 10/25/2012]
North Coastal	Saugus River	MA93-44	covered under existing TMDL [CN 155.0, 10/25/2012]
Buzzards Bay	Acushnet River	MA95-31	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Acushnet River	MA95-32	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Acushnet River	MA95-33	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Bread and Cheese Brook	MA95-58	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Buttonwood Brook	MA95-13	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Clarks Cove	MA95-38	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Crooked River	MA95-51	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	East Branch Westport River	MA95-40	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	New Bedford Inner Harbor	MA95-42	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Outer New Bedford Harbor	MA95-63	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Snell Creek	MA95-44	covered under existing TMDL [CN 251.1, 5/15/2009]

Buzzards Bay	Snell Creek	MA95-45	covered under existing TMDL [CN 251.1, 5/15/2009]
Buzzards Bay	Weweantic River	MA95-05	covered under existing TMDL [CN 251.1, 5/15/2009]
Cape Cod	Great Pond	MA96-54	covered under existing TMDL [CN 252.0, 8/28/2009], added to this segment for 2016.
Taunton	Taunton River	MA62-02	covered under existing TMDL [CN 256.0, 6/16/2011]
Taunton	Taunton River	MA62-04	covered under existing TMDL [CN 256.0, 6/16/2011]
Mount Hope Bay (Shore)	Mount Hope Bay	MA61-06	covered under existing TMDL [CN 351.0, 7/21/2010]
Mount Hope Bay (Shore)	Mount Hope Bay	MA61-07	covered under existing TMDL [CN 351.0, 7/21/2010]
South Coastal	Herring River	MA94-07	covered under existing TMDL [CN 255.0, 9/25/2014]
South Coastal	South River	MA94-09	covered under existing TMDL [CN 255.0, 9/25/2014]

EPA approves the state's 2016 Section 303(d) list without these waterbody segment-pollutant combinations because the delistings are consistent with EPA regulations and EPA guidance.

Aquatic Macrophyte Section

As discussed in Massachusetts's 2016 Consolidated Assessment and Listing Methodology (CALM), waterbody segments that support a surface coverage in excess of 25% by floating, non-rooted vegetation in more than one survey between April 1 and October 31 of the same year are not considered to support the designated uses and are thus considered impaired. As a result of the assessments undertaken for the review of the 2016 listing cycle, there were 3 outcomes for segments where listing status was changed:

1) the segment is delisted from Category 5 for aquatic plant macrophytes as a pollutant and relisted as impaired by a non-pollutant (Category 4c);
2) the segment is delisted due to historical errors in the original listing or reapplication of the current assessment methodology on the available data; or

3) the segments experiencing dense/very dense plant coverage (>25% of the lake area) by filamentous algae, algal blooms, or aquatic macrophyte species that utilize nutrients directly from the water column (e.g., non-rooted floating species including *Lemna, Wolfia, Spirodella, Ceratophyllum, Utricularia*) were reassessed as impaired using the code Nutrient/Eutrophication Biological Indicators, impaired by a pollutant. These segments have been noted in the tables below by a carrot (^).

In order to aid in the evaluation of segments for impairments caused by aquatic plant macrophytes, MassDEP developed and utilized a decision-tree review process that considered multiple sources of information, including satellite imagery, herbicide application records, historical information on maximum lake depth, water quality monitoring data, survey data, TMDL reports, and 319 Grant activities. This step-wise process allowed segments and the applicable data to be evaluated from multiple perspectives to consider if impairments were still warranted.

A review of data and information collected for the following 18 segments was completed for the 2016 listing cycle. These segments were evaluated according to the new assessment methods described in MassDEP's 2016 CALM and, utilizing the afore-mentioned decision tree, were determined to no longer constitute an impairment for aquatic plant macrophytes according to the threshold of 25% surface coverage by floating, non-rooted aquatic plant macrophytes. These segments will be removed from Category 5 for aquatic plant macrophytes, with three exceptions: Indian Lake (MA51073), Lowes Pond (MA42034), and McKinstry Pond (MA42035), which will be relisted in Category 5 as impaired for Nutrient/Eutrophication Biological Indicators due to factors other than aquatic plant macrophytes. The three segments are covered under existing TMDLs.

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Indian Lake	MA51073^	Applicable WQS attained; according to new assessment method.
Blackstone	Mill River	MA51-36	Applicable WQS attained; according to new assessment method.
Blackstone	Newton Pond	MA51110	Applicable WQS attained; according to new assessment method.
Blackstone	Unnamed Tributary	MA51-08	Applicable WQS attained; according to new assessment method.

Blackstone	Unnamed Tributary	MA51-20	Applicable WQS attained; according to new assessment method.
Blackstone	West River	MA51-12	Applicable WQS attained; according to new assessment method.
Chicopee	Wickaboag Pond	MA36166	Applicable WQS attained; according to new assessment method.
French	French River	MA42-03	Applicable WQS attained; according to new assessment method.
French	Granite Reservoir	MA42019	Applicable WQS attained; according to new assessment method.
French	Lowes Pond	MA42034^	Applicable WQS attained; according to new assessment method.
French	Mckinstry Pond	MA42035^	Applicable WQS attained; according to new assessment method.
French	New Pond	MA42037	Applicable WQS attained; according to new assessment method.
Hudson: Hoosic	Cheshire Reservoir, Middle Basin	MA11018	Applicable WQS attained; according to new assessment method.
Hudson: Hoosic	Cheshire Reservoir, North Basin	MA11002	Applicable WQS attained; according to new assessment method.
Merrimack	Forest Lake	MA84014	Applicable WQS attained; according to new assessment method.
Merrimack	Long Pond	MA84032	Applicable WQS attained; according

			to new assessment method.
Millers	Ramsdall Pond	MA35062	Applicable WQS attained; according to new assessment method.

Shawsheen	Vine Brook	MA83-06	Historic impairment from former segment (MA83003) transferred to this segment. Applicable WQS attained; according to new assessment method.

^ Segments have been re-listed with an impairment for Nutrient/Eutrophication Biological Indicators

As MassDEP described in Appendix C Section 4.0 of the 2016 CALM, use of estimated coverages of rooted aquatic plants is not used as a nutrient enrichment indicator. The relationship between nutrients and plant abundance and biomass is influenced by many factors, some of which are natural (e.g., lake bathymetry, light availability). A primary influence on the growth rate of rooted aquatic plants is the nutrient availability in bottom sediments whereas nutrients in the water column are considered a less important, secondary source of nutrients for their growth. As a result, rooted aquatic macrophytes do not respond readily to fluctuation of phosphorus concentrations in the water column, and impairments due to densities of rooted aquatic plants should not be attributed to a pollutant but rather a non-pollutant.

In assessing the following segments, MassDEP has shown through its stepwise review that the dominant vegetation reflected in surveys is rooted, often in segments that have been historically shallow and readily supportive of rooted aquatic plant macrophytes, and thus not caused by a pollutant or likely to be managed through a Total Maximum Daily Load for nutrients. In the case of rooted vegetation, because they are not primarily supported through nutrients in the water column, in-lake management techniques would be needed to control their presence and extent, such as mechanical harvesting, winter drawdowns, and herbicides. The following 25 segments will be delisted from Category 5 to Category 4C for aquatic plant macrophytes. Thirteen of the segments, noted in the table below with a carrot (^), will be relisted in Category 5 for Nutrient/Eutrophication Biological Indicators due to factors other than aquatic plant macrophytes.

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Brierly Pond	MA51010	Not caused by a pollutant,

			impairment still exists.
Blackstone	Eddy Pond	MA51043^	Not caused by a pollutant, impairment still exists.
Blackstone	Flint Pond	MA51050^	Not caused by a pollutant, impairment still exists.
Blackstone	Flint Pond	MA51188^	Not caused by a pollutant, impairment still exists.
Blackstone	Howe Reservoirs	MA51071^	Not caused by a pollutant, impairment still exists.
Blackstone	Shirley Street Pond	MA51196^	Not caused by a pollutant, impairment still exists.
Blackstone	Southwick Pond	MA51157^	Not caused by a pollutant, impairment still exists.
French	Hudson Pond	MA42029^	Not caused by a pollutant, impairment still exists.
French	Jones Pond	MA42030^	Not caused by a pollutant, impairment still exists.
French	Larner Pond	MA42068	Not caused by a pollutant, impairment still exists.
French	Mosquito Pond	MA42060	Not caused by a pollutant, impairment still exists.
French	Shepherd Pond	MA42051	Not caused by a pollutant, impairment still exists.

French	Wallis Pond	MA42062^	Not caused by a pollutant, impairment still exists.
Millers	Bourn-Hadley Pond	MA35008	Not caused by a pollutant, impairment still exists.
Millers	Brazell Pond	MA35010	Not caused by a pollutant, impairment still exists.
Millers	Depot Pond	MA35018	Not caused by a pollutant, impairment still exists.
Millers	Ellis Pond	MA35023	Not caused by a pollutant, impairment still exists.
Millers	Greenwood Pond	MA35026	Not caused by a pollutant, impairment still exists.
Millers	Parker Pond	MA35056^	Not caused by a pollutant, impairment still exists.
Millers	Reservoir No. 1	MA35063^	Not caused by a pollutant, impairment still exists.
Millers	South Athol Pond	MA35078	Not caused by a pollutant, impairment still exists.
Millers	Stoddard Pond	MA35083	Not caused by a pollutant, impairment still exists.
Millers	Whites Mill Pond	MA35099^	Not caused by a pollutant, impairment still exists.
Millers	Whitney Pond	MA35101	Not caused by a pollutant,

			impairment still exists.
Ten Mile	Ten Mile River	MA52-03^	Not caused by a pollutant, impairment still exists.

^ Segments have been re-listed with an impairment for Nutrient/Eutrophication Biological Indicators

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Singletary Brook	MA51-31	Original basis for listing was incorrect.
French	Cedar Meadow Pond	MA42009	Original basis for listing was incorrect.
Millers	Lake Monomonac	MA35047	Original basis for listing was incorrect.
North Coastal	Saugus River	MA93-34	Original basis for listing was incorrect.

Singletary Brook (MA51-31): Aquatic plant macrophytes were added to this segment in the 2012 listing cycle due to a clerical error. Singletary Brook flows into and out of Brierly Pond (MA51010), which is impaired for aquatic plant macrophytes. However, Singletary Brook is not included in this segment and the listing will be removed as it was made in error.

Cedar Meadow Pond (MA42009): During the survey used to list this segment, the area described with dense macrophyte cover is the inlet channel to Cedar Meadow Pond. The channel is in the assessment unit area for the pond, which does not show an impairment for aquatic plant macrophytes. As such, this impairment will be removed.

Lake Monomonac (MA35047): This listing was originally made in 1998 due to the presence of M. heterophyllum, a non-native aquatic plant. Further evaluation has determined that, other than the presence of the invasive species, vegetation is naturally occurring in the waterbody and thus the impairment will be removed.

Saugus River (MA93-34): Observations made that determined this segment's listing in 1997 were indicative of enriched conditions at a station in an adjacent segment. This survey also included no estimation of coverage or density by aquatic plant macrophytes. Because the information used to determine the impairment was for an adjacent waterbody, the original basis for this listing is incorrect and will be removed.

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Dark Brook	MA51-16	Applicable WQS attained; reason for recovery unspecified.
Blackstone	Kettle Brook	MA51-01	Applicable WQS attained; reason for recovery unspecified.
Charles	Rock Meadow Brook	MA72-21	Applicable WQS attained; reason for recovery unspecified.
French	Pierpoint Meadow Pond	MA42043	Applicable WQS attained; reason for recovery unspecified.

Dark Brook (MA51-16): Data for this segment was collected during the summer of 2008 at one station downstream from the Auburn Pond impoundment, noting aquatic plant macrophyte impairment with 75% of the 12-acre pond covered by floating vegetation. Due to the retention time of this waterbody, the original segment was incorporated into Dark Brook (MA51-16), a 2.5-mile-long segment. Because no other observations have been made and vegetative cover represents only 5.6% of the new segment, using the 25% coverage standard applied in the 2016 CALM, the segment's impairment should be removed from Category 5.

Kettle Brook (MA51-01): Stoneville Pond was incorporated into Kettle Brook during the 2010 listing cycle, where the aquatic plant macrophyte listing was retained. New data was collected in 2011 at 3 stations in MA51-01 where 0.7 river miles of the 7-mile segment were found to have macrophyte presence, or 10% of the segment. Therefore, the Kettle Brook impairment should be removed from Category 5.

Rock Meadow Brook (MA72-21): Originally listed during the 2008 reporting cycle, the impairment was found in the lower 1.2 miles of the reach. In more recent surveys, no objectionable growths or conditions were found, however those surveys took place in the upper section of the reach. The aquatic plants macrophyte impairment for this segment will be removed, as macrophyte coverage falls below the CALM target of 25%. The Segment will then be re-listed as impaired for Nutrient/Eutrophication Biological Indicators as a pollutant.

Pierpoint Meadow Pond (MA42043): The survey first used to list this segment calculated macrophyte coverage at 17% of the waterbody, falling below the 25% threshold identified in the 2016 CALM. Further surveys found no objectionable odors, scums, deposits or other conditions, and noted that herbicide applications took place between

2002 and 2012. Due to the coverage and treatment, this impairment should be removed from Category 5.

Nutrient Section

Hoosic watershed: Hoosic River (MA11-05) Benthic Macroinvertebrates Bioassessments

The Hoosic River benthic community sampling stations above and below the Hoosac Water Quality District's water pollution control facility (WPCF) were comparable. The benthic community in the Hoosic River at both stations HR03 and HR02 was characterized by filter-feeding caddisflies and high HBI scores. When compared to the regional reference station on Pecks Brook, both sites were only "Slightly Impaired." When the downstream station was compared to the upstream station it should be noted that it was considered "Non-impacted/Slightly impacted." The high numbers of filter feeding caddisflies at the downstream station indicated a community structured in response to loadings of suspended organic matter. While these samples meet the CALM threshold of Non-Impacted/Slightly-Impacted for non-impairment status, the composition of the benthic community indicates pollution stress. The decision to delist for Benthic Macroinvertebrate Bioassessments is consistent with MA DEP's CALM; however, this segment will remain listed for Nutrient/Eutrophication Biological Indicators due to continued nutrient stress and dissolved oxygen diel shifts and supersaturation.

Westfield watershed: Westfield River (MA32-05) Benthic Macroinvertebrates Bioassessments and Turbidity

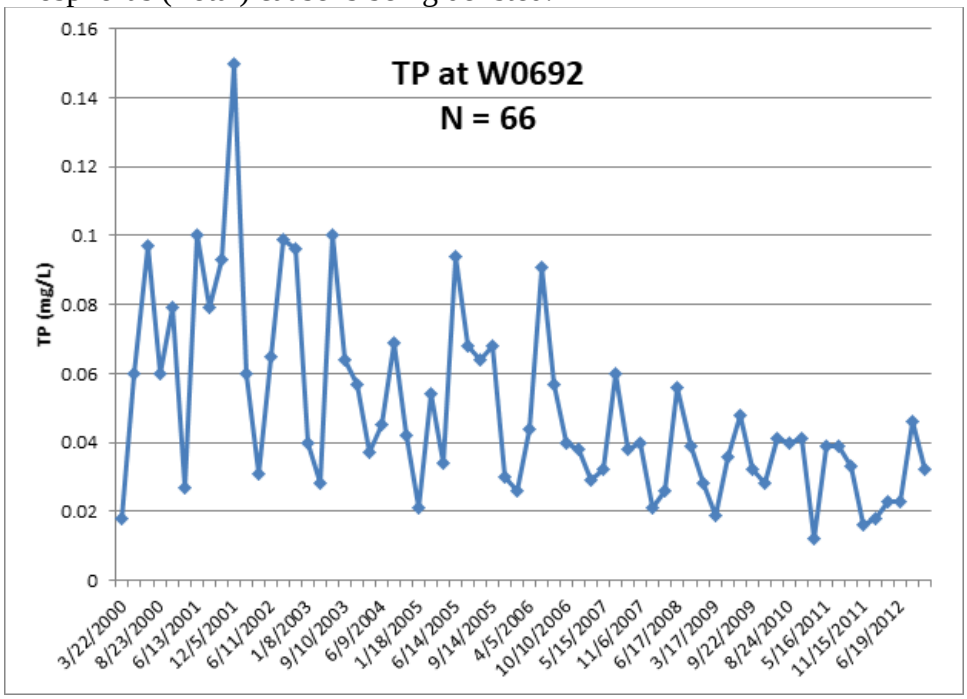
While the two reference sites were not the same in the 2001 and 2006 benthic macroinvertebrate surveys, the sampling station downstream from the Westfield WWTP showed improvements in almost all metrics in the 2006 survey compared to 2001. Increase in EPT taxa from 5 to 12, increase in richness from 23 to 27, a decrease in HBI from 5.46 to 4.55 as well as an increase in EPT/chir ratio from 0.65 to 2.94 all contributed to the percent comparability to the reference station increasing from 60 to 76% between 2001 and 2006. These benthic community structure and function changes are considered to be a strong indication of water quality improvements resulting from the upgrades at the Westfield WWTP.

The decision was made to delist turbidity as a cause for impairment of the Aesthetics Use based on the near lack of visual observations of objectionable levels of turbidity at the three sites sampled along this AU during the 2006 surveys including one site downstream from the upgraded Westfield WWTP discharge where the turbidity problems had originally been identified. Visual turbidity levels were marked as either clear or slightly turbid in 31 of 32 records made during the 2006 survey. The highest measured turbidity sample result was 1.4NTU at the three sites during the 2006 surveys. This maximum value is considered very low and represents acceptable levels of ambient turbidity. It should also be noted that there were no observations of dense or very dense filamentous algae noted at any of these sites either.

Millers watershed: Millers River (MA35-01, MA35-03, and MA35-04) Phosphorous, Total

MA35-01: Total phosphorus concentrations in 2005 from one station W1311 averaged 0.029 and max of 0.045 mg/L whereas back in 1985 concentrations at Station MI15 in this segment max was 0.08 mg/L. Based on the more recent data and lack of any aesthetically objectionable conditions, total phosphorus is being delisted as a cause of impairment for the Aesthetics Use.

MA35-03: Total Phosphorus concentrations in this segment of the Millers River have declined since 2000 and are currently <= 0.04 mg/L and since there were generally no objectionable growths/conditions the Aesthetics Use is meeting CALM guidance. The Phosphorus (Total) cause is being delisted.



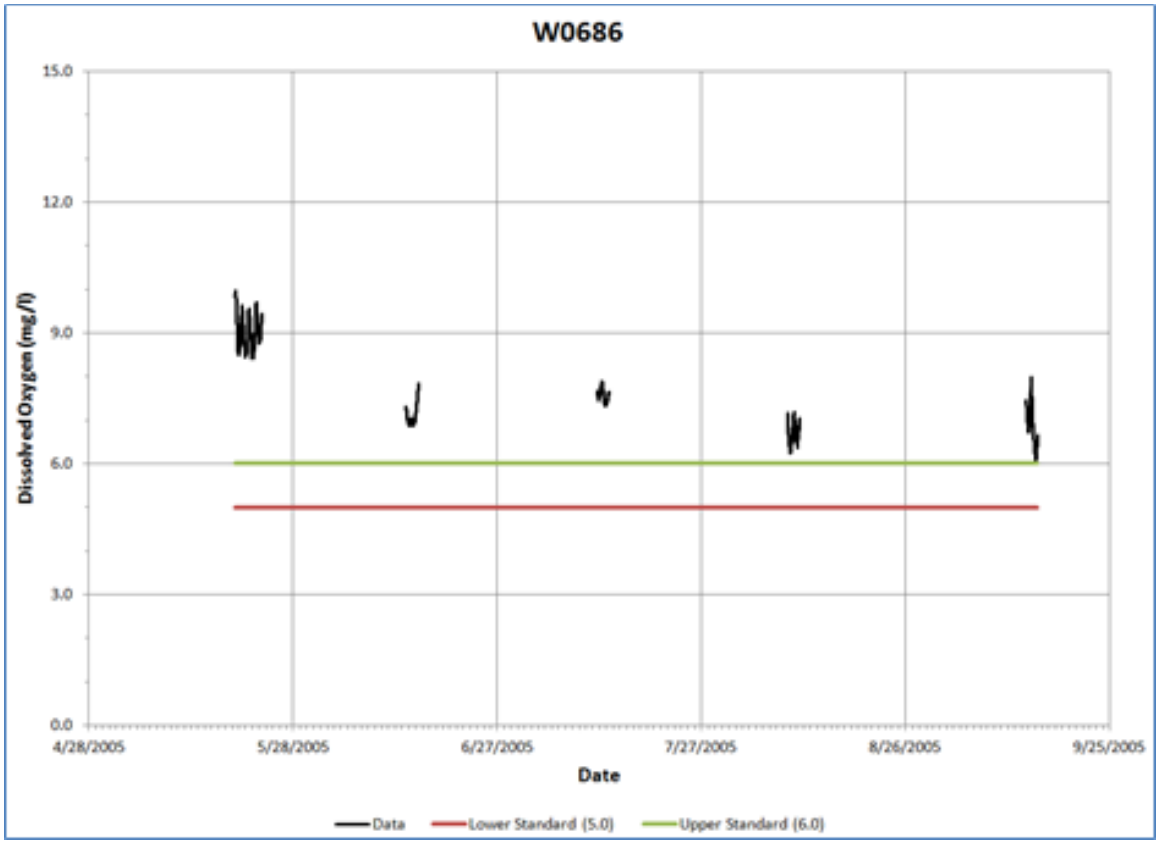
MA35-04: Total Phosphorus concentrations in this segment of the Millers River at the sampling station W0692 have declined since 2000 and are currently <= 0.04 mg/L. Since there were generally no objectionable growths/conditions the Aesthetics Use is meeting CALM guidance. The original Total Phosphorus listing decision had been based primarily on data collected in 1987 when concentrations ranged from 0.10 to 0.23 mg/L at station MI10 (Route 68 Bridge in South Royalston). Concentrations of Total Phosphorus in the river in the next segment downstream (W0690) have also decreased and are currently <=0.03 mg/L. The Phosphorus (Total) cause is being delisted.

Otter River watershed: Otter River (MA35-07): Benthic Macroinvertebrates Bioassessments, Nutrient/Eutrophication Biological Indicators, and Turbidity

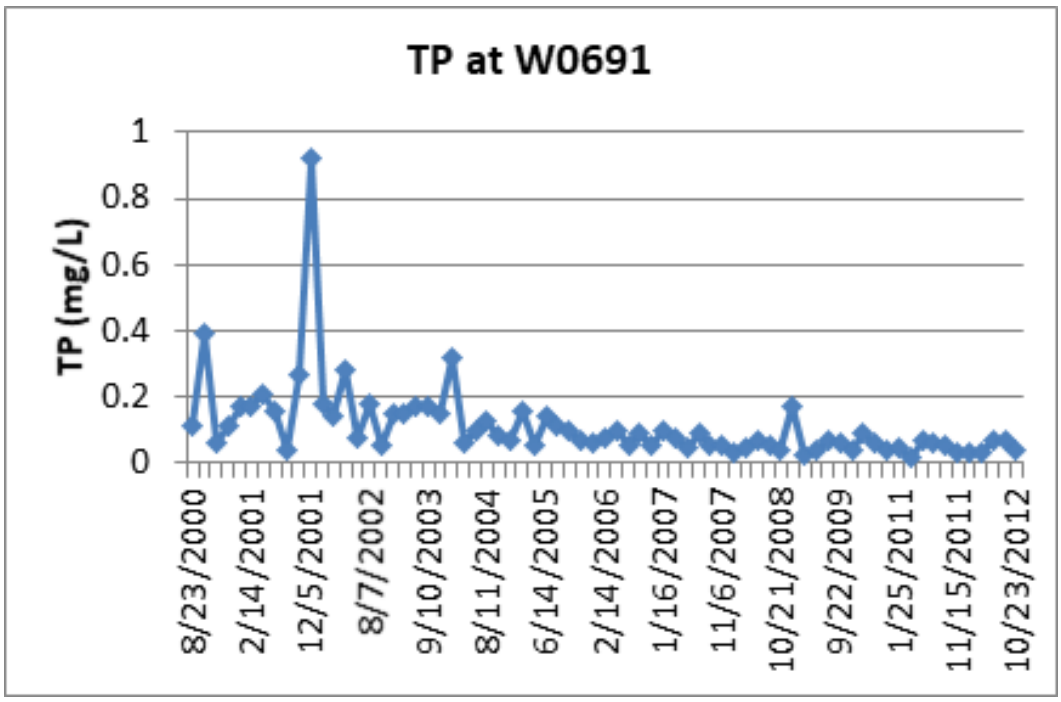
The Aquatic Life Use is assessed as not supporting for this segment of the Otter River based on the PCB in whole fish tissue. The original source of sediment contamination is believed to be located near the former Baldwinville Products Mill (property currently owned by American Tissue Mills, Inc.) and the Templeton WWTP and probably is related to historic discharge from the former Baldwinville Products Mill to the Otter River. However, the benthic macroinvertebrate sampling data collected 2009 and the water quality data are all indicative of good conditions.

All five Otter River stations received RBPIII scores corresponding to slight or no impact in 2009, after all had received moderate impact scores in 2007. While all metrics showed improvement from 2007 to 2009, increases in total and EPT richness were largely responsible for the large difference in total scores between years. These RBPIII scores meet the CALM threshold for "non-impaired," therefore the Benthic Macroinvertebrates Bioassessments impairment is being removed.

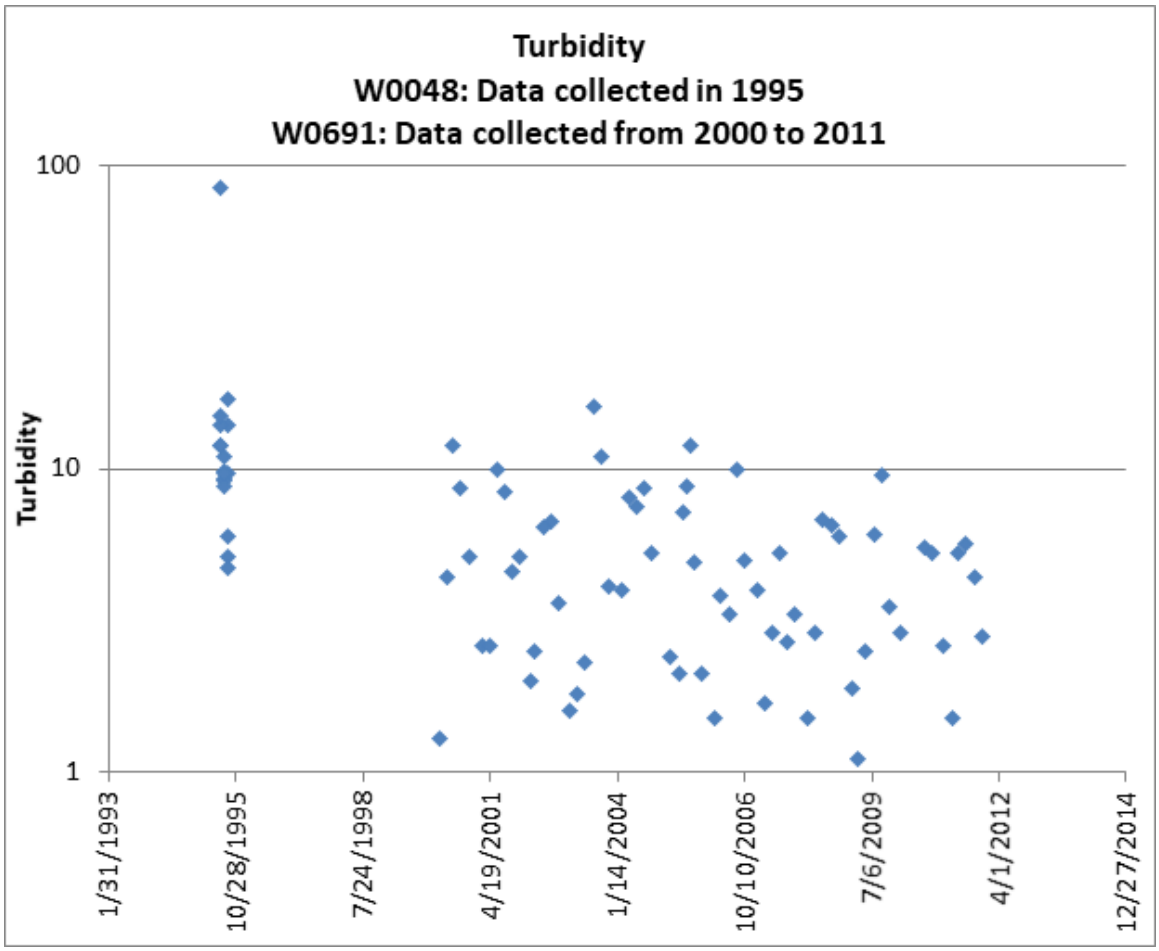
All attended probe measurements at site W0686 meet pH, DO and temperature criteria for a WWF. On five short-term DO\T probe deployments in 2005, there were no violations of the WWF DO and temperature criteria. There was maximum DO diel shift of 1.7 at site W0686.



MassDEP conducted water quality sampling at one site (W0691) from 2005 to 2011. See below a graph of Total Phosphorus (TP) Otter River sample location W0691 between 2000 and 2012.



There were no objectionable growths or conditions or other indicators of nutrient enrichment recorded during field observations, and the total phosphorus concentrations in the river were generally all low (< 0.1 mg/L in the 36 samples except one (February 2009) collected between February 2006 and October 2012 with an overall average of 0.06 mg/L). The Nutrient/Eutrophication Biological Indicators impairment is being delisted consistent with MA DEP's weight-of-evidence approach to nutrient assessments.



There have been no turbidity readings above 10 NTU since the 2006 sampling season, with a general improvement in turbidity over the 2005-2011 data collection period for this site. While MA DEP does not define a numeric water quality criterion for turbidity, 10 NTU is generally accepted as “good," and is used by other states as an assessment threshold. Turbidity impairment is being delisted.

Otter River watershed: Otter River (MA35-08): Benthic Macroinvertebrates Bioassessments, Nutrient/Eutrophication Biological Indicators, and Turbidity

The Aquatic Life Use is assessed as not supporting for this segment of the Otter River based on the PCB in whole fish tissue. The original source of sediment contamination is believed to be located near the former Baldwinville Products Mill (property currently owned by American Tissue Mills, Inc.) and the Templeton WWTP and probably is related to historic discharge from the former Baldwinville Products Mill to the Otter River. However, the benthic macroinvertebrate sampling data collected 2009 and the water quality data are all indicative of good conditions.

The macroinvertebrate community was sampled at four sites in 2007 and 2009. In 2009, the community was found to be slightly impacted at three of the sites and not impacted at the fourth, an improvement from the 2007 survey which found the benthic macroinvertebrate community to be moderately impacted. These RBPIII results meet the

MA DEP threshold for non-impairment, and benthic macroinvertebrates bioassessments cause is being delisted.

Nutrient/Eutrophication Biological Indicators impairment is being delisted. Supporting evidence includes in-stream DO concentrations (maximum diel shift of only 1.7 mg/L) and the lack of any other biological indicator of nutrient enrichment and the decline in the average TP concentrations (W0047 was 0.328 mg/L in 1995 and TP was 0.142 mg/L in 2005 at a nearby station (W0686)). All attended probe measurements at site W0686 meet pH, DO and temperature criteria for a warm water fishery (WWF). On five short-term DO\T probe deployments in 2005, there were no violations of the WWF DO and temperature criteria. There were no objectionable conditions noted during the most recent survey year (2011).

Turbidity is being delisted. From the upstream segment of the Otter River (MA35-07) the following information was developed: “Both measured turbidity and suspended solids data showed a general decrease since 1995. There was one incident of highly turbid conditions (visual on October 19, 2010) out of 33 sampling events conducted between January 2005 and October 2010. Since most recent data collected (since 2005) in this segment of the Otter River show improvements in visual and measured turbidity and suspended solids it is recommended that the turbidity cause be removed.” Given these improvements upstream and the general lack of objectionable turbidity (i.e. declined turbidity from 1995 to 2000/2001/2005) and odors in this segment of the river in 2005 and 2011, the Aesthetics Use is now assessed as supporting. The results of the most recent bacteria sampling in 2005 and 2007 also meet standards.

French watershed: French River (MA42-03) Total Phosphorous and Turbidity

The total phosphorus (TP) impairment for this segment of the French River as of the 2014 reporting cycle was originally associated with Thayer Pond which was incorporated into this French River segment (occurred as part of 2010 reporting cycle). The data for the impairments in Thayer Pond represented survey conditions in 1987. Since then major upgrades at two NPDES facilities (Leicester Water Supply District and the Oxford-Rochdale WWTP) which discharge upstream from this segment of the French River were both upgraded. Currently both plants have TP limits of 0.2 mg/L between April and Oct and <1.0 mg/L between November and March. TP concentrations in the Leicester WSD discharge were between 4 and 16 mg/L in 1987 and concentrations in the Oxford-Rochdale WWTP discharge were between 5.5 and 7.2 mg/L in 1987. Both facilities have been upgraded to include phosphorus removal which has resulted in much lower TP concentrations in the French River. Further downstream in Station W0602 there has been a statistically significant decrease in total phosphorus concentrations in the river at W0602 after 2004 (before (< = 2004, N = 32) and after (> 2004, N = 43). The TP-Before is significantly higher than TP-After (Wilcoxon test, Chi-square = 17.412, P < 0.001). Average concentration after 2004 is 0.019 mg/L. Concentrations in the river at the time of the 1987 survey in the vicinity of this sampling site were 0.13 and 0.26 mg/L.

The Turbidity impairment for this segment of the French River as of the 2014 reporting cycle was originally associated with Thayers Pond which was incorporated into this French River segment (occurred as part of 2010 reporting cycle). The data for the impairments in Thayers Pond represented survey conditions in 1987. At that time the Leicester Water Supply District WWTP (upstream from this segment of the French River) was under construction for an expanded advanced wastewater treatment and the facility was experiencing many problems including turbidity. Since then major upgrades at two NPDES facilities (Leicester Water Supply District and the Oxford-Rochdale WWTP) which discharge upstream from this segment of the French River were both upgraded. No other turbidity problems have been reported in this segment of the French River - 1994, 1999, and 2004 surveys did not note any objectionable conditions.

Ten Mile watershed: Ten Mile River (MA52-02) Total Phosphorous, Excess Algal Growth, and Turbidity

This waterbody was originally listed as impaired for total phosphorus (TP) based on the 1990 Ten Mile River Basin Survey (three surveys on June 19, July 24, and September 18, 1990). Upon review, the two sampling stations (TM04 and TM06) associated with this segment were not found to have high TP concentrations in 1990 (maximum = 0.08 mg/L, N = 6). The average TP concentrations at site W0169 and W0170 during the 2007 surveys were also below 0.1 mg/L (N = 6 and N = 8, respectively). Furthermore, there were generally no reported observations of objectionable algae growths or conditions during the 2007 surveys and the TP concentrations were below the EPA recommended average of 0.1 mg/L. Therefore, total phosphorus is being delisted as a cause of impairment for this segment of the Ten Mile River since the original TP listing is considered to be an error.

During the 1997 survey, nuisance aquatic vegetation and some turbidity were observed. However, there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the surveys in 2007. The Aesthetic Use is attained, and the causes Excess Algal Growth and Turbidity are therefore being delisted.

Ten Mile watershed: Ten Mile River (MA52-03) Dissolved Oxygen Supersaturation

DO saturations in the impoundments along this reach of the Ten Mile River surveyed in the summer of 1984 were as high as 122%. Instream DO and % saturation in this segment of the Ten Mile River in the summer of 1997 was slightly below Class B standards during the early morning sampling runs at stations in this reach. During the most recent surveys conducted during the summer of 2007 the DO saturations were as high as 112% which doesn't violate the saturation guidance (125%) in the current CALM guidance (2016) and therefore DO saturation is being delisted as an impairment.

Narragansett Bay watershed: Palmer River (MA53-22) Nutrient/Eutrophication Biological Indicators

AUID MA53-04 was deleted and split into 2 segments in 2016 (MA53-22 and MA53005). The original listing of impairment was based on public comments made by the Palmer River Watershed Alliance (PRWA) that the Palmer River should be included on the 1996 303(d) list because of nutrient loadings, and low flow/habitat issues. The problems were described to be a result of withdrawals by the Bristol County Water Authority (RI) from Shad Factory Pond. Flow below the Shad Factory Dam and water levels in the pond were severely diminished. During the summer no flow over the dam resulted in excessive growth of weeds in the river below the dam. Since for the 2016 reporting cycle the assessment unit has been changed (and Shad Factory Pond is now its own AU--MA53005 which will remain listed as impaired), the Nutrient/Biological Indicators impairment is being removed from this segment of the Palmer River.

Boston Harbor Weymouth/Weir watershed: Mill River (74-04) Nutrient/Eutrophication Biological Indicators

This impairment was listed beginning in 1992 based on two survey observations from 1989 with notes of debris and weeds. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the surveys during recent sampling in 2009 at two sampling stations. Given the paucity of data for the original listing in comparison to more recent data and assessment methodology which indicates fully supporting conditions, this segment is being delisted.

Nashua watershed: Bare Hill Pond (MA81007) Nutrient/Eutrophication Biological Indicators

Bare Hill Pond was originally listed for noxious aquatic plants in the 1992 cycle which was mapped over to nutrient/eutrophication biological indicators in the 2010 cycle. In July 1998 a synoptic survey was conducted at Bare Hill Pond. At that time 20 acres (~6%) of the whole lake area was described as having dense/very dense aquatic plants (floating, emergent, submergent) primarily in the shallow/cove areas. There were no observations of any filamentous algae, problems with algal blooms, or turbidity. The 2016 CALM guidance recommends an impairment decision when >25% of the lake is densely covered. Since the original impairment represented only 6% of the lake area the nutrient/eutrophication biological indicators cause is being delisted. Google earth images between 1995 and 2015 do not show any problems either. Remediation efforts to date have included: Plant Suppression, Storm water BMPs, Education 319 Funded efforts totaling $779,950 ($1,420,658 including matching total). Mechanical weed harvesting and drawdowns have also been utilized to control lake weeds.

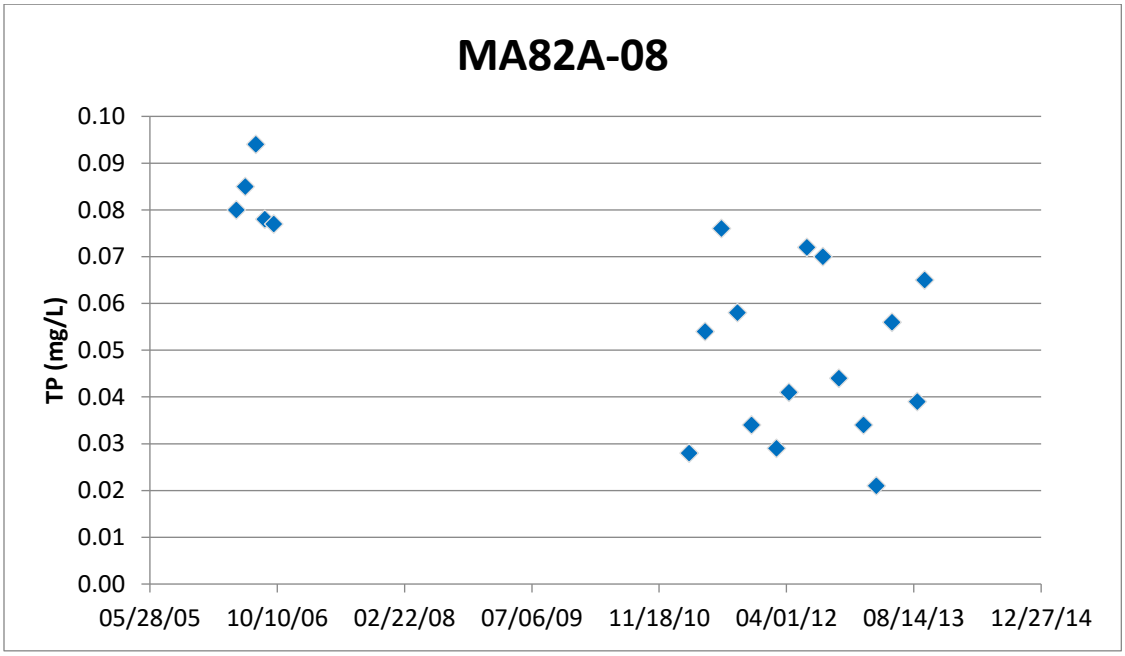
Concord watershed: Concord River (MA82A-07) Total Phosphorous

The original impairment decision was shown in the 1992 303(d) list: The TP was 0.16 and 0.22 mg/L in the 1990 Concord River Survey. In the 2006 Water Quality Survey, the average TP was 0.078 mg/L (N = 16 from Stations W1482, W1483, W1484, and W1485)

and it is below the EPA-recommended River/Stream TP criteria (0.1 mg/L). Therefore, Total Phosphorous is being delisted.

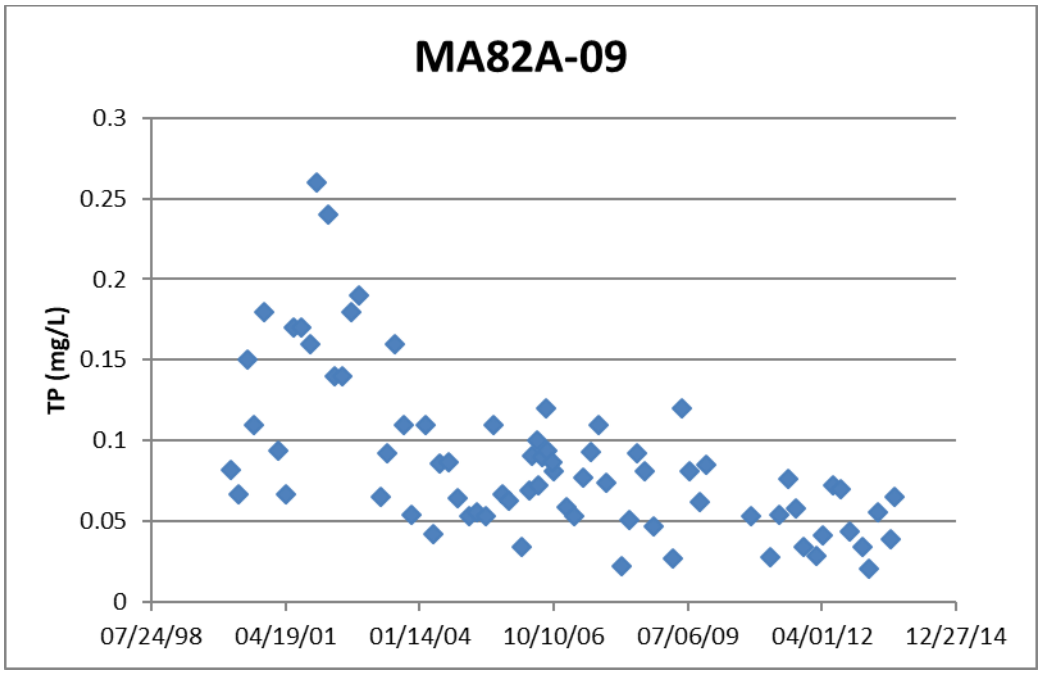
Concord watershed: Concord River (MA82A-08) Total Phosphorous

The original impairment decision was identified in the 1992 303(d) list: The TP was 0.25 mg/L or above in the 1990 Concord River Survey. In recent Water Quality Surveys, TP values were below 0.1 mg/L. Therefore, Total Phosphorous is being delisted.



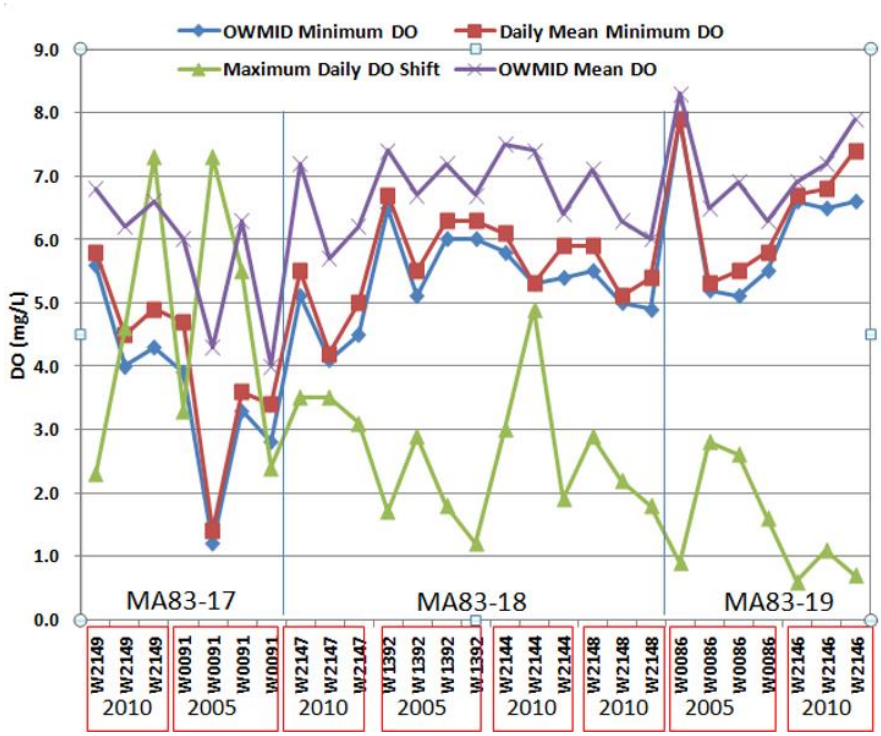
Concord watershed: Concord River (MA82A-09) Total Phosphorous

The original impairment decision was identified in the 1992 303(d) list: The TP was above 0.19 mg/L in the 1990 Concord River Survey. In recent Water Quality Surveys, TP values were below 0.1 mg/L. Therefore, Total Phosphorous is being delisted.



Shawsheen watershed: Shawsheen River (MA83-19) Dissolved Oxygen

The original listing of impairment for low DO was when this portion of the Shawsheen River was included as part of a much larger segment (former segment MA83-02 was a 17.4 mile reach from the confluence of Spring Brook, Bedford to Horn Bridge in Andover). The low DO in the river in segments MA83-17 and MA83-18 is still observed; however, low DO is not a problem in this segment of the Shawsheen River.



Ipswich watershed: Miles River (MA92-03) Benthic Macroinvertebrates Bioassessment

The RBPIII analysis at one station (B0439) in 2005 nearby the water quality sampling station (W0121) showed that the benthic community was considered slightly impacted (the total benthic score was 22 out of 40) when compared to the reference station (B0157). The habitat was comparable to the reference station. The total benthic score was 10 out of 40 in 2000 and was considered moderately impacted at that time. Therefore, benthic community was healthier in 2005 than 2000. Most recent sampling meets the CALM threshold for non-impairment; therefore the Benthic Macroinvertebrates Bioassessments is being delisted as an impairment cause for this segment.

Ipswich watershed: Wills Brook (MA92-10) Dissolved Oxygen

The original basis for the listing was incorrect due to a lack of adequate data and information to support the listing. MassDEP guidance states that more than one measurement is needed for an impairment decision. Since there was only one documented excursion below the dissolved oxygen standard, there is insufficient information to support the dissolved oxygen listing. This decision places the Wills Brook AU into Category 2 (attaining some uses, but not the aquatic life use which will now be considered unassessed).

Buzzards Bay watershed: White Island Pond, East Basin (MA95166) Chlorophyll-a, Dissolved Oxygen, Total Phosphorous, Excess Algal Growth and Secchi Disk Transparency

Implementation of the Total Phosphorus TMDL memorandum of agreement (MOA) with cooperating groups including the University of Massachusetts Cranberry Experiment Station (UMCES) , the cranberry growers, and the towns of Plymouth and Wareham with the assistance of a series of US EPA 319 Program grants (grants included focusing on reduced fertilizer rates, discharge diversions, and alum treatments to address excess phosphorus inputs) has resulted in many improvements to this water segment.

Chlorophyll-a concentrations in 2014 ranging from 2.2 to 8.6 mg/m^3 were much improved, from 2008 and 2012, which ranged from 15 to 117mg/m^3. Based on these data, restoration activities have been shown to be effective and chlorophyll a is being delisted as a cause of impairment.

Secchi depths were improved from 2008 to 2012 (0.7 to 1.9 m between 2008 and 2012 and 2.2 to 4.3 m in 2014). Based on these data, restoration activities have been shown to be effective and secchi disk depth is being delisted as a cause of impairment.

Notes of moderate to very dense green and blue green algae (both pin flocs, and clumps) were observed by DWM staff during surveys in the lake between 2007 and 2012. MA DPH issued an algal bloom posting in the lake for the majority of 2011. In 2013, after the first spring alum treatment, there was one observation of dense algae in August. In 2014, after the second spring alum treatment, algal observations were noted as being either

none or sparse. Based on these data, restoration activities have been shown to be effective and excess algal growth is being delisted as a cause of impairment.

Oxygen depletion at depth occurred in White Island Pond East Basin between 2007 and 2012 but did not occur in any of the deep hole profiles made in June, July, August or September 2014 (minimum DO was well above standards at 7.9 mg/L). Based on these data, restoration activities have been shown to be effective and dissolved oxygen is being delisted as a cause of impairment.

Subsequent to the alum treatments the average surface total phosphorus concentration in White Island Pond East Basin was reduced to ~13 µg/L between June and September 2014 (meeting the TMDL target of 19 µg/L). Based on these data, restoration activities have been shown to be effective and total phosphorus is being delisted as a cause of impairment.

Buzzards Bay watershed: White Island Pond, West Basin (MA95173) Excess Algal, Growth, Dissolved Oxygen and Total Phosphrous

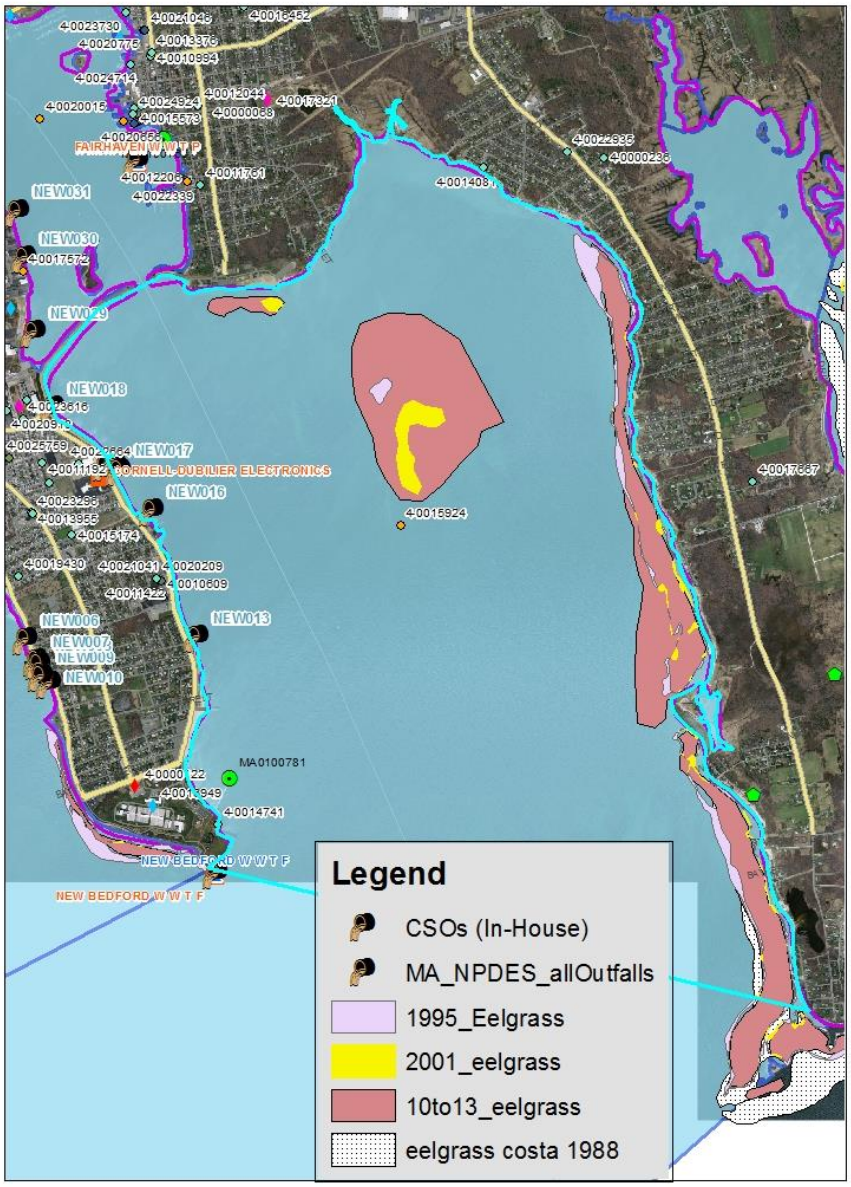
Restoration of water quality in White Island Pond (West Basin) through the implementation of the Total Phosphorus TMDL memorandum of agreement (MOA) with cooperating groups including the University of Massachusetts Cranberry Experiment Station (UMCES) , the cranberry growers, and the towns of Plymouth and Wareham with the assistance of a series of US EPA 319 Program grants (grants included focusing on reduced fertilizer rates, discharge diversions, and alum treatments to address excess phosphorus inputs) is evident since the alum treatments in March 2014.

Subsequent to the alum treatment the average surface total phosphorus concentration in the lake was reduced to ~15 µg/L in the summer of 2014 (meeting the TMDL target of 19 µg/L). Oxygen depletion at depth occurred between 2007 and 2012 but did not occur in any of the deep hole profiles made in June, July, August or September 2014 (minimum DO was well above standards at 8.0 mg/L). Notes of sparse, moderate, dense and very dense green and blue green algae (specs, pinpoint flocs, and small clumps) were observed by DWM staff during surveys in the lake between 2007 and 2013. MA DPH issued algal bloom postings in the pond for ~one and a half months in 2009 and a shorter period of time in 2013. Between June and September 2014, after implementation of the Total Phosphorus TMDL measures including the spring alum treatment in the pond, no algal bloom postings were reported and algal observations by DWM field staff were noted as being either none or sparse. Due to the success of these restoration activities, excess algal growth, dissolved oxygen, and total phosphorous are being delisted as causes of impairment for this segment.

Buzzards Bay watershed: Outer New Bedford Harbor (MA95-63) Estuarine Bioassessments

The Aquatic Life Use for Outer New Bedford Harbor is assessed as fully supporting based on the MassDEP eelgrass monitoring and EPA's long-term harbor monitoring

program data. According to the eelgrass mapping conducted during the 2010 to 2013 sampling period, a total of 0.629 square miles of eelgrass were mapped which is more than the eelgrass habitat mapped in 1995 (0.281 square miles). Due to the increasing extent of eelgrass beds in this AU, the Estuarine Bioassessments impairment is being delisted.



Nutrient-related delistings due to TMDL development:

Basin Name	Water Body	Segment ID	Impairment Cause	Explanation
Islands	Sengekontacket Pond	MA97-10	Dissolved Oxygen	New TMDL [CN 310.1, 1/7/2016]

				applied for the 2016 cycle.
Islands	Sengekontacket Pond	MA97-10	Estuarine Bioassessments	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	Sengekontacket Pond	MA97-10	Nitrogen, Total	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	Sengekontacket Pond	MA97-10	Nutrient/Eutrophication Biological Indicators	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	Lagoon Pond	MA97-11	Dissolved Oxygen	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
Islands	Lagoon Pond	MA97-11	Estuarine Bioassessments	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
Islands	Lagoon Pond	MA97-11	Nitrogen, Total	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
Islands	Lagoon Pond	MA97-11	Nutrient/Eutrophication Biological Indicators	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
Islands	Edgartown Great Pond	MA97-17	Estuarine Bioassessments	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.
Islands	Edgartown Great Pond	MA97-17	Nitrogen, Total	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.
Islands	Edgartown Great Pond	MA97-17	Nutrient/Eutrophication Biological Indicators	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.

Islands	Polpis Harbor	MA97-26	Nitrogen, Total	New impairment, covered under existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
Islands	Hither Creek	MA97-28	Dissolved Oxygen	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Hither Creek	MA97-28	Estuarine Bioassessments	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Hither Creek	MA97-28	Nitrogen, Total	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Hither Creek	MA97-28	Nutrient/Eutrophication Biological Indicators	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Dissolved Oxygen	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Dissolved Oxygen Supersaturation	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Estuarine Bioassessments	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Nitrogen, Total	New TMDL [CN 283.0,

				7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Nutrient/Eutrophication Biological Indicators	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Long Pond	MA97-29	Secchi disk transparency	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Islands	Farm Pond	MA97-30	Dissolved Oxygen	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
Islands	Farm Pond	MA97-30	Estuarine Bioassessments	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
Islands	Farm Pond	MA97-30	Nitrogen, Total	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
Islands	Farm Pond	MA97-30	Nutrient/Eutrophication Biological Indicators	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
Islands	Trapps Pond	MA97-32	Dissolved Oxygen	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	Trapps Pond	MA97-32	Estuarine Bioassessments	New segment - New TMDL [CN 310.1, 1/7/2016]

				applied for the 2016 cycle.
Islands	Trapps Pond	MA97-32	Nitrogen, Total	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	Trapps Pond	MA97-32	Nutrient/Eutrophication Biological Indicators	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Islands	North Head Long Pond	MA97-34	Nutrient/Eutrophication Biological Indicators	New segment - New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Cape Cod	Lewis Bay	MA96-36	Estuarine Bioassessments	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Cape Cod	Mill Creek	MA96-80	Nitrogen, Total	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Cape Cod	Hyannis Inner Harbor	MA96-82	Nitrogen, Total	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Cape Cod	Unnamed Tributary	MA96-97	Nitrogen, Total	New segment - New impairment, covered under existing TMDL [CN 314.0, 4/15/2015], added to this segment for 2016.
Islands	Nantucket Harbor	MA97-01	Estuarine Bioassessments	New impairment, covered under

				existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
Islands	Nantucket Harbor	MA97-01	Nitrogen, Total	New impairment, covered under existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
Millers	Parker Pond	MA35056	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
Millers	Reservoir No. 1	MA35063	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
Millers	Whites Mill Pond	MA35099	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
French	Hudson Pond	MA42029	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this

				segment for 2016.
French	Jones Pond	MA420 30	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
French	Lowes Pond	MA420 34	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
French	Mckinstry Pond	MA420 35	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
French	Wallis Pond	MA420 62	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Blackstone	Eddy Pond	MA510 43	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.

Blackstone	Flint Pond	MA510 50	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Blackstone	Howe Reservoirs	MA510 71	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Blackstone	Indian Lake	MA510 73	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
Blackstone	Southwick Pond	MA511 57	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Blackstone	Flint Pond	MA511 88	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Blackstone	Shirley Street Pond	MA511 96	Nutrient/Eutrophication Biological Indicators	New impairment, covered under

				existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Charles	Charles River	MA72-38	Dissolved Oxygen Supersaturation	TMDL [CN 301.0, 10/17/2007] added due to clerical error/earlier omission.
Concord (SuAsCo)	Assabet River	MA82B-03	Nutrient/Eutrophication Biological Indicators	New impairment, covered under existing TMDL [CN 201.0, 9/23/2004], added to this segment for 2016.
Buzzards Bay	Phinneys Harbor	MA95-15	Estuarine Bioassessments	New impairment, covered under existing TMDL [CN 247.0, 2/5/2008], added to this segment for 2016.

EPA approves the state's 2016 Section 303(d) list without these waterbody segment-pollutant combinations because the delistings are consistent with EPA regulations and EPA guidance.

All other waters Section

Trash/Debris/Floatables

Trash/debris/floatables are being delisted from Category 5 for the following segments. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by field sampling crews during the surveys. Most recent survey dates with no objectionable conditions are recorded below.

Basin Name	Water Body	Segment ID	Survey year(s)	Explanation
Narragansett Bay (Shore)	Runnins River	MA53-01	2009	Applicable WQS attained; according

				to new assessment method. The magnitude/spatial extent of the instream trash/debris originally used to list as impairment does trigger an impairment decision based on the 2016 CALM guidance.
Concord (SuAsCo)	Assabet River	MA82B-06	2007-2014	Applicable WQS attained; due to restoration activities.
Blackstone	Beaver Brook	MA51-07	2008	Applicable WQS attained; reason for recovery unspecified.
Blackstone	Kettle Brook	MA51-01	2011	Applicable WQS attained; reason for recovery unspecified.
Blackstone	Tatnuck Brook	MA51-15	2005, 2008	Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Neponset	Germany Brook	MA73-15	2009	Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Neponset	Hawes Brook	MA73-16	2009	Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Neponset	Unquity Brook	MA73-26	2009	Applicable WQS attained; reason for recovery unspecified.
French	French River	MA42-05	2005-2011	Applicable WQS attained; reason for

				recovery unspecified.
French	French River	MA42-06	2009-2013	Applicable WQS attained; reason for recovery unspecified.
North Coastal	Goldthwait Brook	MA93-05	2007	Applicable WQS attained; reason for recovery unspecified.
Quinebaug	Quinebaug River	MA41-03	2011	Applicable WQS attained; reason for recovery unspecified.
Taunton	Salisbury Plain River	MA62-06	2006	Applicable WQS attained; reason for recovery unspecified.
Mount Hope Bay (Shore)	Lee River	MA61-02	The original listing identified some localized and occasional areas of trash and debris. Based on the 2016 CALM guidance, this should not result in a listed impairment.	Original basis for listing was incorrect.

Foam/Flocs/Scum/Oil Slicks

Basin Name	Water Body	Segment ID	Delisting Comments	Explanation
North Coastal	Goldthwait Brook	MA93-05	Originally listed during the 2008 cycle based on field survey data from 2002. No objectionable conditions noted at the same location during the 2007 survey.	Applicable WQS attained; reason for recovery unspecified.
North Coastal	Proctor Brook	MA93-39	Originally listed during the 2008 cycle based on field survey data from 2002. No objectionable conditions	Applicable WQS attained; reason for

			noted at the same location during the 2007 survey.	recovery unspecified.

Oil and Grease

Narragansett Bay watershed, Runnins River (MA53-01): Oil sheens were originally identified as problem based on field observations in 1992. No observations of oil sheens were documented at the station near the mouth of this segment of the river during the six surveys conducted in summer of 2009. Applicable WQS attained; reason for recovery unspecified.

Chlordane

Impairment name changed from “Chlordane” to “Chlordane in Fish Tissue”. The following segments are being delisted for Chlordane and relisted as Chlordane in Fish Tissue in the same cycle, but do not represent actual changes to the status of the waters exhibiting impairment.

Basin Name	Water Body	Segment ID	Explanation
Boston Harbor: Mystic	Clay Pit Pond	MA71011	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Boston Harbor: Mystic	Malden River	MA71-05	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Boston Harbor: Mystic	Mystic River	MA71-02	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Boston Harbor: Mystic	Spy Pond	MA71040	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Boston Harbor: Weymouth & Weir	Cochato River	MA74-06	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Boston Harbor: Weymouth & Weir	Sylvan Lake	MA74021	Impairment changed from

			"Chlordane" to "Chlordane in Fish Tissue".
Charles	Charles River	MA72-04	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Charles	Charles River	MA72-05	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Charles	Populatic Pond	MA72096	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Concord (SuAsCo)	Fort Meadow Reservoir	MA82042	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
North Coastal	Flax Pond	MA93023	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".

DDT (dichlorodiphenylthrichloroethane)

Impairment name changed from “DDT” to “DDT in Fish Tissue”. The following segments are being delisted for DDT and relisted as DDT in Fish Tissue in the same cycle, but do not represent actual changes to the status of the waters exhibiting impairment.

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Blackstone River	MA51-06	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Mystic	Lower Mystic Lake	MA71027	Impairment changed from "DDT" to "DDT in Fish Tissue".

Boston Harbor: Mystic	Malden River	MA71-05	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Mystic	Mystic River	MA71-02	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Mystic	Spy Pond	MA71040	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Neponset	East Branch	MA73-05	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Neponset	Mother Brook	MA73-28	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Neponset	Neponset River	MA73-01	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Neponset	Neponset River	MA73-02	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Neponset	Neponset River	MA73-03	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Weymouth & Weir	Cochato River	MA74-06	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Weymouth & Weir	Sylvan Lake	MA74021	Impairment changed from "DDT" to "DDT in Fish Tissue".
Boston Harbor: Weymouth & Weir	Whitmans Pond	MA74025	Impairment changed from "DDT" to "DDT in Fish Tissue".
Buzzards Bay	New Bedford Reservoir	MA95110	Impairment changed from

			"DDT" to "DDT in Fish Tissue".
Buzzards Bay	Sampson Pond	MA95125	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-03	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-04	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-05	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-06	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-07	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-36	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Charles River	MA72-38	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Muddy River	MA72-11	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles	Populatic Pond	MA72096	Impairment changed from "DDT" to "DDT in Fish Tissue".
Housatonic	Pontoosuc Lake	MA21083	Original basis for listing was incorrect.

Ipswich	Silver Lake	MA92059	Impairment changed from "DDT" to "DDT in Fish Tissue".
Ipswich	Wenham Lake	MA92073	Impairment changed from "DDT" to "DDT in Fish Tissue".
Merrimack	Lowell Canals	MA84A-29	Impairment changed from "DDT" to "DDT in Fish Tissue".
North Coastal	Flax Pond	MA93023	Impairment changed from "DDT" to "DDT in Fish Tissue".
North Coastal	Foster Pond	MA93026	Impairment changed from "DDT" to "DDT in Fish Tissue".
North Coastal	Lake Quannapowitt	MA93060	Impairment changed from "DDT" to "DDT in Fish Tissue".

Excess Algal Growth

Impairment name changed from “Excess Algal Growth” to “Harmful Algal Blooms”. The following segments are being delisted for Excess Algal Growth and relisted as Harmful Algal Blooms in the same cycle, but do not represent actual changes to the status of the waters exhibiting impairment.

Basin Name	Water Body	Segment ID	Explanation
Boston Harbor: Mystic	Horn Pond	MA71019	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Boston Harbor: Mystic	Spy Pond	MA71040	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".

Cape Cod	Lovells Pond	MA96185	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Cape Cod	Santuit Pond	MA96277	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Charles	Charles River	MA72-38	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Nashua	Lake Shirley	MA81122	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
North Coastal	Lake Quannapowitt	MA93060	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
South Coastal	Wampatuck Pond	MA94168	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Taunton	Monponsett Pond, West Basin	MA62119	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".

The following segments are no longer impaired for Excess Algal Growth and so are being delisted from Category 5 for this impairment. Comments on restoration status below.

Basin Name	Water Body	Segment ID	Delisting Comment	Explanation
Concord (SuAsCo)	Hop Brook	MA82A-06	Since no dense algal growth was found in this segment during the 2006 field survey, the cause of Excess Algal Growth is delisted and the cause Nutrient/Eutrophication Biological Indicators will be identified as the impairment based on the excessive duckweed growth documented by OARS in the river upstream from Landham Road.	Applicable WQS attained; reason for recovery unspecified.
French	Buffumville Lake	MA42005	With the exception of 10 days of closure due to an algal bloom in 2014 no other blooms/closures have been have been reported since the early 2008 bloom up through the 2015 season. Therefore based on the general absence of algal blooms at the Buffumville Lake Beach, the excess algal growth cause of impairment is being delisted as a cause of impairment.	Applicable WQS attained; reason for recovery unspecified.
Westfield	Westfield River	MA32-05	The Aesthetics Use was assessed at multiple sites in this segment in 2006. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the surveys. In 2001, the lower 1.0 mile reach of the river (downstream from the Westfield WWTP discharge) was assessed as impaired for the Aesthetics Use because of the slight instream turbidity, presence of sewage fungus, excess algal growth, and the sewage odor as documented	Applicable WQS attained; reason for recovery unspecified.

			during the 2001 MA DEP benthic survey. The 2006 benthic tech memo and field sheets did not note these conditions downstream of the Westfield WWTP. Communication with field staff have reported steady improvements in this segment of the river from 2001-2012.	

Harmful Algal Blooms

Harmful Algal Blooms impairments being delisted from Category 5 due to TMDL development.

Basin Name	Water Body	Segment ID	Explanation
Blackstone	Jordan Pond	MA51078	covered under existing TMDL [CN 070.1, 5/2/2002]
Charles	Charles River	MA72-07	covered under existing TMDL [CN 272.0, 6/10/2011]
Charles	Charles River	MA72-36	covered under existing TMDL [CN 301.0, 10/17/2007].
Charles	Charles River	MA72-38	covered under existing TMDL [CN 301.0, 10/17/2007]

Algae

Algae impairment being delisted from Category 5 to Category 4a due to TMDL development.

Basin Name	Water Body	Segment ID	Explanation
Concord (SuAsCo)	Assabet River	MA82B-02	covered under existing TMDL [CN 201.0, 9/23/2004]

Taste and Odor

Basin Name	Water Body	Segment ID	Delisting comments	Explanation

Blackstone	Beaver Brook	MA51-07	The aesthetics use was impaired for Taste and Odor based on strong odors detected in shoreline surveys on several reaches of Beaver Brook in 2004. However, generally no noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded during the 2008 surveys.	Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Neponset	Unnamed Tributary	MA73-33	The original impairment for color and odor was based on the surveys conducted in the summer of 1994 when illicit connections and leaking sewers in Norwood were discharging to this brook. At that time the grey water and odors were evidence of the problem. Since MassDEP field crews did not note any objectionable colors and or odors during sampling in 2009, color and odor impairments are being delisted.	Applicable WQS attained; reason for recovery unspecified.
Charles	Beaver Brook	MA72-28	The Odor impairment was originally added to the 303(d) list in 2002 based on MassDEP 1997/1998 Water Quality Assessment Report during which the aesthetic use was particularly impaired in the portion of Beaver Brook downstream from the Metropolitan District Commission reservation, primarily as a result of siltation, turbidity, and objectionable odors associated with urban runoff. MassDEP sampling in 2007 did not note odors sufficient to impair the Aesthetics use and therefore	Applicable WQS attained; reason for recovery unspecified.

			Taste and Odor is being delisted.	
Chicopee	Forget-Me-Not Brook	MA36-28	The original listing of taste, odor and color (old WBS code) was made during the 2002 reporting cycle when the evaluation was “partial support” based on notes made during a 1998 survey. In 2003 and again in 2008 survey notes were also made identifying septic/treated effluent odors but they were not described as being offensively objectionable but rather present. Given that this segment is directly downstream from the North Brookfield WWTP discharge, it is not surprising that a treated effluent odor is present. The level of odor originally used to list as impairment does not trigger an impairment decision based on the 2016 CALM guidance. Since it is not at a level warranting an impairment the taste and odor cause is being delisted and only identified as an alert.	Applicable WQS attained; according to new assessment method.
Concord (SuAsCo)	Assabet River	MA82B-06	The sewer overflow to the river near the Elk's parking lot in Maynard was eliminated, and all of the major upgrades were completed at the Assabet River wastewater treatment plants. The Powdermill impoundment (MA82B-06) was typically free from sheens, odors, colors, trash and debris during the most recent survey (2016).	Applicable WQS attained; due to restoration activities.

French	French River	MA42-06	During the 1999 survey an odor of treated sewage was detected. Since that time observations of field crews at one water quality monitoring station between 2009 and 2013 documented generally good conditions regarding aesthetics. Only an occasional effluent odor was noted between February 2009 and April 2013 and therefore the taste and odor cause of impairment is being delisted.	Applicable WQS attained; reason for recovery unspecified.
Housatonic	West Branch Housatonic River	MA21-18	The most recent MassDEP sampling (2007) did not note sewage odors (a cause of previous listing) and noted the odor as "musty (basement)" or "none". Sewage odors had been added as a cause of impairment during 2008 listing cycle. Since sewage odors are no longer identified as a problem based on most recent sampling, "taste and odor" impairment is being delisted.	Applicable WQS attained; reason for recovery unspecified.
Millers	Otter River	MA35-08	This segment was originally listed due to occasional notes of effluent odor and one note of high turbidity during field surveys in 2005. No noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded by field sampling crews during surveys in 2011. The Taste and Odor impairment is being delisted.	Applicable WQS attained; reason for recovery unspecified.
Mount Hope Bay (Shore)	Lee River	MA61-02	The original listing in 1996 cycle identified some localized odors after rainfall. The majority of the shellfish	Original basis for listing was incorrect.

			growing area is now listed as conditionally approved in this segment and the localized illicit connections/poorly functioning septic systems identified as slight problems contributing to odor after rain events are presumed to be generally fixed. Furthermore, based on the 2016 CALM guidance, this should not result in listed impairment.	
North Coastal	Proctor Brook	MA93-39	The original listing of impairment for Taste and Odor was during the 2008 reporting cycle when odors were identified as an impairment for the Recreational and Aesthetic uses of this segment based on observations during surveys conducted in the brook during the summer of 2002. Since generally no noted objectionable conditions (odors, deposits, growths, or turbidity) were recorded by field sampling crews during surveys in the summer of 2007, the Taste and Odor impairment is being delisted.	Applicable WQS attained; reason for recovery unspecified.
Quinebaug	Quinebaug River	MA41-03	An effluent odor was noted in this segment of the Quinebaug River during a 2001 survey. However, there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the 2011 surveys. Therefore, the Taste	Applicable WQS attained; reason for recovery unspecified.

			and Odor impairment is being delisted.	
Westfield	Westfield River	MA32-05	There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews at multiple sites during the 2006 surveys. In 2001, the lower 1.0 mile reach of the river (downstream from the Westfield WWTP discharge) was assessed as impaired for the Aesthetics Use because of the slight instream turbidity, presence of sewage fungus, excess algal growth, and the sewage odor as documented during the 2001 MA DEP benthic survey. The 2006 benthic tech memo and field sheets did not note these conditions downstream of the Westfield WWTP. Communication with field staff have reported steady improvements in this segment of the river from 2001-2012.	Applicable WQS attained; reason for recovery unspecified.

Total Dissolved Solids (TDS)

Millers watershed, Otter River (MA35-08):

Original TDS was listed with Salinity/TDS/Chlorides as one group in 1992 reporting cycle. There were very limited details on this impairment. However, wastewater discharges to this segment have been upgraded. Based on recent 2005 data, the maximum specific conductivity at W0686 was 859 uS/cm which is less than 904 uS/cm, the value equivalent to the EPA/MassDEP regulation chloride chronic criteria of 230 mg/L (Data Source: 24). It also should be noted that one upstream station (W0691) has the range of specific conductance from 153 to 614 uS/cm (N = 43) between 2005 and 2011. This station (W0691) is upstream from both Seaman Paper Company and Templeton WWTP discharges.

Dioxin (including 2,3,7,8-TCDD)

Ipswich watershed, Glue Factory Pond (MA62078):

Resegmentation for 2016: MA62-39 deleted and split into 2 river segments (MA62-62 and MA62-63) and 1 lake segment (MA62078); historic impairment does not apply to either MA62-62 or MA62078. Glue Factory Pond is upstream from the current site-specific fish consumption advisory that is in place for the Rumford River and therefore this impairment should be delisted.

Ipswich watershed, Rumford River (MA62-62):

MA62-39 deleted and split into 2 river segments (MA62-62 and MA62-63) and 1 lake segment (MA62078); historic impairment does not apply to either MA62-62 or MA62078. Glue Factory Pond is upstream from the current site-specific fish consumption advisory that is in place for the Rumford River and therefore this impairment should be delisted.

Fish Bioassessments

Ipswich watershed, Howlett Brook (MA92-17):

The MassDEP assessment methods for evaluating fish sample information in low gradient warm water streams have changed as part of the 2016 CALM document. Since fluvial specialist/dependent species as well as intolerant or moderately tolerant fish were present in the Howlett Brook samples collected in July 1999 and July 2002, no impairment decision would be made for Howlett Brook and therefore it is appropriate that the fishes bioassessment impairment be removed.

Ipswich watershed, Martins Brook (MA92-08):

The fish samples collected in July 1999 contained 9 species/139 individuals. Among these individuals, 38% were fluvial dependents/specialists. Based on the 2016 CALM guidance, the fish community was relatively healthy. Applicable WQS attained according to new assessment method. Appropriate to delist.

Millers watershed, Otter River (MA35-07):

This segment of the Otter River was found to be supporting the Aquatic Life Use based on the results of the most recent biological sampling data including one fish sample in 2013 which was found to be dominated by intolerant/moderately tolerant fluvial specialist and dependent species. Therefore the Fishes Bioassessment impairment is being delisted.

Millers watershed, Otter River (MA35-08):

The Otter River was sampled on 08/19/2013, using the barge shocking method. A total of 71 individuals were collected with 7 species represented. The sample was composed of 62% fluvial specialists/dependents and 94% intolerant/moderately intolerant, while 6% were considered tolerant to pollution. Although this segment of the Otter River will continue to be listed as impaired for the Aquatic Life Use because of elevated concentrations of PCB in whole fish tissue, based on the results of the most recent fish sampling data as well as the re-evaluation of the August 2000 fish sample data using the updated assessment methodology for low gradient streams, the Fishes Bioassessment impairment is being delisted.

Mercury in Fish Tissue

Millers watershed, Whites Mill Pond (MA MA35099)

No fish toxics monitoring has been conducted in Whites Mill Pond. No site-specific DPH advisory has been issued for this waterbody. Therefore the Fish Consumption Use is being delisted from Category 5 to Category 3 (Not Assessed).

Shawsheen watershed, Shawsheen River (MA83-18):

This segment no longer includes Ballardvale Impoundment in Andover (also known as Lowell Junction Pond) which does have a DPH fish consumption advisory due to mercury based on 1995 fish toxics monitoring in Ballardvale Impoundment. No fish toxics monitoring has been done in this segment of the Shawsheen River, therefore the Fish Consumption Use is being delisted from Category 5 to Category 3 (Not Assessed).

Mercury in Water Column

Merrimack watershed, Spicket River (MA84A-10):

Original listing of metals for Spicket River segment MA84A-10 occurred in 1992 List. In 1994 comments were added that copper and mercury were the metals which were elevated based on results of the Merrimack River Survey that was conducted in the summer of 1989. One station was sampled three times on the Spicket River at Gardner Street in Lawrence. The total mercury concentrations were reported as below detection in two samples (<0.0002 mg/L) while the third sample was reported as 0.0005 mg/L but the report also qualifies the mercury data as being suspect since it was detected at the same concentration (0.0005mg/L) in the blank sample from the same survey. Based on the review of these data, the inclusion of water column mercury as a cause of impairment was found to be in error and should be removed.

PCBs in Fish Tissue

Millers watershed, Millers River (MA35-01):

Fish toxics monitoring was conducted at one site in this segment of the Millers River in 1985 and 1987. MA DPH had originally included this segment of the Millers River as part of a site-specific advisory however their advisory has since been updated. Based on the current site-specific advisory list, this segment of the Millers River has no site-specific advisory in place. Therefore this use should be not assessed (Category 3) and the cause PCB in Fish Tissue should be removed.

Pentachlorophenol (PCP)

Taunton watershed, Glue Factory Pond (MA62078):

Resegmentation for 2016: MA62-39 deleted and split into 2 river segments (MA62-62 and MA62-63) and 1 lake segment (MA62078); historic impairment does not apply to either MA62-62 or MA62078. Glue Factory Pond is upstream from the current site-specific fish consumption advisory that is in place for the Rumford River and therefore this impairment should be delisted.

Taunton watershed, Rumford River (MA62-62):

Resegmentation for 2016: MA62-39 deleted and split into 2 river segments (MA62-62 and MA62-63) and 1 lake segment (MA62078); historic impairment does not apply to either MA62-62 or MA62078. This segment of the Rumford River is upstream from the Glue Factory Pond and is therefore not covered by the current site-specific fish consumption advisory that is in place for the Rumford River and therefore this impairment should be delisted.

Secchi disk transparency

Cape Cod watershed, Lower Mill Pond (MA96188):

During the three surveys conducted at Lower Mill Pond during the summer of 2009 Secchi disk depths ranged from 2.2 to 2.4 m whereas the Secchi disk depth during the summer of 2004 was as low as 0.9 m (the other two results were 2.0 and 2.2m). Based on these most recent data which do not indicate impairment, Secchi disk transparency is being removed as a cause of impairment for the Aesthetics Use.

Turbidity

Basin Name	Water Body	Segment ID	Delisting comment	Explanation
Blackstone	Kettle Brook	MA51-01	This cause was added to this segment during the 2010 303d listing cycle when Smith Pond (former segment MA51156) was incorporated into this Kettle Brook assessment unit. The original notes	Applicable WQS attained; reason for recovery unspecified.

			of turbidity impairment in Smith Pond came from 30 June 1994 observations of turbidity after a rainstorm the previous night. At that time the Primary Contact Recreational Use was listed as partial support. The Smith Pond impoundment represents slightly less than 0.3 river miles of the 7.0 mile segment of Kettle Brook. Since no turbidity problems have been reported in the most recent sampling in Kettle Brook (three stations in 2011) it is recommended that the turbidity impairment be delisted.	
Blackstone	Tatnuck Brook	MA51-15	The Aesthetics Use for Tatnuck Brook was originally identified as threatened by turbidity during the 1992 reporting cycle. More recent assessments (2005 and 2008) show that there were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the surveys. Therefore, the cause of Turbidity is being delisted.	Applicable WQS attained; reason for recovery unspecified.
Blackstone	West Brook	MA51-43	Mill Pond MA51105 merged with West Brook MA51-43 for 2016 cycle due to low retention times. Turbidity had been noted as problematic in Mill Pond during one synoptic survey on 22 July 1994. This pond impounds roughly 0.3 river miles of the West Brook assessment unit. No observations of turbidity occurred at the sampling station downstream from Mill Pond between May and August 2008 (n=10 observations) when the river was described as clear during all 10 sampling events.	New segment - Historic impairment from former segment (MA51105) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.

Boston Harbor (Proper)	Dorchester Bay	MA70-03	Prior to the 2011 opening of the North Dorchester Bay Storage Tunnel, water quality criteria exceedances were frequent at City Point Beach but have since declined dramatically. The completion of the MWRA's North Dorchester Bay CSO abatement plan in 2011 has substantially eliminated wet weather inputs. Stormwater inputs to Carson Beach, M Street Beach, and City Point Beach only occur for storms equivalent to a 5-year storm event or larger, and CSOs only occur for storms equivalent to a 25-year storm event or larger. Since the MWRA CSO abatement project was completed in May 2011, no CSO discharges have occurred in the area of South Boston beaches. Based on the remediation efforts which have resulted in the elimination of almost all CSO discharges, the turbidity impairment should be delisted.	Applicable WQS attained; due to restoration activities.
Boston Harbor: Mystic	Aberjona River	MA71-01	Recent observations at three stations in 2009 did not note objectionable conditions with the majority of clarity observations as "clear" or "slightly turbid". The water quality station downstream was only noted to be "moderately turbid" for two of 11 observations with the remainder of observations noting "clear" or "slightly turbid" conditions. The average turbidity for water quality samples collected in 2009 at each sampling stations was approximately 5 NTU. The field observations at stations and turbidity samples all indicate this segment should be delisted for turbidity.	Applicable WQS attained; reason for recovery unspecified.

Boston Harbor: Neponset	Massapoag Brook	MA73-21	There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during 2009 surveys	Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Neponset	Neponset River	MA73-01	MassDEP sampling in 2009 at two stations did not note objectionable levels of turbidity. Field crews noted turbidity was either "clear" or "slightly turbid" during 2009 sampling on this segment. In addition water quality samples had an average turbidity less than 3 NTU at both 2009 sampling stations. Given both observations and water quality samples which did not show turbidity problems, this use should be delisted for turbidity. Major changes in this section of the river include elimination of discharges and sources from Foxboro Park Raceway.	Applicable WQS attained; reason for recovery unspecified.
Charles	Beaver Brook	MA72-28	The Turbidity impairment was originally added to the 303d list in 2002 based on MassDEP 1997/1998 Water Quality Assessment Report during which the aesthetic use was particularly impaired in the portion of Beaver Brook downstream from the Metropolitan District Commission reservation, primarily as a result of siltation, turbidity, and objectionable odors associated with urban runoff. Given the general lack of turbidity noted during 2007 MassDEP sampling the “turbidity” impairment is delisted for this use.	Applicable WQS attained; reason for recovery unspecified.
French	French River	MA42-06	Observations of field crews at one water quality monitoring station between 2009 and 2013 documented generally good conditions regarding aesthetics.	Applicable WQS attained; reason for recovery unspecified.

			With the exception of 2 times in August 2011 when clarity was described as moderately turbid all observations of clarity were described as clear or slightly turbid. Measured turbidity in samples collected from February 2009 through April 2013 (n=21) were all low ranging from 0.9 to 4.0 NTU. Turbidity is being delisted as a cause of impairment since the most recent data are indicative of generally good conditions.	
Hudson: Hoosic	Cheshire Reservoir, North Basin	MA11002	While one estimated Secchi disk depth was reportedly less than 4' during the 1997 synoptic survey conducted by DWM (original data for impairment/listing decision), all three of the Secchi disk depth measurements taken during the 2002 surveys met the CALM guidance threshold of 4' (1.2 m). Turbidity should be delisted.	Applicable WQS attained; according to new assessment method.
Ipswich	Norris Brook	MA92-11	The turbidity data in 1995 (original listing data for this impairment) were either censored or qualified as likely inaccurate. Therefore, original listing was inappropriate.	Original basis for listing was incorrect.
Shawsheen	Elm Brook	MA83-23		New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Original basis for listing was incorrect.
Shawsheen	Elm Brook	MA83-24	Turbidity impairment from prior listing cycles was based on four measurements of turbidity in 1997. Based on these data the assessment notes were made of a questionable	New segment - Historic impairment from former segment

			problem and an evaluation of "partial support" of the Aesthetics Use. Since the 1997 evaluation all NPDES discharges to Elm Brook have been terminated. Therefore, based on the 2016 CALM guidance manual evaluation procedures the turbidity impairments for Elm Brook should be removed as a cause of impairment for the Recreational and Aesthetics Uses.	(MA83-05) transferred to this segment. Original basis for listing was incorrect.
Shawsheen	Rogers Brook	MA83-04	Original listing for turbidity was 1998 reporting cycle. One turbidity measurement at one of two stations in Rogers Brook just upstream from the confluence with the Shawsheen River was 23 NTU. Suspended solids concentration was 12 mg/L. All other measurements were low (highest was 4.2NTU). Subsequent shoreline survey in 1998 by Merrimack River Watershed Council as well as multiple site visits to sampling stations on Rogers Brook by MassDEP DWM staff in 2000 and 2005 did not identify any problems with turbidity. Therefore this cause should be removed as an impairment.	Applicable WQS attained; reason for recovery unspecified.
Taunton	Shumatuscacant River	MA62-33	The original listing of turbidity impairment for the Aesthetic Use was based on one synoptic survey of Hobart Pond (former segment MA62090) on 25 July 1996. For the 2016 reporting cycle, this former pond segment is now part of the Shumatuscacant River segment based on a calculated retention time analysis. The pond also represents only 0.35 mile reach (~ 4%) of the 8 mile segment. Observations were more recently made at three stations	Historic impairment from former segment (MA62090) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.

			along the river during surveys conducted by ESS staff between June and September 2002. No objectionable levels of turbidity were documented including one station located just downstream from the Hobart Pond near South Avenue in Whitman. Based on the more recent data, turbidity should not be listed as an impairment for the Primary Contact Recreational Use of the Shumatascacant River.	
Taunton	Trout Brook	MA62-07	Turbidity impairment originally applied following the 2001 Taunton River Watershed Water Quality Survey. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the 2006 and 2011 surveys. Appropriate to delist.	Applicable WQS attained; reason for recovery unspecified.
Westfield	Moose Meadow Brook	MA32-40	Since segment (MA32-23) was split into two new segments MA32-40 (upstream) and MA32-41 (downstream) for 2016 reporting cycle, no impairments are appropriate for this new upstream segment because the upper 6.9-mile reach of Moose Meadow Brook was originally assessed as support for the Recreational and Aesthetic uses. Therefore the impairment for turbidity should be removed from this new segment (MA32-40).	New segment - Historic impairment from former segment (MA32-23) transferred to this segment. Original basis for listing was incorrect.
Westfield	Moose Meadow Brook	MA32-41	Resegmentation for 2016: segment MA32-23 was split into two new segments MA32-40 (upstream) and MA32-41 (downstream). Original listing was part of 2006 reporting cycle based on one observation of murkiness and evidence of cow access to stream in summer of 2001. Because there were generally no noted	New segment - Historic impairment from former segment (MA32-23) transferred to this segment. Applicable WQS attained;

			objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during the 2006 survey, this impairment is being delisted.	reason for recovery unspecified.

Total Suspended Solids (TSS)

Basin Name	Water Body	Segment ID	Delisting comment	Explanation
Boston Harbor (Proper)	Dorchester Bay	MA70-03	Prior to the 2011 opening of the North Dorchester Bay Storage Tunnel, water quality criteria exceedances were frequent at City Point Beach but have since declined dramatically. The completion of the MWRA's North Dorchester Bay CSO abatement plan in 2011 has substantially eliminated wet weather inputs. Stormwater inputs to Carson Beach, M Street Beach, and City Point Beach only occur for storms equivalent to a 5-year storm event or larger, and CSOs only occur for storms equivalent to a 25-year storm event or larger. Since the MWRA CSO abatement project was completed in May 2011, no CSO discharges have occurred in the area of South Boston beaches. Based on the remediation efforts which have resulted in the elimination of almost all CSO discharges, the TSS impairment should be delisted.	Applicable WQS attained; due to restoration activities.

Boston Harbor: Neponset	Neponset River	MA73-01	The Total Suspended Solids (TSS) impairment was originally listed in the 1992 reporting cycle. Notes indicated that the evaluation was based on the results of four water quality surveys conducted in 1991. MassDEP sampling in 2009 at two stations did not note objectionable levels of turbidity. Field crews noted turbidity was either "clear" or "slightly turbid" during 2009 sampling on this segment. In addition, water quality samples had an average turbidity less than 3 NTU at both 2009 sampling stations. Water quality samples at W1943 in 2009 had an average turbidity of 2.2 NTU. Water quality samples at W1933 in 2009 had an average turbidity of 2.6 NTU. Given both observations and water quality samples which did not show turbidity problems, this use should be delisted as well for total suspended solids.	Applicable WQS attained; reason for recovery unspecified.
Connecticut	Connecticut River	MA34-05	As far back as 1992 the Aesthetics Use was assessed as “partial support” with suspended solids listed as the impairment. The notes indicated the decision was based on limited data collected by M&E for the Lower Connecticut River CSO study back in 1986. Currently, with the exception of one of four MassDEP sampling events in 2008 at one station (W1395), total suspended solids were less	Applicable WQS attained; reason for recovery unspecified.

			than 10 mg/L on all water quality sampling dates. TSS was 21 mg/L on July 29, 2008 when the river was responding to a 1.58 inch storm event two days prior. CT DEEP does not identify TSS problems on the CT river (AU ID # CT4000-00_03) where the MassDEP station was located. The upstream segment of the Connecticut River (MA34-04) is also assessed as support for the Aesthetics Use. Appropriate to delist TSS.	
Ipswich	Norris Brook	MA92-11	The total suspended solids data collected in 1995 (original listing data for this impairment) were low, ranging from < 2.5 mg/L to 3 mg/L (N = 3), indicating no problem. Therefore, original listing was inappropriate.	Original basis for listing was incorrect.
Taunton	Trout Brook	MA62-07	During the Taunton River Watershed 2001 Water Quality Survey, the lower 1.3 mile reach of this segment was impaired due to turbidity and total suspended solids. There were generally no noted objectionable conditions (odors, deposits, growths, or turbidity) recorded by DWM-WPP field sampling crews during 2006 and 2011 Aesthetic Use surveys, appropriate to delist.	Applicable WQS attained; reason for recovery unspecified.

Ammonia, Unionized

Basin Name	Water Body	Segment ID	Delisting comments	Explanation

Buzzards Bay	Agawam River	MA95-29	Prior to September of 2005 the Wareham Treatment Plant had elevated ammonia concentrations in their effluent (up to 20 mg/L) and this resulted in impairment for ammonia. Since 2005 the effluent ammonia concentrations are greatly reduced. The highest ammonia concentration reported by the Wareham WWTP as part of their quarterly toxicity testing was 0.4 mg/L (June 2008) while the vast majority of samples were reported as < 0.1 mg/L. All ambient water samples collected in the Agawam River by the Wareham WWTP as part of their toxicity testing requirements since 2005 have been less than 0.1 mg/L with the exception of one sample. These data and the lack of acute and chronic whole effluent toxicity are the basis for delisting ammonia.	Applicable WQS attained; due to restoration activities.

Whole Effluent Toxicity (WET)

Basin Name	Water Body	Segment ID	Delisting comments	Explanation
Buzzards Bay	Agawam River	MA95-29	Both the ambient and effluent whole toxicity tests for Wareham WWTP have shown good survival of test organisms. Of the 46 recent valid tests conducted on M. beryllina, 43 tests met the	Applicable WQS attained; due to restoration activities.

			C-NOEC test criteria limit of ≥ 18.2%. From December 2002 to June 2015, survival of M. beryllina (7-day) exposed to ambient river water located downstream of the outfall was good (85-100%) in 45 of the 51 test events. Two test events with M. beryllina had less than 70% survival when exposed 7-day (2 separate test events in March 2008). Survival of M. bahia was good for all three 3 test events conducted (>=90%).	

Waters impaired by nonpoint sources of pollution

The Commonwealth properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) and EPA guidance. Section 303(d) lists are to include all WQLSs still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. EPA's long-standing interpretation is that section 303(d) applies to waters impacted by point and/or nonpoint sources. In 'Pronsolino v. Marcus,' the District Court for Northern District of California held that section 303(d) of the Clean Water Act authorizes EPA to identify and establish total maximum daily loads for waters impaired by nonpoint sources. Pronsolino v. Marcus, 91 F. Supp. 2d 1337, 1347 (N.D.Ca. 2000). This decision was affirmed by the 9th Circuit court of appeals in Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2002). See also EPA's Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act, EPA Office of Water, July 29, 2005.